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Vol. 1022 Number 1

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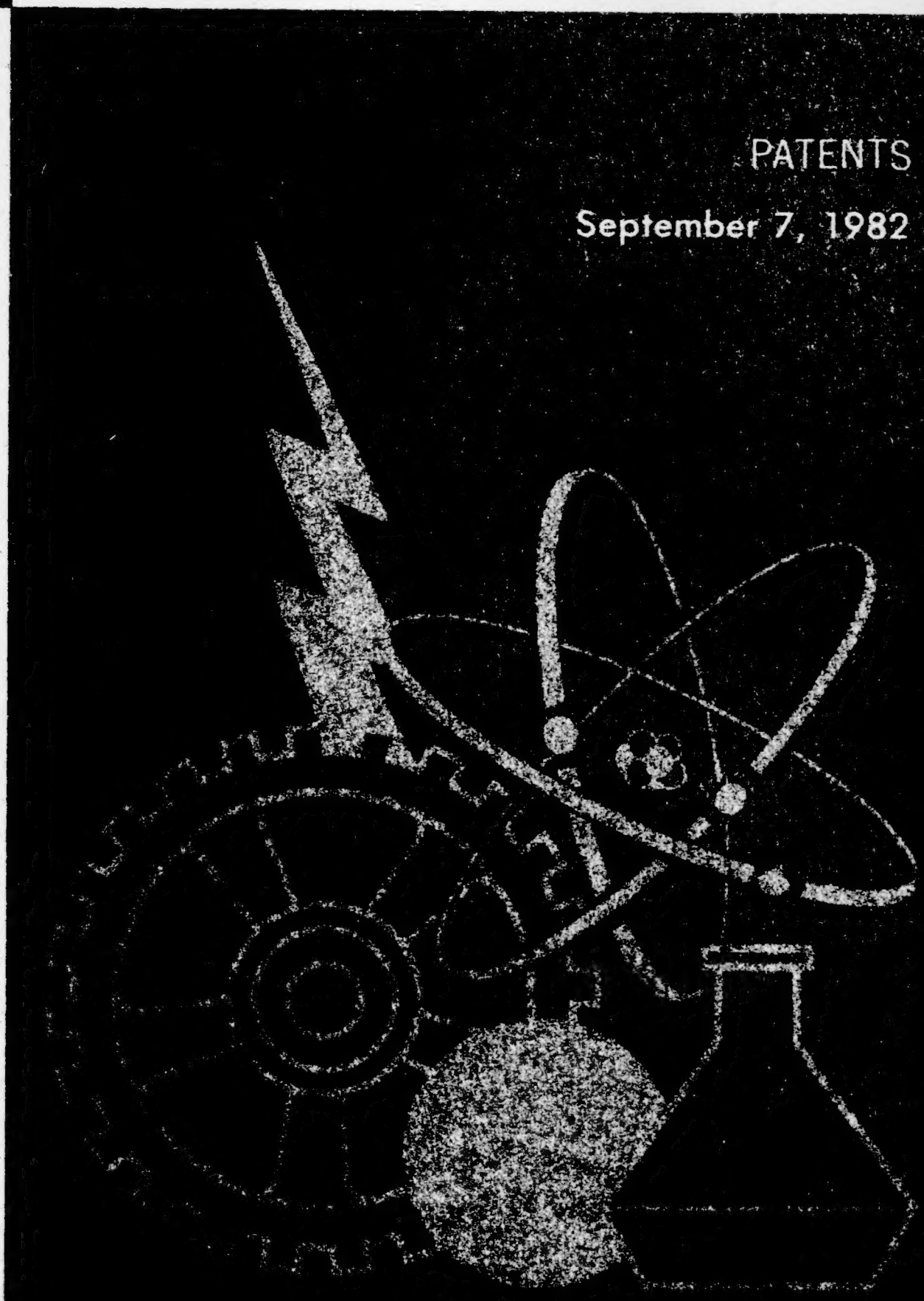
of the

UNITED STATES PATENT AND TRADEMARK OFFICE

Route to:

PATENTS

September 7, 1982



PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

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OF COMMERCE

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OFFICIAL GAZETTE of the UNITED STATES PATENT AND TRADEMARK OFFICE

September 7, 1982 Volume 1022 Number 1

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The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.

THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.

GENERAL INFORMATION concerning PATENTS.

GENERAL INFORMATION concerning TRADEMARKS.

PRINTED COPIES OF PATENTS are furnished by the Patent and Trademark Office at 50 cents each; PLANT PATENTS in color, $1.00 each; copies of TRADEMARKS AND DESIGN PATENTS at 20 cents each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT member countries and the most recent PCT rule changes see the notices appearing in the Official Gazette at 1001 O.G. 14 on Dec. 9, 1980 and at 1012 O.G. 20 on Nov. 17, 1981.

Note that the international fees have been increased as of Jan. 1, 1982. The current schedule of fees is as follows:

Transmittal fee	$ 35.00
Search fee	300.00
International Fees	
Basic Fee (first 30 pages)	270.00
Basic Supplemental Fee (for each sheet over 30)	6.00
Designation Fees	65.00

GERALD J. MOSSINGHOFF,
Jan. 19, 1982. *Commissioner of Patents and Trademarks.*

Board of Appeals Decisions Rendered in the Month of July 1982

Affirmed	231
Affirmed in Part	26
Reversed	63
Total	320

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,932,860, Re. S.N. 396,224, Filed July 8, 1982, Cl. 340/753, ELECTRO-OPTICAL DISPLAY WITH CIRCUITRY FOR APPLYING PREDETERMINED POTENTIALS TO ALL DISPLAY SEGMENTS TO EFFECT ACTIVATION OF A SELECTED SEGMENT ONLY, Sam G. Cohen, Owner of Record: *Timex Corp., Middlebury, Conn.,* Attorney or Agent: Joseph A. Biela, et al., Ex. Gp.: 234

4,186,248, Re. S.N. 392,714, Filed June 28, 1982, Cl. 429/191, SOLID STATE ELECTROLYTES, Geoffrey W. Mellors, Owner of Record: *Union Carbide Corp., New York, N.Y.,* Attorney or Agent: James C. Arvantes, et al., Ex. Gp.: 112

4,207,989, Re. S.N. 389,186, Filed June 16, 1982, Cl. 220/266, CONTAINER WITH LID OPENING MEANS, Ole Ingemann, Owner of Record: *A/S Haustrup Plastic, Langeskov, Denmark,* Attorney or Agent: Alan K. Roberts, et al., Ex. Gp.: 241

4,207,989, Re. S.N. 389,346, Filed June 17, 1982, Cl. 220/266, CONTAINER WITH LID OPENING MEANS, Ole Ingemann, Owner of Record: *A/S Haustrup Plastic, Langeskov, Denmark,* Attorney or Agent: Camil P. Spiecens, et al., Ex. Gp.: 241

4,211,672, Re. S.N. 384,966, Filed June 4, 1982, Cl. 252/455R, SUPPORTED CATALYST FOR PURIFYING GAS AND METHOD OF MANUFACTURING THE SAME, Kazunori Sonetaka, et al., Owner of Record: *Matsushita Electric Industrial Co., Ltd., Osaka, Japan,* Attorney or Agent: John E. Lind, et al., Ex. Gp.: 116

4,211,988, Re. S.N. 396,110, Filed July 7, 1982, Cl. 334/16, SEARCH TUNING SYSTEM FOR TELEVISION RECEIVER, Shigeo Matsuura, et al., Owner of Record: *Hitachi, Ltd., Tokyo, Japan,* Attorney or Agent: Paul M. Craig, Jr., et al., Ex. Gp.: 254

4,225,873, Re. S.N. 390,005, Filed June 18, 1982, Cl. 346/76.3, RECORDING AND PLAYBACK SYSTEM, John S. Winslow, Owner of Record: *MCA Disco-Vision, Inc., Universal City, Calif.,* Attorney or Agent: Ronald J. Clark, Ex. Gp.: 211

4,244,060, Re. S.N. 389,708, Filed June 18, 1982, Cl. 3/13, INTRAOCULAR LENS, Kenneth J. Hoffer, Owner of Record: *Inventor,* Attorney or Agent: None, Ex. Gp.: 336

4,245,000, Re. S.N. 390,476, Filed June 21, 1982, Cl. 428/224, VISCOSE RAYON, Gregory C. Bockno, Media, Pa., Owner of Record: *Avtex Fibers, Inc., Valley Forge, Pa.,* Attorney or Agent: Arthur R. Eglington, Ex. Gp.: 164

4,276,129, Re. S.N. 393,033, Filed June 28, 1982, Cl. 204/58, METHOD FOR PRODUCING FOIL ELECTRODES FOR ELECTROLYTIC CAPACITOR, Nobuyoshi Kanzaki, et al., Owner of Record: *Matsushita Electric Industrial Co., Ltd., Osaka, Japan,* Attorney or Agent: Paul N. Kokulis, et al., Ex. Gp.: 112

4,276,565, Re. S.N. 384,538, Filed June 3, 1982, Cl. 358/140, METHOD AND APPARATUS FOR STANDARDS CONVERSION OF TELEVISION SIGNALS, Christopher John Dalton, et al., Owner of Record: *British Broadcasting Corp., London, England,* Attorney or Agent: Robert F. O'Connell, et al., Ex. Gp.: 233

4,282,111, Re. S.N. 396,207, Filed July 8, 1982, Cl. 252/178, HYDROQUINONE AS AN OXYGEN SCAVENGER IN AN AQUEOUS MEDIUM, Stanley J. Ciuba, Owner of Record: *Betz Laboratories, Inc., Trevose, Pa.,* Attorney or Agent: Alexander D. Ricci, et al., Ex. Gp.: 166

4,283,280, Re. S.N. 392,896, Filed June 28, 1982, Cl. 210/198.200, CARTRIDGE TYPE SEPARATION COLUMN AND HOLDER ASSEMBLY FOR LIQUID CHROMATOGRAPHS, Robert Brownlee, Owner of Record: *Inventor,* Attorney or Agent: Robert B. Block, et al., Ex. Gp.: 176

4,298,001, Re. S.N. 388,923, Filed June 16, 1982, Cl. 128/247, FLUID FLOW CONNECTOR UNIT AND METHOD, Thomas S. Hargest, et al., Owner of Record: *Inventors,* Attorney or Agent: Wellington M. Manning, Jr., et al., Ex. Gp.: 335

4,305,328, Re. S.N. 388,509, Filed June 14, 1982, Cl. 99/283, COFFEE VENDOR, John J. Kueser, et al., Owner of Record: *UMC Industries, Inc., St. Louis, Mo.,* Attorney or Agent: Irving Powers, et al., Ex. Gp.: 242

4,315,907, Re. S.N. 395,856, Filed July 6, 1982, Cl. 424/1, COMBINED HETEROGENEOUS SPECIFIC BINDING ASSAY, Bertold Fridlender, et al., Owner of Record: *Ames-Yissum, Ltd., Jerusalem, Israel,* Attorney or Agent: Louis E. Davidson, et al., Ex. Gp.: 223

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the

requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b).

3,449,280, Reexam. No. 90/000,236, Requested: Aug. 2, 1982, Cl. 523/402, ADHESIVE COMPOSITION CONTAINING HIGH MOLECULAR WEIGHT POLYAMIDES EPOXY RESINS AND CURING AGENTS, Robert A. Frigstad, Owner of Record: *Minnesota Mining & Manufacturing Co., St. Paul, Minn.*, Attorney or Agent: Carpenter, Kinney & Coulter, Ex. Gp.: 144, Requester: James S. Womack, Sheldahl, Inc. Northfield, Minn.

3,736,036, Reexam. No. 90/000,235, Requested: Aug. 2, 1982, Cl. 312/285, STORAGE SYSTEM FOR TAPE CASSETTES, Gregory Mathus, Owner of Record: *Data Packaging Corp.*, Attorney or Agent: George L. Greenfield, Ex. Gp.: 350, Requester: Hartzell Manufacturing Co., St. Paul, Minn.

3,956,667, Reexam. No. 90/000,237, Requested: Aug. 4, 1982, Cl. 315/169, LUMINOUS DISCHARGE DISPLAY DEVICE, Werner Veith, Owner of Record: *Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany,* Attorney or Agent: Hill, Van Santen, Steadman, Chiara & Simpson, Ex. Gp.: 250, Requester: Owner of Record

4,096,202, Reexam. No. 90/000,241, Requested: Aug. 11, 1982, Cl. 525/64, IMPACT MODIFIED POLY (ALKLENE TEREPHTHALATES), Sutton B. Furnham, et al., Owner of Record: *Rohm & Haas Co., Philadelphia, Pa.*, Attorney or Agent: Michael B. Fein, Ex. Gp.: 140, Requester: Frank E. Robbins, Washington, D.C.

4,145,185, Reexam. No. 90/000,239, Requested: Aug. 5, 1982, Cl. 23/230B, REAGENTS FOR SCREENING TESTS AND BIOASSAY OF VON WILLIEBRAND'S FACTOR (PLATELET AGGREGATING FACTOR) IN BLOOD PLASMAS, Kenneth M. Brinkhous, et al., Owner of Record: *Research Triangle Institute, Research Triangle Park, N.C.*, Attorney or Agent: Cushman, Darby & Cushman, Ex. Gp.: 170, Requester: Owner of Record

4,287,087, Reexam. No. 90/000,240, Requested: Aug. 5, 1982, Cl. 252/408, FIXED-DRIED BLOOD PLATELETS, Kenneth M. Brinkhous, et al., Owner of Record: *Research Triangle Institute, Research Triangle Park, N.C.*, Attorney or Agent: Cushman, Darby & Cushman, Ex. Gp.: 223, Requester: Owner of Record

4,295,096, Reexam. No. 90/000,238, Requested: Aug. 5, 1982, Cl. 324/357, ELECTRODE PROSPECTING METHOD PROVIDING CALCULABLE ELECTROMAGNETIC COUPLING FOR THE INDIRECT DETECTION OF HYDROCARBON RESERVOIRS, Ben K. Sternberg, et al., Owner of Record: *Conoco, Inc., Ponca City, Okla.*, Attorney or Agent: William J. Miller, Ex. Gp.: 252, Requester: Owner of Record

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Service by Publication

A petition to cancel the registration identified below having been filed, and the notice of default of such proceedings sent by registered mail to each registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives, shall enter an appearance within thirty days from the date of this publication, the cancellation will be proceeded with as in the case of default.

B & W Enterprises, Tulsa, OK, Reg. No. 1,127,706, for the mark "THE PIZZA OVEN", Can. No. 13,029.

Compressed Concrete Corp., Lake Worth, FL, Reg. No. 745,052, for the mark "SHADOWSTONE", Can. No. 13,123.

Parfums Schiaparelli, Inc., New York, NY, Reg. No. 397,252, for the mark "SILENCE", Can. No. 13,180.

The Hampton Corp., assignee of Marilyn Shoe Co., Milwaukee, WI, Reg. No. 599,386, for the mark "KICKERINOS ALASKAN", Can. No. 13,232.

California Spice & Vegetable Products, Inc., King City, CA, Reg. No. 1,061,806, for the mark "PRIDE OF CALIFORNIA", Can. No. 13,269.

Steri Pierce, Inc., Manassas, VA, Reg. No. 1,140,318, for the mark "SOFTOUCH", Can. No. 13,294.

Appendagez, Inc., Canton, MA, Reg. No. 992,894, for the mark "FADED GLORY", Can. No. 13,340.

Novo Airfreight Corp., New York, NY, Reg. No. 921,738, for the mark "AIRTRAC", Can. No. 13,196.

ERMA S. BROWN,
Deputy Clerk of the Trademark Trial and Appeal Board.
For MARGARET M. LAURENCE,
Assistant Commissioner For Trademarks.

Examiner Education Program Contributions Tax Deductible

The Internal Revenue Service has issued a ruling that financial contributions made in support of the Patent Examiner Education Program are tax deductible for the taxable year in which the contributions are made. The ruling is reproduced below.

July 20, 1982.

Dear Mr. Mossinghoff:

This is in reply to your request for a ruling whether contributions to your office under the following circumstances are deductible under section 170 of the Internal Revenue Code.

The Patent and Trademark Office of the Department of Commerce is promoting a Patent Examiner Education Program, which will improve the capabilities of its patent examiners to make decisions on patentability. That, in turn, will improve the quality of patents issued by the Office. Private industry is being asked to provide the funds for the Program because funds are not available from Congressional appropriations or fees received by the Office. Industry is also being asked to make commercial facilities available for visits under the Program. It is not necessary that a person who makes a facility available for visits also make a financial contribution. The identification of donors and gift amounts will be known to about four individuals in the Office. Neither the examiners nor the individuals assigning examiners to visit industrial facilities will know the donors or amounts of their gifts. Donors to the Program will not have any part in the assignment of examiners to visit the facilities.

Section 170 of the Code provides, subject to certain limitations, a deduction for contributions and gifts to or for the use of organizations described in section 170(c), payment of which is made within the taxable year.

Section 170(c)(1) of the Code provides, in part, that the term "charitable contribution" means a contribution or gift to or for the use of the United States, but only if the contribution or gift is made for exclusively public purposes.

The term "charitable contribution," as used in section 170 of the Code, requires a contribution or gift. A contribution or gift, for the purposes of section 170, is a voluntary transfer of money or property made by the transferor without receipt or expectation of financial or economic benefit. If the transferor receives, or can reasonably expect to receive, sufficiently substantial financial or economic benefits in excess of those that would inure to the general public, no deduction under section 170 is allowable. *United States* v. *Transamerica Corp.*,

392 F.2d 522 (9th Cir. 1968); and *Singer Co.* v. *United States*, 449 F.2d 413 (Ct. Cl. 1971).

Rev. Rul. 69-90, 1969-1 C.B. 63, holds that voluntary payments by merchants and property owners to a city to provide unrestricted public parking facilities located in the general area of the donors' businesses and properties are charitable contributions. This conclusion is based on the fact that the payments were not consideration for an agreement on the part of the city to provide parking facilities for the use of the contributors. The parking spaces were for the use of the general public and the amount of the contributions was not based on proximity or probable use. Thus, there was no special economic benefit conferred on the contributor by reason of the contribution.

In Rev. Rul. 73-296, 1973-2 C.B. 67, the Service considered whether contributions to United States Army Unit Funds, which are integral parts of the Army, are deductible under section 170 of the Code. The Funds could accept contributions if acceptance was found to be in the best interest of the Army and did not involve the granting of special privileges to the donor. The revenue ruling concludes that contributions to the Funds under these circumstances are deductible as contributions to or for the use of the United States under section 170, provided the contributions are for exclusively public purposes.

Contributions to the Program do not confer special privileges on the donors. The contributions provide funds for a program for which funds are not available from Congressional appropriations.

Accordingly, amounts contributed to the Program are deductible under section 170 of the Code, subject to the limitations provided by that section, as contributions to or for the use of the United States, provided the contributions are used exclusively for public purposes.

Sincerely yours,

Anthony Manzanares, Jr.,
Chief, Individual Income Tax Branch

The Patent Examiner Education Program, conducted jointly by the U.S. Patent and Trademark Office and Intellectual Property Owners, Inc., is described in the notice published in the Official Gazette of May 25, 1982, 1018 OG 39.

DONALD J. QUIGG,
Deputy Commissioner of Patents and Trademarks.

Aug. 3, 1982

PATENT NOTICES

Certificates of Correction for the Week of Sept. 7, 1982

Re. 30,820	4,264,299	4,318,180	4,332,327
Re. 30,843	4,264,484	4,318,558	4,332,514
Re. 30,908	4,265,915	4,318,703	4,332,720
D. 262,492	4,266,222	4,318,880	4,332,812
D. 264,188	4,266,271	4,318,968	4,332,820
3,683,654	4,269,671	4,319,412	4,332,896
3,764,571	4,272,431	4,320,751	4,332,942
3,878,225	4,275,061	4,320,959	4,333,068
4,022,654	4,275,588	4,321,214	4,333,091
4,075,669	4,276,293	4,321,511	4,333,120
4,097,489	4,281,799	4,322,399	4,333,129
4,102,779	4,287,426	4,322,456	4,333,318
4,123,147	4,290,953	4,323,297	4,333,479
4,145,736	4,291,178	4,323,331	4,333,706
4,147,090	4,293,047	4,323,665	4,334,096
4,156,021	4,295,197	4,323,841	4,334,169
4,158,856	4,297,279	4,324,713	4,334,285
4,165,561	4,299,459	4,325,125	4,334,802
4,166,972	4,299,953	4,325,152	4,335,071
4,169,868	4,301,222	4,325,372	4,335,306
4,169,999	4,303,453	4,325,808	4,335,385
4,181,611	4,303,876	4,325,974	4,335,871
4,184,875	4,303,880	4,326,236	4,336,094
4,191,486	4,304,448	4,326,311	4,336,854
4,197,451	4,304,679	4,326,519	4,337,018
4,214,207	4,305,646	4,326,805	4,337,173
4,217,259	4,305,943	4,326,837	4,337,255
4,226,753	4,306,438	4,327,562	4,337,338
4,234,768	4,306,688	4,327,939	4,337,621
4,236,802	4,306,707	4,328,036	4,337,635
4,237,846	4,307,918	4,328,053	4,337,705
4,238,593	4,309,927	4,328,113	4,337,706
4,241,071	4,311,763	4,328,176	4,337,729
4,243,133	4,312,497	4,328,244	4,337,823
4,245,003	4,312,782	4,328,292	4,337,867
4,248,509	4,312,809	4,328,316	4,338,034
4,250,387	4,312,967	4,328,772	4,338,074
4,251,564	4,314,167	4,329,060	4,338,199
4,251,692	4,314,191	4,329,578	4,338,921
4,252,561	4,314,728	4,329,817	4,338,929
4,252,791	4,315,003	4,329,950	4,339,214
4,257,778	4,315,205	4,330,029	4,339,265
4,258,148	4,315,367	4,330,142	4,339,496
4,260,764	4,316,984	4,330,196	
4,263,170	4,317,232	4,331,231	
4,263,179	4,317,390	4,331,601	

Disclaimers

3,456,310.—*Fujio Abe* and *John V. Cauthen,* Fayetteville, and *Daniel W. McCoy,* Monroe, N.C. APPARATUS FOR STOPPING TEXTILE MACHINERY UPON DETECTION OF YARN-BREAK AND FOR INDICATING LOCATION THEREOF. Patent dated July 22, 1969. Disclaimer filed Oct. 31, 1980, by the assignee, *Burlington Industries, Inc.*

Hereby enters this disclaimer to all claims of said patent.

3,522,704.—*Lyle S. Martin,* La Salle, Ill. HYDROSTATIC TRANSMISSION. Patent dated Aug. 4, 1970. Disclaimer filed May 20, 1981, by the assignee, *Sundstrand Corp.*

Hereby enters this disclaimer to claims 1 and 2 of said patent.

4,030,881.—*Violet Boyd, Brian R. Fishwick* and *Brian Glover,* Manachester, England. COLORATION PROCESS. Patent dated June 21, 1977. Disclaimer filed Dec. 28, 1979, by the assignee, *Imperial Chemical Industries Ltd.*

Hereby enters this disclaimer to all claims of said patent.

4,076,642.—*John F. Herber,* St. Louis, *William R. Richard, Jr.* and *Robert W. Street,* Kirkwood, Mo. NOVEL MONOEPOXY COMPOUNDS AS ACID SCAVENGERS IN FUNCTIONAL FLUIDS. Patent dated Feb. 28, 1978. Disclaimer filed July 16, 1982, by the assignee, *Monsanto Co.*

Hereby enters this disclaimer to claims 1, 2, 3, 4, and 5 of said patent.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
California	Los Angeles Public Library	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware	(302) 738-2238
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4559
Illinois	Chicago Public Library	(312) 269-2865
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6552
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214, 215
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7814
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1321**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
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Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

**Call only between the hours of 10:00 a.m. and 5:00 p.m.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF July 24, 1982

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director ..... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	9-18-80
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director ..... Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	1-09-81
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director .... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	3-18-81
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director ..... Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	4-13-81
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director ..... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	4-09-81
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	8-20-80
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director ..... Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	9-18-80
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—EARL LEVY, Director ..... Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	6-20-80
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director ..... Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling; Shaft; Impellers; Rotary Fluid Motors.	4-09-80
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director ..... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	11-26-79
DESIGN, GROUP 290—KENNETH L. CAGE, Director ..... Industrial Arts; Household, Personal and Fine Arts.	7-07-80
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director ..... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	11-14-80
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director ... Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	10-27-80
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director ..... Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	2-13-80
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director ..... Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	5-24-82
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—A. L. SMITH, Director ..... Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	11-27-79

Expiration of patents: The patents within the range of numbers indicated below expire during July 1982, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,192,536 to 3,197,783, inclusive

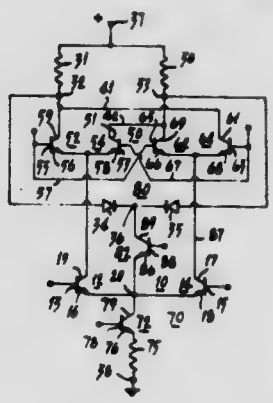
Plant Patents ..... Numbers 2,543 to 2,545 inclusive

REEXAMINATIONS

SEPTEMBER 7, 1982

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination

B1 3,651,418 (14th)
SYNCHRONOUS DETECTOR CONTROL
Erwin Johann Wittman, North Plainfield, N.J. assignor to RCA Corporation, Princeton, N.J.
Reexamination Request No. 90/000,079, Oct. 2, 1981.
Reexamination Certificate for Patent No. 3,651,418, issued Mar. 21, 1972, Ser. No. 89,583, Nov. 16, 1970.
U.S. Cl. 329/50 **Int. Cl.[3] H03D 3/18**



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 1, 2, 4, and 6, having been finally determined to be unpatentable, are cancelled.

Claims 3, 5, and 8 are determined to be patentable, as amended.

Claims 7 and 9, dependent on amended claims 3 and 8, are determined to be patentable.

3. [The improvement of claim 1] *In a synchronous detector including a differential amplifier section formed from two transistors having a pair of base electrodes between which information containing input signals are applied, a pair of collector electrodes at which corresponding intermediate signals are developed for coupling to a synchronous switching section also included within the detector to provide demodulated output signals representative of said information, and a pair of emitter electrodes coupled to a current source section further included within the detector to supply substantially constant quiescent current to said amplifier section and from said amplifier section to said switching section, the improvement comprising:*

means controllably reducing the magnitude of the demodulated output signal provided by said synchronous switching section without substantially affecting the magnitude of the direct voltage developed thereat, said means including:

a. a first terminal coupled to said current source section;

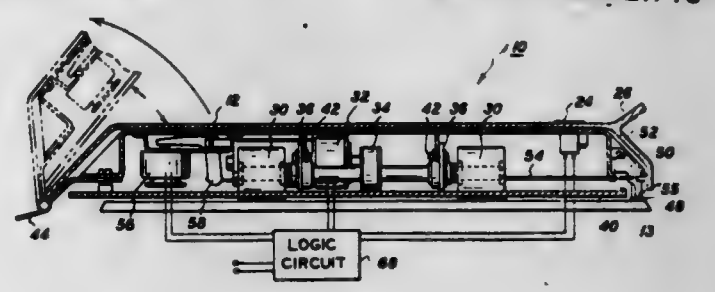
b. a second terminal coupled to said synchronous switching section; and

c. a third terminal coupled to receive an externally applied signal for controlling the conductivity between said first and second terminals to divert quiescent current flow from said current source section through said means and away from said differential amplifier section to desirably reduce the magnitude of the intermediate signals developed by said amplifier section and the magnitude of the demodulated output signal provided by said synchronous switching section, but having a tendency to reduce the magnitude of the quiescent current supplied from said amplifier section to said synchronous switching section to undesirably reduce the direct voltage developed thereat;

said second terminal being coupled, however, to receive said diverted quiescent current for subsequent reinsertion within said synchronous switching section with said reduced magnitude quiescent current from said differential amplifier section in a direction to offset said undesirable reduction in direct voltage and to maintain the total quiescent current in said switching section substantially constant in the presence of such signal magnitude reductions;

wherein said second terminal is coupled to reinsert said diverted quiescent current at an input terminal of said synchronous switching section to which said corresponding intermediate signals are coupled.

B1 3,888,582 (15th)
SEMI-AUTOMATIC DOCUMENT HANDLER
Augustus W. Griswold, Rush, N.Y., assignee to Xerox Corporation, Stamford, Conn.
Reexamination Request No. 90/000,062, Sep. 2, 1981.
Reexamination Certificate for Patent No. 3,888,582, issued Jun. 10, 1975, Ser. No. 449,307, Mar. 8, 1974.
U.S. Cl. 355/69 **Int. Cl.[3] G03B 27/76**



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 2, 3, 5, 6, and 7 is confirmed.

Claims 1 and 4 are determined to be patentable as amended.

1. In a copying apparatus with a document copying platen and an overlayable platen cover holding documents against the platen for copying, the improvement comprising:

platen cover latching means for retaining said platen cover over said platen for the copying of documents on said platen,

said latching means comprising a permanent magnetic latch between said platen cover and said copying apparatus which can be manually unlatched *at any time* merely by manual lifting of said platen cover,

said latching means [including] *further comprising* automatic unlatching means for automatically unlatching said platen cover subsequently to the completion of said copying of documents on said platen,

said copying apparatus further including automatic platen cover lifting means for automatically lifting said platen cover away from said platen when said latching means is unlatched, and

wherein said automatic unlatching means comprises electrically driven mechanical camming means forcibly camming said platen cover away from said copy-

ing apparatus sufficiently to slightly separate and unlatch said permanent magnetic latch so that said automatic platen cover lifting means lifts said platen cover away from said platen subsequent to the completion of said copying of documents on said platen.

B1 3,187,234 (16th)

SELECTIVE SIGNAL-RESPONSIBLE CIRCUIT

Dwight M. Muranaka; Yujiro Yamamoto; Edwin S. Hamberg; all of Santa Ana, Calif., and Lindy T. Ikegami, Anaheim, Calif., assignors to Y 2 Associates, Inc., Santa Ana, Calif.

Reexamination Request No. 90/000,010, Jul. 1, 1981.
Reexamination Certificate for Patent No. 3,187,234, issued Jun. 1, 1965, Ser. No. 236,384, Nov. 8, 1962.
U.S. Cl. 361/182 **Int. Cl.[3] H01H 47/20**

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

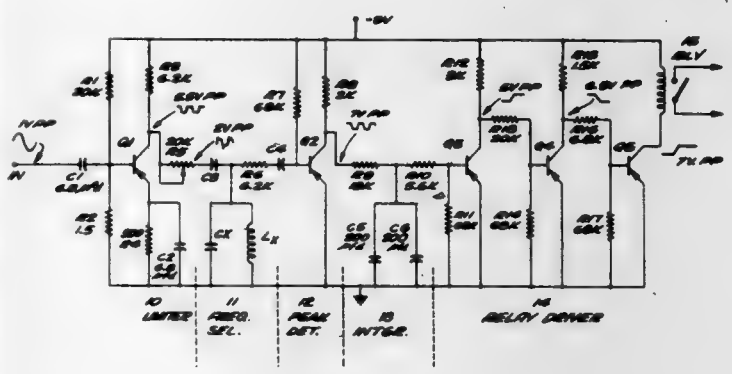
The patentability of claims 1–3 is confirmed.

1. An electrical circuit for responding to a signal of a predetermined frequency having at least a predetermined amplitude for at least a predetermined period of time, said circuit comprising, in combination:

an amplitude limiting circuit for receiving an incoming signal;

a frequency selection circuit coupled to the output of said amplitude limiting circuit;

a peak detector circuit coupled to the output of said frequency selection circuit, and operable for amplifying only such portion of each cycle of the signal as



exceeds a predetermined reference amplitude level;

an integrator coupled to the output of said peak detector circuit;

and a relay driver having an input coupled to said integrator to be actuated thereby.

DEFENSIVE PUBLICATIONS

PUBLISHED SEPTEMBER 7, 1982

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent and Trademark Office makes no assertion as to the novelty of the disclosed subject matter.

T102,201

GRANULATION OF UREA PHOSPHATE FROM UREA AND MERCHANT-GRADE PHOSPHORIC ACID

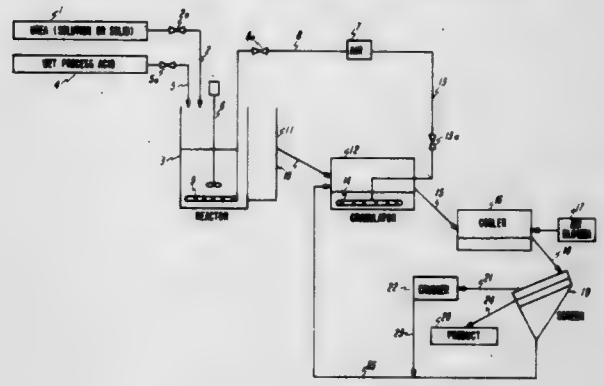
Cecil P. Harrison, Rte. 7, Florence, Ala. 35630

Filed Nov. 16, 1981, Ser. No. 322,096

Int. Cl.[3] C05B *15/00;* C05C *9/00*

U.S. Cl. 71—29

1 Sheets Drawing. 19 Pages Specification



DIRECT GRANULATION OF UREA PHOSPHATE

A process for direct granulation of unpurified urea phosphate from urea or urea solution and merchant or filter grade wet-process phosphoric acid to produce a product with exceptional satisfactory physical and chemical properties for direct application to the soil or for use in production of fluid fertilizers. The process involves the utilization of sweep air in both the reactor and the granulator to remove water from the heat sensitive urea phosphate mixture to cause granulation of the product. The requirement for product drying with applied heat after granulation is eliminated. The process may be used for producing urea-urea phosphate provided certain precautions are taken to minimize hydrolysis of urea to prevent the resultant ammonia which in turn will react with the acid to form monoammonium phosphate.

REISSUES

SEPTEMBER 7, 1982

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

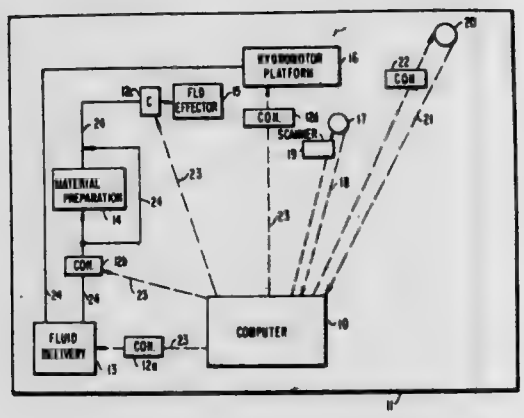
Re. 31,023
HIGHLY AUTOMATED AGRICULTURAL PRODUCTION SYSTEM

Arthur D. Hall, III, Port Deposit, Md., assignor to Advanced Decision Handling, Inc., Port Deposit, Md.

Original No. 4,015,366, dated Apr. 5, 1977, Ser. No. 567,322, Apr. 11, 1975. Application for reissue Mar. 2, 1979, Ser. No. 16,845

Int. Cl.³ A01D *46/00*; A01G *27/00, 13/00*

U.S. Cl. 47—1 R 97 Claims



89. A computerized system for the production of agricultural products in an agricultural area which comprises at least one homogeneous agricultural area, said system comprising:

(a) sensing means for sensing at least one desired parameter in said homogeneous agricultural area, which parameter is necessary to achieve desired agricultural product growth, and for generating a sensor data output representative of said at least one parameter;

(b) a plurality of different controlled means each operative in response to a different respective control signal and functioning together to produce a desired change in said at least one parameter;

(c) computing means for comparing said sensor data output to at least one pre-established standard for said at least one parameter in said agricultural area, said computing means being programmed to generate said respective control signals as a result of the comparison of said sensor data output and said pre-established standard; and

(d) data transmission means connecting said sensing means and said controlled means to said computing means for receiving said sensor data output from said sensing means and transmitting said sensor data output to said computing means, and for receiving said control signals from said computing means and transmitting said control signals to said controlled means.

Re. 31,024
YARN TENSIONING DEVICE

Otto Zollinger, Spartanburg, S.C., assignor to Otto Zollinger, Inc., Spartanburg, S.C.

Original No. 3,892,371, dated Jul. 1, 1975, Ser. No. 368,735, Jun. 11, 1973. Continuation-in-part of Ser. No. 297,995, Oct. 16, 1972, Pat. No. 3,753,535. Application for reissue Oct. 19, 1978, Ser. No. 952,938

Int. Cl.³ B65H *59/22*

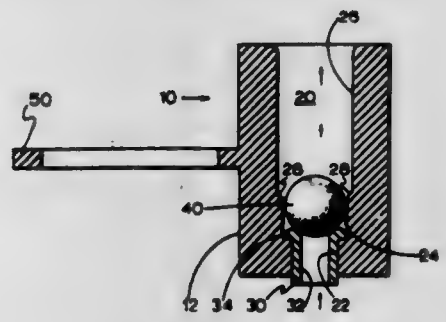
U.S. Cl. 242—152.1 17 Claims

1. A tension device comprising:

a. a housing, said housing having a yarn passageway extending therethrough, said yarn passageway having a small diameter section and a large diameter section;

b. an uninterrupted annular seat located in said large diameter section of said passageway at the junction of said large and small diameter sections, said seat having an annular opening passing therethrough and presenting a smooth arcuate surface extending from said opening outwardly therefrom, the curvature of said arcuate surface being in a direction opposite the curvature of a spherical element receivable thereat *said seat being defined by an insert received in said yarn passageway*; and

c. a spherical element receivable in said large diameter section of said passageway, said spherical element having a diameter less than the length of said large diameter section of said passageway and said large diameter section of said



passageway at said seat and said spherical element being comparatively sized such that said spherical element may reside at said seat out of contact with walls of said large diameter section of said passageway when no yarn is passing through said opening and such that substantial lateral movement of said spherical element is precluded whereby said spherical element continuously controls tension on a yarn passing thereby *said passageway being smooth surfaced and substantially unrestricted upwardly from said seat for a distance sufficient to permit substantially unrestricted upward movement of said spherical element during tensioning of a yarn.*

Re. 31,025
Patent Not Issued For This Number

Re. 31,026
NAVIGATION SYSTEM FOR MANEUVERING A STRUCTURE ABOUT A SUBMERGED OBJECT

Harry H. Shatto, Laguna Beach, Calif., assignor to Santa Fe International Corporation, Orange, Calif.

Original No. 4,025,895, dated May 24, 1977, Ser. No. 614,734, Sep. 18, 1975. Application for reissue May 23, 1979, Ser. No. 41,542

Int. Cl.³ G01S *15/06, 15/88*

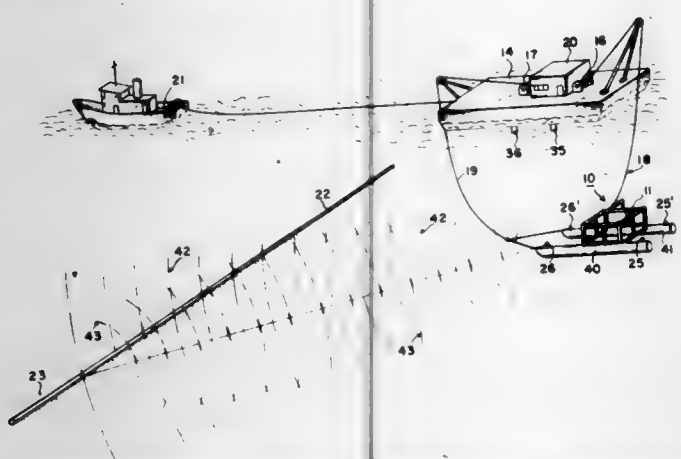
U.S. Cl. 367—106 16 Claims

13. A system for locating an acoustic reflecting object in a body

of water and maneuvering a water-borne structure about such object, the system comprising:

at least one pair of transducers mounted on said structure, each of said transducers of said pair being mounted on one side of said structure;

transmitter means supplying electric impulses to said transducers to cause selected ones of said transducers to transmit acoustic impulses into the body of water each of said transducers transmitting the acoustic impulses directed downwardly and inwardly;



each of said transducers detecting the resultant reflected acoustic impulses produced by its transmitted acoustic impulses and generating an electrical output in response to such detected acoustic impulses;

receiver means coupled to said transducers for selectively receiving the electrical outputs therefrom; and,

navigation means on the surface of the body of water adapted to use information received by said receiver means for piloting said structure relative to the object.

PLANT PATENTS

GRANTED SEPTEMBER 7, 1982

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,884

CHRYSANTHEMUM PLANT

Walter H. Jessel, Jr., Fremont, and William E. Duffett, Salinas, both of Calif., assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed Feb. 27, 1980, Ser. No. 125,139
Int. Cl.³ A01H *5/00*
U.S. Cl. Plt.—78 **1 Claim**

1. A new and distinct cultivar *Chrysanthemum morifolium*, Ramat., plant known by the cultivar name Shamrock, as described and illustrated, and particularly characterized as to uniqueness by the combined characteristics of semi-incurved capitulum form; spider capitulum type; greenish-yellow ray floret color; diameter across face of capitulum ranging from 15 to 19 cm. at maturity; uniform ten week photoperiodic flowering response to short days; very tall plant height; and semi-upright branching pattern.

4,885

ALMOND TREE

Frank E. Valenta, Delhi, Calif., assignor to Thomas Francis Valenta, Atwater, Calif., a part interest

Filed Jan. 22, 1981, Ser. No. 227,461
Int. Cl.³ A01H *5/03*
U.S. Cl. Plt.—30 **1 Claim**

1. A new and distinct variety of almond tree, substantially as illustrated and described, particularly characterized by a blooming period approximately two weeks earlier than the Thompson and about two days after the Nonpareil, and by a harvest period after the Thompson and Nonpareil and approximately with the Merced.

PATENTS

GRANTED SEP. 7, 1982

ERRATA

For CLASS	See PATENT NO.
441–040	4,347,635
464–032	4,347,715
464–083	4,347,716
464–064	4,347,717
528–049	4,348,307
524–110	4,348,308
523–336	4,348,309
524–167	4,348,310
524–530	4,348,311
428–144	4,348,312
524–788	4,348,313
525–439	4,348,314
549–296	4,348,322
549–362	4,348,323
549–369	4,348,324
549–419	4,348,325
549–463	4,348,326
562–538	4,348,509
526–204	4,348,515
523–425	4,348,517
378–112	4,348,590
372–074	4,348,647
372–029	4,348,648

PATENTS

GRANTED SEPTEMBER 7, 1982

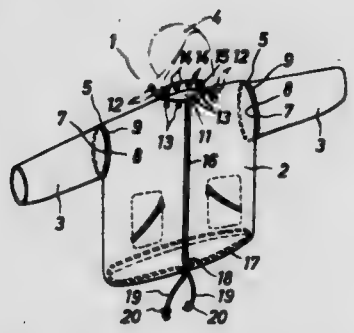
GENERAL AND MECHANICAL

4,347,629

OUTERWEAR USED BOTH AS JACKET AND BAG

Toru Itoi, 861-11, Komatsuri-cho, Kishiwada-shi, Osaka, Japan

Filed Oct. 27, 1980, Ser. No. 200,966
Int. Cl.[3] A41D *1/02*; A45C *3/04*
U.S. Cl. 2—108 9 Claims



1. A convertible article useful as outerwear and a carrying bag, comprising:

a trunk portion adapted to fit over the torso of the wearer's body;

said portion including a back piece and side pieces forming the front of said article;

fastening means for closing said article;

armholes in said portion, and sleeves attached to said armholes and foldable in said trunk portion;

means for attaching said sleeves to said armholes and for closing said armholes;

a neck receiving opening at the upper part of said trunk portion for allowing passage of the wearer's head when said article is worn;

means for closing said neck receiving opening; and

a device for pulling together said back and side pieces and locking said pieces to form a bag type enclosure when said trunk portion is inverted with said neck opening closed; and

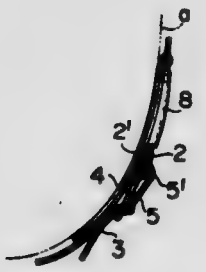
said armholes being closed with said sleeves withdrawn into said trunk portion and said front closed.

4,347,630

FASTENER FOR HELMET JAW BAND

Hirotake Arai, and Michio Arai, both of 2-12, Azuma-cho, Oomiya-shi, Saitama-ken, Japan

Filed Dec. 20, 1979, Ser. No. 105,658
Claims priority, application Japan, May 19, 1979, 54-61773
Int. Cl.[3] A42B *7/00*
U.S. Cl. 2—421 1 Claim



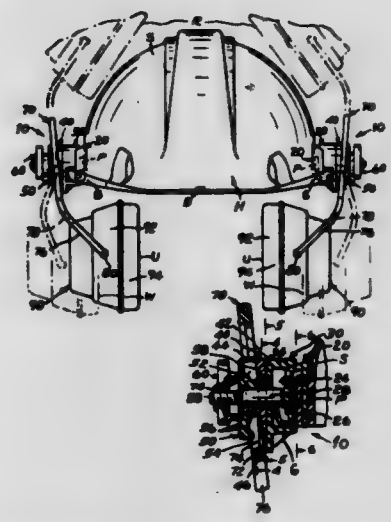
1. A fastener for coupling a helmet jaw band, said band comprising left and right jaw band sections attached to said helmet at the lower ends thereof in a frontal position, said left band having a free end loop portion and said right band having a free end flat portion, said fastener comprising a first inner ring and a second outer ring, unattached, associated with said left and right jaw band sections, each ring having upper and lower horizontal portions, said upper portion of said second outer ring having a bent L-shaped configuration which projects inwardly over said upper portion of said first inner ring such that, when said upper portions of said first and second rings are secured to said loop portion of said left jaw band, said upper portion of said first inner ring is positioned inside and below said upper bent L-shaped configuration of said second outer ring such that, upon fastenting said free end portion of said right jaw band between said lower portions of said first inner and said second outer rings, said helmet is comfortably secured when worn.

4,347,631

EAR MUFF ACCESSORY FOR SAFETY HARD HAT

William E. Newcomb, Coventry, R.I., assignor to Norton Company, Worcester, Mass.

Filed Jul. 18, 1980, Ser. No. 170,193
Int. Cl.[3] A42B *1/24*
U.S. Cl. 2—423 9 Claims



1. A device for mounting a hearing protector on each of the opposite sides of a safety hard hat for movement in oppositely inclined planes between an operative pressure applying wearing position about ears of an individual and an inoperative pressure relieved storing position above a lower rim of and adjacent opposite sides of the hard hat comprising:

a support having:

an end portion adapted for attachment to one of the opposite sides of the hard hat and a pivot stud extending axially outwardly from the end portion to an opposite outer fastener end portion thereof;

guide means fixed against rotation about the pivot stud and having:

an inclined surface extending inwardly at an angle from an upper outer point to a lower inner point situated closer to a central plane between opposite sides of the hard hat and

a key boss projecting radially beyond opposite sides of the pivot stud and axially adjacent the inclined surface and having a width no greater than and a diameter greater than the pivot stud diameter;

a support arm mounted about the pivot stud adjacent the guide means for relative movement in an inclined plane between operative and inoperative positions, resiliently pressing and maintaining a hearing protector in engagement with an area about the ear and having:

a supporting end portion at one end thereof including:

a central portion engageable with the guide means and extending inwardly from an outer end of an opposite inner end thereof including

a key hole shape slot into which extend the pivot stud and key boss adjustable relative thereto having:

an elongated slot portion of a width no less than the pivot stud diameter but less than the diameter of the key boss and an enlarged end portion adjacent the outer end of a diameter no less than the boss for receiving the boss and allowing unrestricted movement of the central portion and support arm about the boss between the operative and inoperative positions, and

at least one flexible resilient leg connected to and extending from a junction with the central portion to an opposite free end thereof adapted for attaching a hearing protector thereto at a predetermined fixed distance from the junction and resiliently pressing a hearing protector at substantially constant force into engagement with areas about the ear of an individual and

clamping means on the fastener end portion of the pivot stud for releasing and shifting the central portion and support arm to and from an extended rotatable position for movement about the key boss and sufficient guiding engagement with the inclined surface during movement between the operative and inoperative positions, and for adjusting and clamping the support arms and attached hearing protector in the operative and inoperative positions whereby the inclined surface of the guide means shifts and directs the extended support arm and attached hearing protector outwardly from an inner resilient pressure applying wearing position about the ear to a substantially pressureless stored position above the rim and adjacent side of the hard hat.

4,347,632

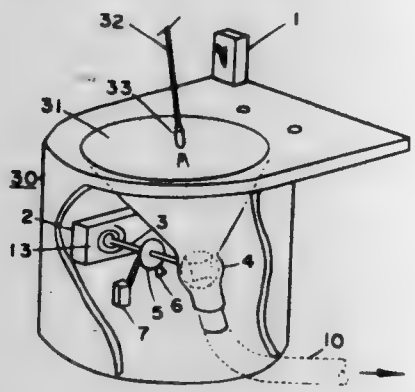
ORGANIC MATERIAL RECYCLING METHOD AND DEVICE

Jeremy F. Criss, 5308 Emerald Dr., Sykesville, Md. 21784

Division of Ser. No. 108,551, Dec. 31, 1979, Pat. No. 4,285,719, which is a continuation-in-part of Ser. No. 878,162, Feb. 15, 1978, abandoned. This application Mar. 31, 1981, Ser. No. 249,679

Int. Cl.[3] A47K *11/02;* C02F *1/02, 11/08*

U.S. Cl. 4—449 11 Claims



1. A human liquid and solid excrement handling system, comprising:

(a) a holding tank, a toilet having a bowl portion and valve means terminating in an orifice means;

(b) conduit means connected between said orifice means and said holding tank providing a first inlet thereto, said valve means operating to open and sealingly close said bowl portion;

(c) means for applying partial vacuum to said holding tank, conduit means, and valve means, at least when said valve means opens said bowl portion;

(d) separate fluid pressure means to apply fluid, under pressure, to the inner surface of said bowl portion;

(e) means for selectively actuating said valve means whereby congolmerated waste material responsive to said partial vacuum passes sequentially from said bowl portion through said valve means and through said conduit means and enters said holding tank;

(f) a pressure differential resistive grille located substantially horizontally within said holding tank, said grille dividing said holding tank into two zones, an upper zone and a lower zone;

(g) means for providing heat and moisture within said holding tank by natural circulation;

(h) separate access means adjacent to the top side of said grille for removal of a portion of the material collected on said grille; and,

(c) collecting means whereby the liquid drainage can be removed from below said grille.

4,347,633

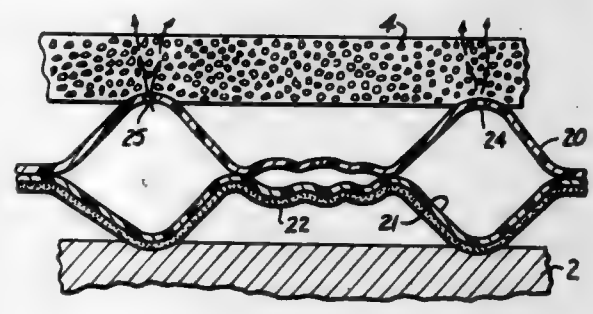
PATIENT TREATING MATTRESS

Clifford E. Gammons, Indianapolis, Ind.; Francis C. Moore, Cape Coral, Fla.; Kenneth L. Pagel, Manitowoc, and Barry N. Jackson, De Pere, both of Wis., assignors to American Hospital Supply Corporation, Evanston, Ill.

Filed Jul. 22, 1980, Ser. No. 171,051

Int. Cl.[3] A61G *7/04*

U.S. Cl. 5—453 25 Claims



1. A "crawl resistant" flexible mattress comprising: a bottom panel; a top panel sealed to the bottom panel to define at least two alternatingly inflatable structures on the mattress, and a continuous crawl resistant layer bonded to a substantial portion of the outer surface of at least one of the panels to follow the contour of the alternatingly inflatable structures on the mattress to reduce crawl of the mattress during use.

4,347,634

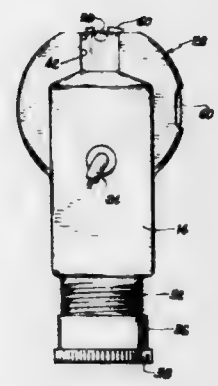
PRECISION PIPE CUTTER AND REAMER COMBINATION

Anis S. Sawan, 1025 S. Magnolia, El Cajon, Calif. 92020

Filed Aug. 14, 1980, Ser. No. 177,904

Int. Cl.[3] B25F *3/00;* B23D *21/06*

U.S. Cl. 7—157 8 Claims



1. A hand-held pipe cutter comprising:

(a) a housing adapted to be hand held;

(b) a depth limiter plate mounted in said housing and having an edge defining a plurality of guide notches of graduated sizes;

(c) said housing having an opening sufficiently large and suitably positioned when aligned to expose at least one of said notches at a time, including the largest notch, and said

housing and plate being mutually movable to selectably expose different ones of said notches through said openings; and

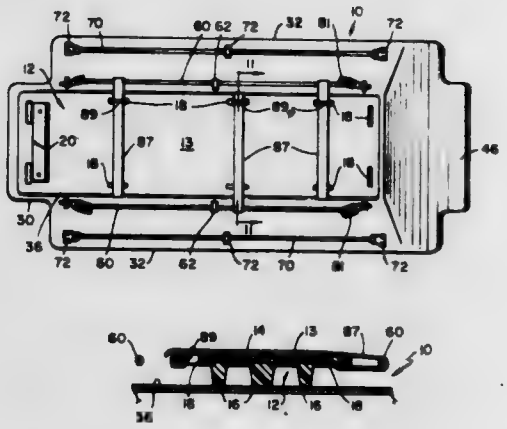
(d) a powered cutting blade passing adjacent said plate and over at least a portion of a notch exposed by said opening to cut an object guided therein.

4,347,635

STRETCHER AND LITTER COMBINATION

Leigh E. Eisenhauer, Van Wert, Ohio, assignor to The Eisenhauer Manufacturing Company, Van Wert, Ohio

Filed Jan. 30, 1980, Ser. No. 116,831
Int. Cl.³ B63C 9/04
U.S. Cl. 441—40 7 Claims



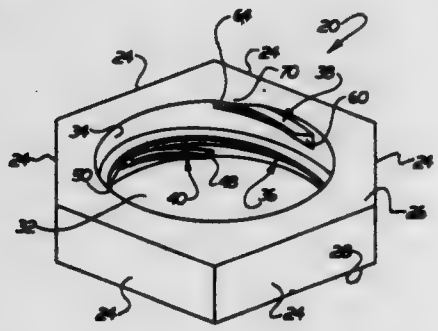
1. In combination, a rescue litter and stretcher, said stretcher having an elongated body section adapted to support a person in reclined position thereon, said litter being floatable and having an elongated body section adapted to receive and support said stretcher, and means for releasably securing said stretcher upon the body section of said litter, said securing means including rails on said litter along opposite sides of said stretcher, and a plurality of transverse straps a first of which releasably secures said stretcher to one of said rails and a second of which releasably secures said stretcher to the other of said rails, said stretcher having a plurality of hand holes in said body section spaced from one another along each side thereof with the holes along one side of said body section being respectively laterally opposed to the holes along the opposite side thereof to provide pairs of laterally opposed holes, said first strap extending through one pair of laterally opposed holes and looped over said one of said rails and said second strap extending through another pair of laterally opposed holes and looped over said other rail.

4,347,636

NUT AND METHOD OF FORMING THE SAME

Terry D. Capuano, Hinckley, Ohio, assignor to Lamson & Sessions Co., Cleveland, Ohio

Filed Nov. 7, 1979, Ser. No. 92,228
Int. Cl.³ B21D 53/24
U.S. Cl. 10—86 F 32 Claims



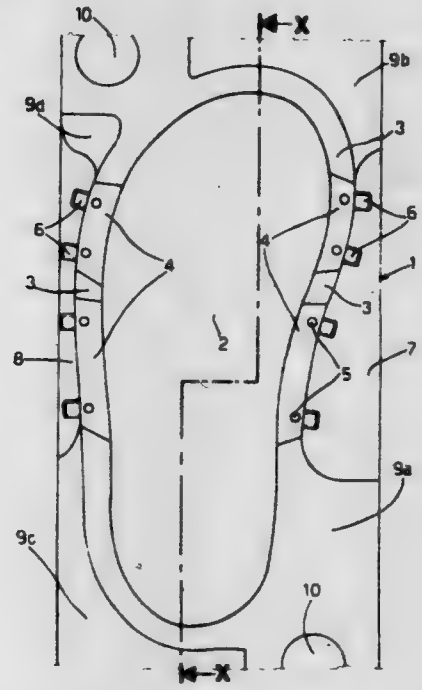
1. A method of forming a nut having a plurality of thread convolutions, said method comprising the steps of providing a metal blank, forming an inner thread convolution in a central portion of the blank, said step of forming the inner thread convolution including the step of cold working the metal of the blank with a first punch, said step of forming an inner thread convolution further including the step of forming an opening in the blank in which the inner thread convolution is formed, and forming an outer thread convolution in a portion of the blank which is axially outwardly of the inner thread convolution, said step of forming an outer thread convolution including the step of cold working the metal of the blank with a second punch after performing said step of cold working the metal of the blank with a first punch, said step of forming an outer thread convolution further including the steps of forming a projection which extends outwardly from a side surface of the blank during said step of forming an inner thread convolution and moving the metal in the projection into the opening in the blank after forming the inner thread convolution.

4,347,637

MANUFACTURING PROCESS OF SANDALS AND CLOGS WITH PLASTIC SOLES AND SHOES MANUFACTURED THROUGH THIS PROCESS

Francesco Ardito, Barletta, Italy, assignor to Calzaturificio "Plastica Excelsior" di Francesco Ardito, Barletta, Italy

Filed May 9, 1980, Ser. No. 148,495
Claims priority, application Italy, May 11, 1979, 2119 A/79
Int. Cl.³ A43D 9/00; A43B 3/12
U.S. Cl. 12—142 S 4 Claims



1. A manufacturing process for footwear containing plastic soles comprising:

providing at least two straps each having means for attachment on one end and some first holes of wide rectangular, circular or other suitable section inboard of and adjacent to the opposite end;

providing a first sole mold portion having flutings on the side edges forming oppositely disposed side openings and a plurality of vertical stakes projecting upwardly from the flutings of said first sole mole portion;

inserting ends of said straps in said oppositely disposed side flutings of the first sole mold portion, inserting the vertical stakes in some second holes of the straps smaller then the first holes in connection with the vertical stakes;

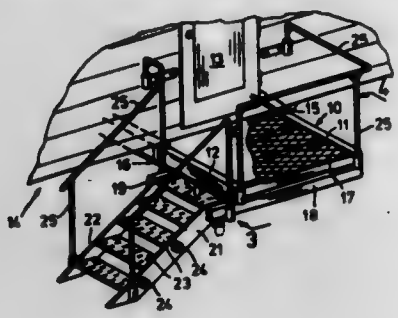
attaching a second sole mold portion adjacent the first mold portion without openings for the end portions of the straps therebetween, wherein said molds have receiving means for the vertical stakes; and

pouring a fluid plastic mix suitable to expand itself into said sole mold portions to fill the whole inner volume of the mould itself.

4,347,638
RETRACTABLE PORCH AND STAIR APPARATUS FOR TRAILERS

Murland L. Weaver, 748 N. 900 West, Apt. 104, Salt Lake City, Utah 84116

Filed Mar. 10, 1980, Ser. No. 128,380
Int. Cl.³ E01D 1/00
U.S. Cl. 14—71.1 6 Claims



1. A combination retractable porch and stair apparatus for trailers, comprising in combination;

floor means mounted on a pair of elongate spaced-apart channel iron support members;

a second pair of cooperating elongate, spaced-apart channel iron support members slidingly receiving said first pair of support members, said second pair of support members being adapted for attachment on the underside of a trailer;

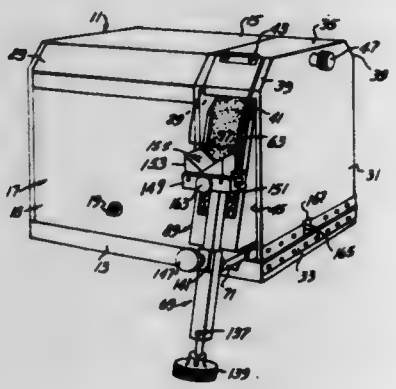
a third pair of spaced-apart, elongate channel iron support members mounted on the underside of said second pair of support members perpendicularly of said first pair of support members; and

stair means having a pair of spaced-apart elongate stair side support members slidingly mounted on said third pair of support members.

4,347,639
DEBURRING APPARATUS

Walter Le Tarte, Smiths Creek, Mich., assignor to Richard A. Anthony, Oak Park, Mich., a part interest

Filed Apr. 13, 1981, Ser. No. 253,604
Int. Cl.³ A46B 13/02
U.S. Cl. 15—21 D 17 Claims



1. In a deburring apparatus having a housing with front and rear walls, a base and a deburring wheel rotatably mounted within said housing on said base upon a longitudinal axis, with the wheel partly projecting through said front wall;

a workpiece holder assembly forwardly of said front wall for holding a workpiece in registry with said wheel;

a guide on said base extending rearwardly of said front wall;

an elongated tube overlying said base movably mounted upon said guide;

an elongated screw nested within and projecting from one end of said tube, at one end journalled upon said base, retained against longitudinal movement and projecting through and outwardly of said rear wall;

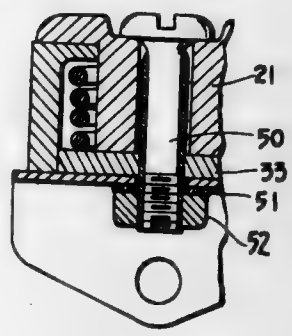
a feed tube having a threaded bore nested within the other end of said elongated tube, at one end threadably receiving said screw and at its other end pivotally connected to the other end of said elongated tube;

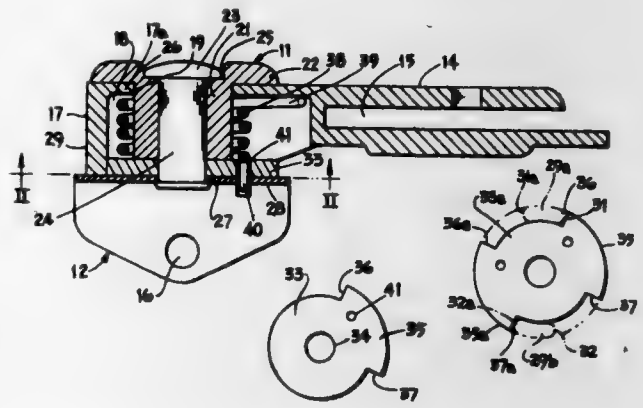
whereby selective manual rotation of said screw adjustably feeds said elongated tube and connected workpiece holder assembly inwardly and outwardly of said housing relative to said deburring wheel.

4,347,640
CONNECTOR ASSEMBLIES FOR CONNECTING WIPER BLADES TO WIPER ARMS

Graham Durtnal, London, England, assignor to Trico Products Corporation, Buffalo, N.Y.

Filed Oct. 30, 1980, Ser. No. 202,249
Int. Cl.³ B60S 1/40
U.S. Cl. 15—250.32 8 Claims





1. A connector assembly for use in connecting a wiper arm and a wiper blade for pivotal movement of the blade in relation to the arm about a common axis which in use is substantially perpendicular to the surface to be wiped, the assembly comprising a first basic part for attachment to the wiper arm and a second basic part for attachment to the wiper blade, the parts being pivotally connected together for relative angular movement about the common axis, the assembly being characterized by the inclusion of a discrete element arranged for rotation about the common axis relative to one of the two basic parts, first abutment means on said one basic part and second abutment means on said discrete element disposed for engagement with said first abutment means to limit the range of angular movement of said basic parts relative to each other and normally loaded spring means for biasing said first and second abutment means into engagement with each other.

4,347,641
WIPER ARM

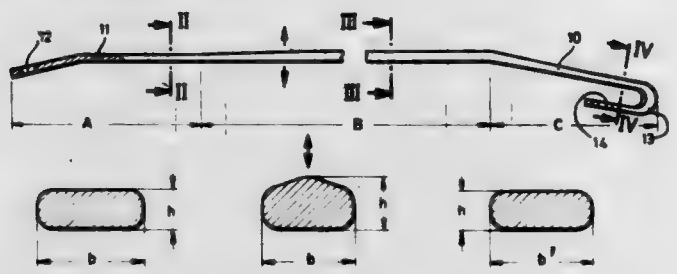
Alfred Kohler, and Hans Prohaska, both of Bietigheim-Bissingen, Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed May 19, 1980, Ser. No. 151,297

Claims priority, application Fed. Rep. of Germany, May 17, 1979, 2919867

Int. Cl.³ B60S 1/34

U.S. Cl. 15—250.35 1 Claim



1. A wiper arm comprising a wiper rod formed from a single, solid rod of approximately circular cross section, said wiper arm having first and second end sections, each of said end sections being formed to an approximately rectangular cross-section, and a central section formed to have a cross-section approximately that of a rectangular having a triangle on top, said central section being smaller in width but greates in height than said rectangular cross-section.

4,347,642
WIPER ARM

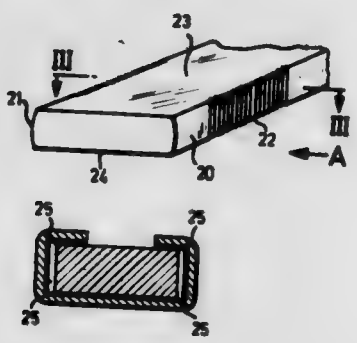
Kurt Bauer, Ingersheim, and Christian Roth, Bietigheim-Bissingen, both of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Feb. 11, 1981, Ser. No. 233,661

Claims priority, application Fed. Rep. of Germany, Feb. 19, 1980, 3006188

Int. Cl.³ B60S 1/34

U.S. Cl. 15—250.35 8 Claims



1. A wiper assembly comprising:

a wiper rod having a substantially rectangular cross-section and formed of relatively hard material;

a link formed of relatively soft material, said link having a substantially U-shaped cross section comprising a web and two side walls;

a fastening member; and

a spring element attached between said fastening member and said wiper rod to provide contact pressure;

said wiper rod having engraved toothing on a first lateral surface and having sharp edged projections on one front surface adjacent said lateral surface, said projections and said toothing being adapted to dig on bite into said link whereby when said link and said wiper rod are assembled, said projections and said toothing are embedded into said link such that said link and said wiper rod are lockingly engaged.

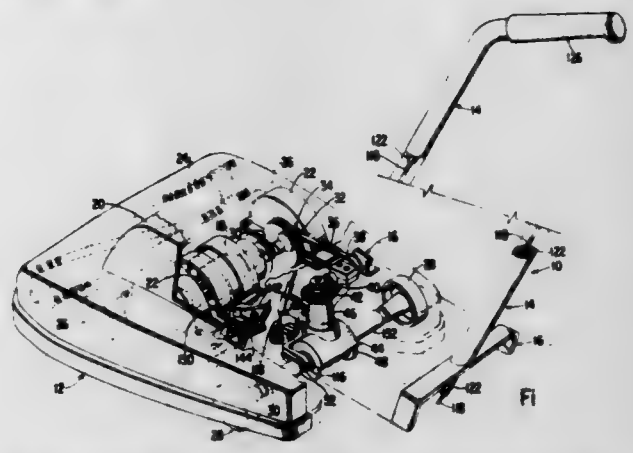
4,347,643
POWER ASSIST DRIVE UPRIGHT VACUUM CLEANER AND POWER ASSIST DRIVE SYSTEM THEREFOR

Scott S. Bair, III, Atlanta, Ga., assignor to The Singer Company, Stamford, Conn.

Filed Jan. 23, 1981, Ser. No. 228,021

Int. Cl.³ A47L 9/00

U.S. Cl. 15—340 8 Claims



1. In an upright suction cleaner for floor coverings and the like having a chassis, an elongated handle pivotally mounted thereon, a drive motor and a pair of drive wheels mounted with said chassis for rotation with a common drive shaft, and a transmission for receiving rotary power from said drive motor and selectively applying rotary power to said common drive shaft, said transmission comprising a transmission housing through which said drive shaft extends generally horizontally and an input shaft extends generally perpendicular to said drive shaft, a spur gear mounted on said perpendicular input shaft in constant mesh with a pair of opposed face gears rotatably carried about said drive shaft for rotation in opposite rotational directions, a clutch operatively associated with each of said face gears on the outside surfaces thereof, a clutch operating lever free floating about said drive shaft outboard of each of said clutches, said operating levers each being provided with a plurality of ramp surfaces extending annularly about said drive shaft, means for cooperating with said ramp surfaces on said operating levers to initiate selective engagement of said clutches, an operating fork associated with both said operating levers so that movement of said fork in one direction will initiate cooperation between said ramp surfaces on one of said operating levers and said cooperating means to influence an axial shift of one of said clutches into engagement to drive said cleaner in a forward direction by one of said face gears and movement of said fork in the other direction will influence an axial shift of the other of said clutches to propel said cleaner in a reverse direction by the other of said face gears, and control means for connecting said fork to a hand grip on the cleaner handle whereby forward movement of said hand grip drives said cleaner forwardly and rearward movement of said hand grip drives said cleaner rearwardly.

4,347,644
OVER-CENTER SELF CLOSING HINGE

Karl Lautenschläger, Reinheim, and Gerhard W. Lautenschläger, Brensbach-Wersau, both of Fed. Rep. of Germany, assignors to Karl Lautenschläger KG Möbelbeschlagfabrik, Reinheim, Fed. Rep. of Germany

Filed Dec. 17, 1980, Ser. No. 217,557

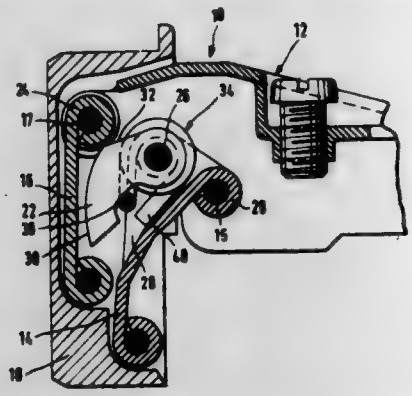
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1979, 2951986

Int. Cl.³ E05D 11/10

U.S. Cl. 16—50 5 Claims

1. An over-center hinge for a cabinet door, said hinge having a supporting-wall related part in the form of a supporting arm, and a door-related part in the form of a cup adapted to be mounted in a recess in the door, a first link and a second link, each having first ends pivotingly mounted in said cup and second ends with pivot eyes pivoted on said supporting-wall-

related part so as to form a four-pivot linkage, a roller rotatably mounted in said supporting arm, a pressure piece biased by a spring and pivotingly mounted in said supporting arm at said second link and bearing against a counter-surface which during the hinge movement undergoes a change of position relative to the pressure piece such that the hinge, after passing beyond a dead center during the closing movement, is resiliently forced into the closed position, said counter-surface being formed by the circumferential surface of said roller, said spring being a



torsion spring with coils and two arms ending in free ends, one arm bearing against said second link and the other arm bearing against said pressure piece, a pin holding said spring, said pin being provided at a distance above said pivot eye of said second link and passing through said coils of said torsion spring, and having two ends respectively held in ears formed on and bent up from opposite longitudinal sides of said second link, the configuration being such that said free ends point out of the supporting arm toward the door-related part.

4,347,645

SELF CLOSING HINGE

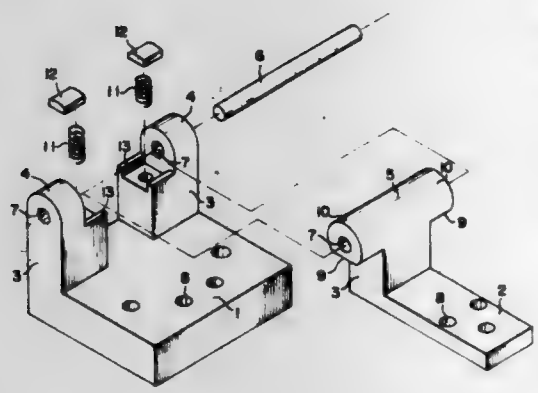
Kazuo Iseki, Tokyo, Japan, assignor to Ohta Company Limited, Tokyo, Japan

Claims priority, application Japan, Aug. 18, 1979, 52-113966[u]; May 6, 1980, 55-61637[u]

Filed Aug. 15, 1980, Ser. No. 178,427

Int. Cl.³ E05F *1/12*

U.S. Cl. 16—291 4 Claims



1. A hinge comprising:

an L-shaped stationary flap having a pair of legs each formed with a recess;

an L-shaped rotatable flap having a leg disposed between said legs of said stationary flap and defining a pair of oppositely directed cam shafts projecting from the opposite ends, respectively, of said leg of said rotatable flap;

each of said legs having a rounded, tubular end formed with an axial hole which also extends through said cam shafts which are received in said recesses;

a hinge pin extending through said axial hole;

each of said cam shafts having a flat surface;

a cam rest provided in each said recess and contacting said flat surface of one of said cam shafts; and

a spring provided in each said recess for urging one of said cam rests outwardly to maintain said one cam rest in intimate contact with each said cam shaft.

4,347,646

METHOD AND APPARATUS FOR SEQUENTIAL PORTIONING OF A PLASTICALLY DEFORMABLE MASS, IN PARTICULAR SAUSAGE STUFFING

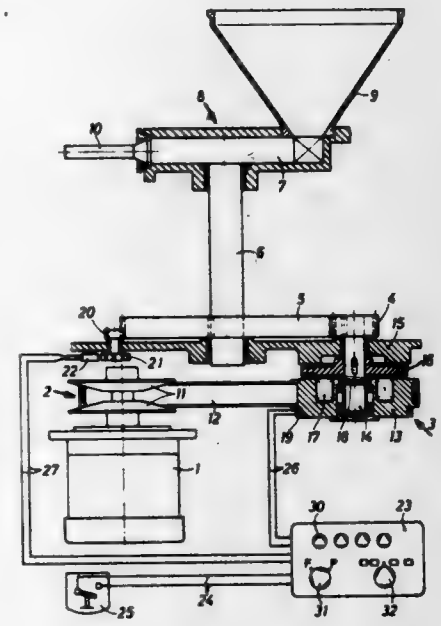
Georg Staudenrausch, Biberach, Fed. Rep. of Germany, assignor to Albert Handtmann GmbH & Co., Biberach, Fed. Rep. of Germany

Filed Jan. 4, 1980, Ser. No. 109,205

Claims priority, application Fed. Rep. of Germany, Jan. 9, 1979, 2900585

Int. Cl.³ A22C *11/08*

U.S. Cl. 17—49 11 Claims



1. In a method of portioning a deformable flowable mass, especially sausage stuffing, which comprises displacing and compressing the mass in successive steps along a flow path with a portion of the mass being discharged from said flow path with each of a succession of compression steps by a movable compression member whereby the discharged portion amounts to a desired volume which can be augmented by an overshoot volume, the improvement which comprises the steps of:

(a) terminating the movement of said member for one of said compression steps at a first desired volume and measuring the overshoot volume resulting therefrom;

(b) establishing a second desired volume as the difference between the first desired volume and the measured overshoot volume;

(c) terminating the movement of said member for the next compression step at said second desired volume; and

(d) repeating steps (a) through (c) for the successive compression steps following said next step.

4,347,647

APPARATUS FOR MAKING NO-TWIST YARN

Roger S. Brown, Clemson, S.C.; Harold L. Salaun, Jr., and Gain L. Louis, both of Metairie, La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Oct. 30, 1980, Ser. No. 202,397

Int. Cl.³ D01G *19/10*

U.S. Cl. 19—128 10 Claims

1. Fiber drafting and parallelizing apparatus comprising:

a. a first roll having fiber-combing teeth on its surface;

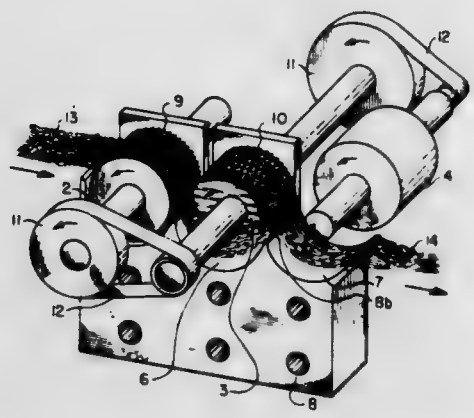
b. a second roll having fiber-combing teeth on its surface, said second roll being parallel and adjacent to said first roll to define a pocket therebetween;

c. a third roll having a resilient surface, said third roll being

parallel and adjacent to said second roll to define a pocket therebetween;

d. means to rotate said first, second and third rolls in the same direction at sequentially greater surface speeds;

e. a curved surface conforming to the surfaces of said first, second and third rolls, said curved surface including a first apex-shaped segment which extends into said pocket between said first and second rolls so as to conform said curved surface to said first and second rolls in said pocket therebetween; said curved surface further including a second apex-shaped segment which extends into said pocket between said second and third rolls so as to conform said curved surface to said second and third rolls in said pocket therebetween; wherein said curved surface is



closely adjacent but does not touch said first and second rolls; wherein said curved surface touches said third roll at said second apex-shaped segment; and wherein said fiber-combing teeth of said first roll carry fibers between said first roll and said closely adjacent curved surface to said first apex-shaped segment, afterwhich said fibers are picked up by said fiber-combing teeth on said second roll and carried between said second roll and said closely adjacent curved surface to said second apex-shaped segment, afterwhich said third roll, in combination with said second apex-shaped segment, grips said fibers and removes said fibers from said second roll to carry said fibers between said third roll and said closely adjacent curved surface, so that said fibers emerge from said third roll in a parallelized and drafted condition.

4,347,648

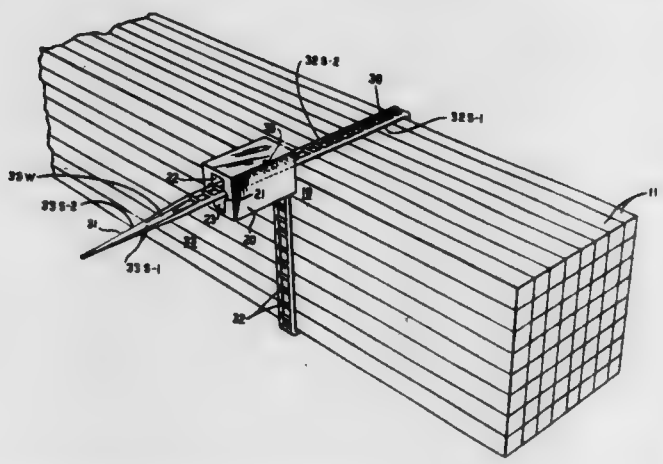
LADDER STRAP HARNESSING DEVICE WITH WEBBED TAIL

Leo P. Dekkers, Scituate Harbor, Mass., assignor to Dennison Manufacturing Company, Framingham, Mass.

Filed May 12, 1980, Ser. No. 149,210

Int. Cl.³ B65D *63/00;* F16B *2/08*

U.S. Cl. 24—16 PB **8 Claims**



1. A harnessing device comprising

a head having an elongated guide channel extending therethrough,

a locking tang within said head, and

a strap formed by a structure with members which are sequentially engaged by the locking tang when the strap is inserted into the channel,

said strap having a webbed tail portion flanked by side rails which extend from said members continuously surrounding said webbed portion and forming an angle with said strap.

4,347,649

NOZZLE FOR TEXTURING THREAD

Miloslav Pavek; Miroslav Novacek; Jiri Fanti, all of Liberec; Jan Kara, Prague, and Zdenek Kasparek, Liberec, all of Czechoslovakia, assignors to Elitex, koncern textilniho strojirenstvi, Liberec, Czechoslovakia

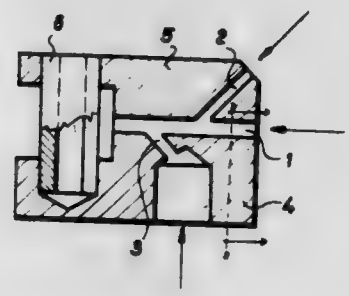
Filed Jun. 27, 1980, Ser. No. 163,425

Claims priority, application Czechoslovakia, Jun. 27, 1979, 4420-79

The portion of the term of this patent subsequent to Jul. 29, 1997, has been disclaimed.

Int. Cl.³ D02G *1/16*

U.S. Cl. 28—254 **4 Claims**



1. A nozzle for combining two threads and texturing the resultant composite thread by a gaseous fluid flow, comprising a nozzle body, a nozzle lid mounted on the nozzle body, a first angular channel for guiding a first thread, a second channel for guiding a second thread opening obliquely into the first channel, a third channel for feeding gaseous fluid opening obliquely into and intersecting the first channel downstream of the intersection of the first and second channels, a texturing bridge located at the exit of the first channel formed by a hollow tube having an axis skewed relative to the longitudinal axis of the first channel, the tube having an open end and a side wall which is provided with a longitudinal wedge-shaped opening, disposed opposite the exit opening of the first channel, the longitudinal opening extending through the side wall of the tube to the hollow interior thereof being directed angularly toward and intersecting the longitudinal axis of the first channel, whereby a first thread is fed into the first channel, a second thread is fed through the second channel into the first channel where it combines with the first thread and the composite thread is met by the gaseous fluid from the third channel and projected against the texturing bridge and the resulting composite textured thread is then withdrawn through the opened end of the texturing bridge.

4,347,650

METHOD OF MAKING MARGINLESS MULTI-LAYER CERAMIC CAPACITORS

Joseph C. Mc Larney, Portville, and David J. Lightweis, Olean, both of N.Y., assignors to AVX Corporation, Myrtle Beach, S.C.

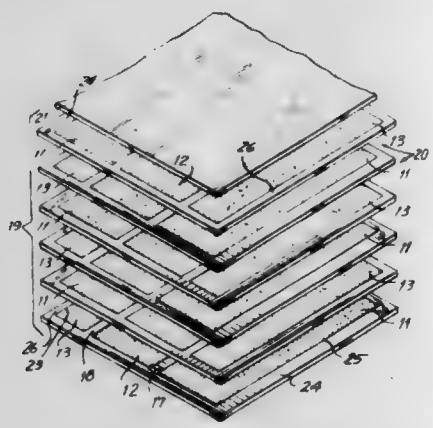
Filed Sep. 22, 1980, Ser. No. 189,023

Int. Cl.³ H01G *4/12*

U.S. Cl. 29—25.42 **6 Claims**

1. The method of making a marginless multi-layer ceramic capacitor comprising the steps of forming a plurality of sheets of green ceramic, depositing on each of said sheets an electrode

pattern comprising at least one elongate, rectangular, continuous strip of electrode material, the length of said strip being a major multiple of the projected electrode width of a finished capacitor, superimposing a plurality of said electrode bearing sheets to form a stack having alternate parallel layers of electrode and ceramic, such that the longitudinal edges of the



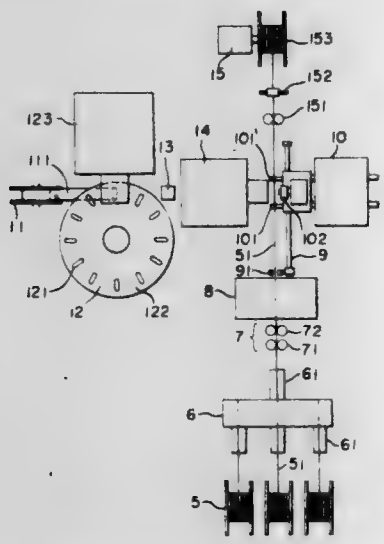
electrode strips of alternate sheets are in alignment and the longitudinal edges of the electrode strips of adjacent sheets are in staggered relation, severing increments of said stack transversely of the length thereof along severance lines, each said severance line defining the borders of two adjacent marginless capacitor blanks, and firing and terminating said capacitor blanks.

4,347,651

SYSTEM FOR MANUFACTURING CONNECTION WIRES

Takayuki Inoue, and Tatsuya Iwasa, both of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 10, 1980, Ser. No. 168,242
Claims priority, application Japan, Jul. 18, 1979, 54-92440
Int. Cl.³ H01R *43/00*
U.S. Cl. 29—33 M **1 Claim**



1. A system for manufacturing connection wires with different shapes and sizes comprising:

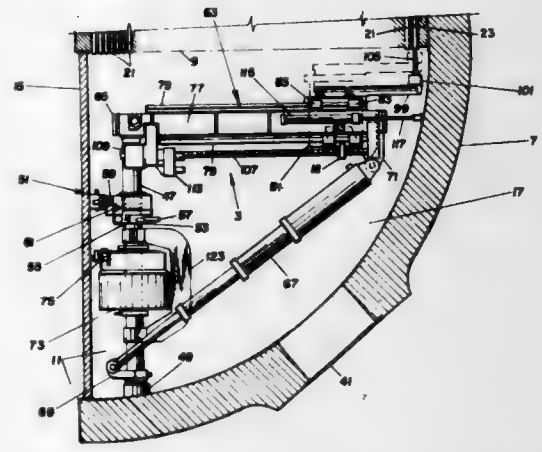
a wire selection and supply unit having a function to hold various types of wires at the terminal and to select necessary wires to manufacture, a tension mechanism to supply wires selected, and a function to feed the selected wire; a wire-length measuring and wire supply unit having a function to feed specified wires in forward and reverse directions, and a function to measure the length of the wire; a marking unit having a function to select characters and signs, which are specified, as wire connection information and marks them on both end portions of each wire; a wire fixed-length and pulling unit having a function to hold and feed the wire by a fixed length; a wire cutting and stripping unit having a function to cut the wire at specified positions and to strip an insulating cover at both end portions by a specified length for press-connecting with the wire; a press-connecting terminal fabricating and forming unit with two or more sets of terminal fabricating and forming jigs for supply press-connecting terminals with specified shapes and specified sizes to the end portions of the wires, which press-connecting terminal fabricating and forming unit has a function to select the jig from those ones in accordance with a direction and to continuously form pairs of the press-connecting terminals with specified shapes and sizes, each being coupled at the heads with each other by a separating portion, in a hoop material as the terminal material; a unit for holding the hoop terminal material to supply the hoop material to the press-connecting terminal fabricating and forming unit; a terminal supply unit having a function to cut the press-connecting terminals fabricated and formed by the press-connecting terminal fabricating and forming unit on a pair-by-pair basis, and to keep the holding of the terminal for transfer to a press-connecting location; a terminal press-connecting unit having a function to press-connect the press-connecting terminal transferred by the supply unit to the given terminal ends of the wire; a wire take-up unit having a tension function and a traverse function for taking up the connection wire manufactured through the respective units by a drum; and a unit which receives from an information medium such as a paper tape or a preset mechanism various information of the connection wire such as type and length of the wire, wire connection, shape and size of the terminal and the like, and issues various operation commands to the respective units; whereby upon application of the operation command to the respective automatic units, a specified wire is taken out and set in said respective units, the wire is marked with connecting information and the like, the wire is cut into a given length of the wire, insulating cover at the terminal ends of the wire is stripped, the pair of the press-connecting terminals with specified shapes and sizes, being coupled at the heads with each other by the separating portion, are press-connected to the connection wire with the terminal ends processed in the insulating cover stripping, thereby to connect the connection wires, and the wires once cut by the given length are again connected by the terminal portions thereby to be wound around the drum while those are coupled with one another, whereby the connection wires are connected in a continuous manner.

4,347,652

METHOD FOR SERVICING A STEAM GENERATOR

Frank W. Cooper, Jr., and Raymond P. Gastner, both of Monroeville, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Division of Ser. No. 952,431, Oct. 18, 1978, abandoned. This application Jul. 1, 1980, Ser. No. 164,859
Int. Cl.³ B23Q *17/00*
U.S. Cl. 29—407 **4 Claims**



1. A method of verifying the alignment of an elongated tool

arm pivotally mounted for rotation about one end thereof by an electrically controlled servomechanism in a plane parallel to the surface of a substantially semicircular tubesheet of a stream generator, with the pivot point of the arm located near the center of the straight side of the semicircular tubesheet, said method comprising the steps of:

generating a control signal to rotate the arm to first, second and third angular positions in the plane substantially parallel to the surface of the tubesheet;

generating electrical signals representative of the distance from a preset point along the control arm to the tubesheet at each of said three angular positions;

comparing said electrical signals;

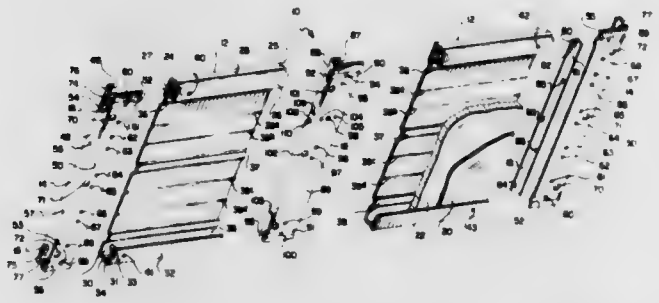
adjusting the angle that the pivotal axis of the arm makes with the tubesheet when said first, second and third electrical signals are not within a predetermined tolerance of each other; and

repeating the above steps until said electrical signals are within said predetermined tolerance of each other.

4,347,653
METHOD OF PREPARING A SECTION FOR AN OVERHEAD DOOR

David O. Martin, Salt Lake City, and Lawrence G. Martin, Bountiful, both of Utah, assignors to Martin Overhead Door and Electronics Company, Salt Lake City, Utah

Division of Ser. No. 59,880, Jul. 23, 1979, Pat. No. 4,284,119.
This application Mar. 23, 1981, Ser. No. 246,805
Int. Cl.³ B23P *19/00*
U.S. Cl. 29—526 R 5 Claims



1. A method of preparing a section for an overhead door system comprising:

forming a section facing for the section by shaping a generally rectangular sheet of metal with a longitudinal channel along each edge of the section facing and a plurality of ribs in the facing;

fabricating end stiles for the section by forming sheet metal stock into end stiles having a front face, a side wall and a rear face, the front face being adapted to overlap the end of the section facing with the rear face fitting within the channels while the side wall encloses the end of the section;

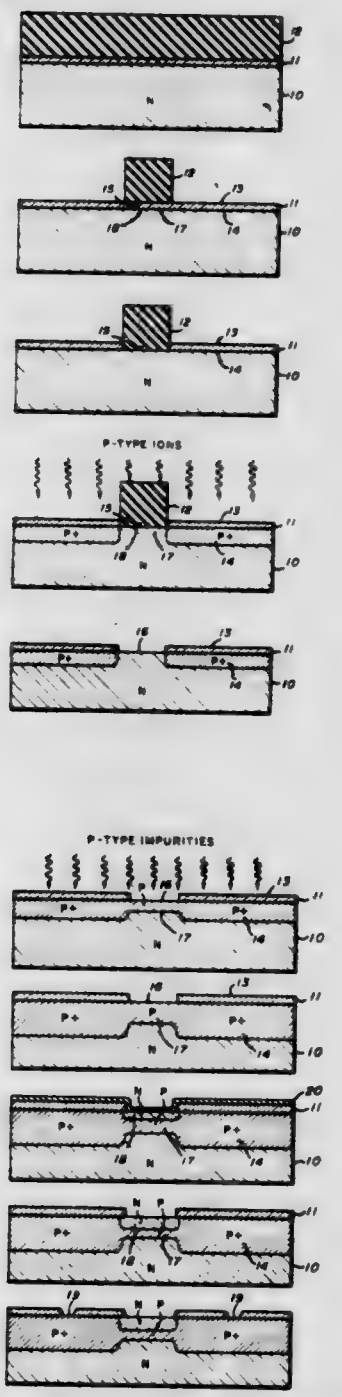
preparing an angle support for the end stile, the angle support adapted to being received inside the end stile to accommodate clamping the end of the section facing against the front face of the end stile; and

assembling the section by mounting an end stile to each end of the section facing and securing the end stile thereto by securing the angle support to the ribs of the section facing and to the side wall of the end stile.

4,347,654
METHOD OF FABRICATING A HIGH-FREQUENCY BIPOLAR TRANSISTOR STRUCTURE UTILIZING PERMEATION-ETCHING

Bert L. Allen, Cupertino; Robert L. Wourms, Santa Clara, and Daniel C. Hu, Saratoga, all of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Jun. 18, 1980, Ser. No. 160,513
Int. Cl.³ H01L *21/306, 21/265*
U.S. Cl. 29—576 B 9 Claims



1. A method of fabricating a bipolar structure having emitter, higher impurity concentration base and lower impurity concentration base regions comprising the steps of:

forming a first masking layer of silicon dioxide on the surface of a semiconductor substrate of a first conductivity type;

forming a second masking layer of negative photoresist over said first masking layer;

forming openings in said second masking layer exposing regions of said first masking layer which lie over those regions of said semiconductor substrate where said higher impurity concentration base regions are to be located:

removing said first masking layer material located between the remaining portions of said second masking layer and said semiconductor substrate, using permeation-etching wherein said remaining portions define the area of said removal of said first making layer;

forming said higher impurity concentration base regions by introducing impurities of a second conductivity type through said first masking layer into said semiconductor substrate to a first depth, using said remaining portions of

said second masking layer to define the location of said higher impurity concentration base regions;

removing said remaining portions of said second masking layer material thereby exposing areas of said semiconductor substrate;

forming said lower impurity concentration base regions by introducing impurities of said second conductivity type into said exposed areas of said semiconductor substrate to a second depth;

forming said emitter regions by introducing impurities of said first conductivity type into said exposed areas of said semiconductor substrate to a third depth; and

providing contacts to said higher impurity concentration base regions and to said emitter regions.

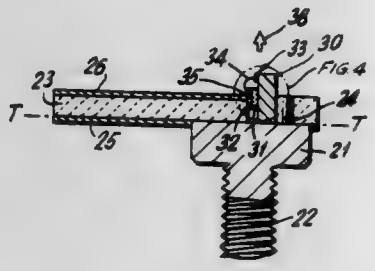
4,347,655
MOUNTING ARRANGEMENT FOR SEMICONDUCTOR OPTOELECTRONIC DEVICES

Peter S. Zory, Ossining; Frederick W. Scholl, Riverdale, and Harry F. Lockwood, New York, all of N.Y., assignors to Optical Information Systems, Inc., Elmsford, N.Y.

Division of Ser. No. 946,592, Sep. 28, 1978, Pat. No. 4,240,098. This application May 5, 1980, Ser. No. 147,047

Int. Cl.³ H01L *33/00*

U.S. Cl. 29—589 **12 Claims**



1. A process for packaging at least one semiconductor optoelectronic device, said at least one device comprising adjacent regions of opposite conductivity forming a p-n junction, said process comprising:

(a) mounting said at least one device on a block of high thermal conductivity by electrically and thermally connecting one of said regions of said at least one device to a portion of said block;

(b) configuring an isolation pad on a portion of said block in proximity to said at least one device, at least a portion of which isolation pad is coated with an electrically conducting coating, which is electrically insulated from said block;

(c) attaching one end of an electrically conducting lead to the other of said regions of said at least one device and the other end of said lead to said electrically conducting coating on said isolation pad;

(d) mounting said block on a device mount comprising:

(1) a metallic stud comprising pedestal and screw portions of high thermal conductivity and

(2) an elongated insulator tab, a portion of the bottom of which is mounted on top of said pedestal portion of said stud, said insulator tab being provided with (a) an opening therethrough at the mounted end, (b) an electrically conducting layer along the bottom of said insulator tab making electrical contact to said stud and (3) at least one electrically conducting layer along the top of said insulator tab, terminating at said opening,

said block electrically attached to the top surface of said pedestal of said stud through said openings, said block configured so that said isolation pad is in juxtaposition with at least one electrically conducting layer on top of said insulator tab; and

(e) forming an electrical connection between said electrically conducting coating on said isolation pad and said at least one electrically conducting layer on top of said insulator tab.

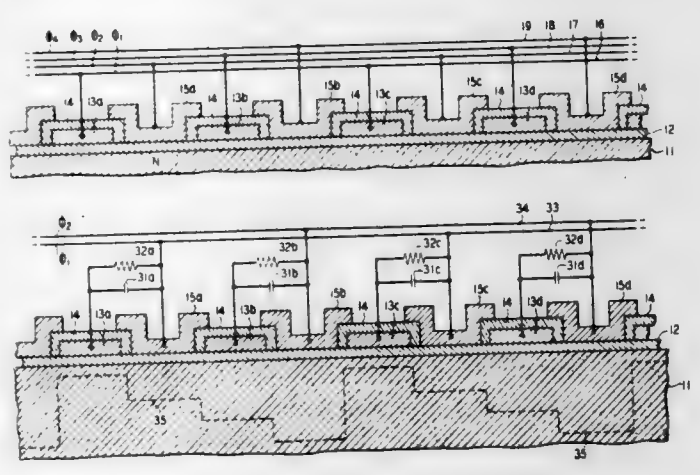
4,347,656
METHOD OF FABRICATING POLYSILICON ELECTRODES

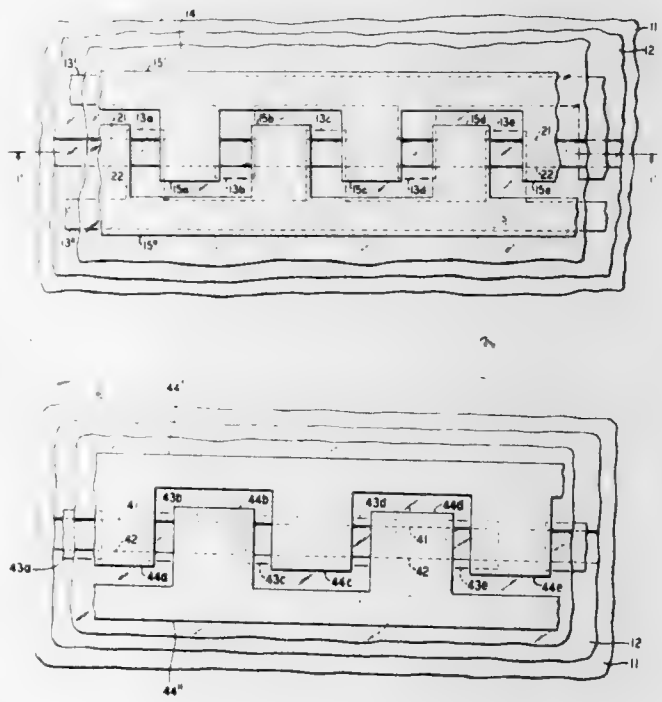
George E. Smith, Murray Hill, and Robert J. Strain, Plainfield, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation of Ser. No. 10,731, Feb. 9, 1979, abandoned, which is a continuation of Ser. No. 885,385, Mar. 10, 1978, abandoned, which is a continuation of Ser. No. 592,368, Jul. 2, 1975, abandoned, which is a continuation of Ser. No. 458,507, Apr. 8, 1974, Pat. No. 3,921,195, which is a continuation of Ser. No. 85,026, Oct. 29, 1970, abandoned. This application Dec. 22, 1980, Ser. No. 218,952

Int. Cl.³ H01L *21/285, 21/308*

U.S. Cl. 29—591 **1 Claim**





1. A method for making an electrical circuit comprising a silicon semiconductor device having a silicon substrate, an insulating material having a maximum thickness of approximately 1000 Angstroms covering a portion of the substrate, and at least one pair of separate closely spaced electrodes on the insulating material, a first electrode of the pair formed by a first metallization step, and a second electrode of the pair formed by a second metallization step so as to partially overlap the first electrode of the pair, the pair of electrodes defining a channel region in the silicon semiconductor substrate directly underlying said pair of electrodes, the said channel region

being of a single conductivity type the method comprising the steps of

(a) forming a first insulating layer on a silicon substrate, said layer comprising a thin portion, and a relatively thick portion surrounding the thin portion, the thin portion having a maximum thickness of approximately 1000 Angstroms,

(b) depositing a first conductive layer comprising silicon on the first insulating layer,

(c) shaping by a lithographic process the silicon layer into a geometry including at least one silicon electrode as the first metallization step to produce the first electrode of the pair of closely spaced electrodes, the electrode being formed on the thin portion of the first insulating layer overlying a first part of said channel region of the silicon substrate, and completely physically spaced from said channel region,

(d) forming a second silicon dioxide layer over the exposed surfacce of the silicon electrode, said layer being formed in situ by oxidizing the silicon electrode to form a silicon dioxide layer by chemical conversion of the silicon electrode,

(e) depositing a second conductive layer overlying at least the entire channel region,

(f) shaping by a lithographic process the second conductive layer into a geometry including at least one second electrode as the second metallization step to produce the second of the pair of closely spaced electrodes, the second electrode being formed overlying the remaining part of said channel region of the silicon substrate and covering at least part of the second silicon dioxide layer but completely separate from the first electrode and the substrate throughout said channel region,

said second electrode thereby being formed overlying at least part of the first electrode so that the first electrode overlying the first part of said channel region and the part of the second electrode overlying the remaining part of said channel region are separated side by side only by the second silicon dioxide layer, and both electrodes are separated from the channel region,

and electrically connecting said first and second electrodes of the semiconductor device into an electrical circuit.

4,347,657

METHOD FOR THE INSERTION OF PRE-WOUND COILS INTO STATOR SLOTS

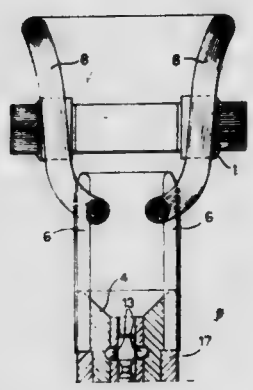
Giorgio Barrera, Leumann, Italy, assignor to Officine Meccaniche Pavesi & C. S.p.A., Turin, Italy

Division of Ser. No. 169,339, Jul. 16, 1980, Pat. No. 4,291,459. This application Jun. 19, 1981, Ser. No. 275,400

Claims priority, application Italy, Feb. 11, 1980, 67200 A/80

Int. Cl.³ H02K *15/06*

U.S. Cl. 29—596 **1 Claim**



1. A method for the insertion of pre-wound coils into stator slots of a stator of a rotary electric machine using a cylindrical finger holder having on its periphery a series of longitudinal grooves and an annular series of fingers fixed in said grooves of said finger holder and extending beyond one end of the said finger holder to receive said pre-wound coils, said method comprising the steps of:

inserting into a stator an end portion of said cylindrical finger holder opposite said one end thereof from which said fingers project;

angularly orienting said finger holder in order to align pre-wound coils carried by said fingers thereof with said stator slots, and effecting an axial displacement of said finger holder through said stator with said end portion as the leading end thereof, whereby to cause said fingers to draw said pre-wound coils carried thereon through said stator and to insert them into the slots of said stator.

4,347,658

METHOD OF MAKING MAGNETIC REED CONTACT UNIT

Brian E. Head, Bexley, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Jun. 23, 1980, Ser. No. 161,822

Claims priority, application United Kingdom, Jul. 31, 1979, 7926703

Int. Cl.³ H01H *11/00*

U.S. Cl. 29—602 R **7 Claims**



1. A method of making a sealed magnetic reed contact unit comprising holding a first reed, supporting a second reed from the first by magnetic attraction between overlapped adjacent ends of the reeds and aligning the second reed with the first reed by moving the remote end of the second reed in the plane of the overlapped ends by locating the remote end in a forked guide member, any nearby magnetic influence on the remote end of the second reed being minimized if not eliminated, and sealing the reeds through the wall of an enclosure member.

4,347,659

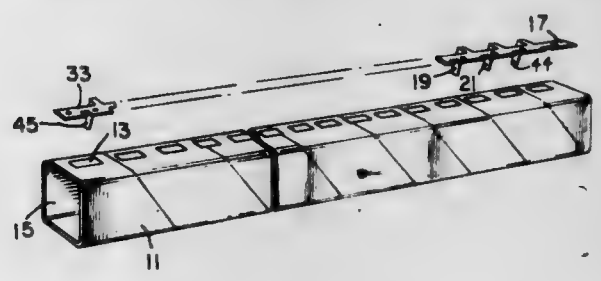
METHOD OF MAKING STICK WOUND COILS

Richard L. Dalton, Jr., West Bend, Wis., assignor to Tecumseh Products Company, Tecumseh, Mich.

Filed Mar. 17, 1980, Ser. No. 131,258

Int. Cl.³ H01F *41/10*

U.S. Cl. 29—605 **14 Claims**



1. The method of concurrently forming a plurality of coils of wire comprising the steps of:

providing an elongated hollow coil form of insulating material having an opening extending therethrough in the direction of elongation, the coil form arranged to have a plurality of holes along one surface in the direction of elongation, each hole communicating with the hollow opening;

disposing a first conductive strip along a substantial portion of the coil form in the direction of elongation by passing a like plurality of conductive tab portions of the first conductive strip through respective holes and into the coil form opening;

connecting a plurality of first wire ends from a like plurality of wire sources in the first conductive strip;

simultaneously winding a like plurality of coils, one from each source, about the coil form;

disposing a second conductive strip in the direction of elongation along an outer surface of each of the wound coils;

connecting second wire ends of each of the plurality of coils to the second conductive strip; and

severing individual coils from other of the coils for subsequent use.

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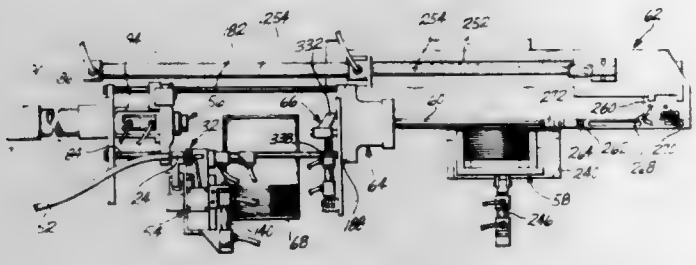
QUICK CHANGE DRILL ASSEMBLY MACHINE

Michael R. Cannon, Redmond; Robert L. Fuller, Jr., Issaquah, and Dwayne E. Proff, Puyallup, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Sep. 30, 1980, Ser. No. 192,237

Int. Cl.³ B23P *11/00*

U.S. Cl. 29—790 **16 Claims**



1. A quick change drill assembly machine, comprising:

means for feeding individual adapters to an adapter magazine, each adapter having a bore in one end to be interference fit on the shank end of a drill;

said magazine being reciprocally movable between a retracted position and an adapter supplying position;

a reciprocally movable press for receiving an adapter from said magazine in said supplying position when said press is in a retracted position;

means associated with said press for securing said adapter thereto with said bore in a predetermined position;

drill feeding means for supplying individual drills to a drill holding collet with the shank end of the drill extending outwardly of said drill collet toward said adapter bore on said press and in axial alignment therewith;

means for removably securing each drill in said drill collet; and

hydraulic means for reciprocating said press between said retracted position and to adjacent said drill collet to respectively interference fit said secured adapter to said drill and withdraw the drill from the drill collet when assembled with the adapter.

4,347,661

PROCESS OF MAKING ELECTRIC ASSEMBLIES

Franz Golla, Lünen, Fed. Rep. of Germany, assignor to Gewerkschaft Eisenhutte Westfalia, Lüunen, Fed. Rep. of Germany

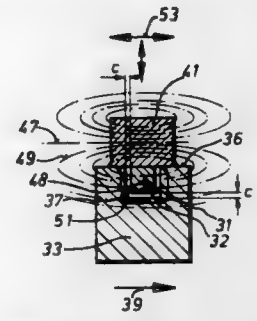
Filed Oct. 10, 1979, Ser. No. 83,733

Claims priority, application Fed. Rep. of Germany, Oct. 11, 1978, 2844222

Int. Cl.³ H01R *43/00*

U.S. Cl. 29—879 **17 Claims**

1. Process for producing composite anode assemblies for use in electrolytic smelting, said process comprising transporting metallic holder members and recessed carbon blocks in succession through work stations, pre-coating end parts of the metallic members with an agent designed to create a separation layer with respect to a grouting material used in a subsequent bonding operation, locating displaceably-supported electrical coils around the pre-coated end parts of the metallic members without physical contact therewith, energizing the coils to dry the pre-coated end parts by induction heating in a controlled manner without cracking the coating, locating displaceably-supported electrical coils within the recesses in the carbon blocks without physical contact therewith, energizing the coils to dry the recesses by induction heating, locating the dried pre-coated end parts of the metallic members in the dried recesses, and bonding the metallic members to the carbon blocks by introducing a liquid grouting material into the recesses.



4,347,662

SHAVING APPARATUS

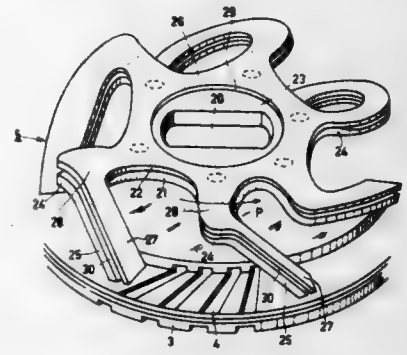
Eduard W. Tietjens, Drachten, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 4, 1981, Ser. No. 259,799

Claims priority, application Netherlands, Jun. 25, 1980, 8003669

Int. Cl.³ B26B *19/42*

U.S. Cl. 30—34.2 **1 Claim**



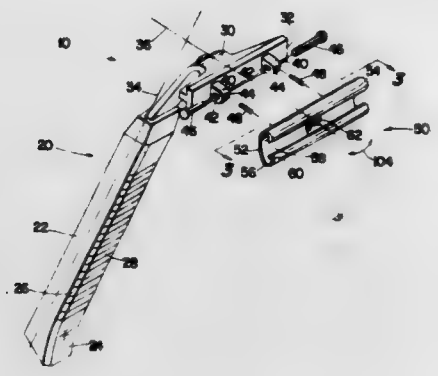
1. A shaving apparatus having a shear plate provided with hair-entry apertures and a cutting unit associated with and drivable relative to the shear plate; said cutting unit comprising a cutting element having a central body, cutters extending from said central body toward the shear plate, a hair-pulling element having a central portion, hair-pulling blades respectively associated with and movable relative to the cutters in directions respectively away from and toward the shear plate, each hair-pulling blade, with reference to the direction of driving the cutting unit, being positioned in front of its associated cutter, resilient arms respectively connecting the hair-pulling blades to said central portion, and means to secure said central portion to said central body to effect elastic coupling of the hair-pulling blades to the central body, each hair-pulling blade being normally spaced from its associated cutter throughout their respective lengths and, upon driving of said cutting unit, being movable toward and into contact with its associated cutter by reason of said elastic coupling upon contact with the hair-pulling blade with a hair.

4,347,663

SAFETY RAZOR HAVING MOVABLE HEAD

Andre A. Ullmo, 3715 Warrensville Rd., Cleveland, Ohio 44122

Filed Jan. 16, 1980, Ser. No. 112,624
Int. Cl.[3] B26B *21/22, 21/52*
U.S. Cl. 30—47 5 Claims



1. In a safety razor having a head for supporting at least one razor blade for use during a shaving operation, and a handle for permitting a user to conveniently guide the head during a shaving operation, the improvement comprising mounting means for attaching the head to the handle, the mounting means permitting movement of the head relative to the handle about more than one axis, the mounting means including:

(a) a hinge connecting the head and the handle, the hinge having a lost motion connection to permit translational, as well as pivotal, relative motion between the head and the handle, the hinge including:

(i) spaced tabs projecting from a selected one of the handle or the head, the tabs having laterally extending slots; and,

(ii) spaced pairs of ears protecting from the other of the selected members, the ears including aligned openings, the openings and the slots being alignable such that fastening members can pass through the openings; and,

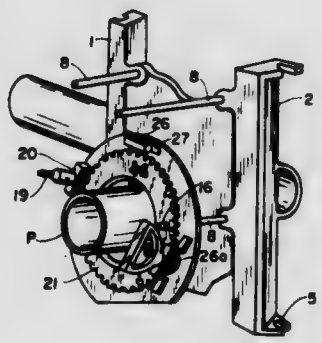
(b) a biasing means interposed between the head and the handle, the biasing means always urging the head toward a neutral, rest position.

4,347,664

SOIL PIPE CUTTER

Felix A. Petrillo, 1143 Stowe Ave., McKees Rocks, Pa. 15136

Filed Aug. 18, 1980, Ser. No. 178,698
Int. Cl.[3] B23D *21/10;* B23B *5/14*
U.S. Cl. 30—97 1 Claim



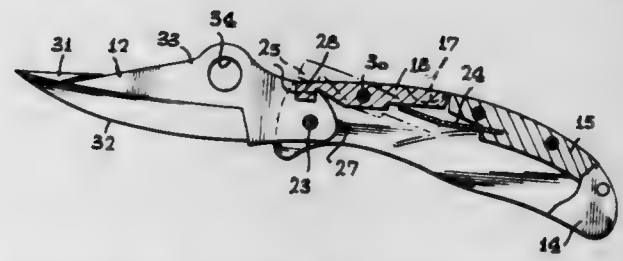
1. In a capped soil pipe mounting assembly having four horizontally extending bolts extending through a bathroom wall or the like, the combination of a pipe cutter comprising a substantially circular mounting plate having a pair of holes through which the lower two of said bolts extend and having mounted on one side thereof a ring gear, idler rollers equidistantly spaced for rotatably mounting said gear, a pipe cutting blade, and a driving pinion in meshing relationship with said ring gear and having a stud shaft which is driven by an electric portable drill so as to rotate said ring gear at a slower speed than said driving pinion, whereby upon rotation of said ring gear, said cutting blade will cut through said soil pipe externally of said wall, a pin extending from said cutting blade, said ring gear having a radially extending longitudinal slot through which extends said pin, and a leaf spring normally biasing said pin and blade radially inwardly of said ring gear, said cutting blade also having a convex shaped cutting surface having a central groove.

4,347,665

POCKET KNIFE

Louis S. Gleaser, P.O. Box 800, Golden, Colo. 80401

Filed May 11, 1981, Ser. No. 262,457
Int. Cl.[3] B26B *1/02*
U.S. Cl. 30—161 5 Claims



1. A pocket knife comprising the combination of:

a handle having opposite, elongated side portions separated by a spacer defining a cavity opening from one side of said handle;

a blade pivotally carried on said handle operable between alternate positions of being stored in said cavity or being open in an operative position as an extension of said handle;

latch means resiliently biasing said blade in either of its stored or operative positions;

said blade having an enlarged portion substantially protruding from its upper top edge and outwardly projecting through said handle cavity opening beyond said handle one side so as to provide an exposed lobe;

said blade enlarged portion outwardly extending from said handle one side when said blade is in its stored position available for engagement by the flesh of the thumb of the user for actuating said blade into its operative position while said handle is held in the same hand of the user;

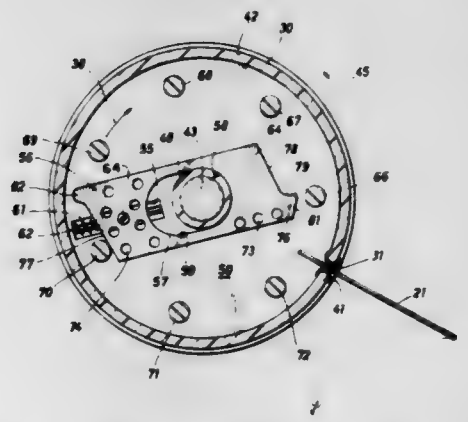
said enlarged portion on said blade is provided with a lateral facing depression adapted to be physically engaged by the flesh of the user's thumb to effect single-handed pivoting of said blade into its operative position.

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APPARATUS FOR CUTTING VEGETATION

Robert J. Moore, Fontana, Calif., assignor to Emerson Electric Co., St. Louis, Mich.

Filed Jul. 25, 1980, Ser. No. 173,192
Int. Cl.[3] A01D *50/00*
U.S. Cl. 30—276 26 Claims



1. An apparatus for cutting vegetation, comprising:

(a) a head rotatable about an axis of rotation;

(b) a spool journaled for rotation within said head;

(c) said head provided at its periphery with aperture means;

(d) a supply of flexible non-metallic cutting line coiled upon said spool, and said cutting line having a free end extending from said aperture exteriorly of said head into a cutting plane;

(e) means including an elongated planar cam for selectively controlling rotation of said spool within said head for feeding increments of said cutting line into the cutting plane during rotation of said head;

(f) said cam mounted within said head in a plane transverse to the rotational axis and adapted to move laterally diametrically between initial and outward positions by centrifugal forces when said head increases in rotational speed from a first magnitude to a second magnitude;

(g) said spool having a plurality of axially-projecting pins arranged in a circle about the axis of rotation;

(h) said cam having a lug at one end thereof, and said lug engaging a projection pin on said spool with said cam at its initial position to prevent rotation of said spool relative to said head;

(i) biasing means for urging said cam into the initial position at rotational speeds of said head less than the first magnitude;

(j) said cam having a camming surface at its end opposite to said lug, and said camming surface adapted to engage a pin on said spool with said cam in its outward position whereby drag of said cutting line during vegetation cutting but not in free air travel rotates said spool within said head and moves the pin across said camming surface to return said cam from its outward position to its initial position thereby securing said spool against rotation relative to said head until its speed again increases from the first magnitude to the second magnitude; and

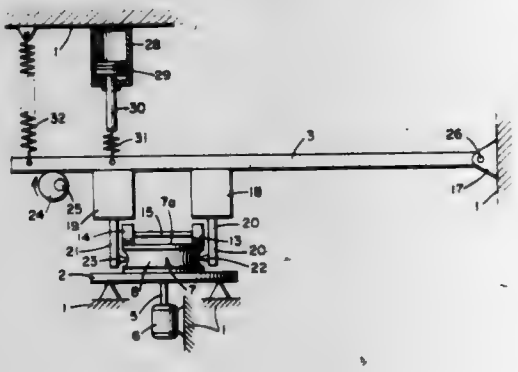
(k) said cam being responsive to increases in rotational speed to move from the initial position to the outward position and said cam being responsive to the urging of said spool to move from the outward position to the initial position whereby said spool rotates a predetermined angular displacement in said head for feeding increments of cutting line into the cutting plane.

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APPARATUS FOR THE DIMENSIONAL CHECKING OF A BEARING RING

Gastone Albertazzi, Bologna, Italy, assignor to Finike Italiana Marposs S.p.A., S. Marino di Bentivoglio, Italy

Filed Aug. 29, 1980, Ser. No. 182,684
Claims priority, application Italy, Sep. 14, 1979, 3491 A/79
Int. Cl.³ G01B 7/12, 7/28
U.S. Cl. 33—174 L **11 Claims**



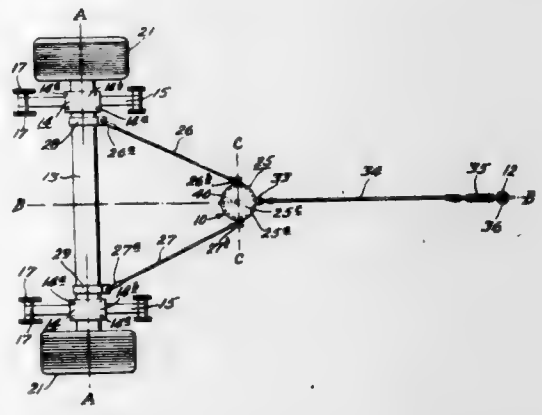
1. An apparatus for the dimensional checking of the raceway of a bearing ring, comprising measuring means including feelers adapted to cooperate with the raceway surface; supporting means for supporting the ring and the measuring means, the supporting means permitting a relative scanning motion of the feelers on the raceway surface, along a transversal direction of the raceway; control means for controlling the checking operation; and processing means connected to the measuring means, wherein said supporting means permit a further relative scanning motion of the feelers on the raceway surface in the direction of the longitudinal development of the raceway; the first scanning motion being a reciprocating motion; said control means controlling said first and further scanning motions; and wherein the processing means receive the measuring means measurement signals obtained through said scanning motions and provide signals responsive to the radial dimensions of the ring in correspondence with a plurality of cross-sections of the raceway.

4,347,668

DEVICES FOR USE IN ALIGNING AXLES

Harry R. Johnston, R.D. #4 - Box 250-G, Coatesville, Pa. 19320

Filed Mar. 20, 1978, Ser. No. 890,588
Int. Cl.³ G01B 5/25
U.S. Cl. 33—193 **2 Claims**



1. Apparatus useful in aligning the axle of a vehicle with respect to its frame, said apparatus including a case, a pair of cables of equal length having inner ends connected to said axle at spaced locations and having outer ends connected to said case at spaced locations closer together than said axle connections so that said cables converge in a forward direction from said axle, an input lever carried by said case to pivot about an upright axis, and means for connecting said input lever to a reference datum on the frame to cause said lever to pivot relative to the case into an angle corresponding to the alignment angle of the axle, gearing means coupled to said input lever, said gearing means including a sector gear connected to said input lever and a pinion gear of smaller pitch diameter meshing with said sector gear, and readout means coupled to said case and responsive to rotation of said gearing means to produce a readout corresponding to the angular disposition of said axle with respect to the frame, said readout means including an array of graduations carried on said case and a pointer coupled to said pinion and extending into registry with said array, said graduations being disposed on said case on the side thereof opposite said input lever, and said pointer being adapted to register with said graduations upon pivotal movement of said input lever, whereby the readout may be seen readily by a mechanic located remote from the apparatus.

2. Apparatus useful in aligning the axle of a vehicle with respect to its frame, said apparatus including a case, means for connecting said case to the axle, including a bracket disposed transversely to an input lever, pre-located means on said axle adjacent its median for disposing said bracket parallel to said axle and midway between the ends thereof, and means for fastening said bracket to said pre-located means, said input lever carried by said case to pivot about an upright axis, and means for connecting said input lever to a reference datum on the frame to cause said lever to pivot relative to the case into an angle corresponding to the alignment angle of the axle, gearing means coupled to said input lever for rotating in response to pivotal movement of said input lever, said gearing means including a sector gear connected to said input lever and a pinion gear of smaller pitch diameter meshing with said sector gear, and readout means coupled to said case and responsive to rotation of said gearing means to produce a readout corresponding to the angular disposition of said axle with respect to the frame, said readout means including an array of

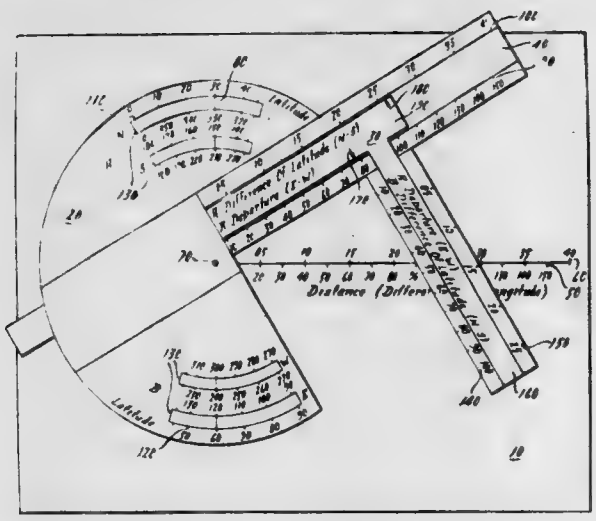
graduations carried on said case and a pointer coupled to said pinion and extending into registry with said array, said graduations being disposed on said case on the side thereof adjacent said input lever, and said pointer having an elongated arcuate slot affording movement thereof relative to the pivot axis of said lever in response to pivotal movement of said pinion gear upon angular displacement of said sector gear, whereby the readout may be seen readily by a mechanic located remote from the apparatus.

4,347,669

NAVIGATIONAL CALCULATING DEVICE

David M. McEwen, 4010 Keewahdin Rd., North Street, Mich. 48049

Continuation-in-part of Ser. No. 51,678, Jun. 25, 1979, Pat. No. 4,208,805. This application Jun. 19, 1980, Ser. No. 161,061
The portion of the term of this patent subsequent to Jun. 24, 1997, has been disclaimed.
Int. Cl.³ B43L 5/00
U.S. Cl. 33—431 14 Claims



1. A navigational calculating device comprised of:

(a) a plotting board,

(b) a base plate slidably mounted on said plotting board, said base plate containing intersecting horizontal and vertical scales and having at least one vertical scale adjacent a vertical edge thereof and at least one horizontal scale adjacent a horizontal edge thereof,

(c) a disk rotatably mounted on said base plate at a position coincident with the intersection of said horizontal and vertical scales, said disk comprising at least one radially spaced arcuate scale coaxial with said disk and superimposed over the vertical scale on the base plate, said arcuate scale being of constant radius and having an origin radially aligned with the intersection of said scales on said base plate, said disk having an arm affixed thereto, the lower edge of which is aligned with said intersection of the scales on the base plate, said arm containing at least one longitudinal scale, and

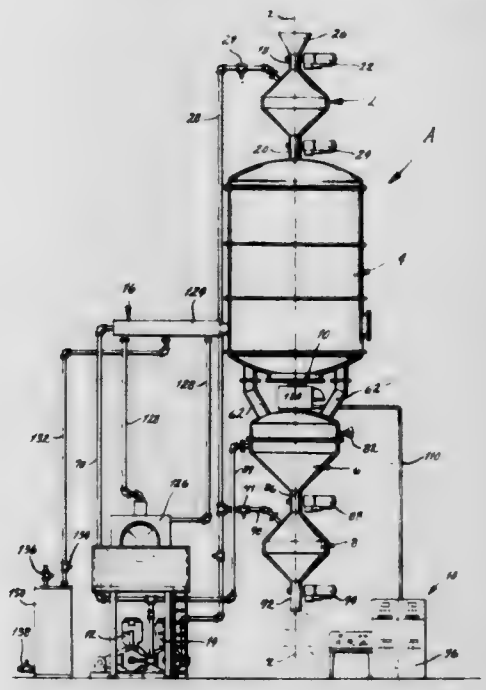
(d) a square slidably mounted on said arm, said square comprising both a vertical portion having an upper edge adjacent the lower edge of said arm and containing at least one scale having its origin aligned with the intersection of the scales on the base plate, and a horizontal portion integral with said vertical portion adapted for sliding movement relative to said arm.

4,347,670

APPARATUS AND PROCESS FOR DRYING GRANULAR PRODUCTS

Frederick C. Wear, St. Louis; Dick Q. Durant, Manchester, both of Mo., and Howard F. McKinney, Edwardsville, Ill., assignors to McDonnell Douglas Corporation, St. Louis, Mo.

Filed Nov. 28, 1980, Ser. No. 211,308
Int. Cl.³ F26B 23/08
U.S. Cl. 34—1 28 Claims



1. An apparatus for drying a granular product, said apparatus comprising: an air-tight drying vessel, a portion of which is formed from a material that is transparent to microwave energy; confining means within the vessel for defining a channel through which the product passes, said means being transparent to microwave energy; a microwave launcher for producing microwave energy; a tubular waveguide-radiator connected with the launcher and being extended along the transparent portion of the vessel such that it is exposed to atmospheric air for its entire length, the waveguide-radiator containing a plurality of apertures through which the microwave energy radiates from the waveguide-radiator, with the apertures being positioned and oriented to direct the microwave energy through the transparent portion of the drying vessel and into the interior of the vessel such that the energy will pass through the confining means and evaporate the moisture from the product and means for evacuating air from the drying vessel.

4,347,671

VACUUM-DRYING METHOD AND APPARATUS

Francisco J. Dias; Willi Hannen, both of Jülich; Hartmut Lahleich, Düren, and Peter Pflaum, Jülich, all of Fed. Rep. of Germany, assignors to Keraforschungsanlage Jülich, Gesellschaft mit beschränkter Haftung, Jülich, Fed. Rep. of Germany

Filed Apr. 3, 1980, Ser. No. 136,927
Claims priority, application Fed. Rep. of Germany, Apr. 7, 1979, 2914181
Int. Cl.³ F26B 5/04
U.S. Cl. 34—15 6 Claims

1. A method of drying a product which comprises the steps of:

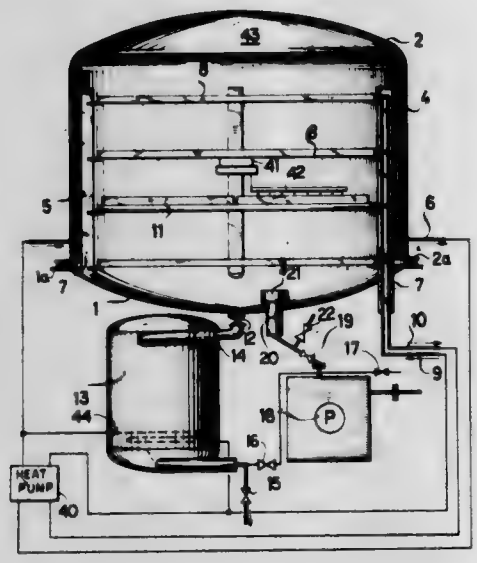
(a) disposing said product in a subdivided form in a high-vacuum-tight chamber;

(b) cooling a condenser surface in said chamber to a temperature T_2 above 0° C. but below a drying temperature T_1 of said product;

(c) evacuating said chamber to a subatmospheric pressure of substantially 5 mbar to substantially 35 mbar until noticeable condensation is observed on the condenser surface

and then terminating evacuation of said chamber, the product being heated to the drying temperature T_1 at least after termination of evacuation;

(d) maintaining said chamber sealed upon termination of evacuation and while further evacuation is halted whereby moisture from said product continues condens-



ing upon said surface, the condensate collecting at the lower part of the chamber being repeatedly drained out into a condensate receptacle

and

(e) evacuating the chamber again when condensation subsides indicating an increase in pressure of noncondensible gases.

4,347,672

INFLOW BOTTOM FOR A FLUIDIZED BED REACTOR

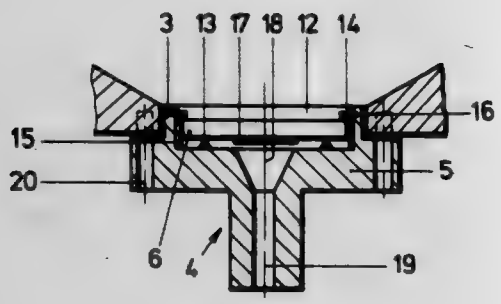
Gregor Friedrichs, Pulheim, Fed. Rep. of Germany, assignor to Thyssengas GmbH, Duisburg and Didier Engineering GmbH, Essen, both of, Fed. Rep. of Germany

Filed Jan. 21, 1981, Ser. No. 226,703

Claims priority, application Fed. Rep. of Germany, Jan. 21, 1980, 3001961

Int. Cl.³ F26B *17/10*

U.S. Cl. 34—57 R **11 Claims**



1. Approach flow floor for a fluidized bed reactor for flowing a feed gas upwardly through a fluidized bed in the reactor with the approach flow floor extending transversely across the direction of gas flow, said flow floor having a number of laterally spaced openings therethrough, an approach flow body located within each of the openings in said flow floor, each said approach flow body having a lower end and an upper end, said approach flow body forming a pick-up pocket within and extending downwardly from the upper end of said flow body, a flow hole extending upwardly from the lower end of said flow body in said pick-up pocket so that the upper end of said flow hole is spaced below the upper end of said flow body, said flow hole has a widening part at the upper end thereof opening into said pick-up pocket, a distribution plate located within said pick-up pocket and spaced upwardly from the upper end of said flow hole, said pick-up pocket has a greater transverse cross-sectional area than the upper end of said flow hole and said distribution plate extends across said pick-up pocket transversely of the upward direction, a gas impermeable baffle plate on the underside of said distribution plate and aligned above the widened part of said flow hole, and the upper surface of said flow floor sloping upwardly from the edges of the openings therethrough in which said approach flow bodies are located.

4,347,673

DISPLAY SOLES FOR ARTICLES OF FOOTWEAR

Joseph F. Svetlik, Stow, Ohio, assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 1,035, Jan. 4, 1979, abandoned. This application Nov. 4, 1980, Ser. No. 203,928

Int. Cl.³ A43B *13/04, 13/12*

U.S. Cl. 36—32 R **9 Claims**

1. A thermoplastic sole for footwear said sole of sufficient transparency to permit display of the bottom of the article of footwear to which it is attached said thermoplastic comprising a blend of (1) predominantly elastomeric block polymer with (2) an amount of predominantly nonelastomeric block polymer sufficient to provide transparency to said blend, said block polymers chosen from among the group consisting of radial and linear block copolymers prepared from a conjugated diene containing from about 4 to 12 carbon atoms per molecule and a monovinylsubstituted hydrocarbon containing from about 8 to 18 carbon atoms per molecule wherein said radial block copolymers consist essentially of polymers described by the formulas $(A\text{-}B)_xY$ or $(A\text{-}B\text{-}A)_xY$ wherein A represents a polymer segment having nonelastomeric properties, B represents an elastomeric polymer segment, Y represents an atom or group of atoms derived from a polyfunctional treating agent, and x represents the number of functional groups of the treating agent and is at least 3 and said linear block copolymers consist essentially of polymers described as A-B-A or A-B-Y-B-A wherein A represents a polymer segment having nonelastomeric properties, B represents an elastomeric polymer segment, and Y represents an atom or group of atoms derived from a polyfunctional treating agent.

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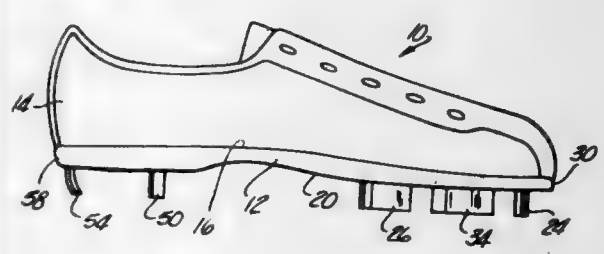
ATHLETIC SHOE

Gary F. George, 5076 Bishop, Detroit, Mich. 48224

Filed Apr. 8, 1980, Ser. No. 138,317

Int. Cl.³ A43B *5/00*; A43C *15/00*

U.S. Cl. 36—126 **6 Claims**



1. An athletic shoe comprising:

a sole,

an upper secured to said sole and extending outwardly from an upper side of the sole,

a first set of at least three narrow and arcuate cleats secured to the forward portion of said sole and extending outwardly from the lower side of said sole, each of said cleats being positioned on said sole on substantially the same radius of curvature and substantially having a common center and

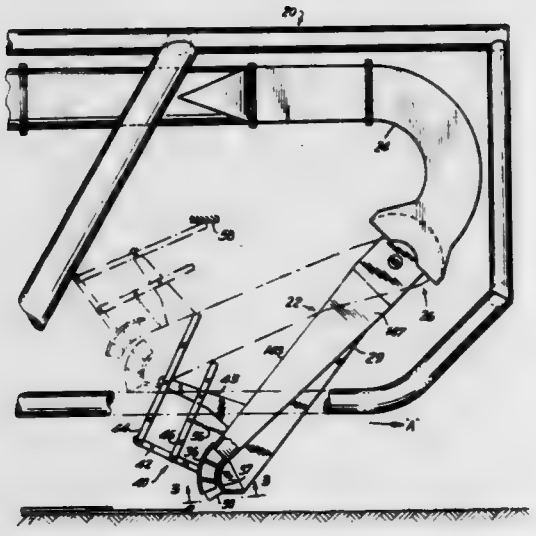
a second set of at least three narrow and arcuate cleats secured to the forward portion of said sole and extending outwardly from said lower side of said sole, said second set of cleats being positioned on said sole concentrically with said first set of cleats but on a radius from said center smaller than said first set of cleats.

4,347,675

DREDGING MEANS HAVING MEANS FOR EXCLUDING OVERSIZED SLENDER OBJECTS

John P. Latimer, Newport News, Va., assignor to Deepsea Ventures, Inc., Gloucester Point, Va.

Filed Feb. 9, 1981, Ser. No. 232,835
Int. Cl.³ E02F *3/94*; B07B *1/16*; B01D *35/02*; B07B *1/52*
U.S. Cl. 37—57 17 Claims



1. Screening means for screening long slender particles to prevent passage through a fluid-flow conduit, wherein the particles have their long dimension extending along the longitudinal axis of the flow conduit, the screening means comprising a conduit and a plurality of opposed pairs of corrugated surfaces within the conduit, the axes of the folds extending transversely to, and the corrugated surfaces being folded along, the direction of fluid-flow through the conduit, such that the corrugated surfaces define a plurality of separate serpentine flow channels through the conduit, and transverse members extending transversely along each serpentine flow channel, extending between and intersecting the opposed corrugated surfaces, intermediate the interior periphery of the conduit.

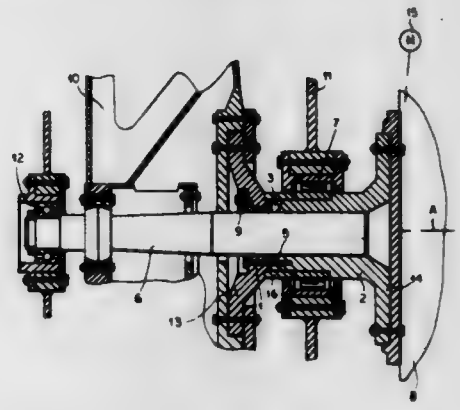
9. In a dredge means for collecting particles from the floor of the ocean, the particles entering the dredge means together with a large volume of water, the dredge means comprising: a nozzle having a nozzle inlet designed to be located adjacent to the ocean floor; liquid pumping means for drawing a flow of liquid with suspended solids into and through the nozzle inlet; and conduit means, the nozzle and conduit means defining an internal flow channel between the nozzle opening and the pumping means; the improvement comprising screening means suitable for excluding long slender objects from passing through the flow channel, the screening means comprising a plurality of pairs of opposed corrugated surfaces within a portion of the flow channel, the corrugated surfaces being folded about axes transverse to the longitudinal axis of the flow channel from the nozzle inlet to the pump, each pair of opposed corrugated surfaces defining a separate serpentine conduit for liquid flow within the flow channel and being spaced apart by a distance designed to prevent the passage of the slender objects having a dimension measured along the longitudinal axis of the flow channel which is greater than a predetermined value.

4,347,676

BUCKET-WHEEL EXCAVATOR

Peter Kersten; Peter Meixner, and Erich Müller, all of Magdeburg, German Democratic Rep., assignors to Veb Schwermaschinenbaukombinat Takraf, Leipzig, German Democratic Rep.

Filed Dec. 1, 1980, Ser. No. 211,653
Int. Cl.³ E02F *5/08*
U.S. Cl. 37—94 7 Claims



1. A bucket-wheel excavator comprising:
a frame;
an unsplit-ring bearing on said frame defining an axis;
a shaft assembly having
a solid core shaft extending along said axis through said bearing
an input-side tube shaft fitted over said core shaft to one side of said bearing and having one end turned away from said bearing and formed with an input flange and an opposite end,
an output-side tube shaft fitted over said core shaft to the opposite side of said bearing and having one end turned away from said bearing and formed with an output flange and an opposite end,
angularly interengaging formations at least partially on said opposite ends rotationally coupling same together, and
means for pressing said opposite ends axially against each other;
a bucket wheel carried on said output flange; and
drive means connected to said input flange for rotating said shaft assembly and bucket wheel about said axis.

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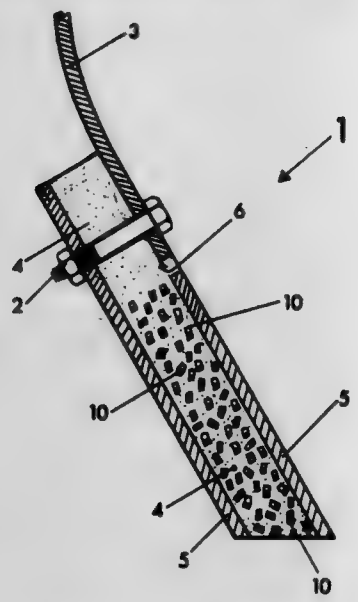
SNOW REMOVAL BAR FOR THE SNOW REMOVAL PLATE OF A SNOW PLOW

Walter Küper, Bochum-Stiepel, Fed. Rep. of Germany, assignor to Gummi Kuper GmbH & Co. KG, Bochum, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 115,832, Jan. 28, 1980, Pat. No. 4,288,932. This application Mar. 18, 1981, Ser. No. 244,838
Claims priority, application Fed. Rep. of Germany, May 2, 1979, 2904251
Int. Cl.³ E01H *5/06*
U.S. Cl. 37—233 6 Claims

1. A snow removal bar for a snow removal plate of a snow removal plow of the type including a rubber intermediary element which is reinforced with steel plates disposed on both sides thereof and which has an upper edge which is mounted by means of bolts on the lower edge of the snow removal plate, the improvement comprising:
said intermediary element having an exposed bottom edge disposed for engagement with a road surface an a multiplicity of particle-like hard material elements embedded therein and distributed within the area between said two steel plates, said hard material elements being more wear resistant and having a lower coefficient of friction than said rubber intermediary element relative to the road surfce so that they will protrude from the lower edge of

the snow removal bar in the form of rounded-off shoulders after a certain operating time, which rounded-off shoulders may slide relatively easily on the road surface,



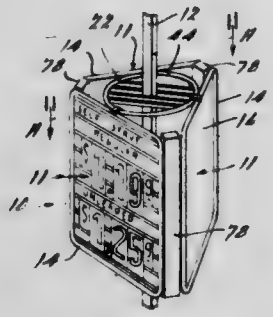
thereby lowering the drive resistance and increasing the wear resistance of the intermediary element and, in turn, the snow removal bar.

4,347,678

MULTI-SIDED DISPLAY DEVICE

John K. Laakso, West Bloomfield, Mich., assignor to Marketing Displays, Inc., Farmington Hills, Mich.

Filed Jan. 15, 1981, Ser. No. 225,318
Int. Cl.[3] G09F *15/00*
U.S. Cl. 40—607 41 Claims



1. A device for mounting a multi-sided sign display to a pole, said device comprising:

a pair of mounting means, each of said mounting means comprising hoop means and means for securely clamping said hoop means to said pole, said hoop means including a pair of tubular half circles with ends, said half circles each having an insert in one end,

a plurality of sign panels, and

means for fastening said sign panels to each of said hoop means, said fastening means being independent of said clamping means and said pole.

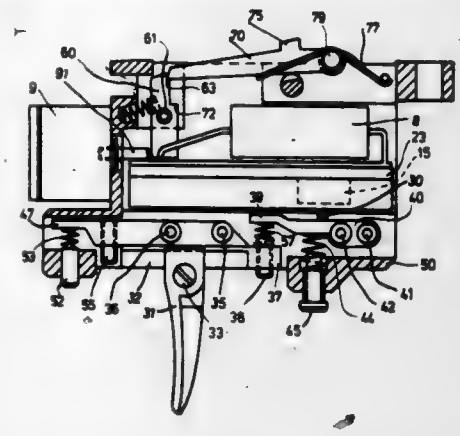
4,347,679

ELECTRIC RELEASE DEVICE FOR FIRE-ARMS

Kurt Grünig; Heinz Elmiger, both of Malters, and Franz Schneider, Oberwenningen, all of Switzerland, assignors to Feinwerkbau, Westinger & Alterburger GmbH & Co., Oberndorf, Fed. Rep. of Germany

Filed Jan. 31, 1980, Ser. No. 117,126
Claims priority, application Switzerland, Feb. 13, 1979, 1378/79
Int. Cl.[3] F41C *19/12*
U.S. Cl. 42—84 8 Claims

1. An electronic release device for a fire arm, comprising an electromagnet adapted to cause firing of said fire arm, a first capacitor connected across said electromagnet, a source of current for charging said first capacitor and an electronic switch arranged between said capacitor and electromagnet and means for firing said electronic switch to cause discharge of said first capacitor through said electromagnet comprising a trigger manipulated mechanical switch having one terminal connected to the control electrode of said electronic switch, a second capacitor connected in parallel across said electronic



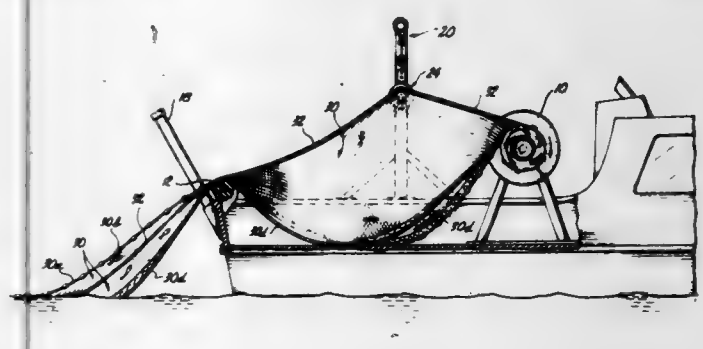
switch to be charged on passage of current through said electromagnet, said second capacitor having one terminal connected to the other terminal of said mechanical switch for discharge of current therethrough, and a voltage divider for delaying the charging of said second capacitor for a time greater then the charging time of said first capacitor whereby firing of said electronic switch is possible only after said first capacitor has reached a predetermined charge.

4,347,680

GILL NET HAULING AND FISH REMOVING SYSTEM

Eugene D. Kaestner, 208 Winesap Rd., Bothell, Wash. 98011

Filed May 5, 1980, Ser. No. 146,278
Int. Cl.[3] A01K *74/00*
U.S. Cl. 43—10 5 Claims



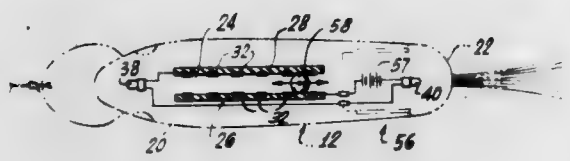
1. A gill net comprising an elongated generally rectangular net having float means distributed along its upper edge and weight means distributed along its lower edge, and having a suspender line extending the length of the net substantially midway between such edges and of a thickness at least several times thicker than the net strands, and securing means fastening the suspender line to the net strands at a substantially uninterrupted succession of points along the length of the suspender line such that with the net folded in half along said suspender line and with the halves hanging suspended from said suspender line the stresses in the net will be distributed along the length of the line, said suspender line being secured to the net on one side thereof by means comprising a backing line a minor fraction of the diameter of the suspender line placed congruently to the suspender line on the opposite side of the net, the two lines being lashed together and to the intervening mesh of the net along the length of the lines, whereby the backing line defines the fold of the net when suspended beneath the suspender line.

4,347,681

INTERMITTENTLY ILLUMINATED FISHING LURE WITH TRAVELLING ELECTRICAL CONTACT

Raoul G. Fima, 10446 N. 82nd. Pl., Scottsdale, Ariz. 85253

Division of Ser. No. 966,361, Dec. 4, 1978, Pat. No. 4,250,650.
This application Aug. 4, 1980, Ser. No. 175,149
Int. Cl.[3] A01K *75/02*
U.S. Cl. 43—17.6 7 Claims



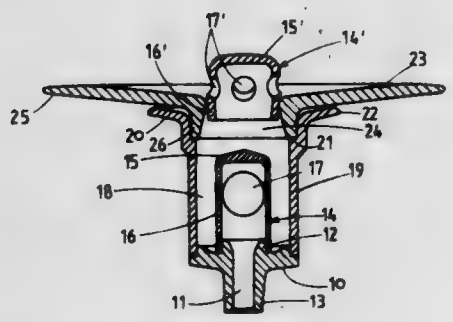
1. A fishing lure comprising:
an elongated body adapted to be pulled through the water in the direction of its longitudinal axis;
means for causing said body to oscillate as it is pulled through the water such that the front end thereof rises and falls relative to the back end thereof;
an electrical light source carried by said body;
a battery disposed within said body;
an elongated guideway extending along said body in the direction of said longitudinal axis;
a plurality of stationary spaced-apart electrical contacts arranged along said guideway;
a movable contact member disposed within said guideway and adapted to travel along said guideway under the force of gravity as said body oscillates, successively engaging said stationary contacts; and
circuit means for intermittently energizing said light source in response to engagement of successive ones of said stationary contacts by said movable contact member.

4,347,682

BUBBLE FORMING DEVICES

Walter E. Hackell, 73 Alexander Ave., Napier, New Zealand

Filed May 15, 1980, Ser. No. 149,985
Claims priority, application New Zealand, Jun. 8, 1979, 190685
Int. Cl.[3] A63H *33/28*
U.S. Cl. 46—6 8 Claims



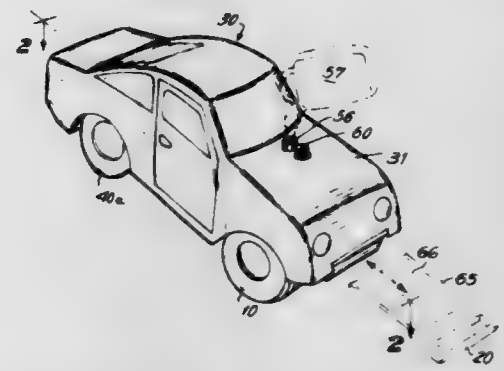
1. A bubble-forming device comprising a shallow dish-shaped bubble engaging disc having an opening centrally disposed therein, means including spaced apart inner and outer circular walls forming an open ended chamber of annular cross-section located on the convex side of the disc; the open end of the chamber being in communication with said central opening of said disc, said inner wall having a lateral aperture in communication with said annular chamber and having an air supply inlet opening concentric with the open end of the chamber and central opening of said disc, a cover detachably mounted with said disc to cover said central opening, said cover having at least one aperture therein, said aperture being located so that air entering into said chamber via said inlet opening and said lateral aperture emits from said at least one aperture over the surface of said disc.

4,347,683

CONDUCTIVE FLUID ACTIVATED DEVICES

John Maxim, 90 Ledgebrook Ave., Norwalk, Conn. 06854

Filed Sep. 3, 1980, Ser. No. 183,778
Int. Cl.[3] A63H *17/00*
U.S. Cl. 46—251 26 Claims



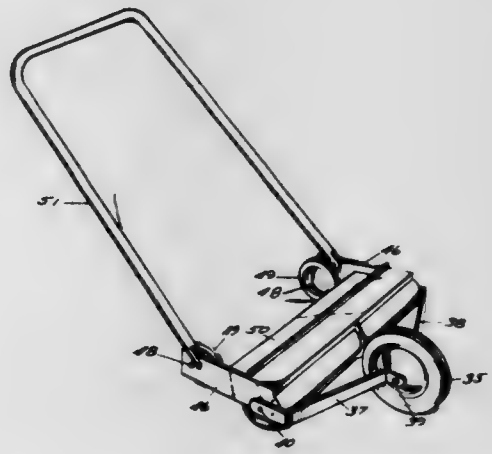
1. A device comprising toy vehicle chassis means; wheel means rotatably mounted on said chassis means; motor means mounted on said chassis means and operatively coupled to said wheel means for driving same; reservoir means carried on said chassis means capable of receiving a current conducting liquid; a pair of electrically conductive probe means in spaced relation in said reservoir means; and circuit means coupled to said probe means and adapted to be actuated when said pair of probe means are electrically coupled by said liquid, said circuit means having an output coupled to said motor means for driving said motor means, whereby a toy vehicle actuated by said liquid for driving same is produced.

4,347,684

HERBICIDE ROW APPLICATOR

John H. Keeton, P.O. Box 278, Campbellsville, Ky. 42718

Filed Sep. 5, 1980, Ser. No. 184,192
Int. Cl.[3] A01C *23/00*
U.S. Cl. 47—1.5 35 Claims



1. Apparatus for applying liquid to plants, comprising
a liquid applicator roller for contacting plants and transferring liquid from the roller surface to the plants;
a liquid reservoir;
means for transferring liquid from said reservoir to said applicator roller so that a film of liquid is deposited on said applicator roller surface just before it contacts plants;
a housing for mounting said roller for rotation about a given axis, and covering said roller at the top and sides but being open at the bottom to allow the peripheral surface of the roller to rotate out of the housing open bottom, and mounting said liquid transferring means; and
means for mounting said housing so that it is spaced from the ground, and so that said applicator roller is rotatable about a horizontal axis and is spaced from the ground, said mounting means including a pair of horizontally spaced

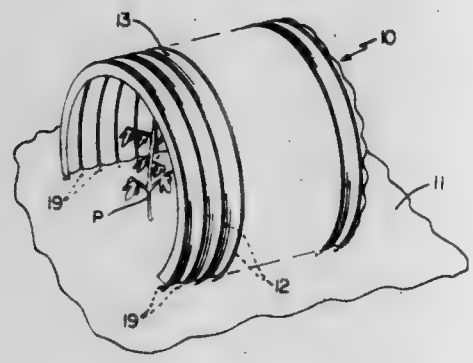
substantially horizontally elongated plates mounted to said housing and extending from one end thereof, each plate having bore means formed therein for receiving mounting pin means.

4,347,685

PROTECTIVE COVER AND METHOD OF MAKING SAME

Richard D. Medford, Waynesville; Pearison W. Henry, Sylva, and Jerry W. Cooper, Waynesville, all of N.C., assignors to Dayco Corporation, Dayton, Ohio

Filed Dec. 16, 1980, Ser. No. 217,266
Int. Cl.[3] A01G *13/00*
U.S. Cl. 47—28 R 24 Claims



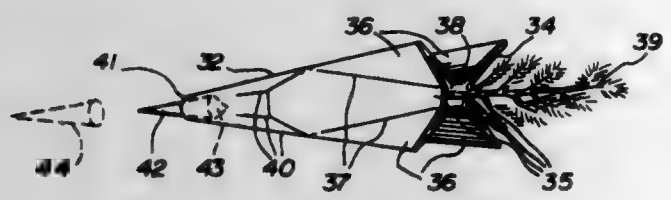
3. In a cover for protecting a plant against weather damage, said cover comprising a plurality of spaced arch-like supports and a flexible polymeric material fastened to and carried by said supports, said supports and polymeric material cooperating to define said cover having an inverted roughly U-shaped outline, said polymeric material being a synthetic plastic material which has a wall thickness generally of the order of thousandths of an inch whereby said U-shaped cover is axially collapsible from an extended configuration, the improvement wherein said arch-like supports are defined by the turns of a helically wound member which has been cut along a rectilinear line engaging all of said turns, and wherein said plastic material has said inverted U-shaped outline which has been defined by cutting a tube made of said plastic material along said rectilinear line.

4,347,686

FIN-STABILIZED CONTAINER OF FOLDABLE SHEET MATERIAL

Arthur D. Wood, Ottawa, Canada, assignor to Canadian Patents & Development Limited, Ottawa, Canada

Filed Jun. 28, 1978, Ser. No. 919,798
Int. Cl.[3] A01G *23/02*
U.S. Cl. 47—73 8 Claims



1. A fin-stabilized container formed from a unitary tapered container made from foldable sheet material, said tapered container having an apex defining the forward end and an opposite trailing end, at least three fold lines extending longitudinally from the trailing end at least partially towards the apex, said trailing end being folded inwardly toward a central longitudinal axis of the tapered container at at least three circumferentially spaced regions to form fins that project outwardly from the central longitudinal axis, each fin having outer edges defined by one of said fold lines, the folded trailing end providing closure means for the container.

4,347,687

WATERING SYSTEM FOR FLOWER POTS AND PLANT BOXES

Uwe Sibbel, Emser Strasse 44, 1000 Berlin 44, Fed. Rep. of Germany

Continuation of Ser. No. 40,883, May 21, 1979, abandoned. This application Jan. 12, 1981, Ser. No. 224,250
Int. Cl.[3] A01G *27/00*
U.S. Cl. 47—79 1 Claim



1. A watering system for plant boxes comprising:
a water supply unit operable for filling when in a closed condition, said water supply unit having an air-tight closable cover, a top fluid passage and a bottom fluid passage;
a tube, said tube having a top fluid passage, a first lower fluid passage and a second lower fluid passage, said tube having an opening therein for a ventilation pipe;
a first fluid passage connecting said top fluid passage of said water supply unit to said top fluid passage of said tube to thereby permit flow of fluid therethrough;
a second fluid passage connecting said bottom fluid passage of said water supply unit to said first lower fluid passage of said tube;
a shut off valve located in said second fluid passage for opening and closing said second fluid passage;
a ventilation pipe for controlling the level of water in a watering cylinder, said ventilation pipe located in said tube, said ventilation pipe having a lower end located in said tube and an upper end projecting through said tube so that said upper end is above the liquid level in said water supply unit, said upper end located in communication with the atmosphere, said upper end located above said top fluid passage of said water supply unit to permit air to escape therethreough during filling of said water supply unit;
an air-tight seal located between said tube and said ventilation pipe to prevent fluid from escaping between said tube and said ventilation pipe, said ventilation pipe vertically adjustable so that the water supply in the watering cylinder can be set to a desired level by the position of the lower end of said ventilation pipe;
a watering cylinder for supplying water to the roots of a plant, said watering cylinder including a foam plug that permits flow of water therethrough but restricts root growth therethrough;
a third fluid passage connecting said second lower fluid passage of said tube to said watering cylinder to permit flow of fluid from said tube to said watering cylinder;
a water supply filling passage connected to said second fluid passage said water supply filling passage operable to be connected to a source of water to permit filling of said water supply unit when said air-tight closable cover is in a closed condition and when said shut off valve in said second passage is in a closed condition to thereby permit discharge of air in said water supply unit through said top fluid passage, said tube and ventilation pipe;
said ventilation pipe vertically adjustable within said tube to permit the vertical positioning of said lower end of said ventilation pipe in said tube to thereby control the water level in said watering cylinder;
said watering cylinder located within plant boxes and below the root level of a plant located in said plant boxes; and
said watering cylinder including a watering element for insertion into a plant box and whereby said watering element can be connected to a watering supply unit, said

watering element including ventilation holes to permit air to discharge therethrough and means for maintaining the ventilation holes in an open position, said watering cylinder including a hole for flow of water into said plant boxes.

4,347,688

RAILROAD RAIL GRINDING TRUCK

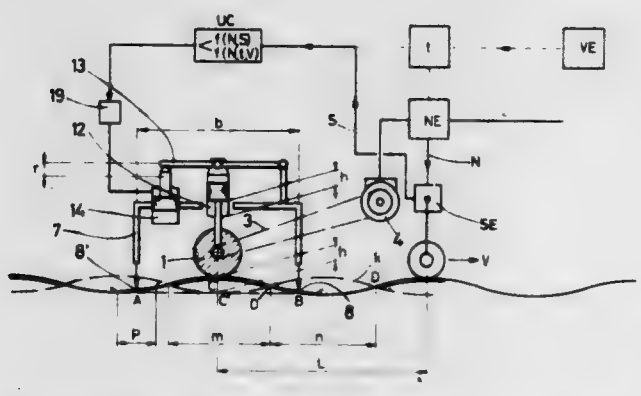
Fredy Scheuchzer, Lausanne, and Fritz Buhler, Ecublens, both of Switzerland, assignors to Les Fils d'Auguste Scheuchzer S.A., Switzerland

Continuation-in-part of Ser. No. 947,067, Sep. 29, 1978, abandoned. This application Jun. 6, 1980, Ser. No. 157,053

Claims priority, application Switzerland, Oct. 10, 1977, 12337/77

Int. Cl.³ B24B *23/00, 49/10*

U.S. Cl. 51—178 **15 Claims**



1. A track grinding truck for grinding the tread surface of a railroad rail, which comprises at least one grinding unit comprising spaced shoes bearing on said rail, grinding means comprising at least one grinding wheel, means for driving said grinding means, means including a fluid-actuated cylinder for supporting said grinding means between said shoes in position to grind the tread surface of said rail, adjustable stop means independent of said cylinder for variably limiting movement of said grinding means toward said rail by said cylinder, and servo-action regulating means controlling said stop means as a function of the degree of wear of said grinding means and also of the undulation of said rail surface so that the point of contact between said grinding means and said rail cannot fall below a grinding base defined by a straight line connecting points of contact of said shoes with said rail.

4,347,689

METHOD FOR BURNISHING

Craig B. Hammond, San Jose, Calif., assignor to Verbatim Corporation, Sunnyvale, Calif.

Filed Oct. 20, 1980, Ser. No. 198,714

Int. Cl.³ B24B *1/00*

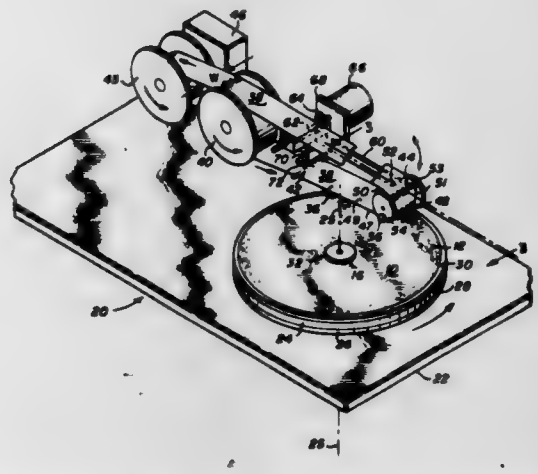
U.S. Cl. 51—281 SF **12 Claims**

1. A method for burnishing an annular region of a coated surface of a disk comprising the steps of:

rotating a disk having a coated surface about an axis substantially normal to said coated surface;

contacting said coated surface with an abrasive surface of a length of burnishing tape, said tape being oriented such that a fixed point on said coated surface of the disk first enters into intimate contact with said abrasive surface of a first segment of the burnishing tape which first segment is urged into contact with said coated surface with a first force and, after having passed said first segment, said fixed point then contacts an abrasive surface of a second segment of the burnishing tape having a common terminal end with said first segment, which second segment is urged toward said coated surface with a lesser force than said first force;

oscillating the burnishing tape back and forth across said coated surface in a path having little or no travel in a direction parallel to the length of said first or said second segments while maintaining intimate contact between both abrasive surface segments and said coated surface; and



disengaging said abrasive surface of the burnishing tape from contact with said coated surface of the disk.

4,347,690

SKELETAL FRAMEWORK STRUCTURE AND JUNCTION FOR USE THEREIN

Brenton G. Wallace, Jr., 1529 Sweet Briar Rd., Gladwyne, Pa. 19035

Continuation-in-part of Ser. No. 105,026, Dec. 19, 1979, abandoned. This application Mar. 23, 1981, Ser. No. 246,845

Int. Cl.³ E04B *1/32*

U.S. Cl. 52—93 **12 Claims**



1. In a skeletal framework structure adapted to be provided with a covering or lining to form a space enclosure, comprising a plurality of parallel vertically disposed arches horizontally spaced from each other, each of said arches comprising a plurality of straight-segment tubular arch members adjacent pairs of which are joined to each other at their adjacent ends by junctions, and said adjacent ends of each of said pairs having longitudinal axes extending in a common plane and at an angle to each other, said arches being interconnected by a plurality of tubular straight-segment arch-connecting members connected to said junctions and extending at an angle to said plane, the improvement wherein at least some of said junctions comprise:

a first plate member a first surface of which is generally parallel to said common plane of the adjacent ends of the associated pair of said tubular arch members, said first surface of said first plate member bearing against one side of each of said associated tubular arch members and bridging their adjacent ends;

a second plate member a first surface of which is generally parallel to said common plane of said adjacent ends of said associated pair of tubular arch members, said first surface of said second plate member bearing against the opposite side of said associated tubular arch members and bridging their associated ends;

at least four bolt members, one pair of which extend through both of said plate members and through one of said pair of associated tubular arch members and another pair of which extend through both of said plate members and the other of said pair of associated tubular arch members;

nut means for each of said bolt members for permitting tightening of said bolt members to draw said plate members toward each other and to clamp said associated tubular arch members between said plate members;

a first angle member having a first flange portion extending over and against a surface of said first plate member and having a second flange portion substantially at right angles to said first flange portion, at least two of said bolt means extending through said first flange portion for securing said first angle member in position; and

means for securing one end of one of said arch-connecting tubular members to said second flange portion.

4,347,691

SOFFIT AND FASCIA PANEL

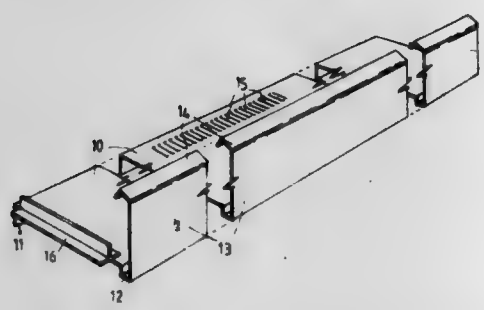
Robert Lloyd-Jones, Redcliffe, Australia, assignor to Salkhad Pty. Limited, Queensland, Australia

Filed Nov. 18, 1980, Ser. No. 207,975

Claims priority, application Australia, Aug. 4, 1980, PE4838; Sep. 19, 1980, PE5655

Int. Cl.³ E04D *13/15*

U.S. Cl. 52—95 **2 Claims**



1. A one piece soffit and fascia panel for a building having a vertical wall structure and inclined roof rafters extending outwardly of the wall structure, said panel comprising a substantially level soffit section of uniform width extending forwardly of the wall structure substantially at right angles thereto, an integral downturned flange carried by the inner edge of the soffit section adapted to abut and be secured to the wall structure, said soffit section and downturned flange being disposed bodily below said rafters, the substantially vertical fascia section extending above the soffit section and substantially abutting and lying across the ends of the rafters, vertical alignment brackets for said panel fixed to side faces of the rafters and having depending extensions projecting somewhat below the outer ends of the rafters and below the level of the soffit section of said panel, and said panel having an integral relatively narrow uniform cross section continuous channel portion formed thereon and receiving therein said depending extensions of the alignment brackets and said channel forming the juncture of the soffit and fascia sections.

4,347,692

PORTABLE DRILLING RIG

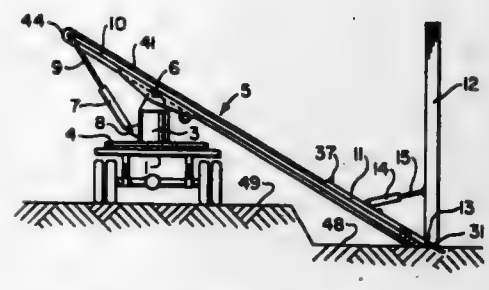
Robert B. Culver, P.O. Box 1234, Claresholm, Alberta, Canada (T0L 0T0)

Filed Aug. 25, 1980, Ser. No. 180,916

Int. Cl.³ E04H *12/34*; E21C *9/00*

U.S. Cl. 52—117 **6 Claims**

1. A portable drilling rig for mounting on a carrier vehicle comprising a turntable rotatably mounted on the vehicle for rotation therein around a vertical axis; slide means pivotally mounted on said turntable for rotation around a horizontal axis; carriage means slidably mounted on said slide means for sliding movement therealong between retracted and extended positions; a drilling derrick mounted on said carriage means for movement with said carriage means between the retracted and extended positions; elevating means for raising and lowering one end of said slide means; means pivotally connecting said derrick to said carriage means; and lifting means for raising the other end of said derrick from said carriage means to orient the derrick with the longitudinal axis thereof in the vertical, whereby actuation of said elevating means raises said one end of said slide means from a transporting position on and in



alignment with said carrier vehicle, rotation of said turntable moves said slide means, carriage means and derrick out of alignment with said carrier vehicle to an operating position where said one end of the slide means can be lowered by said elevating means to ground level, sliding of said carriage means along said slide means moves said one end of said carriage means into engagement with the ground, and actuation of said lift means elevates the other end of said derrick to place the derrick in the operating position.

4,347,693

WINDOW GLASS MOUNTING ARRANGEMENTS

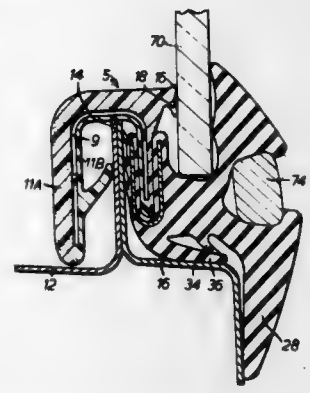
Werner Kruschwitz, Viersen, Fed. Rep. of Germany, assignor to Draftex Development, AG, Zug, Switzerland

Filed Sep. 2, 1980, Ser. No. 183,141

Claims priority, application United Kingdom, Oct. 4, 1979, 7934471

Int. Cl.³ E06B *3/62, 7/16*

U.S. Cl. 52—208 **7 Claims**



1. A window glass mounting arrangement, comprising

two separate parts assembled together to define first and second longitudinally extending channels substantially side-by-side and facing in opposite directions,

the first channel being sized to fit over and grip a support member surrounding and on one side of the window opening so that the second channel then runs along the window opening for receiving the window glass,

the first part being made of plastics material,

the second part being made of rubber material,

one said part including a first longitudinally extending portion which forms at least a component of one of the side walls of one of the channels and which has formed within it a longitudinally extending slot having walls and a base defined in the said portion,

a channel-shaped metal reinforcing carrier which is embedded in the walls and base defining the said slot and which embraces the said slot, and

the other said part defining another longitudinally extending portion which is fitted tightly within the slot and secures the two parts together,

the second part being completely free of embedded inseparable metal reinforcement on the opposite side of the window opening to the said one side.

4,347,694

METHOD OF INTERCONNECTING AND MANIPULATING PRINTED PRODUCTS

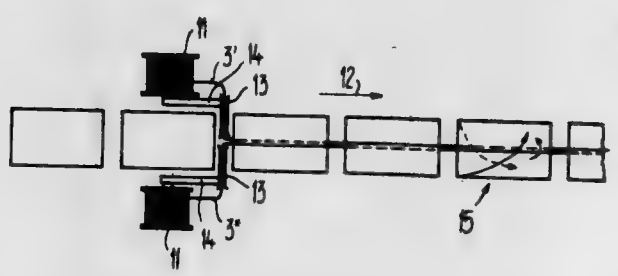
Walter Reist, Hinwil, Switzerland, assignor to Ferag AG, Hinwil, Switzerland

Filed Mar. 3, 1980, Ser. No. 126,424

Claims priority, application Switzerland, Mar. 9, 1979, 2270/79

Int. Cl.³ B65B *15/04*

U.S. Cl. 53—399 2 Claims



1. A method of manipulating printed products, especially newspapers or magazines or the like, comprising the steps of:

arranging product copies or groups of product copies in a serial row for forming a composite formation;

interconnecting the product copies or groups of product copies with one another into a band, worm-like, foldable structure, defining the composite formation by coherent tying means which engage about the product copies or groups of product copies;

forming the tying means by means of at least two traction elements extending in the length of the composite formation;

supplying from the one or the other side each of said traction elements;

passing the traction elements in a crossing fashion between the product copies or groups of product copies;

interconnecting the traction elements with one another between the product copies or groups of product copies; and

processing the folded structure in such composite formation.

4,347,695

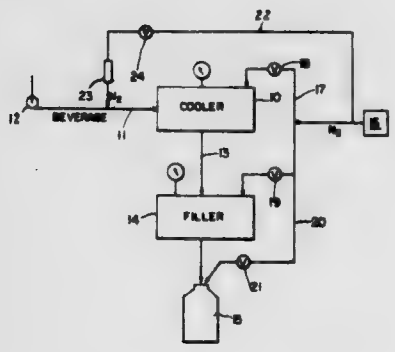
BEVERAGE BOTTLING METHOD

Frederick A. Zobel, Bedford Hills, and Joseph D. Burke, Tarrytown, both of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Mar. 26, 1980, Ser. No. 134,232

Int. Cl.³ B65B *31/00*

U.S. Cl. 53—432 5 Claims



1. A method for bottling a non-carbonated beverage in which the improvement comprises injecting 3 to 10 times the amount of nitrogen required to saturate the beverage at STP, into the beverage prior to the beverage's entry into a conventional pressure filler for standard bottling with a filling pressure of less than 100 psig, introducing the beverage containing nitrogen into a container, permitting an amount of nitrogen to escape from the beverage while the beverage is within said container and exposed to ambient conditions, said amount being sufficient to strip oxygen from the beverage and purge the head-space of the container of air while retaining a sufficient amount of nitrogen in the beverage to exert a superatmospheric pressure within the container when sealed, and subsequently sealing said container.

4,347,696

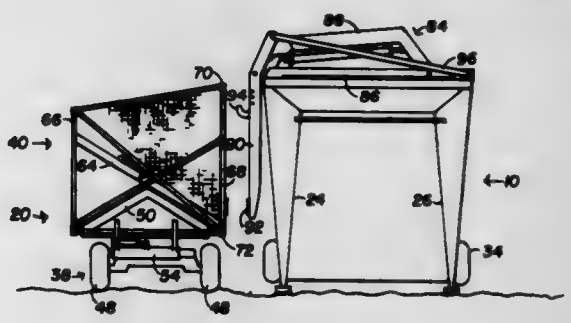
MODULE DUMP

Don R. Johnson, Lubbock, Tex., assignor to Harris & Thrush Manufacturing Company, Wolfforth, Tex.

Filed Mar. 20, 1981, Ser. No. 245,747

Int. Cl.³ A01D *44/00, 46/08, 46/20*

U.S. Cl. 56—16.6 6 Claims



1. The process of harvesting seed cotton including:

a. stripping bolls of seed cotton from the cotton stalk by harvester

b. transferring the stripped seed cotton to a trailer having a basket mounted on a running gear, and

c. moving the trailer to a module builder;

wherein the improved method of dumping the cotton from the trailer into the module builder comprises:

d. attaching hooks from the module builder onto the basket,

e. lifting the basket to above the module builder by the hooks on the module builder, then

f. tilting the basket, and

g. dumping the seed cotton into the module builder.

4,347,697

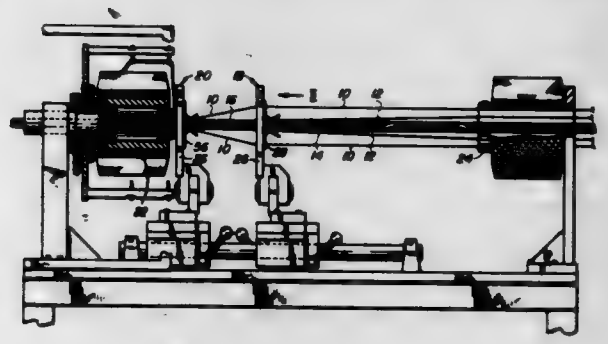
CONTROL OF A SUPPORT FILAMENT FOR OPTICAL WAVEGUIDES

Thomasz S. Hope, Kanata, and Miguel Fombellida, Ottawa, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Nov. 20, 1980, Ser. No. 208,838

Int. Cl.³ D02G *3/44*; D01H *13/04*; G02B *5/16*

U.S. Cl. 57—9 12 Claims



1. A device for limiting the amount of twist in a support

filament for elongate transmission elements as the elements are being laid in grooves sinusoidally along the filament, the device comprising:

a housing;

an arcuate groove follower in the shape of at least part of a circle and rotatably mounted upon the housing to rotate about the major axis of said circle while defining a passage along the axis for movement of the support filament, and comprising at least one groove follower probe extending inwardly of the follower towards said major axis for location within a groove of the support filament and effect rotational movement of the follower dependent upon the sinusoidal groove movement as the filament passes the probe; and

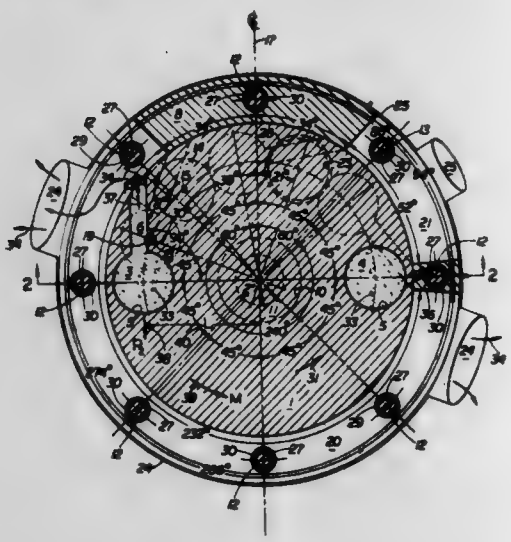
rotation limiting means associated with the housing and the follower to limit rotational movement of the follower between one angularly spaced limit position and another to thereby restrict twist of the filament.

4,347,698

ROTARY-REACTIVE INTERNAL COMBUSTION ENGINE 2-360

Alexander Nelson, 606 E. Juneau Ave., Milwaukee, Wis. 53202

Filed Jul. 17, 1980, Ser. No. 169,643
Int. Cl.³ F02C 5/04
U.S. Cl. 60—39.34 9 Claims



1. A rotary-reactive internal combustion engine of the type having a stator and a rotor which is rotatable in one direction, characterized by:

A. the rotor having

(1) a shaft with a disc fixed thereto intermediate its ends, said disc having flat and parallel opposite faces,

(2) a pair of diametrically opposite cyclinders in the disc, each having a round port, said ports having the same diameter, said ports opening to opposite faces of the disc,

(3) and a reactive duct in the disc leading to its periphery from each cylinder at an angle of 90° to the cylinder axis, said ducts having the same diameter, said ducts extending in a direction opposite to that of rotor rotation and each terminating in a reactive nozzle at the periphery of the disc, said nozzles extending circumferentially through an angle substantially 8°;

B. the stator comprising similar left and right stator housings fixed to one another and overlying the opposite faces of the rotor disc, said housings having bearing means to rotatably receive the rotor shaft, said stator having

(1) diametrically opposite air-fuel admission ports, one in each stator housing, located to be registrable with the cylinder ports during rotation of the rotor, said admission ports having the same diameter as the cylinder ports, and each such admission port having an injector nozzle through which air-fuel mixture must flow to reach its respective cylinder port,

(2) diametrically opposite spark plugs, one in each stator housing, located in circumferentially spaced relation to its respective admission port by an angle of substantially 30° in the direction of rotor rotation, said spark plug located inside a niche means,

(3) diametrically opposite exhaust canals, one in each stator housing, to receive combustion gases from the cylinders, each such canal extending circumferentially through an angle of substantially 232° in the direction of rotor rotation from a location adjacent to its associated admission port,

(4) a first pair of diametrically opposite walls, one in each stator housing, located alongside the rotor periphery and extending through an arc of substantially 68° in a direction opposite to that of rotor rotation, from a location at the end of its exhaust canal first swept by the reactive nozzles in the rotor,

(5) a second pair of diametrically opposite walls, one in each stator housing, located at the end of its exhaust canal last swept by the reactive nozzles and each such wall extending circumferentially through an angle substantially 8°,

(6) diametrically opposite admission canals, one in each stator housing, for delivering high pressure fresh air circumferentially to the cylinders, each such canal being located between said first and second pairs of walls,

(7) diametrically opposite scavenging ports, one in each stator housing, located to be registrable with the cylinder ports during rotation of the rotor, said scavenging port having the same diameter as the cylinder ports and being located substantially 60° from its associated admission port in the direction opposite to rotor rotation,

(8) an exhaust pipe connected to each stator housing and leading outwardly from its exhaust canal from a location adjacent to its spark plug,

(9) an admission pipe connected to each stator housing and located to supply high pressure fresh air to its admission canal,

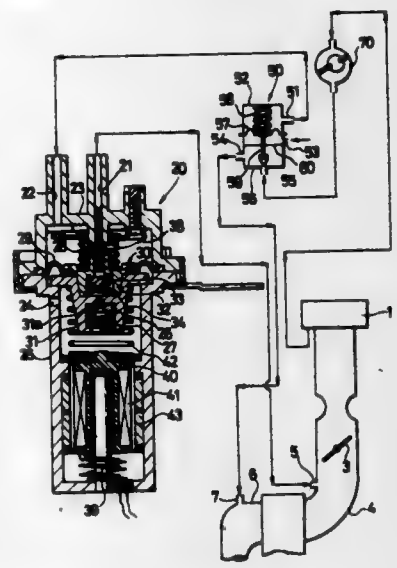
(10) and an outlet pipe connected to each stator housing in communication with its scavenging port.

4,347,699

EXHAUST CLEANING FLUID CONTROL SYSTEM AND VACUUM CONTROL VALVE DEVICE FOR USE THEREIN

Kazuhiko Kitamura, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Nov. 19, 1980, Ser. No. 208,264
Claims priority, application Japan, Dec. 10, 1979, 54-159915
Int. Cl.³ F01N 3/22
U.S. Cl. 60—290 8 Claims



1. An exhaust gas cleaning fluid control system including a flow control valve for metering additional air to be supplied to

the exhaust manifold of an internal combustion engine in response to vacuum signals and a vacuum control valve device for producing vacuum signals to be applied to a vacuum chamber of the flow control valve, said vacuum control valve comprising;

a housing;

a diaphragm dividing said housing into a first chamber communicating with the intake manifold of the engine and second chamber communicating with the atmosphere;

a valve assembly securely fixed to a center portion of said diaphragm and having a passage intercommunicating said first and second chambers, a spring and a movable valve body biased by said spring to normally close said intercommunicating passage;

first and second spring means provided in said first and second chambers for imposing opposite forces on said valve assembly;

a solenoid device provided in said second chamber and including a movable member supporting one end of said second spring means;

a stopper adapted to push said movable valve body when said valve assembly is displaced a predetermined distance, thereby communicating said first and second chambers with each other through said passage of said valve assembly;

said housing including a port formed therein to communicate said first chamber with a vacuum chamber portion of said flow control valve; and

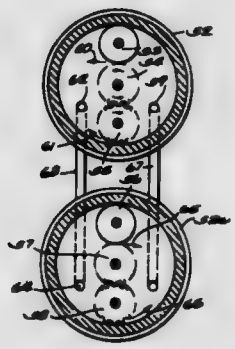
said vacuum control valve producing in said first chamber vacuum signals proportional to the intake manifold vacuum of the engine and to on-off signals applied to said solenoid device.

4,347,700

DIRECT-DRIVE HYDRAULIC PUMP-MOTOR

Harold H. Kantner, Evanston, Ill., and Stephen D. Scott, Cheyenne, Wyo., assignors to Transcience Associates, Inc., Evanston, Ill.

Filed Feb. 21, 1980, Ser. No. 123,314
Int. Cl.³ F01C *1/08*; F16H *39/06*
U.S. Cl. 60—325 8 Claims



1. In a fluid-power converter which is a pump-motor,

a housing which coprises a rotatable cylinder and a pair of non-rotatable end plates defining a chamber, means interposed between said rotatable cylinder and end plates permitting relative rotation therebetween,

a quantity of fluid within the chamber

at least four rotators within the cylinder and supported by the end plates,

said rotators being in contact whereby to define a plurality of pressure areas in the chamber, a plurality of said rotators engaging said rotatable cylinder,

at least one of said areas being a high-pressure area,

at least one of said areas being a low-pressure area,

at least one of said rotators having a smooth surface,

at least one of said rotators having a gear-like surface,

a smooth rotator and a gear-like rotator being in rolling contact with each other to define a displacement path therebetween whereby said fluid may be transferred from one pressure area to another pressure area,

at least one pair of similar rotators in contact with each other to provide a rolling seal between them whereby to restrict to the displacement path any fluid flow between the said areas,

a fluid-port for the low-pressure area,

a fluid-port for the high-pressure area, and

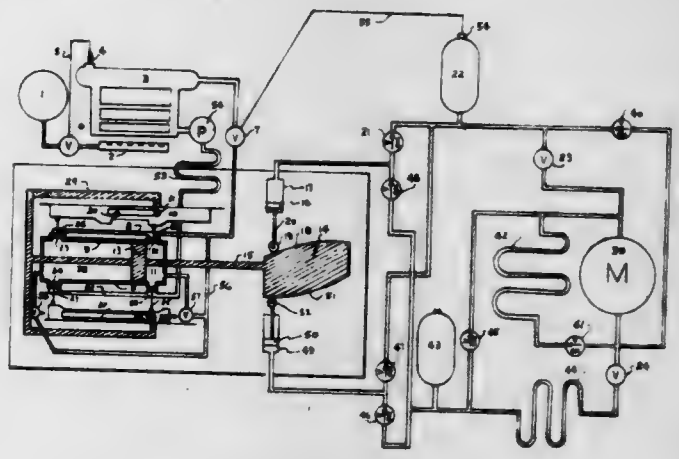
a fluid-sump defined by rotators and said rotatable cylinder, said sump being in communication with the high pressure area and the low pressure area via displacement paths.

4,347,701

POWER SYSTEM FOR LAND VEHICLES

Fletcher C. Eddens; Robert S. Moore, and Kenneth R. Munkittrick, all of Wilmington, N.C., assignors to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Apr. 3, 1980, Ser. No. 136,897
Int. Cl.³ F01K *15/02*
U.S. Cl. 60—413 1 Claim



1. A hydraulically coupled engine comprising:

a first piston inside a bored cylinder, valve means for allowing pressurized steam to enter and exit said cylinder,

a rod with one end connected to first piston and the other end connected to a solid curvilinear cam shaped block with

two contoured surfaces each on a different side of the block and each a reverse curve of the other, each said surface contacting one of a pair of second piston rods at each said second piston rod's end, a pair of second pistons disposed reciprocably inside second opposed cylinders which are fixedly disposed laterally with respect to said block, each said second piston connected to a respective second piston rod for reciprocable movement therewith, said second pistons thereby acting alternately in said opposed cylinders, said second cylinders each being smaller in diameter than said first cylinder and each second cylinder containing hydraulic fluid,

a valve means for delivering said hydraulic fluid to

a pressure accumulator,

a hydraulic motor connected to fluid carrying conduit means at its input side to said pressure accumulator and said motor connected at its output side by fluid carrying conduit means to said second cylinders.

wherein said surfaces each have a length substantially equal in length to the stroke length of said first piston and each said surface is curved to form a contact angle ϕ with the second piston rod which it contacts at any point along the curvilinear block's rectilinear travel substantially according to the formula for the contact angle

$$\phi = \arctan (A_s P_s)/(AhPh)$$

in which

A_s = the circular piston face area of the said first piston,

P_s = the steam pressure on said first piston face at the position whose contact angle is being calculated,

Ah=the circular piston face area of the said respective second piston, and

Ph=a selected hydraulic pressure of the respective second cylinder.

4,347,702

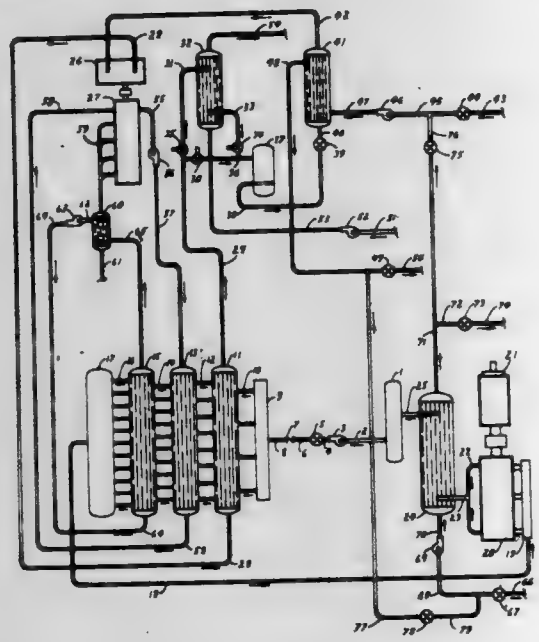
POWER SYSTEM

Ian S. Tawse, Weston, Canada, assignor to Co-Gen, Inc., Miami, Fla.

Continuation-in-part of Ser. No. 889,250, Mar. 23, 1978, abandoned. This application Mar. 30, 1979, Ser. No. 25,354

Int. Cl.³ F01K *23/10*

U.S. Cl. 60—618 12 Claims



1. An improved vapor power system utilizing multiple heat supplies, comprising:

a. a first closed loop comprising: an expansion engine; a refrigerant used as a propellant for said expansion engine; a pumping means for said propellant when said propellant is in liquid phase; a first heat exchange means whereat said propellant receives heat calculated to raise its energy level while said propellant is retained in liquid phase; a second heat exchange means of series connected construction whereat heats at multiple temperature levels are transferred to said propellant thereby evaporating said propellant and raising its kinetic energy to such level, whereby it performs work on the said expansion engine so that said expansion engine is made to produce useful shaft work; and condenser means for abstracting from the said propellant a portion of the heats left unutilized by the said expansion engine to return said propellant to liquid phase;

b. a second closed loop comprising: a refrigeration compressor; a heat engine for driving said compressor; a refrigerant being pumped by said compressor; an expansion valve through which the said refrigerant is expanded when pumped by the said compressor; an evaporator means wherein heat is absorbed by the said refrigerant while being expanded from the liquid to vapor phase, said refrigerant then being channelled to said compressor means whereat it experiences a temperature rise while being pumped to heat exchange with the said propellant of the said first closed loop and whereby a first heat supply is provided for the propellant of the said first closed loop and a condensing means is provided for the said refrigerant of the said second closed loop;

c. a third closed loop comprising: a pumping means; the coolant jacketing means of the said heat engine driving the compressor means of the said second closed loop; the said series connected heat exchange means of said first closed loop; and a heat transfer fluid; said pumping means placing said heat transfer fluid in circulation so as to transfer, by heat exchange, heat losses normal to the coolant system of a heat engine to the said propellant of the said first closed loop and whereby a second heat supply is provided for the said propellant of the said first closed loop and a cooling means is provided for the said heat engine driving the said compressor of the said second closed loop;

d. a fourth closed loop comprising: a pumping means; an exhaust cooling heat exchange means integrated in the exhaust system of the said heat engine driving said compressor of said second closed loop; said series connected heat exchange means of the said first closed loop; and a heat transfer fluid; said pumping means placing said heat transfer fluid in circulation so as to transfer at least a portion of the heat losses normal to the exhaust system of a heat engine to said propellant of said first closed loop and whereby a third source of heat to the said propellant is provided;

e. a fifth closed loop comprising: a pumping means; a heat exchange means wherein heats at temperatures higher than the heats conveyed in the said second, third, and fourth closed loops are obtained; said series connected heat exchange means of said first closed loop; and a heat transfer fluid; said pumping means placing said heat transfer fluid in circulation so that a fourth and highest temperature heat is transferred by heat exchange to said propellant of the said first closed loop;

f. a condenser coolant supply circuit comprising: a pumping means; a heat transfer fluid, said heat transfer fluid serving as a coolant; and the condenser means of said first closed loop; said pumping means placing said heat transfer fluid, while at appropriate temperature, in flow circumstance so that heat is abstracted from the said condenser means of the said first closed loop and whereby condensing of the said propellant of the said first closed loop is effected;

g. an evaporator heat supply circuit comprising: a pumping means; a heat transfer fluid, said heat transfer fluid serving as a heat supply means; and said evaporator means of the said second closed loop; said pumping means placing said heat transfer fluid, while at appropriate temperature, in flow circumstance so that heat supply to the said evaporator of the said second closed loop is effected;

h. a first heat transfer bypass comprising: valve and piping means interconnecting said condenser coolant supply circuit with the said evaporator heat supply circuit; and valve means associated with said condenser coolant supply circuit and the said evaporator heat supply circuit; said valve means permitting the coolant heat transfer fluid of the said evaporator means to be propelled to the inlet side of the said condenser coolant supply circuit and thereby provide at least a portion of the required cooling means for the condenser means of the said first closed loop; and

i. a second heat transfer bypass comprising: valve and piping means interconnecting the said condenser coolant supply circuit with the said evaporator heat supply circuit; and valve means associated with said condenser coolant supply circuit and the said evaporator heat supply circuit; said valve means permitting the warm heat transfer fluid leaving said condenser means to be propelled to the inlet side of the said evaporator heat supply circuit and thereby provide at least a portion of required heat for the evaporator means of the said second closed loop.

4,347,703

RANKINE CYCLE SYSTEM EMPLOYING SEASONAL TEMPERATURE VARIATIONS

William Lukasavage, P.O. Box 340, Great Meadow, N.J. 07838

Filed Jul. 27, 1979, Ser. No. 61,629

Int. Cl.³ F03G *7/02*

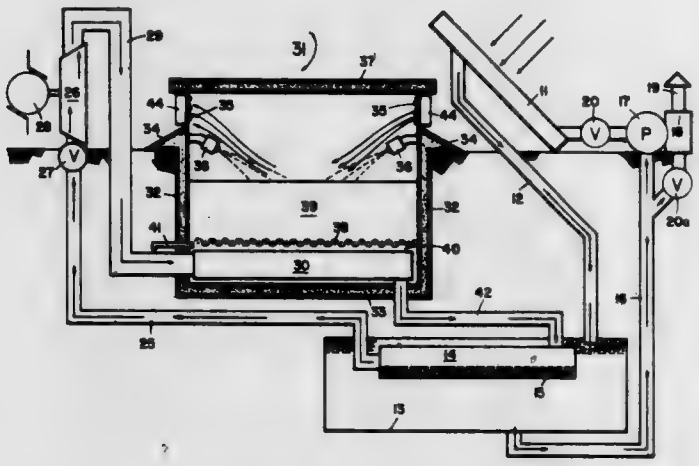
U.S. Cl. 60—641.6 10 Claims

1. In a Rankine cycle system comprising a heat source, a primary fluid heated by said heat source, a boiler for containing said primary fluid, an evaporator containing a working fluid in contact with said heated primary fluid, said working fluid being vaporized in said evaporator, a device for converting a portion of the thermal and kinetic energy of said vapor-

ized working fluid to work, and a condenser associated with a cold source for condensing vaporized working fluid exhausted from said device, said condensed fluid being introduced to said evaporator, the improvement which comprises a cold source comprising:

(a) an insulated container;

(b) means for permitting a flow of cold external air to said container;



(c) means for spraying water into said container; and

(d) a grate extending across said container and defining a space for containment of a body of water therebelow, said condensor being submerged in said body of water, whereby ice formed in said container by contact of said cold external air and said sprayed water is retained by said grate and interfaces with said body of water at about the level of said grate.

4,347,704

THERMAL POWER PLANT WATER TREATMENT PROCESS

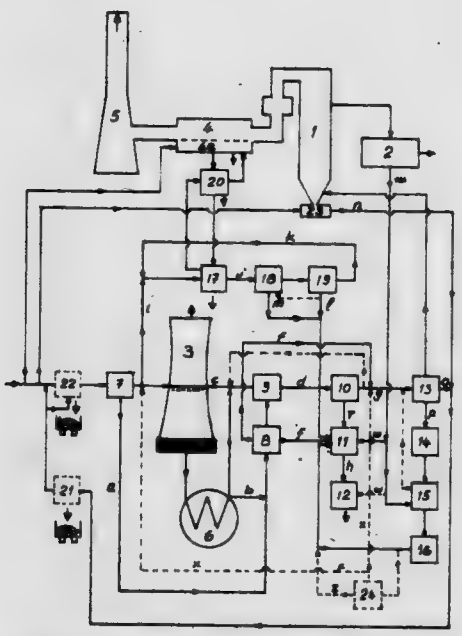
Kurt Marquardt, Holzgerlingen, and Heinz Ludwig, Sindelfingen, both of Fed. Rep. of Germany, assignors to Hager and Elsasser GmbH, Stuttgart, Fed. Rep. of Germany

Filed Apr. 3, 1980, Ser. No. 136,786

Claims priority, application Fed. Rep. of Germany, Apr. 7, 1979, 2914145

Int. Cl.³ F01K *13/00*

U.S. Cl. 60—648 **12 Claims**



1. In the operation of a thermal power station, the power station including steam turbines and a steam circulation system including a steam generator and a steam generator feed water treatment stage, the power station further including at least a first cooling tower and a cooling water circulation system including the cooling tower, an improved process for the production of makeup water for the cooling water and steam circulation systems including the steps of:

providing water from a source to the power station;

subjecting at least part of the source water to a first reverse osmosis treatment;

delivering at least part of the permeate from the first reverse osmosis treatment as makeup water to the cooling water circulation system;

mixing the concentrate from the first reverse osmosis treatment with at least some of the cooling tower blowdown water to form a first mixture;

heating the said first mixture;

subjecting the heated first mixture to a second reverse osmosis treatment;

delivering at least a portion of the permeate resulting from the second reverse osmosis treatment as makeup water to the cooling water circulation system;

subjecting the concentrate stream from the said second reverse osmosis treatment to a third reverse osmosis treatment;

employing steam from the steam circulation system to heat the concentrate from the said third reverse osmosis treatment; and

extracting the solid matter from the heated concentrate of the said third reverse osmosis treatment.

4,347,705

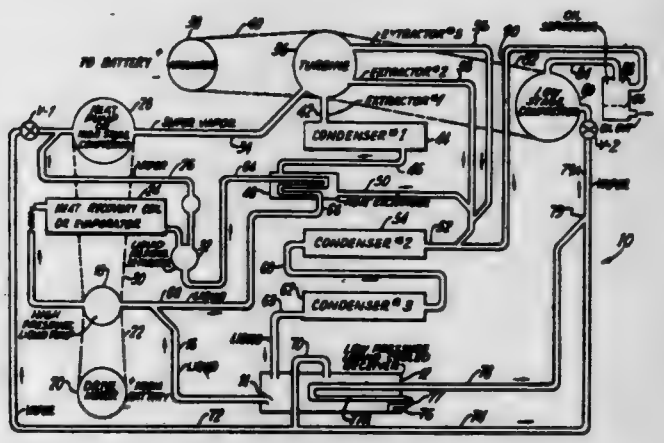
CLOSED FLUID FLOW SYSTEM FOR PRODUCING POWER

Arthur J. Mirante, 8300 Blvd. East, North Bergen, N.J. 07047

Filed Mar. 17, 1980, Ser. No. 130,873

Int. Cl.³ F01K *25/08*

U.S. Cl. 60—651 **37 Claims**



1. Closed fluid flow system for producing power from an extraneous heat source comprising

a receiver for containing volatile heat transfer fluid medium partly in the form of liquid and partly in the form of gas,

a pump for pumping liquid from the receiver,

an evaporator for passing the liquid from the pump in operative heat exchange relation with an extraneous heat source for evaporating the liquid to gas,

a high stage compressor for compressing the gas from the evaporator to high compression gas,

a gas operated prime mover for expanding the high compression gas to produce mechanical power,

a refrigerating control circuit including a liquid intake line arranged for selectively removing a control portion of the liquid from the receiver and for expanding and evaporating such control portion for cooling the contents of the receiver, a gas intake line for selectively removing a compensating control portion of the gas from the receiver, and a low stage compressor for compressing the expanded and evaporated liquid from the liquid intake line and the gas from the gas intake line to low compression gas,

condenser means for condensing and cooling the expanded

gas from the prime mover and the low compression gas from the low stage compressor, and

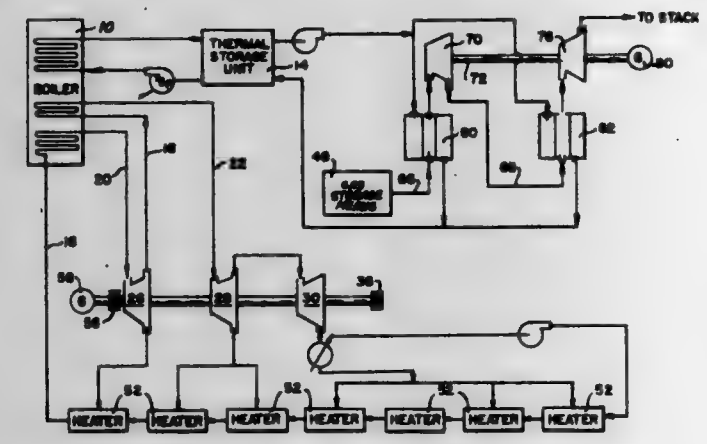
return feed means for returning to the receiver the resulting recondensed and cooled liquid from the condenser means.

4,347,706

ELECTRIC POWER GENERATING PLANT HAVING DIRECT COUPLED STEAM AND COMPRESSED AIR CYCLES

Monte K. Drost, Richland, Wash., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 7, 1981, Ser. No. 222,864
Int. Cl.[3] F01K *3/00*
U.S. Cl. 60—659 3 Claims



1. An electric power generating plant having a predetermined base load capacity and means for storing off-peak energy for use as additional load capacity during peak load periods, comprising:

a boiler having a substantially continuous output;

a steam turbine having an energy input continuously coupled to said boiler output, and further having a continuously-driven output shaft;

a first clutch means coupled to said steam turbine output shaft;

a first electric generator having an input shaft coupled to said steam turbine output shaft through said first clutch means for disconnectable driving engagement with said steam turbine;

a second clutch means coupled to said steam turbine output shaft;

a gas compressor having an output, and an input shaft coupled to said steam turbine output shaft through said second clutch means for disconnectable driving engagement with said steam turbine;

a gas storage means having a selectively operable output, and an input connected to said gas compressor output;

thermal storage means coupled to said boiler for receiving thermal energy therefrom;

gas heater means coupled between said thermal storage means and said gas storage means output for heating stored gas outputted from said gas storage means;

gas turbine means driven by heated gas outputted from said gas storage means and said gas heater means;

a second electric generator coupled to said gas turbine means for receiving driving energy therefrom;

means for disconnecting said first electric generator from said steam turbine output shaft while connecting said gas compressor to said steam turbine output shaft during a first predetermined period of generating plant operation;

means for connecting said first electric generator to said steam turbine output shaft while disconnecting said gas compressor output shaft during a second predetermined period of generating plant operation; and

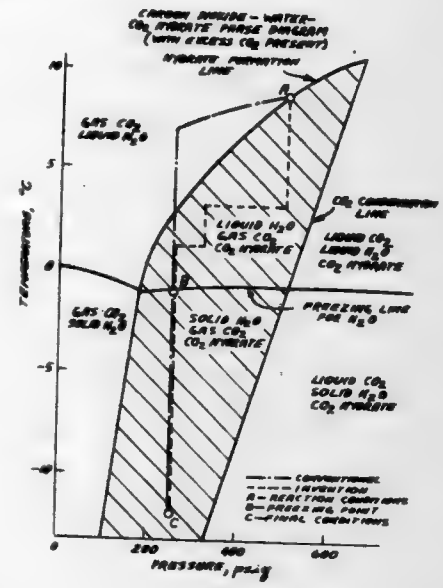
means for operating said gas storage means output so as to drive said second electric generator therewith during said second predetermined period of generating plant operation.

4,347,707

GASIFIED ICE PRODUCT AND PROCESS HAVING IMPROVED STORAGE STABILITY

Valery B. Zemelman, Wilton, Conn.; Fredric Kleiner, New City, and Michael J. Kuchman, Hopewell Junction, both of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Mar. 31, 1981, Ser. No. 249,543
Int. Cl.[3] F25C *1/18*
U.S. Cl. 62—69 11 Claims



1. A process for preparing a gasified ice characterized by a high gas content, prolonged storage stability suitable for commercial distribution in its frozen state, and a vigorous, uniform effervescence when placed in water, which comprises:

(a) contacting an aqueous liquid with a conditionally-stable, hydrate-forming gas under conditions of temperature and pressure capable of forming a chemical hydrate complex of the gas, said contacting temperature and pressure being on or below the hydrate formation line at a temperature above the freezing temperature of the aqueous liquid;

(b) maintaining said contact for a period of time effective to form a gas hydrate complex suspended in the aqueous liquid;

(c) controlling the reduction of the temperature of the aqueous liquid containing said gas hydrate complex and controlling the reduction of the pressure to maintain the pressure below that at which the gas would liquefy at the existing temperature and above that which is represented by the hydrate formation line, said control resulting in a stepwise reduction of temperature and pressure during the hydrate formation reaction;

(d) reducing the temperature of the aqueous liquid containing the gas hydrate complex of step (c) to produce final freezing of all the aqueous liquid; and thereby

(e) entrapping the suspended gas hydrate complex in the frozen aqueous liquid.

4,347,708

MAKEUP AIR PRECONDITIONER FOR USE WITH AN AIR CONDITIONING UNIT

Rudy C. Bussjager, Syracuse, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

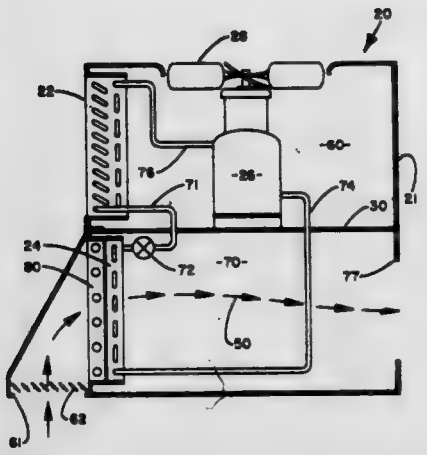
Division of Ser. No. 89,658, Oct. 30, 1979, Pat. No. 4,281,522.
This application Feb. 19, 1981, Ser. No. 235,888
Int. Cl.[3] F25D *17/06*
U.S. Cl. 62—95 3 Claims

1. A method of operating an air conditioning unit including a vapor compression refrigeration circuit, said unit being adapted to be connected to the return and supply ducts of an enclosure for supplying conditioned air to the enclosure which comprises the steps of:

circulating air from the enclosure through the return duct to an indoor portion of the air conditioning unit and back from the air conditioning unit to the enclosure through the supply duct;

selectively operating the vapor compression refrigeration circuit to either heat, cool or pass without temperature change the air passing through the unit from the step of circulating;

introducing ambient air into the indoor portion of the air



conditioning unit to mix with the flow of air from the step of circulating;

regulating the volume of ambient air flow introduced into the circulating air path at the indoor portion of the unit;

providing a second vapor compression refrigeration circuit in heat exchange relation with ambient air and the air being introduced into the indoor portion of the unit; and

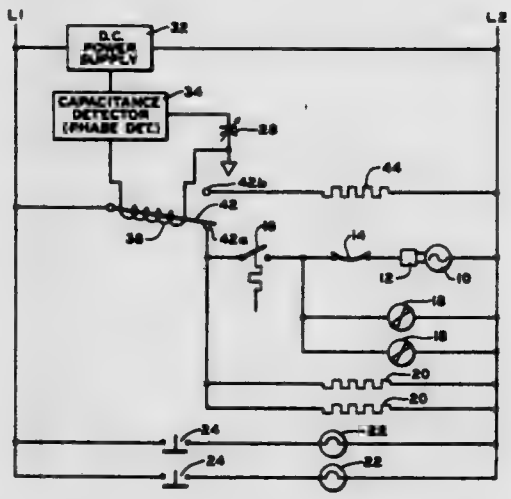
appropriately energizing the second refrigeration circuit thereby controlling the temperature of the ambient air introduced into the circulating air flow path.

4,347,709

DEMAND DEFROST SENSOR

M. T. Wu, Madison, Wis., and Thomas Y. Chai, Freeport, Ill., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jan. 19, 1981, Ser. No. 225,919
Int. Cl.[3] F25D *21/02*; G08B *19/02*
U.S. Cl. 62—140 2 Claims



1. A demand defrost sensor for sensing and controlling the frost build up on an evaporator surface, comprising in combination:

a conductive plate disposed adjacent said surface, said plate and said surface forming a capacitor;

a high resistive material encapsulating said plate;

a first and second operational amplifier;

means for coupling a source of AC reference signal to said first amplifier;

means including said capacitor and coupling said source of AC reference signal to said second amplifier;

means for comparing an output of said first and said second amplifier, said comparing means producing a series of output pulses whose width is a function of the phase shift caused by said capacitive coupling;

means to integrate said pulses, said integrating means producing a DC signal whose magnitude is a function of said pulse width; and

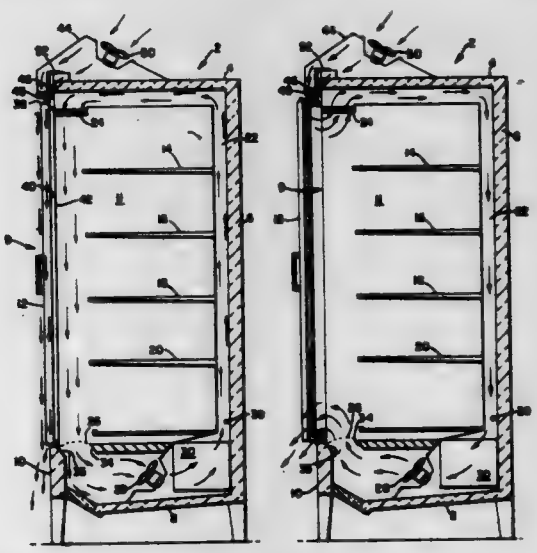
means responsive to said DC signal for initiating and terminating a defrost cycle.

4,347,710

GLASS DOOR MERCHANDIZER WITH TERTIARY AIR BAND

Fayez F. Ibrahim, Niles, Mich., assignor to Tyler Refrigeration Corporation, Niles, Mich.

Continuation-in-part of Ser. No. 101,069, Dec. 7, 1979, Pat. No. 4,265,090, and Ser. No. 107,261, Dec. 26, 1979, Pat. No. 4,265,092, and Ser. No. 124,544, Feb. 25, 1980, and Ser. No. 141,360, Apr. 18, 1980, and Ser. No. 141,359, Apr. 18, 1980, and Ser. No. 145,712, May 1, 1980. This application May 1, 1980, Ser. No. 145,750
The portion of the term of this patent subsequent to May 5, 1998, has been disclaimed.
Int. Cl.[3] F25D *21/08*; A47F *3/04*
U.S. Cl. 62—155 11 Claims



1. A refrigerated display case comprising:

a cabinet having top, bottom, rear and front walls and an interior display space, with an access opening in said front wall for enabling access into said interior display space;

at least one door covering said access opening in said front wall, said door being movable into an open position for enabling access to products in said interior display space;

a refrigeration air conduit extending along said top, bottom and rear walls and having an outlet opening and an inlet opening at opposing ends thereof, said outlet opening and said inlet opening being arranged so that air leaving said outlet opening will be directed toward and received by said inlet opening so as to form a refrigerated air curtain across said front opening along a path inside of said door;

refrigeration means including an evaporator coil arranged within said refrigeration air conduit for refrigerating air circulated through said refrigeration air conduit during a refrigeration cycle of operation;

first air circulating means for circulating air through said refrigeration air conduit;

an ambient air conduit mounted on the top of said display case, said ambient air conduit having an inlet opening located above said display case and an outlet opening arranged for directing a flow of ambient air along the front of said display case;

ambient air circulating means for circulating air through said ambient air conduit;

opening means for partially opening said door;

terminating means temporarily terminating operation of said refrigeration means; and,

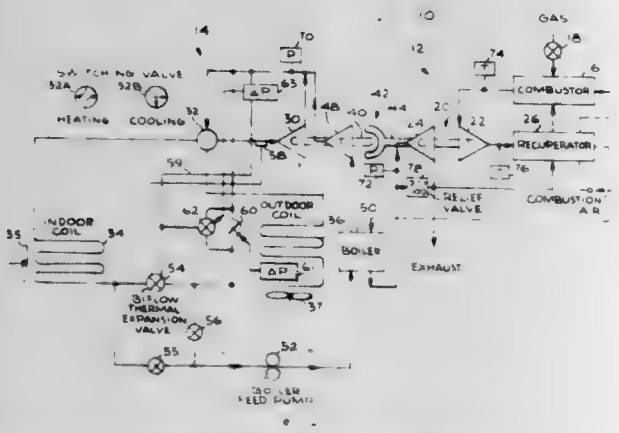
control means for switching said refrigerated display case into a defrost cycle of operation, during such defrost cycle of operation said control means causes said terminating means to temporarily turn off said refrigeration means, causes said opening means to open said door and causes ambient air from said ambient air conduit to be drawn into and circulated through said refrigeration air conduit.

4,347,711

HEAT-ACTUATED SPACE CONDITIONING UNIT WITH BOTTOMING CYCLE

James C. Noe, Canoga Park, and David W. Friedman, Van Nuys, both of Calif., assignors to The Garrett Corporation, Los Angeles, Calif.

Filed Jul. 25, 1980, Ser. No. 172,127
Int. Cl.[3] F25B *13/00, 27/02;* F02C *7/26;* F02G *3/00*
U.S. Cl. 62—160 19 Claims



1. Space conditioning apparatus comprising:

a Brayton cycle circuit including a combustor and a turbo-compressor comprising a turbine coupled to the output of the combustor for expanding combustor exhaust to sub-atmospheric levels and driving an associated compressor mounted together with the turbine on a single shaft;

a recuperator connected to the outlet of the turbine for preheating combustion air supplied to the combustor, the exhaust gas flow outlet of the recuperator being connected to the inlet of the compressor;

a Rankine cycle heat pump circuit comprising indoor and outdoor heat exchanger coils, a centrifugal compressor coupled to a compressor drive shaft for directing refrigeration fluid through the coils, and a transfer valve for selecting operation of the system in the heating or cooling mode;

means for deriving power to drive the Rankine cycle compressor from the Brayton cycle circuit including a bidirectional coupling for driving one shaft from the other shaft;

means for developing useful power from waste heat in the Brayton cycle circuit including a boiler interconnecting the Brayton cycle circuit and the Rankine cycle circuit to vaporize the refrigeration fluid from waste heat in the Brayton cycle circuit, and a second turbine coupled to the compressor shaft and connected to the boiler to be driven by the pressurized refrigeration fluid; and

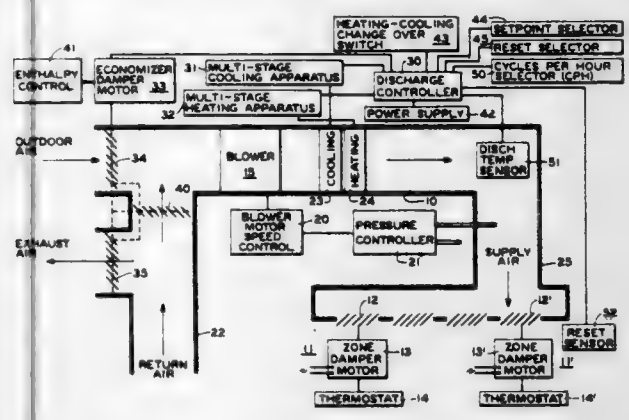
means for starting the apparatus prior to firing off the combustor by pumping refrigerant fluid to the second turbine to initiate rotation of the turbo-compressor through the coupling.

4,347,712

MICROPROCESSOR DISCHARGE TEMPERATURE AIR CONTROLLER FOR MULTI-STAGE HEATING AND/OR COOLING APPARATUS AND OUTDOOR AIR USAGE CONTROLLER

Ronald Benton, Minneapolis; Kenneth B. Kidder, Coon Rapids; Robert L. Linderberg, Bloomington; Timothy M. Tinsley, Coon Rapids, and Curtis E. Westley, St. Louis Park, all of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Nov. 3, 1980, Ser. No. 202,985
Int. Cl.[3] F25B *7/00, 29/00*
U.S. Cl. 62—175 12 Claims



1. An improvement in a temperature control apparatus for controlling temperature conditioning apparatus having an outdoor air supply apparatus and a mechanical cooling apparatus for supplying temperature conditioning air to a plurality of zones by a blower, each of the zones having its own zone thermostat and air supply control means, the temperature control apparatus having a discharge air duct temperature sensor connected to control the temperature conditioning apparatus and adapted to respond to the temperature of the air delivered to the zones, and a second sensor adapted to respond to an environmental condition of a representative zone, the improvement comprising

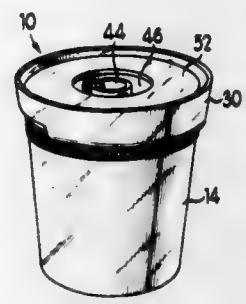
first means responsive to the output of said second sensor for controlling the temperature of air delivered to the zones by adjusting the control temperature of said discharge temperature sensor as an environmental condition of said representative zone changes to maintain a maximum use of the mechanical cooling apparatus when said condition of the representative zone is in the highest range and a maximum use of outdoor air when said condition of the representative zone is in the lowest range.

4,347,713

DEVICE FOR CHILLING CONDIMENTS AND THE LIKE

Howard J. Morrison, Deerfield, and Douglas P. Montague, Chicago, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Jan. 7, 1981, Ser. No. 222,961
Int. Cl.[3] F25D *3/08*
U.S. Cl. 62—371 8 Claims



1. A portable, self-contained device for chilling condiments and the like, comprising:

a vessel including means for containing cooling media such as ice and the like;

means for insulating said vessel and said containing means;

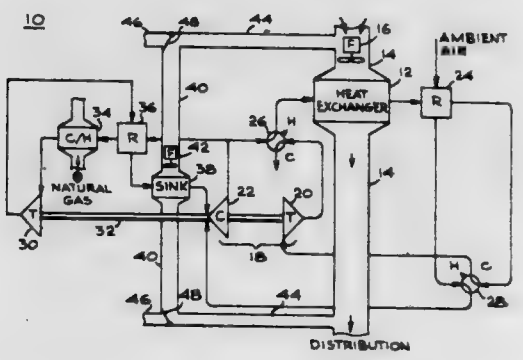
a carrying member removably mounted in said vessel adjacent said cooling media, said carrying member including means defining at least one compartment for containing said condiments and the like, said carrying member further comprises a portion thereof that defines both a compartment and a handle for gripping and removing said carrying member from said vessel, and a cover removably positioned on said carrying member, said cover including an opening through which said portion of said carrying member extends wherein said portion may be grasped to remove said tray and said cover.

4,347,714

HEAT PUMP SYSTEMS FOR RESIDENTIAL USE

Robert C. Kinsell, Los Angeles, and James C. Noe, Canoga Park, both of Calif., assignors to The Garrett Corporation, Los Angeles, Calif.

Filed Jul. 25, 1980, Ser. No. 172,631
Int. Cl.[3] F25D *9/00*
U.S. Cl. 62—402 31 Claims



1. Air cycle heat pump apparatus for selectively providing heating or cooling for an enclosed air space or the like, comprising:

a load heat exchanger connected to recirculation air ducting, the heat exchanger having first, recirculation air passages and second, conditioning air passages in heat exchanging relationship;

a conditioning air circuit including the load heat exchanger, a regenerator at the outlet of the load heat exchanger for initially conditioning inlet ambient air, a turbo-compressor comprising a mechanically coupled turbine and compressor, the compressor serving to drive conditioning air through the circuit and the turbine providing part of the driving power for the compressor, and a plurality of control valves to transfer interconnections within the circuit to select heating or cooling mode operation; and

a primary power source coupled to provide additional power as needed to drive the compressor for operation of the apparatus in a selected mode.

4,347,715

GEAR TYPE COUPLING WITH OVERLOAD PROTECTION

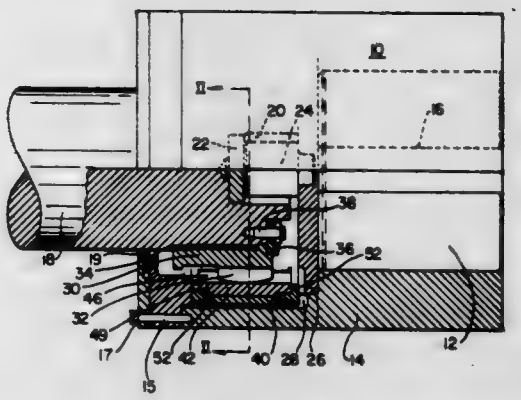
Kenneth K. Carman, Ellicott City, and Stanley G. Webb, Severna Park, both of Md., assignors to Koppers Company, Inc., Pittsburgh, Pa.

Division of Ser. No. 952,628, Oct. 19, 1978, abandoned. This application Dec. 22, 1980, Ser. No. 218,876
Int. Cl.[3] F16D *3/18, 3/56*
U.S. Cl. 464—32 2 Claims

1. In a gear coupling comprising a floating shaft, hubs fixed to said floating shaft at each end thereof, said hubs having a plurality of outwardly extending gear teeth, and sleeve means having an inner axial bore operably connecting each of said hubs to a driving shaft and a driven shaft, respectively, the improvement comprising:

(a) first external intermediate sleeve element having its inner surface fixed to said inner axial bore of each of said sleeve means, said inner surface of said external intermediate sleeve element having shear connection receiving means;

(b) second internal intermediate sleeve element having an inner axial bore and an outer surface, said inner axial bore having a plurality of gear teeth adapted to mesh and coact



with said gear teeth of a respective hub, said outer surface of said internal intermediate sleeve element having shear connection receiving means;

(c) bearing means operably engaging and supporting said first and second intermediate sleeve elements; and

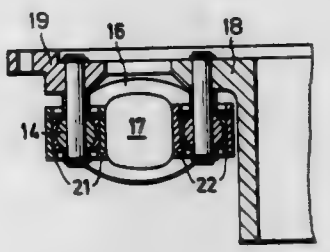
(d) shear connection means received in and retained by said receiving means in said external and internal intermediate sleeve elements, said shear connection means adapted to transmit a predetermined amount of torque between said elements.

4,347,716

FLEXIBLE SHAFT COUPLING

Josef Hackforth, and Jürgen Walter, both of Herne, Fed. Rep. of Germany, assignors to Hackforth GmbH & Co., KG, Herne, Fed. Rep. of Germany

Division of Ser. No. 927,958, Jul. 26, 1978, Pat. No. 4,277,958. This application Sep. 16, 1980, Ser. No. 187,740
Claims priority, application Fed. Rep. of Germany, Jul. 29, 1977, 2834279
Int. Cl.[3] F16D *3/17*
U.S. Cl. 464—83 4 Claims



1. In a flexible shaft coupling comprising first and second rigid coupling parts arranged concentrically one within the other, first and second annular assemblies, means attaching said first annular assembly to said first coupling part, and means attaching said second annular assembly to said second coupling part, said annular assemblies being concentric with a space between them and each of said annular assemblies including a plurality of members, and transmission means interconnecting said members to transmit torque between said rigid coupling parts, said transmission means including a plurality of elastomeric masses and a plurality of groups of radially directed filament loops, each of said groups being embedded in one of said masses and extending round one of said members in said first annular assembly and round one of said members in said

second annular assembly to interconnect said assemblies, said loops including parts between said members and elastic cushion means supporting said parts for displacement inwards into gaps between said members and within said elastomeric members, the improvement comprising means pivotally mounting each of said groups and each of said masses of elastomeric material whereby said groups and said masses can pivot relative to said rigid coupling parts about axes which are parallel to a common axis of said coupling parts, each of said members includes means defining a groove therein, and further comprising a part cylinder in each of said grooves, means defining a cylindrical bearing surface in said groove, and means slidably mounting said part cylinder on said cylindrical bearing surface, said group of loops extending around said part cylinder in said groove whereby said loops can pivot relative to said members about axes relative to said central axis.

4,347,717

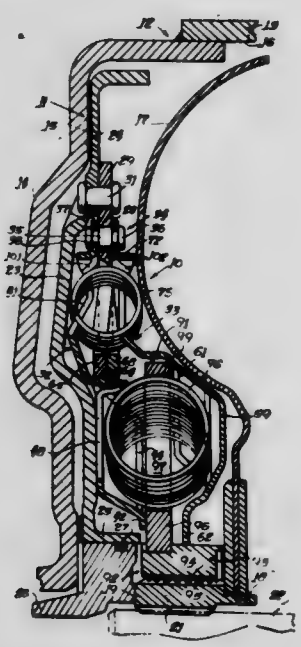
TWO-STAGE TORSIONAL VIBRATION DAMPER

Paul E. Lamarche, Utica, Mich., assignor to Borg-Warner Corporation, Chicago, Ill.

Continuation of Ser. No. 106,597, Dec. 26, 1979, abandoned. This application Jun. 29, 1981, Ser. No. 278,262

Int. Cl.³ F16D *3/66*

U.S. Cl. 464—64 **20 Claims**



1. A two-stage torsional vibration damper assembly for the transmission of torque between driving and driven elements, comprising a piston plate operatively associated with torque input means, at least two drive tangs secured to said piston plate, a hub operatively connected to an output shaft, at least two outer floating means adapted to move in an arcuate path about the hub, at least two inner floating means adapted to move in a second arcuate path about the hub concentric to the first arcuate path, a plurality of outer damper springs movable in said first arcuate path, a plurality of inner damper springs movable in said second arcuate path, said drive tangs having projections extending inward into said first arcuate path, and an intermediate rotatable member having at least two drive members extending into said first arcuate path and at least two drive straps extending into said second arcuate path, said hub having at least two arms extending into said second arcuate path, said outer damper springs being interposed between said outer floating means and said drive members, and said inner damper springs being interposed between said drive straps and said second floating means.

4,347,718

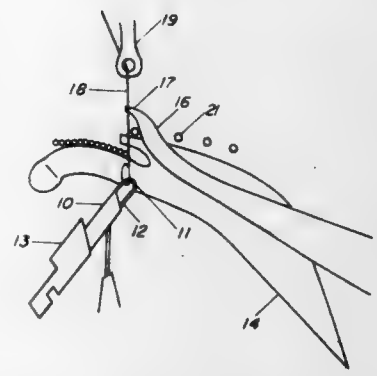
CUTTING ELEMENTS FOR KNITTING MACHINES

William H. Haverland, Conifer, and Albert R. Hiler, Lakewood, both of Colo., assignors to Hospal Medical Corporation, East Brunswick, N.J.

Filed Oct. 3, 1979, Ser. No. 81,576

Int. Cl.³ D04B *23/06, 23/08, 23/10, 23/12*

U.S. Cl. 66—84 A **9 Claims**



1. In a fabric knitting machine having in combination at least one needle reciprocating between a lowest and uppermost position defining a knitting cycle, means for guiding warp thread onto and about the needle with the upward thrust of the needle, means for urging a weft thread into position for knitting the warp thread about the weft thread in response to the reciprocating motion of the needle, and means for advancing the thus knitted fabric from the area of needle reciprocation at the completion of the knitting cycle, the improvement which comprises at least one cutting element for cutting the weft thread of the knitted fabric to a predetermined dimension, the element mounted on the knitting machine in a needle position for movement in unison with, but in spaced relationship to the needle, to cut the weft thread of the previous knitting cycle.

4,347,719

CIRCULAR KNITTING MACHINES FOR KNITTING ARTICLES OF TERRY FABRIC

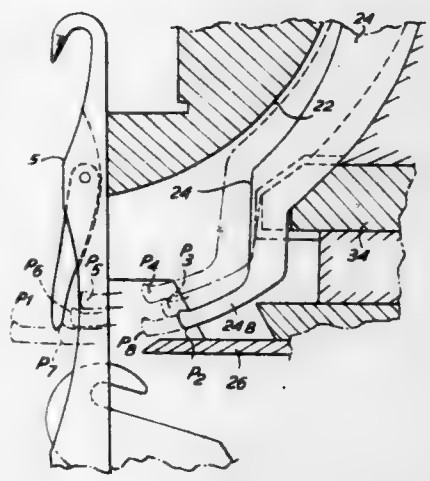
Leopoldo Bertagnoli, Turin, Italy, assignor to Officine Savio S.p.A., Italy

Filed Mar. 6, 1980, Ser. No. 127,877

Claims priority, application Italy, Mar. 13, 1979, 9365 A/79

Int. Cl.³ D04B *35/00, 9/12*

U.S. Cl. 66—91 **3 Claims**



1. An improved double cylinder circular knitting and stocking machine for forming articles of terry fabric of the type having upper and lower cylinders, a ring of arcuate terry sinkers in the upper cylinder, each sinker having a concave edge with a concave contour and a convex edge with a convex contour, the upper cylinder having arcuate seats defining a circular path in one end of the upper cylinder, each of the sinkers being slidably received in a respective one of the arcuate seats for reciprocating angular movement, each of the

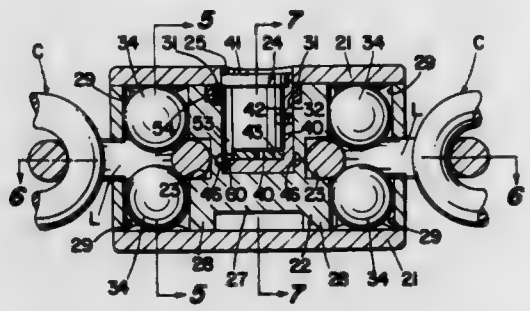
sinkers having a working end for forming a terry loop and a butt on the convex edge for controlling the reciprocating movement of the respective sinker, and a loop withdrawal ring mounted adjacent the one end of the upper cylinder for retaining the terry loop during the withdrawal of the working end therefrom in the centripetal direction, the improvement comprising, in combination therewith, each of the terry sinkers having a partially cut-away concave contour to allow rotation in the plane of the respective sinker during movement thereof in the circular path, and the upper cylinder including cam means for rotating the working end of each of the sinkers before the forward movement of the sinker so as to move the working end away from the withdrawal ring, to pass the working end over the terry loop formed on the previous course, and then to rotate the working end in the reverse direction for forming the next terry loop, and said cam means including cams for imposing both said rotation and the subsequent reverse rotation of the sinker during the completion of the forward movement of the sinker by angular sliding.

4,347,720

CHAIN LOCK

David L. Kenyon, 1727 W. Royalton Rd., Broadview Heights, Ohio 44147

Filed Nov. 13, 1980, Ser. No. 206,568
Int. Cl.³ E05B 73/00
U.S. Cl. 70—14 12 Claims



1. A chain lock which comprises:

an outer sleeve having a hole therethrough and having an indentation in its interior surface;

an inner cylindrical case within the sleeve and capable of rotational movement within the sleeve between a locked position and an unlocked position, the case having a recess at one end for insertion of a link of a chain, the case also having a passage transverse of the recess extending from the recess to an outer end through the outer surface of the case, the indentation in the sleeve being adjacent to the outer end of the passage when the case is in the unlocked position, the case having a cylindrical bore extending into it, the bore being coaxial with the hole in the sleeve when the case is in the locked position;

a locking member movable within the passage, the locking member capable of fitting within the indentation in the sleeve to be clear of the recess when the case is in the unlocked position and capable of partially blocking the recess to retain the chain link in the recess when the case is in the locked position; and

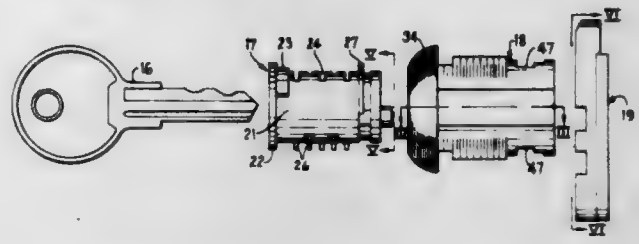
a locking device slidably receivable within the bore in the case and extending through the hole in the sleeve, the locking device having engaging means for retaining the device in the bore to hold the case in the locked position, the locking device slidably removable from the bore to permit the case to be rotated to the unlocked position.

4,347,721

PLUG-TYPE LOCK WITH INCREASED STROKE

Randall W. Borgman, Holland Township, Ottawa County, Mich., assignor to Haworth Mfg., Inc., Holland, Mich.

Filed Jul. 2, 1980, Ser. No. 165,470
Int. Cl.³ E05B 17/04
U.S. Cl. 70—380 4 Claims



1. In a key operated lock device for a closure member, including a shell having a longitudinally extending bore; a cylinder plug supported in said bore for rotational movement relative to said shell about the axis of said plug, stop means for limiting rotation of said plug relative to said shell to a range of substantially 180° bounded by two limit positions which define locked and unlocked positions of said closure member, said plug having means defining a key-receiving slot in one end thereof and having a first generally cylindrical tenon fixed to and projecting axially outwardly from the other end thereof, the axis of said first tenon being spaced radially from said plug axis; a movable locking element coacting between said plug and said shell; and a slide bolt slidably supported on said shell adjacent said other end of said plug for movement in a first direction substantially perpendicular to said plug axis between two end positions which correspond to said locked and unlocked positions of said closure member, said slide bolt having means defining a first slot therein extending substantially transversely of said first direction, said first tenon being cooperable with said first slot during angular displacement of said plug between said limit positions to effect movement of said bolt; the improvement comprising a second generally cylindrical tenon fixed to and projecting axially outwardly from said other end of said plug, the axis of said second tenon being spaced radially from the axis of said plug and said first and second tenons each having a radius which is substantially less than the radius of said plug, the axes of said first and second tenons being angularly spaced from each other about said plug axis by an angle which exceeds 90° but is substantially less than 180°; and means defining a second slot in said slide bolt adjacent but spaced from said first slot and extending substantially transversely of said first direction, said first and second tenons respectively sequentially engaging said first and second slots during angular displacement of said plug and effecting linear displacement of said bolt through a stroke which substantially exceeds twice the radial distance between the axis of either said tenon and the axis of said plug.

4,347,722

METHOD OF MAKING A COOKING VESSEL WHICH HAS SURFACE ORNAMENTATION

John B. Ulam, 134 Mt. Blaine Dr., McMurray, Pa. 15317

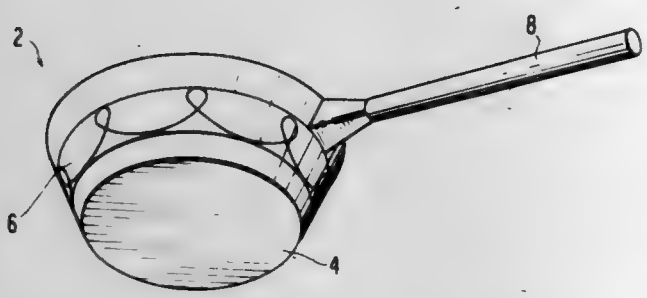
Filed May 19, 1980, Ser. No. 150,822
Int. Cl.³ B21D 51/22
U.S. Cl. 72—63 6 Claims

1. A method of making a cooking vessel which has surface ornamentation, comprising the steps of:

deforming a metal sheet to produce a blank which has one side which has an ornamental pattern formed of areas which are raised or depressed from the principal surface of said one side,

deforming the blank to form therefrom a vessel which has interior and exterior surfaces, said step of deforming the blank being performed by engaging one side of the blank with a forming die and exerting fluid pressure on the opposite side of the blank which has the ornamental pat-

tern with raised or depressed areas, said fluid pressure being sufficient to cause said blank to deform by conforming to the surface of said forming die, said deforming step



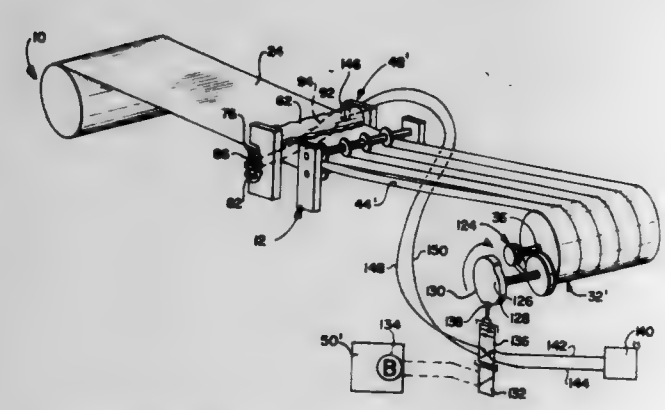
being performed so that the side of the blank which has the ornamental pattern is located on the exterior surface of the vessel.

4,347,723

METHOD AND APPARATUS FOR TENSIONING METALLIC STRIPS ON A SLITTING LINE

Charles R. Bradlee, Sidney, Ohio, assignor to The Monarch Machine Tool Company, Sidney, Ohio

Filed Aug. 22, 1980, Ser. No. 180,534
Int. Cl.³ B21C *47/04, 47/26;* B65H *35/02*
U.S. Cl. 72—130 **20 Claims**



1. In combination with a metal slitting operation including the steps of uncoiling a web having portions of varying thicknesses from a metal coil, slitting said web into a plurality of strips having said portions of varying thicknesses, and recoiling said strips into individual strip coils, the method of tensioning strips comprising the step of:

selectively deforming only thinner ones of said portions of said web intermediate said uncoiling and recoiling steps while leaving thicker ones of said portions undeformed so that a raised pattern is imparted to said thinner ones and strips formed from said deformed thinner ones have an increased effective cross sectional thickness such that coils formed from said strips of said deformed thinner ones during said recoiling step have a larger diameter than if said thinner ones were not so deformed so that the strip coils formed from both said thinner and thicker ones of said portions are of similar diameter and the strips can be recoiled at the same rate, thereby preventing the formation of slack strips during said recoiling step.

4,347,724

METHOD AND KNIVES FOR SHEARING METAL BAR

Birchel S. Brown, Valparaiso; Ted L. Myers, Chesterton, and Holton C. Easter, Munster, all of Ind., assignors to Inland Steel Company, Chicago, Ill.

Filed Jan. 25, 1980, Ser. No. 115,446
Int. Cl.³ B23D *35/00*
U.S. Cl. 72—203 **14 Claims**

10. A method for forming a tapered end on a metal bar extending longitudinally in a downstream direction, said method comprising the steps of:

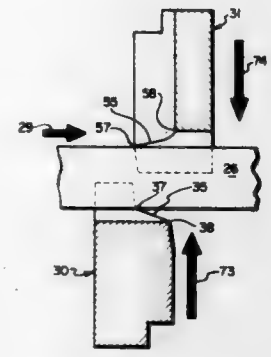
providing a first shear knife having a male section with a tapered shape protruding from said knife in the downstream direction of said bar;

said male section having an upwardly facing peripheral cutting edge extending from a pair of upstream ends to a downstream tip and defining said tapered shape;

said peripheral cutting edge on said male section having a continuous vertical drop from said upstream ends to said downstream tip;

providing a second shear knife having a female section with a tapered shape recessed into said knife longitudinally in said downstream direction of said bar;

said female section comprising means for receiving, in shearing relation, said male section of the first knife;



said female section having a downwardly facing peripheral cutting edge extending from a pair of upstream ends to a downstream tip and defining said tapered shape;

said peripheral cutting edge on said female section having a continuous vertical rise from said upstream ends to said downstream tip;

introducing said metal bar between said shear knives;

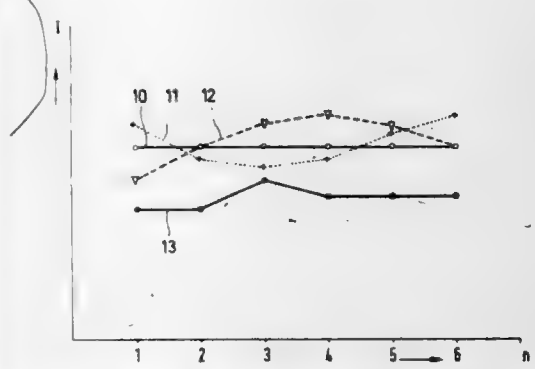
moving at least one of said shear knives toward the other to shear said metal bar, with the shearing action proceeding progressively from the upstream ends to the downstream tips of the peripheral cutting edges on both of said knives; and controlling the shape and angular parameters of said male section to produce a scissors-like cutting action on said metal bar without fracturing said first shear knife or distorting said metal bar and with a total shearing force substantially no greater than that required to shear a flat end on said bar.

4,347,725

ROLLING BLOCKS

Werner Demny, Düsseldorf, Fed. Rep. of Germany, assignor to Friedrich Kocks GmbH & Co., Hilden, Fed. Rep. of Germany

Filed Mar. 17, 1980, Ser. No. 131,058
Claims priority, application Fed. Rep. of Germany, Apr. 2, 1979, 2913192
Int. Cl.³ B21B *31/08, 1/18, 1/00*
U.S. Cl. 72—234 **6 Claims**



1. A rolling block for the rolling of bars, rods, or wire,

having a small number of finishing sizing passes at the delivery end which shape the finished cross section with a small amount of reduction, and a larger number of working sizing passes at the entry end each of which effects a relatively large reduction in the cross section, the rolls of at least the working sizing passes being driven by a common distributor gear assembly in which a fixed transmission ratio from working sizing pass to working sizing pass is provided, the fixed transmission ratios between the adjacent working sizing passes being of differing magnitudes such that positive roll speed ratios from sizing pass to sizing pass of said working sizing pass at the entry end are provided.

4,347,726

METHOD AND DEVICE FOR BENDING SHEET-METAL SECTIONS

Gustav Näslund, Älvsbyn, Sweden, assignor to Groko Maskin AB, Lulea, Sweden

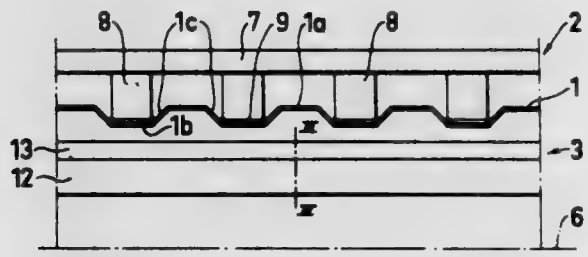
PCT No. PCT/SE79/00227, § 371 Date Jul. 3, 1980, § 102(e) Date Jul. 3, 1980, PCT Pub. No. WO80/00932, PCT Pub. Date May 15, 1980

PCT Filed Nov. 6, 1979, Ser. No. 198,943

Claims priority, application Sweden, Nov. 8, 1978, 7811538

Int. Cl.³ B21D *37/10*

U.S. Cl. 72—385 **9 Claims**



1. A method for bending a sheet-metal channel section having a bottom wall from one side of which lateral side walls extend, said method comprising suppoting a portion of said one side of the bottom wall only along interspaced mutually parallel lines of support extending transversely across the bottom wall for substantially its full width and holding the channel section against displacement from said lines only in a direction right angularly away from said one side and with said portion spanned by said lines free to move in at least one longitudinal direction of the channel, pressing only on the bottom wall's other side along a line extending substantially throughout the bottom wall's width and between said parallel lines and in addition pressing outwardly on localized portions of said side walls, which portions are in a plane normal to said one side and between said parallel lines of support, said pressings bending said portion of the bottom wall in the direction in which said lateral side walls extend and bending said portions of the side walls laterally outwardly, so as to cause the channel section to bend.

4,347,727

PROGRAMMABLE UPWARD-STROKE INSERT MECHANISM FOR BENDING BRAKES AND METHOD OF USE

Barry J. Galiger, 10915 Westgate Dr., Overland Park, Kans. 66210

Filed Jul. 28, 1980, Ser. No. 172,698

Int. Cl.³ B21D *7/06*

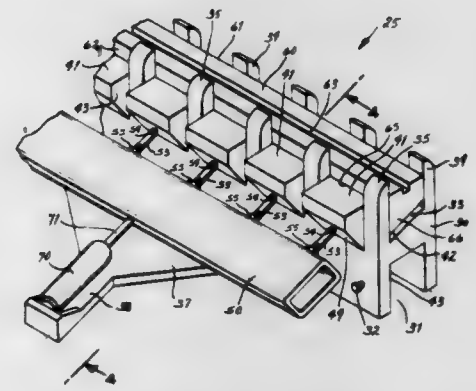
U.S. Cl. 72—389 **12 Claims**

1. A method of press brake bending a workpiece of ductile material, comprising the steps of

positioning the workpiece substantially horizontally between the upper downward-acting ram of a press brake having an elongated upper die and a lower upward-acting die holder inserted above and supported by the press bed,

lowering the upper ram and continuing until the upper die substantially contacts the workpiece, and

applying an upward camming force between the bed and the



lower die-holder and transversely thereto and by such camming force driving the die-holder upward,

whereby a die in such die-holder mating with such upper die will bend the sheet in an upward forming stroke.

4,347,728

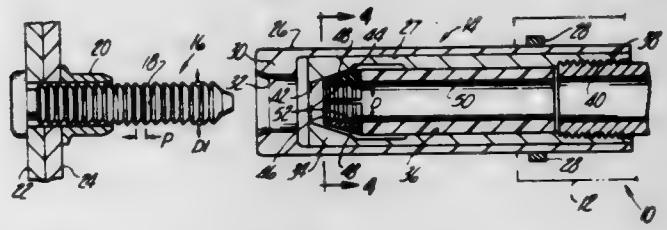
APPARATUS AND SYSTEM FOR SETTING FASTENERS

Walter J. Smith, Waco, Tex., assignor to Huck Manufacturing Company, Irvine, Calif.

Continuation of Ser. No. 43,742, May 30, 1979, abandoned, which is a continuation-in-part of Ser. No. 899,591, Apr. 24, 1978, Pat. No. 4,208,943. This application Oct. 9, 1980, Ser. No. 195,627

Int. Cl.³ B21J *15/34*

U.S. Cl. 72—391 **18 Claims**



1. Apparatus for applying a fastener which includes a pin member having a head and a shank and a plurality of grooves therein and a tubular member adapted to be located over the shank of the pin member and swaged into some of the grooves, said apparatus comprising a generally tubularly shaped anvil member having a swaging aperture through a forward portion thereof for swaging the tubular member to the pin member, a generally tubular collet member slidably located within said anvil member and having an axial bore terminating at its forward end in a tapered bore portion, a plurality of chuck jaws defining a frusto conical outer surface adapted to generally matably fit within said tapered bore portion of said collet and each having an inner surface with a plurality of teeth thereon adapted to grip others of the grooves of the pin member, a tubular sleeve member slidably disposed in said axial bore including elastomeric means for resiliently fixedly securing said chuck jaws to a forward end of said tubular sleeve for resilient, radial movement between open and closed positions.

4,347,729

HAND RIVETER

Kiyoshi Mitani, No. 3-1-13, Minamikosakai-cho, Yao-shi, Osaka-fu, Japan

Filed Nov. 25, 1980, Ser. No. 210,243

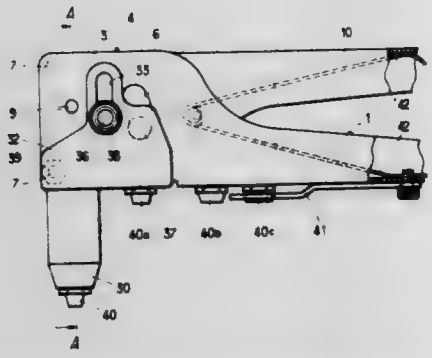
Claims priority, application Japan, Jul. 17, 1980, 55-101632[U]

Int. Cl.³ B21J *15/34*

U.S. Cl. 72—391 **7 Claims**

1. A hand riveter comprising a frame main body having a

head opened at least at its upper, lower and front portions to provide opposite side walls, a lever turnably supported by a pivot on the side walls, a jaw case support member turnably mounted on the pivot and having a jaw case pivotably supported thereon, and a jaw case housing supported by the pivot upwardly and downwardly turnably, the frame main body being formed in at least one of the side walls with an opening positioned around the pivot for passing therethrough a pin for locking the jaw case support member in an adjustable position, the lever being formed around the pivot with a slot for permitting turn of the jaw case support member and with a hole for



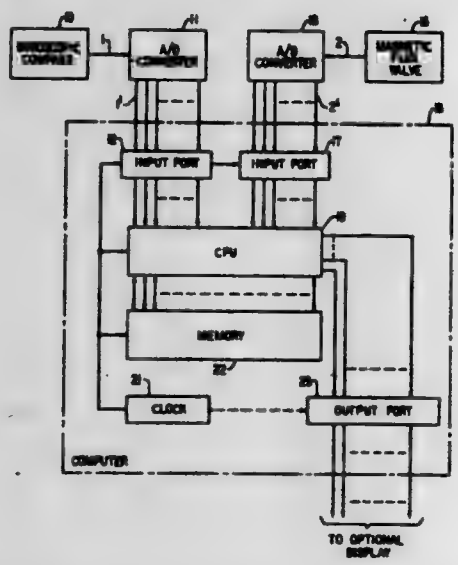
passing the locking pin therethrough, the jaw case support member being formed with locking pin bores arranged around the pivot at least at two locations angularly displaced from each other about the pivot approximately by 90 degrees, the jaw case support member being turnably attached to the lever by a jaw case support pin inserted through the slot, the locking pin being removably inserted through the opening in the frame main body, the hole in the lever and either one of the bores in the jaw case support member, the jaw case housing having the jaw case fitted therein and attached to the frame head fixedly but angularly shiftably to a vertical position or a horizontal position.

4,347,730

METHOD AND APPARATUS FOR CALIBRATING GYROSCOPICALLY-STABILIZED, MAGNETICALLY-SLAVED HEADING REFERENCE SYSTEM

Matthew J. Fisher, Eatontown, N.J., and William J. Gregory, Jr., Pelham, N.H., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation-in-part of Ser. No. 5,255, Jan. 22, 1979, abandoned. This application Feb. 19, 1980, Ser. No. 122,780
Int. Cl.³ G01C *17/38*
U.S. Cl. 73—1 E **22 Claims**



1. Apparatus for compensating for errors in the heading output signal of a magnetic azimuth detector mounted in an aircraft, comprising:

inertial heading reference means for providing a heading reference signal in accordance with the heading of said aircraft,

heading compensation means responsive to said heading output signal and said heading reference signal for compensating said heading output signal for said errors in accordance with the differences between said heading output signal and said heading reference signal at a plurality of predetermined headings of said aircraft, and

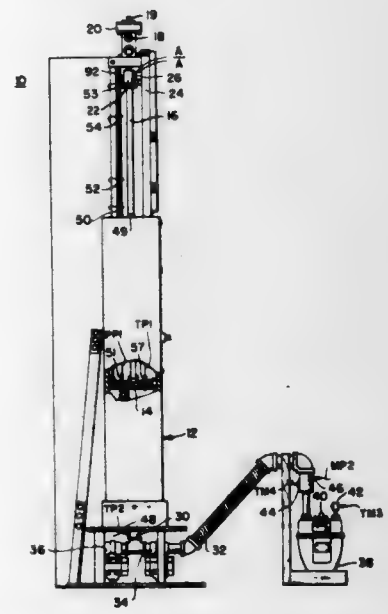
drift compensation means for compensating said heading reference signal for drift of said inertial heading reference means with respect to said plurality of predetermined headings, thereby providing a compensated heading output signal compensated for said errors.

4,347,731

CONTROL APPARATUS FOR METER PROVER

Harry W. Fisher, and Eugene B. Perrine, both of Pittsburgh, Pa., assignors to Rockwell International Corporation, Pittsburgh, Pa.

Filed Mar. 28, 1980, Ser. No. 136,513
Int. Cl.³ G01F *25/00*
U.S. Cl. 73—3 **5 Claims**



1. Apparatus for calibrating a fluid flow meter under test, said apparatus comprising:

(a) a housing of known volume having an opening;

(b) means for directing a known volume of fluid through said housing;

(c) conduit means coupled to said opening for transmitting fluid between said housing and the fluid flow meter under test and for exhausting fluid from said housing;

(d) drive means energizable for disposing said directing means in a first direction whereby fluid is driven from said housing through said conduit means, and energizable for disposing said directing means in a second direction opposite to the first direction, whereby fluid is drawn into said housing through said opening;

(e) first and second distinct valves each independently actuatable between open and closed positions, said first valve associated with said conduit means to control the passage of fluid between said housing and the fluid meter under test, said second valve associated with said conduit means to permit the exhaust of fluid from said housing; and

(f) control means operative in a first mode for actuating said drive means for disposing said directing means in its first direction while actuating said first valve to its open position and said second valve to its closed position, operative in a second mode for actuating said drive means for disposing said directing means in its second direction while actuating said second valve to its open position to permit

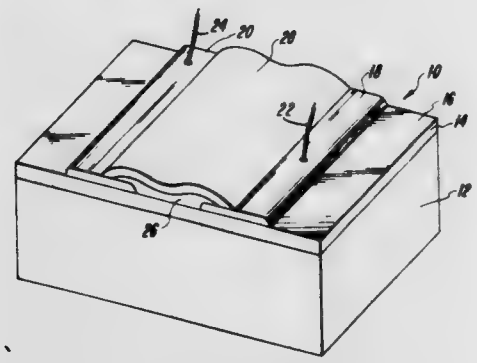
the exhaust of fluid from said housing and said first valve to its closed position, and operative in a third mode wherein each of said first and second valves is disposed to its closed position and said directing means is actuated to increase the pressure within said housing and said conduit means to conduct a leak test.

4,347,732

GAS MONITORING APPARATUS

David J. Leary, 2832 Eagle Dr., Ft. Collins, Colo. 80526

Filed Aug. 18, 1980, Ser. No. 179,218
Int. Cl.[3] G01N *27/12*
U.S. Cl. 73—23 8 Claims



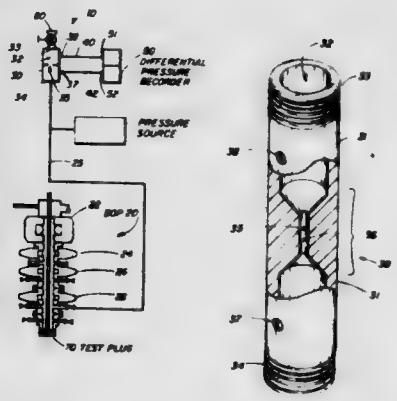
1. Gas monitoring apparatus comprising:
a support which includes an electrically insulating surface;
a pair of electrodes spaced apart on said surface;
a sensor disposed on said surface in a position bridging said electrodes, said sensor being composed of a material which exhibits a change in electrical conductivity in response to exposure of said material to a gas to be sensed;
and a molecular sieve integrally overlying said sensor on the side thereof opposite said surface, said sieve being composed of a porous solid material and having a discrete pore size no larger than the molecular size of said gas to be screened.

4,347,733

BLOWOUT PREVENTOR TEST SYSTEM

Jack A. Crain, 107 Fabiola, Lafayette, La. 70508

Filed Oct. 3, 1980, Ser. No. 193,549
Int. Cl.[3] G01M *3/28*
U.S. Cl. 73—40.5 R 9 Claims



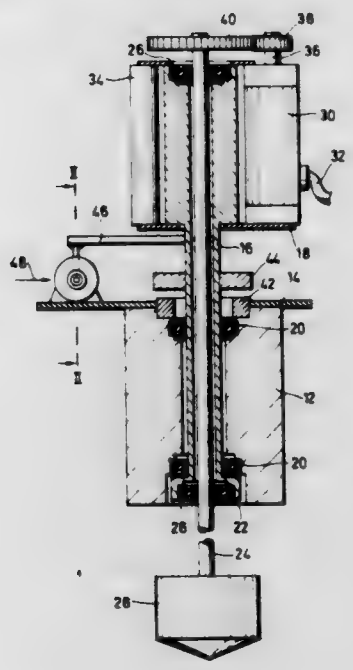
1. A testing apparatus for a blowout preventor comprising:
a. a test nipple having cylindrical wall defining therewithin a flow conveying bore;
b. bore constriction means placed at the central portion of said bore for restricting flow through said bore;
c. a pair of openings provided in said nipple for porting said nipple respectively on each side of said orifice;
d. instrumentation means for connecting one end portion of said nipple to a blowout preventor;
e. valve means at the opposite end portion of said nipple for releasing pressure from said nipple; and
f. a pair of instrumentation lines connected respectively to said pair of openings, the opposite end portion of each of said respective instrumentation lines being connected to a differential pressure recorder.

4,347,734

ROTARY VISCOMETER

Werner Heinz, Dabringhauser Strasse 72, Koeln, Fed. Rep. of Germany

Filed Jun. 25, 1980, Ser. No. 162,945
Claims priority, application Fed. Rep. of Germany, Jun. 27, 1979, 2925904
Int. Cl.[3] G01N *11/14*
U.S. Cl. 73—59 14 Claims



1. A rotary viscometer comprising a variable speed electric drive motor having a rotor and a stator, said variable speed drive motor also including a speed indicator such as a tachogenerator or a similar device, a measuring shaft driven by said motor, a measuring member at one end of said measuring shaft for immersion in a medium to be measured, said motor stator being rotatably mounted on a base block by means of a support and subjected to the return force of a spring, the rotary deflection of said stator from a rest position being measurable over a short path, characterized in that the force path between said motor and measuring shaft includes at least one pair of exchangeable gears or toothed belts, and one of a plurality of springs having different characteristics is selectively insertable between said motor support and said base block and further characterized in that said support is part of a hollow shaft and the measuring shaft extends through and is mounted in said hollow shaft.

4,347,735

PROCESS FOR MONITORING SOLVENT CONTENT OF GREEN CERAMIC SHEET, AND APPARATUS THEREFOR

Kamalesh S. Desai, Wappingers Falls, and George E. Melvin, Poughkeepsie, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 15, 1980, Ser. No. 216,044
Int. Cl.[3] G01N *3/20, 33/38*
U.S. Cl. 73—73 9 Claims

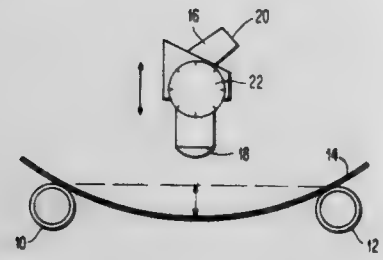
1. A process for determining the solvent content of a ceramic green sheet containing particulate ceramic material, an organic binder resin, and a solvent that interacts with the resin comprising,

partially supporting a ceramic green sheet in a manner that a portion of the sheet is unsupported and free to sag,

measuring the rate of sag of said portion of ceramic green sheet,

comparing the rate of sag to a correlation of rate of sag versus solvent content for similar ceramic green sheets to determine solvent concentration.

6. An apparatus for determining the solvent content of a ceramic green sheet containing particulate ceramic material, an organic binder resin, and a solvent that interacts with the resin comprising,



a means to support a ceramic green sheet in a manner that at least a portion of the sheet is free to sag under the influence of gravity,

a means to determine the distance of sag of the unsupported portion of said ceramic green sheet over a timed interval and

a correlation for the ceramic green sheet to be tested of rate of sag versus solvent content,

the solvent content determined from a comparison of the measured distance of sag over a predetermined time interval to the rate of sag of said correlation.

4,347,736

CONTINUOUS BOREHOLE-LOGGING METHOD

Ulmas D. Mamadzhanov, kvartal Ts-1, dom 19, kv. 25; Vitold M. Bakhir, proezd Gaidara, 7a, kv. 17; Stanislav A. Alekhin, Chilan zar, kvartal 24, dom 53, kv. 89, and Tatyana M. Bakhir, proezd Gaidara, 7a, kv. 17, all of Tashkent, U.S.S.R.

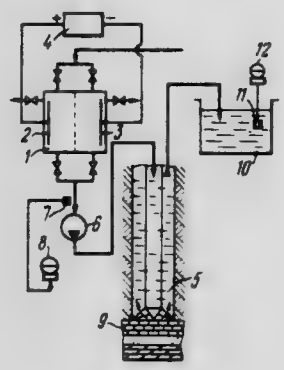
PCT No. PCT/SU79/00118, § 371 Date Nov. 27, 1980, § 102(e) Date Nov. 25, 1980, PCT Pub. No. WO80/02053, PCT Pub. Date Oct. 2, 1980

PCT Filed Nov. 28, 1979, Ser. No. 224,551

Claims priority, application U.S.S.R., Mar. 26, 1979, 2736516

Int. Cl.³ E21B *49/00*

U.S. Cl. 73—155 **1 Claim**



1. A method of continuously logging a borehole in the course of drilling with the use of a drilling mud, characterized in that it includes subjecting the drilling mud fed into the borehole to unipolar electric treatment, while measuring at the same time the value of the oxidation-reduction potential of the drilling mud, and maintaining this value substantially constant at a given magnitude; continuously measuring the value of the oxidation-reduction potential of the drilling mud returning from the borehole, comparing the last-mentioned value with the given value of the oxidation-reduction potential of the drilling mud fed into the borehole, and using the difference between the two values for determining for a given moment the mineralogic composition of the rock adjacent to the bottom of the hole, by comparing this difference with the known in advance normal oxidation-reduction potentials of minerals.

4,347,737

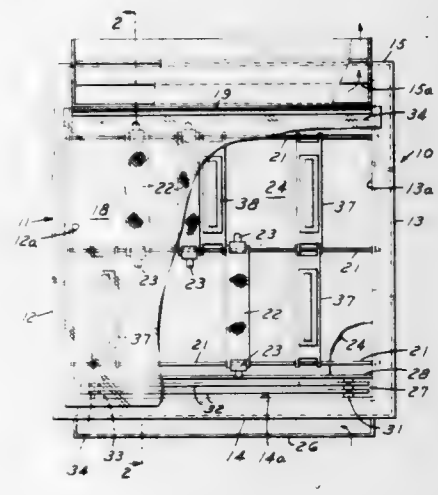
HIGH TEMPERATURE OUTDOOR WEATHERING CHAMBER

Kenneth A. Beach, Canton, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Mar. 31, 1981, Ser. No. 249,525

Int. Cl.³ G01N *25/00*

U.S. Cl. 73—159 **5 Claims**



1. A high temperature outdoor weathering chamber approximating the passenger compartment of an automobile body, comprising:

a box open at the top and having insulated side and end walls;

the top of the box having a hinged closure of standard automobile window glass;

a sample rack positioned within the box below the glass to support samples for exposure to natural sunlight;

an aluminum heat shield positioned below the sample rack to control the distribution of air through the box and to provide a heat sink;

an air intake slot extending substantially across the width of the box at the base of one end wall;

strip heater means mounted within the box contiguous to said one end wall and between the air intake slot and the heat shield;

partition means for channeling airflow from the air intake slot through the strip heater means;

the air then flowing beneath the heat shield to an opening at one end of the latter in communication with an exhaust air outlet located in the opposite end wall of the box above the sample rack level;

the airflow through the box being solely by convection;

a thermocouple mounted on the sample rack adapted to be coupled to a controller means to control the temperature input of the strip heater means.

4,347,738

OCEANOGRAPHIC TRANSDUCER

Edward L. Sanderson, Panama City, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 6, 1968, Ser. No. 758,157

Int. Cl.³ G01W *1/00*

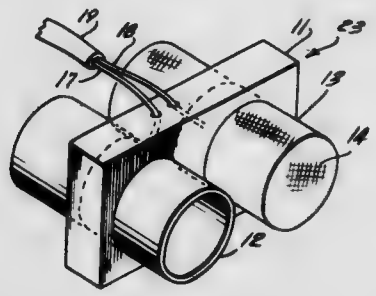
U.S. Cl. 73—170 A **10 Claims**

1. A transducer for producing an electrical signal indicative of and proportional to the current flowing within a predetermined fluid comprising:

a first electrode disposed within said predetermined fluid so as to be in contact with the current flowing therein and

having a surface which produces a galvanic action when disposed in contact with said predetermined fluid;

a second electrode of the same material as said first electrode spatially disposed from said first electrode and having a surface for contact with said predetermined fluid when immersed therein;



a fluid permeable means enclosing said second electrode in such manner as to permit the surface thereof to be contacted by said predetermined fluid while being isolated from the current thereof; and

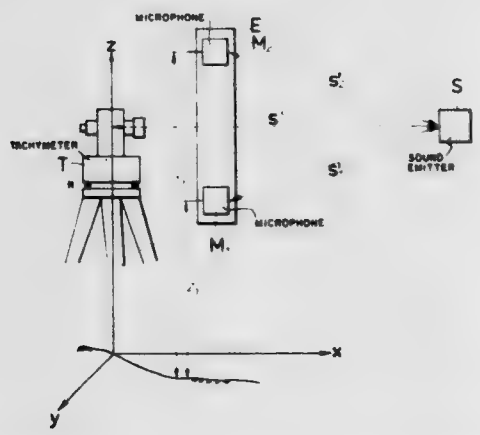
means connected to said first electrode, to said second electrode enclosing means, and effectively to said second electrode for the supporting thereof in a predetermined geometrical configuration.

4,347,739

MEASURING EQUIPMENT FOR THE DETERMINATION OF TERRESTRIAL REFRACTION

Horst Stegmann; Wolfgang Meyl, and Peter Hentschel, all of Dresden, German Democratic Rep., assignors to Jenoptik Jena GmbH, Jena, German Democratic Rep.

Filed May 27, 1980, Ser. No. 153,344
Int. Cl.³ G01W *1/00*
U.S. Cl. 73—170 R **13 Claims**



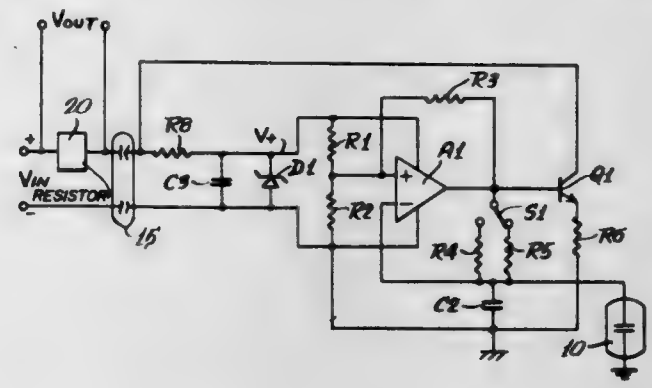
1. A measuring system for determining terrestrial refraction, comprising a geodetic measuring instrument, a device for measuring the difference of travel time of sound waves, said device for measuring the difference of travel time of sound waves comprising a sound emitter adapted to be positioned at a location remote from said measuring instrument to direct sound toward said instrument and a pair of sound receivers positioned to receive sound from said emitter along two different paths that are spaced apart at said measuring instrument for determining the difference of travel times of the sound waves, and a calculator at said measuring instrument for determining said refraction from said difference of travel time.

4,347,740

CAPACITIVE LEVEL SENSING DEVICE

Lawrence B. Townsend, Downers Grove, Ill., assignor to Magnetrol International, Incorporated, Downers Grove, Ill.

Filed Nov. 13, 1979, Ser. No. 93,392
Int. Cl.³ G01F *23/26*; G01R *27/26*
U.S. Cl. 73—304 C **3 Claims**



1. A capacitance sensing circuit comprising:

a voltage comparator with two inputs and an output, said output having either a high or a low state depending on the relative value of signals at said inputs;

a reference signal source connected with one of said inputs;

an unknown capacitor connected with the other of said inputs;

a resistor connected between said output and said other input, said capacitor charging and discharging through said resistor to develop a signal which causes said comparator output to change state and develop an output signal having a period which depends on the capacitance of said unknown capacitor;

a transistor having a collector connected to the output of said comparator; and

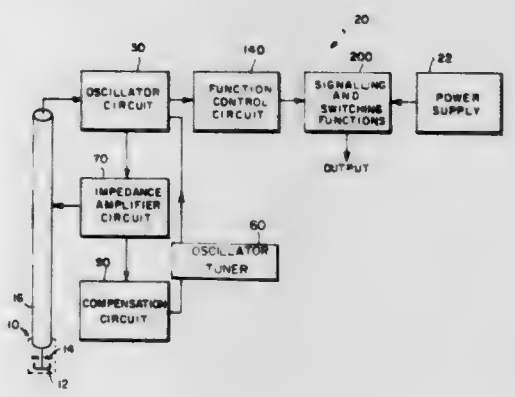
a current sensor connected to said collector so that a signal having the same period as the output signal is developed across said current sensor.

4,347,741

CONTROL SYSTEM FOR A CAPACITIVE LEVEL SENSOR

Wolfgang Geiger, Greenwood, Ind., assignor to Endress & Hauser, Inc., Greenwood, Ind.

Filed Jul. 17, 1980, Ser. No. 169,835
Int. Cl.³ G01F *23/26*; H03J *1/02*
U.S. Cl. 73—304 C **13 Claims**



1. In a control system for a capacitive level sensor of the type which includes a probe having a sensing element arranged therein to establish a capacitance between the sensing element and a grounded conductive member which changes in response to the presence of a material, a shielding element interposed between the sensing element and the conductive member, and a first circuit for applying generally the same electrical potential to both the sensing element and the shielding element

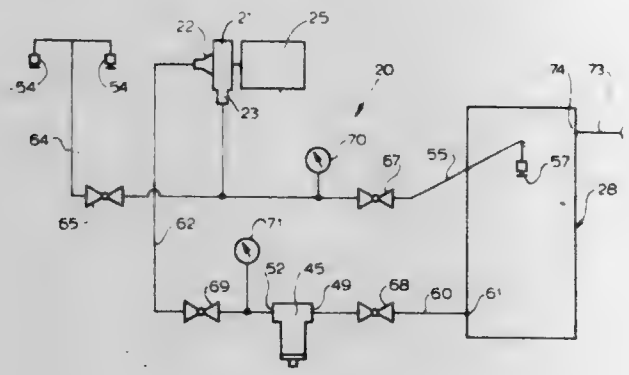
to establish an electrically neutral field between the sensing element and the conductive member and thereby reduce the effect of a conductive buildup of material on the probe within a limited range of conductivity, the improvement which comprises a means for sensing an electrical characteristic of the shielding element which is related to the conductivity of the buildup of material on the probe and a second circuit electrically connecting the sensing means to the first circuit for automatically adjusting the sensitivity of the first circuit in response to changes in the electrical characteristic to compensate for buildup of the material having a conductivity both within and outside the limited range of conductivity.

4,347,742

EVALUATING SPRAYABILITY

Joseph E. Lohr, Jr., Hoffman Estates, Ill., assignor to Stepan Chemical Company, Northfield, Ill.

Filed Sep. 29, 1980, Ser. No. 191,901
Int. Cl.³ G01N *33/00*
U.S. Cl. 73—432 SD **15 Claims**



1. A test apparatus for duplicating on a miniature scale the behavior of a commercial scale spray apparatus to evaluate behavior of specific sprayable systems under generally controlled conditions, said apparatus comprising:

(A) pump means for pumping a sprayable fluid through said test apparatus having a generally uniform volumetric output of fluid at a predetermined fluid output pressure, said pump means having pump input and output means,

(B) variable drive means associated with said pump means for varying the volumetric output of fluid from said pump,

(C) reservoir means having an elongated interior configuration and having reservoirs inlet and outlet means, said outlet means being located in a gravitationally lowermost region of said reservoir means,

(D) orifice means associated with said reservoir inlet means and adapted to discharge generally into the interior gravitationally bottom region of said reservoir means,

(E) filter means for separating particulate material over a predetermined maximum particle size from a fluid past therethrough, said filter means having filter input and output means,

(F) nozzle means for spraying a predetermined volume of said pumped sprayable fluid,

(G) first tube means interconnecting said pump means with said orifice means,

(H) second tube means interconnecting said reservoir outlet means with said filter input means,

(I) third tube means interconnecting said filter output means with said pump input means,

(J) fourth tube means interconnecting a predetermined location in said first tube means with said nozzle means,

(K) first pressure sensing means associated with said first tube means for measuring fluid pressure therein,

(L) second pressure sensing means associated with said filter means for measuring fluid pressure in the region of said filter output means,

(M) means for introducing a fluid into said reservoir,

(N) first valve means located in said fourth tube means for controlling flow through said fourth tube means,

(O) second valve means located in said first tube means between said predetermined location and said orifice means for regulating flow through said first tube means,

(P) the distance between said reservoir inlet means and outlet means in said reservoir means being not more than about 50 centimeters,

(Q) the aperture of said orifice means being not greater than about 0.5 square centimeters,

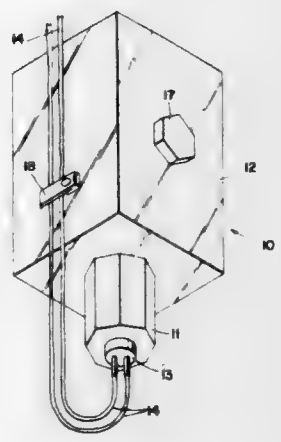
(R) said reservoir means including means for evaluating the contents thereof during operation of said test apparatus.

4,347,743

ACCELEROMETER MOUNTING ASSEMBLY

Frank Rausche, Aurora, and Garland E. Likins, Jr., Newbury, both of Ohio, assignors to Pile Dynamics, Inc., Cleveland Heights, Ohio

Filed Sep. 18, 1980, Ser. No. 188,362
Int. Cl.³ G01P *15/09*
U.S. Cl. 73—654 **10 Claims**



1. An accelerometer assembly for attachment to a specimen to be monitored for acceleration which comprises:

a mounting block capable of attachment to the specimen, the block formed of a rigid material, the proportion of the modulus of elasticity to the density of the material being less than 15,000,000 psi/lb/in^3; and

an accelerometer mounted to the block, the accelerometer having a natural frequency of greater than 30,000 Hertz.

4,347,744

DIAPHRAGM TYPE DIFFERENTIAL PRESSURE GAUGE WITH OVERPRESSURE RELIEF PROTECTION

Steven O. Buchanan, Michigan City, Ind., assignor to Dwyer Instruments, Inc., Michigan City, Ind.

Filed Sep. 8, 1980, Ser. No. 185,004
Int. Cl.³ G01L *13/02, 19/06*; F16K *13/04*
U.S. Cl. 73—715 **11 Claims**

1. In a differential pressure gauge that includes an annular housing member having a front end and a back end, a front cover secured to the housing member front end in hermetically sealed relation thereto, a back plate secured to the housing member back end, with said housing member and said back plate defining a pressure cavity, a flexible diaphragm clamped between said housing member back end and said back plate and disposed across said pressure cavity and separating same into a high pressure chamber on the front side of said diaphragm and a low pressure chamber on the back side of said diaphragm, and including linear to rotary motion transforming means including a helix journaled in said housing member for rotation about its longitudinal axis, with the helix having an indicator connected thereto disposed adjacent and visible through said front cover, a magnet mounted in said high pressure chamber for producing rotational movement of said helix about its said axis in response to linear movement of the magnet alongside and lengthwise of said helix axis, with said helix axis extending

longitudinally of said housing member, means for connecting said diaphragm to said magnet whereby deflection of the diaphragm under differential pressures in said chambers produces said linear movement of said magnet, said diaphragm having a marginal edging thereabout comprising a continuous sealing bead, with said housing member back end and said back plate respectively defining annular clamping surfaces between which said diaphragm bead is clamped for hermetically sealing said chambers from each other about said diaphragm, which surfaces are coextensive with said bead, and means for separately connecting said high and low pressure chambers to sources of high and low pressure fluids, respectively,

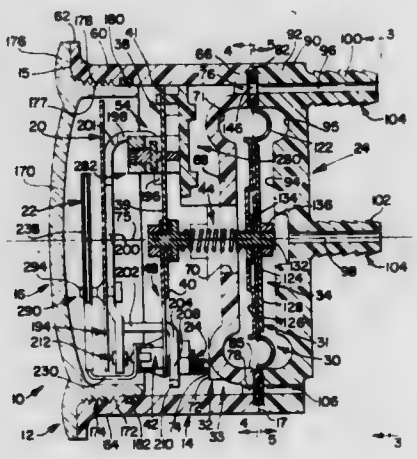
the improvement wherein:

said means for connecting said high pressure chamber to the source of high pressure fluids comprises:

a high pressure passage formed in said housing member and having its inlet end aligned with said diaphragm bead at said clamping surface of said housing member back end and its outlet end communicating with said high pressure chamber,

a high pressure passage formed in said back cover plate and having its inlet end adapted for connection to the source of high pressure fluid and its outlet end aligned with said inlet end of said housing member high pressure passage and said diaphragm bead at said clamping surface of said back plate,

said bead being apertured between and being in sealing relation about said housing member high pressure inlet



end and said back plate high pressure passage outlet end for communicating said back plate high pressure passage to said housing member passage through said bead in hermetically sealed relation to said chambers,

said housing member having formed in same a blowout passage extending longitudinally of said housing member and having its inlet end communicating with said high pressure chamber and its outlet end aligned with said diaphragm bead at said clamping surface of said housing member at a location spaced from said bead aperture along said diaphragm marginal edge,

said back plate having formed in same a blowout passage aligned with said housing member blowout passage and having its inlet end aligned with said housing member blowout passage and said diaphragm bead at said clamping surface of said back plate and its outlet end directed rearwardly of said back plate,

said bead being in sealing relation about said housing member blowout passage outlet end and said back plate blowout passage inlet end and defining therebetween an impervious flangible membrane,

said housing member and back plate high pressure passages and said diaphragm aperture communicating therebetween being similar in effective orifice area,

said housing member and back plate blowout passages each having an effective orifice area that is a predetermined multiple of said effective orifice area of said housing member and back plate high pressure passages and said aperture therefor,

said effective orifice area of said housing member and back plate high pressure passages and said aperture therefor being of rounded opening configuration aligned with said diaphragm bead,

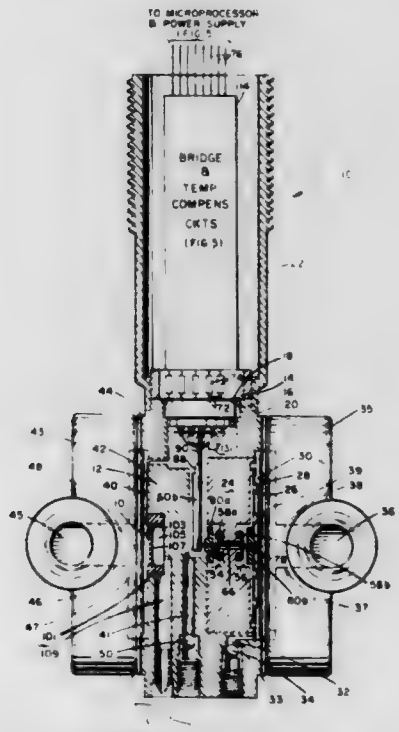
said effective orifice area of said housing member and back plate blowout passages being of elongate opening configuration that extends longitudinally of said bead for orienting same to have said predetermined area multiple as compared to said effective orifice area of said housing member and back plate passages within the confines of the hermetic sealing defined by said bead and said clamping surfaces.

4,347,745

PRESSURE MEASURING APPARATUS

Gurnam Singh, Riverside, Calif., assignor to Bourns Instruments, Inc., Riverside, Calif.

Continuation of Ser. No. 219,418, Dec. 22, 1980, abandoned.
This application Oct. 6, 1981, Ser. No. 309,331
Int. Cl.³ G01L 9/06
U.S. Cl. 73—721 **9 Claims**



1. An apparatus comprising:

a pressure transducer including:

a body having first and second spaced apart sides and a first chamber therebetween;

a first pressure sensing diaphragm connected to and extending across said first chamber to form a fluid tight cover at said first side;

means for respectively applying a fluid at first and second pressures to said first and second sides to cause a resultant differential pressure to be applied across said first diaphragm;

a cantilever beam having first and second ends with said first end being connected to said body between said first and second sides;

a strut element coupling said second end of said beam to said first diaphragm for producing a movement in said beam in response to the differential pressure applied across said first diaphragm;

a first plurality of piezoresistive elements attached to said beam for deflection therewith being responsive to the movement of said beam in response to the differential pressure applied across said first diaphragm for providing a first output signal proportional to said differential pressure;

a second pressure sensing diaphragm disposed within said first chamber and having a front side exposed to the

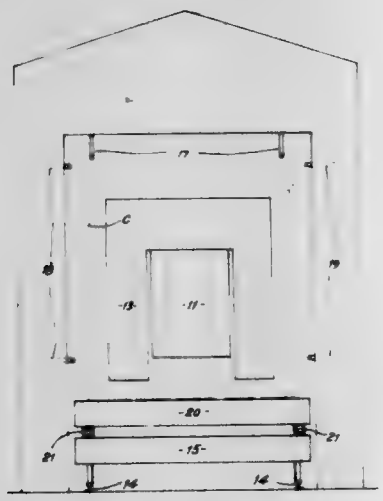
second pressure at said second side and a back side fixedly attached at its periphery to said body to form a second chamber between said back side and said body, said second chamber containing a predetermined reference pressure; and

a second plurality of piezoresistive elements selectively positioned on said front side of said second diaphragm for deflection therewith and being responsive to the differential between the second and reference pressures for providing a second output signal proportional to said second pressure.

4,347,746
TESTING OF SHIPPING CONTAINERS

Kevin R. Waters, 1 Little St., Maroubra, New South Wales, Australia (2035)

Filed Aug. 14, 1979, Ser. No. 66,460
Claims priority, application Australia, Apr. 2, 1978, PD8258
Int. Cl.³ G01L *5/00*; G01M *5/00*
U.S. Cl. 73—789 **7 Claims**



1. Means for testing the load bearing characteristics of a shipping container having doors at at least one end thereof comprising supporting means mounted at one end in a supporting housing for supporting a test load so that the test load and said supporting means can be received in the container through open doors at one end thereof, means for moving the test load supporting means and the container relative to each other in a longitudinal direction for placing the container around the test load, elevating means for elevating the container so that the test load is transferred from said supporting means to the container, support means in said supporting housing for supporting the container in the elevated position when the elevating means are lowered and means for measuring stresses or strains in the container whilst it is under load and in said elevated condition.

4,347,747
SINGLE PHASE FLOW MEASUREMENT

Srinivasan Krishnaswamy, Columbus, Ohio, assignor to Shell Oil Company, Houston, Tex.

Filed Jan. 12, 1981, Ser. No. 224,409
Int. Cl.³ G01F *1/20*; E21B *47/00*
U.S. Cl. 73—861.18 **3 Claims**

1. A method for measuring single phase fluid flow rate in a pipe comprising:

measuring the fluid pressure fluctuations in the pipe at two diametrically opposite positions;

taking the different of said measured pressure fluctuations;

electronically filtering said different to pass only signals above 30 Hz and below 1000 Hz;

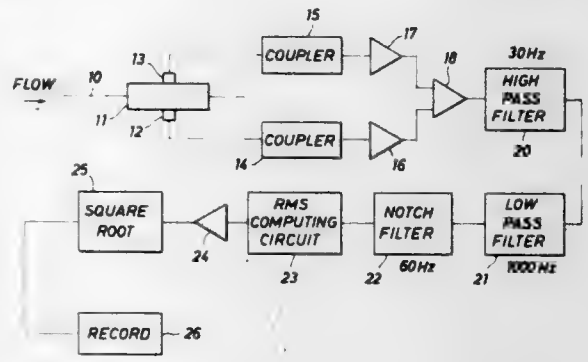
taking the RMS value of the filtered difference in said measured pressure fluctuations; and,

taking the square root of the RMS signal, said square root being proportional to the fluid flow rate.

2. An apparatus for measuring fluid flow in a pipe comprising:

two pressure transducers, said transducers being mounted on said pipe with their sensitive surfaces flush with the inner surface of the pipe;

differential amplifier means, said transducers being coupled to said differential amplifier means to obtain a difference signal;



filter means, said filter means being coupled to said differential amplifier means to attenuate frequencies below 30 Hz and above 1000 Hz;

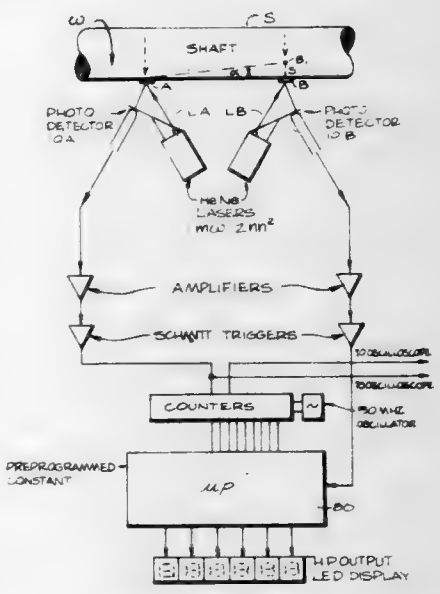
RMS circuit means coupled to said filter means for obtaining the RMS value of the different signal; and,

a square root circuit, said RMS circuit means being coupled to said square root circuit means to obtain the square root of the RMS signal.

4,347,748
TORQUE TRANSDUCER

James G. Pierson, Longueuil, Canada, assignor to Queen's University at Kingston, Kingston, Canada

Filed Mar. 11, 1980, Ser. No. 129,211
Claims priority, application Canada, Mar. 27, 1979, 324262
Int. Cl.³ G01L *3/12*
U.S. Cl. 73—862.34 **19 Claims**



1. Apparatus for measuring torque (or functions derived therefrom or related thereto) transmitted by a shaft driven to rotate and connected to a load comprising:

(a) first and second optically flat, radiation reflecting, surfaces located on the shaft at respective first and second positions displaced from one another axially along the shaft;

(b) means for directing beams of radiation from a suitable source at the reflecting surfaces;

(c) first and second pickup means spaced from the shaft and located to receive the radiation beams reflected by the respective first and second reflecting surfaces during rotation of the shaft and provide respective first and sec-

ond outputs as a result of the radiation beams directed thereat by the reflecting surfaces;

(d) signal processing circuit means associated with said first and second outputs providing an output interrelated with angular twist of the shaft at one of said first and second positions relative to the other, and

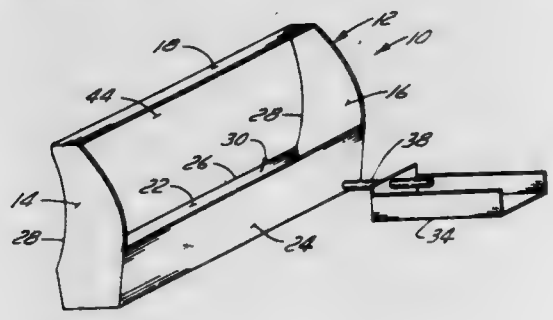
(e) at least one aperture between at least one said first and second reflecting surfaces and the pickup means associated therewith through which the reflected beam passes prior to striking the pickup means.

4,347,749

PRESS ROLLER CONTAMINATION MEASUREMENT

Hans U. Heintze, 1100 Dr. Penfield Ave., Apt. 512, Montreal, Canada (H3A 1A8)

Filed Jan. 26, 1981, Ser. No. 228,189
Int. Cl.³ G01N *1/08*
U.S. Cl. 73—863.21 **8 Claims**



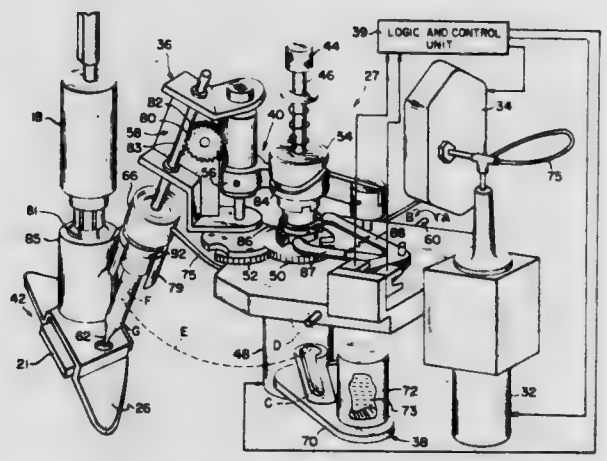
5. Method for the collection of a sample of contaminant from a paper-contacting surface comprising isolating a minor portion of said surface, said portion having a bottom border, moving said contaminant from said portion across said bottom border and collecting said contaminant.

4,347,750

POTENTIOMETRIC METERING APPARATUS

Glenn E. Tersteeg, Honeoye Falls, and Anthony P. DiFulvio, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 16, 1980, Ser. No. 159,561
Int. Cl.³ G01N *1/14, 27/46, 35/06*
U.S. Cl. 73—864.31 **5 Claims**



1. Reference fluid metering apparatus for use with a sample fluid metering device to substantially concurrently deposit a sample fluid onto a first test area and a reference fluid onto a second test area of a generally planar, potentiometric test element supported in a metering station, the reference fluid metering apparatus comprising:

(a) reference fluid supply means supported in a location spaced from the metering station;

(b) dispensing means including a metering tip angularly arranged for receiving reference fluid located in the supply means and for delivering a predetermined quantity of the reference fluid to the second area of the test element, the dispensing means being selectively movable between a at least a position overlying the supply means and a second position in which the metering tip is positioned over the second test area and closely adjacent the first test area of the test element and disposed at an angle to the sample fluid metering device;

(c) drive means for moving the dispensing means between the first and second positions; and

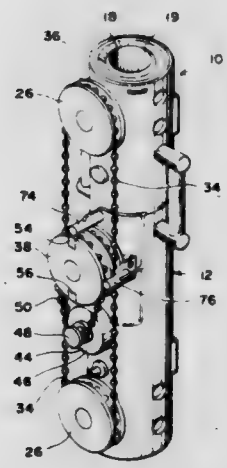
(d) logic and control means for automatically controlling the operations of the sample fluid metering device, dispensing means and drive means to effect the delivery of fluids to the first and second test areas at substantially the same time.

4,347,751

ELECTRIC WATER SAMPLING DEVICE

Shale J. Niskin, 3415 Chase Ave., Miami Beach, Fla. 33140, and Gerald J. Williams, 485 Ridgewood Rd., Dade County, Fla.

Filed Jan. 14, 1981, Ser. No. 225,100
Int. Cl.³ G01N *1/12*
U.S. Cl. 73—864.33 **14 Claims**



1. A water sampler device for collecting a sample of water at a desired depth in a body of water, said water sampler device having an elongated tubular member, valve seat means mounted at each end of said tubular member; substantially spherical valve means mounted on each of said valve means in an initially closed position to prevent contaminated surface waters of said body of water from entering into said tubular member, valve rotating means connected to each of said valve means for consecutively rotating each of said valve means from said closed position to an open position to permit the flow of fluid through said tubular member when said device has arrived at said depth in said body of water and then to a further closed position to contain water in said tubular member, each said valve rotating means including valve pulley means rotatably mounted on the exterior of said tubular member, the improved said valve rotating means comprising:

at least one endless belt mounted over at least one of the two said pulley means;

an electric motor for moving said endless belt;

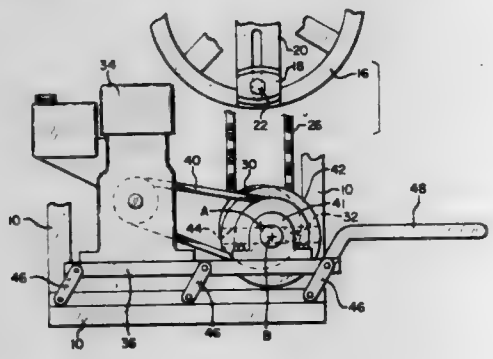
first position changing means for energizing said electric motor to move said valve means from said initially closed position to said open position;

second position changing means for energizing said electric motor to move said valve means from said open position to said further closed position.

4,347,752
APPARATUS FOR CONVERTING ROTARY MOTION TO A RECTILINEAR FORCE

Frederick L. Dehen, P.O. Box 11278, Houston, Tex. 77016

Filed Aug. 18, 1980, Ser. No. 178,836
Int. Cl.³ F16H *21/14, 35/02*
U.S. Cl. 74—84 R 9 Claims



1. Apparatus for converting rotary motion to a rectilinear force, comprising:

(a) drive means for providing a rotary power output having a constant rotational speed;

(b) an eccentrically unbalanced flywheel arranged for being rotatingly driven by said drive means;

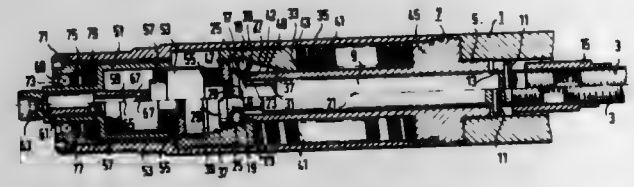
(c) cam mechanism means, interconnecting said drive means and said flywheel, for rotating said flywheel such that for each rotation of said drive means said flywheel first makes a portion of a revolution at a rotational speed which is greater than said constant rotational speed and then completes said revolution at an average rotational speed which is less then said constant rotational speed; and

(d) alignment means associated with said cam mechanism means, for varying the angular position of said flywheel at which said portion of a revolution, at a rotational speed which is greater than said constant rotational speed, begins.

4,347,753
MECHANISM FOR OPERATING A COLLET CHUCK

Reimer Claussen, Altusried, and Liebhard Jung, Nesselwang, both of Fed. Rep. of Germany, assignors to A. Ott GmbH, Kempten, Fed. Rep. of Germany

Continuation of Ser. No. 941,172, Sep. 11, 1978, abandoned. This application Mar. 19, 1980, Ser. No. 131,780
Claims priority, application Fed. Rep. of Germany, Sep. 13, 1977, 2741166
Int. Cl.³ B23B *31/10;* B23C *5/26;* F16H *21/44*
U.S. Cl. 74—110 6 Claims

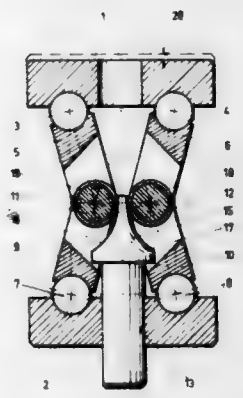


1. A spindle mechanism for operating a collet chuck, comprising an elongated tube member having an axis and a first surface portion on one end of said tube member which forms a first angle of inclination relative to a plane perpendicular to the axis of said tube member and a second surface portion which forms a second angle of inclination relative to the plane perpendicular to the axis of said tube member, said first and second surface portions being serially connected in the direction of the axis of said tube member thereby forming an edge on one end of said tube member which edge extends in the plane perpendicular to the axis of said tube member, an elongated rod member mounted for movement in the direction of the axis of said tube member over a certain path between a release position and a clamp position, one end of said rod member having a conical surface facing said first surface portion on said tube member, a sleeve member mounted for movement in the direction of the axis of said tube member for moving said rod member between said release and said clamp positions, said sleeve member having at least two surface portions each facing said tube and rod members, said at least two surface portions being angularly inclined relative to each other and serially connected in the direction of the axis of said tube member, means for biasing said sleeve member to move said rod member toward said clamp position, and a number of ball members arranged in force transmitting relationship between one of said first and said second surface portions of said tube member, said conical surface of said rod member and one of said at least two surface portions of said sleeve member, said at least two surface portions of said sleeve member forming corresponding angles of inclination relative to the axis of said tube member in the longitudinal cross-section thereof which corresponding angles are selected so that said ball members transfer a larger ratio of the rate of movement of said sleeve member to said rod member when said rod member begins to move away from said release position in response to forces exerted by said ball members on the conical surface of said rod member, and so that said ball members transfer a lesser ratio of the rate of movement of said sleeve member to said rod member after said ball members move over said edge on said tube member and said rod member is urged toward said clamp position to transmit a clamping force to a collet chuck provided at the other end of said rod member in response to forces exerted by said ball members on the conical surface of said rod member, said ball members remaining in force locking engagement with said tube, said rod and said sleeve members over the full path of movement of said rod member.

4,347,754
FORCE AMPLIFIER

Herbert Wehler, Neunkirchen-Salchendorf, Fed. Rep. of Germany, assignor to Optima Spanntechnik GmbH, Siegen, Fed. Rep. of Germany

Filed Mar. 24, 1980, Ser. No. 132,989
Claims priority, application Fed. Rep. of Germany, Apr. 4, 1979, 2913506
Int. Cl.³ F16H *21/44, 25/18*
U.S. Cl. 74—110 5 Claims



1. Force amplifier with a pressure plate and a countersupport plate in spaced apart relation, a spreader bolt axially movably supported in said countersupport plate and extending toward said pressure plate, supporting members arranged between said pressure plate and said countersupport plate, said supporting members are inclined relative to one another, end bolts 3, 4, 7, 8 extending transversely of the longitudinal direction of the force amplifier between said pressure plate and countersupport plate are supported between the ends of said supporting members 5, 6, 9, 10 facing away from one another and said pressure plate 1 and said countersupport plate 2, joints bolts 11, 12 are supported on the ends of said supporting members 5, 6, 9, 10 which face one another with said supporting members 5, 6, 9, 10 bearing against said joint bolts 11, 12,

wherein said spreader bolt has a pair of oppositely facing spreader surfaces thereon located between said pressure plate and countersupport plate with each said spreader surface in contact with a different one of said joint bolts, said spreader surfaces in contact with said joint bolts are concavely shaped, and said concavely shaped spreader surfaces are curved exponentially so that the ratio of the travel distance 28 of said pressure plate 1 to the distance of pressing in said spreader bolt 14 is constant.

4,347,755

WINDOW LIFTER

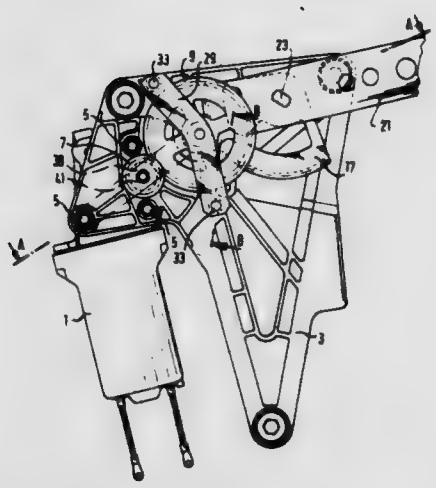
Herbert Becker, Coburg, and Josef Tischler, Lichtenfels, both of Fed. Rep. of Germany, assignors to Metallwerk Max Brose GmbH & Co., Coburg, Fed. Rep. of Germany

Filed Jan. 17, 1980, Ser. No. 113,108

Claims priority, application Fed. Rep. of Germany, Feb. 5, 1979, 2904292

Int. Cl.³ F16H *1/12, 57/04*

U.S. Cl. 74—421 A **6 Claims**



1. Window lifter particularly for use in motor vehicles, comprising a base plate, an electric motor, a window lifting arm supported on said base plate, means in operative engagement with said electric motor and said window lifting arm for transmitting the driving power from said motor to said lifting arm, said means including an axially extending pin having a first end and a second end, a pinion rotatably mounted on said pin intermediate the first and second ends thereof, said pinion having a first end face and a second end face each extending transversely of the axial direction of said pin and facing in opposite directions, a gear having a larger diameter than said pinion and concentrically rotatably mounted on said pin with said pinion, said pinion and gear rigidly interconnected at the second end face of said pinion for rotation together on said pin, the first end of said pin is fixed to said base plate, wherein the improvement comprises that the first end face of said pinion contacts said base plate, a stirrup secured to the second end of said pin and said stirrup extending transversely of the axial direction of said pin laterally outwardly from the diametrically opposite sides of said gear and said stirrup is attached to said base plate laterally outwardly from both of the opposite sides of said gear, said pinion includes a flange formed as a unit with said pinion and forming the first end face of said pinion and said first end face formed by said flange in combination with said base plate forms a lubricant pocket.

4,347,756

TRANSMISSION

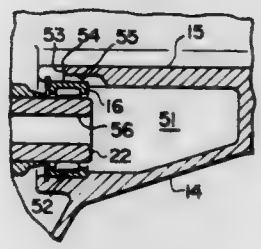
Yoshitaka Sogo, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jul. 30, 1980, Ser. No. 173,750

Claims priority, application Japan, Apr. 3, 1980, 55/45143[U]

Int. Cl.³ F16H *57/04, 7/26*

U.S. Cl. 74—467 **7 Claims**



1. A transmission including an outer housing having a main portion and an elongated portion extending therefrom, input shaft means rotatably connected to said main portion for connecting the transmission to a source of power, output shaft means rotatably secured in said housing for transmitting output torque from an engine, counter shaft means rotatably secured in said housing for drivingly connecting said input shaft means to said output shaft means, said counter shaft means having one end rotatably mounted in at least first bearing means positioned in said elongated portion, said elongated portion having upper and lower sections, said upper section including first trough means for collecting oil transported by said output and counter shaft means and for directing that oil to said lower section, said lower section comprising a second trough means extending at least in part beneath said first trough means so as to collect oil flowing therefrom, said second trough means having an inclined V-shaped upper surface terminating at means defining an opening positioned above said first bearing means, means defining a chamber beneath said second trough means within said lower section in which said first bearing means and one end of said counter shaft means are exposed, said second trough means further including means defining a passageway undercut beneath said V-shaped upper surface leading away from said opening between said first bearing means and said second trough means into said chamber.

4,347,757

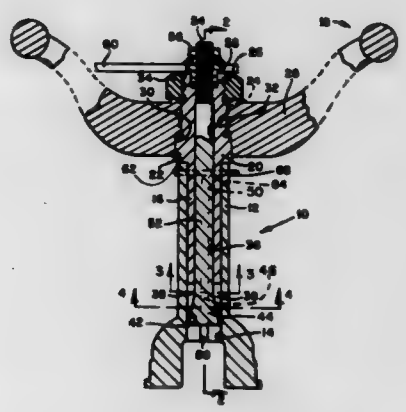
TELESCOPING STEERING SHAFT

Michael D. Martin, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Filed Nov. 10, 1980, Ser. No. 205,532

Int. Cl.³ B62D *1/18*

U.S. Cl. 74—493 **13 Claims**



1. A telescoping steering shaft comprising:

a first elongated shaft defining an axially-extending bore therein, said bore being substantially circular and including an axially-extending keyway therein;

a second elongated circular shaft received for reciprocation in said bore, said second shaft including spaced axially-extending, resilient tangs frictionally engageable with said first shaft;

means engaging said tangs for moving said tangs into frictional engagement with said first shaft;

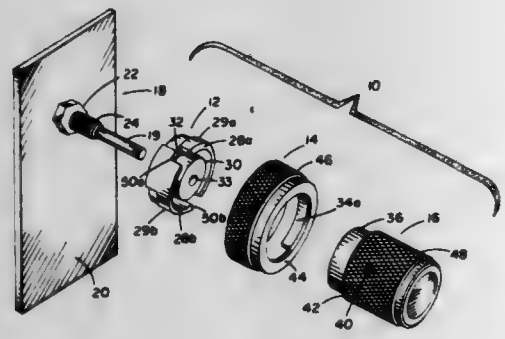
a key extending radially outwardly between said tangs and slidably received in said keyway to couple said shafts for rotation in unison.

4,347,758

MOLDED PLASTIC CONTROL LOCK KNOB

Ronald J. Geil, Vermilion; Richard E. Tinker, Westlake, both of Ohio, and Robert A. Carmo, Placentia, Calif., assignors to Gould Inc., Rolling Meadows, Ill.

Filed Sep. 3, 1980, Ser. No. 183,957
Int. Cl.³ G05G *5/06*
U.S. Cl. 74—531 **9 Claims**



1. A locking device for use with an adjustable rotary control member of the type having a rotary shaft fixedly mounted through a panel, said locking device comprising:

a locking shoe assembly having a means for fixedly attaching said locking shoe assembly to said panel so as to remain rotationally fixed thereto wherein the rotary shaft extends axially through said locking shoe assembly, a circumferential receiving slot, and at least one locking shoe integrally attached at one end to said locking shoe assembly with an internally inclining outer cam surface wherein the distal other end of said locking shoe is free to move radially inward into said receiving when force is applied thereto;

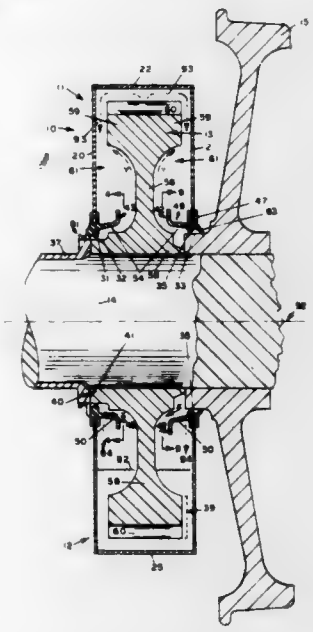
an annular locking knob circumferentially mounted over said locking shoe assembly so that said shaft of said rotary control member is in axial alignment and extends through said locking knob and wherein said locking knob is free to move rotationally about said locking shoe assembly, said locking knob having at least one internally inclining internal cam being dimensioned so as to be closely adjacent with said internally inclining outer cam of said locking shoe when said locking knob is in an unlocked position and adapted to contact said internally inclined outer cam of said locking shoe when said locking knob is rotated into a locked position forcing the free end of said locking shoe into said receiving means; and a control knob mounted on said shaft of said rotary control device, said control knob having an attachment means for attaching said control knob to said shaft of said rotary control member so that rotation of the control knob will rotate said shaft of said rotary control device, a land portion integrally attached to said knob and adapted to fit within said circumferential receiving slot of said locking shoe assembly, an integral retention means for retaining said locking knob in a longitudinal position with respect to said panel and said locking shoe assembly while permitting said locking knob to rotate about said locking shoe assembly so that when said locking knob is in siad unlocked position said control knob is free to rotate and when said locking knob is in said locked position said at least one locking knob internal cam forces said at least one locking shoe into said receiving slot binding said land portion in said receiving slot thus preventing said control knob from being rotated.

4,347,759

GEAR CASE

Richard J. Renk, 768 Terrace La., and George E. Boller, 1312 Randall St., both of Winona, Minn. 55987

Filed Aug. 30, 1979, Ser. No. 71,193
Int. Cl.³ F16H *57/02*
U.S. Cl. 74—606 R **12 Claims**



1. A lubricant retaining device for a gear case having a series of sides adapted to contain a lubricant, said case including matable members having edges which abut one another along a split-line to provide an enclosure, said case members having a complimentary pair of side walls with aligned oppositely facing recesses along adjacent edges which form a shaft receiving opening when said sections are assembled together, said case being adapted to enclose at least a pair of interacting gears which give off a lubricant spray pattern when rotating, and wherein a gear in said case has a rim with a tooth area along the periphery thereof and an arm relatively thinner than said rim extending radially inwardly from said rim to provide an undercut area under said tooth area, and wherein a shaft surface extends through said opening and is rotatable with one of said gears with a spray pattern from said gears being directed toward said shaft surface, said device comprising,

section means adapted to extend inwardly from a point adjacent a side of said case and in overhanging relation with respect to at least a portion of said shaft surface as the latter extends through said opening to the interior of said case, said section means being positioned between said shaft surface and said gear tooth area to extend on both sides of said split-line between said gear case members and beyond the lubricant spray pattern from said gears toward shaft surface to deflect lubricant spray directed toward said shaft surface,

said device being split to provide ends and having means provided on said section means to the interior of said case for urging said ends toward one another, and

means carried by said device for locating said section means relative to said case.

4,347,760

LOCKING DIFFERENTIAL CONTROL SYSTEM

Mark D. Jewett, Livonia, Mich., assignor to Massey-Ferguson, Inc., Detroit, Mich.

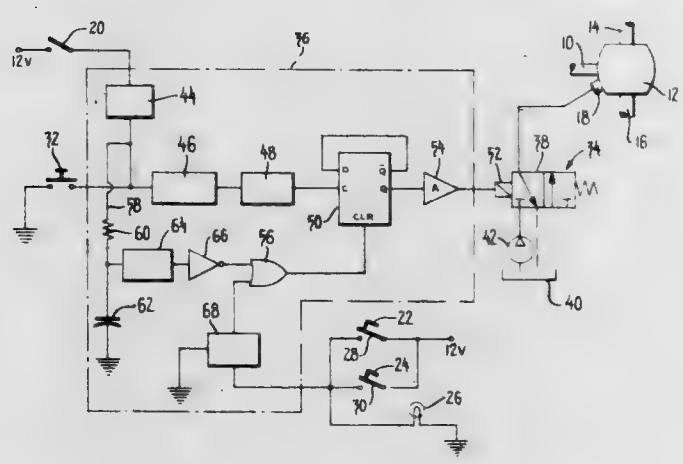
Filed Jan. 25, 1980, Ser. No. 115,469
Int. Cl.³ F16H *1/44*
U.S. Cl. 74—710.5 **13 Claims**

1. A locking differential control system for an operator

controlled vehicle having first and second axle shafts driven through a differential, and locking means capable of selectively locking the differential, the control system being characterized by:

first and second operator controlled signalling means capable of initiating signals in response to actuation by the operator;

a two state device coupled to both the first and the second operator controlled signalling means and capable of alternately switching an output between first and second states



in response to successive actuation signals received from the first operator signalling means, and to switch said output to its first state in response to a signal received from the second operator controlled signalling means; and

an electromechanical transducer operatively interconnected with the locking means and connected to said output of the two state device and capable of causing the differential mechanism to be unlocked when said output is in its first state and to be locked when said output is in its second state.

4,347,761

HYDROMECHANICAL TRANSMISSIONS

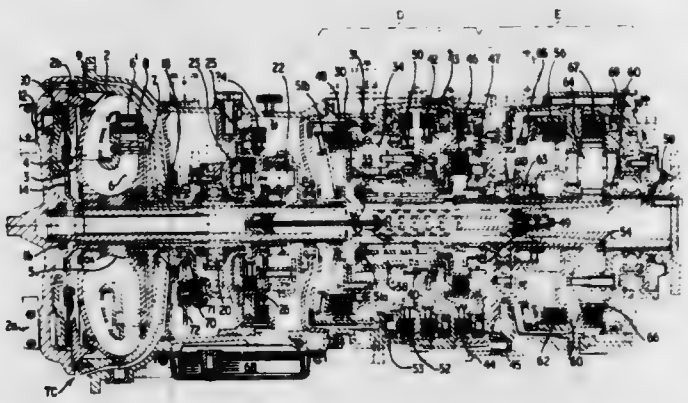
Karl G. Ahlen, Bromma, Sweden, assignor to S.R.M. Hydromekanik Aktiebolag, Stockholm-Vallingby, Sweden

Filed Aug. 15, 1979, Ser. No. 66,860

Claims priority, application United Kingdom, Aug. 18, 1978, 33809/78; Aug. 24, 1978, 34391/78; Nov. 6, 1978, 43313/78; Nov. 6, 1978, 43315/78; Nov. 21, 1978, 45431/78; Nov. 21, 1978, 45432/78

Int. Cl.³ F16H *47/00*; B60K *41/04*

U.S. Cl. 74—732 **17 Claims**



1. A hydromechanical transmission for driving a vehicle, comprising a torque converter component, a complimentary mechanical gear component, a feeder fluid pump system component, a valve system component and an automatic and a manual control means component, wherein:

(A) the torque converter component comprises at least one pump member, at least one guide member and at least one turbine member with a ring of turbine blades following the pump member, a direct drive lock-up clutch and a friction clutch permitting the guide member to be locked against rotation in at least one direction;

(B) the complimentary mechanical gear component is a servo-motor controlled multiple speed mechanical gear of the power shift type having one planet gear carrier and a plurality of planetary gears providing a plurality of different gear ratios;

(C) the feeder fluid pump system component is servo-motor controlled and includes at least one variable capacity pump unit;

(D) the valve system component includes one disc valve arrangement for controlling the flow of feeder fluid through the converter, with the valves thereof adapted to open and close relatively large port areas upon relatively short movements of the valves and a second disc valve arrangement for controlling the flow of feeder fluid to the complimentary mechanical gear servo-motors with the valves thereof adapted to open and close relatively large port areas upon relatively short movements of the valve; and

(E) the automatic control means component includes a microprocessor for receiving input signals relating to "primary speed", "output shaft speed" and "fuel injection settings" and for processing said signals in accordance with preprogrammed memories and according to manual settings so as to produce output signals to determine operation of the torque converter component and the complimentary mechanical gear component.

4,347,762

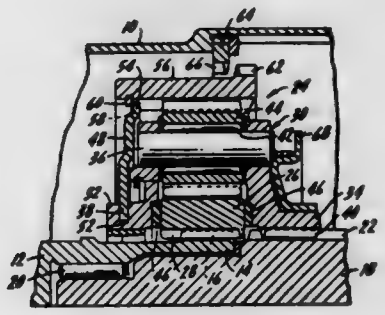
PLANETARY GEAR ASSEMBLY

John W. Holdeman, Muncie, Ind., assignor to Borg-Warner Corporation, Chicago, Ill.

Continuation of Ser. No. 937,342, Aug. 28, 1978, abandoned. This application Jun. 2, 1980, Ser. No. 155,243

Int. Cl.³ F16H *3/44, 57/10*

U.S. Cl. 74—788 **16 Claims**



1. In combination, first and second rotatable members, and a planetary gear assembly movable as a unit, said planetary gear assembly comprising sun gear means continuously engaged with said first member, planet carrier means continuously engaged with said second member, ring gear means, and planet gear means supported by said planet carrier means in meshing relationship with said sun and ring gear means, said planetary gear assembly being movable to one position wherein said sun gear means is engaged with said second member and said ring gear means is not grounded, and to another position wherein said sun gear means is not engaged with said second member and said ring gear means is grounded.

4,347,763

ONE-WAY BRAKE

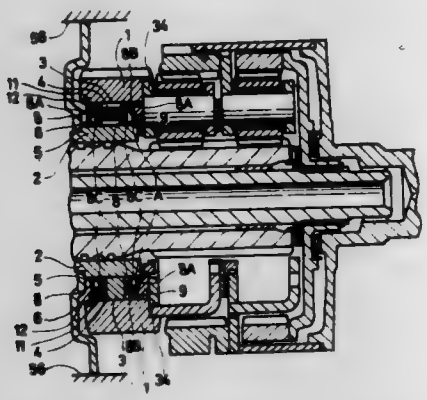
Shiro Sakakibara, Toyokawa; Kazumasa Tsukamoto, Toyota; Takahiro Sakai, Toyota, and Yukio Terakura, Toyota, all of Japan, assignors to Aisin Warner K.K., Anjo, Japan

Filed Jun. 2, 1980, Ser. No. 155,614

Claims priority, application Japan, Sep. 13, 1979, 54-127560[U]

Int. Cl.³ F16H *57/10;* F16D *59/00*

U.S. Cl. 74—789 5 Claims



1. A one-way brake comprising a plurality of sprags held by annular cages and annular isolation springs and inserted in an annular space between outer and inner races; end bearings each of which consists of an annular and radially extended support wall, an axially extended outer rib contacting the inner circumferential surface of said outer race, and an inner rib axially extended in the same direction as said outer rib and contacting the outer circumferential surface of said inner race, and each of which is inserted in said annular space; and stopper means consisting of stopper plates connected to said outer race of snap ring fitted into groove provided in the inner circumferential surface of said outer race to thereby hold in said annular space the outer race side portion of the support wall of said end bearings, characterized in that each of said support walls is protruded at the inner race side portion thereof in the outward direction with respect to said annular space from that surface of said support wall which is contacted by said stopper means connected to said outer race, to thereby increase the area of that portion of said inner race which is in sliding contact with said inner rib.

4,347,764

HYDRAULIC CONTROL VALVE SYSTEM FOR A PLANET GEAR TRANSMISSION PARTICULARLY FOR MOTOR VEHICLES

Walter Lauven, Wohnpark, Fed. Rep. of Germany, assignor to Ford Motor Company, Dearborn, Mich.

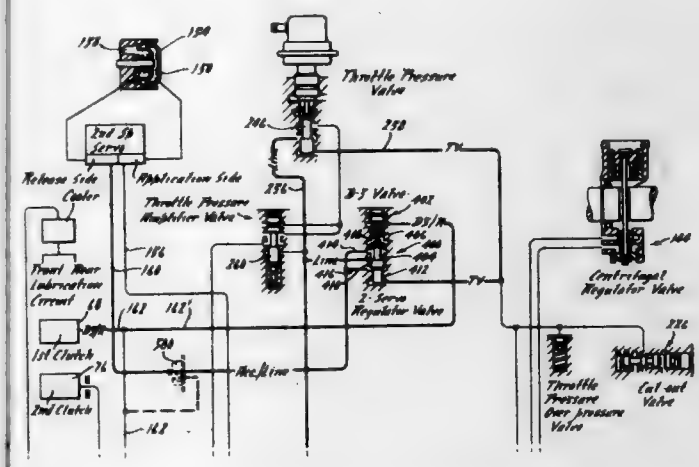
Filed Sep. 14, 1979, Ser. No. 75,455

Claims priority, application Fed. Rep. of Germany, Sep. 23, 1978, 2841507

Int. Cl.³ B60K *41/04;* F16H *3/74*

U.S. Cl. 74—867 4 Claims

1. In a hydraulic control valve system for a multiple-ratio, geared transmission having plural torque delivery paths extending from a driving member to a driven member, said paths being defined by planetary gear elements, clutch and brake means for controlling the relative motion of the gear elements to establish each of several torque ratios in the gearing, said clutch and brake means including a double acting intermediate speed ratio brake and a high speed ratio clutch, said brake being adapted to anchor one element of the gearing to establish a torque reaction point during an underdrive condition, said clutch being engageable selectively to establish a direct-drive, 1:1 ratio, a pressure source comprising a pump driven by said driving member, a valve circuit including a shift valve in said circuit for controlling distribution of pressure from said pump to said clutch and brake means, said brake means including a double acting servo having a piston engageable with a brake friction member, a double working chamber having a portion situated on either side of said piston, said chambers being simultaneously pressurized to establish a brake release condition, one pressure chamber being exhausted to establish a brake apply condition, and an intermediate ratio servo pressure regulator valve means in said circuit including a first passage communicating with the release side of said intermediate ratio servo and another passage communicating with a high pressure portion of said circuit, a modulator valve means for modulating the pressure in said high pressure portion to produce an accumulator pressure in said first passage, a source of a pressure signal that is proportional in magnitude to the input torque for said gearing, means for distributing said pressure signal to said servo regulator valve to control the modulating valve portions acting thereon whereby an increase in the torque related pressure establishes a decrease in the pressure in said accumulator line whereby the servo capacity for said intermediate ratio brake is proportional to the torque input.



4,347,765

MULTIPLE RATIO OVERDRIVE TRANSMISSION

Allan S. Leonard; Ralph C. Bolz, and Lawrence D. Burcz, all of Livonia, Mich., assignors to Ford Motor Company, Dearborn, Mich.

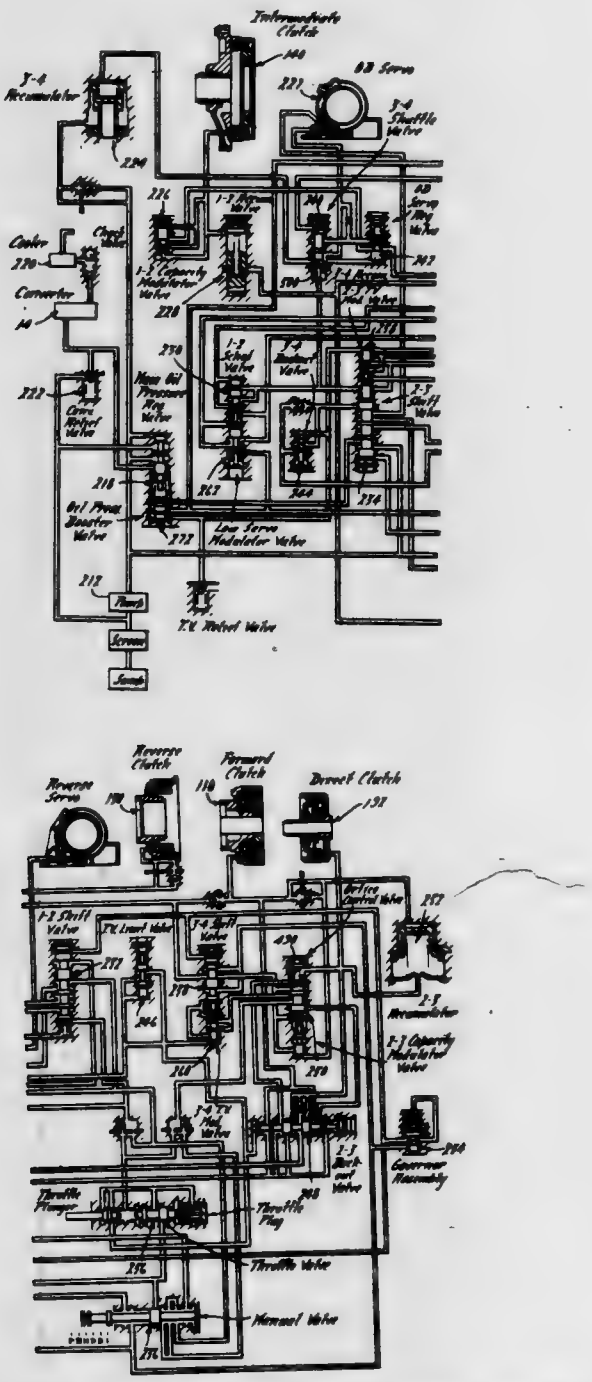
Filed Oct. 5, 1979, Ser. No. 82,399

Int. Cl.³ F16H *47/00;* B60K *41/22*

U.S. Cl. 74—869 36 Claims

1. A power transmission mechanism comprising a hydrokinetic torque converter having a bladed turbine and a bladed impeller, a driven member, a driving member connected to said impeller, a planetary gear unit comprising a first sun gear and a second sun gear, the diameter of said first sun gear being larger than the diameter of said second sun gear, a ring gear connected to said driven member, a planet gear comprising a set of first planet pinions engaging said first sun gear and said ring gear, a set of second planet pinions engaging said second sun gear and said first planet pinions, a carrier rotatably supporting said pinions, first clutch means for connecting said turbine to said second sun gear to establish a forward drive, second clutch means for connecting said turbine to said first sun gear to establish reverse drive, third clutch means for connecting said driving member to said carrier, first brake means for anchoring said carrier to establish a torque reaction point during low speed ratio operation, second brake means for anchoring said first sun gear to establish a torque reaction point during second speed ratio operation, said second brake means including a friction brake and an overrunning brake in series relationship, third brake means for anchoring said first sun gear to establish a torque reaction point during overdrive operation, separate fluid pressure operated servos for actuating each of said clutch means and said brake means, a fluid pump, a valve circuit connecting said pump and said servos to actuate and release the servos during ratio changes, said third brake means comprising a double acting piston and a pressure cylinder, said piston and cylinder defining opposed release and apply pressure chambers, shift valve means for controlling pressure dis-

tribution to said third brake means to establish ratio changes between third speed ratio and overdrive ratio, overdrive servo regulator valve means between said shift valve means and said apply pressure chamber for modifying the actuating pressure for said third brake means to effect a smooth ratio transition between said overdrive and third ratios, said overrunning brake accommodating overrunning motion of said first sun



gear as said third clutch means becomes applied, said circuit including a shuttle valve located between said apply chamber and said shift valve means and in communication with a high pressure part of said circuit, said shift valve means being adapted to distribute actuating pressure to said shuttle valve when it assumes an upshift condition, whereby said shuttle valve connects said high pressure part to said apply chamber.

4,347,766

SHARPENER FOR STEEL EDGES OF SKIS

Hans Heinlein, Bahnhofstrasse 11-13, 8502 Zirndorf, Fed. Rep. of Germany

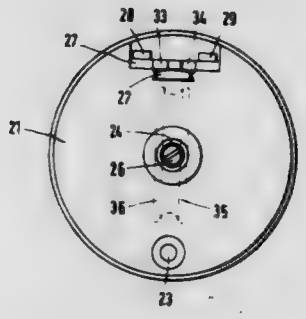
Continuation of Ser. No. 749,521, Dec. 10, 1976, abandoned.
This application Mar. 11, 1981, Ser. No. 242,820
Claims priority, application Fed. Rep. of Germany, Dec. 13, 1975, 2556178; Dec. 7, 1976, 2655342
Int. Cl.³ A63C *11/06;* B27G *17/04;* B21K *17/00*
U.S. Cl. 76—83 **23 Claims**

1. A sharpener for steel edges of skis, comprising:

a holder having a substantially flat planar surface for stable sliding contact with a ski surface;

a cutting plate having first and second cutting edges on opposed sides thereof, said plate being disposed on said holder such that said plate and both of said cutting edges thereof protrude from said flat surface; and

guide means disposed on said holder and protruding from said flat surface substantially perpendicular thereto for guiding the edge of a ski disposed on said flat surface, when said ski edge is in contact with both said first cutting edge and one side of said guide means, such that an appropriate cutting angle is maintained at said first cutting edge when the sharpener is moved along the edge of the ski in



a given cutting direction, and also for guiding the edge of a ski disposed on said flat surface, when said ski edge is in contact with both said second cutting edge and the other side of said guide means, such that an appropriate cutting angle is maintained at said second cutting edge when the sharpener is moved along the edge of the ski in a given cutting direction;

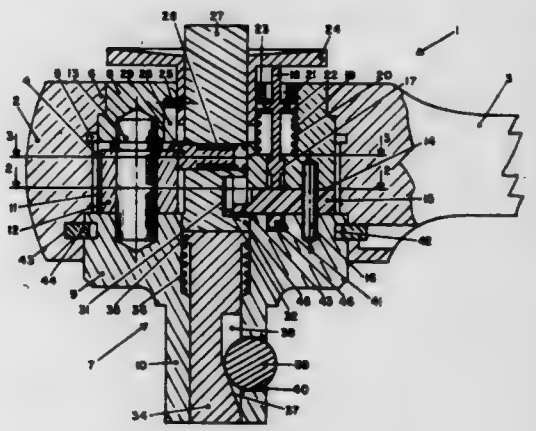
wherein said cutting plate and said guide means are so disposed with respect to said flat surface that a sufficient amount of said surface is present on both sides of a line connecting said cutting plate and said guide means to provide stable sliding contact with a ski surface when placed on either side of such line and in contact with both said cutting plate and said guide means.

4,347,767

RATCHETING DEVICE

Joseph A. Gentiluomo, 1456 Belmont Ave., Schenectady, N.Y. 12308

Filed Jan. 6, 1981, Ser. No. 222,780
Int. Cl.³ B25B *13/46*
U.S. Cl. 81—62 **8 Claims**



1. A ratcheting device comprising:

a drive member having a toothed bore;

a driven member rotatably mounted within said driver member and including a centrally mounted upper actuating member having a transversely mounted pawl detent;

a double ended toothed pawl pivotally mounted within said driven member and positioned such as to interact with said pawl detent and said toothed bore;

and a push-button actuated direction shifting mechanism

operatively associated with said upper actuating member to provide reversed rotation thereto for effectuating alternate engagement of the toothed ends of said double ended pawl with said toothed bore, upon successive depression of said push-button.

4,347,768

DRILLING TOOL FOR PRODUCING AN UNDERCUT BORE

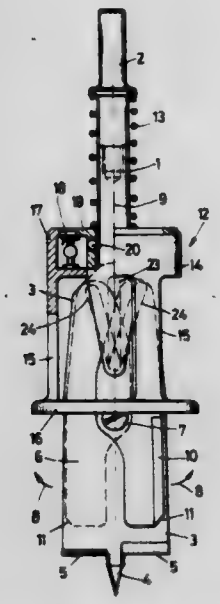
Edgar Boehm, Bremen, Fed. Rep. of Germany, assignor to Hilti Aktiengesellschaft, Liechtenstein, Fed. Rep. of Germany

Filed Jul. 2, 1979, Ser. No. 54,242

Claims priority, application Fed. Rep. of Germany, Jul. 5, 1978, 7820164[U]

Int. Cl.³ B23B *41/06*

U.S. Cl. 82—1.5 **1 Claim**



1. A drilling tool for producing an undercut bore, the tool comprising:

an axially extending rotatable drive shaft;

a primary drill fixedly secured to one end of and extending axially outwardly from said drive shaft, said primary drill comprises a thin flat plate extending in the axial direction with the front end thereof extending radially of the axial direction, said front end forming a radially extending cutting edge extending transversely outwardly from both sides of the axial direction, said primary drill having a pair of opposite faces with each face having a pair of spaced axially extending edges each located on an opposite side of the axis of said drive shaft;

a secondary drill having first and second cutting members pivotally secured to at least one of the opposite faces of the primary drill and located axially rearwardly of said cutting edge such that the first and second cutting members pivot in opposite directions between a retracted position confined within the axially extending edges of the faces of the primary drill and a flared position extending radially outwardly beyond the axially extending edges of the faces of the primary drill, each of said first and second cutting members having an axially extending cutting edge located radially outwardly from said primary drill in the flared position and located axially rearwardly from the cutting edge of said primary drill;

spring means for biasing the secondary drill into the retracted position;

means for overcoming the spring means only after the drill advances axially a predetermined distance, thereby pivoting the secondary drill to its flared position and producing an undercut, the overcoming means comprises a sleeve coaxial with and encircling the drive shaft and axially movable relative to the drive shaft, first and second slots in the cutting members of the secondary drill located within the axially extending range of said sleeve when said secondary drill is in the retracted position, in the retracted position said first and second slots having first ends located closer to the cutting edge of said primary drill and second ends located further away from the cutting edge of said primary drill and said first ends located on the axis of said drill shaft and said second ends spaced radially outwardly from the axis so that said first and second slots are angled symmetrically away from the axis of the drive shaft in the direction away from the cutting edge of said primary drill, a third slot in the primary drill aligned with and extending along the axis of the drive shaft, a pin passing through the first, second, and third slots, and means for securing the pin to the sleeve, and the spring means comprises a spring for urging the sleeve in the axial direction toward the cutting edge of said primary drill.

4,347,769

UNDERFLOOR LATHE FOR PROFILING WHEEL SETS

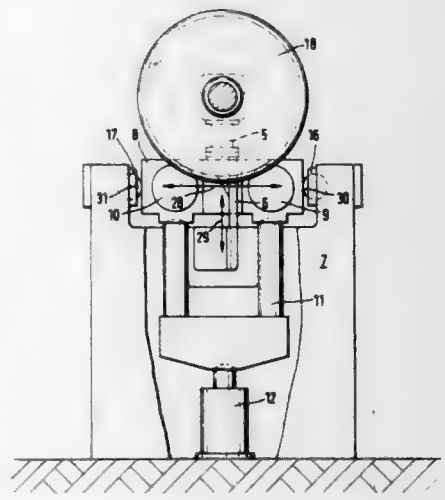
Theodor Dombrowski, and Max Luzina, both of Erkelenz, Fed. Rep. of Germany, assignors to Wilhelm Hegenscheidt Gesellschaft mbH

Filed Aug. 25, 1980, Ser. No. 180,817

Claims priority, application Fed. Rep. of Germany, Sep. 19, 1979, 2937751

Int. Cl.³ B23B *5/32*

U.S. Cl. 82—8 **7 Claims**



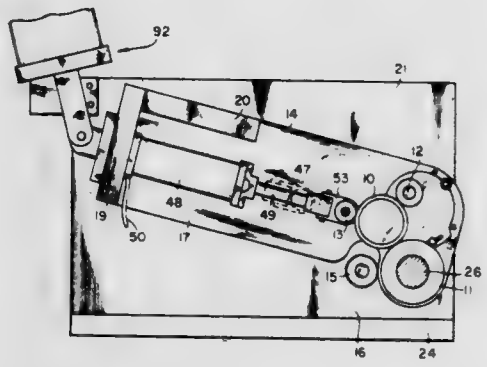
1. In an underfloor wheelset turning machine for the profiling of wheelsets of vehicles which run on rails roll carrier means mounted for horizontal and vertical movement, a spaced pair of rollers mounted on said carrier means, said rollers being positioned to contact at least the tread of a wheel of a wheelset disposed in said machine, and at least partially supporting the weight thereof, drive means connected to at least one said roller for driving said wheel, the improvement which comprises horizontally acting brake means operatively connected to said carrier means for yieldably resisting horizontal movement of said carrier means in a plane perpendicular to the axis of said wheel.

2. An underfloor wheel set turning machine for the profiling of wheel sets of vehicles which run on rails comprising roll carrier means mounted for horizontal and vertical movement, said roll carrier means including oppositely directed vertical guide surfaces, a spaced pair of rollers mounted on said carrier means, said rollers being positioned to contact at least the tread of a wheel set disposed in said machine, and at least partially supporting the weight thereof, drive means connected to at least one said roller for driving said wheel, and horizontally acting brake means operatively connected to said carrier means for resisting horizontal movement of said carrier means in a plane perpendicular to the axis of said wheel, said brake means comprising horizontally aligned first and second brake assemblies, each said assembly including a guide roll rotatable about a horizontal axis and engaging one of said guide surfaces.

4,347,770
APPARATUS AND METHOD FOR RADIALLY CUTTING CYLINDRICAL MATERIAL

Charles G. Mosey, 319 Henley Rd. South; George N. Mosey, 1912 Morrow Rd.; Charles J. Mosey, 308 S. 21st St., and Stephen A. Mosey, Boston Township Line Rd., all of Richmond, Ind. 47374

Filed Mar. 3, 1980, Ser. No. 126,949
Int. Cl.[3] B23B *5/14*
U.S. Cl. 82—90 8 Claims



8. An apparatus for radially cutting material having an exterior cylindrical surface which comprises:

a frame;

a roller carrier mounted to said frame;

roller carrier mounting means for mounting said roller carrier to said frame;

first, second and third rollers rotatably mounted to said roller carrier about parallel axes;

first, second and third roller mounting means for rotatably mounting said first, second and third rollers, respectively, to said roller carrier, at least said third roller mounting means comprising a hydraulic cylinder and a piston member received within and extendable from the hydraulic cylinder, said third roller being rotatably mounted to one of the piston member and the hydraulic cylinder, the other of the hydraulic cylinder and the piston member being secured to said roller carrier, said third roller being movable to a position to hold a piece of the material against said first and second rollers to engage the material with said first, second and third rollers about greater than 180° of the exterior of the material;

drive means for rotating the material;

saw means mounted to said frame;

saw mounting means for mounting said saw means to said frame; means for rotating said saw means; and

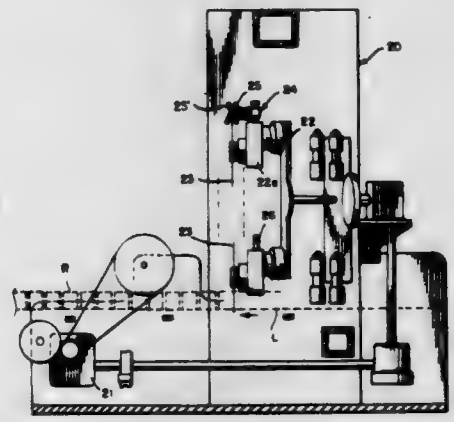
movement means for moving said roller carrier relative to said saw means, with the material simultaneously being held by said first, second and third rollers and being rotated by said drive means, to radially cut the material said roller carrier being pivotally mounted to said frame, said movement means including means for pivoting said roller carrier relative to said frame, said roller carrier being mounted to pivot relative to said frame about the axis of one of said first and second rollers.

4,347,771
APPARATUS FOR SHARPENING A DISC

John J. Bradley, Green Bay, Wis., assignor to Paper Converting Machine Company, Green Bay, Wis.

Filed Nov. 10, 1980, Ser. No. 205,716
Int. Cl.[3] B26D *7/12*
U.S. Cl. 83—174 10 Claims

7. Apparatus for cutting comprising a frame, means on said frame for advancing a product along a lineal path for transverse cutting thereof, an arm rotably mounted on said frame and equipped with a cutting disc for movement through an orbit intersecting said path, disc sharpening means on said arm including first and second devices each equipped with grinding stones, one for each side of the disc, each device including bracket means mounted adjacent said disc and projecting generally axially of said disc and adjustably supporting a carriage, a shaft for the grinding stone associated therewith, resilient leaf

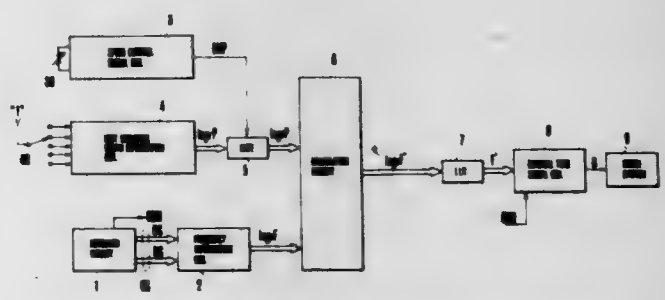


spring means connecting said carriage with said shaft whereby adjustment of said carriage deforms said leaf spring means to adjust the pressure of said grinding stone against said disc.

4,347,772
ELECTRONIC MUSICAL INSTRUMENTS CAPABLE OF VARYING TONE PITCH DURING ONE KEY DEPRESSION

Tetsuo Nishimoto, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Nov. 10, 1980, Ser. No. 205,708
Claims priority, application Japan, Nov. 21, 1979, 54-151082
Int. Cl.[3] G10F *1/00*
U.S. Cl. 84—1.03 18 Claims



1. An electronic musical instrument comprising:

keyboard means having a plurality of keys;

a frequency information generator for generating a first frequency information corresponding to a tone pitch designated by a depressed one of said keys;

a pitch variation information generator for generating a pitch variation information representing a discrete pitch step width;

a performer controllable pitch variation designator for enabling arbitrary designation by a performer, from a plurality of designatable values, of the magnitude of said pitch step width represented by said pitch variation information to be generated by said pitch variation generator;

calculating means for generating a second frequency information in accordance with said first frequency information and said pitch variation information, said second frequency information varying stepwisely from a first value to a second value in steps each having the width represented by said pitch variation information;

a musical tone signal generator for generating a musical tone signal having a frequency corresponding to the value of said second frequency information; and

a sound system for converting said musical tone signal into a musical tone.

16. In an electronic musical instrument including a tone generator for generating a musical tone having a pitch established by a certain modified frequency information supplied

thereto, a system for producing glissando, portamento, and like effects, comprising:

note frequency information generator means for producing note frequency information corresponding to a selected musical note;

unit variation width information generator means for providing a performer selectable unit variation data establishing, from among a plurality of selectable unit cent values, a fixed incremental change in pitch to be imparted to the generated tone;

speed control signal generator means for providing pitch variation clock pulses at a selectable rate;

calculating circuit means, operative at each occurrence of a pitch variation clock pulse, for arithmetically combining said note frequency information and said unit variation data to obtain a modified frequency information which is supplied to said tone generator to establish the pitch of the tone generated thereby, said established pitch varying stepwise at a rate established by the selected rate of said pitch variation clock pulses and changing incrementally in pitch by unit values established by the selected unit variation data.

4,347,773

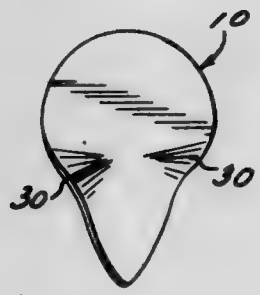
MUSICIAN'S PICK

Steven T. Zook, Long Beach, Calif., assignor to Ronald F. Vaughn, Long Beach, Calif.

Continuation-in-part of Ser. No. 65,859, Aug. 3, 1979, abandoned. This application Jan. 16, 1981, Ser. No. 225,665

Int. Cl.³ G10D *3/16*

U.S. Cl. 84—322 **4 Claims**



1. A musician's pick comprising:

a gripping portion lying generally within a grip plane and adapted to be gripped between the thumb and forefinger of a musician with said grip plane generally parallel to the longitudinal axis of the musician's forearm;

a pick portion adjacent said gripping portion and lying generally within a pick plane, said pick portion having a predetermined extended length adapted to engage an instrument string at a predetermined depth when said gripping portion is gripped between said thumb and forefinger; and,

an intermediate portion integrally joining said side grip portion and said pick portion such that said pick plane is angularly inclined relative to said grip plane, thereby enabling orientation of said pick plane parallel to the string despite a non-parallel orientation between the longitudinal axis of the musician's forearm and the string, said intermediate portion including a pair of oppositely oriented shoulders which are each characterized by a planar portion to serve as stops for the thumb and forefinger of the musician, said pick having an overall length of approximately one inch, and said intermediate portion being located midway between the opposite ends of said pick.

4,347,774

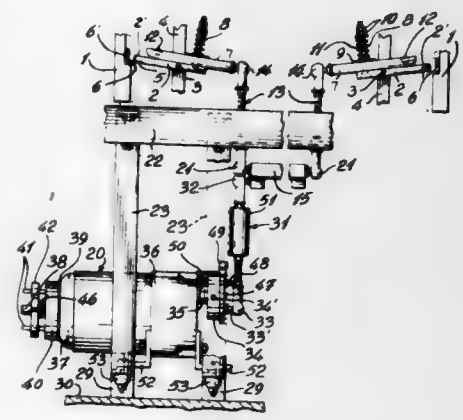
ACTUATOR FOR CAPTURE TYPE COMBINATION SYSTEM IN ORGANS

Irene Roy, 1080 Bordeleau, Ste- Hyacinthe, Quebec, Canada

Filed Jun. 25, 1981, Ser. No. 277,336

Int. Cl.³ G10B *3/10*

U.S. Cl. 84—345 **9 Claims**



1. An actuator for the selector hooks of a capture type combination system in an organ, said selector hooks arranged in at least one row and selectively shiftable laterally of said row between an operation and an inoperating position, a lever board pivotally mounted on a support frame and having a front edge extending parallel with said row and engageable with the selector hook shifted to operating position and clearing those selector hooks remaining in inoperating position, an electric motor, crank means driven by said motor and connected to said lever board to cause reciprocating movement of said lever board with said front edge engaging and longitudinally moving said shifted selector hooks and motor operated switch means to stop said motor after one complete rotation of said crank means.

4,347,775

PLUG FOR MOUTHPIECE OF A WOODEN RECORDER

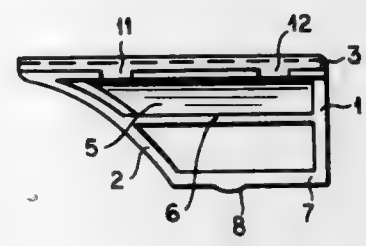
Hans-Dieter Held, and Waldemar Schaller, both of Trossingen, Fed. Rep. of Germany, assignors to Matth. Hohner AG, Trossingen, Fed. Rep. of Germany

Filed May 20, 1981, Ser. No. 265,540

Claims priority, application Fed. Rep. of Germany, Jun. 19, 1980, 3022822

Int. Cl.³ G10D *7/02*

U.S. Cl. 84—380 C **5 Claims**



1. A plug for a mouthpiece of a wooden recorder, comprising an integrally molded member with a concave front end wall, a flat rear end wall and a plurality of connecting walls between said end walls, said connecting walls including an upper wall adapted to form a boundary for a flue of the mouthpiece upon insertion of the plug into same, said end walls defining sections of an imaginary cylinder,

at least one of said connecting walls other than said upper wall having a portion which extends along the periphery of said imaginary cylinder and is provided with an external hump adapted to contact an adjacent inner wall surfce of the mouthpiece into which the plug has been inserted,

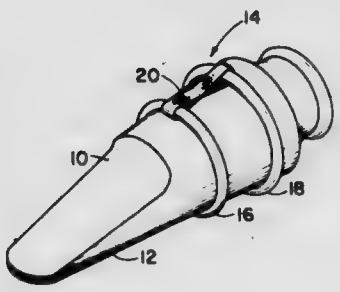
said portion being resiliently inwardly deformable under contact pressure between said hump and the mouthpiece.

4,347,776

O-RING LIGATURE

Kenneth G. Grass, and Tommy R. Stout, both of Broken Arrow, Okla.

Filed May 1, 1981, Ser. No. 259,666
Int. Cl.[3] G10D *9/02*
U.S. Cl. 84—383 R **5 Claims**



1. A ligature device for holding a reed to a woodwind musical instrument mouthpiece comprising:

(a) a pair of elastomeric rings adapted to sequentially fit over the reed and mouthpiece applying sufficient compressive force to hold said reed in place; and

(b) a means for holding said elastomeric rings at a predetermined fixed distance apart from each other.

5. A method for holding a reed to a woodwind musical instrument mouthpiece comprising the steps of:

(a) sequentially fitting a pair of elastomeric O-rings over the reed and mouthpiece, said O-rings applying sufficient compressive force to hold said reed in place; and

(b) selecting and positioning said pair of O-rings at a predetermined fixed distance apart from each other according to the following table:

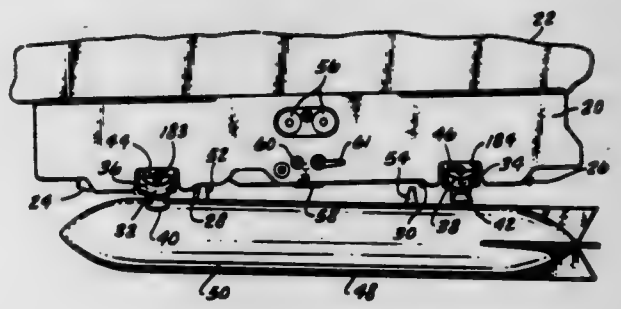
Instrument (Tradename of Hard Rubber Mouthpiece)	Front O-Ring Diameter	Back O-Ring Diameter	Fixed Distance
Soprano Sax	3/8"	13/16"	7/8"
Tenor Sax (Runyon)	13/16"	7/8"	1"
Alto Sax (Selmer HS* Vandoren 77,88 99)	15/16"	1"	1"
Tenor Sax (Vandoren 77,88,99)	15/16"	1"	1 1/8"
Tenor Sax (Selmer CS80)	1"	1 1/64"	1 1/8"
E♭ Bari Sax (Bilhurt 5*, Selmer Bundy[3])	1"	1 1/64	1 1/8"
Soprano Clarinet (Selmer HS*, Vandoren B45)	15/16"	1"	1"
E♭ & B♭ Contra Clarinet (Selmer C*)	1 13/16"	1 15/16"	1"
B♭ Bass Clarinet	1 1/8"	1 3/16"	1 1/8"

4,347,777

RACK WITH COMPLIANT WEDGE ACTUATED SWAYBRACES

Thaddeus Jakubowski, Jr., Long Beach; Jess W. Lockhart, Torrance, and Norman F. Robinson, Manhattan Beach, all of Calif., assignors to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Oct. 6, 1980, Ser. No. 194,148
Int. Cl.[3] F41F *5/02*
U.S. Cl. 89—1.5 G **11 Claims**



1. A store carrier including at least one pair of hooks for retaining a store to said carrier, means to actuate said at least one pair of hooks, and sway brace means positioned to engage the store when retained by said at least one pair of hooks, said sway brace means including:

at least one brace column moveable toward and away from a store retained by said at least one pair of hooks;

means for engagement with a store retained by said at least one pair of hooks connected to said at least one brace column;

at least one longitudinal slot adjacent said at least one brace column, said at least one longitudinal slot having upper and lower parallel surfaces;

at least one ramp surface facing away from a store retained by said at least one pair of hooks;

at least one wedge positioned for sliding engagement with said at least one ramp surface to force said at least one brace column toward a store retained by said at least one pair of hooks, said at least one wedge including parallel upper and lower surfaces which mate with said upper and lower surfaces of said at least one longitudinal slot for sliding contact therewith;

first bias means connected between said at least one wedge and said store carrier tending to force said at least one wedge to positions to force said at least one brace column toward a store retained by said at least one pair of hooks; and

second bias means acting in the load path between said store carrier and said means for engagement with a store tending to pre-load said at least one wedge into engagement with said at least one ramp surface whereby said means for engagement are forced into engagement to brace a store retained by said at least one pair of hooks against lateral sway about said at least one pair of hooks and maintain said engagement in a vibratory environment.

4,347,778

REVERSIBLE FLUID UNIT

Jerome L. Murray, 652 First Ave., New York, N.Y. 10016

Filed Aug. 17, 1979, Ser. No. 67,224
Int. Cl.[3] F01L *33/02*; F01B *1/06*; F04B *1/04*
U.S. Cl. 91—180 **15 Claims**

1. A reversible fluid device comprising

a housing,

a plurality of circumferentially spaced separately sealed diaphragm chambers disposed within said housing,

shaft means rotatably supported with respect to said housing,

a hub means within said housing fixed to said shaft means,

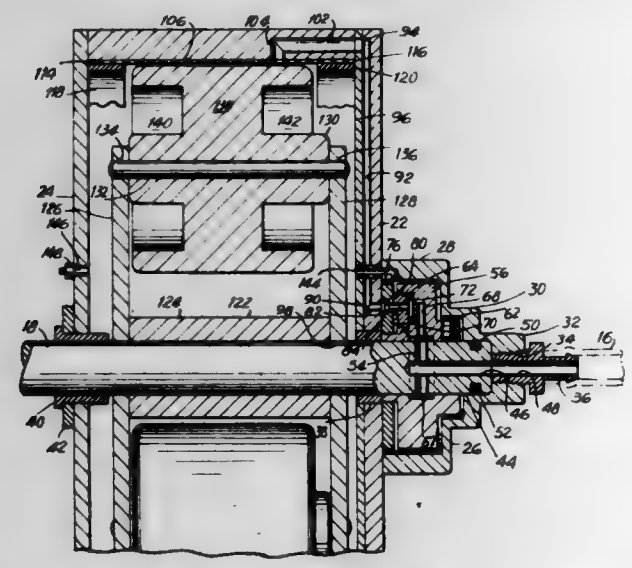
and disposed radially inwardly from said diaphragm chambers,

a plurality of circumferentially spaced roller members rotatably mounted on said hub means disposed for rolling contact with said diaphragm chambers,

fluid communication means operatively associated with each said diaphragm chamber and fluid distribution means to sequentially supply fluid under pressure to selected ones of said fluid communication means thereby to selectively expand selected ones of said diaphragm housings radially inwardly to bear against a contiguous roller member to impart relative rotation thereto and to said shaft means,

said fluid distribution means comprising an inlet from a source of fluid under pressure in communication with fluid distribution means fixed to said shaft means whereby said fluid under pressure is selectively distributed to said fluid communication means as said shaft means rotates,

said fluid distribution means further comprising a housing



fixed to said shaft means including fluid passage means communicating from said inlet from a source of fluid under pressure to a plurality of circumferentially spaced fluid access ports in an end face of said housing,

control means interposed between said fluid distribution means and said fluid communication means to control the flow of fluid under pressure from said fluid distribution means to said fluid communication means, and

said fluid communication means further comprising a plurality of circumferentially spaced fluid access ports in a circular array disposed through an end face of said housing with each said fluid access port communicating with a radially disposed fluid access channel in said end face of said housing to each said diaphragm chamber and wherein said control means comprises a plate member having a plurality of circumferentially spaced fluid access ports therethrough in circular array arranged to be selectively registrable with said fluid access ports in said end face of said housing.

4,347,779

VACUUM BRAKE BOOSTER

Juan Belart, Walldorf, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Apr. 21, 1980, Ser. No. 141,830

Claims priority, application Fed. Rep. of Germany, May 10, 1979, 2918912

Int. Cl.³ F15B *13/16*; F01B *19/00*; F16J *3/02*

U.S. Cl. 91—369 A **25 Claims**

1. A vacuum brake booster comprising:

a housing having a longitudinal axis and two end walls transverse to said axis;

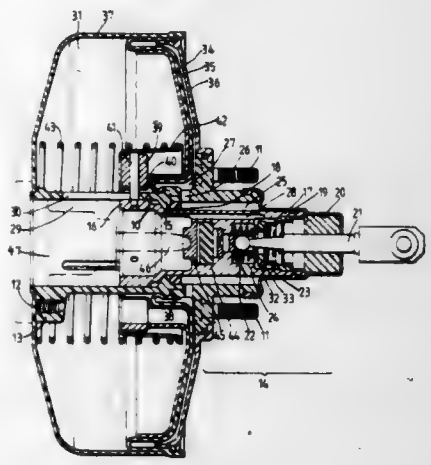
a tube disposed in said housing coaxial of said axis connected between said two end walls;

a movable wall disposed in said housing coaxial of said axis to divide said housing into a vacuum chamber and a working chamber;

a valve housing disposed within said tube containing therein a valve to control the pressure in said working chamber to generate a force proportional to the differential pressure in said vacuum and working chambers to act on said movable wall;

slots through the outer surface of said tube disposed in said vacuum chamber;

cross members extending through and guided in said slots to



interconnect said valve housing and said movable wall on the vacuum side of said movable wall; and

said movable wall includes a diaphragm plate, a first rolling diaphragm disposed on one surface of said diaphragm plate disposed in said working chamber to provide a seal between said movable wall and said tube and at least one component disposed between said one surface and said first rolling diaphragm, said one component exerting an inwardly directed force on said first rolling diaphragm to cover said slots in a positively sealed relationship when said movable wall is displaced in an operative direction.

4,347,780

OPERATING VALVE ASSEMBLY FOR A POWER STEERING

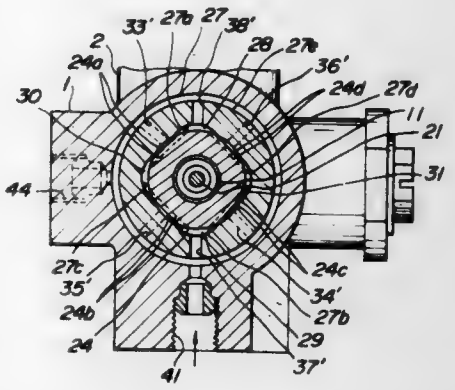
Koichi Takahashi, Yokohama; Megumu Higuchi, and Minoru Watanabe, both of Tokyo, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Feb. 15, 1980, Ser. No. 121,897

Claims priority, application Japan, Feb. 19, 1979, 54-17167

Int. Cl.³ F15B *9/10*

U.S. Cl. 91—375 A **2 Claims**



1. In an operating valve assembly in fluid connection with a pair of power cylinder chambers, a pump and a drain, said valve assembly having an outer sleeve and an inner sleeve in sliding contact with each other, said sleeves being relatively rotatable in response to the twisting of a torsion bar occasioned by a steering load, said outer sleeve having an inner circumferential surface with a plurality of circumferentially spaced apart recesses, said recesses being alternately connected to pump and

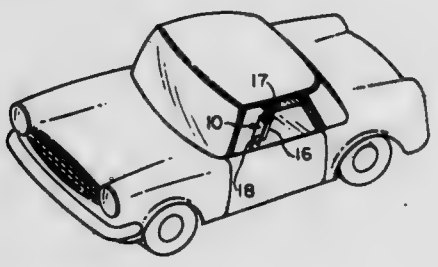
drain chambers which are in turn adapted to be connected respectively to said pump and drain, said inner sleeve having an outer circumferential surface with grooves therein which establish a fluid communication between adjacent ones of said recesses, said outer sleeve further being provided with apertures each normally opening into one of said grooves and being alternately connected to one or the other of said power cylinder chambers, the improvement comprising said recesses being spherical, said grooves extending in directions substantially at right angles to the axis of said inner sleeve, and the bottom surfaces of said grooves being convex.

4,347,781

AIR DEFLECTOR FOR MOTOR VEHICLE WINDOWS

Aarno A. Hassell, 98 Moulton Rd., Storrs, Conn. 06268

Filed Jul. 10, 1979, Ser. No. 56,332
Int. Cl.³ B60J *1/20*
U.S. Cl. 98—2.12 **5 Claims**



1. An air deflector for a motor vehicle window comprising:
deflector means, said deflector means consisting of a flat plate, said flat plate having oppositely disposed first and second ends, said second end of said flat plate extending outwardly from the side of a motor vehicle window when said deflector means is installed;
means for releasably securing said deflector means flat plate to a window, said securing means being generally U-shaped and having first and second ends, said second end of said securing means being joined to and integral with said first end of said deflector means flat plate whereby said flat plate and said securing means formed legs of a generally V-shaped body, said securing means having an elongated slot, said elongated slot being adapted to receive the front edge of a window, said elongated slot being defined by two elongated plates, said elongated plates converging from said second end towards said first end of said securing means, said slot extending at an angle of about 105° to about 135° with respect to said deflector means flat plate; and
support strut means extending between said deflector plate means and one of said securing means elongated plates.

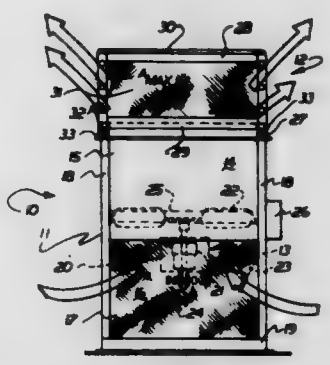
4,347,782

TELESCOPABLE WINTER/SUMMER AIR RECIRCULATOR

David A. Hoecke, Berea, Ohio, assignor to Enercon Systems, Incorporated, Cleveland, Ohio

Filed Nov. 13, 1979, Ser. No. 93,595
Int. Cl.³ F24F *13/10*
U.S. Cl. 98—33 A **2 Claims**

1. An air recirculator to be placed on the floor of a building for recirculating air therewithin at any time of the year, said air recirculator comprising:
(A) a unitary vertical duct-like housing having
(i) air-impermeable side walls extending downwardly for about one half said housing's height,
(ii) air-permeable side walls extending downwardly for the remaining portion of said housing's height, terminating in a base, and
(iii) a fan assembly disposed within said air-impermeable walls with the longitudinal axis of the fan longitudinally axially disposed therewithin to blow air vertically upwards, and
(B) a telescopable outlet hood having
(i) air-permeable side walls which telescopes adjustable over said air-impermeable walls of said housing,
(ii) an air-impermeable end plate to serve as a movable deflector,
(a) which is locatable, when said outlet hood is fully extended as in a winter mode of operation, to deflect air from outlets in said outlet hood upwardly and



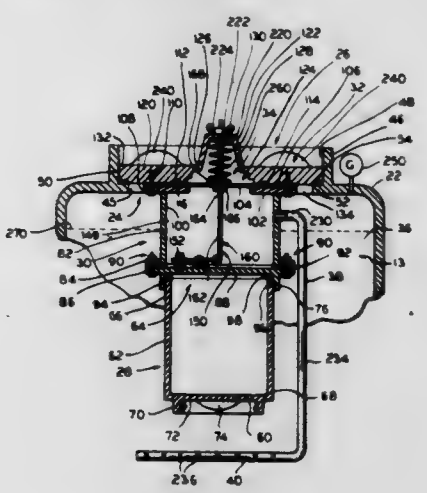
outwardly at an angle in the range from about 30° to about 60° from the horizontal, at a winter air velocity in the range from about 6 to about 12 ft/sec
(b) which is locatable, with said outlet hood in a partially retracted position as in a summer mode of operation, to deflect air from outlets in said outlet hood outwardly and substantially horizontally slightly above persons standing on said floor, and,
(c) which is locatable with said outlet hood in a fully retracted position, as when the device is to be shipped, to a vertical overall height of less than 8 ft.

4,347,783

BEVERAGE CARBONATOR DEVICE

Ralph Ogden, 1304 Fisher St., Munster, Ind. 46321

Filed Apr. 6, 1981, Ser. No. 251,476
Int. Cl.³ B01F *3/04*
U.S. Cl. 99—323.1 **8 Claims**



1. A beverage carbonator device comprising:
an outer container open at its upper end and defining a beverage carbonation chamber and including means for selectively dispensing a carbonated beverage, when contained therein, therefrom,
and a carbonation generation and pressure regulating assembly adapted to be mounted in said chamber and comprising:
a lower generator tank that is open at its upper end and is adapted to receive and contain carbonating gas generating substances,
a carbonating gas receiver including means at its lower end

for removably securing said tank upper end thereto in sealed relation therewith,

said receiver defining an imperforate floor that spans said tank upper end, with said floor defining an orifice opening,

said receiver having an open upper end that is spanned by a flexible diaphragm in sealed relation thereto,

said receiver defining between said floor and said diaphragm a pressure cavity adapted to receive carbonating gas from said tank through said orifice,

a cover secured to said receiver upper end in sealed relation to said diaphragm,

said cover being formed to define with said diaphragm a vented breathing chamber, whereby said diaphragm deflects upwardly of said cavity under the pressure of carbonating gas received in said pressure cavity,

a valve member mounted within said receiver for opening and closing said orifice,

an elongate valve member actuator link secured to said diaphragm and having a depending portion disposed within said cavity,

means for resiliently biasing said diaphragm inwardly of said cavity and toward said floor against the action of said gas in said cavity on said diaphragm,

a gas conduit connected to said receiver in communication with said pressure cavity at one end thereof and extending exteriorly of said assembly and having the other end of same disposed below the level of said tank and formed for emitting gas into the beverage,

means for securing said assembly to said container in sealed relation with said container with said tank and gas conduit other end disposed in the beverage to be carbonated,

and means for articulating said link depending portion to said valve member for positioning said valve member relative to said orifice under the control of said diaphragm for maintaining the carbonating gas in said container at a substantially uniform predetermined pressure.

4,347,784

BEARINGS FOR CALENDER ROLLS AND SUPPORTS THEREFOR

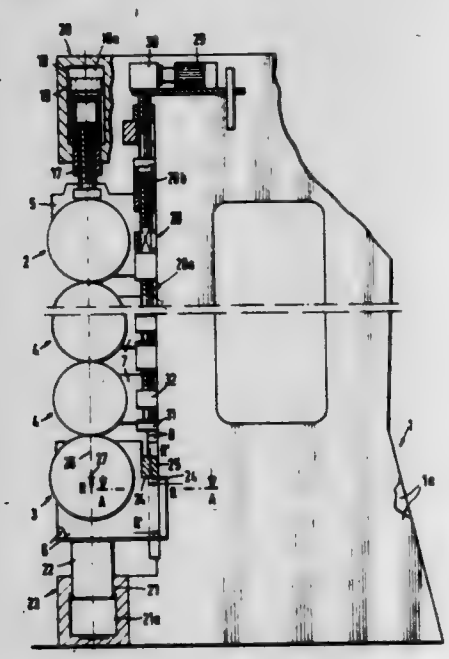
Josef Pav; Gerhard Hartwich, both of Krefeld, and Jörg Prey, Tönisvorst, all of Fed. Rep. of Germany, assignors to Kleinewefers GmbH, Krefeld, Fed. Rep. of Germany

Filed Jan. 30, 1981, Ser. No. 230,022

Claims priority, application Fed. Rep. of Germany, Feb. 9, 1980, 3004914

Int. Cl.³ B30B *3/04*

U.S. Cl. 100—162 R **11 Claims**



1. In a calender, the combination of a stand having elongated guide means; a roll train mounted in said stand and having an outermost roll; bearing means for said outermost roll, said guide means and said bearing means having cooperating surfaces enabling said bearing means to slide along said guide means; stop means provided on said stand; and motor means operable to move said bearing means along said guide means in a direction to advance said outermost roll against the neighboring roll of said train and to engage said bearing means with said stop means, said motor means including a reciprocable component having an axis disposed in a predetermined plane and said stop means being disposed only at one side of said plane.

4,347,785

ENGRAVING PRINTING CYLINDERS

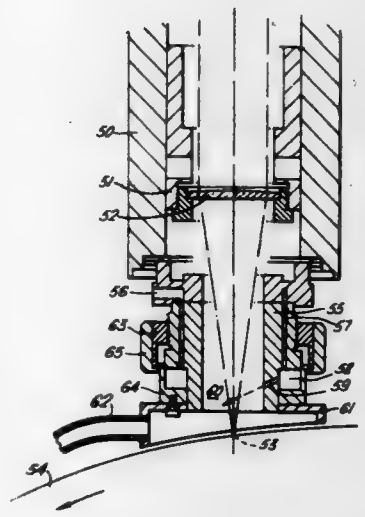
Bryan B. Chase, Layer-de-la-Haye, and Alberto Yi, London, both of England, assignors to Crosfield Electronics Limited, London, England

Filed Mar. 5, 1980, Ser. No. 127,431

Claims priority, application United Kingdom, Mar. 7, 1979, 7908041

Int. Cl.³ B23K *9/00*

U.S. Cl. 101—1 **5 Claims**



1. Apparatus for engraving a cylinder by means of a laser, comprising:

means for rotating the cylinder to be engraved;

a lens mounted for focusing the laser beam substantially at the cylinder surface;

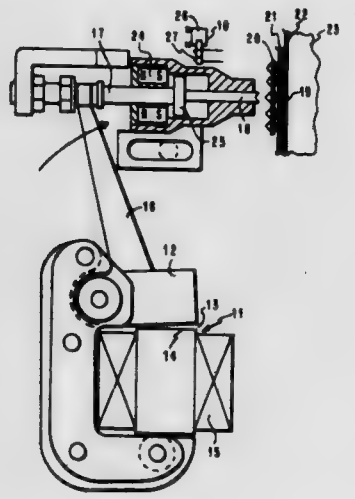
a structure through which the beam emerges and which terminates in a chamber having one face open towards the rotating cylinder, the said structure including tubular means extending around the beam, the said chamber being shallow, in the direction of the laser beam, and wider than the tubular means, and having a lateral wall which extends around the beam but is spaced from the beam, the chamber being mounted to provide clearance between the cylinder and the edge of the lateral wall defining the open face;

and means defining a path spaced from the cylindrical surface, for a flow of air between the lens and the cylinder, the said air path defining means comprising an air channel, for connection to an air supply, passing through the wall of the tubular structure and having an exit arranged to direct air into the shallow chamber along a path which crosses the optical axis of the lens obliquely in a direction away from the lens axis and is spaced from the point of incidence of the beam on the cylindrical surface, and suction means communicating with the said chamber for extracting air from the region between the lens and the cylinder.

4,347,786
IMPACT PRINTER HAMMER FLIGHT TIME AND VELOCITY SENSING MEANS

Robert H. Sweat, Jr., Round Rock, and William J. Thornhill, Austin, both of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 1, 1979, Ser. No. 80,890
Int. Cl.[3] B41J 7/92
U.S. Cl. 101—93.03 10 Claims



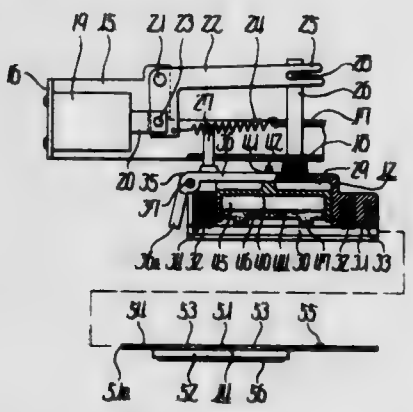
1. In an impact printer including a print wheel having a plurality of selectable character type bearing elements for respectively printing a plurality of characters, said print wheel being rotatable for selectively positioning selected type elements at successive print positions, impact means impellable against said selected elements to drive said elements against a printing medium and means for impelling said impact means against said selected type element, the improvement comprising:

means for detecting the coincident engagement of said impact means with a type element by sensing the velocity of said impact means after said impact means has reached a predetermined coincident engagement position.

4,347,787
PRODUCT NAME STAMPING DEVICE OF LABEL PRINTERS

Yukihiro Takada, Shizuoka; Kimikazu Sugiyama, Shimokanuki Nishimura, and Mithuo Imai, Shizuoka, all of Japan, assignors to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Aug. 14, 1980, Ser. No. 177,912
Claims priority, application Japan, Aug. 14, 1979, 54-103467
Int. Cl.[3] B41D 7/00
U.S. Cl. 101—333 3 Claims



1. A product name stamping device of label printers comprising:

a reciprocable stamp holder;

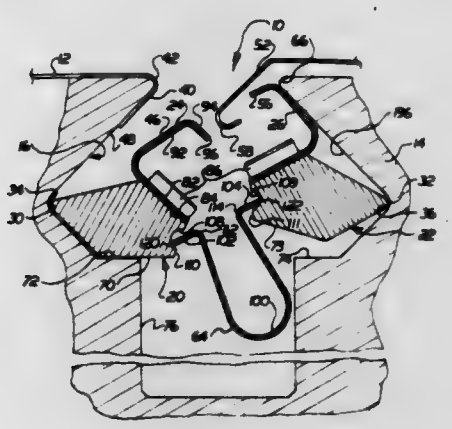
an ink-soaked member contained in the holder and made of spongy material that retains ink therein, the ink-soaked member having a plurality of projections on a first side thereof; and

a stamp insertable in or removable from the holder, wherein the stamp further comprises a base plate of hard material having a plurality of holes formed therein into which the projections of the ink-soaked member fit and an ink-soaking member formed with a stamping portion on which a product name is stamped wherein said projections can contact said ink soaking member to transmit ink from said ink soaked member to said ink soaking member.

4,347,788
PLATE LOCKUP MECHANISM

Charles H. Dufour, Westerly, R.I.; W. Robert Gelinas, Jewett City, Conn.; Michael J. Stankosky, North Stonington, Conn., and Bohdan D. Washchynsky, Pawcatuck, Conn., assignors to Harris Corporation, Melbourne, Fla.

Filed May 1, 1980, Ser. No. 145,438
Int. Cl.[3] B41F 27/12
U.S. Cl. 101—415.1 12 Claims



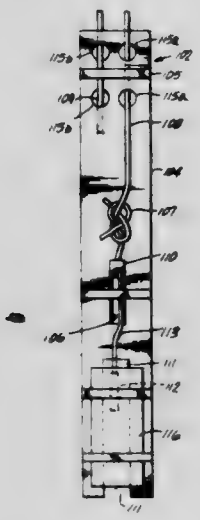
1. A plate lockup mechanism for use in a printing cylinder to secure a printing plate thereto, said mechanism comprising first and second movable members disposed on the printing cylinder, means associated with said first movable member for engaging one end portion of a printing plate, means associated with said second movable member for engaging a second end portion of the printing plate, pivot means enabling said first movable member to rotate between two extreme positions about a first axis generally parallel with the one end portion of the printing plate, pivot means enabling said second movable member to rotate between two extreme positions about a second axis generally parallel with the second end portion of the printing plate, said first and second axes of rotation of said movable members defining a plane, and biasing means engaging said first and second movable members and urging them away from each other, said movable members being movable between a first position in which said biasing means applies a torque to said first member tending to rotate said first member about said first axis in a first direction and a torque to said second member tending to rotate said second member about said second axis in said first direction, and a second position in which said biasing means applies a torque to said first member tending to rotate said first member about said first axis in a second direction and a torque to said second member tending to rotate said second member about said second axis in said second direction, and wherein when said movable members are in either of said first and second positions the line of action of the force applied by said biasing means intersects said plane defined by said first and second axes of rotation of said movable members between said axes of rotation of said movable members, said movable members being further movable to a third position in which the line of action of said biasing means is free of intersection with said plane between said first and second axes to thereby apply a torque to said first member tending to rotate said first member about said first axis in said second direction and a torque to said second member about said second axis in said first direction.

4,347,789

DOWNHOLE DELAY ASSEMBLY FOR BLASTING WITH SERIES DELAY

Thomas E. Ricketts, Grand Junction, Colo., assignor to Occidental Oil Shale, Inc., Grand Junction, Colo.

Filed Jul. 15, 1980, Ser. No. 169,025
Int. Cl.[3] C06C *5/04*
U.S. Cl. 102—275.3 39 Claims



1. A downhole delay assembly for detonating explosive placed in a blasthole, the assembly comprising:

a first detonating time delay device for introducing a first time delay in a detonation sequence;

means for preventing detonation of explosive in a blasthole in response to detonation of the first detonating time delay device;

a second detonating time delay device for introducing a second time delay in the detonation sequence and for initiating explosive in the blasthole;

means for connecting the first time delay device to the second time delay device for initiating the second time delay device in response to the detonation of the first time delay device; and

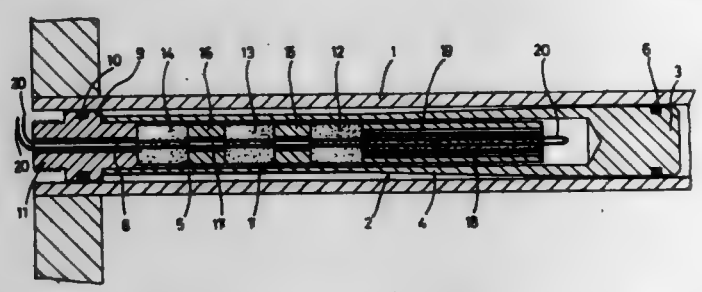
support means for supporting the first and second time delay devices for placement in a blasthole.

4,347,790

EXPLOSIVE PLUG FOR BLOCKING TUBES

Christian E. Lizen, Vencimont, Belgium, assignor to Cockerill and Centre de Technologies Nouvelles, Seraing and Liege, Belgium

Filed Jul. 8, 1980, Ser. No. 166,961
Claims priority, application Belgium, Jul. 11, 1979, 0/196251
Int. Cl.[3] F42D *3/00*
U.S. Cl. 102—304 7 Claims



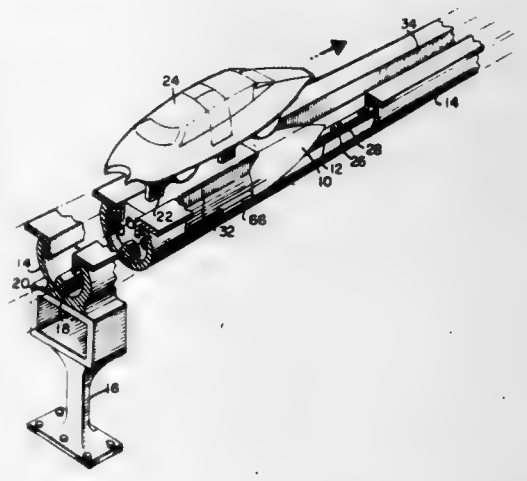
1. An explosive plug for blocking a tube, comprising a tubular metal body closed at one end by a solid head and having at the other end a cylindrical surface-contact region, said tubular metal body being such that when it is placed in a tube to be blocked the surface-contact region is coaxial with but at a distance from the tube, said surface-contact region containing a plurality of explosive charges and a detonator disposed in a tube made of a synthetic material which extends coaxially within the metal body, the adjacent explosive charges being axially separated by a ring of a synthetic material such that the charges can be primed one after another by the detonator, there being an axial passage extending along the entire length of the synthetic tube to accommodate wires for firing the detonator.

4,347,791

VEHICLE GUIDEWAY SYSTEM

James A. Mandros, 60 Newcastle Rd., Peabody, Mass. 01960

Continuation-in-part of Ser. No. 785,455, Apr. 7, 1977, abandoned. This application Jan. 22, 1979, Ser. No. 5,196
Int. Cl.[3] B61B *13/08, 13/10;* B60V *3/04*
U.S. Cl. 104—156 23 Claims



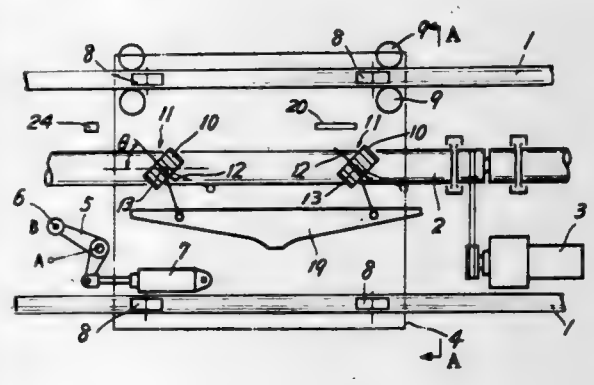
1. A guideway system for cargo including vehicles comprising a carriage mounted to glide in a channel, said carriage having support means to hold said cargo thereon, said carriage having at least one longitudinal recess therein adjacent said channel, said channel having a plurality of vacuum intake ports and gas inlet pressure ports therein in sequence along the path of said carriage, which ports align with said recess as it passes by and means to activate said ports so that compressed gas and suction are applied separately to said recess to propel the carriage along said channel.

4,347,792

DRIVELESS VEHICLE WITH SPEED CONTROL CAM

Katsuhiro Nagahori, Chiba, Japan, assignor to SI Handling Systems, Inc., Easton, Pa.

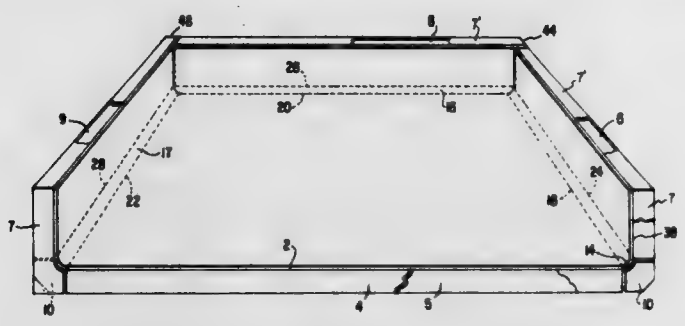
Filed Dec. 18, 1980, Ser. No. 217,862
Claims priority, application Japan, Jan. 11, 1980, 55-1655[U]
Int. Cl.[3] B61B *13/12*
U.S. Cl. 104—166 4 Claims



1. A driverless vehicle comprising a base mounted on support wheels, at least one drive wheel having a support and oscillatable therewith about the axis of its support between a drive position and an accumulation position, a cam supported on the base by a horizontal parallelogram linkage, one leg of which is connected to said support for moving said drive wheel support and said drive wheel between said positions, said cam having a generally longitudinally extending acceleration and deceleration surface positioned so that said surfaces

may contact a cam follower and as a result of such contact move transversely of the base.

4,347,793
COUNTER TOP AND CONSTRUCTION
Edward Rajnert, Box 325, Pine Island, N.Y. 10969
Filed Oct. 15, 1980, Ser. No. 197,131
Int. Cl.[3] A47B *13/08*
U.S. Cl. 108—27 11 Claims



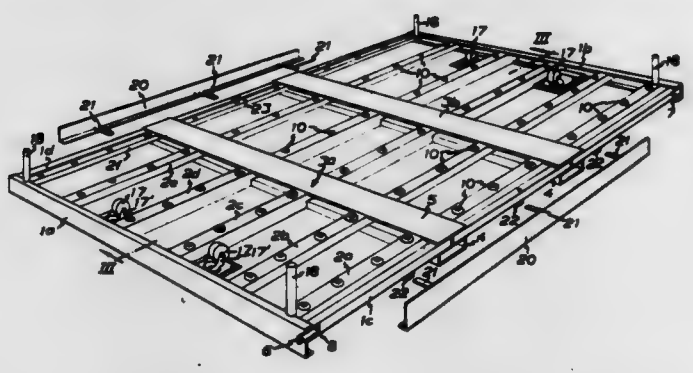
8. A counter top assembly having at least one inside corner comprising in combination:

a base having a plan view form of a particular configuration having at least one corner with first and second adjacent straight edges;

backsplash strips substantially perpendicular to and above said base and in spaced parallelism with respective said first and second adjacent straight edges;

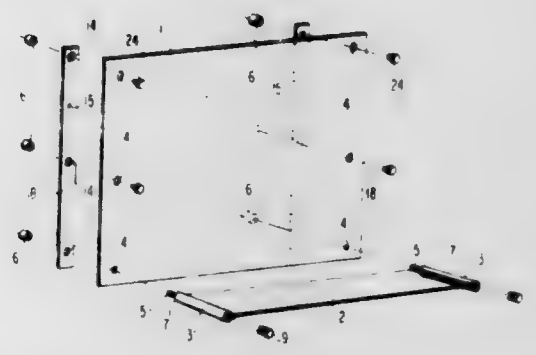
a sheet of synthetic thermoplastic material bonded to said base and said backsplash strips and curved throughout the areas which span the spaces between each said first and second adjacent straight edges of said base and the corresponding said backsplash strips, the sheet being arcuately cut along a line from said one corner of said base so as to provide a convex edge for the sheet portion curved and overlying one backsplash strip which intersects and abuts the surface of the sheet portion curved and overlying the other backsplash strip to form an inside corner juncture.

4,347,794
PALLET FOR USE AS A LOAD-CARRYING SUPPORT
Claes Nordström, Sigvard Grubbesgatan 12, S-230 40 Bara, Sweden
Filed Jul. 15, 1980, Ser. No. 169,080
Claims priority, application Sweden, Jul. 19, 1979, 7906201
Int. Cl.[3] B65D *19/28, 19/44*
U.S. Cl. 108—51.1 10 Claims



1. A lightweight pallet intended for use as a load-carrying support for goods, comprising a body in the form of a rectangular framework of beams of light metal interconnected by welding, and a load-carrying surface formed by roller means which comprise a plurality of ball roller means mounted in the framework to rollingly support the goods, wherein said roller means also comprise at least one brake roller means mounted in the framework for braking engagement with goods supported on the balls of said ball roller means, said pallet further comprising means permitting relative movement of said ball roller means and said brake roller means to permit non-braked movement of said goods in either of at least two opposite directions.

4,347,795
SET OF SHELVES
Pekka Mäkinen, Kankaantaka, 37100 Nokia, Finland
Filed Nov. 5, 1979, Ser. No. 91,024
Claims priority, application Finland, Nov. 6, 1978, 783374; Jul. 17, 1979, 792230
Int. Cl.[3] A47B *5/00*
U.S. Cl. 108—152 11 Claims



1. A shelf assembly comprising:

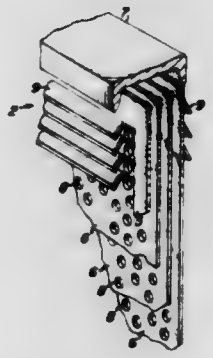
a substantially rectangular-shaped rear plate having at least two spaced openings extending therethrough;

at least one pair of rod-shaped support devices, each having a first end portion extending through a separate opening in said rear plate, each rod-shaped support device including a hollow interior portion and a cleft portion extending outwardly from said interior portion through an exterior wall of said respective support device, with said rod-shaped support devices being positioned such that said respective cleft portions substantially confront one another;

a rigid shelf having an end portion extending into each cleft portion whereby said shelf extends outwardly from said rear plate; and

plug means mounted on each rod-shaped support device for preventing withdrawal of said shelf from said respective cleft portions.

4,347,796
BLAST SUPPRESSIVE SHIELDING
Paul V. King, Joppatowne; Albert P. Becher, Fallston, and Wilmer P. Henderson, Bel Air, all of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Continuation of Ser. No. 699,738, Jun. 24, 1976, abandoned, which is a continuation of Ser. No. 495,177, Aug. 6, 1974, abandoned. This application Oct. 5, 1979, Ser. No. 82,263
Int. Cl.[3] F41H *5/06*
U.S. Cl. 109—49.5 18 Claims



1. A blast suppressive shield comprising a multi-plate metal or metal-like composite which includes in combination:

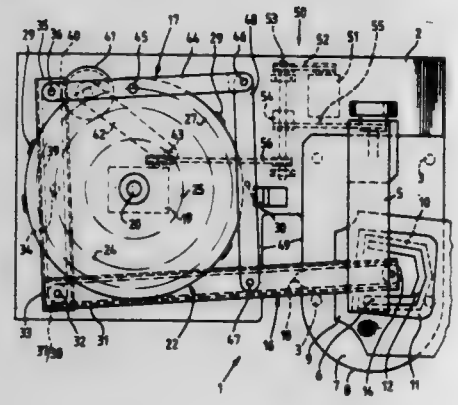
a first apertured plate in the form of a louvered plate suitable for slowing or confining blast debris and fragments;
a second apertured plate in the form of a perforated plate defining a plurality of gas flow apertures suitable for attenuating blast overpressure; and
means for mounting said first and second apertured plates in spaced apart and substantially fixed position relative to each other.

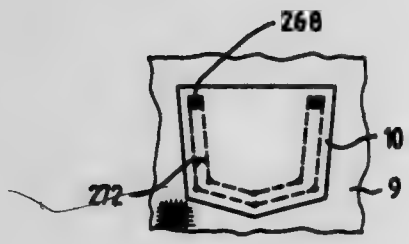
4,347,797

SEWING DEVICE FOR PRODUCING FASTENING STITCHES AND TACK STITCHES

Hans Scholl, Oerlinghausen-Lipperreihe, and Jochen Fischer, Bielefeld, both of Fed. Rep. of Germany, assignors to Kochs Adler AG, Bielefeld, Fed. Rep. of Germany

Filed Dec. 10, 1980, Ser. No. 215,238
Claims priority, application Fed. Rep. of Germany, Jan. 11, 1980, 3000831
Int. Cl.[3] D05B *21/00*
U.S. Cl. 112—121.12 10 Claims





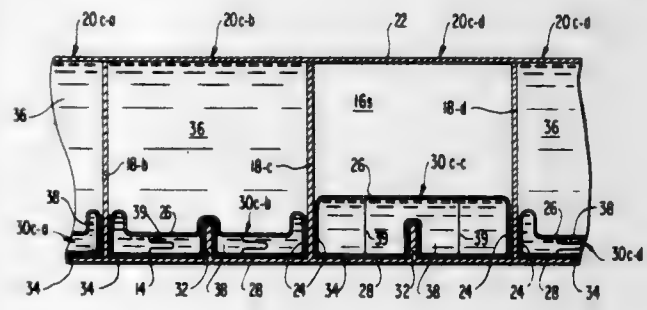
1. A sewing device for producing fastening stitches (270, 272) and tack stitches (268), having
a sewing head (5) including
an arm (57),
a shaft (58) pivoted in said arm (57) and driving a crank mechanism (59),
a needle bar (61) carrying a needle (6) and reciprocately driven by said crank mechanism (59),
a bracket (60) receiving said reciprocating needle bar (61) and pivoted in said arm (57) for allowing a lateral swing movement of said bracket (60) in a plane (63) and
a jogging means (72) imparting said swing movements to said bracket (60), comprising
input drive means (73,191, 219;248) cooperating in an angular relationship with said shaft (58),
an output drive element (92; 226) drivingly connected to said bracket (60).
a mechanism (95,115,188, 189) driven by said drive means (73; 191, 219; 248) for producing oscillating movements transmitted to said output drive element (92;226), said oscillating movements relating to said reciprocating needle movements as 1:1 or 1:2, and
shifting means (105, 237, 251) for selecting one of said two oscillating movements;
means for receiving a workpiece (9, 10) and
control means (17) producing a continuous relative feed movement between said workpiece (9, 10) and said needle (6), comprising
means (25,43,42,41,40,39,38,37,18) as to produce said relative movement in direction of said plane (63) while said sewing head (5) produces said fastening stitches (270, 272).

4,347,798

BUFFER SYSTEM FOR TANKVESSELS

John J. Gallagher, 4206-13th St. NE., Washington, D.C. 20017

Continuation-in-part of Ser. No. 911,528, Jun. 1, 1978, abandoned. This application Nov. 17, 1980, Ser. No. 207,661
Int. Cl.[3] B63B *25/08*
U.S. Cl. 114—74 R 5 Claims



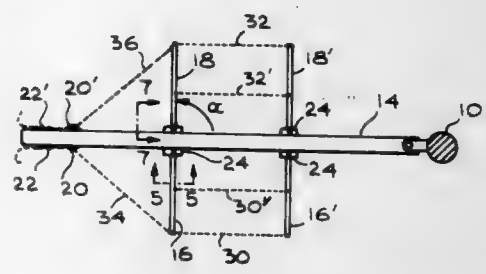
1. In a bulk liquid cargo vessel having plural cargo tanks each having top, side and bottom walls, the system for shielding the liquid cargo carried in said tanks in the event of cargo tank penetration comprising:
top, side and bottom elastomeric walls defining at least one closed buffer tank disposed in each of said cargo tanks to correspond to like walls of said cargo tanks respectively, at least the bottom walls of said buffer tanks being formed and disposed to substantially cover the bottom walls of said cargo tanks;
means sealably fixing at least the bottom walls of said buffer tanks to the bottom walls of said cargo tanks; and
fluid means communicative with each of said buffer tanks to transmit a non-pollutant buffer fluid thereto to selectively displace the top wall thereof to a first position spaced from the bottom wall of the cargo tank in which it is disposed to interpose said non-pollutant buffer fluid at least between said cargo, and the bottom wall of said cargo tanks and shield cargo loaded in said tank at least from penetration of the bottom wall thereof.

4,347,799

SAIL CATCHER

Vincent C. Moriarty, 3474 Sunset La., Oxnard, Calif. 93030

Filed Sep. 4, 1979, Ser. No. 72,354
Int. Cl.[3] B63H *9/04*
U.S. Cl. 114—102 9 Claims



1. An extendable sail catcher to be mounted on a boom of a sailboat, comprising:
a pair of arms, each of which is positioned on opposite sides of said boom;
hinge means attached to one end of each of said arms and to said boom;

means for pivoting each of said arms outwardly from said boom about said hinge means until each arm defines a predetermined angle with respect to said boom, said means for pivoting comprising first and second securing lines each attached to one of said arms so that said arms will pivot to said predetermined angle when tension is applied to said lines;

stop means for preventing each of said arms from pivoting beyond said predetermined angle;

means for securing said first and second securing lines to said boom whereby said arms will be held against said stop means at said predetermined angle so that said pair of arms and said first and second securing lines define a basket-like structure for catching a sail when it is lowered to said boom; and

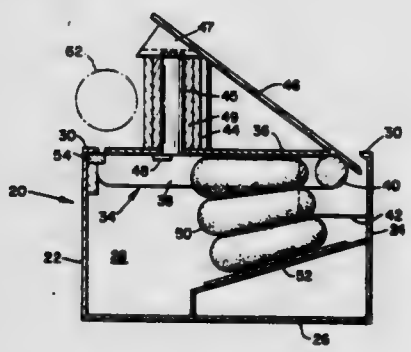
means for holding said arms against said boom when they are pivoted inwardly with respect to said boom comprising first and second magnet pairs, said first magnet pair having one magnet thereof attached to said first arm and the other magnet thereof attached to said boom, said second magnet pair having one magnet thereof attached to said second arm and the other magnet thereof attached to said boom whereby when said arms are pivoted inwardly to said boom, said first pair of magnets are magnetically coupled to each other and said second pair of magnets are magnetically coupled to each other.

4,347,800

RETRACTABLE TOWING PIN

Frederick H. Culver, Covington, La., assignor to Fritz Culver, Inc., Covington, La.

Filed Jan. 21, 1980, Ser. No. 113,954
Int. Cl.³ B63B *21/04*
U.S. Cl. 114—218 **4 Claims**



1. A retractable towing pin assembly adapted to be mounted in pairs on the deck of a marine vessel to guide a tow line therefor comprising:

a housing having an open top portion adapted to be mounted on the deck of said vessel with the top portion disposed in the horizontal plane containing the deck surface;

a shaft member pivotally mounted within and extending across said housing adjacent the open top portion and adjacent a side thereof;

a platform disposed within said housing and mounted adjacent an edge thereof on said shaft, said platform being movable between a lower, inclined position within said housing and an upper, operative position across the open top portion of said housing so that said platform in the upper position is contained in the horizontal plane containing the deck surface;

a cover plate carried by said platform at an edge thereof adjacent said shaft and extending outwardly therefrom, said cover plate being movable with said platform between a lower position wherein said plate closes the open top portion of said housing and is contained in the horizontal plane containing the deck surface and an upper position wherein said plate extends upwardly from said shaft at an acute angle to the horizontal plane;

a roller pin extending between said platform and cover plate and rotatably mounted thereto, said pin being mounted distally to the portions of said platform and plate disposed adjacent said shaft whereby when said platform and cover plate are in the lower position and pin will be contained within said housing, and when said platform and plate are in the upper position said pin will extend upwardly through the deck surface perpendicular to the horizontal plane;

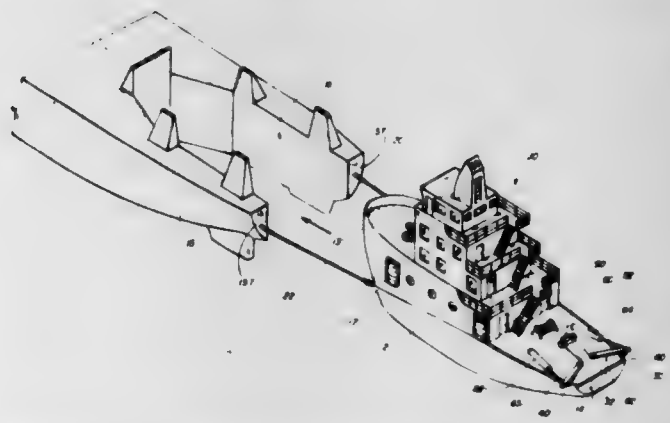
inflatable actuator means mounted underneath said platform for raising and lowering said platform between its upper and lower positions to extend and retract said pin.

4,347,801

BARGE AND TUG CONNECTION SYSTEM

Jean P. Colin, Metairie, La., assignor to Bretagne ACB Corporation, New Orleans, La.

Filed Jan. 29, 1980, Ser. No. 116,616
Int. Cl.³ B63B *21/60*
U.S. Cl. 114—248 **35 Claims**



1. A barge and tug connection apparatus comprising:

a. a barge providing a V-notched portion for receiving a tug into said V-notch;

b. a tug for pushing said barge with said notch allowing said tug to pitch and heave in said notch relative to said barge;

c. a least one elongated elastic pushing line, said pushing line terminating at barge and tug end portions which define its length, said pushing line stretching during operation responsive to relative movement between said tug and said barge;

d. tug connection means associated with said tug and separate from said pushing line for connecting the tug end portion of said pushing line to said tug, said pushing line being disposed during operation between said barge and said tug connection means, said tug connection means comprising at least in part moving means movably mounted on said tug between aft connected and fore disconnected positions, for forming a connection with the tug end portion of said pushing line, said moving means being generally aft of said disconnected position when in said connected position;

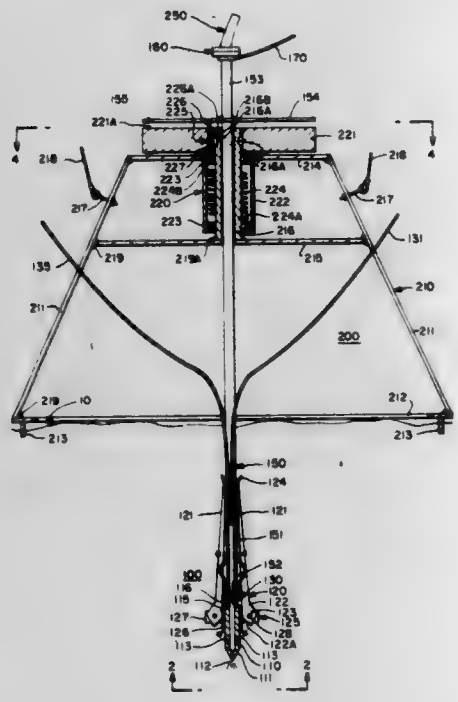
f. release means for separating said pushing line from said moving means responsive to movement of said moving means from said aft connected position to said fore disconnected position;

g. pre-stressing means associated with said connection means for pre-stressing said pushing line uniformly along its length between said barge and said tug connection means, with said pushing line being stressed continuously during operation by said pre-stressing means disallowing a slackening of said pushing line.

4,347,802
SELF-BURYING ANCHOR SYSTEM

William R. Hossfeld, 3 Pine Ct., Kentfield, Calif. 94904

Filed May 19, 1980, Ser. No. 150,925
Int. Cl.³ B63B 21/26
U.S. Cl. 114—295 10 Claims



1. In an anchor device adapted to be buried in a bed of material;

an anchor head comprising a generally hollow cylindrical body having an upper portion adapted to be releasably secured to a hollow placement stem connected to a supply of fluid under pressure and a lower portion with a tapered nose and at least one downwardly oriented jet aperture in the lower end of said nose and a plurality of upwardly angled jet apertures in the walls thereof for transmitting said fluid into the bed materials surrounding said nose thereby to fluidize said material and drive said head into said bed;

a fin assembly mounted on said anchor head intermediate said top and bottom portions thereof and comprising a plurality of fins and means for mounting a foot portion of each of said fins for rotation of said fins between a folded position generally parallel to the axis of said anchor head and an unfolded position at a substantial acute angle to said axis; and

an anchor line assembly including an anchor line and means fastening said anchor line to said fin assembly to enable said anchor head and fin assembly to be partly retracted from said bed to unfold said fins and thereby set said anchor device in said bed;

said placement stem including a transversely extending stop plate fastened thereto at a preselected distance from said anchor head to determine a maximum burying depth for said anchor device.

4,347,803
DISPLAY DEVICE PROVIDING MAGNIFIED INDICATION

Masaharu Ohba, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

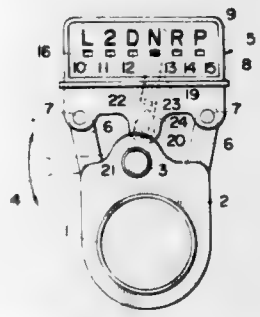
Filed Aug. 13, 1980, Ser. No. 177,584
Claims priority, application Japan, Oct. 26, 1979, 54-149092[U]
Int. Cl.³ G09F 9/00
U.S. Cl. 116—28.1 8 Claims

1. A display device for displaying an indication of a quantity, comprising:

an indicator member rotatable within a first range of rotational movement around a first axis; and

a drive member rotatable around a second axis, different from and substantially parallel to said first axis, within a second range of rotational movement, through an angle corresponding to said quantity, said drive member engaging said indicator member so as to drive said indicator member around said first axis;

a point of engagement between said drive member and said indicator member describing a locus, with said first and second axes being located on the same side of said locus, as



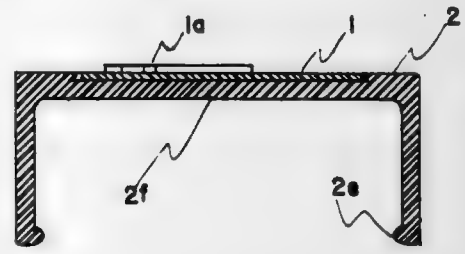
said drive member and said indicator member move through their respective ranges of rotation, the perpendicular distance from any point on said locus to said first axis being shorter than the perpendicular distance from said point to said second axis;

said indicating member having a portion for displaying the indication of said quantity located at a side of said point of engagement remote from said first axis.

4,347,804
MONO-DISC ROTATORY MEDICATION REMINDER

Antony-Euclid C. Villa-Real, Las Vegas, Nev., assignor to Medi-Timer Corporation, Las Vegas, Nev.

Filed Feb. 12, 1980, Ser. No. 120,865
Int. Cl.³ B65D 5/72; G09F 9/00
U.S. Cl. 116—308 1 Claim



1. A medication dosage time-intake reminder device for a medicine container comprising:

a stationary portion having a lower disc-like central surface, an upper and outer ring-like surface, and a ridge and groove portion between said surfaces, said upper and outer ring-like surface having time indicia thereon;

an inner annular disc member having an annual ridge means for engagement with said ridge and groove portion between said surfaces, said disc member rotatable within said ridge and groove portion and within said disc-like central surface and the top surface of said disc member flush with said upper ring-like surface;

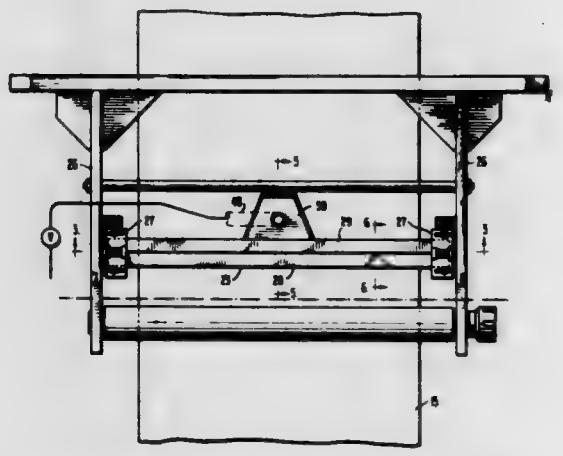
medication dosage indicating means on said disc member whereby upon rotation of said disc member with respect to the stationary portion, the medication dosage indicating means may be aligned with the time indicating means to indicate the time for the next dose administration; and

an annular protuberance on said depending annular wall for engaging a medicine container whereby said device may be firmly attached to said medicine container cap.

4,347,805
APPARATUS FOR LIQUID COATING THICKNESS CONTROL

Robert T. Ernest, Portage, Ind., assignor to National Steel Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 685,801, May 12, 1976, abandoned, which is a continuation-in-part of Ser. No. 540,599, Jan. 13, 1975, abandoned. This application Jan. 30, 1980, Ser. No. 116,877
Int. Cl.³ B05C *11/06*
U.S. Cl. 118—63 13 Claims



1. In combination with a pair of opposed nozzles, a bath of liquid coating which will harden to form a solid coating on a substrate, means for moving a continuous imperforate web lengthwise through the bath of liquid coating, the web issuing from the bath having excess liquid coating thereon and means for moving the coated strip upwardly between the nozzles in such closely spaced relation to each nozzle as to make the nozzle operative for impinging a stream of fluid under pressure against the web for removing excess liquid coating from the web and wherein the two opposed streams of fluid under pressure normally cause a heavier liquid coating to remain on the longitudinal marginal portions of the imperforate web after the web has passed the nozzles, the improvement for preventing the accumulation of such heavier coating on the web in which each nozzle comprises

an elongated body member having its length dimension disposed transversely of the length of the web,

an elongated plenum chamber enclosed by the body member and extending along the length thereof,

fluid discharge orifice forming means facing toward the web and extending along the length of the body member for placing the plenum chamber in communication with the exterior of the body member,

fluid inlet port forming means associated with the body member in fluid communication with the plenum chamber in only an intermediate zone along the length of the plenum chamber, the fluid inlet port forming means constituting the only fluid inlet means in fluid communication with the plenum chamber,

the fluid inlet port forming means being elongated in the direction of the length of the body member, the smallest cross-sectional area of the fluid inlet port forming means having a length dimension at least several times the width dimension of such area but not greater than one-half the length of the fluid discharge orifice means,

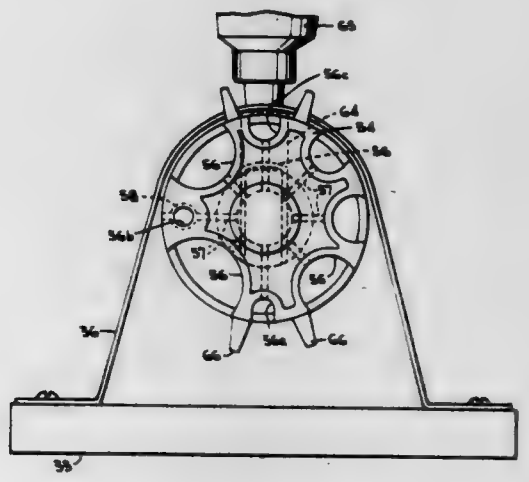
baffle means located within the plenum chamber interposed in the path of fluid moving from the fluid inlet port forming means through the plenum chamber to the fluid discharge orifice forming means, the baffle means being shaped to change the direction of movement of fluid passing through the fluid inlet port forming means and impinging on the baffle means, and

internal wall surfaces presented by the plenum chamber shaped to impart to fluid impinging on the baffle means and moving through each end portion of the fluid discharge orifice forming means movement having a component parallel to the associated surface of the web and in a direction toward the associated marginal portion of the web to thereby move liquid coating on the associated marginal portion of the web outwardly and downwardly relative to the surface of the web.

4,347,806
LIQUID DISPENSING APPARATUS

Dennis J. Argazzi, and Robert Burger, both of Newington, Conn., assignors to Loctite Corporation, Newington, Conn.

Filed Oct. 30, 1980, Ser. No. 202,418
Int. Cl.³ B05C *5/02*
U.S. Cl. 118—710 8 Claims

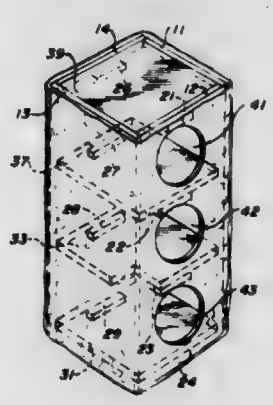


1. An apparatus for dispensing a liquid product for the coating of a workpiece, comprising, a housing having a cavity with a product inlet, a pump cylinder extending from said cavity and terminating in a valve controlled outlet, a piston shiftable between retracted and extended positions in said housing for pumping the product from said cylinder through said outlet means for actuating said piston, and a turret mounted on said housing for rotation about a horizontal axis and including a plurality of workpiece receiving seats for each receiving a workpiece of a different size, and said turret further including a plurality of product passageways respectively extending from said seats toward said outlet, one of said passageway communicating with said outlet in a predetermined rotative position of said turret.

4,347,807
CAT CONDOMINIUM AND METHOD OF MAKING SAME

Marvin Reich, 1407 G St. NW., 3rd Floor, Washington, D.C. 20005

Filed Mar. 17, 1981, Ser. No. 244,555
Int. Cl.³ A01K *1/03*
U.S. Cl. 119—19 10 Claims



1. A method of making a cat condominium comprising:

a. placing four panels on a work surface, said four panels being aligned side by side in a horizontal plane,

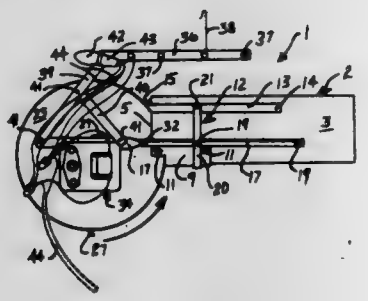
b. placing a continuous piece of carpet over said four panels and attaching said carpet to said panels,
c. erecting said four panels to form a box-shaped structure,
d. inserting rigid shelf members in a spaced relationship within said erected four panels, so as to form compartments, thereby forming a rigid cat condominium.

4,347,808

FROG FEEDING APPARATUS

Dozier Lester, 1156-F Guilbeau Rd., Duson, La. 70529

Filed Jan. 19, 1981, Ser. No. 226,057
Int. Cl.³ A01K *5/02*
U.S. Cl. 119—51 R **9 Claims**



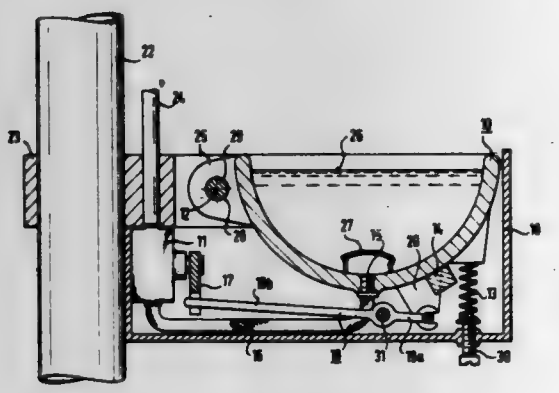
1. A frog feeding apparatus for automatically dispensing particles of food to frogs comprising:
(a) a hopper defined by two sides disposed in a generally V-shaped cross-section, and a first end closing one end of said hopper and a second end closing the opposite end of said hopper, said first end having a slot for containing and providing access in removing said particles of food;
(b) a frame attached to said hopper and including a bracket means extending beyond said hopper;
(c) an electric motor mounted on said bracket means and provided with a rotatable drive shaft extending from said motor in essentially perpendicular relationship to said bracket means;
(d) wheel means fixedly mounted on said drive shaft with a portion of the periphery of said wheel means in registration with said slot in said hopper, said wheel means rotatable with respect to said bracket means and responsive to activation of said electric motor; and
(e) food engaging means secured to the periphery of said wheel means for periodic traversal of said slot and engagement of the particles of food in said hopper when said wheel means rotates in registration with said slot.

4,347,809

DRINKING BOWL SYSTEM FOR FARM AND OTHER ANIMALS

Martin Glöggler, Memelstrasse 34, D-7910 Neu-Ulm, Fed. Rep. of Germany

Filed Mar. 2, 1981, Ser. No. 239,620
Int. Cl.³ A01K *7/02*
U.S. Cl. 119—81 **10 Claims**



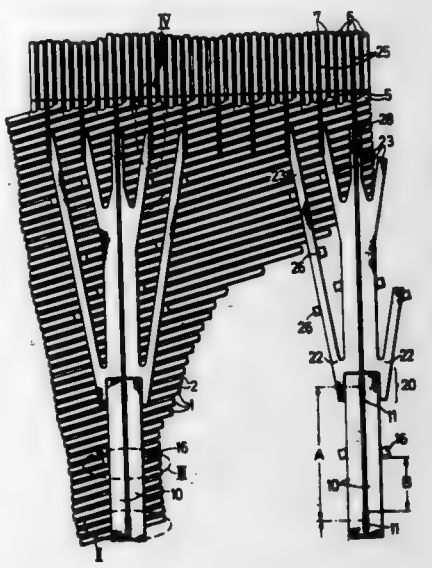
1. An automatic drinking bowl system for animals, the system being designed to be attached to a fixed stanchion, the system comprising: a drinking bowl designed to be moved against an upwardly directed restoring force including an adjustable spring, a housing surrounding said bowl, and being attached on one side to said stanchion, a turnpin assembly attached to said housing on a side of the housing adjacent to said stanchion, said turnpin assembly providing a horizontal axis, said drinking bowl being attached to said housing by said turnpin assembly so that the bowl can rotate around said horizontal axis of said turnpin assembly in such a manner that an edge of the bowl opposite said turnpin assembly moves in an arc, spring adjustment means, said bowl moving through a desired distance to a lower position under the weight of water let into the bowl by way of a continuously adjustable water inlet valve, said valve having an external control means for controlling the operation of said valve, and, on water being taken therefrom, said bowl is moved upwards by said restoring force into an upper position at which said valve is opened, the valve being shut in said lower bowl position, a flexible hose joining said valve with a water inlet opening of said bowl, said opening being in a part of said bowl which is lower down than the rest of the bowl, a valve activating means comprising a driving part connected on the exterior of said water inlet valve, said driving part acting to increase said inlet valve water flow when moved in one direction and to decrease the flow when moved in the opposite direction, a bowl ear attached to said bowl on the side of the bowl opposite the water inlet valve, a firstclass lever rotatable relative to said housing and located outside said flexible hose and outside said water inlet valve, a first end of said lever being connected to said bowl ear, and the second end of said lever being joined with said driving part.

4,347,810

COMBUSTION CHAMBER WALL

Karl Rees, Ruti, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Continuation of Ser. No. 104,427, Dec. 17, 1979, abandoned.
This application Sep. 9, 1981, Ser. No. 300,662
Claims priority, application Switzerland, Dec. 20, 1978, 12930/78
Int. Cl.³ F22B *37/24*
U.S. Cl. 122—6 A **7 Claims**



1. A combustion chamber wall comprising
a plurality of wall tubes each having a horizontal vector;
a plurality of webs interconnecting said wall in gas-tight relation;
a plurality of vertical tubes;
vertical webs connecting said vertical tubes together in gas-tight relation to define at least one wall of a gas flue extending upwardly from said wall tubes;
pairs of vertically disposed tension strips in contact with said wall tubes and having fork-like prongs extending up-

wardly and laterally alongside said vertical tubes in secured relation thereto; and

a plurality of comb-shaped sheet-metal strips, at least two of said sheet-metal strips being vertically disposed between and secured to a respective pair of said tension strips in vertically spaced apart relation, each said sheet-metal strip being secured to a plurality of said webs in perpendicular relation thereto.

4,347,811

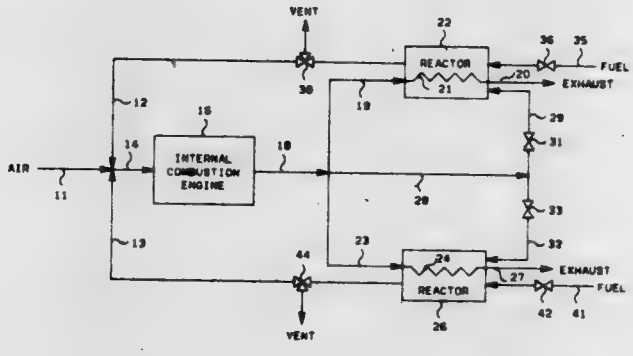
METHOD AND APPARATUS FOR REMOVING HYDROGEN SULFIDE FROM FUEL FOR AN INTERNAL COMBUSTION ENGINE

Roy C. Lee, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 28, 1980, Ser. No. 125,434

Int. Cl.³ F02B 75/12

U.S. Cl. 123—1 A **6 Claims**



1. A method for removing hydrogen sulfide from a fuel being supplied to an internal combustion engine comprising the steps of:

(a) contacting a first stream of fuel with a first absorbing composition, capable of removing hydrogen sulfide from fuel for an internal combustion engine and capable of being regenerated in the presence of oxygen, to thereby remove hydrogen sulfide from said first stream of fuel;

(b) supplying the thus treated first stream of fuel to said internal combustion engine;

(c) contacting a second absorbing composition capable of removing hydrogen sulfide from fuel for an internal combustion engine and capable of being regenerated in the presence of oxygen, with a first stream of exhaust gases, which contain oxygen, from said internal combustion engine to thereby regenerate said second adsorbing composition;

(d) shutting off the flow of said second stream of fuel to said first absorbing composition;

(e) shutting off the flow of said first stream of exhaust gases from said internal combustion engine to said second absorbing composition;

(f) contacting a second stream of fuel with said second absorbing composition to thereby remove hydrogen sulfide from said second stream of fuel;

(g) supplying the thus treated second stream fo fuel to said internal combustion engine;

(h) contacting said first absorbing composition with a second stream of exhaust gases from said internal combustion engine to thereby regenerate said first absorbing composition; and

(i) sequentially repeating steps (a)–(h) to provide an alternate absorption/regeneration cycle for said first absorbing composition and for said second absorbing composition.

4,347,812

HYDRAULIC VALVE LIFT DEVICE

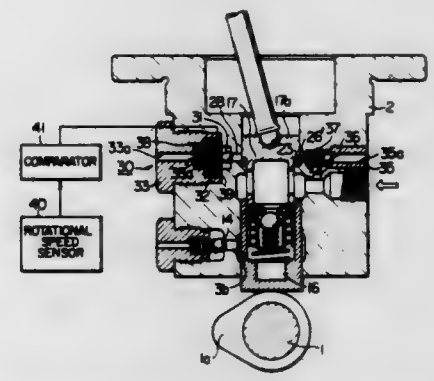
Tooru Kosuda, Okazaki; Michihiro Ohashi, Handa; Yasuhiro Takeuchi, Okazaki; Tadahide Toda, Mishima; Noboru Matsubara, Susono, and Masaaki Takizawa, Mishima, all of Japan, assignors to Nippon Soken, Inc., Nishio and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed Apr. 27, 1979, Ser. No. 34,186

Claims priority, application Japan, Apr. 28, 1978, 53-51337; Jun. 6, 1978, 53-68073

Int. Cl.³ F01L 1/24

U.S. Cl. 123—90.55 **11 Claims**



1. In a hydraulic valve lift device for transmitting the movement of a cam to a combustion chamber valve of an internal combustion engine, which device includes a housing, a lifter slidably engaged in housing bore means, and a plunger slidably-engaged in said bore means and slidable in relation to said lifter and defining therewith an oil pressure chamber into which oil is introduced under pressure, said plunger being extended to move said valve away from its seating position and retracted to move said valve toward its seating position, the improvement comprising:

means defining a braking chamber between said plunger and said bore means, said chamber having opposed end walls and opposed side walls and being adapted to receive oil; and

slit means in one of said side walls forming a portion of a passage to relieve oil from said braking chamber as said plunger is retracted, said slit means having an opening area variable by movement of said plunger such that said opening area is gradually reduced as said plunger is retracted.

4,347,813

APPARATUS FOR STARTING AN INTERNAL COMBUSTION ENGINE

Paul Maucher, Sasbach, and Hugo-Werner Geschka, Düsseldorf, both of Fed. Rep. of Germany, assignors to Luk Lamellen und Kupplungsbau GmbH, Bühl, Fed. Rep. of Germany

Filed Dec. 7, 1979, Ser. No. 101,547

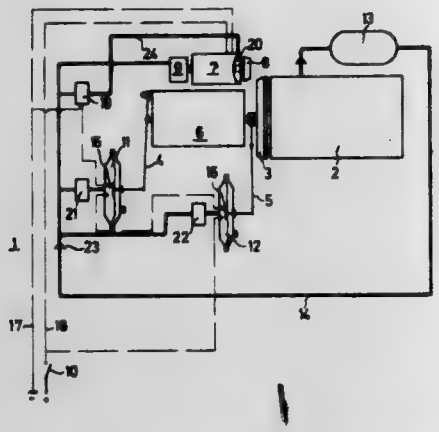
Claims priority, application Fed. Rep. of Germany, Dec. 8, 1978, 2853130

Int. Cl.³ F02N 5/04

U.S. Cl. 123—179 J **20 Claims**

1. Apparatus for starting an internal combustion engine, comprising a starter wheel, a starter motor for rotating said starter wheel, a flywheel rotatable by said starter motor, means for reversing the direction of rotation of said starter motor, and

a rotatable device connected to said starter motor, arranged so that said flywheel is rotatable when said starter motor is driven



to rotate in one direction, and said device is rotatable when said starter motor is driven to rotate in the opposite direction.

4,347,814

PRECHAMBER FOR AN AIR-COMPRESSING INJECTION INTERNAL COMBUSTION ENGINE

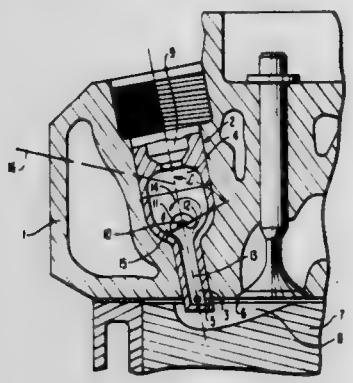
Wulf Besslein, Darmstadt, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Jun. 1, 1978, Ser. No. 911,313

Claims priority, application Fed. Rep. of Germany, Jun. 4, 1977, 2725344

Int. Cl.³ F02B *19/08*

U.S. Cl. 123—261 **14 Claims**



1. A prechamber for an air-compressing injection internal combustion engine, the prechamber comprising an enlarged space portion in communication with a cylinder space by way of a channel-shaped space portion, fuel being injected into the enlarged space portion from an injection nozzle generally in a direction of the channel-shaped space portion, and baffle means with a curved surface facing a fuel jet and provided in said enlarged space portion, characterized in that a bottom side of the baffle means is constructed as a guide surface means for the combustion air flowing into the enlarged space portion of the prechamber, the baffle means is arranged at an insert pin supported in the enlarged space portion, the guide surface means continues on the insert pin up to walls of the prechamber, and in that the guide surface means is constructed within an area of the baffle means as a bottom of a cut-in channel means.

4,347,815

AIR-COMPRESSING INTERNAL COMBUSTION ENGINE WITH A PRECOMBUSTION CHAMBER

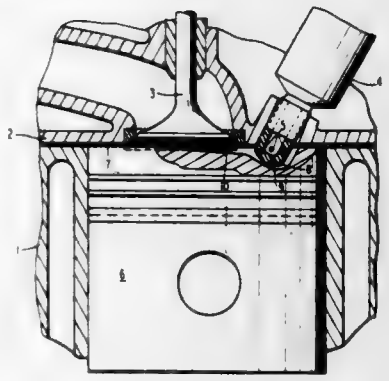
Hans-Georg Schmidt, Nürtingen-Hardt, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Jun. 5, 1980, Ser. No. 156,815

Claims priority, application Fed. Rep. of Germany, Jun. 13, 1979, 2923869

Int. Cl.³ F02B *3/00*

U.S. Cl. 123—269 **2 Claims**



1. An air-compressing fuel-injected internal combustion engine comprising a cylinder block, a plurality of cylinders in the cylinder block, a piston reciprocably mounted in the respective cylinders, a cylinder head disposed on said cylinder block, a precombustion chamber arranged in the cylinder head and associated with the respective cylinders, a plurality of approximately radially extending burner holes provided around a periphery of an end of the precombustion chamber,

a depression arranged in a head of each of the pistons, the end of the precombustion chamber extending into the depression when an associated piston is in a top dead center position thereof, and

stellate depressions emanating from the depression in the cylinder head and corresponding in number and direction to the plurality of radially extending burner holes and being adapted in their cross-sectional shape to the form of the fuel-air mixture jets exiting from said burner holes, each of the stellate depressions ascending continuously in a radially outward direction for reducing the free volume between the piston and the cylinder head in the top dead center position, and

a further substantially axially extending burner hole being provided at the end of the precombustion chamber and oriented into the depression of the piston head, characterized in that

the stellate depressions each have a lenticular configuration.

4,347,816

FUEL/AIR MIXTURE SUPPLY SYSTEM WITH ADDITIONAL AIR SUPPLY

Masaaki Saito, Yokosuka; Yoshihisa Kawamura, Fujisawa; Yuko Sugo, Yokosuka, and Mitsumasa Inoue, Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Dec. 17, 1979, Ser. No. 104,702

Claims priority, application Japan, Dec. 28, 1978, 53-162549

Int. Cl.³ F02B *15/00*

U.S. Cl. 123—308 **12 Claims**

1. In an internal combustion engine of the single-point fuel injection type, comprising a plurality of power cylinders each provided with an inlet valve and an inlet port passage leading to the inlet valve;

(a) an air suply system, comprising:

(a.1) a first intake passage having first and second ends and which takes in air at said first end:

(a.2) a plurality of first branch passages, one corresponding to each inlet port passage, each of which is connected at

one end to receive the air from the second end of the first intake passage, and each of which discharges air from its other end into a corresponding inlet ort passage;

(a.3) and means including a first throttle valve disposed in said first end of said first intake passage and mounted on a first shaft for controlling air flow, which controls flow of air through the air supply system;

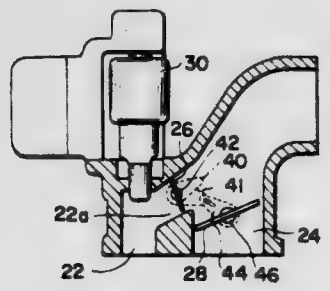
(b) a mixture supply system, comprising:

(b.1) a second intake passage, having an inclined end opening close to the first end of the first intake passage for taking in air at said inclined end;

(b.2) a mixture throttle valve mounted on a second shaft and disposed in said inclined end for controlling air flow in the second intake passage;

(b.3) a fuel injection valve, disposed adjacent the inclined end of the second passage so as to inject fuel in a direction in which the second passage extends into a point of the second intake passage downstream of the mixture throttle valve;

(b.4) and a plurality of second branch passages each having first and second passage ends, one of said second branch passages corresponding to each inlet port passage, each of said second branch passages being connected at said first passage end to receive a flow of air and injected fuel from



an other end of the second intake passage, and each of which discharges an air/fuel mixture from said second passage end into a corresponding inlet port passage;

(c) and means for interrelating the operation of the mixture throttle valve and the means for controlling the air flow to pass substantially no air flow when the mixture throttle valve is opened up to a certain predetermined opening, and which progressively controls the means for controlling the air flow to pass progressively more and more air through the air supply system as the mixture throttle valve opening is further increased beyond said certain predetermined opening, said interrelating means including a first lever mounted fixedly on said second shaft, coupling means including a second lever mounted on said second shaft, and a third lever mounted on said first shaft, wherein when the mixture throttle valve is first rotated to open, the first throttle valve is not rotated and remains closed, but when the mixture throttle valve is rotated to open past a certain intermediate position, said first throttle valve rotates to an open position;

(d) each second branch passage being of generally smaller cross-section than its corresponding first branch passage, and the second intake passage being of generally smaller cross-section than the first intake passage.

4,347,817

IDLE CIRCUIT SHUT-OFF VALVE

John E. Muller, Cold Spring, N.Y., assignor to Jolenn Energy Products Ltd., Monroe, N.Y.

Filed Oct. 23, 1980, Ser. No. 199,943
Int. Cl.³ F02M 7/12
U.S. Cl. 123—325 **12 Claims**

1. A valve needle assembly for a carburetor of an engine for a vehicle adapted to control fluid flow through a needle valve seat in a carburetor fluid passage, the carburetor having a bore adapted to receive a conventional idle adjustment screw, the valve needle assembly comprising:

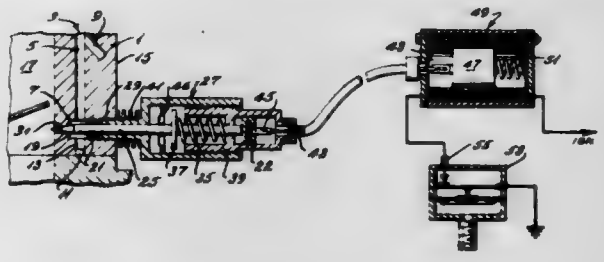
(a) an outer housing adapted to be attached at a first end to an opening of the bore on an outer surface of the carburetor extending into the carburetor to the fluid passage, said housing including a portion received in the bore;

(b) a closure member, the closure member being inserted into a second end of the outer housing;

(c) a needle member, the needle member passing through the outer housing at the first end of the housing and having a needle end adapted to be passed through the needle valve seat to restrict passage of fluid therethrough;

(d) a needle biasing means, the needle biasing means biasing the needle member toward the needle valve seat;

(e) a stop member fixed to the needle member, the stop member limiting travel of the needle member away from the needle valve seat, the stop member being an enlarged



portion on the needle member and wherein the stop member limits said travel by abutting against the closure member;

(f) electromechanical actuating means connected to the needle member, the electromechanical actuating means operating to withdraw the needle member away from the needle valve seat to the extent permitted by the stop member;

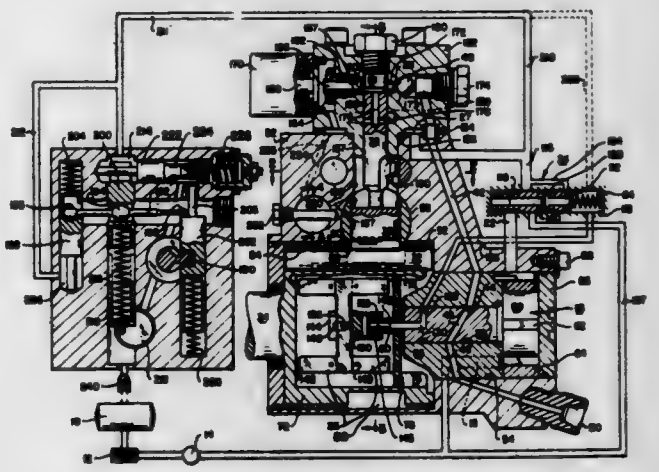
(g) an adjustment means, the adjustment means controlling the distance that the needle member is from the needle valve seat when the stop member has limited the travel of the needle member, wherein the first end of the housing is attached to the opening by threads, and the threads form the adjustment means.

4,347,818

EXTERNALLY CONTROLLED FUEL DELIVERY CURVE ADJUSTMENT MECHANISM FOR A FUEL INJECTION PUMP

Bryan M. Wysong, Hartford, Conn., assignor to Stanadyne, Inc., Windsor, Conn.

Filed Apr. 21, 1980, Ser. No. 142,443
Int. Cl.³ F02D 7/00
U.S. Cl. 123—369 **5 Claims**



1. In a liquid fuel injection pump suited for the delivery of measured charges of liquid fuel under high pressure to an associated engine comprising a charge pump for delivering successive charges of fuel under high pressure for injection, means for metering the fuel charges delivered by the charge pump to provide a fuel charge measure correlated with engine

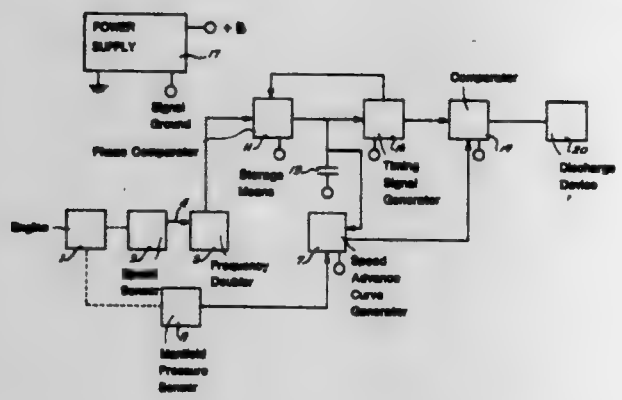
operating conditions, means for generating a fuel pressure correlated with the speed of the pump and means for overriding the metering means to limit the maximum fuel charge measure delivered by the charge pump in accordance with pump speed, the improvement wherein the overriding means comprises a piston mounted in a bore for longitudinal and rotational movement and longitudinally positioned in response to said pressure correlated with pump speed, said piston having a longitudinally extending cam with a longitudinally continuous peripheral cam surface having a longitudinally extending cam profile section formed by a surface of revolution around an axis which is nonparallel to the longitudinal axis of the piston, adjusting means for adjustably holding the piston in a preselected rotational position, and a follower engageable with said cam surface to vary said maximum fuel charge limit in accordance with the axial and rotational position of the piston.

4,347,819

IGNITION SPARK ADVANCE USING A CONSTANT PEAK TO PEAK AMPLITUDE TIMING SIGNAL WITH A FREQUENCY TIED TO ENGINE SPEED

William J. Roberts, Toledo, Ohio, assignor to Eltra Corporation, Toledo, Ohio

Filed Dec. 3, 1979, Ser. No. 99,802
Int. Cl.³ F02P *5/08*
U.S. Cl. 123—415 27 Claims



1. A system for timing the occurrence of an event at a predetermined phase angle in the period of a cyclically operating device comprising means for producing a first timing signal having a substantially constant peak to peak amplitude, said first timing signal having an amplitude varying over a portion of a period of oscillation and with an instantaneous amplitude of said portion of said first timing signal being indicative of the phase of the first timing signal;

means for comparing and aligning the phase of said first timing signal with the phase of said cyclically operating device;

means including a clipper amplifier for amplifying and clipping said first timing signal thereby producing an amplified and clipped second timing signal;

means responsive to said amplified and clipped second timing signal and to a parameter of said cyclically operating device for producing an output signal at said predetermined phase angle of said cyclically operating device.

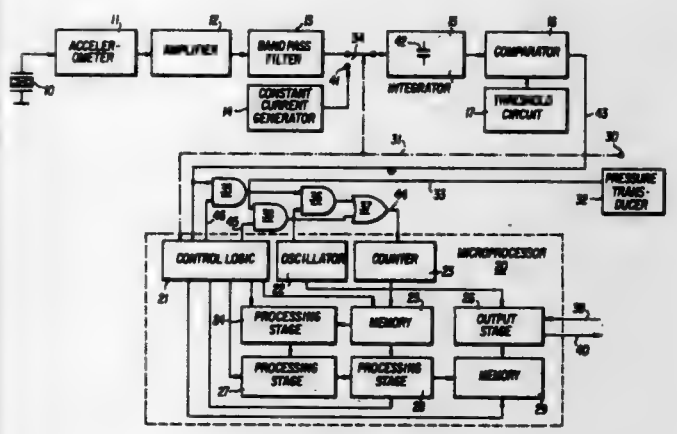
15. An ignition spark advance system for use with an internal combustion engine, having a means for sensing the rotational speed of said engine and producing an engine rotational signal, means for producing a spark advance signal, means for generating a timing signal having a constant peak to peak amplitude and a varying amplitude over its period of oscillation, said amplitude being indicative of said timing signal phase angle, and means to compare the phase of said engine rotational signal and said timing signal to produce a drive signal, said means for generating a timing signal having an input connected to receive said drive signal for driving the frequency of said timing signal toward an engine rotational signal frequency, means for amplifying and clipping said timing signal operatively connected to means for comparing said spark advance signal with said timing signal for producing a trigger signal and means responsive to said trigger signal for producing a high energy discharge spark.

4,347,820

PROCESS AND APPARATUS FOR ELECTRONIC ANGLE OF ADVANCE CORRECTION IN RESPONSE TO PINGING AND ENGINE CHARGE

Robert Deleris, Bailly, France, assignor to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Dec. 10, 1980, Ser. No. 215,057
Claims priority, application France, Oct. 12, 1979, 79 30179
Int. Cl.³ F02D *5/04;* F02P *11/02*
U.S. Cl. 123—417 14 Claims



1. A process for electronically correcting the angle of advance of an internal combustion engine by means of detection of combustion noise signals with the aid of a transducer such as an accelerometer rigidly attached to the engine's cylinder head, wherein an accelerometric signal from the transducer is subjected to analogue processing, including in particular integration in a measurement window of given width to deduce therefrom a value for the noise signal A_i integrated in said measurement window, comprising:

calculating an integrated average noise value S_n, which is constantly re-updated by the last value taken, according to the formula,

$$\overline{S}_n = \overline{S}_{n-1} + \frac{A_i - S_{n-1}}{k}$$

in which S_{n-1} is the preceding average value; A_i is the last value taken for the integrated noise; k is a numerical filtering coefficient for re-updating the average value;

defining a pinging detection threshold C by the formula,

$$C = k_3 \cdot S_{n-1} + k_2$$

in which k_3 is a multiplier coefficient and k_2 a decrementing value;

comparing the last integrated noise value A_i to the pinging detection threshhold C defined from the value S_{n-1} relating to the same cylinder; and

correcting according to the result of the preceding comparison the point of advance under a strategy which depends on the engine's operating state.

4,347,821

AIR/FUEL RATIO CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE HAVING ROTARY VALVE AND STEP MOTOR

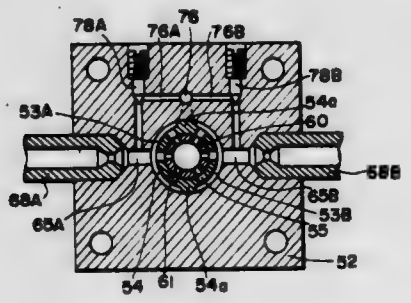
Masaaki Saito, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Sep. 9, 1980, Ser. No. 185,436

Claims priority, application Japan, Sep. 13, 1979, 54-126638[U]

Int. Cl.³ F02M *11/00*; F02B *33/00, 3/00, 75/10*

U.S. Cl. 123—440 4 Claims



1. In an air/fuel ratio control system for an internal combustion engine equipped with a carburetor which has a main fuel discharge passage provided with an air bleed and a slow fuel discharge passage provided with an air bleed, the control system having an air/fuel ratio detector which produces an electrical feedback signal representative of an actual air/fuel ratio of an air-fuel mixture supplied to the engine, a first auxiliary air-admitting passage connected to the main fuel discharge passage, a second auxiliary air-admitting passage connected to the slow fuel discharge passage, electrically operated flow control valve means for controlling the admission of air into the first and second auxiliary air-admitting passages and a control circuit which provides a control signal to the valve means so as to nullify a deviation of the actual air/fuel ratio represented by the feedback signal from a preset air/fuel ratio,

wherein said flow control valve means is a single rotary valve operable to simultaneously control the admission of air into both said first and second auxiliary air-admitting passages and operated by a single stepping motor which is driven in compliance with said control signal;

said rotary valve comprising a hollow outer cylinder fixedly held in a valve body and formed with a plurality of circumferentially arranged radial apertures with circumferentially equal intervals therebetween, and a hollow inner cylinder formed with the same number of circumferentially arranged radial apertures as said apertures of said outer cylinder with circumferentially equal intervals therebetween and rotatably fitted into said outer cylinder whereby said inner cylinder is rotated stepwise by said stepping motor to alternately assume a first position wherein the respective radial apertures of said inner cylinder are aligned with the respective radial apertures of said outer cylinder and a second position where the radial apertures of said inner cylinder are deviated from the radial apertures of said outer cylinder.

4,347,822

SINGLE POINT FUEL INJECTION WITH VENTURI ATOMIZATION

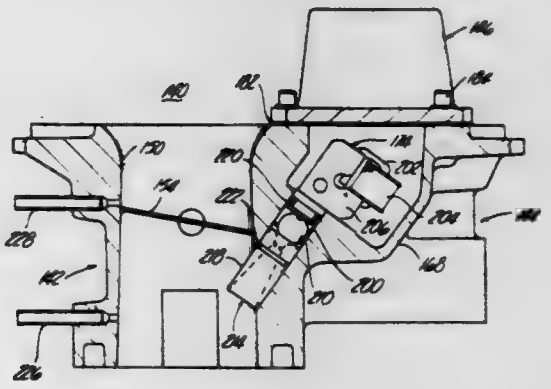
Gary L. Casey, Troy, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Division of Ser. No. 970,410, Dec. 18, 1978, abandoned, which is a continuation of Ser. No. 778,636, Mar. 17, 1977, abandoned. This application Feb. 19, 1980, Ser. No. 122,551

Int. Cl.³ F02M *61/14*

U.S. Cl. 123—445 5 Claims

1. In a fuel management system for an internal combustion engine having a source of fuel supply, throttle body means mounted on the engine having throat means for delivering fuel to the engine and pump means including regulator means for delivering fuel from the supply to the engine, the improvement comprising fuel bowl means formed as part of the throttle body means having a cavity formed therein and an inlet connecting said cavity to the pump means for receiving fuel from said pump means, said fuel bowl means having an outlet formed therein communicating said cavity with the throat means, injector means disposed contiguous with said outlet and positioned in said fuel bowl means for controlling the flow of fuel from said cavity to the throat means, venturi means positioned in said outlet between said injector means and the throat means, and means for introducing air flow between said injector means and said venturi means for creating air flow through said venturi means and entraining fuel from said injector in said air flow.



4,347,823

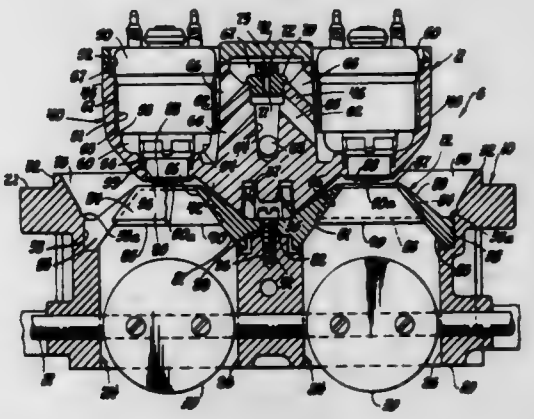
THROTTLE BODY INJECTION APPARATUS WITH DISTRIBUTION SKIRT

David R. Kessler, Churchville; Thomas J. Gutmann, and Charles E. Finn, both of Rochester, all of N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 24, 1981, Ser. No. 237,291

Int. Cl.³ F02M *39/00*

U.S. Cl. 123—472 3 Claims



1. A throttle body injection apparatus for a spark ignition, internal combustion engine comprising in combination: a throttle body having opposed inlet and outlet surfaces and at least one longitudinal cylindrical internal stepped wall defining a throttle bore extending from said inlet surface to said outlet surface and being adapted for communication at its inlet end with atmospheric air and at its outlet end with the intake manifold of the engine; a throttle valve of circular disc configuration pivotally positioned in said throttle bore intermediate said ends; an injector mechanism operatively connected to said throttle body, said injector mechanism including at least one fuel injector disposed above said inlet end and co-axial with said throttle bore, said fuel injector being adapted to receive low pressure fuel and to inject the same in pulses having a substantially hollow cone spray pattern; and, a distribution skirt of truncated, conical ring-like configuration operatively

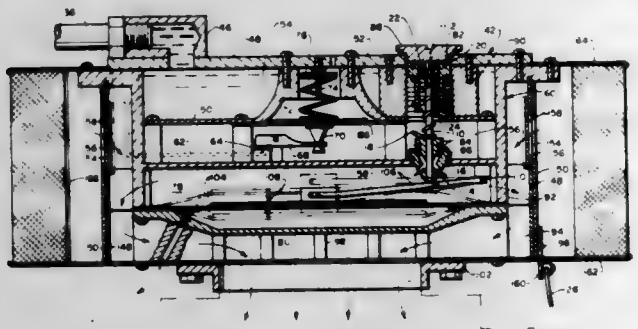
connected to said throttle body and positioned so that its convergent end is located next adjacent to and concentric with the discharge end of said fuel injector and so that its divergent end extends into said throttle bore upstream of said throttle valve, said distribution skirt thus being operative so as to divide the flow of atmospheric air into said throttle bore between a first flow path about the exterior of said distribution skirt and a second flow path through the interior of said distribution skirt whereby to effect improved air-fuel distribution in the charge being inducted into the engine.

4,347,824

LPG FUEL SUPPLY SYSTEM

William V. Pierson, Ventura, Calif., assignor to I.C.E. Company, Inc., Ventura, Calif.

Filed Jun. 26, 1980, Ser. No. 163,316
Int. Cl.³ F02M *15/00*
U.S. Cl. 123—527 **25 Claims**



1. An LPG fuel supply system for internal combustion engines comprising:
- a housing having a fuel vaporizing chamber, a hot fluid circulating chamber adjacent said fuel vaporizing chamber and an air-fuel mixing chamber;
- fuel inlet conduit means to said vaporizing chamber;
- fuel inlet valve means in said vaporizing chamber responsive to the pressure in said vaporizing chamber to control the flow of fuel from said inlet conduit to said vaporizing chamber;
- fuel flow regulation valve means between said fuel vaporizing chamber and said air-fuel mixing chamber;
- fuel flow regulating valve activating means responsive to downstream pressure for activating said fuel flow regulating valve means; and
- air inlet means to control the flow of air to said air-fuel mixing chamber;
- mounting adapter means for mounting said housing on a carburetor of an internal combustion engine.

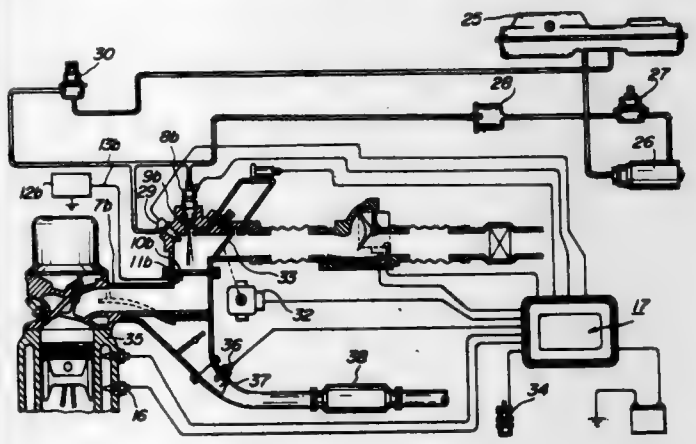
4,347,825

FUEL INJECTION APPARATUS FOR AN INTERNAL COMBUSTION ENGINE

Suzuo Suzuki, Yokosuka; Yasuhiko Nakagawa, Kamakura; Hisamoto Aihara, Yokosuka, and Yasuo Matsumoto, Yokohama, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jan. 14, 1980, Ser. No. 112,077
Claims priority, application Japan, Jan. 18, 1979, 54-4641
Int. Cl.³ F02M *27/04*
U.S. Cl. 123—537 **10 Claims**

1. A fuel injection apparatus for an internal combustion engine, wherein fuel is injected from an injection valve into a space defined by a wall of a fuel passage, comprising an electrode arranged in opposition to the injected fuel near the injection valve, and electrically insulated from the injection valve and the wall; first means for applying to the injection valve a first voltage; second means for applying to the electrode a second voltage; third means for applying to the wall a third voltage; the first, second and third voltages forming a high voltage electric field within the space, by which the injected fuel is electrified to have a polarity which is opposite to that of the electrode, and thus electrified fuel tends to be repulsed by the wall, characterized in that the third means consists of a



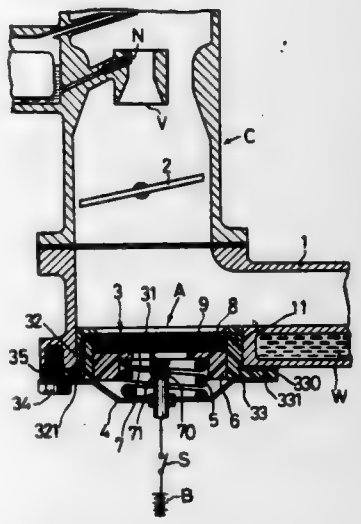
connection between the wall and the ground, and that the electrode consists of a ring and a wire or ribbon connected with the ring and extending downstream from the ring within and along the fuel passage.

4,347,826

FUEL EVAPORATOR FOR INTERNAL COMBUSTION ENGINE

Ken Nomura, Okazaki; Toshihiko Igashira, Toyokawa, and Seikou Abe, Kariya, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Oct. 29, 1980, Ser. No. 202,173
Claims priority, application Japan, Oct. 31, 1979, 54-150836[U]
Int. Cl.³ F02M *31/00*
U.S. Cl. 123—549 **13 Claims**



1. A fuel evaporator disposed in an intake manifold of an internal combustion engine, comprising:
- a casing compcsed of
  - a metallic heating plate member;
  - a metallic supporting member which projects from the outer periphery of said heating plate member underwards;
  - a covering member made of heat resistant and electric insulating material, which covers the outer periphery of said supporting member; and
  - a bottom plate member which covers an opening formed by the lower ends of said supporting member and said covering member;
- said covering member being closely inserted within a hole penetrating through said intake manifold so that said heating plate member is exposed to the interior of said intake manifold;

a heating element composed of a ceramic having positive temperature coefficient of resistance, which is closely fixed to the under surface of said heating plate member within said casing;

a cushion member composed of metallic fine wire fabric, which is closely fixed to the under surface of said heating element;

a spring member which is disposed on said bottom plate member within said casing so as to support said heating element through said cushion member and press said heating element against said heating plate portion; and

an electrically connecting means which electrically connects said heating element and an electric power source.

4,347,827

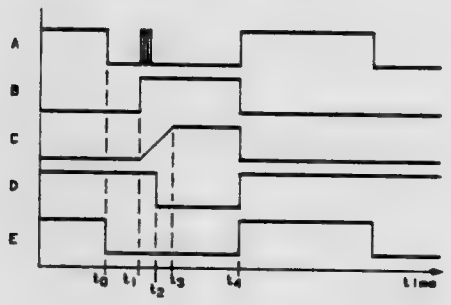
NOISE BLANKER CIRCUIT FOR USE WITH ELECTRONIC IGNITION SYSTEMS OR THE LIKE

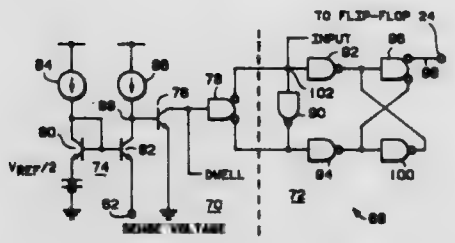
James J. LoCascio, Mesa, Ariz., assignor to Motorola, Inc., Del.

Filed Jun. 1, 1981, Ser. No. 269,149

Int. Cl.³ F02D *1/00*

U.S. Cl. 123—618 **12 Claims**





1. A circuit having an input and an output which is responsive to periodic input signals applied to the input for transferring the same to the output at which is connected load circuit means, the circuit being made non-responsive to changes in the input signals which can occur during a portion of each period of each individual input signal a predetermined time interval after initiation of each periodic input signal due to noise transients being coupled onto each periodic input signal, comprising:

blanking circuit means responsive to control signals generated in response to each periodic input signal for producing a blanking signal at an output thereof during the portion of each period; and

coincidence circuit means having an input and output, said input being coupled both to said output of said blanking circuit means and the input of the circuit, said output being coupled to the output of the circuit, said coincidence circuit means transferring the periodic input signals between said input and output except during the portion of each period when said coincidence circuit means is inhibited by said blanking signal.

4,347,828

LAUNCHER FOR FLYING DISCS

Gerald L. Bridgeman, 421 N. Morrow, Drumright, Okla. 74030

Filed Mar. 17, 1980, Ser. No. 130,731

Int. Cl.³ F41B *3/04*; A63H *33/18*

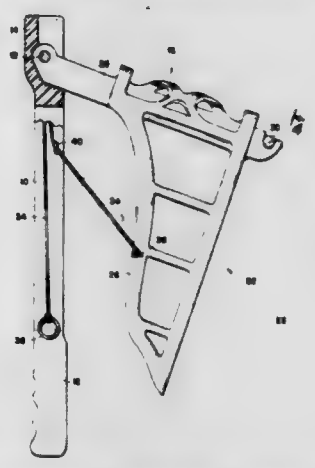
U.S. Cl. 124—5 **5 Claims**

1. A launcher for flying discs of the type having an integral circumferential rim, the rim having an inner circumferential surface, comprising:

a rigid handle having means at one end for manual engagement by the user;

an arm pivotally attached at its inner end to the other end of the handle, the arm having a basket portion for cradling a flying disc therein; and

a pin pivoted to said arm and arranged to engage the inner circumferential surface of the rim of a flying disc positioned in said arm basket portion prior to launching the flying disc, said pin being pivotal between a first upright position wherein the axis thereof is substantially perpendicular said basket portion surfaces in which position the pin is adapted to engage the inner circumferential



surface of a flying disc rim, and a second, outward position wherein the axis of the pin is substantially parallel to said basket portion surfaces, the pin serving to retain a flying disc in position in the basket during the first portion of a launch, the pin pivoting as a flying disc is launched by the force of a flying disc as it is flung outwardly from said arm basket portion, said basket portion including means providing parallel surfaces spaced apart slightly greater than the thickness of the flying disc for which the launcher is dimensioned, the surfaces being in planes parallel to the axis of said handle and arm.

2. A launcher for flying discs according to claim 1 wherein the pivotal connection of said arm and said handle includes stop means whereby said arm is limited in rotation to an arc of about 45° to about 180° relative to the axis of said handle.

4,347,829

ARCHERY BOW AND ARROW GUIDE SUPPORT AND ADJUSTMENT MEANS

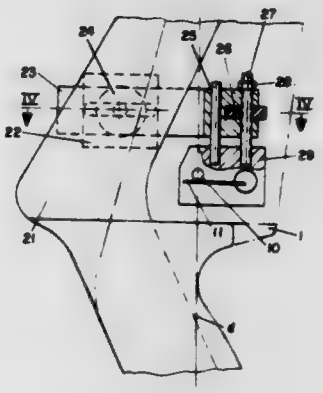
Rudolf Okupniak, Gerokstrasse 55, D-7080 Aalen, Fed. Rep. of Germany

Filed Feb. 7, 1980, Ser. No. 119,550

Claims priority, application Fed. Rep. of Germany, Mar. 3, 1979, 2938809

Int. Cl.³ F41B *5/00*

U.S. Cl. 124—24 R **4 Claims**



1. An archery bow, comprising:

a handle section;

arrow guide elements supported by said handle section and including bearing means for lateral positioning of an arrow with respect to said handle section and a support for the vertical guidance of the arrow;

a supporting plate having both said arrow guide element arranged thereon;

adjusting means joining said supporting plate to said handle section and being adjustable for moving said support plate with respect to said handle section, said adjusting means being adjustable for adjusting said support plate generally along the direction of the axis of an arrow that may be supported in position for shooting by the bow, said adjusting means including a rail attached to said handle section and extending generally in the direction of the axis of an arrow being supported by the bow for shooting, said supporting plate being carried on said rail for enabling movement of said support plate generally along the direction of the axis of an arrow being supported by the bow for shooting; and

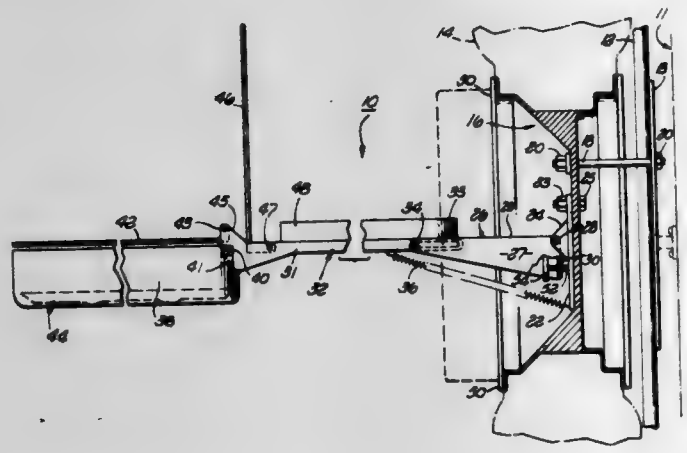
a space being defined on said handle section for receiving said supporting plate and for submitting adjustment movement of said support plate with respect to said handle section.

4,347,830

COLLAPSIBLY SUPPORTED OUTDOOR COOKING APPARATUS

Gary D. Runyan, 92 Norma Ct., Camarillo, Calif. 93010

Filed Nov. 8, 1979, Ser. No. 92,606
Int. Cl.³ F24C *1/16*
U.S. Cl. 126—9 R **16 Claims**



1. An outdoor cooking apparatus comprising:

a mounting bracket;

a collapsible cantilevered support having a first end and a second end and pivotally attached to the mounting bracket at the first end thereof, said support including an arm pivotally attached to the mounting bracket at one end of the arm, and an extension pivotally attached to the other end of the arm at one end of the extension; and

a pan, pivotally attached to the extension at the other end of the extension, said pivotal attachment being such that the pan folds over the extension, and the extension being of such size and shape so as to fit within the interior of the pan when the pan is folded over the extension.

4,347,831

FUEL BURNING STOVE

Peter Graziano, Rte. 4, Eau Claire, Wis. 54701

Filed Aug. 17, 1979, Ser. No. 67,466
Int. Cl.³ F24C *15/28, 1/14;* F23L *3/00*
U.S. Cl. 126—83 **3 Claims**

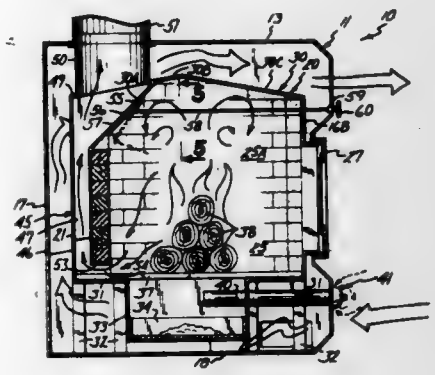
1. A stove comprising:

a stove housing having top and bottom walls and side walls defining an unobstructed combustion chamber having a combustion area located intermediate between the top and bottom walls;

a grate for holding fuel in the combustion chamber located beneath the combustion area for combustion of fuel in the combustion area;

a flue including flue wall means spaced from one of the stove housing side walls and defining a flue chamber and an upper flue opening for exhaust of products of combustion, said one side wall having a bottom edge spaced from the grate to provide a flue passage in communication with the combustion chamber and the flue chamber at a location beneath the combustion area in the combustion chamber;

a damper opening located in one of said stove housing walls



at a location above the combustion area, open to the flue chamber, and a closeable damper normally closing the damper opening and means to control the position of the damper with respect to the damper opening;

a draft inlet means to the combustion chamber to admit draft to the combustion chamber, said draft inlet means located at a position below the flue passage; and

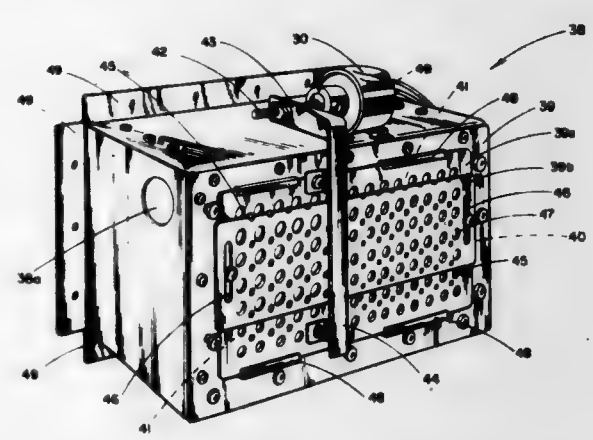
a cabinet surrounding the stove housing having cabinet walls spaced from the wall means and means for circulation of air in the space between the cabinet walls and the housing walls to warm said air and return it to the room.

4,347,832

CONTROLLED AIR INTAKE APPARATUS FOR FURNACES AND THE LIKE

Delbert L. Myers, 3229 W. 32nd St., Anderson, Ind. 46011

Division of Ser. No. 76,341, Sep. 17, 1979, Pat. No. 4,274,392.
This application Mar. 4, 1981, Ser. No. 240,461
Int. Cl.³ F24H *3/00;* G05D *23/00*
U.S. Cl. 126—112 **3 Claims**



1. In a furnace having a burner, a combustion zone surrounding said burner, an air inlet opening permitting airflow from the atmosphere into said combustion zone and a flue in communication with the combustion zone, the flue having a closed updraft opening which remains closed under all operating conditions, the improvement which comprises:

a barrier plate disposed directly across said air inlet opening between the burner and the atmosphere, said barrier plate including a plurality of apertures arranged into a first pattern and adapted for introducing air into said combustion zone;

a cover plate disposed directly against said barrier plate, said cover plate including a plurality of openings arranged into second pattern; and

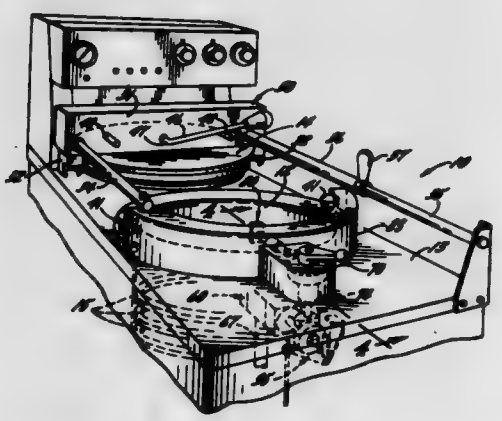
said cover plate being movable relative to said barrier plate between a first position wherein said second pattern of openings is in registration with said first pattern of apertures and a second position wherein said first and second patterns are completely out of registration with each other such that airflow into said combustion zone via said plurality of apertures is prevented.

4,347,833

PRESSURE COOKING DEVICE WITH EXHAUST AND DRAIN VALVES

Clement J. Luebke, Beloit, Wis., and Lowell W. Daniels, Rockford, Ill., assignors to Alco Standard Corporation, Valley Forge, Pa.

Filed Jun. 30, 1980, Ser. No. 164,245
Int. Cl.³ F24D *1/00*
U.S. Cl. 126—369 **9 Claims**



1. A cooking device comprising a base, an open-topped vessel mounted on said base and adapted to hold liquid, a cover for selectively closing and sealing said vessel, means for heating the liquid to create pressure in said vessel when the latter is sealed, means mounting said cover on said base for downward and upward shifting between an unsealed position and a sealed position, said cover being disposed in vertically aligned but non-telescoping and non-sealing relation with the open top of said vessel when said cover is in said unsealed position, said cover telescoping with said vessel and closing and sealing said vessel when said cover is in said sealed position, a pressure exhaust valve associated with said vessel and movable between a closed position permitting pressure to build up in said vessel and an open position relieving the pressure in said vessel, a manual member which is operable when shifted manually to move said valve between its positions, and safety means engageable with said cover for preventing said manual member from being shifted to move said valve to its closed position as long as said cover is in its unsealed position.

4,347,834

VARIABLE ENTROPY SOLAR ENERGY HARVESTER

Bernard H. York, 1725 Wayne St., Pomona, Calif. 91767

Filed Nov. 28, 1980, Ser. No. 211,372
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—424 **13 Claims**

1. A variable entropy solar energy harvester comprising

an absorber for absorbing the energy of the Sun's rays for conversion into another form of energy;

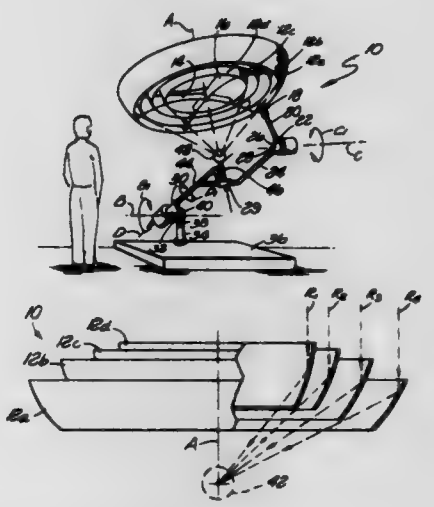
a frame distal from said absorber and disposed intermediate said absorber and the Sun;

means for supporting said frame and said absorber in said relationship;

Sun-tracking means operatively connected to said frame for movement therefore along two axes corresponding to the diurnal movement of the Sun along the East-West axis and the seasonal movement of the Sun along the North-South axis;

means for sustaining said absorber in a stationary position relative to said Sun-tracking movements;

a plurality of annular conic frusta of different diameters concentrically mounted on said frame with respect to an axial line passed through their geometric centers and in a stepped array, ascending from a base formed by the outermost of said frusta to a vertex formed by the innermost of said frusta, said array comprising annular gaps intermediate proximate frusta, said frusta circumscribing a conoid interior cavity, said frame comprising at least one cruciform stay fixedly connecting said frusta to one another



across said gaps and said cavity, each of said frusta comprising an outer surface and a light reflecting inner surface of arcuate profile defined by a singular and unique parabola whose focal length is different from but correlated with the focal length of each of the parabolas defining surface areas in said array, each of said frusta being inclined in an upwardly and outwardly slanting direction relative to said axial line for receiving incident solar rays and transmitting them by means of a single reflection through said annular gaps and said interior cavity onto said absorber, said absorber comprising a focal zone common to said light reflecting parabolic frusta and said focal zone having a common center of focus at the intersection of said two axes; and

means for moving said absorber along said axial line.

4,347,835

ALL SEASON WINDOW

Robert A. Seemann, 89 Earl Ave., Hamden, Conn. 06514

Filed Jun. 28, 1979, Ser. No. 52,770
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—431 **18 Claims**

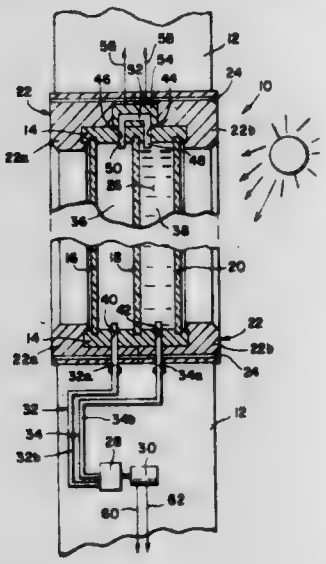
1. An all season window comprising:

a peripherally extending pane mounting frame mounting said window in an exterior wall of a structure having an interior space;

first, second and third panes of essentially rigid transparent sheet material mounted sealingly and fixedly within said frame in spaced parallel relationship each to the other, said second pane being interposed between said first and third panes;

a discrete amount of solar heat ray absorbent material maintained either at a first location between said first and second panes to provide insulation from solar heat of said interior space or at a second location between said second and third panes to provide solar heat to said interior, said

discrete amount being sufficient to substantially fill only one of said locations at a time;



and means for selectively moving said solar heat ray absorbent material between said first and second locations.

4,347,836

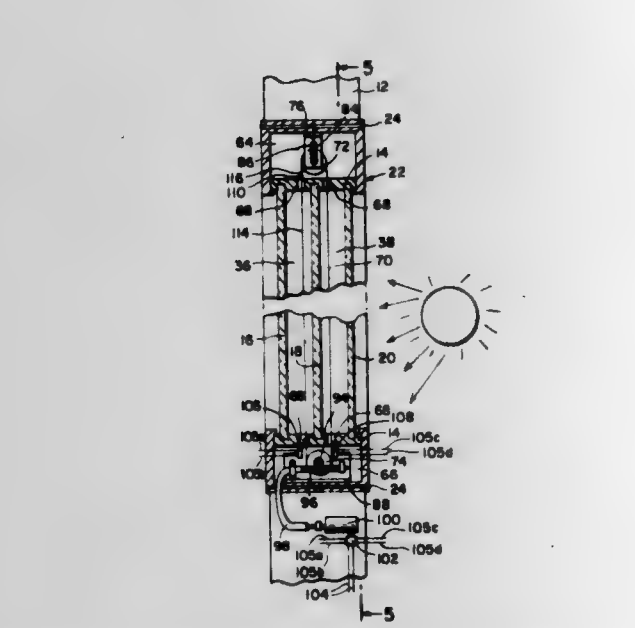
SOLAR HEATING SYSTEM

Arthur M. Frank, Plainview, N.Y., assignor to Grumman Aerospace Corporation, Bethpage, N.Y.

Continuation-in-part of Ser. No. 885,356, Mar. 13, 1978, abandoned. This application Feb. 20, 1980, Ser. No. 122,935

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—450 **13 Claims**



1. A solar collector assembly of thermally compatible material operable over wide temperature variations and having fluid input and output ports comprising:

a molded one piece collector assembly frame having oblique, depending side walls and a ribbed upper surface forming a plurality of passages in said upper ribbed surface;

an absorber plate of material thermally compatible with said frame bonded to said frame on said ribbed surface to be contiguous to said upper ribbed surface such that capillary passages are formed between said frame and plate with a leakproof seal formed therewith;

an input passageway internal to said frame extending from the input port of said frame to said capillary passages so as to place said absorber plate in fluid communication with the input port;

an outlet passageway integral to said frame and connecting said capillary passages to the output port to permit the flow of fluid from said capillary passages;

an interior cavity integral to said frame being defined by a bottom surface and the side walls of said frame;

a transparent molded collector assembly cover detachably mounted to said frame to enclose the upper surface of said frame;

mounting means attachable to the surface of said cover for securing said cover to said collector assembly frame, and

high temperature insulation material in said interior cavity and contacting the bottom surface of said frame.

4,347,837

STRUCTURE FOR PREVENTING THE BREAKAGE OF END PORTIONS OF A PROTECTIVE COVERING FOR THE ADJUSTABLE BEND SECTION OF AN ENDOSCOPE

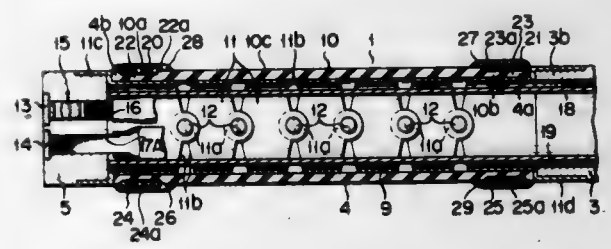
Saburo Hosono, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Sep. 16, 1980, Ser. No. 187,543

Claims priority, application Japan, Sep. 17, 1979, 54-128388

Int. Cl.³ A61B *1/06*

U.S. Cl. 128—6 **5 Claims**

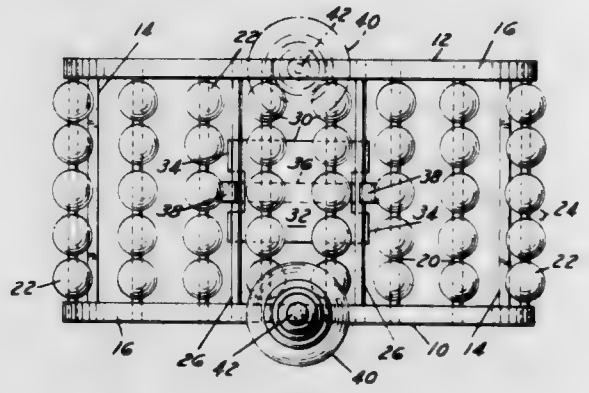


1. In an endoscope including a control section and an elongated insertion section extending from the control section extending from the control section and comprising an elongated flexible sheath having two ends, one of which is fixed to the control section, a distal end section, and an adjustable bend section comprising an elongated bendable core assembly having two ends, one of which is connected to the other end of the sheath, and the other of which is connected to distal end section, a protective covering which is made of elastic material, has two end portions and an intermediate portion between the two end portions, and encloses substantially the whole length of the core assembly, and threads wound around both end portions of the protective covering to fix both end portions to the core assembly in a sealed state, the improvement wherein the endoscope is further provided with a structure which comprises a first section for overlying and fixing the threads to the end portions of the protective covering, and a second section extending from the first section toward and overlying a portion of the intermediate part of the protective covering and fixed to the end portions of the protective covering, said structure being made of elastic material retaining elasticity and adhesivity at normal and temperatures up to about 200° C., thereby preventing the breakage of the end portions of the protective covering when said covering is subjected to repeated stress.

4,347,838
FOOT MASSAGER

Kerry McCauley, 9607 E. Sturgeon Valley Rd., Vanderbilt, Mich. 49795

Continuation-in-part of Ser. No. 909,762, May 26, 1978, Pat. No. 4,198,962. This application Mar. 10, 1980, Ser. No. 128,501
The portion of the term of this patent subsequent to Apr. 22, 1997, has been disclaimed.
Int. Cl.[3] A61H *1/00*
U.S. Cl. 128—33 6 Claims

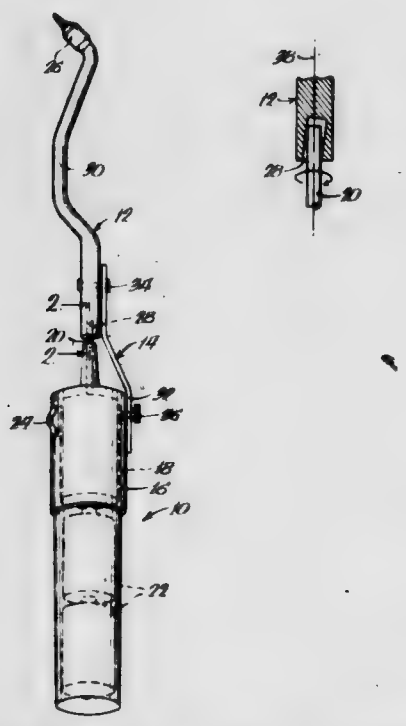


1. A foot massager comprising a supporting frame, a plurality of non-cylindrical beaded rollers rotatably attached to the frame to dispose the beaded rollers into a generally convex arcuate massaging surface and positioned to place the beads in staggered relation to the beads of the next adjacent roller, and a rotatable spindle attached to the frame and extending above the convex arcuate massaging surface, said rotatable spindle being substantially formed as a non-cylindrical surface of revolution.

4,347,839
GUM MASSAGE DEVICE

William P. Youngclaus, Jr., Elm Grove, Wis., assignor to William R. Haljun, Kenilworth, Ill.

Filed Aug. 18, 1980, Ser. No. 178,846
Int. Cl.[3] A61H *7/00*
U.S. Cl. 128—62 A 5 Claims

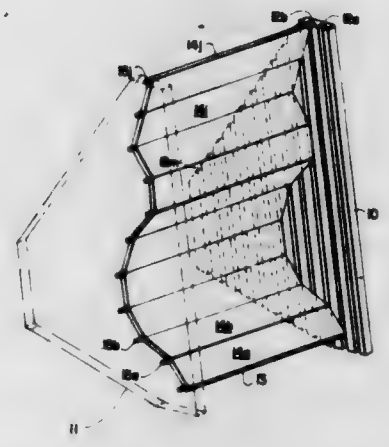


1. A gum massage device comprising a wand having a massage element at one end and a socket in the other end, a shaft frictionally engaged in said socket, said socket being angularly disposed relative to the axis of said shaft with said wand being rockable on said shaft, means for rotating said shaft, and means for resiliently holding said wand in substantial axial alignment with said shaft and preventing rotation of said wand, whereupon an oscillatory motion is imparted to said wand upon rotation of said shaft.

4,347,840
ORTHOPEDIC CORRECTIONAL SUPPORT SYSTEM

Gerald M. Adams, Huntsville, Ala., assignor to Orthotech, Incorporated, Herkimer, N.Y.

Filed Oct. 27, 1980, Ser. No. 201,355
Int. Cl.[3] A61F *5/00;* A47C *3/00*
U.S. Cl. 128—70 9 Claims



1. An orthopedic chair having a back structure comprising
a plurality of elongated slat-like members extending laterally across the chair back, each of said members having a front surface;
means on the longitudnal edges of said slat-like members for interconnecting the members in edge-to-edge articulated relationship;
first and second support panels at opposite sides of said chair back; and
means on the inwardly facing portions of each of said support panels defining a plurality of recesses for receiving the ends of said slat-like members,
said members being insertable between said panels with the ends of said members in pairs of said recesses and with said members in edge-to-edge relationship in a selectable pattern of anterior-posterior locations so that the front surfaces of said members define a preselected curvilinear surface.

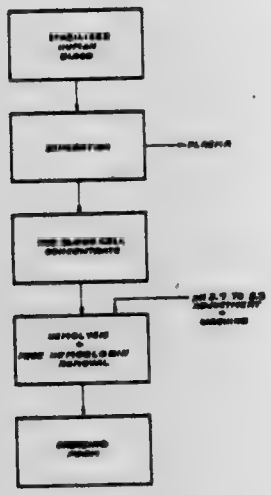
4,347,841
BIOLOGICAL WOUND COVERING AND METHOD FOR PRODUCING SAME

Janos Benyo; Tibor Papp, and Janos Tolnay, all of Miskolc, Hungary, assignors to Human Oltoanyagtermelo es Kutato Intezet, Godollo, Hungary

Filed Mar. 11, 1981, Ser. No. 242,710
Int. Cl.[3] A61L *15/00;* A61K *35/14*
U.S. Cl. 128—156 40 Claims

1. A wound dressing for direct application to exposed tissue at a wound site for the treatment of superficial and deep burns

and as a temporary skin replacement, comprising as an active material stroma, subcellular elements and protein derived from



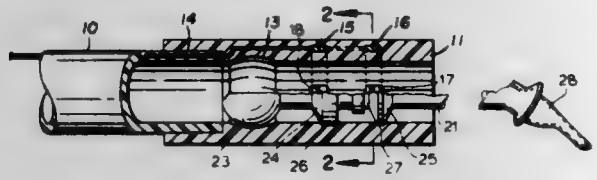
red blood corpuscle concentrate and free from free haemoglobin.

4,347,842

DISPOSABLE ELECTRICAL SURGICAL SUCTION TUBE AND INSTRUMENT

Mark Beale, 111 Old Hickory Blvd. No. 170, Nashville, Tenn. 37221

Filed Feb. 15, 1980, Ser. No. 121,669
Int. Cl.³ A61M *1/00*
U.S. Cl. 128—276 **4 Claims**



1. The combination of an expandable electrosurgical suction tube comprising an elongated flexible tubular body member, a receptacle and on said tube, an annular groove within said receptacle end, electric contact means within said receptacle end, conductors for electrical current within said tubular body member, an annular groove in said receptacle end, said receptacle end being resilient; and an electrosurgical instrument comprising a hollow shaft, a hollow cautery on one end of said hollow shaft, an apertured sphere on the other end of said hollow shaft and a pair of spaced annular contacts on said hollow shaft inwardly from said apertured sphere, said apertured sphere on said hollow shaft adapted to register in said annular groove in said receptacle end to align said annular contacts with said electric contact means within said receptacle end.

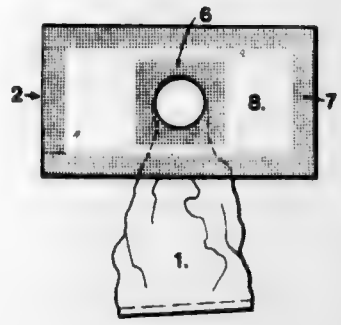
4,347,843

ILEOSTOMIC BAG

Brigitte C. R. De Zaepffel, c/o M.B.S. S.A. 6, bd James Fazy, Geneva, Switzerland (CH-1201)

Filed Jul. 25, 1980, Ser. No. 172,113
Claims priority, application Switzerland, Aug. 8, 1979, 7278/79
Int. Cl.³ A61F *5/44*
U.S. Cl. 128—283 **7 Claims**

1. An ostomic, plastic, selfadhesive pocket which comprises a smooth bag of plastic material transparent or opaque, protruding through an aperture made in a fixation sheet and having its opening fixed around the aperture of said sheet (2) that has two adhesive areas, one immediately surrounding the aperture where the bag is fixed and a second one separated from the first one by a non-adhesive zone of absorbing material, both adhesive areas being concentric and covered each by a non-adhesive removable pellicle (9, 10).

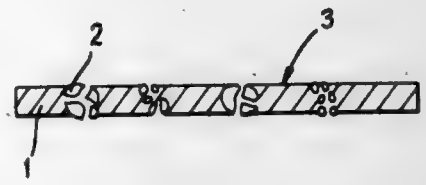


4,347,844

POROUS SHEET AND PROCESS FOR PREPARATION THEREOF

Kenji Ohki; Mistru Tokuyama, both of Utsunomiya; Masayuki Sagae, Ichikaimachi, and Kenji Kawabuchi, Wakayama, all of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Dec. 29, 1980, Ser. No. 220,395
Claims priority, application Japan, Jan. 10, 1980, 55-1541
Int. Cl.³ A61F *5/44*
U.S. Cl. 128—287 **7 Claims**



1. A liquid impermeable, vapor permeable, porous sheet consisting essentially of a thin, flexible sheet made of non-foamed thermoplastic resin, said sheet having fine pores distributed over the entire surface area of said sheet, said pores penetrating between and through the opposite surfaces of said sheet to permit permeation of vapor through said sheet, said pores being of a small size so that liquid cannot substantially permeate through said sheet, said pores each being defined by a cluster of fragments of broken-apart, frangible, filler particles wherein the cluster of fragments extends between said opposite surfaces of said sheet and defines margins of a passage extending between and through said opposite surfaces, the outermost fragments of said cluster being substantially flush with said opposite surfaces of said sheet.

4,347,845

HOOK INSERTER DEVICE

Jack K. Mayfield, 12 Evergreen Rd., St. Paul, Minn. 55110

Filed Mar. 23, 1981, Ser. No. 246,296
Int. Cl.³ A61B *17/00*; A61F *5/04*; A61B *17/18*
U.S. Cl. 128—303 R **4 Claims**

1. A hook inserter device for positioning a hook used in spinal distraction or compressions systems, the hook including a hub having an axial opening therethrough and having a transverse opening through the hub arranged normal to the axial opening therein, a curved hook portion integral with the hub and extending therefrom, said device comprising:

an elongate bar including a handle portion and a hook mounting portion; when being used, said hook mounting portion is inserted into the axial opening in the hub of the distraction hook,

positioning means on said bar adjacent said hook mounting portion serves to prevent angular movement of a hook positioned on said mounting portion,

and releasable retention means on said bar releasably engaging a hook mounted on said mounting portion to posi-



tively but releasably retain the hook in mounting relation on said bar.

4,347,846

SURGICAL EXTRACTOR

Enrico Dormia, Lecco, Italy, assignor to Porges, Paris, France

Filed Oct. 14, 1980, Ser. No. 196,866
Claims priority, application Italy, Dec. 7, 1979, 27940 A/79
Int. Cl.[3] A61B *17/00*
U.S. Cl. 128—328 2 Claims



1. In a surgical extractor for removing bodies from natural passages, of the type comprising a flexible tube adapted to be inserted in a natural passage where the body to be extracted is located, the distal end of the tube having a retractable cage formed by flexible metal wires which are retractable inside the tube for positioning the tube in the passage and extendable for trapping the body to be extracted,

the improvement wherein the retractable cage is formed by a plurality of flexible metal wires arranged in pairs and disposed in helical paths, one wire of each pair being spiralled in clockwise direction and the other in anti-clockwise direction,

the wires of each pair intersecting at a single point between the ends thereof,

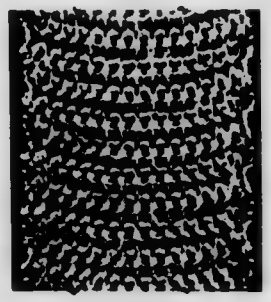
the spacing between wires in said cage being sufficient to permit the passage of said body into the interior of said cage.

4,347,847

METHOD OF HERNIA REPAIR

Francis C. Usher, 2219 Richmond Ave., Houston, Tex. 77098

Filed Jun. 6, 1980, Ser. No. 157,146
Int. Cl.[3] A61B *17/04*
U.S. Cl. 128—334 R 3 Claims



1. A method of repairing hernias and other defects of the abdominal and chest wall comprising,

placing a tubular surgical mesh over the defect in flattened form to provide continuous border edges,

the tubular surgical mesh being of a size sufficient to bridge the defect and to position the continuous border edges on tissue adjacent opposite sides of the defect free of selvedge edges,

suturing through the mesh adjacent the continuous border edges to the tissue,

the tubular surgical mesh being comprised of monofilament threads free of water-leachable irritant impurities and being physiologically inert even in the presence of infection, and

having a tensile strength sufficient when doubled to withstand wound tension,

the threads and the mesh having a diameter in the range of 5 to 15 mils, and

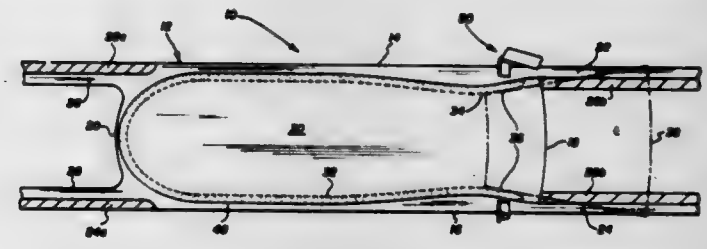
the mesh having 10 to 20 stitches per inch and being knitted in a continuous tubular shape with the threads being unattached to each other at their points of crossing.

4,347,848

SMALL ICE PACK

Vance M. Hubbard, Euless, and Welton K. Brunson, Bedford, both of Tex., assignors to Tecnol, Inc., Fort Worth, Tex.

Filed Sep. 5, 1980, Ser. No. 184,466
Int. Cl.[3] A61F *7/00*
U.S. Cl. 128—402 8 Claims



1. A refillable sanitary ice pack for single patient use comprising:

a generally rectangular envelope having an open end and a closed end, said envelope containing a waterproof bag member formed internally thereof, said bag member being open adjacent the open end of the envelope, said envelope being formed from a multiple ply material, said material including an inside layer of waterproof material, an intermediate layer of absorbent material and an outside layer of absorbent material perforated by a large number of small apertures to provide a wicking effect to reduce condensation;

a first pair of tie strings extending longitudinally of the envelope from the open end thereof;

a second pair of tie strings extending longitudinally of the envelope from the closed end thereof; and

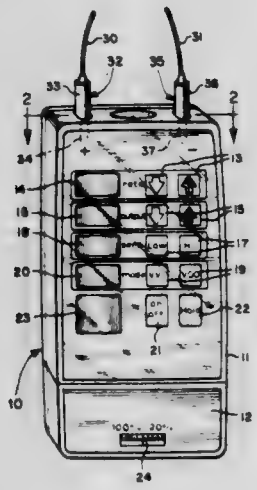
a closure member for selectively sealing the bag member, said closure member having a blade-like member and a sheath member hingedly connected thereto for compressing said envelope against said blade-like member in said sheath member.

4,347,849

CARDIAC PACER HAVING QUICK-CONNECT LEAD TERMINALS

George L. Congdon, Fort Atkinson, Wis., assignor to Norland Corporation, Fort Atkinson, Wis.

Filed Nov. 25, 1980, Ser. No. 210,276
Int. Cl.³ A61N *1/36*
U.S. Cl. 128—419 P **15 Claims**



1. In a cardiac pacer operable with a pacer lead having a connector pin, a connector system comprising:

connector guide means including a bore dimensioned to receive the pin;

a lock plate including an aperture dimensioned to slidably receive the connector pin, said lock plate being mounted for movement relative to a reference plane, whereby said aperture is brought into substantial registration with said bore to allow free insertion and removal of said pin when said lock plate is positioned toward parallel alignment with said reference plane, and is brought into substantial misregistration with said bore when said lock plate is moved toward non-parallel alignment with said reference plane to oppose movement of said connector pin through said bore; and

user actuated means for moving said lock plate from said non-aligned position toward said aligned position to release said connector pin from said connector.

4,347,850

DIRECT WATER COUPLING DEVICE FOR ULTRASOUND BREAST SCANNING IN A SUPINE POSITION

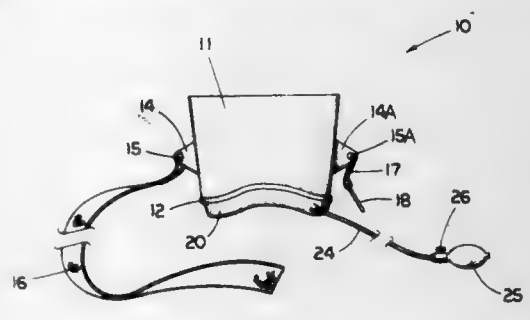
Elizabeth Kelly-Fry; Francis J. Fry, and George W. Gardner, all of Indianapolis, Ind., assignors to Indianapolis Center for Advanced Research, Inc., Indianapolis, Ind.

Filed Mar. 19, 1980, Ser. No. 131,669
Int. Cl.³ A61B *10/00*
U.S. Cl. 128—660 **7 Claims**

1. A direct liquid coupler for ultrasound scanning with an ultrasound transducer means of a breast area of a patient in a supine position, said coupler comprising:

(a) generally rigid wall means for maintaining a liquid within the breast area of the patient in a supine position, said wall means including a wall portion having an inside surface and an outside surface, the wall portion further defining a top opening and having a bottom edge portion, the bottom edge portion being contoured to conform to the shape of a human body about the periphery of a breast area including the curvature at the lateral chest wall area and the indentation of the breast bone area;

(b) sealing means for sealing the wall portion to the patient about the periphery of the breast area, said sealing means including a seal attached to the bottom edge of the wall portion, the seal defining a bottom opening which is smaller than the top opening defined by the wall portion, the seal including a pliable, water impervious material; and



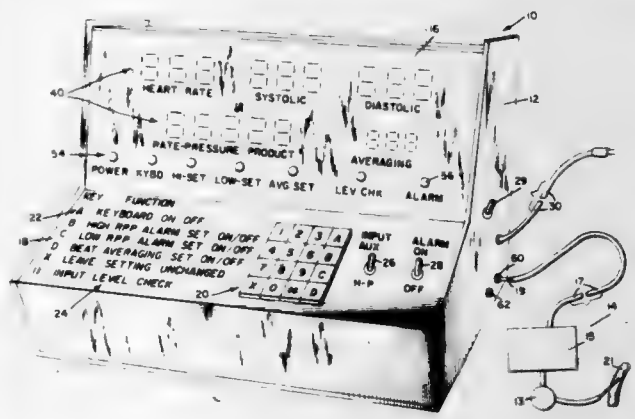
(c) attachment means for attaching the wall portion directly to the patient to be supported by the patient so as to be movable with the patient and thereby movable relative to said ultrasound transducer means when said transducer means is at a fixed position in a position about the breast area with the seal being sealingly juxtaposed to the patient's body about the periphery of the breast area, said sealing means including said attachment means holding the seal tightly against the patient to provide a liquid tight seal.

4,347,851

VITAL SIGNS MONITOR

Richard H. Jundanian, Whitinsville, Mass., assignor to Norman S. Blodgett and Gerry A. Blodgett, both of Worcester, Mass., part interest to each

Filed Oct. 21, 1980, Ser. No. 199,286
Int. Cl.³ A61B *5/02*
U.S. Cl. 128—668 **5 Claims**



1. Vital signs monitor comprising:

(a) a sensor for sensing the heart beat and blood pressure of a patient and producing electrical pulses in a waveform indicative of the heart rate, systolic blood pressure, and diastolic blood pressure,

(b) a computer for receiving the electrical waveform pulses from the sensor, converting the waveform pulses into digital signals and calculating a rate-pressure product which is the product of the heart rate and the systolic blood pressure, said computer comprising:

(1) control means for counting the heart beats of the patient, averaging the heart rate, blood pressure and rate-pressure product for a plurality of heart beats and causing said averaged rate-pressure product valve to be displayed on the display screen,

(2) a heart beat memory connected to the control means

for determining the number of heart beats that constitute the rate-pressure product averaging value to be displayed on the screen,

(3) keyboard control switches for programming the heart beat memory to set the number of heart beats to be averaged, and

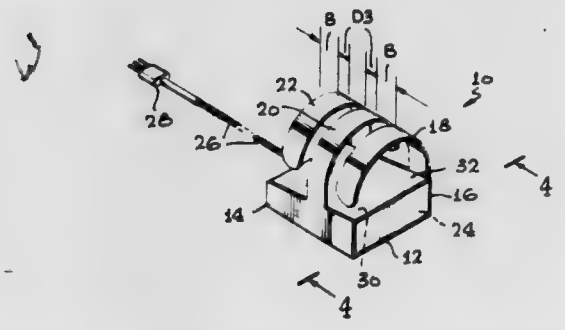
(4) a digital display screen connected to the computer for visually displaying the heart rate, blood pressure and rate-pressure product in digital form.

4,347,852

HEARTBEAT SENSOR HOLDING DEVICE

Josef K. S. Tan, 1891 Hillcrest Ave., St. Paul, Minn. 55116

Filed May 19, 1980, Ser. No. 150,712
Int. Cl.³ A61B *5/02*
U.S. Cl. 128—687 **19 Claims**



1. A device for holding a heartbeat sensor in a relatively fixed relationship with respect to a user's fingertip, comprising:

a heartbeat sensor

a sensor holding structure for holding said sensor;

a base portion for holding said holding structure with said heartbeat sensor; and

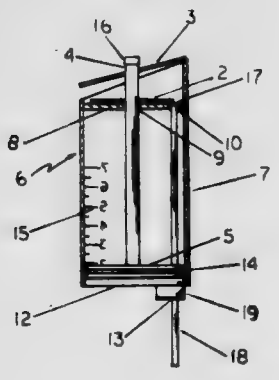
pressure producing means connected to said base portion for holding said user's fingertip against said heartbeat sensor, said pressure producing means comprising means for causing pressure between said heartbeat sensor and said user's fingertip to be greater at the portion of said user's fingertip closest to the end than at the portion of said user's fingertip farthest from the end, said sensor being contained in a wedge-shaped holding structure adapted to be held by said base portion, said holding structure having a wedge-shaped top side at which said sensor is exposed, so that the thickest portion of said holding structure is closest to the end of said user's fingertip.

4,347,853

CYCLE COUNTER FOR LUNG EXERCISER

Gordon A. Gereg, 557-A Blue Church Rd., Coopersburg, Pa. 18036, and Robert K. Rightler, Pennsburg, Pa., assignors to Gordon A. Gereg, Woodbury, Conn.

Filed Feb. 23, 1981, Ser. No. 236,648
Int. Cl.³ A61B *5/08*
U.S. Cl. 128—725 **2 Claims**



1. A device to be used to register or count cycles of vertical motion as would occur when a bellows was being used for a volume breathing exercise needing a very light actuating force, said counter assembly consisting of:

a. a push rod for sensing cycles of vertical motion;

b. a bearing rod having an indicator disc at one end to serve as a moving indicator;

c. a thin walled transparent elongated tube closed at one end, said closed end having a guide hole therein positioned eccentrically to the longitudinal axis of said tube, said elongated tube having an open opposite end cut at an angle with respect to the longitudinal axis thereof, a bearing disc mounted in said tube adjacent said open end and having two guide holes therein, one of said guide holes being aligned with the guide hole in said closed end of said tube, the other guide hole being centrally positioned therein, said bearing rod having said indicator disc being slidably mounted in said tube with said indicator disc located between said closed end and said bearing disc and said bearing rod passing through said central guide hole in said bearing disc, said indicator disc having a guide hole therein in alignment with the guide hole in said closed end of said tube, said push rod being slidably mounted in said aligned guide holes in said closed end, said indicator disc and said bearing disc and being of sufficient length to extend from within said elongated tube, said tube having calibrated graduations on its side to correspond with alignment of the indicator disc;

d. a first plane circular disc having a hole at its center and mounted over said bearing rod between said bearing disc and said open end of said tube, said hole having a small clearance to the diameter of said bearing rod, said first disc being sized to fit inside said elongated tube and overlie said guide hole in said bearing disc;

e. a second plane circular disc having a hole at its center and mounted over said bearing rod adjacent the open end of said tube, said hole having a small clearance to the diameter of said bearing rod, said second disc being sized to contact with its outer edge the upper-most point of the angle cut of said elongated tube;

f. whereby, in response to reciprocating movement of said push rod against said first disc, said first and second discs provide an escapement or one way motion of the bearing rod with indicating disc by alternately gripping or releasing the bearing rod due to the push rod forcing the first disc to jam at an angle to the bearing rod and carry it up with the push rod a calibrated distance to the second disc which can only stop downward motion due to being forced to jam on the bearing rod by the angle cut of the open end of the tube;

g. wherein each completed cycle would lift the bearing rod with the first and second discs jammed on it above the edge of the angle cut of the open end of the tube indicating visually the end of a cycle; and

h. said second disc constituting means to release the bearing rod with indicator disc by lifting the second disc back to a level position thereby allowing the bearing rod and indicator disc to drop and reset to zero.

4,347,854

BIPOLAR TEMPERATURE MEASURING APPARATUS

Scott P. Gosline, P.O. Box 41962, Atlanta, Ga. 30331; William F. Stembridge, and James C. Sturrock, both of P.O. Box 90756, East Point, Ga. 30364

Filed Oct. 15, 1979, Ser. No. 85,118
Int. Cl.³ A61B *5/00*
U.S. Cl. 128—736 **10 Claims**

1. Hand-held apparatus for measuring the skin temperature of a living organism, comprising:

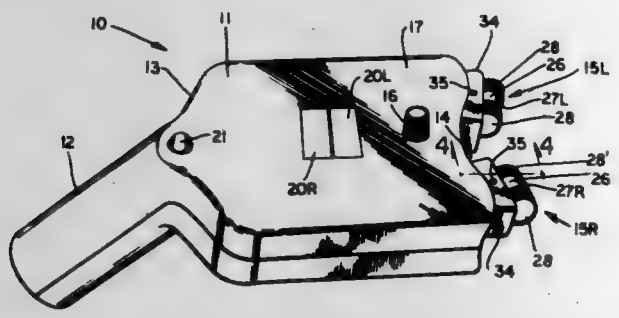
means defining a housing having a first portion configured to be manually grasped and having a second portion configured for disposition in proximity to the skin surface of a living organism;

a pair of temperature responsive means mounted in predetermined mutually spaced apart relation on said second portion,

each of said temperature responsive means being operative to produce an electrical signal in response to skin temperature adjacent the temperature responsive means;

circuit means carried by said housing means and selectably operative in response to said electrical signals from each of said temperature responsive means to provide a first temperature signal corresponding to the skin temperature served by said first temperature responsive means, and to provide a second temperature signal corresponding to the skin temperature served by said second temperature responsive means;

a pair of display means carried by said housing means and



respectively operative in response to said first and second temperature signals to provide a simultaneous visual indication of the skin temperatures observed by said pair of temperature responsive means;

said second portion of said housing means being configured to be traversed along the skin surface while said skin temperature sensing means remain in temperature sensing contact with the skin surface; and

means carried by said housing means and responsive to movement along the skin surface to produce a signal indicating the distance traveled by said skin temperature sensing means as said housing means is traversed along the skin surface.

4,347,855

METHOD OF MAKING SMOKING ARTICLES

Harry V. Lanzillotti, Midlothian; George H. Burnett, Richmond; Alline R. Wayte, Richmond; Thomas S. Osdene, Richmond; Warren E. Claflin, Bon Air; A. Clifton Lilly, Jr., Richmond, and John F. Nienow, Midlothian, all of Va., assignors to Philip Morris Incorporated, New York, N.Y.

Continuation of Ser. No. 171,314, Jul. 23, 1980, abandoned, which is a continuation-in-part of Ser. No. 148,124, May 9, 1980. This application Sep. 18, 1981, Ser. No. 303,519

Int. Cl.³ A24B *3/14*

U.S. Cl. 131—78 **59 Claims**



1. A method of producing smoking articles comprising:

mixing combustible tobacco material with one or more other ingredients including a liquid to provide a tobacco mixture;

shaping the mixture under pressure into a discrete coherent mass;

providing at least one passage through said mass; and

drying said shaped mass,

the mixture composition being selected and the shaping pressure and drying being controlled to impart to said shaped mass a porosity and density such as to substantially occlude gas flow therethrough and a porosity sufficient to support combustion of said shaped mass when ignited.

4,347,856

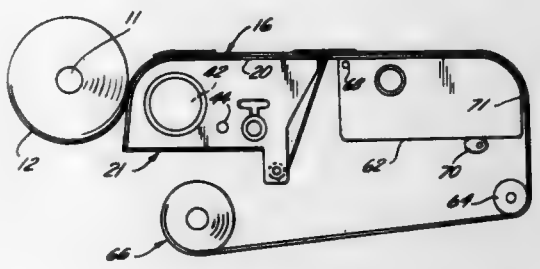
METHOD AND APPARATUS FOR REMOVING CIGAR WRAPPERS FROM THE WEB OF A BOBBIN

John Woltman; Donald W. Zarfos, both of Red Lion, Pa., and Robert F. Bulger, deceased, late of York, Pa. (by Mary L. Bulger, executrix), assignors to United States Tobacco Company, Greenwich, Conn.

Filed May 20, 1980, Ser. No. 151,743

Int. Cl.³ A24C *1/00*

U.S. Cl. 131—105 **13 Claims**



1. In apparatus for delivering cigar wrappers along a path from a bobbin to an overrolling zone in a cigar wrapping machine wherein said bobbin comprises a roll formed by a continuous web of sheet material and cigar wrappers positioned individually between the turns in the roll, the combination of, rigid means extending along a wrapper delivery path and presenting a first surface and a second surface which are separated by a gap defined by first and second parallel straight edges extending transversely of the direction of movement, roller means forming a loop path extending from said first edge to said second edge and positioned upon the opposite side of said gap from said path, said roller presenting a surface around which said web passes when moving from said first edge to said second edge, and means to draw said web continuously along said path on said first surface and around said first edge and along said loop path around said roller means and back to said second edge and along said second path, said first edge being effective to change the direction of movement of said web at a sufficiently sharp angle that each of the wrappers is peeled from the web and projects across said gap toward said second surface, whereby each of said wrappers passes from its position along said first surface across said gap to a position above said second surface where it rests upon a portion of said web which is moving away from said gap.

4,347,857

1-ETHOXY-1-ETHANOL ACETATE AND USES THEREOF FOR AUGMENTING OR ENHANCING THE AROMA OR TASTE OF CONSUMABLE MATERIALS

Richard M. Boden, Monmouth Beach, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

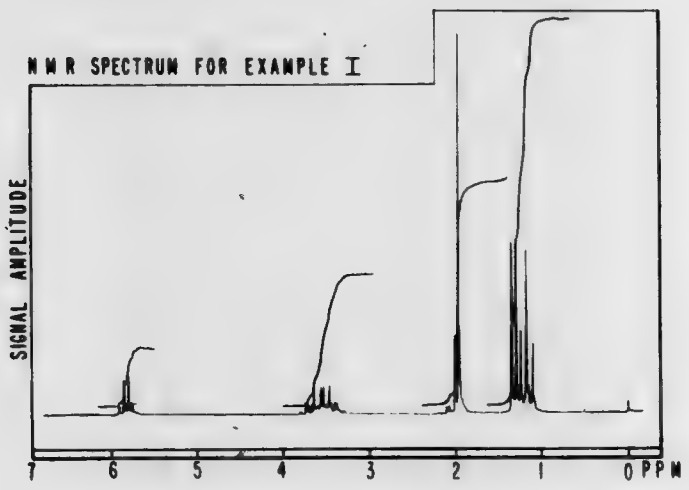
Division of Ser. No. 176,111, Aug. 7, 1980, Pat. No. 4,296,137. This application Jul. 6, 1981, Ser. No. 280,273

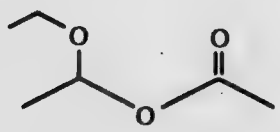
Int. Cl.³ A24B *3/10, 15/30*

U.S. Cl. 131—276 **3 Claims**

1. A process for augmenting or enhancing the aroma or taste of a smoking tobacco comprising the step of adding to smoking tobacco an organoleptic property-modifying, augmenting or

enhancing quantity of 1-ethoxy-1-ethanol acetate having the structure:





4,347,858

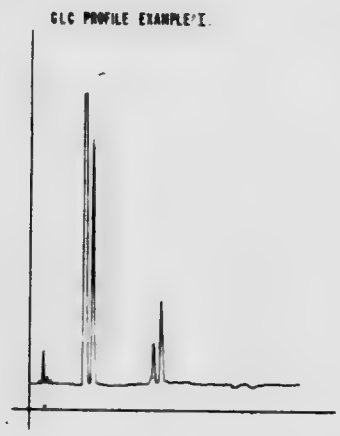
USE OF CARBOALKOXY ALKYL NORBORNANES FOR AUGMENTING OR ENHANCING THE AROMA OR TASTE OF A SMOKING TOBACCO COMPOSITION OR AT LEAST A PORTION OF A SMOKING TOBACCO ARTICLE

Philip T. Klemarczyk, Old Bridge; James M. Sanders, Eatontown; Manfred H. Vock, Locust; Joaquin F. Vinals, Red Bank; Frederick L. Schmitt, Holmdel, and Edward J. Granda, Englishtown, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

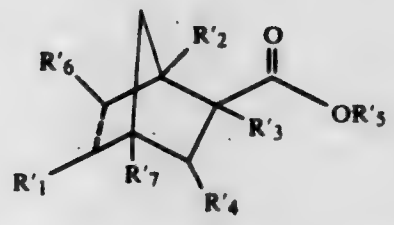
Division of Ser. No. 206,466, Nov. 13, 1980, Pat. No. 4,312,888, which is a continuation-in-part of Ser. No. 133,870, Mar. 25, 1980, Pat. No. 4,319,036. This application Sep. 17, 1981, Ser. No. 303,032

Int. Cl.³ A24B *3/10, 15/30*

U.S. Cl. 131—276 **3 Claims**



1. A process for augmenting or enhancing the aroma or taste of a smoking tobacco comprising the step of intimately admixing with smoking tobacco an aroma augmenting or enhancing quantity of at least one compound defined according to the generic structure:



wherein the dashed line represents a carbon-carbon single bond or a carbon-carbon double bond; R_1',R_2',R_3',R_4',R_6', and R_7' are each selected from the group consisting of hydrogen and methyl and R_5' is C_1–C_4 alkyl with the provisos that:

1. one of R_1', R_2', R_6' and R_7' is methyl and the other of R_1', R_2', R_6' and R_7' represents hydrogen;
2. R_3' and R_4' are not both methyl;
3. when the dashed line is a carbon-carbon double bond, R_1', R_3' and R_4' are not all hydrogen when R_2' is methyl.

4,347,859

ACID CURING OF TOBACCO

Gordon H. Bokelman, Boulder, Colo., and Dewitt T. Gooden, III, Barnwell, S.C., assignors to Philip Morris Incorporated, New York, N.Y.

Filed Dec. 9, 1980, Ser. No. 214,494

Int. Cl.³ A24B *3/12, 15/30, 15/42*

U.S. Cl. 131—290 **6 Claims**

1. A process for curing green tobacco comprising immersing the tobacco in an aqueous solution of an acid selected from the group consisting of acetic, phosphoric, hydrochloric, lactic, formic and 2-chloroethylphosphonic acids and incubating the immersed tobacco at at least room temperature.

4,347,860

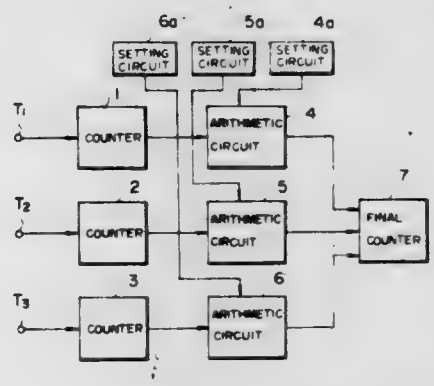
GENERAL COIN COUNTING DEVICE FOR AUTOMATIC VENDING MACHINE

Yukichi Hayashi; Osamu Sugimoto, both of Sakado, and Yutaka Yokohda, Kamifukuoka, all of Japan, assignors to Kabushiki Kaisha Nippon Coinco, Tokyo, Japan

Filed Oct. 27, 1980, Ser. No. 201,195

Int. Cl.³ G07D *9/00*

U.S. Cl. 133—1 R **1 Claim**



1. A general coin counting device for an automatic vending machine, which comprises:

a plurality of counters for counting the numbers of coins inserted, separately according to the denominations thereof;

a plurality of ratio setting circuits for suitably setting ratios corresponding to the denominations, respectively; and

arithmetic means for multiplying outputs of said counters by said ratios set by said ratio setting circuits,

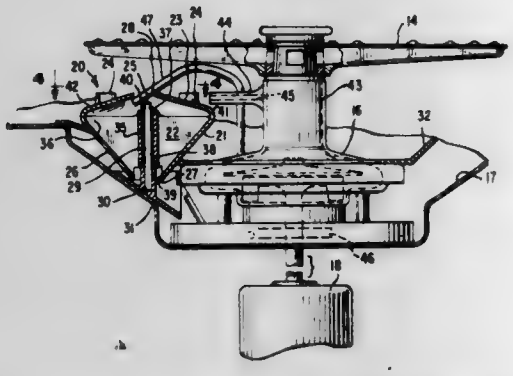
said ratios set by said ratio setting circuits being changed, whereby said general coin counting device can handle coins of any denominations.

4,347,861

DISHWASHER SOIL SEPARATOR

Jack F. Clearman, and Vincent P. Gurubatham, both of St. Joseph, Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Feb. 25, 1981, Ser. No. 238,356
Int. Cl.³ B08B *3/02*
U.S. Cl. 134—104 **24 Claims**



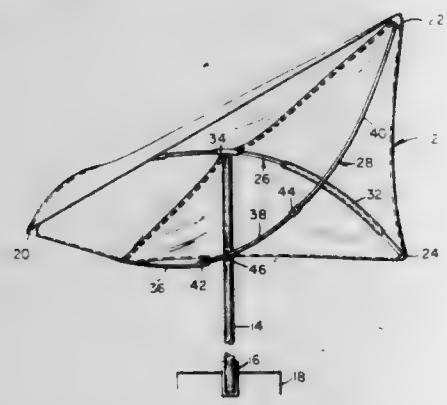
1. A soil separator for use in a dishwasher, comprising:
wall means defining a pump chamber having an inlet opening and an outlet opening spaced from the inlet opening;
pump means in the chamber for pumping liquid from the inlet opening through the chamber and outwardly through the outlet opening as an incident of rotation of the wall means about an axis of rotation thereof;
means for supporting the wall means for rotation about said axis of rotation;
reaction means on the wall means arranged to be responsive to a liquid stream directed thereagainst for rotating the wall means about said axis; and
collecting means responsive to rotation of said wall means for collecting soil from liquid being pumped through said chamber.

4,347,862

LAWN UMBRELLA

Edward Secon, Trumbull, Conn., assignor to The Sherwood Corporation, Spring City, Tenn.

Filed May 22, 1981, Ser. No. 266,459
Int. Cl.³ A45B *11/00, 17/00*
U.S. Cl. 135—20 R **7 Claims**



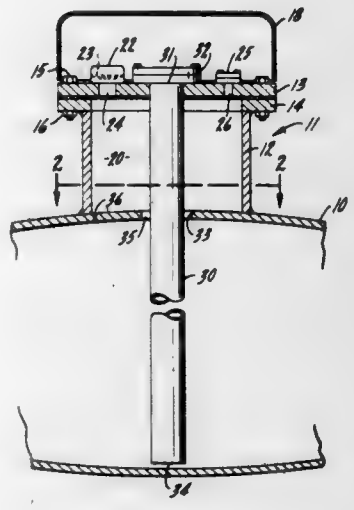
1. A lawn umbrella comprising, a mast, means for journally mounting said mast for rotation about a vertical axis, a flexible shade having a generally quadrilateral configuration disposed above the mast, a first strut having a bowed configuration between its ends, means for fastening the ends of the first strut to a first pair of opposed corners of the shade with the strut bowed such that the center of curvature is beneath the shade, means for mounting said first strut on the top of the mast for pivotable movement relative to the mast about an axis substantially normal to the axis of the mast, a second strut having a bowed configuration between its end, means for fastening the ends of the second strut to a second pair of opposed corners of the shade with the strut bowed such that the center of curvature is above the second strut, and means for mounting the second strut on the mast for transverse movement relative to the mast.

4,347,863

COMBINED SAFETY VENT AND SIPHON UNLOADING NOZZLE FOR LIQUID TRANSPORTATION VEHICLE

John T. Keyes, Greenville, S.C., assignor to Union Tank Car Company, East Chicago, Ind.

Filed Jul. 14, 1977, Ser. No. 815,481
Int. Cl.³ B67D *5/54*
U.S. Cl. 137—212 **3 Claims**



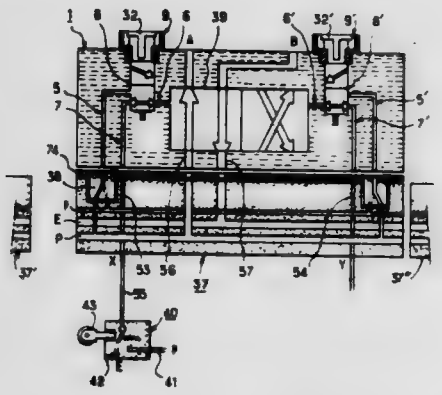
1. A vehicle for transporting a liquid commodity comprising:
(a) a closed tank for containing such liquid commodity;
(b) a combined safety vent and siphon unloading nozzle mounted on the top outside surface of said tank having an open-ended upstanding side wall extending above said tank and a generally horizontal coverplate spanning the open end, said side wall, cover plate and top surface defining a closed surge chamber on the outside of said tank that communicates with the inside of said tank through a hole in said top surface;
(c) a safety vent including a replaceable frangible element mounted on said cover plate and communicating with said closed chamber through said cover plate;
(d) a siphon unloading pipe of predetermined outside diameter having its upper end mounted in said cover plate and means closing said pipe upper end, said siphon pipe extending downwardly through said closed chamber and continuing through said hole in said top surface and into the inside of said closed tank, the lower end of said siphon pipe terminating adjacent the bottom of said closed tank;
(e) said hole having a predetermined diameter slightly larger than said outside diameter of said siphon pipe so as to define an annular surge pressure transmitting opening around said siphon pipe for dissipating transient surge pressure of said tank into said chamber without causing premature rupture of said frangible element, and
(f) said liquid commodity being unloaded from said tank through said siphon pipe by opening said means closing the upper end of said siphon pipe and connecting a source of pressurized air to air pressure inlet means for said tank.

4,347,864

AUXILIARY CONTROL DEVICE FOR PNEUMATIC DISTRIBUTOR

Daniel Bouteille, Ville D'Avray; Michel Nicolas, Plaisir, and Pierre Prudhomme, Saint Germain en Laye, all of France, assignors to La Telemecanique Electrique, France

Continuation of Ser. No. 50,856, Jun. 21, 1979, abandoned. This application Apr. 15, 1981, Ser. No. 254,802
Claims priority, application France, Jun. 21, 1978, 78 18518
Int. Cl.³ F16K *31/11*
U.S. Cl. 137—269 4 Claims



1. In a pneumatic control system comprising a distributor and an external pilot switch having an output, a first input, a source of permanent pressure connected to the said first input, a second input connected to an exhaust pressure and actuating means for connecting said output to said first or second inputs, a pneumatic distributor comprising:

(a) a body having a first face and a second face;

(b) a two-state valve received in said body, having a permanent pressure input and an exhaust opening both on said first face, two cylinder outputs and at least one control input;

(c) at least a cylindrical housing located in said body, said housing having a first threaded inner surface portion opening on said second face, and a second inner surface portion opposite to said first inner portion;

(d) a first feeding channel having a first end opening on said first face and a second end opening on said second inner surface portion at a first distance from said second face, said first end being normally connected to the output of said external pilot switch for receiving external pneumatic control signals;

(e) a second feeding channel having a first end opening on said first face and a second end opening on said second inner surface portion at a second distance from said second face, said first end being adapted to receive a permanent pressure;

(f) a control channel having a first end connected to said control input and a second end opening in said second inner surface portion at a third distance from said second face;

(g) a pneumatic commutation sub-assembly comprising a hollow body having an outer surface and a transverse face, said outer surface being provided with a pilot orifice, with a first feeding orifice and with a second feeding orifice, a valve located in said hollow body and movable between a first position wherein said pilot orifice is connected to said first feeding orifice and a second position wherein said pilot orifice is connected to said second feeding orifice;

(h) resilient means located in said sub-assembly body and adapted to place said valve in its first position;

(i) a movable tumbler located in said hollow body, having an actuating end located in the vicinity of said transverse face and an opposition end remote from said transverse face, said opposite end cooperating with said valve for displacing it from its first position to its second position when said actuating end is depressed;

(j) said sub-assembly being so inserted in said second inner surface portion that said first orifice, said second orifice and said pilot orifice register and form a tight joint, respectively with the second ends of said first feeding channel, said second feeding channel and said control channel;

(k) a removable stopper having an outer transverse surface portion, a cylindrical threaded outer surface portion, a transverse end face opposite to said outer transverse surface portion, a cylindrical bore longitudinally extending between said outer transverse surface portion and said transverse end face, and a cylindrical pusher located in said bore, said pusher having an outer end, an intermediate outer surface portion adapted to slide in said bore in a tight manner and an inner end opposite to said outer end;

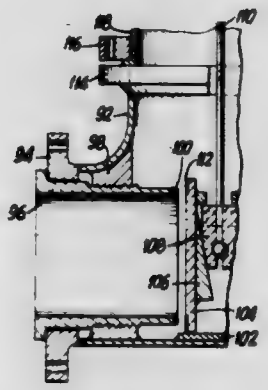
(l) said cylindrical threaded outer surface portion of the stopper being so associated with said first threaded inner surface portion of the cylindrical housing that said transverse end face of the stopper tightly closes said second inner surface portion of the cylindrical housing and that said inner end of the pusher cooperates with said actuating end of the tumbler when said outer end of the pusher is depressed.

4,347,865

FABRICATED GATE VALVES

Arthur C. Worley, Morristown, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 895,918, Apr. 13, 1978, abandoned. This application Jun. 17, 1980, Ser. No. 160,557
Int. Cl.³ F16L *7/00*
U.S. Cl. 137—375 3 Claims



1. A gate valve comprising housing means having a hollow interior and opposed coaxial tubular ends each with an integral end flange, cylindrical tubular means removably carried by said housing means extending between said ends and fixedly secured to said end flanges and with said housing means during operation of said valve and having a central axis along which fluid is adapted to flow, said tubular means terminating internally of said housing means opposite from said end flanges in spaced seat means integral at the inner end of each said tubular means and removable with said tubular means through a selected one of said tubular ends, said seat means disposed normal to said axis to form a parallel gap therebetween, gate means situated internally of said housing means and having a closed position engaging said seat means only in a plane normal to said axis for providing a fluid-tight seal and preventing flow of fluid through said tubular means and an open position situated beyond the axis of said tubular means for enabling flow of fluid therethrough, said tubular means being in removable threaded engagement with said housing means for a short axial distance at said end flange for a distance substantially less than the axial length of the tubular means and of the adjacent housing, the non-treaded portion of said tubular means having an outside diameter substantially less than the inside diameter of said housing means to provide an annular clearance therebetween to thereby thermally shield said housing from temperature influences produced by the fluid which flows through said tubular means, moving means operatively connected for moving said gate means between said open and closed positions

thereof, said moving means when moving said gate means from said open to said closed position first moving said gate means transversely with respect to said axis to a position of alignment with said seat means while still being spaced therefrom, and stop means situated in said housing means in the path of movement of said gate means from said open toward said closed position thereof for stopping the movement of said gate means by said moving means transversely with respect to said axis when said gate means reaches said position of alignment with said seat means, said moving means after displacing said gate means to said position of alignment determined by said stop means then cooperating with said gate means for displacing the latter only in an axial direction into said fluid seal engagement with said seat means to assume said closed position, said stop means guiding said gate means during seating movement thereof into engagement with said seat means by the continued operation of said moving means.

4,347,866

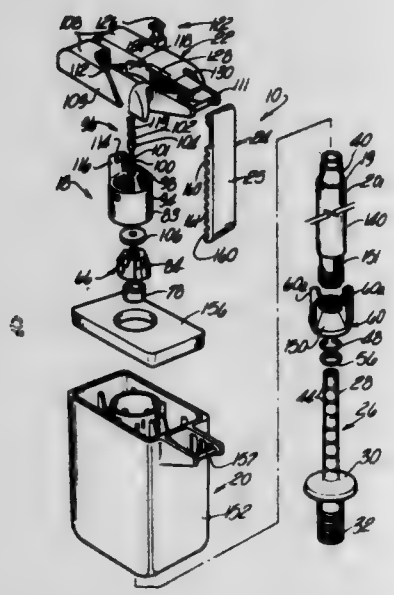
BALLCOCK ASSEMBLY

Albert E. Straus, Erie, Pa., assignor to Hoover Universal, Inc., Ann Arbor, Mich.

Division of Ser. No. 36,399, May 7, 1979, Pat. No. 4,286,619. This application May 8, 1981, Ser. No. 261,742

Int. Cl.³ F16K *31/26, 47/08*

U.S. Cl. 137—436 **7 Claims**



1. A ballcock valve assembly for controlling the supply of liquid to a liquid storage tank comprising,

a standpipe through which liquid is conveyed to said storage tank,

valve means on said standpipe for controlling the delivery of liquid to said tank,

means forming a liquid distribution chamber in communication with said valve means, said chamber having at least one discharge opening through which said liquid flows from said chamber,

said standpipe including an outlet tubular member in communication with said discharge opening and providing a liquid outlet flow passageway from said chamber to said tank,

said tubular member including flow restrictor means for restricting said discharge opening, said flow restrictor means being operable in response to rotation of said tubular member about the longitudinal axis thereof and with respect to said discharge opening to adjust the flow of liquid from said discharge opening through said passageway.

4,347,867

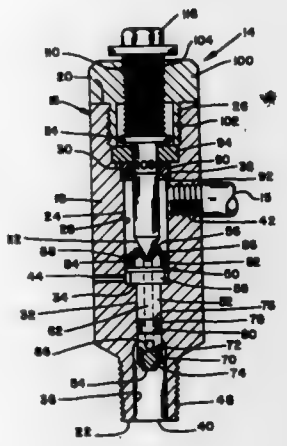
SAFETY VALVE

Clifford M. Peters, Longview, Tex., assignor to W-K-M Wellhead Systems, Inc., Shreveport, La.

Filed Dec. 29, 1980, Ser. No. 221,129

Int. Cl.³ F16K *17/00*

U.S. Cl. 137—460 **9 Claims**



1. A safety valve adapted to be inserted within a flowline comprising:

an elongate valve body having a longitudinally extending central bore, said valve body having a fluid inlet in fluid communication with said bore, a fluid outlet in fluid communication with said bore and spaced longitudinally from said fluid inlet;

a slidable valve element mounted within said bore between said fluid inlet and said fluid outlet and slidable between seated and unseated positions relative to said valve body, said valve element having a fluid passage within an inlet port thereof in fluid communication with said fluid inlet in the seated position and an outlet port thereof normally in fluid communication with said fluid outlet in the seated position, said outlet port being positioned at an outer end of said valve element along its longitudinal axis and having a seat thereabout;

a stop member mounted on said valve body for relative movement between extended and retracted positions and having a stem extended within said bore along the longitudinal axis of said valve body, said stop member when in a retracted position permitting movement of said valve element to the unseated position and when in a fully extended inward position engaging said valve element and holding said valve element in the seated position on said valve body, said stem being seated on said seat about said outlet port in said fully extended position and blocking fluid flow through said valve element to said fluid outlet; and

sealing means, positioned between said fluid inlet and said inlet port, for providing a fluid-tight seal between said inlet port and said fluid inlet in the unseated position, said sealing means in the seated position permitting fluid flow between said fluid inlet and said inlet port.

4,347,868

RELATING TO DEVICES FOR THE CLOSURE OF FLUID FLOW LINES

Michael J. Scott, Feilding, New Zealand, assignor to Allflex International Limited, Palmerston North, New Zealand

Filed Nov. 13, 1980, Ser. No. 206,515

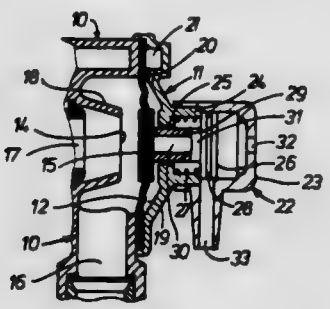
Claims priority, application New Zealand, Nov. 14, 1979, 192114; Jun. 11, 1980, 194014

Int. Cl.³ F16K *17/00*

U.S. Cl. 137—462 **14 Claims**

1. A device for closing a fluid flow passage in response to a decrease in vacuum pressure existing in the passage, said device comprising a fluid flow passage, a seating in the passage, a diaphragm located so that one face thereof can locate on said seating to close said passage, a chamber which is partially

formed by the or at least part of the other face of said diaphragm, said diaphragm in use, being maintained away from said seating by a higher pressure in said chamber due to a pressure differential between said chamber and passage, venting means to open said chamber to atmosphere, means to seal said venting means, and actuating means which engages with



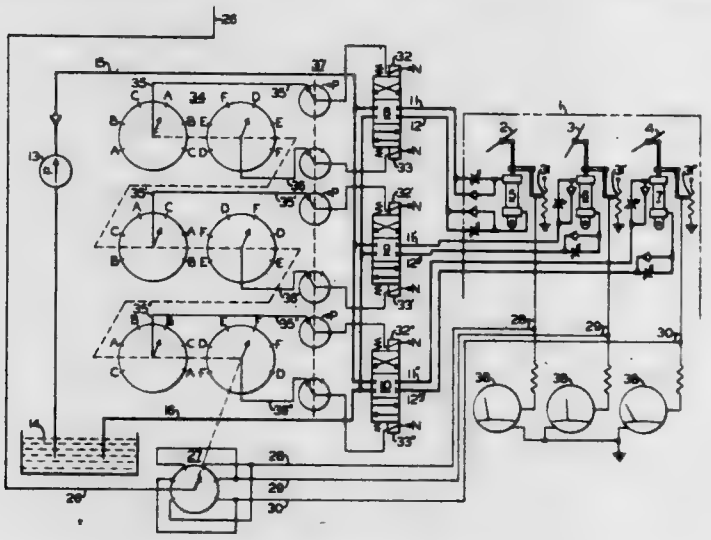
said diaphragm when said pressure differential exists such that when the pressure differential is altered by a decrease in the vacuum in said passage, the resultant movement of said diaphragm causes the actuating means to operate the sealing means such that the venting means vent said chamber such that said diaphragm can locate on said seat.

4,347,869

HYDRAULIC VALVE POSITION CONTROL SYSTEM FOR REGULATING SMOKESTACK EXHAUST PRESSURE

Richard A. Strobel, and Michael D. Lyons, both of Lexington, Ky., assignors to American Standard Inc., Lexington, Ky.

Filed Dec. 14, 1979, Ser. No. 103,802
Int. Cl.³ F16K *37/00*; F23N *3/00*
U.S. Cl. 137—488 **12 Claims**



1. A control system for adjusting a plurality of butterfly valves arranged in a substantially horizontal plane of a furnace smokestack to regulate the stack exhaust pressure, comprising:

(a) a source of hydraulic fluid under pressure;

(b) a hydraulic power cylinder for each said butterfly valve having a double-acting piston and linkage connecting said piston to a respective one of said butterfly valves to effect operation thereof in an opening or closing direction;

(c) a solenoid actuated, three position spool valve device having a first position in which hydraulic fluid is connected from said source to one end and is concurrently exhausted from the other end of said double-acting piston of a respective one of said power cylinders, a second position in which hydraulic fluid is connected from said source to said other end and is concurrently exhausted from said one end of said double-acting piston of a respective one of said power cylinders, and a third position in which said supply and exhaust of hydraulic fluid is terminated;

(d) means for selectively establishing a command signal representative of the desired exhaust pressure in said smokestack;

(e) means for establishing a feedback signal representative of the actual exhaust pressure of said smokestack; and

(f) first circuit means operative in response to a difference between said command and feedback signals for operating said spool valve device of said one of said power cylinders to said first or said second position depending upon the sense of said difference between said command and feedback signals, and operative in response to equality between said command and feedback signals for operating said spool valve device of said one power cylinder to said third position, thereby adjusting the degree of opening or closing of said butterfly valve associated with said one of said power cylinders and accordingly providing a fine adjustment of said smokestack exhaust pressure; and

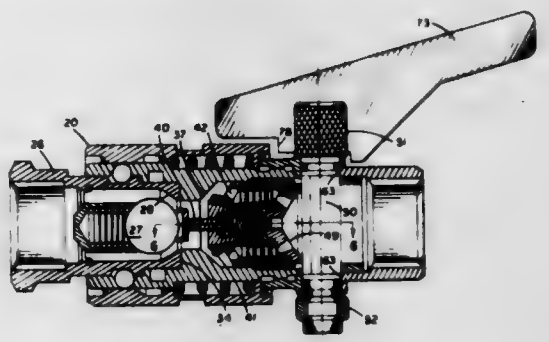
(g) second circuit means operative concurrently with said first circuit means in response to said difference between said command and feedback signals in excess of a predetermined amount for operating said spool valve device of another one of said power cylinders to said first or said second position depending upon the sense of said difference between said command and feedback signals, and operative in response to said difference between said command and feedback signals being less than said predetermined amount for operating said spool valve device of said another power cylinder to said third position, thereby adjusting the degree of opening or closing of said butterfly valve associated with said another power cylinder concurrently with said adjustment of said butterfly valve associated with said one power cylinder and accordingly providing a coarse adjustment of said smokestack exhaust pressure.

4,347,870

LEVER-TYPE QUICK DISCONNECT COUPLING

Ojars Maldavs, Lincoln, Nebr., assignor to Gould Inc., Rolling Meadows, Ill.

Filed May 14, 1980, Ser. No. 149,628
Int. Cl.³ F16L *37/28*
U.S. Cl. 137—614.05 **8 Claims**



1. A lever-type quick disconnect female coupling for coaction with a check-valve equipped male coupling, the female coupling comprising:

(a) a generally tubular housing having a forward end and a rearward end and an axially extending bore open at said forward end for receipt of said male coupling, the housing being provided with a valve seat within the bore,

(b) a valve assembly slidably mounted in said bore for movement axially of said bore, the valve assembly including a valve which is engageable with said valve seat in the bore and a tubular rear end portion which is provided with an opening therethrough which extends transversely to the axis of said bore of the housing,

(c) a pusher member slidably mounted in said valve assembly for movement axially of said bore, the pusher member including a tubular rear end portion which is slidable axially within the rear end portion of the valve assembly,

(d) cam means mounted in said housing and engageable with said valve assembly and said pusher member for moving the valve assembly and the pusher member in opposite directions, said cam means including a shaft which extends through the opening in the valve assembly and is engageable with the rear end portion of the pusher member and which is rotatable about an axis which extends transversely to the axis of the bore, the shaft having a first camming portion which is engageable with an edge portion of the opening in the valve assembly for moving the valve assembly axially in one direction and a second camming portion which is engageable with an edge portion of the rear end portion of the pusher member for moving the pusher member axially in the opposite direction, the cam means being movable between a first position in which the valve of the valve assembly engages said valve seat and the pusher member does not open the check valve of the male coupling and a second position in which the valve of the valve assembly is moved axially away from the valve seat to provide a fluid passage therebetween and the pusher member is moved axially toward the male coupling to open the check valve of the male coupling, and

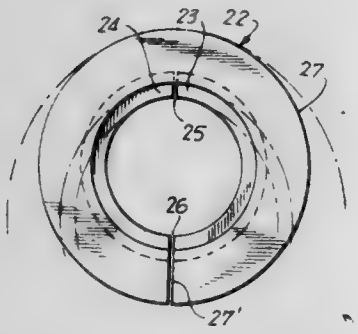
(e) a lever attached to the cam means for moving the cam means between said first and second positions.

4,347,871

PRESSURE ACCUMULATOR WITH LOCKING NUT

Abduz Zahid, Los Angeles, Calif., assignor to Greer Hydraulics, Inc., Chatsworth, Calif.

Filed May 4, 1978, Ser. No. 902,972
Int. Cl.³ F16L *55/04*
U.S. Cl. 138—30 **2 Claims**



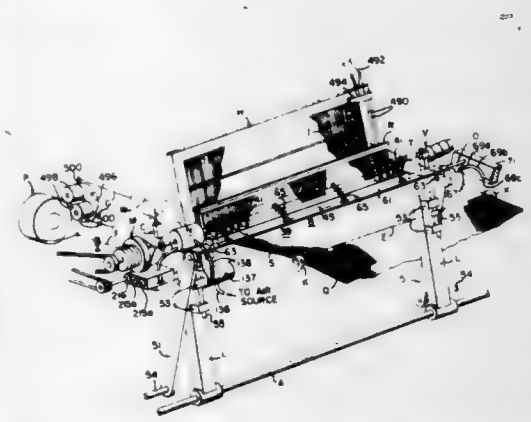
1. An accumulator device comprising, in combination, a pressure vessel having a gas port at one end and an oil port at the other end, a gas charging valve positioned in said gas port, a deformable bladder member mounted within said vessel and dividing the same into two chambers, namely, a first chamber communicating with said gas port, and a second chamber communicating with said oil port, a cylindrical plug member adapted to be inserted through said oil port into said second chamber, said plug member including a radially outwardly directed flange formed at the upper end thereof, and a threaded portion in downwardly spaced relation to said flange, the outer diameter of said flange being smaller than the inner diameter of said oil port, an annular seal ring receiver groove formed on the external surface of said plug member in spaced relation to said flange between said flange and said threaded portion, a seal ring seated in said groove and projecting radially beyond said plug, the outer diameter of said ring corresponding essentially to and engaging against the inner surface of said oil port, a locking member interposed between the under surface of said flange and the upper inside surface of said vessel surrounding said oil port, said locking member including a plurality of rigid arcuate metallic segments defining a ring having an inner diameter less than the diameter of said port and an outer diameter greater than the diameter of said port, the adjacent ends of said segments being disposed in close juxtaposition to define a substantially continuous surface, and an annulus of resilient elastomeric material bonded to said segments, said annulus including a slot extending along one radius of the annulus and completely through that portion of the annulus intersected by the radius from inner diameter to outer diameter of said portion to render said annulus discontinuous at the loci of the slot, said slot being disposed in alignment with one given junction between any two adjacent said segments whereby said locking member may be deformed and inserted through said oil port into said vessel and may thereafter be spread and mounted over said plug between said flange and said sealing ring, and clamp nut means threadedly engaging said threaded portion of said plug and urged against the exterior surface of said vessel surrounding said oil port whereby said locking member is clamped between said flange and the interior surface of said vessel surrounding said port.

4,347,872

AIR WEFT INSERTION SYSTEM

Charles W. Brouwer, East Greenwich, R.I.; H. Gary Osbon, Kalamazoo, Mich., and Karl W. Wueger, Wakefield, R.I., assignors to Leesona Corporation, Warwick, R.I.

Filed Aug. 6, 1979, Ser. No. 64,180
Int. Cl.³ D03D *47/30*
U.S. Cl. 139—435 **50 Claims**



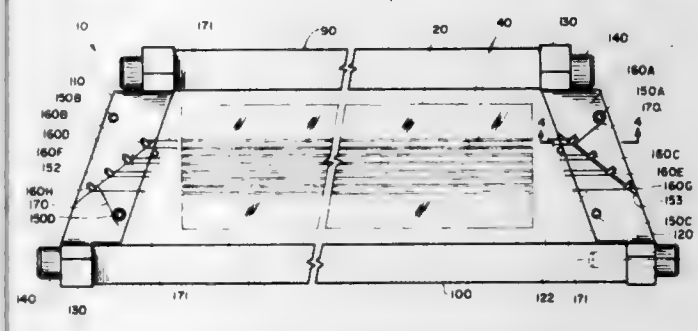
1. A method of inserting a weft strand into the shed of a weaving machine comprising the steps of providing a nozzle in proximity to the shed and serving as guide for a weft strand passing therethrough, and abruptly expelling from said nozzle at a supersonic velocity a sustained pulse of a gaseous medium, said pulse being directed toward said shed into the atmosphere ambient thereto to thereby project the weft strand through at least a portion of the shed, said medium being supplied to said nozzle at an operating pressure having a ratio to the pressure of the ambient shed atmosphere of at least about 2.7:1.

4,347,873

FIXTURE FOR MAKING AN ASSEMBLY OF FINE WIRES

Bernard Caras, Princeton, N.J., assignor to Burroughs Corporation, Detroit, Mich.

Filed Jul. 7, 1980, Ser. No. 166,059
Int. Cl.³ H01J *9/14*
U.S. Cl. 140—71.5 **3 Claims**



1. A fixture for forming an assembly of wires on a support plate comprising

a frame having a longitudinal axis including upper and lower bars and left and right side bars, all of the bars being secured together and defining an open space between them,

first and second groups of pins on said side bars and spaced from each other so that a wire can be wound around said pins and between the pins of each group to form the desired individual wires oriented generally parallel to said axis, the pins of each group being disposed on a line oriented at an angle to said longitudinal axis, and

a plurality of binding pins on said frame to which the ends of a winding wire can be secured, said binding pins having such a cross-section that the binding pins have a sharp edge which secures the wire in place when it is tightly wound around the pin.

4,347,874

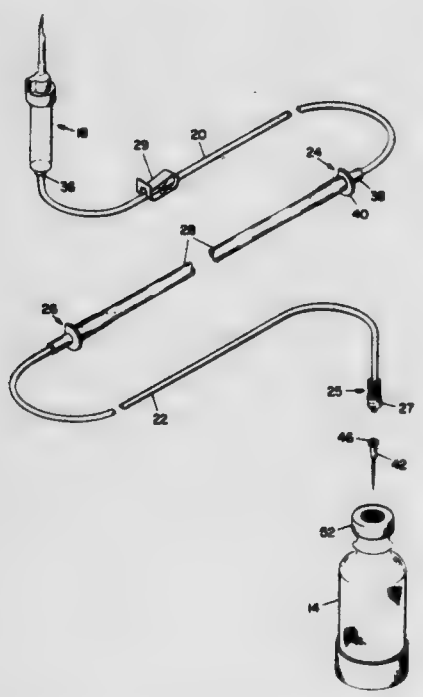
HIGH SPEED STERILE FLUID TRANSFER UNIT

James J. Sullivan, 1329 N. Foothill Rd., Ojai, Calif. 93023, and Charles M. Grey, 1518 Conestoga Ct., Redlands, Calif. 92373

Filed Oct. 2, 1980, Ser. No. 193,364

Int. Cl.³ B65B *3/12*

U.S. Cl. 141—1 **12 Claims**



1. A high speed sterile transfer unit for sterile fluids, for use with peristaltic type pumps, comprising:

a large diameter flexible silicone rubber tube having an outer diameter in the order of one-third of an inch, and being approximately one foot long and of sufficient length to serve as the active flexible conduit of a roller-type peristaltic pump;

input and output small diameter plastic tubes each being in the order of one and one-half feet or more in length, and the diameter of said tubes being less than one-half that of said rubber tube;

first and second plastic fitting means cemented to the said input and output plastic tubes and having an interference fit with both of the opposite ends of said silicone rubber tube, each of said fittings having a substantial overlapping area with each of said tubes;

a large vented input spike cemented to the other end of said input plastic tube for receiving input fluid;

a threaded fitting cemented to other end of said output plastic tubing for attachment to a fluid dispensing fitting;

a shutoff clamp valve enclosing one of said plastic tubes;

said entire assembly as defined hereinabove being secured together as a single sterile unit; and

peristaltic pump means for pumping fluid through said assembly at a rate of 50 cc's in less than ten seconds.

4,347,875

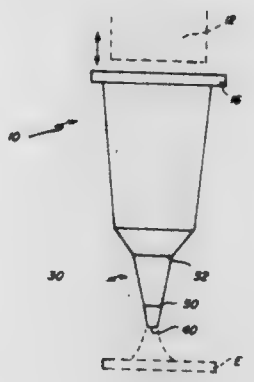
SELF-CLEANING NOZZLE CONSTRUCTION FOR ASPIRATORS

Richard L. Columbus, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 14, 1980, Ser. No. 168,789

Int. Cl.³ B65B *3/04*

U.S. Cl. 141—18 **18 Claims**



12. A container for aspirating, storing and dispensing liquid, the container comprising

a compartment having a storage capacity for the total liquid to be aspirated and dispensed, and

a nozzle in fluid communication with said compartment and comprising

a liquid-confining wall wrapped around a longitudinal axis and terminating in a liquid-dispensing orifice,

said wall further including

(a) an interior surface,

(b) an exterior surface having a portion adjacent to said orifice that is adapted to be immersed into a source of the liquid during aspiration, and

(c) means at predetermined loci for attracting liquid remaining on said adjacent exterior surface portion after aspiration, said loci being spaced from said orifice a distance that is between about 0.02 cm and about 0.5 cm,

whereby liquid remaining on said exterior surface is attracted to said loci away from said orifice and does not interfere with the dispensing of the aspirated liquid.

4,347,876

HANDLING AND/OR TREATMENT OF PARTICULATE MATERIALS

John H. Morgan, Syston, England, assignor to Richards Structural Steel Co., Ltd., Leicester, England

Filed Jul. 16, 1980, Ser. No. 169,343

Claims priority, application United Kingdom, Jul. 19, 1979, 79/25126

Int. Cl.³ B65B *1/30, 31/00*

U.S. Cl. 141—70 **3 Claims**

1. An apparatus for the handling and/or treatment of particulate materials, comprising:

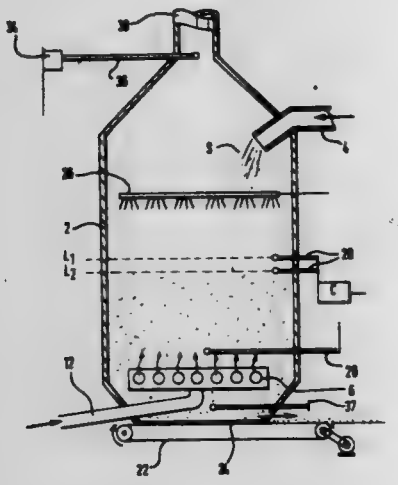
a vessel having a gas outlet flue and a material inlet at an upper region thereof, said inlet allowing entry of particulate material which is to be passed in at an at least substantially downward direction through the vessel, means for passing pressurized gases upwardly through the vessel towards said gas outlet flue, and a second outlet adjacent to a base portion of said vessel;

a discharge conveyor having an upper run positioned to receive material discharging from said second outlet;

sensing and signalling means arranged for sensing the height of fluidized material in said vessel at a predetermined maximum level and a predetermined minimum level and for generating a signal relative thereto, respectively; and

control means adapted to receive said signals and to operate said discharge conveyor to allow discharge of the particulate materials when a signal is received that the maximum level has been reached, and to cause said discharge to

cease when a signal is received that the minimum level has been reached, wherein said upper run of the discharge conveyor passes in such close proximity to said second



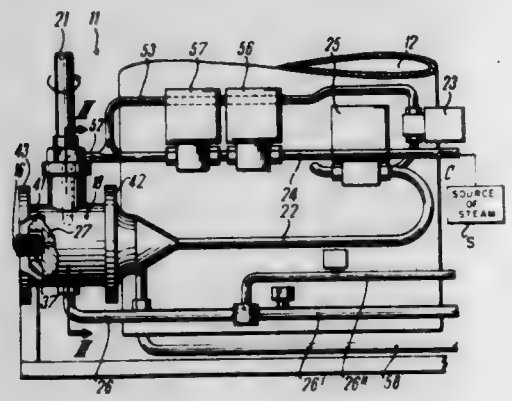
outlet that when, in operation of the apparatus, the conveyor is halted, said second outlet is effectively closed by the presence of the discharged material on said conveyor upper run.

4,347,877

APPARATUS FOR ASEPTICALLY DISCHARGING FLOWABLE SUBSTANCES

Jakob Hoiss, Waldhornstrasse 31, D-8000 München 50, Fed. Rep. of Germany

Filed Apr. 21, 1980, Ser. No. 142,252
Int. Cl.³ B08B *3/00*; B65B *3/04*; F16K *51/00*
U.S. Cl. 141—91 **18 Claims**



1. An arrangement for aseptically discharging a flowable substance, especially such which has been sterilized in a sterilizing container, into a sterilized conduit, comprising an output duct for the flowable substance having an output end; a discharge valve arranged at and communicating with said output end of said duct and including a valve housing bounding a chamber and inlet and outlet ports for the flowable substance, and having valve seats surrounding said ports, and a valve member received in said chamber and having a surface located on an imaginary sphere and sealingly contacting said seats, and a through passage having inlet and outlet ends, said valve member being rotatable between an open position in which said ends of said passage respectively register with said ports, and a closed position; means for coupling said discharge valve to the sterilized conduit, including a tubular coupling member mounted on said valve member in communication with said outlet end of said passage and having a portion extending beyond the latter and terminating within the confines of said imaginary sphere; and means for admitting sterilizing medium between said valve housing and said valve member at the region of said coupling member.

4,347,878

FUNNEL

Miles E. Schofield, 5949 Melvin Ave., Tarzana, Calif. 91356

Filed Jul. 11, 1980, Ser. No. 167,646
Int. Cl.³ B65B *39/04*
U.S. Cl. 141—300 **4 Claims**



1. A funnel for receiving a poured liquid, and for guiding the liquid into an elongated filler pipe for flow into a receptacle, comprising:

a relatively wide-mouthed bowl for receiving the poured liquid;

a central section formed integrally with said bowl and defining a flow path communicating with the interior of said bowl for receiving the liquid from said bowl; and

a generally cylindrical spout of relatively small cross section for reception into the filler pipe, said spout being formed integrally with said central section generally opposite said bowl, and defining a relatively small flow path communicating with the flow path through said central path communicating with the flow path through said central section for passage of the liquid through said spout and into the filler pipe;

said central section and said spout being formed generally in alignment with each other and angularly disposed at an obtuse angle with respect to said bowl, said central section including a pair of generally opposed surfaces of arcuate cross section extending for a substantial portion of the length of said central section and converging gradually from said bowl toward each other to define a generally wedge-shaped profile, said wedge-shaped profile being of sufficiently small cross section at its end adjacent said spout for reception at least partially into the filler pipe with said opposed arcuate surfaces in binding engagement with the filler pipe and with the end of said spout opposite said central section in abutting engagement with the interior of the filler pipe, said central section further including at least one relatively flat side extending between said opposed arcuate surfaces to define an air vent between the exterior of said central section and the filler pipe when said central section is received partially into the filler pipe.

4,347,879

BOTTLE NECK COUPLING DEVICE

Anton J. Blaser, 700 E. Mason St., Santa Barbara, Calif. 93103

Filed Mar. 27, 1981, Ser. No. 248,463
Int. Cl.³ B15B *3/06*
U.S. Cl. 141—364 **1 Claim**

1. A bottle neck coupling device for receiving in opposite ends the neck end openings of two bottles respectively and holding them in axial alignment so that one bottle can have its ingredients transferred to the second bottle by standing the one bottle upside down on top of the second bottle with their neck end openings held by said device, said device comprising, in combination:

an outer annular body having integrally formed flexible fingers extending from opposite peripheral ends and a central partition;

a tube section coaxially supported by said central partition at its mid portion so as to extend on either side of said partition within said body, said tube section having an outside diameter less than the inside diameter of said body to define an annulus therebetween on either side of the partition for receiving said neck ends of said bottles, the oppo-



site ends of said tube section being received in the inside of the neck end openings and the annular body surrounding the outside of the neck end openings, said flexible fingers serving to hold the bottles in their mounted positions, said tube section holding the bottle neck end openings in coaxial alignment so that ingredients are transferred through said tube section by gravity.

4,347,880

TREE TRIMMERS

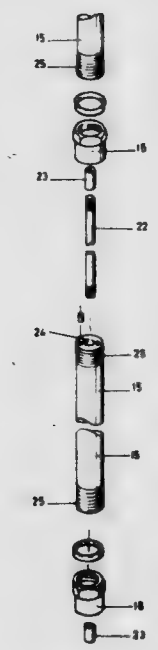
Jacobus C. van der Merwe, 144 Kerk St., Nylstroom, Transvaal, South Africa

Filed Dec. 15, 1980, Ser. No. 216,782

Claims priority, application South Africa, Nov. 28, 1979, 79/6454

Int. Cl.³ B26B *15/00*; B27L *1/00*

U.S. Cl. 144—2 Z **3 Claims**



1. A tree trimmer comprising:

a pruning head adapted to be operated by a reciprocable rod to perform a cutting action and to open up;

a double acting compressed air operated linear thrustor having a casing and an actuating rod which is caused to reciprocate;

a standpipe composed of a series of tubes detachably and rigidly screwed together and interposed between the casing and the pruning head; each tube being formed at one end as a solid plug having a guide hole therein; and

a series of connecting rods passing through the guide holes and detachably and rigidly screwed together, the series of connecting rods being connected at one end to the actuating rod and at the other end to the reciprocable rod.

4,347,881

WOOD SPLITTING APPARATUS

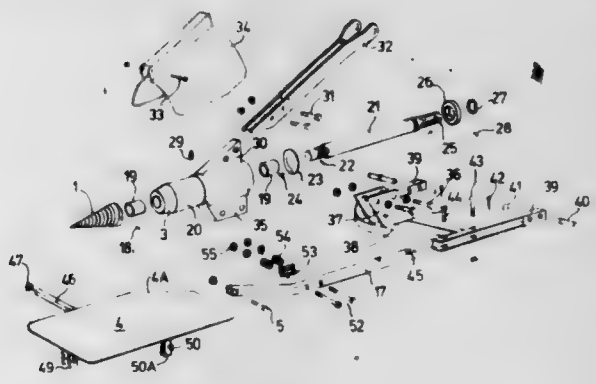
Ian W. Wickham, Junction Rd., 7.R.D., Inglewood, New Zealand; Maxwell J. Till, New Plymouth, New Zealand, and Ernst Forster, Inglewood, New Zealand, assignors to Ian Wallace Wickham, Inglewood, New Zealand

Filed Oct. 2, 1980, Ser. No. 193,115

Claims priority, application New Zealand, Oct. 4, 1979, 191748

Int. Cl.³ B27L *7/00*

U.S. Cl. 144—194 **5 Claims**



1. Apparatus for splitting blocks of wood comprising:

a rotatable block-splitting threaded cone mounted on a stationary mounting,

framework connected with said mounting for supporting said mounting,

a block-supporting platform mounted on said framework and positioned below and to one side of said cone,

said cone, said platform and said framework defining a path of travel along which a block of wood can move while being split, said path of travel being unobstructed beyond the stationary mounting, and

said mounting including bevel means for transferring the pressure tending to restore a split block to its original condition from said cone to said mounting as the split block moves from the base of the cone to said mounting.

4,347,882

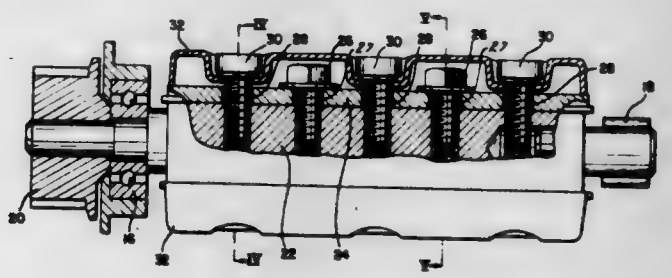
CUTTERHEAD FOR A POWER PLANER

Rainer Bachmann, Hohenstein, Fed. Rep. of Germany, assignor to Black & Decker Inc., Newark, Del.

Filed Oct. 7, 1980, Ser. No. 194,833

Int. Cl.³ B27C *1/10*; B27G *13/04*

U.S. Cl. 144—225 **12 Claims**



1. A rotary cutterhead for a power planer, comprising:

an elongated core;

a pressure plate mounted on the core to define a cantilever portion of said pressure plate, said cantilever portion conjointly defining with said core a longitudinally extending slot-like opening for replaceably receiving a cutting blade;

positioning means for allowing positioning of said pressure plate relative to said core at a chosen location to enable

the cutting edge of the cutting blade to project a predetermined amount beyond the cutting circle defined by said rotary cutterhead;

fixing means for fixing said pressure plate to said core at said chosen location without clamping said cutting blade in said slot-like opening whereby said cutting blade can be easily inserted in and withdrawn from said slot-like opening with said pressure plate so fixed in position; and

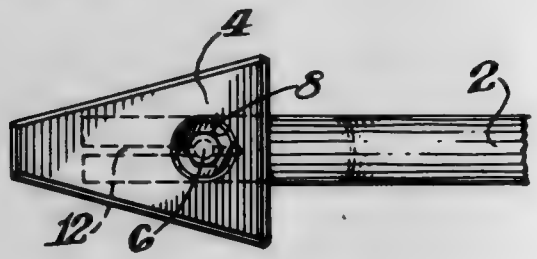
clamping means, independent of said fixing means and operable between said core and said pressure plate, for clampingly loading said cantilever portion to bias the latter towards said core and tightly clamp said blade between said cantilever portion and said core.

4,347,883

EASILY REMOVABLE HANDLE MEANS FOR AXES AND THE LIKE

James D. Fariss, Jr., Wilmington, Del., assignor to Innovation Enterprises, Inc., Wilmington, Del.

Filed Sep. 19, 1980, Ser. No. 188,609
Int. Cl.³ B25G *1/00*
U.S. Cl. 145—61 R **3 Claims**



1. A tool such as an axe, maul, sledge, hatchet, hammer and the like comprising:

a head for cutting or hitting, and

a wooden handle for said head having a slot at one end thereof, this end being insertable into a first opening extending into said head in a direction substantially parallel to the cutting or hitting edge of said head, and

means for detachably affixing said handle to said head comprising a lag screw type fastener extending into a second opening in said head, this second opening extending from the rear or butt end of said head in a direction substantially perpendicular to the cutting or hitting edge of said head, and oriented such that said lag screw is directed through said slot, said lag screw having a diameter large enough for the screw threads thereof to engage and expand the wooden sides of said slot, thereby doubly securing said tool head to said handle and providing for detachment of head and handle by removing the lag screw.

4,347,884

TIRE LINER AND METHOD OF PREPARATION

Donald R. Price, Lansing, Mich., assignor to Harold Harry Vischer, Brooklyn; Harold Harrison Vischer, Jr.; Michael Louis Vischer, both of Jackson; Ian Campbell McLeod, Lansing and Charles Edward Sherry, Holt, all of, Mich.

Continuation-in-part of Ser. No. 51,720, Jan. 25, 1979, Pat. No. 4,262,719. This application Apr. 13, 1981, Ser. No. 253,102
The portion of the term of this patent subsequent to Apr. 21, 1998, has been disclaimed.
Int. Cl.³ B60C *17/00*
U.S. Cl. 152—158 **10 Claims**

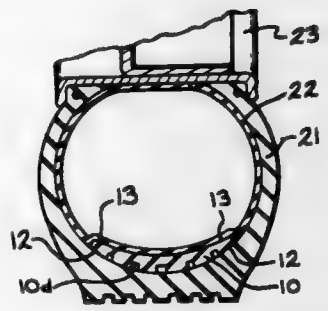
1. In an annular shaped tire liner adapted to fit around and in contact with the inside of a casing which is part of a pneumatic tire and around and in contact with the outside of an inner tube for the tire so as to be between the inner tube and the casing and to be vulcanized to the inside of the casing without an inner tube to reduce the frequency of flat tires wherein the casing has a generally U-shaped surface inside and wherein the tire has spaced apart annular sidewalls supporting a tread the improvement which comprises:

an annular strip of high temperature and pressure molded and vulcanized rubber with two opposite long sides and two opposite short sides,

wherein the strip has a width defined by the two opposite long sides and a thickness along the length between the two opposite short sides which provides for substantial protection against and resistance to penetration of the inside casing by a foreign object,

wherein the annular strip is in compression by the casing and is bent into the U-shape of the casing adjacent the tread when positioned in the casing by the inner tube and by vulcanizing to the casing without an inner tube and tends to straighten when outside of the casing thus holding the liner in position in the casing in use, and

wherein a portion of one long side of the strip which is to be in contact with the tire casing or the inside of the casing adjacent each of the short sides has tapered edges into the short sides.



7. In the method of forming an annular shaped tire liner from a high temperature and pressure molded and vulcanized rubber strip adapted to fit around and in contact with the inside of a casing which is part of a pneumatic tire and around and in contact with the outside of an inner tube for the tire so as to be between the inner tube and the casing and to be vulcanized to the inside of the casing without an inner tube to reduce the frequency of flat tires wherein the casing has a generally U-shaped surface inside and wherein the tire has spaced apart annular sidewalls supporting a tread the improvement which comprises providing a strip of the rubber having generally four sided cross-section such that there are two opposite long sides and two opposite short sides; and bevelling at least the long side of the strip to be adjacent the tread of the tire casing or the inside of the casing with a rubber cutting means into the short sides wherein the strip provides substantial protection against and resistance to penetration to the inside of the casing through the tread by a foreign object and wherein the strip is in compression in the casing and is bent in the U-shape of the inside of the casing and tends to straighten outside of the casing.

4,347,885

ROLLER BLIND STRUCTURE

Enar S. von Knorring, 38 Varkevagan, 770 20 Soderbarke, and Torsten F. Swensson, 76 Vastmannagatan, 113 26 Stockholm, both of Sweden

Filed Nov. 16, 1979, Ser. No. 95,039
Claims priority, application Sweden, Nov. 16, 1978, 7811856; Apr. 27, 1979, 7903741; Sep. 4, 1979, 7907364
Int. Cl.³ E06B *9/206*
U.S. Cl. 160—242 **4 Claims**

1. A roller blind structure comprising:

(i) two spaced apart brackets each having an elongated opening, one of said brackets having an elongated locking surface substantially parallel to its elongated opening,

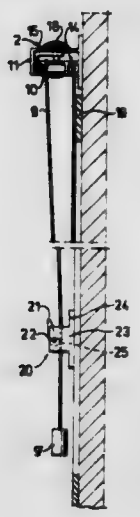
(ii) an elongated roller having at each and an axially projecting stud rotatably and displaceably engaged in a said elongated opening of a respective bracket, said roller having one end of a screen secured thereto,

(iii) a pulley secured to said roller and having a hub between two flanges,

(iv) a cord secured to the hub of the pulley and wound upon said hub in the direction opposite to the direction in which the screen is wound on the roller,

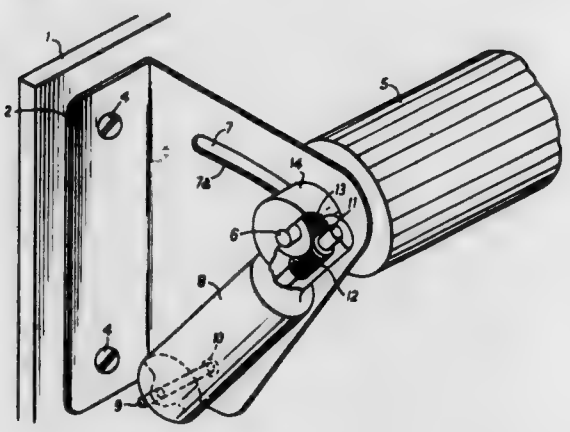
(v) a sleeve rotatably receiving at least one of said flanges of said pulley and including an opening permitting passage of said cord there through, said sleeve including an axial projection disposed to abut and slide along said locking surface of said one bracket for preventing rotation of said sleeve relative to said bracket,

(vi) a guiding and locking member for guiding said cord



relative to said opening of said sleeve and for locking said cord in any desired condition of being wound on said hub, said guiding and locking member being located at a spacing below said sleeve and comprising a manually-actuatable resiliently-loaded locking arm arranged to press said cord against a body portion of said guiding and locking member such that the cord may be pulled past the arm in the direction to wind up said screen on said roller, but such that said cord is locked against movement in the opposite direction until said arm is moved against its loading to free the cord.

4,347,886
ROLLER BLINDS
Enar S. von Knorring, 77020 Saderbarke, Sweden
Filed May 30, 1980, Ser. No. 154,702
Int. Cl.³ E06B *9/20*; A47H *1/00*
U.S. Cl. 160—242 **2 Claims**



1. A roller blind comprising:

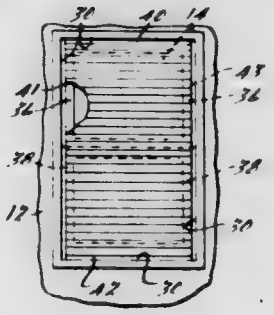
(i) a pair of brackets, for mounting on a support structure each bracket including an arm with an elongated slot therein, the brackets each being such that when they are mounted on the supporting structure the slot extends in the direction away from the support structure,

(ii) a roller, to receive a screen, having a respective trunnion extending axially from each end of the roller, each said trunnion being engaged through the slot of a respective one of the brackets and bearing frictionally on an edge bounding the slot,

(iii) a screen having an end thereof secured to said roller,

(iv) reversing motor drive means connected to one of said brackets and to the roller for rotating said roller, the screen being wound onto the roller in the direction such that rotating of the roller in the direction to lower the screen causes travel of the trunnions along the respective slot to bring the screen nearer to the support structure, and rotation of the roller in the direction to raise the screen causes travel of the trunnions along the respective slot to move the screen farther away from the support structure, wherein the reversing motor drive means comprises an electric motor mounted by a pivot on said one bracket and having a drive shaft drivingly connected to the adjacent trunnion, said slot being arcuate and the axis of said pivot being concentric with the axis of said arcuate slot, said pivot providing clearance such that the respective trunnion rests by its own weight, and the weight of the roller and blind, on said edge bounding the slot.

4,347,887
THERMAL SHUTTERS
Lawrence P. Brown, 760 Gibbs Dr., Ithaca, Mich. 48847
Filed Oct. 6, 1980, Ser. No. 194,135
Int. Cl.³ E06B *3/00*
U.S. Cl. 160—368 R **7 Claims**



1. In a window assembly having a sash portion with glazing therein and a casing surrounding said sash portion, the improvement comprising a thermal insulating system having:

a continuous single sheet of relatively compliant material bonded to itself at spaced intervals to form a plurality of adjacent elongated cells arranged in a double row configuration and disposed adjacent to but spaced from said sash portion on said casing, said double row of elongated cells having generally coplanar outer portions collectively forming a pair of generally parallel outer thermal insulating members and having coplanar inner portions collectively forming a common intermediate thermal insulating member spaced between and generally parallel to said outer thermal insulating members, thereby providing a quadruple glazing insulating effect with the glazing in said sash portion,

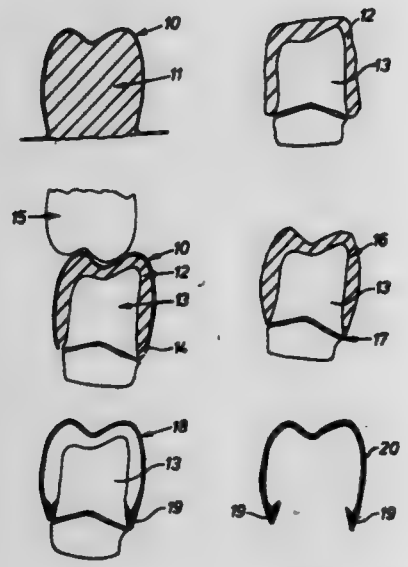
attachment means for securely affixing said formed continuous single sheet to said window assembly on said casing, said attachment means including batten means fixedly secured to said casing for fixedly pressing and sealingly affixing the edge portions of said formed continuous single sheet between said batten means and said casing thereby reducing infiltration through said window assembly and providing a double row of insulative dead air spaces within said elongated cells over the full area of said window assembly.

4,347,888

METHOD OF MAKING FORMS FOR INVESTMENT CASTING AND PRODUCTS PRODUCED THEREFROM

Melvyn P. Butler, Derby, England

Filed Mar. 20, 1980, Ser. No. 132,296
Int. Cl.[3] B22C 7/02
U.S. Cl. 164—34 17 Claims



1. A method of making a form of a desired shape, for use in an investment casting technique which comprises:

(a) forming a first sheet of formable material to a shape which approximates to the desired shape of the form;

(b) disposing the formed shape around a layer of deformable hardenable material;

(c) applying a compressive force to the formed shape to deform the underlaying hardenable material to a desired shape;

(d) hardening the hardenable material to produce a form precursor;

(e) removing the formed shape from the hardened form precursor; and

(f) utilizing the hardened form precursor to form a second sheet of formable material into the form of the desired shape.

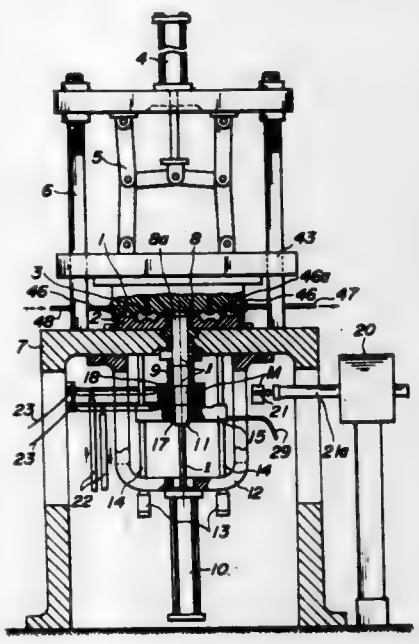
4,347,889

DIECASTING APPARATUS

Mikiya Komatsu; Shunsuke Suzuki, both of Yokohama, and Takasumi Maruyama, Yokosuka, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jan. 3, 1980, Ser. No. 109,394
Claims priority, application Japan, Jan. 9, 1979, 54/366
Int. Cl.[3] B22D 17/00
U.S. Cl. 164—250.1 6 Claims

1. A vertical diecasting apparatus comprising a diecasting cavity, a vertically arranged injection cylinder having its upper end in communication with said cavity, a melt chamber cylinder coaxially located below said injection cylinder and having an inner diameter substantially the same as said injection cylinder, a base member adapted for vertical movement, means for moving said base member, said melt chamber cylinder being secured to said base member for movement therewith toward and away from said injection cylinder, so that when said base member is lowered, the melt chamber cylinder is spaced apart from the injection cylinder to provide a space for supplying the material to be melted, a movable plunger adapted to pass through said melt chamber cylinder and said injection cylinder to form a melt chamber defined by an upper surface of said plunger and an inner surface of said melt chamber cylinder, said melt chamber cylinder in abutment with said injection cylinder and said cavity all forming a hermetically closed space, and heating and melting means comprising a high frequency induction coil and a resistance heating body arranged about said melt chamber cylinder for melting a solid material inserted therein to be injected into said cavity when melted, said resistance heating body arranged between said coil and said melt chamber for preheating said melt chamber to mitigate rapid heating by said coil, wherein said melt chamber



is a ceramic material composed of at least one material selected from high grade furnace materials of alumina, silica and zirconia ceramics and carbide and nitride materials.

4,347,890

METHOD FOR BINDING PARTICULATE MATERIALS

Iris B. Ailin-Pyzik, Norristown, and James S. Falcone, Jr., Devon, both of Pa., assignors to PQ Corporation, Valley Forge, Pa.

Filed Mar. 9, 1981, Ser. No. 241,877
Int. Cl.[3] B28B 7/34
U.S. Cl. 164—528 9 Claims

1. A method of binding particulate materials, comprising the steps of:

(a) agitating said particulate material;

(b) adding a solution containing lithium ions, said solution being free of chemical species that gel sodium silicate solutions;

(c) mixing for a period sufficient to provide a uniform damp mixture;

(d) adding a sodium silicate solution and mixing for a period of time sufficient to provide a uniform mixture;

(e) shaping the uniform damp mixture to the desired shape; and

(f) subjecting the uniform damp mixture to microwave radiation;

the amounts of said lithium ions calculated as Li_2O and sodium silicate providing up to 4 moles of SiO_2 per mole of M_2O wherein $M_2O = Na_2O + Li_2O$ and 1.25 and 20.0 moles of Na_2O per mole of Li_2O.

4,347,891

THERMOCHEMICAL ENERGY TRANSPORT PROCESS

Talbot A. Chubb, Arlington, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

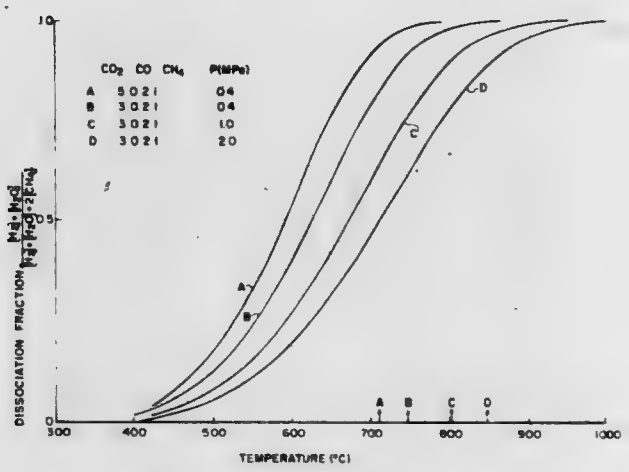
Filed May 6, 1980, Ser. No. 147,412
Int. Cl.[3] F28D 15/00
U.S. Cl. 165—1 6 Claims

1. A method of transporting thermal energy from a source of heat to a place of use comprising:

reacting, at a temperature of at least 700° C., a gas mixture of CO, CO_2 and CH_4, having a CO_2/CH_4 mole ratio of 2.0–7.0 and a CO/CH_4 mole ratio of 0.0–0.4, in the presence of a first catalyst to produce a reformed gas mixture of primarily CO_2, H_2, CO and H_2O;

transporting said gas mixture to said plate of use;

reacting, at a temperature of about 600° C. or less, said reformed gas mixture in the presence of a second catalyst to produce a substantially methanated gas mixture and thermal energy;



cooling and pressurizing said methanated gas mixture;

transporting said methanated gas mixture to said source of heat; and

repeating the series of steps set forth above.

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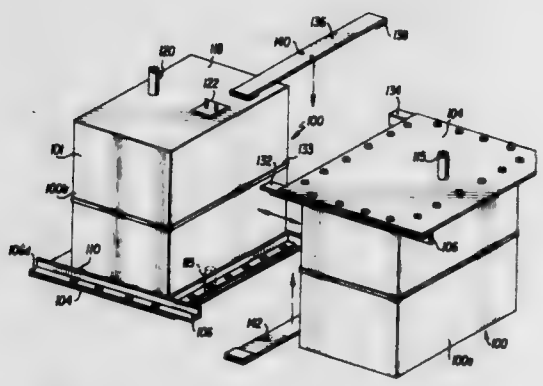
ENERGY STORAGE UNIT AND SYSTEM

Arthur J. Clyne, Alma; John E. Knarr, Lansing, and Stanley Miller, Alma, all of Mich., assignors to Energy Recycling Company of Michigan, Lansing, Mich.

Continuation-in-part of Ser. No. 938,543, Aug. 31, 1978, which is a division of Ser. No. 773,714, Mar. 2, 1977, Pat. No. 4,127,161. This application Mar. 4, 1980, Ser. No. 126,933

Int. Cl.³ F28D *17/00*

U.S. Cl. 165—10 **16 Claims**



1. A heat storage unit of the type in which heat from a heat transfer fluid is transferred to a heat storage substance when the transfer fluid temperature is greater than the melting temperature of the substance such that heat is stored in the substance as heat of fusion and wherein heat is transferred from said substance to a heat transfer fluid when the transfer fluid temperature is less than the melting temperature of the substance, said heat storage unit comprising a substantially closed housing having first and second ends; a closure element forming substantially one entire end thereof; a fluid inlet and outlet at said respective first and second ends; at least two planar support means having a plurality of holes therein mounted within said housing adjacent to, and spaced from, each end of said housing; and a plurality of elongated, cylindrically-shaped, heat storage substance containers in said housing, said containers being longitudinally supported within said housing by said two planar support means, and laterally supported by one another; said unit including laterally extending supports for attaching said heat storage unit to an adjacent heat storage unit and a compression retainer plate engageable with lateral supports of an adjacent heat storage unit.

4,347,893

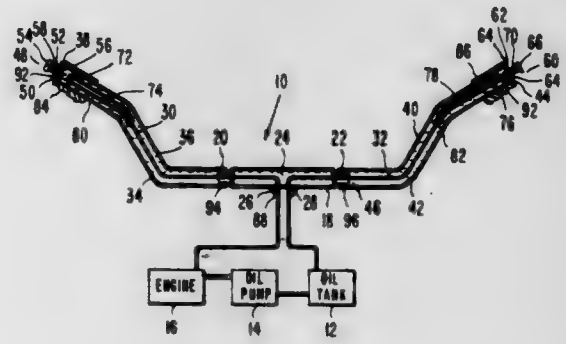
OIL HEATED MOTORCYCLE HANDLEBAR CONSTRUCTION

Donald Moyer, 8105 Millcreek Pkwy., Levittown, Pa. 19054

Filed Apr. 6, 1981, Ser. No. 251,583

Int. Cl.³ B60H *1/14*

U.S. Cl. 165—44 **10 Claims**



1. An oil heated motorcycle handlebar construction comprising:

(a) a central handlebar section extending generally horizontally and including a first end and a second end thereof and being adapted to be secured to a conventional motorcycle, said central handlebar section defining a central conduit therethrough and an oil intake hole and an oil exit hole therein;

(b) a first arm means secured to and extending upwardly and outwardly from said first end of said central handlebar section and defining a first arm conduit therethrough being in fluid flow communication with said central conduit, said first arm means defining an outer first arm end opposite from securement to said central handlebar section;

(c) a second arm means secured to and extending upwardly and outwardly from said second end of said central handlebar section and defining a second arm conduit therethrough being in fluid flow communication with respect to said central conduit, said second arm means defining an outer second arm end opposite from securement to said central handlebar section, said central conduit and said first arm conduit and said second arm conduit being in fluid flow communication to define an oil chamber for heating the motorcycle handlebars;

(d) a first stopper means detachably securable to said first arm end to seal said first arm conduit from fluid flow communication with respect to the external environment;

(e) a second stopper means detachably securable to said second arm end to seal said second arm conduit from fluid flow communication with respect to the external environment;

(f) an intake line means to admit warm oil into said oil chamber which extends through said oil intake hole into said central conduit and through said first end into said first arm conduit to a location adjacent to said outer first arm end and defining an upper intake aperture thereadjacent, said intake line means also defining a lower intake aperture within said first arm conduit at an intermediate location between said first end of said central section and said upper intake aperture;

(g) an exit line means to withdraw warm oil from said oil chamber which extends through said oil exit hole into said central conduit and through said second end into said second arm conduit to a location thereadjacent to said outer second arm end and defining an upper exit aperture thereadjacent, said exit line means also defining a lower exit aperture within said second arm conduit at an intermediate location between said second end of said central section and said upper exit aperture;

(h) a first tubing means removably placeable extending over and along the outer surface of said intake line means to close said lower intake aperture and force all warm oil

being admitted through said intake line means to travel through said upper intake aperture and warm the handlebar construction outwardly to said first arm end; and

(i) a second tubing means removably placeable extending over and along the outer surface of said exit line means to close said lower exit aperture and force all warm oil being exited through said exit line means to travel through said upper exit aperture and warm the handlebar construction outwardly to said second arm end.

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HEAT EXCHANGER

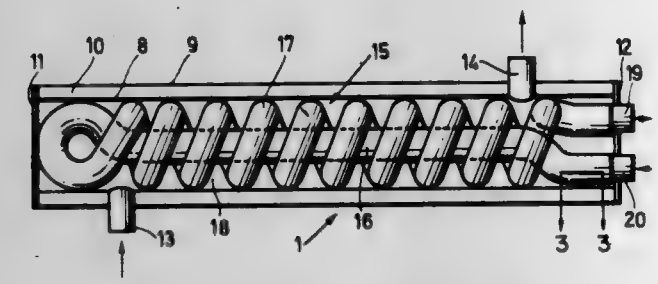
Jürgen Gerlach, c/o Gerlach GmbH Maschinebau, In den Gärten 5, 5140 Erkelenz, Fed. Rep. of Germany

Filed Sep. 3, 1980, Ser. No. 183,726

Claims priority, application Fed. Rep. of Germany, Sep. 4, 1979, 2935626

Int. Cl.³ F28F 9/22; F28D 7/02

U.S. Cl. 165—76 4 Claims



1. A heat exchanger having a casing (1) and a piping (15) arranged in the casing for the separate flow and heat exchange of media having different temperatures, the casing (1) having an inlet (13) and an outlet (14) for a flowing medium and the piping being a coil (15) having a helical form which is arranged so that a portion of its outer surface rests against the inner wall (8) of the casing, the improvement comprising, the coil (15) having a straight central section (16) and a section running back around it (17) in a helical manner, whereby a helical channel (18) for the passage of a heat exchange medium fed into the inlet (13) and passing out from the outlet (14) is defined by the piping (17) resting against the inner wall (8) and the straight central section (16), thereby increasing the area of heat transfer and also increasing the area on which impurities may condense, the inlet (13) and the outlet (14) each communicating with the helical channel (18), the casing (1) being formed of two horizontally separated sections (4, 5), the upper section (5) being swung away, when desired, to thereby permit the piping coil (15) to be removed from the casing for cleaning, the said coil (15) being formed as a cartridge-like insert both ends of which terminate at one end portion (12) of the casing (1).

4,347,895

HEAT EXCHANGER WITH BILAYERED METAL END CONTAINER FOR ANTICORROSIVE ADDITION

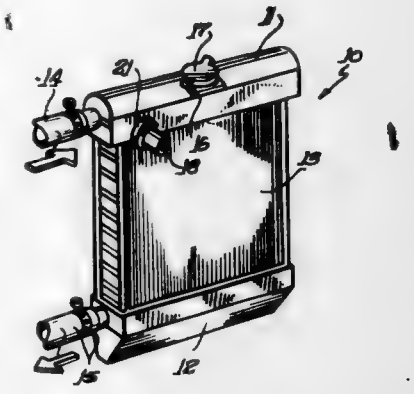
John L. Zambrow, Lincolnshire, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Jan. 5, 1981, Ser. No. 222,413

Int. Cl.³ F28F 19/00

U.S. Cl. 165—134 R 6 Claims

1. A heat exchanger in combination with a container for the automatic addition of a corrosion inhibitor into a circulating fluid system for the heat exchanger subject to corrosion, including a container housing the corrosion inhibitor with a membrane for one end of said container having an exterior surface exposed to the circulating fluid, said container end comprising a bimetallic membrane having a base metal layer forming the interior surface exposed to the corrosion inhibitor and which will corrode when the circulating fluid has an unacceptable level of corrosion inhibitor, and an imperforate thin film of a second metal formed on the exterior surface of



the base layer to protect the base layer until a corrosive condition occurs.

4,347,896

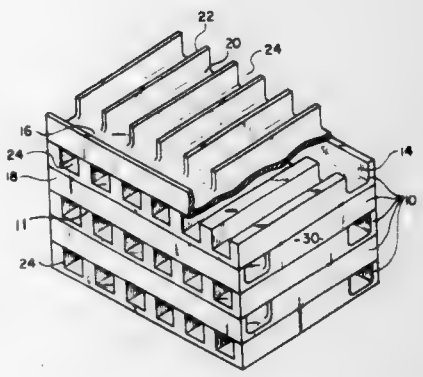
INTERNALLY MANIFOLDED UNIBODY PLATE FOR A PLATE/FIN-TYPE HEAT EXCHANGER

Irwin E. Rosman, Woodland Hills, and William R. Wagner, Los Angeles, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Oct. 1, 1979, Ser. No. 80,877

Int. Cl.³ F28F 3/00

U.S. Cl. 165—166 13 Claims



1. A plate for a plate/fin-type heat exchanger, comprising:

an open-faced plate, for channeling a fluid;

a side port transversely oriented through the top edge of said open-faced plate;

means for internally manifolding, wherein said means extend the full width of said plate and is contiguous with said side port;

a closed end lateral with and adjacent to said means for internally manifolding;

a plurality of contact fins and channels for directing fluid flow and for enhancing heat transfer, and wherein said contact fins and channels are contiguous with and transverse to said means for internally manifolding;

an open end port contiguous with said means for channeling; and

a flat bottom for mating with said fins and said open face of an adjacent plate.

4,347,897

PLATE TYPE HEAT EXCHANGER

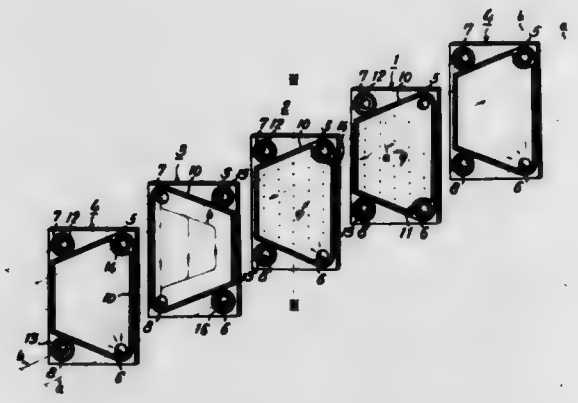
Hiroyuki Sumitomo, Amagasaki, and Haruo Uehara, Saga, both of Japan, assignors to Hisaka Works, Ltd., Osaka, Japan

Continuation of Ser. No. 868,749, Jan. 12, 1978, abandoned. This application Nov. 16, 1979, Ser. No. 94,831

Claims priority, application Japan, Jan. 19, 1977, 52-5270; Jan. 19, 1977, 52-5271; Jan. 28, 1977, 52-9029

Int. Cl.[3] F28F *3/00;* B01D *1/00*

U.S. Cl. 165—167 5 Claims



1. A plate type heat exchanger for exchanging heat between first and second fluids, said heat exchanger comprising a plurality of plate assemblies, each assembly including a heat exchange plate to provide heat exchange between said first and second fluids while maintaining separation of said first and second fluids, at least one of said plate assemblies including jet plate means positioned adjacent and parallel to at least one of said heat exchange plates, said jet plate means including a plurality of hole means therethrough, said hole means being distributed on said jet plate means in a selected pattern, wherein said hole means are oriented with respect to said heat exchange plate such that fluid passes through said hole means in only one direction perpendicular to said at least one heat exchange plate only in the direction towards said heat exchange plate and contacts said at least one heat exchange plate.

4,347,898

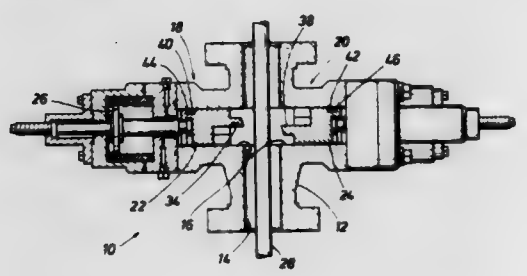
SHEAR RAM BLOWOUT PREVENTER

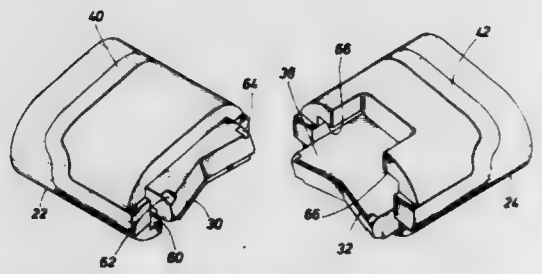
Marvin R. Jones, Houston, Tex., assignor to Cameron Iron Works, Inc., Houston, Tex.

Filed Nov. 6, 1980, Ser. No. 204,451

Int. Cl.[3] E21B *29/08, 33/06*

U.S. Cl. 166—55 10 Claims





1. A blowout preventer comprising
a housing having a bore therethrough,
ram guideways extending outwardly from said bore,
rams mounted for reciprocation in said guideways and having shearing means on their inner faces,
means for moving said rams together to close off said bore and apart to open said bore,
means for sealing between said shearing means,
a shoulder on one of said rams, and
ramp means on the other of said rams adapted to engage said shoulder as said shearing means is moved to closed position whereby said shearing means are urged toward each other to minimize the gap to be sealed by said sealing means.

4,347,899

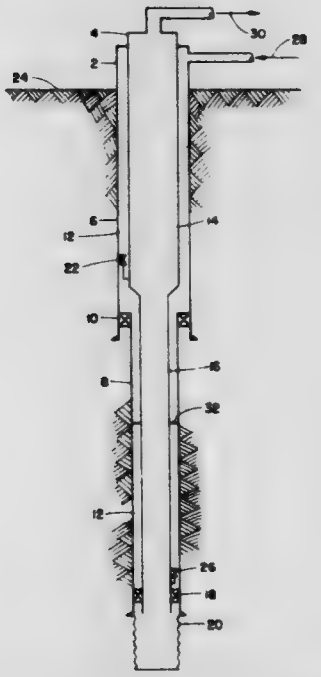
DOWNHOLD INJECTION OF WELL-TREATING CHEMICAL DURING PRODUCTION BY GAS LIFT

Robert F. Weeter, Carrollton, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 218,149, Dec. 19, 1980, abandoned. This application May 28, 1981, Ser. No. 267,301

Int. Cl.[3] E21B *43/00*

U.S. Cl. 166—310 14 Claims

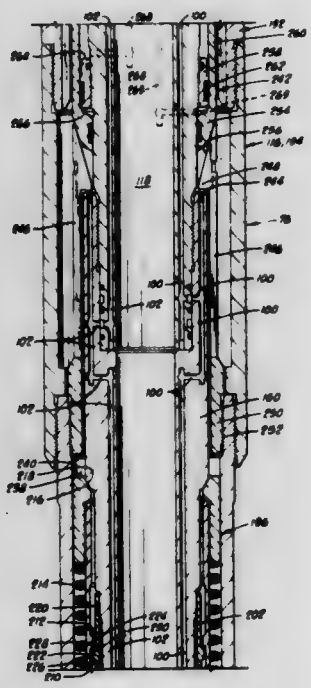


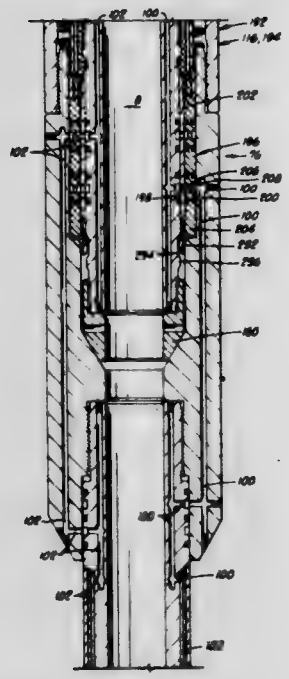
1. In the production of oil from an oil well by gas lift operations of the type wherein
(1) recovery gas is introduced into the annular space between a well casing and a tubing string located within said casing, said tubing string provided with at least one gas lift flow valve intermediate the well head and the wellbore bottom, and
(2) gas pressure in the annular space is maintained at a level effective to cause the flow valve to open whereby the recovery gas causes oil to be produced at the well head, the improvement which comprises:
(a) providing a liquid well-treating chemical composition injection valve on said tubing string downhole from the lowermost gas lift flow valve, said well-treating composition injection valve being operatively opened by the pressure difference between the annular space and the tubing string at the location of the well-treating composition injection valve, and
(b) during the oil production of step (2), injecting into the annular space a well-treating effective amount of a liquid, well-treating chemical composition said composition providing a liquid head in the annular space effective to cause the well-treating composition injection valve to open and the well-treating composition to pass into the tubing string.

4,347,900
HYDRAULIC CONNECTOR APPARATUS AND METHOD

Burchus Q. Barrington, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Jun. 13, 1980, Ser. No. 159,285
Int. Cl.[3] E21B *23/04, 34/06, 34/16, 43/12*
U.S. Cl. 166—380 30 Claims



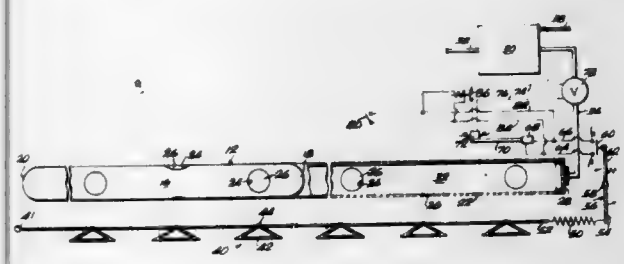


1. A hydraulic connector apparatus, comprising:
a first cylindrical tubular member having a first hydraulic port disposed in a radially outer surface thereof;
a second cylindrical tubular member having a second hydraulic port disposed in a radially inner surface thereof;
a first cylindrical sliding sleeve valve disposed about said first tubular member and movable relative to said first tubular member between open and closed positions wherein said first port is open and closed, respectively;
a second cylindrical sliding sleeve valve disposed within said radially inner surface of said second cylindrical tubular member and movable relative to said second tubular member between open and closed positions wherein said second port is open and closed, respectively; and
interconnecting means, operably associated with said first and second sliding sleeve valves, for moving said first and second sliding sleeve valves to their respective open positions when said first tubular member is inserted in said second tubular member by movement of said first tubular member in a first direction relative to said second tubular member.

4,347,901
FIRE EXTINGUISHING SYSTEM FOR AIRCRAFT

George D. Wilhoit, 4421 Meade Ave., Fort Myers, Fla. 33901

Continuation-in-part of Ser. No. 30,516, Apr. 16, 1979, Pat. No. 4,253,527. This application Feb. 9, 1981, Ser. No. 232,740
Int. Cl.[3] A62C *35/12*
U.S. Cl. 169—62 7 Claims

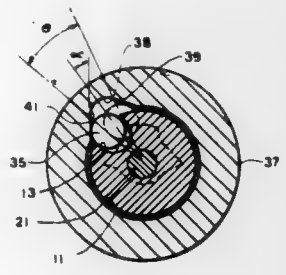


1. A fire suppression system for vehicles having closed cabins with oxygen masks superposed above passenger seats comprising, a pressurized source of an appropriate fire extinguishing material, delivery means for said material supported relative to and about the general length and width of the ceiling of the vehicle compartment, means interconnecting said source to said delivery means including a normally closed valve means; heat responsive sensor means extending about the compartment relative to said delivery means to actuate said fire suppression system, a first normally open electric switch means in a first electric circuit, interconnected between said heat sensor and each existing oxygen mask compartment door in a vehicle in a manner so as to close said first switch permitting the opening of the doors and the automatic discharge of said oxygen masks therein in response to an overheated condition of said heat sensor; a second electric circuit connecting between said valve and a normally open time delay switch which is closed to open said valve after a predetermined time delay period in response to the opening of any one of said doors, to permit a flow of said fire extinguishing material from said source through said interconnection means and valve, and into said delivery means; a plurality of perforations about said delivery means to permit the discharge of said fire extinguishing material through said perforations when the system is actuated.

4,347,902
ROTARY IMPACT WRENCH CLUTCH

William K. Wallace, Barneveld, and David A. Giardino, Deerfield, both of N.Y., assignors to Chicago Pneumatic Tool Company, New York, N.Y.

Filed Dec. 18, 1979, Ser. No. 104,848
Int. Cl.[3] B25B *19/00*
U.S. Cl. 173—93.5 6 Claims



1. In an impact tool have a housing enclosing a motor means and an output shaft for rotation of a work piece, a clutch mechanism including an anvil member, a hammer surrounding the anvil member, a pin positioned between the anvil member and the hammer, and a coupling member for connecting the

pin with the motor means wherein the coupling member is interengagedly connected to the output shaft at a first end, said coupling member having a semi-circular groove at a second end for receipt of one end of the pin, said anvil being formed with diametrically opposed double-sided cam means which serve to move the pin in a longitudinal slot of the hammer, said anvil having a lug with surfaces arranged for receipt of an impact blow from the hammer by way of the pin.

4,347,903

ELECTRONIC READING BALANCE

Shozo Yano; Toshiyuki Miyake; Yasuhiro Fujinaga; Akira Koomoto; Toshio Kawara; Akio Yagi; Tomohiro Tsuji, and Tadashi Nagaoka, all of Kyoto, Japan, assignors to Shimadzu Corporation, Kyoto, Japan

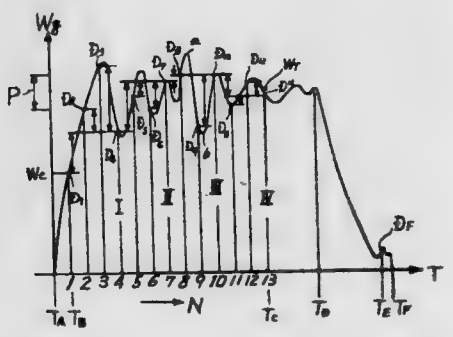
PCT No. PCT/JP79/00178, § 371 Date Mar. 10, 1980, § 102(e) Date Feb. 5, 1980, PCT Pub. No. WO80/00272, PCT Pub. Date Feb. 21, 1980

PCT Filed Jul. 5, 1979, Ser. No. 192,529

Claims priority, application Japan, Jul. 10, 1978, 53/84696

Int. Cl.³ G01G *19/04, 23/10;* G06F *7/28*

U.S. Cl. 177—25 **3 Claims**



1. A weighing balance device designed to provide an average weight to a weighed object which moves such as a laboratory animal, comprising, in combination:

(a) balance means (1) disposed to receive an object to be weighed and provide an electrical analog output signal corresponding to the weight of the object;

(b) an amplifier (2) electrically coupled to said balance means (1) so as to receive said analog output signal and convert said analog signal to a value useable by the subsequent circuitry;

(c) an analog-to-digital converter (3) coupled to said amplifier (2) for receiving said useable signal in analog form and convert it to information in digital form;

(d) data input control means (6) coupled to said analog-to-digital converter (3) disposed to receive said digital information;

(e) detector level setting means (7) coupled to said data input control means (6) allowing an output from said control means (6) only when the weight on said balance means (1) reaches a predetermined level;

(f) memory register means (8) coupled to said control means (6) including a plurality of registers fed by the digital information passing through said control means to store said information;

(g) comparator means (9) coupled on a first side to said control means (6), on a second side to said memory; and also having third, fourth and fifth sides;

(h) allowable range means (11) coupled to the third side of said comparator;

(i) sampling time means (10) coupled to said fourth side;

(j) average calculating means (12) coupled to said fifth side to average the information provided by said comparator; and,

(l) utilization means (14) coupled to said average calculator means (12).

4,347,904

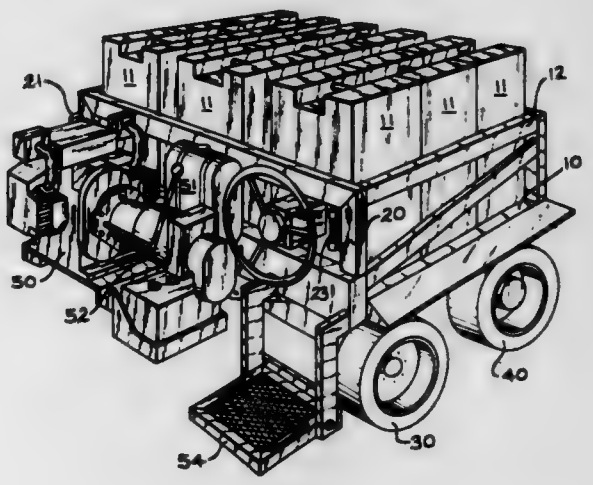
WEIGHT CART CALIBRATION APPARATUS

Glenn G. Dunbar, 2608 Overbrook, Toledo, Ohio 43614

Filed Jan. 21, 1981, Ser. No. 226,723

Int. Cl.³ G01G *19/52;* G01L *25/00*

U.S. Cl. 177—50 **11 Claims**



1. A scale testing cart for selectively positioning scale calibration weights on platform scales, comprising in combination:

a bed for retaining a plurality of calibration weights;

a tubular frame positioned at one end of said bed, said tubular frame being adapted for holding a fluid;

a hollow member positioned at the other end of said bed, said hollow member being adapted to retain ballast means;

drive means positioned adjacent said tubular frame, said drive means including a drive engine and gas tank and a hydraulic drive pump for propelling said cart; and

a lift bar positioned substantially at the weight center-line of said cart whereby the fluid in said tubular frame can be varied to balance said cart when said cart is suspended on said lift bar.

4,347,905

TEST WEIGHT SCALE

David H. Berckes, Rte. 3, Box 210, Canby, Minn. 56220

Filed Dec. 8, 1980, Ser. No. 214,277

Int. Cl.³ G01G *19/56, 1/18*

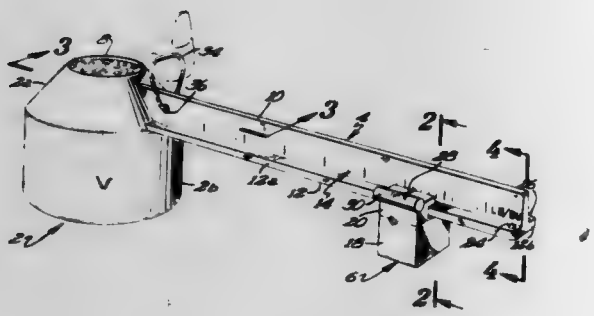
U.S. Cl. 177—149 **10 Claims**

1. A portable, hand held scale for testing the bushel weight of grain comprising:

a cannister of predetermined volume for receiving grain, said cannister having a lower end in the form of a cylinder and an open upper end of generally frustro-conical configuration with inclined side walls forming an angle of less than 45° with the vertical extensions of the cylindrical side walls of said lower end and terminating at the top of said cannister in a grain filling and receiving aperture lying in a horizontal plane when the scale is being used, said conical upper end and said cylindrical lower end being joined together in permanently assembled condition for all weighing opera-

tions, and said filling and receiving aperture comprising a circular opening having a diameter of an order of magnitude between one and two inches, whereby excess grain overflowing the top of said cannister through said circular opening may be struck off level with the top of the cannister with the user's finger;

a slide beam joined to said cannister at one end thereof, said slide beam having weight scale increments marked along its length in a predetermined calibration based on the volume of said cannister, permitting the direct reading of the weight of the grain being tested for a particular volume, such as a bushel;



weight means slidably supported on said beam for sliding movement along the length thereof, said weight means having a weight scale indicating marker thereon; and

pivot support means on said beam located between said cannister and the opposite, free end of said beam, whereby said scale may be suspended from said pivot support means with said cannister filled with grain and said weight means slidably adjusted on said beam until said scale is in a balanced condition with said beam oriented substantially horizontally, the test weight of the grain being indicated by the scale increment with which said marker is aligned.

4,347,906

Patent Not Issued For This Number

4,347,907

ALL-ELECTRIC A.C. TRACTOR

James H. Downing, Jr., Rte. 2, Box 276, Louisa, Va. 23093

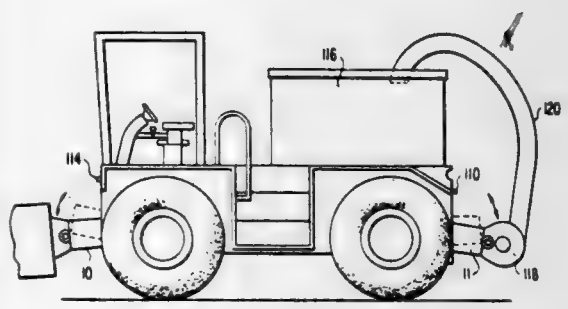
Division of Ser. No. 941,358, Sep. 11, 1978, Pat. No. 4,196,785, which is a continuation-in-part of Ser. No. 769,378, Feb. 16, 1977, Pat. No. 4,113,045. This application Nov. 5, 1979, Ser. No. 91,307

The portion of the term of this patent subsequent to Jun. 28, 1995, has been disclaimed.

Int. Cl.³ B60L *11/08*

U.S. Cl. 180—65 C **1 Claim**

1. A land vehicle having left and right traction means, and comprising a material-transferring tunnel extending from the front to the rear of the vehicle and passing between the two traction means, said tunnel being closed along its length and open at the front and rear ends thereof, and a vertically adjustable tunnel extension hinged at one end of said tunnel, and wherein said left traction means comprises a pair of front and rear left wheels, and said right traction means comprises a pair of front and rear right wheels, and further comprising:



at least one hollow-tubular axle having an enlarged portion in the center thereof for mounting said axle for oscillating movement about said tunnel; and

left and right wheel-driving induction motors mounted within said axle at opposite ends thereof.

4,347,908

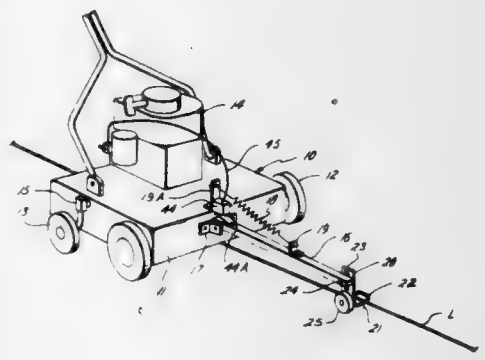
APPARATUS FOR TRAVERSING A TERRAIN IN A PREDETERMINED PATTERN

Ronald L. Anderson, 9034 Marlive, Houston, Tex. 77025

Filed Jan. 17, 1980, Ser. No. 112,941

Int. Cl.³ B62D *1/00*

U.S. Cl. 180—131 **18 Claims**

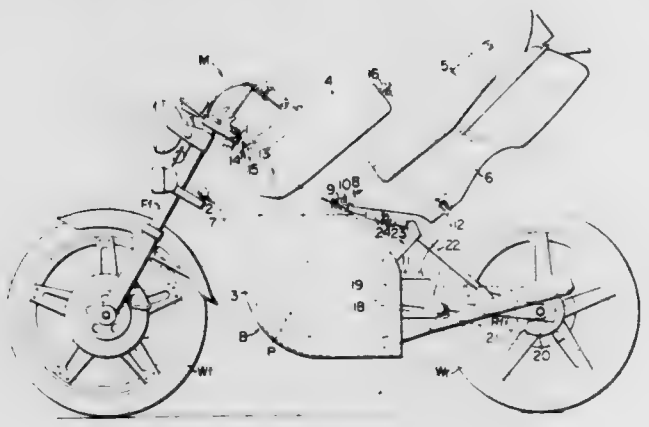


1. Apparatus for traversing a terrain in a predetermined pattern, comprising a self-propelled vehicle, a line adapted to be arranged over the terrain in the desired pattern, means for anchoring the opposite ends of the line to the terrain to hold it tautly when so arranged, means adapted to be anchored to the terrain for yieldably urging intermediate portions of the line downwardly to a position close to the terrain, and upwardly biased follower means attached to the vehicle and having a laterally extending flange which is slidably engageable with the bottom portion of the line, for moving beneath and along the line so as to guide said vehicle in said pattern as it moves over the terrain, and means responsive to upward movement of the follower means relative to the vehicle, in the event of a break in the line, for interrupting the power by which the vehicle is self propelled.

4,347,909
TWO-WHEELED MOTORCYCLE WITH PIVOTABLE SEAT ARRANGEMENT

Hiroo Takemura, Wako, and Azusa Noda, Tokyo, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 14, 1980, Ser. No. 167,779
Claims priority, application Japan, Jul. 16, 1979, 54-98243[U]
Int. Cl.[3] B62K *11/08;* B60R *11/06*
U.S. Cl. 180—219 4 Claims

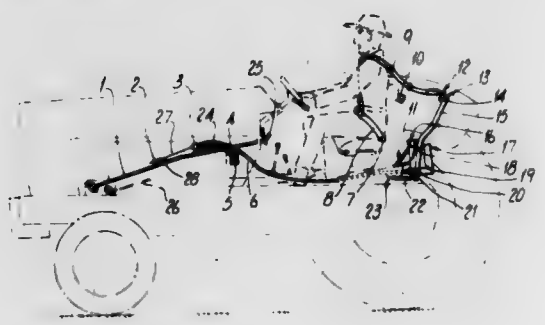


1. In a two-wheeled motorcycle including a shell of thin plates having a head pipe at its front end and being open at its rear side, a rear wheel driving power unit disposed in and fixedly secured to said shell, a rear fork pivotally mounted on said power unit and supporting a rear wheel, a seat stay covering the upper part of said rear wheel and the rear upper portion of said shell, a rider's seat carried on said seat stay, and a shock absorber for damping vertical movements of said rear wheel, the improvement wherein said shell has its rear upper portion formed open, said rear upper shell portion being covered with said seat stay; said seat stay is pivoted at its front end to the rear upper portion of said shell for upward rotation; and said shock absorber is connected between said power unit and said rear fork and covered with said seat stay.

4,347,910
SAFETY APPARATUS FOR VEHICLES

Albert Deguara, C/-Post Office, Rosella, Qld., Australia (4714)

Filed Aug. 25, 1980, Ser. No. 180,906
Claims priority, application Australia, Sep. 25, 1979, PE0639
Int. Cl.[3] B60R *21/00*
U.S. Cl. 180—268 7 Claims



1. Safety apparatus for a vehicle, comprising:
(a) a seat belt or harness adapted to be worn by the operator of the vehicle,
(b) a rigid actuating member attached at a first region thereof to said belt or harness and pivotally mounted at a second, lower region thereof to support means mounted on said vehicle, and
(c) a flexible member attached at one end to said rigid actuating member and connected at its other end to a component or accessory of the vehicle the engagement or disengagement of which controls the movement of said vehicle,
whereby when the operator slumps or makes an unexpected movement of rigid actuating member is pivoted thereby causing movement of said flexible member to engage or disengage said component or accessory.

4,347,911
ACOUSTIC HEADSET

Richard A. Bertagna, San Dimas; Benjamin H. Stansbury, Beverly Hills, and Kenneth A. Tarlow, Pacific Palisades, all of Calif., assignors to Audio in Motion, Pasadena, Calif.

Filed Mar. 18, 1981, Ser. No. 245,127
Int. Cl.[3] A61B *7/02*
U.S. Cl. 181—130 10 Claims



1. An acoustic headset, comprising:
a generally U-shaped flexible yoke having opposed ends;
a pair of hollow sound-conducting rigid horns having first ends adapted for attachment to the respective yoke ends, each horn extending from the first end through a curved portion to a second end adapted to support an ear-plug tip, the first and second ends of each horn having central axes which are displaced by an angle of more than 90 degrees, and each horn having an inside diameter which enlarges as the horn extends from the first end toward the second end;
an acoustic connector having a pair of hollow sound-conducting tubes extending therefrom, the tube ends being connected to the respective first ends of the horns; and
means for mounting the first ends of the horns to the respective opposed ends of the yoke.

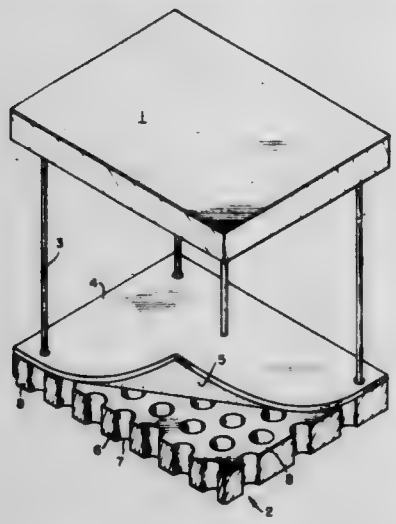
4,347,912
AIRBORNE-SOUND-ABSORBING WALL OR CEILING PANELING

Heinz A. Flocke, and Udo Weuster, both of Weinheim, Fed. Rep. of Germany, assignors to Carl Freudenberg, Hohnerweg, Fed. Rep. of Germany

Filed Sep. 25, 1980, Ser. No. 190,696
Claims priority, application Fed. Rep. of Germany, Nov. 26, 1979, 2947607
Int. Cl.[3] E04B *1/82;* B32B *3/26, 27/04*
U.S. Cl. 181—286 11 Claims

1. Airborne-sound-absorbing wall or ceiling paneling comprising: a perforated plate having a hole-area proportion L and a nonwoven fabric bonded thereto by a discontinuously distributed adhesive layer and having an open-area proportion N and an air flow resistance W_v in the zones free of adhesive, said perforated plate being mountable at a spacing from a wall or ceiling that is large in relation to the thickness of the nonwoven fabric and said paneling having a total air flow resistance W,

wherein the adhesive layer is applied to the nonwoven fabric in the form of a fine pattern composed of substantially annular, circular and/or elongated partial layers, wherein the thickness of the nonwoven fabric is from 0.1 to 0.5 mm and the partial



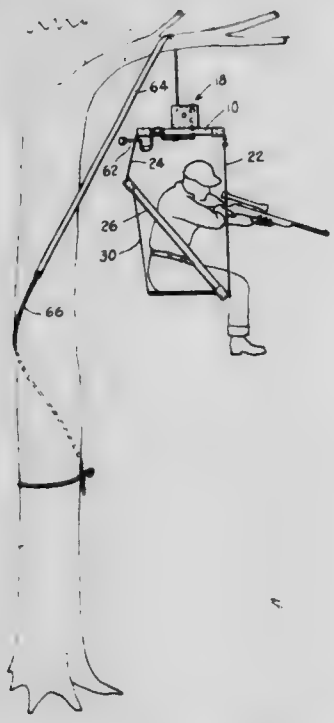
layers have a width ranging from 0.1 to 3 mm and that the proportion per unit area of the nonwoven fabric which is not covered with adhesive is approximately equal to its air flow resistance W_r divided by the hole-area proportion L times the desired total air flow resistance W.

4,347,913

CHAIR LIFT

John A. Cromer, Jr., P.O. Box 597, Aiken, S.C. 29801

Filed Aug. 4, 1980, Ser. No. 175,034
Int. Cl.[3] A01M *31/02;* A47F *3/26;* A47C *9/10*
U.S. Cl. 182—142 4 Claims



1. A chair lift for use by a hunter and the like for raising a person off the ground by means of a line extending over a support member comprising:

a substantially rectangular rigid frame member;

a seat hung from said frame member;

a gear assembly carried on top of said substantially rectangular rigid frame member;

said gear assembly including,

(i) a rotatable worm,

(ii) a gear meshing with said worm,

(iii) a shaft extending through said gear and being rotated therewith,

(iv) a pulley carried by said shaft;

a coil of line carried on said pulley; and

a hand-operated crank arm connected to said worm and extending downwardly through said substantially rectangular rigid frame member adjacent said seat so that said crank can be manually rotated by an occupant of said seat.

4,347,914

PORTABLE TREE SLING OR PORTABLE TREE STAND OR PORTABLE TREE HUNTING SLING, OR ALTERNATIVES THEREOF

David A. Gary, O'Donald, Tex., assignor to Robert Sims, Brownfield, Tex.

Filed Jul. 27, 1981, Ser. No. 286,870
Int. Cl.[3] A45F *3/26;* A01M *31/02;* A47C *9/10;* A62B *1/00*
U.S. Cl. 182—142 26 Claims



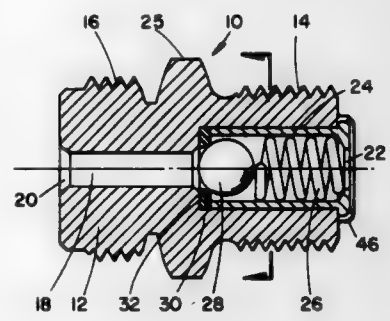
1. A sling adapted to suspendingly support a seated person above the ground comprising means for defining a flexible seat rest and a separate flexible back rest, means for suspending said sling through a connection at least between said back rest and an associated support, means for defining a foot rest, said foot rest being a rope, and means for joining said rope to opposite sides of said seat rest whereby a person seated upon said seat rest will have his back and feet supported respectively by said back rest and said foot rest rope.

4,347,915

GREASE FITTING

Jack M. Cooper, Houston, Tex., assignor to General Screw Products Company, Houston, Tex.

Filed Feb. 25, 1980, Ser. No. 124,444
Int. Cl.[3] F16N *5/02*
U.S. Cl. 184—105 B 7 Claims



1. A fitting for allowing a lubricant to enter a device and retain said lubricant within said device, comprising:

a body member having a passageway through said body member,

a pliable washer within said passageway having a substantially circular seating surface formed therein,

a ball member within said passageway for sealing engagement with said seating surface,
a spring within said passageway biasing said ball member toward said seating surface,
a sleeve member within a portion of said passageway containing said ball member and spring and exerting a predetermined compressional force on said pliable washer, and
a stop on said sleeve member for engagement with said body member for restricting the compressional force exerted on said pliable washer by said sleeve member.

4,347,916

ROLL GUIDE SHOE FOR ELEVATORS OR THE LIKE

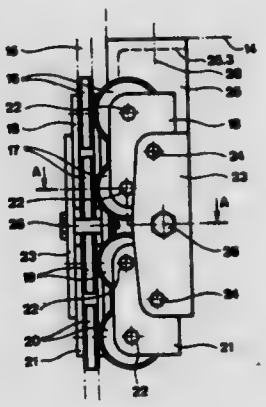
Joris Schröder, Lucerne, Switzerland, assignor to Inventio AG, Hergiswil, Switzerland

Filed Nov. 24, 1980, Ser. No. 210,005

Claims priority, application Switzerland, Dec. 11, 1979, 10964/79

Int. Cl.³ B66B *7/02*

U.S. Cl. 187—95 **1 Claim**



1. A roll guide shoe for elevators comprising:
a plurality of travelling rolls arranged behind one another in the direction of travel of the elevator and adapted to bear against at least one guide surface of a guide rail;
at least one support element adapted to be pivotably connected with a movable part of the elevator;
means for rotatably mounting said travelling rolls in said support element;
said travelling rolls of said at least one support element possessing different diameters with respect to one another;
said plurality of travelling rolls comprise four travelling rolls arranged in pairs behind one another in the direction of travel of the elevator part;
each of the pair of travelling rolls having different diameters;
each pair of travelling rolls being operatively associated with a respective support body of a related support element;
yoke means with which there is pivotably connected each related support element; and
said yoke means being pivotably connected with the movable elevator part.

4,347,917

FLOATING TYPE DISC BRAKE

Yasuo Kita, Itami, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

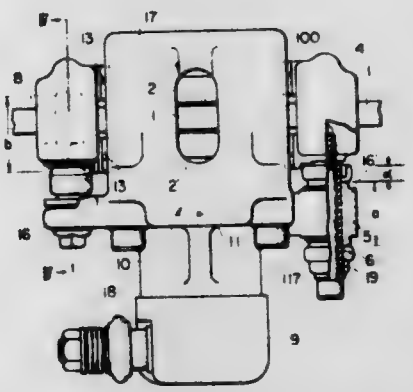
Continuation-in-part of Ser. No. 854,168, Nov. 23, 1977, abandoned. This application Jul. 23, 1979, Ser. No. 59,702

Claims priority, application Japan, Dec. 7, 1976, 51-147460

Int. Cl.³ F16D *65/02*

U.S. Cl. 188—73.45 **9 Claims**

1. In a floating disc brake of the type having a fixed member having two pairs of arm portions spanning a rotatable disc and displaced from one another about the periphery thereof, first and second friction pads slidably guided by opposing faces of said two pairs of arm portions of said fixed member into and out of pressing contact with opposite faces, respectively, of said disc, a floating caliper member spanning said disc and both of said pads, mechanically activated press means for acting between said second pad and one end of said caliper member, the improvement wherein said floating caliper member is provided with a hole receiving therein a bolt extending in the axial direction of said disc from one pair of said arm portions of said fixed member, said bolt serving as a main guide for supporting the majority of the weight of said floating caliper during sliding movement of the latter and slidably supporting said floating caliper within a range of sliding movement which is entirely on one side of the disc and includes the center of gravity, in the axial direction of the disc, of the floating caliper, and a pin supporting said caliper member only on said one side of said disc and slidingly fitted in a guide slot running in the axial direction of said disc in the other pair of said arm portions of said fixed member, said guide slot slidably supporting said pin within a range of sliding movement which includes the disc but does not include the center of gravity, in the axial direction of the disc, of the floating caliper.



4,347,918

DRIVE DEVICE FOR A VEHICLE

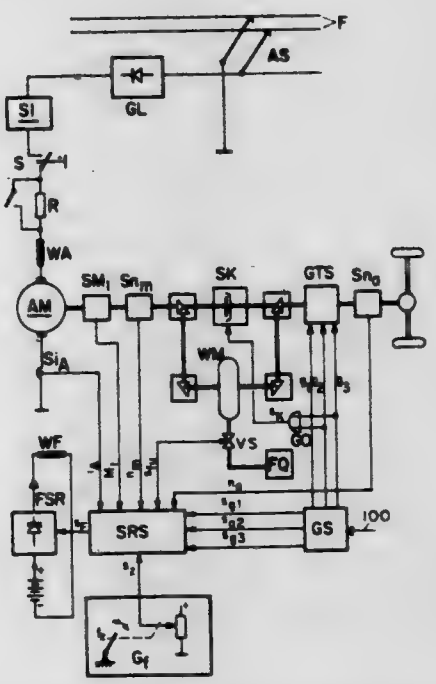
Jean-Jacques Bezencon, deceased, late of Bernex, Switzerland (by Madeleine Bezencon, Corinne Bezencon and Serge Bezencon, heirs); Georges Menzi, Le Lignon, Switzerland, and Lucien Mermoud, Geneva, Switzerland, assignors to BBC Brown, Boveri & Co. Ltd., Baden, Switzerland

Filed Feb. 11, 1980, Ser. No. 120,519

Claims priority, application Switzerland, Feb. 22, 1979, 1176/79

Int. Cl.³ B60K *41/02*

U.S. Cl. 192—0.02 R **25 Claims**



1. A drive device for a vehicle, particularly a road or rail vehicle, comprising at least one controllable drive motor and a transmission unit operatively arranged after and coacting with

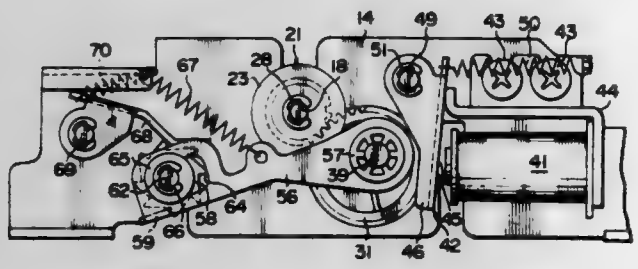
said drive motor, said transmission unit containing an hydrodynamic torque converter, a torque control device operatively connected with said hydrodynamic torque converter, said torque control device comprising a control-variable transmitter controlled in dependence upon a driving condition command, a set-value/actual-value torque comparator with which there is connected said control-variable transmitter, said hydrodynamic torque converter being arranged in circuit after said torque control device and constituting a regulating unit for regulation of the motor torque.

4,347,919

ONE REVOLUTION CLUTCH ASSEMBLY USING GEARS

Katsumi Maeda, Shizuoka, Japan, assignor to Star Seimitsu Kabushiki Kaisha, Japan

Filed Mar. 31, 1980, Ser. No. 135,325
Claims priority, application Japan, Mar. 30, 1979, 54-38593
Int. Cl.³ F16D *11/02*; F16H *27/02, 27/08*
U.S. Cl. 192—33 R **5 Claims**



1. A one revolution clutch assembly comprising:

a drive rotating assembly which is mounted on a continuously rotating drive shaft, the drive assembly including a cylindrical cam having an engaging portion at a point on its peripheral surface, and a drive gear disposed for integral rotation with the cam;

a driven rotating assembly including a driven gear having a hiatus along part of its periphery and disposed for intermittent engagement with the drive gear, and a cylindrical cam follower disposed for integral rotation with the driven gear and having on its peripheral surface means for engaging the engaging portion of the cylindrical cam;

a retainer for retaining the driven gear in position whenever the hiatus of the driven gear is located opposite to the drive gear, the retainer comprising a cylindrical retaining cam coaxially mounted on the driven assembly, and a movable piece having its one end biased by a combination of an electromagnetic plunger and a spring into engagement with the retaining cam, the actuation of the electromagnetic plunger being effective to attract the movable piece against the resilience of the spring, the movable piece being engageable with a detent on the retaining cam to retain the driven assembly in position; and

an engagement guiding device for guiding the cam follower into a position where it is engageable with the engaging portion of the cam when the retainer ceases to retain the driven gear, the engagement guiding device comprising a lever drive shaft mounted on a side face of the driven assembly at a location which is eccentric to the axis thereof, a crank lever having its one end rotatably mounted on the lever drive shaft, and resilient means connected to the crank lever for biasing the crank lever in one direction resiliently, the lever drive shaft being located such that when the retainer ceases to retain the driven gear, the crank lever permits a rotation of the driven assembly in order to engage the means for engaging of the cam follower with the engaging portion of the cam;

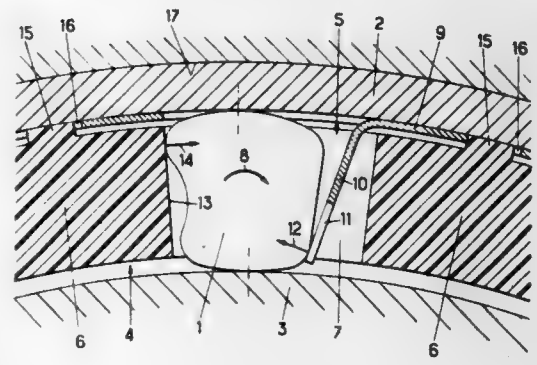
the means for engaging being located such that when it has engaged the engaging portion to permit a rotation of the driven assembly, the drive gear can mesh with a tooth on the driven gear which is located at the terminal end, as viewed in the direction of rotation, of the hiatus.

4,347,920

FREEWHEEL WITH LATERAL RETURN

Alain Bordes, Trappes, France, assignor to SKF Compagnie d'Applications Mecaniques, Clamart, France

Filed May 7, 1980, Ser. No. 147,650
Claims priority, application France, May 10, 1979, 79 11918
Int. Cl.³ F16D *41/07*
U.S. Cl. 192—41 A **7 Claims**



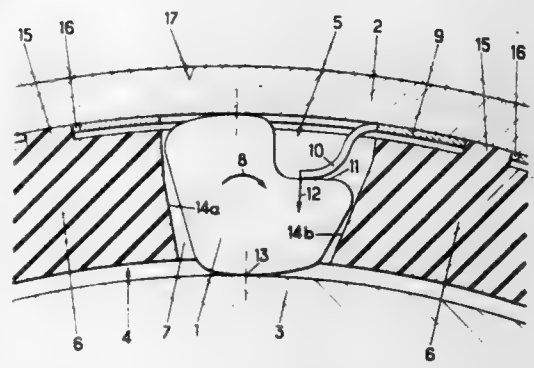
1. A freewheel which is operable between the surfaces of revolution of an outer bush and an inner bush or shaft, said freewheel comprising a plurality of cams for engaging said surfaces of revolution, a cage formed of a single piece of moulded material which has a plurality of roughly rectangular recesses for the cams, said cams being located in said recesses, a continuous strip spring located around the periphery of said cage and being operable as an elastic return means for said cams, said spring having elastic tabs which enter the cage recesses at right angles thereto and bear against the base of the respective cam near the inner bush to exert on it a roughtly tangential thrust, means for fixing said spring member angularly and axially with respect to the cage member, said fixing means including projections on one member which extend into openings on the other member.

4,347,921

FREEWHEEL OR UNIDIRECTIONAL CLUTCH

Alain Bordes, Trappes, France, assignor to SKF Compagnie d'Applications Mecaniques, Clamart, France

Filed May 27, 1980, Ser. No. 153,659
Claims priority, application France, May 28, 1979, 79 13494
Int. Cl.³ F16D *41/07*
U.S. Cl. 192—41 A **6 Claims**



1. In a unidirectional clutch comprising an outer bush, means defining a surface of revolution within said bush, an inner member, means defining a surface of revolution on said inner member concentric with said surface of revolution on said outer bush, a plurality of cam profiled jamming elements located between said surfaces of revolution and a cage holding said jamming elements, the improvemen wherein said cage comprises a single integral moulding, means defining recesses in said cage, said recesses each containing one of said elements,

said recesses having sidewalls converging inwardly towards said inner member and said elements having sides adjacent said converging side walls of said recesses converging inwardly towards said inner member, and an integral spring strip extending around said cage between said cage and said outer bush, said spring strip including a plurality of resilient tabs, one of said tabs extending inwardly into each of said recesses, means defining a surface which extends in a substantially tangential direction on each of said elements, said surface being located at one side of said element and said tab in each of said recesses bearing against said surface on said element in said recess to exert upon said surface a substantially radial thrust which is offset circumferentially from a line of contact between said element and said inner member, and further comprising lugs on one of said cage and said spring strip and means defining openings in one of said spring strip and said cage, said lugs fitting in said openings to locate said spring strip circumferentially and axially with respect to said cage.

4,347,922

GRAIN DISTRIBUTOR ASSEMBLY FOR GRAIN ELEVATOR

Robert D. Curry, Decatur; Richard C. Larson, Chicago, and Merle E. Clewett, Clinton, all of Ill., assignors to Union Iron Works, Inc., Warrensburg, Ill.

Filed Oct. 27, 1980, Ser. No. 201,010
Int. Cl.³ B65G *11/00*
U.S. Cl. 193—23 **19 Claims**



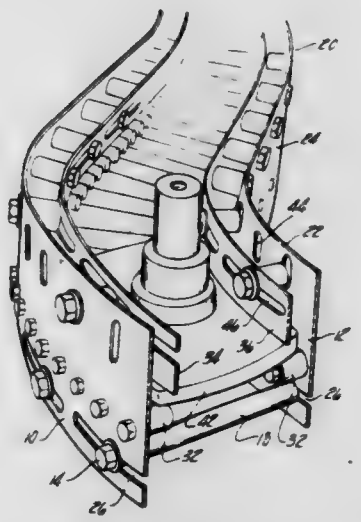
1. In a grain distributor assembly for a grain elevator, the combination comprising a frame including a horizontal manifold plate having a plurality of discharge openings arranged in a circle at a radius about a central axis, each opening having a land surface encircling the same and each opening having an associated downspout connection under the plate, a closure disc superimposed on the manifold plate and having a single window therein located at the same radius for registering with one of the discharge openings for communication with an active downspout, a distributor elbow having an inlet at its upper end arranged coaxially with the central axis and having an outlet at its lower end terminating at the window in the disc, means for feeding grain into the upper end of the elbow for discharge through the registering discharge opening into the active downspout, the land surfaces all being arranged adjacent and parallel to the closure disc so that the inactive non-registering ones of the discharge openings are covered by the closure disc, and selector means for swinging the closure disc and elbow horizontally in unison about the central axis for positioning the elbow and window in angular register with a selected one of the discharge openings while maintaining all of the other such openings covered, the weight of the disc being supported on the land surfaces for sealing off the non-registering ones of the openings, the disc being made of metal and sufficiently weighty so that it remains in position to serve as a fire stop in the face of an explosion either at the distributor inlet or in an inactive one of the downspouts.

4,347,923

GRAVITY CHUTING CONVEYOR

Lungchuck Wong, Warren, Mich., assignor to F. Jos. Lamb Company, Warren, Mich.

Filed Dec. 5, 1980, Ser. No. 213,567
Int. Cl.³ B65G *11/00*
U.S. Cl. 193—35 S **13 Claims**



1. A gravity chuting system having a plurality of successively connected track sections including at least a downwardly inclined straight track section and a downwardly inclined curved track section, said sections each comprising a pair of upright laterally spaced thin spring tempered metal rails, a plurality of rollers mounted between said rails and forming a supporting and conveying surface for workpieces having flat plate-like portions adapted to rest on the rollers, the rollers at said curved section forming a helically extending work-supporting surface, means for retaining workpieces being conveyed on said track sections against vertical displacement so as to prevent shingling thereof, said retaining means comprising at least one upright, thin, spring tempered metal rail having a lower edge extending above said rollers in generally parallel relation therewith, a support member for supporting said retaining rail on said track sections, releasable fastening means extending through apertures in said retaining rail and said support member, said fastening means, when tightened, being adapted to secure the retaining rail on the track sections in a fixed position, at least some of said apertures being elongated vertically relative to the track sections to permit selective adjustment of the retaining rail vertically at each track section relative to the underlying support surface provided by said rollers before the fastening means are tightened, the vertical spacing between the lower edge of the retaining rail and the underlying support surface being greater at said curved section than at said straight section and being selectively adjusted at each section so as to permit the workpieces to travel freely through said sections on said rollers while simultaneously preventing shingling of the workpieces at both track sections.

4,347,924

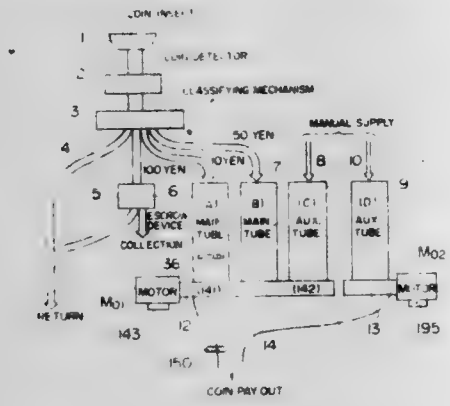
CONTROL SYSTEM FOR A VENDING MACHINE

Yukichi Hayashi; Masayuki Tamara; Osamu Sugimoto, all of Sakado; Masayoshi Takizawa, Kitamoto, and Tatsujiro Nishioka, Yokohama, all of Japan, assignors to Nippon Coinco Co. Ltd., Tokyo, Japan

Continuation of Ser. No. 26,497, Apr. 3, 1979, abandoned, and a continuation-in-part of Ser. No. 790,507, Apr. 25, 1977, abandoned. This application Sep. 23, 1980, Ser. No. 189,988
Claims priority, application Japan, Apr. 30, 1976, 51-49623
Int. Cl.³ G07F *5/24*
U.S. Cl. 194—1 N **11 Claims**

2. A control system of an automatic vending machine comprising main coin storing means, coins stored therein being automatically supplemented by coins inserted into said vend-

ing machine, a counter circuit for adding the number of coins automatically supplemented and for subtracting the number of coins paid out from said main coin storing means, auxiliary coin storing means for storing coins of a predetermined denomination which are supplemented manually, means for paying out coins from said main coin storing means until the count of said counter circuit reaches a predetermined value, means for



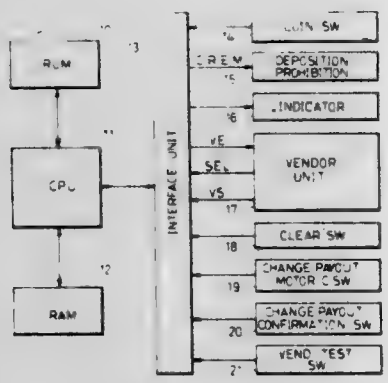
switching from said main coin storing means to said auxiliary coin storing means for paying out coins therefrom when the count of said counter circuit reaches said predetermined value, and means for switching from said auxiliary coin storing means back to said main coin storing means thus paying out coins therefrom when coins are not paid out from said auxiliary coin storing means irrespective of the operation thereof.

4,347,925

MALFUNCTION INDICATION DEVICE FOR A VENDING MACHINE

Osamu Sugimoto, and Masaki Akagawa, both of Sakado, Japan, assignors to Kabushiki Kaisha Nippon Coinco, Tokyo, Japan

Filed Oct. 10, 1980, Ser. No. 196,072
Claims priority, application Japan, Oct. 16, 1979, 54-143023
Int. Cl.³ G07F *9/02*
U.S. Cl. 194—1 N **6 Claims**



1. A malfunction indication device for a vending machine including means for detecting malfunction in the vending machine characterized by comprising;

malfunction occurrence indication means provided at a prominent place on the outside of the vending machine for indicating occurrence of malfunction if the malfunction has been detected;

memory means for storing codes each representing a malfunctioning point;

an indication control switch; and

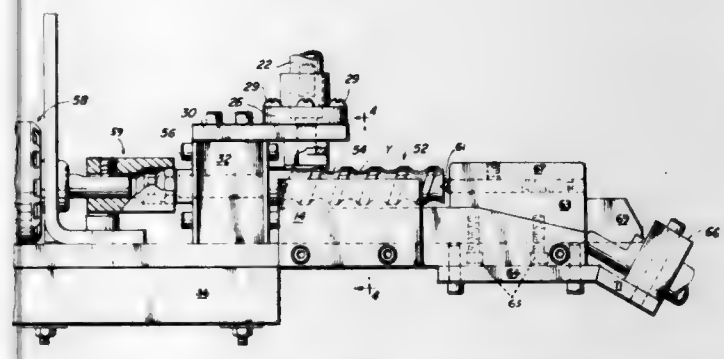
malfunction code indication means for indicating the codes stored in said memory means in response to operation of said indication control switch.

4,347,926

SCREW ORIENTER

William F. Alter, Lexington; Jonathan J. DeBoer, Nicholasville, and Charles R. Shellenberger, Lexington, all of Ky., assignors to Square D Company, Palatine, Ill.

Filed Sep. 22, 1980, Ser. No. 189,255
Int. Cl.³ B65G *47/24*
U.S. Cl. 198—388 **10 Claims**



1. Apparatus for orienting slotted headless screws fed by a feeder bowl, said apparatus comprising;

a guide rail onto which the screws are fed, said rail having a top portion with a width measuring slightly less than the width of the slots in said screws;

means for sequentially moving each screw from said bowl along a predetermined path, with either one end or the other end of each screw forming a leading end in response to the movement, and depositing said screws in a vertical position with said leading end of each screw engaged with said top portion of said rail;

means for supporting, rotating and advancing said screws along said rail towards a second end of said rail to align said slot of each screw having the slot in said leading end with said top portion for enabling said rail to seat in said slot and to advance said screws along said rail in their substantially vertical position,

said means for supporting, rotating and advancing said screws comprises a worm gear extending parallel to and on a first side of said guide rail; and a side shield extending parallel to and on an opposite side of said guide rail;

first discharge means for discharging each screw having a slot engaged by the rail from said rail at a selected position with each leading end having a predetermined orientation; and

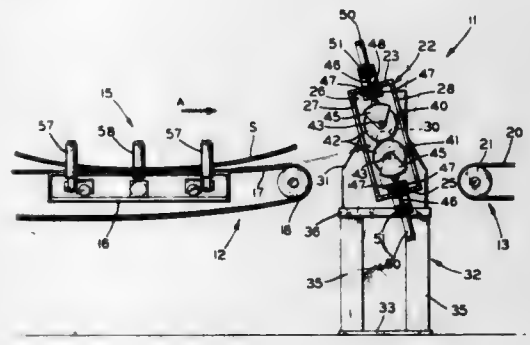
second discharge means for discharging each screw having said slot in said other end at another position.

4,347,927

SHEET ALIGNING APPARATUS

Raymond L. Landes, Perrysburg, Ohio, assignor to Libbey-Owens-Ford Company, Toledo, Ohio

Filed Jun. 23, 1980, Ser. No. 162,150
Int. Cl.³ B65G *47/26*
U.S. Cl. 198—434 **9 Claims**



1. A sheet aligning apparatus comprising: a frame, a conveyor mounted on said frame for supporting and advancing a

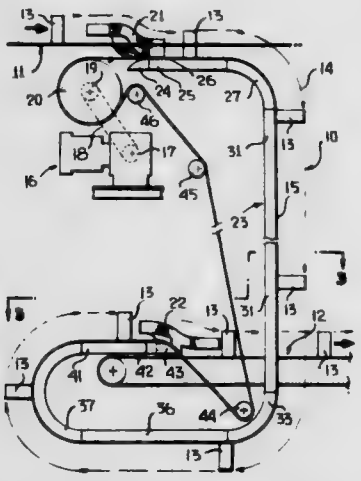
horizontally disposed stacked sheet assembly in a generally horizontal path toward an apparatus having a restricted zone for receiving said sheet assembly, and means along said path immediately upstream of said apparatus for aligning said stacked sheet assembly on said conveyor to guide the leading end of said assembly into said restricted zone, said aligning means comprising a plurality of arms on said frame disposed in an opposed relation on opposite sides of said conveyor, and means moving said arms laterally inwardly into engagement with the opposite sides of said advancing sheet assembly for urging the same in a desired orientation to assure entry of said leading end into said restricted zone, said moving means including means for sequentially swinging one of said arms from an angular position of rest into an upright position and then moving said one arm bodily laterally inwardly into a sheet assembly engageable position.

4,347,928

MAGNETIC CONVEYOR

Russell E. Millspaugh, Downers Grove, Ill., assignor to The Continental Group, Inc., New York, N.Y.

Filed Jan. 16, 1978, Ser. No. 869,769
Int. Cl.³ B65G *15/58, 17/46*
U.S. Cl. 198—690 **8 Claims**



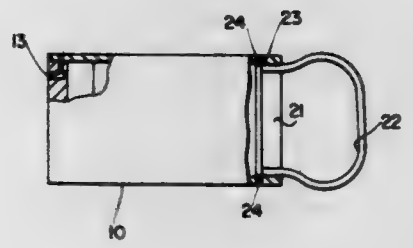
2. A magnetic conveyor for transferring units capable of being magnetized from a first conveyor along a path to a second conveyor wherein said first and second conveyors are positioned at different elevations, said magnetic conveyor comprising conveyor means adapted to be positioned relative to first and second conveyors for carrying units along said path, drive means connected to said conveyor means for imparting movement to said conveyor means, an entrance guide adapted to be positioned to receive units from a first conveyor and deposit the same units directly upon said conveyor means, an exit guide positioned to receive units from said conveyor means and direct the same units to a second conveyor, and support means positioned along said path and engageably underlying a portion of said conveyor means for providing support to said conveyor means portion, said support means exhibiting a magnetic force whereby the units deposited upon said conveyor means portion are magnetically retained on said magnetic conveyor while being transported to said exit guide, said conveyor means and support means lying in a single general plane and including vertically spaced parallel horizontal entrance and exit paths.

4,347,929

BLASTING CAP CONTAINER

Barber S. W. Poe, Piney Point, and Lennard J. Wolfson, La-Plata, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 16, 1980, Ser. No. 160,051
Int. Cl.³ F42B *37/00, 39/00*
U.S. Cl. 206—3 **9 Claims**



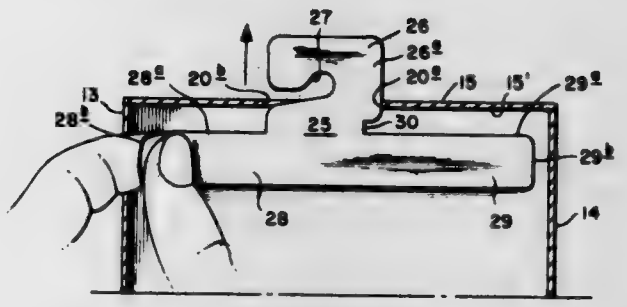
1. An explosive shipping container particularly designed for the shipment and storage of blasting caps comprising: a cylindrical member having a secure base wall, said cylindrical member fitted with a removable door capable of being screwed into the cylindrical member; a shock absorbing means filling substantially the interior of said cylindrical member, said shock absorbing means fitted with a plurality of openings, each opening designed to fit in shock absorbing contact around one blasting cap, said door provided with exterior screw threads designed to fit within the interior upper wall of said cylindrical member, wherein the screw threads on said door are of the square buttress type that engage a buttress type thread located on the interior wall of the cylindrical member, the screw threaded joint between the door and the cylindrical member providing a fluid tight seal that is capable of withstanding high pressure.

4,347,930

HANGING PACKAGE

Lenny Herrin, Elkins Park, Pa., assignor to Regent Paper Box Company, Philadelphia, Pa.

Filed Oct. 14, 1980, Ser. No. 196,375
Int. Cl.³ B65D *25/22, 5/44, 25/54*
U.S. Cl. 206—45.34 **7 Claims**



1. A package adapted to be supported by a hook, comprising: a container having at least first and second sidewalls and a top wall including an aperture, said aperture having first and second ends corresponding to said first and second sidewalls respectively; and a separate hanger assembled with said container, said hanger having a head with an opening projecting above said top wall for engagement by a hook, the maximum widthwise dimension of said head being substantially equal to or less than the lengthwise dimension of said aperture between said first and second ends of said aperture, first and second arms extending away from said head in said first and second directions respectively and engaging the underside of said top wall, said first and second directions corresponding to said first and second sidewalls, the length of said first arm being greater than the distance between said first end of said aperture and

said first sidewall, a notch formed between said head and said second arm adapted to receive a portion of said top wall at said second end of said aperture, said first arm being flexible about a vertical axis and having an outer edge adapted to engage said first sidewall to provide means for urging said entire hanger in said second direction for latching said notch in engagement with said top wall, whereby downward movement of said hanger relative to said container is prevented.

4,347,931
MITT

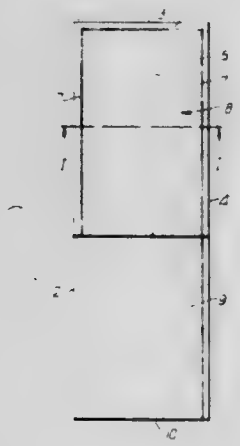
Rodney E. Ginger, St. Leon-Rot, and Manfred Jungesblut, St. Ilgen, both of Fed. Rep. of Germany, assignors to Imperial Chemical Industries Limited, London, England

Filed Dec. 19, 1977, Ser. No. 862,296

Claims priority, application United Kingdom, Dec. 23, 1976, 53942/76

Int. Cl.³ A61B *19/02*

U.S. Cl. 206—438 **5 Claims**



1. A disposable mitt pack comprising: a bag-like mitt for accommodating the hand of the wearer, said mitt including two overlying layers of impregnant-impermeable material bonded together to form the front and the back of a hand-accommodating region and a hand opening, one of said layers having bonded to its outer surface a porous material, said porous material having a pile on its outer surface impregnated with a desired treating material; and a removable packaging layer of impregnant-impermeable material covering at least the pile area of the mitt so as to protect the impregnated pile until the layer is stripped away, said packaging layer being sealed to the mitt by a continuous seal which surrounds at least the pile area, said continuous seal being formed by a bond between an edge of said removable packaging layer and at least one of said impregnant-impermeable layers, and the removable packaging layer and both of the impregnant-impermeable layers forming the mitt being bonded together at the hand-opening so as to seal said hand opening.

4,347,932
TAG PIN

Akira Furutu, Tokyo, Japan, assignor to Clements Industries, Inc., South Hackensack, N.J. and Japan Bano'k Co. Ltd., Tokyo, Japan

Continuation of Ser. No. 845,961, Oct. 27, 1977, abandoned, which is a continuation of Ser. No. 727,234, Sep. 27, 1976, abandoned. This application Oct. 24, 1979, Ser. No. 87,848

Int. Cl.³ A44B *9/00*; B44D *3/18*

U.S. Cl. 206—343 **7 Claims**

1. A tag pin group comprised of a plurality of integrally molded tag pins formed from a synthetic resin and lying in an aligned row, each said tag pin comprising:

a solid head portion, said head portion including a transverse bar-like projection,

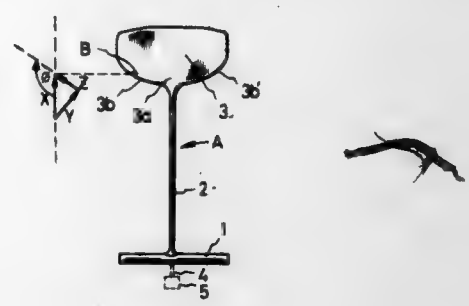
said transverse bar-like projection being positioned approximately mid-way of the longitudinal height of said head portion and coinciding with the largest head width, thereby assuring that the head portion maintains its maximum width, and permitting the use of a relatively thin head portion while preventing deformation of the head portion;

an elongate transverse bar portion having a uniform cross-section;

a filament portion interconnecting said head and transverse bar portions to form a tag pin having a generally H-shape;

a connecting portion extending from said transverse bar portion in a direction away from said filament portion;

a connecting bar connecting each of said connecting portions of said tag pins, wherein said connecting portion and said connecting bar cooperate to form said tag pin group,



said head portion and said transverse bar portion of each tag pin being substantially coplanar and the head and transverse bar portion of each tag pin of said tag pin group lying in substantially parallel planes; and

said solid head portion further including an edge opposite said transverse bar portion, said edge being formed so as to continuously arcuately slope away from said transverse bar portion as it spreads out from the center of the head portion to its outer periphery, the arcuately sloped edge portion forming an obtuse angle with said filament, thus forming a convex release means facing said transverse bar portion permitting easy removal of a single tag pin or group of tag pins from an intermixed group of tag pins.

4,347,933
CASE FOR HOLDING MAGNETIC TAPE CASSETTE

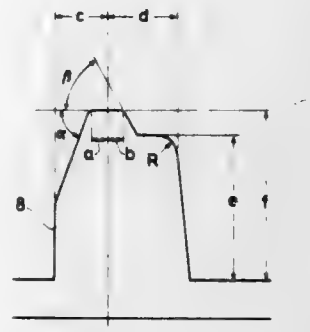
Toshihiko Ishida, Komoro, and Kimio Tanaka, Saku, both of Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Jul. 11, 1980, Ser. No. 167,411

Claims priority, application Japan, Jul. 17, 1979, 54-97567[U]

Int. Cl.³ B65D *85/67*; B65H *17/02, 75/00*

U.S. Cl. 206—387 **4 Claims**

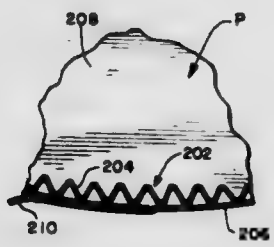


1. A case for holding a magnetic tape cassette, the case having flat locking projections or tabs upright from the inner wall surface thereof to engage the hubs of the magnetic tape cassette and thereby lock the hubs unrotatably, characterized in that said locking tabs have a uniform thickness and have a step formed in the upper part of each said locking tab.

4,347,934
CORRUGATED CONTAINER

James A. Goodman, Glencoe, Ill., assignor to Consolidated Foods Corporation, Deerfield, Ill.

Division of Ser. No. 974,065, Dec. 28, 1978, Pat. No. 4,250,797.
This application Oct. 15, 1980, Ser. No. 197,362
Int. Cl.³ B65D 8/04, 3/26, 17/00
U.S. Cl. 206—633 12 Claims



1. A tubular container having a readily removable corrugated side wall comprising:

a corrugated inner sheet having a selected length and width and formed with the lateral ends of said inner sheet that define said length being adjacent each other to define a corrugated tubular inner ply of said container side wall;

a bottom wall member engaged with the lower edge of said corrugated inner sheet and shaped to form the bottom of said container;

a flat outer sheet having a selected length defined by lateral ends and a width defined by axially opposite edges which is greater than the width of the corrugated inner sheet, said outer sheet joined to said corrugated inner sheet to define a tubular outer ply of said side wall, with the lateral ends of said outer sheet adjacent each other and with a portion of said outer sheet projecting beyond said lower edge of said corrugated inner sheet and folded against and secured to said bottom wall member so that said inner sheet and outer sheet cooperate to restrain upward or downward movement, respectively, of said bottom wall member;

said outer sheet and said bottom wall member defining a frangible joint along which said side wall can be severed from said bottom wall without severing said corrugated inner wall, so that the corrugated inner wall adds rigidity to said package without interfering with the ready removal of the side wall from the bottom wall; and

the adjacent lateral ends of said inner sheet being unsealed to one another across said inner sheet which facilitates said removal of said side wall.

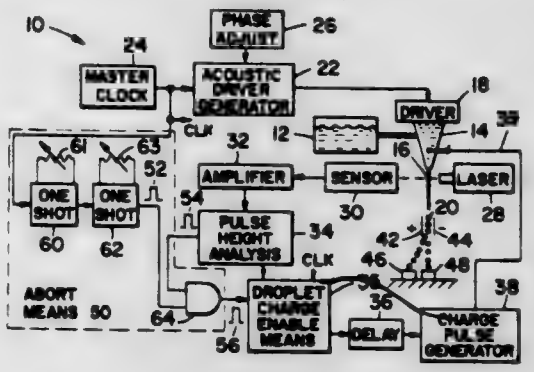
4,347,935
METHOD AND APPARATUS FOR ELECTROSTATICALLY SORTING BIOLOGICAL CELLS

John T. Merrill, Berkeley, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 16, 1979, Ser. No. 39,527
Int. Cl.³ B07C 5/342
U.S. Cl. 209—3.2 5 Claims

1. A method for sorting small particles using apparatus which includes means for generating a fluid jet having said particles suspended therein, sensor means across the path of said fluid jet for generating a particle detect pulse and a droplet-charge-enable signal in response to a selected characteristic of a particle, means for acoustically pulsing said fluid jet to cause separation thereof into droplets in a discrete separation zone, said pulsing means including a clock generating means for generating a clock pulse for each droplet to be formed, electrical charging means operatively coupled to said fluid jet, electrical delay means having a period of delay equal to the time of passage of a particle passing from the sensor means to said droplet separation zone, whereby each particle-containing droplet, as it forms, is impressed with a charge by said charging means of a magnitude controlled by said droplet-charge-enable signal generated for that droplet, electrical deflection means positioned with respect to said droplet path, said electrical deflection means deflecting a droplet according to its charge, the method comprising the steps of:

(a) generating a timing pulse as a function of said clock pulse, wherein said timing pulse remains on for an abort interval



corresponding to when said sensor means would detect a particle in a position where it will fall between adjacent droplets during droplet formation;

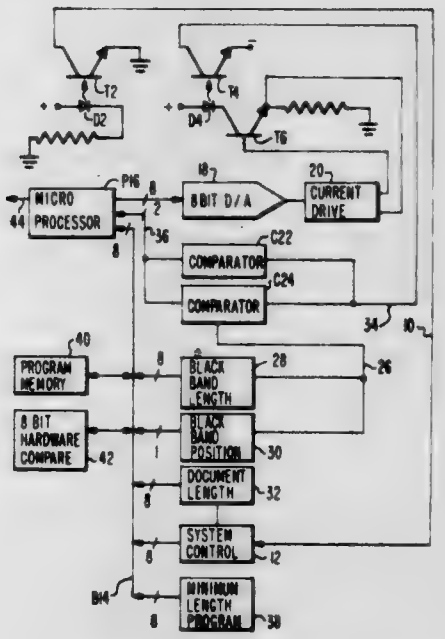
(b) comparing said abort interval pulse with said particle detect pulse and outputting an abort pulse if said detect pulse is detected during said abort interval; and

(c) disabling said charge enable signal in response to the generation of said abort pulse.

4,347,936
BLACK BAND DETECTOR FOR DOCUMENT SORTING MACHINES

Harold A. Fasig, Plymouth, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed Aug. 5, 1980, Ser. No. 175,366
Int. Cl.³ B07C 5/342
U.S. Cl. 209—3.3 10 Claims



1. A system for detecting the boundaries between moving batches of documents in which the boundaries are marked by the presence of black band documents positioned between adjacent batches of documents to be sorted, comprising:

a first light source and a first light sensor spaced apart across a document path;

said first light sensor detecting the passage of documents between the light source and the sensor;

a second light source and a second light sensor spaced apart across the document path;

means for adjusting the intensity of the second light source including voltage regulating means to enable the second

light sensing device to provide a preselected output voltage as the leading edge of a document passes between the light source and the light sensing device;

said second light sensor providing varying output signals as documents pass between the second light source and the second sensor along the document path, and

means responsive to said varying output signals to establish when a black band document passes said light sensor, thereby establishing the existence of a boundary between adjacent batches of documents.

4,347,937

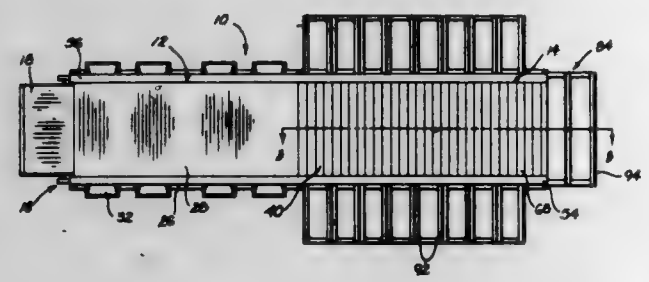
MACHINE FOR SORTING OBJECTS BY SIZE

Robert R. Reich, Odessa, Mo., assignor to Triple R Designs, Inc., Odessa, Mo.

Filed Sep. 11, 1980, Ser. No. 186,190

Int. Cl.³ B07C *5/06*

U.S. Cl. 209—622 **8 Claims**



1. A machine for sorting objects by size comprising:

an elongated supporting frame;

a continuous carrier chain extending longitudinally on each side of the frame;

means for synchronously driving said chains;

a plurality of spaced, transversely extending generally parallel rods spanning the distance between said chains and carried thereby for longitudinal movement with said chains;

a finger member carried by each of said rods, said fingers each having an upper hook portion for swingable engagement with its corresponding rod, a lower free edge portion and an intermediate arcuate portion between said hook and said free edge;

means for delivering the objects to be sorted onto the rods and fingers at the object-receiving end of the machine for movement therewith longitudinally of the machine when the chains are driven toward the opposite end of the machine; and

a toothed guide strip extending longitudinally adjacent at least one of said carrier chains and in a position to engage the lower free edge portions of said finger members as the finger members are moved longitudinally of the machine when the chains are driven whereby to impart vibrating movement to the finger members,

the teeth of said guide strip increasing in height as they progress along the strip from the object-receiving end of the machine towards the opposite end of the machine.

4,347,938

RUNNING SKYLINE INTERMEDIATE SUPPORT AND MULTI-SPAN CARRIAGE

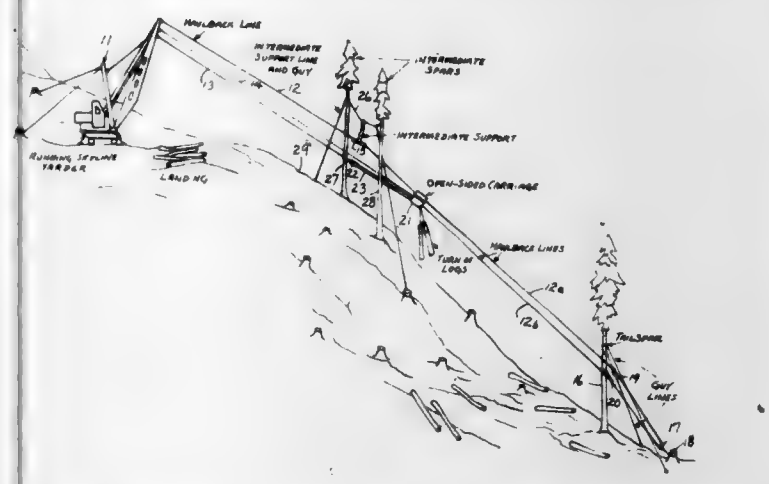
Joseph W. Gorsh, Missoula, Mont., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Dec. 11, 1979, Ser. No. 102,484

Int. Cl.³ B66C *21/00*

U.S. Cl. 212—121 **8 Claims**

1. A logging system comprising a yarder, tail-spar means, running skyline means interconnecting the yarder and said tailspar means, load carriage means, means movably supporting said carriage means on said skyline means, said skyline means including a haulback line, intermediate support means located between the yarder and said tailspar means, said intermediate support means comprising intermediate spar means, a hanger bar suspended from said intermediate spar means, shoe means adjacent to the lower portion of said hanger bar and supportingly engaging said haulback line on the underside thereof, and transverse shaft means pivotally connecting said shoe means to said hanger bar, said carriage means having a longitudinally extending side opening located to form a passageway for said transverse shaft means when the carriage means moves past said shoe means, said shoe means comprising longitudinal cover means retentively surrounding the haulback



line, said longitudinal cover means comprising a downwardly facing channel-shaped elongated rail member mounted on said shoe means, said carriage means comprising sheave means engageable on said rail member, said sheave means including a walking beam member pivoted to said carriage means, a pair of sheaves mounted on opposite sides of the pivotal connection of said walking beam member to said carriage means, said sheaves being engageable on said rail-member, and movable safety gate means on said carriage means normally overlapping said side opening and being yieldably engageable by said transverse shaft means to allow the carriage to move past said shoe means.

4,347,939

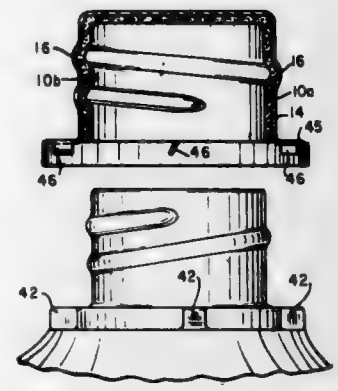
THERMOFORMED CLOSURE OF COMPOSITE MATERIAL

John D. Upton, 76 Clapboard Hill Rd., Green's Farms, Conn. 06436

Filed Sep. 24, 1976, Ser. No. 726,223

Int. Cl.³ B65D *41/34*

U.S. Cl. 215—252 **3 Claims**



1. A container closure comprising a thermoformed unitary composite material structure having

an outer shell of thermoformed thermoplastic material of substantially uniform thickness throughout except in the areas where deformed during thermoforming and having a top wall and a skirt wall depending therefrom,

and a liner of compressible cellular foam thermoplastic material located within and being coextensive with the entire inner surface of said outer shell, said liner being of substantially uniform thickness throughout except in the areas where deformed during thermoforming and bonded

to the inner surface of said shell and formed to the desired shape during the thermoforming of the closure,

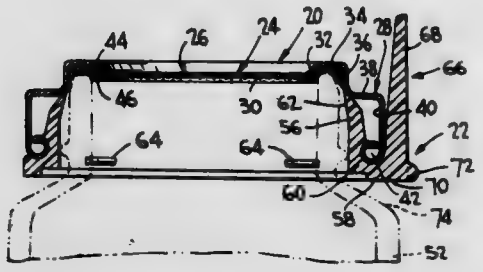
and at least one tab cut through the shell and liner of said closure skirt wall and extending inwardly therefrom, said tab adapted for engaging a member on the container as the closure is unfastened therefrom.

4,347,940

LEVER-OFF TAMPER-INDICATING COMPOSITE CLOSURE

Elmer J. Boik, Lombard, and F. Paul Marshall, Park Forest, both of Ill., assignors to The Continental Group, Inc., Stamford, Conn.

Filed Apr. 10, 1981, Ser. No. 252,714
Int. Cl.³ B65D *41/32*
U.S. Cl. 215—253 **15 Claims**



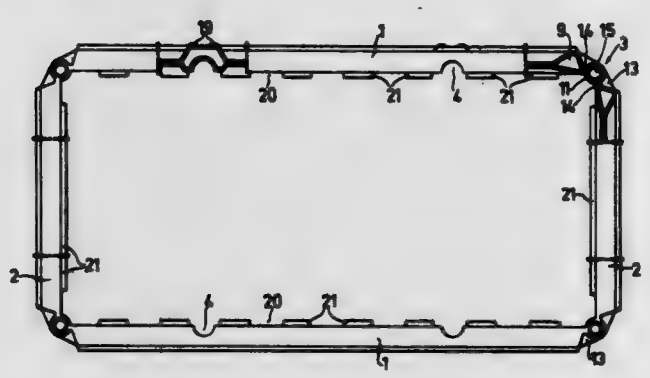
1. A closure comprising a shell including an end panel and a depending uninterrupted conventional skirt, there being an annular corner between said end panel and said skirt, a sealing ring underlying said end panel generally at said corner, and lever means and support means for said lever means formed separately of said shell and carried by said skirt, said lever means being positioned for engaging a container shoulder to lift said shell.

4,347,941

PALLET COLLAR

Sigvard Johansson, Gränna, and Wells R. S. Pearson, Gnosjö, both of Sweden, assignors to Gnosjöplast Aktiebolag, Gnosjö, Sweden

Continuation of Ser. No. 77,100, Sep. 10, 1979, abandoned. This application Mar. 17, 1981, Ser. No. 244,773
Claims priority, application Sweden, Sep. 8, 1978, 7809452
Int. Cl.³ B65D *19/10*
U.S. Cl. 220—6 **1 Claim**



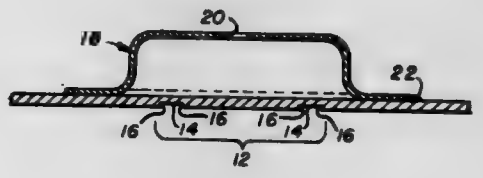
1. A pallet collar comprising two pairs of substantially rigid plastic walls each having opposite ends and hinges at said opposite ends, said walls being interconnected by means of said hinges only at said respective ends, each wall having a bottom edge forming a support surface for engagement with the upper surface of the peripheral edge of a pallet to thereby support the pallet collar upon the pallet, and an external flange projecting downwards from the outer peripheral edge of said bottom edge for engaging the outer circumference of the peripheral edge of the pallet, each one of at least one pair of mutually opposite walls being provided on its inside with an integral internal supporting rib which extends substantially parallel to said bottom edge of the respective wall along at least a major portion of said wall above said support surface for carrying a removable bottom in cooperation with the supporting rib of the opposite wall, each of said internal supporting ribs extending in the same plane as the supporting rib of the other wall in the folded out working position of the pallet collar, each supporting rib being divided into a plurality of individual portions which are separated from each other by interspaces, each supporting rib of a pair of adjacent walls being located just opposite an interspace between two supporting rib portions of the remaining pair of adjacent collar walls when the pallet collar is folded into a collapsed, substantially flat condition.

4,347,942

PRESSURE RELIEF DEVICE AND METHOD OF FABRICATION THEREOF

Robert H. Jernberg, East Hampton, and Edwin A. Barton, Colchester, both of Conn., assignors to Pressure-Pak Container Co., Inc., East Hampton, Conn.

Filed Nov. 24, 1980, Ser. No. 209,880
Int. Cl.³ B65D *8/00, 25/00;* B23K *31/02;* F16K *17/14*
U.S. Cl. 220—89 A **5 Claims**



1. A pressure vessel with an integral pressure relief valve comprising:

a pair of cylindrical vessel halves, said vessel halves having been formed from low carbon steel by a deep drawing operation, said vessel halves being joined together by welding to define the vessel, at least one end of said vessel having an arcuate shape which is other than hemispherical when viewed in cross-section;

a coined pattern in said one end of said vessel, said pattern being in the form of an arcuate groove which defines a region which acts as a rupturable valve member, said groove extending inwardly from the vessel exterior to a depth which is in the range of 67% to 45% of the thickness of said one end, said groove having a bottom which is at least partly flat; and

a generally cup-shaped restrictor means having an inner wall surface defining the interior of said restrictor means, said wall surface having a cross-sectional area that is greater than said coined pattern and is arranged to surround and enclose said coined pattern within the vessel, said restrictor means being secured at a location adjacent the perimeter of the restrictor means, said location being small with respect to said perimeter, a major portion of said perimeter along with the rest of said restrictor means except for at said location remaining unsecured to said vessel to allow for partial relative separate movement of said restrictor means during deformation of said one end due to internal pressure to prevent interference of said restrictor means with said deformation, said restrictor means having aperture venting means in registration with said region of said coined pattern for rupture of said valve member by an excessive internal pressure, said aperture venting means being of a size smaller than said region of said coined pattern to prevent too rapid a discharge from said vessel upon fracture of said valve member.

5. A method of fabricating a pressure vessel comprising:

forming a pair of vessel halves by deep drawing;

coining the end of a first of said halves to form a narrow arcuate groove having a bottom which is at least partly flat, said groove extending inwardly from the exterior of the vessel half, the depth of said groove being in the range of 45% to 67% of the vessel half wall thickness;

spot welding an apertured member to the interior of the said vessel first half, at a location adjacent the outer perimeter of said member spaced radially outwardly from said groove, said member being positioned with the aperture therein spaced from and in registration with the region disposed inwardly of the arcuate groove formed during the coining step; and

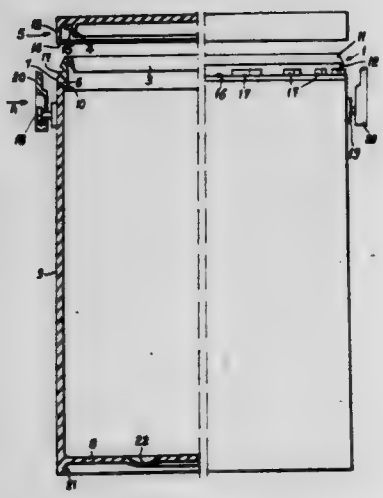
welding the vessel halves together to define a pressure vessel.

4,347,943

CONTAINERS

Roger E. Hackwell, Saffron Walden; Philip D. Gale, Gidea Park, Romford, and Eric K. L. Mason, Colchester, all of England, assignors to National Plastics Limited, London, England

Filed Apr. 14, 1981, Ser. No. 254,057
Int. Cl.³ B65D *41/16, 41/18*
U.S. Cl. 220—306 **10 Claims**



1. A container and lid combination in which the container has a base, a side wall or walls and an open end opposite to the base defined by a peripheral flange extending inwardly with respect to the side wall or walls and downwardly towards the base, and the lid has a closure part which is a sealing fit within the peripheral flange wherein the container comprises two components each integrally moulded from plastics material and secured together, the said components being a top component including said peripheral flange and having lid-retaining means adjacent to its periphery and independent of the peripheral flange for engaging complementary means on the lid when the closure part of the lid is fitted within the peripheral flange, and a bottom component including the base of the container, at least one of the said components having an integral wall part which comprises the side wall or walls of the container or part of the side wall or walls.

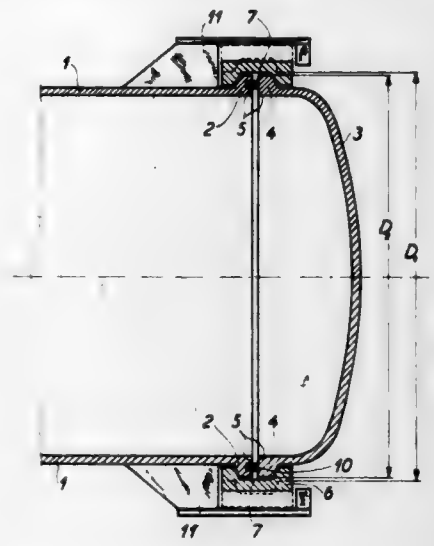
4,347,944

COVER FOR A CYLINDER-SHAPED PRESSURE CONTAINER

Niels Moldrup, Rytterhegnet 9, 3400 Allerod, Denmark

PCT No. PCT/DK79/00005, § 371 Date Oct. 17, 1980, § 102(e) Date Oct. 17, 1980, PCT Pub. No. WO80/01831, PCT Pub. Date Sep. 4, 1980
PCT Filed Feb. 22, 1979, Ser. No. 198,146
Int. Cl.³ B65D *45/32*
U.S. Cl. 220—320 **7 Claims**

1. Cover for a cylinder-shaped pressure container such as a vacuum impregnation container or an autoclave which at the mouth edge has members for holding a tight fitting closure member against the mouth edge, characterized in that the mouth edge of the container (1) and the closure member (3) both have a radially outwards directed annular flange (2,4), the flanges having cooperating contact faces (5) and each a sloping surface, whereby the width of the two flange members (2,4) is decreasing towards the outer edge, the cover further comprising a one-piece, unitary, circular, retaining ring (6) which is placed close to the flange members (2,4) and which is ended up by two free ends (8), and that the retaining ring (6) has a slot (7) which is open towards the centre and corresponding to the cross section of the flange members (2,4), said width of said



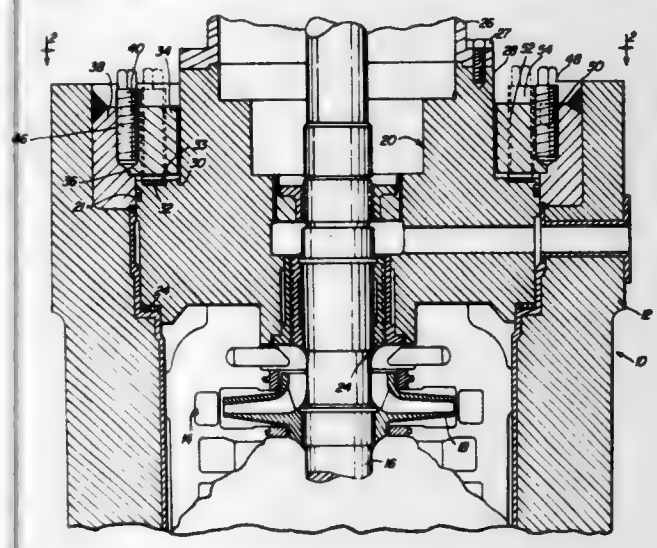
two flange members being at least equal to the depth of said slot, and where the circumference of the retaining ring (6) is smaller than the outer circumference of the flanges (2,4), so that the free ends (8) of the one-piece, unitary, circular, retaining ring (6) can be pulled towards each other to a closed position, when the flange members (2,4) are assumed in the slot (7) of the ring (6).

4,347,945

PUMP CLOSURE FASTENING MEANS

Rudolf Fehlau, Downey, Calif., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed May 5, 1981, Ser. No. 260,611
Int. Cl.³ B65D *45/00*
U.S. Cl. 220—327 **5 Claims**



1. A closure arrangement for a pump housing having a generally cylindrical bore, comprising:

a closure member having a first cylindrical portion closely fitting into said bore and a second cylindrical portion defining a shoulder with said first portion which faces in an outwardly direction with respect to said housing;

a closure ring surrounding said second portion and positioned over said shoulder;

a plurality of spaced threaded openings at the juncture of the periphery of said closure ring and said housing, said openings each having a generally semi-circular portion in said closure ring and a generally semi-circular portion in said housing;

a threaded shear stud in each opening to join said closure ring and said housing; and

compression means connected to said closure ring engaging said shoulder.

4,347,946

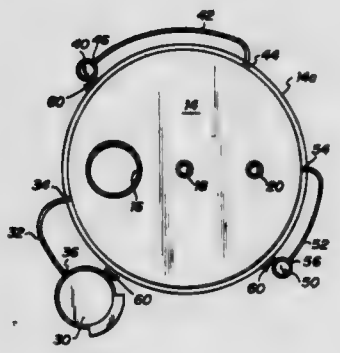
SUCTION SYSTEM WITH COVER-PORT CAP ATTACHMENT BREAKAWAY TAB

Robert L. Nichols, 808 Fort Worth St., Jacksonville, Tex. 75766

Continuation of Ser. No. 955,531, Oct. 30, 1978, abandoned. This application May 18, 1981, Ser. No. 264,611

Int. Cl.³ A61M *1/00*; B65D *55/16, 41/18, 47/14*

U.S. Cl. 220—375 **1 Claim**



1. In a suction system for draining fluid from a source, a receptacle cover comprising:

(a) a plurality of ports located in the receptacle cover, including a first port for connection to a vacuum source, a second port for receiving fluid from the source and a third port for emptying collected fluid contained within the receptacle, said third port having a larger dimension than said first and second ports;

(b) A first port closure member dimensioned to engage and close said first port, a second port closure member dimensioned to engage and close said second port and a third port closure member dimensioned to engage and close said third port, said third port closure member being larger than said first and second closure members;

(c) a first flexible connecting line integrally molded and attached at one end to said first port closure member and at a second end to the receptacle cover at a first point of attachment for permanently attaching said first port closure member to the edge of the receptacle cover, said flexible connecting line having sufficient length to allow said first port closure member to engage and close said first port, a second flexible connecting line integrally molded and attached at one end to said second port closure member and at a second end to the receptacle cover at a second point of attachment for permanently attaching said second port closure member to the edge of the receptacle cover, and a third flexible connecting line integrally molded and attached at one end to said third port closure member and at a second end to the receptacle cover at a third point of attachment for permanently attaching said third port closure member to the edge of the receptacle cover; and

(d) a separate breakaway tab means integrally molded and attached to each of said port closure members and to said receptacle cover for temporarily separately attaching each of said port closure members to the edge of the receptacle cover at a different point of attachment for each port closure member, said separate breakaway tab means spaced apart and distinct from said first, second and third points of attachment, each of said breakaway tab means being separable for allowing said port closure members to be disengaged from the receptacle cover at said points of attachment by said tab means to permit said port closure members to be moved to engage and close said ports, and each of said tab means having a portion of reduced thickness disposed adjacent said port closure members to provide a point of severance adjacent said port closure members.

4,347,947

CONTAINER AND COVER WITH TWO GASKET SEAL

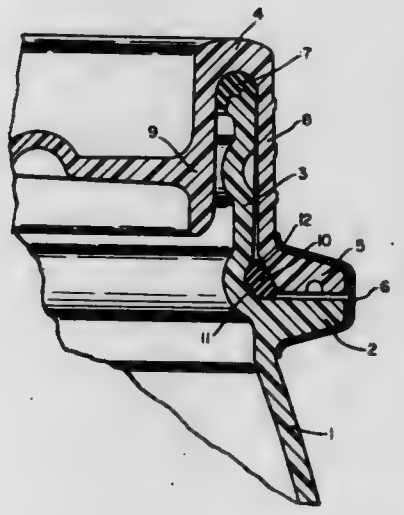
Theo Hammes, Ingenieur, Fed. Rep. of Germany, assignor to Mauser-Kommandit Gesellschaft, Bruhl, Fed. Rep. of Germany

Filed Dec. 15, 1980, Ser. No. 216,647

Claims priority, application Fed. Rep. of Germany, Dec. 14, 1979, 7935222[U]

Int. Cl.³ B65D *53/00*

U.S. Cl. 220—378 **5 Claims**



1. A container for storing fluids having a neck with an opening, a cover for attachment to said neck, said cover having an inner rim disposed internally of the neck of the container and an outer rim disposed externally of said neck in circumventing relation therewith, a first gasket disposed between the inner rim and the outer rim of the cover in engagement with the upper edge of said neck to space the cover axially from said upper edge by a predetermined distance, a first flange on the outer rim of the cover extending radially outward thereof, a second flange on the container extending radially outward thereof and axially facing the first flange in spaced relationship therewith said spacing being less than said predetermined distance by which the cover is axially spaced from the upper edge of the container neck and an annular connecting element operative for urging said first and second flanges together into alignment in the axial direction of the container, wherein the improvement comprises a second gasket supported radially and axially said second gasket in contact with said cover and said neck.

4,347,948

CONTAINER FOR FILLING IN LIQUID

Minoru Hamada, Kawanishi; Nobuyuki Nakamura, Takatsuki, and Akira Odajima, Ibaraki, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

PCT No. PCT/JP79/00229, § 371 Date Mar. 31, 1980, § 102(e) Date Mar. 31, 1980, PCT Pub. No. WO80/00431, PCT Pub. Date Mar. 20, 1980

PCT Filed Aug. 29, 1979, Ser. No. 196,052

Claims priority, application Japan, Aug. 31, 1978, 53-107302; Nov. 1, 1978, 53-135487; May 29, 1979, 54-67014

Int. Cl.³ B65D *25/16*

U.S. Cl. 220—404 **5 Claims**

1. A container for holding liquids, said container comprising:

a rigid cylindrical main body, said main body having an open end, a fixed end member sealing one end of said main body, a plurality of annular ring retaining means extending around the inner periphery of said main body, each means being taken from the group consisting of an annular groove in the cylindrical portion of said main body and a projection, said plurality of said means being spaced from

each other axially in the direction of the central longitudinal of said main body, at least one of said means being adjacent the open end of said main body;

a plastic inner bag removably positioned inside said main body and having a protruding open end portion projecting out of said main body open end when said bag is positioned inside said main body and folded downwardly around the outer periphery of said main body;

a plurality of resilient ring members each removably positioned within said main body, one engaged with said inner bag and with said retaining means adjacent the open end of said main body, and at least one further ring member engaged with said inner bag and with a further retaining means spaced inwardly from said open end of said main body;

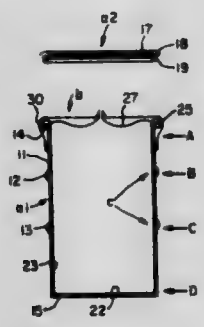
a longitudinal member which is attached to and connects said ring members together; and

a lid removably fitted to said open end of said main body.

4. A container for holding liquids, said container comprising:

a rigid cylindrical main body, said main body having an open end, a fixed end member sealing one end of said main body, and a plurality of annular ring retaining means extending around the inner periphery of said main body, each means being taken from the group consisting of an annular groove in the cylindrical portion of said main body and a projection, said plurality of said means being spaced from each other axially in the direction of the central longitudinal axis of said main body, at least one of said means being adjacent the open end of said main body;

a plastic inner bag removably positioned inside said main body and having a protruding open end portion projecting



out of said main body open end when said bag is positioned inside said main body and has an outer and an inner layer integral with the remainder of said bag, said outer layer being folded downwardly and around a portion of the outer periphery of said main body and said inner layer being drawn together and secured at the center of said open end of said main body for closing the inside of said inner bag;

a plurality of resilient ring members each removably positioned within said main body, one engaged with said inner bag and with said retaining means adjacent the open end of said main body, and at least one further ring member engaged with said inner bag and with a further retaining means spaced inwardly from said open end of said main body; and

a lid removably fitted to said open end of said main body.

5. A container for holding liquids, said container comprising:

a rigid cylindrical main body, said main body having an open end, a fixed end member sealing one end of said main body, and a plurality of annular ring retaining means extending around the inner periphery of said main body spaced axially in the direction of the central longitudinal axis of said main body, at least one of said means being adjacent the open end of said main body;

a plastic inner bag removably positioned inside said main body and having a protruding open end portion projecting out of said main body open end when said bag is positioned inside said main body and folded downwardly around the outer periphery of said main body;

a plurality of resilient ring members each removably positioned within said main body, one engaged with said inner bag and with said retaining means adjacent the open end of said main body, and at least one further ring member engaged with said inner bag and with a further retaining means spaced inwardly from said open end of said main body; and

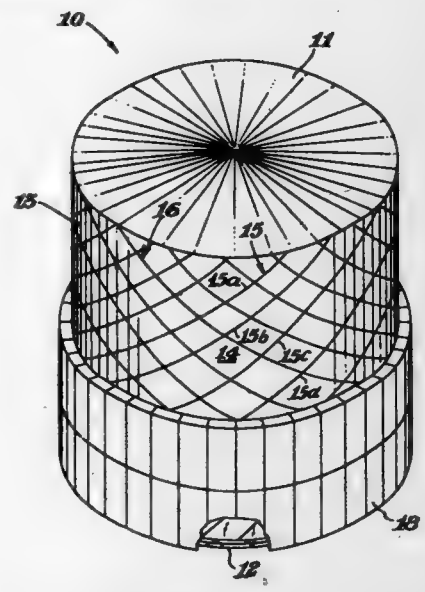
a lid removably fitted to said open end of said main body, the surface of said lid facing the inside chamber of said main body being adapted to receive an annular removable packing around its outer peripheral surface and is lined with a removable plastic sheet, said plastic sheet having perforations around segments of its outer peripheral surface aligned with said packing, the packing being applied to said lid with said plastic sheet between the packing and the lid with adhesive securing the portions of the packing exposed through said perforations to said lid.

4,347,949

INSULATED TANK

Robert B. Bennett, Hebron, Ohio, assignor to The Dow Chemical Co., Midland, Mich.

Division of Ser. No. 813,148, Jul. 5, 1977, Pat. No. 4,146,952.
This application Jun. 26, 1978, Ser. No. 918,978
Int. Cl.³ B65D *88/08, 90/06*
U.S. Cl. 220—415 **4 Claims**



1. An improved thermally insulated tank, the tank being of generally cylindrical configuration having a top, a bottom, and a generally cylindrical side wall, a plurality of elongate tension members in generally spaced relationship, extending from a location generally at the top of the tank to a location generally at the bottom of the tank, the tension members being generally disposed against the outer surface of the generally cylindrical tank wall, the tension members being generally helically disposed, a plurality of insulating panels disposed about the tank wall, the panels being affixed at least to the helically disposed tension members.

4,347,950

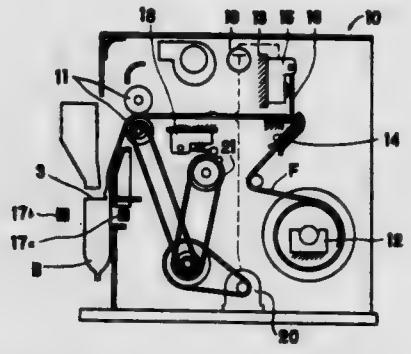
PACKING MACHINE WITH APPARATUS FOR AUTOMATICALLY STOPPING BAG MATERIAL TRANSFER ROLLERS

Masami Onishi, Tokyo, Japan, assignor to Taiyo Shokai Co., Ltd., Japan

Filed Sep. 15, 1980, Ser. No. 187,063
Claims priority, application Japan, Sep. 17, 1979, 54-126903[U]
Int. Cl.³ B65G *59/00*
U.S. Cl. 221—13 **1 Claim**

1. A packing machine comprising a pair of intermittently operated pinching rollers for intermittently transferring an elongated strip-like bag material of a collapsed plastic film tube, said bag material comprising a series of interconnected bags each having a heat-sealed bottom portion and an opposite opening portion, each bag of said tube having a flap-like mar-

gin formed transversely across the bag material between said opening portion and said heat-sealed bottom portion, guide means mounted upstream of said pinching rollers for guiding the bag material through a travel path, said guide means comprising a plate having a V-shaped cross-section having a first leg and a second leg from which said first leg is depended, said second leg having a surface for supporting said bag material so that the respective opening portion of the bag material is directed outwardly of said guide means and said flap-like margin is caused to be raised slightly above the surface when passing over the same, detecting means for detecting said flap-like



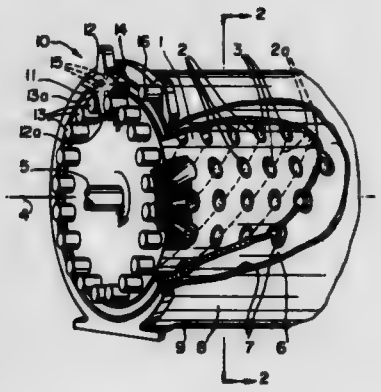
portion, said detecting means comprising a limit switch having an elongated contact mounted adjacent the surface of said guide means, said contact being releasably engageable with said margin responsive to the raising of said margin above the surface, means for stopping movement of said bag material in response to detection by said detecting means of said flap-like portion, and timer means for stopping rotation of said rollers, said timer means being constructed so that it can be activated longer than the time required for each intermittent travel of the bag material for a distance corresponding to the length of a single bag section.

4,347,951

AERIAL DISPENSING APPARATUS

Arthur D. Wood, Ottawa, Canada, assignor to Canadian Patents & Development Limited, Ottawa, Canada

Filed Nov. 4, 1980, Ser. No. 203,909
Claims priority, application Canada, Dec. 18, 1979, 343202
Int. Cl.³ G07F *11/00*
U.S. Cl. 221—86 **5 Claims**



1. An aerial dispensing apparatus comprising:

a cylindrical magazine having a plurality of receptacles for receiving articles arranged in helical rows about the periphery thereof, said magazine being rotatable about a central longitudinal axis thereof,

a rotatable selector sleeve disposed concentrically around the magazine, said selector sleeve having a helical row of apertures arranged to align with a row of receptacles of the magazine,

stepping means operatively interconnecting said selector sleeve with the magazine for synchronized rotation throughout a major portion of each revolution thereof and, once every revolution, to step the selector sleeve, relative to the magazine, angularly an amount corresponding to the angular spacing of adjacent helical rows of receptacles of the magazine,

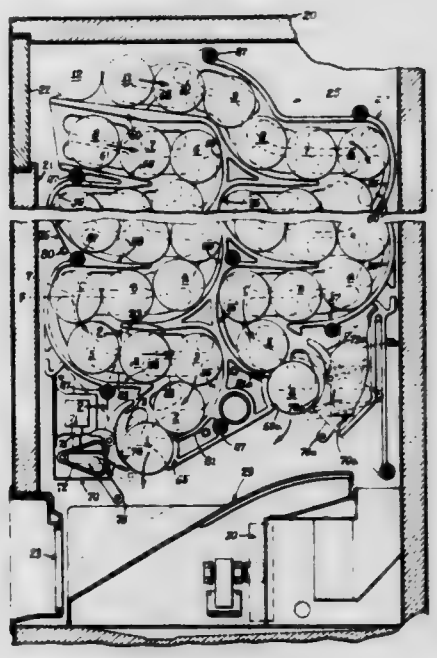
an outer casing disposed around the selector sleeve, said casing having longitudinally extending opening means for allowing sequential release of articles from the receptacles as the apertures of the selector sleeve sequentially align with said opening means.

4,347,952

SERPENTINE MAGAZINE FOR CAN VENDERS

Floyd V. Bookout, Arlington Heights, Ill., assignor to Rock-Ola Manufacturing Corporation, Chicago, Ill.

Filed Oct. 20, 1980, Ser. No. 199,012
Int. Cl.³ B65G *59/06*
U.S. Cl. 221—129 **6 Claims**

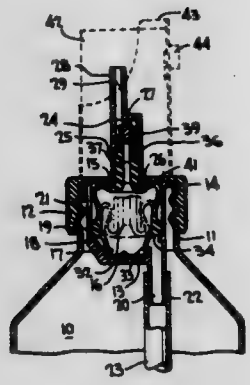


1. For use in an automatic coin controlled machine for vending cylindrical articles, a magazine for holding a plurality of generally cylindrical articles, comprising: a pair of laterally spaced wall members having abuttable means projecting integrally from opposing faces thereof and disposed at selected spaced locations thereon, means interconnecting said wall members with opposing said abuttable means engaging one; each of said wall members having a plurality of oppositely directed, vertically and laterally spaced, curvilinear flight sections, each merging at its lower end with a horizontal flight section extending toward an opposing said curvilinear flight section; said flight sections being formed integrally with and projecting outwardly from a said wall member so that corresponding flight sections on opposed faces of said pair of wall members are in abutting alignment to formulate a pair of laterally spaced, vertical serpentine columns therebetween; each column having two laterally spaced serpentine tracks for movement of articles therealong; said pair of serpentine columns being substantially alike and arranged in nonoverlapping, front-to-back spaced relationship within their associated magazine; each said column having an open loading end at the upper end thereof, with the rearmost of the columns having its loading end disposed above the loading end of the foremost of said columns; an open discharge end at the lower end of each said column, with the discharge end of the foremost of said columns releasing articles toward the front of the machine and the discharge end of the rearmost of said columns releasing articles toward the rear of said machine; and a periodically operable vend mechanism mounted opposite the lower discharge end of each of said columns and operable to release articles one-by-one therefrom.

4,347,953
ELASTOMER BULB DISPENSING PUMP

Peter Bauer, 13921 Esworthy Rd., Germantown, Md. 20767

Filed May 30, 1980, Ser. No. 154,607
Int. Cl.[3] B65D *37/00*; B05B *11/00*
U.S. Cl. 222—207 9 Claims

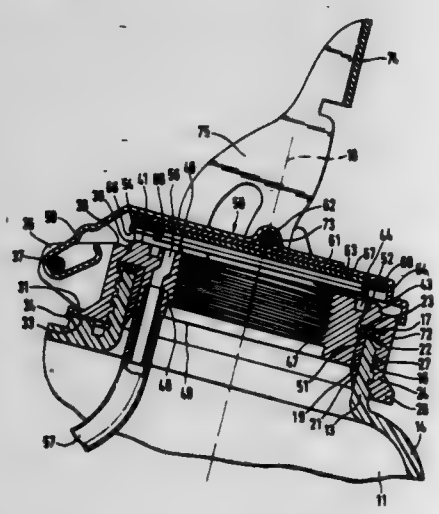


8. A dispensing pump for dispensing fluid contents from a container, said pump comprising a housing member, a stem and a bulbous elastomer diaphragm which fits into said housing member to define a variable volume pump chamber having a quiescent state wherein the chamber is at maximum volume, said diaphragm and said housing member defining inlet valve means for admitting fluid from said container into said pump chamber during expansion of said pump chamber and blocking flow communication between said pump chamber and said container during contraction of said pump chamber and when said pump chamber is in its quiescent state, said stem and diaphragm defining outlet valve means for expelling fluid to ambient from said chamber during contraction of said pump chamber and blocking communication between said pump chamber and ambient in the quiescent state of said pump chamber and during expansion of said pump chamber, and means for maintaining said bulb in a state of compression within said pump chamber in said quiescent state to positively seal said inlet valve means.

4,347,954
CLOSURE FOR A CANISTER

Wolfram Schiemann, Hohenzellern Platz 1, 7140 Ludwigsburg, Fed. Rep. of Germany

Filed Oct. 10, 1980, Ser. No. 196,194
Int. Cl.[3] B67D *3/00*
U.S. Cl. 222—484 4 Claims



1. In a closure for a container made of extruded plastic with a capacity in the 20–30 liter range with an integral plastic nipple having an external thread, comprising:

a metallic collar coaxial with the threaded nipple having two eyelets at its sides,

a lid articulated to the collar,

a double claw tiltably carried by the lid having claws which cooperate with the eyelets,

an outer annular flange and an inner annular flange on the lid bottom,

a ring seal held between the outer and inner flanges,

an annular counter surface at the closure for the ring seal, and

a coaxial internal ring in the threaded nipple having a radial flange which goes over the threaded nipple,

the improvement in which:

the internal ring in the threaded nipple is integral with the metallic collar and is composed of light metal,

the internal ring has an axial internal thread with an inside diameter and outside diameter according to U. S. standard thread size for 20 liter canisters,

the radial faces of the collar and the internal ring are in radial alignment and set off from each other by an annular groove into which the inner annular flanges on the lid bottom extends when the lid is closed, and

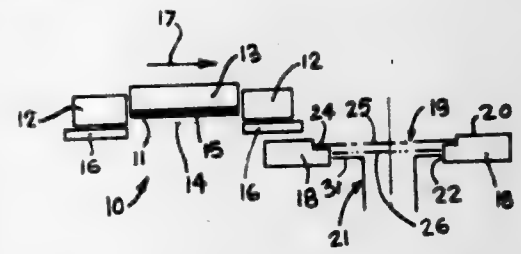
the internal ring has a venting hole in the wall of the internal ring, and

a venting tube is attached to the venting hole within the canister.

4,347,955
REVERSED MOVING DIE FOLDING AND CREASING MACHINE

Nabil Kamal, 8166 St. Denis St., Montreal, Quebec, Canada

Continuation-in-part of Ser. No. 137,644, Apr. 7, 1980, abandoned. This application Jul. 10, 1980, Ser. No. 167,400
Int. Cl.[3] A41H *33/00*
U.S. Cl. 223—38 14 Claims



1. An edge folding and creasing machine comprising a die having a die cavity therein, a wall surface in said cavity juxtaposed to an open end of said cavity, folding plates adjacent said open end, a support plate having a punch cavity, a flat punch head in said punch cavity, means for displacing said die with respect to said support plate for aligning said cavities, means to displace said punch head out of said cavity from an open end thereof and into said die cavity with a fabric material disposed on a front face of said punch head and protruding about an outer periphery thereof, actuating means to effect planar displacement of said folding plates inwardly of said die cavity open end to fold said protruding marginal edge material over a peripheral back face of said punch head to form a folded peripheral edge about said fabric, retracting means to retract said punch head from said die cavity free of said material, means to release said material from said die cavity, and a shield plate supported on said front face of said punch head, said shield plate having a smaller identical configured contour as said punch head and disposed concentrically therewith to define a liner locating channel about its outer edge to locate a strip of lining material about a peripheral edge portion of said punch head front face.

4,347,956
HEARING AID SHEATH AND BODY HARNESS

Rosemary K. Berger, Apt. C-2, 29511 E. Jefferson, St. Clair Shores, Mich. 48081

Filed Jan. 19, 1981, Ser. No. 226,465
Int. Cl.³ A45C 11/00
U.S. Cl. 224—202 5 Claims



1. A holder for F-M auditory training units for children with severe hearing impairment which comprises:

(a) a case formed from a single sheet of pliable material having a body and lateral wings folded to form the front panel, side panels, and overlapping to form the rear panel of the case,

(b) top and bottom flaps extending from the body to overlap releasably at the body side of the wearer behind the rear panel,

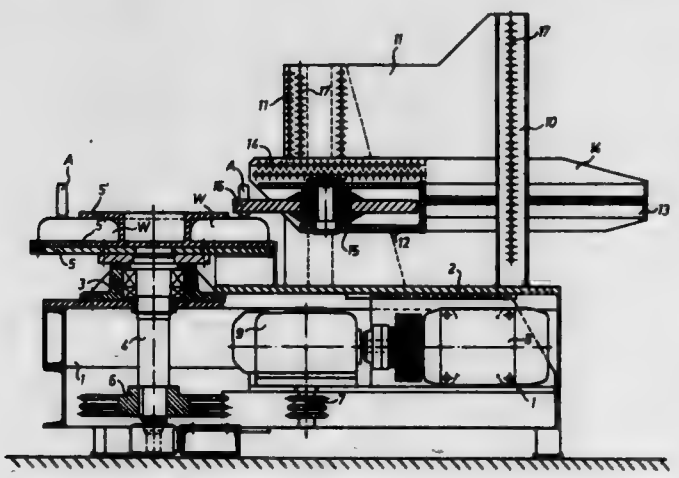
(c) bottom tabs parallel to the bottom flap overlapping in assembly to form the bottom of the case, and

(d) support straps encircling the body and the neck of the wearer secured to the case to confine it to the chest area of a wearer.

4,347,957
APPARATUS FOR DE-BURRING OF WORKPIECES

Peter Rögener, Bad Lauterberg im Harz, Fed. Rep. of Germany, assignor to Universal Maschinen-u Apparatebau GmbH & Co., KG, Herzberg, Fed. Rep. of Germany

Filed Apr. 30, 1980, Ser. No. 145,332
Int. Cl.³ B26F 3/00
U.S. Cl. 225—93 7 Claims

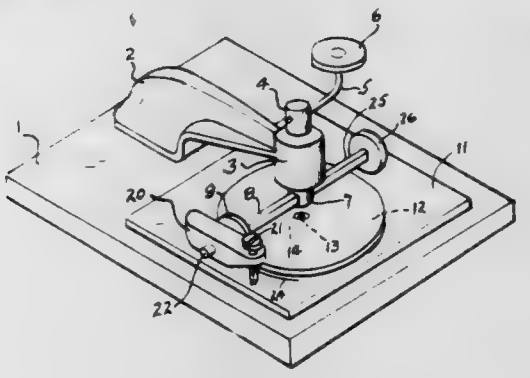


1. Apparatus for de-burring of workpieces, comprising support means for a workpiece to be de-burred; drive means for rotating said support means so that any burr to be removed travels in a predetermined path; and de-burring means stationary relative to the rotating support and extending into said predetermined path so as to be impacted by the traveling burr and cause the same to break off; said de-burring means comprising a disk and means freely turnably mounting said disk.

4,347,958
APPARATUS FOR CUTTING GLASS

Donald C. Wood, Rte. 3, Box 332, Sylva, N.C. 28779

Filed Nov. 10, 1980, Ser. No. 205,686
Int. Cl.³ C03B 33/04, 33/10
U.S. Cl. 225—96.5 4 Claims



1. A glass cutter for cutting glass circles comprising a base, a flat circular form having a diameter slightly smaller than that of the circle to be cut, means for supporting said form on said base in a predetermined position, so that the glass to be cut may be placed on top of said form, a bracket extending over said form and the glass to be cut and rigidly secured to said base, a spindle rotatably mounted on said bracket on an axis perpendicular to the surface of said form and in alignment with the center of said form, an arm attached to said spindle and extending outwardly therefrom, a cutting tool attached to said arm at a point spaced from the axis of said spindle equal to the radius of the circle to be cut and extending downwardly towards the surface of the glass to be cut and perpendicular thereto, means for rotating said spindle with said cutting tool applied against the glass to be cut with sufficient force to score the glass, means attached to said cutting tool for applying pressure to the glass being scored at a point trailing said cutting tool and spaced slightly from said form, said last mentioned means comprising a shaft extending outwardly from said cutting tool, a member rotatably mounted on said shaft and extending perpendicularly to said shaft a short horizontal distance therefrom, and adjustable means on the trailing end of said member as said cutting tool moves for creating a pressure on the glass being scored as the other end of said member is pressed against the glass with an equalizing pressure, whereby the glass is flexed as the score is made and the score is caused to run through the glass.

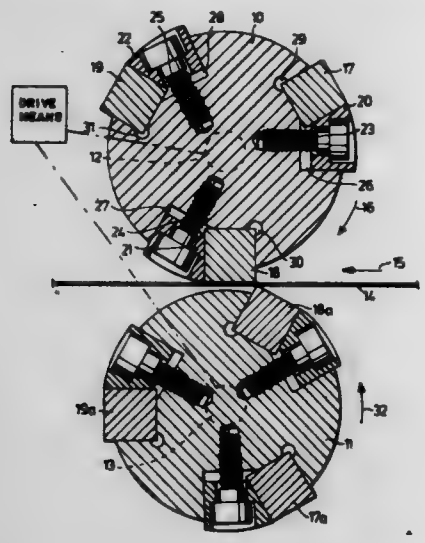
4,347,959
APPARATUS FOR DIVIDING STRIP MATERIAL

Kjell E. G. Ivinger, Finspang, Sweden, assignor to Gränges Aluminium AB, Stockholm, Sweden

PCT No. PCT/SE79/00252, § 371 Date Aug. 19, 1980, § 102(e) Date Aug. 15, 1980, PCT Pub. No. WO80/01259, PCT Pub. Date Jun. 26, 1980
PCT Filed Dec. 17, 1979, Ser. No. 200,499
Claims priority, application Sweden, Dec. 19, 1978, 7813021
Int. Cl.³ B26F 3/02; B26D 1/62
U.S. Cl. 225—97 11 Claims

1. An apparatus for dividing strip material, comprising at least one pair of mutually co-operating cutters, between which the strip material is fed and which are arranged to penetrate said material from mutually opposite sides, characterized in that the two cutters in each pair are mutually substantially parallel at the moment of their penetration into the strip material, and that the one cutter in each pair is arranged to engage the strip material slightly in front of the second cutter as seen in the direction of movement of the strip material, and then to move away from the second cutter in the direction of movement of said strip material, such that the part of strip material located in front of the cutters is separated from the remainder of said strip by a combined cutting and tearing operation;

wherein the cutter arranged to move away from the other cutter is mounted on a body which is arranged for rotation about an axis which is substantially perpendicular to the direction of movement of said strip material and which is spaced from said material; wherein the cutters of each pair are each mounted on a respective roller and said rollers are arranged to rotate in a direction such that the cutters, during a dividing operation, move substantially in the direction of movement of said strip material, one cutter during said dividing operation being located in front of the other and moving at a greater



peripheral velocity than said other cutter; wherein the cutters comprise steel rods of square cross section, and said rods are removably mounted in the rollers in a manner such that the cutter moving at the higher peripheral velocity has its rear, outer edge, as seen in the direction of rotation of the associated roller, and the cutter moving at the lower peripheral velocity has its leading, outer edge, as seen in the direction of rotation of the associated roller, projecting out beyond the cylindrical surface of the associated roller, said outwardly projecting edges of the cutters being used to divide said strip.

4,347,960

APPARATUS FOR LOADING RUNS OF FABRICS

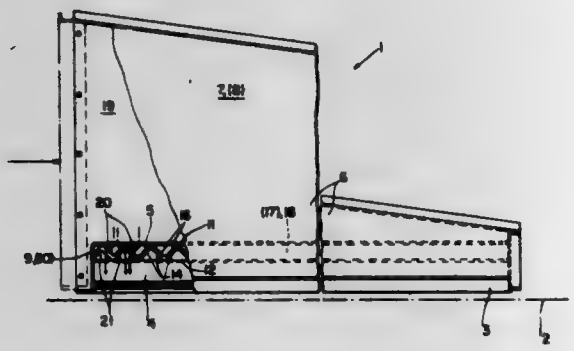
Fritz Gageur, Lindau-Bodolz, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 19, 1980, Ser. No. 218,365

Claims priority, application Fed. Rep. of Germany, Feb. 29, 1980, 3007752

Int. Cl.³ B65H *25/06, 17/32*

U.S. Cl. 226—97 **2 Claims**



1. In equipment for loading runs of fabrics with a gaseous treatment medium and being composed of nozzle boxes sequentially arrayed in the direction of advance of the run of material and extending transversely thereto, said boxes being laterally supplied with the treatment medium which is blown out from orifices located therein against the run of material, a covering means being mounted in each nozzle box above a slotted discharge nozzle and being of such a design that the covering means has a wavy profiled surface extending longitudinally parallel to the direction of jet and parallel to the longitudinal direction of the discharge nozzle, said wavy profiled surface forming a number of stop apertures above the discharge nozzle and perpendicularly thereto,

the improvement comprising upper and lower partition means covering ends of said covering means which point toward side walls of said nozzle box, whereby said nozzle box is divided into an upper and a lower barrier space with the latter including at least one discharge nozzle,

said upper partition means covering ends of the wavy profiled surface of said covering means open toward said upper barrier space, and said lower partition means covering an area extending beyond the ends and toward the center of the nozzle box of the wavy profiled surface of said covering means which is open toward the lower barrier space and the discharge nozzle,

said partition means between walls of the nozzle box and the ends of said covering means forming lateral channels which connect the wavy profiled surfaces of said covering means which are open toward said upper and lower barrier spaces.

4,347,961

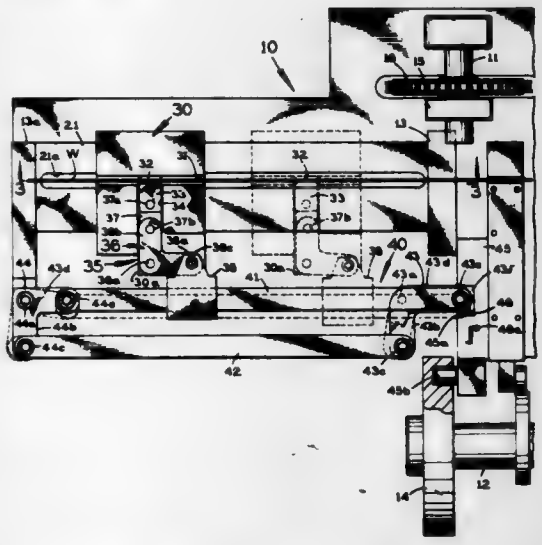
RAPID ADVANCE LONG DWELL FEED MECHANISM FOR MULTIPLE SLIDE MACHINES

Frank G. Smith, 911 Alabama Ave., Ft. Lauderdale, Fla. 33312

Filed Feb. 23, 1981, Ser. No. 236,702

Int. Cl.³ B65H *17/36*

U.S. Cl. 226—158 **12 Claims**

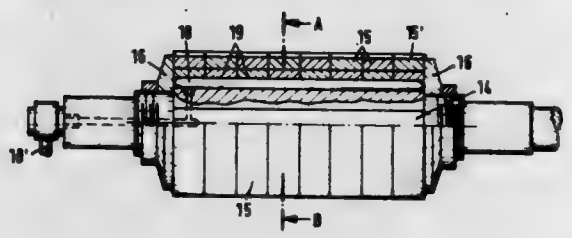


1. In a multiple slide machine having a device shaft rotating at a uniform rate and a reciprocating strip material feeder, said machine being driven to feed a measured length of said strip material and form one unit therefrom with each revolution of said drive shaft, a reciprocating motion conversion drive mechanism driven by said drive shaft in a one to one rotation ratio reciprocating said feeder in a rapid advance feed stroke and a slow return stroke of each cycle, said conversion drive mechanism comprising a drive wheel driven at said uniform rate on a first axis and having an eccentric pin spaced a first predetermined distance from said first axis, a driven wheel means rotating on a second axis spaced a second predetermined distance from said first axis, said driven wheel means having a radially extending slot engaged by said pin whereby said driven wheel means is rotated at a variable rate by said drive wheel, and a reciprocating pitman arm driven by said driven wheel means and linked to said feeder for effecting said rapid advance feed stroke and slow return stroke, said machine operation being timed for a dwell period during said advance stroke and for an operating period during said return stroke.

4,347,962
BRAKE ROLL FOR SPANNING SEVERAL BANDS

Ewald Uphues, Hemer, Fed. Rep. of Germany, assignor to Sundwiger Eisenhütte Maschinenfabrik Grah & Co., Hemer-Sundwig, Fed. Rep. of Germany

Filed Aug. 20, 1980, Ser. No. 179,673
Claims priority, application Fed. Rep. of Germany, Aug. 21, 1979, 2933775
Int. Cl.³ B65H *23/08*
U.S. Cl. 226—195 7 Claims

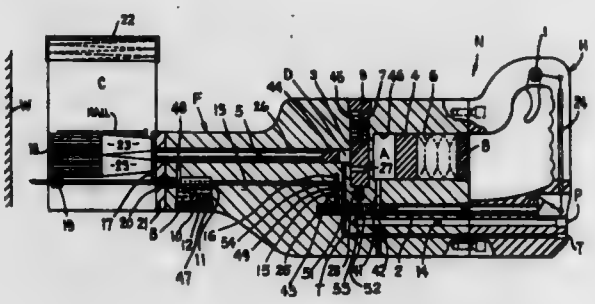


1. A brake roll for spanning several, adjacently guided bands comprising:
   a. a shaft;
   b. a plurality of runner rings slidingly disposed on said shaft;
   c. radially movable brake members disposed between said shaft and said rings, in sliding contact with said rings, for braking said rings with respect to said shaft;
   d. means to apply a radial pressure load to said brake member; and
   e. the one of said runner rings and brake members which is more heavily abrading divided up into running zones and braking zones, pressure being applied to said means to apply only in said braking zones.

4,347,963
HYDRAULIC NAILING MACHINE

Lars J. T. Billing, Värmlandsgaten 2, S-25252 Helsingborg, Sweden

PCT No. PCT/SE79/00010, § 371 Date Sep. 19, 1979, § 102(e) Date Sep. 6, 1979, PCT Pub. No. WO79/00531, PCT Pub. Date Aug. 9, 1979
PCT Filed Jan. 16, 1979, Ser. No. 154,413
Claims priority, application Sweden, Jan. 19, 1978, 7800644
Int. Cl.³ B25C *1/04*
U.S. Cl. 227—8 8 Claims



1. A hydraulic nailing pistol, comprising:
a frame means including an inlet opening and an outlet opening;
a magazine means secured to said frame means for housing plural nails;
guide cylinder means on said frame means;
a nail driving piston rod means reciprocally mounted in said guide cylinder means for effecting a driving of a nail from said magazine means;
hydraulically operated means for effecting a reciprocation of said nail driving piston rod means, said hydraulically operated means including:
(a) a first energy accumulator means adapted to be connected in fluid circuit with a pressurized fluid source through said inlet opening, said first energy accumulator means accummulating energy in response to a fluid connection to said inlet opening;
(b) passageway means connecting said first energy accumulator means in fluid circuit with said guide cylinder means on a side of said piston rod means remote from said magazine means;
(c) first valve means intermediate said first energy accumulator means and said guide cylinder means for opening and closing said passageway means;
(d) second energy accumulator means connected in fluid circuit with said guide cylinder means on a mutually adjacent side of said piston rod means as said magazine means, said second energy accumulator means accumulating energy in response to a movement of said piston rod means toward said magazine means;
(e) second valve means intermediate said first energy accumulator means and said inlet opening for opening and closing said fluid connection therebetween;
(f) first means defining a fluid connection between said guide cylinder means at an end thereof between said first valve means and said piston rod means and said outlet opening in said frame means;
(g) third valve means intermediate said guide cylinder means at the end thereof between said first valve means and said piston rod means, and said outlet opening for opening and closing said fluid connection therebetween, said third valve means also including means for effecting a closing of said first valve means in response to an opening of said third valve means;
(h) operating slide means operable between conditions effecting an opening and closing of said second and third valve means and a closing and opening, respectively, of said first valve means;
(i) second means for normally maintaining said operating slide means in a first condition to effect a closing of said first valve means and an opening of said second and third valve means so that said first energy accumulator means will accumulate energy; and
(j) manually operative means for selectively changing the condition of said operating slide means to a second condition to effect a closing of said second and third valve means and an opening of said first valve means so that said piston rod means will be driven by the energy from said first energy accumulator means along the length of said guide cylinder means thereby effecting a driving of a nail from said magazine means and an accumulation of energy in said second energy accumulator means, the energy of said second energy accumulator means being used to effect a return of said piston rod means to a starting position thereof in response to said second means changing said condition of said operating slide means to said first condition thereof.

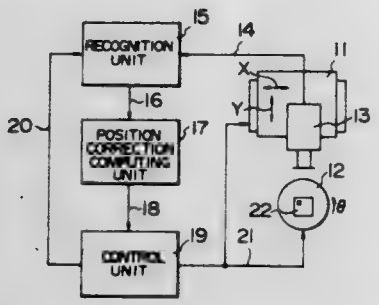
4,347,964
WIRE BONDING APPARATUS

Nobuhiro Takasugi, Hinodemachi, and Ryuichi Kyomasu, Kodaira, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 14, 1980, Ser. No. 149,633
Claims priority, application Japan, May 23, 1979, 54-62608
Int. Cl.³ B23K *28/00*
U.S. Cl. 228—4.5 7 Claims

1. A wire bonding apparatus for wire bonding a first group of bonding positions disposed on a first member with a second group of associated bonding positions disposed on a second member, one of said first and second members having at least one recognition mark, the apparatus comprising:
   a recognition means having a field of view for detecting a presence of the recognition mark in the field of view and for identifying a position of the detected recognition mark in the field of view;
   means for successively moving the field of view of said recognition means in a predetermined manner when the

recognition mark is not detected until such time the recognition mark falls within the field of view; and



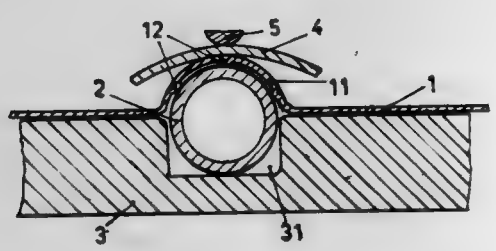
means for computing the positions of said bonding positions based on a detected position of the recognition mark.

4,347,965

METHOD OF CONNECTING THIN METAL SHEETS TO METAL TUBES

Gershon Grossman, Hahorsha 18; Gideon Sivan, Tchernihovski 28a; Tudor Chefner, David Pinsky 37, and Eliyahu Matania, Shoshanat Hacaremel 66a, all of Haifa, Israel

Filed Mar. 20, 1980, Ser. No. 132,300
Claims priority, application Israel, Mar. 28, 1979, 56961
Int. Cl.³ B23K *20/08*
U.S. Cl. 228—107 **6 Claims**



1. A method of connecting a metal sheet to a metal tube, both being preferably components of a solar collector plate, by forming a stripshaped bond between a portion of said sheet and a portion of the circumference of said tube, the method comprising the following steps in combination,

providing said metal sheet with a channeled section, substantially corresponding in size and shape to the contour of said tube, said channel being adapted to contain said tube and being preferably of a depth not more than one half of the tube diameter, while the portions of said sheet adjoining said channeled section are substantially flat and planar,

positioning said tube onto a rigid support which comprises upstanding portions adjacent both sides of said tube extending in the shape of a planar surface to a level above the bottom surface of said tube substantially equal to the distance said tube is predetermined to project beyond said flat and planar portions of said sheet,

filling said tube with water or another non-compressible and non-inflammable liquid and closing the previously open ends of said tube,

positioning said sheet onto said tube and said rigid support, whereby said channel section covers said tube and whereby said planar portions rest on said upstanding portions of said rigid support,

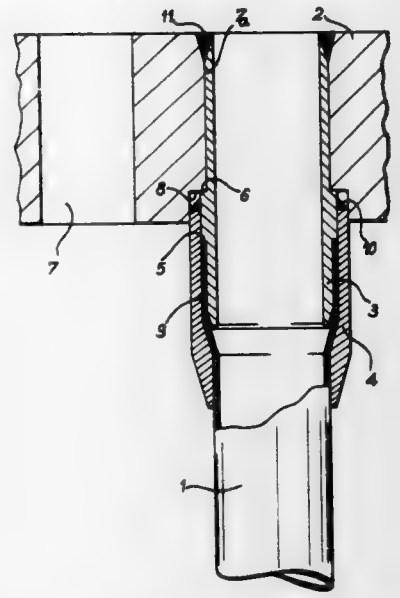
placing an explosive charge in the shape of a bond or ribbon onto the apex of the outside of said channeled section and detonating the charge.

4,347,966

METHOD FOR FIXING A GUIDE TUBE OF A NUCLEAR REACTOR FUEL ASSEMBLY

Claude Feutrel, Vauhallan, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed Jun. 9, 1980, Ser. No. 157,827
Claims priority, application France, Jun. 14, 1979, 79 15272
Int. Cl.³ B23K *33/00*; F16L *41/08*
U.S. Cl. 228—173 F **1 Claim**



1. A method for fixing a zircalloy guide tube of a nuclear reactor fuel assembly to the steel end plate of said assembly, wherein the following steps are successively performed:

expanding one end of the guide tube;

engaging the expanded end of the guide tube around a sleeve provided with first and second outer shoulders until it abuts against the first outer shoulder of said sleeve;

covering said end with a force-fitted ferrule and squeezing the tube against the sleeve, then welding the upper end of the ferrule to the sleeve above the said first outer shoulder;

introducing the sleeve-tube-ferrule assembly into an opening adapted to receive the same in the end plate, said opening also having a shoulder, until said second outer shoulder of the sleeve abuts against the said shoulder of the end plate opening:

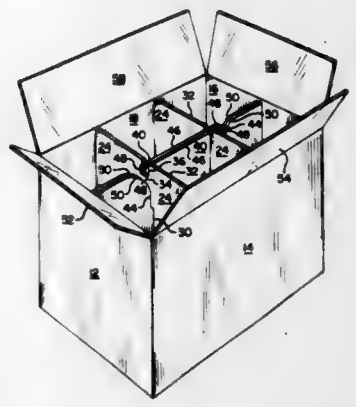
and welding the upper part of the sleeve to the upper part of the opening of the end plate of the assembly.

4,347,967

MULTICOMPARTMENT FOLDING CARTON

Jake Loudermilk, Jr., 1200 W. North Carrier Pkwy., Grand Prairie, Tex. 75050

Filed Jan. 26, 1981, Ser. No. 228,310
Int. Cl.³ B65D *5/48*
U.S. Cl. 229—27 **7 Claims**



1. A multicompartment folding carton comprising:

(a) four articulated side walls;

(b) a pair of foldable, opposed first flaps, each having a

bottom panel and a divider panel, the bottom panel being hinged to one of the side walls and the divider panel being hinged to the bottom panel on its edge opposite the edge attached to the side wall, and each first flap having a central slit therein extending substantially from its side wall hinge, substantially perpendiculary thereto, to a point spaced apart from the outer edge of the divider panel forming panel segments on both sides of the slit and having a bridge between the segments; and

(c) a pair of foldable, opposed second flaps, each having a bottom panel and a divider panel, the bottom panel being hinged to one of the side walls and the divider panel being hinged to the bottom panel on its edge opposite the edge attached to the side wall, the bottom panel of each second flap in its folded condition covering substantially half of the bottom of the carton, each second flap having a notch therein on its outer edge configured to receive the bridge of the divider panel of one of the first flaps in its folded condition.

4,347,968

STACKABLE CARTON FOR PERISHABLE COMMODITIES

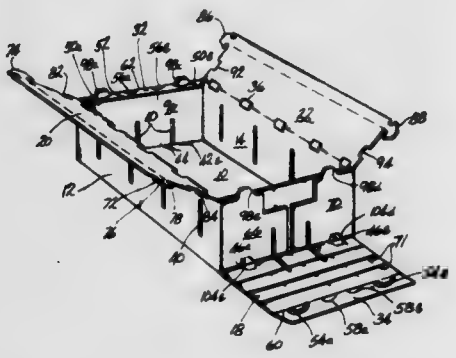
William F. Cornell, Fresno; John P. Vear, Salinas, both of Calif., and E. Anthony Pascuzzi, Arden Hills, Minn., assignors to Champion International Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 89,885, Oct. 31, 1979, abandoned, which is a continuation-in-part of Ser. No. 936,612, Aug. 24, 1978, Pat. No. 4,175,692. This application Feb. 26, 1981, Ser. No. 238,659

The portion of the term of this patent subsequent to Nov. 27, 1996, has been disclaimed.

Int. Cl.³ B65D *13/00, 5/32*

U.S. Cl. 229—33 **12 Claims**



1. A stackable storage and shipping tray including in combination a pair of generally rectangular shaped stacking panels wherein the completed tray includes opposed at least triple-ply adhesively connected end wall assemblies, said tray further including a generally rectangular floor panel, first and second generally rectangular side wall panels extending from fold lines defining opposite edges of said floor panel, respectively, first and second pairs of side wall flaps, each flap in each of said pairs extending from a fold line defining an end of one of said side wall panels, each of said side wall flaps including at least one tab extending upwardly from an upper edge thereof and at least one recess at its lower edge with at least a portion in vertical alignment with said tab, first and second generally rectangular end wall panels extending from opposite end edges of said floor panel, each of said end wall panels having first and second recesses at its lower edge, said floor panel end edges having openings therein, said end wall panel recesses, said floor panel end edge openings and said tabs being in vertical alignment.

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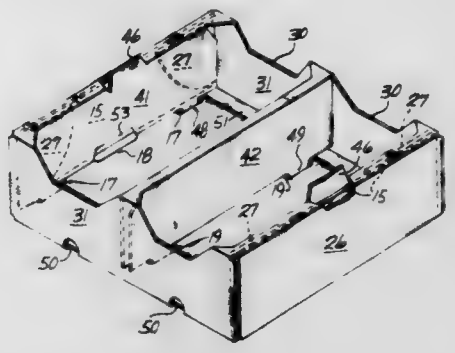
TRAY

William E. Kost, and Norman Schoenberger, Jr., both of Norman, Fla., assignors to Weyerhaeuser Company, Tacoma, Wash.

Filed May 8, 1981, Ser. No. 261,831

Int. Cl.³ B65D *5/06*

U.S. Cl. 229—34 HW **14 Claims**



1. A tray comprising

a base panel,

side walls extending upwardly from said base panel,

an upper panel extending between said side walls and being parallel to said base panel,

interior end walls hingedly connected to the ends of one of said panels,

an exterior end wall connected to the ends of the other of said panels,

the inner face of said exterior end wall being contiguous with the exterior face of said interior end wall,

locking flaps hingedly connected only to the side edges of said exterior end walls, said locking flaps being bent around said interior end walls and being contiguous with the interior face of said interior end walls,

a locking partition hingedly connected to the upper panel at each end of said tray, said locking partitions being adjacent said end walls,

locking tabs on the lower edges of said locking partitions,

locking apertures in said base panel aligned with said locking tabs, said locking tabs fitting into said locking apertures and said locking partition holding said locking flaps against the interior face of said interior end wall.

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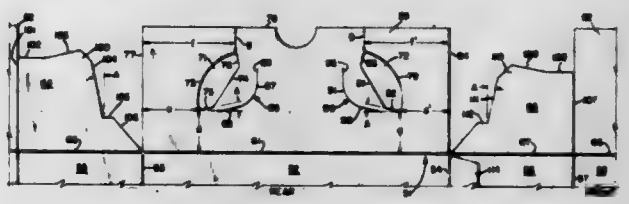
CONTAINER CLOSURE

Robert M. Nardone, Whippany, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Aug. 21, 1980, Ser. No. 180,108

Int. Cl.³ B65D *5/10*

U.S. Cl. 229—39 R **8 Claims**



1. In a carton structure having a plurality of side panels each connected by a fold line to one of a series of end closure flaps, there being a major flap having two oppositely located and oppositely angularly related slots each having side edges and upper and lower end edges, said slots being canted with respect to the fold line of said major flap so that none of the slot edges are parallel to the fold line, each inner slot end edge being straight and inclined at a small acute angle relative to said fold line, and two minor flaps, each having a correspondingly canted tab adapted, when the minor flaps are folded inwardly, to slidably enter the slots in the major flap folded thereover

and smoothly overlie the upper surface of the major flap in the slot area.

4,347,971

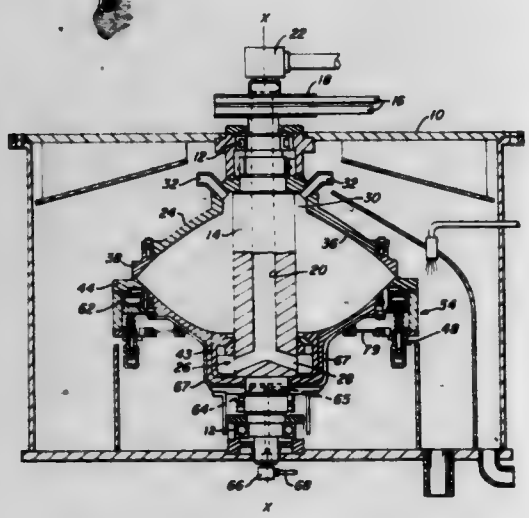
CENTRIFUGE APPARATUS

John Novoselac, Ontario, Canada, assignor to Joy Manufacturing Company, Pittsburgh, Pa.

Division of Ser. No. 959,817, Nov. 9, 1978, abandoned, which is a continuation-in-part of Ser. No. 773,991, Mar. 3, 1977, abandoned. This application Feb. 26, 1981, Ser. No. 238,498

Int. Cl.[3] B04B *11/00*

U.S. Cl. 233—20 R 10 Claims



3. A centrifuge comprising: an elongated upstanding shaft rotatable about the longitudinal central axis thereof and a bowl having upper and lower formed portions secured to axially spaced portions of said shaft, respectively, for conjoint rotation therewith; said bowl forming an interior chamber for centrifugally separating an incoming slurry into a product constituent in a radially, with respect to said axis, outer portion of said bowl and an effluent constituent at a portion of said bowl radially inward of said product constituent; said bowl being associated with means for discharging such constituents therefrom; said shaft having passageway means therein for receiving a slurry and for discharging said slurry to a hollow annulus comprising an axially lower portion of an upwardly extending passageway, formed in a lower section of said lower formed portion, which passageway has an uppermost end in open communication with said interior chamber, a part of said passageway above said lower portion of said passageway being provided with means to impart a rotational velocity to a slurry flowing through said passageway upon rotation of said shaft and bowl.

4,347,972

APPARATUS FOR PRODUCTION OF HOT WATER

Björn Hillerström, Onsala; Lennarth Fransson, and Arne Thuvander, both of Ljungby, all of Sweden, assignors to AB CTC, Ljungby, Sweden

Filed Feb. 12, 1980, Ser. No. 120,911

Claims priority, application Sweden, Feb. 27, 1979, 7901726

Int. Cl.[3] F28F *27/00;* F24D *3/08*

U.S. Cl. 236—18 7 Claims

1. An apparatus for producing hot water, comprising:

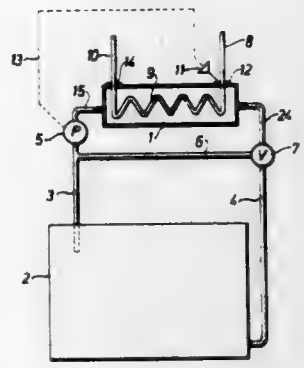
a heat exchanger,

a source of hot water connected to the primary circuit of said heat exchanger for flowing hot water therethrough, and a return line for returning fluid from the primary circuit back to the source of hot water,

pipe means defining a secondary fluid circuit through the heat exchanger such that the fluid in the secondary circuit is in heat exchange relationship with the fluid of the primary circuit, said secondary fluid circuit including means for receiving unheated water and delivering the same as heated water,

a pump in the line between the source and the primary circuit of the heat exchanger,

a shunt passage in parallel with the line which includes the pump and the primary circuit of the heat exchanger, such that fluid downstream from the primary circuit of the heat exchanger can be delivered directly to the pump, bypassing the said source,



and a temperature sensitive device for sensing a drop in temperature of the water in the secondary circuit adjacent to and in heat exchange relationship to the primary circuit, upon commencement of flow through the secondary circuit, to control operation of said pump for causing a flow of water from the said source to the said primary circuit of the heat exchanger and for terminating such flow through the primary circuit upon termination of flow through the secondary circuit.

4,347,973

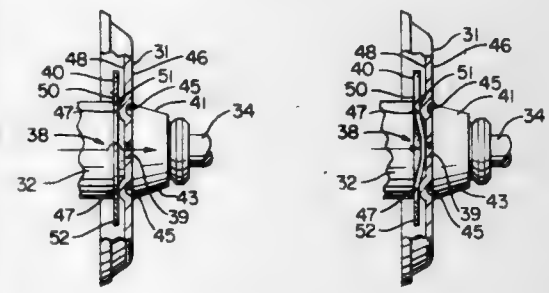
INTERNAL COMBUSTION ENGINE COOLANT SYSTEM, THERMOSTAT THEREFOR AND METHODS OF MAKING THE SAME

Byron L. Jackson, Knoxville, Tenn., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Jan. 21, 1981, Ser. No. 226,800

Int. Cl.[3] F01P *7/02*

U.S. Cl. 236—34.5 40 Claims



1. In an internal combustion engine coolant system having a radiator for receiving coolant into an inlet thereof from an outlet of said engine through a thermostat disposed intermediate said outlet of said engine and said inlet of said radiator and having a coolant pump for circulating said coolant through said engine from an inlet of said engine to said outlet thereof, said pump having a first inlet interconnected to said outlet of said engine upstream of said thermostat and a second inlet interconnected to the outlet of said radiator while having its outlet interconnected to said inlet of said engine, said thermostat having a vent valve means carried by the main valve member thereof for venting air from said outlet of said engine to said inlet of said radiator when said main valve member of said thermostat is in a closed condition against the main valve seat thereof and said system is being filled with coolant that is being introduced into said radiator and for preventing coolant flow through said vent valve means when said pump is circulating said coolant and said main valve member of said thermostat is in a closed condition against said main valve seat, the improvement wherein said vent valve means comprises a vent opening through said main valve member and a flexible vent

valve member for opening and closing said vent opening, said flexible vent valve member normally being held in spaced relation from said vent opening and being adapted to be flexed against said vent opening to close said vent opening by said coolant being circulated by said pump.

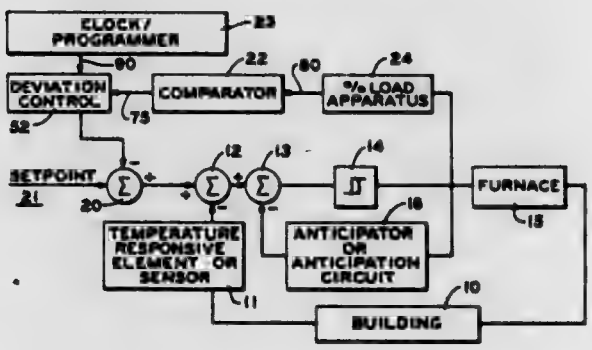
4. In an internal combustion engine coolant system having a radiator for receiving coolant into an inlet thereof from an outlet of said engine through a thermostat disposed intermediate said outlet of said engine and said inlet of said radiator and having a coolant pump for circulating said coolant through said engine from an inlet of said engine to said outlet thereof, said pump having a first inlet interconnected to said outlet of said engine upstream of said thermostat and a second inlet interconnected to the outlet of said radiator while having its outlet interconnected to said inlet of said engine, said thermostat having a vent valve means carried by the main valve member thereof for venting air from said outlet of said engine to said inlet of said radiator when said main valve member of said thermostat is in a closed condition against the main valve seal thereof and said system is being filled with coolant that is being introduced into said radiator and for preventing coolant flow through said vent valve means when said pump is circulating said coolant and said main valve member of said thermostat is in a closed condition against said main valve seat, the improvement wherein said vent valve means comprises a vent opening through said main valve member and a flexible vent valve member for opening and closing said vent opening, said main valve member having a substantially flat surface surrounding said vent opening, said flat surface having abutment means extending outwardly from said flat surface adjacent said vent opening, said flexible vent valve member being adapted to engage said abutment means in one flexed condition thereof to seal around said vent opening at said surface to close said vent opening and to engage said abutment means in another flexed condition thereof that will not seal around said vent opening at said surface so that said vent opening is open.

4,347,974

TEMPERATURE CONTROL SYSTEM WITH NIGHT SETBACK PROGRAMMING AS A FUNCTION OF TEMPERATURE CONDITIONING LOAD

B. Hubert Pinckaers, Edina, and Robert T. Ruminsky, Bloomington, both of Minn., assignors to Honeywell, Inc., Minneapolis, Minn.

Filed Mar. 5, 1981, Ser. No. 240,741
Int. Cl.³ F23N *5/20*; G05D *23/00*
U.S. Cl. 236—46 R **6 Claims**



1. An improvement in a temperature control system for a building in which a temperature responsive control means and time program means is adapted to control temperature conditioning apparatus to maintain a first temperature during a first predetermined time period and a second temperature during a second predetermined time period and after said second time period, said temperature control returns the temperature to said first temperature after a pickup time period, the improvement comprising,

building temperature conditioning load responsive means having an output indicative of the building load, and

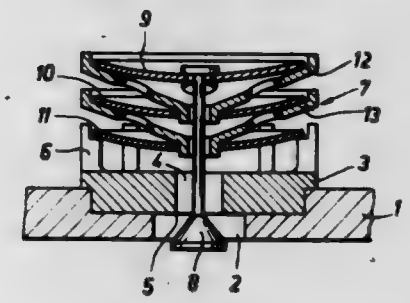
means connecting said output to the temperature responsive means to adjust said temperature responsive control means to maintain said second temperature as a function of building load to maintain a predetermined pickup time period.

4,347,975

BIMETALLIC-CONTROLLED STEAM TRAP

Werner Föller, Stuhr, Fed. Rep. of Germany, assignor to GESTRA-KSB Vertriebsgesellschaft mbH & Co. KG, Bremen, Fed. Rep. of Germany

Filed Nov. 24, 1980, Ser. No. 210,080
Claims priority, application Fed. Rep. of Germany, Dec. 4, 1979, 2948686
Int. Cl.³ F16T *1/04*
U.S. Cl. 236—59 **6 Claims**



1. In a steam trap of the type having a bimetallic control element disposable at the prepressure side, a valve seat, and a locking element which cooperates with the valve seat and which is actuated by the bimetallic control element and is biased in an operating direction with respect to the valve seat by the prepressure, the improvement comprising:

said bimetallic control element including at least two bimetallic spring disks which are serially connected so that when the locking element is open during the slow-speed stroke of the bimetallic spring disks, the stroke movement of said locking element is equal to the sum of the slow-speed strokes of all of said bimetallic spring disks, and said bimetallic spring disks being different from one another with respect to their spring force and temperature, as well as with respect to each other's spring constant, so that each of the bimetallic spring disks closes the locking element by a spring stroke within a separate section of the total operating pressure range of the steam trap, at temperatures in the proximity of a predetermined pressure-temperature curve.

4,347,976

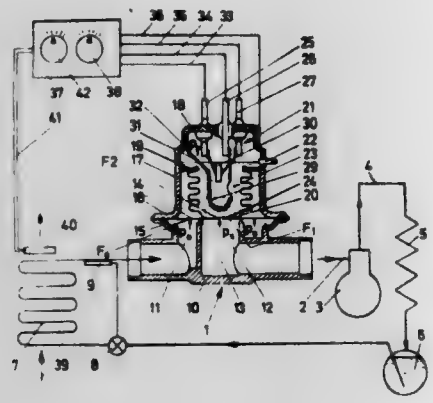
REGULATING CIRCUIT FOR THE VALVE OF A REFRIGERATION PLANT

Jakob S. Jakobsen, Sonderborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Continuation of Ser. No. 956,649, Nov. 1, 1978, abandoned. This application Apr. 17, 1980, Ser. No. 148,152
Claims priority, application Fed. Rep. of Germany, Nov. 3, 1977, 2749240
Int. Cl.³ G05D *15/00*; F16K *31/00*
U.S. Cl. 236—68 B **2 Claims**

1. A valve assembly for a refrigeration plant, comprising, a valve, a reference pressure generator for controlling said valve filled with a liquid vapor medium, a heating resistor in said medium, a first feedback external temperature sensor, a second feedback temperature sensor in said medium, a first bridge circuit including said first temperature sensor and a first operational amplifier, a second bridge circuit including said second temperature sensor and a second operational amplifier, a summating circuit for said bridge circuits including a third amplifier connected to said heating resistor, adjustable resistors at the outputs of said bridge circuits connected to the noninverting input of said third amplifier for varying the relative influ-

ence of either of said first and second sensors on said third amplifier and thereby on the regulation of said valve, capacitor means and feed back resistor means in series between the output and the inverting input of said amplifier, voltage divider means between said output and said capacitor forming a volt-



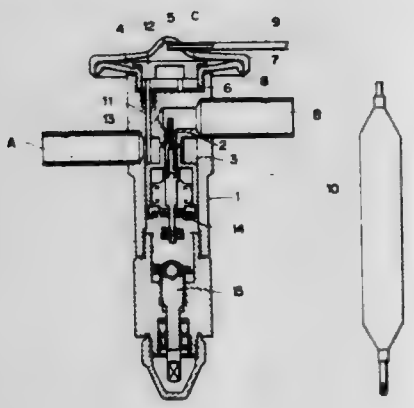
age divider energized by said output for setting a time delay integration constant for said first amplifier, and variable resistance means between the junction of said feedback resistor means and said capacitor means and ground forming a voltage divider energized by the input voltage to the inverting input for setting the proportionality factor for said first amplifier.

4,347,977

TEMPERATURE RESPONSIVE EXPANSION VALVE

Morio Kaneko, Hidaka, Japan, assignor to Kabushiki Kaisha Saginomiya Seisakusho, Tokyo, Japan

Filed Aug. 5, 1981, Ser. No. 290,230
Int. Cl.³ F25B *41/04*
U.S. Cl. 236—92 B **7 Claims**



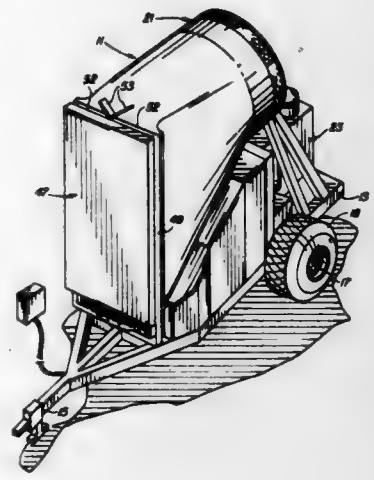
1. A temperature responsive expansion valve comprising
a valve body having a channel therein and inlet and outlet conduits communicatable with each other through said channel;
a first valve member slidable within said valve body on an inlet side of the channel, said first valve member being normally biased to seat on the channel, having a central bore therein, and defining a chamber in communication with said central bore;
means for counteracting said biased first valve member in response to a temperature in the outlet conduits,
a second valve member slidably provided through said central bore and including a larger diameter section normally biased to seat on the channel and a smaller diameter section, substantially extending through the channel, said second valve member having a passageway to provide communication between the outlet conduit and the chamber;
a bellows provided in said chamber and having a free end coupled with the second valve member; and
means for providing communication between said inlet conduit and an open end of said bellows.

4,347,978

AGRICULTURAL SPRAYER

Theodore Lenhardt, Winter Garden, Fla., assignor to Raym Company, Inc., Mascotte, Fla.

Filed Aug. 4, 1980, Ser. No. 174,850
Int. Cl.³ A01N *17/08*
U.S. Cl. 239—78 **8 Claims**



1. An agricultural sprayer comprising:
a chassis;
a source of liquid material to be sprayed carried on said chassis;
an axial flow fan disposed on said chassis to generate a substantially axial flow of air;
a flow divider disposed adjacent said fan;
an intermediate covering section surrounding said flow divider, and adjacent to said fan, said covering section having a substantially rectangular cross section at its distal end and a substantially circular cross section at the end proximate to said fan;
an end wall section disposed a predetermined distance from the distal end of the intermediate covering, said end wall section, flow divider and intermediate covering defining a plenum chamber with a pair of vertically disposed emitter orifices;
a plurality of nozzles disposed at predetermined intervals on said end wall section, said nozzles coupled to the source of liquid material to be sprayed;
a pair of shafts each disposed inside said plenum chamber and adjacent to a corresponding one of the emitter orifices defined by the intermediate covering section and the end wall section;
means coupled to said shafts for rotating said shafts;
a vane system attached to each shaft, each vane system comprising a first plurality of vanes attached at their respective end to the shaft at a predetermined angle; and
a second plurality of vanes each one attached to the shaft a predetermined distance away from and on an opposite side of a respective one of said first plurality of vanes whereby rotation of the shaft will cause the air flow to abruptly change from an upward direction to a horizontal direction and then to a downward direction.

4,347,979

SWIMMING POOL CLEANER

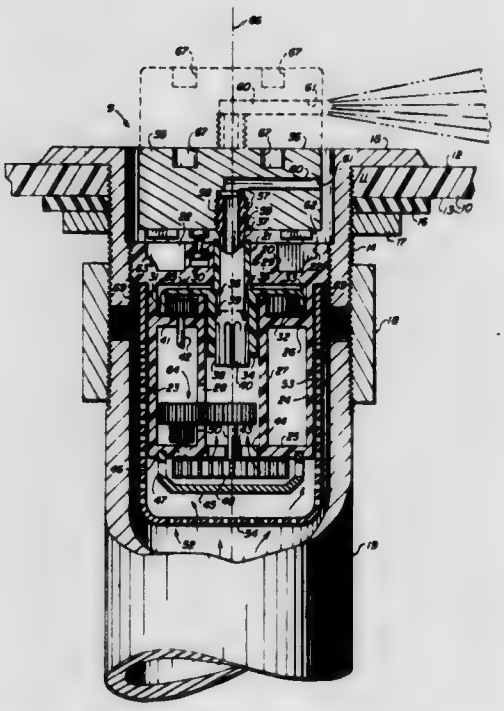
Lester R. Mathews, 9810 N. 37th St., Phoenix, Ariz. 85028

Continuation-in-part of Ser. No. 843,870, Oct. 20, 1977, Pat. No. 4,202,499. This application Feb. 4, 1980, Ser. No. 118,317
Int. Cl.³ B05B *3/06*
U.S. Cl. 239—206 **5 Claims**

3. A pop-up cleaner for a swimming pool defined by walls, each of said walls having a surface, said pool adapted to have water in the pool, said water having a top surface, said cleaner comprising:
a housing having means for mounting said housing in a fitting;
a substantially cylindrical jet block having a top surface and an

axis of symmetry, means for mounting said jet block on said housing for rotation about the jet block's axis of symmetry, for limited linear movement substantially parallel to the axis of symmetry, and for directing a stream of water over the surfaces of adjacent portions of the walls defining a swimming pool; and

recesses formed in the top surface of the jet block adapted to cooperate with a tool for holding the jet block and for applying torque to the jet block, said jet block and housing being provided with cooperating projections and recesses said projections adapted to be inserted into the recesses whereby torque applied to the jet block can be applied to the housing for removably mounting the housing in the fitting, said fitting being located in a wall of said pool below the surface of the water in the pool from a position above the top surface of the water in said pool, said fitting adapted to be connected to a source of water under pressure.



4,347,980

ORNAMENTAL SPRAYING APPARATUS AND A SPRAYER THEREFOR

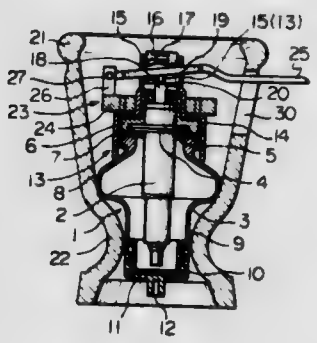
Michinori Seki, Ibaragi, Japan, assignor to Tokushu Aerosol Co. Ltd., Tokyo, Japan

Filed Jul. 30, 1980, Ser. No. 173,558

Claims priority, application Japan, Mar. 25, 1980, 55/038254[U]

Int. Cl.[3] B05B *15/00*

U.S. Cl. 239—289 19 Claims



1. A manually operable spray dispenser comprising a reservoir chamber, a spray dispensing nozzle extending upwardly out of the reservoir chamber, ornament article holding means mounted at the upper end of said chamber, means for ejecting spray through said nozzle from the chamber, a projecting lever pivotally secured to the ornament article holding means for triggering said spray ejecting means and a sealable opening in the reservoir chamber for recharging said chamber.

4,347,981

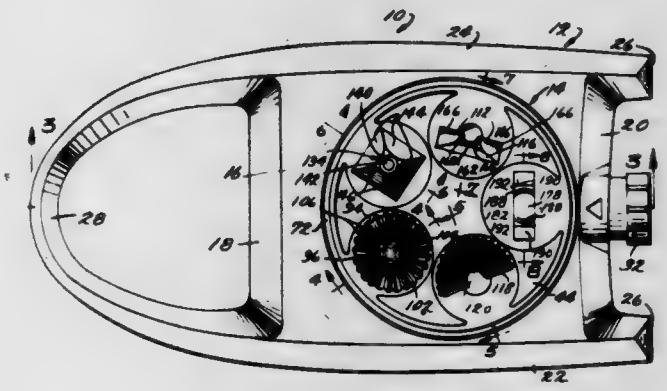
TURRET TYPE SPRINKLER WITH IMPROVED TURRET ASSEMBLY

Jerry R. Hayes, Peoria, Ill., assignor to L. R. Nelson Corporation, Peoria, Ill.

Continuation of Ser. No. 20,925, Mar. 15, 1979, abandoned. This application Oct. 6, 1980, Ser. No. 194,605

Int. Cl.[3] B05B *1/16*

U.S. Cl. 239—394 21 Claims



17. A spray head for distributing water in a strip ground pattern comprising a spray head structure having a generally vertically extending water inlet, interior water engaging surface means for receiving the water from said inlet and directing the same in at least one jet extending horizontally outwardly and slightly upwardly, and an upwardly open pattern defining surface means disposed in a position such that the lower portion of the jet engages the same so as to cause the lower portion of the jet to lose its integrity with the remainder of the jet and to progressively fall out along the ground in a strip pattern as the jet moves outwardly beyond said pattern defining surface means.

4,347,982

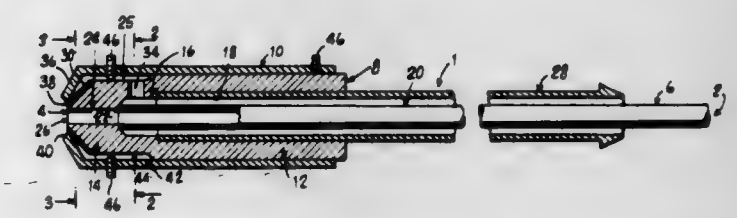
OIL BURNER NOZZLE

Donald G. Wright, Rockville Center, N.Y., assignor to Adelphi Research Center, Inc., Garden City, N.Y.

Filed Jul. 2, 1979, Ser. No. 54,244

Int. Cl.[3] B05B *7/10*

U.S. Cl. 239—405 5 Claims



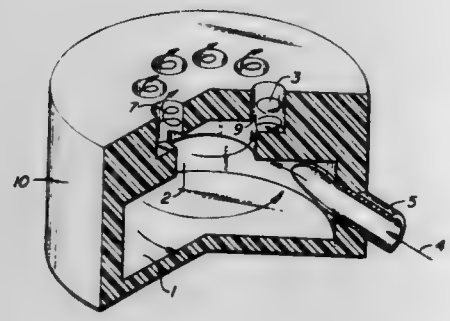
1. A burner nozzle capable of atomizing a liquid fuel containing combustible particulates, comprising a barrel member having an unrestricted inner passage extending to the exterior of said nozzle for conveying said fuel to an outlet located exteriorly of said nozzle, said barrel member having an outer passageway disposed around said inner passage for conveying atomizing vapor towards the forward end portion of said barrel member and outward laterally therefrom, and means including a sleeve member held over said barrel member and forming with said forward portion a converging chamber extending to said outlet to direct said vapor across said outlet for atomizing said fuel exteriorly of said nozzle.

4,347,983

HYPERBOLIC FREQUENCY MODULATION RELATED TO AERO/HYDRODYNAMIC FLOW SYSTEMS

Conrad A. Bodai, Davis, Calif., assignor to Sontek Industries, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 4,818, Jan. 19, 1979, Pat. No. 4,253,508. This application Jan. 9, 1980, Ser. No. 110,670
The portion of the term of this patent subsequent to Feb. 23, 1999, has been disclaimed.
Int. Cl.[3] B05B *1/34, 17/06*
U.S. Cl. 239—466 28 Claims



1. A frequency modulator comprising:

(a) a swirl chamber having a substantially circular cross-section and further having means for the feeding of a fluid to the interior of the swirl chamber to impart a rotational motion to the fluid;

(b) a compression chamber also having a substantially circular cross-section disposed downstream of the swirl chamber and in substantially coaxial alignment therewith wherein said compression chamber has a cross-section which is equal to or smaller than the cross-section of said swirl chamber; and

(c) at least two modulator cavities also having substantially circular cross-sections which are in fluid communication with and disposed downstream of said compression chamber and which communicate with the compression chamber by ports tangential to the modulator cavities.

4,347,984

ELECTROSTATIC SPRAY COATING APPARATUS

James E. Sickles, Glenshaw, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 634,386, Nov. 24, 1975, abandoned, which is a continuation-in-part of Ser. No. 456,944, Apr. 1, 1974, abandoned. This application Jul. 12, 1977, Ser. No. 814,953
Int. Cl.[3] B05B *5/00*
U.S. Cl. 239—707 25 Claims

1. An inductive charging electrostatic spray coating apparatus comprising:

an electrically non-conductive spray nozzle including both air and liquid discharge ports arranged in produce air-atomized liquid spray particles;

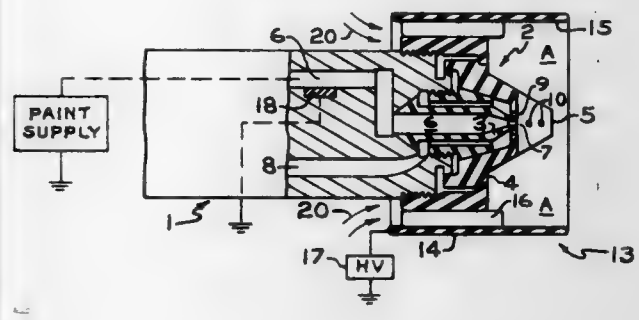
a substantially cylindrical tube of dielectric material;

means securing said tube exteriorly of said discharge ports and substantially coaxial with the axis of flow of spray particles discharged from said discharge ports;

a charging zone formed between said tube and said spray nozzle discharge ports;

means forming an electrically conductive layer on the interior surface of said tube, at least a portion of said conductive layer passing through a plane perpendicular to the axis of flow of spray particles, said plane passing through at least one of said discharge ports; and

means applying an electrical potential between the liquid discharged from said liquid discharge port and said electrically conductive layer to create within said charging zone an electrostatic field having an average potential gradient sufficient to produce induction charging on air-atomized liquid particles as said particles are from said spray nozzle into said charging zone, but insufficient to produce corona effects.

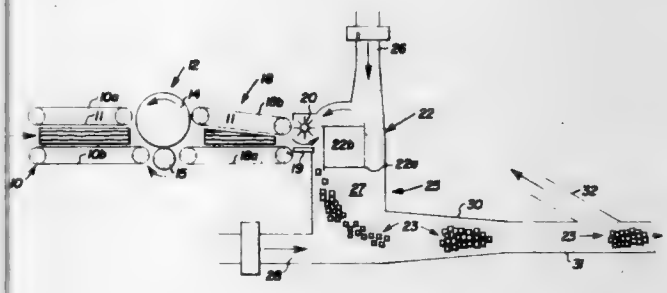


4,347,985

MANUFACTURE OF GLASS FIBRE BLOWING WOOL

Robert B. Simpson, Sarnia Township, Lambton County, Canada, assignor to Fiberglas Canada Inc., Toronto, Canada

Filed Oct. 11, 1979, Ser. No. 83,968
Claims priority, application Canada, Aug. 3, 1979, 333125
Int. Cl.[3] B02C *19/12*
U.S. Cl. 241—1 10 Claims



1. A method of producing blowing wool from bonded, laminated, glass fibre material, comprising the steps of:

cutting the glass fibre material into a plurality of strips;

cutting said strips across the lengths thereof to form individual substantially rectangular shaped cut pieces of said glass fibre material;

delaminating said individual cut pieces into smaller pieces having the shape of rectangular parallelepipeds by subjecting said cut pieces to an air stream; and

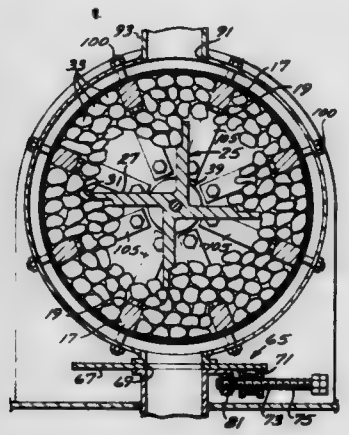
subsequently controlling the velocity of said air stream and the movement of the pieces treated thereby to avoid excessive delamination of said smaller pieces.

4,347,986

SELF-ATTRITIONING PULVERIZER

Lawrence D. Haddon, 350 East Ave., R 4, Palmdale, Calif. 93550

Filed Jan. 2, 1980, Ser. No. 109,050
Int. Cl.[3] B02C *19/00*
U.S. Cl. 241—74 11 Claims



1. A self-attritioning pulverizer for reducing chunk material to a powder and comprising:

a cylindrical shell including a peripheral wall and front and back end walls, said front wall being formed with a feed opening and said peripheral wall being formed with a outlet opening;

cylindrical screen means received in telescopical relationship in said shell and open on at least the end facing said feed opening, said screen means cooperating with said shell to form an annular screened particle collection chamber in communication with said outlet;

an axially disposed impeller received coaxially in said screen means and rotatably mounted from said back wall of said shell, said impeller including an axial shaft and a plurality of radially outwardly projecting blades terminating in radial outer ends;

an array of axial baffles spaced in a cylindrical pattern about said screen means and projecting radially inwardly therefrom to terminate in blunt edges, spaced radially outwardly of said radial outer ends of said blades, said baffles cooperating together to define therebetween an annular holding zone, and said blunt edges cooperating together to form a substantially cylindrically shaped outline defining an attrition interface for projection radially inwardly therepast of such chunks to cause any chunks held in said holding zone with the respective radially innermost surfaces thereof projecting radially inwardly past said attrition interface to be rubbed by confronting surfaces of the chunks circulated about by said impeller to thus reduce the held chunks and circulated chunks; and

drive means coupled with said impeller for rotation thereof whereby said chunks of material to be reduced may be fed progressively into said cylindrical screen means through said feed opening and said drive means actuated to rotate said impeller to cause said chunks to be orbited about by said impeller to be progressively thrown centrifugally outwardly into said holding zone to be retained by said baffles against orbiting and as said chunks build up in said holding zone the radially innermost surfaces of the chunks disposed radially inwardly in said zone will be held projecting radially inwardly past said interface and as further chunks are fed into said feed inlet, said further chunks will be orbited about a circular path defined by said radially innermost surfaces of the chunks retained by said baffles in said holding zone to thus wear the orbiting chunks against the retained chunks thus reducing said chunks against one another and causing the reduced particles to move radially outwardly between said retained chunks and through said screen means to be received in said collection chamber for removal through said outlet.

4,347,987

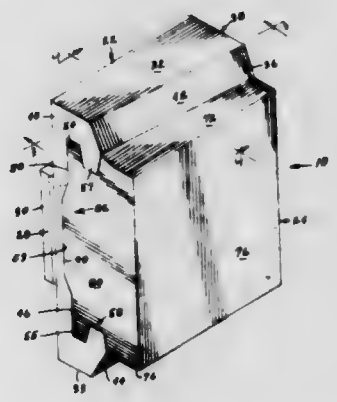
Patent Not Issued For This Number

4,347,988

ANVIL ASSEMBLY FOR VERTICAL SHAFT CENTRIFUGAL IMPACT CRUSHING MACHINE

Kenneth D. Warren, and Gregory G. Tenold, both of Spokane, Wash., assignors to Spokane Crusher Mfg. Co., Spokane, Wash.

Filed Jun. 18, 1980, Ser. No. 160,811
Int. Cl.[3] B02C *19/06*
U.S. Cl. 241—300 6 Claims



1. An anvil assembly for mounting to a stationary bracket to position the anvil assembly in the path of material thrown from a rotating horizontal turntable of a vertical shaft centrifugal impact crushing machine to cause the material to disintegrate as the material impacts against the anvil assembly; comprising:

a wedge-shaped supporting base member having a bottom face, a top face, a back face, an inclined front face, an upstream side face and a downstream side face;

said front face being at an inclined acute angle with respect to the back face tapering inward from the upstream side face to the downstream side face;

said back face of the base member having bracket mounting means projecting therefrom adapted to secure the anvil assembly to the stationary bracket;

said front face of the base member having a horizontal female dovetail channel formed therein extending at the acute angle with respect to back face and parallel with the front face with an entrance opening in the upstream side face;

said base member having abutment surface formed adjacent the upstream face;

a wedge-shaped wear resistant member having a bottom face, a top face, a back face, a front face, an upstream side face and a downstream side face;

said back face being at an inclined acute angle with respect to the front face tapering inward from the downstream side face to the upstream side face;

said back face of the wear resistant member having a horizontal male dovetail projection formed thereon complementary to the female dovetail groove for enabling the male dovetail projection to slide into the female dovetail groove through the entrance opening to enable the wear resistant member to overface the base member with the front face of the wear resistant member facing the turntable to receive the material; and

said wear resistant member having a shoulder surface for engaging the abutment surface of the base member to limit the sliding movement of the wear resistant member with respect to the base member and to align the wear resistant member centrally on the base member.

4,347,989

SPINNING MACHINE FOR SYNTHETIC THREADS

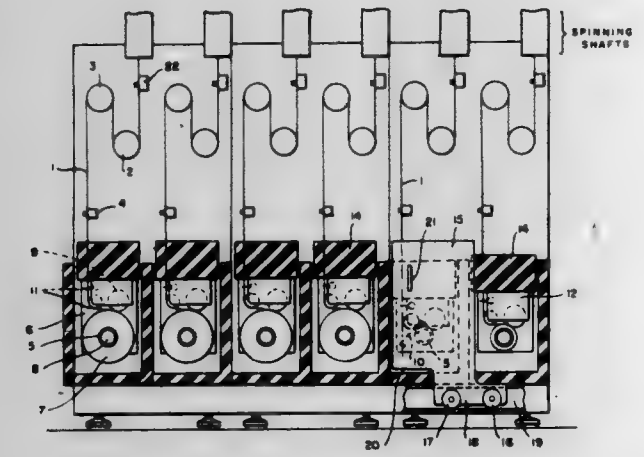
Werner Pieper, Radevormwald, and Reinhard Worpenberg, Remscheid, both of Fed. Rep. of Germany, assignors to Barmag Barmer Maschinenfabrik AG, Remscheid-Lennep, Fed. Rep. of Germany

Filed Jan. 23, 1981, Ser. No. 227,912

Claims priority, application Fed. Rep. of Germany, Jan. 26, 1980, 3002849

Int. Cl.[3] B65H *54/20*

U.S. Cl. 242—35.5 R 8 Claims



1. In a spinning machine for synthetic fibers, including a plurality of spinning units and their associated winding units arranged side by side adjacent one another over the length of the machine, each winding unit adapted to receive thread for winding from a thread feed plane located at one side of each unit, and further including soundproofing means partly enclosing each winding unit, while leaving the front face of each winding unit exposed for access to the individual winding elements, the improvement which comprises:

a soundproofing screen having a size sufficient to extend across the exposed front face of at least one winding unit;

means to move said screen along the front of the machine; and

thread insertion means in said screen including an open-ended thread insertion slot extending longitudinally of the machine from the leading side edge of the screen which is located on the same side of each winding unit at its thread feed plane.

4,347,990

METHOD AND APPARATUS FOR STOPPING PACKAGES IN AUTOMATIC WINDER

Kenji Ohashi, Uji, Japan, assignor to Murata Kikai Kabushiki Kaisha, Japan

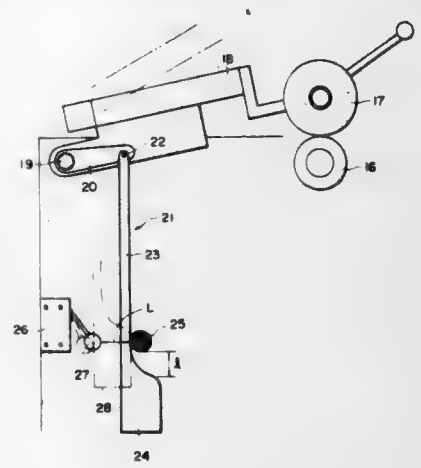
Filed Jul. 18, 1980, Ser. No. 170,069

Claims priority, application Japan, Jul. 19, 1979, 54-92351

Int. Cl.[3] B65H *63/02*

U.S. Cl. 242—36 9 Claims

1. A method for stopping a winding package driven under contact with the surface of a driven drum in an automatic winder comprising the steps of stopping the drum, sensing whether the diameter of the winding package is at or above a predetermined diameter and separately stopping the winding



package when it is sensed that the diameter of the winding package is at or greater than the predetermined diameter.

4,347,991

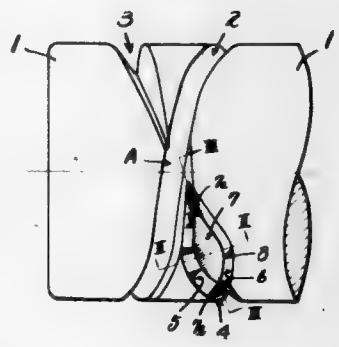
GROOVED TRAVERSE DRUM FOR USE IN DRUM WINDER

Masao Mino, and Takeshi Ohno, both of Yao, Japan, assignors to Kabushiki Kaisha Mino Seisakusho, Yao, Japan

Filed Jul. 6, 1978, Ser. No. 922,494

Int. Cl.[3] B65H *54/28, 54/48*

U.S. Cl. 242—43.2 4 Claims



1. A grooved traverse drum for use in a drum winder, said drum including a spiral yarn guide groove formed in the peripheral surface thereof, said spiral groove having a deep portion and a shallow portion crossing said deep portion, said shallow portion being interrupted where it crosses said deep portion defining an interrupted portion, said yarn guide groove having two sides, one of which guides said yarn in said groove, wherein said shallow portion of said yarn guide groove includes a widened portion extending from the interrupted portion thereof in the longitudinal direction of said yarn guide groove for a distance greater than the width of the widened portion, said widened portion being formed in the side of said yarn guide groove which is opposite said one side, said widened portion being formed contiguously with the remaining portion of said yarn guide groove, thereby minimizing the change of direction of a piece of yarn which passes through said widened portion, said widened portion including a recess formed in the bottom thereof wherein the yarn in the bottom of said widened portion bridges across said recess.

4,347,992

WEBBING TAKE-UP DEVICE

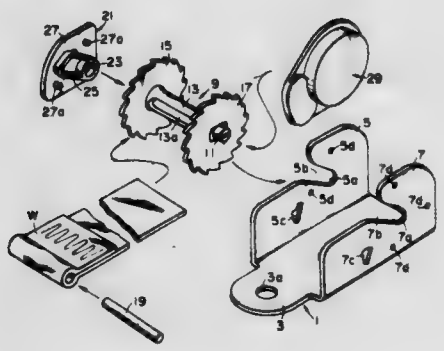
Hironobu Imai, Fujisawa, Japan, assignor to NSK-Warner K.K., Tokyo, Japan

Filed Aug. 6, 1980, Ser. No. 175,916

Claims priority, application Japan, Aug. 10, 1979, 54-109452[U]

Int. Cl.³ B65H *75/18*

U.S. Cl. 242—68.4 10 Claims



1. A webbing take-up device having a base member with opposed side plate portions, a reel assembly carried between the side plate portions and mounting means for mounting opposite ends of the reel assembly in the respective side plate portions, wherein the mounting means for at least one end of the reel assembly comprises a cut-away formed in the respective side plate portion from the outer periphery thereof, and a bushing member fitting in the cut-away, the bushing member including an annular portion in the form of an uninterrupted circular ring receiving said one end of the reel assembly, first and second rib portions extending from the annular portion, the rib portions fitting between edges of the side plate portion defining the cut-away, and a web portion between the rib portions connecting the rib portions to the annular portion, the mounting means including means for fixing the bushing member lengthwise in the cut-away and means for preventing lateral removal of the bushing member from the cut-away, the cut-away having a closed end and extending from the closed end to the outer periphery of the side plate portion in a direction generally opposite the direction of webbing draw-out.

4,347,993

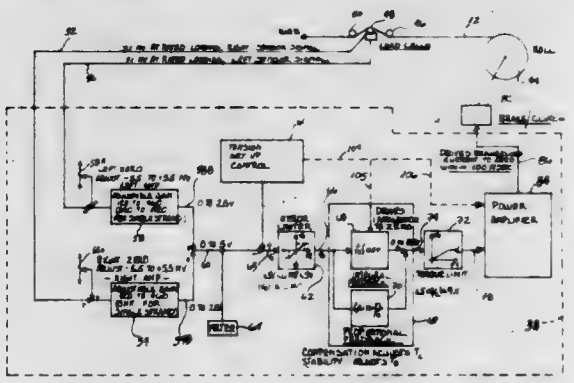
TENSION MONITOR MEANS AND SYSTEM

Michael R. Leonard, Manchester, Mo., assignor to W. J. Industries, Incorporated, Fenton, Mo.

Filed Nov. 6, 1979, Ser. No. 91,738

Int. Cl.³ B65H *23/04*

U.S. Cl. 242—75.51 56 Claims



1. A tension control device for a web handling system including a roller over which a web of material passes, comprising means associated with the roller including transducer means for detecting the tension of the web passing over the roller and for producing tension monitor responses that very therewith, means operatively connected to the web to move the web over the roller, controllable force applying means for applying tensional forces to the web, said controllable force applying means including inductive means, and controller means to control the tension on the web, said controller means including means for establishing a desired web tension and for producing a signal representative thereof, comparison means responsive to said tension monitor responses and to the signal representative of the desired web tension for controlling the amount of tensional force applied to the web, said comparison means including means for receiving said tension monitor responses and the signal representative of the desired web tension and for producing responses representing the differences between the tension detected and the desired web tension, error limiter means responsive to said difference responses to produce error limiter responses, said error limiter means having an input connected to receive said difference responses and an output at which said error limiter responses are produced, said error limiter means passing positive difference responses less than or equal to a predetermined positive value and limiting the magnitude of the difference responses greater than the predetermined positive value, means operatively connected to said output of said error limiter means to integrate said error limiter responses and to produce integrated error limiter outputs, and signal conditioning means connected to operatively apply such integrated error limiter outputs to the force applying means to control the amount of tensional force applied to the web by the force applying means, said signal conditioning means including amplifier means having a control input operatively connected to receive said integrated error limiter outputs and an output operatively connected to said inductive means, energy dissipation means, and means connecting said energy dissipation means to the inductive means to permit excess energy associated with the inductive means to be rapidly dissipated when power from such amplifier means to said inductive means is interrupted.

4,347,994

MAGNETIC TAPE DRIVE ARRANGEMENT

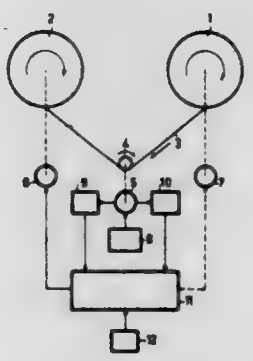
Jacob de Boer, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 29, 1980, Ser. No. 202,035

Claims priority, application Netherlands, Nov. 26, 1979, 7908559

Int. Cl.³ G03B *1/04*; G11B *15/32*

U.S. Cl. 242—203 5 Claims



1. A magnetic tape drive arrangement without pressure roller, which arrangement comprises:

a capstan,

a capstan drive motor,

a magnetic tape transport device for feeding and taking up a magnetic tape under tension along the capstan by means of at least one winding motor,

an energizing circuit, connected to the capstan motor, for driving the magnetic tape with the desired speed by means of the capstan,

a control signal generator for controlling at least said winding motor in such a way that the magnetic tape can be driven by the capstan without slipping past the capstan, and

a motor current detector, which is connected to the control signal generator, for detecting the current consumed by the capstan drive motor and for supplying a signal, which is proportional to said motor current, to the control signal generator, characterized by

a reference source, which is connected to the control signal generator, for supplying a reference signal which is proportional to the no-load current of the capstan drive motor, which reference signal is deducted from the signal supplied by the motor current detector, and

an acceleration detector, which is connected to the control signal generator, for detecting the acceleration of the capstan and supplying an acceleration signal, which is proportional to said acceleration and which is deducted from the signal supplied by the motor current detector.

4,347,995

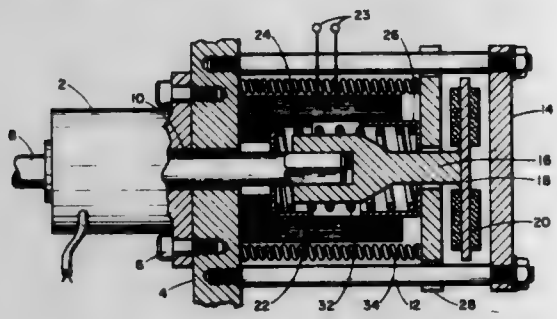
BI-DIRECTIONAL TAPE REEL BRAKE

Walter J. Mahnken, Littleton, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 22, 1980, Ser. No. 218,954

Int. Cl.³ G03B *1/04*; G11B *15/32*

U.S. Cl. 242—204 **10 Claims**



1. A tape reel brake comprising:

a tape reel motor means having a motor shaft,

a brake pad means connected to said motor shaft,

a brake plate means,

a first spring means for urging said brake plate means against said brake pad means,

a second spring means for urging said brake plate means against said brake pad means to supplement said first spring means to produce a net braking effect by said brake pad means and

means for altering the spring pressure exerted by said second spring means from a first spring pressure to a second spring pressure to produce a first and a second net braking effect by said brake pad means, respectively.

4,347,996

SPIN-STABILIZED PROJECTILE AND GUIDANCE SYSTEM THEREFOR

Vincent A. Grosso, Hopkinton, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed May 22, 1980, Ser. No. 152,284

Int. Cl.³ F41G *7/26*

U.S. Cl. 244—3.16 **5 Claims**

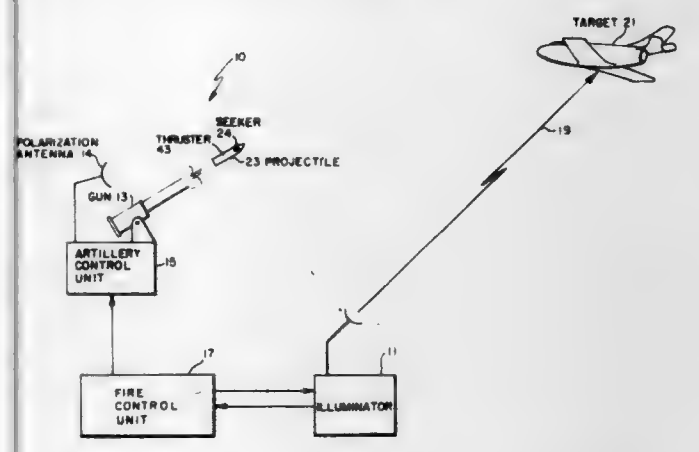
1. A guidance system for a spinning projectile, such projectile being in flight toward a target in motion, such system comprising:

(a) ground-based means for illuminating the spinning projectile with a linearly polarized radio frequency signal;

(b) radio frequency signal receiving means including a linearly polarized antenna affixed to, and rotating with, the spinning projectile for establishing a roll reference when the linearly polarized antenna is aligned with the linearly polarized radio frequency signal;

(c) a seeker for continuously measuring the line-of-sight angle between the centerline of the spinning projectile and the line-of-sight to the target, such seeker having its boresight aligned with such centerline;

(d) signal processing means, responsive to the outputs of the radio frequency signal receiving means and the seeker, for determining, in a first plane defined by the velocity vector of the spinning projectile and a line from the center of gravity of such projectile to the target and in a second plane orthogonal to the first plane, the rates of change of the line-of-sight between such projectile and target; and



(e) course correction means carried on the spinning projectile to maintain the vector sum of the rates of change of the line-of-sight in the first and the second plane below a preset value during intercept.

4,347,997

HELICOPTERS

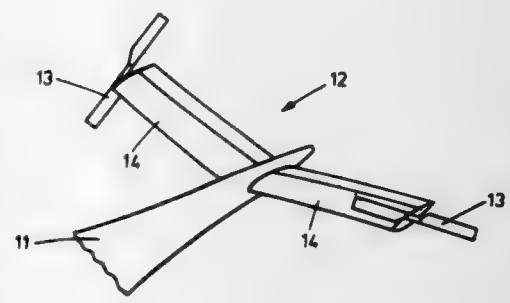
Geoffrey M. Byham, Yeovil, and Ronald V. Smith, Sherborne, both of England, assignors to Westland Aircraft Limited, Yeovil, England

Filed Mar. 24, 1980, Ser. No. 133,095

Claims priority, application United Kingdom, Mar. 23, 1979, 7910385

Int. Cl.³ B64C *27/82*

U.S. Cl. 244—17.19 **10 Claims**



1. An improved helicopter having increased deceleration comprising:

a main sustaining rotor system;

a pair of auxiliary rotors drivingly coupled to the sustaining rotor system and having adjustable pitch settings, said auxiliary rotors arranged to produce thrusts for control purposes; and

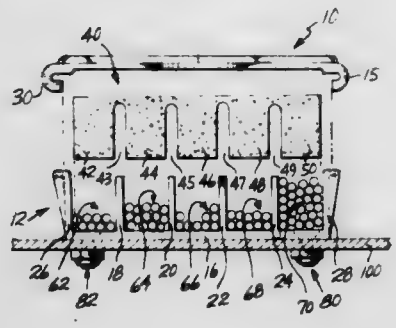
a control means for adjusting the pitch settings of said auxiliary rotors to provide additive control thrust forces when driving torque is applied to said sustaining rotor system and to provide opposed thrust forces for absorbing power from said sustaining rotor system during deceleration of the helicopter thereby increasing the deceleration effect on the helicopter.

4,347,998

MULTIPLE WIRE BUNDLE SUPPORT ASSEMBLY

Thomas J. Loree, Renton, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Apr. 15, 1981, Ser. No. 254,798
Int. Cl.³ F16L 3/22; H02G 3/02
U.S. Cl. 248—68 R 2 Claims



1. An assembly for mounting a plurality of wire bundles on a structure comprising in combination:

a cover member including a pair of inturned lip portions at respective ends of said cover member;

a multichanneled base member for receiving a corresponding plurality of wire bundles in respective channels of said base member;

a resilient insert comprising a plurality of foam cushions adapted for insertion respectively in said plurality of channels to retain said wire bundles; and,

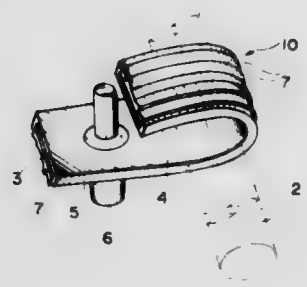
said multichanneled base member having first and second end wall portions, each of said end wall portions having a pair of recesses adapted to receive corresponding pairs of said inturned lip portions.

4,347,999

HOLDER FOR A WIRE MEMBER

Toshio Sato, Yokohama, and Yasuyuki Ogawa, Yokosuka, both of Japan, assignors to Nissan Motor Company, Limited and Kato Hatsujo Kaisha Limited, both of Yokohama, Japan

Filed Feb. 22, 1980, Ser. No. 123,689
Claims priority, application Japan, Feb. 26, 1979, 54/22882[U]
Int. Cl.³ F16L 3/12
U.S. Cl. 248—73 9 Claims



1. A holder for firmly holding a wire member comprising:

a clip including a head and a leg extending from said head; and

a long and thin holding member coated with a coating material on substantially the entire area of the front side, the back side, and both edges thereof, said holding member having a through hole in one end portion thereof through which said clip leg is inserted, said holding member being bendable for holding the wire member,

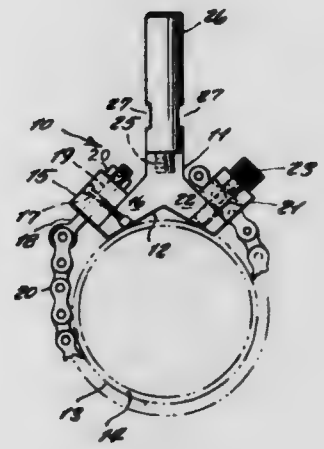
said coated material on said holding member back side having an irregular exterior surface, said irregular surface having a jagged saw-tooth profile running across the width of said holding member, and having parallel saw-tooth peaks and parallel saw-tooth valleys running along the length of said holding member.

4,348,000

DIAL INDICATOR HOLDER

Paul J. Hanner, 510 Heckman Ave., Nazareth, Pa. 18064

Filed Dec. 11, 1979, Ser. No. 102,855
Int. Cl.³ G01B 3/30
U.S. Cl. 248—231 1 Claim



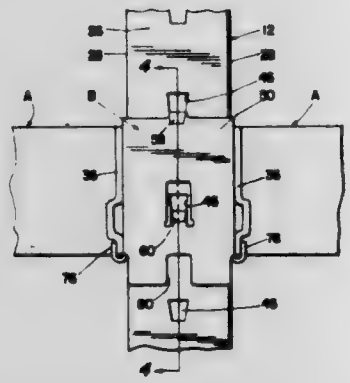
1. A chain compression "V" block dial indicator holder comprising, in combination, a "V" block having a first and a second leg, a pair of anchor of anchor blocks attached to said "V" block at said legs thereof, one of said anchor blocks having a pair of holes and a pair of screws for insertion in said pair of holes, and said first leg having a pair of threaded holes for receiving said pair of screws of said one anchor block to thereby attach said one anchor block to said "V" block, said one anchor block also having a longitudinal opening formed therethrough perpendicular to the direction of each of said pair of holes; the other of said pair of anchor blocks having a pair of holes and a pair of screws for insertion into said pair of holes of said other anchor block, said second leg having a pair of threaded holes for receiving therein said pair of screws of said other anchor block, to thereby attach said other anchor block to said "V" block, said other anchor block also having a transverse threaded opening parallel with each of said pair of openings of said other anchor block, and a knurled screw for insertion into said transverse threaded opening, said second leg having a passageway in alignment with said transverse threaded opening of said other anchor block, said passageway passing entirely through said second leg adjacent said other anchor block for receiving therethrough a portion of said knurled screw; a roller chain having a first end for attachment to said one anchor block; an eye bolt having its eye portion thereof affixed to said first end of said roller chain and a second end inserted through said longitudinal opening of said one anchor block, and a nut for tightening said eye bolt to said one anchor block; said chain having a second end remote from said first end and defining therebetween a series of openings between the links of said chain, said knurled screw passing through one of said series of openings of said chain adjacent the second end thereof for holding said chain fast to said other anchor block; said "V" block further comprising an upwardly extending stem removably attached thereto, said stem having a pair of oppositely disposed flat recessed portions for easy gripping by a tool, said stem being used for supporting thereon a dial indicator; and said other anchor block having a notch extending therethrough in a direction parallel with said second leg of said "V" block and perpendicular to said pair of holes of said other anchor block, whereby alignment of a shaft to another shaft may be accurately obtained.

4,348,001

SHELF SUPPORT BRACKET

Mark H. Baldwin, Cincinnati, Ohio, assignor to NesTier Corporation, Cincinnati, Ohio

Filed Sep. 22, 1980, Ser. No. 189,197
Int. Cl.[3] A47G *29/02*
U.S. Cl. 248—243 10 Claims



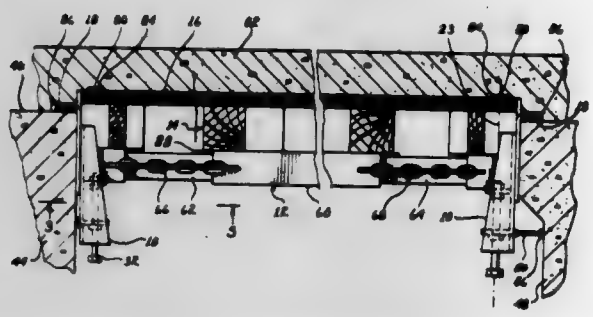
1. A shelf hanger bracket comprising: a substantially flat rectangular plate having plate top and plate bottom edges and opposite side edges, a first mounting hook bent from said plate top edge and extending back toward said plate bottom edge, said first mounting hook being located substantially centrally between said side edges, a second mounting hook bent from said plate intermediate said plate top and said plate bottom edges in the same direction as said first mounting hook and being located substantially centrally between said side edges, flanges bent from said side edges, extending out from said plate in the same direction as said first and said second mounting hooks and further extending substantially perpendicular to said plate, said flanges having shelf support hooks adjacent said plate bottom edge, said shelf support hooks having saddles facing upwardly toward said plate top edge and having saddle axes extending substantially perpendicular to said plate.

4,348,002

HANGER FOR CONCRETE DECK FORMING APPARATUS

Everett A. Eyden, P.O. Box 1873, Sedona, Ariz. 86336

Division of Ser. No. 133,904, Mar. 25, 1980. This application May 18, 1981, Ser. No. 265,036
Int. Cl.[3] F04G *11/00*
U.S. Cl. 249—19 4 Claims



1. A hanger for use with removable deck forming apparatus to suspend temporarily ledgers intermediate support elements defining the span of the deck to be formed, said hanger comprising in combination:

(a) a channel chase having a base and opposed sides;

(b) a threadedly apertured load transfer plate secured to said channel chase;

(c) a threaded rod in threaded engagement with the aperture of said load transfer plate, said rod being located in general alignment with the longitudinal axis of said channel chase;

(d) an apertured ledger support plate penetrably mounted upon said rod for supporting an end of a ledger;

(e) means for translating said ledger support plate longitudinally within said channel chase upon rotation of said rod;

(f) means for suspending said hanger from the support element; and

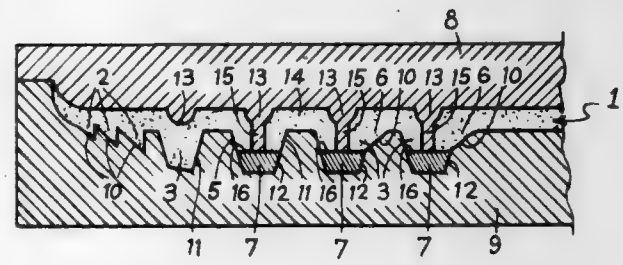
(g) means for rotating said rod from either the top or bottom of said rod to raise and lower said ledger support plate and the supported end of the ledger whereby the grade elevation of the deck to be formed between the support elements may be adjusted.

4,348,003

MOLD FOR THE PRODUCTION OF SPIKED SOLES FOR SPORT SHOES

Charles Beneteau, Pouzauges, France, assignor to Patrick S.A., France

Filed Apr. 13, 1981, Ser. No. 253,882
Claims priority, application France, Apr. 28, 1980, 80 09538
Int. Cl.[3] B29C *1/14;* B29D *3/00*
U.S. Cl. 249—96 3 Claims



1. A mold for forming a spiked sole for a sport shoe wherein the spikes are formed from a hard, stress-resistant plastic material that is chemically bonded or fused to a supple sole, comprising:

(a) a first mold portion defining a cavity for forming the sole, the mold also defining a plurality of recesses in the cavity, into which recesses the spikes are placed, the recesses having the same cross-sectional shape as the spikes such that the spikes sealingly contact the recesses about their peripheral surfaces to prevent molding material passing therebetween; and

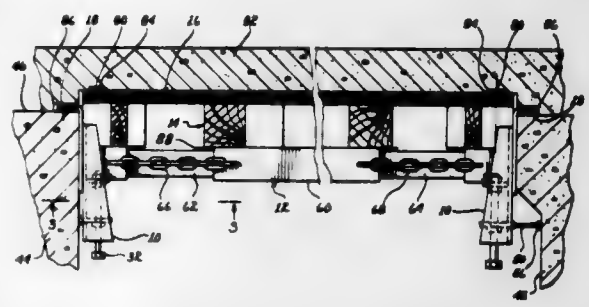
(b) a second mold portion fitting over the first mold portion, the second mold portion having a plurality of bosses projecting into the cavity above the recesses and a plurality of push rods extending from said bosses into the recesses to hold the spikes in position when the mold is assembled.

4,348,004

LEDGER FOR CONCRETE DECK FORMING APPARATUS

Everett A. Eyden, P.O. Box 1873, Sedona, Ariz. 86336

Division of Ser. No. 133,904, Mar. 25, 1980. This application May 18, 1981, Ser. No. 264,352
Int. Cl.[3] H01J *40/14*
U.S. Cl. 249—210 6 Claims



1. A ledger for use with deck forming apparatus to support deck joists and decking intermediate opposed hanger pairs suspended from support members defining the span of the deck to be formed, said ledger comprising in combination:

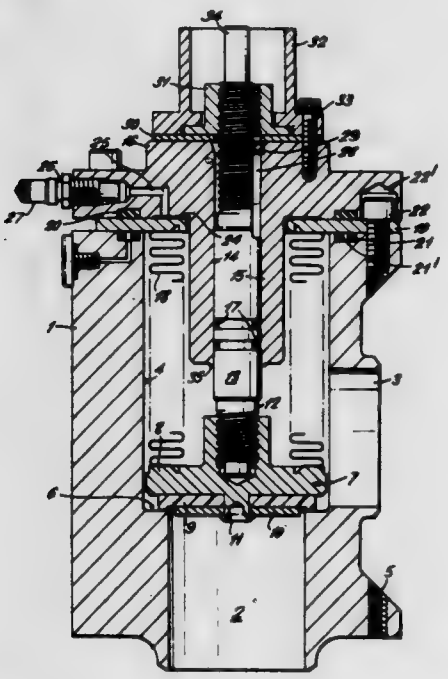
(a) telescoping members extendable and contractable to a length commensurate with the span between the support members;
(b) means for limiting the extension of said members relative to one another to ensure overlap therebetween; and
(c) means disposed at each end of said ledger for engaging one of the hangers.

4,348,005

VALVES FOR FLUIDS

Alan Eaton, Lymm; William T. Mitchell, Thirsk, and Alec Sunderland, Weymouth, all of England, assignors to British Nuclear Fuels Limited, Cheshire, England

Filed Sep. 28, 1972, Ser. No. 293,663
Claims priority, application United Kingdom, Oct. 1, 1971, 45902/71
Int. Cl.[3] F16C *31/44*
U.S. Cl. 251—268 2 Claims



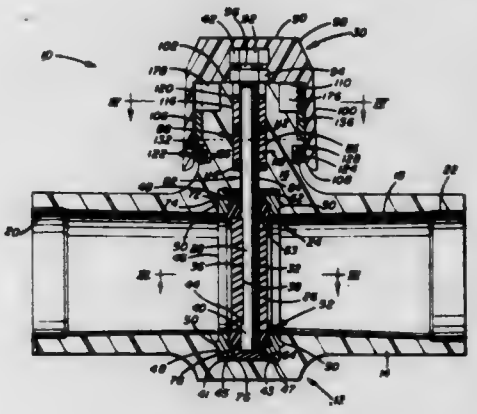
1. A valve for vacuum applications and of the kind which is provided with a bellows for sealing between a longitudinally movable valve closure member and a stationary body of the valve which carries a seat upon which the valve closure member is engaged to close the valve, characterised in that the valve also includes
a bellows mounting member to which one end of the valve bellows is sealed, the other end of the bellows being sealed to the valve closure member;
two separate portions of the valve body between which said bellows mounting member is interposed;
first sealing means between said bellows mounting member and said valve body portions, said first sealing means comprising two 'O' ring seals with an interspace between the seals for leak testing, such seals lying between said bellows mounting member and one of said valve body portions and constituting a back-up for helping to retain leak tightness of the valve, and said first sealing means further comprising a ring seal lying beween said bellows mounting member and the other of said valve body portions, with an interspace provided between the bellows and said ring seal for leak testing, said ring seal constituting a back-up for helping to retain leak tightness of the valve in the event the bellows should fail;
a valve operating member secured to the valve closure member and capable of longitudinal movement in a bore in one of the valve body portions;
second sealing means effective between said valve operating member and said bore, said second sealing means comprising a pair of 'O' ring seals mounted in grooves in said valve operating member for contacting said bore;
and a rotatable member held against longitudinal movement in screwthreaded engagement with the valve operating member over a length thereof at the opposite side of the last-named sealing means form said valve closure member, for moving by rotation of said rotatable member said valve closure member between 'valve open' and 'valve closed' positions.

4,348,006

PLASTIC VALVE ASSEMBLY

Edward L. Schmitt, Pittsburgh; Steven J. Caroleo, McKees Rocks; Charles W. Bolam, and Richard W. Conley, both of Pittsburgh, all of Pa., assignors to Kerotest Manufacturing Corp., Pittsburgh, Pa.

Continuation of Ser. No. 58,785, Jul. 19, 1979, abandoned. This application Jan. 12, 1981, Ser. No. 224,203
Int. Cl.[3] F16K *1/226*
U.S. Cl. 251—288 20 Claims



11. A valve assembly comprising,
a valve body of plastic material,
said valve body having a conduit portion and an annular portion extending upwardly from said conduit portion,
a passageway extending through said conduit portion for the conveyance of fluid through said conduit,
a valve seat positioned in said passageway and secured to said conduit portion surrounding said passageway,
said valve seat including a metallic sleeve member,
said metallic sleeve having an outer peripheral edge,
a plurality of circumferential grooves extending around said metallic sleeve on said outer peripheral edge,
a resilient, expandable annular seal member positioned in each of said grooves, said seal members being undersized with respect to said grooves so that said seal members are stretched when in position in said grooves to securely grip said metallic sleeve member and prevent displacement of said seal members from said grooves during molding of said valve body around said metallic sleeve,
said valve body plastic material being molded in surrounding relation with said seal members to embed said seal members in said plastic material to form a fluid tight seal between said metallic sleeve member and said valve body conduit portion,
an annular resilient sleeve insert secured to said metallic sleeve member and positioned within said passageway,
a valve disc centrally positioned in said conduit portion for movement into and out of sealing engagement with said annular resilient sleeve insert to effect closing and opening of said valve assembly,
actuating means supported by said valve body annular portion and connected to said valve disc for moving said valve disc between an open position permitting fluid flow through said passageway and a closed position sealingly engaging said valve disc with said annular resilient sleeve insert to interrupt fluid flow through said passageway,
a metal support sleeve positioned in surrounding relation with said valve body annular portion to reinforce said valve body annular portion,
interlocking means on said metal support sleeve and said

valve body annular portion for nonrotatably connecting said metal support sleeve to said valve body annular portion,

said valve body annular portion having at least one vertical planar surface, and

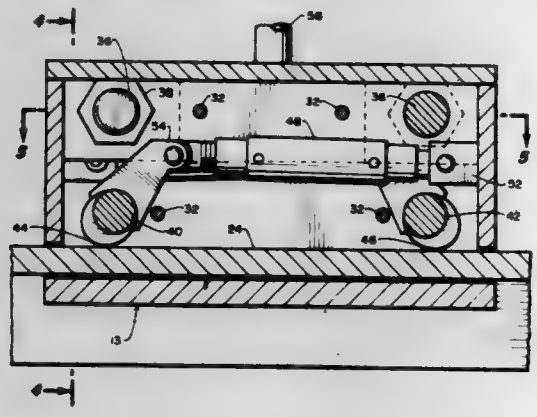
said metal support sleeve having a tab embedded in said plastic material of said valve body annular portion and abutting said vertical planar surface to permit the rotational forces generated upon turning of said actuating means to be transmitted from said valve body annular portion to said metal support sleeve.

4,348,007

GRIPPER SYSTEM FOR MOVING DRILLING RIGS

Fred Malzacher, 1555 Callens Rd., Ventura, Calif. 93003

Filed Oct. 7, 1980, Ser. No. 194,755
Int. Cl.[3] B66F *1/00*
U.S. Cl. 254—106 10 Claims



1. A gripper system for moving drilling rigs supported on flanged skid bases of a drilling platform comprising;

clamping means for clamping the flanges of said skid base;

said clamping means include a pair of rotatable eccentric cam means;

hydraulic cam locking means for rotating and holding said eccentric cam means in clamping engagement with said flanges of said skid base;

said hydraulic cam locking means adapted to rotate said pair of eccentric cam means in opposite directions so that their clamping forces are in opposition;

hydraulic skidding jack means connecting said hydraulic cam locking means to a saddle of said drilling rig for moving said drilling rig while said hydraulic cam locking means is securely clamped to said skid base.

4,348,008

LIFTING APPARATUS

Mitsuhiro Kishi, 1320 Mizuhonocho, Ashikaga-shi, Tochigi-Pref.,, Japan

Filed May 9, 1980, Ser. No. 148,351
Int. Cl.[3] B66F *3/22*
U.S. Cl. 254—122 5 Claims

1. A lifting apparatus comprising

a carriage,

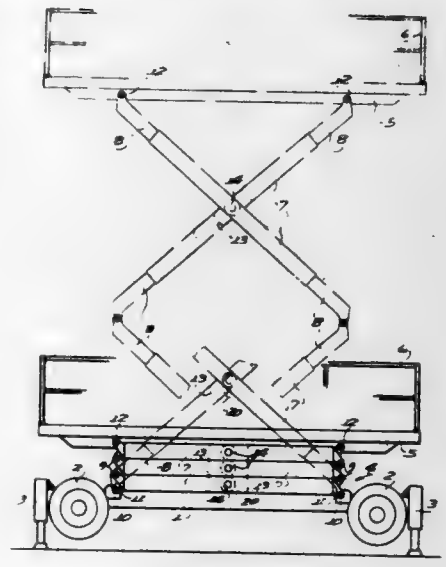
a pantograph comprising a plurality of X-link units provided on said carriage,

a platform provided on said pantograph,

each of said X-link units comprising a pair of outer pipes rotatably connected to each other at a central portion to form an X-link and a pair of inner pipes slidably inserted into each of said outer pipes from opposite ends thereof,

an end of said inner pipes of a lowermost X-link unit being connected to said carriage and an end of said inner pipes of an uppermost X-link unit being connected to said platform, and

means for extending and retracting said inner pipes,



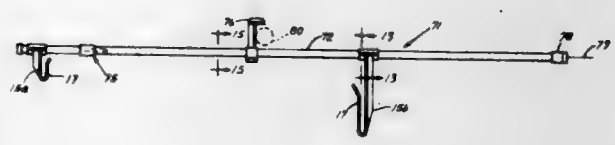
means for initially raising said outer pipes a small height, said initially raising means comprises a rotary eccentric member.

4,348,009

LOAD PICKUP COUPLING DEVICE, LINE STRINGING APPARATUS AND METHOD

Claude L. Chapman, 3300 W. Union Ave., Englewood, Colo. 80110

Filed May 30, 1980, Ser. No. 154,878
Int. Cl.[3] B66D *1/36*
U.S. Cl. 254—134.3 R 13 Claims



1. Stringing apparatus comprising:

a hoist line carried by an aircraft;

an elongated threading member having a leading end and a trailing end arranged to be passed through a window-like line-holding structure on a tower while suspended from above by said hoist line;

a threading line connected to said threading member rearwardly of said leading end;

a coupling between said hoist line and said threading member having interfitting, releasable, male and female coupling portions, one of said coupling portions being connected to the lower end of said hoist line and the other of said coupling portions being asscociated with said threading member to suspend said threading member from said hoist line and to releasably connect said threading member to said hoist line for the directed movement of said threading member through said structure while suspended from above, said other coupling portion including a leading coupling part at a forward position on said threading member and a trailing coupling part rearwardly of and spaced from said leading coupling part; and

tower catch means for said threading member releasably fastening said threading member to said tower after said hoist line is released from said threading member, said tower catch means including a front tower catch rearwardly of said leading coupling part and a rear tower catch forwardly of said trailing coupling part, said hoist line being first coupled to said leading coupling part and said front tower catch engaging the tower, the hoist line being released from said leading coupling part and cou-

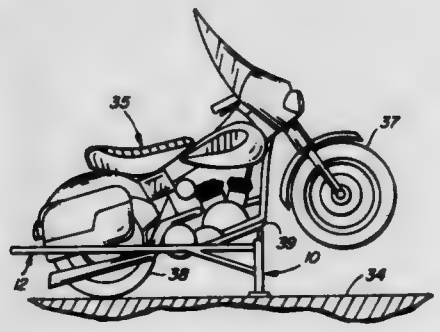
pled to said trailing coupling part for the movement of the leading end of said threading member and leading coupling part through said structure, said rear tower catch engaging the tower, said hoist line being released from said trailing coupling part and coupled to said leading coupling part, said threading member and threading line being moved through said structure while suspended from said aircraft.

4,348,010

MOTORCYCLE JACK

David H. Baxter, 3049 N. 52nd Pkwy., Phoenix, Ariz. 85031

Filed Nov. 17, 1980, Ser. No. 207,231
Int. Cl.³ B66F 7/22
U.S. Cl. 254—131 **6 Claims**



1. A jack for lifting and for supporting a motorcycle so that one of the two wheels of the motorcycle is elevated above a planar supporting surface while the other wheel contacts said surface, said motorcycle including a frame intermediate the two wheels, said frame having a minimum clearance between the frame and the supporting surface, said jack comprising:

a lifting frame defining a plane, said lifting frame having an upper element, a lower element, a length, a width and a height,

a substantially planar contact element mounted on the upper element of the lifting frame so that the plane of the contact element is substantially parallel to the plane of the lifting frame and is adapted to establish substantially linear engagement with the underside of the frame of a motorcycle to be lifted and supported;

a foot having a substantially planar bottom surface, said foot being mounted on the lower element of the lifting frame so that the plane of the bottom surface of the foot is substantially perpendicular to the plane of the lifting frame; said bottom surface of the foot having a length substantially equal to the length of the lifting frame and a width substantially greater than the width of the frame; and elongate handle means having a substantially linear axis connected to the upper element of the lifting frame so that the axis of the handle means is substantially perpendicular to the plane of the lifting frame for rotating the contact element relative to the lower element of the lifting frame to lift and support a motorcycle, said motorcycle having one wheel engaging the support surface and its frame engaging the contact element; whereby, when the jack is supporting a motorcycle, the bottom surface of the foot is substantially in contact with the supporting surface and the handle means is spaced above the supporting surface and substantially parallel to said surface.

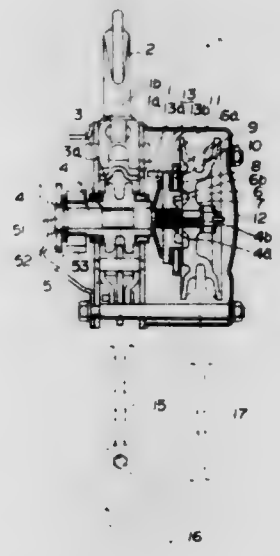
4,348,011

HOIST WITH IMPROVED OVERLOAD PROTECTION

Munenobu Honda, Osaka, Japan, assignor to Elephant Chain Block Co., Ltd., Osaka, Japan

Filed Mar. 31, 1980, Ser. No. 135,235
Claims priority, application Japan, Apr. 3, 1979, 54-44956[U]
Int. Cl.³ B66D 1/14
U.S. Cl. 254—350 **8 Claims**

1. A hoist comprising: a main body; means for hanging said body; a load sheave supported rotatably to said body; a chain engageable with said load sheave for lifting and lowering a load; power-actuating means for rotating said load sheave, said power-actuating means including a drive shaft, a disc hub spline connected to said drive shaft, a driving member screwably connected with said drive shaft, an anti-reverse-rotation plate supported to said disc hub for preventing said disc hub from rotating in a direction of moving said chain downwardly, and friction plates interposed between opposite surfaces of said disc hub and anti-reverse-rotation plate and between opposite



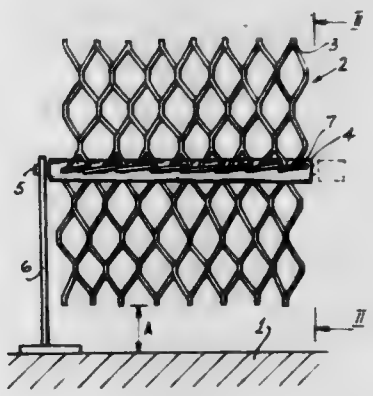
surfaces of said driving member and anti-reverse-rotation plate; and overload protection means including a locking mechanism provided between said disc hub and said body and a biasing means for biasing said disc hub toward said driving member; said driving member screwably moving toward said disc hub to move said disc hub axially of said drive shaft and actuate said locking mechanism when a load applied to said chain exceeds a predetermined value, whereby rotation of said disc hub is locked to halt the lifting of a load by said rotatably driven load sheave.

4,348,012

INTRUDER BARRIER

Thomas P. McLoughlin, Dublin, Ireland, assignor to MNJ Engineering Company Limited, Dublin, Ireland

Filed Jan. 24, 1979, Ser. No. 6,158
Claims priority, application Ireland, Jan. 25, 1978, 162/78; Jul. 11, 1978, 1388/78; Nov. 22, 1978, 2296/78
Int. Cl.³ E04H 17/00
U.S. Cl. 256—12 **12 Claims**



7. An intruder barrier for mounting on a surface of a wall comprising:

a scaling barrier rotatable about a longitudinal axis, said barrier being formed by a plurality of blades of semi-rigid expanded metal mesh material which deforms under load,

said blades being substantially equi-spaced circumferentially and radially arranged relative to the axis; and

a support framework for mounting the barrier on the wall with its longitudinal axis substantially parallel to the surface of the wall.

4,348,013

DEVICE OF REFRACTORY POROUS MATERIAL FOR BLOWING GAS INTO A BATH OF LIQUID METAL

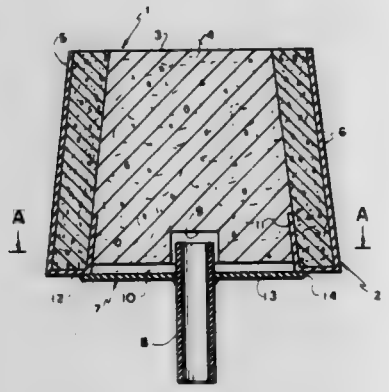
Jean-Claude Grosjean, Semecourt, and Roland Grave, Metz, both of France, assignors to Institut de Recherches de la Siderurgie Francaise, St. Germain-en-Laye, France

Filed Dec. 5, 1980, Ser. No. 213,548

Claims priority, application France, Dec. 10, 1979, 79 30425

Int. Cl.³ C21C *5/48*

U.S. Cl. 266—220 **6 Claims**



1. A device of refractory porous material for blowing gas into a mass of molten metal comprising an outer metallic envelope of predetermined length having an open end and an opposite end closed by a bottom; a mass of refractory material which is porous at least at a central portion thereof substantially filling said envelope, said mass of refractory material having an end face adapted to contact the mass of molten metal and being located in one plane with said open end of said metallic envelope; means fluid-tightly extending through said bottom for feeding a gas under pressure towards the central portion of said mass so that the gas will pass through said central portion of said mass and through said open end of said envelope; and a deflector fluid-tightly connected to said bottom inwardly of said outer envelope and having a wall parallel to that of said envelope but having a length shorter than that predetermined length.

4,348,014

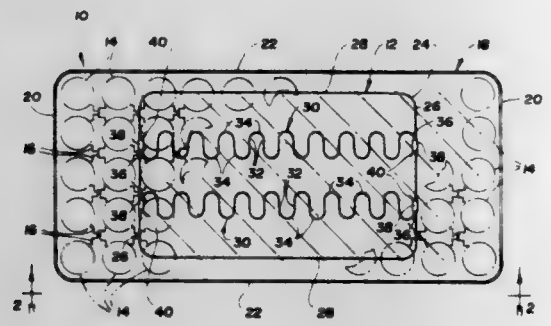
TORSION BAR SPRING AUXILIARY PANEL FOR BEDDING UNIT

Stanley Litkewycz, Brighton, Mich., assignor to Lear Siegler, Inc., Berkley, Mich.

Filed Jun. 6, 1980, Ser. No. 157,131

Int. Cl.³ A47C *25/00, 23/30;* F16F *13/00*

U.S. Cl. 267—87 **8 Claims**



1. In a bedding unit including a plurality of springs defining a load supporting surface and a generally rectangular border wire supported by the springs and defining longitudinal and lateral margins of the load supporting surface, an auxiliary panel comprising: a peripheral wire of a generally rectangular shape on the load supporting surface; said peripheral wire having opposite longitudinal portions and opposite lateral portions respectively extending parallel to the longitudinal and lateral margins defined by the border wire; said longitudinal portions of the peripheral wire being spaced longitudinally inward from the longitudinal margins defined by the border wire; a plurality of torsion bar springs extending between opposite portions of the peripheral wire; each torsion bar spring having oppositely opening loops including torsion bars and connecting portions extending between the torsion bars; and each torsion bar spring including distal end torsion bars adjacent which the torsion bar spring terminates and said end torsion bars being connected to the peripheral wire such that the auxiliary panel provides increased firmness to the load supporting surface.

4,348,015

SHOCK ABSORBERS

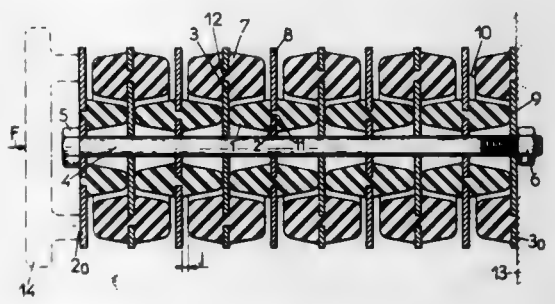
Michel Domer, Montigny les Cormeilles, France, assignor to Hutchinson-Mapa, Paris, France

Filed May 7, 1980, Ser. No. 147,346

Claims priority, application France, May 11, 1979, 79 12115

Int. Cl.³ F16F *3/08*

U.S. Cl. 267—140.4 **10 Claims**



1. Shock absorber comprising two concentric adjacent stacks, each stack having a plurality of metallic elements and elastic elements arranged with the metallic elements and elastic elements alternating with each other in each stack, the metallic elements and elastic elements arranged to bear one against the other upon compression of the shock absorber, said elastic elements of each stack being borne by the metallic elements of the other stack and wherein the elastic elements of the two stacks are constituted respectively of elastomers having different deformation and damping characteristics.

4,348,016

PROCESS AND DEVICE FOR SUSPENSION OF VEHICLE WHEELS

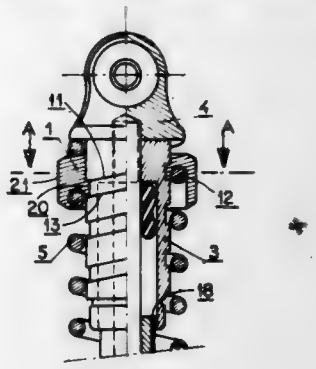
Lucien Milly, 1, rue du Cardinal Mercier, Paris, France

Filed Aug. 24, 1979, Ser. No. 69,495

Claims priority, application France, Sep. 6, 1978, 78 25588; May 21, 1979, 79 12849

Int. Cl.³ B60G *17/02;* B62K *25/10;* F16F *1/06, 1/12*

U.S. Cl. 267—177 **3 Claims**



1. A spring suspension device for a two-wheel vehicle with

a body comprising: an upper and a lower securing member to be connected, respectively, with the body of the vehicle and with a wheel of the vehicle; a hollow control sleeve depending from and solid with said upper member and a rod of said lower member telescopically received at one end within said sleeve, said rod having peripheral shoulder means thereon away from its telescoping free end; threads formed on the outer surface of said sleeve; a control nut having a bore with first and second threads therein, said first threads meshing with the threads of said sleeve; a suspension spring, about said lower member and sleeve, having one end abutting said shoulder means and another end abutting said upper member, and wherein said but has a body, said second threads being in the form of a through helical guideway in said body of said nut for the passage of the coils of said spring, said nut being slideable along said spring and sleeve to vary the active length of said spring.

4,348,017

BEARING FOR FACEPLATE PANELS OF COLOR-PICTURE TUBES

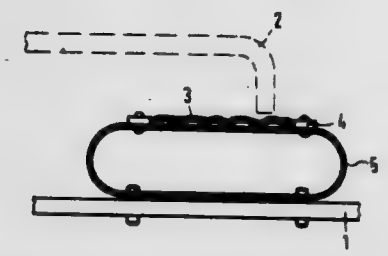
Wolfgang Schlayer, Stuttgart, and Herbert Hemminger, Schorndorf, both of Fed. Rep. of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Jun. 12, 1980, Ser. No. 158,847

Claims priority, application Fed. Rep. of Germany, Sep. 27, 1979, 2939143

Int. Cl.³ B23Q *3/00*

U.S. Cl. 269—296 **5 Claims**



1. A support assembly, comprising:
a rigid support member;
resilient link means mounted to said support member; and
wire fabric disposed on said resilient link means to provide a generally upwardly facing support surface wherein a portion of said link means is coextensive with and beneath said support surface.

4,348,018

METHOD AND APPARATUS FOR THE SEPARATION OF FLEXIBLE SHEETS FROM A STACK AND THEIR TRANSPORTATION TO A PROCESSING UNIT

Gaspar A. H. Bijttebier, Grote Heerweg, 64, B-8749 Waregem-Beveren, Belgium, and Jozef Vangheluwe, Roeselare, Belgium, assignors to Gaspar A. H. Bijttebier, Waregem-Beveren, Belgium

Filed Aug. 7, 1979, Ser. No. 64,514

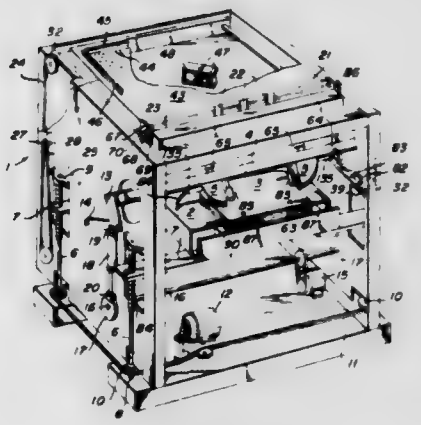
Claims priority, application Netherlands, Aug. 10, 1978, 7808345

Int. Cl.³ B65H *3/22, 5/14, 9/04*

U.S. Cl. 271—10 **39 Claims**

1. An apparatus for separating and transporting flexible sheets individually from a stack to at least one processing unit, comprising:
a frame having a vertically movable table for carrying said stack and a registering plate for receiving the sheets individually from said stack and for orienting each sheet for delivery to said at least one processing unit;
pick-up means for engaging the top sheet of said stack at an edge thereof and lifting the edge to a position spaced above said stack;
conveying means for transporting each sheet from said stack to said registering plate, said conveying means including two opposed endless chain means circulating in said frame at opposite sides thereof in paths having a portion over said stack and a portion over said registering plate, said conveying means also including means attached at each end to one of said chain means for gripping the top sheet of said stack by the lifted edge of the top sheet as the gripping means moves over said stack to remove the top sheet from the stack;
said gripping means comprising a horizontally disposed rotatable roller and a clamping member mounted parallel to said roller and relatively movable with respect to said roller for engaging said roller by moving into contact with said roller and thereby gripping a sheet to be conveyed; and,
means for rotating said roller at said registering plate to release the sheet from said roller and said clamping member and to deposit it on said registering plate.

5. An apparatus for separating and transporting flexible sheets individually from a stack to at least one processing unit, comprising:
a frame having a vertically movable table for carrying said stack and a registering plate for receiving the sheets individually from said stack and for orienting each sheet for delivery to said at least one processing unit, said registering plate being situated vertically above said table in said frame;



pick-up means for engaging the top sheet of said stack at an edge thereof and lifting the edge to a position spaced above said stack; and,
conveying means for transporting each sheet from said stack of said registering plate, said conveying means including two opposed endless chain means circulating in said frame at opposite sides thereof in rectangular paths having a portion over said stack and a portion over said registering plate, said conveying means also including means attached at each end to one of said chain means for gripping the top sheet of said stack by the lifted edge of the top sheet as the gripping means moves over said stack to roll the top sheet off the stack;
said gripping means comprising a horizontally disposed lath and a clamping member mounted parallel to said lath for engaging and disengaging said lath and thereby gripping and releasing a sheet to be conveyed.

4,348,019

METHOD AND DEVICE FOR SEPARATING A SHEET FROM A STACK OF SHEETS

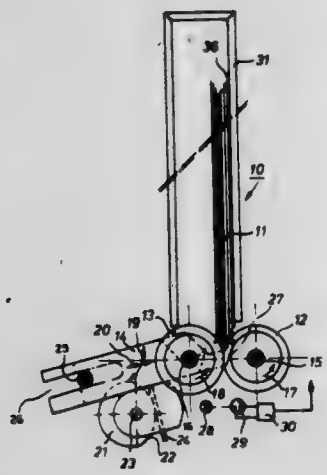
Emile F. Stievenart, Hoboken; Hendrik S. Plessers, Wychmaal, and Julianus J. Hellemans, Kontich, all of Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

Filed Mar. 27, 1980, Ser. No. 134,553

Claims priority, application United Kingdom, Mar. 30, 1979, 7911119

Int. Cl.³ B65H 3/06, 3/50

U.S. Cl. 271—10 17 Claims



1. A method for separating a sheet from a stack of sheets, comprising the steps of:

supporting a generally vertically oriented stack of sheets with the lower edges of the sheets therein abutting against the surface of at least two pairs of rotary traction surfaces forming a nip, a first one of each pair of traction surfaces having a coefficient of friction relative to one surface of the sheet to be separated that is greater than the coefficient of friction of the second one of each pair of traction surfaces relative to the other surface of the sheet to be separated,

imparting to each such pair of traction surfaces rotary movements so that said first one advances in the direction of feed of the sheet to be separated, whereas the second one advances in the opposite direction thereby causing the stack of sheets to be displaced to bring the lower edge of the outermost sheet which is supported by said first traction surface into said nip and advanced thereby over a predetermined distance therethrough,

after a predetermined length of said outermost sheet has passed beyond said nip, engaging the remainder of the sheets in said stack and lifting the same bodily upwardly away from said traction surfaces so that the remaining sheets in the stack are bodily separated from the sheet to be separated,

advancing the thus-separated sheet through and away from said pair of traction surfaces, and

returning the remaining sheets of the stack into lower edgewise abutment with said traction surfaces.

8. A device for separating a sheet from a stack of film sheets comprising:

at least two pairs of rotary traction surfaces forming a nip and supporting one edge of said stack, the first one of each pair of traction surfaces having a coefficient of friction relative to one surface of the sheet to be separated which is greater than the coefficient of friction of the second one of each pair of traction surfaces relative to the other surface of the sheet to be separated;

means for rotating said each pair of traction surfaces in directions such that the first one of each pair advances in the direction of feed of the sheet to be separated, whereas the second one of each pair of said traction surfaces advances in the opposite direction, thereby causing said stack of sheets to be displaced so that the lower edge of the outermost sheet which is supported by said first traction surface is directed into said nip and advanced thereby a predetermined distance therethrough; and

lifting means operable after the predetermined length of said outermost sheet has passed through said nip to engage the remainder of the stack and lift the same bodily so that the remaining sheets constituting said stack are bodily separated from the sheet to be separated and after separation of the latter to return the stack into edgewise abutting contact with said traction surfaces.

4,348,020

BELT CONVEYOR FOR SIGNATURES

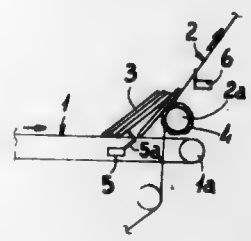
Giorgio Pessina, and Aldo Perobelli, both of Via Arborina 2, Paderno Dugnano, Italy

Filed May 5, 1980, Ser. No. 146,203

Claims priority, application Italy, May 18, 1979, 22807 A/79

Int. Cl.³ B65H 3/04

U.S. Cl. 271—35 7 Claims



1. An improved belt conveyor for signatures, loose sheets, gathered sheets, and the like, having a device for picking up said signatures, etc., and being of the type including a set of feeder belts lying in a substantially horizontal plane and an associated set of elevator belts that receive signatures, etc., delivered to them by the feeder belts, said elevator belts lying in a substantially oblique plane which intersects the horizontal plane of the feeder belts, said feeder belts transporting signatures, etc., toward the intersection between said feeder and elevator belts, and said planes defining a first obtuse solid angular space, characterized in that:

(A) said set of elevator belts having at the output ends thereof near the set of feeder belts a deflecting roller the axis of rotation of which is parallel to the apex of the solid angle between said sets of belts, said deflecting roller being located in the path of travel of signatures, etc., leaving the feeder belts, and directing the elevator belts to pass through said feeder belts in a steeper plane than the oblique plane of said elevator belts leaving the deflecting roller, whereby there is provided at the intersection between said sets of belts a second angular space which is larger than the first angular space,

(B) said deflecting roller being provided with signature, etc., entrainment rings in the path of travel of signatures, etc., leaving the feeder belts,

(C) said rings having outer surfaces with a high frictional coefficient, which rings at least in part protrude beyond the elevator belts, whereby to contact and lift the foremost signature, etc., entering the second angular space as soon as the preceding signature, etc., has cleared said angular space.

4,348,021

SHEET FEEDING APPARATUS

David M. Montes, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 24, 1980, Ser. No. 209,579

Int. Cl.³ B65H 3/06, 3/08

U.S. Cl. 271—112 4 Claims

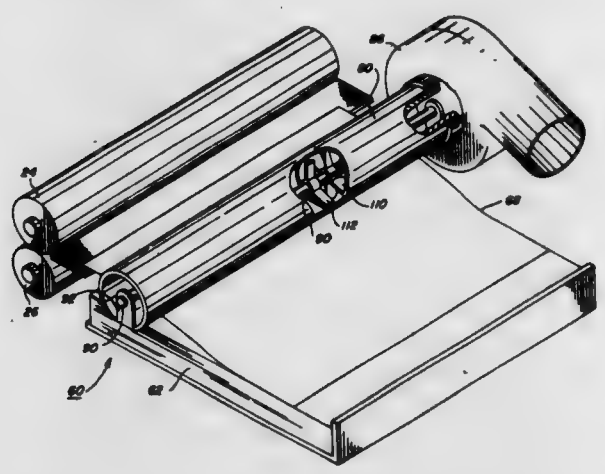
1. Sheet feeding apparatus comprising:

a cylindrical tube mounted in relation to a sheet supply, said

tube defining one or more openings positioned along its length opposite said supply;

means for creating a pressure reduction inside said tube to attract individual sheets to said tube openings; and

drive means for moving sheets away from the supply having a shaft centrally mounted in said tube which supports at



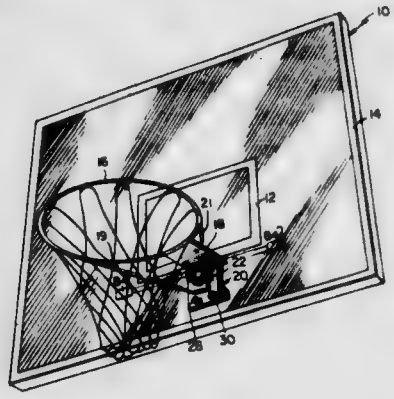
least one radially extending blade so that said blade extends through said one or more openings during each revolution of said shaft to contact each attracted sheet, and a number of turbine blades mounted to said shaft which respond to said means for creating a pressure reduction by rotating said shaft.

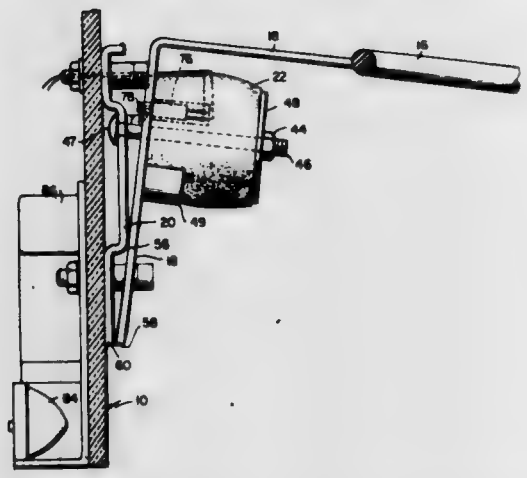
4,348,022

MOUNTING ASSEMBLY OF CONTROLLED RESILIENCE FOR BASKETBALL GOAL HOOP

John F. O'Donnell, Peoria, Ill., assignor to Safelex Systems, Peoria, Ill.

Filed Aug. 15, 1980, Ser. No. 176,721
Int. Cl.³ A63B *63/08*
U.S. Cl. 273—1.5 R **9 Claims**





4. A mounting assembly for a horizontal basketball goal hoop having a standardized L-shaped mounting bracket integral therewith for providing a connection of controlled resilience between such hoop and a vertical backboard therefor having standardized mounting apertures therein, comprising:

intermediate bracket means mounted in front of such backboard and having a plurality of mounting apertures therein positioned in alignment with respective ones of such standardized mounting apertures in such backboard, said intermediate bracket means having a portion thereof forming a horizontal fulcrum for such L-shaped bracket spaced away from the front of such backboard,

a resilient mass having a central aperture therethrough,

a threaded connector extending, in order, through an auxiliary mounting aperture in said intermediate bracket means, an auxiliary mounting aperture provided in the vertical leg of such standard L bracket integral with the goal hoop and through said central aperture in said resilient mass, with a nut on said threaded connector means for clamping together said series of elements with a predetermined force, and

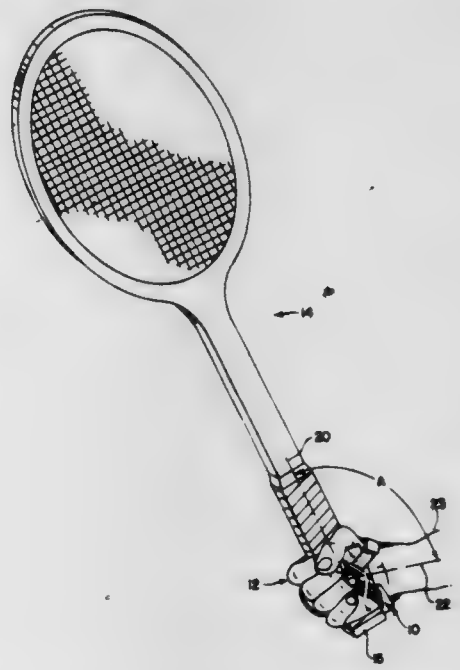
a threaded connector for each of said standardized mounting apertures in such backboard fixedly securing said intermediate bracket thereto and having a non-threaded portion extending through the corresponding aperture in the vertical leg of said hoop L bracket to act as a guide for movement of the latter relative to said intermediate bracket.

4,348,023

RACKET SPORTS TRAINING AID

Robin A. Hinson, 11602 Ashbury, Cleveland, Ohio 44106

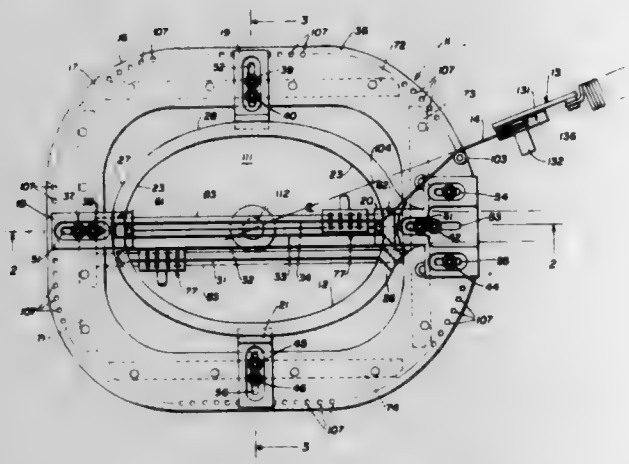
Filed Dec. 4, 1980, Ser. No. 213,000
Int. Cl.³ A63B *69/38*
U.S. Cl. 273—29 A **9 Claims**



1. A racket sports training aid for improving the grip adapted to engage a player's wrist, hand, fingers and racket comprised of a wrist pad, a finger pad, a grip pad and strap; said strap interconnecting said wrist pad, said finger pad and said grip pad such that; said finger pad engages said fingers, said strap connects to said finger pad and passes away from said finger pad in two strap segments, a first strap segment passing from said fingers toward said wrist and a second strap segment passing from said fingers toward said wrist; said first strap segment and said second strap segment connect to said grip pad; said first strap segment adapted to pass near the heel of the hand and around said wrist and engage said wrist pad; said second strap segment adapted to pass near the base of the thumb of said hand and about said wrist engaging said first strap segment and said wrist pad; the engagement of said first strap segment and said second strap segment being adjustable such that said two strap segments may be varied in length and

said grip pad is adapted to press against said racket when said two strap segments are shortened aiding in the proper grip of said racket.

4,348,024
RACKET STRINGING APPARATUS AND METHOD
John A. Balaban, 4142 Graham St., Pleasanton, Calif. 94566
Continuation-in-part of Ser. No. 11,145, Feb. 12, 1979, Pat. No. 4,249,732, and Ser. No. 99,215, Dec. 3, 1979, Pat. No. 4,326,713.
This application Jan. 25, 1980, Ser. No. 115,258
Int. Cl.³ A63B *51/14*
U.S. Cl. 273—73 A **16 Claims**



1. In a racket stringing apparatus having an open racket head frame holding fixture and means for tensioning a string drawn across the open area of said head frame, said fixture comprising;

an open center frame member having an annulus dimensioned for circumscribing the racket head frame;

a plurality of head supporting members mounted on said member for movement across said annulus for engagement with and for radial support of said head frame;

means mounted on said frame member for supporting a string clamp for movement to a succession of parallel positions across the open area of said racket head frame parallel to the longitudinal and transverse axes thereof;

said last-named means comprising a pair of guides positioned parallel to the longitudinal axis of the racket head frame adjacent opposite sides thereof;

a second pair of guides positioned parallel to the transverse axis of the racket head frame and adjacent said yoke and distal ends thereof;

carriage members formed for longitudinal reciprocation on said guides;

a rod having opposite ends secured to said carriage members and being adapted for mounting of said clamp along the length thereof;

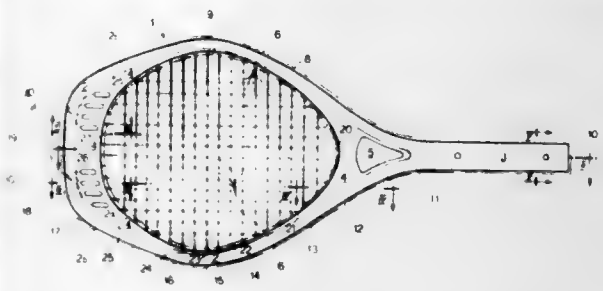
said annulus being formed with opposed substantially flat planar surfaces;

said supporting members being mounted on one surface; and

said guides comprising rails mounted on the other of said surfaces.

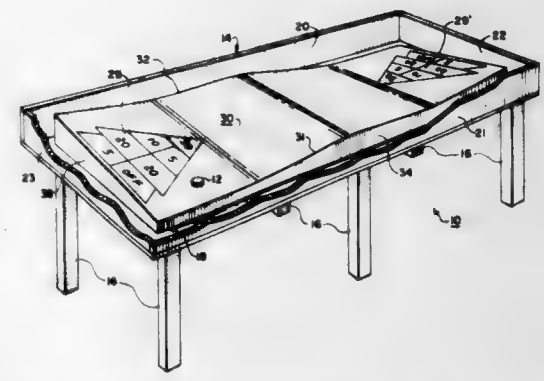
4,348,025
RACQUET
Neville D. Wills, Brighton, and Sigmund Kwiatkowski, Seacombe Heights, both of Australia, assignors to Half Court Tennis Pty. Limited, South Australia, Australia
Filed Jan. 21, 1981, Ser. No. 227,033
Claims priority, application Australia, Jan. 24, 1980, PE2134; Dec. 24, 1980, PE7070
Int. Cl.³ A63B *49/00*
U.S. Cl. 273—73 R **9 Claims**

1. A racquet having a strung weight in the range of 340 to 400 grams, a length between 480 and 500 mms, a centre of gravity located on the longitudinal axis of the racquet in the range of from 240 to 260 mms from the extremity of the racquet head and a radius of gyration about an axis perpendicular



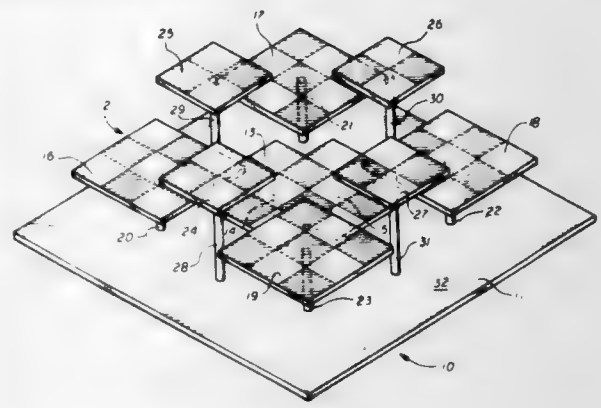
to the racquet plane and passing through said centre of gravity in the range from 156 to 176 mms.

4,348,026
DISC GAME APPARATUS
Russell E. Kauffmann, 1604 Executive Ln., Glenview, Ill. 60025
Filed Aug. 24, 1976, Ser. No. 717,339
Int. Cl.³ A63B *67/14*
U.S. Cl. 273—126 R **6 Claims**



1. In a table-height game apparatus of the type wherein a slider is propelled to slide freely along an elongated, upward-facing smooth and hard surface from a launch area to a target area, the improvement comprising constructing the surface into a fixed inelastic contour such that a slider travelling along the surface from the launch area to the target area is presented, over at least a portion of its path, with successive surface areas having a progressively changing transverse pitch, which pitch smoothly varies from one direction to another and back to the first direction along the direction of travel of the slider.

4,348,027
MULTI-LEVEL GAME BOARD APPARATUS
Ricardo Escamilla-Kelly, 14123 Rosetta, Cypress, Tex. 77429
Filed May 26, 1981, Ser. No. 266,844
Int. Cl.³ A63F *3/02*
U.S. Cl. 273—241 **9 Claims**



1. A multi-level game board apparatus for use with a plurality of chess-like playing pieces, comprising

a square game board of bilaterally colored light and dark squares,

said board comprising a central portion and a plurality of surrounding separate portions, each of said surrounding portion being square in shape and cooperating to complete the square shape of said board,

means supporting said board central portion at one level,

means supporting said surrounding board portions at one or more different levels and laterally spaced to cooperate with said central portion to provide a substantially continuous game board in plan view, and

said last named supporting means supporting at least some of said square surrounding board portions for rotary movement about the center of such square whereby playing pieces used on said board may be moved along the surface of said board portions or by rotation of one or more of said surrounding square board portions.

4,348,028

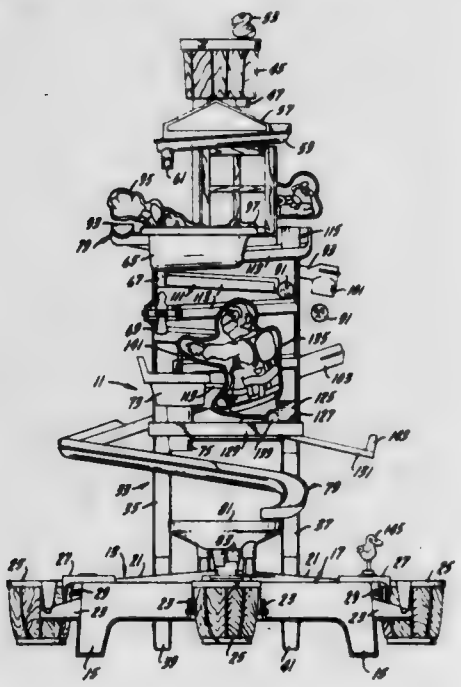
BOARD GAME WITH RANDOM WATER DISTRIBUTION FOR DUNKING PLAYING PIECES

Gordon A. Barlow, Glenview, Ill., assignor to Gordon Barlow Design, Skokie, Ill.

Filed Feb. 10, 1981, Ser. No. 233,160

Int. Cl.³ A63F *3/00*; A63H *33/00*

U.S. Cl. 273—249 **8 Claims**



1. A game including:

a base having a path defined by a plurality of spaces on which playing pieces can be moved from a starting point to a finish point as a result of the selection of a random number of spaces for each move of each playing piece, a plurality of dunking stations for the playing pieces located along the path, each of the dunking stations including a tiltable platform for dumping a playing piece located thereon into a water container, each water container being mounted on the base, each tiltable platform functioning as a space of the path,

a tower located adjacent the base,

a water reservoir supported on the tower near the top thereof,

a water distributor positioned between the water reservoir and the water containers mounted on the base,

a plurality of intermediate water containers located between the top reservoir and the distributor,

a conduit connecting the top reservoir, the intermediate water containers and the distributor,

a plurality of valves controlling the flow of water along the conduit,

a first of the valves controlling the flow of water from the top reservoir to the conduit,

a first downwardly inclined marble track supported on the tower and arranged to discharge a marble into the water distributor,

a first releasable detaining means for holding a first marble near the top of the first track and for selectively releasing the first marble to allow it to roll down the first track,

a second downwardly inclined marble track also supported on the tower,

a second releasable detaining means for holding a second marble near the top of the second track and for selectively releasing the second marble to allow it to roll down the second track,

the first releasable detaining means for holding the first marble being releasably actuated by water filling one of the intermediate water containers,

the second releasable detaining means for holding the second marble being releasably actuated by the first marble rolling down the first track,

a second of the valves controlling the flow of water through the conduit controls the flow of water out of another of the intermediate containers, and

means are provided for opening the second valve by the second marble rolling down the second track,

the distributor being equipped with a plurality of water discharge outlets each of which is closable by the first marble seating in the outlet,

a plurality of flues located beneath the distributor with each flue aligned with a distributor discharge outlet and a water container on the base.

4,348,029

SEAL-RING TYPE SHAFT-SEALING DEVICE

Norio Oishi; Toshinari Shimazu, both of Kobe; Takuya Suganami, and Takahiro Masuda, both of Amagasaki, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

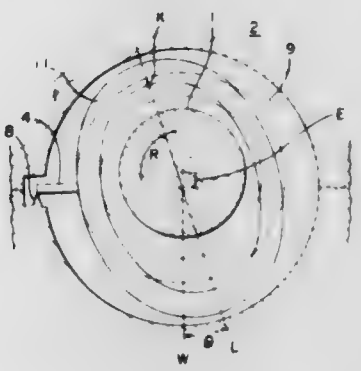
PCT No. PCT/JP81/00011, § 371 Date Jul. 22, 1981, § 102(e) Date Jul. 22, 1981, PCT Pub. No. WO81/02051, PCT Pub. Date Jul. 23, 1981

PCT Filed Jan. 16, 1981, Ser. No. 285,097

Claims priority, application Japan, Jan. 17, 1980, 55-4213

Int. Cl.³ F16J *15/40*

U.S. Cl. 277—26 **1 Claim**



1. In a seal-ring type shaft-sealing device comprising an annular seal ring held in housing and fitted loosely around a rotating shaft passing through the side walls of said housing in which said seal ring is rendered in a floating state upon said rotating shaft by sealing liquid forced into said housing, an improvement characterized in that the inner circumference of said annular seal ring is substantially oval and is held in an inclined state so that the angle formed by the longitudinal axis of the ellipse and the gravity force direction of said seal ring in the revolutional direction of said rotating shaft is smaller than 90°.

4,348,030

TOGGLE-ACTION FACE SEAL FOR RELATIVELY ROTATABLE MEMBERS

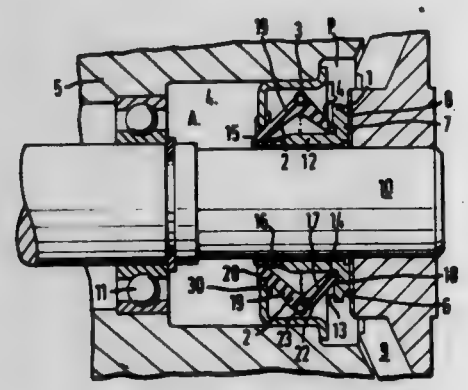
David E. Johnston, Gosforth, England, assignor to George Angus & Company Limited, Newcastle upon Tyne, England

Filed May 6, 1981, Ser. No. 260,937

Claims priority, application United Kingdom, May 12, 1980, 8015639

Int. Cl.³ F16J *15/36*

U.S. Cl. 277—40 **6 Claims**



1. A face seal comprising a rigid sealing ring carried by a free end of a coaxial resiliently deformable sleeve, the other end of the sleeve having means for mounting the sleeve fluid-tight on one member so as in use to present the sealing ring to bear axially against a counterface on another, relatively rotatable, member, the unconstrained shape of the sleeve being substantially that of two axially opposed frusto-conical parts of which the smaller diameters are at the ends of the sleeve respectively and the larger diameter portions form a flexible circumferential junction at about the mid-length of the sleeve, there being provided around the circumferential flexible junction of the sleeve a circumferential groove which defines a pivotal toggle joint for the frusto-conical parts of the sleeve, a contractile spring seated in said groove and the free end of the sleeve being supported on the sealing ring by means shaped to conserve in use the frusto-conical shape of the adjacent sleeve part, the sleeve thereby forming a toggle system which, in use, is exposed to the pressure of fluid to be sealed and exerts on the sealing ring an axial bearing load dependent on the axial lengths and angles of conicity of the frusto-conical parts of the sleeve and on the ratio of the diameters of the ends of the sleeve.

4,348,031

ROTARY FLUID SEALS WITH FLOATING SEALING RINGS

David E. Johnston, Gosforth, England, assignor to George Angus & Company Limited, Newcastle upon Tyne, England

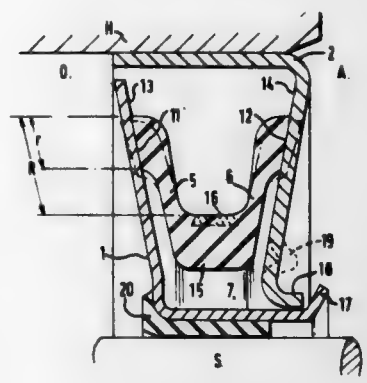
Filed Mar. 9, 1981, Ser. No. 241,647

Claims priority, application United Kingdom, Mar. 18, 1980, 8009057

Int. Cl.³ F16J *15/34*

U.S. Cl. 277—83 **7 Claims**

1. A rotary fluid seal, for preventing leakage of fluid between two coaxial relatively rotatable members, comprising a pair of axially opposed relatively rotatable counterface members, a circular flexible sealing ring freely located to float substantially coaxially between the conterface members, the sealing ring having a pair of radially outwardly divergent, oppositely axially directed, annular sealing lips to bear resiliently against the counterfaces respectively of the counterface members, so that the sealing ring is frictionally driven into rotation by one or the other of the counterface members on relative rotation thereof, the sealing lips each presenting to the respective counterface a frusto-conical contact face defined by radially inner and outer peripheral edges and the counterfaces being radially outwardly divergent and frusto-conical over an area provided for face contact by the sealing lip contact faces, the sealing ring being substantially coaxially located by seating between the counterfaces, and the effect of centrifugal force, due to rotation of the sealing ring, being to cause the sealing



lips to tend to flex angularly outwardly towards a radial plane and thereby to reduce the bearing load of the contact faces on the counterfaces.

4,348,032

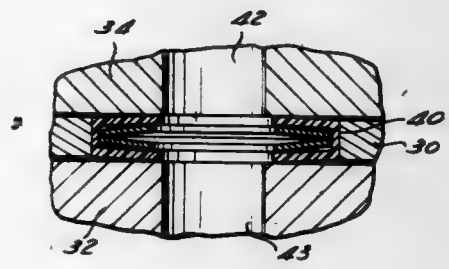
HEAD GASKET HAVING RESILIENT SEAL WITH BELLEVILLE SPRINGS

Larry K. Hanson, Los Alamitos, and Silvano A. Bosdachin, Downey, both of Calif., assignors to The Fluorocarbon Company, Los Alamitos, Calif.

Filed Mar. 19, 1981, Ser. No. 245,395

Int. Cl.³ F16J *15/06*

U.S. Cl. 277—235 B **12 Claims**

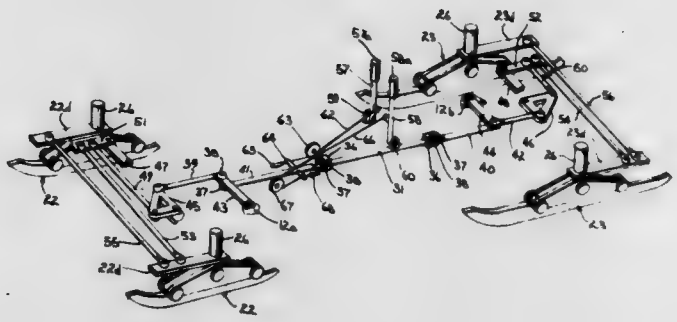


1. A seal for use between two stationary members such as an engine cylinder head and block, such seal comprising a resilient jacket having a closed loop shape and a generally U-shaped cross-section with a closed end and a pair of legs forming a closed loop recess, a pair of spring elements having a closed loop configuration positioned within the recess in the jacket in face-to-face opposing relation, first portions of the elements extending towards each other and engaging the closed end of the jacket U-shaped cross-section, second portions of the elements being spaced from each other and located adjacent to the open end of the jacket and reacting against the inner surfaces of the jacket, said elements being imperforate on their first and second portions and being resiliently compressible towards each other when the seal is compressed between the members, the elements biasing the legs to spread, and the outer faces of the jacket legs forming sealing surfaces against such members, the jacket outer periphery being sized to fit snugly within walls of a surrounding hole or recess so that the outer edges of the elements are maintained in aligned relation when the elements are compressed.

4,348,033
BOBSLED

David B. Stevens, 36324 S. Beach Rd., Oconomowoc Lake, Wis. 53066

Filed Aug. 18, 1980, Ser. No. 179,012
Claims priority, application United Kingdom, Aug. 29, 1979, 7929979
Int. Cl.³ B62B *13/08*
U.S. Cl. 280—16 8 Claims

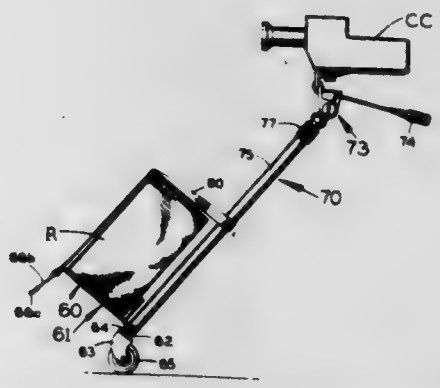


1. A bobsled which comprises:
a frame formed along a longitudinal axis;
a front axle and a rear axle carried by the frame transverse to its longitudinal axis;
two laterally spaced front runner assemblies pivotally connected to the front axle on opposite sides of the longitudinal axis of the frame;
two laterally spaced rear runner assemblies pivotally connected to the rear axle on opposite sides of the longitudinal axis of the frame;
a front link pivotally connected at its opposite ends to opposite front runner assemblies;
a front steering motion translator pivotally mounted on one side of the longitudinal axis of the frame, the steering motion translator having a first radial portion extending forward of its pivot and having a second radial portion extending laterally from its pivot towards the longitudinal axis;
means connecting the forwardly extending radial portion of the front steering motion translator to one of the front runner assemblies;
a rear link pivotally connected at its opposite ends to opposite rear runner assemblies;
a rear steering motion translator pivotally mounted on the opposite side of the longitudinal axis of the frame from the pivot of the front steering motion translator, the rear steering motion translator having a first radial portion extending rearwardly from its pivot and having a second radial portion extending laterally from its pivot towards the longitudinal axis;
means for connecting the rearwardly extending radial portion of the rear steering motion translator to one of the rear runner assemblies;
a steering linkage carried longitudinally by the frame and connecting the laterally extending radial portion of the front steering motion translator to the laterally extending radial portion of the rear steering motion translator; and
manually operable steering control means coupled to the steering linkage for axial movement of the linkage to pivot the front and rear steering motion translators in opposite rotational directions, so that the rear runner assemblies are pivoted counter to the front runner assemblies in a turning maneuver.

4,348,034
COLLAPSIBLE CARTS AND SUPPORTS FOR CAMERAS AND THEIR EQUIPMENT

David I. Welt, Miami, Fla., assignor to Welt/Safe-Lock, Inc., Hialeah, Fla.

Continuation-in-part of Ser. No. 26,788, Apr. 3, 1979, abandoned. This application Sep. 23, 1980, Ser. No. 189,582
Int. Cl.³ B62B *1/12*
U.S. Cl. 280—35 6 Claims



1. A cart and camera support unit comprising a two-wheeled cart, a camera support having a sectionalized tubular telescoping leg which carries at an upper end thereof a pan head with a laterally projecting handle for manipulating and locking the head in selective adjusted positions including a rearwardly and upwardly extending position to serve as a manipulative handle for the cart and camera support unit, and separable connecting means coacting between the lower end of the leg and the two-wheeled cart, said cart comprising a transverse bar supported at each opposite end by one of said wheels mounted in a caster fork attached beneath said bar, means securing each of said caster forks against relative rotation with respect to said transverse bar, a component of said connecting means being located on said transverse bar midway between said wheels and formed as an upstanding threaded male member, a collapsible platform for equipment formed by a pair of bars, each having one end pivotally mounted on the transverse bar spaced symmetrically on opposite sides of said connecting means component and adapted when in operative position to extend in parallel relation in a forward direction and in perpendicular relation to said transverse bar and to pivot toward each other in an overlapping relation and against said transverse bar in collapsed position, an opposite free end of each of said platform bars being downturned to form a ground engaging foot coacting with said wheels as a four point support disposing said platform horizontally in rest position, a pair of symmetrically spaced upstanding stops secured to said transverse bar for engaging said equipment when said platform is tilted rearwardly by manipulation of said handle in said rearwardly and upwardly extending position for rolling the unit on said wheels, and a female member of said connecting means formed as an internally threaded self-locking connector press fitted into the bore of said tubular leg at the bottom end thereof and located to separably engage said male member.

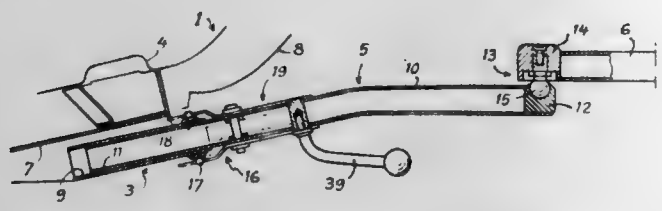
4,348,035
TOWING ATTACHMENTS FOR ATTACHING TRAILERS TO VEHICLES

Francois Wasservogel, Treffort - 01370 Saint Etienne du Bois, France

Filed Feb. 22, 1980, Ser. No. 243,967
Int. Cl.³ B60D *7/00, 1/08*
U.S. Cl. 280—478 R 11 Claims

1. A towing attachment for attaching a trailer including a tow bar to the end of a vehicle comprising a tubular member attached to said vehicle, extension means including a first end and second end, said first end of said extension means being rotatably attached to said tow bar of said trailer and said second end of said extension means being adapted for releasable

attachment to said tubular member, said second end of said extension means having a cross-sectional shape which is complementary to the cross-sectional shape of said tubular member whereby it can slide smoothly into said tubular member for attachment thereto, and clamping means for releasably clamping said second end of said extension means to said tubular member, said clamping means including fixed trunnion means extending from said tubular member and resilient clamping means affixed to said extension means, whereby said resilient clamping means may be releasably clamped to said trunnion



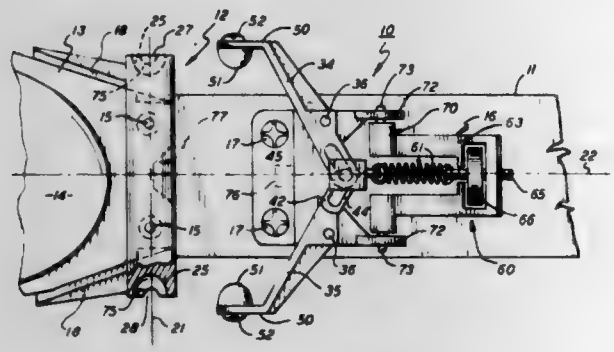
means when said extension means slides into said tubular member, said resilient clamping means being pivotable between first and second positions, so that when said resilient clamping means is in said first position it does not interfere with the sliding of said extension means into said tubular member, and when said resilient clamping means is in said second position, it prevents said extension means from being slidably released from said tubular member, and whereby said tubular member may be located inwardly with respect to said end of said vehicle.

4,348,036

SAFETY BINDING FOR NORDIC SKIS

Richard J. Settembre, 714 Velasko Rd., Syracuse, N.Y. 13207

Filed Aug. 19, 1980, Ser. No. 179,503
Int. Cl.³ A63C *9/08*
U.S. Cl. 280—615 **11 Claims**



1. A safety binding for use in conjunction with a cross country ski including

a toe piece that is adapted to be secured to the front of a ski boot, said toe piece further having a pair of opposed open faced sockets that are oval in form and which lie along a common centerline that will be normal to the central axis of the boot,

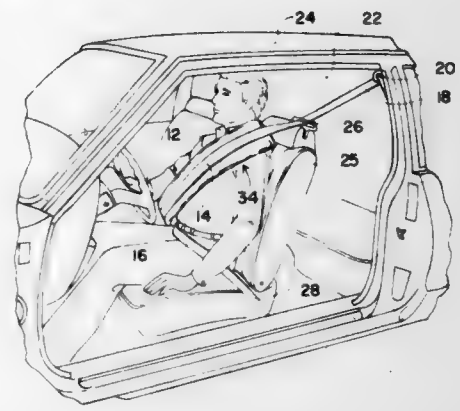
a ski piece that is adapted to be secured to the top surface of a ski that further includes a pair of coacting scissor arms pivotably mounted therein so that the distal ends of the arms move between an open and a closed position in a plane that is generally parallel with the top surface of the ski, a biasing means acting upon the scissor arms for urging the distal ends of the arms towards said closed position, and an oval shaped ball member affixed to the distal end of each arm, said ball members being arranged to move with the arms towards each other when the arms are moved toward said closed position, said ball members having a shape that compliments the inner surface of the sockets and being capable of being received therein as the arms are moved towards said closed position thereby securing the toe piece of the binding to the ski piece, both the oval shaped ball and socket having a major axis that is generally perpendicular to the top surface of the ski when the two are brought together in assembly.

4,348,037

SAFETY CUSHION ATTACHABLE TO BELT-TYPE RESTRAINTS

Bliss W. Law; George F. Kirchoff, and Gary V. Adams, all of Brigham City, Utah, assignors to Thiokol Corporation, Newtown, Pa.

Filed Jun. 3, 1980, Ser. No. 152,922
Int. Cl.³ B60R *21/10*
U.S. Cl. 280—733 **8 Claims**



1. Safety cushion apparatus attachable to belt-type restraints for protecting vehicle occupants including,

an elongated inflatable cushion folded and compacted to conform to the shape of a belt-type restraint to which it is to be attached, and

releasable means to fasten said folded and compacted inflatable cushion to the belt-type restraint in conforming relationship therewith and for support thereby,

wherein the material of which the inflatable cushion is made is selected to allow leakage of gas from the interior thereof thereby to impede hardening of the exterior surface of said inflatable cushion upon inflation thereof, and

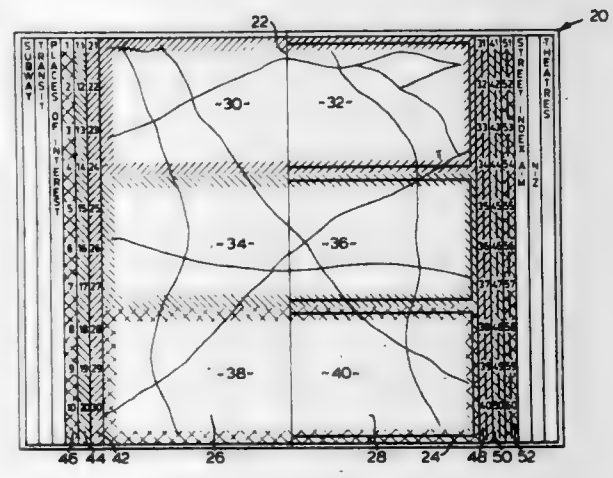
wherein said inflatable cushion is made of neoprene coated rib stock nylon sheet and includes seams that are sealed with silicone rubber, said seams providing said leakage.

4,348,038

MAP

Peter Lynch, 134 Carlton Ave., Toronto, Canada (M5B 2G2)

Filed May 27, 1980, Ser. No. 153,384
Int. Cl.³ G09B *29/04;* B42D *1/04*
U.S. Cl. 283—34 **3 Claims**



1. A map illustrating a subject pictorially in sections, the map comprising a plurality of pages and means coupling the pages to one another at a spine so that with the map open at its centre pages, there are centre pages at both sides of the spine showing the subject to a small scale broken into said sections, each of

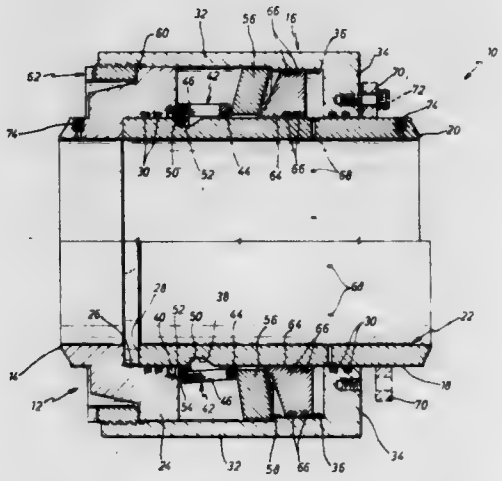
the sections carrying identifying coding and each of the pages below these centre pages being larger than the centre pages and smaller than the page below it so that when viewed in said open condition with the smallest of the pages uppermost, at least one of each of the edges of the pages parallel to the spine and below the smallest pages is visible and displays identifying coding corresponding to that used for one of the sections appearing on the centre pages, at least some of the pages below the centre pages consisting of at least two folded panels proportioned so that adjacent pages can be opened and after arranging in face-to-face relationship, the pages can be refolded to close the map while maintaining this face-to-face relationship, whereby in use a section can be selected from the display of the subject and using the identifying coding to find the relevant page, this page and an adjacent page can be opened out to either side of the spine to display the selected one of the said sections to a larger scale without damaging the pages.

4,348,039

RELEASE COUPLING

Jack E. Miller, Houston, Tex., assignor to Big Inch Marine Systems, Inc., Houston, Tex.

Filed Jul. 17, 1980, Ser. No. 169,841
Int. Cl.³ F16L 55/00
U.S. Cl. 285—1 **30 Claims**



1. A high pressure coupling for releasably coupling high pressure tubular elements in sealed relationship, the coupling comprising:

a first tubular member having a socket formation;

a second tubular member having a spigot formation to be sealingly engaged with the socket formation in mating relationship therewith;

one member having an annular recess and the other member having a radially directed annular bearing surface to cooperate with a locking sleeve, the annular recess being shaped to define an annular abutment surface;

a radially deformable locking sleeve having a complementary annular abutment surface, the locking sleeve being adapted to be located with its complementary annular abutment surface in abutment with the annular abutment surface in the annular recess, and the locking sleeve being adapted to be located against radial deformation out of the recess by the bearing surface engaging with a radially directed surface of the locking sleeve during use;

bias means to be operative between the tubular members to bias the complementary abutment surface into engagement with the abutment surface to provide a predetermined bias force to restrain axial separation of the formations when mated;

the tubular members when mated being axially separable upon application of an axial separation force in excess of the predetermined bias force of the bias means for the bearing surface to disengage from the locking sleeve, and for the bias means to continue to bias the complementary abutment surface against the abutment surface to force the locking sleeve to become radially deformed out of the annular recess to release the member having the recess for the spigot formation to separate from the socket formation; and

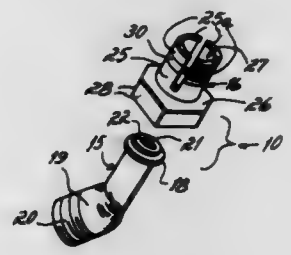
the tubular members being shaped to define, when mated, an annular pressure balancing chamber which is in communication with the coupling bore and which is further defined by axially spaced radially extending pressure flanges which are associated with the members for pressure within the balancing chamber to act on the flanges for urging the members into mating engagement and at least partially balance the axial separation force generated by pressure in the coupling during use.

4,348,040

FLANGED PIPE FITTING

Martin J. Harjar, Vermilion, Ohio, assignor to Nordson Corporation, Amherst, Ohio

Filed Dec. 11, 1980, Ser. No. 215,262
Int. Cl.³ F16L 55/00
U.S. Cl. 285—175 **19 Claims**



1. A two-piece pipe fitting adapted to be secured to a connector body, said fitting comprising

a tube element having a radial flange adjacent one end of the element, and a section of substantially larger external dimension than the external diameter of said radial flange formed on the end of said tube opposite from said one end, and

a unitary threaded sleeve nut surrounding said tube element, said threaded sleeve nut having a generally tubular body section formed on one end and a circumferentially continuous nut section formed on the other end, said tubular body section being longitudinally split and having male threads formed thereon,

said one end of said threaded sleeve nut having an internal diameter less than the diameter of said radial flange of said tube element and said other end of said threaded sleeve nut having an internal diameter larger than the external diameter of said radial flange of said tube element, said threaded sleeve nut being positioned over said tube element by forcing the split tubular body section over said radial flange of said tube element while radially expanding the split tubular body section of said sleeve nut, and said threaded sleeve nut being retained on said tube element by engagement of an end surface of said split tubular body section of said sleeve nut with said radial flange of said tubular element.

4,348,041

BUTT WELDED TUBULAR STRUCTURE OF AUSTENITE STAINLESS STEEL

Katsuyuki Imai; Isao Masaoka; Yochiteru Chiba, all of Hitachi; Masayoshi Kanno, Kitaibaraki, all of Japan; Jiro Kuniya, San Jose, Calif., and Hisao Itow, Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 24, 1979, Ser. No. 6,216
Claims priority, application Japan, Jan. 25, 1978, 53/6254
Int. Cl.[3] F16L *13/04*
U.S. Cl. 285—286 15 Claims

1. A butt welded tubular structure for use with nuclear reactors, comprising:

two tubular members of austenite stainless steel butt welded together at their adjacent ends to form a welded joint and weld heat affected zones immediately adjacent said welded joint; and

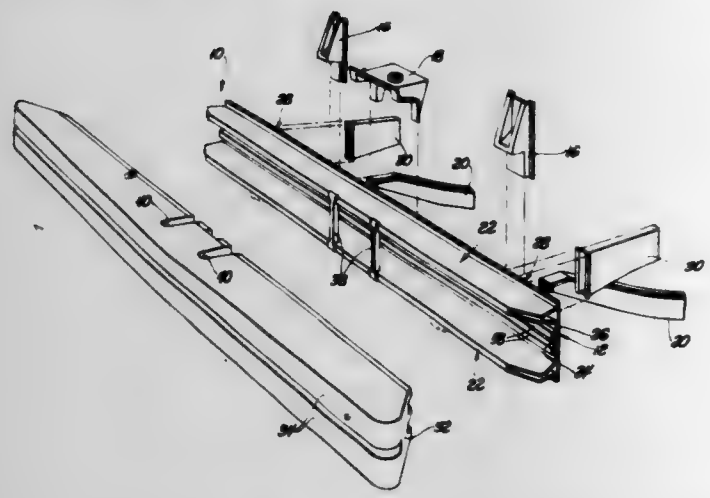
an imperforate restraining member providing a cover to said welded joint and adjacent heat affected zones of said tubular members in a manner to substantially form a clearance between the restraining member and the tubular members, said restraining member being formed of a metal of lower stress corrosion cracking sensitivity than the material of said tubular members, said restraining member being welded at the entire surfaces of opposite end portions thereof to said tubular members, said restraining member being spaced from said welded joint and said heat affected zones to form an annular chamber between said restraining member and said welded joint and the heat affected zones of the tubular members.

4,348,042

VEHICLE BUMPER ASSEMBLY

Jerry V. Scrivo, Dover, N.H., assignor to Ex-Cell-O Corporation, Troy, Mich.

Filed Jul. 14, 1980, Ser. No. 168,477
Int. Cl.[3] B60R *19/00*
U.S. Cl. 293—120 24 Claims



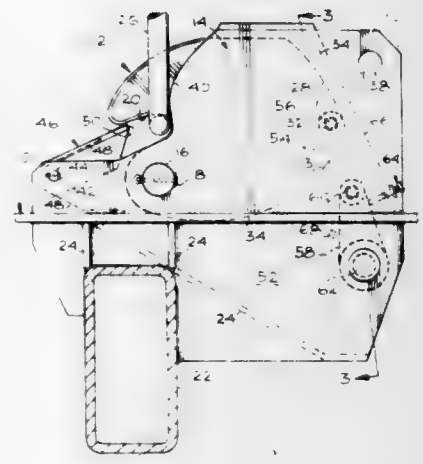
1. A vehicle bumper assembly (10) comprising; elongated mounting means (12) adapted for being an integral part of the vehicle structure, energy absorber means (14) for absorbing impact energy, said energy absorber means (14) being connected to said mounting means (12) for support thereby, and characterized by said mounting means (12) including two vertically spaced and interconnected hollow tubular portions (22), each of said tubular portions (22) having a closed cross section and extending along the length of said mounting means (12) for providing structural rigidity and minimal deflection under impact loads, said mounting means (12) including a back portion (24, 26) extending between and interconnecting said tubular portions (22), said energy absorber means (14) engaging said back portion (24, 26) and extending vertically between and engaging said tubular portions (22), said energy absorber means (14) extending away from said back portion (28, 26) forwardly beyond said tubular portions (22).

4,348,043

DISENGAGING APPARATUS

Joseph N. Fandel, San Diego, Calif., assignor to Whittaker Corporation, Los Angeles, Calif.

Filed Jun. 16, 1980, Ser. No. 159,826
Int. Cl.[3] B66C *1/34*
U.S. Cl. 294—83 R 18 Claims



1. Disengaging apparatus comprising:

a releasable hook pivotable about a pivot and including a contact surface rotatable about said pivot and an off-center moment-producing extension containing linkage engaging means, said hook being rotatable between first engaging and second disengaging positions;

a housing including means for positioning said hook for rotation about its pivot;

a first link pivotably mounted in said housing at one end and pivotable between first and second positions, respectively, to control rotation of the hook between said engaging and disengaging positions;

a second link pivotably coupled to the first link and to the linkage engaging means of said hook for rotating the hook about its pivot axis; and

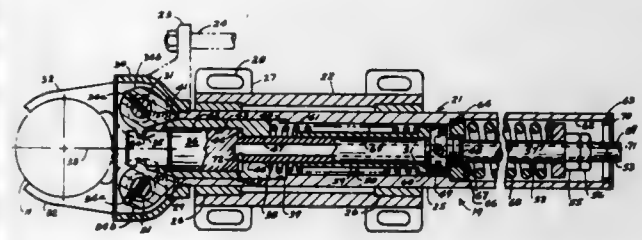
stop means for stopping movement of the first and second links short of straight line orientation when the hook is in the engaged position.

4,348,044

ARTICLE GRIPPING APPARATUS

David B. Wood, III, West Chester, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Oct. 10, 1980, Ser. No. 195,756
Int. Cl.[3] B66L *1/42*
U.S. Cl. 294—88 8 Claims



1. An article gripping apparatus, comprising in combination:

(a) a housing;

(b) at least one clamp finger movable on said housing from an unclamped position to a clamped position and the reverse;

(c) means for opposing said clamp finger and gripping an article therebetween;

(d) an actuator supported in said housing for moving said clamp finger to said clamped position and the reverse;

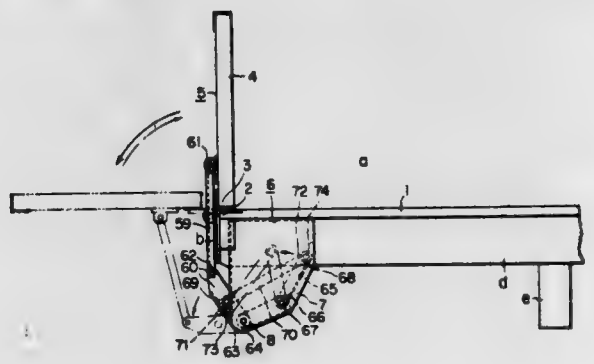
(e) first biasing means for biasing said actuator relative to said housing in a first predetermined direction;
(f) an interference block engageable with said finger when said actuator is biased in said direction;
(g) second biasing means for biasing said interference block relative to said actuator in a second, predetermined finger-engaging direction; and
(h) means for overcoming said second and first biasing means.

4,348,045

DEVICE FOR OPENING AND CLOSING A SIDE PLATE OF A LOADING BOX ON A MOTOR TRUCK UNDER NO-LOAD CONDITION

Masaki Hori, Funabashi, and Hisashi Hori, Yokohama, both of Japan, assignors to Jidosha Seiko Co., Ltd., Tokyo, Japan

Division of Ser. No. 829,455, Aug. 31, 1977, Pat. No. 4,165,121, which is a division of Ser. No. 672,308, Mar. 31, 1976, abandoned. This application May 23, 1979, Ser. No. 41,786
The portion of the term of this patent subsequent to Aug. 21, 1996, has been disclaimed.
Int. Cl.³ B60P *3/04*
U.S. Cl. 296—14 **3 Claims**



1. A device for opening and closing a side plate of a loading box on a motor truck under no-load condition, the side plate being outwardly openably hinged at its bottom edge to the outer side edge of the floor plate of said loading box, said device comprising an interlocking mechanism consisting of two upper and lower actuating connecting rods and twice-foldably articulated to a point on the outer surface of said side plate and to the lower portion of a support arm downwardly depending from the underside of said floor plate, said interlocking mechanism being resiliently pulled by a pull spring downwardly and sidewise of said floor plate to hold said side plate in equilibration, said upper actuating connecting rod having the upper end thereof articulated to said point on the outer surface of said side plate and having the lower end thereof articulated to the upper end of said lower actuating connecting rod, the lower end of said lower actuating connecting rod being articulated to the lower portion of said support arm, a flicking arm rod having the lower end thereof articulated to the upper portion of said support arm by means of a resilient torsion shaft, and a control connecting rod having the opposite ends thereof articulated to the upper portion of said flicking arm rod and an intermediate portion of said lower actuating connecting rod, respectively.

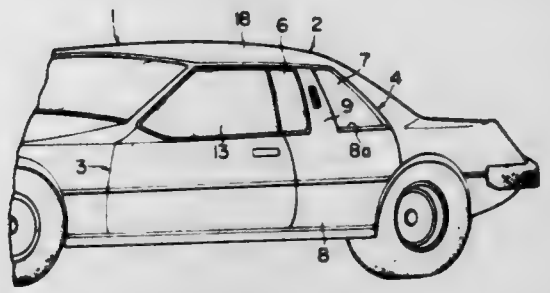
4,348,046

REAR SIDE DOOR STRUCTURE FOR A FOUR-DOOR TYPE AUTOMOBILE

Takeji Ohya, Hiroshima, Japan, assignor to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Jul. 14, 1980, Ser. No. 168,703
Claims priority, application Japan, Jul. 16, 1979, 54/90853; Aug. 31, 1979, 54/120840[U]; Aug. 31, 1979, 54/120841[U]
Int. Cl.³ B60J *1/00*
U.S. Cl. 296—201 **10 Claims**

1. A rear side door structure for an automobile which is adapted to be used with a front side door of a sashless type, and which comprises a rear door panel assembly having an upper hem for defining a lower edge of a window opening, guide means extending upwardly from the upper hem of the door panel assembly for dividing the window opening into a front opening portion and a rear opening portion, a transparent front glass panel disposed in said front opening portion, a transparent



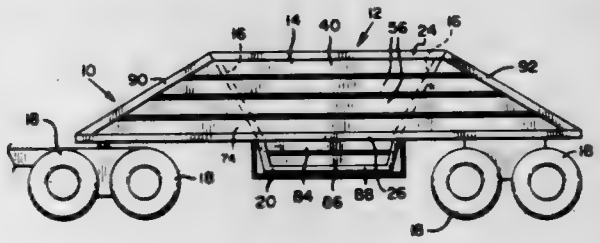
rear glass panel disposed in said rear opening portion, said rear glass panel being movable along the guide means so that it can be retracted into the door panel assembly, said door panel assembly being provided with cover means which is located to cover said guide means, said front glass panel being fixed to the door panel assembly.

4,348,047

WALL CONSTRUCTION FOR A BELLY DUMP TRAILER

George A. Harshman, 1253 Neil Creek Rd., Ashland, Oreg. 97520

Filed Sep. 15, 1980, Ser. No. 187,480
Int. Cl.³ B62D *27/00*
U.S. Cl. 296—184 **12 Claims**



1. A wall for containing a bulk cargo in a vehicle, comprising:
(a) an inner wall member having inner and outer sides;
(b) an elongate three-sided first channel reinforcing member fixedly attached to said outer side of said inner wall member, said first channel reinforcing member having a pair of generally parallel sides extending generally perpendicularly from said inner wall member, and an interconnecting side oriented generally parallel with said inner wall member, said first channel reinforcing member and said inner wall member together defining a tube;
(c) an elongate three-sided second channel reinforcing member fixedly attached to said outer side of said inner wall member and spaced apart from said first channel reinforcing member, said second channel reinforcing member having a pair of generally parallel sides extending generally perpendicularly from said inner wall member and an interconnecting side spaced apart from and oriented, generally parallel with said inner wall member, said second channel reinforcing member and said inner wall member together defining a tube;
(d) located between said first and second channel reinforcing members, at least one elongate intermediate reinforcing member having a face portion spaced apart from and extending generally parallel with said inner wall member and a rib portion extending generally perpendicularly toward said inner wall member, said face portion having an elongate edge spaced apart from said outer side and fixedly attached to one of said generally parallel sides of one of said first and second channel reinforcing members

and said rib portion being fixedly attached to said outer side of said inner wall member; and

(e) an elongate closing reinforcing member, said closing reinforcing member having a face portion and a pair of opposite elongate edges, said face portion being spaced apart from and oriented generally parallel with said inner wall member, one of said pair of opposite elongate edges being fixedly attached to one of said at least one intermediate reinforcing members, and the other of said opposite elongate edges being fixedly attached to another one of said channel and said intermediate reinforcing members.

4,348,048

ADJUSTABLE CURVED SEAT FOR INFANTS

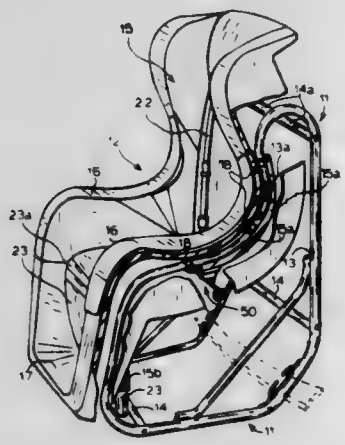
Gilles Thevenot, Baden-Baden, Fed. Rep. of Germany, assignor to Storchenmuhle Kinderausstattungs-GmbH & Co., Textile & Hartwarenwerk KG, Markleugast, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 916,662, Jun. 19, 1978. This application Jun. 10, 1980, Ser. No. 158,094

Claims priority, application Fed. Rep. of Germany, Jun. 21, 1977, 2727785

Int. Cl.³ A47D *1/10*

U.S. Cl. 297—250 **7 Claims**



1. An adjustable boat-shaped seat for infants, particularly for use as a car seat, comprising:

a generally boat-shaped seat having armrests on each side thereof and a generally arcuately-shaped slide guide having a generally U-shaped channel, integrally-joined to the underside of said seat on each side thereof adjacent to each of said armrests thereof; and

a rigid frame supporting said seat, said frame including two generally arcuately-shaped rails disposed generally parallel to the sides of said seat, each of which slidably supports said seat and lies in front of, and above, one of said slide guides within said channel thereof to permit movement of said seat between sitting and prone end positions, said frame being made from tubular metal and including two congruent, generally parallel pipe frames, to each of which one of said rails is connected and at least two transverse connecting struts which rigidly connect said two pipe frames together; and

means for arresting said seat on said frame in at least said sitting and prone end positions.

4,348,049

PROTECTING DEVICE FOR CARRYING CHILDREN

Michel Monot, Les Bois des Grottes, Asnieres les Dijon, and Hubert Monot, Asnieres les Dijon, both of 21380 Messigny, France

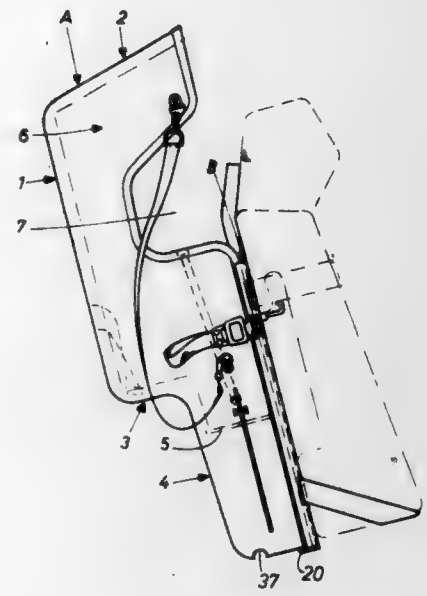
PCT No. PCT/EP79/00088, § 371 Date Jul. 3, 1980, § 102(e) Date Jul. 3, 1980, PCT Pub. No. WO80/00946, PCT Pub. Date May 15, 1980

PCT Filed Nov. 7, 1979, Ser. No. 205,954

Claims priority, application France, Nov. 8, 1978, 78 32063

Int. Cl.³ A47D *1/10*

U.S. Cl. 297—254 **8 Claims**



1. Protection device for carrying children, which comprises, more particularly, an enveloping back-rest provided with a head-rest overlying a seat surrounded by upholstered sides, a foot-rest, this assembly being adapted to be secured by suitable means behind the seat of a vehicle, characterized by the fact that it consists of at least two elements independent of each other and provided with means for quickly coupling and uncoupling these elements, one element consisting of a rigid shell surrounding the child from head to feet, which comprises an open side of which the major portion of the outer periphery lies in a single plane substantially parallel to the solid bottom of the shell, said shell being a unitary member comprising several sections, a hood, a bottom, a seat, a cradle for receiving the legs, in which a suspended foot-rest is slidably mounted, the other element being a rigid frame provided with means for fixing it to the back-rest of a vehicle seat, means for quickly fastening the shell to the frame, means for holding said shell in a predetermined position in relation to the frame.

4,348,050

HINGING DEVICES FOR SEAT BACKS

Alain Letournoux, Saint-Jean-Le Blanc, and Christian Raye, Etrechy, both of France, assignors to Societe Industrielle Bertrand Faure, Etampes, France

Filed Jul. 23, 1980, Ser. No. 171,359

Claims priority, application France, Aug. 2, 1979, 79 19874

Int. Cl.³ A47C *1/026*

U.S. Cl. 297—365 **11 Claims**

1. A seat back hinging device comprising:

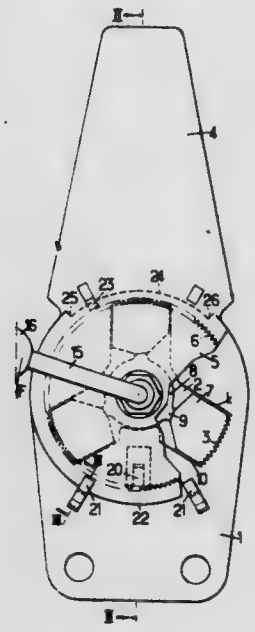
a control handle accessible to the person sitting in the seat;

a first inner toothed ring integral with a side-plate of the sitting portion of the seats

a second inner toothed ring integral with a side-plate of the seat back portion and coaxial with said first ring;

locking means actuable by the control handle to responsively cause said first and second rings to be either angularly locked or angularly free with respect to one another; said locking means comprising n toothed bolts each adapted to coact with the teeth of said first and second rings, said bolts being spaced apart evenly about the common axis of these

rings interiorly thereof, at respective mutual angular distances of the other of 360°/n, n being a whole number at least equal to 1, and a central rotary flat cam actuable by said control handle and adapted to coact with said bolts so as either to move them radially away from said common axis to put them in locking relationship with said first and second rings, or to cause them to move radially nearer said common axis thereby freeing them from said locking relationship; and means for resiliently urging the control handle and the cam towards their position corresponding to said locking relationship, the bolts and the cam being mounted so as to be



able to float slightly transversely with respect to said first and second side-plates while being wedged axially therebetween, said hinging devide further characterized in that the rotary flat cam includes a first cylindrical projection on one of its faces adapted to coact with a first complementary bore in one of said side-plates, said first projection and bore defining a first clearance therebetween and, on its other face, a second cylindrical bore adapted to coact with a second complementary projection on the other of said side-plates defining therebetween a second clearance so that said first and second coacting projections and bores assist in the relative centering of said side-plates.

4,348,051

SEAT WITH ADJUSTABLE FOOT-REST

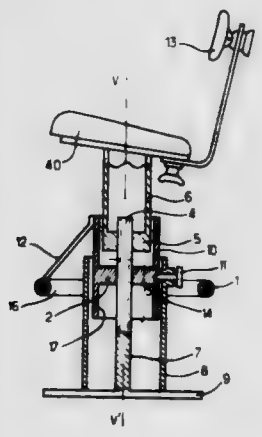
Guy Boucher, Paris, France, assignor to La Telemecanique Electrique, France

Continuation of Ser. No. 20,132, Mar. 13, 1979, abandoned. This application Nov. 12, 1980, Ser. No. 206,406

Claims priority, application France, Mar. 14, 1978, 78 07319

Int. Cl.³ A47C *7/50*

U.S. Cl. 297—423 **4 Claims**



1. In a seat, adjustable in height and having a seat-member, a backrest and a foot-rest having a cylindrical hub and a ring shaped outer part concentrically mounted about said hub, the improvement which comprises: a first cylindrical column having a free upper end and a base resting on the ground and connected to the lower end of the first column, the said first column having a first threaded portion and a second threaded portion, the said hub having a third cylindrical threaded portion which cooperates with the first threaded portion of the first column; and a second column supporting the seat member and the back-rest, said second column having a fourth threaded portion cooperating with the second threaded portion of the first column, the first and second columns and the third threaded portion having a common axis.

4,348,052

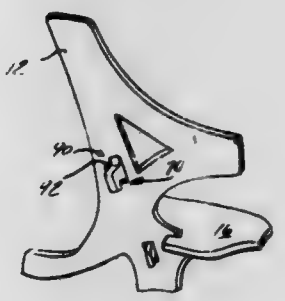
KNOCK DOWN CHAIR

Billy F. Roland, 37805 Maple Hill, Mt. Clemens, Mich. 48043

Filed Feb. 29, 1980, Ser. No. 125,961

Int. Cl.³ A47C *4/03*

U.S. Cl. 297—440 **4 Claims**



1. A knock down chair made from an assembly of interlocking planar members requiring no fasteners comprising:

a first side member and a second side member;

a seat member;

a pair of transverse seat support members;

a back member having a first side edge and a second side edge;

a first locking means for rotatingly locking the transverse seat support members to the first and second side members;

a second locking means comprising a pair of opposed forwardly and rearwardly projecting hook means for securing the seat member to and preventing transverse movement of the rearward and forward portions of the first and second side members; and

a third locking means for securing the back member to the first and second side members.

4,348,053

FOAM PADDED CHAIR WITH SCREW ASSEMBLY OF SEAT, BACKREST AND LEGS

Alex Strassle, Kirchberg, Switzerland, assignor to Intercollection Development SA, Kirchberg, Switzerland

Filed Jun. 19, 1980, Ser. No. 160,806

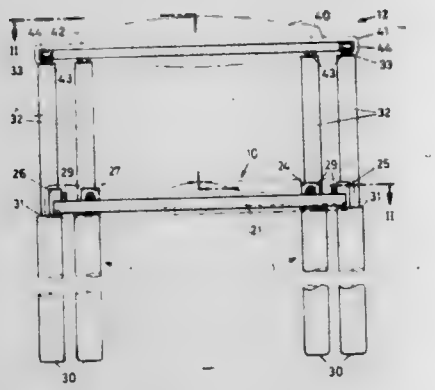
Claims priority, application Switzerland, Aug. 3, 1979, 7165/79

Int. Cl.³ A47C *5/06*

U.S. Cl. 297—445 **10 Claims**

1. A chair including rigid supporting elements and soft foam padding, comprising: a seat (10) including a rigid frame (20–23), a plurality of inserts (24–27) rigidly mounted on said frame for individually securing an equal plurality of columnar legs (11) thereto, said inserts each having a concave configuration which mates with and matches a corresponding covex surface of an associated leg and having a fastening element (29) secured thereto for rigidly mounting said associated leg, a rigid planar seat core (28) inserted into said frame, a first molded foam padding encasing the frame and the seat core on all sides with the exception of outwardly facing surfaces of said inserts, rear ones of the columnar legs extending above the seat, a backrest (12) comprising a rigid frame (44) having fastener

elements (43) rigidly secured thereto for fastening to abutting ends of the extended columnar legs, and a second molded foam
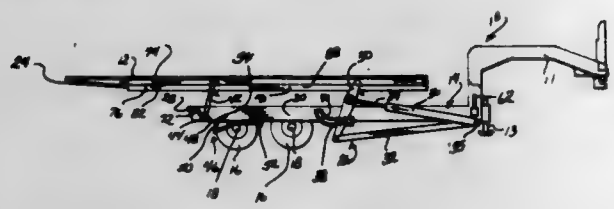


padding encasing the backrest frame on all sides with the exception of downwardly facing surfaces of the fastener elements.

4,348,054

CONVERTIBLE ADJUSTABLE BED VEHICLE

Gary L. Shonkwiler, 942 Beale St., South Bend, Ind. 46616, and Forest M. Shonkwiler, 22652 W. Madison Rd., South Bend, Ind. 46614

Filed Jul. 7, 1980, Ser. No. 166,444
Int. Cl.[3] B60P *1/34*
U.S. Cl. 298—11 2 Claims



1. In a vehicle having a frame and a bed normally bearing on said frame, said frame having bed supporting rollers at the rear thereof, front arms pivotally connected to the front of said frame, lever arms pivotally connected at opposite ends thereof to said bed and to the free ends of said front arms, extensible power actuated means pivotally connected to the front of said frame and to an intermediate point of said lever arms, the improvement wherein said frame pivotally mounts rear support arms adapted to engage an abutment of said bed at their foreward free ends, a bell crank pivoted to said frame below said rear arms and normally spring urged to accommodate lowering of said rear arms to a position clear of said abutment, selectively operable means for shifting said rear arms into contact with said bed frame adjacent said abutment whereby actuation of said power means elevates said bed with said lever arms and said rear arms substantially defining a parallelogram in combination with said frame and said bed, a releasable latch adjacent said rollers for interconnecting said bed and said frame, and another selectively operable means for releasing said latch.

4,348,055

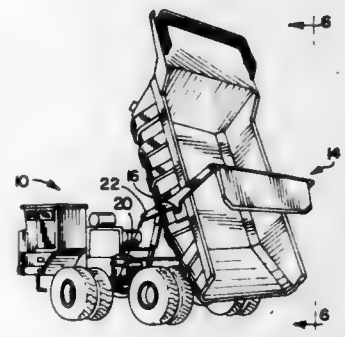
SINGLE CABLE ACTUATED TAILGATE

David B. Meisner, and Dusan M. Vacval, both of Buffalo Grove, Ill., assignors to International Harvester Co., Chicago, Ill.

Filed May 5, 1980, Ser. No. 146,975
Int. Cl.[3] B60P *1/26*
U.S. Cl. 298—23 DF 2 Claims

1. In a vehicle having a pivotable rearwardly unloading dump body mounted on the frame of said vehicle and a pivotally mounted tailgate supported between and attached to respective left and right gate lever arms, each gate lever arm having cable attachment points, said gate lever arms carried on pivot pins located high on the sides of the dump body intermediate the forward wall and the open end of said dump body, the improvement comprising:

a single cable attached to said frame in a movable manner and passing below said frame and extending from said cable attachment point of said left gate lever arm to said cable attachment point of said right gate lever arm, said cable being under equal tension throughout its length when said dump body of said vehicle is raised to a dumping mode,



said attachment of said cable to said frame in a movable manner including:

a first swivel pulley mounted to the left side of said frame through which said cable is passed;

a first guide pulley mounted to the left side of said frame through which said cable is passed;

a second guide pulley mounted to the right side of said frame through which said cable is passed;

a second swivel pulley mounted to the right side of said frame through which said cable is passed.

4,348,056

METHOD FOR ABOVE-GROUND LEACHING OF METAL BEARING ORES AT BELOW-FREEZING TEMPERATURES

Henry Von Kohorn, 22 Perkins Rd., Greenwich, Conn. 06830

Filed Jan. 12, 1981, Ser. No. 224,651
Int. Cl.[3] E21B *43/28*
U.S. Cl. 299—4 9 Claims

1. A method for above-ground leaching of metal bearing ores in below-freezing atmospheric temperatures which comprises

(a) constructing a first ore body,

(b) providing leach liquor supply and piping means,

(c) providing above and in close proximity to the upper surface of said first ore body a plurality of leach liquor outlets,

(d) depositing on said upper ore surface a second insulating ore layer of such thickness as to cover said leach liquor outlets to a depth sufficient to prevent freezing at prevailing below-freezing atmospheric temperatures of the leach liquor discharged into the first ore body through said outlets, and

(e) introducing leach liquor into the first ore body through said leach liquor outlets.

4,348,057

BLOWER AND DUST COLLECTING MACHINE AND METHOD OF OPERATION

Joseph A. Parenti, 1204 Buckhannon Ave., Morgantown, W. Va. 26505, and Malcolm J. Charles, Lodi, Calif., assignors to B & J Manufacturing Company, Glenwood, Ill., by said Malcolm Jean Charles

Filed Aug. 25, 1980, Ser. No. 181,101
Int. Cl.[3] E21C *7/02;* B01D *45/12*
U.S. Cl. 299—12 26 Claims

1. Apparatus for maintaining a low dust level in a coal mine about the face of the coal as it is mined comprising

(a) an enclosed blower having an intake opening, an exhaust opening and a main passageway connecting therebetween;

(b) adjustable-length ventilating duct means for establishing

communication of the intake opening of the blower with the coal face;

(c) evacuating means in the exhaust opening of the blower which continuously pulls a column of air through the main passageway of the blower from its air intake opening;

(d) a first stage of closely-spaced, small-diametered, cylindrically-shaped individual centrifuges arranged in said main passageway across the cross section of the main passageway;

(e) said individual centrifuges each having an inlet toward the intake opening, an outlet end toward the exhaust opening of the blower, and means which effectively spin the dust-laden air as it enters the centrifuges such that the dust content is concentrated at the sides of the centrifuges and the central core of the centrifuges is substantially freed of the dust;

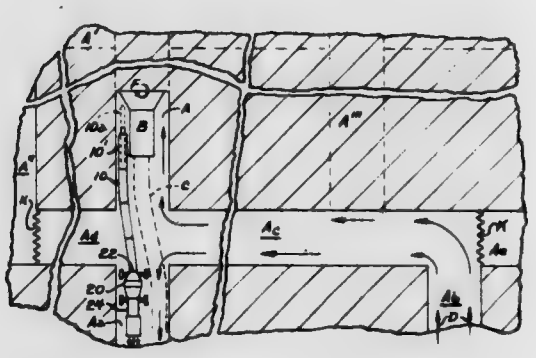
(f) air-tight conduit means establishing a second passage between the evacuating means and the inner sides of the centrifuges against which the dust is concentrated;

(g) said conduit means including a removable dust-collecting bin; and

(h) means in said second passage adapted to discharge the dust from the air in which it is concentrated into the dust-collecting bin;

(i) the second passage communicating with the first passage upstream of the evacuating means such that only the dust-freed portion of the air pulled through said passages is returned through the evacuating means into the mine.

21. A method of maintaining a low level of coal dust in a coal mine comprising the steps of



(a) locating an evacuating fan in the discharge end of a main passageway leading from the coal face being cut so as to draw a mainstream of air from the coal face in which the coal dust particles generated by the coal-cutting action are caught;

(b) dividing said main airstream into smaller diametered columns and spinning each said columns to concentrate the coal dust particles into an annular portion about the dust-freed center core of said columns;

(c) simultaneously causing the exhaust fan to draw said dust-concentrated air from said annular portions of the mainstream and into a communicating secondary passageway which leads from said annular portions of the mainstream to upstream of the evacuating fan;

(d) discharging a portion of said coal dust particles from the stream of air being drawn through the secondary passageway;

(e) collecting said discharged coal dust particles;

(f) concentrating the dust particles remaining in said secondary stream into an indentifiable portion of said second stream; and

(g) separating out and collecting said dust particles from said indentifiable portion;

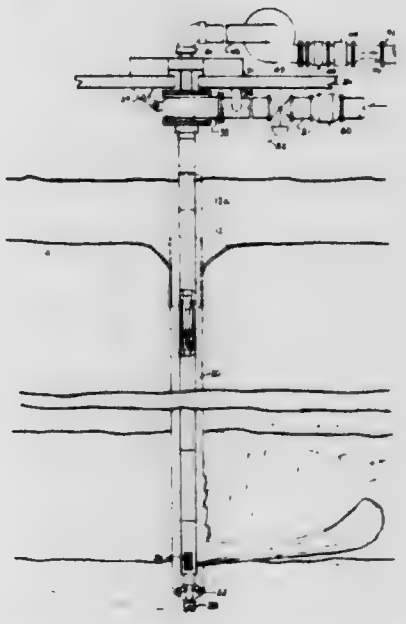
(h) the thus dust-freed secondary airstream combining with the main airstream for discharge into the mine and so that only air of low dust content is discharged by the evacuating fan.

4,348,058

METHOD AND APPARATUS FOR SLURRY BOREHOLE MINING

John E. Coakley, Westfield, and James J. Nolan, Brielle, both of N.J., assignors to Slurry Mining Engineering Inc., Westfield, N.J.

Filed Apr. 1, 1980, Ser. No. 136,283
Int. Cl.[3] E21C 45/00, 37/12
U.S. Cl. 299—17 25 Claims



1. A method of hydraulic borehole mining by drilling into a subterranean ore deposit, reducing the ore to a slurry and pumping the ore to the surface with an apparatus which includes a mobile platform having a drilling mast with a vertical hoist for handling the drill string, power slips and wrenching means for assembling the drill string sections intermittently during drilling until the ore strata is reached, a swivel head on the uppermost section of the drill string with the fluid supply connection entering the annular space between the conduits and a slurry discharge connection connected through a swivel to the inner conduit, a dual conduit tool string having a drill bit as its drilling head, drilling fluid controlled by a valve that is normally open during drilling and closed during mining, two hydraulic eductor pumps within the discharge conduit, the first or lower eductor is located at the suction entrance at the base of the tool and is controlled by a valve that is normally open during drilling and closed during mining, the second or slurry eductor is located intermediate of the mining section and below the fluid level in the borehole with fluid jetting from the eductor nozzle during the drilling and mining mode to pump drill cuttings and/or slurry to the surface, a mining nozzle adjacent to the slurry entrance to the tool to erode the ore matrix to form an ore-bearing slurry and controlled by a valve that is normally closed in the drilling mode and open during the mining mode, a flow measuring element and a flow control valve in the fluid supply pipe to the drill string, a flow measuring element and a flow control valve in the discharge conduit from the mining tool; the method comprising the steps of drilling a borehole from the surface to the ore deposit while pumping drilling fluid at drilling system capacity and pressure into the supply conduit and directing the fluid down the annulus between the conduits through a normally open valve to the drill bit and through a normally open control valve supplying fluid to the eductor at the suction entrance and also through the second or slurry eductor nozzle which is open during drilling and mining to pump the drill cuttings to the surface, increasing the capacity and pressure of the supply fluid to mining system conditions, pumping the mining fluid down the annulus between the conduits with the increased fluid pressure actuating the down-hole control valve actuators to convert the tool from the drilling to the mining mode by closing the valve and stopping the flow of fluid to the drill bit and to the lower eductor nozzle while opening the mining nozzle control valve

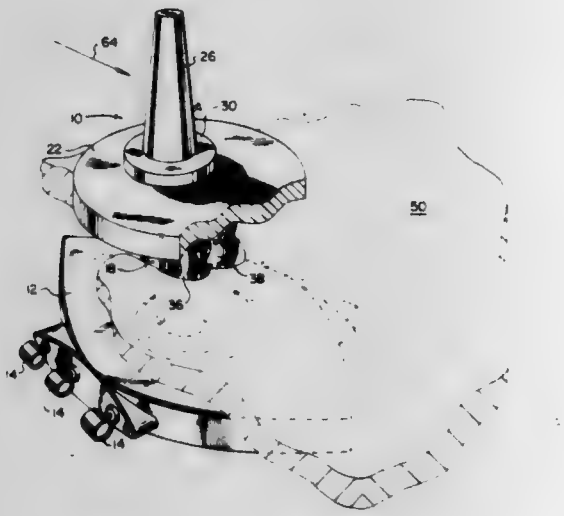
and directing mining fluid through the mining nozzle to reduce the ore to a slurry, rotating the tool string continuously or intermittently during mining, pumping the slurry to the surface by the slurry eductor located within the inner conduit intermediate of the mining section and the discharge of the tool, throttling the flow of fluid from the tool string by the flow control valve in the discharge piping to maintain the fluid level in the borehole sufficient to prevent cavitation in the slurry eductor pump.

4,348,059

MULTIPLE-TINE ICE DISAGGREGATION SYSTEM

George W. Morgan, La Jolla, Calif., assignor to Sun Oil Company, Ltd., Calgary, Canada

Filed Sep. 7, 1978, Ser. No. 940,246
Int. Cl.³ E02B *15/02*
U.S. Cl. 299—25 **3 Claims**



1. In an ice disaggregation system characterized by at least one rotating drum, which drum carries ice engaging teeth structure on the peripheral surface thereof, the improvement comprising:

(A) a plurality of tooth supporting brackets distributed about and affixed to the peripheral surface of the drum, each of said brackets including an elongated tooth carrying portion disposed generally parallel to the drum peripheral surface and rigidly supported outwardly therefrom by a plurality of bracket legs;

(B) a plurality of ice engaging teeth fixed to said bracket beam portion, each of said teeth having a sharp, ice engaging forward portion, said teeth being oriented such that the forward portions thereof generally face the direction of drum rotation; and

(C) said ice engaging portion of said teeth including a plurality of pointed tines comprising a relatively long central tine flanked by a pair of tines which are shorter than said central tine, all of said tines being aimed in the same forward direction.

4,348,060

METHOD FOR MAKING A TUFTED BRUSH

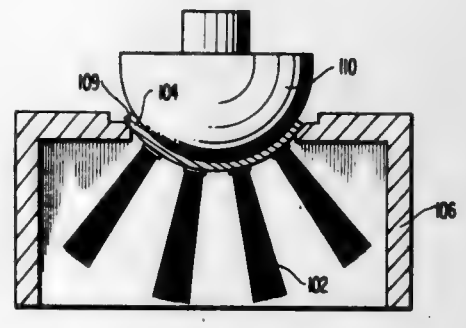
John C. Lewis, Jr., Salisbury, Vt., assignor to Tucel Industries, Inc., Forest Dale, Vt.

Division of Ser. No. 59,479, Jul. 20, 1979, Pat. No. 4,291,431, which is a division of Ser. No. 924,643, Jul. 14, 1978, Pat. No. 4,189,189, which is a continuation-in-part of Ser. No. 757,564, Jan. 7, 1977, Pat. No. 4,109,965. This application Mar. 10, 1981, Ser. No. 242,190
Int. Cl.³ B29C *17/02, 27/02*
U.S. Cl. 300—21 **5 Claims**

1. A method for forming a tufted, flared brush construction wherein each tuft is disposed at an angle different from each adjacent tuft comprising:

providing a thermoplastic sheet substrate, supporting said sheet at the edges thereof, and heating said sheet until it softens;

providing a plurality of synthetic filament tufts, supporting said tufts in a mutually spaced parallel relationship, and heating a common end of each of said tufts, simultaneously, until each of said ends fuses;



simultaneously fusing said ends of each of said tufts to a surface of said heat softened substrate to mount said tufts thereon in the parallel mutually spaced relationship;

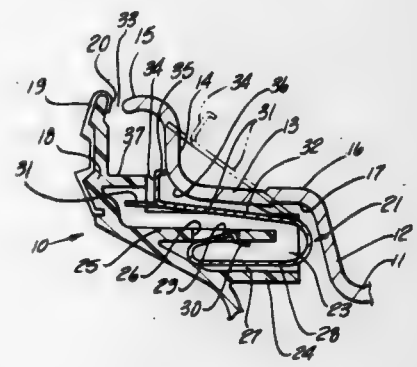
then deforming said heat softened sheet while supported only by the edges into a convex configuration to form said flared construction with said tufts extending outwardly therefrom.

4,348,061

WHEEL COVER RETENTION

James T. Bowling, Grosse Pointe Farms, Mich., assignor to J. Connell Associates, Bloomfield Hills, Mich.

Filed May 6, 1980, Ser. No. 147,420
Int. Cl.³ B60B *7/00*
U.S. Cl. 301—37 R **6 Claims**



1. A wheel cover adapted for attachment to an annular axial flange of a vehicle wheel wherein the axially outer portion of said axial wheel flange is connected by an arcuate cam portion with a generally radially directed wheel flange, said cover having a plurality of circumferentially spaced spring clips, each clip comprising a retention arm having a generally axially extending portion resiliently yieldable radially for enabling coaxial movement of said cover toward said wheel and for engaging said wheel flange with radially directed spring force to effect said attachment, each clip comprising a fixed portion secured to said cover and an axially outwardly opening loop resiliently connecting said fixed and axially extending portions for resiliently urging said axially extending portion into said engagement with said axial flange when said cover is moved coaxially toward said wheel, and means to facilitate coaxial alignment of said cover and wheel in predetermined axially spaced relationship comprising locating means of said retention arm for engaging said wheel and camming said axially extending portion radially in the direction opposing said spring force to prevent said attachment when said retention arm is moved axially toward said wheel beyond a predetermined limit, said locating means comprising an axially outer portion of said axially extending portion adapted to engage said cam portion, a locating arm secured to said retention arm for mov-

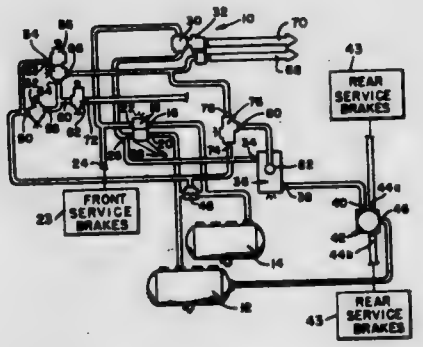
ing therewith and extending radially from said axially outer portion of said retention arm when said cover is attached to said wheel, said cover having movement limiting means projecting axially inward toward said locating arm and terminating at a location adjacent to and spaced axially outwardly therefrom to limit resilient yielding of said loop and axially outward movement of said locating arm and attached retention arm.

4,348,062

TRACTOR AIR BRAKE PROPORTIONING SYSTEM

James P. Koenig, Cuyahoga, Ohio, assignor to The Bendix Corporation, Southfield, Mich.

Filed Aug. 14, 1980, Ser. No. 178,225
Int. Cl.³ B60T 8/18, 8/26
U.S. Cl. 303—6 C 2 Claims



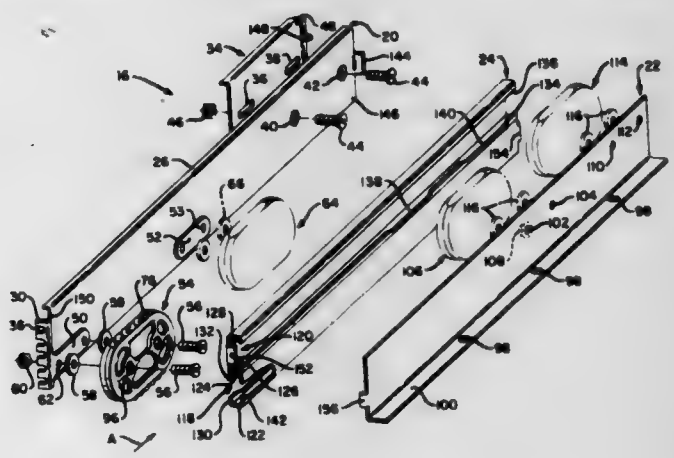
1. In a fluid pressure braking system for an articulated vehicle having a towed unit and a towing unit, a source of fluid pressure carried by the towing unit, a supply line interconnecting said units for communicating fluid pressure from the towing unit to the towed unit, said supply line being maintained at a predetermined pressure level by said source when the towed unit is coupled to the towing unit and the supply line is connected to the latter, said supply line being at a pressure level less than the predetermined pressure level when the towed unit is disconnected from the towing unit and said supply line is thereby disconnected from the towed unit, said towing unit having front and rear service brakes and a service brake actuating system, characterized in that said service brake actuating system includes proportioning valve means, said proportioning valve means being responsive to the pressure level in said supply line for communicating a pressure level to said rear service brakes on the towing unit that is less than the pressure level communicated to said proportioning valve means over at least a portion of the range of actuating pressures in said service brake system when the pressure level in said supply line is below said predetermined level, said proportioning valve means communicating substantially the same pressure level to said rear service brakes as is the pressure level communicated to said proportioning valve when the pressure level in said supply line is above said predetermined level, whereby a proportioned brake pressure level is communicated to said rear service brakes when the towing unit is disconnected from the towed unit and an unproportioned brake pressure level is communicated to said rear service brakes when the towed unit is connected to the towing unit, said proportioning valve means including a housing having a control port, an inlet port, and an outlet port, and valve mechanism for controlling communication between the inlet and the outlet ports, said valve mechanism being responsive to the pressure level at said control port to proportion communication between the inlet and outlet port over at least a portion of the range of actuating pressures, said braking system further including an inversion valve having a first port connected to said fluid pressure source, a second port connected to said control port of the proportioning valve, and a third port connected to said supply line, said inversion valve including means responsive to the pressure level at said third port to open communication between the first and second ports when the pressure at the third port is below a predetermined value and to vent said second port when the pressure level is above said predetermined value.

4,348,063

BALL BEARING SLIDE

William I. Chambers, Wichita, Kans., assignor to NCR Corporation, Dayton, Ohio

Filed Dec. 23, 1980, Ser. No. 219,758
Int. Cl.³ F16C 29/06
U.S. Cl. 308—3.8 5 Claims



1. A slide assembly comprising:

first, second, and third track members, with said third track member being positioned between said first and second track members;

means for attaching said first track member to a support member;

said third track member having first and second U-shaped channels extending along the length thereof, with said first and second U-shaped channels having the associated open sides thereof facing said first and second track members, respectively;

said first track member having first bearing means secured thereto to engage said first U-shaped channel in bearing relationship therewith; and

said second track member having second bearing means secured thereto to engage said second U-shaped channel in bearing relationship therewith to enable said second and third track members to be extended and retracted with respect to said first track member;

each said first and second bearing means comprising recirculating ball bearings in said bearing relationship;

said first bearing means comprising first and second spaced-apart, bearing units; and

each of said first and second spaced-apart bearing units comprising:

first and second plates facing each other and also being shaped to form an endless recirculating track therebetween, with said recirculating ball bearings being located in said endless recirculating track;

each of said endless recirculating tracks having first and second straight portions located on opposed sides thereof, with said recirculating ball bearings located in said first and second straight portions providing said bearing relationship with said first U-shaped channel.

4,348,064

LINEAR BALL BEARING UNIT

Hiroshi Teramachi, 2-34-8, Higashi-Tamagawa Setagaya-ku, Tokyo, Japan (158)

Filed Sep. 22, 1980, Ser. No. 189,903
Claims priority, application Japan, Oct. 20, 1979, 54/135580
Int. Cl.³ F16C 29/06
U.S. Cl. 308—6 C 2 Claims

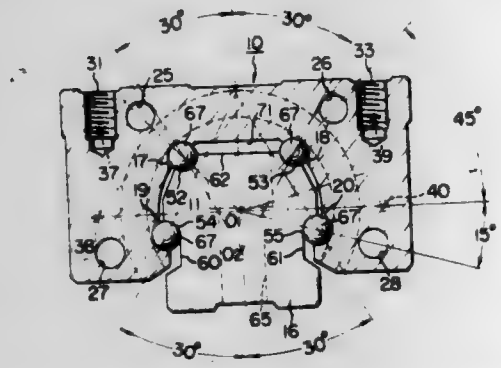
1. A linear ball bearing unit, comprising in combination:

a. an elongated bearing main body having front and rear end surfaces (23, 24);

b. an elongated hollow center portion defined between said end surfaces, said center portion being defined from a cylindrical configuration but having a horizontal flat top inner surface (71), an open bottom, and curved sides symmetrically disposed around the center axis of said cylindrical configuration;

c. two upper and two lower concave longitudinal parallel outer track grooves (12, 13, 14, 15) defined in said center portion, with loaded bearing balls (67) therein, said concave track grooves being adapted and disposed so as to provide the outer portion of a loaded travel path for said bearing balls, said concave track grooves having a radius of curvature substantially the same, but slightly larger as the bearing balls, the two upper track grooves (12, 13) being located on opposite sides of said horizontal flat top inner surface (71), the centerpoints defined by the radii of curvature of said two upper track grooves being located on a first set of theoretical radial lines making an angle of 45° with a theoretical horizontal diameter passing through the center axis of said center portion spherical configuration, and located above said theoretical horizontal diameter, the theoretical centers of the two lower track grooves (14, 15) being similarly located on a second set of theoretical radial lines marking an angle of 15° with said theoretical horizontal diameter, but located below said horizontal diameter;

d. an elongated track table (16) disposed in said center portion havig two upper and two lower inner grooves for



tracks (52, 53, 54, 55) defined therein corresponding to the outer track grooves so as to hold said bearing balls (67) therein, said track table having a theoretical cross-sectional configuration axially aligned with said hollow center portion, with a flat upper surface (62) disposed opposite said flat top inner surface (71), said inner grooves for tracks having a radius of curvature corresponding to that of the outer track grooves, the centerpoints of the radii of curvature of said two upper inner grooves being located on said first set of radial lines while the centerpoints of the radii of curvature of said two lower inner grooves being located on said second set of radial lines, said inner track grooves providing the inner portion of a loaded travel path for loaded balls in cooperation with the corresponding outer portion of a loaded travel path definedfor providing a non-loaded return travel path for the bearing balls, each of said non-loaded travel paths being adjacent to an outer track groove, each of said non-loaded travel paths having a radius of curvature substantially the same but slightly larger than that of the bearing balls and having centerpoints located on said first and second theoretical radial lines and each being equally spaced from its adjacent outer track groove as the other non-loaded travel paths;

f. caps (44, 45, 46, 47) disposed over the front and rear ends of said bearing main body connecting the defined loaded travel paths with the non-loaded travel paths, each cap having a U-shaped portion so that the bearing balls can pass between the loaded and non-loaded travel paths; and,

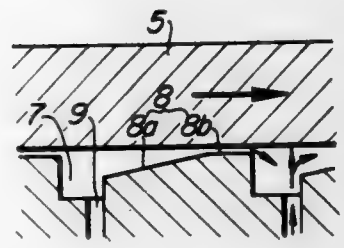
g. semi-circular guide tongues (48, 49, 50, 51) defined in the caps to charge direction of travel of the rolling bearing balls (67).

4,348,065

THRUST BEARING

Masahiro Yoshioka, Ibaraki, and Toshifumi Koike, Shimoinayoshi, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 10, 1980, Ser. No. 167,398
Claims priority, application Japan, Jul. 13, 1979, 54-88133
Int. Cl.³ F16C *32/06, 33/10*
U.S. Cl. 308—9 4 Claims



1. A tapered-land thrust bearing comprising:

a bearing surface having a plurality of lands, each of which has a tapered surface followed by a flat surface;

a plurality of lubricant grooves formed on said bearing surface, each of said grooves extending radially of the bearing surface between the flat surface of a circumferentially preceding land and the tapered surface of a circumferentially following land; wherein the improvement comprises at least one axially oriented lubricant feeding nozzle hole being formed in each of said lubricant grooves, each said nozzle hole having a diameter which is substantially smaller than the width of the lubricant grooves and being disposed in a bottom surface thereof at a position adjoining a leading edge of a tapered surface of the respective following land in a manner forming lubricant jet means for minimizing hot oil-carry-over from the flat surface of the respective preceding land to said tapered surface of the following land by causing hot oil from the preceding flat surface to be discharged through the respective lubricant groove within which the nozzle hole is formed.

4. A tapered-land thrust bearing comprising:

a bearing surface;

a plurality of lubricant grooves formed on said bearing surface and extending radially thereof; and

a plurality of tapered surfaces and flat surfaces, each tapered surface and each flat surface being disposed between the adjacent lubricant grooves extending radially of the bearing surface; wherein the improvement comprises each of said lubricant grooves having a peripheral dimension greater than the peripheral dimension of the tapered surface and the flat surface interposed between the adjacent lubricant grooves, and a plurality of lubricant feeding nozzle holes formed in said lubricant grooves, at least one of said nozzle holes being disposed close to the respective tapered surface of said bearing surface.

4,348,066

FOIL BEARING MOUNTING

Giridhari L. Agrawal, Torrance, and Edward J. Hockey, Vista, both of Calif., assignors to The Garrett Corporation, Los Angeles, Calif.

Continuation of Ser. No. 47,601, Jun. 11, 1979, abandoned. This application Feb. 17, 1981, Ser. No. 235,061
Int. Cl.³ F16C *32/06*
U.S. Cl. 308—9 13 Claims

1. A fluid bearing comprising:

a pair of members arranged for relative movement with respect to one another, one of said pair of members having a plurality of circular slots having a depth less than the diameter but greater than the radius of the slots to form lip

means at the edge of the slots at the surface of said one of said pair of members; and

a plurality of compliant foils operably disposed between said pair of relatively movable members, each of said plurality of compliant foils having at one end thereof a circular loop



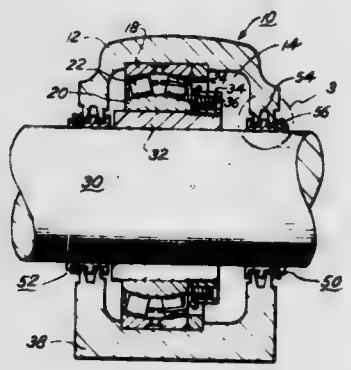
having an outer diameter slightly less than the diameter of the circular slots, said loop pivotably disposed in a corresponding circular slot of said one of said pair of relatively movable members and restrained by the lip means at the edge of the slot.

4,348,067

BEARING SEAL

Robert W. Tooley, Osceola, Ind., assignor to Reliance Electric Company, Mishawaka, Ind.

Filed Mar. 3, 1980, Ser. No. 126,451
Int. Cl.³ F16J *15/32*
U.S. Cl. 308—187.1 16 Claims



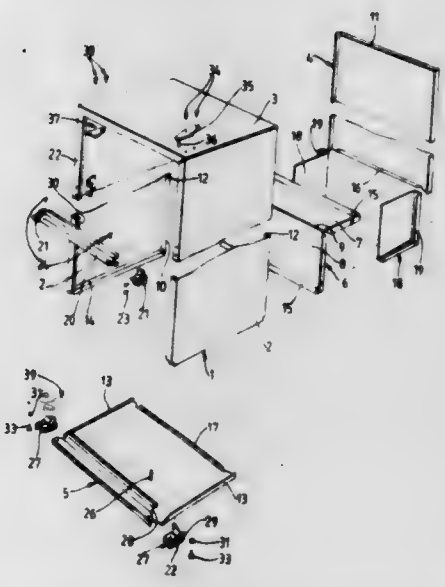
1. A seal for a shaft bearing having a housing with an opening therein for receiving a shaft: said seal comprising a sleeve for receiving a shaft, said sleeve extending through said opening for the shaft and being elongated and positioned axially with respect to the shaft and providing relative axial movement between the shaft and sleeve, a labyrinth sealing section having intermeshing, radially extending, annular grooves and ribs on the inner periphery of the opening and on the external periphery of said sleeve, an annular radially extending sealing surface on the housing adjacent one end of the opening in the housing, and a V-ring seal mounted on said sleeve adjacent said labyrinth section and spaced axially therefrom and having a lip thereon for seating on said radially extending sealing surface, the shaft being capable of sliding axially relative to the sleeve during operation of the bearing to permit expansion and contraction of the shaft, thereby maintaining the proper operating relationship between the various parts of the combination seal on the shaft and in the housing.

4,348,068

REFRIGERATOR CASING

Harold R. Hawkins; Clive A. Gardner; Lindsey J. Roke; Richard J. Clark, and Warwick F. Rumble, all of Auckland, New Zealand, assignors to Fisher & Paykel Limited, Auckland, New Zealand

Filed Jan. 22, 1980, Ser. No. 114,329
Claims priority, application New Zealand, Jan. 26, 1979, 189489
Int. Cl.³ A47B *43/00, 81/00*
U.S. Cl. 312—257 R 3 Claims



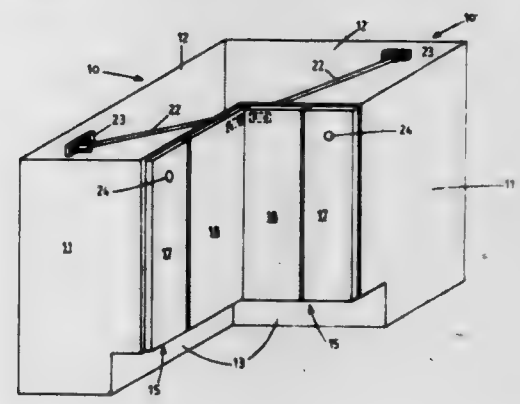
1. A casing comprising a shell member having a transverse cross section in the form of a substantially square bottomed U, a bottom panel closing part of the space between the ends of the arms of said U-shaped shell member opposite the base of said U-shaped shell member, a back panel closing part of the space between said arms of said shell member, said bottom panel and said back panel not extending to a common boundary, a compartment panel engaged between said back panel and said bottom panel, and end panels at the ends of said compartment panel which are positioned adjacent said outer shell, said end panels having spacing flanges thereon so that a gap is provided between said outer shell and said end panels.

4,348,069

CABINETS AND DOORS THEREFOR

John A. Lindsay, Invercargill, New Zealand, assignor to Lynwood Products Limited, Invercargill, New Zealand

Filed Apr. 23, 1980, Ser. No. 142,882
Claims priority, application New Zealand, Apr. 26, 1979, 190289
Int. Cl.³ A47B *81/00*; E05F *1/08*
U.S. Cl. 312—324 17 Claims



1. In a cupboard having an opening defined at least in part by two lateral parallel walls a door for closing the opening said door comprising a planar closure member having one edge hingedly mounted to one of said lateral walls and a second

edge which is parallel to said first edge engageable with the other lateral wall when said closure member is in the closed position, the closure member being formed in two sections of different width, said sections being hingedly interconnected along adjacent edges which are parallel to said first and second edge so that said two sections fold back parallel to and against one another when the closure member is in the fully opened position, said closure member in said fully open position being located outside said cupboard with the said second edge adjacent the edge of the lateral wall to which said first edge is hingedly connected, and an arm pivotally mounted by one end to said closure member adjacent said second edge and at its other end to a fixture remote from said opening but in a plane parallel to that of said opening.

4,348,070

INSULATION FOR FLAT CONNECTORS

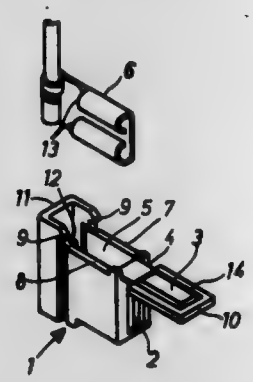
Hans Simon, Bruchhausener Strasse, 5463 Unkel, Rhein, Fed. Rep. of Germany

Filed Dec. 11, 1979, Ser. No. 102,976

Claims priority, application Fed. Rep. of Germany, Sep. 4, 1979, 7925002[U]

Int. Cl.³ H01R *13/48*

U.S. Cl. 339—59 R **5 Claims**



1. Insulation apparatus for flat connectors comprising a unitary plastic housing including a first narrow side wall and a second side wall extending substantially transversely to said first side wall, an embedding opening being formed in said first side narrow wall and an insertion opening being formed in said second side wall, a lid integrally connected to said housing by a hinge frame proximate to said insertion opening such that said lid is rotatable to partially close said embedding opening, and at least one latch means integrally formed on said housing for arresting said lid when the latter closes said embedding opening.

4,348,071

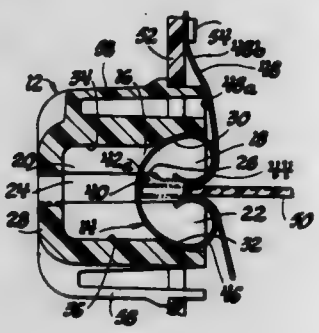
PRINTED CIRCUIT CONNECTOR

Shao-Chung Hsieh, Warren, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Jun. 11, 1980, Ser. No. 158,502

Int. Cl.³ H01R *13/62*

U.S. Cl. 339—75 MP **3 Claims**



1. A connector for mating a flexible printed circuit to a printed circuit board comprising:

a housing having a cavity and a spring disposed in the cavity,

said spring having a resilient body and first and second sets of laterally spaced, resilient fingers which are at respective ends of the body and which curve inwardly from the respective ends,

the fingers of the first set having convex portions spaced from convex portions of the fingers of the second set to define a lateral slot,

said cavity having an entrance portion at one end and a second portion of reduced height inwardly of the entrance portion, said spring being initially disposed in the entrance portion for receiving a flexible printed circuit and a printed circuit board in the lateral slot,

means for temporarily retaining the spring in the entrance portion so that the convex portions of the fingers are moveable relative to the housing while the flexible printed circuit and the printed circuit board are inserted into the lateral slot against the body of the spring, and

said spring being moveable into the second portion of the cavity responsive to further insertion of the flexible printed circuit and the printed circuit board.

4,348,072

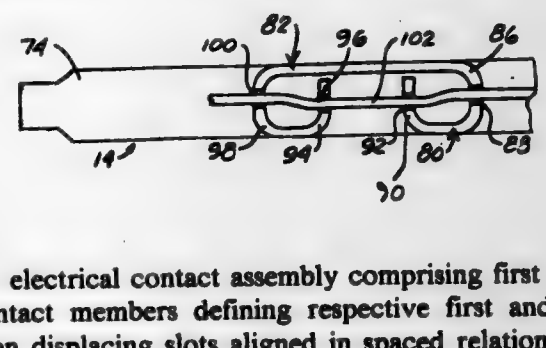
INSULATION DISPLACING ELECTRICAL CONTACT ASSEMBLY

Bernard V. Gudaitis, Elgin, Ill., assignor to Thomas & Betts Corporation, Raritan, N.J.

Division of Ser. No. 955,239, Oct. 26, 1978, Pat. No. 4,209,217. This application Dec. 12, 1979, Ser. No. 102,770

Int. Cl.³ H01R *4/24*

U.S. Cl. 339—97 R **10 Claims**



1. An electrical contact assembly comprising first and second contact members defining respective first and second insulation displacing slots aligned in spaced relation along a first axis and a third contact member defining a third insulation displacing slot disposed intermediate said first and second insulation displacing slots, said third contact member biasingly disposing said third slot along a second axis offset from said first axis and being movable to dispose said third slot along said first axis in the course of insertion of an electrical conductor in said assembly, said first, said second, and said third contact members being portions of a common sheet member, said first, second and third insulation displacing slots being mutually disposed in a common direction for jointly receiving a common length of wire therein.

4,348,073

FRANGIBLE POLARIZING RIB FOR MULTIPLE CONTACT HEADER

Sidney V. Worth, Flourtown, and Keith D. Nelson, Willow Grove, both of Pa., assignors to Continental-Wirt Electronics Corp., Warminster, Pa.

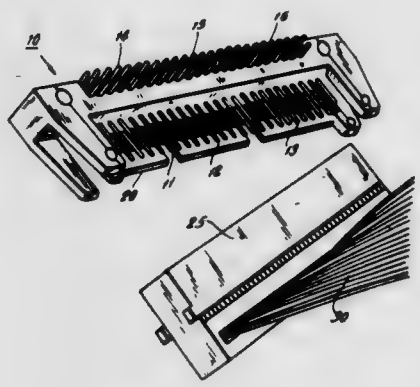
Filed Jun. 27, 1980, Ser. No. 163,740

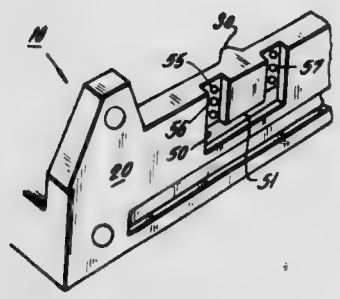
Int. Cl.³ H01R *13/645*

U.S. Cl. 339—186 M **9 Claims**

9. The structure of claim 1 or 5, wherein said reduced wall thickness slots consist of first and second spaced, parallel reduced thickness slots which extend from the outer edge of said first wall and are perpendicular to said first wall; and a channel extending through said first wall and communicating with the ends of said first and second slots, whereby said first and sec-

ond slots and said channel define the area of said frangible section and define an opening with sharp, regular sides when





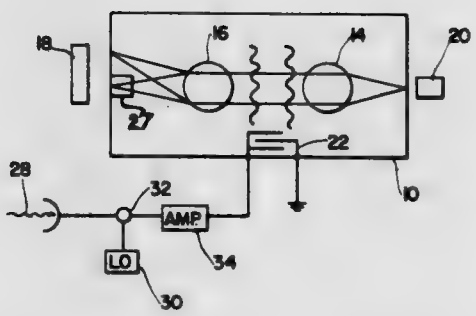
said frangible section is removed from said first wall by breaking it out along said first and second slots.

4,348,074

APPLICATION OF ION IMPLANTATION TO LINBO$_3$ INTEGRATED, OPTICAL SPECTRUM ANALYZERS

William K. Burns, Alexandria, and Thomas G. Giallorenzi, Springfield, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 3, 1980, Ser. No. 126,268
Int. Cl.^{3} G02B *5/174*
U.S. Cl. 350—96.11 15 Claims



1. In an improved integrated optical spectrum analyzer, including a waveguide, a substrate, a light source, a collimator lens, a transform lens, a light-detector array and a SAW means, the improvement comprising:

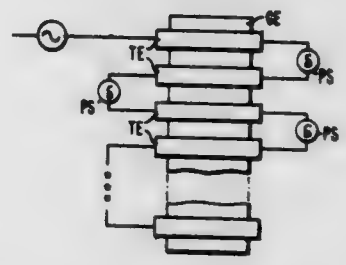
light-absorbing means within said substrate paralleling the bottom of said substrate.

4,348,075

BULK ACOUSTIC WAVE INTEGRATED OPTICAL DEFLECTOR AND MONOLITHIC A/D CONVERTER USING SUCH DEFLECTOR

Milton Gottlieb, Pittsburgh, and Gerald B. Brandt, Edgewood Borough, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 9, 1979, Ser. No. 82,513
Int. Cl.^{3} G02B *5/14*
U.S. Cl. 350—96.13 15 Claims



1. In a monolithic deflector comprising:

a slab of substrate material;

an optical waveguide disposed in a plane of said slab in which is propagated incident light;

a plurality of parallel spaced bulk acoustic wave transducer elements disposed on said optical waveguide in a plane parallel to said plane and distributed along a direction transverse to the operative direction of said optical waveguide for passing respective ultrasonic bulk acoustic waves through parallel channels of said optical waveguide and in a direction normal thereto for interaction with light guided in said parallel channels, respectively

said transducer elements including: respective top electrodes, a common ground electrode disposed on said waveguide, an optical insulator of refractive index less than said waveguide interposed between said ground electrode and said waveguide; piezoelectric material sandwiched between said ground electrode and a corresponding one of said top electrodes; said piezoelectric material and said top electrode being coextensive and spaced from one transducer element to the other by a predetermined spacing s, and said transducer elements having a length l in the operative direction of said optical waveguide such that l is substantially larger than said spacing s; the deflection angle caused by acoustic-optic interaction being defined by sin $\phi=\lambda/s$; the combination of:

a plurality of controllable phase shifters associated with the respective transducer elements for introducing cumulative phase shifts of identical relative magnitude between consecutive transducer elements; and

a voltage signal applied to said transducer elements through the associated phase shifters for establishing by acoustic-optic interaction a selected deflection angle for said guided light which is proportional to the change of refractive index caused by said phase shifters and to the length of propagation through said transducers, said selected deflection angle being in relation to the voltage of said signal.

4,348,076

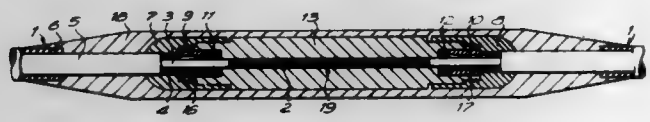
FIBRE-OPTIC CABLE JOINTS

Ronald C. Oldham, Chandlers Ford, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Aug. 29, 1979, Ser. No. 70,580
Claims priority, application United Kingdom, Oct. 3, 1978, 39147/78
Int. Cl.^{3} G02B *7/26*
U.S. Cl. 350—96.22 13 Claims

7. A ferrule for use in joining two fibres arranged in a respective tubular strength member, comprising respective means whereby to grip the end of the strength member at each cable

end, a tubular ferrule body comprising one or more longitudinally-split portions and means associated with each end of the ferrule body for clamping the portions of the ferrule body



together and to the strength member, gripping means such as to transfer strain between the strength members of the two cables in use thereof.

4,348,077

ELECTROCHROMIC DISPLAY DEVICE

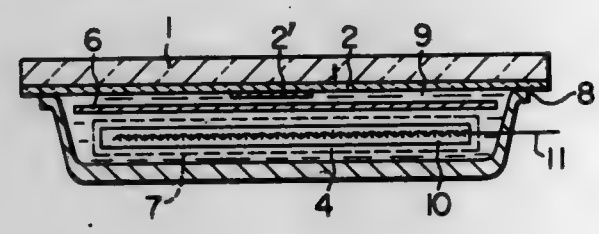
Shigeo Kondo, Hirakata, and Nobuyuki Yoshiike, Ikoma, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Nov. 19, 1979, Ser. No. 95,380

Claims priority, application Japan, Nov. 20, 1978, 53-143649; Jul. 17, 1979, 54-90600

Int. Cl.³ G02F *1/17*

U.S. Cl. 350—357 **55 Claims**



1. An electrochromic display device having a display memory function, comprising:

an electrolyte;

at least one display electrode disposed in contact with said electrolyte;

at least one counter electrode spaced from said display electrode and disposed in contact with the electrolyte, said counter electrode containing at least berlinate which is insoluble in the electrolyte; and

means for applying first and second electric potentials between said display and counter electrodes for causing reversible oxidation and reduction reactions on the electrodes,

said first electric potential being substantially constant to cause a stable display to appear on the display electrode which display is maintained even after removal of said first electric potential, said second electric potential being applied to cause the display to disappear.

4,348,078

ENHANCEMENT OF OPTICAL ABSORPTION AND CONTRAST OF ELECTROCHROMIC DEVICES

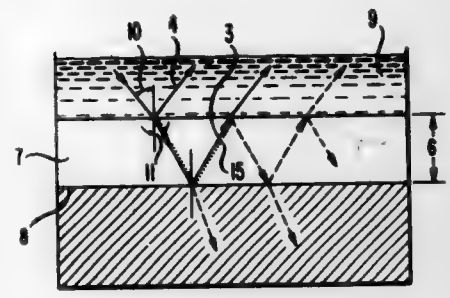
James D. E. McIntyre, Gillette, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jul. 30, 1980, Ser. No. 173,813

Int. Cl.³ G02F *1/17*

U.S. Cl. 350—357 **7 Claims**

1. An electrochromic device comprising (1) an electrolyte in intimate contact with both an electochromic layer of (2) an electrochromic electrode, and with a (3) counterelectrode, characterized in that said electrochromic layer includes means for receiving incident light at an angle other than 90 degrees to the surface of said layer, said electrochromic electrode includes a reflective backing surface, and the dimensions of said electrochromic electrode that determine the optical path



length from said surface of said electrochromic layer to said reflective surface and back produces destructive interference.

4,348,079

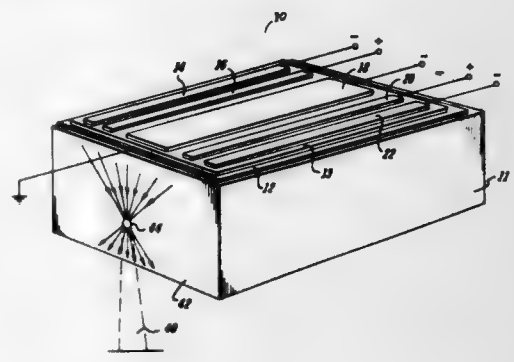
ACOUSTO-OPTIC DEVICE UTILIZING FRESNEL ZONE PLATE ELECTRODE ARRAY

Richard V. Johnson, Pasadena, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 8, 1980, Ser. No. 138,629

Int. Cl.³ G02F *1/11*

U.S. Cl. 350—358 **5 Claims**



1. In a laser scanning system including a Bragg acousto-optic device and a laser source directing a laser light beam through an acousto-optic medium within said Bragg device, the improvement of apparatus for focusing a sound field in said Bragg device, said improvement comprising:

a Fresnel zone plate electrode array bonded to one surface of said medium, and

means for driving each electrode of said array with a radio frequency voltage of sufficient magnitude to activate said acousto-optic device to modulate and/or deflect said laser light beam passing through said acousto-optic medium.

4,348,080

OPTICAL SCANNING APPARATUS AND METHOD

Hiroyoshi Funato, Chigosaki, Japan, assignor to Ricoh Company, Ltd., Japan

Filed Oct. 17, 1979, Ser. No. 85,486

Claims priority, application Japan, Oct. 25, 1978, 53/131332

Int. Cl.³ G02B *27/17*

U.S. Cl. 350—3.71 **1 Claim**

1. An optical scanning apparatus comprising:

a rotary disc having a plurality of circumferentially equally spaced and disposed holograms thereon, all having a selected radial width and positioned at a single radial position on said disc, each hologram being of a type which is prepared by the interference of a reference light beam with an object light beam;

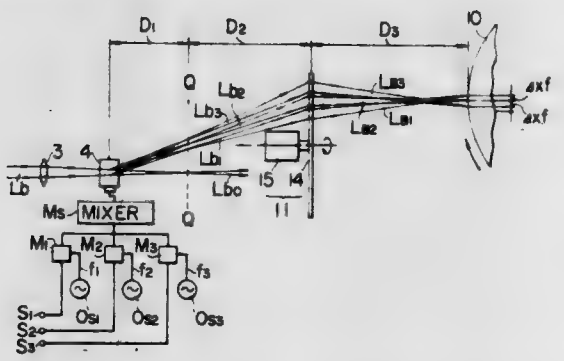
a motor connected to said rotary disc for rotating said rotary disc continuously at a predetermined speed; and

reconstruction beam generating means associated with said rotary disc for generating a plurality of diverging fixed information-carrying beams each at an acute angle to each

other, and directing them toward and through each of said holograms sequentially, said selected radial width of each of said holograms being sufficient to receive all said information-carrying beams, said information-carrying beams acting as a plurality of reference beams to form a plurality of reconstructed light beams;

said reconstruction beam generating means comprising a laser for producing a laser beam, beam expanding and converging lens means spaced from said laser for receiving said laser beam and converging said laser beam;

acousto-optic means spaced from said beam expanding and converging lens means for receiving said laser beam and



producing said information-carrying beams, said acousto-optic means having an uninterrupted path to said disc for said information-carrying beams; and electric circuit means connected to said acousto-optic means for producing information signals and applying said information signals to said acousto-optic means to produce said information-carrying beams, said circuit means producing a plurality of information signals each at a different frequency for producing, in said acousto-optic means, the information-carrying beams which are each directed through said holograms, said information-carrying beams all being scanned in a direction contained in a plane which is parallel to a plane containing said rotary disc.

4,348,081

PROJECTION LENS

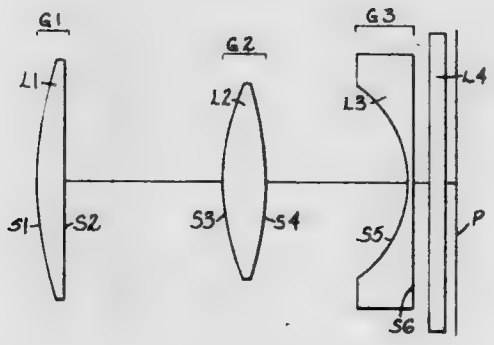
Ellis I. Betensky, New York, N.Y., assignor to U.S. Precision Lens Inc., Cincinnati, Ohio

Continuation-in-part of Ser. No. 70,748, Sep. 5, 1979, Pat. No. 4,300,817, which is a continuation-in-part of Ser. No. 940,724, Sep. 6, 1978, abandoned. This application Jan. 28, 1981, Ser. No. 228,012

The portion of the term of this patent subsequent to Nov. 17, 1998, has been disclaimed.

Int. Cl.³ G02B *3/04, 9/12, 9/34, 27/18*

U.S. Cl. 350—412 **22 Claims**



1. A projection lens for a cathode ray tube display consisting of three groups, the first group from the image end comprising an element having at least one aspheric surface, the second group comprising a bi-convex element, the third group consisting a negative element having an aspheric surface concave to the image and serving as a field flattener essentially correcting the Petzval curvature of the first and second groups, said three groups have optical powers K1, K2 and K3, the overall lens has an optical power of 1.0, and

$$0.25<K1<0.50$$

$$0.85<K2<1.20$$

$$-1.3<K3<-0.9$$

4,348,082

ZOOM LENS HAVING HIGH ZOOM RATIO INCLUDING WIDE ANGLE RANGE

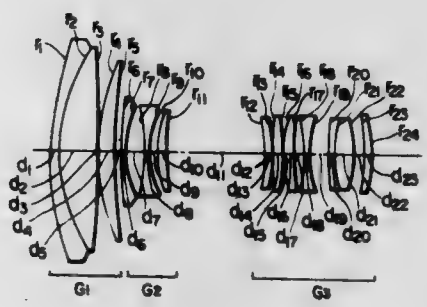
Ryota Ogawa, Kawagoe, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 13, 1980, Ser. No. 149,410

Claims priority, application Japan, May 16, 1979, 54-60040

Int. Cl.³ G02B *15/14*

U.S. Cl. 350—423 **5 Claims**



1. A zoom lens wherein a resultant refractive power is determined by a positive first lens group, a negative second lens group and a positive third lens group arranged in that order from the object side, said first and third lens groups being integrally movable along the optical axis to thereby vary the zoom ratio, a compact zoom lens system having a high zoom ratio including a wide angle range characterized in that:

(a) said second and third lens groups are adapted to simultaneously increase respective zoom ratios, said zoom lens satisfying the following conditions:

$$0.9<e_{2W}/f_3<1.4,$$

$$1.8<f_1/f_W<2.6$$

$$-2.8<(f_1-e_{1T})/f_2<-1.6, \text{ and}$$

$$0.7<f_3/f_W<1.3$$

where f_1, f_2 and f_3 are the focal lengths of the first, second and third lens groups, respectively, e_{2W} is the distance between the principal points of said second and third lens groups at the wide angle end of said lense, e_{1T} is the distance between the principal points of said first and second lens groups at the telephoto end of said lens, and f_W is the overall focal length at the wide angle end of said lens;

(b) said first lens group is composed, in order from the object side, of a negative meniscus lens L_1 having a strong negative lens power toward the image side, a positive lens L_2 having a strong positive lens power toward the object side and a positive meniscus lens L_3 having a strong positive power toward the object side, the lenses L_1 and L_2 being cemented to each other, said first lens group satisfying the following conditions:

$$1.75<n_1,$$

$$n_2<1.7,$$

$$1.65<n_3<1.75,$$

$$\nu_1<30, \text{ and}$$

$50<(\nu_2+\nu_3)/2$

where n_1, n_2 and n_3 are the refractive indices of the lenses L_1, L_2 and L_3, respectively, and ν_1, ν_2 and ν_3 are the Abbe numbers of the lenses L_1, L_2 and L_3, respectively;

(c) said second lens groups is composed, in order from the object side, of a negative meniscus lens L_4 having a strong negative lens power toward the image side, a negative lens L_5 and a positive lens L_6 having a strong positive lens power toward the object side, said second lens group satisfying the following conditions:

$1.7<(n_4+n_5)/2$,

$1.75<n_6$,

$45<(\nu_4+\nu_5)/2$,

$\nu_6<30$, and

$0.15<r_9/f_2-r_{10}/f_2<0.30$

where r_9 and r_{10} are radii of curvature of the lens surfaces of the lenses L_5 and L_6 facing each other, n_4, n_5, n_6 are the refractive indices of the lenses L_4, L_5 and L_6, respectively, and ν_4, ν_5, and ν_6 are the Abbe number of the lenses L_4, L_5 and L_6, respectively;

(d) said third lens group is composed, in order from the object side, of a positive meniscus lens L_7 having a strong negative lens power toward the object, a biconvex lens L_8, positive lens L_9, a negative lens L_{10}, a negative meniscus lens L_{11} having a strong negative lens power toward the image, a biconvex lens L_{12} and a positive lens L_{13}, the lenses L_{11} and L_{12} being cemented to each other, said third lens group satisfying the following conditions:

$-3f_3<r_{12}<-f_3$,

$0.6f_3<r_{19}<1.5f_3$,

$0.4f_3<r_{21}<0.8f_3$,

$n_{10}>1.70$,

$0.2<n_{11}-n_{12}$,

$\nu_{10}<10$, and

$15<\nu_{12}-\nu_{11}$

where n_7, n_8, . . . , n_{13} are the refractive indices of the lenses L_7, L_8, . . . , L_{13}, respectively, ν_7, ν_8, . . . , ν_{13} are the Abbe numbers of the lenses L_7, L_8, . . . , L_{13}, respectively, and r_{12}, r_{19}, r_{21} are the radii of curvature of the object side surface of the lens L_7, the image side surface of the lens L_{10} and the image side surface of the lens L_{11}, respectively.

4,348,083

CRIME PREVENTIVE DOOR VIEWER

Yasushi Kamimura, 3-3, Chuou 2-chome, Outa-ku, Tokyo, Japan

Filed Apr. 1, 1980, Ser. No. 136,303
Claims priority, application Japan, Apr. 5, 1979, 54-43957
Int. Cl.³ G02B *25/04*
U.S. Cl. 350—453 7 Claims

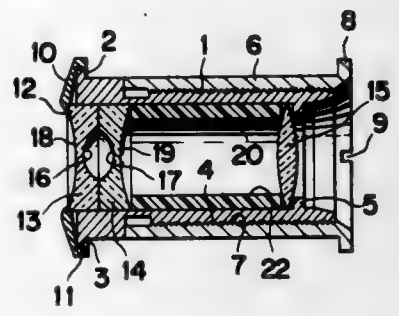
1. A wide-angle lens assembly particularly suitable for use as a door viewer having an image side and an object side comprising:

an eyepiece mounted proximate said image side of said lens assembly;

a first and a second objective lens juxtaposed adjacent said image side of said lens assembly; and

focal length means intermediate said eyepiece and said first and second lenses to maintain a desired distance therebetween;

said first and said second objective lenses being identically formed each with concave surfaces on the opposite sides thereof, the concave surface on one side of each lens having a larger radius of curvature and the concave surface on the other side of each of said lenses having a smaller radius of curvature, said lenses being juxtaposed with said sides having the concave surfaces with the smaller radii of curvature facing toward each other and with the sides having the concave surfaces with the larger radii of curvature facing away from each other.

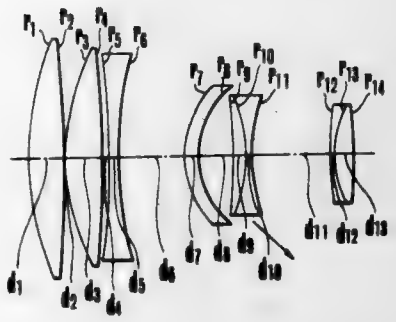


4,348,084

TELE-PHOTOGRAPHIC LENS OF LARGE APERTURE RATIO

Nozomu Kitagishi, Kawasaki, and Kazuo Fujibayashi, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 30, 1980, Ser. No. 144,989
Claims priority, application Japan, May 7, 1979, 54-55474
Int. Cl.³ G02G *9/62;* G02B *13/02*
U.S. Cl. 350—454 11 Claims



1. A tele-photographic lens of a large aperture ratio comprising:

a fixed first lens group which has a positive refracting power;

a fixed second lens group which has a negative refracting power and is disposed on the image side of said first lens group;

a third lens group which has a negative refracting power and is disposed on the image side of said second lens group, said third lens group being arranged to be movable in the direction of the optical axis of the lens for focusing it on an object to be photographed; and

a fixed fourth lens group which has a positive refracting power and is disposed on the image side of said third lens group;

wherein, when said tele-photographic lens is focused on an object located at infinity, the compound focal length of the first, second and third lens groups is f(I,II,III) and the focal length of the whole lens system is fT, said tele-photographic lens is arranged to satisfy the following condition:

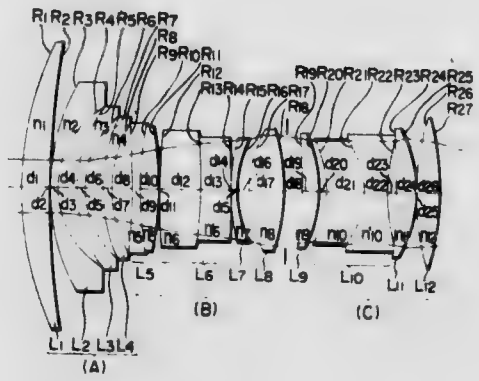
$2\ fT<f(I, II, III)<2.6\ fT$

4,348,085

INVERTED TELEPHOTO TYPE WIDE ANGLE LENS

Satoshi Mogami, Kodaira, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Jul. 18, 1980, Ser. No. 170,962
Claims priority, application Japan, Jul. 26, 1979, 54-95535
Int. Cl.³ G02B *13/04*
U.S. Cl. 350—458 4 Claims



1. An inverted telephoto type wide angle lens comprising, in succession from the object side, a divergent first group (A) including a positive meniscus lens (L_1) having its convex surface facing the object side, and negative meniscus lenses (L_2–L_4) having their convex surfaces facing the object side; a diaphragm-forward convergent second group (B) including positive lenses (L_5, L_6), a positive lens (L_8) and a negative meniscus lens (L_7) disposed between said positive lenses (L_5, L_6) and said positive lens (L_8) and having its convex surface facing the object side; and a diaphragm-rearward convergent third group (C) including a positive meniscus lens (L_9) having its convex surface facing the image side, positive lenses (L_{11}, L_{12}) and a doublet biconcave negative lens (L_{10}) disposed between said positive meniscus lens (L_9) and said positive lenses (L_{11}, L_{12}); said inverted telephoto type wide angle lens satisfying the following conditions:

$$d_{21}+d_{22}>0.5f \quad (I)$$

$$d_{19}>d_{20} \quad (II)$$

$$0.45R_{15}<R_{16}<0.73R_{15} \quad (III)$$

where f is the total focal length of the entire system, $(d_{21}+d_{22})$ is the center thickness of the lens forming the biconcave negative lens (L_{10}) in said third group (C), d_{19} is the center thickness of the positive meniscus lens (L_9) in said third group (C), d_{20} is the air space between the positive meniscus lens (L_9) and the negative lens (L_{10}) in said third group (C), and R_{15} and R_{16} are the curvature radii of the surfaces of the negative lens (L_7) in said second group (B) which are adjacent to the object side and the image side, respectively.

4,348,086

CAMERA ATTACHMENT FOR OBTAINING INSTANTANEOUS CONTACT PRINTS

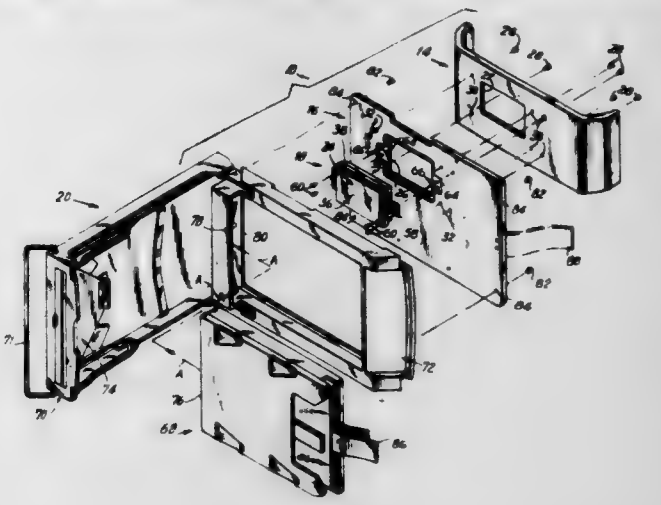
Martin Forscher, 71 Deepwood Dr., Chappaqua, N.Y. 10514

Filed Oct. 30, 1981, Ser. No. 316,851
Int. Cl.³ G03B *17/52, 17/56*
U.S. Cl. 354—83 9 Claims

7. An attachment to a camera for obtaining instantaneous prints of pictures taken by said camera comprising,

(a) a fiber optic face plate having opposed front and rear surfaces adapted to be secured to the back of said camera with said front surface being in the focal plane of said camera whereby an image formed on said front surface is transferred to said rear surface, and

(b) a housing adapted to receive instant picture forming film adapted to be secured to said camera so that picture forming film in said housing is in surface to surface contact with the rear surface of said fiber optic face plate whereby the image formed on said front surface is automatically



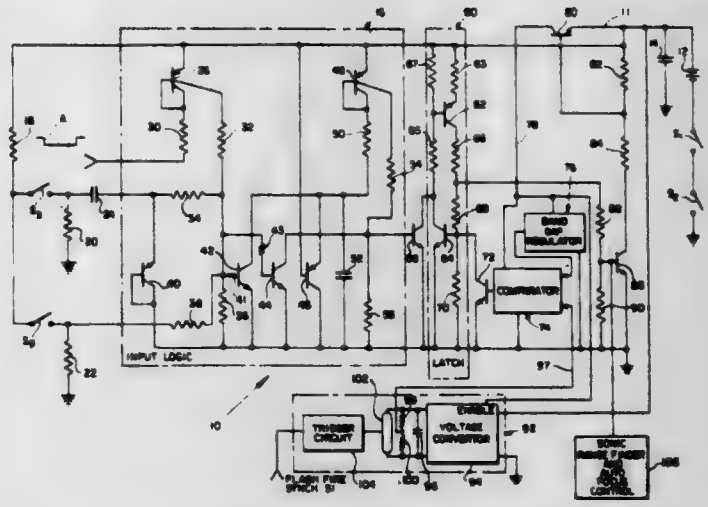
transferred to said film to enable instantaneous printing of said image on said film.

4,348,087

PHOTOGRAPHIC SYSTEM FOR AUTOMATICALLY CHARGING ELECTRONIC FLASH

Seymour Ellin, Chestnut Hill, and John W. Stempeck, Reading, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 3, 1981, Ser. No. 250,853
Int. Cl.³ G03B *15/03*
U.S. Cl. 354—139 18 Claims



1. A photographic control system for use with a camera and electronic flash apparatus of the type having a converter circuit for converting a low DC voltage to a select high DC voltage stored by a capacitor for subsequent discharge through a flashtube to effect a flash of artificial illumination, said control system comprising:

switch means for closing an electrical connection in response to the readying of the camera in anticipation of implementing a photographic exposure cycle; and control means responsive to the closing of said switch means for enabling the converter to operate and convert the low DC voltage to the select high DC voltage and thereafter immediately responsive to the voltage on the storage capacitor reaching the select high DC voltage level for disabling the converter from further operation so as to allow the select high DC voltage to gradually discharge from the storage capacitor, said control means being further responsive to the subsequent actuation of the camera to commence the photographic exposure cycle for reenabling the converter to again operate and convert the low DC voltage to the select high DC voltage and thereafter responsive to the voltage on the storage capacitor again reaching the select high DC voltage level for again disabling the converter from further operation so as to allow

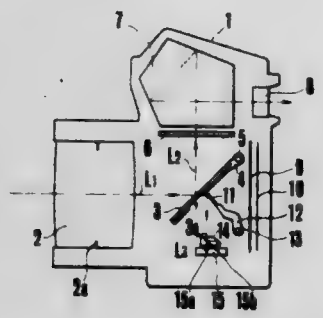
the select high DC voltage to again gradually discharge from the storage capacitor during the remainder of the exposure cycle.

4,348,088

SINGLE LENS REFLEX CAMERA

Masayoshi Yamamichi, Kawasaki, and Nobuo Tezuka, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 8, 1980, Ser. No. 166,969
Claims priority, application Japan, Jul. 10, 1979, 54-87115; Jul. 13, 1979, 54-89113; Jul. 13, 1979, 54-89116
Int. Cl.[3] G03B *19/12*
U.S. Cl. 354—152 33 Claims



1. A single lens reflex camera comprising:

(A) a viewfinder optical system adapted to observe an image to be formed on a film plane by an objective lens device;

(B) main movable reflection mirror means for directing an image forming light beam coming from said objective lens device to said viewfinder optical system, said main movable reflection mirror means being movable between a position so advanced into the optical path for exposure as to direct the image forming light beam coming from said objective lens device to said viewfinder optical system and a position so retracted to the outside of said optical path for exposure as to allow said film to be exposed to the image forming light beam coming from said objective lens device, and having a portion for passage at least a portion of the image forming light beam therethrough;

(C) auxiliary movable reflection mirror means for taking out the light passed through said light-passage allowing portion of said main movable reflection mirror means, said auxiliary movable reflection mirror means being arranged independently of said main movable reflection mirror means and movable between a position so advanced into said optical path for exposure behind said main movable reflection mirror means as to take out a light beam passage through said light-passage allowing portion of said main movable reflection mirror means and a position so retracted to the outside of said optical path for exposure as not to obstruct the exposure of said film to the image-forming light beam coming from said objective lens device;

(D) diaphragm controlling means for controlling diaphragm means equipped within said objective lens device for defining an exposure aperture opening from maximum possible aperture opening to a required aperture opening; and

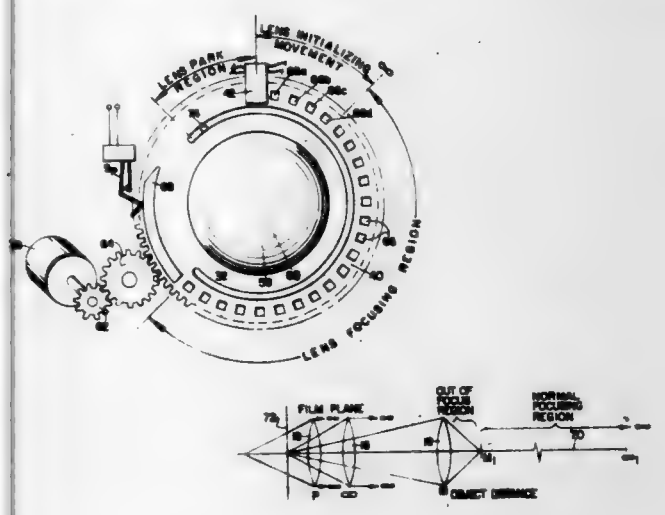
(E) a single drive means common to said movable reflection mirror means, said auxiliary movable reflection mirror means and said diaphragm actuating means for moving said main movable reflection mirror means and said auxiliary movable reflection mirror means from their respective advanced positions to their respective retracted positions and for causing said diaphragm controlling means to control said diaphragm means equipped within said objective lens device, said drive means having a first controlling portion for said main movable reflection mirror means, a second controlling portion for said auxiliary movable reflection mirror means and a third controlling portion for said diaphragm controlling means.

4,348,089

LENS MOVEMENT ACTUATED REFERENCE AND SEQUENCING MEANS FOR CAMERAS HAVING UNIDIRECTIONAL AUTOMATIC FOCUSING

Edwin K. Shenk, Westford, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation of Ser. No. 865,852, Dec. 30, 1977, abandoned, which is a continuation-in-part of Ser. No. 729,289, Oct. 4, 1976, abandoned. This application Feb. 21, 1979, Ser. No. 13,681
The portion of the term of this patent subsequent to Apr. 22, 1997, has been disclaimed.
Int. Cl.[3] G03B *3/10*
U.S. Cl. 354—195 62 Claims



1. A camera having an image plane and comprising:

means for selectively coupling said camera to a source of electrical energy;

a lens mounted for displacement over a given operational range wherein it alternately serves to focus images of subjects positioned in various locations within a normal range of selectable subject distances at said image plane, and also for displacement outside of its said given operational range into another range wherein it does not serve to focus images of subjects positioned within said normal selectable subject distance range at said image plane, said lens being normally located within its said other range when said camera is inoperative;

means for producing a signal indicative of the position of a particular subject, within said normal selectable subject distance range, selected to be photographed; and

drive means responsive to said signal for effecting the movement of said lens from its normally inoperative position within its said other range into its position within its said operational range wherein it serves to focus an image of the particular subject at said image plane to facilitate the recording of an image of the particular subject on film located at said image plane.

4,348,090

INVERTED GALILEAN FINDER

Yutaka Iizuka, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed May 22, 1981, Ser. No. 266,218
Int. Cl.[3] G03B *13/08*
U.S. Cl. 354—224 5 Claims

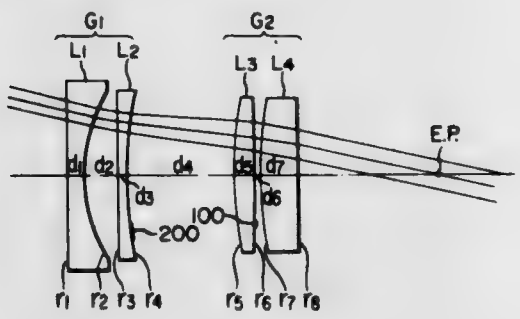
1. An inverted Galilean finder having a divergent objective lens and a convergent eyepiece, said objective lens including, in succession from the object side, a first negative lens and a second negative lens, said eyepiece including, in succession from the object side, a first positive lens and a second positive lens, said finder satisfying the following conditions:

$$1.2|F_1| < |f_1| < 1.4|F_1|$$

$$4.4|F_1| < |f_2| < 5.2|F_1|$$

$1.8 F_2 < f_3 < 2.2 F_2$

$1.8 F_2 < f_4 < 2.2 F_2$



where F_1 represents the focal length of said objective lens, F_2 the focal length of said eyepiece, f_1 the focal length of said first negative lens, f_2 the focal length of said second negative lens, f_3 the focal length of said first positive lens, and f_4 the focal length of said second positive lens.

4,348,091

INDICATOR DEVICE IN AN INVERTED GALILEAN FINDER

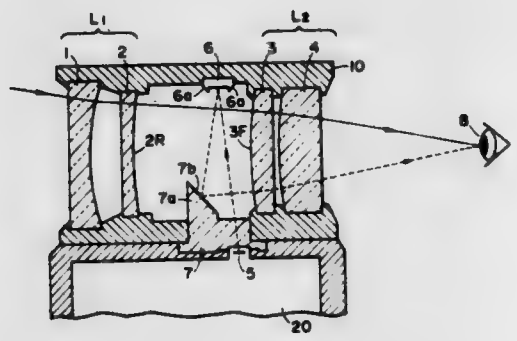
Yutaka Iizuka, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed May 22, 1981, Ser. No. 266,469

Claims priority, application Japan, Jun. 3, 1980, 55-74538

Int. Cl.³ G03B *13/06, 17/20*

U.S. Cl. 354—225 **6 Claims**



1. In an inverted Galilean finder barrel having a divergent objective lens and a convergent eyepiece lens, an indicator device for effecting visual indication within an observation view field, said indicator device comprising:

(a) indicating means including indicating elements and disposed on the inner side surface of said barrel between said objective lens and said eyepiece lens;

(b) a first reflecting optical system having a reflecting surface capable of receiving the light beam from said indicating means and provided at a position opposed to said indicating means on the inner side surface of said barrel; and

(c) a second reflecting optical system having an obliquely disposed reflecting surface for reflecting toward said eyepiece lens the light beam from said indicating means reflected by said first reflecting optical system and disposed at a position opposed to the reflecting surface of said first reflecting optical system.

4,348,092

ELECTROMAGNETICALLY DRIVEN SHUTTER

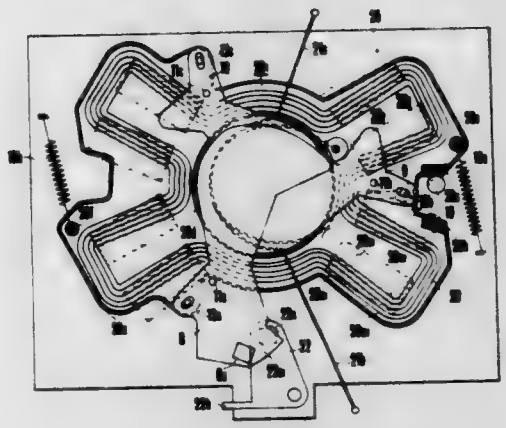
Michio Hirohata, Inagi, and Nobuo Tezuka, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 9, 1981, Ser. No. 232,851

Claims priority, application Japan, Feb. 8, 1980, 55-15089; Feb. 8, 1980, 55-15091; Feb. 8, 1980, 55-15415[U]; Feb. 8, 1980, 55-15416[U]; Feb. 8, 1980, 55-15417[U]; Feb. 8, 1980, 55-15418[U]

Int. Cl.³ G03B *9/22*

U.S. Cl. 354—230 **6 Claims**



1. An electromagnetically driven shutter for a camera comprising:

a magnetic member adapted to form a magnetic circuit;

a permanent magnet for forming a magnetic circuit together with said magnetic member, said permanent magnet operating to produce a magnetic field;

a positioning member composed of nonmagnetic material and including a frame with a portion engageable with said permanent magnet;

a shutter driving rotor arranged in a space between said magnetic member and said positioning member, said space being formed by said frame of said positioning member;

an inductive coil arranged on said rotor in a pattern in the form of a sector, said coil when supplied with current operating to generate an electromagnetic force to drive said rotor in order to open said shutter, with part of the effective line elements of said coil entering and exiting a peripheral portion of said magnetic field with an obliquely slanted orientation to control said electromagnetic force; and

a spring exerting a force biasing said shutter to the closed position.

4,348,093

INTER-LENS SHUTTER

Edmund Haag, Technischer Angestellter, Talwiesenstrasse 26, 7546 Enzklosterle, Nonneamias, Fed. Rep. of Germany

Filed Aug. 20, 1981, Ser. No. 294,703

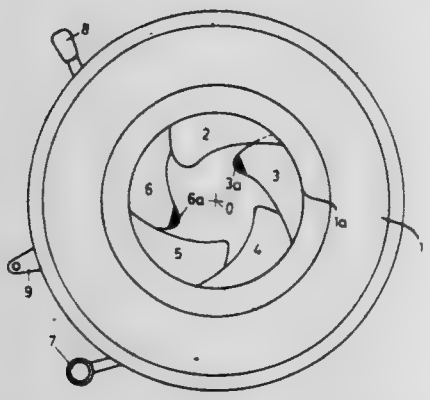
Claims priority, application Fed. Rep. of Germany, Aug. 30, 1980, 3032760

Int. Cl.³ G03B *9/22*

U.S. Cl. 354—233 **5 Claims**

1. Photograpic inter-lens shutter in which the opening and closure system is formed of a plurality of oscillating segments which are successively overlappingly arranged in ordinal sequence viewed in the direction of the optical axis and disposed for reciprocating backwards and forwards in a plane of movement between an open shutter position and a closed shutter position, and having outer ends which overlap in a closed position, in which two of the segments are provided as stabilizer segments having, on their outer ends which overlap in the closed position, a corresponding angled portion which extends substantially laterally to the plane of movement of the segments, the first stabilizer segment having such angled por-

tion being disposed after the frontmost successive segment viewed in the direction of the optical axis and the second



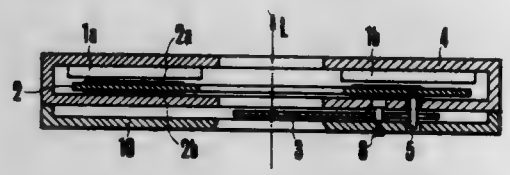
stabilizer segment having such angled portion being disposed after the fourth successive segment.

4,348,094

ROTOR OF ELECTROMAGNETICALLY DRIVEN DEVICE FOR EXPOSURE CONTROL

Michio Hirohata, Inagi, and Hirosi Sugitani, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 3, 1980, Ser. No. 183,858
Claims priority, application Japan, Sep. 3, 1979, 54-112643
Int. Cl.³ G03B *9/00*
U.S. Cl. 354—234 7 Claims



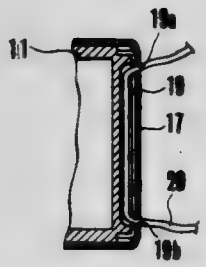
7. A method for making a rotor of an electromagnetically driven device for exposure comprising the steps of:
forming a base plate of epoxy resin;
forming a conductor member on both sides of the base plate by photo-etching;
forming a protective film of uv or pseudo uv ray-setting resin on both sides of the base plate by applying uv or pseudo uv to said resin adhered and set in planar form thereon;
polymerizing and setting said base plate by heating; and
setting the protective film between glass plates.

4,348,095

STRAP MOUNTING DEVICE

Toyotosi Suzuki, Tokyo, and Nobuhiro Ago, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 10, 1981, Ser. No. 272,380
Claims priority, application Japan, Jun. 11, 1980, 55-81446
Int. Cl.³ G03B *17/02, 29/00*
U.S. Cl. 354—288 4 Claims



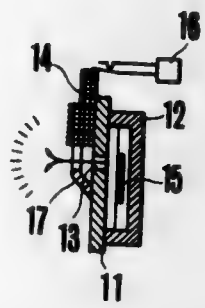
1. A portable instrument with a strap mounting device comprising:
a side wall defining part of said portable instrument;
a battery loading chamber provided aside said portable instrument,
said chamber having a shape corresponding to the shape of a battery to be contained therein;
a space provided between said battery loading chamber and said side wall,
said space being a dead space formed by the shape of said battery loading chamber;
a strap loading portion provided in said dead space; and
an opening formed through said side wall at a position corresponding to the end portion of said strap loading portion,
said opening being arranged to permit take-out of a strap therethrough.

4,348,096

SOUND MODE SELECTOR DEVICE IN A CAMERA INCORPORATING A BUZZER

Makoto Katsuma, Yokohama; Kenichi Shinbori, Kawasaki; Masayoshi Kiuchi, Yokohama, and Kiyoshi Alyfuku, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 5, 1980, Ser. No. 204,194
Claims priority, application Japan, Nov. 9, 1979, 54-155620[U]
Int. Cl.³ G03B *17/18*
U.S. Cl. 354—289 12 Claims



1. A sound producing mode selector device for a camera having a housing, comprising:
sound forming means;
chamber forming means for accommodating said sound forming means, said chamber forming means having an apertured portion;
shielding means for shielding said apertured portion of said chamber means, said shielding means being accessible from the outside of the camera housing, so that at least two data may be indicated by sounds from said sound forming means; and
selector means cooperative with said shielding means for actuating a self-timer.

4,348,097

CAMERA POSITIONING APPARATUS

Charles Sippel, Villa Park, Ill., assignor to LogEtronics, Inc., Springfield, Va.

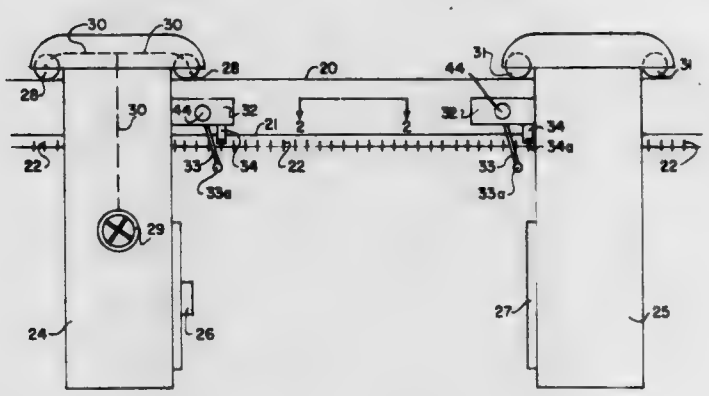
Filed Jul. 10, 1980, Ser. No. 167,595
Int. Cl.³ G03B *15/06*
U.S. Cl. 354—293 10 Claims

1. In picture taking apparatus,
(a) at least one element for varying the distance between a part of a camera and an object to be photographed,
(b) a track for supporting said element for movement to thus enable said distance to be varied,
(c) means for moving said element along said track to change the relative position of said part of the camera and the object to be photographed,
(d) incremental locating means mounted on said track for defining a series of locations along said track, and
(e) reciprocating means carried by said element for engaging

and disengaging said incremental locating means to position said reciprocating means in a selected one of said series of locations along said track,

the improvement comprising:

means, including carriage means, mounting said reciprocating means on said element to permit relative movement between said reciprocating means and said element parallel to said track, so that relative movement parallel to said track may occur between the element and the reciprocating means when the reciprocating means has engaged the incremental means and the element is moved parallel to the track and with respect to the incremental location means, said reciprocating means being mounted to recip-



rocate in said carriage means for engaging and disengaging said incremental locating means, and

a distance indicating gauge carried by said element in fixed relationship thereto and having an actuating projection extending therefrom for engaging said carriage means, so that when said element moves relative to said reciprocating means the amount of such movement will be indicated by said gauge,

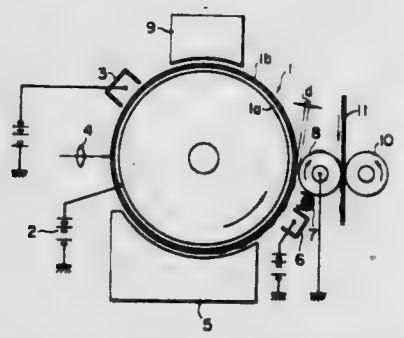
whereby the engagement of the reciprocating means with the incremental means achieves a relatively coarse position of said element and the reading of said gauge is a relatively fine indication of the position of the element with respect to one of said locations.

4,348,098

ELECTROPHOTOGRAPHIC APPARATUS

Yutaka Koizumi, Kawasaki, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed May 6, 1980, Ser. No. 147,048
Claims priority, application Japan, May 7, 1979, 54/55427
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—3 TR **7 Claims**



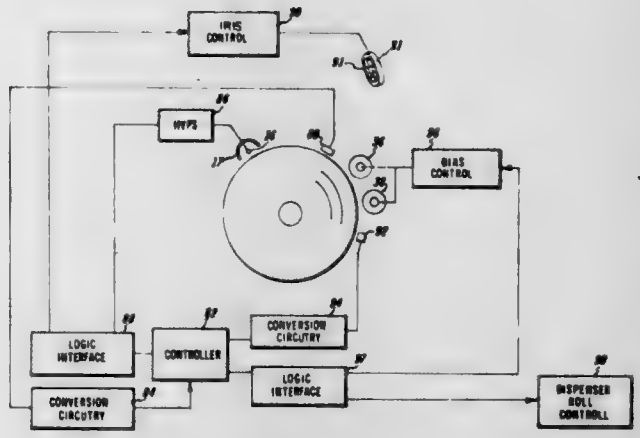
1. In an electrophotographic apparatus comprising a photosensitive member movable passed a plurality of processing stations to form an electrostatic latent image on said member and having means for developing said electrostatic latent image to form a toner image by contacting said latent image with a charged toner, the improvement including transfer means for transferring said toner image onto a record surface without physically contacting said photosensitive member, said transfer means including a conductive transfer roller disposed in closely spaced relation with said photosensitive member, means for making the potential difference between the toner of said toner image on said photosensitive member and said conductive transfer roller larger than the potential difference between said toner and said photosensitive surface by injecting charge into said toner whereby said toner image can be transferred to said conductive transfer roller as said photosensitive surface moves closely therepassed, and removing means for transferring the toner image on said conductive transfer roller to a record surface.

4,348,099

CLOSED LOOP CONTROL OF REPRODUCTION MACHINE

Louis J. Fantozzi, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 7, 1980, Ser. No. 137,667
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—14 E **20 Claims**



1. In a reproduction machine having a corona device for charging a photoreceptor, an illuminator for projecting an image of an object on a platen along an optical path onto the photoreceptor, a developer for applying toner to the photoreceptor, and a toner dispenser to provide toner to the developer, the method of optimizing machine operation using a sample data control system comprising the steps of:

disposing test targets into the optical path causing characteristics on the photoreceptor surface,

sensing the characteristics on the photoreceptor surface by the test targets,

analyzing the sensed signals to determine optimum processing conditions,

selectively regulating the corona device, the illuminator, the developer and the toner dispenser and

repeating the sequence at predetermined intervals.

4,348,100

CONTROL FOR XEROGRAPHIC SYSTEM

Christopher Snelling, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

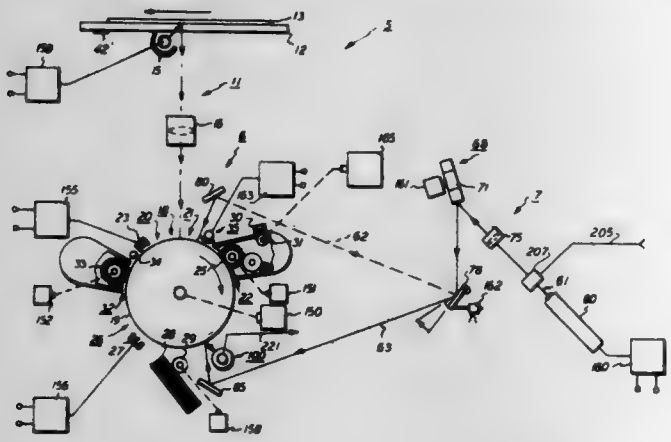
Filed Sep. 2, 1980, Ser. No. 183,133
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—14 R **6 Claims**

1. In a system having a xerographic section with xerographic processing components for producing and developing images on a charged photoreceptor for transfer to copy substrate material and a scanning section with scanning components to scan images on said photoreceptor to produce signals representative of the images scanned, said scanning section including thresholding means for processing image signals produced by scanning images on said photoreceptor and a source of threshold reference signals; the combination of:

(a) means for generating a test image for processing by said xerographic section and scanning by said scanning section;

(b) comparator means for comparing the signals produced by scanning said test image with said threshold reference

signals to provide threshold calibration signals for adjusting the threshold level of said thresholding means; and



(c) control means for adjusting the threshold level of said thresholding means in response to said threshold calibration signals.

4,348,101

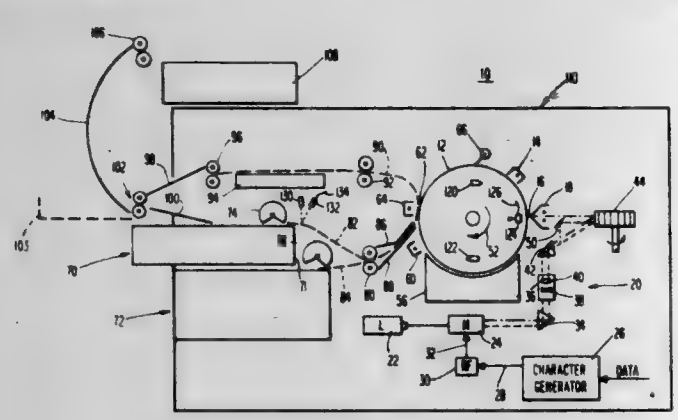
DUPLEX PRINTING APPARATUS

Arnold Schonfeld, Norristown; Jules A. Eibner, Dresher, and Franklin E. Bastian, North Wales, all of Pa., assignors to Sperry Corporation, New York, N.Y.

Filed Sep. 30, 1980, Ser. No. 192,269

Int. Cl.[3] G03G *15/00*

U.S. Cl. 355—14 R 8 Claims



1. A laser printer for printing data on both sides of a sheet of paper comprising:

a light source for transmitting a collimated light beam along a path;

a light beam modulator disposed along said light beam path for modulating said light beam in response to modulation signals received from a data source;

optical means disposed along said light beam path for exposing a photosensitive member to said modulated light beam to image data thereon;

at least one transfer means disposed adjacent said photosensitive member for transferring said data image to one side of a sheet of paper;

at least one paper feeding station for holding a plurality of sheets of paper, said at least one paper feeding station and said transfer means lying along a paper feeding path;

paper feeding means for feeding a sheet of paper from said at least one paper feeding station and presenting said sheet of paper to said transfer means whereby data is transferred to a single side of said sheet;

at least one discharge station for holding sheets of paper on which printing is finished, said discharge station and said transfer means lying along a paper discharge path; and

duplex means in close proximity to said at least one paper feeding station for discharging sheets of paper along a portion of said discharge path to said at least one discharge station when the printing on said sheets is furnished, and for depositing selected sheets of paper having data imaged on a first side and received from said transfer means into said at least one paper feeding station inverted from their original state in said paper feeding station, whereby said selected sheets are presented to said transfer means a second time for imaging of data on a second side of said selected sheets, said duplex means comprising a reversible propelling means for engaging and moving said sheets of paper, said reversible propelling means disposed intermediate said portion of said discharge path and said transfer means, wherein said laser printer prints data on first and second sides of a plurality of sheets of paper in a predetermined order by presenting each sheet of paper to a transfer means first and second times and wherein said data comprises pagination data for each of said plurality of sheets, said laser printer further comprising sensing means for sensing said pagination data and stopping said printer when the printing of said sheets of paper deviates from said predetermined order.

4,348,102

ELECTROGRAPHIC APPARATUS WITH CONTROL SYSTEM FOR FIXING POWDER IMAGES BY HEAT AND CONTACT

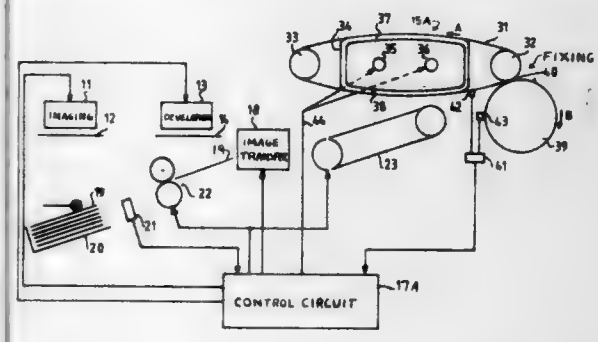
Bernardus W. L. M. Sessink, Venlo, Netherlands, assignor to Oce-Nederland B.V., Venlo, Netherlands

Filed Mar. 19, 1981, Ser. No. 246,134

Claims priority, application Netherlands, Apr. 9, 1980, 8002065

Int. Cl.[3] G03G *15/00, 15/22*

U.S. Cl. 355—14 SH 4 Claims

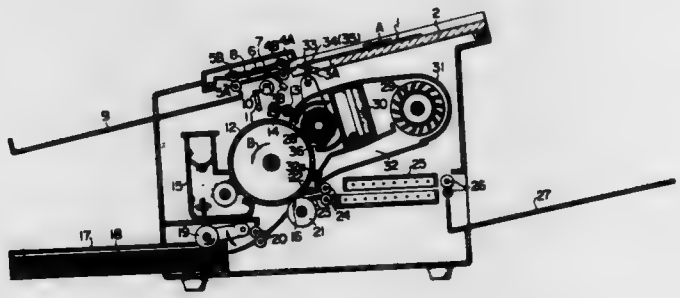


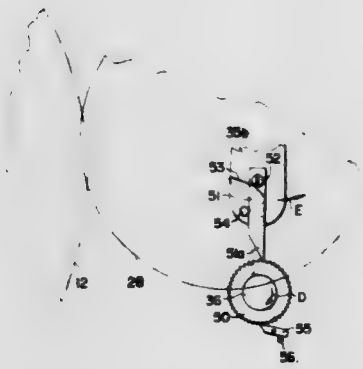
1. In an electrographic apparatus by which powder images corresponding to electrostatic images can be formed on receiving material, and including means for transporting receiving material to an image fixing zone and a heat contact fixing device comprising moving heated surface means for contacting a powder image and a receiving material moving into said zone so that the powder image is fixed onto the receiving material by heat and contact, the improvement wherein said apparatus is provided with a control system comprising first signalling means for issuing a first signal representing the heat capacity of a receiving material provided for receiving a powder image, second signalling means for issuing a second signal representing the heat content of said heated surface means, and means responsive the said first and second signals for controlling the quantity of receiving material transported per unit of time by said transporting means as a function of the heat content of said heated surface means and of the heat capacity of said receiving material.

4,348,103
CLEANING APPARATUS FOR PHOTOSENSITIVE MEMBER OF ELECTROPHOTOGRAPHIC COPYING MACHINE

Hideyuki Kawazu, and Yoshiro Suzuki, both of Hachioji, Japan, assignors to Olympus Optical Company Ltd., Tokyo, Japan

Filed Jul. 13, 1981, Ser. No. 282,920
Claims priority, application Japan, Jul. 14, 1980, 55-98927[U]
Int. Cl.³ G03G *21/00*
U.S. Cl. 355—15 6 Claims





1. A cleaning apparatus for a photosensitive member of an electrophotographic machine, comprising

a cleaning brush disposed to be movable into contact with or away from a photosensitive member which is adapted to carry an electrostatic latent image thereon, the brush being disposed to be maintained in contact with said photosensitive member while rotating to remove therefrom unnecessary developing toner which attaches to the photosensitive member;

trap means for collecting unnecessary developing toner removed by the cleaning brush;

a striker rod disposed in abutment against the cleaning brush and to be rotatable for removing developing toner from the brush;

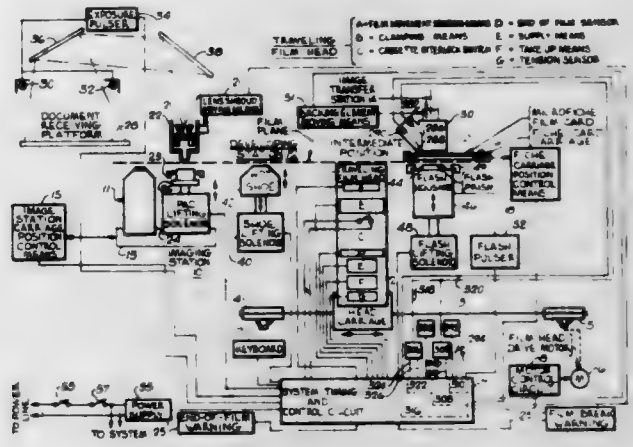
and drive means for causing an angular movement of the striker rod through a given angle in association with the movement of the cleaning brush into contact with or away from the photosensitive member.

4,348,104
DOUBLE EXPOSURE CONTROL FOR MICROFICHE RECORDING SYSTEM

Herbert C. Ovshinsky, Oak Park, Mich., assignor to Energy Conversion Devices, Inc., Troy, Mich.

Filed Jan. 23, 1981, Ser. No. 227,941
Int. Cl.³ G03B *27/52*
U.S. Cl. 355—41 19 Claims

1. In an annotatable photographic microfiche film recording system for forming and storing images of record copy, said system including means for forming a first image of said copy within a prescribed imaging area of an intermediate photographic film in which any portion of said imaging area can be imaged by radiant energy from said record copy to yield an image upon development in those regions of said imaging area illuminated by said radiant energy, means for replication of said first image as a second image on an annotatable microfiche photographic film by directing radiant energy from a frame illumination means through said imaging area of said intermediate film and onto said microfiche photographic film, said second image being an annotatable permanent record formed by the absorption of said radiant energy as it strikes said microfiche photographic film, said microfiche film having designated frames for receiving said second image at a prescribed location on said microfiche film card, said system further including means for adding an additional image to a previously exposed frame of said microfiche film, the improvement comprising means for exposing a given sensing area on said microfiche photographic film during said replication so that the status of said sensing area after said replication constitutes a permanent indication that the selected frame has been exposed, each of said frames having a unique corresponding sensing area associated therewith, each said corresponding sensing area being disposed so as not to substantially interfere with replica-

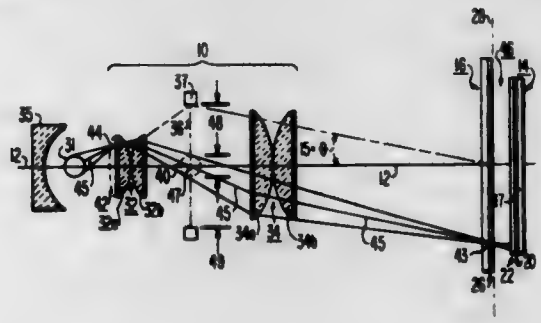


tion of said record copy, a status sensing means for sensing the status of the corresponding sensing area for a chosen frame before said replication, disabling control means responsive to said status sensing means for disabling said replication means when said status sensing means detects a status of said corresponding sensing area indicative of prior exposure of said chosen frame, means for detecting failure of said frame illumination means to expose said microfiche film comprising said frame illumination means for also exposing said corresponding sensing area by said frame illumination means during exposure, property sensing means for sensing during or after an attempted exposure by said frame illumination means a property of said corresponding sensing area indicative of exposure, failure alarm means for warning of said failure, and failure control means responsive to said property sensing means for activating said failure alarm means when the absence of said property is sensed during or after an attempted replication.

4,348,105
RADIATION SHADOW PROJECTION EXPOSURE SYSTEM

Fausto Caprari, East Brunswick, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 30, 1981, Ser. No. 259,362
Int. Cl.³ G03B *27/54*
U.S. Cl. 355—67 10 Claims



1. In a radiation shadow projection exposure system of the type having a radiant source, an input lens to collect source

radiance as an effective source at a nodal point along the optical axis of the system, and an output lens to project the collected source radiance through a mask onto a proximate projected plane wherein the improvement comprises:

said source including means to provide spatially distributed partially coherent illumination of polychromatic radiance;

said input lens and said output lens comprising, respectively, a pair of plano-convex positive lens elements positioned along the optical axis to disperse the sorce radiance into a distributed effective source as a function of the wavelength of the radiance and to position the effective source in the space of the entrance pupil, said mask being positioned relative to the output lens so that the ray bundles at each wavelength of the radiance spectrum converge at the same vertex in the plane of the mask.

4,348,106

GUIDE APPARATUS FOR MOVABLE CONTACT GLASS IN ELECTROPHOTOGRAPHIC COPYING MACHINES

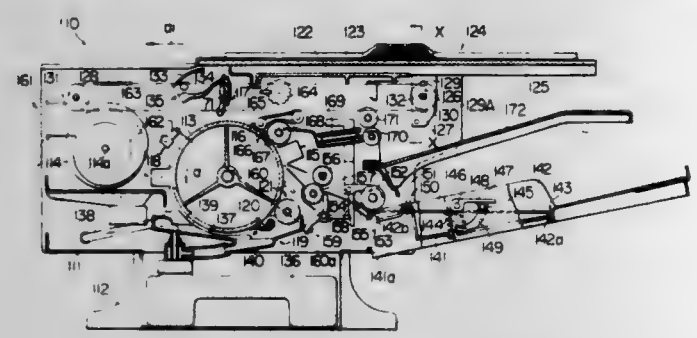
Shigeru Suzuki, Yokohama; Yukihiro Ohno, Tokyo; Nobuyuki Yanagawa, Chigasaki, and Yasunori Kawaishi, Tokyo, all of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Filed May 12, 1980, Ser. No. 148,952

Claims priority, application Japan, May 18, 1979, 54-61922; May 31, 1979, 54-67921; Jun. 27, 1979, 54-81088

Int. Cl.³ G03B *27/62*

U.S. Cl. 355—75 **9 Claims**



1. A guide apparatus for guiding a movable contact glass, which serves as an original table in an electrophotographic copying machine, in an exposure scanning direction, in order to expose an original document stacking surface of the contact glass at a predetermined exposure position comprises:

a drive apparatus for reciprocating said contact glass in the exposure scanning direction; and

a guide member, which is shorter than the distance from said exposure position to the center of gravity of said contact glass at completion of the exposure scanning and whose upper surface at said exposure position is higher than the other upper surface thereof.

4,348,107

ORIFICE INSIDE OPTICAL ELEMENT

Robert C. Leif, Coral Gables, Fla., assignor to Coulter Electronics, Inc., Hialeah, Fla.

Filed Jul. 18, 1980, Ser. No. 170,319

Int. Cl.³ G01N *21/05, 21/64*

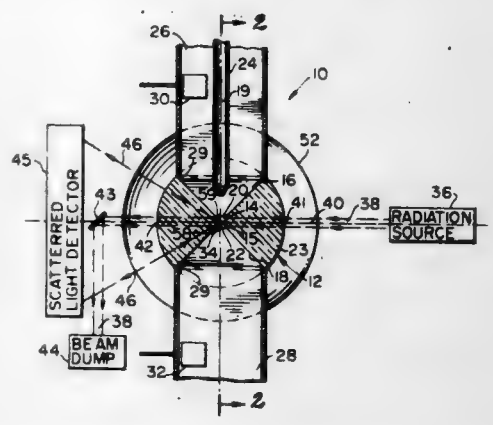
U.S. Cl. 356—72 **17 Claims**

1. A particle analyzing apparatus for studying individual microscopic sized particles in liquid suspension, said apparatus including a flow cell having a particle sensing orifice through which a stream of said particles in suspension are passed, radiation source means for providing radiation to illuminate a given particle in said particle sensing orifice, radiation detector means responsive to optical signals caused by the passage of said given particle through said radiation for generating an analog electrical signal, said flow cell having an upstream passageway and a downstream passageway formed in opposed ends of said flow cell, said particle sensing orifice being disposed in liquid connecting relationship between said passageways, the improvement being characterized by:

said flow cell comprising a substantially spherical element;

said spherical element having a monolithic structure;

a light illumination optical axis along which said radiation is



provided by said radiation source means and at least one light collecting optical axis along which said optical signals are collected by said radiation detector means, said optical axes being aligned to intersect said orifice, and said spherical element being essentially radially symmetric with respect to said optical axes.

4,348,108

AUTOMATIC LENS METER

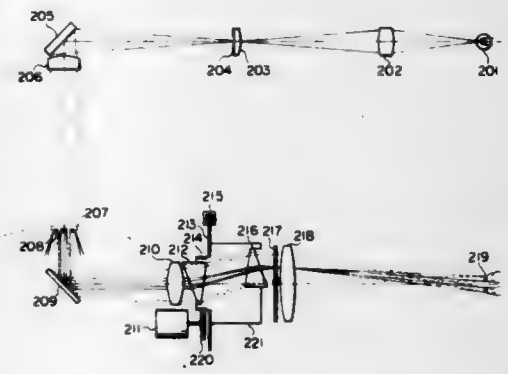
Osamu Shindow, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 12, 1980, Ser. No. 215,704

Claims priority, application Japan, Dec. 24, 1979, 54-166835

Int. Cl.³ G01B *9/00*

U.S. Cl. 356—125 **1 Claim**



1. An automatic lens meter comprising:

means for causing parallel flux of light to enter a lens being inspected;

a multiple-pin-hole disc having at least three pin holes and disposed adjacent to a light-emission end of said lens being inspected on a first focal point of an objective lens or in the vicinity thereof;

a lens set consisting of said objective lens and a collector lens and adapted to collect light rays emitted from said multiple-pin-hole disc;

a photosensor for receiving respective pin-hole images of said multiple-pin-hole disc separately from each other in a position to be conjugate with said multiple-pin-hole disc with respect to said lens set; and

shading means for obtaining the coordinates of points at which respective light rays emitted from respective pin-holes cross a second plane including a second focal point of said objective lens, according to the shading time lag among respective light rays, characterized in that said shading means comprises:

a pair of deviated prisms respectively having substantially an equal apical angle, and disposed at a given spacing from

each other between said objective lens and said collector lens, with the apical angle of one prism directed opposite to that of the other vertically with respect to the optical axis;

a rotary mechanism for rotating said pair of deviated prisms about an optical axis of said lens set at a given rate;

means for reading an angle of rotation of said pair of deviated prisms; and

a shading disc disposed at the rear of said pair of deviated prisms on the second focal point of said objective lens, and having opaque portions and transparent portions defined by two lines crossing at a right angle to each other at a point on the optical axis of said lens set.

4,348,109

SIGHTS

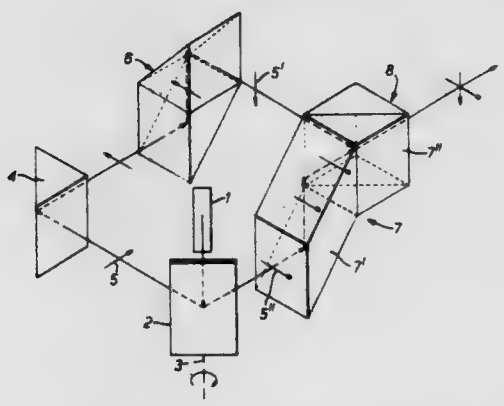
James Auterson, Leicester, England, assignor to The Marconi Company Limited, Chelmsford, England

Filed Oct. 17, 1980, Ser. No. 198,268

Claims priority, application United Kingdom, Oct. 19, 1979, 7936271

Int. Cl.³ G02B *23/10*

U.S. Cl. 356—252 **10 Claims**



1. A system comprising a sight into the field of which a position indicating mark in the form of a cross is required to be injected the means for generating said mark comprising a linear array of light sources, reflector means rotatable about an axis and arranged to reflect an image of said array in the course of rotation towards a first light transmissive member and thereafter towards a second light transmissive member such that said image scans across the field of each light transmissive member in turn, means for relatively rotating the image passing through one light transmissive member relative to the image passing through the other light transmissive members, means for optically combining the output of the two light transmissive members and means for selectively energising individual ones of said light sources whereby said optical combining means produces a mark consisting of two crossing strokes the first of which is derived from the image of an illuminated light source scanned across the field of said first light transmissive member and the other of which is derived from the image of a light source scanned across the field of said second light transmissive member.

4,348,110

CHARGING CURRENT INTEGRATING TYPE PHOTODETECTORS

Tetsuo Ito, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 6, 1980, Ser. No. 118,908

Claims priority, application Japan, Mar. 3, 1979, 54/24951

Int. Cl.³ G01J *3/38, 1/46*

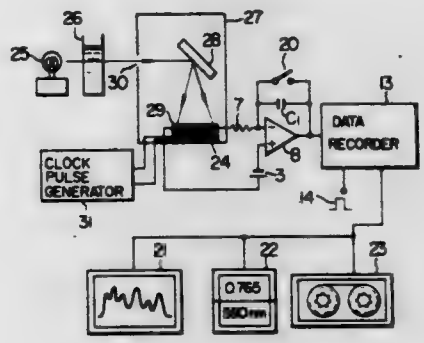
U.S. Cl. 356—328 **9 Claims**

1. A charging current integrating type photodetector comprising:

a photodiode;

a power source for applying a reverse bias to said photodiode and charging said photodiode until a charging current flowing to said photodiode becomes steady state;

a switching element connected in series with the photodiode to permit said charging current to flow to said photodiode when said switching element is turned on and to stop said charging current during a predetermined time in which said switching element is turned off to discharge said photodiode during said predetermined time in accordance



with a light intensity to be measured impinging on said photodiode; and

a current integrator disposed so that said switching element is coupled between said photodiode and said current integrator, said current integrator integrating said charging current at least from at time at which said switching element is again turned on after said predetermined time elapses to a time at which the charging of said photodiode is substantially completed.

4,348,111

OPTICAL PARTICLE ANALYZERS

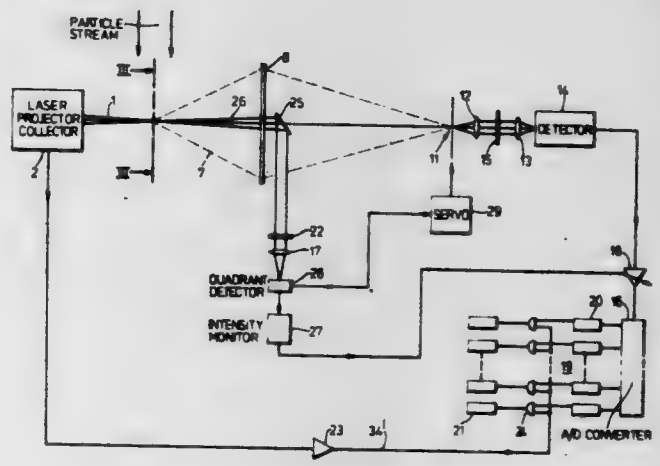
Apostolos Goulas, Cranfield; Brian R. Moon, Narborough, and Michael M. Ross, Lutterworth, all of England, assignors to The English Electric Company Limited, London, England

Filed Nov. 30, 1979, Ser. No. 98,852

Claims priority, application United Kingdom, Dec. 7, 1978, 47572/78

Int. Cl.³ G01N *15/02*

U.S. Cl. 356—336 **6 Claims**



1. An optical particle analyzer, wherein a stream of particles is subjected, in operation, to incident light, the arrangement including a first predetermined volume in said stream defined by a beam of light of a first frequency, a second predetermined volume in said stream defined by a beam of light of a second frequency, said second predetermined volume being smaller than said first volume and lying in a fixed position within it, means for recording a pulse of scattered light of said first frequency as one of said particles traverses said first predetermined volume, means for recording a pulse of scattered light of said second frequency as one of said particles traverses said second predetermined volume, validation means for selecting only those light pulses in respect of the first volume which are

in coincidence with light pulses in respect of the second volume, and assessment means for assessing a particle-size dependent factor of the selected light pulses.

4,348,112

METHOD OF AND APPARATUS FOR MEASURING THE VOLUME OF MATERIAL IN SUSPENSION IN A LIQUID

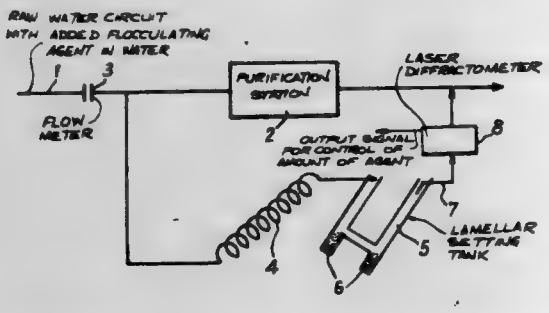
Henri Moreaud, Le Chesnay, and Jean-Paul Meric, Paris, both of France, assignors to Omnium d'Assainissement, Courbevoie and Societe des Applications Biologiques du Laser a l'Environnement (SABLE) S.a.r.l., Paris, both of, France

Filed Jan. 30, 1980, Ser. No. 116,766

Claims priority, application France, Jul. 13, 1979, 79 18188

Int. Cl.³ G01N *21/00*

U.S. Cl. 356—338 **6 Claims**



2. An apparatus for automatically determining the quality of water which may contain materials in suspension, the apparatus comprising:

raw water and flocculating agent supply means upstream from a purification station;

at least one coagulation-settling system which includes a pipe coupled to said supply means and a settling tank in which flocs settle;

one laser diffractometer coupled to said coagulation-settling system to receive continuously settled water therefrom, said laser diffractometer including means for producing at least one signal representative of suspended materials remaining in the water.

4,348,113

PROCESS AND APPARATUS FOR ATTENUATING LINEARILY ERRORS IN A RING TYPE LASER RATE GYRO

Georges L. A. Bonfils, Velizy Villacoublay, France, assignor to Societe Francaise d'Equipements pour la Navigation Aerienne, Velizy Villacoublay, France

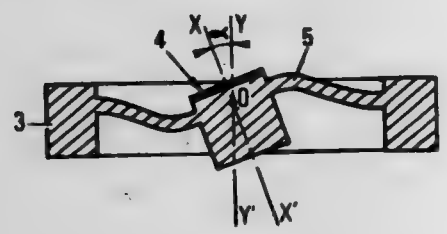
PCT No. PCT/FR78/00054, § 371 Date Sep. 12, 1979, § 102(e) Date Sep. 12, 1979, PCT Pub. No. WO79/00502, PCT Pub. Date Aug. 9, 1979

PCT Filed Dec. 22, 1978, Ser. No. 74,716

Claims priority, application France, Jan. 13, 1978, 78 00871

Int. Cl.³ G01C *19/64*

U.S. Cl. 356—350 **11 Claims**



1. Process for attenuating linearily errors in a ring type laser rate gyro that uses N mirrors arranged in such a way that two laser beams travel along two identical polygons in opposite directions, comprising the steps of angularly oscillating at least one of the mirrors that define the trajectories of the two laser beams with respect to the rate gyro body, about an axis perpendicular to a plane defined by said two laser beams; and arranging the rotational axis of each of the oscillating mirrors so as to be as close as possible to the perpendicular to the mirror being considered that passes through the point of contact of the laser beams with the mirror in question.

4,348,114

METHOD OF INSPECTING COATED WEB MATERIAL TO DETECT THE PRESENCE OF DOWNLINES THEREON

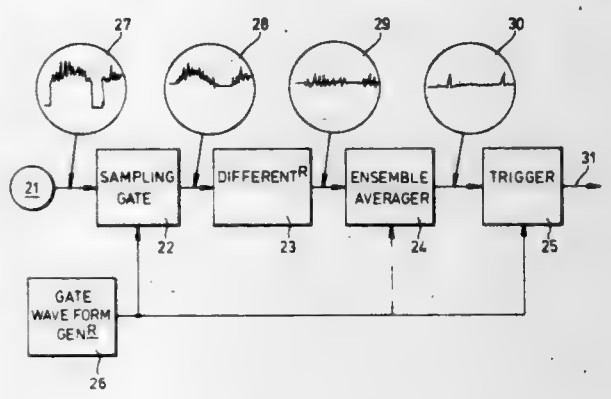
Denis M. Neale, Brentwood; Frederick J. Bontoft, Chelmsford, and John B. Ikin, Leigh-on-Sea, all of England, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed Nov. 28, 1980, Ser. No. 211,159

Claims priority, application United Kingdom, Dec. 7, 1979, 7942268

Int. Cl.³ G01N *21/17*

U.S. Cl. 356—431 **7 Claims**



1. A method of inspecting coated web material to detect the presence of downlines thereon which comprises passing the coated web material past an inspection station and inspecting the web transversely point by point across the web width to produce data signals responsive to variations in coated thickness, performing said transverse inspection repeatedly as the web moves past said inspection station, summing those parts of successive data signals corresponding to a first pattern of at least 100 points spaced at like distances across the web width, thereby producing an averaged signal waveform, detecting as faults any abnormal excursions of the averaged signal waveform occurring within a predetermined time and thereafter repeating said summing and detecting in respect of at least a second pattern of similarly spaced-apart points intermediate the spaced-apart points of said first pattern.

4,348,115

CHROMATOGRAPHIC ANALYZER DETECTOR AND METHOD

Starnes E. Walker, Bartlesville, and Fred T. Klein, Tulsa, both of Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 15, 1980, Ser. No. 121,763

Int. Cl.³ G01N *21/01*

U.S. Cl. 356—436 **33 Claims**

1. An optical absorbance detector comprising:

radiation point source means for producing a point source of light;

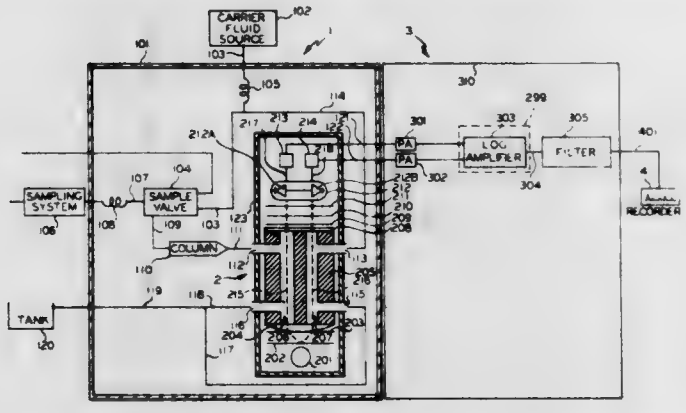
first spatial filter means optically aligned with the radiation point source means and operable for producing a first light beam and a second light beam, the first spatial filter means having an opaque portion thereof opaque to radiation from the radiation point source means, said opaque portion having a first through aperture and a second through aperture, the first through aperture and the second through aperture being optically aligned with the radiation point source means and the first through aperture allowing the first light beam to pass therethrough and the second through aperture allowing the second light beam

to pass therethrough, the first aperture and the second aperture being separated by at least a portion of the opaque portion of the first spatial filter means;

collimating means in light communication with the first spatial filter means for collimating the first light beam to produce a first collimated light beam and for collimating the second light beam to produce a second collimated light beam;

first flow cell means for passing a first fluid through a first fluid light path optically aligned with the first collimated light beam to produce a first light signal representative of the first fluid;

second flow cell means for passing a second fluid through a second fluid light path optically aligned with the second



collimated light beam to produce a second light signal representative of the second fluid;

first detector means for producing a first electrical signal representative of the first light signal;

second detector means for producing a second electrical signal representative of the second light signal; and

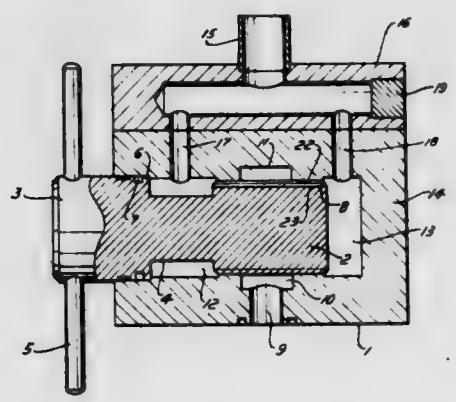
a second spatial filter means, said second spatial filter means positioned between the first and second flow cell means and the first and second detector means and having an opaque portion opaque to the radiation from the radiation point source, said opaque portion having a first aperture therethrough being optically aligned with the first light signal and with the first detector means and a second aperture being optically aligned with the second light signal and with the second detector means.

4,348,116

HOMOGENIZING APPARATUS

Andre Bordas, Fontenay aux Roses, France, assignor to Fives-Cail Babcock, Paris and Pierre Guerin S.A., Mauze-sur-le-Mignon, both of, France

Filed Oct. 30, 1980, Ser. No. 202,078
Claims priority, application France, Nov. 13, 1979, 79 27900
Int. Cl.³ B01F *3/08*
U.S. Cl. 366—340 **9 Claims**



1. An apparatus for homogenizing a liquid or pasty product, which comprises

(a) a casing having an internal cylindrical surface defining a first bore having an open end,

(1) a portion of the internal cylindrical surface being threaded and

(2) the casing defining an inlet port terminating in an annular chamber substantially centered between the ends of the threaded portion,

(b) a rotatable closing plug in the open bore end, the plug having

(1) a cylindrical threaded portion meshing with the threaded portion of the internal cylindrical surface the threads of the internal cylindrical surface of the casing being truncated in transverse section in a progressively variable fashion by a second bore of the casing having an axis offset from the geometric axis of the first bore, and

(2) longitudinally extending grooves along the cylindrical threaded portion of the plug, the threads of the threaded portions and the grooves defining homogenizing passages, and the annular chamber surrounding the threaded portion of the plug and communicating with the homogenizing passages whereby a liquid or pasty product delivered under pressure into the inlet port is divided into two equal streams flowing from the centered annular chamber through the homogenizing passages in opposite directions and the variation of the section of the homogenizing passages is controlled by the rotation of the plug in relation to the casing, and

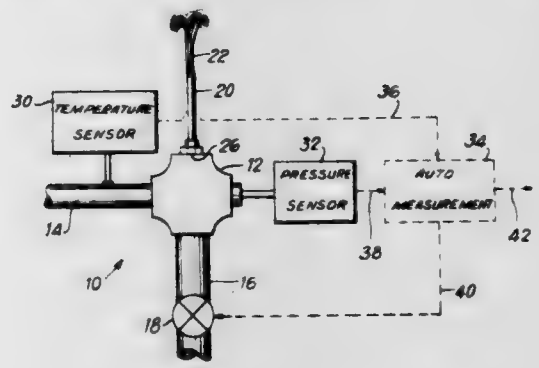
(c) an outlet conduit receiving the streams of homogenized liquid or pasty product.

4,348,117

APPARATUS AND METHOD FOR MEASURING BOILING OR FLASH PRESSURE OF PRESSURIZED FLUID

Donald Michels, Whittier, Calif., assignor to Republic Geothermal, Santa Fe, Calif.

Filed Mar. 12, 1980, Ser. No. 129,574
Int. Cl.³ G01N *25/08, 7/14*
U.S. Cl. 374—24 **15 Claims**



12. A method of detecting a boundary pressure in a fluid between an all-liquid condition and a liquid-plus-vapor condition, comprising the steps of:

passing said fluid through a test chamber;

varying the pressure of said fluid in said test chamber through said boundary pressure;

venting an upper portion of said test chamber to atmospheric pressure whereby only liquid is vented when said pressure is above said boundary pressure and liquid plus vapor is vented when said pressure is below said boundary pressure; and

determining said boundary pressure in response to a change in a characteristic of said venting.

15. Apparatus for detecting a boundary pressure in a fluid between an all-liquid condition and a liquid-plus-vapor condition comprising:

a test chamber;

means for passing said fluid through said test chamber;

means for controlling pressure of said fluid in said test chamber; and

means in said test chamber effective to vent said liquid from said test chamber, and to vent liquid plus vapor when said fluid is in said liquid-plus-vapor condition.

4,348,118

PAPER TRANSPORT MEANS FOR A RECORDING DEVICE

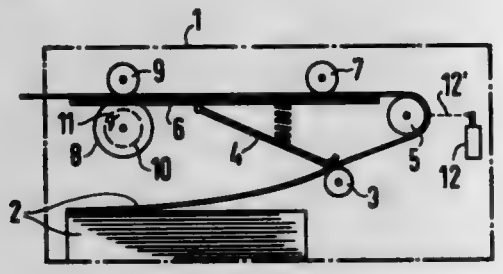
Bengt Skafvenstedt, Stockholm, and Sture Ahlgren, Vällingby, both of Sweden, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 20, 1981, Ser. No. 245,915

Claims priority, application Fed. Rep. of Germany, Apr. 11, 1980, 3014043

Int. Cl.³ B41J *29/38*

U.S. Cl. 400—54 **6 Claims**



1. A paper transport system for a recording device with a receiving location for the unwritten recording paper and at least one motor-driven drive capstan having a motor for driving the same for the transport of the paper from the receiving location, a recording location at which a fluid jet writer is disposed for writing, characterized in that the motor-driven drive capstan (8) has a no-load indicator (13 through 19, 22, 23) allocated to it which identifies a no-load operation of the drive capstan (8) and generates a shut-down signal for the fluid jet writer (12).

4,348,119

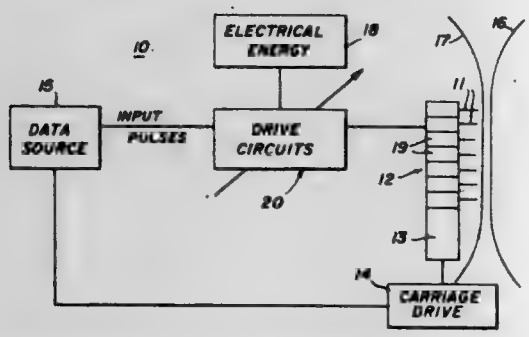
BOUNCE CONTROL SYSTEM FOR MOVING COIL PRINTING ELEMENT

Andrew B. Carson, Jr., Waynesboro, and William A. Hanger, Churchville, both of Va., assignors to General Electric Company, Waynesboro, Va.

Filed Nov. 6, 1980, Ser. No. 204,628

Int. Cl.³ B41J *3/10, 7/84, 9/42*

U.S. Cl. 400—121 **14 Claims**



1. In an impact printer which develops a force whose direction is a function of the direction of the driving current, said printer comprising a movable electromagnetic printing element located adjacent a backstop and a source of drive pulses for moving the printing element from the backstop toward a record medium to print indicia, damping means coupled to the printing element and responsive to impact of the printing element on the backstop for applying to said printing element a damping pulse after impact theref on the backstop to oppose the rebound of the printing element from the backstop.

4,348,120

PRINTING HEAD FOR A DOT PRINTER

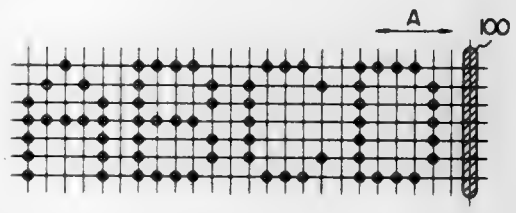
Minoru Isobe; Hiroshi Kikuchi; Minoru Teshima, all of Tokyo; Tadasi Kodama, Sakura, and Wataru Ohara, Yokosuka, all of Japan, assignors to Oki Electric Industry Co. Ltd. and Nippon Telegraph & Telephone Public Corporation, both of Tokyo, Japan

Filed May 6, 1980, Ser. No. 147,106

Claims priority, application Japan, May 11, 1979, 54-56924; May 11, 1979, 54-56925; May 22, 1979, 54-62143

Int. Cl.³ B41J *3/12*

U.S. Cl. 400—124 **3 Claims**



1. A printer head comprising:

a cylindrical permanent magnet,

a first yoke covering the bottom of said magnet,

n number of electromagnets (n is an integer) each having a center core and a coil wound around the core, positioned in a circle on said first yoke with predetermined angle intervals therebetween,

a disk shaped spring having an outer ring and n number of projections projecting towards the center of said outer ring,

n number of elongated armatures each having first portion of predetermined shape and a tapered end portion wherein each of said armatures is positioned on one of the projections of said disk spring,

n number of print needles each fixed to one of said armatures perpendicular to the plane of the disk spring wherein each of said needles is straight,

a ring shaped spacer positioned between said disk spring and said cylindrical permanent magnet,

a second circular yoke fixed on said disk spring for providing a magnetic flux path between the permanent magnet and each of said electromagnets, said second circular yoke having radial slits having a shape corresponding to said predetermined shape for receiving said armatures wherein the tapered end portions of said armatures extend from said slits at the center of said yoke and wherein the thickness of the radial slits is equal to the thickness of said armatures, and

a guideframe having a thin linear slit for receiving the tops of said print needles wherein said guideframe covers the print needles.

4,348,121

STRIKE AND NON-STRIKE IMPACT CONTROL MECHANISM FOR TYPEWRITER

Raymond Clavel, Yverdon (Vaud), Switzerland, assignor to Hermes Precisa International S.A., Yverdon, Switzerland

PCT No. PCT/CH79/00016, § 371 Date Oct. 7, 1979, § 102(e) Date Jul. 19, 1979, PCT Pub. No. WO79/00598, PCT Pub. Date Aug. 23, 1979

PCT Filed Feb. 6, 1979, Ser. No. 166,978

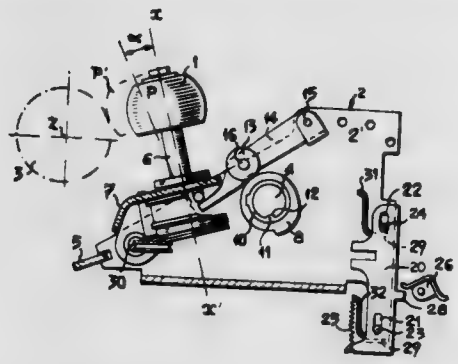
Claims priority, application Switzerland, Feb. 7, 1978, 1325/78

Int. Cl.³ B41J *1/32*

U.S. Cl. 400—166 **6 Claims**

1. Strike and non-strike impact control mechanism for a typewriter having a printing element (1) movable parallel to a platen (3) upon a carrier (2), said mechanism comprising particularly a drive shaft (4), at least two rotatable cams (8 and 9) integral with the drive shaft and corresponding to different strike forces, a guidance component (17 and 18) for guiding a

tracker (13) of the radial contour of said cams (8 and 9), and capable of displacing said tracker so as to cause said tracker to work in connection with one or the other or neither of said cams, means (14-17) for transmission of the movement of said tracker (13) to said printing element (1) to assure particularly the striking of a character, and means (20,40 and 41) for receiving command impulses given by universal bars (26,42 and 43) arranged parallel to said platen (3), characterized in that said control mechanism comprises abutment apparatus (34-38) for abutting said guidance component (17 and 18) of said tracker (13) in several positions, the activation of said apparatus being controlled by said means (20,40 and 41) for receiving command impulses, a tension spring (39) acting upon said guidance component (17 and 18) of said tracker (13) to cause said means for



receiving command impulses to work in connection with said abutment apparatus, a return apparatus (61 and 59) for return of said guidance component into a normal position, said return apparatus being driven by said drive shaft (4) upon each complete rotation of said drive shaft, said means for receiving command impluses comprising first, second and third intermediate couplers (20,40 and 41), said abutment apparatus comprising a key (38), the position of which is controlled by said second and third intermediate couplers (40 and 41) for receiving command impulses, and by an extremity (37) of a lever (34) driven by said guidance component (17 and 18) of said tracker (13), and set up so as to work in connection with said key (38) in several positions corresponding to the choice of strike or non-strike force.

4,348,122

SHIFT LOCK AND POSITION INDICATING TORSION SPRING ACTIVATED KEY SWITCH

Justin O. Balta, 5638 Atlle, Jacksonville, Fla. 33205, and Edward I. Nelson, 10430 NW. 24th St., Sunrise, Fla. 33322

Filed Oct. 23, 1980, Ser. No. 200,254
Int. Cl.³ B41J *5/20*
U.S. Cl. 400—276 **7 Claims**

1. A shift lock mechanism for photo-optical switch apparatus comprising,

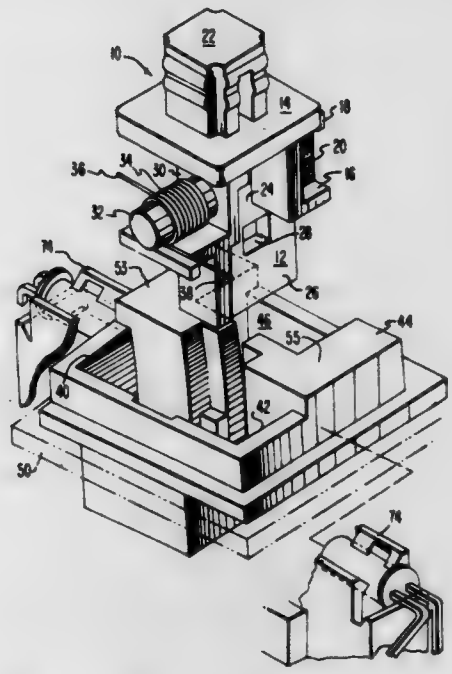
an insert member including means for snap-in insertion of said member in a respective aperture in a keyboard array of apertures,

a slidable shutter member including an aperture therein, said shutter member being vertically, slidably movable in said insert member effective in one position to block light from a light generator to a light receptor and in another position to permit light to pass unobstructed from said light generator to said light receptor,

said shutter member further including an external, horizontally disposed, biasing member for biasing said shutter member vertically upwardly into a light blocking position within said insert member,

an externally supported demountable, removable cam member slidably horizontally received on said shutter member in diametric opposition to said horizontally disposed biasing member and including means for demountably, receiving and guiding a cam follower member therein, and

a cam follower member loosely slidably mounted on said insert member with one end inserted in said insert member and axially aligned with said horizontally disposed biasing member, the opposite end of said follower member engaging said demountable cam member effective in one posi-



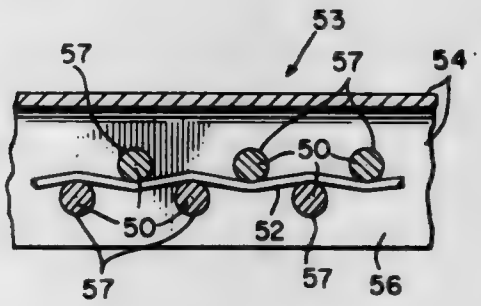
tion to lock said shutter member in a light passing position and in another position to block the light from said light generating member.

4,348,123

TABULATION RACK WITH SPRING PIN HOLDING

Clinton E. Abbott, Nicholasville, and Larry J. Rice, Lexington, both of Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 27, 1980, Ser. No. 163,676
Int. Cl.³ B41J *21/04*
U.S. Cl. 400—298 **3 Claims**



1. A tabulation rack assembly for a typewriter or other stepping printer of the general type having:

a plurality of pins, each of said pins having a first, substantially straight outer surface on a first long side and a second, substantially straight outer surface on a second long side opposite said first long side,

an elongated bracket having pairs of spaced, opposed holes for slideably supporting said pins positioned along said bracket at locations providing tabulation stops;

said pairs of holes in said bracket having received in them one of said pins with said first straight outer surface facing the side of said holes;

said holes being larger than the dimensions of the pin received so that the pin may move longitudinally to set and clear positions by sliding within the holes while remaining received within said pair of holes; and

at least one continuous, resilient member extending in contract with a plurality of said pins received in said pairs of holes, said contact being with said second straight outer surface of each of said pins contacted,

said resilient member being in a deformed configuration;

said resilience of said member in said deformed configura-

tion being sufficient to press said first straight outer surfaces of all of said pins received in said pairs of holes against the side of said holes to create sufficient frictional drag to prevent movement of said pins during normal handling and use while permitting a direct pushing force to slide said pins to set and clear position,

wherein the improvement comprises said pins being positioned with the top of one pin located on generally the same plane as the bottom of the next adjoining pins, and said resilient member comprising a normally straight wire wound through said pins in a serpentine configuration to engage said pins in the area of said plane.

4,348,124

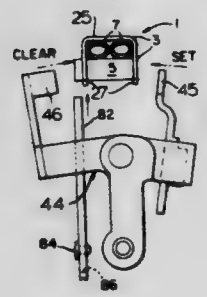
TABULATION RACK WITH SPRING PIN HOLDING

Larry J. Rice, Lexington, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 27, 1980, Ser. No. 163,677

Int. Cl.³ B41J *21/04*

U.S. Cl. 400—298 **4 Claims**



1. A tabulation rack assembly for a typewriter or other stepping printer comprising:

a plurality of pins, each of said pins having a first, substantially straight outer surface on a first long side and a second, substantially straight outer surface on a second long side opposite said first long side,

an elongated bracket having pairs of spaced, opposed holes for slidably supporting said pins positioned along said bracket at locations providing tabulation stops, said bracket having a continuous surface spaced away from said holes;

said pairs of holes in said bracket having received in them one of said pins with said first straight outer surface facing the side of said holes;

said holes being larger than the dimensions of the pin received so that the pin may move longitudinally to set and clear positions by sliding within the holes while remaining received within said pair of holes; and

at least two continuous, resilient members extending in contact with a plurality of said pins received in said pairs of holes, said contact being with said second straight outer surface of each of said pins contacted,

said resilient members being in a deformed configuration, said resilient members comprising two coil springs of mechanical spring wire deformed by the coils being partially pushed in one direction along the center axis of each said coil spring, the diameter of the coils being so large that said coils remain deformed in the area between said pins and said continuous surface of said bracket;

said resilience of said members in said deformed configuration being sufficient to press said first straight outer surfaces of all of said pins received in said pairs of holes against the side of said holes to create sufficient frictional drag to prevent movement of said pins during normal handling and use while permitting a direct pushing force to slide said pins to set and clear positions.

4,348,125

PAPER GUIDE MECHANISM OF PRINTER

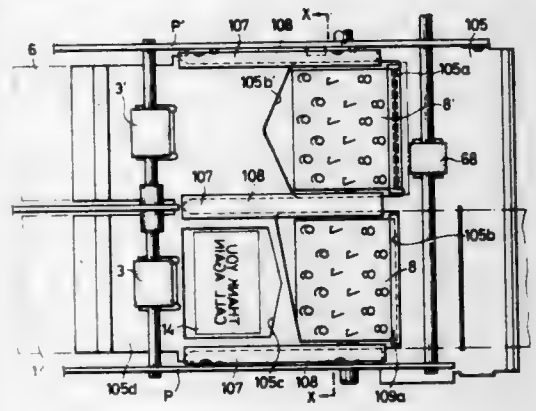
Toshimasa Fujiwara, Ayasemachi, and Yoshiyuki Sudo, Yono, both of Japan, assignors to Copal Company Limited, Tokyo, Japan

Filed Aug. 8, 1980, Ser. No. 176,378

Claims priority, application Japan, Oct. 8, 1979, 54-110130[U]

Int. Cl.³ B41J *15/18, 15/04*

U.S. Cl. 400—645.1 **7 Claims**



1. In a paper tape printer in which paper is drawn from a roll of paper and advanced along a feed run through a printing station:

a main body;

a first guide member including a first guide plate provided with a first opening and located in said main body and extending along and below said feed run;

a first printing section registering with said first opening:

a mount swingably supported by said main body and including a second guide member having a second plate provided with a second opening and being movable between an advanced position with said second guide plate extending along and parallel to and above and proximate said first guide plate with said second opening registering with said first opening and delineating with said first guide plate a passageway for said paper along said feed run, and a retracted position remote from said run to open said passageway and provide access to said paper along said feed run;

a second printing section supported by and movable with said mount and registering with said second opening; and

transversely spaced lip members disposed above and extending along the side edges of said first guide plate and directed toward each other and overlying only the side borders of said paper extending along said passageway and positioned between said first and second guide members to releasably restrict the vertical movement of said paper side borders when said mount is in its retracted position.

4,348,126

BRUSH ASSEMBLY

Louis V. Nigro, Saugus, Mass., assignor to The Gillette Company, Boston, Mass.

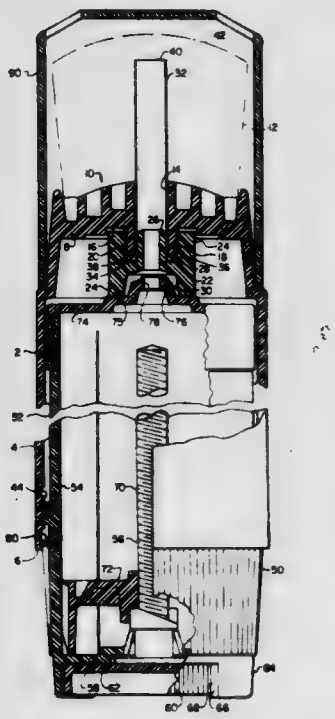
Filed Nov. 13, 1980, Ser. No. 206,520

Int. Cl.³ A46B *11/02, 17/04*

U.S. Cl. 401—135 **2 Claims**

1. A brush assembly comprising a brush portion and a cartridge portion, said brush portion comprising an elongated housing open at a first end thereof, a bristle-retaining wall at a second end thereof, said wall having an opening extending therethrough, a collar disposed about said opening and extending from an interior surface of said wall toward said first end, a retainer ring of elastomeric material fixed to said collar, said retainer ring having an annular wall defining in part an annular recess, said collar being disposed in said recess, said retainer ring having a central tubular portion defining in part said annular recess and extending into said opening, a flexible sleeve

disposed in said opening, a first end of said sleeve being open and having a circular base portion, said base portion being clamped between said retainer ring and said collar, a second end of said sleeve being disposed in a body of bristles, said housing having therein first connecting means comprising internal threads on a wall portion of said brush portion housing for releasably connecting said brush portion to said cartridge portion, said cartridge portion comprising a cartridge housing adapted to be inserted in said brush portion by way of said open first end of said brush portion, said cartridge housing defining a chamber adapted to retain a fluid, a spindle extending through a first end of said cartridge housing, manual turning means fixed to said spindle and disposed on an exterior surface of said first cartridge end, said manual turning means comprising a circular knob, and including an interrupted skirt depending from said cartridge housing first end and disposed



around said knob, the interruptions in said skirt defining openings for manual access to the periphery of said knob, said spindle having a threaded portion, a piston threadedly disposed on said spindle and adapted, upon rotation of said spindle, to move in said chamber toward a second end of said cartridge housing, an exterior side of said cartridge housing second end having a shoulder portion adapted to engage said retainer ring annular wall to effect a seal between said brush portion and said cartridge portion, a closed nozzle extending from said cartridge housing second end and adapted to be opened to provide an orifice at the end thereof and to be received in a pocket formed by said annular wall, said nozzle being adapted to be aligned with said tubular portion, and second connecting means comprising external threads on a wall portion of said cartridge portion for releasable connection to said first connecting means.

4,348,127

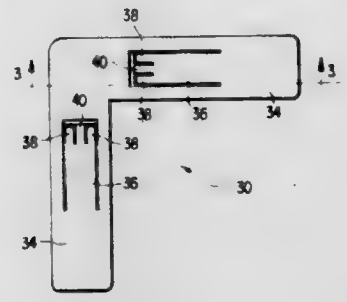
CONNECTOR FOR EXTRUDED SECTIONS SUCH AS PICTURE FRAME MEMBERS

George O. Hays, Jr., P.O. Box 355, Summerville, S.C. 29483

Filed Jul. 24, 1981, Ser. No. 287,096
Int. Cl.[3] G09F *1/12;* A47G *1/10*
U.S. Cl. 403—9 4 Claims

2. The improvement in a connector for joining extruded metal sections each having an open-sided slot of T-shape configuration, said connector comprising:

a spring steel member having first and second leg portions extending from a common juncture and slideable into said slot, each leg having a tab formed therein, said tab extending along the principal axis of the leg, having its free end toward said juncture of said legs, and terminating in three tines, said tab being bent at a small angle relative to the plane of said legs, the two lateral tines being bent further



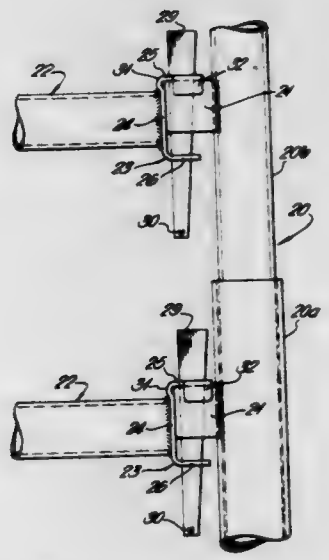
in the same direction as said tab and the center tine being bent in the opposite direction.

4,348,128

CONNECTOR ASSEMBLY FOR SCAFFOLD STRUCTURES

Peter E. Gostling, Sutton Coldfield, England, assignor to C. Evans & Sons Limited, Essex, England

Filed Mar. 3, 1980, Ser. No. 126,707
Claims priority, application United Kingdom, Mar. 8, 1979, 7908234; Sep. 12, 1979, 791622
Int. Cl.[3] E04G *7/00;* F16B *1/00*
U.S. Cl. 403—49 8 Claims



1. A connector assembly for use in builders scaffolding of the kind hereinbefore described, comprising an open-ended socket adapted to be fixed to an upright member or standard with the open ends thereof in parallel alignment with the longitudinal axis of the upright member, a channel-shaped connector member having a base flange and upper and lower arms and adapted to be fixed by its base flange to an end of a cross member and, in use, to be positioned with its arms at opposite ends of the socket, and a wedge element provided to extend through openings in the respective arms of the connector member, and through the socket wherein, in the fully interconnected position of the assembly, the base flange of the connector member is in tight engagement with the outer surface of the socket and the ends of the arms of the connector member are in spaced relationship with the outer peripheral surface of the upright member.

4,348,129

COUPLING JOINT

Maurizio Conforti, Via Bietoletti 21, Sesto Fiorentino (FI), Italy

Filed Apr. 16, 1979, Ser. No. 30,168
Claims priority, application Italy, Apr. 14, 1978, 9416 A/78
Int. Cl.[3] F16B *7/00*
U.S. Cl. 403—218 5 Claims

1. A six-way joint for assembling a plurality of tubular rods

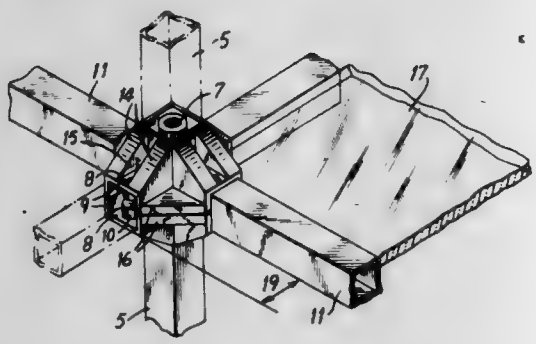
in three orthogonal and concurrent directions, comprising, combination:

two separable, complementary, shell-shaped members,

each member having a central base;

four channels extending from said base along a first plane and forming, when said members are assembled, sockets receiving each a rod;

an opening in said base along a plane perpendicular to said first plane;



a peg in said opening, said peg having a bore therethrough, said peg being adapted for connection to the end of a rod;

seats extending outwardly from said base parallel to said channels but on different planes;

horizontal gussets between said seats and coplanar with said base, and

fastening means passing through said bore in said peg for securing together said members.

4,348,130

JOINING DEVICE

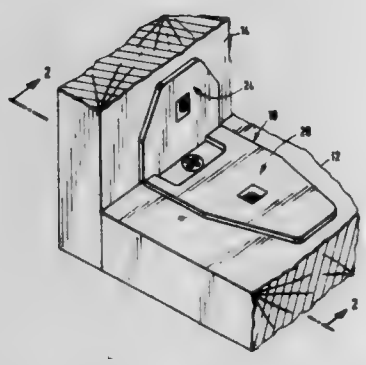
Karl Lautenschläger, Reinheim, Fed. Rep. of Germany, assignor to Karl Lautenschlager, KG Mobelbeschlagfabrik, Reinheim, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 974,042, Dec. 28, 1978, Pat. No. 4,272,207. This application Mar. 11, 1980, Ser. No. 129,264

Claims priority, application Fed. Rep. of Germany, Aug. 22, 1978, 2836678; Mar. 12, 1979, 2909656

Int. Cl.³ B25G 3/00

U.S. Cl. 403—231 15 Claims



1. A joining device for joining first and second boardlike furniture parts meeting at an angle, preferably at right angles, with respect to each other, comprising: first and second fittings adapted to be mounted fixedly into first and second mortises respectively in said first and second furniture parts, said first fitting comprising a turn wedge with a spiral-shaped locking wedge which is mounted in said first fitting for turning out of a starting position in which it is turned back into said first fitting, into a locking position in which it emerges from said first furniture part, said second fitting having in its surface facing said first fitting, an elongated undercut recess into which the locking wedge can engage, said first and second fittings being in the form of substantially cylindrical, plastic drive-in cups adapted to be inserted into said first and second mortises respectively, said first and second mortises having orifices on one side face of said first and second furniture parts respectively, said first mortise being broken-through to an edge of said first furniture part for the passage of said turn wedge, and said first fitting having a flattened portion at its side associated with said break-through such that the flattened portion open for the passage of the turn wedge is approximately flush with said edge when in its proper position of assembly, said locking wedge being formed by a marginal molding projecting in opposite directions over more then 180° from the marginal portion of a disk-like base part provided with pivots for mounting in said first fitting, said marginal molding having surfaces on opposite sides of said base part, which surfaces extend spiral-like and face said pivots and engage behind inner surfaces of two locking abutments projecting from opposite lateral surfaces of said elongated recess in said second fitting, said first fitting being composed of a cup having a bottom and integral therewith a circumferential wall which is cylindrical with the exception of said flattened portion and which is open on the side opposite to said bottom, and an obturator inserted in the open side of said cup, and bearings for the pivots of the turn wedge being provided in said bottom and in said obturator, the bottom of the cup being located within the mortise of said first furniture part, whereas a cover part located in the area of the opening of the mortise is made from metal and protrudes radially at least in a partial area thereof beyond the outer surface of the circumferential wall of the cup and thereby forms a base abutment when the cup is pressed into or pounded into the mortise of said first furniture part.

4,348,131

WELDED STRUCTURE HAVING IMPROVED MECHANICAL STRENGTH AND PROCESS FOR MAKING SAME

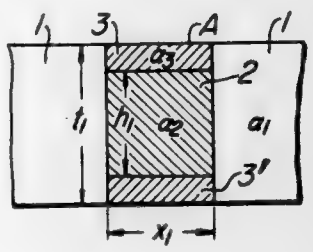
Shizuka Shimanuki; Toshimi Matsumoto; Hiroshi Sato; Tsutomu Onuma, and Seishin Kirihara, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 6, 1980, Ser. No. 147,329

Claims priority, application Japan, May 9, 1979, 54-55759

Int. Cl.³ B23K 9/23

U.S. Cl. 403—272 12 Claims



1. A welded structure with compressive stress on the surface of its weld produced by stress relief annealing treatment, comprising:

structural members welded by at least one weld joint into said welded structure and thereafter annealed;

a plurality of weld metals deposited on said structural members in a zone defining said weld joint of said welded structure in such a manner that the weld metals are restrained by the structural members;

said plurality of weld metals comprising a first weld metal having a first coefficient of thermal expansion forming at least one layer and a second weld metal having a second coefficient of thermal expansion higher than said first coefficient of thermal expansion forming at least a second layer, said first weld metal and said second weld metal being contiguous to each other and fused into the welded portion of said welded structure to provide a metallurgical bond, the layer of said first weld metal having an exposed surface;

said coefficient of thermal expansion of said first weld metal layer being lower than that of said second weld metal layer by over 1×10^{-6}/°C.; and

the ratio of the thickness, as measured perpendicular to said surface, of said second weld metal to the thickness of said weld joint and the difference between said first and second coefficient of thermal expansion being sufficient that said exposed surface has compressive stress after annealing.

4,348,132

CLAMPING CONNECTION FOR JOINING AN EXTERNAL STRUCTURAL PART WITH A SHAFT

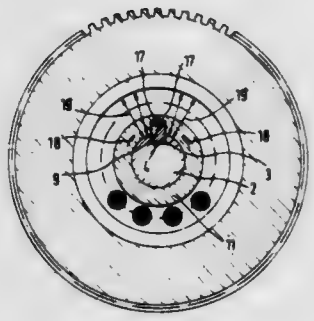
Ralph Mullenberg, Im Wiesengrund 6, 4048 Grevenbroich 12, Fed. Rep. of Germany

Filed Jul. 23, 1980, Ser. No. 171,485

Claims priority, application Fed. Rep. of Germany, Jul. 26, 1979, 2930245

Int. Cl.³ B25G *3/28;* F16B *3/00, 7/00*

U.S. Cl. 403—356 **5 Claims**



1. A clamping connection for joining an external structural part with a shaft, which shaft includes a longitudinal keyway therein defined by flanks in the shaft, the connection comprising:

a conical clamping set surrounding said shaft and being engageable with the external structural part, said conical clamping set including a plurality of co-operating conical rings for generating, under the action of a tightening operation, radial clamping forces upon axial displacement of at least one conical ring in relation to another;

an element which directly engages the shaft, said shaft engaging element having a slit which extends both radially and longitudinally therein, said slit being at least partially defined by flanks in said shaft engaging element, said shaft engaging element receiving radial forces generated by the clamping set, there being a certain region in which said longitudinal slit and part of said clamping set are closely mutually disposed;

a key fitted into said longitudinal keyway in the shaft and tightly abutting the flanks in the shaft prior to tightening of the conical ring, said key entering said longitudinal slit in at least said certain region thereof;

said longitudinal slit in said shaft engaging element and said key being mutually so dimensioned as to effect forcible abutment of said longitudinal slit, via its flanks, against said key prior to complete tightening of said clamping set, yet after initiation of tightening thereof and to effect further tightening of the abutment of the flanks of the keyway with said key during tightening of said conical clamping set, such further tightening being effected by a radially inward force exerted by said shaft engaging element on the shaft in the region of the keyway thereof during tightening of the clamping set.

4,348,133

MEDIAN BARRIER CONSTRUCTION

Peter F. Trent, Westmount, and Raymond Charlebois, Laval sur-le-Lac, both of Canada, assignors to Plastibeton Canada Inc., Canada

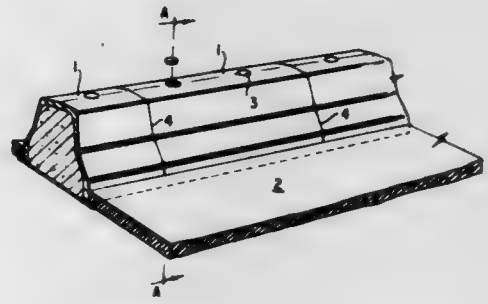
Filed Jun. 2, 1980, Ser. No. 155,596

Claims priority, application Canada, Apr. 25, 1980, 350738

Int. Cl.³ E01F *13/00, 15/00;* E01C *11/22*

U.S. Cl. 404—6 **12 Claims**

1. A structural member comprising an elongated, relatively thin outer U-shaped shell member open at one end between the legs thereof integrally pre-formed of polymer concrete, and having an outer surface defining a desired outer peripheral shape of a median barrier for highway construction, and having spaced apart openings in the top of the shell member, the



shell member being adapted for end-to-end arrangement with other shell members along a road subsurface to form an interior space therebeneath for receiving filler material which does not adhere to the polymer concrete shell members.

4,348,134

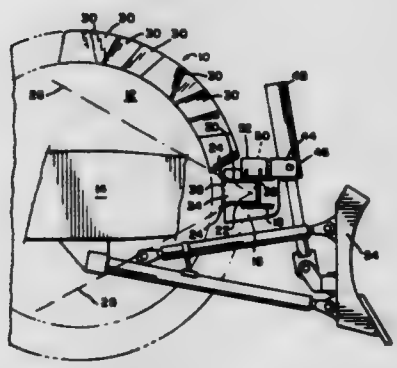
SCRAPER ASSEMBLY FOR A PADFOOT COMPACTOR, AND METHOD OF FORMING SAME

Robert F. Goehler, Greencastle, Pa., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Jan. 24, 1980, Ser. No. 114,964

Int. Cl.³ E01C *19/26;* A01B *29/04, 29/06*

U.S. Cl. 404—129 **11 Claims**



1. A scraper assembly, for a padfoot-type earth compactor, comprising:

a pair of substantially flat, elongate elements;

each of said elements having a longitudinal edge with an undulated configuration defined by a series of spaced-apart recesses with intervening, prominently-extending tongues; and

means fixing said elements in a spaced-apart, superposed and substantially parallel relationship, with said longitudinal edges, recesses, and tongues in common alignment; wherein

said elements each have a planar portion subsisting in a given plane;

said tongues of each element are angularly disposed relative to said planar portions;

said fixing means comprises wall means interposed between, and fixed to, said tongues of said elements, to secure said tongues to said common alignment;

said wall means comprises means for securing said tongues in said common alignment and for maintaining said tongues in said angular disposition with a divergent angle therebetween;

said wall means comprises gussets; and

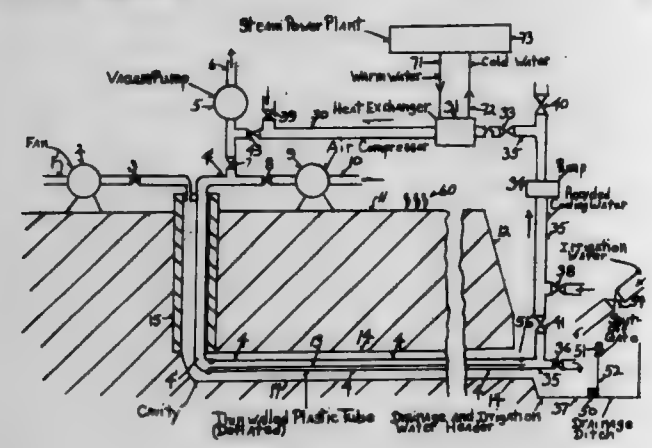
each of said gussets having a portion of one uniform width and a portion of greater width than said one width; and

said gusset portion of one width is fixed to said planar portions of said elements, and said gusset portion of greater width is fixed to said tongues to maintain said divergent angle therebetween.

4,348,135
DRAINING, IRRIGATING AND AERATION OF SOIL AND HEATING OR COOLING OF SOIL

John C. St. Clair, Box 3345, Columbus, Ohio 43210

Continuation-in-part of Ser. No. 738,182, Nov. 2, 1976, abandoned, which is a continuation of Ser. No. 593,022, Jul. 3, 1975, abandoned. This application Jul. 23, 1979, Ser. No. 60,214
Int. Cl.³ E02B *11/02*
U.S. Cl. 405—36 8 Claims



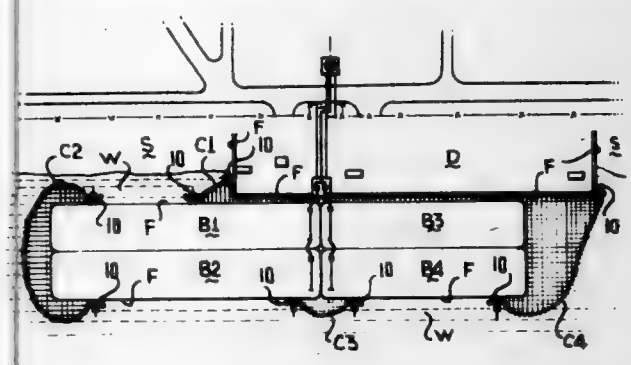
1. A method for draining land which comprises:
(a) burying a flexible tube in a substantially horizontal position beneath the surface of the ground,
(b) then after the tube is placed below the surface of the ground forcing fluid into an end of the tube and thereby increasing the internal volume of the tube, said increase in volume being below the surface of the ground,
(c) then after step (b) in which fluid is forced into the tube, deflating the tube by removing fluid from inside the tube by submitting an end of the tube to a pressure less than the pressure at a point that is both outside the tube and contacts said tube, said point being under the surface of ground being drained,
(d) then after step (c) forcing into an end of the tube a fluid inside the tube and thereby inflating the tube and increasing its internal volume below the surface of the ground,
(e) then after the inflation of the tube removing fluid from the tube so the volume, the tube occupies, decreases in volume and there is left because of this decrease in volume a cavity around the tube that is open the length of the tube and to an outlet at the end of the tube, that is open for water to drain out of,
(f) after the mentioned inflation and deflation in steps (d) and (e), draining water through the cavity around the tube to the outlet at the end of the tube and out of the cavity to the outlet,
(g) after the preceding steps, and after the rate of drainage from the cavity has decreased after rains, repeating both the inflation and deflation steps so as to increase the rate of drainage from the cavity after rains.

4,348,136
SPILL OIL CONTAINMENT SYSTEM

David M. Donovan, New Orleans, La., assignor to Waldemar S. Nelson & Co., New Orleans, La.

Filed Jan. 15, 1981, Ser. No. 225,326
Int. Cl.³ E02B *15/04*
U.S. Cl. 405—65 29 Claims

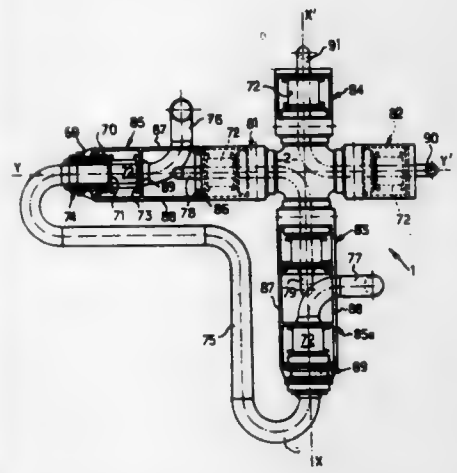
1. A device particularly adapted for attachment to a ferrometallic surface comprising a base member, means carried by said base member for magnetically attaching said base member to a ferrometallic surface, means carried by said base member for imparting buoyancy to said base member relative to a body of water, means carried by said base member for attaching said base member to a floating element whereby said device functions as the connecting intermediary between the ferrometallic surface and the floating element, and said last-mentioned attaching means is mounted for relative movment with respect to said base member.



4,348,137
PIVOTAL CONNECTION FOR ARTICULATED COLUMN OF SEA-BED WORKING STRUCTURE

Samuel Tuson, Mesnil-Le-Roi, and Jean-Pierre Ghilardi, La Bouffemont, both of France, assignors to Entreprise d'Equipements Mecaniques et Hydrauliques EMH, France

Filed Aug. 7, 1978, Ser. No. 931,421
Claims priority, application France, Aug. 12, 1977, 77 24912
Int. Cl.³ E02B *17/00*
U.S. Cl. 405—202 5 Claims

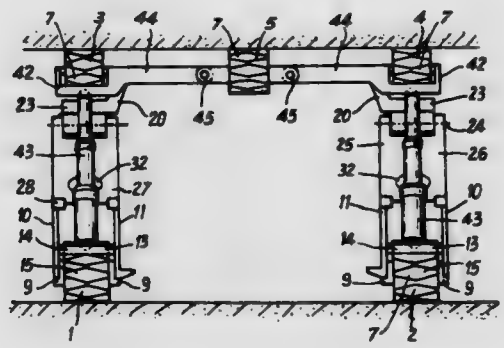


1. A pivotal connecting device of the kind forming a universal Cardan joint coupling in particular for a compliant or articulated column of a sea-bed working structure, said column being pivotally connected to a base member resting on the sea-bottom so as to be capable of swinging about two axes of rotation extending at right angles to each other and supported by said column and said base member, respectively, rigid connecting ducts being provided between the base member and the column, which ducts are associated with four torsion couplings axially aligned by pairs along the axis of rotation, for the flow of fluids between the column and the base member, each of the couplings associated with the base member being connected with the corresponding coupling associated with the column through a rigid duct, these connecting ducts extending through the inside of a Cardan joint spider which has generally a parallelepipedic hollow shape, wherein at least one rigid connecting duct is provided outside of the spider of the Cardan joint coupling, said duct extending between associated additional torsion couplings aligned along the axis of rotation and connected to the base member and the column, respectively.

4,348,138
SLIDING SUPPORTING GALLERY

Guy Blampain, Verneuil.en.Halatte, and Pierre Grandfils, Precy-sur-Oise, both of France, assignors to Charbonnages de France, Paris, France

Filed Jun. 27, 1980, Ser. No. 163,474
Claims priority, application France, Jul. 6, 1979, 79 17587
Int. Cl.[3] E21D *23/00*
U.S. Cl. 405—297 10 Claims

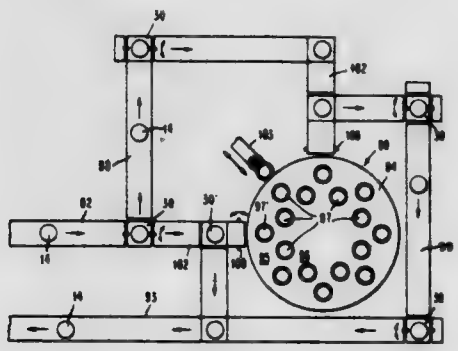


1. A roof support for use in mines between a roof and a floor comprising two pairs of frames spaced from each other laterally of the support and each including an upper frame provided with an articulated track and a lower frame provided with an articulated track, wherein the frames are spaced apart by a large passage for use as heading, an upper cross-member extending between said upper frames, the opposite ends of said upper cross-member being connected to said upper frames, an intermediate upper frame having an articulated track being carried by said upper cross-member and located between said upper frames, jack means associated with each pair of frames and operable to apply a force between the lower frames and the upper cross-member to cause the track of the intermediate upper frame to be applied against the roof of the passage.

4,348,139
GAS FILM WAFER TRANSPORTATION SYSTEM

Javathu K. Hassan, Hopewell Junction, and John A. Paivanas, Hyde Park, both of N.Y., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Apr. 30, 1980, Ser. No. 145,156
Int. Cl.[3] B65G *51/02*
U.S. Cl. 406—10 6 Claims



1. A manufacturing system comprising:

(a) at least two processing stations for performing processing steps on an object being manufactured;

(b) an air track creating a film of air, on the underside of said object, and with force components capable of both holding the object off of said track and moving the object along the track, and extending between said two processing stations for transporting the objects from one station to the other station, the operating level for processing the object in one station being either at a different elevation than the other station, or requires an angular orientation different from the other station, said air track having two sections of different angular orientation relative to each other;

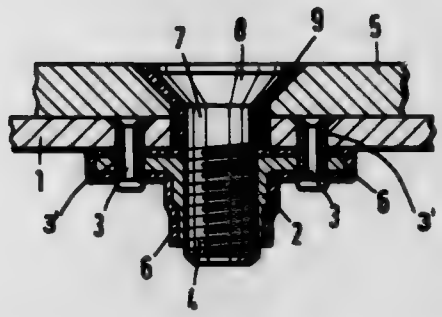
(c) an air track swivelator positioned between said two sections and having a pivot essentially centrally located in the planes of the two sections and normal to the path of the object being transported and being capable of being rotated 360° about said pivot, said swivelator comprising a sensor for detecting the presence of an object and a plurality of air jets for stopping the object, when detected, for attracting the object toward, but out of contact of, the surface of the swivelator during rotation, and for moving the object in either a forward or reverse direction after rotating the swivelator a predetermined number of degrees; and

(d) means operable for providing an air flow so as to stop and hold said object on the air film, while said swivelator is rotated, and to move the object after rotation, whereby the object is moved from said one section of air track to said other section.

4,348,140
CONNECTING DEVICE, PREFERABLY FOR SHEET METAL COMPONENTS OF LIGHT METAL ALLOWS

Helmut Bergholz, Hamburg, and Walter Tams, Buxtehude, both of Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 952,654, Oct. 19, 1978, abandoned.
This application Jan. 19, 1981, Ser. No. 226,460
Claims priority, application Fed. Rep. of Germany, Oct. 28, 1977, 7733291[U]
Int. Cl.[3] F16B *5/02, 37/04*
U.S. Cl. 411—103 4 Claims



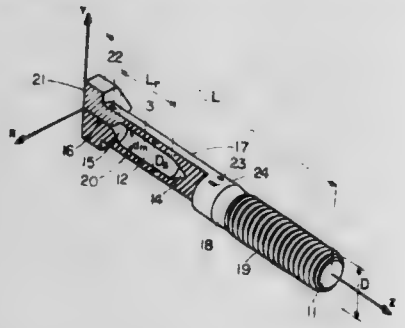
1. An aircraft construction threaded nut assembly for transmitting forces between sheet metal pieces, comprising in combination a piece of sheet metal having first and second holes therein, a nut having a threaded hole, means rigidly securing said nut to said piece of sheet metal, whereby said threaded hole registers with a first hole in the piece of sheet metal, said securing means comprising holding means connected to the nut, at least one rivet hole in said holding means registering with a second hole in said piece of sheet metal, and at least one rivet extending through the rivet hole in the holding means of the nut and through a respective second hole in the piece of sheet metal, said assembly further comprising a coating of synthetic insulating material of sufficient mechanical strength for directly transmitting mechanical stress through the coating covering said holding means substantially on all sides including the wall of the rivet hole in the holding means, whereby the nut is insulated from the piece of sheet metal and from the rivet for releasably securing said piece of sheet metal to a further piece of sheet metal in a rigid, force transmitting manner.

4,348,141

HOLLOW EXTERNALLY THREADED FASTENERS HAVING GREATLY INCREASED DUCTILITY

Norman C. Dahl, 40 Fern St., Lexington, Mass. 02173

Filed Nov. 19, 1979, Ser. No. 95,166
Int. Cl.[3] F16B *35/00, 31/02*
U.S. Cl. 411—389 46 Claims



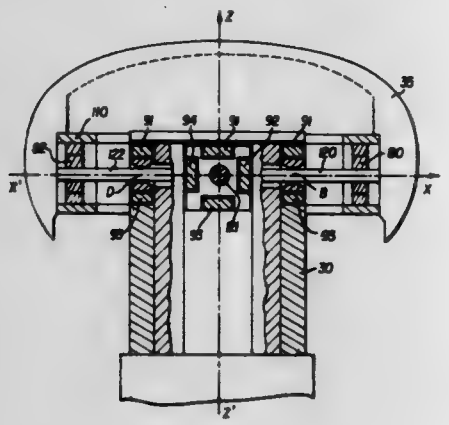
1. A metal fastener having a well-defined yield point and improved elongation beyond the yield point and a tensile strength (force) at least as large as the specified minimum for the grade, size, and threads of said metal fastener, the metal fastener of nominal diameter D, which metal fastener comprises in combination: an externally threaded component having threads of nominal diameter D; a circular, cylindrical shank component having a diameter D_s equal to or substantially equal to said nominal diameter D extending axially to one end of the threaded component; and a head component for the application of torque to the fastener extending axially to the other end of the shank component; the fastener being characterized by an axially extending hollow cavity positioned therein within the shank component, and not extending substantially into the threaded component, the axially transverse cross-sectional shape of the cavity being circular in shape at every pont along the cavity and concentric with said cylindrical shank component, the maximum cross-sectional area of the hollow cavity in the shank component being greater than the minimum cross-sectional area within any part of the hollow cavity which extends into the head or threaded components.

4,348,142

SIX-AXES MANIPULATOR

Jean Figour, Le Mesnil Saint Denis, France, assignor to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Mar. 13, 1980, Ser. No. 129,979
Claims priority, application France, Mar. 22, 1979, 79 07254
Int. Cl.[3] B25J *3/00*
U.S. Cl. 414—2 7 Claims



1. A six-axis manipulator for controlling the extremity of a robot arm, said manipulator comprising:

a central tubular support having an axis;

four bearings on said support and each separated by 90° in a plane perpendicular to said support axis;

a ring having a diameter larger than that of a section of said support, said section lying in said perpendicular plane;

rigid and elastic means for supporting said ring on said tubular support wherein said ring and tubular support are coaxial at rest;

at least four force sensors, for sensing forces in four directions, on each of said bearings;

logic means for converting signals from said sensors into individual translational components along three axes and into individual rotational components about said three axes; and

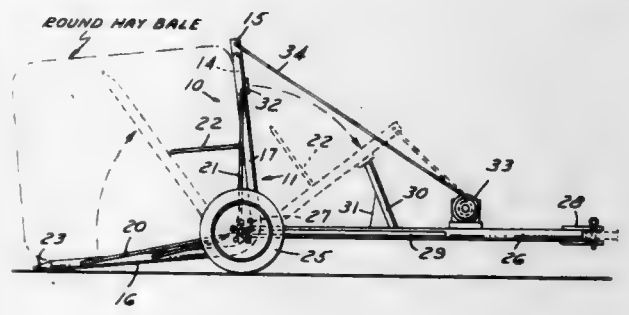
means for transmitting said components as command signals to said robot.

4,348,143

LARGE ROUND HAY BALE MOVER

Clofford L. Hedgespeth, Rte. 1, P.O. Box 29, Finley, Ky. 42736

Continuation of Ser. No. 2,572, Jan. 11, 1979, abandoned. This application Oct. 30, 1980, Ser. No. 202,144
Int. Cl.[3] A01D *87/12;* B60P *1/14*
U.S. Cl. 414—24.5 7 Claims



1. A large round hay bale mover for trailing use behind a towing vehicle comprising a large round hay bale cradle and a two-wheeled trailing unit, said cradle comprising pipe means formed to provide a pair of straight fork elements adapted to pass in a forward downwardly inclined ground engaging position under its center of gravity and while remaining in ground engaging position to raise to an inclined preliminary fully loaded condition a large round hay bale, the pipe of each fork element having a 90° vertical bend mounted in close proximity to the wheel axis extending therefrom to form back support elements for the bale, and horizontal connecting means extending between said back support elements to provide a further back support, said horizontal connecting means comprising the upper ends of said back support elements provided with transverse bends continuing horizontally and adapted to provide a rigid integral horizontal connecting means, an outwardly extending transverse pipe section rigidly secured to said pipe means in the close proximity of each of said 90° bends, said trailing unit comprising transverse pipe means extending through both of said transverse pipe sections to provide pivotal connections therewith and having trailer frame means connected to said transverse pipe means including means for raising said fork elements adapted for trailing attachment to a towing vehicle with said fork elements raised to an upwardly inclined position providing minimum ground clearance at said 90° bend substantially spaced above the ground contacting wheel perimeter and in close proximity to the wheel axis.

4,348,144

METHOD AND APPARATUS FOR LOADING A MULTI-PLATEN PRESS

Victor R. Nelson, 2700 SW. Summit Dr., Oswego, Oreg. 97034

Filed Jun. 27, 1980, Ser. No. 163,813
Int. Cl.[3] B65G *1/06*
U.S. Cl. 414—277 13 Claims

1. The method of loading a plurality of panels into a multi-platen press, comprising:

(a) infeeding a panel onto each of a plurality of vertically spaced trays mounted for movement with a carriage,

(b) while retaining the carriage in stationary position, pushing the panels forwardly on the trays into abutment with verti-

cally aligned stops extended in front of the trays, whereby to align the forward ends of the panels vertically,

retracting the stops away from the panels,

(d) while holding the panels against rearward movement on the trays, moving the carriage forwardly to move the trays and panels into the spaces between platens of the open multi-platen press, and

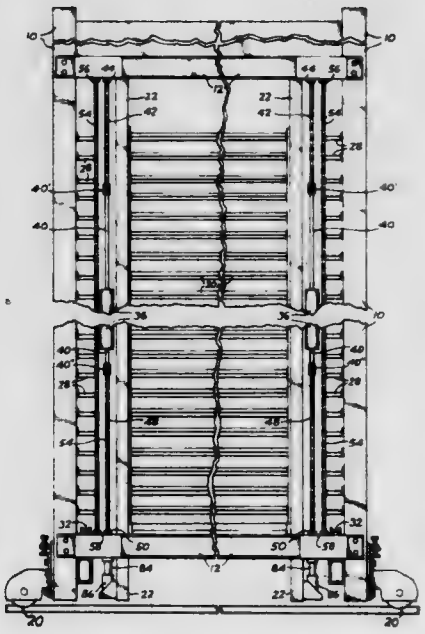
(e) while holding the panels against rearward movement relative to the press, retracting the carriage and withdrawing the trays from the press, thereby depositing the panels on the press platens.

3. Apparatus for loading a plurality of panels into a multi-platen press, comprising:

(a) a main frame located on the infeed side of the multi-platen press and having a panel outfeed end facing said infeed side of the press,

(b) a carriage mounted on the main frame for movement toward and away from the outfeed end of the main frame,

(c) a plurality of vertically spaced panel support trays mounted on the carriage for movement therewith for retractable extension forwardly of the outfeed end of the main frame for



insertion into and retraction from the spaces between the press platens when the press is open,

(d) stop means mounted on the main frame adjacent the outfeed end thereof for movement between an extended position for intercepting the forward ends of panels supported on the trays and the retracted position displaced from panels on the trays,

(e) sweep arm means mounted on the carriage for movement therewith and for movement relative thereto between a retracted position displaced from the trays for receiving panels onto the trays and an extended position for abutment with the rearward ends of the panels on the trays for moving the panels forwardly into abutment with the forward ends with the extended stop means for aligning the forward ends of the panels vertically, the sweep arm means being movable with the carriage for moving the vertically aligned panels into the press when the stop means are retracted, and

(f) panel stripper means mounted movably on the main frame for releasably engaging panels on the trays within the press for retaining the panels in the press while the trays are retracted from the press.

4,348,145

WOOD COMPARTMENT

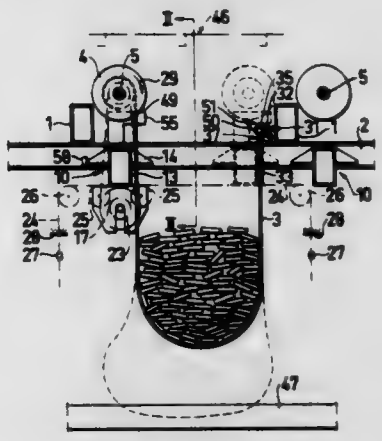
Erland Marklund, Skelleftea, and Lars Lindström, Byske, both of Sweden, assignors to Renholmens Mekaniska Verkstad AB, Byske, Sweden

Filed Jun. 13, 1979, Ser. No. 48,581

Claims priority, application Sweden, Jun. 16, 1978, 7806953; Sep. 26, 1978, 7810092; Jun. 8, 1979, 7905011

Int. Cl.³ B07C 5/14

U.S. Cl. 414—288 **10 Claims**



1. Apparatus for handling elongated objects such as pieces of wood includes at least one elongated flexible member for forming the bottom and sides of an object-handling compartment having a longitudinal dimension and a transverse dimension, said flexible member having a first end and a free end; coiling means associated with said first end of said flexible member for winding up and unwinding said flexible member; attaching means at said free end of said flexible member; an attaching mechanism operable for selectively being connected to and disconnected from said attaching means whereby when said attaching means and said attaching mechanism are connected, said flexible member can be suspended from its ends to form said compartment and whereby said attaching means can be disconnected from said attaching mechanism to loosen said flexible member to enable emptying of the compartment; and means arranged after loosening of the flexible member to introduce the flexible member in the attaching mechanism so as to bring the attaching means by winding of the flexible member onto the coiling means, to retaining engagement with the attaching mechanism, said attaching mechanism including a bifurcated holder for said flexible member, said holder being displaceable relative to said flexible member in the longitudinal direction of the compartment to loosen said flexible member when displaced in one direction, and to straddle the flexible member after introduction thereof into the attaching mechanism, when displaced in the opposite direction, so as to allow for the attaching means to be brought by winding of the flexible member onto the coiling means, to its retaining engagement with the attaching mechanism.

4,348,146

SELF-ERECTING SURGE BIN

J. Donald Brock, Chattanooga, TN, assignor to Astec Industries, Inc., Chattanooga, Tenn.

Division of Ser. No. 912,501, Jun. 5, 1978, Pat. No. 4,249,351. This application May 9, 1980, Ser. No. 148,509

Int. Cl.³ B65G 67/08

U.S. Cl. 414—332 **5 Claims**

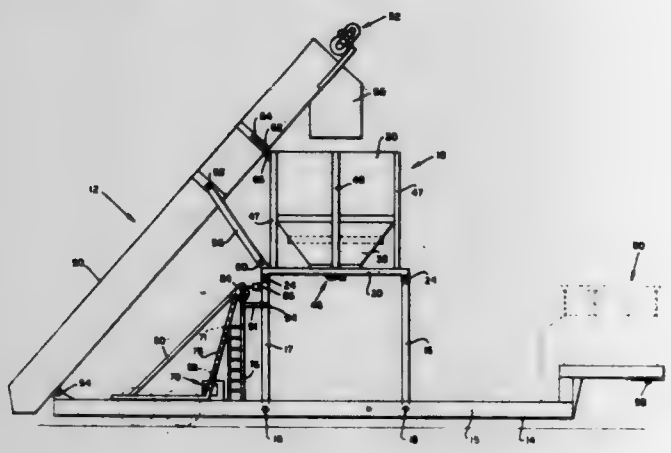
1. Apparatus for transporting and temporarily storing asphalt, said apparatus comprising:

trailer means;

bin means having a raised and a lowered configuration with respect to said trailer means, said bin means being pivotally attached to said trailer means and including a plurality of connected wall sections defining a storage bin area open at the top and at the bottom, door means selectively opening and closing said opening in the bottom of said

storage bin area, and collapsable support leg means pivotally attached to said trailer means and to said wall sections such that said wall sections remain substantially vertical when said bin means is in said raised and said lowered configuration;

conveying means for conveying asphalt to said bin means and having a raised and a lowered configuration with respect to said trailer means, said conveying means being pivotally attached to said trailer means, and to said bin means; and



erecting means for raising or lowering said conveying means and said bin means from their lowered or raised configuration to their raised or lowered configuration, respectively;

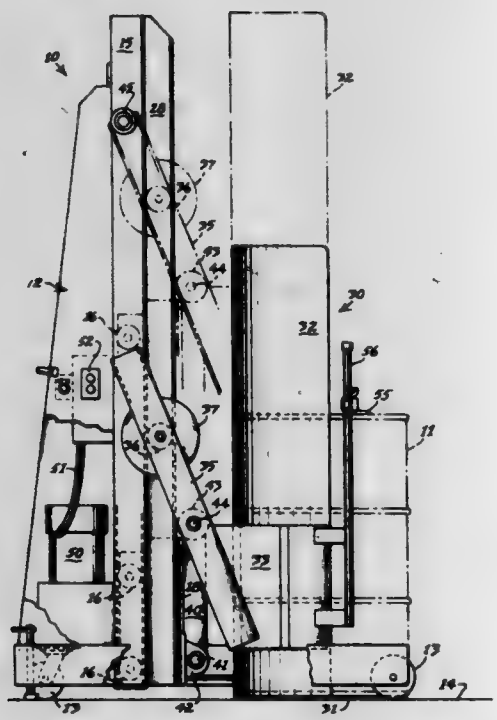
at least one of said wall sections of said bin means being pivotally mounted to said other wall sections so as to permit said conveying means to nest within said bin means when said conveying means and said bin means are in said lowered configuration.

4,348,147

HIGH-LEVEL DUMPING APPARATUS

J. Thomas Helm, Franklin, Tenn., assignor to Dozier Equipment International Company, Nashville, Tenn.

Filed Aug. 11, 1980, Ser. No. 176,855
Int. Cl.[3] B65G *65/24*
U.S. Cl. 414—420 8 Claims



1. A high-level dumping apparatus comprising:

(a) an upright frame having a front and back and upper and lower frame portions,

(b) an upright carriage track extending between said upper and lower frame portions,

(c) a guide track extending between said upper and lower frame portions in front of said carriage track,

(d) a carriage mounted for reciprocable movement along said carriage track,

(e) means for reciprocably moving said carriage,

(f) load carrying chute means, including a tilt arm having an upper free end portion,

(g) a guide element fixed to said tilt arm for cooperative engagement with said guide track to permit reciprocable movement of said tilt arm along said guide track and pivotal movement of said tilt arm relative to said upright frame,

(h) a trip member fixed to said upper frame portion in the upward path of movement of the upper free end portion of said tilt arm, so that engagement of said trip member by said upward moving tilt arm causes said chute means to pivot upward about the pivotal axis of said trip member, and

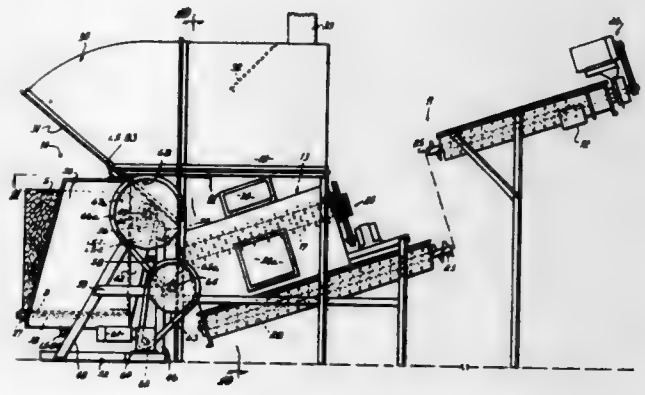
(i) a lift member on said carriage cooperative with said chute means for moving said chute means upward with said carriage and for exerting an upward thrust upon said chute means at a predetermined distance along said tilt arm from said guide element.

4,348,148

DUMPER APPARATUS AND METHODS

Edwin Wilding, Louisville, and James W. DeVere, Jeffersontown, both of Ky., assignors to Griffin & Company, Inc., Louisville, Ky.

Filed Jul. 30, 1979, Ser. No. 61,748
Int. Cl.[3] B65B *21/02*
U.S. Cl. 414—421 3 Claims



1. Apparatus for dumping tobacco into a feeder apparatus having a hood with an opening for receiving tobacco, said apparatus including a pivoted dumper supporting a load of tobacco and being pivotable from a first position for receiving tobacco to a raised position within said opening for dumping tobacco, the improvement comprising,

means for holding said dumper in said raised position within said opening,

said means including a first element pivoting with said dumper from said first position to said raised position, and

a selectively actuable blocking element movable to a blocking position with respect to said first element when said dumper is in its raised position,

wherein said first element comprises a dumper drive sprocket having a central pivot axis and having an aperture therein spaced from said axis, and wherein said blocking element includes a movable brake pin, said aperture being operatively aligned with said brake pin when said dumper is in its raised position and said brake pin being movable into said aperture when said dumper is in its raised position for locking said dumper in its raised position, and

further including two drive sprockets, each having a central axis, and an aperture therein spaced from said axis, and further including two movable brake pins, each operatively associated with a respective drive sprocket, said

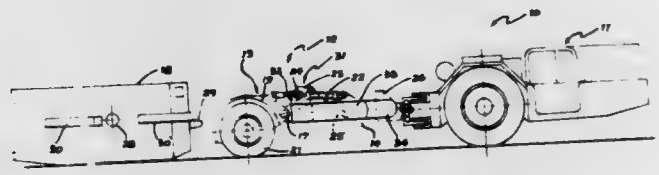
apertures being operatively aligned with respective ones of said pins when said dumper is in its raised position, said brake pins being movable into respective ones of said apertures when said dumper is in its raised position for locking said dumper in its raised position.

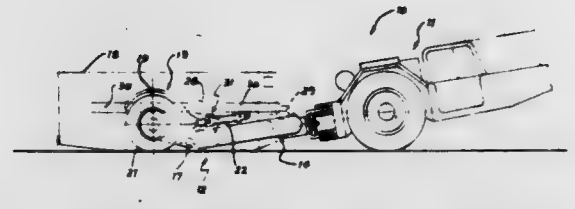
4,348,149

MOBILE TRANSPORTER FOR MINES

Charles R. Deamer, Church Point, Australia, assignor to Noyes Bros. Pty. Limited, St. Leonards, Australia

Filed Apr. 2, 1980, Ser. No. 137,115
Claims priority, application Australia, Apr. 17, 1979, PD8383
Int. Cl.³ B60P *3/00*
U.S. Cl. 414—458 **2 Claims**





1. A transport assembly adapted to transport a variety of attachments with the attachments having three mounting points, two of which comprise transversely spaced horizontally projecting spigots and the third mounting point being a forwardly horizontally projecting pin, said assembly comprising:

(a) a horizontal "U"-shaped main frame having two generally parallel co-extensive transversely spaced side arms joined by a transverse base so that a load receiving area is defined between the two side arms,

(b) a subframe pivotally attached to each arm so that both subframes pivot about a common horizontal axis extending generally transverse of the normal direction of travel of the transport assembly,

(c) a wheel rotatably fixed to each subframe so that the wheels are rotatable about a common horizontal axis parallel to the pivot axis of said arms,

(d) coupling means adapted to secure an attachment to the transport assembly, said coupling assembly comprising three spaced reaction points of which two are transversely spaced and the third is longitudinally spaced relative to the others, each of said subframes having one of said two reaction points with the third reaction point being located on said transverse base, said two reaction points each comprising a latch which consists of a recessed member adapted to receive one of said spigots and a retainer adapted to selectively secure the spigot within the recessed member, said third reaction point including a hollow member having a generally horizontal rearwardly open passage adapted to receive said pin, and

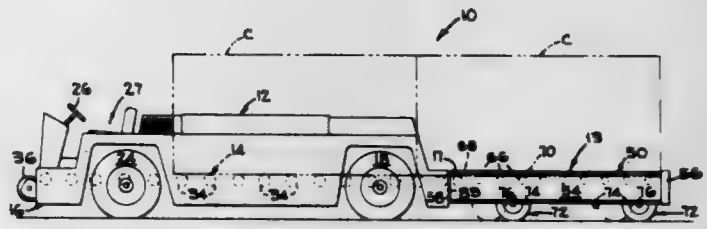
(e) motor means extending between said subframes and main frame so as to pivotally move said subframes between an upper and a lower position so that said attachment is locatable within said space when said subframes are in said lower position, and is supported by said three reaction points when said subframes are in said upper position.

4,348,150

MOBILE CARGO HANDLING SYSTEM AND METHOD

Donald M. Ingram, Santa Clara, and William B. Walker, Los Gatos, both of Calif., assignors to FMC Corporation, Chicago, Ill.

Filed May 19, 1980, Ser. No. 151,045
Int. Cl.³ B60P *1/52*
U.S. Cl. 414—529 **4 Claims**



4. An apparatus including a powered container supporting deck of predetermined length for selectively transferring container loads of different lengths between two locations:

when handling one or more containers defining a short container load having a total length less than the length of said powered container supporting deck, said apparatus comrpising:

means defining a longitudinally extending steerable self-propelled mobile transporter including said powered container supporting deck, means defining power operated container stops on said deck movable between an inoperative position out of the path of movement of the container and a container restraining position within the path of movement of the container, and controllable power means for actuating said container supporting deck for moving said short load onto said deck from said first location and off said deck at said second location after said mobile transporter has been driven to said second location and when said stops are in their inoperative positions, said controllable power means including means for raising and lowering said stops with the stops being in their container retaining position when said transporter is driven between said two locations;

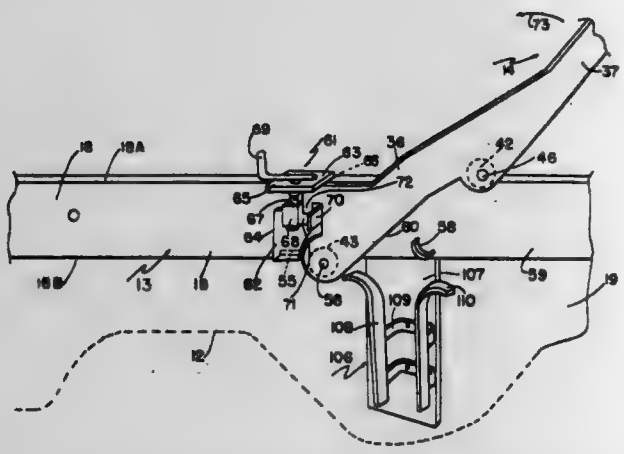
when handling one or more container defining a long load having a total length greater than said powered container supporting deck, said apparatus additionally comprising:

means defining a dolly having a front and rear end and a longitudinal axis, swivel caster wheels supporting said dolly, means releasably connecting said dolly to said transporter with the longitudinal axes of said transporter and said dolly being maintained substantially parallel relative to a vertical plane, said dolly including an unpowered deck means having a container supporting surface defined solely by unpowered freely rotatable elements for supporting a portion of a long load, stop means on the rear end of said dolly being spaced from said front end of said dolly a distance less than the length of the rearmost of said one or more containers of said long load for assuring that a portion of said rearmost container is supported on said powered transporter deck when said rearmost container is contacting said dolly stop means, said power transporter deck supporting a sufficient portion of the rearmost one of said one or more containers for powering said containers onto or off of said dolly deck upon selective actuation of said controllable power means and upon moving said stops into their inactive positions.

4,348,151
TRUCK WINCH ASSEMBLY

Lorimer Olson, Hawarden, Canada, assignor to WGM Safety Corp., Franklin, Pa.

Filed May 19, 1980, Ser. No. 151,180
Int. Cl.[3] B60P 1/48
U.S. Cl. 414—542 13 Claims



11. A truck winch assembly, for use in a truck cargo area comprising:

a frame assembly attachable within said truck cargo area, said frame assembly comprising a vertically situated front frame component secured at the front of said truck cargo area and a pair of vertically situated side frame components secured along the sides of said truck cargo area, said side frame components further comprising horizontally extending rail elements having upper and lower rail surfaces;

a lifting yoke; and

roller means mounted on said lifting yoke for supporting said lifting yoke within said frame assembly for movement from a stored position to an elevated lifting position and vice-versa, said roller means further cooperating with said horizontally extending rail elements for moving said lifting yoke along said frame assembly when said lifting yoke is in the lifting position;

said roller means comprising a first pair of rollers, one roller mounted on each leg of said lifting yoke, for cooperation with the upper rail surfaces of said horizontally extending rail elements, and a second pair of rollers mounted on said lifting yoke, spaced apart from said first pair of rollers, for cooperation with the lower rail surfaces of said horizontally extending rail elements.

4,348,152
ARTICLE RETRIEVAL DEVICE

Shunichi Takamatsu, Osaka, Japan, assignor to Itoki Co., Ltd., Osaka, Japan

Division of Ser. No. 92,754, Nov. 9, 1979, Pat. No. 4,333,005.
This application Aug. 15, 1980, Ser. No. 178,574
Claims priority, application Japan, Nov. 10, 1978, 53-137779; Nov. 10, 1978, 53-137780
Int. Cl.[3] B65G 1/06
U.S. Cl. 414—785 9 Claims

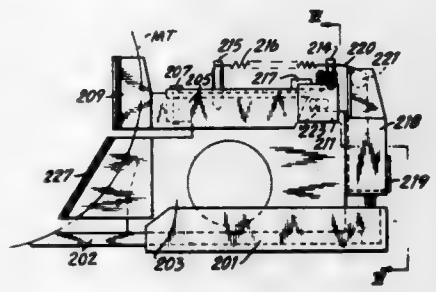
1. A device for retrieving an article comprising:

carriage means displaceable from a first position out of engagement with said article to a second position in engagement with said article;

an arm extending forwardly from said carriage for engagement with said article, said arm having a tapered end for engaging the bottom portion of said article to raise said article;

first and second guide plates pivotally mounted to said carriage and disposed above said arm, said guide plates being displaceable from a first position in engagement with said article to a second position out of engagement with said article;

biasing means connected to said first and second guide plates to urge said first and second guide plates to said first position thereof;



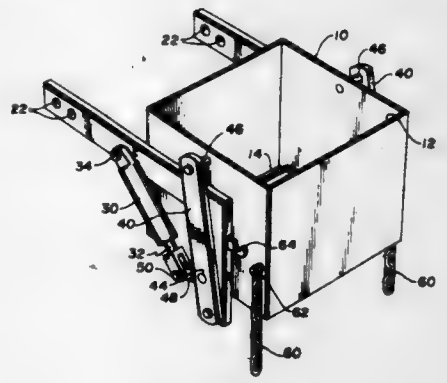
means for displacing said carriage means; and

means for displacing said first and second guide plates from said first position thereof to said second position thereof against said biasing means.

4,348,153
ROCK BOX

Ardell W. Johnson, Rte. #2, Lake Lillian, Minn. 56253

Filed Dec. 10, 1980, Ser. No. 214,912
Int. Cl.[3] B60P 1/22
U.S. Cl. 414—786 2 Claims



1. A method of loading, transporting and dumping farm rocks conveniently and economically comprising the steps of:

(a) fastening a rock box to the frontal part of a farm tractor in upright position wherein said rock box including plurality of mounting brackets, plurality of elevation arms, a single hydraulic cylinder and a chain and a hook arrangement;

(b) making the hydraulic connections between said hydraulic cylinder and the operator's controls of said farm tractor via hydraulic systems of said farm tractor;

(c) lowering said rock box to the ground level by advancing piston out of said cylinder;

(d) rolling rock box 90 degrees by advancing said farm tractor;

(e) advancing said rock box up to the rock by advancing tractor,

(f) loading the rock into the box manually

(g) rotating said rock box to upright position by retracting the piston of said hydraulic cylinder;

(h) transporting the farm tractor to dump location;

(i) connecting said chain to said hook;

(j) dumping the contents of said rock box by advancing the piston out of said hydraulic cylinder;

(k) withdrawing the piston into said hydraulic cylinder to bring said rock box to upright position;

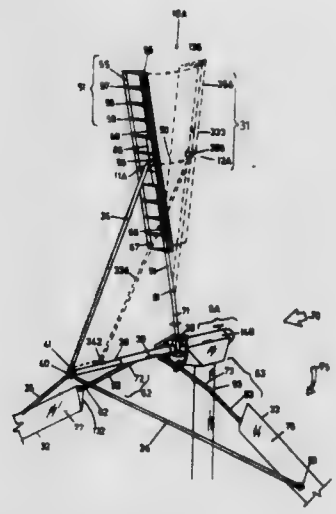
(l) raising said rock box to upright position; and

(m) unhooking said chain from said hook.

4,348,154
ADJUSTABLE VANE WINDMILLS

William L. Ducker, Lubbock, Tex., assignor to Wind Engineering Corporation, Lubbock, Tex.

Continuation-in-part of Ser. No. 874,222, Feb. 1, 1978, Pat. No. 4,183,715. This application Jan. 11, 1980, Ser. No. 111,251
Int. Cl.³ F03D 7/04
U.S. Cl. 416—43 6 Claims



1. In a windmill comprising a tower and a plurality of airfoil blades, means for controllably adjusting the pitch of the airfoil blades from a feathered position to any run position relative to the direction of the wind, said means comprising:

an elongated sleeve member,

an actuator shaft coaxially extending through said sleeve, said shaft rotatable with said sleeve and longitudinally moveable relative to said sleeve,

hub means coupled to said sleeve for rotation therewith,

a plurality of elongated spar members equal in number to the number of airfoil blades, each of said spar members having a central portion rotatively in fixed spatial relation to and rotatably supported on said hub at an angle to the axis of said actuator shaft and a peripheral portion angularly extending from said central portion and fixedly connected to one of the blades, said blades extending rearwardly and radially from said hub, said hub located rearward of said tower

collar means mounted for rotation with said actuator shaft,

elongated rigid strut means pivotally connected at each end respectively to said collar means and to the airfoil blade intermediate its ends, and

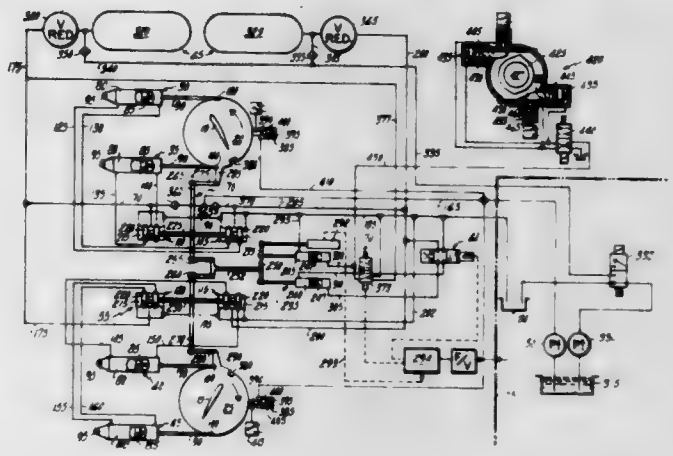
control means operatively coupled to said actuator shaft for longitudinally moving said shaft and, through said strut means, rotating each of the blades beween and including the feathered position and any run position and moving each of the blades in an arcuate path for changing the dihedral angle of the blades, and spar synchronization means connected between the central portion of each of said spars and said actuator shaft whereby to maintain the same angular relations between each of said spar members.

4,348,155
WIND TURBINE BLADE PITCH CONTROL SYSTEM

Philip E. Barnes, West Hartford; Millard G. Mayo, Wethersfield, and Robert Sherman, West Hartford, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Mar. 17, 1980, Ser. No. 130,658
Int. Cl.³ F03D 7/02
U.S. Cl. 416—46 19 Claims

1. A pitch control system for a wind turbine having a plurality of blades, said control system comprising a plurality of hydraulic actuators, each connected to one of said blades and adapted to pivot said blade about the longitudinal axis thereof in blade pitch adjusting and feathering modes of operation; means in fluid communication with said actuators for selectively distributing hydraulic fluid to said actuators in both pitch adjusting and feathering modes of operation; first and redundant second sources of pressurized hydraulic fluid in fluid communication with said distributing means for supplying hydraulic fluid thereto for delivery to said actuators; first means communicating with said first hydraulic fluid source for controlling the introduction of hydraulic fluid from said first source to said distributing means in said blade pitch adjusting mode and second means communicating with said second

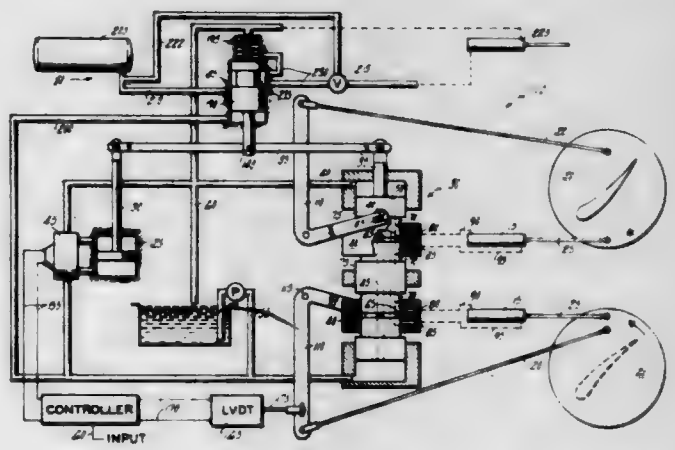


hydraulic fluid sources for controlling the introduction of hydraulic fluid from said redundant second hydraulic fluid sources in said blade feathering mode such that each of said redundant sources supplies hydraulic fluid to at least a single one of said actuators associated with each of said blades independently of other hydraulic actuators associated therewith whereby each of said redundant second sources of hydraulic fluid is individually capable of powering all of said blades simultaneously in said feather mode of operation.

4,348,156
BLADE PITCH ACTUATION SYSTEM

Merritt B. Andrews, Westfield, Mass., assignor to United Technologies Corporation, Hartford, Conn.

Filed Mar. 17, 1980, Ser. No. 130,656
Int. Cl.³ B64C 11/40; F03D 7/04
U.S. Cl. 416—48 11 Claims



1. A pitch actuation system for adjusting the pitch of a plurality of blades, said system comprising a plurality of hydraulic actuators, each being associated with, and connected to a single blade, for driving said blade in a pitch-change mode of operation, said system further comprising a control valve in fluid communication with said actuators and a primary hydraulic fluid source, said control valve comprising an input member in fluid communication with said hydraulic fluid source and a plurality of feedback members each in fluid communication with one of said blade actuators, said input member, in response to a command signal thereto, being positionable into fluid communication with said feedback members for supplying hydraulic fluid therethrough to said blade actuators for the operation thereof, operation of said blade actuators in response

to hydraulic fluid admitted thereto through said input and feedback members causing the positioning of said feedback members out of fluid communication with said input members thereby nulling said control valve and arresting further operation of said blade actuators for maintenance of a desired blade pitch setting.

4,348,157

AIR COOLED TURBINE FOR A GAS TURBINE ENGINE

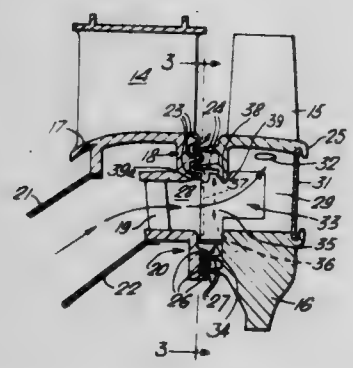
David A. Campbell, Borrowash, and Frederick W. W. Morley, Castle Donington, both of England, assignors to Rolls-Royce Limited, London, England

Filed Oct. 16, 1979, Ser. No. 85,300

Claims priority, application United Kingdom, Oct. 26, 1978, 42094/78

Int. Cl.[3] F01D 5/18

U.S. Cl. 41.6—95 5 Claims



1. An air cooled turbine for a gas turbine engine comprises a rotor including a disc carrying a stage of rotor blades, static structure adjacent the outer portion of the rotor, inner and outer annular seals between the static structure and the rotor, the seals defining between them a space adjacent the rotor, pre-swirl nozzles upstream of said space for directing cooling air from the static structure and across the space toward the rotor, cooling air entry means adapted to allow said cooling air to enter the blades to cool them, and deflector means mounted on the rotor in between said seals, said deflector means deflecting fluid of higher pressure than said cooling air which leaks radially outwardly through said inner seal away from said cooling air entry means.

4,348,158

SEWAGE PUMPING STATION

Marvin E. Wood, Lenexa, Kans., assignor to Smith & Loveless, Inc., Lenexa, Kans.

Filed Jul. 7, 1980, Ser. No. 166,624

Int. Cl.[3] F04B 49/04

U.S. Cl. 417—40 9 Claims

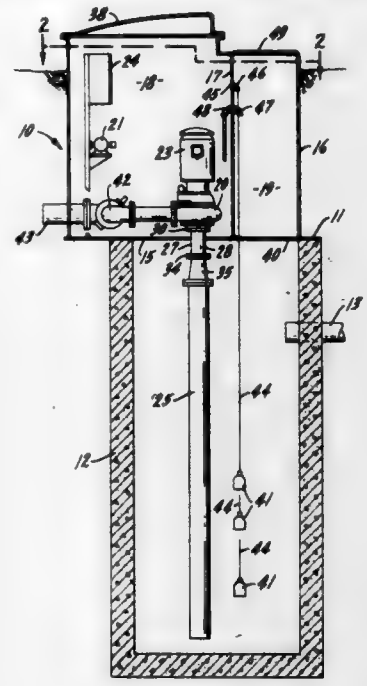
8. A sewage pumping station mounted on the top peripheral edge of an open ended sewage wet well, comprising:

A. a generally horizontal floor overlying and fitted on said wet well;

B. a peripheral wall extending upwardly from said floor and defining the interior of said pumping station;

C. a generally vertical partition extending upwardly from said floor within said peripheral wall, said partition dividing the interior of said pumping station into a machinery chamber and an access chamber, at least a portion of each of said chambers being directly vertically above said wet well, and said partition hermetically isolating said chambers from each other;

D. said machinery chamber containing electrically operated sewage pumping means directly above said wet well and sewage conduit means comprising unitary pipe means extending downwardly from said sewage pumping means through a hole in said floor into said wet well, said pipe means having flange means at its upper end within said machinery chamber connected to said sewage pumping means and having flange means at its bottom end within said wet well connected to other pipe means that terminates adjacent the bottom of said wet well, said hole being sealed by welding said unitary pipe means to the edge of said floor that defines said hole in said pumping station such that said machinery chamber is hermetically isolated from said wet well, and removable cover means for closing the top of said machinery chamber; and



E. a manway opening in said floor within said access chamber that provides continuous access to the inside of said wet well beneath said pumping station, said means for controlling the operation of said pumping station comprising displacement switches suspended in said wet well by wires that pass horizontally through an elevated hole in said partition and extend downwardly through said manway opening, and a separate removable cover closing the top of said access chamber.

4,348,159

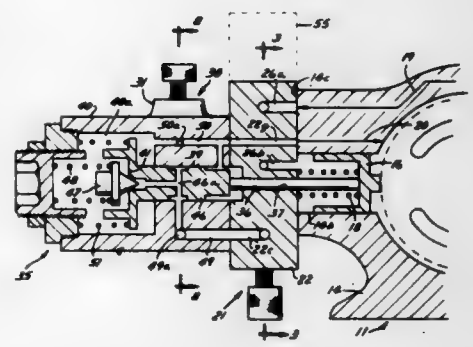
CONVERTIBLE PUMP SERVO-VALVE CONTROL

John L. Acheson, Franklin, Wis., assignor to Rexnord Inc., Milwaukee, Wis.

Filed Jan. 7, 1980, Ser. No. 110,041

Int. Cl.[3] F04B 49/08; F04C 15/04

U.S. Cl. 417—220 6 Claims



1. A control system for a variable displacement pump having a body provided with an output port and a supply port, and a piston disposed in a control cylinder and movable under pressure therein, said piston operatively controlling the position of a pump displacement control device such that an increase in pressure acting on said piston tends to increase the pump displacement and vice versa, said system comprising:

a servo-valve having a body provided with an output pressure passage communicating with said pump output port, a pump control passage communicating with said control cylinder, a servo-valve control passage communicating

with said output pressure passage through a restriction, a return passage communicating with said pump supply port, and a servo-valve member movable in a servo-valve bore in response providing a pump control pressure which is derived from a pilot flow through and varied by said servo-valve member and which is increased as said pressure differential decreases and vice versa;

means allowing and controlling a return flow of a fraction of the pump output through said restriction, including a spring biased displacement control valve having a body attached to said servo-valve body, means for coupling said pump piston and said control valve such that movement of the latter in the direction which decreases pump displacement increases the spring bias of said control valve and vice versa, said means further including a spring biased pressure relief valve having a body attached to said displacement control valve body, said valve bodies having a series of interconnected passages providing for said return flow of a fraction of the pump output through said restriction and both the displacement control valve and the pressure relief valve in parallel whereby pump displacement is caused to vary inversely with pump output pressure.

4,348,160

METERING SYRINGE

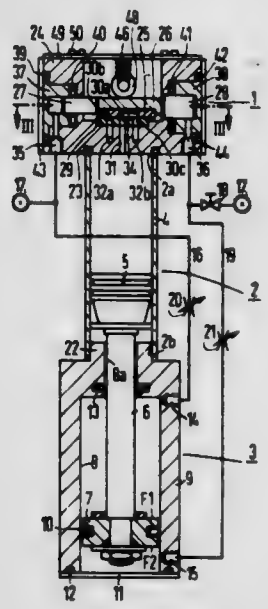
Guido Heyneman, Knokke, Belgium, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Feb. 25, 1980, Ser. No. 124,139

Claims priority, application Fed. Rep. of Germany, Mar. 20, 1979, 2910946

Int. Cl.³ F04B *37/00*

U.S. Cl. 417—403 **8 Claims**



1. In a metering syringe for conveying fluids in predetermined volumes from one container to another container, comprised of a piston-burette with a pneumatic drive connected to a valve means assembled so that said piston-burette, valve means and pneumatic drive form a unitary structural unit, the improvement comprising wherein:

said pneumatic drive is provided with a double-headed piston (7) attached to a free end of a piston rod (6) of the piston-burette (2);

said piston-rod (6) having a diameter selected of such a size relative to the diameter of the double-headed piston (7) that two pneumatically effective piston-head surfaces (F1 and F2) differing significantly in area from one another are defined, with one of said piston-head surfaces being at least twice as large in effective area relative to the other of said piston-head surfaces, said piston-head surfaces being operationally connected with a compressed air source (17) in such a manner that the piston-head surface (F1) with a relatively smaller diameter is constantly charged with compressed air from said source and the piston-head surface (F2) with a relatively larger diameter is connected to said source via a control valve (18) so as to be selectively charged with compressed air for controllably moving said double-headed piston.

4,348,161

PRESSURE CONVERTING APPARATUS

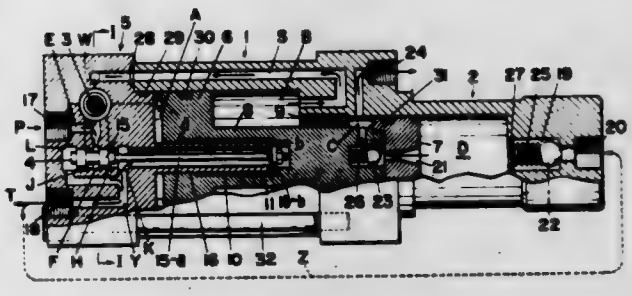
Tsugio Shibata, 21-4, Yusentei, Nishi-ku, Fukuoka-shi, Fukuoka, Japan

Filed May 12, 1980, Ser. No. 149,054

Claims priority, application Japan, Mar. 15, 1980, 55-32845

Int. Cl.³ F04B *17/00*; F15B *7/02*

U.S. Cl. 417—403 **3 Claims**



1. Pressure converting apparatus comprising:

(a) low-pressure and high-pressure-producing cylinders connected coaxially, said respective cylinders having low-pressure and high-pressure-producing cylinder chambers of different effective bore areas, said bore area of said high-pressure-producing cylinder chamber being smaller than said bore area of said low-pressure-producing cylinder chamber;

(b) a coaxial piston rod slidably disposed in said coaxial low-pressure and high-pressure-producing cylinder chambers, said coaxial piston rod being provided with low-pressure and high-pressure-producing pistons at opposed longitudinal ends thereof, said low-pressure and high-pressure-producing pistons each dividing said respective cylinder chambers into a front piston chamber and a rear piston chamber;

(c) a rear cover block attached to the rear of said low-pressure cylinder, said rear cover block incorporating a low-pressure liquid inlet, a low-pressure liquid outlet, a directional control valve, and a pilot valve, said directional control valve and said pilot valve cooperating so as to alternatively supply low-pressure fluid into said front and rear piston chambers of said low-pressure-producing cylinder, thus enabling an automatic reciprocation of said piston rod;

(d) an automatic pilot valve operating mechanism incorporated in said rear cover block, said mechanism being operably interconnected with the movement of said piston rod so as to automatically operate said pilot valve corresponding to the reciprocal movement of said piston rod;

(e) a secondary fluid by-pass line directly supplying a portion of said low-pressure fluid discharged from said pilot valve to said high-pressure-producing cylinder;

(f) a front cover block attached to the front of said high-pressure-producing cylinder, a suction valve disposed in said front cover block and communicating said secondary fluid by-pass line with said front piston chamber of said high-pressure-producing cylinder allowing one-way supplying of said low-pressure fluid to said front piston chamber of said high-pressure-producing cylinder from said pilot valve;

(g) an exhaust valve disposed in a front portion of said coaxial piston rod, said exhaust valve communicating said front piston chamber of said high-pressure-producing cylinder with said rear piston chamber of said high-pressure-producing cylinder through a passage formed in said high-pressure-producing piston allowing one-way supplying of said low-pressure fluid into said rear piston chamber

of said high-pressure-producing cylinder from said front piston chamber of said high-pressure-producing cylinder; and

(h) a high-pressure-fluid outlet formed in said high-pressure-producing cylinder, said high-pressure-fluid outlet communicating with said rear piston chamber of said high-pressure-producing cylinder;

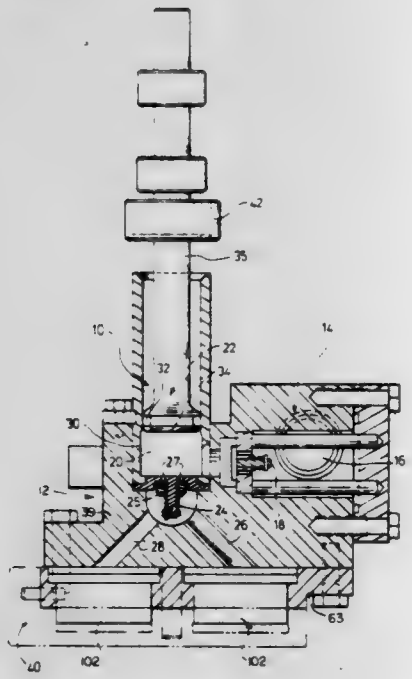
whereby, upon said automatic reciprocation of said coaxial piston, said low-pressure fluid is pressurized in said front piston chamber of said high-pressure-producing cylinder twice per one reciprocation of said coaxial piston rod thus converting said low-pressure liquid to a high pressure liquid and said high-pressure liquid is pumped out through said high-pressure-fluid outlet.

4,348,162

COMBINATION AUTOCLAVE PUMP AND NOZZLE

Derek V. Mancini, Markham, Canada, assignor to Consumers Glass Company Limited, Etobicoke, Canada

Filed Nov. 30, 1979, Ser. No. 99,033
Int. Cl.³ F04B *39/00*; B08B *3/02, 9/00*
U.S. Cl. 417—431 **11 Claims**



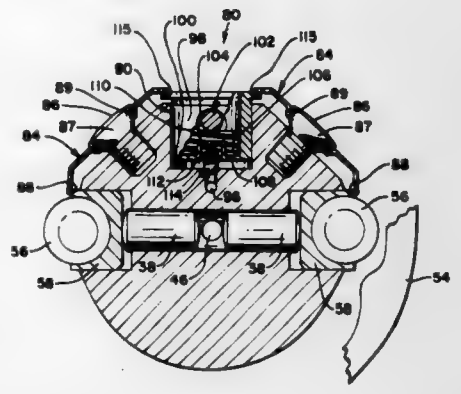
1. A fluid dispensing piston pump to be cleaned in place having an operating position and a cleaning position comprising a cylinder having an area of larger diameter adjacent the lower end, a closing member adjacent the lower portion of said cylinder and housing, an outlet check valve, a piston member having a face portion and a stem portion, said stem portion extending outwardly along the axis of said cylinder away from said closing member, an inlet check valve located below top dead centre of the piston pumping stroke, sealing means associated with said stem for enaging the upper end of said cylinder when said piston member is lowered into said cylinder for cleaning of the apparatus, such that said face is within the cylinder area of larger diameter breaking the seal between said piston face and cylinder wall, the arrangement being such that high temperature steam or a cleaning fluid may be introduced through said inlet check valve to fill the cylinder chamber when said piston is positioned for cleaning to sterilize the components of the pump including the piston face and stem without disassembling the pump wherein the upper end of said cylinder is normally open and said sealing means is secured to said stem and adapted to engage the upper end of said cylinder when said piston face is positioned within the cylinder area of larger diameter.

4,348,163

FUEL INJECTION PUMP LIMIT MECHANISM

Wesley B. Gilbert, Windsor, Conn., assignor to Standadyne, Inc., Hartford, Conn.

Filed Aug. 11, 1980, Ser. No. 177,277
Int. Cl.³ F04B *29/00*
U.S. Cl. 417—462 **9 Claims**



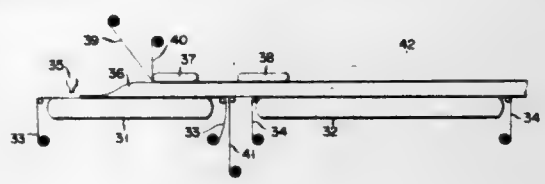
1. In a fuel injection pump for an internal combustion engine having a charge pump with linear pumping means, actuating means for periodically actuating the pumping means in one linear direction thereof in synchronism with an associated internal combustion engine for periodically delivering pulses of pressurized fuel for injection of fuel charges into the internal combustion engine, and a stroke limit mechanism for variably setting a limit for the pumping means in the opposite intake stroke direction thereof for setting a fuel charge limit, the stroke limit mechanism comprising an operator shiftable in opposite pumping stroke increase and pumping stroke decrease directions thereof mechanical means connected to the operator and providing a limit stop for setting the intake stroke limit of the pumping means in accordance with the position of said operator, and operator abutment means including first fixed abutment means and second abutment means on the operator engageable therewith to set a limit for said operator in at least its said decrease direction to set a predetermined minimum stroke limit for the linear pumping means, the improvement wherein the first and second abutment means comprise wear compensation means adapted to wear at a predetermined rate to extend the operator limit in its said decrease direction to generally match the wear of said mechanical means and generally maintain the said predetermined minimum stroke limit setting of the linear pumping means.

4,348,164

APPARATUS FOR CONTINUOUS PRODUCTION OF A SLAB OF POLYURETHANE FOAM

Osamu Fujii, Kounosu; Toshio Kishimoto, Kawagoe; Hisao Kosuge, Sakato, and Ryoji Nagamine, Kawagoe, all of Japan, assignors to Toyo Rubber Chemical Industrial Corporation, Tokyo, Japan

Continuation of Ser. No. 56,956, Jul. 12, 1979, abandoned, which is a continuation-in-part of Ser. No. 838,449, Oct. 3, 1977, abandoned. This application Dec. 4, 1980, Ser. No. 213,046
Claims priority, application Japan, Oct. 4, 1976, 51-119101; Oct. 4, 1976, 51-119102
Int. Cl.³ B29D *27/04*
U.S. Cl. 425—89 **5 Claims**



1. An apparatus for continuous production of a slab of poly-

urethane foam having a fabric sheet laminated on at least one of its surfaces, comprising:

(A) a horizontally moving trough which comprises a bottom plate or surface portion including first and second endless belt conveyors arranged one after the other in a horizontal direction and a pair of sidewalls each including a horizontally movable vertical sheet;

(B) feeding means for feeding a foamable polyurethane composition to the moving trough to form a foaming mass on the moving trough;

(C) pressure means for lightly pressing the top surface of the foaming mass over a zone including a zone extending from the foaming completion point to a point just prior to the completion of curing; and

(D) sheet feeding means for continuously feeding a fabric sheet between the under surface of the foaming mass and the second endless belt conveyor through the space between the first and second endless conveyors while said foaming mass remains adhesive though completely foamed, so as to bond the fabric sheet to the under surface of said foaming mass substantially without impregnating the fabric sheet with the polyurethane composition.

4,348,165

ASSEMBLY FOR CLAMPING MOLD TO PLATENS OF INJECTION-MOLDING MACHINE

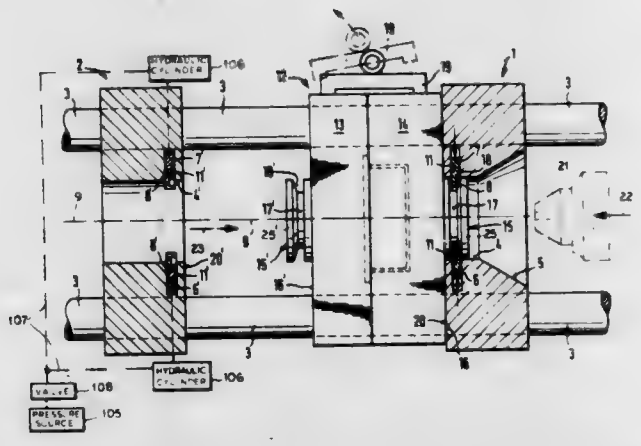
Ernst Vostrovsky, Oberschleissheim, Fed. Rep. of Germany, assignor to Krauss-Maffei Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Sep. 23, 1980, Ser. No. 190,162

Claims priority, application Fed. Rep. of Germany, Sep. 25, 1979, 2938665

Int. Cl.³ B29F *1/00*

U.S. Cl. 425—185 3 Claims



1. In an injection-molding machine, the improvement which comprises in combination:

a pair of separable mold halves jointly defining a mold cavity and having oppositely directed sides each formed with a respective projection along an axis, each of said projections having an annular flange defined by an outwardly open annular groove separating the respective flange from the respective side, each flange having a beveled camming surface defining a flank of the respective groove;

a pair of relatively movable platens on said machine spaced apart along said axis and receiving said mold halves between them, each of said platens having a bore receiving a respective one of said projections;

respective gripper means on each of said platens engageable with the projection of a respective mold half for form-locking and force-locking retention thereof on the platen, each of said gripper means including:

a plurality of sliding members reciprocatingly shiftable on the respective platen toward and away from said axis and engageable in the groove between the flange and said side of the respective mold half;

means for displacing said sliding members on the respective platen for engaging and releasing the respective projection, selectively, and

further beveled camming surfaces on said members engageable with the said camming surface of the respective flange to press said side of the respective mold half against the respective platen.

2. In an injection-molding machine, an assembly for anchoring a mold half having a projection rigid with and extending from a side of the mold half and formed with a flange transverse to said projection, said assembly comprising:

a platen on said machine provided with a bore adapted to receive said projection; and

gripper means on said platen engageable with said projection for form-locking and force-locking retention thereof on said platen, said gripper means including:

a plurality of sliding members reciprocatingly shiftable on said platen toward and away from an axis of said bore and engageable between said flange and said side of said mold half,

means for displacing said sliding members on said platen for engaging and releasing said projection, selectively, and

camming surfaces on said members engageable with a surface of said flange to press said side of said mold half against said platen.

4,348,166

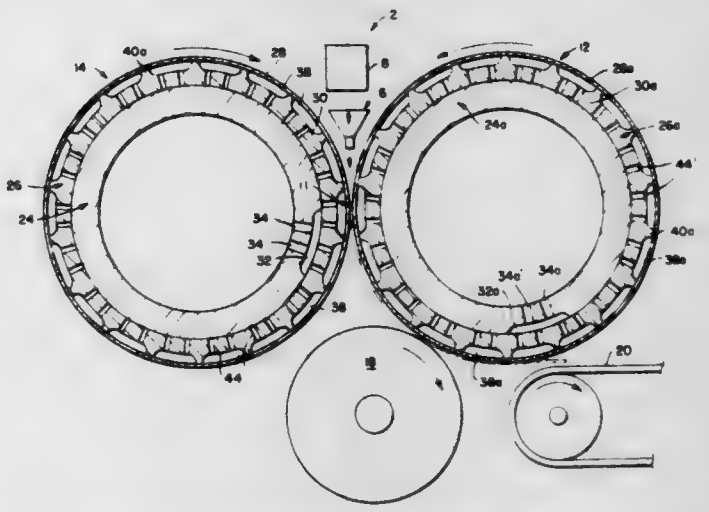
APPARATUS FOR FORMING THIN MATERIALS

David P. Fowler, Irving, Tex., assignor to Frito-Lay, Inc., Dallas, Tex.

Filed Oct. 10, 1980, Ser. No. 195,938

Int. Cl.³ A21C *3/02, 3/10*

U.S. Cl. 425—310 11 Claims



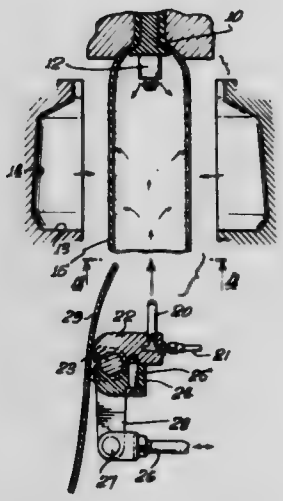
1. An apparatus suitable for forming sheet dough material comprising a first rotatable roll and a second rotatable roll positioned to provide a sheet-forming nip therebetween, means for delivering dough for sheeting and cutting to said nip, each of said rolls having means for providing elevated gas pressure from within to the periphery of the roll, said first roll having means for selectively applying pressurized gas from within the roll to its periphery immediately downstream of said nip and positioning the formed sheet on said second roll, cutting means downstream of said nip for cutting the sheet on said second roll into pieces, said second roll having means for selectively applying pressurized gas from within the roll to its periphery downstream of said cutting means to force said pieces away from the outer surface of said second roll.

4,348,167

BOTTOM ASSIST PRE-BLOW SYSTEM FOR BLOW MOLDING MACHINES

John J. Virog, Jr., 7502 San Ardo Dr., Buena Park, Calif. 90621

Filed Jan. 26, 1981, Ser. No. 228,098
Int. Cl.[3] B29C 17/07; B05B 15/08, 15/10
U.S. Cl. 425—522 7 Claims



1. A device for use in a blow molding machine for improving the control of the shape of a parison positioned into a mold of the blow molding machine, said device comprising:

an air nozzle attached to a pivot carriage which in turn is attached to a pivot shaft moveable between a first and second position, said air nozzle being located at a position near the extremity of the pivot carriage, said pivot carriage thus also being moveable between a first and second position so that the nozzle is positionable directly under a parison when the carriage is in a first position and is moved away from below a parison when the arm is in its second position when a finished part is ejected from the mold; and

a deflector plate attached to said pivot shaft, said deflector plate being positioned so that when the pivot carriage is moved from its first position to its second position, the deflector plate is moved into the location formerly occupied by the nozzle so that when a finished part would be ejected from the mold of the blow molding machine, it would strike the deflector plate rather than the nozzle.

4,348,168

PROCESS AND APPARATUS FOR ATOMIZING AND BURNING LIQUID FUELS

Christian Coulon, Wenckstrasse 56, D 61 Darmstadt, Fed. Rep. of Germany

Continuation of Ser. No. 839,060, Oct. 3, 1977, abandoned, which is a continuation of Ser. No. 678,634, Apr. 20, 1976, abandoned. This application Mar. 17, 1981, Ser. No. 244,580
Claims priority, application Fed. Rep. of Germany, Apr. 22, 1975, 2517756
Int. Cl.[3] F23M 3/00
U.S. Cl. 431—9 18 Claims

9. A method of producing a flame from a burner nozzle providing high combustion efficiency and relatively low amounts of obnoxious constituents comprising the steps of:

(a) introducing primary oxidizing gas into a swirl area of a nozzle having a fuel jet and an outer front wall;

(b) discharging said primary oxidizing gas into said swirl area provided between said outer front wall and an inner wall, said outer front wall having a central aperture,

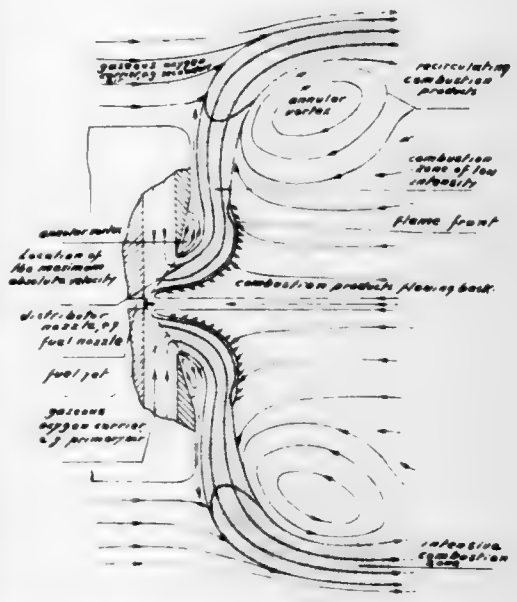
(c) passing the swirl flow of primary oxidizing gas from said swirl area through said central aperture to said outer front wall,

(d) discharging fuel from said fuel jet into a region of approximately maximal flow velocity of the swirl flow of said primary oxidizing gas so that the twist of the swirl flow is such that an annular vortex of said primary oxidizing gas and fuel is formed on a rotationally concentric surface that is inclined with respect to said nozzle,

(e) igniting and forming as a flame a swirling fuel-gas mixture in a corridor adjacent to and adhering to the outer surface of said outer front wall of said nozzle by means of the Coanda effect;

(f) combusting a portion of said swirling fuel-gas mixture in a first stage adjacent said outer front wall surface;

(g) admitting a stream of secondary oxidizing gas to substantially flow around said nozzle,



(h) merging with the partially combusted mixture of said primary oxidizing gas and said fuel to substantially complete the combustion of said swirling fuel-gas mixture in a second stage radially outward from and downstream of said central aperture; and

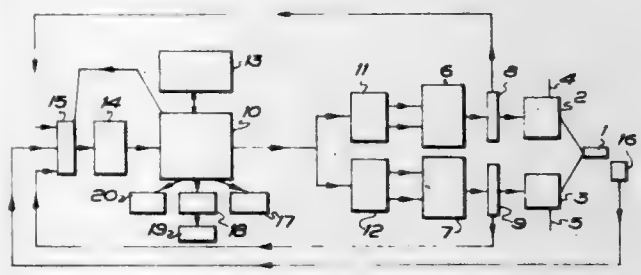
(i) returning incompletely combusted products of combustion towards a combustion zone represented by said first stage for improving the combustion of said fuel-gas mixture.

4,348,169

CONTROL OF BURNERS

Joshua Swithenbank, and David S. Taylor, both of Sheffield, England, assignors to Land Combustion Limited, Chesterfield, England

Filed May 10, 1979, Ser. No. 37,690
Claims priority, application United Kingdom, May 24, 1978, 22180/78
Int. Cl.[3] F23N 5/08, 5/10
U.S. Cl. 431—89 13 Claims



1. Control means for the reactant flow ratio for at least one burner comprising separate valve means for the control of flow of fuel and of air to a burner, a variator associated with each valve for the setting of the position thereof, sensing means associated with each valve for the sensing of the position thereof, a memory device for holding data pertaining to the characteristics of the control means, said memory device having initially stored therein data representing a calculated parameter related to an optimum condition of combustion and data representing control information for the flow of fuel and air to the burner corresponding to said calculated optimum

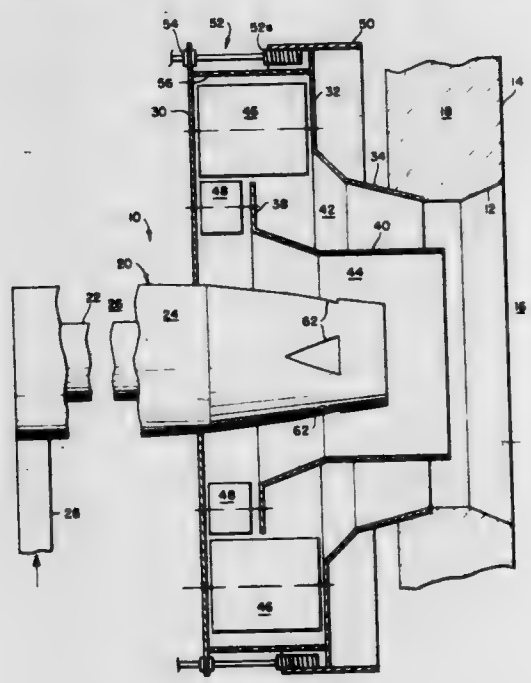
parameter, a computing device for controlling the variators to adjust the positions of said valves in accordance with the calculated data in the memory device, and detector means associated with the or each burner for the detection of the actual value of said parameter related to the optimum condition of combustion, both said sensing and detector means being connected to the memory device, said memory device further including means for continually and automatically up-dating said data stored in the memory to that data which is detected by said detector and sensing means only when the system achieves a condition of combustion which is an improvement over a previously determined optimum condition of combustion, such that the computing device automatically optimises the performance of the control means on the basis of the feedback of information from the said detector means and sensing means.

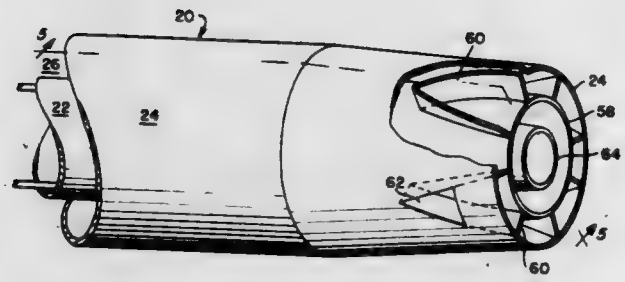
4,348,170

DUAL REGISTER, SPLIT STREAM BURNER ASSEMBLY WITH DIVIDER CONE

Joel Vatsky, Millburn, and Norman K. Trozzi, West Caldwell, both of N.J., assignors to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed Jun. 4, 1980, Ser. No. 156,309
Int. Cl.³ F23M *9/00*; B05B *1/14*
U.S. Cl. 431—188 **26 Claims**





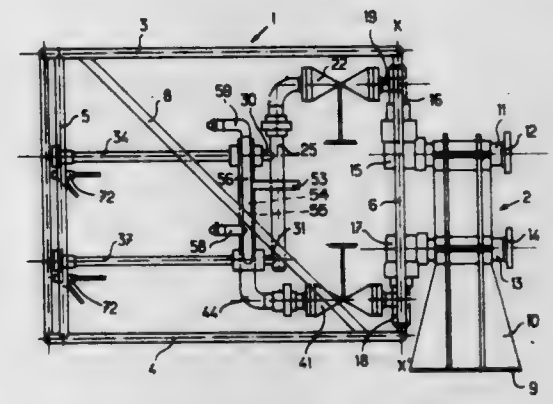
1. A burner assembly comprising means defining an annular passage, means for supplying fuel to said passage, an inlet located at one end of said passage for receiving said fuel, and an outlet located at the other end of said passage for discharging said fuel, means disposed within said annular passage for dividing the stream of fuel passing through said passage into two parallel streams, means for splitting up one of said streams as it discharges from said opening so that upon ignition of said fuel, a plurality of flame patterns are formed, and a register assembly associated with said burner, said register assembly comprising an enclosure extending over said passage for receiving air, and means for directing said air from said enclosure towards said outlet in two parallel paths extending around said passage, and a plurality of vanes respectively disposed in each of said paths for regulating the spin and/or quantity of air flowing through said paths.

4,348,171

APPARATUS FOR BURNING CRUDE OIL

Olivier Isseamann, 4 eme Ave. a, 60260, Lamorlaye, France

Filed Nov. 6, 1979, Ser. No. 91,812
Claims priority, application France, Nov. 6, 1978, 78 31384
Int. Cl.³ F23D *13/20*
U.S. Cl. 431—202 **13 Claims**



1. An apparatus for use in burning crude oil produced in the course of conducting production tests at an oil well drilling installation, said apparatus comprising:

a pedestal adapted to be positioned at a drilling installation;

horizontal conduits extending through said pedestal, said conduits having at first ends thereof means for connection to separate supplies of air, water and crude oil to be burned;

each said conduit having connected to a second end thereof an elbow member having a vertical portion;

each said elbow member having in said vertical portion thereof a revolving coupling pivotally mounted with respect to said elbow member about a vertical axis;

all of said elbow members and said couplings being vertically aligned coaxially of said vertical axis;

a burner assembly fixedly connected to said couplings and horizontally pivotable therewith about said vertical axis with respect to said elbow members and said pedestal;

a cage fixed to and supported by said burner assembly and surrounding said burner assembly;

said burner assembly comprising a plurality of pairs of horizontal burners connected to said elbow members for receiving therefrom crude oil and air, and a plurality of horizontal water nozzles connected to one of said elbow members for receiving therefrom water, said burners of each said pair of burners being vertically spaced, said pairs of burners being horizontally spaced, and each said burner having positioned adjacent thereto a respective one of said water nozzles; and

said burner assembly, said cage and said couplings being supported solely by said elbow members.

4,348,172

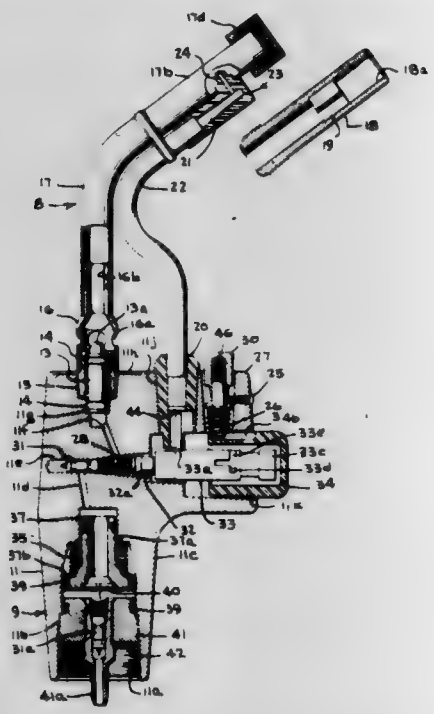
PORTABLE PROPANE GAS HAND TORCH

Harry C. Miller, One Security Dr., Nicholasville, Ky. 40356

Filed Jul. 28, 1980, Ser. No. 172,716
Int. Cl.³ F23Q *7/12*
U.S. Cl. 431—255 **16 Claims**

1. A portable gas hand torch igniter and burner assembly of the piezoelectric-type to be assembled onto a portable pressurized gas fuel cylinder, comprising a handgrip housing body having upper and lower cavities opening through top and bottom wall portions thereof respectively and an interconnecting gas conduit network therebetween, the lower cavity forming an internally threaded gas inlet to be threaded onto the neck of the fuel cylinder for rigidly mounting the housing body

thereon, an elongated burn tube having a venturi portion at its inlet end and an end-tapered orifice cylinder removably mounted in the venturi portion, means removably supporting said venturi portion and orifice cylinder in said upper cavity for rigidly mounting the burn tube on said housing body, a gas pressure regulator valve mechanism adjustably supported in said lower cavity for maintaining a substantially constant predetermined gas supply pressure level at the inlet portion of said gas conduit network, means forming a valve chamber intercepting said gas conduit network having a control valve therein normally closing the conduit network against passage of gas to the burn tube, a push button on the housing body supported for rectilinear axial movement along an axis intercepting the control valve from a normal outward position projecting from the housing body, piezoelectric igniter means in said housing body having a case portion movable along said axis responsive to inward depression of said push button for opening said control valve to admit gas to the burn tube and having a plunger portion movable relative to its case portion responsive to such push button depression to activate the igniter to generate a spark-producing voltage a predetermined short interval after opening of the control valve, an electrode means extending from the igniter to a location within the burn tube near its exit end forming a spark gap with the burn tube for igniting the gas admitted thereto upon opening of said control valve.



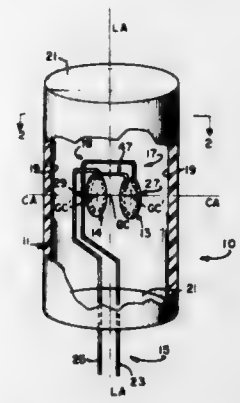
4,348,173

SUBMINIATURE PHOTOFLASH LAMP WITH SPACED-APART, LIGHT-EMITTING PYROTECHNIC CHARGES

George J. English, Reading, and John A. Scholz, Danvers, both of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Filed May 5, 1980, Ser. No. 146,573
Int. Cl.³ F21K *5/02*
U.S. Cl. 431—362 **12 Claims**

1. A subminiature photoflash lamp comprising:
a light-transmitting envelope;
first and second spaced-apart pyrotechnic charges for emitting light through said envelope upon ignition thereof, each of said charges comprising a primer composition and a fuel mixture and located within said envelope at a preestablished distance from the internal surfaces of the walls of said envelope, said charges being positioned within said envelope relative to each other such that each of said charges assists in the ignition of the other to create a region of the high brightness therebetween;
ignition means for electrically igniting said first and second pyrotechnic charges in a substantially simultaneous manner, said ignition means including first and second electrical conductors secured within said envelope, each of said conductors having an end portion extending within said envelope, said extending end portions electrically coupled to said first and second pyrotechnic charges; and
first and second support means for supporting said first and second pyrotechnic charges, respectively, within said envelope at said preestablished distances from said internal surfaces, said first support means located on the extending end portion of said first electrical conductor or forming a part thereof, said second support means located on the extending end portions of said second conductor or forming a part thereof.

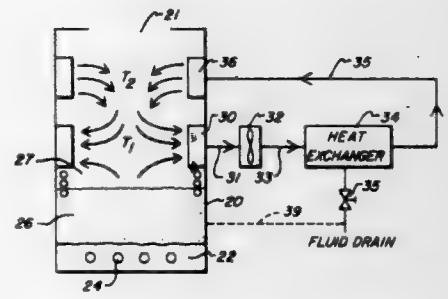


4,348,174

METHOD AND APPARATUS FOR VAPOR CONSERVATION AND CONTROL

Donald J. Spigarelli, Carlisle, Mass., assignor to Hybrid Technology Corporation, Concord, Mass.

Filed Jan. 22, 1981, Ser. No. 228,613
Int. Cl.³ F26B *3/00*; F27B *15/00*; F26B *21/06*; F28D *13/00*
U.S. Cl. 432—1 **18 Claims**

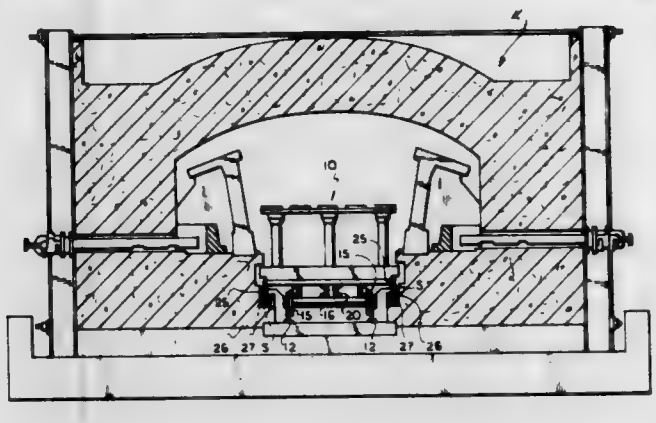


8. For use in a vapor phase processing system having a vessel containing a processing vapor substantially within a processing vapor zone, the upper level of said processing vapor zone defined by the location of first cooling means and an opening by which a work prodcut is introduced into and removed from the processing vapor zone, a method for control of said vapor comprising the steps of:
providing a processing vapor in a processing vapor zone in the vessel disposed in the bottom section of the vessel;
providing a zone in the vessel above the processing vapor zone and below the vessel opening;
exhaust from said vessel at a position above the processing vapor zone and below the opening, air and vapor in the zone above the processing vapor zone;
removing from the exhausted air and vapor at least some of the vapor present; and
returning the exhausted air after removal of an amount of vapor to the vessel in the zone above the processing vapor zone and at a position above that at which air and vapor is exhausted.

4,348,175
KILN CAR

Joao F. G. Molina, Jundiai, Brazil, assignor to American Standard Inc., New York, N.Y.

Filed Nov. 17, 1980, Ser. No. 207,504
Int. Cl.³ F27D *1/12*; F27B *9/26*
U.S. Cl. 432—241 8 Claims



1. A kiln car having a carriage assembly including wheels for transporting the kiln car and product to be fired through a high temperature kiln, said kiln having a bench therein; a dense refractory superstructure of low mass mounted on said carriage assembly, said superstructure comprising:

a load-bearing base of dense refractory of low mass and low heat capacity, having product-supporting means to provide a load-bearing surface, the plane of which is adapted to lie below the plane of the bench of said kiln, to provide an increased cross-sectional area for product firing;

said low-mass, load-bearing base having means for supporting an upper load-bearing base;

a layer of insulating refractory forming a thermal barrier mounted on the upper surface of said carriage assembly, on which said load-bearing base is mounted;

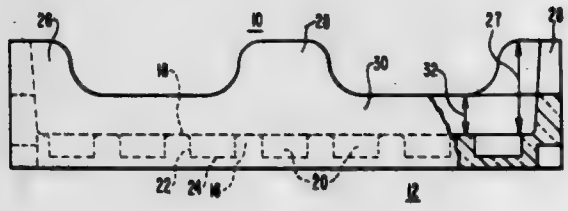
said load-bearing base including a plurality of low-mass, dense, refractory blocks mounted on said insulating refractory and forming a perimeter on said insulating refractory; and

a low density, low heat capacity, thermal-insulating material is positioned interiorly of said perimeter of refractory blocks, filling the spaces between said refractory blocks and said product-supporting means to form load-bearing base of low mass and low heat capacity.

4,348,176
MATERIAL HANDLING APPARATUS FOR INSULATORS

James R. Gamble, Greensburg; Lear C. Herrold, Derry, and Rowland S. Baran, Latrobe, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 2, 1980, Ser. No. 212,283
Int. Cl.³ F27D *5/00*
U.S. Cl. 432—258 11 Claims

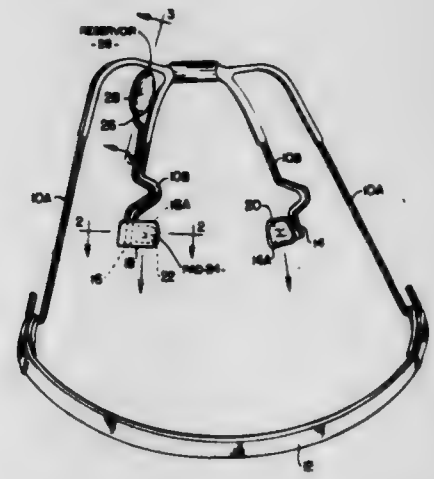


1. Apparatus for supporting ceramic insulator greenware having a mounting portion, a flanged portion and a load bearing surface portion, comprising: support means for supporting said ceramic insulator greenware, said support means including a base having a first surface with at least one recess therein, said recess including a lateral portion and a bottom support portion, said lateral portion providing lateral support for said mounting portion of said ceramic insulator greenware so as to support said ceramic insulator greenware in a predetermined position, said bottom support portion of said recess providing a support surface for said load bearing surface of said ceramic insulator greenware, said recess having a predetermined depth from said first surface of said base selected to position said ceramic insulator greenware so that said flanged portion of said ceramic insulator greenware is above said first surface of said base.

4,348,177
PULSATING ORTHODONTIC APPLIANCE

Craven H. Kurz, No. 6 North Star, Apt. 106, Marina del Rey, Calif. 90291

Filed Jul. 27, 1981, Ser. No. 287,493
Int. Cl.³ A61C *7/00*
U.S. Cl. 433—5 4 Claims



1. An orthodontic appliance comprising: a bow element adapted to be engaged with a tooth of a patient to apply a pressure to the tooth to move the tooth in a predetermined direction; a liquid reservoir mounted on the bow element; a hollow resilient pad adapted to be mounted on the occlusal surface of a tooth of the patient; and a tubular member coupling the pad to the reservoir to carry liquid from the interior of the pad to the reservoir each time the patient bites to exert a compressive force on the pad so as to cause the bow to transmit a pulse of pressure to the first-named tooth each time the patient removes the compressive force from the pad.

4,348,178
VIBRATIONAL ORTHODONTIC APPLIANCE

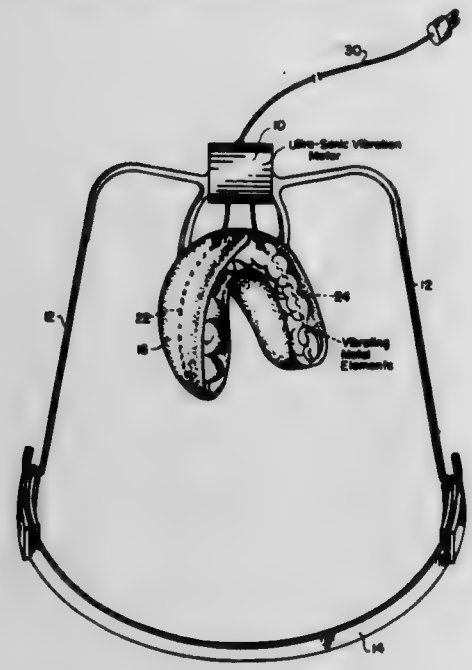
Craven H. Kurz, No. 6 North Star, Apt. 106, Marina del Rey, Calif. 90291

Continuation of Ser. No. 756,268, Jan. 3, 1977, abandoned. This application Jul. 31, 1978, Ser. No. 929,329
Int. Cl.³ A61C *3/00*
U.S. Cl. 433—6 4 Claims

1. An active tooth-moving orthodontic appliance for moving teeth that are in maloclusion into corrected positions without clenching, comprising: a resilient tooth positioner mouthpiece containing impressions of the teeth of a patient in corrected position; and means coupled to the mouthpiece for imparting tooth-moving vibrational forces to the mouthpiece to press the teeth that are in maloclusion into the corrected positions, in which said means comprises an ultra-sonic electric motor for introducing vibratory motion to the mouthpiece.

4. An active tooth-moving orthodontic appliance for moving teeth that are in maloclusion into corrected positions without clenching, comprising: a resilient tooth positioner mouthpiece containing impressions of the teeth of a patient in corrected position; and means coupled to the mouthpiece for imparting tooth-moving vibrational forces to the mouthpiece

to press the teeth that are in maloclusion into the corrected positions, in which said means comprises an electrically ener-



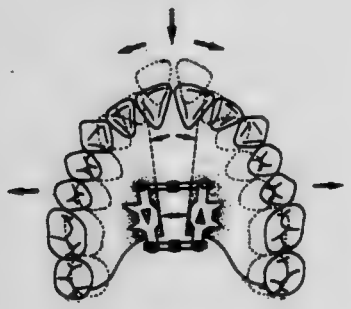
gized hydraulic pump, and rubber tubing extending from said pump through said mouthpiece.

4,348,179

ADJUSTABLE ORTHODONTIC SCREW ASSEMBLY

Alessandro Nardella, Oberhausen, Fed. Rep. of Germany, assignor to Francesco Pedrazzini, Munich, Fed. Rep. of Germany

Filed May 1, 1981, Ser. No. 259,579
Int. Cl.³ A61C *7/00*
U.S. Cl. 433—7 6 Claims



1. An adjustable orthodontic screw assembly adapted to regulate the position of human teeth comprising:

a two-part extension plate, the separate parts being formed to fit against teeth-supporting gums on opposite sides of one of the jaws, the two parts of the plates being separated and held together by the screw assembly which includes

two limbs each secured to one of the extension plate parts and extending along the length of the separation between the plate parts,

means articulating together said limbs at selected first opposed points, second opposed points spaced from the first opposed points on each limb supporting a head member rotatable respectively about parallel axes, each head member being provided with a threaded hole transverse to the axis of rotation with the threads of the threaded holes of the two head members being of opposite hand,

a twin screw having opposed ends oppositely threaded for threaded engagement with the threaded holes of said respective rotatable head members, whereby as the twin screw is rotated in one direction the limbs move apart and as the twin screw is rotated in the opposite direction the limbs move together any relative rotation of the limbs being accommodated by the respective rotatable head members.

4,348,180

DEVICE FOR RELEASABLY CONNECTING A HEAD PART TO A HANDLE PART OF A DENTAL HANDPIECE

Werner Schuss, Heppenheim, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Oct. 30, 1980, Ser. No. 202,136
Claims priority, application European Pat. Off., Nov. 29, 1979, 79104767.3
Int. Cl.³ A61C *1/08*
U.S. Cl. 433—126 5 Claims



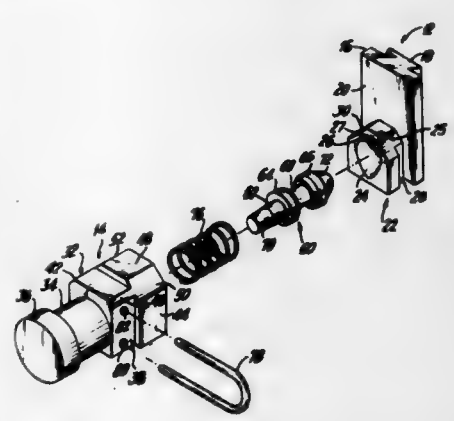
1. A device for releasably connecting a head part having a neck extending from a head housing with a socket for receiving a dental tool to a handle part of a dental handpiece with each part having drive shafts of a drive train extending from the socket in the head housing through the neck and the handle part to a motor in the drive section, said device comprising a radially resilient sleeve-shaped member being disposed on the neck of the head part immediate adjacent to the head housing to form one portion of the outer circumference of the neck of the head part, a pair of catch elements coacting with a pair of counter elements, said sleeve-shaped member acting as means for biasing the catch and counter elements into engagement with each other, each catch element being an outwardly radially projecting catch member disposed on said sleeve-shaped member to be positioned inward of an end of said neck with the catch elements of the pair being diametrically opposite each other, each counter element being a recess adapted to receive the catch member and being disposed on the handle part and aligned with a respective catch element so that said sleeve-shaped member urges said elements into a coupled state and squeezing pressure applied to diametrically opposite portions of said sleeve-shaped member adjacent the catch members enables disengagement of said elements to release the connection between the head and handle parts to enable applying interchangeable head parts on the same handle part.

4,348,181

RETAINING DEVICE FOR A REMOVABLE DENTAL PROSTHESIS

Peter E. Dawson, St. Petersburg, Fla., assignor to Ipco Corporation, White Plains, N.Y.

Filed Feb. 25, 1981, Ser. No. 237,919
Int. Cl.³ A61C *13/22*
U.S. Cl. 433—172 16 Claims



1. A retaining device for removably securing a dental prosthesis in position, said device comprising, in combination, a male section for securement to a side of a fixed tooth, and a cooperating female section for securement within the dental

prosthesis, said female section including an elongated casing, said male section including a projecting member receivable in said casing, a spring loaded plunger member disposed in said casing and projecting therefrom, first means within said casing for limiting the extent of longitudinal travel of said plunger member, said male section including securing means for fixedly retaining said male section in place on the fixed tooth, said projecting member including second means for cooperatively receiving said plunger member to thereby anchor the dental prosthesis to the fixed tooth, and third means coacting between said casing and said projecting member to prevent relative rotation between said male and female sections,

said plunger member including an elongated cylindrical body portion, longitudinally spaced apart enlarged first and second collars on said body portion defining a neck portion therebetween, said first collar being at a forward end of said plunger member,

said casing including an elongated bore extending therein and having a closed inner end, said plunger member being disposed in said bore, and a biasing spring being disposed in said bore, said spring being biased between said closed inner end and said second collar,

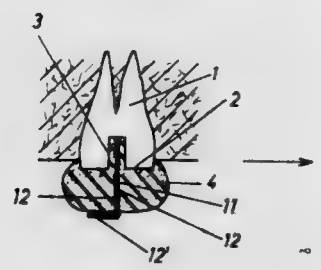
said first means including a restricting member in said casing for engaging both said first and second collars to capture said plunger member within said casing and to limit its longitudinal movement, said restricting member including a wire clip removably inserted through an opening in a side wall of said casing and extending transversely into said bore adjacent said neck portion in a position between said first and second collars.

4,348,182

REINFORCEMENT WIRE FOR MATERIAL FOR THE IMPRESSION OF DECAYED TOOTH

Kazunari Shirota, Tokyo, Japan, assignor to Shirota Denki Kozai Kabushiki-Kaisha, Tokyo, Japan

Filed Dec. 31, 1980, Ser. No. 221,562
Int. Cl.³ A61C 9/00
U.S. Cl. 433—214 1 Claim



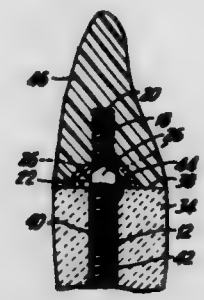
1. A reinforcement for use with a jerry material such as agar agar, silicone resin and so on, which material is pressed over a decayed tooth, which is made flat at its outer surface, and which projects into a hole provided in the tooth, and is solidified for producing an impression of said tooth for joining thereto an artificial tooth by means of said hole and a corresponding post provided on the artificial tooth; said reinforcement comprising a wire body piece and a plurality of short filaments or staple fibers fixed to said piece and projecting radially outwardly therefrom, said filaments or fibers being engaged in the surrounding jerry material when the wire piece is embedded in the jerry material, particularly in the projecting portion thereof which mates with the hole of the decayed tooth, and wherein the wire body piece comprises a stainless steel wire, and the filaments and fibers are made from nylon or rayon fibers which are electrostatic-bonded to the wire.

4,348,183

DENTAL POST PROVIDED WITH A RESTORATIVE MATERIAL RETAINER

Bernard Weissman, New York, N.Y., assignor to IPCO Corporation, White Plains, N.Y.

Filed Jan. 21, 1981, Ser. No. 226,783
Int. Cl.³ A61C 5/08
U.S. Cl. 433—221 3 Claims



1. A holding device for a dental prosthetic structure, said holding device comprising:

an elongated post for secured insertion within a conformally shaped bore in a tooth stub, said post including securing means on one end portion thereof for coacting with cement for securely retaining said post within the bore in the tooth stub;

said securing means including first external thread means for receiving the cement therein to prevent said post from being pulled out of the bore, said securing means further including first slot means disposed longitudinally along said one end portion of said post and across said first thread means for receiving the cement therein to prevent relative rotation between said post and the tooth stub;

retaining means disposed on the opposite end portion of said post for anchoring dental restorative material of the dental prosthetic structure on the tooth stub, said retaining means including a retaining member provided with a centrally disposed, threaded opening therethrough for receiving said opposite end portion of said post therein;

said opposite end portion of said post including second external thread means coacting with said threaded opening of said retaining member to threadedly secure said retaining member on said opposite end portion of said post;

said post being threaded along its length to define said first and second external thread means;

said retaining member including anchoring means extending outwardly therefrom for securement within the dental restorative material, said anchoring means including a plurality of inwardly directed, upwardly extending tabs, said tabs being spaced apart about said retaining member, said tabs having pointed free end portions, said tabs being an integral part of said retaining member; and

cooperative locking means on said opposite end portion of said post and said retaining member for positionally stabilizing said retaining member with respect to said post to prevent rotation of said retaining member relative to said post, said locking means including second slot means disposed longitudinally along said opposite end portion of said post, said opposite end portion being disposed between said tabs within the dental restorative material, said locking means further including a selected one of said tabs, each of said tabs being deformable to permit entry of said selected one into said second slot means to thereby prevent the rotation of said retaining member with respect to said post;

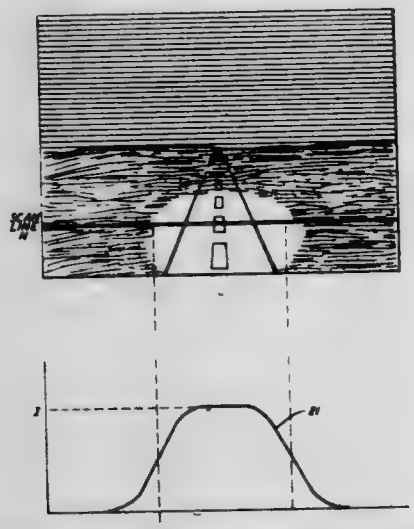
said post including a longitudinally extending slot to define said first and second slot means.

4,348,184

LANDING LIGHT PATTERN GENERATOR FOR DIGITAL IMAGE SYSTEMS

Randy W. Moore, Cupertino, Calif., assignor to The Singer Company, Binghamton, N.Y.

Filed Nov. 4, 1980, Ser. No. 203,913
Int. Cl.³ G09B 9/08
U.S. Cl. 434—42 7 Claims



1. A system for developing a predetermined scene from information obtained from data generated digitally and from data stored electronically, and for displaying said scenes on a display device, comprising:

data storage means for receiving data representative of predetermined scenes,

control means for generating data in order to select a predetermined scene,

a display device connected to receive data from said data storage means and to display scenes selected by said control means,

means connected to said display device to vary the illumination intensity of portions of said displayed scene in accordance with a preselected pattern unrelated to the information in said scene,

an aircraft simulator apparatus having portions to develop information varying in accordance with input provided by a pilot trainee,

a computer-controller circuit,

digital image data processor circuit controlled by information from said computer-controller circuit,

landing lights function generator circuit means comprising counter means connected to said computer-controller circuit to initiate counting depending upon data from said computer-controller circuit,

circuit means to convert the output of said counter circuit means to a log function, and

circuit means to combine said log function output with a position signal from said aircraft simulator in order to control the timing position of said log function output.

4,348,185

WIDE ANGLE INFINITY DISPLAY SYSTEM

Denis R. Breglia, Altamonte Springs, and Alfred H. Rodemann, Maitland, both of Fla., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 14, 1980, Ser. No. 121,553
Int. Cl.³ G09B 9/08
U.S. Cl. 434—43 9 Claims

1. A wide angle infinity display system comprising in combination:

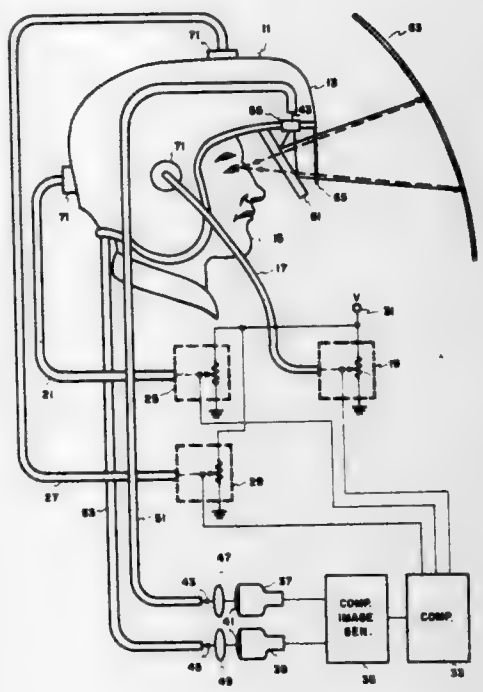
a helmet adapted to be worn upon the head of a trainee pilot;

position monitoring means, having first, second, and third outputs, for sensing the angular movement of the head of said trainee pilot, and for producing pitch, roll, and yaw control signals indicative of such angular movement, said position monitoring means comprising:

first, second, and third potentiometers, each of which has a fixed resistance and a movable arm in slidable contact with said fixed resistance,

a first cable having one end thereof in rotatable engagement with one side of said helmet, and the opposite end thereof connected to the movable arm of said first potentiometer, a second cable having one end thereof in rotatable engagement with the rear of said helmet and the opposite end thereof connected to the movable arm of said second potentiometer, a third cable having one end thereof in rotatable engagement with the top of said helmet and the opposite end thereof connected to the movable arm of said third potentiometer, and a direct current voltage source having an output connected to the fixed resistance of said first, second, and third potentiometers;

computing means having first, second, and third inputs respectively connected to the first, second, and third outputs of said position monitoring means, and an output adapted for processing the pitch, roll, and yaw control



signals produced by said position monitoring means in accordance with a flight simulation program, and for providing at the output thereof a position control signal in response to the processing of said pitch, roll, and yaw control signals by the flight simulation program of said computing means;

image producing means having an input connected to the output of said computing means for generating visual information, the visual information generated by said image producing means to be oriented in accordance with the angular movement of the head of said trainee pilot in response to the position control signal provided by said computing means; image forming means mounted upon said helmet and secured thereto adapted for projecting upon a retroreflective screen the visual information provided by said image producing means so as to form upon said screen a visual scene to be observed by said trainee pilot; and

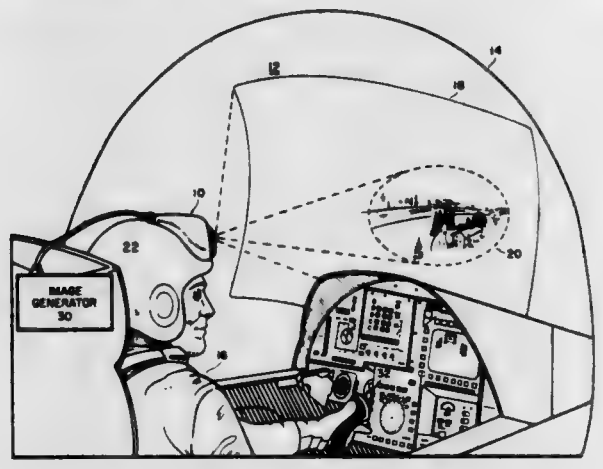
multiple path communicating means positioned between said image producing means and said image forming means for transmitting therebetween the visual information by said image producing means.

4,348,186

PILOT HELMET MOUNTED CIG DISPLAY WITH EYE COUPLED AREA OF INTEREST

James F. Harvey, Maitland; Walter S. Chambers, Orlando, and John J. Kulik, Longwood, all of Fla., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 17, 1979, Ser. No. 104,521
Int. Cl.³ G09B 9/08
U.S. Cl. 434—44 11 Claims



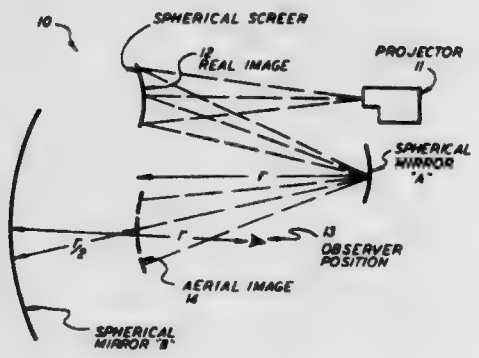
1. A display system adaptable as a training device that has the capability of imaging a scene in motion which is responsive to the actions of a trainee and which substantially matches the visual acuity of the human eye with the resolution of the image such that level of detail is allocated by priority to the area of interest then being observed by the trainee, comprising a sight line tracker, display means at least partially within the visual field of view of said trainee for presenting an observable scene of image information coupled thereto, computing means coupled to said tracker for ascertaining the orientation of the trainee's line of sight with respect to said display means, and means coupled to said computing means for electronically generating and providing image information for said display means from stored data by correlating said ascertained line of sight to said scene and allocating image detail in a predetermined hierarchy of resolution about said area that is being observed by said trainee as determined by said ascertained line of sight, whereby said hierarchy of resolution progressively decreases about said line of sight.

4,348,187

AERIAL IMAGE VISUAL DISPLAY

Martin Dotsko, Binghamton, N.Y., assignor to The Singer Company, Binghamton, N.Y.

Filed Jul. 31, 1980, Ser. No. 174,091
Int. Cl.³ G09B 9/08
U.S. Cl. 434—44 9 Claims



1. In a simulator training apparatus having an optical visual display to develop a realistic aerial image, said visual display comprising:

a first concave spherical mirror positioned to focus a predetermined visual scene as an aerial image located a distance from said first mirror equal to its radius,

a second concave spherical mirror positioned on the opposite side of said aerial image from said first mirror and located a distance from said aerial image equal to one-half its radius, so that its concave mirror surface can focus at infinity said predetermined visual scene focused by said first spherical mirror as said aerial image,

means to project said predetermined visual scene for focusing by said first concave spherical mirror as an object for said second concave spherical mirror,

an observer's position facing said second concave spherical mirror and contiguous with the center of curvature,

said first concave spherical mirror is located above and behind said observer's position, and

said observer's position is located contiguous to a line from said center of curvature to the center of said second concave spherical mirror,

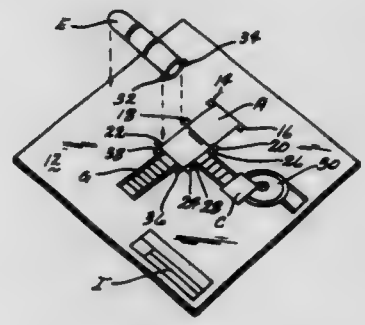
whereby an aerial image of a projected visual scene is developed and functions as an object to develop an infinity virtual image which is visible at said observer's position.

4,348,188

PLAYGROUND DESIGN KIT AND METHOD OF USING THE SAME

Paul W. Ahrens, Grinnell, Iowa, assignor to Miracle Recreation Equipment Company, Grinnell, Iowa

Filed Feb. 5, 1981, Ser. No. 231,863
Int. Cl.³ G09B 29/00
U.S. Cl. 434—72 11 Claims



1. A method of designing an outdoor playground complex comprising:

projecting selected views of interchangeable components of said complex onto two dimensions in reduced scale, including the display of the significant features of said components visible in said view;

transposing said views onto a substantially transparent material adapted to releaseably adhere to substantially smooth, dry, clean surfaces;

cutting templates out of said material which follow the outline of said views;

securing selected templates in a proposed arrangement to a surface adapted to releaseably adhere to said material;

removing said templates from said surface; and

repositioning said templates in further proposed arrangements;

whereby said components can be variously arranged to form a scale plan of a desired complex.

4,348,189

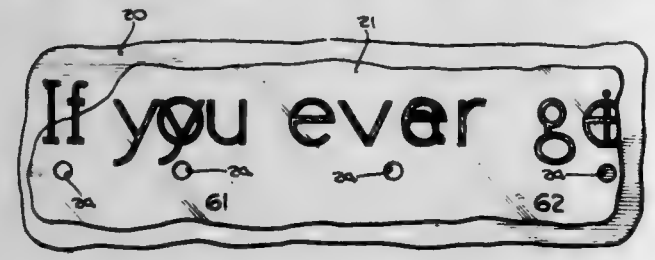
METHOD FOR READING TYPING AND SPACING ERRORS

Michael L. Sapp, Santa Maria, Calif. 93454

Continuation-in-part of Ser. No. 879,074, Feb. 21, 1978, abandoned. This application Nov. 30, 1979, Ser. No. 99,202
Int. Cl.³ G09B 13/00
U.S. Cl. 434—227 2 Claims

1. A method for determining typing errors comprising preparing of a master sheet having a legend thereon of simulated

type characters at selected spacing and margins, preparing on a transparent sheet the same legend in simulated type characters and in ink of one color, placing the characters on the transparent sheet in the same selected spacing and margins as appearing on the master sheet, typing on a test page in type corresponding to that of the transparent sheet but in ink of a contrasting second color the same legend material and at the same selected spacing and margins as appearing on the master sheet, superimposing the transparent sheet on the test page



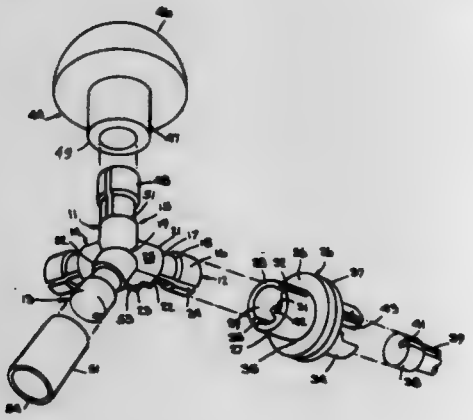
with characters matched as to spacing and margins and then tabulating exposed spots of characters of the second color which are visible adjacent corresponding characters of the first color, perforating the transparent sheet with a series of laterally spaced holes at substantially equal intervals, numbering the holes successively as speed intervals, imprinting the test page through a hole at the end of the typed legend and marking the imprint with the corresponding number to indicate time consumed in typing the legend.

4,348,190

INTERLOCKING MOLECULAR MODEL SYSTEM

Edward J. Barrett, McGuire La., Croton-on-Hudson, N.Y. 10520

Filed Jun. 22, 1981, Ser. No. 276,180
Int. Cl.³ G09B *23/26*
U.S. Cl. 434—278 **17 Claims**



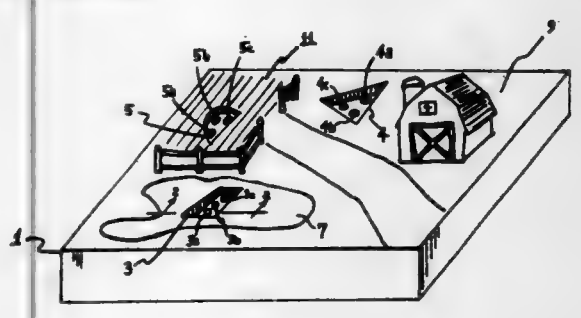
1. An interlocking molecular model system comprising:
a first component representative of an atom and including at least one elongated shank extending outwardly from a part of the component representing the nucleus of the atom, the shank having
a first cylindrical section of one cross sectional area at its outer end,
a second cylindrical section of smaller cross-sectional area adjacent the end of the first cylindrical section facing the part of the component representing the nucleus, the surface of the shank between the first and second cylindrical sections defining a shoulder extending inwardly from the surface of the first cylindrical section, and
an abutment extending transversely outwardly relative to the axial direction of the second cylindrical section and adjacent the end of the second cylindrical section closer to the part of the component representing the nucleus; and
a fastener component comprising a hollow tubular portion longitudinally slotted at one end and having an axial length representative of a predetermined portion of a covalent radius of the atom, the inner surface at one end of the slotted end portion comprising an inwardly extending axial lock fitting over the second cylindrical section of the first component to be hooked behind the shoulder on the shank and having an axial length substantially equal to the axial length of the second cylindrical section, whereby the fastener component can be axially interlocked with the shank so that the distance between the part of the first component representing the nucleus and the remote end of the tubular portion of the fastener component is representative of the covalent radius of that atom, and the inner surface of the part of the tubular portion between the axial lock and the remote end has a cross-sectional area large enough to fit over the first cylindrical section.

4,348,191

ELECTRONIC GAME BOARD

Barry R. Lipsitz, 44 Purdy Rd. East, Norwalk, Conn. 06850, and Charles D. Forman, 164 E. 83rd St., New York, N.Y. 10028

Filed Oct. 29, 1980, Ser. No. 201,922
Int. Cl.³ G09B *5/06*
U.S. Cl. 434—308 **11 Claims**



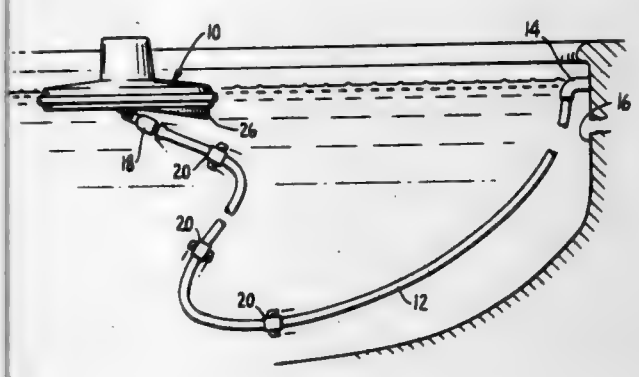
1. Game board apparatus comprising:
a plurality of articles each representative of a different entity;
a board having at least one receptacle adapted to interchangeably receive at least two of said articles;
sound generating means for producing a plurality of sounds; and
switch means, coupled to said sound generating means and responsive to the placement of articles in said receptacle, for causing said sound generating means to produce different sounds for different articles placed in said receptacle.

4,348,192

AUTOMATIC POOL CLEANER

Andrew L. Pansini, Belvedere, Calif., assignor to Jandy Industries, Inc., San Rafael, Calif.

Filed Feb. 23, 1981, Ser. No. 236,774
Int. Cl.³ B64C *21/06*; B08B *3/02, 9/08*
U.S. Cl. 440—38 **8 Claims**



1. In an automatic pool cleaner comprising a transporter adapted to rollingly engage pool side walls, a drive jet nozzle for the transporter having a pivotal connection therewith whereby said nozzle may drive said transporter randomly about a pool, a water supply hose connected to said nozzle, and jet driving means for the supply hose operable when said

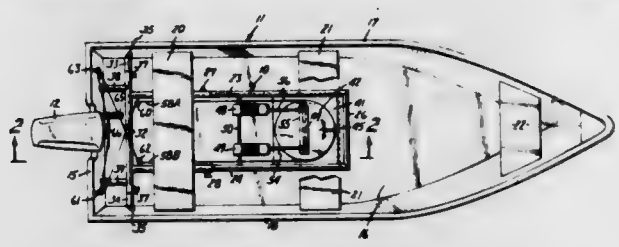
transporter is slowed along a forward line of direction to re-orient said drive jet nozzle and drive said transporter along a rearward line of direction: the provision in combination therewith of means carried by said transporter operable due to the turning of said transporter as it travels in rolling engagement with a pool side wall to slow said transporter in its direction of movement and re-orient said drive jet nozzle to drive said transporter in the opposite direction along said pool wall.

4,348,193

FOOT STEERING APPARATUS FOR OUTBOARD MOTOR BOATS

Walter E. Arndt, 1713 Third Ave. South, Fargo, N. Dak. 58102

Filed Apr. 25, 1980, Ser. No. 143,645
Int. Cl.[3] B63H *25/02*
U.S. Cl. 440—62 20 Claims



1. A foot operable steering apparatus to steer a boat equipped with an outboard motor mounted on a transom at the back of the boat and rotatable about a generally upright axis for purposes of steering the boat, said steering apparatus comprising:

frame means locatable on the floor of the boat;

a turntable secured with respect to the frame means forward of said motor and rotatable about a generally upright axis;

a steering cable trained around the turntable and having ends extending tangentially from either side of the turntable rearwardly therefrom and connected to the motor whereby rotation of the turntable in one direction rotates the motor in one direction to turn the boat in one direction, and rotation of the turntable in the opposite direction rotates the motor in the opposite direction to turn the boat in the opposite direction; and

first and second foot pedals connected to the frame means and connected to the turntable on opposite sides of the axis of rotation of the turntable, said foot pedals each having a rearward end pivotally connected to the frame means for rotation about a generally horizontal axis, a first foot pedal connecting link connected to the forward end of the first foot pedal at one end and connected at the opposite end to said turntable, and a second foot pedal connecting link connected at one end to the forward end of the second foot pedal and connected at the other end to the turntable on the opposite side of the axis of rotation with respect to the first foot pedal connecting link whereby operation of one foot pedal is effective to rotate the turntable in one direction and operation of the other foot pedal is effective to rotate the turntable in the opposite direction.

4,348,194

COWL FOR AN OUTBOARD MOTOR

James R. Walsh, Oshkosh, Wis., assignor to Brunswick Corporation, Skokie, Ill.

Filed Jul. 1, 1980, Ser. No. 164,976
Int. Cl.[3] B63H *21/00*
U.S. Cl. 440—77 8 Claims

1. An outboard motor including:

(A) a drive shaft housing;

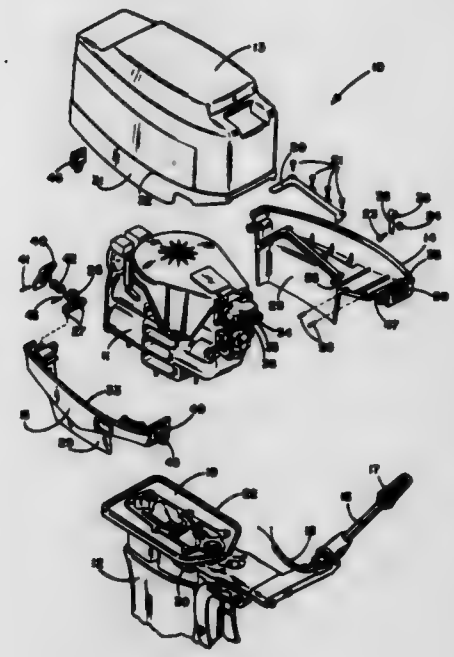
(B) an engine supported on said drive shaft housing; and

(C) a cowl assembly surrounding said engine, said cowl assembly comprising:

(1) a first bottom cowl member,

(2) a second bottom cowl member, said bottom cowl members fitting together around said drive shaft housing below said engine,

(3) a top cowl member joined with said bottom cowl members to enclose said engine, and



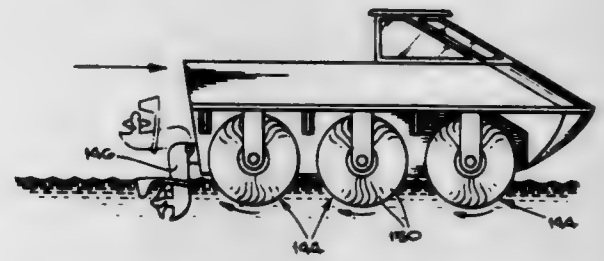
(4) a latch means to hold said cowl members together, said latch means comprising a bracket attached to both of said bottom cowl members.

4,348,195

MULTIPLE STEP VENTED HULL

George H. Lantz, 7520 Rovena, Anchorage, Ak. 99502

Filed May 10, 1979, Ser. No. 37,818
Int. Cl.[3] B63H *1/38*
U.S. Cl. 440—100 2 Claims



1. An all-terrain vehicle for high speed travel on water, comprising:

a plurality of broad flotation wheels, each of which is a flotation body;

a plurality of steps on the surface of each said flotation body, said steps being angled toward the center of said body from the front to the rear thereof; and each said step being sloped downward and to the rear;

means for venting the rear surface of each said step to the atmosphere, said means including lateral extension of each step to one of the sides of said body to a point above the normal water line when said flotation body is stationary, said extensions angling forward along the sides of said body and terminating in a curving arc extending forward substantially parallel to the surface of the water when said steps are in the water and said structure is moving forward; and

means for driving said body through the water with sufficient speed to progressively raise said body up onto the steps so that there is progressively reduced contact between said flotation body and the water as the speed is increased.

4,348,196
UNIVERSAL JOINT

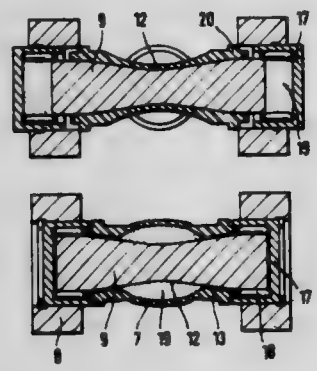
Werner Krude, Siegburg-Kaldauen, and Peter Harz, Hennef, both of Fed. Rep. of Germany, assignors to Uni-Cardan Aktiengesellschaft, Siegburg, Fed. Rep. of Germany

Filed Jun. 10, 1980, Ser. No. 158,253

Claims priority, application Fed. Rep. of Germany, Jun. 20, 1979, 2924844

Int. Cl.³ F16D 3/40

U.S. Cl. 464—11 3 Claims



1. A universal joint comprising: a trunnion cross defining an axis of symmetry thereof adapted to connect the yoke arms of a pair of yokes, said trunnion cross including trunnion members having arranged thereon bearing means adapted to be received in bores of said yoke arms; a continuous resilient seal member loosely extending over the body of said trunnion cross which also acts as a seal for said bearing means and is constructed as a contact seal, said trunnion cross being constructed in such a way that a lubricant supply is arranged between said trunnion cross and said seal member; recess means formed in said trunnion cross for containing therein a supply of lubricant, said recess means being formed with a greater depth at the center portion thereof, said center portion being spaced closer to the axis of symmetry of said trunnion cross than peripheral areas of said recess means surrounding said center portion; and grooves extending in the longitudinal direction of said trunnion members from said peripheral areas of said recess means toward the ends of said trunnion members, said grooves being arranged with an angle of inclination relative to said axis of symmetry, with the inclination of said grooves being such that said grooves tend to deepen inwardly of said trunnion members in the direction of said recess means, said sealing member being in resilient sealing engagement with said grooves and operating to permit lubricant to be supplied to said recess means through said grooves by resilient deformation of said seal member and to enable lubricant contained in said recess means to effect lubrication of said bearing means through said grooves, said flow of lubricant being enhanced by the inclined orientation of said grooves.

4,348,197
TORQUE-SENSING PULLEY AND DRIVE SYSTEM

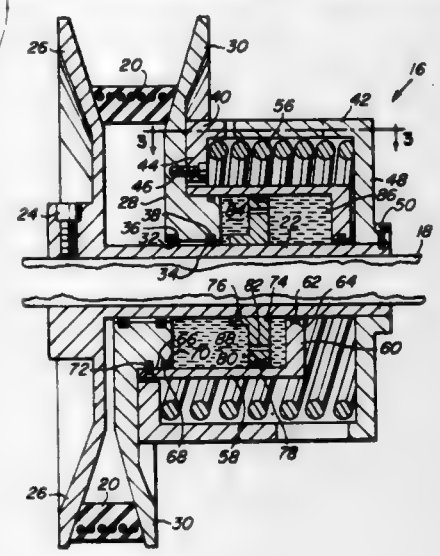
Larry R. Oliver, Springfield, Mo., assignor to Dayco Corporation, Dayton, Ohio

Filed Jan. 28, 1980, Ser. No. 115,599

Int. Cl.³ F16H 11/04

U.S. Cl. 474—28 10 Claims

1. In a torque-responsive variable diameter V-belt pulley comprising, a first central cylindrical sleeve having a first V-belt engaging pulley section extending from one end thereof, means for fixedly mounting said first sleeve and first pulley section on a rotary shaft, a second cylindrical sleeve having a second V-belt engaging pulley section extending therefrom and having a cylindrical shoulder, said second cylindrical sleeve and second pulley section being mounted over said first sleeve for free rotation relative thereto and axial translational movement thereon so that said second section is movable relative to said first section, said sections defining a V-belt groove therebetween, means for urging said second section toward said first section, torque-responsive contact pressure means for controlling the axial spacing between said pulley sections in response to a change in the load being transmitted by a V-belt in said groove which results in relative rotation of said sections, said torque-responsive means operating to adjust the distance between said sections and allow the



belt in said groove to reach a new position therein corresponding to the new load, and damping means for preventing sudden change in said axial spacing of said pulley sections, the improvement wherein said damping means comprises an integral fluid-operated shock absorber which has an integral fluid chamber comprised of portions of both of said sleeves.

4,348,198
BICYCLE DERAILLEUR HAVING A REDUCED LATERAL WIDTH

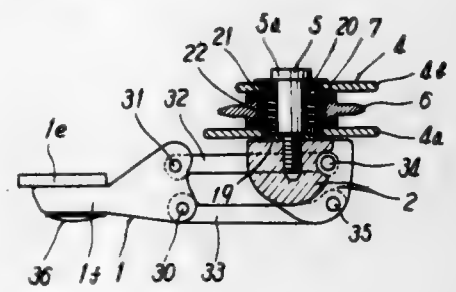
Keizo Shimano, Sakai, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

Filed Apr. 21, 1980, Ser. No. 142,380

Claims priority, application Japan, May 4, 1979, 54-59801[U]

Int. Cl.³ F16H 7/22

U.S. Cl. 474—82 9 Claims



1. A derailleur for a bicycle for guiding a driving chain axially of a plurality of sprockets forming a multi-stage sprocket assembly so as to switch said chain to a selected one of said sprockets for changing speed, said derailleur comprising:

a fixing member;

a supporting member supported to said fixing member and movable with respect thereto;

a change-over frame supported swingably to said supporting member through a first horixontal shaft, said change-over frame having at least one side plate;

a second tubular shaft arranged co-axially with said first shaft, said second shaft being fixed to one of said supporting member and change-over frame, the inner periphery of said second shaft and the outer periphery of said first shaft forming a tubular spring housing chamber;

a coiled tension spring housed within said spring housing chamber, said spring being retained at one end to a side of said change-over frame and at the other end to a side of said supporting member;

a first pulley supported rotatably to the outer periphery of said second shaft, the axial length of said first pulley being substantially equal to that of said first and second shafts; and,

a second pulley supported rotatably to said change-over.

4,348,199

BUFFER DEVICE FOR A ROLLER CHAIN AND SPROCKET COUPLING

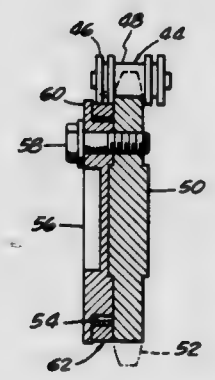
Koichiro Oonuma, Shiki; Yoshinori Kawashima, Sakado, and Toshinori Hanai, Kamifukuoka, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 1, 1980, Ser. No. 192,892

Claims priority, application Japan, Oct. 4, 1979, 54-136728[U]

Int. Cl.³ F16H 9/00, 55/30

U.S. Cl. 474—156 4 Claims



1. A buffer device for a roller chain and sprocket coupling comprising a circular, peripheral groove coaxially arranged with the sprocket and adjacent the teeth thereof and a buffer ring positioned in said groove, said buffer ring including an outside resiliently compressible ring and an inside leaf spring concentrically arranged together, the inside diameter of said buffer ring being larger than the outside diameter of the bottom of said groove and the sum of the outside diameter of the bottom of said groove and twice the radial thickness of said buffer ring being greater than the inside diameter of the inscribed circle of the link plates of the portion of the roller chain engaged with the sprocket.

4,348,200

MULTI-SPEED SPROCKET ASSEMBLY FOR A BICYCLE

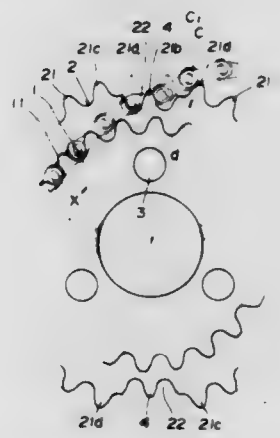
Masao Terada, Sakai, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

Filed Sep. 18, 1980, Ser. No. 188,296

Claims priority, application Japan, Oct. 11, 1979, 54-141001[U]

Int. Cl.³ F16H 55/30, 11/08

U.S. Cl. 474—160 5 Claims



1. A multi-speed sprocket assembly for a bicycle, comprising at least two sprockets and connectors for connecting said sprockets axially at a given interval, one of said sprockets being a smaller diameter sprocket having a smaller number of teeth than that of a remaining of said sprockets, said remaining sprocket having a larger diameter with a larger number of teeth than that of said one sprocket, said larger diameter sprocket having at least two teeth omitted from a plurality of teeth of said larger diameter sprocket, and being provided between teeth which are adjacent to said omitted teeth with a recess which is directed radially inwardly of said larger diameter sprocket from the dedendum circle thereof, and at an intermediate portion of said recess corresponding to a bottom land between said omitted teeth a projection extending close to said dedendum circle is provided.

4,348,201

TANNING PROCESS AND TANNING COMPOSITIONS

Saburo Hayashi, Kakogawa; Syohiti Okada, Kobe; Kazuyoshi Okamoto, Hyogo; Mochifumi Mizutani, Himeji; Teizo Isono, Kakogawa; Toshio Osada, Himeji; Tohru Okabe, Hyogo, and Mitsuji Adachi, Himeji, all of Japan, assignors to Seitetsu Kagaku Co., Ltd., Hyogo, Japan

Filed May 7, 1980, Ser. No. 147,663

Claims priority, application Japan, May 11, 1979, 54/58488; Apr. 17, 1980, 55/51323

Int. Cl.[3] C14C *1/04, 3/06*

U.S. Cl. 8—94.18 27 Claims

1. A pretanning process comprising pickling a hide which has previously been subjected to beamhouse works, in the presence of hexamethylene-tetramine, an acid selected from the group consisting of sulfuric acid and a mixture of sulfuric and formic acid and at least one tanning improver selected from the group consisting of chromium salts and aluminum salts.

4,348,202

HAIR DYE OR BLEACH SUPPORTS

Jean-Francois Grollier, and Chantal Fourcadier, both of Paris, France, assignors to L'Oreal, Paris, France

Filed Jun. 10, 1980, Ser. No. 158,271

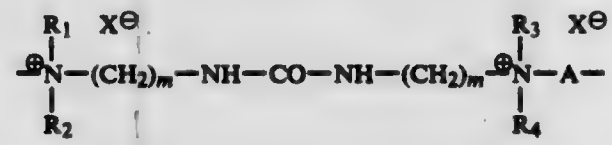
Claims priority, application France, Jun. 15, 1978, 78 17899; Belgium, Jun. 14, 1979, 195.741; Italy, Jun. 14, 1979, 68281 A/79; Switzerland, Jun. 14, 1979, 5592/79; Canada, Jun. 15, 1979, 329838; Fed. Rep. of Germany, Jun. 15, 1979, 2924230; Japan, Jun. 15, 1979, 54-75560; United Kingdom, Jun. 15, 1979, 7920878; France, Dec. 13, 1979, 79 30586

The portion of the term of this patent subsequent to May 6, 1997, has been disclaimed.

Int. Cl.[3] A61K *7/06*

U.S. Cl. 8—406 47 Claims

1. A hair dye composition free of an anionic polymer comprising an oxidation hair dye present in an amount effective to dye hair and a dye support therefor, said dye support comprising at least one polymer having units of the formula



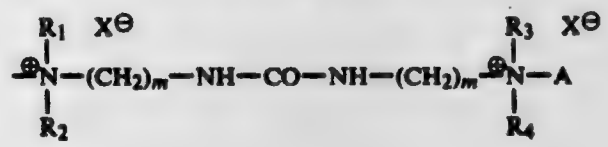
wherein R_1, R_2, R_3 and R_4, each independently represent alkyl having 1–20 carbon atoms, hydroxyalkyl having 1–20 carbon atoms, cycloalkyl having 5 or 6 carbon atoms in the ring, alkyl substituted cycloalkyl having 5 or 6 carbon atoms in the ring and wherein the total number of carbon atoms is less than 20 and phenylalkyl wherein the alkyl moiety has 1–3 carbon atoms, or one or both of the pairs R_1 and R_2, and R_3 and R_4, together with the nitrogen atom to which each of said respective pairs is attached, form a ring having 2–6 carbon atoms or a ring having 2–6 carbon atoms and a heteroatom other than nitrogen;

$X^{\ominus}$ is an inorganic or organic acid anion;

m is 2 or 3; and

A represents linear or branched alkylene or alkenylene having 2–18 carbon atoms, linear or branched alkylene or alkenylene having 2–18 carbon atoms and substituted by one or more of —OH or =O groups, or linear or branched alkylene or alkenylene having 2–18 carbon atoms and interrupted by one or more of oxygen, sulfur, nitrogen or phenylene groups.

13. A hair dye composition free of an anionic polymer comprising an oxidation hair dye present in an amount effective to dye hair and a dye support therefor, said dye support comprising at least one polymer having the units of the formula



wherein

R_1=R_2=R_3=R_4=CH_3 or C_2H_5;

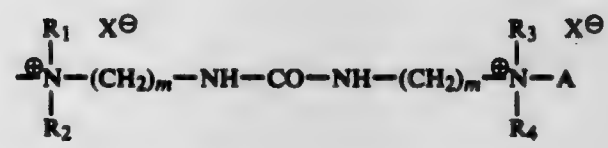
X=Cl

m=3; and

when R_1-R_4=CH_3, A represents —CH_2CH_2O—CH_2CH_2—, —CH_2—C_6H_4—CH_2—, —CH_2—CHOH—CH_2—, —$(CH_2)_6$— or —CH_2—CH=CH—CH_2—, and

when R_1-R_4=C_2H_5, A represents —$(CH_2)_6$—, —CH_2—CHOH—CH_2— or —CH_2—CH=CH—CH_2—.

22. A hair dye composition free from an anionic polymer in cream form comprising an oxidation hair dye present in an amount effective to dye hair, at least one polymer having units of the formula



wherein

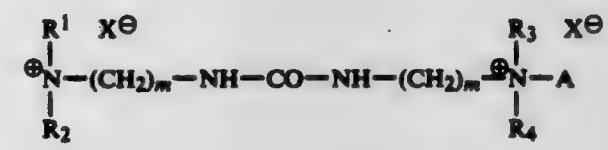
R_1=R_2=R_3=R_4=CH_3 or C_2H_5;

X is Cl;

m is 3; wherein

when R_1—R_4=CH_3, A represents —CH_2—CH_2—O—CH_2—CH_2—, —CH_2—C_6H_4—CH_2—, —CH_2—CHOH—CH_2—, —$(CH_2)_6$— or —CH_2—CH=CH—CH_2— and when R_1—R_4=C_2H_5, A represents —$(CH_2)_6$—, —CH_2—CHOH—CH_2— or —CH_2—CH=CH—CH_2—; and at least one of a C_{12} to C_{20} fatty acid soap or a C_{12} to C_{20} fatty alcohol in the presence of a nonionic emulsifier.

33. A hair dye composition free from an anionic polymer in gelable liquid form comprising an oxidation hair dye present in an amount effective to dye hair, at least one polymer having units of the formula



wherein

R_1=R_2=R_3=R_4=CH_3 or C_2H_5;

X is Cl;

m is 3; wherein

when R_1—R_4=CH_3, A represents —CH_2—CH_2—O—CH_2—CH_2—, —CH_2—C_6H_4—CH_2—, —CH_2—CHOH—CH_2—, —$(CH_2)_6$— or —CH_2—CH=CH—CH_2—, and when R_1—R_4=C_2H_5, A represents —$(CH_2)_6$—, —CH_2—CHOH—CH_2— or —CH_2—CH=CH—CH_2—; and

(a) a mixture of an oxyethylenated or polyglycerolated nonionic compound and a solvent or

(b) a mixture of a liquid fatty acid soap and a solvent.

4,348,203

DYEING PROCESS

James K. Skelly, Wilmslow; David G. Evans, Rochdale, and Barrie Broadbent, Stockport, all of England, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 920,107, Jun. 26, 1978, abandoned, which is a continuation of Ser. No. 702,551, Jul. 6, 1976, abandoned, which is a continuation of Ser. No. 465,046, Apr. 29, 1974, abandoned. This application Jul. 7, 1980, Ser. No. 166,628

Claims priority, application United Kingdom, May 5, 1973, 21529/73; Switzerland, Mar. 5, 1974, 9723/74

Int. Cl.³ D06P *1/16, 1/64, 5/00*

U.S. Cl. 8—501 15 Claims

1. A process for dyeing synthetic textile fibers consisting essentially of the steps of contacting said fibers at ambient temperature with a water-insoluble dyestuff in a two-phase liquid system in the substantial absence of a dispersing agent, said two-phase liquid system consisting essentially of a minor amount of an active solvent excluding chlorinated aliphatic hydrocarbons in admixture with the necessary amount of water to produce said two-phase liquid system, and subsequently rapidly raising the temperature for fixation of the dye, the active solvent under the conditions of dyeing being liquid, a solvent for the dye and only slightly soluble or insoluble in water and the fixation affinity of the fiber for the dye being greater than that of the active solvent for the dye at the temperature required for fixation.

4,348,204

AQUEOUS DYESTUFF FORMULATION, A PROCESS FOR ITS PREPARATION AND ITS USE FOR DYEING AND PRINTING

Wolfgang Bauer, Maintal; Heinz Dickmanns, Frankfurt am Main; Konstantin Morgenroth, Maintal; Kuno Reh, Frankfurt am Main, and Joachim Ribka, Offenbach-Bürgel, all of Fed. Rep. of Germany, assignors to Cassella Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 112,541, Jan. 16, 1980, abandoned. This application Apr. 1, 1981, Ser. No. 249,955

Claims priority, application Fed. Rep. of Germany, Jan. 19, 1979, 2902034

Int. Cl.³ D06P *67/00;* C09B *67/00*

U.S. Cl. 8—527 8 Claims

1. Aqueous dyestuff solution of a tetrakisazo direct dyestuff which is stable to alkali and contains at least one aromatic hydroxyl or enol group and at least two groups conferring solubility in water, or a mixture of such azo direct dyestuffs, said solution having a pH value of at least 12, and a dyestuff concentration of 5 to 50% by weight.

4,348,205

MEASURING BETA-HYDROXYBUTYRATE CONCENTRATION IN URINE

Stuart A. Lipton, 125 Pleasant St., Apt. #601, Brookline, Mass. 02146, and James V. Manzione, Jr., 38 Meadow La., Glen Head, N.Y. 11545

Filed Sep. 19, 1980, Ser. No. 188,749

Int. Cl.³ G01N *33/64*

U.S. Cl. 23—230 B 4 Claims

1. A process of measuring beta-hydroxybutyrate in a urine sample consisting essentially of

providing said urine sample free of any additions of acid solutions,

mixing hydrogen peroxide with said urine sample,

heating said urine and hydrogen peroxide mixture at a temperature of about 100° C. for a period of time sufficient to vaporize all of any acetone/acetoacetate originally present in said sample and to oxidize beta-hydroxybutyrate in said sample to acetone/acetoacetate,

cooling said mixture, and

measuring the acetone/acetoacetate concentration using the nitroprusside test, said concentration being a measure of said beta-hydroxybutyrate originally present in said urine sample.

4,348,206

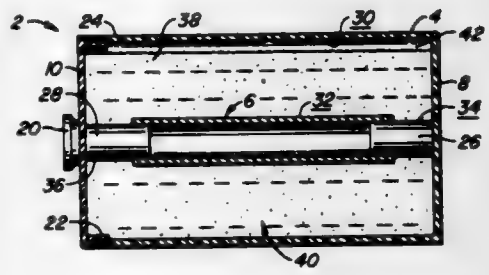
SLURRY PIPELINE SIMULATION METHOD

Avtar S. Sandhu, Tiburon, Calif., assignor to Bechtel International Corporation, San Francisco, Calif.

Filed Nov. 3, 1980, Ser. No. 203,775

Int. Cl.³ G01N *33/22, 33/24*

U.S. Cl. 23—230 A 10 Claims



1. A method for simulating the effect upon a first slurry, comprising a mixture of solid particulates and a liquid, after it has passed through a pipeline, comprising the following steps:

providing a test slurry comprising a test liquid and test solid particulates;

providing a closed, horizontally disposed drum, said drum having a circular cross-sectional shape, an inside surface and mounted for rotation about its axis, a pipeline simulation surface mounted within and generally along the axis of said drum, and door means for introducing said test slurry within said drum;

adding said test slurry to said drum;

rotating said drum for a predetermined time; and

analyzing said test slurry after being rotated whereby the expected effect upon said first slurry after passing through said pipeline is determined.

2. The method according to claim 1 wherein said test slurry is a coal-water slurry.

4,348,207

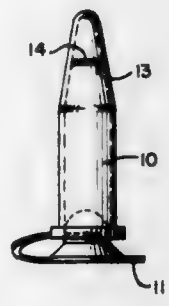
METHOD AND MEANS FOR DETERMINATION OF PREGNANCY

Leona R. Cappel, Norco, Calif., assignor to Cooper Laboratories, Inc., Palo Alto, Calif.

Filed Jan. 29, 1981, Ser. No. 230,108

Int. Cl.³ G01N *33/54, 33/76*

U.S. Cl. 23—230 B 16 Claims



1. A process for diagnosing pregnancy in humans comprising

providing a test container including a dry reaction mixture comprising HCG sensitized particles and an anti-serum of HCG, said test container having an interior surface, at least, which is non-wettable to urine or a diluting liquid therefor and further having an interior diameter of sufficient dimension to support capillary action of the urine or diluting liquid when contained therein,

adding a predetermined amount of urine from a subject

being tested to the test container and mixing the urine with the reagent contained therein,

allowing the mixture to stand in the container in an upright position for from about ¼ hour to 2 hours,

inverting the container and inspecting the contents thereof for evidence of an agglutination reaction or inhibition thereof.

4,348,208

URIC ACID ASSAY AND REAGENT SYSTEM THEREFOR

Robert L. Long, Indianapolis, Ind., assignor to American Monitor Corporation, Indianapolis, Ind.

Filed Oct. 26, 1981, Ser. No. 315,165
Int. Cl.³ G01N *33/52*
U.S. Cl. 23—230 B 18 Claims

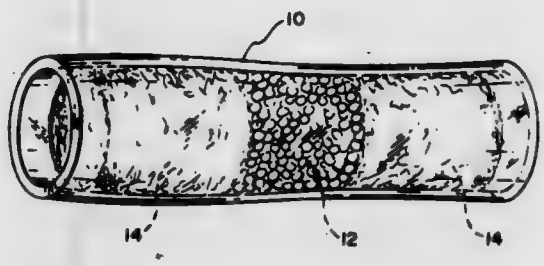
1. In a method for the determination of uric acid in a fluid sample wherein said sample is reacted with phosphotungstate under alkaline conditions, the improvement comprising the step of accelerating the reaction between uric acid and phosphotungstate by including in the reaction mixture thereof at least one sulfhydryl-containing compound in an amount substantially greater than that endogenously present in said sample, thereby increasing the sensitivity and specificity of the reaction for uric acid.

4,348,209

DETERMINING QUANTITATIVE DEGREE OF ETHYLENE OXIDE EXPOSURE IN STERILIZATION PROCESSES

J. Barry Murtaugh, Barrington; Dean G. Laurin, Lake Zurich, both of Ill.; John E. Kling, Dallas, Tex., and Archie G. Woodworth, Barrington, Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Sep. 25, 1981, Ser. No. 305,418
Int. Cl.³ G01N *31/04, 31/10*
U.S. Cl. 23—232 R 15 Claims



1. The method of quantitatively determining the amount of exposure of an object to ethylene oxide gas, which comprises:

placing adjacent to said object a preweighed ethylene oxide-permeable container which encloses a predetermined amount of catalyst for the reaction of ethylene oxide to form a liquid, said container being impermeable to said catalyst and liquid;

exposing said object and container to ethylene oxide gas for a controlled time and at a determined temperature; and

reweighing said container, whereby the weight gain of said container is a quantitative indication of the amount of exposure to ethylene oxide gas.

4,348,210

NOVEL PROCESS AND PRODUCT

Rodney L. Sung, Fishkill, N.Y., assignor to Texaco Inc., White Plains, N.Y.

Filed Nov. 14, 1980, Ser. No. 206,814
Int. Cl.³ C10L *1/02*
U.S. Cl. 44—56 14 Claims

1. A composition comprising:

(i) a water-soluble alcohol; and

(ii) an effective corrosion-inhibiting amount, of 0.25–25 pounds per thousand barrels of alcohol, of the reaction product of a maleic anhydride and

$$C_aH_{2a+1}—O—C_bH_{2b}NH_2$$

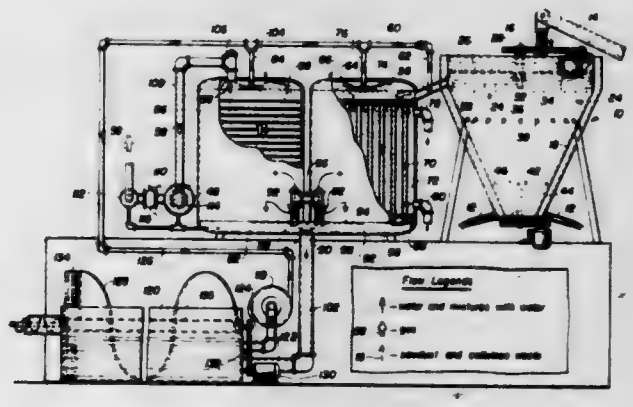
wherein a is an integer greater than 5, b is an integer greater than 2, and C_bH_{2b} is a straight chain alkylene group.

4,348,211

GAS GENERATING SYSTEM

Edwin H. Zimmerman, R.D. #1, New Holland, Pa. 17557

Filed Feb. 6, 1981, Ser. No. 231,987
Int. Cl.³ C10J *3/30, 3/32*
U.S. Cl. 48—76 15 Claims



1. A system to generate gas products having useful B.T.U. values from waste cellulosic material capable of being sintered and charred and comprising in combination:

a. a conical metallic generator shell positioned vertically and tapering downwardly to material inlet means in the bottom thereof,

b. a closure for the top of said generator shell to form with the walls of the shell a gas accumulating chamber in the upper portion of said shell,

c. means to feed waste material progressively into said inlet means for progressive movement upwardly in said shell from the lower portion thereof,

d. controlled air inlet ports spaced circumferentially around said generator shell adapted to form a sintering type combustion zone within waste material in the upper portion of said shell below said gas accumulating chamber,

e. gas outlet means extending from and communicating with said gas accumulating chamber,

f. means in the lower portion of said shell operable to agitate the material and feed it upwardly in said shell in a manner to loosen the same as it ascends in the widening area of the upper portion of said shell,

g. suction means downstream from the upper portion of said shell and operable adjustably to induce the inlet of ambient air into said combustion zone through said controlled air inlet ports to control the rate of sintering of the material to generate combustible gas,

h. movable means mounted within the upper portion of said shell below said closure and operable to agitate the solid products resulting from combustion and the sintered products and effect progressive removal thereof laterally from the shell adjacent said combustion zone with the useful gas produced by the sintering of said material, and

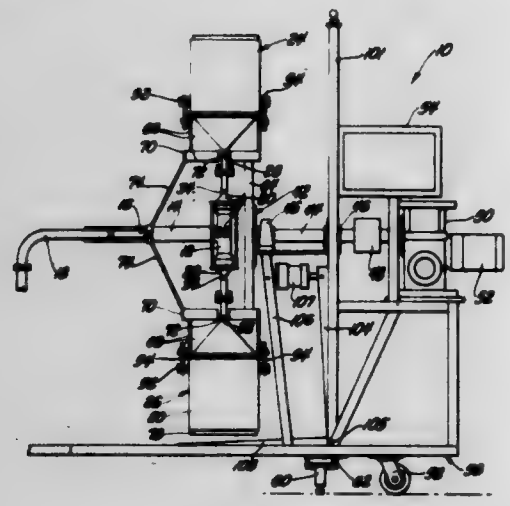
i. means communicating with said gas outlet means to receive said gas and separate the same from the solid products of combustion and the sintered products removed therewith from said combustion zone.

4,348,212

METHOD AND APPARATUS FOR CYCLIC DEGASSING PARTICULATE MATERIAL

Walter J. Rozmus, Traverse City, Mich., assignor to Kelsey-Hayes Company, Romulus, Mich.

Filed May 28, 1981, Ser. No. 267,729
Int. Cl.³ B03C 9/00
U.S. Cl. 55—2 9 Claims



1. An apparatus (10, 110) for cleaning particulate material which is at least in part contaminated by gas, said apparatus comprising; a vacuum chamber (12, 112) having a gas outlet (14, 114), vacuum pump means (119) connected to said gas outlet for evacuating said chamber, said vacuum chamber (12, 112) having first (20, 120) and second (22, 122) ends with a flow passage at each end for directing the flow of the particulate material into and out of said chamber electric field producing means (128, 132) positioned and arranged so as to produce an electric field to electrically charge the gaseous contaminates and cause separation of the gaseous contaminates from the particulate material to facilitate removal of the gaseous contaminates from said vacuum chamber (12, 112) through said gas outlet (14, 114), first (24, 124) and second (26, 126) container means connected to and in communication with said flow passages at said first and second ends of said vacuum chamber, support means (42, 142) supporting said vacuum chamber and said first and second container means for initially positioning said first container means (24, 124) above said second container means (26, 126) to allow particulate material to flow from said first container means (24, 124) through said vacuum chamber (12, 112) and into said second container means (26, 126) and for thereafter rotating said vacuum chamber (12, 112) and said first and second container means (24, 124, 26, 126) while connected together to reposition said second container means (26, 126) above said first container means (24, 124) to allow particulate material to return from said second container means (26, 126) in the opposite direction back through said vacuum chamber (12, 112) to said first container means (24, 124).

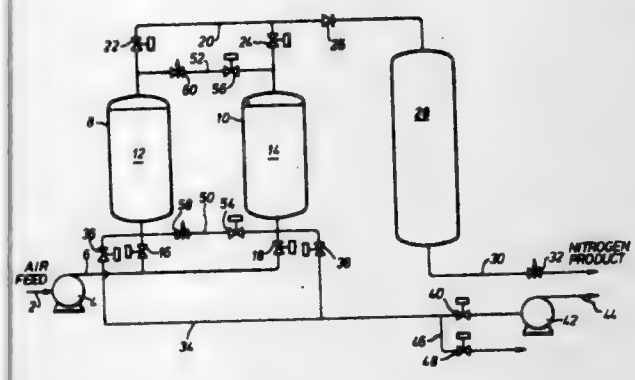
8. A method of cleaning particulate material which is at least in part contaminated by gas, including passing said gas-contaminated particulate material from a first container (24, 124) downward through a vacuum chamber (12, 112) and into a second container (26, 126), subjecting the gas-contaminated particulate material to an electric field to electrically charge the gaseous contaminants to cause the gaseous contaminants to separate from the particulate material, applying a vacuum to the vacuum chamber for removing (14, 114) the gaseous contaminants from the vacuum chamber (12, 112), rotating the first (24, 124) and second (26, 126) containers and the vacuum chamber (12, 112) end-for-end to position the second container (26, 126) above the vacuum chamber (12, 112) and above the first container (24, 124) for passing said gas-contaminated particulate material back through the vacuum chamber (12, 112) and into the first container (24, 124).

4,348,213

PROCESS FOR THE SEPARATION OF A GASEOUS MIXTURE

John W. Armond, Buckhurst Hill, England, assignor to BOC Limited, London, England

Filed Mar. 27, 1981, Ser. No. 248,600
Claims priority, application United Kingdom, Mar. 31, 1980, 8010799
Int. Cl.³ B01D 53/04
U.S. Cl. 55—25 6 Claims



1. A process for the separation of a gas mixture which includes:

(1) repeatedly performing a cycle of operations on a first bed of adsorbent which adsorbs one component of the gas mixture more readily than another or the other component of the gas mixture, the cycle of operations comprising the steps of:

(a) passing the gaseous mixture at superatmospheric pressure through the bed of adsorbent and thereby adsorbing said one component;

(b) reducing the pressure of the bed to a value intermediate said superatmospheric pressure and atmospheric pressure;

(c) regenerating the bed, which step comprises desorbing gas therefrom by further reducing the pressure of the bed, and causing the desorbed gas to flow out of the bed in a direction counter to the direction of passing the gaseous mixture, and

(d) increasing the pressure of the bed to a value intermediate said superatmospheric pressure and atmospheric pressure;

(2) repeatedly performing such a cycle of operations on a second bed of such adsorbent; wherein the cycles are phased such that when the pressure of one bed is reduced after desorption but before its regeneration, the pressure of the other bed is being increased after its regeneration but before adsorption, and vice versa, and the steps (b) and (d) are performed by placing the beds in communication with one another through at least one restricted passage for a period of time insufficient for the pressures of the beds to equalise.

4,348,214

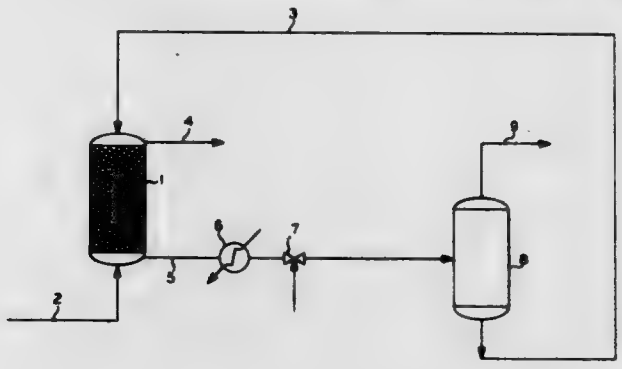
HYDROGEN SULFIDE REMOVAL WITH SULFUR-CONTAINING ESTERS

Bruce W. Gordon, Borger, Tex., and Edward E. Huxley, Fritch, Tex., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 31, 1981, Ser. No. 249,547
Int. Cl.³ B01D 19/00
U.S. Cl. 55—48 5 Claims

1. Process to remove hydrogen sulfide from a feed gas stream comprising contacting this feed gas stream with a solvent comprising at least one ester containing 1–4 ester groups COOR wherein R is a hydrocarbyl radical having 1–20 C atoms and containing one or more sulfur groups selected from

the group consisting of —SH and —$(S)_x$—, x being an integer of 1 to 6, to produce a solution of hydrogen sulfide in said



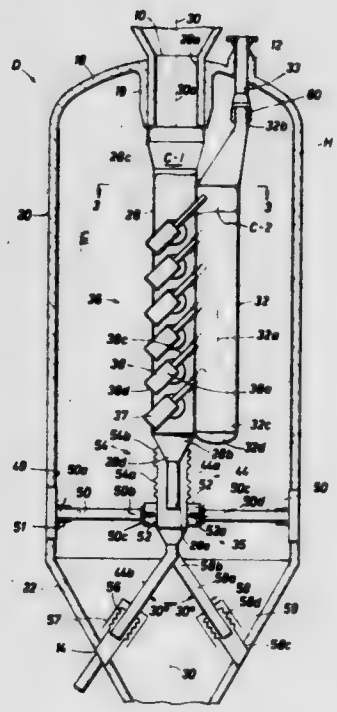
solvent and a gas stream having reduced hydrogen sulfide content as compared to the feed gas stream.

4,348,215

PARTICULATE SEPARATION DEVICE

Manfred F. Dehne, 14350 Chrisman Rd., Houston, Tex. 77039

Filed Jan. 9, 1981, Ser. No. 223,801
Int. Cl.³ B01D *45/12*; B04C *5/04, 5/185*
U.S. Cl. 55—349 12 Claims



1. In a particulate separating device, including a main vessel housing forming a particulate chamber, a particulate-laden housing mounted within said main vessel housing and forming a particulate-laden gas chamber said main vessel having a first particulate outlet, a clean gas housing mounted within said main vessel housing adjacent said particulate-laden gas housing and forming a clean gas chamber, a particulate-laden gas inlet in fluid communication with said particulate-laden gas chamber, a clean gas outlet in fluid communication with said clean gas chamber, a plurality of cyclone separator units each mounted to said particulate-laden gas chamber and said clean gas chamber, and said main vessel having a second particulate outlet in fluid communication with said particulate chamber, the improvement comprising:

particulate transfer means being connected to both said particulate-laden gas chamber and said first particulate outlet;

said particulate transfer means including a particulate transfer body having a substantially vertical axis;

said first particulate outlet being horizontally displaced from said particulate transfer body axis;

said particulate transfer means further including an angled conduit portion mounted between said particulate transfer body and said first particulate outlet; and

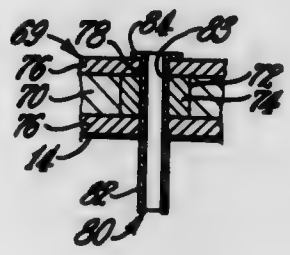
angled compensation means mounted between said particulate transfer body and a location on said main vessel housing diametrically opposite said first particulate outlet for reducing thermal expansion forces exerted on said particulate transfer body by said angled conduit portion.

4,348,216

METHOD AND APPARATUS FOR FORMING GLASS FIBERS

Mohinder S. Bhatti, and Alfred Marzocchi, both of Newark, Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Oct. 27, 1980, Ser. No. 200,650
Int. Cl.³ C03B *37/025*
U.S. Cl. 65—1 24 Claims



23. A laminated wall for a feeder for supplying streams of molten glass to be attenuated into filaments comprising:

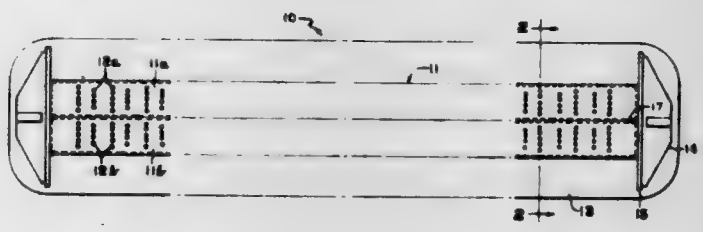
a refractory metal core having an oxygen impervious, precious metal, first layer having a first surface intimately bonded thereto by hot isostatic pressing to form a laminate, and an element positioned in said core having at least one orifice extending therethrough adapted to permit said molten glass to pass therethrough, said element having an end surface sealed to said first surface of said first layer.

4,348,217

METHOD OF CONTROLLING FILAMENT FORMATION IN A GLASS FIBER BUSHING

Kenneth T. Williamson, Jr., Glenshaw; Samuel S. Bruce, Jr., Pittsburgh, both of Pa., and Walter L. Martin, Jr., Lexington, N.C., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 111,753, Jan. 14, 1980, abandoned. This application Jan. 26, 1981, Ser. No. 228,445
Int. Cl.³ C03B *37/025*
U.S. Cl. 65—2 6 Claims



1. A method of controlling the formation of filaments from a molten glass source in a fiber forming bushing comprising establishing in the bushing at least two groups of orifices, the orifices in each of the groups having different diameters, pulling glass fibers from each group of orifices simultaneously and chopping the fibers into discrete lengths as they are being pulled, and controlling the formation and pulling of the glass fibers to minimize interruption by maintaining the difference in orifice size in any two groups between 0.0215 to 0.015 inch.

4,348,218

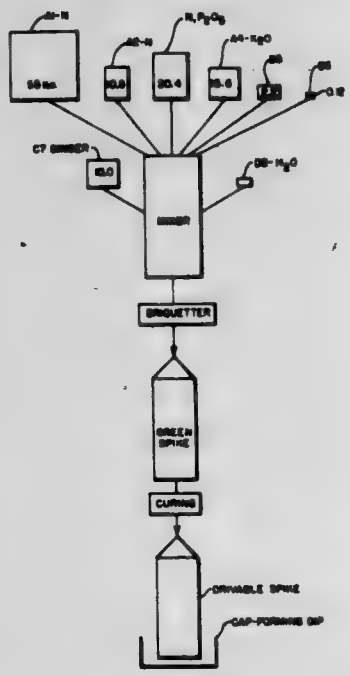
FERTILIZER BRIQUETTE ADAPTED TO BE HAMMERED INTO THE GROUND

Allen M. Bond, Jr., Louisville, Ky., assignor to International Spike, Inc., Lexington, Ky.

Continuation of Ser. No. 827,545, Aug. 25, 1977, abandoned, which is a continuation of Ser. No. 419,899, Nov. 28, 1973, abandoned, which is a continuation-in-part of Ser. No. 235,257, Mar. 16, 1972, abandoned. This application May 24, 1978, Ser. No. 909,033

Int. Cl.³ C05C *9/00*

U.S. Cl. 71—1 **15 Claims**



1. A hard, rigid fertilizer product compacted by briquetting and having a shape, mechanical strength and an impact resistance which adapts it to be hammered while unsupported into the ground without significant shattering and having a substantially homogeneous composition consisting essentially of from 85% to 95% by weight substantially nonfibrous NPK fertilizer source materials bonded together by from 15% to 5% by weight of a substantially water insoluble cured thermosetting resinous binder based on the dry weight of the mixture.

4,348,219

HERBICIDAL SULFONAMIDES

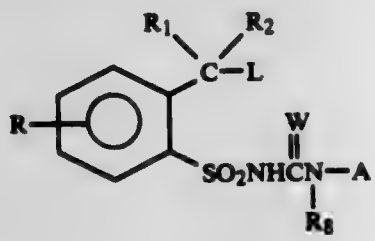
George Levitt, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 168,348, Jul. 11, 1980, abandoned. This application Apr. 29, 1981, Ser. No. 254,256

Int. Cl.³ A01N *43/54, 43/66*; C07D *239/42*

U.S. Cl. 71—92 **28 Claims**

1. A compound of the formula:



wherein

L is CO_2R_{10}, $CONR_3R_4$ or CN;

R is H, F, Cl, Br, NO_2, CF_3, C_1–C_3 alkyl or C_1–C_3 alkoxy;

R_1 is H or C_1–C_4 alkyl;

R_2 is H or CH_3;

R_3 is H, C_1–C_4 alkyl or OCH_3;

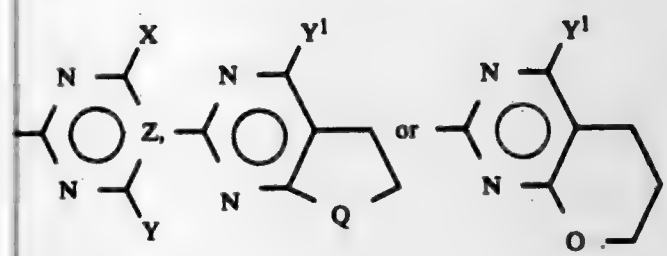
R_4 is H or C_1–C_4 alkyl;

R_3 and R_4 can be taken together to form $—(CH_2)_4—$, $—(CH_2)_5—$ or $—(CH_2CH_2)_2O$;

R_8 is H, CH_3 or OCH_3;

R_{10} is H, C_1–C_4 alkyl, C_3–C_4 alkenyl, CH_2CH_2Cl or $CH_2CH_2OCH_3$;

A is



W is O or S;

X is H, Cl, Br, CH_3, CH_2CH_3, C_1–C_3 alkoxy, CF_3, SCH_3 or CH_2OCH_3;

Y is CH_3 or OCH_3;

Z is N, CH, CCl, CBr, CCN, CCH_3, CCH_2CH_3, CCH_2CH_2Cl or $CCH_2CH{=}CH_2$;

Y^1 is H, CH_3, OCH_3 or OCH_2CH_3; and

Q is O or CH_2;

and their agriculturally suitable salts; provided that:

(1) when L is $CONR_3R_4$, then Z is CH or N;

(2) when R_3 is OCH_3, then R_4 is CH_3; and

(3) when W is S, R_8 is H.

13. A composition suitable for controlling the growth of undesired vegetation which comprises an effective amount of a compound of claim 1 and at least one of the following: surfactant, solid or liquid diluent.

4,348,220

HERBICIDAL SULFONAMIDES

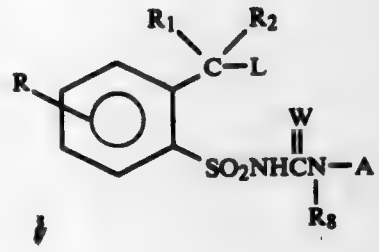
Gregory W. Schwing, Lincoln University, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 168,350, Jul. 11, 1980, abandoned. This application May 27, 1981, Ser. No. 264,661

Int. Cl.³ A01N *43/54, 43/66*; C07D *230/42*

U.S. Cl. 71—92 **43 Claims**

1. A compound selected from



(I)

wherein

L is $S(O)_nR_7$ or OR_9;

R is H, F, Cl, Br, NO_2, CF_3, C_1–C_3 alkyl or C_1–C_3 alkoxy;

R_1 is H or C_1–C_4 alkyl;

R_2 is H or CH_3;

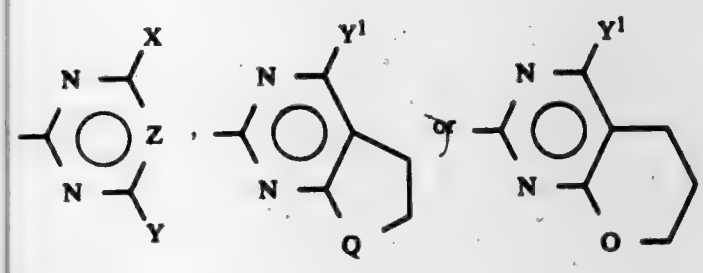
R_7 is C_1–C_4 alkyl;

R_8 is H, CH_3 or OCH_3;

R_9 is C_1–C_6 alkyl, C_3–C_4 alkenyl, CH_2CF_3, CF_2CF_2H or C_5–C_6 cycloalkyl;

n is 0, 1 or 2;

A is



W is O or S;

X is H, Cl, Br, CH_3, CH_2CH_3, C_1–C_3 alkoxy, CF_3, SCH_3 or CH_2OCH_3;
Y is CH_3 or OCH_3;
Z is N, CH, CCl, CBr, CCN, CCH_3, CCH_2CH_3, CCH_2CH_2Cl or $CCH_2CH{=}CH_2$;
Y^1 is H, CH_3, OCH_3 or OCH_2CH_3; and
Q is O or CH_2;
and their agriculturally suitable salts; provided that when n is 1, then W is 0; and when W is S, then R_8 is H.

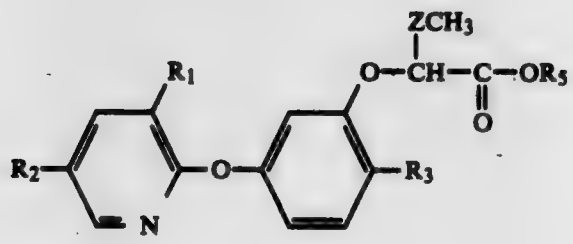
28. A composition suitable for controlling the growth of undesired vegetation which comprises an effective amount of a compound of claim 1 and at least one of the following: surfactant, solid or liquid diluent.

4,348,221
HERBICIDAL DERIVATIVES OF PYRID-2-YLOXYPHENOXY-ACETIC ACIDS AND ESTERS

Henry Szczepanski, Rheinfelden; Otto Rohr, Therwil, both of Switzerland; Georg Pissiotas, Lörrach, Fed. Rep. of Germany; Beat Böhner, and Hermann Rempfler, both of Binningen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 19,999, Mar. 12, 1979, Pat. No. 4,233,054. This application Jun. 16, 1980, Ser. No. 159,534
Claims priority, application Switzerland, Mar. 17, 1978, 2932/78
Int. Cl.³ C07D *213/57, 213/64;* A01N *43/40*
U.S. Cl. 71—94 6 Claims

1. A compound of the formula



in which
R_1 is chlorine or bromine,
R_2 is hydrogen, chlorine, bromine or cyano,
R_3 is chlorine, bromine or nitro
Z is oxygen or sulfur, and
R_5 is hydrogen, C_1–C_3 alkyl, allyl, cyclohexyl, phenyl or benzyl.

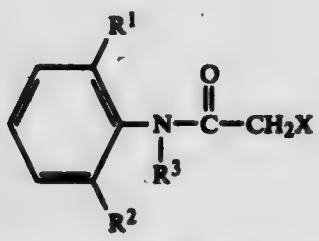
6. A method for the selective control of weeds in crops of cereals or rice comprising applying thereto or to the locus thereof a herbicidally effective amount of a compound according to claim 1.

4,348,222
HERBICIDAL N-HALOACETYL-2-ALKYL-6-ACYLANILINES

John W. Kobzina, Walnut Creek, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 53,877, Jul. 2, 1979, Pat. No. 4,244,730. This application Jul. 28, 1980, Ser. No. 172,788
Int. Cl.³ A01N *37/22, 37/24*
U.S. Cl. 71—118 5 Claims

1. A compound of the formula:



wherein R^1 is alkyl of 1 to 4 carbon atoms or alkoxy of 1 to 4 carbon atoms; R^2 is acyl of 2 to 4 carbon atoms or a group having the formula:



wherein R^4 is alkyl of 1 to 3 carbon atoms and R^6 is hydrogen or alkyl of 1 to 3 carbon atoms; R^3 is hydrogen or alkyl of 1 to 4 carbon atoms; and X is halogen.

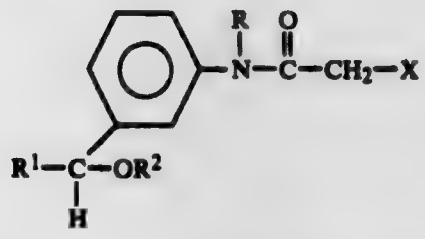
4. An herbicidal composition comprising a biologically inert carrier and an herbicidally effective amount of the compound of the formula defined in claim 1.

4,348,223
N-ALKYL-N-[3-(ALKOXYALKYL)PHENYL]-2-HALOACETAMIDE HERBICIDES

William S. Grove, Doylestown, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 5, 1980, Ser. No. 216,574
Int. Cl.³ A01N *37/22;* C07C *103/32*
U.S. Cl. 71—118 5 Claims

1. A compound represented by the formula:



wherein:
R is alkyl containing up to 5 carbon atoms;
R^1 is hydrogen or alkyl containing up to 4 carbon atoms;
R^2 is alkyl containing up to 3 carbon atoms; and
X is halogen.

4,348,224
METHOD FOR PRODUCING COBALT METAL POWDER

Richard G. W. Gingerich; Clarence D. Vanderpool; Richard A. Scheithauer, and Joseph E. Ritsko, all of Towanda, Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Sep. 10, 1981, Ser. No. 300,868
Int. Cl.³ C22B *23/04*
U.S. Cl. 75—0.5 AA 7 Claims

1. A process for producing fine particle size cobalt metal powder from scrap material comprising cobalt and copper or silver, said process comprising digesting said scrap material in aqueous hydrochloric acid to produce an aqueous acid cobalt chloride solution containing copper ions or silver ions, contacting said aqueous acid cobalt chloride solution at a pH of from about 2 to about 4 with a sufficient amount of iron metal to result in the cementation of said copper ions or silver ions with said iron to form an insoluble mixture comprising iron and copper or silver and a resulting aqueous acid cobalt chloride solution, complexing cobalt present in said aqueous cobalt chloride solution with ammonia to form a cobalt ammine chloride solution, forming a cobalt containing precipitate, and reducing said cobalt containing precipitate to form a cobalt metal powder.

4,348,225

BATCH PROCESS AND STATIC-BED TYPE APPARATUS FOR REDUCING IRON ORE

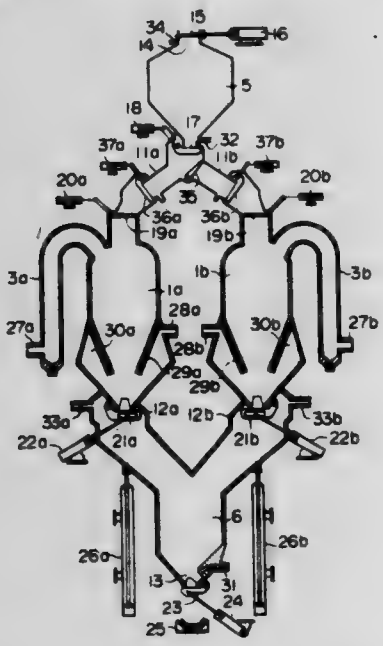
Takuya Maeda; Tsutomu Yamada, both of Kobe, and Mitsuharu Kishimoto, Miki, all of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Filed Feb. 25, 1980, Ser. No. 124,229

Claims priority, application Japan, Feb. 26, 1979, 54-22225

Int. Cl.³ C21B *13/02*

U.S. Cl. 75—34 **9 Claims**



1. A method for producing iron comprising charging into a static bed type furnace means raw materials containing iron oxides, maintaining said raw materials in a static bed within said furnace means, applying a reducing agent to said static bed of raw materials at an elevated temperature sufficient to and for a time necessary to reduce said iron oxides to iron, transferring said reduced materials prior to substantial cooling thereof to a cooling chamber means maintained separate from said furnace means and cooling said iron-containing materials wherein said reducing agent is gaseous, the raw materials charging step is immediately preceded by a step of filling the furnace means with inert gas and the transferal of reduced materials to the cooling chamber is immediately preceded by a step of filling the cooling chamber means with inert gas.

4,348,226

DIRECT REDUCTION PROCESS FOR PRODUCING METALLIC IRON

Mamoru Aoki; Masahiro Tomita; Kei Utsunomiya, all of Kobe; Hironobu Sako, Yokohama; Dentaro Kaneko, Kobe; Katsunori Shimazaki, Kobe, and Yoshitomo Ishii, Kobe, all of Japan, assignors to Kobe Steel, Ltd., Kobe, Japan

Filed Sep. 11, 1980, Ser. No. 186,131

Claims priority, application Japan, Sep. 11, 1979, 55-116801

Int. Cl.³ C21B *13/02*

U.S. Cl. 75—35 **12 Claims**

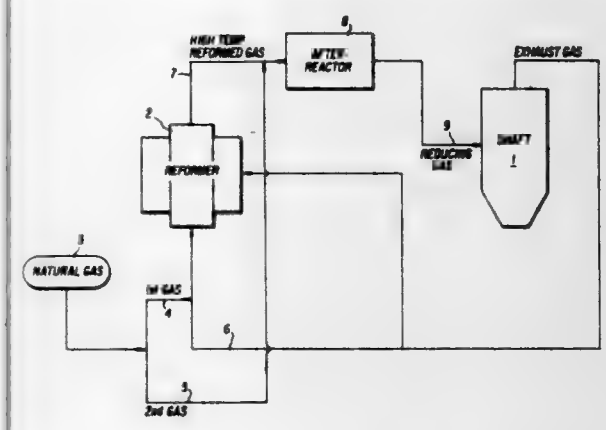
1. In a process for the direct reduction of iron oxide by blowing into a reduction furnace a reducing gas which is prepared by reforming a mixture of a reduction furnace exhaust gas and a gas mainly composed of methane, the improvement which comprises the steps of:

(a) dividing the gas mainly composed of methane into two branch streams;

(b) mixing the first branch stream gas with a part of the reduction furnace exhaust gas and supplying the resulting mixture to the externally heated reformer furnace, to produce a high-temperature reformed gas;

(c) mixing the second branch stream gas with said high-temperature reformed gas, thereby forming a gas mixture having a $CH_4/(CO_2+H_2O)$ volume ratio of 0.5–0.7, and, during the course to the reduction furnace, subjecting the mixture to endothermic reforming reactions in an after-reactor without external heating, utilizing the sensible heat of the high-temperature mixed gas;

(d) controlling the self-reforming reactions so as to lower the



temperature and simultaneously adjust the composition of the high-temperature mixed gas; and

(e) blowing the reducing gas obtained into the reduction furnace.

4,348,227

PROCESS FOR PRODUCING STEEL WITH LOW HYDROGEN CONTENT IN A THROUGH-BLOWING OXYGEN CONVERTER

Karl Brotzmann, Sulzbach-Rosenberg, Fed. Rep. of Germany, assignor to Eisenwerk-Gesellschaft Maximilianshutte mbH, Sulzbach-Rosenberg, Fed. Rep. of Germany

Filed Jul. 24, 1980, Ser. No. 172,008

Claims priority, application Fed. Rep. of Germany, Aug. 7, 1979, 2931957

Int. Cl.³ C21C *5/32, 5/34*

U.S. Cl. 75—60 **4 Claims**

1. A process for producing steel with low hydrogen content in a convertor in which a molten iron bath is refined (1) by means of oxygen introduced into the bath by means of nozzles located below the bath surface, said oxygen being introduced together with a sheathing of a protective medium and (2) means of oxygen introduced into the bath by oxygen blowing devices located above the bath surface, which comprises the following improved procedure to insure production of a steel having a hydrogen content of about 2 ppm or less:

introducing at least half of the quantity of oxygen required for refining by blowing the same onto the bath and operating the nozzles located below the surface of the bath with hydrogen free gases as the protective medium during the final 0.1 to 2 minutes of the refining procedure.

4,348,228

YIELD OF METAL VALUES FROM INCINERATED SLUDGES

George L. Zarur, Springfield, Va., assignor to World Resources Company, McLean, Va.

Filed Sep. 9, 1980, Ser. No. 185,465

Int. Cl.³ C22B *15/00*

U.S. Cl. 75—97 R **5 Claims**

1. A process for improving the yield of metal values recovered from dewatered organic sludge by the addition of selected additives to the sludge prior to incineration, wherein the sludge has as a principal ingredient organic matter complexed with certain metal values and has inorganic matter including silica, alumina, lime and other uncombined metal values, and wherein the organic content of the dewatered sludge is then degraded by incineration to produce an ash comprising residual solids including metal values entrained in soluble refractory materials so that the metal values are accessible for recovery by hydrometallurgical extraction, the process comprising:

(a) mixing additives with the dewatered sludge to form a

mixture of the sludge with said additives prior to incineration, said additives being alkali metal salts selected from the soluble salts of sodium and potassium including chlorides, carbonates, bicarbonates, oxides, hydroxides, nitrates and sulfates, and the additives being added in sufficient quantity to provide an excess of alkali metal atoms beyond the proportion thereof required to convert the silica to acid leachable silicates:

(b) incinerating said mixture of dewatered sludge and additives to drive off the organic matter and produce an ash including said silicates in soluble forms;

(c) acid leaching the ash to produce liquid and solid components respectively containing different metal values; and

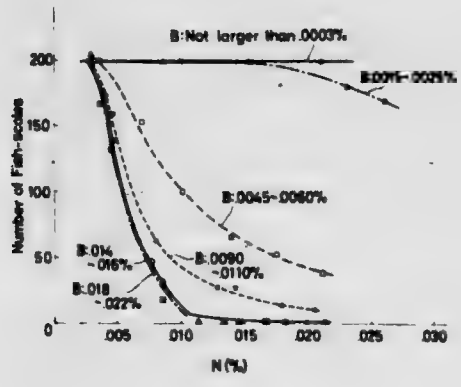
(d) recovering selected metal values from said components.

4,348,229

ENAMELLING STEEL SHEET

Kenichiro Suemmune and Masami Osawa, both of Kitakyusyu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Aug. 22, 1980, Ser. No. 180,486
Int. Cl.³ C22C *38/06*
U.S. Cl. 75—124 8 Claims



1. An enamelling steel sheet consisting essentially of not larger than 0.10% carbon, 0.023 to 0.10% aluminum, 0.004 to 0.020% boron, 0.0089 to 0.020% nitrogen, the balance being iron and unavoidable impurities wherein combined boron and nitrogen effectively resist fish-scales.

3. An enamelling steel sheet consisting essentially of not larger than 0.10% carbon, 0.023 to 0.10% aluminum, 0.004 to 0.020% boron, 0.0089 to 0.020% nitrogen, and one or more of 0.1 to 2.0% silicon, 0.50 to 2.0% manganese, 0.1 to 2.0% chromium and 0.05 to 0.15% phosphorus, the balance being iron and unavoidable impurities wherein combined boron and nitrogen effectively resist fish-scales.

7. An enamelling steel sheet consisting essentially of 0.003 to 0.052% carbon, 0.023 to 0.062% aluminum, 0.008 to 0.0171% boron, 0.0089 to 0.0160% nitrogen, 0.03 to 0.51% silicon, 0.16 to 1.30% manganese, 0.01 to 0.36% chromium, 0.020 to 0.10% phosphorus, the balance being iron and unavoidable impurities.

4,348,230

BRIQUETTES OF SILICON AND FERROSILICON DUST

Pierre C. Aitcin; Philippe Pinsonneault, and Roland Fortin, all of Sherbrooke, Canada, assignors to Universite de Sherbrooke, Sherbrooke, Canada

Filed Feb. 3, 1981, Ser. No. 231,476
Int. Cl.³ C21C *7/00*
U.S. Cl. 75—129 8 Claims

1. A compacted unit of metallurgical grade granular material selected from silicon and ferrosilicon comprising a compressed homogeneous mixture of (1) a fine powder of a silicon material selected from the group consisting of silicon and ferrosilicon, said silicon material being finer than 160 μm, (2) from 2 to about 5% based on the weight of the silicon material of sodium or calcium bentonite and (3) from 2 to about 5% based on the weight of the silicon material of sodium or calcium lignosulfonate.

4,348,231

METHOD OF RECOVERING METAL CARBIDES

Joseph E. Ritako; Martin B. MacInnis, and Thomas L. Henson, all of Towanda, Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Apr. 17, 1980, Ser. No. 141,017
Int. Cl.³ C22C *29/00*
U.S. Cl. 75—203 8 Claims

1. A process for recovering selected portions of metal carbide from scrap material containing pieces of cemented metal carbide, said pieces having various compositions of metal carbide distributed in a matrix material, said process comprising treating the scrap material with a suitable liquid for a sufficient period of time to dissolve the matrix material into the liquid to form pieces of matrix depleted metal carbide, separating the liquids containing dissolved matrix material from the pieces of matrix depleted metal carbide, feeding the pieces of matrix depleted metal carbide into a ferrofluid material, passing a magnetic field through said fluid for positioning the pieces of matrix depleted metal carbide of the type having a heavier density spaced from the pieces of matrix depleted metal carbide of the type having a lighter density, collecting portions of pieces of matrix depleted metal carbide having a heavier density separate from the portion of pieces of matrix depleted metal carbide having a lighter density.

5. A process for preparing a hard refractory cemented metal carbide body from a scrap material containing pieces of cemented metal carbide, said pieces having various compositions of metal carbide distributed in a matrix material, said process comprising treating the scrap material with a suitable liquid for a sufficient period of time to dissolve the matrix material into the liquid to form pieces of matrix depleted metal carbide, separating the liquid containing dissolved matrix material from the pieces of matrix depleted metal carbide, feeding the pieces of matrix depleted metal carbide into a ferrofluid material, passing a magnetic field through said fluid for positioning the pieces of matrix depleted metal carbide particles of the type having a heavier density spaced from the pieces of matrix depleted metal carbide of the type having a lighter density, collecting portions of pieces of matrix depleted metal carbide having a heavier density separate from a portion of pieces of matrix depleted metal carbide having a lighter density, comminuting at least one of said portions of metal carbide to form a metal carbide powder, mixing said metal carbide powder with a binder metal to form a resulting powder, and compressing and sintering said resulting powder to form a hard cemented metal carbide body.

4,348,232

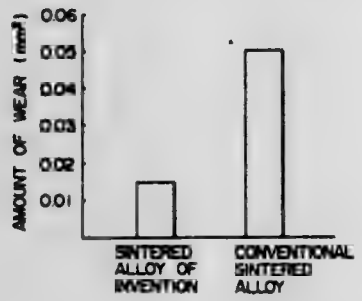
ABRASION RESISTANT FERRO-BASED SINTERED ALLOY

Takeshi Hiraoka, Ageo; Shigeru Urano, Omiya; Masajiro Takeshita, Yono, and Keiji Nakamura, Funabashi, all of Japan, assignors to Nippon Piston Ring Co., Ltd., Tokyo, Japan

Filed May 7, 1980, Ser. No. 147,452
Claims priority, application Japan, May 7, 1979, 54-54746
Int. Cl.³ B22F *3/12*
U.S. Cl. 75—238 2 Claims

1. An abrasion resistant ferro-based sintered alloy comprising 0.8 to 1.5% by weight of carbon, 0.5 to 2.5% by weight of chromium, 2.0 to 6.0% by weight of molybdenum, 1.5 to 5.0% by weight of nickel, 0.1 to 2.0% by weight of tungsten, 0.2 to 5.0% by weight of copper and the balance iron wherein said alloy contains molybdenum particles around which nickel is

distributed and which are uniformly dispersed in the base structure comprising a mixture of pearlite, bainite and martens-



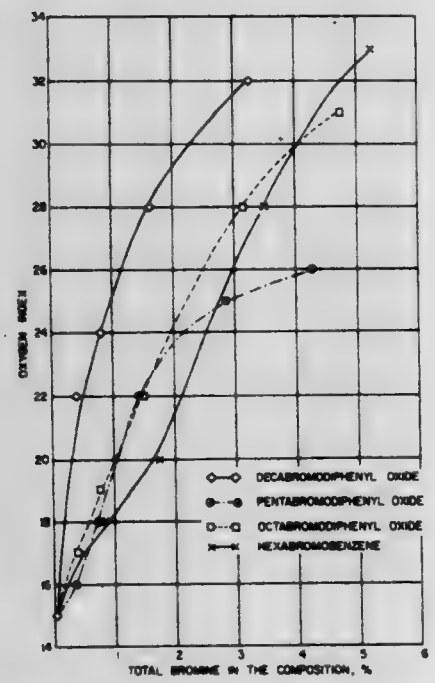
ite and said alloy contains composite carbide of Fe-Cr-W-C dispersed in the base structure.

4,348,233

PLASTICIZED SULFUR COMPOSITION

Milutin Simic, Novato, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Apr. 17, 1981, Ser. No. 255,084
Int. Cl.³ C09D *5/18*; C09K *3/28*
U.S. Cl. 106—18.23 **9 Claims**



1. A plasticized sulfur composition comprising at least 50% by weight sulfur, from about 0.05% to about 25% by weight sulfur plasticizer, from about 1.0% to about 40% by weight inorganic filler, and from about 0.1% to about 10% by weight decabromodiphenyl oxide.

4,348,234

COATING COMPOSITIONS FOR THE PRODUCTION OF A RECORDING MATERIAL

Manuel Cespon, Vienna, Austria, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Mar. 14, 1980, Ser. No. 130,304
Claims priority, application Austria, Mar. 20, 1979, 2073/79
Int. Cl.³ C09D *11/00*
U.S. Cl. 106—21 **12 Claims**

1. A coating composition for the production of a pressure-sensitive recording material based on a color former composition and a color developer composition, said color developer composition containing, a color developer consisting essentially of a mixture of at least two water-soluble inorganic metal salts, including at least one nitrate with a molecular weight of 150 to 350 and at least one halide with a molecular weight of 120 to 280.

4,348,235

STOP-LEAK COMPOSITION FOR AUTOMOBILE COOLING SYSTEMS AND THE LIKE

Tull C. Lasswell, and John L. Monier, both of Oxford, Mich., assignors to Tri-X Corporation, Oxford, Mich.

Filed Jun. 27, 1980, Ser. No. 163,818
Int. Cl.³ C09K *3/12*
U.S. Cl. 106—33 **6 Claims**

1. A stop-leak composition for the cooling system of an internal combustion engine and the like consisting essentially of ginger rhizome flour, ground nut shells, boric acid powder, sodium lignin sulfonate powder and magnesium stearate.

4,348,236

COMPOSITION FOR CASTABLE REFRACTORY BLOCK

James E. Hines, Jr., Monroeville, Pa., and Richard G. LaBar, deceased, late of Murrysville, Pa. (by Judith LePage LaBar, executor), assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Sep. 9, 1980, Ser. No. 185,480
Int. Cl.³ B28B *7/36*
U.S. Cl. 106—38.27 **24 Claims**

1. A particulate refractory mixture suitable for combination with water to form a castable refractory having high strength, low porosity and enhanced resistance to molten aluminum, consisting essentially of:

79.5–89.5% by weight alumina;

10–20% by weight calcium aluminate; and

0.5–1.5% by weight borosilicate frit.

4,348,237

ADDITIVE COMPOSITION AND METHOD OF USING SAME

P. Jay Ruckel, Ponca City, Okla., assignor to Conoco Inc., Ponca City, Okla.

Filed Jun. 20, 1980, Ser. No. 161,714
Int. Cl.³ C08L *91/00, 95/00*
U.S. Cl. 106—122 **3 Claims**

1. In a method of generating foamed asphalt wherein heated liquid asphalt is contacted with liquid water and subsequently expanded through a nozzle to generate a foamed asphalt, the improvement wherein an effective amount of a liquid additive comprising at least 20 percent by weight metal stearate dispersed in a hydrocarbon carrier oil having a poor point of not more than 0° C., an initial boiling point of at least 200° C. and a flash point of at least 150° C. is added to said asphalt prior to generation of said foam, said metal stearate being present in an amount less than the amount which would render the additive non-liquid at ambient temperatures.

4,348,238

MANUFACTURE OF CELLULOSE ESTER FILM

Harry J. Krall, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 26, 1980, Ser. No. 163,249
Int. Cl.³ C08B *1/00*
U.S. Cl. 106—177 **15 Claims**

1. In a method for the manufacture of a cellulose ester film in which a film-forming composition comprising a cellulose ester disolved in a solvent is cast upon a smooth surface, said solvent is partially evaporated, and said composition is stripped from said surface in the form of a film, the improvement comprising incorporating in said composition a polyethoxylated phosphate ester in an amount sufficient to promote stripping of said film.

4,348,239

PROCESS FOR COLORING ORGANIC MATERIAL OF HIGH MOLECULAR WEIGHT

Arnold Wick, Therwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

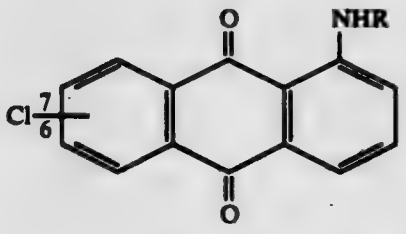
Continuation of Ser. No. 968,318, Dec. 11, 1978, abandoned. This application Jul. 31, 1980, Ser. No. 174,309

Claims priority, application Switzerland, Dec. 29, 1977, 15572/77

Int. Cl.³ C08K 3/04

U.S. Cl. 106—193 D 2 Claims

1. A process for the mass coloration of organic materials of high molecular weight which comprises incorporating into said material a mixture of anthraquinone compounds of the formula:



(1)

wherein R represents unsubstituted 1-anthraquinone.

4,348,240

PROCESS FOR DEACTIVATING SOLUBLE METAL CATIONS IN IRON OXIDE PIGMENTS

Arvind S. Patil, Wyoming, Mich.; Siegfried P. Kersten, Frankenthal, Fed. Rep. of Germany, and Werner P. Fliege, Grosse Ile, Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Dec. 22, 1980, Ser. No. 218,863

Int. Cl.³ C04B 31/02; C09C 1/24

U.S. Cl. 106—304 8 Claims

1. A process for deactivating soluble metal cations contained in synthetic iron oxide pigments having a yellow shade which are prepared under acidic conditions comprising

A. adding, while oxidizing, an alkalizing compound to iron oxide pigment slurry until the pH of the pigment slurry is greater than 9; and

B. separating the iron oxide pigment from the liquid phase of the slurry.

7. An iron oxide pigment devoid of active soluble metal cations prepared in accordance with the process of claim 1.

4,348,241

HEAT-TREATMENT OF SEMIFINISHED PRODUCT-SLIDING SURFACE OF SHAPING MEMBERS IN PLASTIC METAL-WORKING APPARATUS

Saburo Kunioka, Kawagoe; Hatsuo Kawaguchi, Ogawa, and Minoru Ono, Hidaka, all of Japan, assignors to Shinhokoku Steel Corporation, Kawagoe, Japan

Filed Feb. 12, 1981, Ser. No. 233,859

Int. Cl.³ C23F 7/04

U.S. Cl. 148—6.35 12 Claims

1. A method of heat-treating the sliding surface of a shaping ferrous metal member used in a metal-working apparatus which in service is abrasively contacted with a sliding semifinished ferrous metal product to provide a coated sliding surface which has superior abrasion resistance, said method comprising the steps of:

placing the shaping metal member in a furnace using a gaseous fuel;

incompletely burning the fuel to provide an atmosphere composed of 1 to 4% of CO, 8 to 12% of CO_2, 0 to 0.5% of O_2, 16 to 18% of H_2O, and N_2 and other inert gases jointly constituting the remainder by means of controlling the amount of secondary air introduced into the furnace;

heating the shaping metal member in said atmosphere at a temperature of from 900° to 1,200° C. for 3 to 5 hours; and annealing or quenching the heat-treated metal member.

4,348,242

ALUMINUM POWDER BLASTING SLURRY SENSITIZER

John H. O'Dette, and Stanton E. Jack, both of Kingston, Canada, assignors to Alcan Research and Development Limited, Montreal, Canada

Filed Nov. 27, 1979, Ser. No. 97,885

Claims priority, application United Kingdom, Nov. 29, 1978, 46516/78

Int. Cl.³ C06B 45/34

U.S. Cl. 149—7 10 Claims

1. A process for preparing a water dispersable aluminum powder composition which comprises comminuting a particulate aluminum feed in a hydrocarbon medium and in the presence of from 0.5% to 1.5% by weight, based on the weight of the aluminum present, of a polyvinylpyrrolidone resin powder, until a desired aluminum particle size is reached, and thereafter removing the majority of the hydrocarbon medium to provide an aluminum paste composition containing 15% to 30% by weight of hydrocarbon medium.

4,348,243

THERMAL INSULATION, A PROCESS FOR PREPARING SAID INSULATION AND A PIPE INSULATED THEREWITH

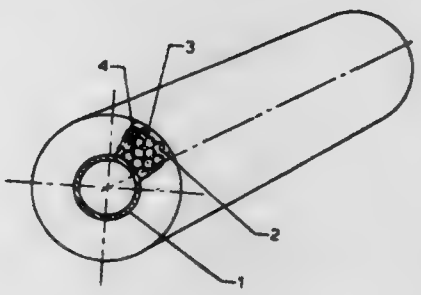
Ingo Craubner, Munich, Fed. Rep. of Germany, assignor to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 949,587, Oct. 10, 1978, abandoned. This application Feb. 12, 1980, Ser. No. 120,791

Claims priority, application Fed. Rep. of Germany, Oct. 24, 1977, 2747579

Int. Cl.³ E04B 2/00; E04F 13/00

U.S. Cl. 156—71 1 Claim



1. A process for preparing a thermally insulated article which consists essentially of completely filling a space between the article to be insulated and a jacket which has been positioned concentrically around the article with a plurality of hollow structures, each in contact with adjacent hollow structures, maintaining the hollow structures in their original position while adding an organopolysiloxane composition capable of being cured to an elastomeric solid to said space to fill the interstices between the adjacent hollow structures, and thereafter curing the organopolysiloxane composition to an elastomer.

4,348,244

LUBRICATING COMPOSITIONS FOR PRIMARY BACKING FABRICS USED IN THE MANUFACTURE OF TUFTED TEXTILE ARTICLES

John D. Shepley, and Herman M. Muijs, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Division of Ser. No. 48,289, Jun. 13, 1979, Pat. No. 4,288,331. This application May 4, 1981, Ser. No. 260,139

Claims priority, application United Kingdom, Oct. 20, 1978, 41466/78

Int. Cl.³ D06M *13/18;* B32B *5/00*

U.S. Cl. 156—72 4 Claims

1. In the process for the manufacture of tufted textile articles by inserting yarn into a primary backing fabric by means of needles, the improvement which comprises coating said primary backing fabric with a lubricating composition prior to needle insertion of yarn into the primary backing fabric, where said lubricating composition comprising a major amount of a polyalkoxylate lubricating oil and 0.001 to 10% by weight, based on the polyalkoxylate lubricating oil, of a saturated or unsaturated aliphatic carboxylic acid of from 10 to 20 carbon atoms.

4,348,245

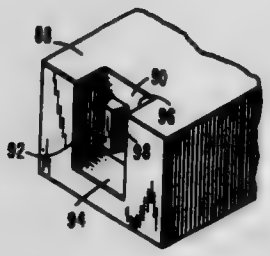
METHOD AND APPARATUS FOR ULTRASONIC BONDING OF COUPLING ELEMENTS TO A TAPE

Norman W. MacFee, R.D. #1, Conneaut Lake, Pa. 16316

Division of Ser. No. 932,891, Aug. 10, 1978, Pat. No. 4,259,272, which is a division of Ser. No. 809,842, Jun. 24, 1977, Pat. No. 4,115,489. This application Mar. 12, 1980, Ser. No. 129,815

Int. Cl.³ B29C *27/08;* B29D *5/00*

U.S. Cl. 156—73.1 3 Claims



1. A method of attaching a coupling element to an edge of a tape comprising the steps of

placing a pair of legs of the coupling element on opposite sides of the tape,

surrounding the legs on three sides with walls of respective members defining cavities for receiving the legs, and

applying ultrasonic energy through energizer means projecting into at least one of the pair of legs to fuse the legs to the edge of the tape and prevent flash and distortion of the legs,

said applying step including projecting the energizer means into a central outer portion of the at least one leg spaced from the walls and only to a depth substantially less than the depth of the walls.

3. An ultrasonic horn tip for bonding legs of coupling elements to a tape comprising

a member having a front face with a cavity formed in the upper portion thereof defining three walls surrounding the cavity with the top side of the cavity being open for receiving a leg of a coupling element on an edge of the tape, and said member further having an energizing projection positioned centrally within the cavity spaced from the three walls and projecting into the central portion of the cavity to a depth less than the depth of the three walls to direct energy to the leg of the coupling element.

4,348,246

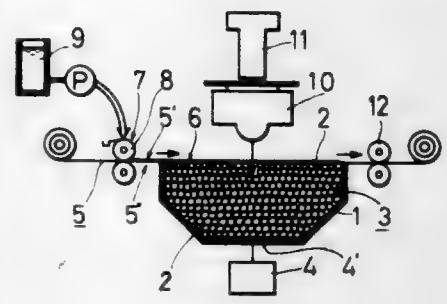
METHOD OF PRINTING

Motoyasu Nakanishi, Shimizu, Japan, assignor to Suzuki Sogyo Kabushiki Kaisha and Kabushiki Kaisha Cubic Engineering, both of Shizuokaken, Japan

Filed Jan. 6, 1981, Ser. No. 222,882

Int. Cl.³ B29C *3/00;* B32B *31/04, 31/20*

U.S. Cl. 156—73.1 16 Claims



1. A method of printing which comprises:

positioning a transcription film, made of an extendible film on which a transcription pattern is preprinted to form a transcription surface, on an accumulated granule layer consisting of a plurality of granules, said transcription film being positioned on said accumulated granule layer so that the surface of said transcription film opposite said transcription surface contacts said accumulated granule layer,

contacting a material to be printed against said transcription surface of said transcription film,

impressing said material to be printed in contact with said transcription film into said accumulated granule layer,

vibrating at least one of said accumulated granule layer and said material to be printed while said material to be printed is impressed into said accumulated granule layer, and

transcribing said transcription pattern onto said material to be printed by conducting the internal pressure of said accumulated granule layer to the transcription film.

4,348,247

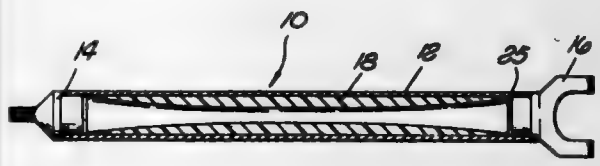
METHOD OF FABRICATING A REINFORCED TUBULAR STRUCTURE

Morris S. Loyd, Northridge, and Timothy W. McGann, Anaheim, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Division of Ser. No. 16,454, Feb. 26, 1979, Pat. No. 4,272,971. This application Feb. 27, 1981, Ser. No. 238,733

Int. Cl.³ B29C *27/16*

U.S. Cl. 156—156 12 Claims



1. A method of forming a reinforced tubular structure comprising:

forming a laminate of a plurality of plies of fibrous material in an uncured resin matrix, the laminate having two opposed principal surfaces, the shape of the principal surfaces being substantially trapezoidal;

wrapping the laminate around a flexible mandrel such that the laminate is formed into a variable thickness tube tapering from the middle to the ends thereof;

inserting the flexible mandrel into a metal tube, the metal tube having inner and outer peripheral surfaces; and

co-curing the laminate to the inner peripheral surface of the metal tube such that the laminate is bonded to the inner peripheral surface of the metal tube across a plurality of

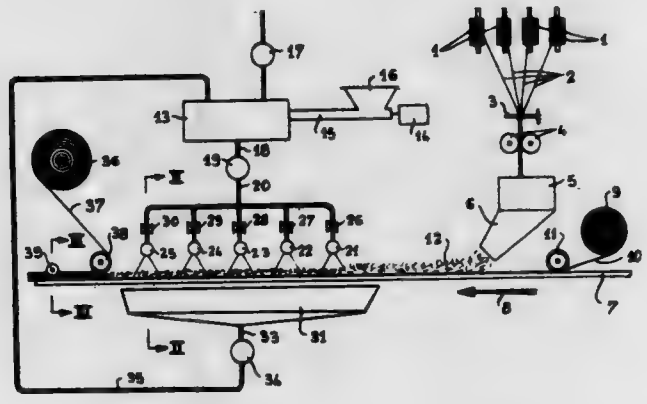
windings of the laminate, said flexible mandrel being expanded during said co-curing such that the laminate is compressed between the flexible mandrel and the inner peripheral surface of the metal tube.

4,348,248

PREPARATION OF DE-GASSED COMPLEX PRODUCTS FORMED OF FIBRES IMPREGNATED WITH A PLASTIC MATERIAL

Pierre Poncet, 12bis Rue Trarieux, 69003 Lyons, France

Filed Sep. 29, 1980, Ser. No. 192,162
Claims priority, application France, Oct. 2, 1979, 79 25022
Int. Cl.³ B32B *31/00*
U.S. Cl. 156—276 **3 Claims**



1. In a method for preparation of a de-gassed complex product formed of fibers impregnated with a plastic material, made by creating an endless flat web and conveying it substantially horizontally while passing said web continuously below successive nozzle locations and pouring onto said web said plastic material in liquid state, and collecting and recycling the excess of said plastic material to said nozzle locations, the improvement which comprises:

dividing said nozzle locations into first and second nozzle groups, with said first group being disposed upstream of said second group relative to the movement of said web;

feeding the first group with an auxiliary liquid which is selected to absorb gases from the web and which has been previously fully de-gassed under vacuum, the web being penetrated and progressively washed by the auxiliary liquid to remove gases therefrom, and such auxiliary liquid as is retained by the web being compatible with and dissolved by the plastic material with which said web is to be impregnated;

collecting the excess of said auxiliary liquid which overflows laterally from said web;

fully de-gassing under vacuum said excess of said auxiliary liquid and then recycling it to the first nozzle group;

feeding the second nozzle group with a different liquid material with which said web is to be impregnated and which comprises a plastic material which has previously been fully de-gassed under vacuum;

collecting separately the excess of said plastic material which flows laterally from said web;

and fully de-gassing said collected excess of plastic material and then recycling it to the second nozzle group.

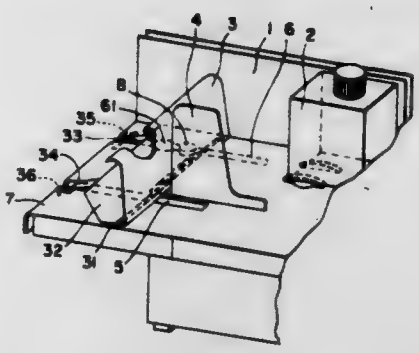
4,348,249

WELL SIDES IN LETTER FEEDING AND LETTER SEALING MACHINES

Horst Denzin, Berlin, Fed. Rep. of Germany, assignor to Francotyp GmbH, Berlin, Fed. Rep. of Germany

Filed Nov. 19, 1980, Ser. No. 208,492
Claims priority, application Fed. Rep. of Germany, Nov. 30, 1979, 7934228[U]
Int. Cl.³ B29H *9/00*
U.S. Cl. 156—442.2 **2 Claims**

1. Movable, hinged and removable well sides for letter feeding and letter sealing machines, comprising a table having first guide slots formed therein, an angular well side having a leg with two ends and a second guide slot formed in vicinity of an end of said leg, a stop forming another well side and being guidable at least partially in said second slot at a right angle to said leg, two angled-off webs being integral with an end of said leg opposite said second guide slot, projections being integral with said webs and guidable in said first guide slots, and a



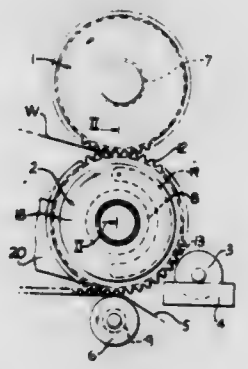
screw element being attached to said leg and having a pin and a washer for guiding and locking said angular well side and said stop on said table, said table having a hole formed therein along one of said first guide slots through which said washer is liftable for folding down said angular well side and said stop and through which said web is liftable for removing said angular well side and said stop.

4,348,250

SINGLE FACER FOR MAKING SINGLE FACED CORRUGATED MATERIAL

Harold Bromley, Bristol, England, assignor to Masson Scott Thrissell Engineering, Bristol, England

Filed Feb. 13, 1981, Ser. No. 234,151
Claims priority, application United Kingdom, Feb. 20, 1980, 8005708; Feb. 20, 1980, 8005723
Int. Cl.³ B29D *7/14*
U.S. Cl. 156—473 **9 Claims**



1. A single facer for making single faced corrugated material such as board, comprising a first corrugating roll having axially-extending corrugations, a second corrugating roll meshing with the first corrugating roll, means for feeding the material to be corrugated into the nip between the two rolls, means for applying adhesive to the tips of the corrugations produced in the material, means for feeding flat liner material on to the adhesive coated tips of the corrugated material, and means for pressing the liner on to the tips, wherein the second corrugating roll has axially-extending passageways, means for applying suction to at least one end of each of the passageways, and apertures extending substantially radially outwards from said passageways to apply suction from the passageways to the inside surface of the material being corrugated to hold the material into corrugations of the second roll, the second corrugating roll comprising an inner core and an outer sleeve means having on its outer surface the axially-extending corrugations and formed as a number of axially-abutted rings, the outer surface of the core being engaged with the inner surface of the

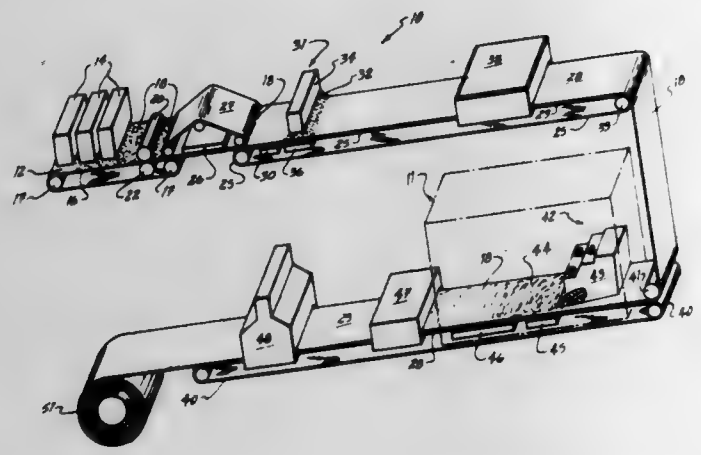
sleeve means, said passageways being provided in one of the engaging surfaces of the core and the sleeve means.

4,348,251

SYSTEM FOR APPLYING BINDING AGENTS TO FIBROUS WEBS

Walter L. Pauls, Appleton, and Raymond A. Dunleavy, III, Neenah, both of Wis., assignors to American Can Company, Greenwich, Conn.

Filed Dec. 19, 1980, Ser. No. 218,251
Int. Cl.³ B29D *27/00*; B29J *5/00*
U.S. Cl. 156—500 5 Claims



1. An apparatus for applying binding agent as a foam to a fibrous web supported by a moving foraminous carrier wire, comprising:

a foam extruder having means defining a flow passage terminating in an elongate orifice extending transversely of the direction of movement of said wire, said flow passage being inclined between about 2° and about 25° to the plane of said web in a direction opposite to the direction of wire movement,

said elongate orifice including a pair of longer edges positioned at substantially the same distance of from about ¼ and about 3 inches above said web, and spaced one from the other, in the direction of wire movement, a distance of from about 1/16 inch to about ½ inch,

and a first vacuum means disposed beneath said wire, and, as respects the direction of wire movement, at a point just downstream of said elongate orifice, said first vacuum means being operative to draw a vacuum of from about 0.1 inch to about 1.0 inch of water.

4,348,252

DEVICE FOR THE INSERTION AND EXTRACTION OF A LAMINATING PACK IN AND FROM A PRESS

Heinrich Knoop, Allgau, and Heinrich Pfeiffer, Eppingen, both of Fed. Rep. of Germany, assignors to Maschinenfabrik J. Dieffenbacher GmbH & Co., Eppingen, Fed. Rep. of Germany

Filed Apr. 10, 1981, Ser. No. 253,017
Claims priority, application Fed. Rep. of Germany, Jan. 12, 1980, 3000967
Int. Cl.³ B30B *15/30, 15/32*
U.S. Cl. 156—538 17 Claims

1. A device for inserting a workpiece in the form of a laminating pack to be processed into a press in a charging direction and for extracting the workpiece which has become a processed laminate from the press in a discharging direction, the press having a plurality of sides, the device comprising:

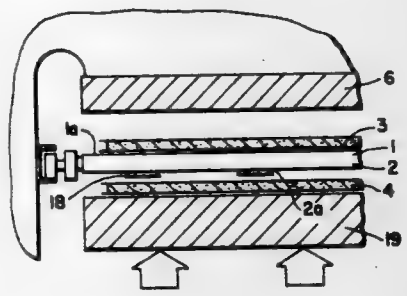
means for charging the press by depositing a laminating pack therein, said charging means including a table for receiving, holding and discharging the laminating pack;

means for discharging the press by taking up a processed laminate from the press, said discharging means including a suction means for gripping the processed laminate by suction; said charging and discharging means being operatively coupled together for cooperation with each other;

a plurality of holding gibs which cooperate with said charging means for holding laminating packs deposited in the press by the charging means;

means for inserting a laminating pack into one side of the press and for extracting a processed laminate from the same side of the press and

means for effecting simultaneous deposit of said laminating pack onto said holding gibs and take up of the processed laminate by said suction means;



said inserting and extracting means and said means for effecting simultaneous deposit and take up together comprising:

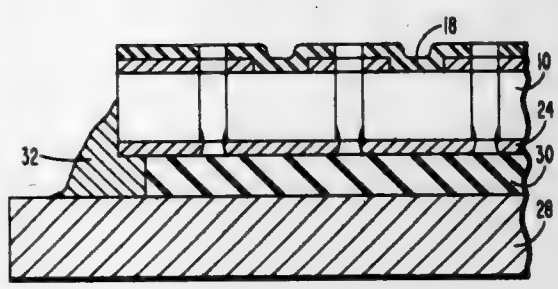
a transfer car which is movable into and out of the press, said transfer car having an upper part and a lower part, said table of said charging means being disposed on said upper part of said transfer car, said suction device of said discharging means being located on said lower part of said transfer car, so that said charging and discharging devices are located one above the other in said transfer car, said charging device, discharging device and transfer car all being part of a single unit which is movable into and out of the press.

4,348,253

METHOD FOR FABRICATING VIA HOLES IN A SEMICONDUCTOR WAFER

Saligrama N. Subbarao, Plainsboro, and Ho-Chung Huang, Princeton Junction, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Nov. 12, 1981, Ser. No. 320,430
Int. Cl.³ C23F *1/00*
U.S. Cl. 156—643 7 Claims



1. A method for fabricating a conductive via hole in a semiconductor wafer, comprising:

forming a layer of apertured photoresist on a first wafer surface;

laser drilling a via hole through said wafer, at a site corresponding to said photoresist aperture;

metallizing a second wafer surface opposing the first surface;

placing the second wafer surface on an adhesive layer on a plating block;

electrically connecting the second surface metallization to the plating block;

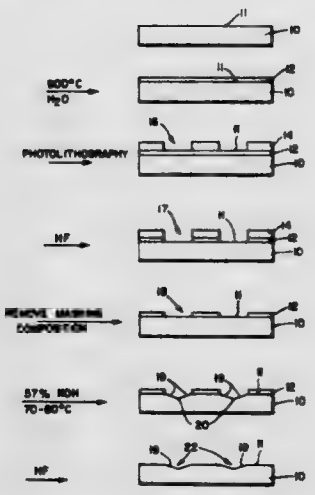
electroplating through the via hole; and

separating the wafer from the plating block and adhesive layer.

4,348,254
METHOD OF MAKING SOLAR CELL

Joseph Lindmayer, Bethesda, Md., assignor to Solarex Corporation, Rockville, Md.

Continuation of Ser. No. 973,760, Dec. 27, 1978, abandoned, which is a division of Ser. No. 860,892, Dec. 15, 1977, abandoned. This application Jun. 13, 1980, Ser. No. 159,445
Int. Cl.³ H01L *21/306*
U.S. Cl. 156—647 9 Claims

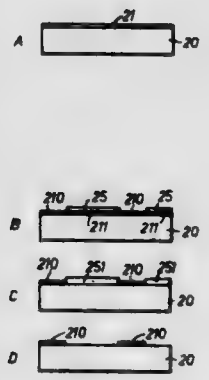


1. A method of making a silicon solar cell having at least one major surface adapted to receive light impinging thereon and absorb and convert such light into electrical energy, comprising providing a silicon wafer having at least one major surface thereof subject to attack by a silicon etchant, masking said surface with a layer resistant to attack by said silicon etchant, said masking layer being formed with open regions therein that expose substantially symmetrical portions of said surface of said silicon wafer, etching said exposed portions of said surface through said open regions of said masking layer with said silicon etchant to produce indentations in said surface, said indentations being in the form of inverted pyramids the apices of which are located inwardly of and the bases of which lie substantially in the plane of said surface, and thereafter forming an electrical junction at said surface, said junction extending along said surface and inwardly thereof into said indentations.

4,348,255
PROCESS FOR THE PREPARATION OF AN OPTICALLY TRANSPARENT AND ELECTRICALLY CONDUCTIVE FILM PATTERN

Walter Schmidt, Zurich, Switzerland, assignor to BBC Brown, Boveri & Company, Ltd., Baden, Switzerland

Filed Jul. 3, 1980, Ser. No. 165,714
Claims priority, application Switzerland, Jul. 4, 1979, 6229/79
Int. Cl.³ C23F *1/02*; B44C *1/22*
U.S. Cl. 156—656 10 Claims



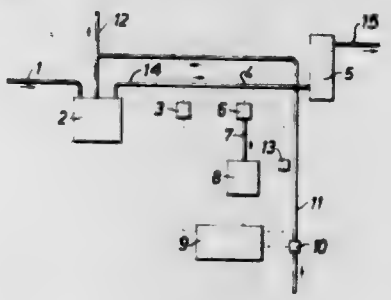
1. A process for producing a patterned, optically transparent electrically conducting film on a substrate comprising:

(a) providing a substrate coated with a continuous layer of an optically transparent electrically conductive material;
(b) depositing by screen printing on selected areas of said layer an etchant composition comprising an acid etchant for said optically transparent electrically conductive material and a carrier therefor, said etchant being capable of reacting with said optically transparent electrically conductive material to form soluble reaction products;
(c) allowing said etchant composition to contact said optically transparent electrically conductive material until said material has reacted with said etchant in said selected areas;
(d) removing from said substrate the etchant composition and the products of reaction between said etchant and said optically transparent electrically conductive material.

4,348,256
PROCESS FOR CONTROLLING THE SUPPLY OF DELIGNIFYING AND/OR BLEACHING CHEMICALS IN THE CONTINUOUS DELIGNIFICATION OF LIGNOCELLULOSIC MATERIAL

John R. Bergstrom, Domsjo, and Sten L. Haggstrom, Overnornas, both of Sweden, assignors to Mo och Domsjo Aktiebolag, Ornskoldsvik, Sweden

Filed May 5, 1978, Ser. No. 903,267
Claims priority, application Sweden, May 11, 1977, 7705513
Int. Cl.³ D21C *9/10*; G06F *15/46*
U.S. Cl. 162—49 43 Claims



1. A continuous flow process for the delignification of lignocellulosic material, in which there is a throughput of lignocellulosic material through a delignification stage, with addition of delignifying chemicals at at least one location to the delignification, which comprises adding delignifying chemicals to the system in an amount so adjusted according to the ratio for the quantity of delignifying chemicals consumed and the quantity of the delignification chemicals originally charged that the relative consumption of delignifying chemicals is maintained substantially constant.

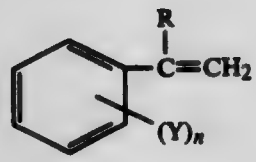
4,348,257
ORGANIC PIGMENTS

William W. Maslanka, London-Britain Township, Chester County, Pa., and Gavin G. Spence, New Castle County, Del., assignors to Hercules Incorporated, Wilmington, Del.

Division of Ser. No. 909,606, May 25, 1978, Pat. No. 4,235,982, which is a continuation-in-part of Ser. No. 803,330, Jun. 3, 1977, abandoned. This application Jun. 23, 1980, Ser. No. 161,805
The portion of the term of this patent subsequent to Aug. 4, 1998, has been disclaimed.
Int. Cl.³ D21H *3/82*
U.S. Cl. 162—162 21 Claims

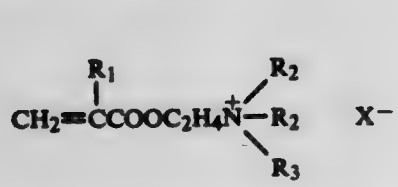
1. In the method of manufacturing paper wherein an opacifying agent is used to provide opacity in the final paper product, either by means of a coating or by means of internal addition to the paper pulp, the improvement wherein there is employed as at least a portion of the opacifying agent water-insoluble graft copolymer particles consisting essentially of the free radical catalyzed graft copolymerization product of (1) at least one ethylenically unsaturated monomer (a) and at least one polyethylenically unsaturated monomer (b) in an amount

at least sufficient to provide crosslinked graft copolymer particles and (2) a water-soluble cationic prepolymer having an RSV of about 0.1 to about 2.5 (1 M NaCl, 1%, 25° C.), the prepolymer moiety of the graft copolymer particles being present on the surface of the particles, said monomer (a) being selected from the group consisting of methyl alpha-chloroacrylate, ethyl alphachloroacrylate, methyl methacrylate, isopropyl methacrylate, phenyl methacrylate, vinyl chloride, acrylonitrile, methacrylonitrile, and monomers having the formula



wherein R is hydrogen or methyl, Y is methyl or chlorine, and n is 0, 1, 2, or 3, said monomer (b) being selected from the group consisting of divinylbenzene; diallyl phthalate; ethylene glycol dimethacrylate; 1,3-butylene glycol dimethacrylate; 1,6-hexanediol dimethacrylate; polyethylene glycol dimethacrylate; polypropylene glycol dimethacrylate trivinylbenzene; divinylnaphthalene; diallylmaleate; diallyl fumarate; trimethylol propane trimethacrylate; and pentaerythritol tetraacrylate, and said prepolymer (2) being the addition polymerization product of

(i) about 5 mole percent to 100 mole percent of at least one cationic monomer selected from the group consisting of



(I)

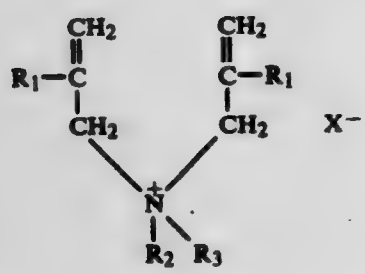
wherein R_1 is hydrogen or methyl, R_2 is hydrogen or a C_1–C_4 alkyl, R_3 is hydrogen, a C_1–C_4 alkyl,



where Y is hydroxyl or halogen,

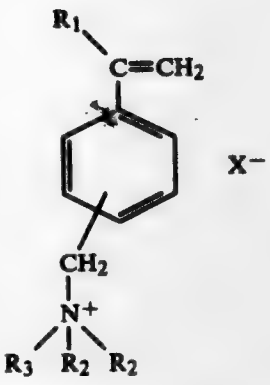


and $-(CH_2CH_2O)_nH$ where n is an integer 1 or more and X^- is an anion,



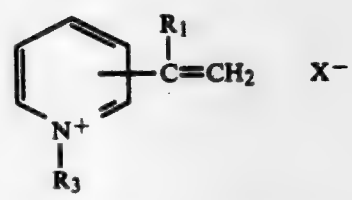
(II)

wherein R_1 is hydrogen or a C_1–C_4 alkyl, R_2 is hydrogen, alkyl or substituted alkyl, and R_3 and X^- are as defined in formula (I),



(III)

wherein R_1, R_2, R_3 and X^- are as defined in formula (I),



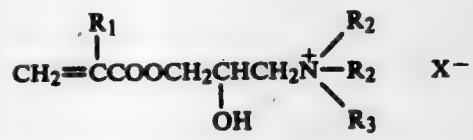
(IV)

wherein R_1, R_3 and X^- are as defined in formula (I),



(V)

wherein R_1, R_2, R_3 and X^- are as defined in formula (I), and n is an integer 1, 2 or 3 and



(VI)

wherein R_1, R_2, R_3 and X^- are as defined in formula (I), and

(ii) from about 95 mole percent to 0 mole percent of at least one ethylenically unsaturated nonionic monomer selected from the group consisting of N-vinyl pyrrolidone, ethylenically unsaturated monomers having amide functionality, and ethylenically unsaturated monomers having hydroxyl functionality,

the amount of prepolymer (2) employed in preparing the graft copolymer particles being from about 1 part to about 25 parts by weight for each 100 parts by weight of monomer (1) employed.

4,348,258

SPRAY NOZZLE FOR COKE OVEN GAS-COLLECTING SYSTEM

Carl-Heinz Struck, Bochum, and Ralf Schumacher, Hagen, both of Fed. Rep. of Germany, assignors to Dr. C. Otto & Comp. G.m.b.H., Bochum, Fed. Rep. of Germany

Filed Aug. 1, 1980, Ser. No. 174,451

Claims priority, application Fed. Rep. of Germany, Sep. 15, 1979, 2937409

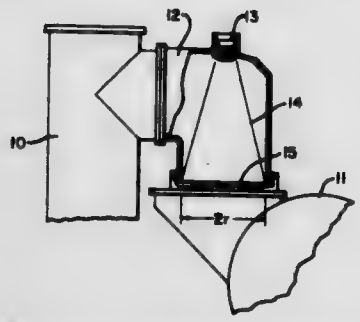
The portion of the term of this patent subsequent to Nov. 10, 1998, has been disclaimed.

Int. Cl.³ C10B *27/04, 27/06, 41/08*

U.S. Cl. 202—255 6 Claims

1. In combination with a coke oven a multi-orificed nozzle adapted to be fitted into the elbow interconnecting the ascension pipe and main of a coke oven, comprising a generally cup-shaped element having a cylindrical side wall and a bottom wall, nozzle orifices in said bottom wall, said orifices being

frusto-conical in configuration and inclined outwardly with respect to the axis of the nozzle, the orifices being wider at their exit ends than at their entrance ends and being disposed in at least one circle around the axis of the nozzle with the ratio



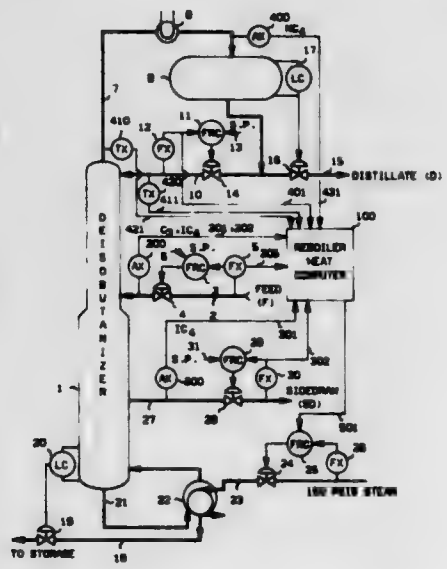
of the circumferential distance between orifices in the circle to the diameter of the exit ends of the orifices being from 1.5 to 2.5, and means for directing steam through the orifices in said nozzle.

4,348,259

CONTROL OF SIDEDRAW ON DISTILLATION COLUMN

Bruce A. Jensen, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 9, 1980, Ser. No. 195,698
Int. Cl.³ B01D *3/42*
U.S. Cl. 203—1 19 Claims



1. In a fractionation distillation process comprising
a. introducing a feed stream into a distillation column,
b. withdrawing a side stream from said distillation column,
c. withdrawing a bottom stream from said distillation column,
d. withdrawing an overhead stream from said distillation column, the improvement comprising
e. controlling the composition of the sidedraw stream or the overhead stream by
aa. automatically establishing a predicting signal representative of the effect of changes in the rate and/or composition of the feed stream on the composition of the stream to be controlled,
bb. automatically determining the deviation of said composition in said stream from a set point,
cc. responsive to the determinations in aa and bb, automatically calculating a control signal,
dd. responsive to said control signal manipulating the heat input to the distillation column.

4,348,260

METHOD FOR INHIBITING POLYMERIZATION OF CONJUGATED DIENES

Hiroshi Hokari, and Iwaki Nishitai, both of Kamakura, Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

Filed Nov. 25, 1980, Ser. No. 210,334
Claims priority, application Japan, Dec. 6, 1979, 54-157384
Int. Cl.³ B01D *3/40*
U.S. Cl. 203—9 2 Claims

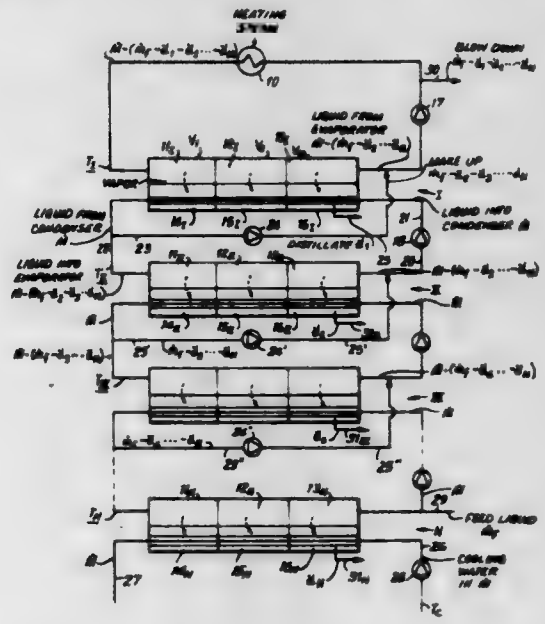
1. In a process for separating a conjugated diene from a hydrocarbon mixture containing the conjugated diene by extractive distillation using dimethyl formamide as an extractive solvent in an amount sufficient to conduct said extractive distillation, a method for inhibiting polymerization of the conjugated diene in the dimethyl formamide at a sufficiently high temperature to otherwise cause polymerization of said conjugated diene, which comprises using furfural and furfural polycondensates as polymerization inhibitors, and controlling the amounts of the polymerization inhibitors such that about 0.01 to about 2% by weight, based on the solvent, of furfural and about 0.5 to about 10% by weight, based on the solvent, of the furfural polycondensates are present in a total amount of about 1 to about 12% by weight, based on the solvent, throughout the entire separating process.

4,348,261

METHOD FOR DISTILLING A LIQUID

Risto Saari, Harjula, 02440 Luoma, Finland

Continuation-in-part of Ser. No. 23,704, Mar. 26, 1979, abandoned. This application Mar. 13, 1981, Ser. No. 243,505
Int. Cl.³ B01D *1/26, 3/02*
U.S. Cl. 203—25 11 Claims



1. A method for distilling liquids in at least two consecutively disposed distillation units which operate at different respective temperature levels, and wherein said units each include at least two consecutive distillation stages, each stage including an evaporator and associated condenser, and evaporator in one stage adapted to operate at a prevailing pressure which is lower than the prevailing pressure in the preceding stage in the direction of flow of distilling liquid through the evaporators thereof, comprising the steps of:
passing distilling liquid through evaporators of the respective stages of a first preceding distillation unit wherein in each of said stages the distilling liquid is evaporated and the vapor formed directed into the associated condenser of the respective stage of said first preceding distillation unit;
passing distilling liquid through evaporators of the respective stages of a second succeeding distillation unit operating at a lower temperature level than said first preceding distillation unit and wherein the prevailing pressure in

each evaporator is lower than the prevailing pressure in the evaporator in the preceding distilling stage so that the distilling liquid is cooled as it passes through the evaporators of the respective stages, said distilling liquid being at least partially evaporated in each of said stages and wherein the vapor formed is directed into the associated condensers of the respective stages of said second succeeding distillation unit for being condensed therein;

conducting the cooled distilling liquid from the last evaporator of the second succeeding unit into the condensers of said first preceding distillation unit which is operating at a higher temperature level than that of the succeeding unit wherein the cooled distilling liquid in the first preceding distillation unit flows in countercurrent relationship to the distilling liquid passing through the evaporators of said first preceding distillation unit with the cooled distilling liquid passing from the condenser in a distillation stage of said first unit to the condenser in the preceding distillation stage thereof wherein the pressure is higher, said cooled distillation liquid being brought into indirect heat exchange with the vapor which has been directed into the condensors of said first preceding distillation unit so that the cooled distilling liquid from the evaporators of the second succeeding distillation unit acts as a coolant in the condensers of said first preceding distillation unit whereby the vapor present in the condensers of said first preceding distillation unit is condensed to become distillate, said cooled distilling liquid being heated in the preceding unit as it flows in the condensers thereof from a distilling stage to a preceding distilling stage thereof; and

conducting the heated distilling liquid back from the last condenser in the first preceding distillation unit where it acted as a coolant to the succeeding distillation unit operating at a lower temperature level and into the evaporators thereof.

4,348,262

REFINING TETRAHYDROFURAN

Albert M. Stock, LaPorte, and Wilson S. Tse, Houston, both of Tex., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 151,242, May 19, 1980, abandoned. This application May 4, 1981, Ser. No. 259,954

Int. Cl.³ B01D *3/34*

U.S. Cl. 203—37 **4 Claims**

1. A process for refining crude acidic tetrahydrofuran made from acetylene and formaldehyde, the process comprising adding enough base to the crude tetrahydrofuran to bring its pH value to no more than about 11, but in sufficient amount to hinder the formation of methacrolein while inhibiting corrosion therein, and thereafter distilling the thus treated tetrahydrofuran.

4,348,263

SURFACE MELTING OF A SUBSTRATE PRIOR TO PLATING

Clifton W. Draper, Hopewell, N.J., and Satya P. Sharma, Reynoldsburg, Ohio, assignors to Western Electric Company, Inc., New York, N.Y. and Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 12, 1980, Ser. No. 186,654

Int. Cl.³ C25D *5/34*; H01H *1/02*

U.S. Cl. 204—29 **15 Claims**

1. A method of making an electrical contact including the step of depositing a protective layer on at least a first portion of a metal substrate characterized by melting at least a second portion of the surface of said substrate with said first portion at least partially overlapping said second portion to a depth of less than 0.1 millimeters by means of an electron beam or laser beam prior to said deposition, wherein the duration of said melting at a given location on said substrate is less than 10 milliseconds, wherein said protective layer comprises at least one metal selected from the group consisting of gold, silver, platinum, ruthenium, rhodium, iridium, and palladium, and wherein said melting substantially reduces the average metallic grain diameter of said surface of said substrate.

4,348,264

PHOTOCATALYZED PROCESS FOR PRODUCING CARBAPENAMS AND CARBAPEN-2-EMS

Robert L. Rosati, Stonington, Conn., assignor to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 149,604, May 14, 1980, abandoned. This application Feb. 9, 1981, Ser. No. 232,156

Int. Cl.³ B01J *19/12*

U.S. Cl. 204—158 R **30 Claims**

1. A light-catalyzed process of rearranging a 2-diazo-1-oxoceph-3-em-4-carboxylate to a 1-oxocarbapen-2-em-3-carboxylate in a reaction-inert organic solvent in a temperature range of −100° C. to 35° C.

4,348,265

PROCESS FOR THE SELECTIVE ALIPHATIC CHLORINATION OF ALKYLBENZENES

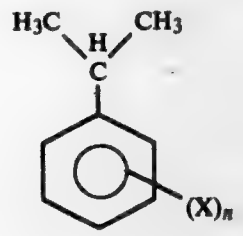
Robert M. Strom, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Mar. 27, 1981, Ser. No. 248,599

Int. Cl.³ B01J *19/12*; C07C *17/12*

U.S. Cl. 204—158 HA **12 Claims**

1. A process for the preparation of α-chlorinated cumene derivatives, which comprises contacting a chlorinating agent with a cumene derivative represented by formula I



I

wherein n is a whole number from 1 to 5, and X is a halogen or any electron-withdrawing group which does not react with chlorine, in the presence of a free radical initiator and under conditions sufficient to selectively chlorinate the α carbon of the isopropyl side chain of the cumene derivative, and under such conditions that at least 80 mole percent of the cumene derivative is converted to the corresponding α-chlorocumene derivative or its dehydrochlorinated analogue.

4,348,266

IRRADIATED BLENDS OF POLYETHYLENE AND NEOPRENE RUBBER

Aubert Y. Coran, and Raman Patel, both of Akron, Ohio, assignors to Monsanto Company, St. Louis, Mo.

Filed Apr. 2, 1981, Ser. No. 250,472

Int. Cl.³ C08F *8/00*

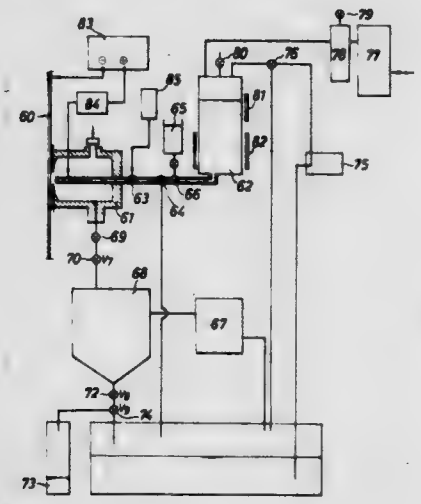
U.S. Cl. 204—159.17 **14 Claims**

1. A composition comprising a blend of about 10–75 parts by weight of crystalline polyethylene, and, correspondingly, about 90–25 parts by weight of neoprene rubber wherein the composition is irradiated with an ionizing radiation dose of about 1 to 15 M Rads.

4,348,267
PLATING MEANS

Kouichi Shimamura, Yokohama, Japan, assignor to Sonix Limited, Kanagawa, Japan

Division of Ser. No. 133,130, Mar. 24, 1980, Pat. No. 4,287,029.
This application Nov. 14, 1980, Ser. No. 206,873
Claims priority, application Japan, Aug. 9, 1979, 54-100772
Int. Cl.³ C25D *17/00, 21/00*
U.S. Cl. 204—206 18 Claims

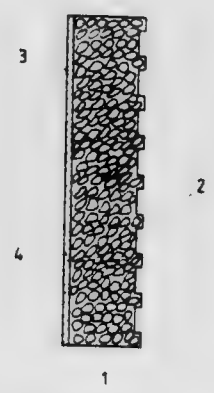


1. A plating means comprising:
(a) a mask having an opening of the same size as a smaller work surface and contacting closely the smaller work surface,
(b) a nozzle for jetting a plating solution which is disposed so as to confront the opening of the mask,
(c) an outer tube enclosing the mask and the nozzle in which is formed a closed space,
(d) an outer air induction means communicated to outer air,
(e) a fluid discharging means for discharging fluid within the closed space,
(f) a power source circuit for supplying electric power of mutually opposing polarity to the work surface and the nozzle respectively,
(g) a gas-liquid separator for separating the plating solution from the fluid withdrawn by the fluid discharging means, and
(h) a plating solution tank associated with the gas-liquid separator and replenished by a reproduced plating solution.

4,348,268
ELECTRODE FOR ELECTROLYSIS OF WATER

Rene Müller, Fislisbach, Switzerland, assignor to BBC Brown, Boveri & Company, Baden, Switzerland

Filed Jun. 17, 1980, Ser. No. 160,176
Claims priority, application Switzerland, Jun. 29, 1979, 6082/79
Int. Cl.³ C25B *11/12, 1/04;* H01M *4/48*
U.S. Cl. 204—290 R 2 Claims

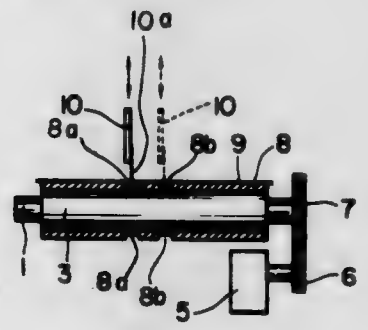


1. A porous electrode for electrolysis of water comprising a plate of porous graphite having one major surface thereof coated with a thin layer comprised of titanium and titanium oxide doped with a catalyst comprising mixture of about 20 mole percent of RuO_2 and about 80 mole percent of IrO_2 totalling 100% the thickness of said layer comprised of titanium and titanium oxide being from 0.1 to 0.5 micrometers, the coated graphite surface and the opposite uncoated graphite surface being exterior surfaces of the electrode.

4,348,269
CARRIER CONVEYING MECHANISM FOR ELECTROPHORETIC APPARATUS

Toshio Sakagami, Chofu, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Oct. 7, 1980, Ser. No. 195,068
Claims priority, application Japan, Oct. 15, 1979, 54-141388[U]
Int. Cl.³ B01D *13/02*
U.S. Cl. 204—299 R 3 Claims



1. A carrier conveying mechanism for electrophoretic apparatus comprising a pair of wide rollers which are arranged on the front and rear sides respectively, of the conveying mechanism, a driving mechanism for rotating said rollers, a wide and thick conveying belt passing over said rollers, a first longitudinally extending groove formed on the surface of said conveying belt, a carrier mounted on said conveying belt and capable of being conveyed by travel of said belt upon rotation of said rollers by said driving mechanism and capable of being stopped at a predetermined position upon stopping of said driving mechanism, and a plurality of sample applicators arranged over and along said first groove and holding a sample at each tip portion thereof, each applicator being capable of applying said sample onto said carrier at a position located over said first groove when said conveying belt has stopped.

4,348,270
CATALYSTS AND HYDROCARBON TREATING PROCESSES UTILIZING THE SAME

Roby Bearden, Jr.; Clyde L. Aldridge, and Lloyd A. Pine, all of Baton Rouge, La., assignors to Exxon Research And Engineering Co., Florham Park, N.J.

Division of Ser. No. 93,698, Nov. 13, 1979, Pat. No. 4,295,996.
This application Mar. 23, 1981, Ser. No. 246,448
Int. Cl.³ C10G *1/06, 47/12, 45/04, 11/02*
U.S. Cl. 208—9 9 Claims

1. A hydrocarbon treating process which comprises contacting a hydrocarbonaceous oil feed at treating conditions with a supported catalyst comprising a composition comprising a metal component, carbon, and hydrogen deposited on a support, the metal constituent of said metal component of said composition being selected from the group consisting of metals of Groups II, III, IV, V, VIB, VIIB, VIII and mixtures thereof of the Periodic Table of Elements, said composition having a surface area of at least about 50 m^2/g, and said support being an aluminum alloy powder having a surface area of less than about 5 square meters per gram, said alloy having been prepared by atomizing said aluminum alloy, in molten state, into a

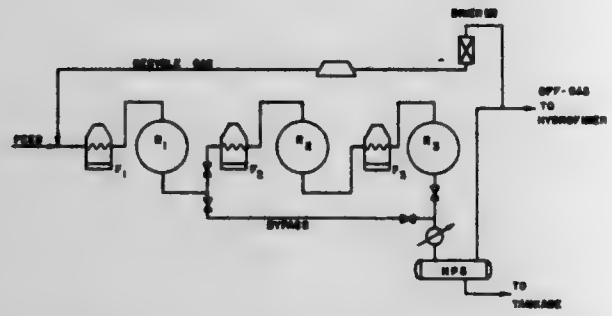
stream selected from the group consisting of water, a gas and mixtures thereof.

4,348,271

CATALYTIC REFORMING PROCESS

George A. Swan, Baton Rouge, La., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jul. 14, 1981, Ser. No. 283,167
Int. Cl.[3] C10G *45/00*
U.S. Cl. 208—89 10 Claims



1. In a process for reforming a naphtha, with hydrogen, in a reforming unit which is a net producer of hydrogen, at least a portion of which is used in a Hydrofiner for hydrodesulfurizing the naphtha feed used in the reforming process, comprised of a plurality of serially connected reactors, inclusive of a lead reactor which contains a platinum catalyst and one or more subsequent reactors of the series which contains a sulfur sensitive metal promoted platinum catalyst, such that naphtha and hydrogen can be contacted with the platinum catalyst of the lead reactor at reforming conditions and the product of said reaction, and the products of subsequent reactions, passed in seratim from one reactor of the series to the next, the product of the final reactor of the series being separated into a hydrogen rich gaseous product and a C_5^+ liquid product with a portion of the gas being recycled to the lead reactor and another portion of the gas to said Hydrofiner,

the improvement comprising

bypassing reactors subsequent to said lead reactor during start-up of the reforming unit with the product of said lead reactor,

separating the product of said lead reactor into hydrogen-containing gaseous portions, one of which is fed to said Hydrofiner, and another of which is recycled to said lead reactor, and

passing the product of said lead reactor, after line out of said reforming unit and satisfactory operation of said Hydrofiner in hydrodesulfurizing said naphtha feed to said lead reactor, in seratim from one subsequent reactor of the series to another to produce in the final reactor of the series a high octane C_5^+ liquid product, and hydrogen.

4,348,272

HYDROGEN UTILIZATION IN FLUID CATALYTIC CRACKING

Hosheng Tu, Shorewood, Ill., assignor to UOP, Inc., Des Plaines, Ill.

Filed Jul. 21, 1980, Ser. No. 170,373
Int. Cl.[3] C10G *47/20, 47/30*
U.S. Cl. 208—111 6 Claims

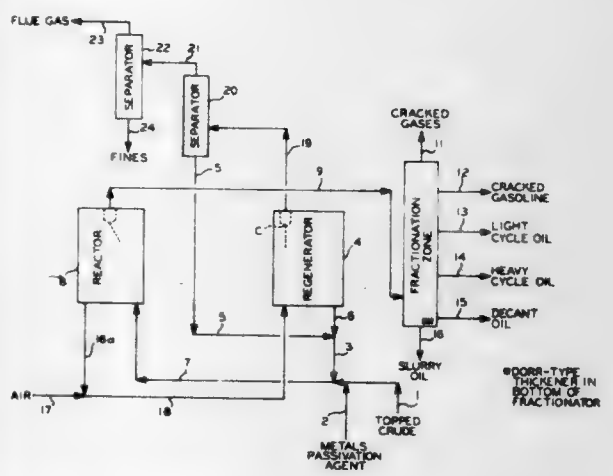
1. A fluidized catalytic cracking process employing a catalyst comprising a crystalline aluminosilicate, the exchangeable cationic sites of which have been ion exchanged with cations of a non-noble transitional metal, said catalyst being cycled between a cracking zone, in which said catalyst is contacted at an elevated temperature with a hydrocarbon feedstock, and a regeneration zone, in which carbon is oxidized and thereby removed from said catalyst, said process comprising subjecting said catalyst, while in transit from said regeneration zone to said cracking zone, to water thermolysis at a temperature from about 900° F. to a maximum thermal stability temperature of said catalyst and a catalyst water content of from about 0.1 wt% to about 5.0%, thereby forming hydrogen which is retained by the catalyst, introducing said hydrogen to said cracking zone with the catalyst, and releasing the hydrogen from the catalyst by contact of the latter with said hydrocarbon feedstock in the cracking zone to effect improved cracking selectivity and reduced coke production.

4,348,273

TREATING CRACKING CATALYST FINES CONTAINING A PASSIVATING MATERIAL

Richard H. Nielsen, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 25, 1980, Ser. No. 163,004
Int. Cl.[3] C10G *11/18*
U.S. Cl. 208—113 7 Claims



1. A process comprising:

(a) cracking a hydrocarbon oil in a cracking zone in the presence of a cracking catalyst; wherein said catalyst becomes contaminated with a contaminant that is a member of the group consisting of vanadium, chromium, iron, cobalt, copper, arsenic, antimony, platinum, bismuth and compounds thereof;

(b) regenerating, in a regeneration zone, said cracking catalyst;

(c) passing from said regeneration zone gas and fines of said catalyst to a first separation zone.

(d) separating, in said first separation zone, coarser fines of said catalyst from finer fines of said catalyst; wherein said finer fines are contaminated with more, on a weight percent basis, of said contaminant than are said coarser fines;

(e) recycling said coarser fines to said cracking zone;

(f) separating, in a second separation zone, said gas from said finer fines; and

(g) treating said finer fines with a stabilizing agent in an amount sufficient to improve the stability of said contaminant against leaching by water; wherein said stabilizing agent is a member of the group consisting of indium, tin and compounds thereof.

4,348,274

OIL SHALE UPGRADING PROCESS

Robert P. Guerre, Seabrook, Tex., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

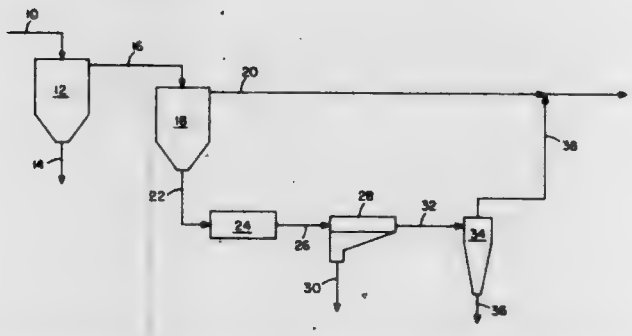
Continuation-in-part of Ser. No. 57,250, Jul. 13, 1979. This application Dec. 24, 1980, Ser. No. 220,205
The portion of the term of this patent subsequent to Jul. 6, 1999, has been disclaimed.
Int. Cl.[3] B03B *9/02*
U.S. Cl. 209—2 9 Claims

1. A process for upgrading particulate oil shale which comprises:

(a) removing substantially all particles having a specific gravity greater than a predetermined value from said oil

shale thereby producing a first low density fraction of particles;

(b) crushing or grinding substantially all of said particles comprising said first low density fraction to produce smaller particles;



(c) separating said smaller particles into a high density fraction and a second low density fraction; and

(d) recovering said second low density fraction as high grade oil shale rich in kerogen.

4,348,275

APPARATUS FOR SEPARATING FINE MATERIAL FROM COARSE MATERIAL

Bo G. Backman, Skelleftea, Sweden, assignor to Linden-Alimak AB, Skelleftea, Sweden

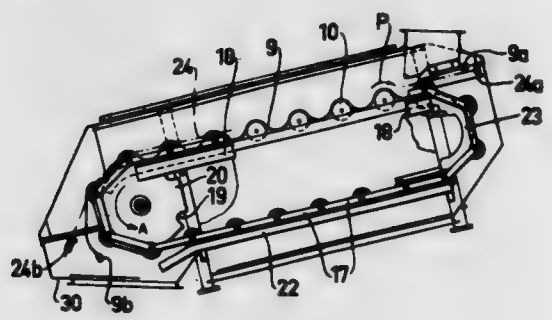
PCT No. PCT/SE79/00064, § 371 Date Nov. 23, 1979, § 102(e) Date Nov. 23, 1979, PCT Pub. No. WO79/00812, PCT Pub. Date Oct. 18, 1979

PCT Filed Mar. 21, 1979, Ser. No. 173,132

Claims priority, application Sweden, Mar. 22, 1978, 7803308

Int. Cl.³ B07B *1/28*

U.S. Cl. 209—310 **9 Claims**



1. In an apparatus for separating fine material from coarse material having an elongated, perforated, non-travelling screen-cloth extending from a feed end toward a discharge end, and travelling support means supporting said screen-cloth and imparting undulating motion thereto, said support means including a plurality of travelling rotatable support members spaced longitudinally with respect to said screen-cloth and extending transversely beneath said screen-cloth, each of said support members contacting portions of the underside of said screen-cloth near the edges thereof and intermediate the edges across the width thereof, while at the same time travelling in a forward direction lengthwise of said screen-cloth toward said discharge end, the improvement comprising means for positively rotating said support members, while they are in contact with said screen-cloth, in a screen-cloth retarding direction toward the feed end to urge all of said contacted portions of the underside of said screen-cloth toward the feed end.

4,348,276

AUTOMATIC TESTING APPARATUS POR AUTOMATICALLY TESTING A PRINTED CIRCUIT BOARD

Kazushi Tateishi, Kamisatomachi; Kuniaki Anzai, Kumagaya, and Taketoshi Tomita, Chichibu, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

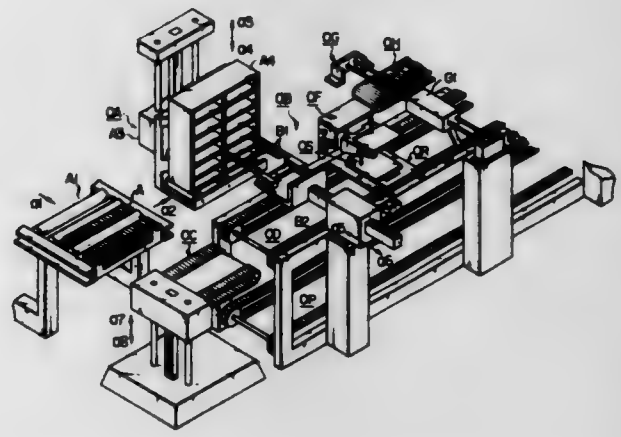
PCT No. PCT/JP79/00173, § 371 Date Jan. 8, 1981, § 102(e) Date Sep. 3, 1980, PCT Pub. No. WO80/02461, PCT Pub. Date Nov. 13, 1980

PCT Filed Jun. 30, 1979, Ser. No. 224,282

Claims priority, application Japan, May 8, 1979, 54-55851; May 8, 1979, 54-55852; May 8, 1979, 54-55853; May 8, 1979, 54-55854; May 8, 1979, 54-55855; May 8, 1979, 54-55856; May 11, 1979, 54-57817; May 11, 1979, 54-57818; May 11, 1979, 54-57821

Int. Cl.³ B07C *5/344*

U.S. Cl. 209—573 **3 Claims**



1. An automatic testing apparatus for automatically testing printed circuit boards, comprising a frame-like pallet (OR) for carrying a printed circuit board; a pallet supply device (OC) for supplying the pallet (OR) to a conveyor (OD) for testing process; a printed circuit board takeout device (OB) for placing the printed circuit board on the pallet (OR) which is supplied to the conveyor (OD); an automatic parts measuring/adjustment means (OI, OK) disposed in a fixed position on a travel path of the printed circuit board (OS) passed through an automatic parts testing apparatus (OF), said automatic parts testing apparatus being disposed on a path of conveyance of the printed circuit board (OS) by the conveyor (OD) and having upper and lower arm tables (20, 31) moved such that the printed circuit board (OS) is sandwiched therebetween, said lower arm table (31) having a contact pin (38) adapted to be contacted with each component part terminal etc. on the printed circuit board (OS), said automatic parts testing apparatus being capable of electrically detecting the respective component part through the contact pin (38), said automatic parts measuring/adjustment means (OI, OK) having upper and lower arm tables moved such that the printed circuit board carried at this position is sandwiched therebetween, said lower arm table (161) having a contact pin (168) adapted to be contacted with the corresponding terminal on the printed circuit board and said upper arm table having at least a driver device (158) adapted to be driven to permit it to be fitted into a to-be-adjusted component part on the printed circuit board, said automatic parts measuring/adjustment means being adapted to measure the circuit or component parts while adjusting the to-be-adjusted component part by said driver means (158); and sorting means (OG, OJ, OL) disposed in a fixed position on a path of conveyance of the printed circuit board (OS) by said conveyor means (OD) to lift the printed circuit board (OS) to permit it to be transferred to a conveyor (OH) for unfit circuit board if it is at least an unfit circuit board.

4,348,277

ARTICLE SORTING APPARATUS AND METHOD

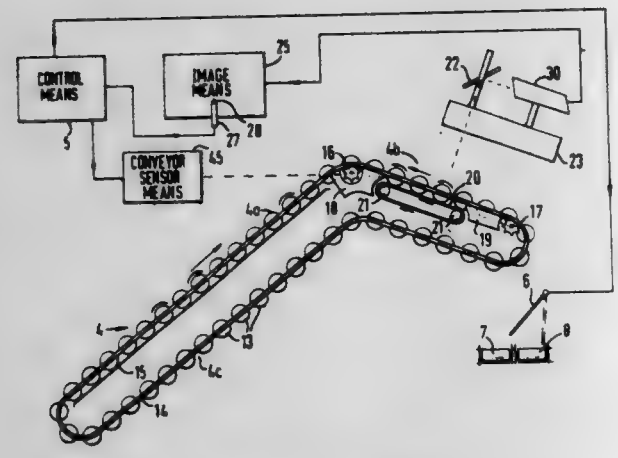
Robert M. Cowlin, Leiston, and Nigel C. Helsby, Maldon, both of England, assignors to Lockwood Graders (UK) Limited, Essex, England

Filed Apr. 21, 1980, Ser. No. 141,927

Claims priority, application United Kingdom, Nov. 6, 1979, 7938336

Int. Cl.³ B07C 9/00

U.S. Cl. 209—705 13 Claims



1. Article sorting apparatus comprising:

conveying means for conveying articles to be sorted through an inspection area;

image means comprising a television camera and a television monitor screen for displaying at the monitor screen an image of the inspection area simultaneously showing two or more articles to be sorted;

selection means for selecting an article from the two or more articles displayed at the monitor screen and for generating signals indicative of the selected article, including a hand-held light pen movable relative to the screen for indicating a location on the screen corresponding to a location of a selected article in the inspection area and for generating a location signal indicative of the location on the screen indicated by the light pen, and switch means positioned on the light pen and operable by touch of pressure of the light pen on the screen to generate at a chosen time a signal indicative of the transient position of the selected article in the inspection area;

deflector means for selectively deflecting articles conveyed by the conveying means; and

control means for actuating the deflector means in dependence upon signals generated by the selection means to effect selective deflection of articles in response to article selection by an operator observing the monitor screen.

4,348,278

SETTLEMENT TANK CONDITION MONITORING SYSTEM

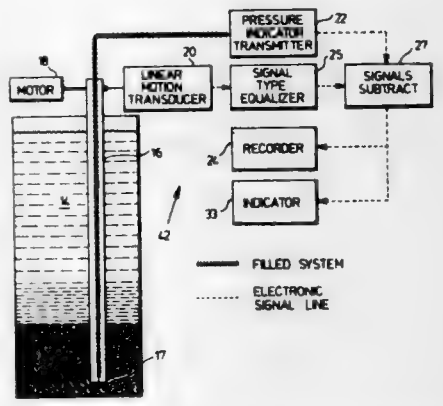
Carl Checia, 72 Empire Ave., Toronto, Ontario, Canada (M4M 3L4)

Filed Oct. 31, 1980, Ser. No. 202,722

Int. Cl.³ B01D 21/00

U.S. Cl. 210—86 4 Claims

1. A condition monitoring system for use with a settling tank used to receive a mixture of substances including a parent fluid for differential gravitational settlement, said system including; a selectively submersible probe; motor driven means to change the level of the probe end within the tank; continuously operable probe submergence sensing means including a transducer having a static head output signal responsive to the position of said probe end; pressure sensitive head detection means having an output signal responsive to the instantaneous total fluid pressure of said mixture at said probe end; signal conversion means connected to said submergence sensing means having an output equivalent to the partial pressure static head of said parent fluid acting at said probe end, signal subtractor means connected to said conversion means and said head detection means having an output signal responsive to the difference between said total pressure and said partial pressure, and recording means



for recording said difference signal as a characteristic curve of said tank contents.

4,348,279

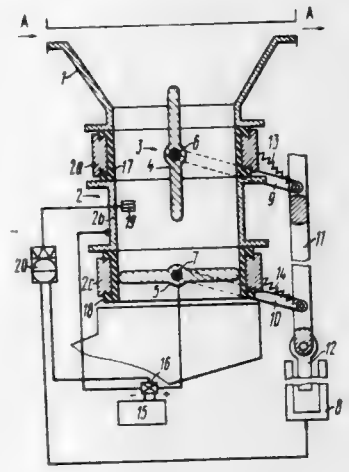
APPARATUS FOR CLEANING DRILLING MUD

Jury P. Tikhonov, Zaiton, 17; Stanislav A. Alekhin, Chilanzar, 24, dom 55, kv. 89; Vitold M. Bakhir, Gaidara, 7a, kv. 17, and Jury G. Zadorozhny, Chilanzar, 2, dom 59, kv. 12, all of Tashkent, U.S.S.R.

Filed Dec. 11, 1980, Ser. No. 215,353

Int. Cl.³ B01D 21/24

U.S. Cl. 210—96.1 3 Claims



1. An apparatus for cleaning drilling mud, wherein a straightflow hopper has a pipe for collecting drillings deposited, from drilling mud, which accommodates a device for removing drillings, characterized in that the device (3) for removing the drillings comprises two shutters (4, 5) provided at the ends of the pipe (2) for collecting the drillings deposited from driling mud, which are operatively connected to one another and coupled to an actuator (8) for turning them for alternately shutting-off the cross-section of the pipe (2).

4,348,280

PROPORTIONING DIALYSIS MACHINE

Richard W. George, Libertyville, and William J. Schnell, Arlington Heights, both of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Continuation of Ser. No. 750,028, Dec. 13, 1976, abandoned, which is a continuation of Ser. No. 654,137, Jan. 30, 1976, abandoned, which is a continuation-in-part of Ser. No. 516,526, Oct. 21, 1974, abandoned. This application Mar. 3, 1980, Ser. No. 126,404

Int. Cl.³ B01D 31/00; A61M 1/00

U.S. Cl. 210—101 13 Claims

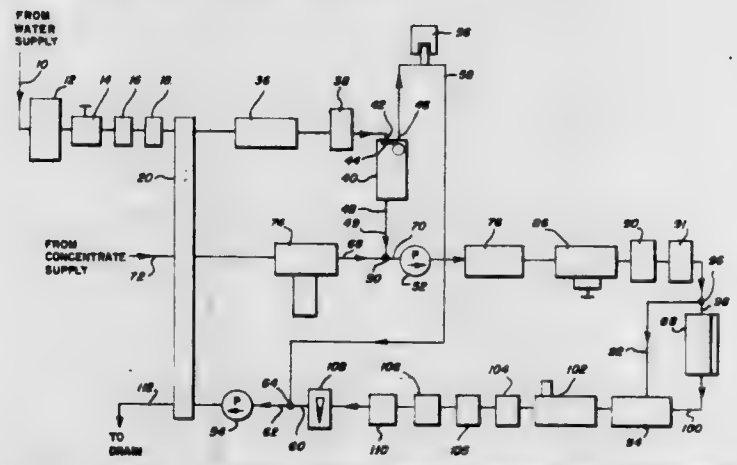
1. A dialysis machine which constantly delivers dialysis

solution to a dialyzer during dialysis, and which includes a degassing system for removal of dissolved and entrained gases from a substantially body temperature liquid said system including:

chamber means for receiving said liquid for treatment and having: liquid inlet means, liquid outlet means in a lower portion of said chamber, and gas outlet means in an upper portion of said chamber means; and

means for producing a negative pressure within said chamber means,

wherein the improvement comprises:



there being provided valve means associated with said chamber means and cooperating with said liquid inlet means for controlling liquid flow into said chamber means and the liquid level within said chamber so as to establish a restricted volume for gas within said chamber;

said means for producing a negative pressure in said chamber being first pump means connected to said gas outlet means for drawing gas from the restricted volume for gas within said chamber; and

said chamber means, valve means and first pump means cooperating to controllably produce negative pressures in said chamber as low as about −700 mm/Hg.

4,348,281

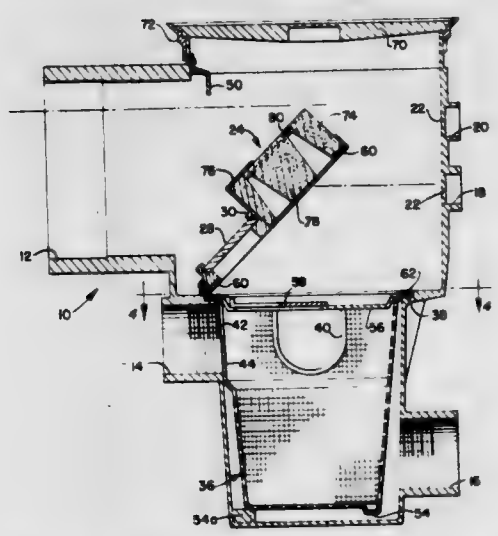
SKIMMER ASSEMBLY FOR SWIMMING POOLS

Stephen J. Perry, Arcadia; Gordon F. Ehret, Alhambra, and William N. Rowley, Palos Verdes Estates, all of Calif., assignors to Marley/Wylain Company, Mission, Kans.

Filed Feb. 2, 1981, Ser. No. 230,517

Int. Cl.³ E04H *3/20*

U.S. Cl. 210—129 **5 Claims**



1. A skimmer assembly for use in swimming pools comprising:

a housing having walls presenting a cavity and further including—structure defining a skimming inlet in communication with said cavity for receiving water from the water line of said pool, structure defining a second inlet in communication with said cavity for receiving water from a level below the water line of said pool, and structure defining an outlet in communication with said cavity for communicating said cavity with a vacuum source for discharging water from said housing; a filter basket disposed in said housing including a generally upright, perforate sidewall structure defining a basket opening; and means for controlling the ratio of the flow of water entering said cavity through said skimming inlet to the flow of water entering said cavity through said second inlet including—a buoyant weir disposed in said housing between said skimming inlet and said outlet and shiftable between an open and closed position for regulating the amount of water entering said housing through said skimming inlet, separate means operatively attached to said basket sidewall presenting respective, spaced apart, flow restricting orifices of different effective flow control dimensions, each orifice being selectively positionable in a location relative to said second inlet for selective control of the volume of water permitted to flow from below the water line of the pool through said second inlet to the outlet via said orifice, means mounting said basket within said housing generally between said skimming inlet and said outlet for selective shifting of said basket to a position where one of said orifices is adjacent said second inlet to restrict flow of water from said second inlet to the cavity in accordance with the size of said orifice, a top wall secured to said basket sidewall structure configured to substantially cover said opening, said top wall defining a water flow aperture therethrough and including a shiftable cover for selectively adjusting the size of the aperture.

4,348,282

OIL-COLLECTING SHIP

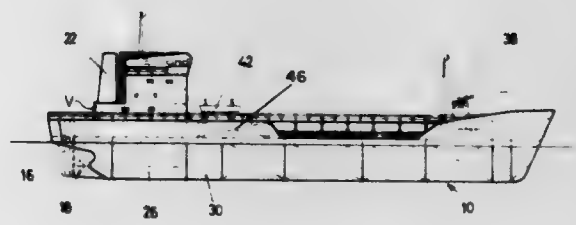
Ortwin Fries, and Claus Lühring, both of Brake, Fed. Rep. of Germany, assignors to C. Lühring-Schiffswerft-Trockendock, Brake, Fed. Rep. of Germany

Continuation of Ser. No. 947,456, Oct. 2, 1978, abandoned. This application Dec. 22, 1980, Ser. No. 218,691

Claims priority, application Fed. Rep. of Germany, Oct. 4, 1977, 2744517

Int. Cl.³ B63B *35/28*

U.S. Cl. 210—242.3 **10 Claims**



1. An oil-collecting ship comprising:

an elongated ship body including two bouyant seaworthy body halves arranged to be separable from one another generally along the vertical longitudinal plane of symmetry of said ship body;

a movable joint arranged at the stern of said ship body for directly connecting the rearward ends of said body halves so that said body halves can be separated to a stable spread apart condition relative to one another to collect oil on the water surface;

means for skimming the oil from the water surface after the oil has been contained by said body halves when in said spread apart condition;

a first locking device arranged at the forecastle end bulkhead of said ship body for holding said two body halves together in abutting relationship in a closed condition;

at least one main drive arranged at the stern of said ship body for propelling the ship when said two body halves are in said closed condition; and

two auxiliary drive units each arranged at the bow of a different one of said two body halves for separating said two body halves and for propelling the ship when said two body halves are in said spread apart condition.

4,348,283

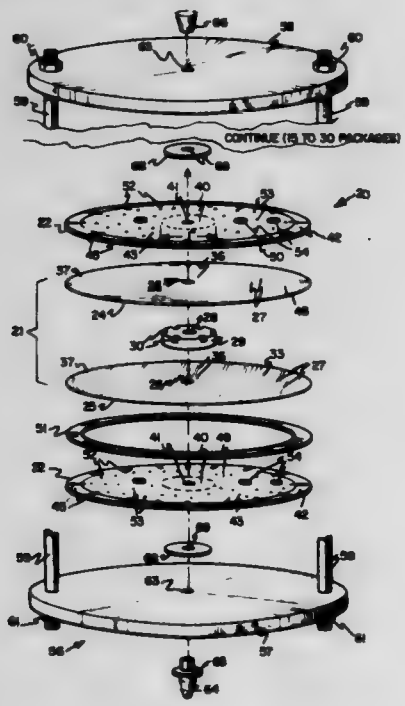
RECIPROCATING DIALYZER HAVING SPACERS

Stephen R. Ash, Lafayette, Ind., assignor to Purdue Research Foundation, West Lafayette, Ind.

Filed Nov. 5, 1980, Ser. No. 204,342

Int. Cl.³ B01D *31/00*

U.S. Cl. 210—321.3 **19 Claims**



1. A reciprocating dialyzer apparatus, comprising:

membrane means defining a wall between a first chamber for receiving a fluid to be treated and a second chamber for receiving treating solution with treatment occurring through said wall in the presence of a fluid to be treated and treating solution in contact with opposite sides of said wall;

first and second conduit means for separately providing access for said fluid to be treated to said first chamber and access for said treating solution to said second chamber, said first conduit means being a single conduit for introducing and withdrawing fluid to be treated from said first chamber through said single conduit, and said second conduit means providing treating solution to said second chamber to allow free flow of said treating solution in said second chamber; and

spacer means in said second chamber with said spacer means permitting substantially free flow of said treating solution at said wall, said spacer means having alternating first and second portions extending over at least a substantial portion of said spacer means with said first portions being engageable with said wall to limit movement thereof without creating a block in the other of said chambers and said second portions being recessed from said wall to permit access thereto so that said treatment can occur at said wall, said second portion including a relatively flat pad and said first portion including a plurality of closely spaced first and second groups of protuberances extending from said pad with said second group of protuberances extending from said pad a distance greater than said first group of protuberances but without creating a block in the other of said chambers.

4,348,284

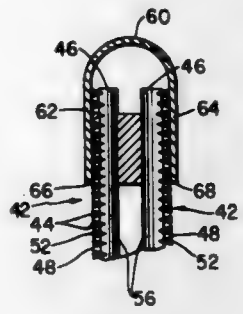
FILTER LEAF CONSTRUCTION

George J. Peer, Mt. Kisco, N.Y., and Robert C. Bradley, Paramus, N.J., assignors to Multi-Metal Wire Cloth Inc., Tappan, N.Y.

Filed Jan. 9, 1981, Ser. No. 223,821

Int. Cl.³ B01D *39/12*

U.S. Cl. 210—486 **20 Claims**



1. A pressure filter assembly comprising:

a. a first filtering screen having:

(1) a plurality of widely spaced support wires,

(2) a plurality of closely spaced surface wires extending generally perpendicular to the support wires and connected thereto along one side of the support wires, said surface wires having a wedge shaped cross-section with the apex of the wedge connected to the support wires and the opposite flat surface of the wedge of each surface wire being disposed in a flat plane with the spacing between each surface wire forming narrow filtering slots extending along said plane;

b. a second filtering screen having the same construction as the first filtering screen;

c. said first and second filtering screens being connected together in opposed relationship with the surface wires of each screen in spaced relation to form an internal chamber and with the flat surfaces thereof facing away from each other and with the support wires of each screen being disposed in said chamber between the surface wires of the screens said chamber being otherwise free of structure;

d. a binder extending around the entire periphery of the two filtering screens and sealing the periphery against flow of fluid therethrough; and

e. a filter outlet connected to the binder and having an opening in communication with said internal chamber.

4,348,285

METHOD OF TREATING LIQUID AGRICULTURAL WASTES

Joost Groeneweg, Kreuzau-Drove, and Manfred Schlüer, Grevenbroich, both of Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich Gesellschaft mit beschränkter Haftung, Jülich, Fed. Rep. of Germany

Filed Feb. 27, 1981, Ser. No. 239,118

Claims priority, application Fed. Rep. of Germany, Mar. 4, 1980, 3008127

Int. Cl.³ C02F *3/32*

U.S. Cl. 210—602 **11 Claims**

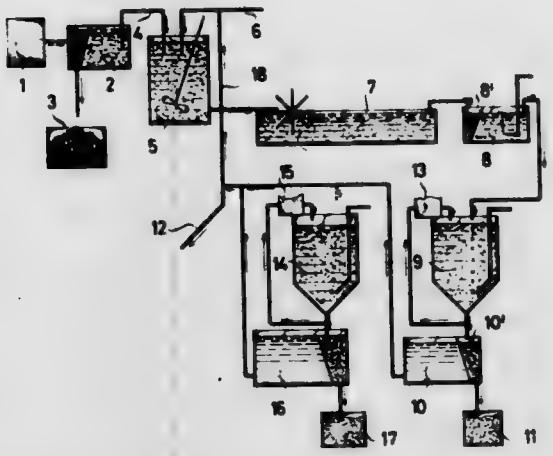
1. A method of treating agricultural waste water which comprises the following sequential steps:

anaerobically pretreating said waste water; subjecting said anaerobically treated waste water to an algae/bacteria mixture culture in a shallow open air pond for approximately 3 to 6 days at a mean temperature of about 18° C.;

controlling and maintaining the pH of said algae/bacteria mixture culture in said pond to a value of at least 8.5 and above to thereby prevent the multiplication of rotifers therein, and to obtain an algae/bacteria suspension;

supplying said algae/bacteria suspension for removal of the algae/bacteria to an aerated rotifer breeding reactor having a rotifer culture therein;

holding said algae/bacteria suspension in said reactor for approximately 2 to 4 days at a mean temperature of about 20° C. and a pH of 6 to 8 for rotifer multiplication;



separating said rotifers from the thusly treated suspension to obtain a purified water.

4,348,286

LARGE SAMPLE THIN LAYER CHROMATOGRAPHY

Herman R. Felton, Wilmington, Del., assignor to Analtech, Incorporated, Newark, Del.

Filed Jul. 17, 1981, Ser. No. 284,515
Int. Cl.[3] B01D *15/08*
U.S. Cl. 210—658 3 Claims



1. In the process of resolving the components of a sample on a thin layer chromatogram having an absorbent layer characterized by linear increase in absorbent layer thickness from a thin end to a thicker end opposite, the improvement consisting in placing the sample on the absorbent near the thin end and developing said chromatograph in the direction of increasing absorbent layer thickness, whereby to resolve components of both low and high R_f values.

4,348,287

ZIRCONIUM COMPOUNDS AS FLOTATION AID

Fred W. Jenkins, St. Louis, Mo., assignor to Petrolite Corporation, St. Louis, Mo.

Filed May 26, 1981, Ser. No. 266,775
Int. Cl.[3] C02F *1/24*
U.S. Cl. 210—705 18 Claims

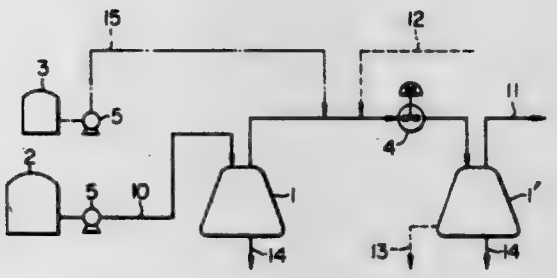
1. A flotation process of clarifying an aqueous system containing oils, solids, or combinations thereof, characterized by the use of a flotation aid selected from the group consisting of water soluble zirconium salts which form zirconium-oxygen bonds in aqueous solution and zirconium-organic compound complexes.

4,348,288

PROCESS FOR DESALTING FUEL OIL

Shoji Yoshinaga; Hirosige Kawano; Matsuzo Todo; Toshiko Takahasi; Kiyoshi Fujiwara, and Yukio Inoue, all of Kudamatsu, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 26, 1979, Ser. No. 79,154
Claims priority, application Japan, Sep. 27, 1978, 53-117852; Oct. 27, 1978, 53-131514; Oct. 27, 1978, 53-131519; Jan. 22, 1979, 54-4807
Int. Cl.[3] B01D *17/04*
U.S. Cl. 210—708 14 Claims



1. A process for desalting fuel oil, which comprises a separation step of separating fuel oil containing sludges into fuel oil and sludges, without the addition of an emulsion breaker, by a centrifugal separating means, thereby removing the sludges from the fuel oil, and a washing by mixing-separation step of mixing the fuel oil freed from the sludges with water and separating the resulting liquid mixture into fuel oil and water.

4,348,289

WATER TREATMENT METHOD TO REMOVE DISSOLVED OXYGEN THEREFROM

Earl S. Snavely, Jr., Arlington, Tex., and Paul L. Caldwell, Jr., Westport, Conn., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 955,548, Oct. 27, 1978, abandoned. This application Dec. 29, 1980, Ser. No. 220,327
Int. Cl.[3] C02F *1/70*; C01B *17/00*
U.S. Cl. 210—749 7 Claims

1. A method of treating an oxygen-containing water to scavenge the oxygen therefrom and render the water less corrosive, comprising:

(a) firing a sulfur-containing fuel in a flue gas generator to form a flue gas containing sulfur oxides;

(b) flowing said flue gas containing sulfur oxides into a reactor vessel;

(c) flowing an aqueous sodium hydroxide solution into said reactor vessel and into contact with said flue gas to scrub said flue gas and to react said sulfur oxides with said sodium hydroxide and form sodium sulfites and discharging said scrubbed flue gas from said reactor vessel;

(d) injecting ascorbic acid into said reactor vessel in an amount sufficient to inhibit the oxidation of said sodium sulfites to sodium sulfates;

(e) discharging from said reactor vessel said reacted sodium hydroxide solution containing said sodium sulfites and ascorbic acid;

(f) recirculating through said reactor vessel at least a portion of said reacted solution through said reactor vessel to further react with said sulfur oxides;

(g) recovering said sodium sulfites and ascorbic acid; and

(h) injecting said recovered sodium sulfites and ascorbic acid into a water containing oxygen in an amount sufficient to scrub the oxygen from the water but in a sufficiently small amount to dilute said ascorbic acid to a concentration of less than about 0.1 ppm.

4,348,290

METHOD AND DEVICE FOR REMOVING A FLUID FROM A MIXTURE OF A FLUID AND A SOLID SUBSTANCE

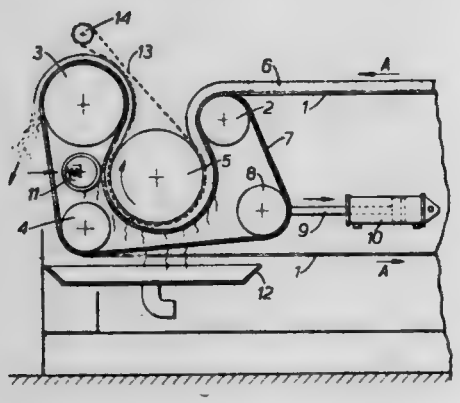
Hendricus H. Schipper, Bunnik, Netherlands, assignor to B.V. Machinefabriek v/h Pannevis & Zn., Netherlands

Filed Jun. 4, 1981, Ser. No. 270,425

Claims priority, application Netherlands, Jun. 25, 1980, 8003667

Int. Cl.³ B01D *33/00*

U.S. Cl. 210—783 10 Claims



1. In a method of removing fluid from a mixture of fluid and solid substance wherein said mixture is supported by a conveyor belt, then passed between said belt and at least a portion of an outer circumference of a drum wherein said belt has sufficient tension to compress said mixture against said outer circumference such that said drum is rotated by contact with said mixture, the improvement comprising the steps of:

positively driving said conveyor belt about said drum; and

braking said drum to resist movement of said mixture therepast, thereby creating shear stresses in said mixture and continuously increasing compressive forces of said conveyor belt against said outer circumference of said drum from a point where said mixture first contacts said circumference to a point where said mixture breaks contact with said circumference.

4,348,291

NOVEL PHOSPHORAMIDES, LUBRICATING COMPOSITIONS AND METHOD OF IMPROVING WEAR AND EXTREME PRESSURE CHARACTERISTICS OF LUBRICATING OIL

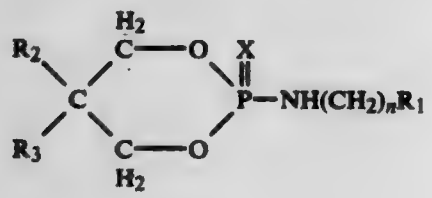
Kyung S. Shim, Irvington, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Jul. 2, 1979, Ser. No. 54,126

Int. Cl.³ C10M *1/44*

U.S. Cl. 252—49.9 7 Claims

1. The compound of the formula:



wherein:

n is 3 to 8;

R_1 is a mono- or di-alkylamine or alkenyl, having a total of from 8 to 20 carbon atoms;

R_2 and R_3 are each, independently, alkyl of 1 to 3 carbon atoms; and

X is oxygen or sulfur.

6. A lubricating composition comprising a major amount of lubricating oil or grease and a wear or extreme pressure improving amount of the compounds of claims 1, 2, 3, 4 or 5.

7. A method of improving the wear or extreme pressure lubricating characteristics of a lubricating oil or grease comprising adding to the lubricating oil or grease a wear or extreme pressure improving amount of the compounds of claims 1, 2, 3, 4 or 5.

4,348,292

MULTI-LAYERED LIQUID DETERGENT-BUILDER CONCENTRATE COMPOSITIONS WHICH ON ADDITION TO WATER PRODUCE STABLE CLEANING SOLUTIONS

Martin E. Ginn, Skokie, Ill., assignor to Walton-March, Inc., Highland Park, Ill.

Filed Oct. 17, 1980, Ser. No. 197,918

Int. Cl.³ C11D *17/04, 11/00*

U.S. Cl. 252—90 15 Claims

1. A detergent system for single-use applications in providing a substantially homogeneous aqueous solution or dispersion of predetermined composition to be used for detergent, cleaning, or the like, purposes, comprising a fluid-tight container having at least two separate layers of liquid compositions therein, one of said layers comprising, as an essential ingredient, a predetermined proportion of a concentrate of at least one surfactant which is soluble or readily dispersible in water; and another of said layers comprising, as an essential ingredient, an aqueous solution, in the form of a concentrate, which includes a predetermined proportion of at least one detergent builder; the compositions of said separate layers being of a character such that, if mixed together in their concentrated form, they would be incompatible or immiscible and the resulting mixed composition would be non-homogeneous; said liquid compositions of said separate layers being so related as to the ingredients and proportions thereof that, when essentially all of the liquid contents of the layers in said container are poured into a predetermined proportion of water, a final essentially stable solution or dispersion is obtained in ready-to-use form for the intended detergent, cleaning, or the like, use of the thus finally produced stable solution.

4,348,293

WATER-INSOLUBLE, WATER-PERMEABLE BAG HAVING A WATER-SOLUBLE OR WATER-DISPERSABLE PROTECTIVE LAYER AND CONTAINING A PARTICULATE DETERGENT COMPOSITION

David E. Clarke; James F. Davies, and John B. Tune, all of Merseyside, England, assignors to Lever Brothers Company, New York, N.Y.

PCT No. PCT/GB79/00192, § 371 Date Jul. 14, 1980, § 102(e) Date Jul. 14, 1980, PCT Pub. No. WO80/01078, PCT Pub. Date May 29, 1980

PCT Filed Nov. 16, 1979, Ser. No. 198,016

Claims priority, application United Kingdom, Nov. 17, 1978, 45076/78; Nov. 17, 1978, 45078/78

Int. Cl.³ C11D *17/00, 7/54*

U.S. Cl. 252—90 17 Claims

1. In a detergent product comprising a particulate detergent composition contained within a closed water-insoluble water-permeable bag formed of sheet material, the improvement which comprises the provision of a layer of water-soluble or water-dispersible material between said particulate detergent composition and said sheet material in an amount effective to protect the bag material from the detergent composition and substantially to prevent dusting-out of the detergent composition through the sheet material when in a dry state.

4,348,294

ONE PACKAGE REPLENISHER FOR ALUMINUM CLEANER

Peter F. King, Farmington Hills, Mich., assignor to Occidental Chemical Corporation, Warren, Mich.

Filed Jun. 26, 1980, Ser. No. 163,365
Int. Cl.³ C11D *1/72, 7/08*
U.S. Cl. 252—142 2 Claims

1. An aqueous acidic replenisher having good temperature stability and containing, as active ingredients, a polyalkylene glycol-abietic acid surfactant having the general formula:

$$A(R'O)_nH;$$

a polyalkylene glycol-hydrocarbon surfactant having the general formula:

$$R(OR')_nOH;$$

wherein:

R is an alkyl or alkylaryl group of 8–22 carbon atoms,

each R′ is a divalent radical selected from ethylene, propylene and combinations thereof

each n is an integer from 7 to 22, and

A is the abietic acid radical; fluoride; and sulfuric acid, characterized by having said surfactants present in a combined concentration of from about 10 to about 20% by weight, said fluoride present in a concentration of from about 2 to about 15% by weight and said sulfuric acid present in a concentration of from about 25 to about 50% by weight and being further characterized by having the said active ingredients present in a combined concentration of from about 38 to about 68% by weight.

4,348,295

CRYSTALLINE LITHIUM ALUMINATES

John L. Burba, III, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Dec. 18, 1980, Ser. No. 217,614
Int. Cl.³ B01D *15/04;* C01D *15/00*
U.S. Cl. 252—184 14 Claims

1. A process whereby crystalline hydrous alumina is converted to crystalline $LiX.2Al(OH)_3.nH_2O$, where nH_2O indicates waters of hydration, and

where X indicates anions which will form acids when in molecular combination with hydrogen or will form salts when in molecular combination with metal ions,

said process comprising reacting the said alumina with a concentrated solution of LiX at an elevated temperature of at least about 85° C.

4,348,296

CRYSTALLINE LITHIUM ALUMINATES

William C. Bauman; John M. Lee, and John L. Burba, III, all of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 18, 1980, Ser. No. 217,611
Int. Cl.³ B01D *15/04;* C01D *15/00*
U.S. Cl. 252—184 17 Claims

1. A process for growing crystalline hydrous alumina within the pores of a porous substrate, said process comprising

providing a seed of crystalline hydrous alumina in said pores by the in-situ precipitation of soluble Al values, thereby forming amorphous hydrous alumina,

converting the so-formed amorphous hydrous alumina to crystalline hydrous alumina by heating, and

adding to the seed-bearing substrate on aqueous solution of an alkaline aluminate, thereby providing aluminum oxide values which grow additional quantities of crystalline hydrous alumina on the crystalline hydrous alumina seeds.

4,348,297

CRYSTALLINE LITHIUM ALUMINATES

William C. Bauman, and John M. Lee, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 95,692, Nov. 19, 1979, which is a division of Ser. No. 939,545, Sep. 5, 1978, Pat. No. 4,221,767, which is a division of Ser. No. 812,534, Jul. 5, 1977, Pat. No. 4,116,856. This application Dec. 18, 1980, Ser. No. 217,612
Int. Cl.³ B01D *15/04;* C01D *15/00*
U.S. Cl. 252—184 12 Claims

1. Crystalline lithium aluminates conforming substantially to the empirical formula

$$(LiA_x)_y.2Al(OH)_3.nH_2O$$

where

A represents anions or negative-valence radicals, other than hydroxyl, having a valence of 1, 2, or 3,

x is the reciprocal of the valence of A,

y is a numerical value in the range of about 0.5 to about 1.2, and

n is a value of at least about 1 for waters of hydration.

4,348,298

NEMATIC LIQUID CRYSTAL MIXTURES

Horst Zaschke; Rudolf Wolff; Gerhard Pelzl, and Dietrich Demus, all of Halle, German Democratic Rep., assignors to VEB Werk fur Fernsehelektronik im Veb Kombinat Mikroelektronik, Berlin-Oberschöneweide, German Democratic Rep.

Continuation-in-part of Ser. No. 46,842, Jun. 8, 1979, abandoned. This application Mar. 31, 1980, Ser. No. 136,036
Claims priority, application German Democratic Rep., Jun. 16, 1978, 206038
Int. Cl.³ C09K *3/34;* G02F *1/13;* C07D *257/08*
U.S. Cl. 252—299.1 10 Claims

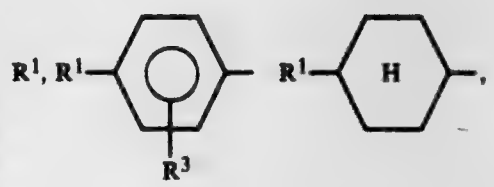
1. A nematic liquid crystal composition for modulation of transmitted or incident light, and for rendition of numerals, symbols, and images in color in electro-optical devices, comprising

(A) a nematic liquid crystal adapted for reorientation in an electric field due to its dielectric anisotropy, and

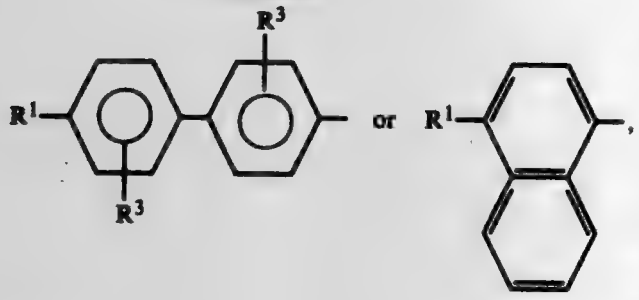
(B) a dichroic dyestuff adapted for simultaneous orientation with said nematic liquid crystal (A) between a light absorption and a light transmission position based on the guest-host effect, said dichroic dyestuff (B) an s-tetrazine derivative with rod-like molecular structure of the formula



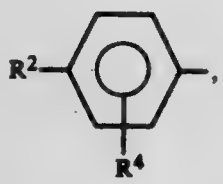
wherein X is



-continued



Y is R^2— or



R^1 is H—, F—, Cl—, Br—, I—, O_2N—, NC—, HO—, H_2N, $C_nH_{2n+1}NH$—, $C_nH_{2n+1}(CH_3)N$—, C_nH_{2n+1}—, $C_nH_{2n+1}O$—, $C_nH_{2n+1}S$—, $C_nH_{2n+1}COS$—, $C_nH_{2n+1}COO$—, $C_nH_{2n+1}OOC$—, $C_nH_{2n+1}CO$— or $C_nH_{2n+1}OCOO$—,

R^2 is H—, F—, Cl—, Br—, I—, O_2N—, NC—, HO—, H_2N—, $C_nH_{2n+1}NH$—, $C_nH_{2n+1}(CH_3)N$—, C_nH_{2n+1}—, $C_nH_{2n+1}O$—, $C_nH_{2n+1}S$—, $C_nH_{2n+1}COS$—, $C_nH_{2n+1}COO$—, $C_nH_{2n+1}OOC$— $C_nH_{2n+1}CO$— or $C_nH_{2n+1}OCOO$—,

R^3 is H—, F—, Cl—, Br—, I—, CH_3— or CF_3—, and

R^4 is H—, F—, Cl—, Br—, I—, CH_3—, or CF_3—,

n is a positive integer.

4,348,299

METHOD FOR PREPARING INORGANIC SULFIDES

Fumio Okamoto, Kamakura, and Katsuhiro Kato, Tokyo, both of Japan, assignors to RCA Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 181,945, Aug. 27, 1980, abandoned. This application Nov. 4, 1981, Ser. No. 318,149

Int. Cl.³ C09K *11/465*

U.S. Cl. 252—301.4 S 9 Claims

1. A method for preparing an inorganic sulfide material consisting essentially of

(a) heating at temperatures between about 800° and 1200° C. a mixture consisting essentially of (i) at least one member of the group consisting of oxidic materials of calcium, strontium and combinations thereof and (ii) a reactive sulfurizing flux which yields alkali metal sulfides and polysulfides upon heating and which is molten between about 800° and 1200° C. and consists essentially of (I) sulfur in elemental form, or as a sulfide of an alkali metal, or a thiosulfate of an alkali metal, and (II) at least one alkali metal as a compound thereof, said compound being thiosulfate, or a carbonate or a hydroxide, said at least one alkali metal being a member selected from the group consisting of sodium, potassium and combinations of at least two of sodium, potassium and lithium, said heating being continued until said flux melts, reacts with said oxidic material and the mixture forms into a molten mass,

(b) cooling said mass to about room temperature whereby relatively water-insoluble particles of said inorganic sulfide material crystallize in a relatively water-soluble matrix,

(c) dissolving said matrix with water and

(d) collecting particles of said inorganic sulfide material.

4,348,300

STABILIZATION OF SODIUM DISPERSION

Robert F. McCartney, Wilmington, Del., and Nicholas Nazarenko, West Chester, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 28, 1980, Ser. No. 173,098

Int. Cl.³ B01J *13/00*

U.S. Cl. 252—309 5 Claims

1. A process for reducing agglomeration of finely divided alkali metal particles which are dispersed in an inert organic liquid which consists essentially of introducing at least about 2.5% by weight based upon the weight of the alkali metal of an aryl halide into said organic liquid before the dispersion reaches a condition where agglomeration can occur.

4,348,301

PROCESS FOR MAKING COLLOIDAL SOLS OF ANTIMONY PENTOXIDE IN AN AQUEOUS MEDIUM

Charles E. Crompton, Arlington Heights, Ill.; Abdulla M. Z. Kazi, Euclid, and Inderjit S. Soni, Bedford Heights, both of Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 605,607, Aug. 18, 1975. This application Aug. 10, 1976, Ser. No. 713,155

Int. Cl.³ B01J *13/00*

U.S. Cl. 252—313 R 22 Claims

1. A process for making a colloidal dispersion of hydrous antimony pentoxide particles comprising introducing a particulate antimony component selected from the group consisting of, oxidizable antimony oxides and mixtures thereof into an essentially aqueous medium which contains no stabilizers and contacting said antimony component with hydrogen peroxide in the aqueous medium at a temperature of from about 0° C. to about the decomposition temperature of the reaction mixture for a length of time sufficient to convert at least a portion of the antimony component to colloidal particles of hydrous antimony pentoxide.

12. A process for making a colloidal dispersion of hydrous antimony pentoxide particles comprising introducing a particulate antimony component selected from the group consisting of oxidizable antimony oxides and mixtures thereof into a dispersion medium which is essentially aqueous, said dispersion medium containing a stabilizing amount of a component selected from the group consisting of alkanolamines, alkanolamine salts, aliphatic alphahydroxy carboxylic acids, and aliphatic polyhydroxy alcohols having vicinal hydroxyl groups, contacting said antimony components with hydrogen peroxide in said dispersion medium at a temperature of from about 0 degrees centigrade to about the decomposition temperature of the reaction mixture for a length of time sufficient to convert at least a portion of the antimony component to colloidal particles of hydrous antimony pentoxide.

4,348,302

ANTICORROSIVE AGENT STABLE TO HARD WATER

Horst Fröhlich, Eppstein, and Rainer Helwerth, Eschborn, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

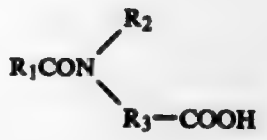
Filed Sep. 29, 1980, Ser. No. 191,677

Claims priority, application Fed. Rep. of Germany, Oct. 4, 1979, 2940258

Int. Cl.³ C23F *11/14, 11/12;* C07C *79/40*

U.S. Cl. 252—389 R 2 Claims

1. Anticorrosive agent stable to hard water, which comprises an alkali metal salt, alkaline earth metal salt, or amine salt of a compound of the formula



in which

R_1 is branched C_6–C_{13}-alkyl or C_5- or C_6-cycloalkyl, or polycycloalkyl having from 6 to 13 carbon atoms optionally substituted by 1 or 2 C_1–C_4-alkyl groups,

R_2 is hydrogen or C_1–C_6-alkyl, and

R_3 is C_1–C_{11}-alkylene having a linear or branched chain.

2. Anticorrosive agent stable to hard water consisting substantially of a 0.5 to 10 weight % aqueous solution, dispersion or emulsion of the compound as claimed in claim 1.

4,348,303

CATALYST FOR HYDRAZINE DECOMPOSITION

Philip J. Birbara, Windsor Locks, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Division of Ser. No. 82,291, Oct. 20, 1970, Pat. No. 4,324,819. This application May 18, 1981, Ser. No. 264,509

Int. Cl.³ B01J *23/46, 23/68, 23/88*

U.S. Cl. 252—447 **8 Claims**

1. A catalyst for decomposing hydrazine-base monopropellants, and capable of restarting the decomposition reaction once an initial flow of monopropellant has been terminated, said catalyst comprising:

(a) a high surface area carrier material; and

(b) ½ to 8% by weight of active iridium, ruthenium, or mixtures thereof, based on the total weight of catalyst, deposited on the exterior surface only of the carrier.

4,348,304

CRACKING PROCESS AND CATALYST FOR SAME

John S. Roberts; Brent J. Bertus, and Dwight L. McKay, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 26,504, Apr. 3, 1979, Pat. No. 4,256,564. This application Nov. 21, 1980, Ser. No. 209,076

Int. Cl.³ B01J *29/06, 23/08*

U.S. Cl. 252—455 Z **18 Claims**

1. A cracking catalyst composition comprising a zeolite-containing cracking catalyst containing at least one modifier selected from the group consisting of elemental indium and indium compounds free of the element antimony, said modifier being present in an amount sufficient to reduce the deleterious effect that nickel, vanadium, iron, copper, and/or cobalt have on the activity of said cracking catalyst.

4,348,305

LIQUID DETERGENT COMPOSITIONS COMPRISING MIXTURES OF ALKYL POLYGLYCOL ETHERS AND QUATERNARY AMMONIUM FABRIC SOFTENING AGENTS

Manfred Hennemann, Hilden, and Albrecht Löhr, Ratingen, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf-Holthausen, Fed. Rep. of Germany

Continuation of Ser. No. 32,467, Apr. 23, 1979, abandoned. This application Mar. 13, 1981, Ser. No. 243,503

Claims priority, application Fed. Rep. of Germany, Apr. 24, 1978, 2817834

Int. Cl.³ C11D *1/835, 1/62;* D06M *13/46*

U.S. Cl. 252—542 **17 Claims**

1. A liquid detergent having an optimum combination of washing ability, fabric softening action, and sudsing behavior, said liquid detergent comprising:

(a) from about 5 to 18% by weight of a mixture of alkyl polyglycol ethers of the formula



(I)

wherein R^1 represents a linear alkyl radical; R^2, in from about 20 to 75% of said alkyl polyglycol ethers, represents a C_1 to C_4 alkyl group and, in from 25 to 80% of said alkyl polyglycol ethers, represents a hydrogen atom, the total number of carbon atoms in R^1 and R^2 together being from about 11 to 15; and wherein n represents an average value of from about 5 to 9, n being a value such that the ethylene oxide portion of the alkyl polyglycol ether represents from about 50 to 65% by weight, based on the total weight of the alkyl polyglycol ether;

(b) from about 5 to 18% by weight of a mixture of alkyl polyglycol ethers of Formula I, wherein R^1 represents a linear alkyl group; R^2 is a hydrogen atom or, in from about 20 to 75% of said alkyl polyglycol ethers, represents a C_1 to C_4 alkyl group and, in from about 25 to 80% of said alkyl polyglycol ethers, represents a hydrogen atom, the total number of carbon atoms in R^1 and R^2 together being from about 6 to 10; and wherein n represents an average value of from about 3 to 8, n being of such a value that the ethylene oxide portion of the alkyl polyglycol ether represents from about 55 to 70% by weight, based on the total weight of the alkyl polyglycol ether, the quantitative ratio of (a) to (b) being from about 2:1 to 1:2; and

(c) from about 2.5 to 10% by weight of a fabric-softening quaternary ammonium salt.

8. The liquid detergent composition of claim 1 wherein component (c) is a derivative of ammonia or imidazoline.

4,348,306

FLAME RETARDANTS

Vladimir Mischutin, Union City, N.J., assignor to White Chemical Corporation, Bayonne, N.J.

Division of Ser. No. 797,767, May 17, 1977, Pat. No. 4,158,077, which is a division of Ser. No. 538,896, Jan. 6, 1975, abandoned, which is a division of Ser. No. 300,732, Oct. 25, 1972, abandoned. This application Apr. 18, 1979, Ser. No. 31,307

The portion of the term of this patent subsequent to Apr. 15, 1992, has been disclaimed.

Int. Cl.³ C09K *3/28*

U.S. Cl. 252—608 **11 Claims**

5. As a new product, an aqueous medium composition having the ability to impart flame retardant characteristics to synthetic organic textile materials, which comprises by weight:

a water-insoluble solid organic brominated compound, in an amount from about 50% to 75%,

a wetting agent for the organic brominated compound, in an amount from about ¼% to about 2.5%,

a protective colloidal material, in an amount from 1% to 5% and,

a water medium wherein the brominated organic compound is suspended in finely divided form, with substantially all of said particles under 2 microns in diameter.

4,348,307

SEALING MATERIALS FOR ELECTRICAL AND OPTICAL COMMUNICATION CABLES AND CABLE CONNECTORS

Bjoern Noethe, Ebersberg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 65,961, Aug. 13, 1979, abandoned. This application Dec. 2, 1980, Ser. No. 212,321

Claims priority, application Fed. Rep. of Germany, Oct. 30, 1978, 2847387

Int. Cl.³ C08K *5/05*

U.S. Cl. 528—49 **1 Claim**

1. A sealing material based on polyurethane for longitudinal sealing of electrical and optical communication cables and cable connectors, comprised of a substantially uniform mixture consisting essentially of:

a first component (A) formed of a material selected from the group consisting of polyester-polyether-polyol with an equivalent weight of about 350, a viscosity of about 2500 mPa.sec at 25° C. and a density of about 0.95 g/ml at 20°

C. and anhydrous caster oil, said material being mixed with dibutyl tin dilaurate;

a second component (b) consisting of hexamethylene-1, 6-diisocyanate; and

a third component (C) consisting of 2-octyldodecanol.

4,348,308

ORTHO-SUBSTITUTED ARYL PHOSPHITE ADDITIVE COMPOSITION

Motonobu Minagawa, Koshigaya; Yutaka Nakahara, Iwatsuki, and Kazumi Kitsukawa, Misato, all of Japan, assignors to Adeka Argus Chemical Co., Ltd., Saitama, Japan

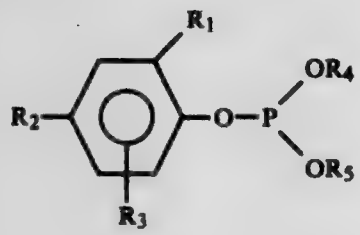
Continuation of Ser. No. 50,320, Jun. 20, 1979, abandoned. This application Jan. 19, 1981, Ser. No. 226,165

Claims priority, application Japan, Jun. 20, 1978, 53-75041

Int. Cl.³ C08K *5/09, 5/15, 5/52*

U.S. Cl. 524—110 **18 Claims**

1. In an additive composition for improving the color stability upon heating at 175° C. of a vinyl chloride polymer composition stabilized with environmentally acceptable stabilizers only, said stabilizer comprising at least one salt of a non-nitrogenous mono-carboxylic acid having 6 to 24 carbon atoms or a phenol having 6 to 36 carbon atoms with at least one of the metals Li, Na, K, Zn, Ba, Ca, Mg, and Sr, and said additive composition comprising a dehydroacetic acid compound, which is a sodium, potassium, lithium, magnesium, zinc, barium, calcium, tin, or strontium salt of dehydroacetic acid, or dehydroacetic acid, and an organic phosphite, the improvement in which the organic phosphite has the formula:

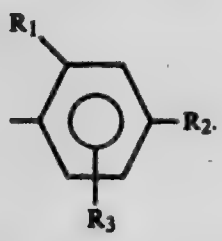


wherein

each of R_1 and R_2 independently is selected from t-butyl and t-amyl;

R_3 is hydrogen or methyl; and

each of R_4 and R_5 independently is selected from hydrogen, alkyl having 1 to 18 carbon atoms, cycloalkyl having 5 to 20 carbon atoms, aryl having 6 to 12 carbon atoms, aralkyl having 7 to 12 carbon atoms, alkaryl having 7 to 18 carbon atoms, ether-substituted-groups having 3 to about 80 carbon atoms, and 1 to about 40 ether oxygen atoms; and



11. A vinyl chloride polymer composition containing not more than 10 mg of arsenic, beryllium, cadmium, lead, mercury, and thallium combined per kg of vinyl chloride polymer and having improved color stability at 175° C. comprising a vinyl chloride polymer, at least one salt of a non-nitrogeneous monocarboxylic acid having 6 to 24 carbon atoms or a phenol having 6 to 36 carbon atoms with at least one of the metals lithium, sodium, potassium, zinc, barium, calcium, magnesium, and strontium, and a color improving additive composition according to claim 1.

4,348,309

PREPARATION OF VINYL ESTER RESIN POLYMER SPHERES

Warren W. Pruess, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Oct. 9, 1980, Ser. No. 195,564

Int. Cl.³ C08K *5/05*

U.S. Cl. 523—336 **10 Claims**

1. A process for preparing a slurry of macrospherical thermoset resin particles which comprises:

(a) making a polyphase mixture by stirring (1) an aqueous phase containing at least 0.25 weight percent polyvinyl alcohol into (2) a vinyl ester resin phase containing a free-radical polymerization catalyst to form an initial water-in-resin emulsion which inverts to a resin-in-water emulsion, said vinyl ester resin being a terminally unsaturated reaction product of an epoxide and a compound containing a group which is reactive with the epoxide, and

(b) adding a promoter and

(c) then curing the resin particles while the mixture is stirred.

4,348,310

SOLUTIONS OF SULFONYL FLUORIDE COMPOUNDS AND FLUOROPOLYMERS

Raimund H. Silva; Paul R. Resnick, both of Wilmington, Del., and Roger A. Smith, Kennett Square, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 79,173, Sep. 26, 1979, abandoned. This application Aug. 8, 1980, Ser. No. 176,595

Int. Cl.³ C08K *5/42, 5/10*

U.S. Cl. 524—167 **13 Claims**

1. A solution of fluoropolymer in halogenated solvent wherein: the fluoropolymer is present in an amount greater than 0.5 percent, by weight, of the solution at 25° C.; the solvent is a perhalogenated, saturated liquid having at least one alkyl segment, at least one alkyl ether segment, and at least one terminal sulfonyl fluoride polar group wherein the halogens in the liquid are selected from the group consisting of F, Cl, Br and I, and the alkyls have one to three carbon atoms; and the fluoropolymer is a copolymer of tetrafluoroethylene and perfluorinated sulfonyl fluoride- or carboxyl-containing vinyl monomer having an equivalent weight of greater than 1000.

4,348,311

COUPLING AGENT COMPOSITIONS FOR COUPLING AN ELASTOMER TO A FILLER AND ELASTOMER/FILLER COMPOSITIONS CONTAINING SAME

Jean Machurat, Neuville sur Saone; Jean-Claude Morawski, Chassieu, and Gerard Soula, Meyzieu, all of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Feb. 11, 1981, Ser. No. 233,459

Claims priority, application France, Feb. 25, 1980, 80 04037

Int. Cl.³ C08K *3/30;* **C09C** *3/10;* **C08K** *5/34;* **C08L** *21/02*

U.S. Cl. 524—530 **23 Claims**

1. An improved elastomeric composition of matter comprising a natural or SBR rubber, an inorganic filler, and a coupling agent for coupling said rubber to said filler, said coupling agent comprising at least one silane and at least one alkenyl succinimide.

4,348,312

ULTRA-HIGH-INDEX GLASS MICROSPHERES AND PRODUCTS MADE THEREFROM WITH A FLUOROPOLYMER AND AN ESTER POLYMER BLEND

Chi F. Tung, Mahtomedi, Washington County, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 129,077, Mar. 10, 1980, abandoned, which is a division of Ser. No. 962,324, Nov. 20, 1980, Pat. No. 4,192,576. This application Mar. 11, 1981, Ser. No. 242,550

Int. Cl.³ C08K *3/40;* C08L *27/16, 33/12*

U.S. Cl. 428—144 5 Claims

1. Retroreflective film comprising a layer in which glass microspheres are at least partially embedded, said layer comprising a transparent blend of 1 to 99 weight-parts of a copolymer that comprises about 3 parts of methylmethacrylate and 1 part of ethyl acrylate and 99 to 1 weight-parts of a copolymer that comprises about 3 parts of vinylidene fluoride and 1 part of hexafluoropropylene.

4,348,313

CONCRETE FORMULATION COMPRISING POLYMERIC REACTION PRODUCT OF SULFUR/CYCLOPENTADIENE OLIGOMER/DICYCLOPENTADIENE

William C. McBee, and Thomas A. Sullivan, both of Boulder City, Nev., assignors to The United States of America as represented by the Secretary of the Department of Commerce, Washington, D.C.

Continuation-in-part of Ser. No. 85,450, Oct. 16, 1979, Pat. No. 4,311,826. This application Oct. 14, 1980, Ser. No. 196,172

Int. Cl.³ C08F *28/02;* C08K *3/06*

U.S. Cl. 524—788 7 Claims

1. A sulfur concrete formulation, comprising:

an admixture of (a) at least one concrete aggregate, and (b) the polymeric reaction product of (1) sulfur with (2) a modifier, said modifier being a blend of a cyclopentadiene oligomer mixture and dicyclopentadiene, said oligomer mixture being free from dicyclopentadiene, wherein the cyclopentadiene oligomer mixture is at least 37 weight % of the blend, said polymeric reaction product having a softening point of no more than 116° F.

4,348,314

PRODUCTION OF THERMALLY STABILIZED POLYESTER WITH ALKYLENE CARBONATES AND SODIUM OR POTASSIUM THIOCYANATE

Stanley D. Lazarus, Petersburg, and Robert A. Lofquist, Richmond, both of Va., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Jun. 2, 1980, Ser. No. 155,375

Int. Cl.³ C08G *63/76*

U.S. Cl. 525—439 9 Claims

1. A high molecular weight linear polyester stabilized against thermal degradation comprising a polyester reacted with a thermally stabilizing amount of an alkylene carbonate having a 5 or 6 membered ring in the presence of a catalytic amount of a compound selected from the group consisting of sodium thiocyanate, potassium thiocyanate or mixtures thereof.

4,348,315

PROCESS IN PURIFICATION AND CONCENTRATION OF THE FACTOR VIII-COMPLEX

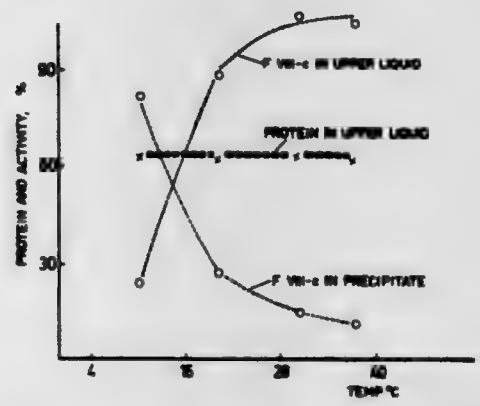
E. G. Birger Blombäck, and Lars G. Thorell, both of Karolinska Institutet, S-10401 Stockholm, Sweden

Filed Dec. 11, 1980, Ser. No. 215,530

Claims priority, application Sweden, Dec. 20, 1979, 7910527

Int. Cl.³ A23J *1/06*

U.S. Cl. 260—112 B 13 Claims



1. A process for purifying and/or concentrating the factor VIII complex comprising the steps of:

(1) dissolving a composition containing factor VIII complex together with impurities therein in glycine to form a solution of at least 1.5 M at a temperature of at least +15° C. and a pH of about 6.3–7.8 to form a solution containing factor VIII and a precipitate containing the impurities; and

(2) recovering the supernatant fluid containing the factor VIII complex.

4,348,316

NEW PROTEIN PP_{15}, A PROCESS FOR ITS PREPARATION AND ITS USE

Hans Bohn, Marburg, Fed. Rep. of Germany, assignor to Behringwerke Aktiengesellschaft, Marburg, Fed. Rep. of Germany

Filed Dec. 29, 1980, Ser. No. 220,848

Claims priority, application Fed. Rep. of Germany, Dec. 31, 1979, 2952792

Int. Cl.³ A61K *35/50, 39/395;* C07G *7/00*

U.S. Cl. 260—112 R 5 Claims

1. A protein, PP_{15}, extracted from placental tissue, having

(a) a carbohydrate content of 3.35±0.9%, consisting of 2.8±0.5% of hexoses, 0.3±0.2% of hexosamines, 0.05±0.05% of fucose, and 0.20±0.5% of neuraminic acid;

(b) a sedimentation coefficient $S_{20^0,w}$ of 2.9±0.2 S;

(c) a molecular weight of 30,700±3,200, determined in an ultracentrifuge;

(d) a extinction coefficient $E_1{}^{1\%}{}_{cm}$ (280 nm) of 14.2±1.0,

(e) an electrophoretic mobility within the range of that of albumin,

(f) an isoelectric point of 4.4±0.1, and the following amino acid analysis:

Amino Acid	Mol %	Coefficient of Variation (%)
Lysine	4.74	3.30
Histidine	3.81	5.43
Arginine	1.62	3.43
Aspartic acid	13.39	5.08
Threonine	3.85	5.35
Serine	6.38	2.81
Glutamic acid	13.43	5.32
Proline	4.35	14.25
Glycine	6.87	2.13
Alanine	6.51	8.26
Cystine ½	2.48	4.55

-continued

Amino Acid	Mol %	Coefficient of Variation (%)
Valine	2.29	15.67
Methionine	2.87	10.86
Isoleucine	8.39	8.18
Leucine	8.18	6.72
Tyrosine	2.09	8.49
Phenylalanine	6.27	2.27
Tryptophan	2.51	6.81

4,348,317

RECOVERY OF L-PHENYLALANINE AND L-ASPARTIC ACID DURING PREPARATION OF α-L-ASPARTYL-L-PHENYLALANINE METHYL ESTER

Gerald L. Bachman, Des Peres, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Dec. 29, 1980, Ser. No. 221,128
Int. Cl.³ C07C *99/12, 103/52*
U.S. Cl. 260—112.5 R 20 Claims

1. In a process for preparing α-APM comprising reacting an N-protected-L-aspartic anhydride and L-phenylalanine to form the α- and β-isomers of N-protected L-aspartyl-L-phenylalanine, separating α-L-aspartyl-l-phenylalanine, removing the N-protecting group to afford α-L-aspartyl-L-phenylalanine, esterifying said α-L-aspartyl-L-phenylalanine in aqueous, methanolic hydrogen halide to afford a precipitate of the hydrogen halide salt of α-APM and neutralizing said hydrogen halide salt of α-APM to afford α-APM, said process including separation and washing steps resulting in sidestreams, the improvement comprising recovering L-phenylalanine and L-aspartic acid from at least one of said sidestreams by a process comprising acidifying said sidestream to afford a first solution containing L-aspartic acid and a salt of L-phenylalanine and from which solution the salt of L-phenylalanine precipitates and is removed, forming a second solution by dissolving said removed salt of L-phenylalanine in a solvent therefor and adjusting the pH of said second solution to precipitate L-phenylalanine and adjusting the pH of said first solution to precipitate L-aspartic acid.

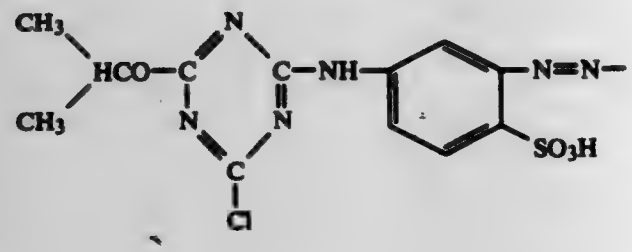
4,348,318

AZO-DYES, THEIR PREPARATION AND USE

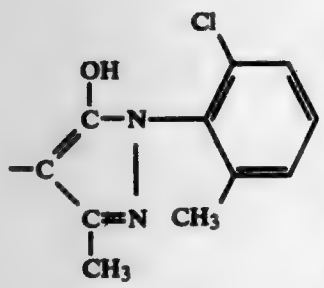
Edmond Ruhlmann, Saint-Louis, France, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 21, 1979, Ser. No. 96,595
Claims priority, application Switzerland, Nov. 30, 1978, 12354/78
Int. Cl.³ C07C *107/04;* C09B *62/085*
U.S. Cl. 260—153 1 Claim

1. The azo dye of the formula



(4)



4,348,319

PROCESS FOR THE PREPARATION OF CYANO-AZO DYESTUFFS

Rainer Hamprecht, Cologne, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 776,411, Mar. 10, 1977, abandoned. This application Jan. 7, 1981, Ser. No. 223,064
Claims priority, application Fed. Rep. of Germany, Mar. 13, 1976, 2610675
Int. Cl.³ C07C *107/04, 107/06;* C09B *43/00*
U.S. Cl. 260—208 11 Claims

1. A process for the preparation of an azo compound which, in the diazo component, contains at least one cyano group in the ortho-position relative to the azo bridge, consisting essentially of reacting the corresponding ortho-halogeno-azo dyestuff with copper-I cyanide or with a metal cyanide of the formula

$$Me_pCu(CN)_{p+1} \text{ or } Me_qZn(CN)_{q+2}$$

in which
Me is an alkali metal;
p is 1, 2 or 3; and
q is 1 or 2
in a reaction medium consisting essentially of water or water plus water-immiscible organic solvent and a phase transfer catalyst.

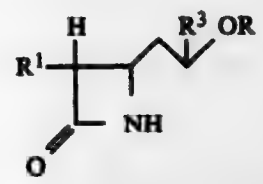
4,348,320

SUBSTITUTED AZETIDIONES

F. Aileen Bouffard, Scotch Plains; Burton G. Christensen, Metuchen, and David B. R. Johnston, Warren, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

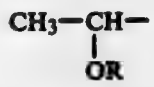
Continuation of Ser. No. 920,417, Jun. 29, 1978, abandoned, which is a continuation of Ser. No. 743,370, Nov. 19, 1976, abandoned. This application Aug. 20, 1980, Ser. No. 179,922
Int. Cl.³ C07D *205/08, 487/04*
U.S. Cl. 260—239 A 6 Claims

1. The compound having the formula



wherein R is hydrogen, acetyl, bromo-t-butoxy carbonyl, benzyloxycarbonyl, formyl, trifluoroacetyl, trimethylsilyl, or t-butyl dimethylsilyl;

R^1 and R^3 are independently selected from the group consisting of hydrogen; alkyl of 1–6 carbon atoms; or the group



wherein R is as defined; phenylalkyl, the alkyl chain of which is 1–6 carbon atoms; and phenyl.

4,348,321

RECRYSTALLIZATION OF PHOSMET

Joe D. McDaniel, Jr., Dallas, and Paul L. Pruitt, Carrollton, both of Tex., assignors to Zoecon Corporation, Palo Alto, Calif.

Filed Nov. 14, 1980, Ser. No. 206,916
Int. Cl.³ C07D *209/34*
U.S. Cl. 260—326 E 8 Claims

1. A process for the recrystallization of phosmet which comprises: preparing a mixture of phosmet with toluene and methanol; agitating and heating said mixture to form a hot

solution; cooling said solution with agitation until the phosmet is recrystallized; and filtering said cooled solution to collect said recrystallized phosmet, said recrystallized phosmet characterized by the absence of offensive mercaptan type odor and said toluene and methanol being present within the ratio of 1:2.5 to 1:1, by weight.

4,348,322

DIOXOLANE DERIVATIVES

Philip N. Edwards, and David M. G. Martin, both of Stockport, England, assignors to Imperial Chemical Industries Limited, London, England

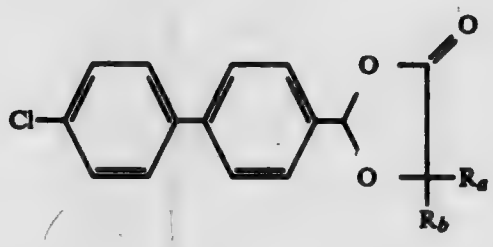
Filed Mar. 11, 1981, Ser. No. 242,529

Claims priority, application United Kingdom, Apr. 3, 1980, 8011378

Int. Cl.³ C07D *317/34*

U.S. Cl. 549—296 4 Claims

1. A 2-biphenylyl-1,3-dioxolan-4-one of the formula:



I

wherein R_a is hydrogen or a (1–4 C)alkyl radical, and R_b is a (1–4 C)alkyl radical or a phenyl radical optionally bearing a halogeno radical.

4,348,323

INTERMEDIATES AND DERIVATIVES THEREOF

Rainer Fuchs, Wuppertal; Erich Klauke, Odenthal; Ingeborg Hammann, Cologne; Bernhard Homeyer, Leverkusen; Wolfgang Behrenz, Overath; Wilhelm St-Noel, Wuppertal; Reinhard Lantzsch, and Albrecht Harhold, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 64,253, Aug. 6, 1979, Pat. No. 4,284,643.

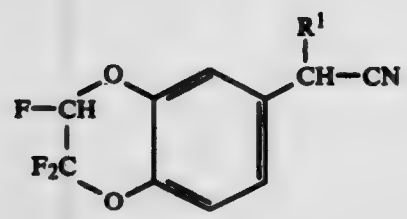
This application Jan. 19, 1981, Ser. No. 226,289

Claims priority, application Fed. Rep. of Germany, Aug. 28, 1978, 2837524; Oct. 14, 1978, 2844816

Int. Cl.³ C07D *319/20*

U.S. Cl. 549—362 3 Claims

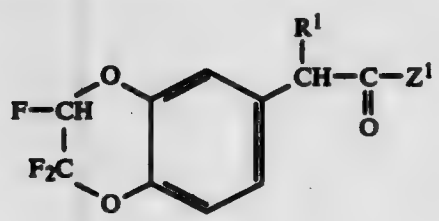
1. A compound of the formula



in which

R^1 is hydrogen or isopropyl.

2. A compound of the formula



in which

R^1 is hydrogen or isopropyl, and

Z^1 is halogen, OH or OC_{1-4}-alkyl.

4,348,324

LIQUID CRYSTALLINE SUBSTITUTED 1,3-DIOXANES AND MIXTURES CONTAINING THESE

Dietrich Demus; Horst Zaschke, both of Halle; Hans-Mathias Vorbrodt, Quedlinburg; Horst Kresse, and Wolfgang Weissflog, both of Halle, all of German Democratic Rep., assignors to VEB Werk für Fernsehelektronik im Veb Kombinat Mikroelektronik, Berlin-Oberschöneweide, German Democratic Rep.

Filed Dec. 12, 1979, Ser. No. 102,944

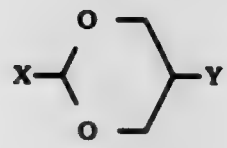
Claims priority, application German Democratic Rep., Dec. 13, 1978, 209707; Dec. 13, 1978, 209708

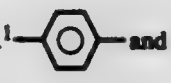
The portion of the term of this patent subsequent to Aug. 17, 1999, has been disclaimed.

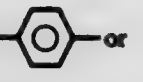
Int. Cl.³ C09K *3/34*; G01F *1/13*; C07D *319/06, 319/04*

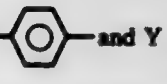
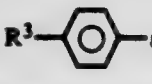
U.S. Cl. 549—369 40 Claims

1. A compound of the general formula:



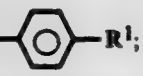
wherein X =  and Y = R^2, or

X = R^4 and Y =  or

X =  and Y =  and

where $R^1 = C_nH_{2n+1}$; $C_nH_{2n+1}O$; $C_nH_{2n+1}COO$;

$C_nH_{2n+1}OCOO$; F; Cl; Br; OH;

$R^2 = C_nH_{2n+1}$; OOC—  —R^1;

$R^3 = C_nH_{2n+1}$; $C_nH_{2n+1}O$; CF^3; CN; NO_2;

$R^4 = C_nH_{2n+1}$, and n = 1 to 10,

4,348,325

METHYL 3-AZIDO-4-C-CYANO-2,3,4,6-TETRADEOXY-α-D-ARABINO-HEXOPYRANOSIDE

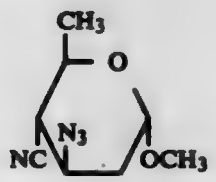
Philippe L. Durette, New Providence, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Mar. 30, 1981, Ser. No. 248,178

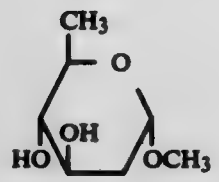
Int. Cl.³ C07D *309/14*

U.S. Cl. 549—419 3 Claims

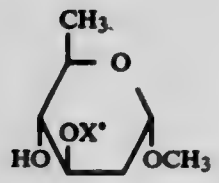
1. A process for preparing:



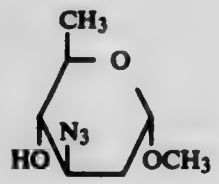
comprising the steps of treating



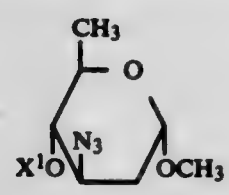
with an activating agent to yield



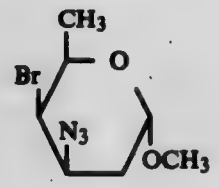
followed by an azidolysis in the presence of an azide selected from lithium azide, sodium azide, potassium azide to yield



followed by treating with an activating agent selected from p-methylphenylsulfonyl chloride, trifluoromethanesulfonic anhydride, methanesulfonyl chloride, p-bromophenylsulfonyl chloride and p-nitrophenyleneformyl chloride to yield



followed by treating with a brominating agent to yield:



followed with a cyanide reagent; wherein X° is selected from methanesulfonyl, trifluoromethanesulfonyl, p-methylphenylsulfonyl, p-bromophenylsulfonyl; and X′ is selected from methanesulfonyl, trifluoromethanesulfonyl, p-methylphenylsulfonyl, p-bromophenylsulfonyl, p-nitrophenylsulfonyl.

4,348,326

SUBSTITUTED 7-OXABICYCLO[2,2,1]HEPTA-2,5-DIENE METHANOLS

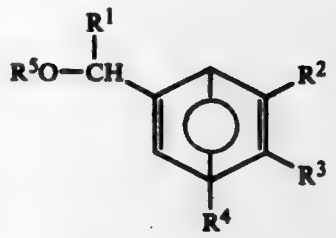
William A. Van Saun, Jr., Titusville, N.J., assignor to FMC Corporation, Philadelphia, Pa.

Division of Ser. No. 104,201, Dec. 17, 1979, Pat. No. 4,239,773, which is a continuation-in-part of Ser. No. 11,334, Feb. 12, 1979, abandoned. This application Aug. 11, 1980, Ser. No. 176,736

Int. Cl.³ C07D *307/00*

U.S. Cl. 549—463 **3 Claims**

1. A compound of the formula



wherein R^1 is hydrogen, an ethynyl group, a cyano group, a haloalkyl group, an aminocarbonyl group, or an aminothioxomethyl group; R^2 and R^3, the same or different, are nitro, halogen, cyano, lower alkyloxycarbonyl, lower alkylsulfinyl, lower alkylsulfonyl, or the group $—CONR^6R^7$ or $—SO_2NR^6R^7$ where R^6 and R^7 are independently hydrogen, lower alkyl, or halo(lower)alkyl; R^4 is phenyl, benzyl or benzoyl, optionally substituted with halogen or lower alkyl; and R^5 is hydrogen.

4,348,327

PROCESS FOR THE PREPARATION OF 17α-HYDROXY- AND 17Aα-HYDROXY-D-HOMOETIOCARBOXYLIC ACIDS

Robert Nickolson; Ulrich Kerb; Rudolf Wiechert, all of Berlin, Fed. Rep. of Germany; Leo Alig, Kaiseraugst, Switzerland; Andor Fürst, Basel, Switzerland, and Marcel Müller, Frenkendorf, Switzerland, assignors to Schering Aktiengesellschaft, Berlin & Bergkamen, Fed. Rep. of Germany

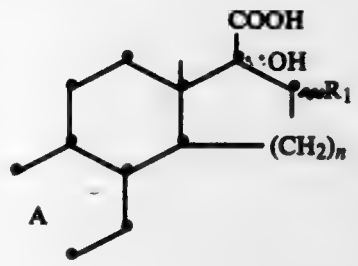
Filed Jun. 23, 1981, Ser. No. 276,563

Claims priority, application Fed. Rep. of Germany, Jun. 24, 1980, 3024008

Int. Cl.³ C07J *9/00*

U.S. Cl. 260—397.1 **10 Claims**

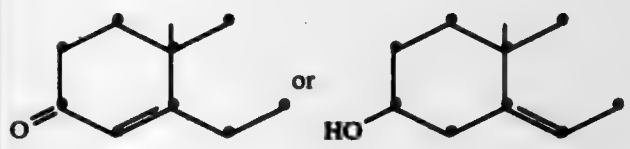
1. A process for preparing a 17α-hydroxy- or 17aα-hydroxy-D-homoetiocarboxylic acid of the formula



wherein

n is 1 or 2,

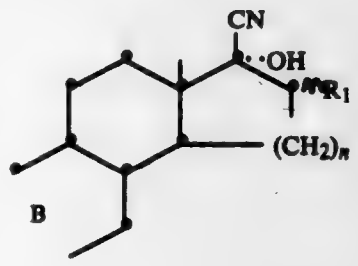
A is



and

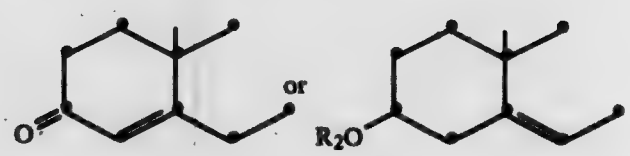
R_1 is H or CH_3,

comprising hydrating the corresponding nitrile of the formula



wherein

R_1 and n are as defined above and
B is



wherein R_2 is hydrogen or C_{1-6} alkanoyl, with a mixture of a lower alkane carboxylic acid and its anhydride in the presence of perchloric acid,

and subsequently treating the thus-formed 17β-N-acylcarboxamide in a polyhydric alcohol with an alkali metal hydroxide at a temperature of 100° C. or higher.

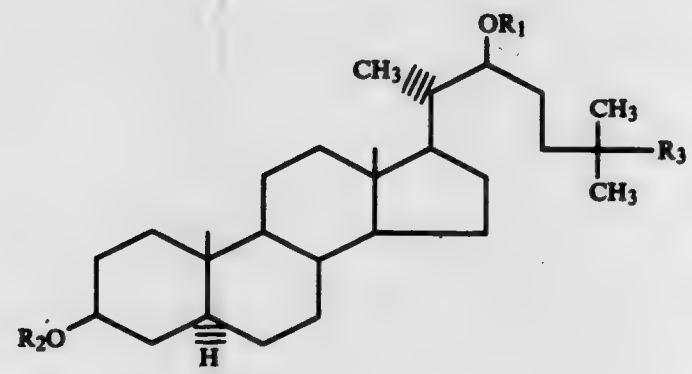
4,348,328

25-SUBSTITUTED-5α-CHOLESTANE-3β,22S-DIOL

Robert J. Chorvat, Arlington Heights, Ill., assignor to G.D. Searle & Co., Skokie, Ill.

Filed Nov. 9, 1981, Ser. No. 319,519
Int. Cl.³ C07J 9/00
U.S. Cl. 260—397.2 **9 Claims**

1. A compound of the formula:



wherein R_1 and R_2 are:

(a) hydrogen; and

(b) an esterifying moiety of the formula HO—C(O)—$(CH_2)_n$—C(O)—; R_1 and R_2 each being the same or different;

wherein n is an integer from 1 to 3;

wherein R_3 is:

(a) halogen

(b) alkyl of 1 to 6 carbon atoms inclusive.

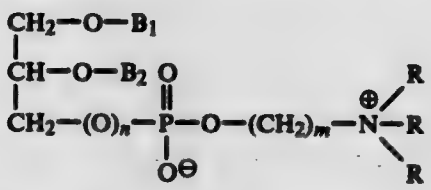
4,348,329

BIOCOMPATIBLE SURFACES

Dennis Chapman, Royal Free Hospital School of Medicine, 8, Hunter St., London WC1, England

Filed Dec. 22, 1980, Ser. No. 218,556
Claims priority, application United Kingdom, Dec. 20, 1979, 7943936; Oct. 15, 1980, 8033221
Int. Cl.³ C07F 9/02; A23J 7/00
U.S. Cl. 260—403 **8 Claims**

1. A conjugated di-yne of the general formula:



wherein at least one of B_1 and B_2 is a group of the formula

$$—(CO)_p—X_1—C{\equiv}C—C{\equiv}C—Y_1$$

wherein p is 0 or 1, X_1 is a direct bond or a divalent aliphatic or cycloaliphatic group, Y_1 is H or a monovalent aliphatic or cycloaliphatic group, the total number of carbon atoms in X_1 and Y_1 in each of B_1 and/or B_2 being 8 to 26; and the other of B_1 and B_2 is either (a) the same or a different group of the formula:

$$—(CO)_p—X_1—C{\equiv}C—C{\equiv}C—Y_1$$

where X_1, Y_1 or p are as defined above;

or (b) is an aliphatic or cycloaliphatic group containing at least 8 carbon atoms; n is 0 to 1, m is 2, 3 or 4 and each R independently represents an alkyl group containing 1 to 4 carbon atoms.

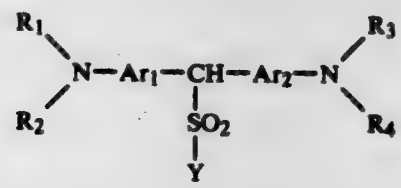
4,348,330

PROCESS FOR THE PRODUCTION OF SULPHINATES OF BENZHYDROL COMPOUNDS

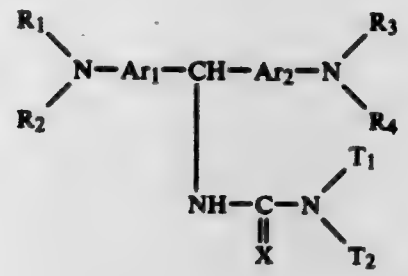
Malcolm C. Clark, Cheadle, and John B. Henshall, Manchester, both of England, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Feb. 6, 1981, Ser. No. 232,084
Claims priority, application United Kingdom, Mar. 14, 1980, 8008768; Oct. 10, 1980, 8032772
Int. Cl.³ C07C 145/00
U.S. Cl. 260—456 NS **13 Claims**

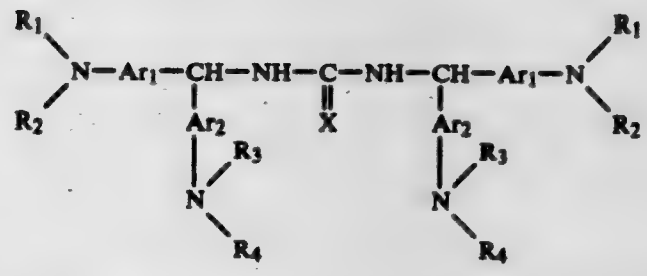
1. A process for the production of a sulphinate of formula


(1)

which comprises reacting, in an organic solvent in the presence of a mineral acid or an organic acid, a compound of the formula


(2a)

or


(2b)

or a mixture of the compounds of formulae (2a) and (2b) with a compound of formula

$$Y—SO_2—M, \quad (3)$$

wherein

Ar_1 and Ar_2 are the same or different and each represents an unsubstituted or substituted aromatic carbocyclic radical, R_1, R_2, R_3 and R_4 independently of one another represent hydrogen, C_1–C_{12}-alkyl, C_2–C_8-alkoxyalkyl, cycloalkyl, aralkyl, aryl, or substituted alkyl, cycloalkyl, aralkyl or aryl, or each of the pairs of substituents (R_1 and R_2) and (R_3 and R_4), together with the nitrogen atom to which said pair is attached, independently, represents a heterocyclic ring, or one or several of the substituents R_1, R_2, R_3

and R_4 with the nitrogen and an adjacent carbon atom of the residue Ar_1 or Ar_2 form a heterocyclic ring,

Y represents an unsubstituted or substituted C_1–C_{20}-alkyl, cycloalkyl, aryl, aralkyl or heterocyclic radical,

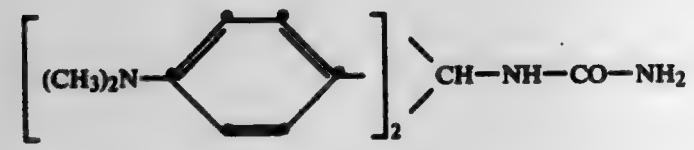
X represents oxygen, sulphur or imino,

T_1 and T_2 independently represent hydrogen, C_1–C_{12}-alkyl, C_2–C_{12}-alkenyl, aryl, aralkyl, and T_1 also amido or ureido, or T_1 and T_2 together with the nitrogen atom which links them represent a five or six-membered heterocyclic radical and

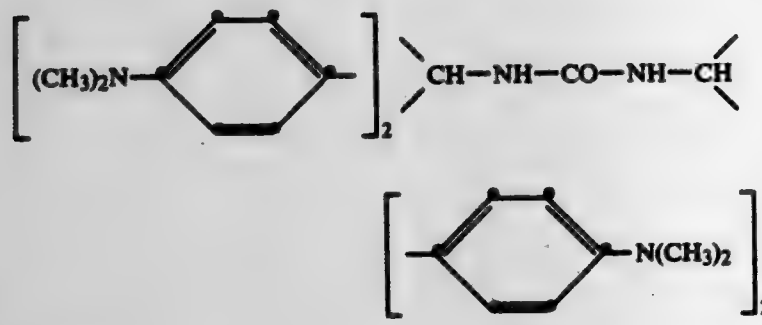
M represent hydrogen, ammonium, an alkali metal or an alkali earth metal.

8. A process according to claim 1, wherein a mixture of the compounds of formulae (2a) and (2b) is used.

9. A process according to claim 8, wherein a mixture of the compound of formula



and of the compound of formula



is used.

4,348,331

PROCESS FOR THE PREPARATION OF N-SUBSTITUTED IMIDO-DICARBOXYLIC ACID DIARYL ESTERS

Karlfried Dickore, Leverkusen, and Engelbert Kühle, Berg.-Gladbach, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 10, 1981, Ser. No. 233,249

Claims priority, application Fed. Rep. of Germany, Sep. 19, 1980, 3035392; Sep. 19, 1980, 3035393

Int. Cl.³ C07C *125/073, 125/075*

U.S. Cl. 260—465 D 32 Claims

1. Process for the production of an N-substituted imido-dicarboxylic acid diaryl ester compound of the formula

$$R^1\text{-}N(CO\text{-}OR^2)_2 \qquad (I)$$

wherein

R^1 is a straight-chain or branched alkyl of from 1 to 10 carbon atoms; substituted alkyl wherein the substituents are at least one of lower alkoxy, lower alkylmercapto, halogen, cyano or nitro; alkenyl or alkynyl of from 3 to 8 carbon atoms; cycloaliphatic of from 3 to 8 carbon atoms; substituted by cycloaliphatic wherein the substituent is lower alkyl; araliphatic with from 7 to 12 carbon atoms; substituted araliphatic wherein the aromatic ring system is substituted by halogen, nitro, trifluoromethyl, cyano, lower alkyl or lower alkoxy; an aromatic radical of from 6 to 12 carbon atoms and is optionally substituted by halogen, nitro, trifluoromethyl, cyano, lower alkyl or lower alkoxy;

R^2 is a phenyl or naphthyl radical; substituted phenyl or naphthyl wherein the substituents are at least one of chlorine, methyl or methoxy; and

which process comprises reacting an amine salt of the formula

$$R^1\text{-}NH_2HX^1 \qquad (I)$$

in which

R^1 is defined as above; and

X^1 is a chlorine atom

with a carbonic acid aryl ester halide of the formula

$$R^2O\text{—}CO\text{—}X^2 \qquad (III)$$

wherein

R^2 is defined as above; and

X^2 is a chlorine or fluorine atom

at a temperature from 100° C. to 300° C.

4,348,332

PHOSPHONOFORMALDEHYDE, A PROCESS FOR ITS PREPARATION AND ITS USE AS AN INTERMEDIATE PRODUCT FOR THE PREPARATION OF MEDICAMENTS

Hermann Oediger, Cologne; Folker Lieb, Leverkusen, and Hans Disselnkötter, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

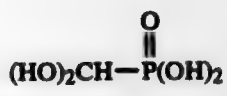
Filed Oct. 5, 1981, Ser. No. 308,717

Claims priority, application Fed. Rep. of Germany, Oct. 23, 1980, 3039998

Int. Cl.³ C07F *9/38;* C07D *213/18*

U.S. Cl. 260—502.4 R 1 Claim

1. A compound which is phosphonoformaldehyde of the formula



(I)

or a salt thereof.

4,348,333

β-KETOCARBOXYL AND PHOSPHONATE DIHYDRO-CHALCONE SWEETENERS

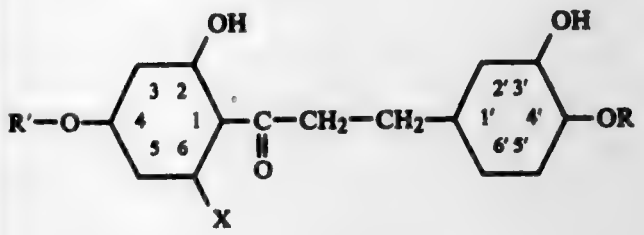
Grant E. DuBois, Palo Alto, Calif., assignor to The United States of America as represented by the Secretary of the Department of Health and Human Services, Washington, D.C.

Filed Oct. 9, 1981, Ser. No. 310,406

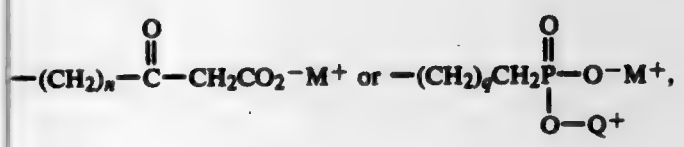
Int. Cl.³ C07F *9/38;* C07C *57/38;* A23L *1/236*

U.S. Cl. 260—502.4 R 14 Claims

1. A dihydrochalcone compound represented by the structural formula



wherein R′ is



n and q, respectively, are numbers between 1 and 5, R is a lower alkyl of from 1 to 3 carbon atoms, X is hydrogen or hydroxy, and M^+ and Q^+ are the same or different and are physiologically acceptable cations.

4,348,334

PROCESS FOR PRODUCING THE MAGNESIUM SALT OF 3-NITRO-NAPHTHALENE-1,5-DISULFONIC ACID (NITRO-ARMSTRONG'S ACID)

Bernhard Albrecht, Buus; Hans Frey, Bettingen; Vinzenz Habermacher, Basel, all of Switzerland; Horst Behre, Odenthal, Fed. Rep. of Germany; Lutz Kienitz, Bergisch Gladbach, Fed. Rep. of Germany; Wolfgang Schenk, Leverkusen, Fed. Rep. of Germany; Guido Steffan, and Axel Vogel, both of Odenthal, Fed. Rep. of Germany, assignors to Ciba-Geigy AG, Basel, Switzerland and Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 18, 1980, Ser. No. 113,412

Claims priority, application Switzerland, Feb. 2, 1979, 1045/79

Int. Cl.³ C07C *143/55*

U.S. Cl. 260—505 C 16 Claims

1. A process for producing the magnesium salt of 3-nitronaphthalene-1,5-disulfonic acid by sulfonating naphthalene, nitrating the sulfonation product, and separating the pure magnesium salt of 3-nitronaphthalene-1,5-disulfonic acid, which process comprises the steps of:

(a) sulfonating naphthalene wth liquid SO_3 in the presence of an inert organic solvent at temperatures between −40° and +20° C., the ratio of added SO_3 to added naphthalene being during the whole course of addition in the range of 2.5 to 5.0 mols of SO_3 per mol of naphthalene;

(b) adding to the reaction mixture obtained a mixture consisting of about equal parts of 100% sulfuric acid and fully reacted crude nitration mixture obtained at the end of step (b), separating from the resulting two-phase system the upper organic solvent phase by decanting, and removing from the Armstrong's acid anhydride slurry the remainder of organic solvent by distillation, subsequently adding to the residue the amount of nitric acid required for nitration, in admixture with sulfuric acid and SO_3, at a temperature of between 10° and 60° C., and nitrating at this temperature for 1 to 6 hours;

(c) adding then firstly water and afterwards, in the absence of the inert organic solvent, at 90° to 120° C., a compound releasing magnesium ions, the amount being such that per mol of 3-nitronaphthalene-1,5-disulfonic acid, 1.1 to 1.3 mols of magnesium ions are added, and a sulfuric acid concentration of between 40 and 60 percent by weight (relative to the sulfuric acid and water) is maintained; and

(d) separating the crystallised magnesium salt of 3-nitronaphthalene-1,5-disulfonic acid at a temperature of between 20° and 70° C., and subsequently optionally washing it with a maximum of 60 percent by weight of sulfuric acid and/or water.

4,348,335

PROCESS FOR THE PARTIAL REDUCTION OF POLYNITRATED DIARYL COMPOUNDS

Karl Linhart; Dieter Pawellek, both of Leverkusen, and Harald Gleinig, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 14, 1980, Ser. No. 139,952

Claims priority, application Fed. Rep. of Germany, Apr. 26, 1979, 2916815

Int. Cl.³ C07C *143/29*

U.S. Cl. 260—508 7 Claims

1. Process for the preparation of 4-nitro-4-aminostilbene-2,2'-disulphonic acid or alkali metal salts thereof by reducing 4,4'-dinitro-stilbene-2,2'-disulphonic acid or alkali metal salts thereof with sulphides, or subetances which donate sulphide ions, at elevated temperature, characterised in that the reduction is carried out with equivalent amounts of sulphide per mol of nitro group to be reduced and in the presence of 0.5–10 mols of ammonia per mol of starting compound.

4,348,336

PROCESS FOR THE ISOLATION OF 1-NAPHTHYLAMINE-4,6- AND 1-NAPHTHYLAMINE-4,7-DISULPHONIC ACID

Heinz U. Blank, Odenthal; Horst Behre, Odenthal-Eikamp, and Hans W. Linden, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 25, 1981, Ser. No. 247,414

Claims priority, application Fed. Rep. of Germany, Apr. 5, 1980, 3013276

Int. Cl.³ C07C *143/60*

U.S. Cl. 260—506 4 Claims

1. A process for the isolation of 1-napthylamine-4,6- or 1-napthylamine-4,7-disulphonic acid from sulphonation mixtures obtained in the sulphonation of 1-napthylamine-6- or 1-naphthylamine-7-sulphonic acid, respectively with sulphuric acid and sulphur trioxide, wherein the aqueous solutions or suspensions formed when the sulphonation mixtures are introduced into water are warmed to 85° to 120° C. and the resulting solutions or suspensions are optionally kept for a period of time at this temperature, are then cooled to a temperature below 70° C., and the 1-naphthylamine-4,6- or 1-naphthylamine-4,7-disulphonic acid which has crystallised out is filtered off.

4,348,337

PROCESS FOR THE MANUFACTURE OF 1-HALOGEN-1-OXO-Δ^3-PHOSPHOLENES

Utz-Hellmuth Felcht, Bruchmühlbach, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed May 14, 1980, Ser. No. 149,741

Claims priority, application Fed. Rep. of Germany, May 16, 1979, 2919754

Int. Cl.³ C07F *9/34*

U.S. Cl. 260—543 P 8 Claims

1. A process for the manufacture of a 1-halogen-1-oxo-Δ^3-phospholene, which comprises reacting a phosphorus trihalide, a 1,2-epoxide and a 1,3-diene, at a temperature of from about 50° to 200° C. and without isolation of an intermediate, the amounts of the phosphorus trihalide, the 1,2-epoxide and the 1,3-diene being in a molar proportion of 1:greater than 1: at least 1, respectively.

4,348,338

INJECTION-TYPE PRESSURE-FREED CARBURETOR

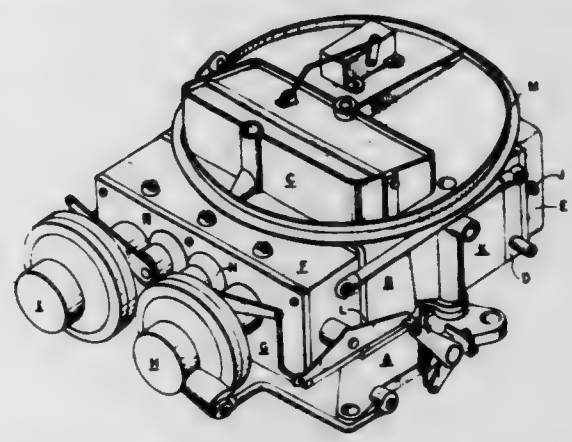
Jose L. P. Martinez, and Jose P. Osorio, both of Viveros de Coyoacan No. 5, Viveros de la Loma, Tlalnepantla, Mexico

Continuation of Ser. No. 71,722, Aug. 31, 1979, abandoned. This application Apr. 6, 1981, Ser. No. 251,060

Claims priority, application Mexico, Oct. 18, 1978, 175349

Int. Cl.³ F02M *15/04*

U.S. Cl. 261—142 9 Claims



1. A pressure-feed, fuel injection type carburetor comprising:

a carburetor base adapted to be connected to an intake manifold of an internal combustion engine, said base having a pair of cylindrical openings therethrough having axial centerlines, a shaft pivotally mounted in said base radially extending across both openings perpendicular to both axial centerlines, a pair of acceleration dampers fixedly mounted on said shaft in said openings and movable with said shaft, vacuum duct means in said base terminating in one of said openings downstream of said dampers, and an idle-speed fuel-air mixture duct terminating in both said openings;

a main housing connected to said base, said main housing including a pair of venturi-shaped internal bores axially aligned on the centerlines of said openings in said base;

a gasifier housing connected to one side of said main housing, said gasifier housing including a heated fluid inlet, a heated fluid outlet, a fuel inlet, a fuel outlet, means interconnecting said fuel inlet to said fuel outlet for transferring heat from a heated fluid to a fuel passing therethrough for gasifying a portion of the fuel;

a secondary housing connected to a side of said main housing opposite said gasifier housing;

pressure-actuated shut-off means mounted on said secondary housing, including a first valve seat in said secondary housing, a first needle adapted to seat on said first seat, first vacuum-operated diaphragm means mechanically connected to said first needle and operative to move said first needle towards and away from said first valve seat, conduit means interconnecting said fuel outlet of said gasifier housing and said first seat, and conduit means interconnecting said vacuum duct means in said base and said first diaphragm means, said shut-off means permitting fuel flow whenever a vacuum is present in one of said openings downstream of said dampers;

primary injection metering valve means mounted on said secondary housing and mechanically linked with one end of said pivotable shaft in said base, said primary valve means including first means for metering fuel in response to the rotational position of said shaft, and means for feeding fuel during low speed operation of the engine, said means for feeding being adapted to be progressively throttled back as said means for metering progressively opens;

complementary injection metering valve means mounted on said secondary housing and mechanically linked with the other end of said pivotable shaft in said base, said complementary valve means including second means for metering fuel in response to the rotational position of said shaft;

means for interconnecting said shut-off means with said primary valve means and said complementary valve means for fuel flow therebetween;

means in said secondary housing interconnecting said means for feeding fuel and said idle-speed fuel-air mixture duct in said base, including an idle-speed air intake duct, means for adjusting the amount of fuel entering said air intake duct, and means for regulating the amount of the resultant fuel-air mixture entering said mixture duct;

a pair of spray units, one mounted in each venturi-shaped bore;

means in said secondary housing for interconnecting said first means for metering and one of said pair of spray units; and

means in said secondary housing for interconnecting said second means for metering to the other of said pair of spray units.

4,348,339

METHOD FOR MANUFACTURING OXIDIC NUCLEAR FUEL BODIES

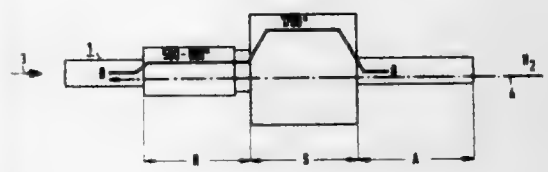
Helmut Assmann, Dormitz; Egbert Brandau, Bebra; Wolfgang Dörr, Erlangen; Viktor Mathieu, Neuberg, and Gerhard Diehtjar, Langenselbold, all of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft and Reaktor-Brennelement Union GmbH, both of Mülheim, Fed. Rep. of Germany

Filed Dec. 18, 1979, Ser. No. 104,973

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1978, 2855166

Int. Cl.³ G21C *21/00*

U.S. Cl. 264—0.5 **10 Claims**



1. Method for manufacturing oxidic nuclear fuel bodies with oxygen-to-metal ratio of 2.0±0.02 at treating temperatures between 1000° and 1400° C., which comprises adding up to 25% U_3O_8 as a grain-growth-promoting sintering additive to a powder selected from the group consisting of UO_2 powder, a powder mixture of UO_2 with gadolinium oxide, and a powder mixture of UO_2 with PuO_2, mixing the additive and said powder and pressing the additive containing mixture into blanks, exposing said blanks in a furnace for a sintering time of up to 30 minutes to a first atmosphere of a mild oxidizing gas to cause the UO_2 powder to come to a constant stoichiometric excess of O_2 to U and sintering said blanks therein at a temperature within the range of 1000°–1400° C., and subsequently exposing the sintered blanks in said furnace to a second atmosphere of hydrogen as a reducing gas at a temperature within the range of 1000°–1400° C.

4,348,340

PRODUCTION OF SPHEROIDAL GRANULES FROM MOLTEN INORGANIC MATERIALS

Francis Gagneraud, Villa Montmorency, 6 Allee des Tilleuls, 75016 Paris, France

Filed Aug. 6, 1980, Ser. No. 175,892

Claims priority, application France, May 20, 1980, 80 11199

Int. Cl.³ B01J *2/02*

U.S. Cl. 264—8 **3 Claims**

1. A process for producing spheroidal granules with a high sphericity index from molten material consisting essentially of metallurgical slag or scoria, comprising:

(a) pouring the molten material directly onto an uncooled polygonal rotating device having edge or onto an uncooled cylindrical rotating device equipped with paddles or blades, the peripheral speed of said edges or said paddles or blades being at least 10 meters/second with a sufficient number of said edges or said paddles or blades being present to provide at least 40 passages of said edges or said paddles or blades past a fixed point per second, such that the molten material being poured onto said rotating device is disintegrated into small molten droplets and projected into the ambient atmosphere, said droplets solidifying in the ambient atmosphere into spheroidal granules consisting substantially of granules having a diameter between 0.1 and 5 mm and a hardness index at least equal to 6 (Mohs scale), no gaseous or liquid cooling means, other than the ambient atmosphere, being provided to the molten material during said step (a); and

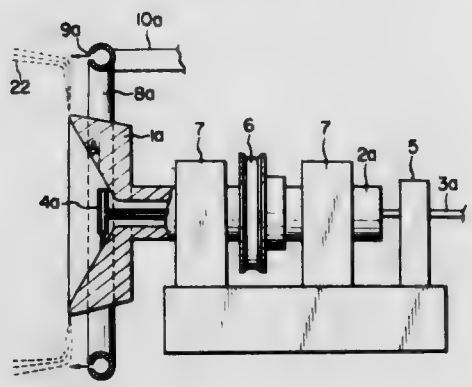
(b) recovering the formed spheroidal granules.

4,348,341

PROCESS FOR PRODUCTION OF PRECURSOR OF ALUMINA FIBER

Takeshi Furuya; Yoshihisa Uchiyama, and Akinori Kouda, all of Ohmi, Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 70,528, Aug. 28, 1979, abandoned. This application Jul. 14, 1980, Ser. No. 167,745
Claims priority, application Japan, Aug. 28, 1978, 53-103850
Int. Cl.³ B01J *2/04*
U.S. Cl. 264—8 7 Claims



1. A process for the production of a precursor of a polycrystalline alumina fiber comprising

(a) continuously feeding an aqueous solution containing (i) 20 to 35% by weight, calculated as Al_2O_3, of basic aluminum chloride, (ii) up to 10% by weight of colloidal silica, and (iii) 0.2 to 5% by weight of polyvinyl alcohol and having a viscosity of 500 to 2,000 centipoise through the center of a rotating funnel-shaped disk to the inclined surface of said disk;

(b) atomizing said aqueous solution by the centrifugal force of said rotating disk to form droplets;

(c) contacting the droplets of step (b) with a high-pressure fluid to dry and convert said droplets into filaments; and

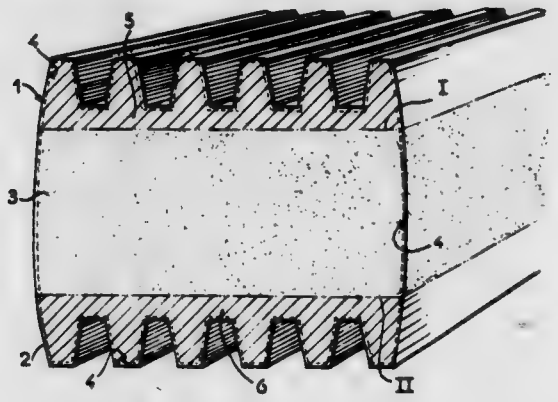
(d) collecting the filaments in the form of a mat.

4,348,342

METHOD FOR MAKING ELECTRODYNAMIC LOUDSPEAKERS HAVING A PLANAR DIAPHRAGM OF EXPANDED POLYSTYRENE

Ernest Spiteri, 29 Ave. Monge, 77490 Chelles, France

Filed Feb. 12, 1981, Ser. No. 234,020
Claims priority, application France, Mar. 7, 1980, 80 05143
Int. Cl.³ B29C *17/12*; B29D *27/00*
U.S. Cl. 264—28 5 Claims



1. A process for producing a diaphragm of expanded polystyrene for an electrodynamic speaker, comprising moulding a blank of expanded polystyrene with the use of steam in a mould to produce the blank in its definitive state with a ribbed and grooved surface on the blank, removing the blank from the mould, making use of a residual amount of said steam which remains just after the expansion of the polystyrene and is trapped to a certain percentage in the blank by lowering the temperature of the blank and condensing said steam and causing the water of said steam to travel toward said ribbed and grooved surface of the blank, brutally freezing the blank so as to produce microfractures in a thin superficial zone of the blank, and removing said superficial zone by a suitable machining operation so as to expose under said superficial zone a softer aspect of the diaphragm immediately subjacent to said superficial zone.

4,348,343

METHOD AND COMPOSITION FOR A FURAN-MODIFIED PHENOLIC NOVOLAK BINDER SYSTEM

Denis W. Akerberg, Huntley; George W. Huffmann, Crystal Lake, and Carl A. Rude, Cary, all of Ill., assignors to The Quaker Oats Company, Chicago, Ill.

Filed Oct. 6, 1980, Ser. No. 194,118
Int. Cl.³ C01B *31/00*
U.S. Cl. 264—29.5 20 Claims

1. A method for forming shapes comprising the steps of

a. mixing particles of a solid particulate material and a liquid amine capable of reacting with furfural into a substantially uniform blend;

b. mixing at room temperature said blend from step (a) with a resin system comprising a phenolic novolak resin dissolved in furfural;

c. continuing mixing until a free-flowing dry particulate solid results, and

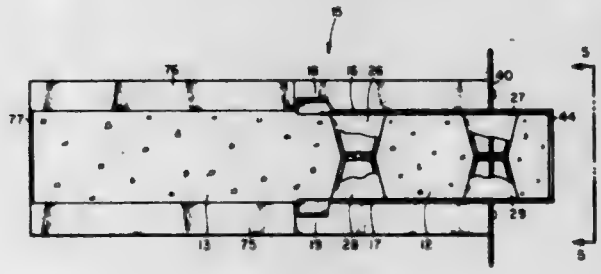
d. forming said particulate solid into a desired shape whereby shapes of refractory material with satisfactory green strength are formed, said shapes being capable of being baked and carbonized.

4,348,344

METHOD AND DEVICE FOR PRODUCING SLOTTED CONCRETE WALLS IN PLACE

Paul J. Nobbe, R.R. 2, Brookville, Ind. 47012

Filed Sep. 22, 1980, Ser. No. 189,090
Int. Cl.³ E04B *1/16*; B22C *9/22*
U.S. Cl. 264—31 10 Claims



1. A method of producing a slotted vertical wall on site in a building for livestock comprising the steps of:

positioning on the final use site for said wall a pair of mutually facing and aligned plastic molds having vertically extending hollow ridges with horizontally extending top lips;

locating said ridges of one of said molds against and aligned with ridges of the other of said molds to insure absence of concrete directly between ridges of one mold and ridges of the other mold forming slotted openings in the concrete wall to be formed;

locating a first pair of forms on opposite sides of said molds;

hanging said molds on said forms by positioning said top lips atop said forms;

extending a plurality of ties through said ridges of said molds;

attaching said ties to said forms, securing said forms and molds together;

pouring concrete between said molds forming a slotted concrete wall;

removing said forms and molds once said concrete has solidified; and

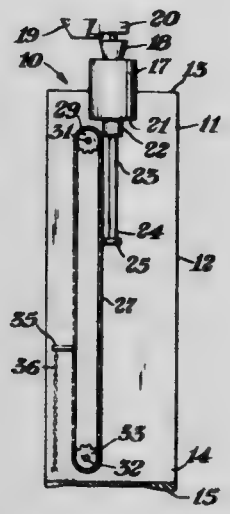
leaving said concrete as solidified permanently in the vertical position poured and formed.

4,348,345

METHOD FOR THE TAKE-AWAY OF VERTICALLY EXTRUDED SYNTHETIC RESINOUS TUBES

Edward L. Burnett, and Eugene V. Stack, both of Bay City, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jan. 23, 1981, Ser. No. 227,842
Int. Cl.³ B27J 5/00
U.S. Cl. 264—127 4 Claims



1. In a method for the fabrication of a tetrafluoroethylene polymer tube wherein tetrafluoroethylene polymer resins are downwardly ram extruded in a ram extruder to heat and generally fuse together the polytetrafluoroethylene particles to provide a coherent tetrafluoroethylene polymer tube from the ram extruder, subsequently cooling the tetrafluoroethylene polymer tube to a self supporting condition, the tetrafluoroethylene polymer tube being discharged from the extruder at a temperature above its crystalline melting point, cooling the tube below its crystalline melting point while the tube is radially unsupported and axially supported to provide a tetrafluoroethylene polymer tube of reduced gas permeability, the improvement which comprises supporting the tetrafluoroethylene polymer tube on a movable counterbalanced support means which permits downward motion of the tetrafluoroethylene polymer tube without inducing deformation of the tube either on a continuous or incremental basis to the portion of the tube which is above the crystalline melting point and external to the ram extruder.

4,348,346

POLYESTER FILM EXTRUSION WITH EDGE BEAD CONTROL

Kenneth P. Thompson, Canton, N.C., assignor to Champion International Corporation, Stamford, Conn.

Filed Jul. 23, 1980, Ser. No. 171,391
The portion of the term of this patent subsequent to Jun. 9, 1998, has been disclaimed.
Int. Cl.³ B29D 7/02
U.S. Cl. 264—146 6 Claims

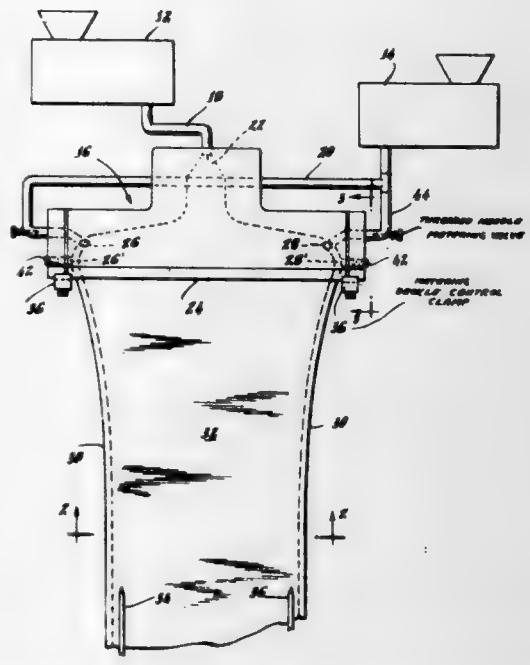
1. A process for forming a film of a thermoplastic film-forming, polyester comprising the steps of:

(a) heating and plasticizing the polyester;

(b) feeding the heated and plasticized polyester to a die having an elongated die opening and a deckled area therein. thereby producing a flowing stream of the polyester;

(c) heating and plasticizing a second organic polymer;

(d) feeding the heated and plasticized second organic polymer into the die and directing it into the flowing stream of the polyester adjacent to but spaced inwardly of the steam's outer edges and sufficiently upstream of the elongated die opening to eliminate the existence of any dead spaces adjacent said deckled area where said polyester or second polymer could accumulate and to permit overlapping of the polyester and the second polymer in the areas near both opposite edges of the elongated die, thereby forming a composite stream of the polyester and second polymer;



(e) extruding the composite stream from the elongated die opening to form a film comprising a central portion of the polyester and two edge portions of the polyester and the second polymer, the central portion of the polyester covering at least a major part of the width of the film; and

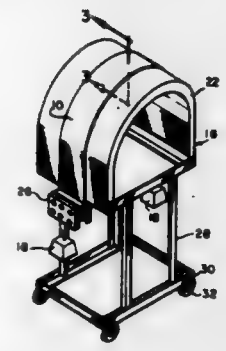
(f) drawing the film from the die opening at a rate greater than the rate of extrusion to thereby reduce the thickness of the film.

4,348,347

STRETCH-STAGING OF RESIN-BASED FIBER-IMPREGNATED TAPE

Gary G. Brown, Escondido, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 27, 1981, Ser. No. 258,120
Int. Cl.³ B29C 25/00
U.S. Cl. 264—231 4 Claims



1. A method for strengthening a length of resinous tape impregnated with continuous fiber columns, comprising the steps of:

supporting the tape in a continuous curve along the entire length of the tape;

stretching the tape at the ends thereof in the direction of fiber columns; and

staging the tape, while being supported and stretched, so

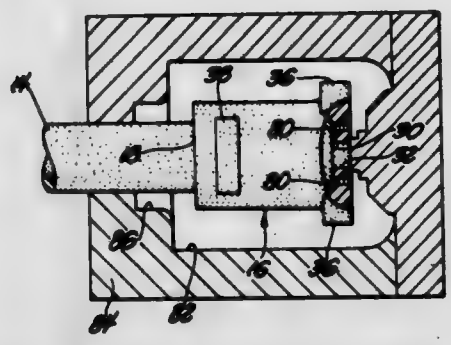
that the fiber columns are straightened and retained in a straightened condition thereafter.

4,348,348

METHOD FOR MAKING A REMOTE CONTROL ASSEMBLY WITH VIBRATION DAMPENER

William G. Bennett, Troy, and Arthur L. Speare, Livonia, both of Mich., assignors to Teleflex Incorporated, Limerick, Pa.

Filed Jun. 23, 1980, Ser. No. 162,172
Int. Cl.³ B29D 3/00, 31/00
U.S. Cl. 264—255 11 Claims



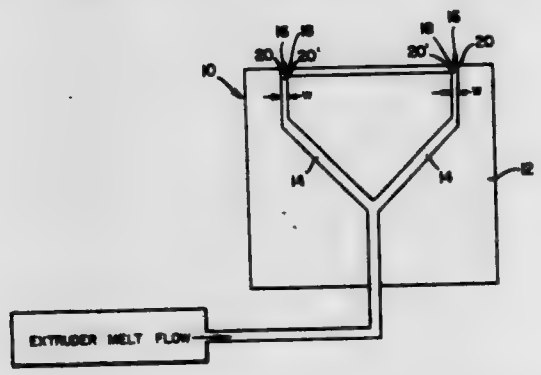
1. A method for making a motion transmitting remote control assembly (10) of the type for supporting a flexible motion transmitting core element (12) including the steps of: inserting the end portion of a conduit (14) into a cavity (72) of a first mold (74) and injecting a hardenable organic polymer into the cavity for molding an end fitting (16) about the conduit (14); inserting the end fitting (16) into a cavity (82) of a second mold (84) and injecting a hardenable vibration dampening material into the cavity of the second mold to mold the vibration dampening material about the end fitting (16) and the end portion of the conduit (14) to define a vibration dampener (24) including an extending section (26); placing the conduit (14) with the vibration dampener (24) in a third mold (90) having a third cavity (88), the extending section (26) engaging the third mold (90) and the remaining portion of the vibration dampener (24) being spaced from the third mold (90) defining the third cavity (88); injecting a hardenable organic polymer into the third cavity (88) about the vibration dampener (24) to form a support member (22) spaced from and isolated from said end fitting (16) by the vibration dampener; and allowing the materials of the end fitting (16), vibration dampener (24) and support member (22) to harden so that the vibration dampener (24) is softer than the end fitting (16) or the support member (22).

4,348,349

METHOD FOR REDUCING MELT FRACTURE DURING EXTRUSION OF A MOLTEN NARROW MOLECULAR WEIGHT DISTRIBUTION, LINEAR, ETHYLENE COPOLYMER

Stuart J. Kurtz, Martinsville, N.J., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Oct. 1, 1980, Ser. No. 192,701
Int. Cl.³ B29D 23/04
U.S. Cl. 264—564 15 Claims



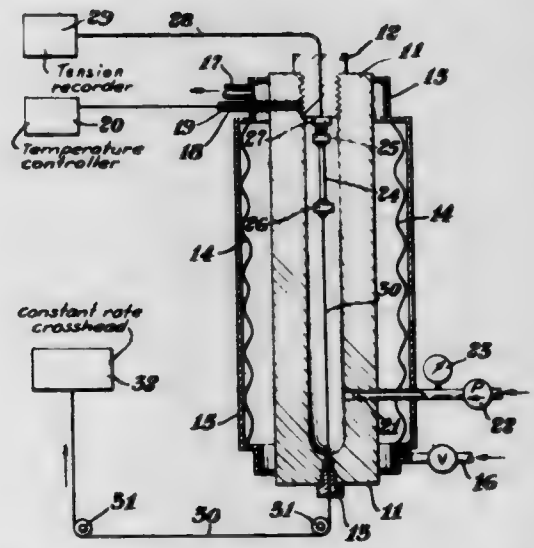
1. A process for reducing melt fracture formed during extrusion of a molten narrow molecular weight distribution, linear, ethylene polymer, under conditions of flow rate and melt temperature which would otherwise produce higher levels of melt fracture which comprises extruding said polymer through a die having a discharge outlet defining an exit die gap formed by opposing die lip surfaces and wherein one surface of the die lip and/or die land in contact with the molten polymer extends beyond the opposing surface of the die lip and/or die land in the direction of the axis of flow of the molten polymer through the die exit whereby melt fracture is reduced on the surface of the polymer leaving the extended die lip surface.

4,348,350

ULTRA-DRAWING CRYSTALLINE POLYMERS UNDER HIGH PRESSURE

Dale J. Meier, Midland, Mich., and Leszek Jarecki, Warsaw, Poland, assignors to Michigan Molecular Institute, Midland, Mich.

Filed Sep. 26, 1980, Ser. No. 191,322
Int. Cl.³ B29C 23/00
U.S. Cl. 264—570 10 Claims



1. A process of making transparent high-modulus polymer filament, rod, or film which comprises ultra-drawing a crystalline organic polymer in the solid state at a temperature within 70° C. of but below its melting point at the operating pressure while subjecting the polymer during and immediately after drawing to a hydrostatic pressure of at least about 500 atmospheres by a medium inert to the polymer, thereby to restrain void formation in the polymer during ultradrawing and render the product transparent.

4,348,351

METHOD FOR PRODUCING NEUTRON DOPED SILICON HAVING CONTROLLED DOPANT VARIATION

Horst G. Kramer, Chesterfield, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Apr. 21, 1980, Ser. No. 142,310
Int. Cl.³ G21G 1/06
U.S. Cl. 376—183 6 Claims

1. A method for producing neutron doped silicon having controlled dopant variation, comprising

selection of undoped single crystal silicon bodies according to the following, measuring the criteria fluctuation in said undoped silicon base level dopant concentration as expressed by the difference between maximum and minimum dopant concentrations, determining the average base level dopant concentration of said undoped single crystal silicon bodies, determining the desired average dopant concentration in the neutron doped silicon, determining the desired maximum and minimum dopant concentrations in the neutron doped silicon, selecting those undoped single crystal silicon bodies whose measured fluctuation is

no more than said average dopant concentration in the neutron doped silicon multiplied by a homogeneity factor of the neutron doped silicon as measured by the difference between said maximum and said minimum dopant concentrations divided by said average dopant concentration in the neutrol doped silicon

and whose maximum dopant concentration in the undoped state is greater than one tenth of said desired maximum dopant concentration in the neutron doped silicon and whose base level dopant concentration in the undoped state is less than said neutron doped silicon desired average dopant concentration by a factor which is a ratio of (a) desired homogeneity in the neutron doped silicon as expressed by the difference between said maximum and said minimum dopant concentrations of the neutron doped silicon divided by said doped silicon average dopant concentration to (b) homogeneity of the undoped single crystal silicon, as measured by said difference between maximum and minimum dopant concentrations of the undoped silicon divided by said average dopant concentration subjecting said selected undoped single crystal silicon body to sufficient neutron radiation so as to obtain neutron doped silicon having said desired average dopant concentration and said desired maximum and minimum dopant concentrations.

4,348,352

RACK FOR INTERMEDIATE STORAGE OF NUCLEAR REACTOR FUEL ELEMENT BUNDLES

Max Knecht, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

PCT No. PCT/CH79/00072, § 371 Date Feb. 1, 1980, § 102(e) Date Feb. 1, 1980, PCT Pub. No. WO80/00046, PCT Pub. Date Jan. 10, 1980

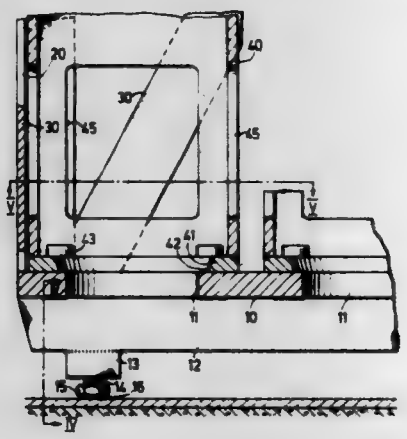
PCT Filed May 22, 1979, Ser. No. 192,506

Claims priority, application Switzerland, Jun. 9, 1978, 6310/78

Int. Cl.³ G21C *19/00*

U.S. Cl. 376—272

10 Claims



1. A storage rack for fuel element bundles, said rack comprising,

a bottom plate;

a plurality of vertically disposed square receiving tubes, each tube having an inwardly directed flange resting on said plate and defining a bore for centering a fuel element bundle; and

screws passing through each flange and into said plate to secure said tubes to said plate.

4,348,353

NUCLEAR REACTOR FUEL ASSEMBLY DUCT-TUBE-TO-INLET-NOZZLE ATTACHMENT SYSTEM

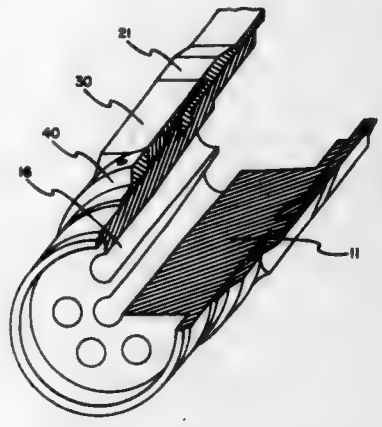
David W. Christiansen, and Bob G. Smith, both of Kennewick, Wash., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 12, 1980, Ser. No. 206,231

Int. Cl.³ G21C *15/00*

U.S. Cl. 376—364

9 Claims



1. A nuclear reactor fuel assembly duct-tube-to-inlet-nozzle attachment system, comprising:

(a) a nuclear reactor fuel assembly inlet nozzle having an upper end (11) with a generally equilateral polygonal top section (12) and a generally cylindrical bottom section (14), said top section (12) and said bottom section (14) being coaxially interconnected, said top section (12) with each of its sides having an external recess (13) and said bottom section (14) having an outside threaded portion (15);

(b) a nuclear reactor fuel assembly duct tube having a generally equilateral polygonal lower end (21), the lower end's (21) polygon shape being similar to the inlet nozzle upper end top section's (12) polygon shape, said lower end (21) with each of its sides having an outwardly-extending protrusion (24), after which each side terminates in a deflectable locking tab (22), said locking tabs (22) slidable over said top section (12) to said recesses (13), each of said locking tabs (22) ending in an inwardly-extending, recess-matching flange (23), said flanges (23) coaxially surrounding and engaging said recesses (13) for attachment of said duct tube's lower end (21) to said inlet nozzle's upper end (11);

(c) a retaining collar (30) having a flange-restraining, protrusion-engaging, generally equilateral polygonal top segment (31) and a generally cylindrical bottom segment (32), said top segment (31) and said bottom segment (32) being coaxially interconnected, the top segment's (31) polygon shape being similar to the inlet nozzle upper end top section's (12) polygon shape, said top segment (31) slidable over said locking tabs (22) to said protrusions (24) when said flanges (23) engage said recesses (13) during said attachment, said bottom segment (32) slidable over said bottom section (14) to above only part of the outside threaded portion (15), said collar's top segment (31), during said attachment, engaging said protrusions (24), and surrounding and restraining said flanges (23) in said recesses (13); and

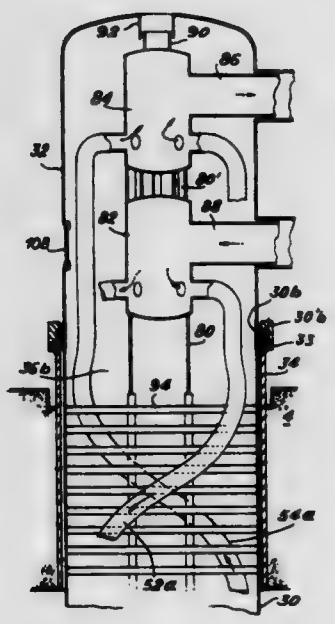
(d) a locking nut (40), engageable with said retaining collar's bottom segment (32), having an inside threaded portion (41) engageable with said outside threaded portion (15) to secure said retaining collar's top segment (31) against said duct tube lower end's protrusions (24) during said attachment.

4,348,354

SEMI-MODULAR HEAT EXCHANGER FOR NUCLEAR REACTORS

Robert Artaud, Aix-en Provence; Michel Aubert, Manosque; Richard Elbeze, Aix-en Provence, and Patrick Jogand, La Tour d'Aigues, all of France, assignors to Commissariat a l'Energie Atomique, France

Filed May 30, 1980, Ser. No. 154,604
Claims priority, application France, May 31, 1979, 7914000
Int. Cl.[3] G21C *15/00*; G21D *5/08*
U.S. Cl. 376—405 7 Claims



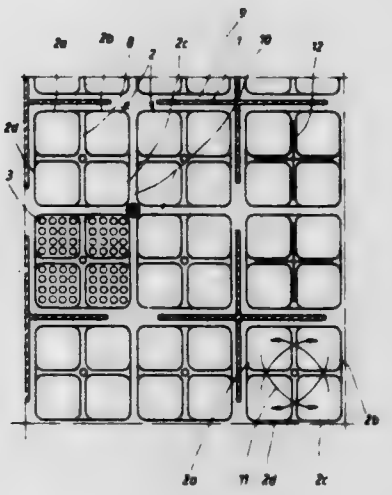
1. In a nuclear reactor having a vessel sealed by a horizontally disposed slab, a heat exchanger comprising an outer ferrule disposed along and defining a vertical axis, said ferrule being provided at its upper end with a supporting flange which bears on said slab by means of a supporting sleeve, said ferrule being extended by an upper dome connected to the ferrule, a supply manifold and a discharge manifold for a secondary fluid, the manifolds being positioned within the upper dome, a plurality of heat exchange modules located within said ferrule, each said modules having substantially vertically disposed straight tubes opening in a secondary fluid inlet chamber and in a secondary fluid outlet chamber and orifices for introducing and removing a primary fluid with respect to each module, a plurality of supply pipes connecting said supply manifold to each inlet chamber, a plurality of discharge pipes connecting each outlet chamber with said discharge manifold, and a plurality of biological protection plates positioned within the outer ferrule level with said slab, wherein said heat exchanger further comprises at least one base plate peripherally fixed to said outer ferrule, each of said modules, said supply manifold and said discharge manifold, and said biological protection plates being connected to said outer ferrule by a single of said at least one base plate, each module being suspended to the corresponding base plate by a supporting ferrule traversing the latter and being connected on the one hand to the upper end of the module and on the other hand to the corresponding base plate, said supply pipes and said discharge pipes traversing said corresponding base plates through thermally expandible sealing means and having between said manifolds and said corresponding base plate portions which absorb thermal expansion of said pipes, whereby thermally induced mechanical stresses are reduced.

4,348,355

FUEL ASSEMBLY FOR A BOILING NUCLEAR REACTOR

Olov Nylund, Västerås, Sweden, assignor to AB Asea-Atom, Västerås, Sweden

Filed Jun. 11, 1980, Ser. No. 158,616
Claims priority, application Sweden, Jul. 3, 1979, 7905800
Int. Cl.[3] G21C *3/32*
U.S. Cl. 376—434 9 Claims



1. A fuel assembly for use in the core of a nuclear reactor, said fuel assembly comprising

a plurality of separate elongated box-forming means,

a bundle of elongated fuel rods positioned in each elongated box-forming means, and

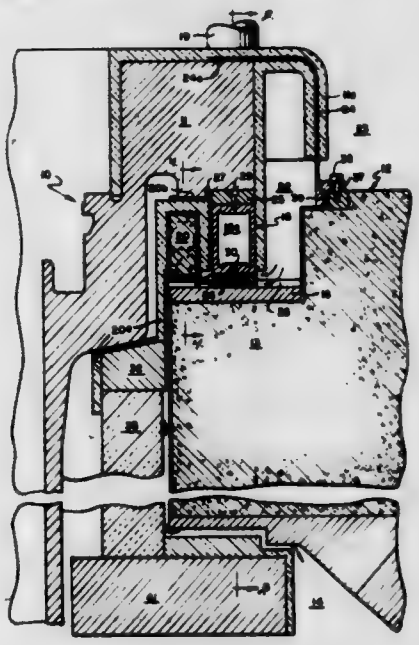
separate spaced-apart first and second end members which mount the respective opposite ends of all of said box-forming means such that they are spaced apart from one another and oriented in parallel, said first and second end members being supportable in said core.

4,348,356

REACTOR VESSEL SUPPORT SYSTEM

Martin P. Golden, Trafford, and John C. Holley, McKeesport, both of Pa., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 9, 1980, Ser. No. 148,323
Int. Cl.[3] G21C *13/00*
U.S. Cl. 376—461 7 Claims



1. In a nuclear reactor vessel support system including a nuclear reactor vessel having an outwardly extending support ring, a nuclear reactor containment structure surrounding the

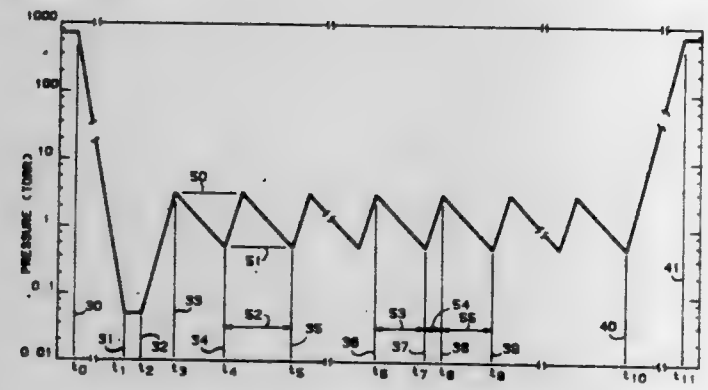
vessel, the containment structure having an inwardly extending support ledge aligned with and attached to the support ring whereby the vessel weight is transmitted to the support ledge, the improvement comprising a box ring interposed in load bearing relationship directly between the support ring and support ledge to transmit the vessel weight from the support ring to the support ledge, said box ring having rigid cylindrical side walls and flat rigid ring-shaped upper and lower walls to enclose and define an annular space directly between the support ledge and the support ring to limit heat flow therebetween.

4,348,357

PLASMA PRESSURE PULSE STERILIZATION

Roger M. Bithell, Richmond, Calif., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 12, 1980, Ser. No. 215,597
Int. Cl.[3] A61L *2/14, 2/24*
U.S. Cl. 422—22 9 Claims



1. A process for sterilizing an article having at least one aperture therein, in a plasma reactor, and without gas flow passing unidirectionally through said aperture comprising the steps of:

supplying a reactant gas appropriate for plasma generation;

varying pressure of said reactant gas within said plasma reactor up and down in a cycle over a prescribed range, each said cycle comprising a pressure-rise interval less than 60 seconds and a pressure-fall interval longer than and following each pressure-rise interval;

energizing a plasma reactor generator during at least the pressure-rise interval to create active species for sterilization; and

continuing for a sufficient time such that a contaminant on said article has a very low probability of survival.

4,348,358

COLORIMETRIC DOSIMETER

Elmer S. McKee, and Paul W. McConnaughey, both of Pittsburgh, Pa., assignors to Mine Safety Appliances Company, Pittsburgh, Pa.

Filed Sep. 25, 1980, Ser. No. 190,593
Int. Cl.[3] G01N *21/78*
U.S. Cl. 422—56 12 Claims



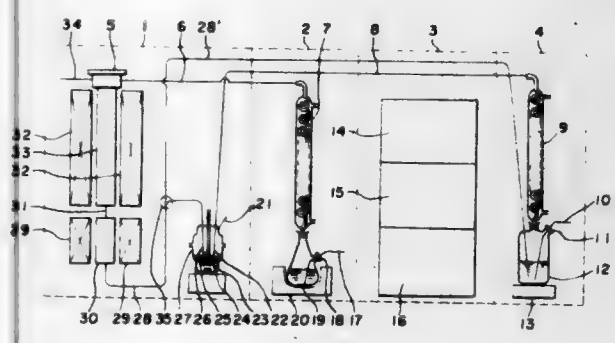
1. A colorimetric gas dosimeter comprising a transparent tube having closed ends, one of said ends being openable, a detecting strip of a substrate carrying a reagent that changes color on contact with the gas to be determined, the strip being disposed lengthwise in the tube with one end of the strip spaced from the openable end of the tube by a diffusion path and with at least one side of said strip spaced apart from said tube along a substantial portion of the length of said strip.

4,348,359

DEVICE FOR DETERMINING VARIOUS TYPES OF TRACE NITROGEN

Tomonori Kojima, and Yasumitsu Katsuno, both of Kita-Kyushu, Japan, assignors to Mitsubishi Chemical Industries, Limited, Tokyo, Japan

Filed Jun. 4, 1981, Ser. No. 270,231
Claims priority, application Japan, Jul. 16, 1980, 55-97066; Jul. 16, 1980, 55-97067; Jul. 16, 1980, 55-97068
Int. Cl.[3] G01N *31/10, 31/16*
U.S. Cl. 422—76 12 Claims



1. A device for determining various types of trace nitrogen, which comprises the following measuring system and distillation system (A):

(a) a measuring system which comprises

(1) a reaction section comprising a cylindrical reaction tube having a sample inlet and a hydrogen gas supplying tube at one end, and a gas outlet at the other end, and packed therein with a catalyst for reduction,

(2) an acidic gas removal section comprising a container having a gas inlet and a gas outlet, and packed therein with a solid alkaline substance,

(3) heating sections for heating the reaction section and the acidic gas removal section, and

(4) a coulometric titration section comprising gas supplying tube means, a gas outlet, electrolytic electrodes, termination point detecting electrodes, and an electrolytic cell,

the reaction section and the acidic gas removal section being accommodated in the respective heating sections, the gas outlet of the reaction section being connected with the gas inlet of the acidic gas removal section, the gas outlet of the acidic gas removal section being connected with the gas supplying tube means of the coulometric titration section, and said gas supplying tube means being open in the vicinity of the bottom in the electrolytic cell, and

(b) a distillation system A which comprises

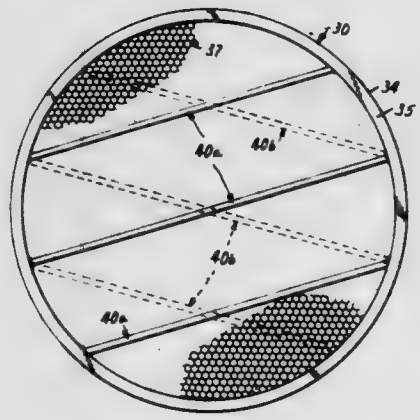
(1) a distillation vessel having a sample inlet, a carrier gas supplying tube and a gas outlet, and made of an alkali resistant material, and

(2) a reflux condenser, said carrier gas supplying tube being open in the vicinity of the bottom in the distillation vessel, the lower end of the reflux condenser being connected with the gas outlet of the distillation vessel and the upper end thereof being connected with the gas supplying tube means of said coulometric titration section.

4,348,360
CATALYTIC CONVERTER FOR OZONE REMOVAL IN AIRCRAFT

Jeffrey C. Chang, Woodbury, and Arthur W. Pluim, Jr., Stillwater, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 5, 1979, Ser. No. 91,139
Int. Cl.³ A62B 7/08; B32B 3/04; B01J 8/02
U.S. Cl. 422—122 13 Claims



1. A cartridge for a catalytic ozone converter, said cartridge comprising:

(a) an aluminum honeycomb core consisting essentially of a plurality of corrugated aluminum sheets bonded together at their contiguous points of contact to define a plurality of longitudinally aligned, thin-walled passages in the form of regularly repeating cells of such dimensions as to ensure turbulent flow of air therethrough, and with the nodes of said cells being the loci of said contiguous points of contact;

(b) a tubular metal shell surrounding the outer wall of said core and affixed thereto;

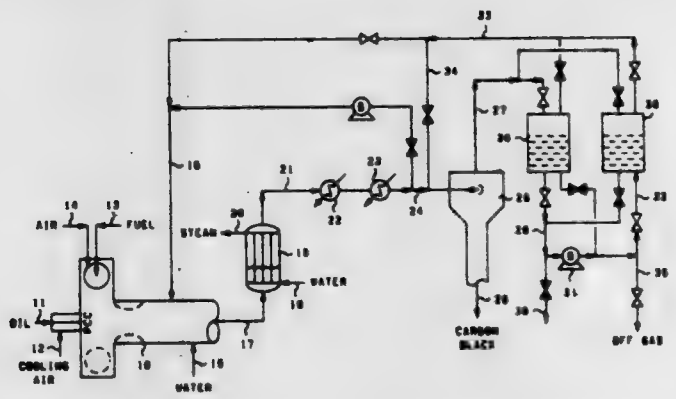
(c) one or more metal rib support members each fastened at its two ends to said shell and fastened along its length to said core so as to transversely intersect a plurality of said nodes; and

(d) a catalytic material deposited on the walls of said cells to form a catalytic surface for reaction with fluid passing through said core.

4,348,361
CARBON BLACK RECOVERY

Paul H. Johnson, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 44,147, May 31, 1979, Pat. No. 4,289,742.
This application May 18, 1981, Ser. No. 264,308
Int. Cl.³ C01B 31/02; C09C 1/48
U.S. Cl. 422—150 4 Claims



1. A carbon black producing and recovery system comprising in combination

(a) a carbon black producing furnace having a hot smoke outlet connected to the inlet of a waste heat boiler;

(b) an indirect heat exchange apparatus connected to the outlet of said waste heat boiler and the inlet of a cyclone separator provided with an outlet in the lower portion for removal of separated carbon black product and an outlet in the upper portion for removal of carbon black smoke reduced in carbon black content;

(c) at least two filter chambers, each containing a bed of aggregate material, at least one of said chambers being on filtration cycle and connected at the inlet end to said outlet in the upper portion of said cyclone for removal of remaining carbon black in said smoke being passed therethrough and at least one of said chambers being on regeneration cycle;

(d) an outlet in each filter chamber for removal of clean off-gas;

(e) a valved conduit connecting said outlet in (d) with the outlet end of said at least one filter chamber having a bed of aggregate containing carbon black solids which is on regeneration cycle and closed to the filtering cycle;

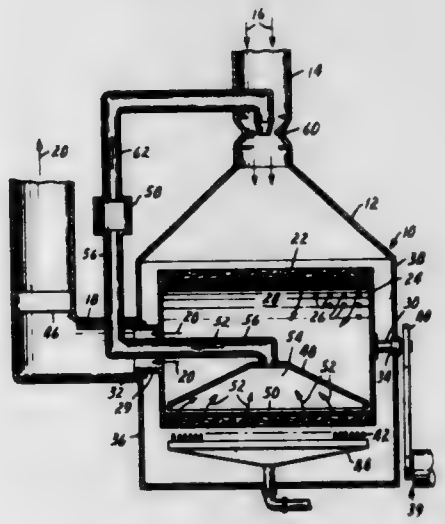
(f) means in said valved conduit of (e) for increasing the pressure of said off-gas and forcing same through said filter chamber(s) on regeneration cycle to substantially remove deposited carbon black solids remaining from a filtering cycle and removing same through the inlet end of said filter chamber being regenerated; and

(g) valved conduit means connecting the inlet end of said filter chamber being regenerated in (f) and said furnace in (a) to quench carbon black smoke within said furnace.

4,348,362
AIR POLLUTION CONTROL APPARATUS AND PROCESS

George D. Foss, River Falls, Wis., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sep. 24, 1980, Ser. No. 190,196
Int. Cl.³ B01D 50/00
U.S. Cl. 422—171 28 Claims



1. Apparatus for removing airborne particulate material and organic vapors from a polluted air stream comprising:

(a) a housing having an inlet plenum for introduction of a polluted air stream thereinto,

(b) a burner located within said housing,

(c) a collector which rotates at a speed in the range of 0.1 to 10 cm/sec located within said housing, said collector comprising an assembly of layers of refractory microfiber mats, metal screens, and vapor adsorbents, one of said refractory microfiber mats being on the exposed surface of said collector adjacent to said burner and being capable of withstanding temperatures of at least 600° C. produced by a burner, the microfibers having diameters in the range of 0.1 to 40 μm and said microfiber mats having a thickness in the range of 2.5 to 25 mm and a bulk density in the range of 4 to 40 mg/cc, and one of said vapor adsorbent layers which is capable of withstanding temperatures up to 450°

C. being on the inner surface of said collector, and by its position said collector being

(1) a filtering and adsorption station for particulate matter and organic vapors when said collector is located across said inlet plenum, and

(2) a combustion and desorption station when said collector is located adjacent said burner and in the presence of heat from said burner for combustion of particulte matter and desorption of organic vapors,

(c) an oxidizing means for converting the desorbed vapor into oxidized pollutant-free products,

(d) connecting means for providing passage for exhaustion of the resultant pollutant-free air stream from the filtering and absorption station to an outlet plenum,

(e) connecting means for providing passage for the resultant combustion products and desorbed vapors from the combustion and desorbing station to said oxidizing means,

(f) connecting means for providing passage for said combustion and oxidized products to the atmosphere or, optionally, back to the inlet plenum, and

(g) means for moving the rotatable collector continuously from the filtering and adsorption station to the combustion and desorption station.

4,348,363

APPARATUS FOR SOLID GAS REACTION

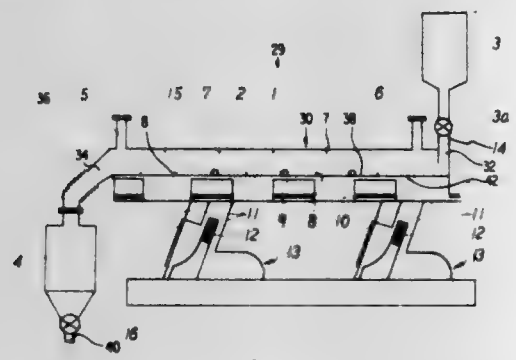
Toru Akiyama; Tsutomu Kamihigoshi, both of Takatsuki; Shoji Takagi, Toyonaka, and Tadayuki Maeda, Settsu, all of Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

Filed Mar. 24, 1980, Ser. No. 132,992

Claims priority, application Japan, Mar. 30, 1979, 54-39193; May 31, 1979, 54-74256

Int. Cl.[3] B01J *8/08, 8/16, 8/18*

U.S. Cl. 422—192 6 Claims



1. An apparatus for contact reaction of a solid powder and a reactive gas, said apparatus comprising:

(a) a horizontal reactor having two end portions with a feed port for receiving a solid powder positioned in one end portion, a discharge port for discharging product positioned in the other end portion, a feed port for receiving reactive gas positioned in one end portion and a discharge port for discharging said gas positioned in the other end portion, said horizontal reactor comprising:

(i) a trough comprising:

(A) a bottom wall,

(B) end walls, and

(C) side walls, each wall having an inner surface and an outer surface, and

(D) a cover having an inner surface and an outer surface;

(ii) a plurality of weirs positioned at intervals on the inner surface of the bottom wall and projecting upward therefrom; and

(iii) a plurality of baffle means positioned at intervals on the inner surface of the cover and projecting downward therefrom; and

b) vibrating means for vibrating the trough.

4,348,364

THERMAL REGENERATIVE CRACKING APPARATUS AND SEPARATION SYSTEM THEREFOR

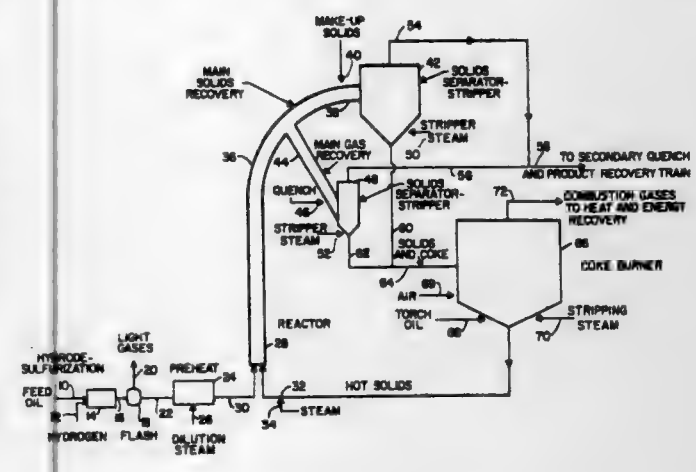
Robert J. Gartside, Auburndale, Mass., and Herman N. Woebcke, Stamford, Conn., assignors to Stone & Webster Engineering Corp., Boston, Mass.

Continuation-in-part of Ser. No. 55,148, Jul. 6, 1979, Pat. No. 4,288,235. This application Jul. 3, 1980, Ser. No. 165,781

The portion of the term of this patent subsequent to Sep. 8, 1998, has been disclaimed.

Int. Cl.[3] B01J *8/08*

U.S. Cl. 422—214 12 Claims



1. In a TRC apparatus having a tubular thermal cracking reactor including a reaction chamber cracking zone, means for delivering hot inert particulate solids to the reactor, means for delivering hydrocarbon feed or hydrodesulfurized residual oil fluid feed to the reactor and means for delivering a diluent gas at a temperature between 1300° F. and 2500° F. to the reactor and wherein the hydrocarbon fluid feed or the hydrodesulfurized residual oil fluid feed along with the inert particulate solids and diluent gas are passed through the cracking zone for a residence time of 0.05 to 2 seconds, the improvement comprising a solids-gas separator designed to effect rapid removal of particulate solids from a dilute mixed phase stream of solids and gas leaving the reactor, said separator comprising a chamber for disengaging solids from the incoming mixed phase stream, said chamber having rectilinear longitudinal walls to form a flow path essentially rectangular in cross section, said chamber also having a mixed phase inlet, a gas phase outlet, and a solids phase outlet, with the inlet being at one end of the chamber disposed normal to one wall of the rectilinear chamber, the solids phase outlet being at the other end of the chamber and suitably arranged for downflow of discharged solids by gravity, and the gas outlet being therebetween and oriented to effect a 180° change in direction of the gas and wherein the separator further comprises a weir disposed in said chamber and extending across the flow path adjacent the gas phase outlet upstream of the solids phase outlet.

2. In a TRC apparatus having a tubular thermal cracking reactor including a reaction zone, means for delivering hot inert particulate solids to the reactor, means for delivering hydrocarbon feed or hydrodesulfurized residual oil fluid feed to the reactor and means for delivering a diluent gas at a temperature between 1300° F. and 2500° F. to the reactor and wherein the hydrocarbon fluid feed or the hydrodesulfurized residual oil fluid feed along with the hot inert particulate solids and diluent gas are passed through the reaction zone for a residence time of 0.05 to 2 seconds, the improvement comprising a solids-gas separator designed to effect rapid removal of particulate solids from a dilute mixed phase stream of solids and gas leaving the reactor, the separator comprising a chamber for disengaging solids from the incoming mixed phase stream, said chamber having slightly arcuate longitudinal walls to form a flow path essentially rectangular in cross section, said chamber also having a mixed phase inlet, a gas phase outlet, and a solids phase outlet, with the mixed phase inlet being at one end of the chamber and disposed normal to one wall of the

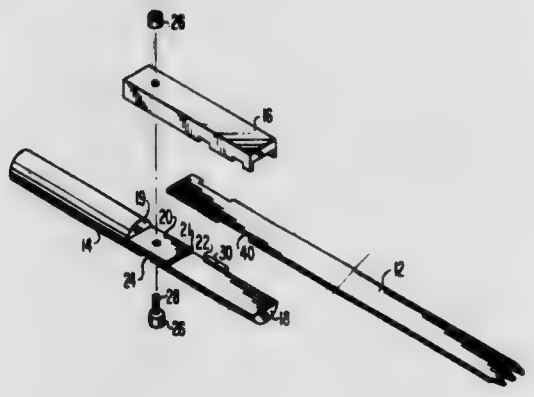
rectilinear chamber, and the solids phase outlet being at the other end of the chamber and suitably arranged for downflow of discharged solids by gravity, and said gas phase outlet being therebetween and oriented to effect a 180° change in direction of the gas, and wherein said separator further comprises a weir disposed in said chamber and extending across said flow path adjacent said gas phase outlet upstream of said solids phase outlet.

4,348,365

CRYSTAL SEED HOLDER ASSEMBLY

Nicholas F. Gubitose, Moosic; Malcolm R. Schuler, and David L. Patterson, both of Mountaintop, all of Pa., assignors to RCA Corporation, New York, N.Y.

Filed Mar. 9, 1981, Ser. No. 242,046
Int. Cl.³ C30B *15/32*
U.S. Cl. 422—249 5 Claims



1. A crystal seed holder assembly comprising a rod member having a portion of reduced cross-section adjacent one end, said portion being formed with a first generally planar surface, a clamp member formed with a second generally planar surface, fastener means securing said clamp member to said rod member with said planar surfaces being adjacent each other in spaced apart relationship to form a track, a crystal seed slideably retained in said track, and stop means for limiting movement of the crystal seed in said track, wherein said stop means includes a rib member formed on said first planar surface and a notch formed in said crystal seed for seating around said rib member.

4,348,366

PROCESS FOR THE PRODUCTION OF ALUMINA AND ALUMINA COMPOUNDS FROM WASTES

Raymond J. Brown, 2235 Hackamore Ct., Walnut Creek, Calif. 94596; Ronald L. Keller, 1003 N. Main St., Bicknell, Ind. 47512, and Charles F. Lang, 3528 Hillcrest Rd., Vincennes, Ind. 47591

Filed Apr. 6, 1981, Ser. No. 251,345
Int. Cl.³ C01F *7/02*
U.S. Cl. 423—111 24 Claims

1. A process for the conversion of substantially all aluminum present in an aluminum bearing secondary waste source to anhydrous alumina and compounds of alumina comprising the following steps:

(a) pulverizing the waste;
(b) scalping oversized aluminum bearing particles from the pulverized waste;
(c) subjecting the oversized particles to further pulverizing;
(d) combining the pulverized waste from steps (a), and (c), and placing the mixture in water heated to the range of 120°–180° F., thereby forming a slurry;
(e) agitating the slurry;
(f) continuously pulverizing the particles remaining in the slurry to maximize their reactive surface area;
(g) continuing pulverization and agitation until the carbides, nitrides, and aluminum alloys are dissociated, the resulting aluminum ions are hydrolized and oxidized and all particles are reduced to predominantly sub-micron sizes;
(h) diluting, decanting and filtering the reacted product to obtain an intermediate product;
(i) mechanically processing, drying and dehydrating the intermediate product; and
(j) calcining to a finished product.

4,348,367

SELECTIVE REMOVAL OF COBALT(II) FROM AQUEOUS SOLUTIONS WITH PHOSPHINIC EXTRACTANTS

William A. Rickelton, Niagara Falls; Allan J. Robertson, Thorold, both of Canada, and David R. Burley, Kinnelon, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 182,296, Aug. 28, 1980, abandoned. This application May 14, 1981, Ser. No. 263,528
Int. Cl.³ C01G *51/00*
U.S. Cl. 423—139 44 Claims

19. A process for the extraction of cobalt(II) from an aqueous cobalt(II)-bearing solution containing metal ions and having a pH of 4.0 to 6.0 comprising contacting said solution with an extraction solvent at about 0° to 80° C., thereafter separating the aqueous phase from the cobalt(II)-loaded phase wherein said extraction solvent comprises from about 2 to 99 parts by volume of an organic-soluble phosphinic acid having at least 2 carbon atoms or an organic-soluble salt thereof, from about 98 to 1 parts by volume of a water-immiscible organic diluent and from 0 to about 15 parts by volume of a phase modifier.

30. A process according to claim 19 with the additional steps of contacting the cobalt(II)-loaded extraction solvent with an aqueous solution of a mineral acid at about 0°–80° C. to strip the cobalt(II) into the aqueous phase; separate the cobalt(II)-containing aqueous phase; and, recovering the stripped extraction solvent for subsequent reuse.

4,348,368

METHOD OF REMOVING HYDROGEN SULFIDE FROM GASES

George C. Blytas, and Zaida Diaz, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed May 26, 1981, Ser. No. 267,196
Int. Cl.³ B01D *53/34*; C01B *17/04*
U.S. Cl. 423—226 20 Claims

1. A process for the removal of H_2S from a sour gaseous stream comprising:

(a) contacting the sour gaseous stream in a contacting zone with an aqueous reaction solution at a temperature below the melting point of sulfur, the solution comprising a reactant selected from the group consisting of oxidizing polyvalent metallic ions and oxidizing polyvalent metal chelate compounds, and from about 0.1 percent to about 10 percent by weight, based on the weight of the solution, of a reaction rate modifier selected from compounds having the formula $HO—C_nH_{2n}OH$, wherein n is a number from 4 through 12, and mixtures thereof, and producing a sweet gas stream and an aqueous admixture containing crystalline sulfur and a reduced reactant;
(b) removing at least a portion of the crystalline sulfur from the aqueous admixture;
(c) regenerating the aqueous admixture in a regeneration zone with oxygen to produce a regenerated reactant;
(d) returning aqueous admixture containing regenerated reactant from the regeneration zone to the contacting zone.

4,348,369

ZEOLITE LZ-200

Richard J. Hinchey, Thornwood, and Willis W. Weber, South Salem, both of N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Jul. 6, 1981, Ser. No. 280,377
Int. Cl.³ C01B *33/28*
U.S. Cl. 423—328 2 Claims

1. A synthetic crystalline zeolite having, on an anhydrous basis, a composition expressed in terms of mole-ratios of oxides as follows;

$$0.9\text{–}1.1\ M_{2/n}O:Al_2O_3:1.9\text{–}2.4\ SiO_2,$$

where M is a cation selected from the group including alkali, alkaline earth and transition metals, ammonium and hydrogen, and n is the valence of M, said crystalline zeolite having an X-ray powder diffraction pattern containing at least those d-spacings set forth in Table A.

4,348,370

AMMONIA SYNTHESIS WITH CATALYST DERIVED BY HEATING ON A SUPPORT A SALT SELECTED FROM ALKALI METAL, ALKALINE EARTH METAL, IRON AND COBALT HEXACYANOCOBALTATES AND HEXACYANORUTHENATES

Marvin M. Johnson; Donald C. Tabler, and Gerhard P. Nowack, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 110,303, Jan. 8, 1980, Pat. No. 4,309,311.
This application Sep. 21, 1981, Ser. No. 304,271
Int. Cl.³ C01C *1/04*
U.S. Cl. 423—362 8 Claims

1. A process for the synthesis of ammonia which comprises reacting, under ammonia synthesis conditions, hydrogen and nitrogen in the presence of a catalyst comprising a salt on a support wherein said salt is selected from the group consisting of:

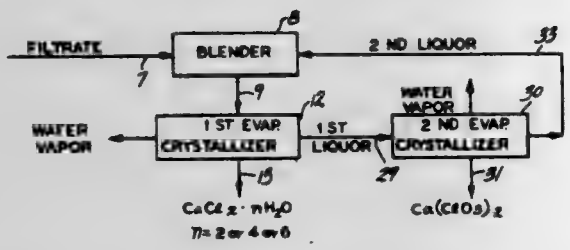
an alkali metal hexacyanoruthenate,
an alkali metal hexacyanocobaltate,
an alkaline earth metal hexacyanoruthenate,
an alkaline earth metal hexacyanocobaltate,
iron hexacyanoruthenate,
iron hexacyanocobaltate,
cobalt hexacyanoruthenate, and
cobalt hexacyanocobaltate.

4,348,371

PROCESS FOR THE RECOVERY OF CALCIUM SALTS FROM CALCIUM HYPOCHLORITE PROCESS EFFLUENTS

Walter C. Saeman, Cleveland, Tenn., assignor to Olin Corporation, New Haven, Conn.

Filed May 4, 1981, Ser. No. 260,641
Int. Cl.³ C01B *11/14*; C01F *11/24*
U.S. Cl. 423—475 12 Claims



1. A process for the recovery of calcium chloride hydrates and anhydrous calcium chlorate from calcium hypochlorite process effluents which comprises:

(a) neutralizing said calcium hypochlorite process effluent by the addition of an acid to form a neutralized effluent comprised of an aqueous solution of calcium chloride, calcium chlorate, and calcium hypochlorite and having a weight ratio of $Ca(ClO_3)_2/CaCl_2$ of less than about 0.2;

(b) blending said neutralized effluent with a second mother liquor comprised of an aqueous solution of calcium chlorate and calcium chloride and having a weight ratio of $Ca(ClO_3)_2/CaCl_2$ of greater than about 1.0, to form a blended solution;

(c) feeding said blended solution to a first crystallizer to form a slurry of calcium chloride hydrate in a first mother liquor;

(d) separating said crystals of said calcium chloride hydrate from said first mother liquor, said first mother liquor having a weight ratio of $Ca(ClO_3)_2/CaCl_2$ of at least about 1.0;

(e) feeding said first mother liquor to an evaporative crystallizer to form a crystalline anhydrous calcium chlorate compound;

(f) separating said crystalline anhydrous calcium chlorate compound from a second mother liquor;

(g) recovering said crystalline anhydrous calcium chlorate compound; and

(h) returning said second mother liquor to step (b).

4,348,372

PROCESS FOR THE RECOVERY OF CALCIUM CHLORIDE FROM CALCIUM HYPOCHLORITE PROCESS EFFLUENTS

Budd L. Duncan, Athens, and Ian L. Madden, Cleveland, both of Tenn., assignors to Olin Corporation, New Haven, Conn.

Filed May 4, 1981, Ser. No. 260,653
Int. Cl.³ C01F *11/24*
U.S. Cl. 423—497 8 Claims

1. A process for the recovery of calcium chloride hydrates from calcium hypochlorite process effluents which comprises:

(a) acidifying an effluent comprised of an aqueous solution of calcium chloride, calcium hypochlorite, and calcium chlorate with a chlorine-containing compound selected from the group consisting of chlorine, hydrochloric acid, and hydrogen chloride to form an acidic aqueous solution of calcium chloride having reduced concentrations of calcium hypochlorite;

(b) evaporating water from said acidic aqueous solution to produce a concentrated acidic aqueous solution containing at least 45 percent by weight of calcium chloride;

(c) feeding said concentrated acidic aqueous solution of calcium chloride to a crystallizer to form crystals of a calcium chloride hydrate selected from the group consisting of calcium chloride dihydrate, calcium chloride tetrahydrate, calcium chloride hexahydrate and mixtures thereof;

(d) separating said crystals of said calcium chloride hydrate from a waste liquor; and

(e) recovering said crystals of said calcium chloride hydrate.

4,348,373

PROCESS FOR THE PREPARATION OF SULFURIC ACID

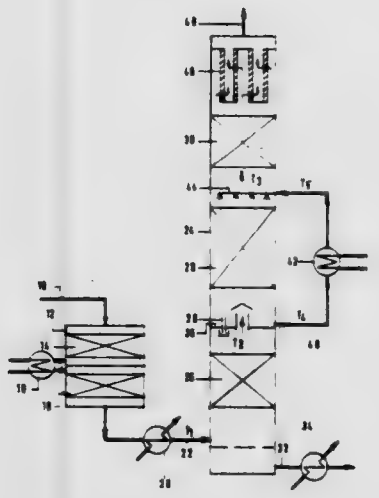
Peter C. S. Schoubye, Horsholm, Denmark, assignor to Haldor Topsoe A/S, Lyngby, Denmark

Filed Mar. 12, 1981, Ser. No. 243,097
Claims priority, application Denmark, Mar. 25, 1980, 1282/80
Int. Cl.³ C01B *17/88*
U.S. Cl. 423—522 4 Claims

1. In a process for preparing sulfuric acid, comprising the steps of passing, in a sulfuric acid tower, a gas stream containing sulfur trioxide and sulfuric acid vapour in a total amount of up to 10% by volume and water vapour in an amount of up to 50% by volume in countercurrent with formed liquid sulfuric acid through a concentrating zone containing filler bodies trickled with sulfuric acid and subsequently an absorption zone wherein sulfuric acid vapour is absorbed in recycled sulfuric acid on filler bodies trickled therewith, the improvement con-

sisting in maintaining in the sulfuric acid tower such temperature conditions that the recycle acid is removed from the tower at a temperature of T_4°C., determined by the formula

$$T_4 > 140 + 6\alpha + \beta + 0.2(T_1 - T_d)$$



where α is the concentration in % by volume of $SO_3 + H_2SO_4$-vapour in the inlet gas entering the tower, β the concentration in % by volume of water vapour in the same inlet gas, T_1 the temperature of the same inlet gas in °C. and T_d the dew point of the sulfuric acid vapour in the same inlet gas in °C.

4,348,374

CHARCOAL COATED ADSORBENT DEVICE

Kue H. Chau, Mundelein, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Continuation-in-part of Ser. No. 833,791, Sep. 16, 1977, abandoned. This application Apr. 27, 1978, Ser. No. 900,455
Int. Cl.³ G01N *33/54, 33/56, 23/06*
U.S. Cl. 424—1 5 Claims

5. A ligand binding assay for proteins in a physiological fluid which comprises:

a. introducing an aliquot of the specimen to be assayed into a vial containing a labeled ligand and an activated charcoal-coated solid support of regular geometric form;

b. allowing the contents of the vial to incubate;

c. separating the solid phase containing unbound ligands adsorbed on the activated charcoalcoated solid support from the liquid phase containing protein bound ligand; and

d. determining the quantity of labeled ligand in either phase which is a function of the degree of ligand binding in the sample fluid.

4,348,375

RADIOASSAY PROCESS AND COMPOSITIONS USEFUL THEREIN

Wilhelmus T. Goedemans, Schoorl, Netherlands, assignor to Byk-Mallinckrodt CIL B.V., Netherlands

Filed Dec. 31, 1979, Ser. No. 108,575
Int. Cl.³ A61K *49/00, 43/00*
U.S. Cl. 424—1 13 Claims

1. A method for radioassaying a warmblooded animal which comprises administering to said animal an essentially organic solvent-free, aqueous solution containing a small amount of a radioactive indium-8-hydroxyquinoline or blood cells radioactivity labeled by said solution, said amount being sufficient for detection by external imaging, and subjecting said animal to external imaging for detecting accumulated radioactivity to determine its location in the body of said animal.

4,348,376

TUMOR LOCALIZATION AND THERAPY WITH LABELED ANTI-CEA ANTIBODY

Milton D. Goldenberg, 11837 Gainsborough Rd., Potomac, Md. 20854

Filed Mar. 3, 1980, Ser. No. 126,262
Int. Cl.³ A61K *49/00*
U.S. Cl. 424—1 39 Claims

1. In a method for determining the location of a tumor which either produces or is associated with carcinoembryonic antigen (CEA), which comprises injecting a human subject parenterally with an antibody specific to CEA and radiolabeled with a pharmacologically inert radioisotope capable of detection using a photoscanning device and subsequently scanning the subject with said device to determine the location of the resultant uptake of said labeled antibody by said tumor;

the improvement which comprises concurrently injecting said human subject with normal immunoglobulin from the same or different species as that used to prepare said specific antibody, said normal immunoglobulin being radiolabeled with a different radioisotope of the same element used to label the specific antibody and emitting at an energy capable of independent detection using said photoscanning device, the level of activity of the labeled normal immunoglobulin being used to determine the distribution of background activity due to non-targeted specific antibody, said distribution being subtracted from the total activity of specific antibody whereby the activity of substantially only the targeted tumor-associated antibody is determined.

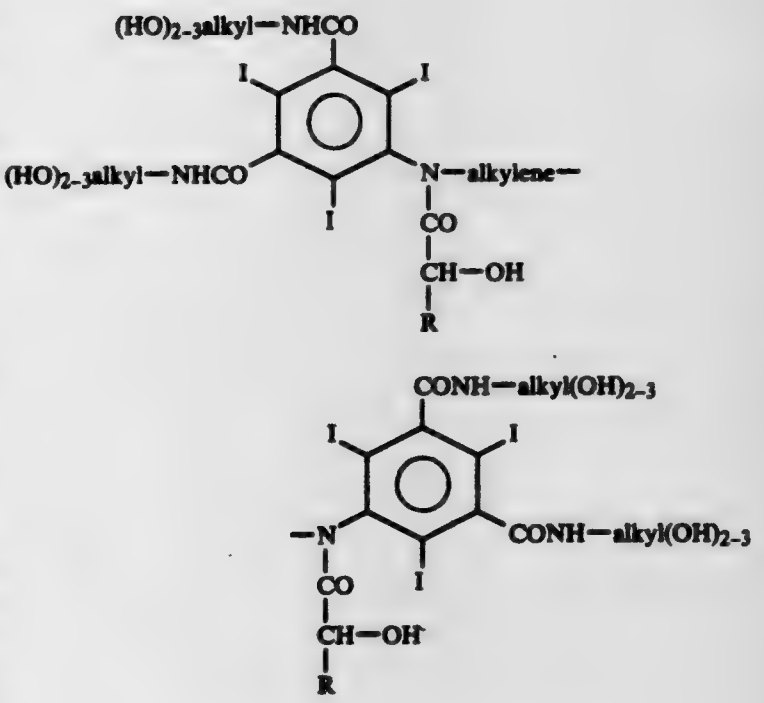
4,348,377

NEW DERIVATIVES OF 2,4,6-TRIIODO-ISOPHTHALIC ACID, PROCESES FOR THEIR SYNTHESIS AND X-RAY CONTRASTING MATERIALS CONTAINING THESE

Ernst Felder, Vitale, Switzerland, and Davide Pitre, Milan, Italy, assignors to Bracco Industria Chimica S.p.A., Milan, Italy

Filed Jul. 30, 1980, Ser. No. 173,765
Claims priority, application Italy, Aug. 9, 1979, 25027 A/79
Int. Cl.³ A61K *49/04*
U.S. Cl. 424—5 7 Claims

1. Bis-[N-{3,5-bis-(hydroxyalkylaminocarbonyl)-2,4,6-triiodo-phenyl}-N-(α-hydroxyacyl]-alkanes having the formula (I)



wherein

$(HO)_{2-3}$alkyl is 1,3-dihydroxyisopropyl, 2,3-dihydroxypropyl, or 1,3-dihydroxy-2-hydroxymethylisopropyl,

R is hydrogen or methyl, and
alkylene is a bivalent alkylene residue with 2 to 10 carbon atoms which may be substituted by hydroxy functions, or a mono-, di-or poly-oxa-alkylene residue with 4 to 12 carbon atoms, which may be substituted by hydroxy functions.

4,348,378

PLAQUE DISCLOSING DENTIFRICE COMPOSITIONS WITH SEMI-SOLID MICROCAPSULES OF DYE

Carl M. Kosti, 704 Foxhall Rd., Bloomfield Hills, Mich. 48013

Continuation-in-part of Ser. No. 65,078, Aug. 9, 1979, abandoned. This application Oct. 7, 1980, Ser. No. 194,921
Int. Cl.³ A61K *7/16, 7/18*
U.S. Cl. 424—7 21 Claims

1. A diagnostic plaque disclosing dentifrice composition for topical application to the teeth comprising a continuous water soluble phase, and a discontinuous water insoluble phase dispersed in said water soluble phase, said water insoluble phase comprising selectively rupturable dye elements, with a dental plaque disclosing substance dispersed in said rupturable dye elements, whereby said dental plaque disclosing substance may be topically applied to said teeth by rupturing said selectively rupturable dye elements.

4,348,379

DIETETIC COMPOSITION FOR NATURAL DIGESTION REGULATION

Horst Kowalsky, Marzellenstrasse 1, Cologne 1, Fed. Rep. of Germany (5000), and Horst Scheer, Poststrasse 17, Bad Neuenahr, Fed. Rep. of Germany (5483)

Filed May 5, 1980, Ser. No. 146,495
Claims priority, application Fed. Rep. of Germany, May 15, 1979, 2919449
Int. Cl.³ A61K *9/34, 35/78;* A21D *10/00*
U.S. Cl. 424—34 4 Claims

1. A dietetic composition for natural digestion regulation, consisting of 50 150 parts by weight of whole fleawort seeds, 50 to 150 parts by weight of whole linseed, 50 to 150 parts by weight of wheat bran, 50 to 150 parts by weight of lactose, an amount of a gum sufficient for binding these dry constituents, and optionally a flavor corrective and/or a food color.

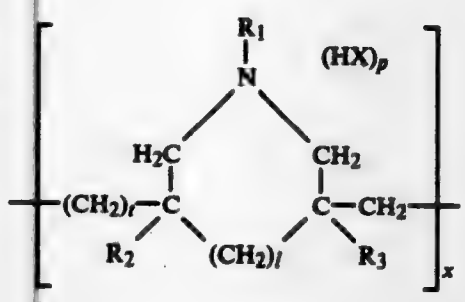
4,348,380

COSMETIC COMPOSITIONS FOR THE HAIR AND SKIN BASED ON COPOLYMERS HAVING TERTIARY AMINE AND/OR QUATERNARY AMMONIUM FUNCTIONS

Bernard Jacquet, Antony; Christos Papantoniou, Montmorency, and Jean Mondet, Sevran, all of France, assignors to L'Oreal, Paris, France

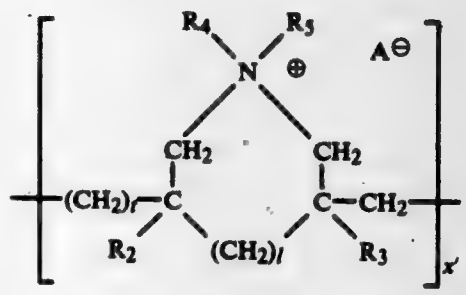
Filed Aug. 14, 1979, Ser. No. 66,678
Claims priority, application France, May 17, 1977, 77 15088
Int. Cl.³ A61K *7/00, 7/06, 31/74;* C11D *3/48*
U.S. Cl. 424—47 7 Claims

1. A cosmetic composition for the care of the hair and skin to prevent dryness and roughness comprising in a cosmetic vehicle selected from the group consisting of water, alcohol and a hydroalcoholic solution 0.01 to 15 percent by weight of a copolymer having one or both of tertiary amine and quaternary ammonium functions, said copolymer having the formula

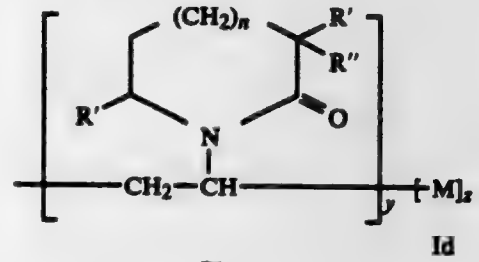


(I)

Ia

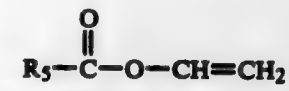


Ib

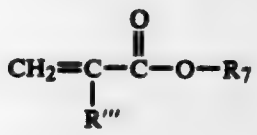


Ic Id

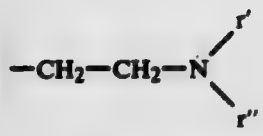
wherein:
R_1, R_4 and R_5 each independently represent alkyl having 1–12 carbon atoms,
R_2 and R_3 each independently represent hydrogen or methyl,
R′ and R″ each independently represent hydrogen or lower alkyl having 1–4 carbon atoms,
l is 0 or 1, if l=0, t=1 and if l=1, t=0,
n is 0, 1 or 2,
s is 0 or 1,
A represents chloride or bromide,
HX is an acid selected from the group consisting of hydrochloric acid, hydrobromic acid, acetic acid and lactic acid,
M represents a unit of an unsaturated monomer selected from the group consisting of
(i) a vinyl ester of the formula



wherein R_5 represents alkyl having 1–17 carbon atoms,
(ii) a vinyl ether of the formula $R_6—O—CH=CH_2$ wherein R_6 represents alkyl having 1–16 carbon atoms,
(iii) an acrylic or methacrylic ester of the formula

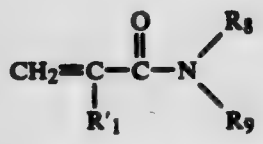


wherein R‴ represents a member selected from the group consisting of hydrogen and methyl and R_7 represents a member selected from the group consisting of alkyl having 1–18 carbon atoms, alkyl having 1–3 carbon atoms and substituted by at least one alkoxy having 1–4 carbon atoms and



wherein r′ and r″ each independently represent alkyl having 1–4 carbon atoms, and

(iv) an acrylamide or methacrylamide of the formula



wherein R_8 and R_9 each independently represent a member selected from the group consisting of hydrogen, alkyl having 1–4 carbon atoms and $-(CH_2)_m-OH$ wherein m is equal to 1, 2 or 3 and R'_1 represents a member selected from the group consisting of hydrogen and methyl;

x+x′ corresponds to 95–5 mole percent wherein one of x and x′ can be 0;

y corresponds to 5–95 mole percent; and

z corresponds to 0–60 mole percent, with (x+x′)+y+z being equal to 100 mole percent; and from 0.01 to 10 weight percent of another polymer having an anionic or cationic character and cosmetic adjuvants.

4,348,381

DENTAL REMINERALIZATION COMPOSITION

Abdul Gaffar, Somerset, and Calvin B. Davis, North Brunswick, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed May 6, 1981, Ser. No. 260,951
Int. Cl.³ A61K 7/16, 7/18
U.S. Cl. 424—52 16 Claims

1. A stable aqueous remineralizing composition which comprises a solution of water having dissolved therein a source of calcium ions and a source of phosphate ions, the amount of calcium ion and phosphate ions being sufficient to effect remineralization of dental enamel; a compound which provides fluoride anticaries agent; and an antinucleating agent selected from the group consisting of 2-phosphono-butane-tricarboxylic acid-1,2,4 and water-soluble salt thereof, said solution having a pH of about 5–9.

4,348,382

DENTIFRICE COMPOSITION

Robert C. Pierce, Plainsboro, and Robert L. Mitchell, Somerset, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation-in-part of Ser. No. 213,423, Dec. 5, 1980, abandoned. This application Oct. 19, 1981, Ser. No. 313,046
Int. Cl.³ A61K 7/18
U.S. Cl. 424—52 2 Claims

1. A dentifrice composition with improved soluble fluorine retention comprising about 0.05% to about 7.6% by weight of sodium monofluorophosphate and about 20–99% by weight of a compatible polishing material, at least a major portion of which is dicalcium phosphate dihydrate having a particle size such that all particles are above 3 microns in size and at least about 65% of the particles are 3–10 microns in size.

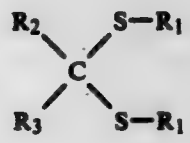
4,348,383

DITHIOETHER-BASED COSMETIC COMPOSITIONS FOR THE TREATMENT OF THE OILY STATE OF HAIR AND SKIN

Claude Bouillon, Esubonne, and Jean Maignan, Tremblay les Gonesse, both of France, assignors to L'Oreal, Paris, France

Filed Jun. 29, 1979, Ser. No. 53,417
Claims priority, application France, Jul. 12, 1978, 78 20801
Int. Cl.³ A61K 7/06
U.S. Cl. 424—70 10 Claims

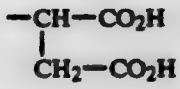
1. A cosmetic composition for the treatment of the oily appearance of the hair and skin comprising in combination, in a suitable cosmetic vehicle, (1) an effective amount of at least one active compound having the formula



(I)

wherein

R_1 represents

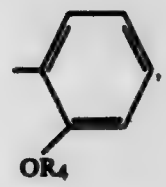


R_2 represents a member selected from the group consisting of

(i) $-C_6H_5p\text{-}OCH_3$,

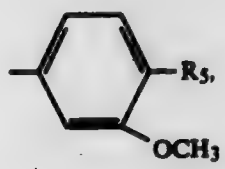
(ii) $-C_6H_5$

(iii)



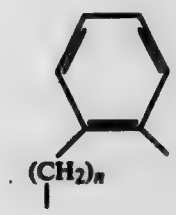
wherein R_4 represents a radical selected from the group consisting of $-CH_2COOH$ and $-COCH_3$, and

(iv)



wherein R_5 represents a radical selected from the group consisting of —OH, $-OCH_3$, $-OC_4H_9$ and $-OCH_2COOH$, and

R_3 represents hydrogen or methyl, or R_2 and R_3 together form a divalent radical of the formula,



wherein n is 2–5 inclusive, and (2) an effective amount of at least one of an anionic, cationic, nonionic or amphoteric detergent.

4,348,384

PHARMACEUTICAL COMPOSITION FOR ORAL ADMINISTRATION CONTAINING COAGULATION FACTOR VIII OR IX

Izumu Horikoshi; Nobuo Sakuragawa; Masaharu Ueno, and Kaoru Takahashi, all of Toyama, Japan, assignors to Dainippon Pharmaceutical Co., Ltd., Osaka, Japan

Filed Oct. 7, 1981, Ser. No. 309,269

Claims priority, application Japan, Oct. 17, 1980, 55/144508; Apr. 28, 1981, 56/65685

Int. Cl.[3] A61K *35/14*

U.S. Cl. 424—101 14 Claims

1. A pharmaceutical composition for oral administration, which comprises effective amounts of coagulation factor VIII or IX and a protease inhibitor which are incorporated in liposomes.

4,348,385

FLOWABLE PESTICIDES

Joseph Synek, Overland Park, Kans., assignor to Mobay Chemical Corporation, Pittsburgh, Pa.

Filed Nov. 17, 1980, Ser. No. 207,318

Int. Cl.[3] A01N *25/22, 57/00*

U.S. Cl. 424—173 9 Claims

1. A flowable water dispersible pesticide formulation comprising

(a) a finely divided biologically active water insoluble solid pesticide compound,

(b) an organic water miscible solvent which has a solubility for said pesticide compound of between 1000 ppm and 10 wt. % at 40° C., and

(c) a sufficient amount of finely divided inert filler and dispersant effective for dispersing water insoluble substances in aqueous media to maintain said compound in stable suspension in said organic solvent and prevent either agglomeration or Ostwald ripening.

6. A storage stable, flowable, water dispersible suspension of Azinphos-methyl in propylene glycol having a viscosity after agitation of between 400 and 5000 cps at 20° C. and containing sufficient dispersant and inert filler to maintain the stability of the suspension at temperatures between 40° and 0° C.

7. The suspension of claim 6 wherein the dispersant is an alkali metal lignosulfonate.

4,348,386

PROTEASE INHIBITORS

Shinichi Kojima, Ashiya; Ten Koide, Takarazuka; Shigeo Ogino, Nishinomiya; Toshiro Tsuchiya, and Yoshito Kameno, both of Minoo, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

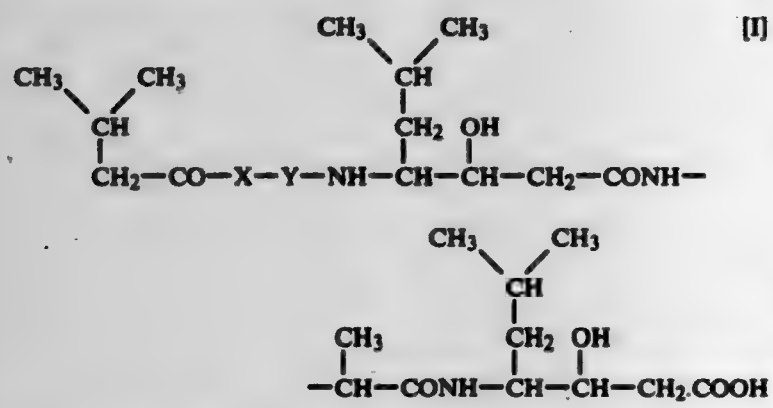
Filed Apr. 1, 1981, Ser. No. 249,984

Claims priority, application Japan, Apr. 16, 1980, 55-50725

Int. Cl.[3] A61K *37/00;* C07C *103/52*

U.S. Cl. 424—177 23 Claims

1. An acidic protease inhibitor obtained as precipitated by allowing a compound of the formula (I),



[I]

wherein X and Y are L-leucine or L-valine, or its salt to react with an aluminum compound in a medium containing water and/or an alcohol, and further continuing the reaction after adjusting the pH of the system to within a range of 4.5 to 7.

4,348,387

METHOD AND SYSTEM FOR THE CONTROLLED RELEASE OF BIOLOGICALLY ACTIVE SUBSTANCES TO A BODY FLUID

Michael Brownlee, Watertown, Mass., and Anthony Cerami, Flanders, N.J., assignors to The Rockefeller University, New York, N.Y.

Filed Jul. 31, 1979, Ser. No. 62,484

Int. Cl.[3] A61K *37/26;* C07C *103/52*

U.S. Cl. 424—178 15 Claims

1. A process of treating hyperglycemia which comprises:

delivering to a glucose containing human body fluid a reversible complex of (1) a hypoglycemically active insulin analogue which is a conjugate between a carbohydrate and an insulin and (2) a lectin having affinity for glucose and for the carbohydrate portion of said conjugate (1); thereby

causing the glucose present in said fluid to complex to said lectin and to release said conjugate into said fluid.

4,348,388

11-AMINO-11-DEOXYDAUNORUBICIN AND ANALOGS

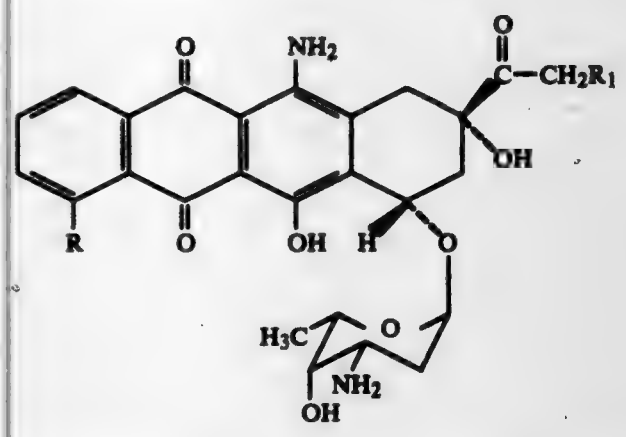
Robert B. Garland, Northbrook; Raphael Pappo, Skokie, and Paul B. Sollman, Wilmette, all of Ill., assignors to G.D. Searle & Co., Skokie, Ill.

Filed Apr. 2, 1980, Ser. No. 136,620

Int. Cl.[3] A61K *31/70;* C07H *15/24*

U.S. Cl. 424—180 17 Claims

1. An 11-amino-11-deoxydaunorubicin derivative represented by the formula:



wherein: R is hydrogen, hydroxy or methoxy; R_1 is hydrogen or hydroxy; and the pharmaceutically acceptable salts thereof.

13. A pharmaceutical composition for parenteral administration comprising a therapeutically effective amount of a compound of claim 1 and a pharmaceutically acceptable carrier or diluent.

4,348,389

QUINOXALINE ADDUCTS USEFUL AS ANTHELMINTICS

Vernon V. Young, Terre Haute, and David R. Bright, West Terre Haute, both of Ind., assignors to International Minerals & Chemical Corp., Terre Haute, Ind.

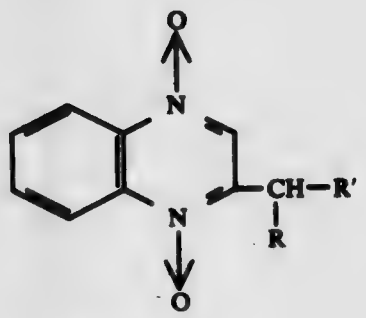
Filed Aug. 7, 1980, Ser. No. 176,168

Int. Cl.[3] A61K *31/63, 31/495, 31/635*

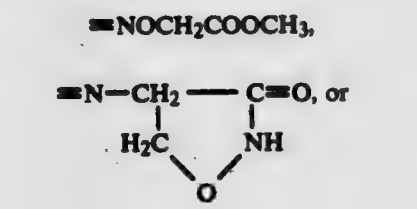
U.S. Cl. 424—228 9 Claims

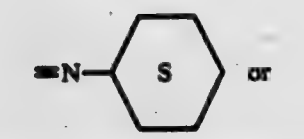
6. The method of inhibiting parasitic helminths in animal digestive systems which comprises orally administering an inhibitory amount of a substituted quinoxaline compound to said animal, said quinoxaline compound being selected from the group consisting of:

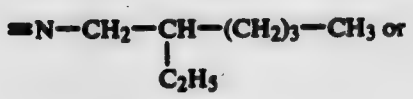
(a) a compound represented by the formula

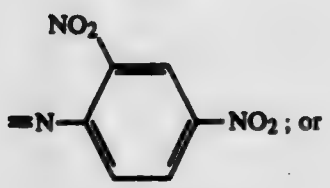


where R and R′ collectively are



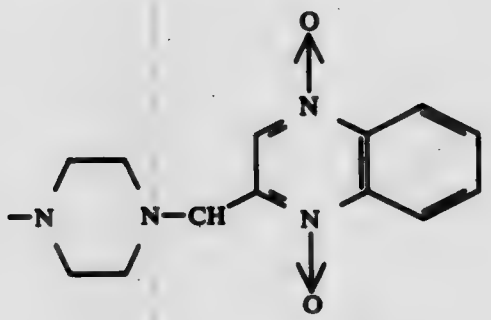


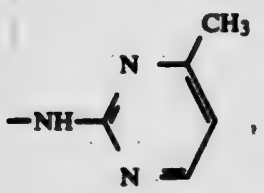


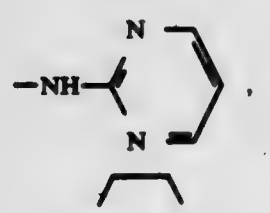


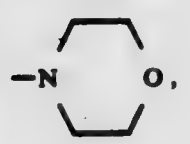


or R is hydroxyl or alkoxy and R′ is

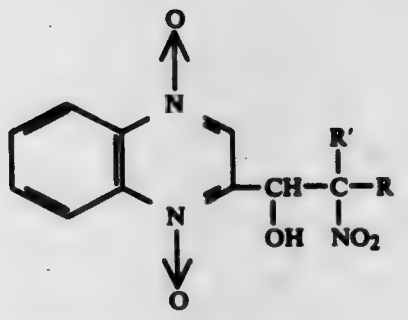






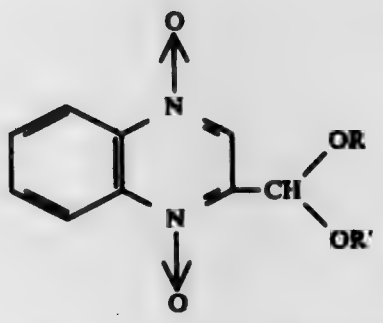


(b) nitrohydroxyalkylquinoxaline-1,4-dioxides represented by the formula



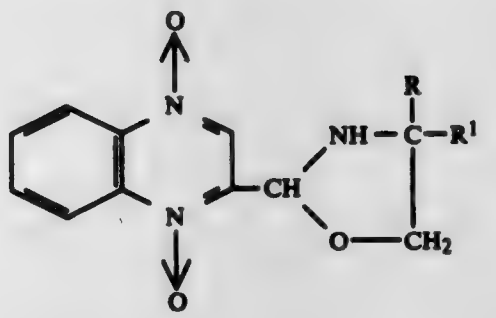
where R is hydrogen, lower alkyl of 1–3 carbon atoms, hydroxymethyl or acetoxymethyl and R′ is hydrogen or lower alkyl of 1–2 carbon atoms or R and R′ taken together constitute an alkylene group of five carbon atoms;

(c) A substituted quinoxaline-1,4-dioxide represented by the formula



(d) where R and R′ are hydrogen or collectively R and R′ are $-(CH_2)_x-$ or $-CH_2CHOHCH_2-$, or $-CH_2C(CH_2OH)(NO_2)Ch_2-$ where x is an integer of 2 to 4; and

(e) substituted quinoxaline dioxides represented by the formula



where R and R^1 can be hydrogen, methyl, ethyl or hydroxymethyl and can be the same or different.

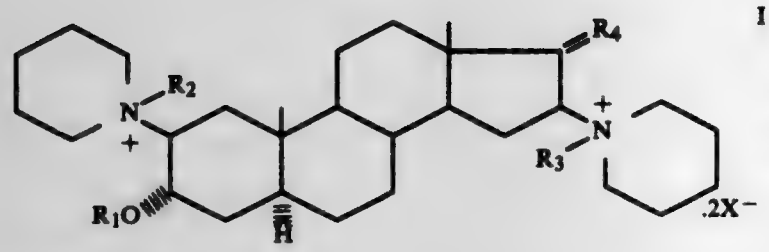
4,348,390

(i) **NOVEL BIS- AND MONO-QUATERNARY AMMONIUM DERIVATIVES OF 2β,16β-DIPIPERIDINO-5α-ANDROSTANES, PROCESSES FOR THEIR PREPARATION AND PHARMACEUTICAL PREPARATIONS**

(j) Jan Kelder, Oss, Netherlands, assignor to AKZO nv, Oss, Netherlands

Filed Dec. 10, 1980, Ser. No. 214,650
Claims priority, application United Kingdom, Dec. 12, 1979, 7942883
(k) Int. Cl.³ A61K *31/58*; C07J *43/00*
U.S. Cl. 424—241 6 Claims

1. Novel bisquaternary ammonium derivatives of 2β,16β-dipiperidino-5α-androstanes having the formula I:



I

wherein

R_1=



R_2=CH_3, C_2H_5 or $CH_2CH{=}CH_2$;

R_3=CH_3, C_2H_5 or $CH_2CH{=}CH_2$, with the proviso that R_2 and R_3 are not CH_3 simultaneously;

R_4=O or H(βOR_5), wherein R_5=H or aliphatic carbacyl (1–6 C); and

X=a halogen atom.

6. Pharmaceutical preparations having neuromuscular blocking activity comprising a pharmaceutically effective amount of one or more compounds of claim 1.

4,348,391

SULFONAMIDO AND SULFAMOYLAMINO-ERGOLINE-I DERIVATIVES

Peter Stütz, Vienna, Austria; Theodor Fehr, Dornach, and Paul Stadler, Biel-Benken, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

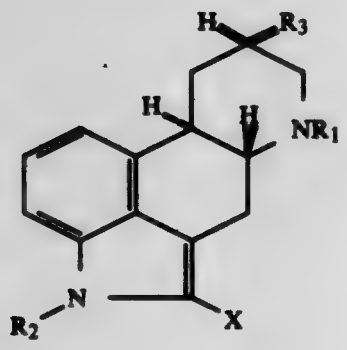
Continuation of Ser. No. 973,158, Dec. 26, 1978, abandoned, which is a continuation-in-part of Ser. No. 896,703, Apr. 17, 1978, abandoned, which is a continuation of Ser. No. 752,070, Dec. 20, 1976, abandoned. This application Sep. 22, 1980, Ser. No. 189,068

Claims priority, application Switzerland, Dec. 23, 1975, 16680/75; May 18, 1976, 6188/76

Int. Cl.³ C07D *457/12*; A61K *31/48*

U.S. Cl. 424—246 **12 Claims**

1. A compound of formula I,



I

wherein

X is hydrogen, chlorine or bromine,

R_1 is methyl or ethyl,

R_2 is alkyl of 1 to 4 carbon atoms or allyl,

R_3 is a group —NR_4R_5, wherein R_4 is hydrogen or alkyl of 1 to 4 carbon atoms, and R_5 is SO_2R_6, wherein R_6 is alkyl of 1 to 4 carbon atoms, mono-, di- or tri-haloalkyl of 1 to 4 carbon atoms, phenyl, phenyl mono-substituted by halogen or alkoxy of 1 to 4 carbon atoms, or pyridyl, or R_6 is a group NR_7R_8, wherein R_7 and R_8 are, independently, hydrogen or alkyl of 1 to 4 carbon atoms, or R_7 and R_8 together form —$[CH_2]_n$— or —$[CH_2]_2$—A—$[CH_2]_2$—, wherein n is a whole number from 3 to 7, and A is oxygen, sulphur, or nitrogen substituted by alkyl of 1 to 4 carbon atoms or phenyl,

in free base form or in pharmaceutically acceptable acid addition salt form.

3. A pharmaceutical composition useful in inhibiting lactation, treating Morbus Parkinson or treating depression which comprises a therapeutically effective amount of a compound of claim 1 in association with a pharmaceutical carrier or diluent.

4,348,392

8α-SUBSTITUTED ERGOLINE-I DERIVATIVES

Theodor Fehr, Dornach; Paul Stadler, Biel-Benken, and Peter Stütz, Bottmingen, all of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

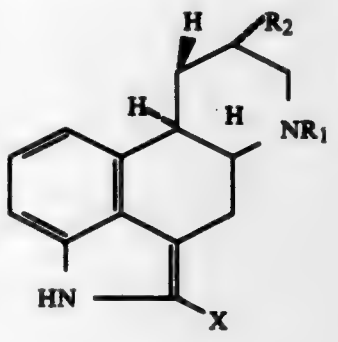
Continuation of Ser. No. 912,876, Jun. 5, 1978, abandoned, which is a continuation of Ser. No. 825,598, Aug. 19, 1977, abandoned, which is a continuation of Ser. No. 725,431, Sep. 22, 1976, abandoned, which is a continuation-in-part of Ser. No. 595,161, Jul. 11, 1975, abandoned. This application Sep. 22, 1980, Ser. No. 189,295

Claims priority, application Switzerland, Jul. 19, 1974, 9983/74; Aug. 13, 1974, 11031/74; United Kingdom, Jan. 2, 1976, 48/76

Int. Cl.³ C07D *457/12*; A61K *31/48*

U.S. Cl. 424—246 **29 Claims**

1. A compound of formula I,



I

wherein

X is hydrogen, chlorine or bromine,

R_1 is methyl or ethyl, and

R_2 is a group NR_3R_4, wherein

R_3 is hydrogen or alkyl of 1 to 4 carbon atoms, and

R_4 is SO_2R_5,

wherein R_5 is alkyl of 1 to 4 carbon atoms, mono- to tri-halogenalkyl of 1 to 4 carbon atoms, phenyl, pyridyl, phenyl monosubstituted by halogen or alkoxy of 1 to 4 carbon atoms, or a group NR_6R_7, wherein each of

R_6 and R_7 is independently hydrogen or alkyl of 1 to 4 carbon atoms, or

R_6 and R_7 together are one of the groups $(CH_2)_n$ or $(CH_2)_2$—A—$(CH_2)_2$, wherein

n is a number from 3 to 7, and

A is oxygen, sulphur or nitrogen substituted by alkyl of 1 to 4 carbon atoms or phenyl,

or a pharmaceutically acceptable acid addition salt.

4. A pharmaceutical composition useful in inhibiting prolactin secretion or treating Morbus Parkinson comprising a therapeutically effective amount of a compound of claim 1 in association with a pharmaceutical carrier or diluent.

4,348,393

N-ARYL OXAZOLIDINONES, OXAZOLIDINETHIONES, PYRROLIDINONES, PYRROLIDINES AND THIAZOLIDINONES

Guy R. Bourgery, Colombes; Colette A. Douzon, Paris; Jean-Francois R. Ancher, Rueil-Malmaison; Alain P. Lacour, La Varenne; Patrick G. Guerret, Rueil-Malmaison; Michel Langlois, Buc, and Philippe L. Dostert, Le Vesinet, all of France, assignors to Delalande S.A., Courbevoie, France

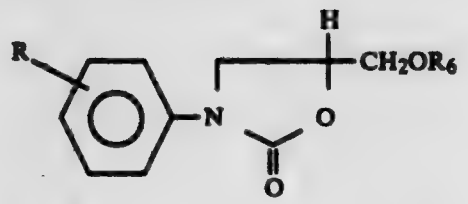
Filed Jun. 4, 1979, Ser. No. 45,143

Claims priority, application France, Jun. 9, 1978, 78 17388; Aug. 17, 1978, 78 24024

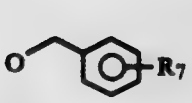
Int. Cl.³ A61K *31/42, 31/535;* C07D *263/06, 275/10*

U.S. Cl. 424—248.57 19 Claims

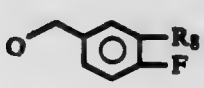
1. A compound having the formula



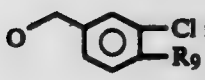
wherein R_6 is alkyl having 1 to 5 carbon atoms, cyclohexyl, allyl, propargyl or methoxymethyl, and R is (1) methyl in meta position or (2) is in para position and is selected from the group consisting of alkoxy having from 4 to 6 carbon atoms, cycloalkylmethoxy in which the cycloalkyl has from 4 to 7 carbon atoms, 1-methyl-1-cyclopentylmethoxy, cyclopenten-1-yl methoxy, cyclohexen-1-yl methoxy, (butene-2)oxy, (3-methyl butene-2)oxy, 4-chlorobutoxy, 2-cyanoethoxy, 3-cyanopropoxy, 4-cyanobutoxy, 2-oxo-propoxy, 4-oxocyclohex-1-yl methoxy, 2-morpholino-ethoxy, N,N-dimethylamino, tetrahydropyran-4-yl methoxy, tetrahydropyran-3-yl methoxy, 3-cyanobenzyloxy,



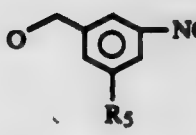
in which R_7 is hydrogen, 3-Cl, 4-Cl, 3-F, 4-F, 3-I, 3-Br, 3-CF_3, 3-NO_2, 4-NO_2 or 4-CN,



R_8 in which R_8 is Cl, CN or NO_2,

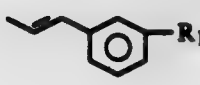


Cl in which R_9 is Cl or NO_2,

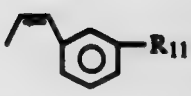


NO_2 in which R_5 is Cl or CN,

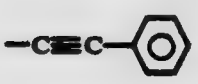
3,5-dichlorobenzyloxy,



R_{10} in which R_{10} is hydrogen, Cl, CN, or NO_2,



R_{11} in which R_{11} is hydrogen or NO_2,



, phenethyl and phenyl.

2. A pharmaceutical composition for treating depression comprising a therapeutically effective amount of a compound as claimed in claim 1 mixed with a pharmacologically acceptable carrier.

4,348,394

COMBATING PESTS WITH SUBSTITUTED 3,6-DIPHENYL-3,4-DIHYDRO-2H-1,3,5-OXADIAZINE-2,4-DIONES

Wilhelm Sirrenberg, Sprockhoevel; Erich Klauke, Odenthal; Ingeborg Hammann; Ingomar Krehan, both of Cologne, and Wilhelm Stendel, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

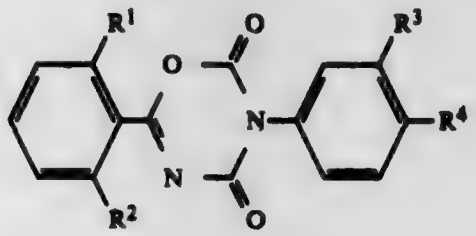
Continuation of Ser. No. 115,854, Jan. 28, 1980, abandoned. This application Dec. 22, 1980, Ser. No. 219,751

Claims priority, application Fed. Rep. of Germany, Feb. 14, 1979, 2905687

Int. Cl.³ C07D *273/04;* A01N *9/20*

U.S. Cl. 424—248.57 8 Claims

1. An oxadiazine derivative of the formula



in which

R^1 represents halogen, methyl or ethyl,

R^2 represents hydrogen or halogen,

R^3 represents hydrogen or halogen,

R^4 represents halogenomethoxy, halogenoethoxy or halogenomethylthio, or

R^4 together with R^3 represents dioxahalogenobutanediyl.

7. A method of combating arthropods or nematodes which comprises applying to the arthropods or nematodes, or to a habitat thereof, an arthropodicidally or nematicidally effective amount of a compound according to claim 1.

4,348,395

1,4-DIHYDROPYRIDAZINE COMPOUNDS

Gerhard Franckowiak; Horst Meyer; Friedrich Bossert; Arend Heise; Stanislav Kazda; Kurt Stoepel; Robertson Towart, all of Wuppertal, and Egbert Wehinger, Velbert, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

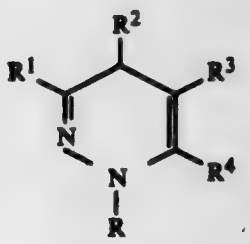
Filed Oct. 4, 1978, Ser. No. 948,599

Claims priority, application Fed. Rep. of Germany, Oct. 10, 1977, 2745496

Int. Cl.³ A61K *31/50;* C07D *237/04*

U.S. Cl. 424—250 13 Claims

1. A compound which is 1-N-substituted 1,4-dihydropyridazine of the formula or its pharmaceutically acceptable bioprecursors:



(I)

in which:

R is a straight-chain or branched alkyl having 1 to 4 carbon atoms optionally substituted by fluorine or carboalkoxy having up to 4 carbon atoms, or is a group COR^5 wherein R^5 is straight-chain or branched alkyl having from 1 to 4 carbon atoms optionally substituted by fluorine or phenyl

or wherein

R^5 is phenyl or benzyl which is optionally substituted by methoxy, halogen or nitro

or wherein

R^5 is a group OR^6

wherein

R^6 is straight-chain or branched alkyl having from 1 to 4 carbon atoms or

R^6 is phenyl or benzyl which is optionally substituted by methoxy, halogen or nitro

R^1 is straight-chain or branched alkyl having from 1 to 4 carbon atoms optionally being substituted by halogen,

R^2 is phenyl optionally substituted by halogen, nitro, cyano or trifluoromethyl,

R^3 represents the group $COOR^8$

wherein

R^8 represents straight-chain or branched alkyl having from 1 to 4 carbon atoms, the alkyl chain being optionally interrupted by an oxygen atom and

R^4 represents alkyl having 1 or 2 carbon atoms.

10. A method of combating circulatory disorders in warm-blooded animals which comprises administering to the animals an effective amount of an active compound according to claim 1 either alone or in admixture with a diluent or in the form of a medicament.

4,348,396

SUBSTITUTED 11-OXO-11H-PYRIDO[2,1-B]QUINAZOLINES AND METHOD OF INHIBITING ALLERGIC REACTIONS WITH THEM

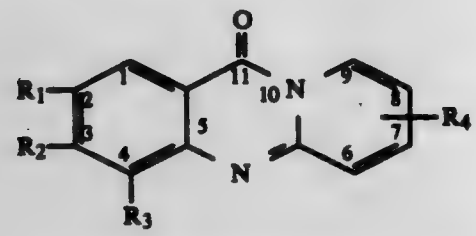
Richard W. Kierstead, and Jefferson W. Tilley, both of North Caldwell, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation of Ser. No. 871,564, Jan. 23, 1978, abandoned, which is a continuation-in-part of Ser. No. 780,939, Mar. 24, 1977, abandoned. This application May 2, 1980, Ser. No. 146,730

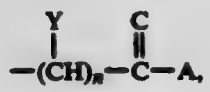
Int. Cl.³ A61K *31/505*; C07D *471/04*

U.S. Cl. 424—251 **35 Claims**

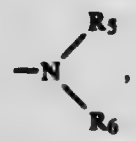
1. A compound of the formula



wherein R_1, R_2 and R_3, independently, are hydrogen, isopropyl, lower alkoxy, lower alkylthio, cyclopropyl, or cyclobutyl; and R_4 is cyano, hydroxy-lower alkyl, lower alkanoyloxy-lower alkyl, benzoyloxy-lower alkyl or a radical of the formula

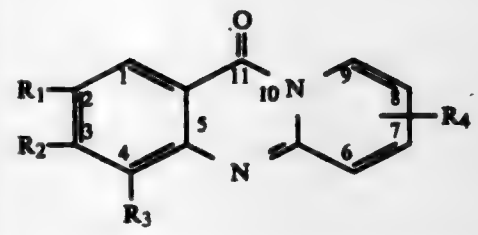


wherein A is lower alkyl, hydroxy, lower alkoxy, di-(C_1–C_7-)alkylamino-(C_2–C_7)-alkoxy, pivaloyloxymethoxy, or a radical of the formula

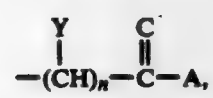


wherein R_5 and R_6, independently, are hydrogen, lower alkyl or di-(C_1–C_7)alkylamino-(C_2–C_7)alkyl, Y is hydrogen or methyl, and n is 0 or 1; provided that only one of R_1, R_2 or R_3 is other than hydrogen and that R_4 is present only in position 6, 7 or 8, or a pharmaceutically acceptable acid addition salt thereof, or when A is hydroxy, also a salt thereof with a pharmaceutically acceptable base.

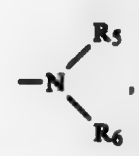
33. Method of inhibiting allergic reactions which comprises administering an effective amount of the compound of the formula



wherein R_1, R_2 and R_3, independently, are hydrogen, isopropyl, lower alkoxy, cyclopropyl, or cyclobutyl; and R_4 is cyano, hydroxy-lower alkyl, lower alkanoyloxy-lower alkyl, benzoyloxy-lower alkyl or a radical of the formula



wherein A is lower alkyl, hydroxy, lower alkoxy, di-(C_1–C_7-)alkylamino-(C_2–C_7)-alkoxy, pivaloyloxymethoxy, or a radical of the formula



wherein R_5 and R_6, independently, are hydrogen, lower alkyl or di-(C_1–C_7)alkylamino-(C_2–C_7)alkyl, Y is hydrogen or methyl, and n is 0 or 1; provided that only one of R_1, R_2 or R_3 is other than hydrogen and that R_4 is present only in position 8, or a pharmaceutically acceptable acid addition salt thereof, or when A is hydroxy, also a salt thereof with a pharmaceutically acceptable base.

4,348,397

PROBENECID-DYPHYLLINE THERAPY

David C. May, and Charles H. Jarboe, both of Louisville, Ky., assignors to Research Corporation, New York, N.Y.

Filed Mar. 23, 1981, Ser. No. 246,661

Int. Cl.³ A61U *31/19, 31/52*

U.S. Cl. 424—253 **8 Claims**

1. A method of enhancing the retention of dyphylline in the human system into which it is administered which comprises administering a retentively effective amount of probenecid to said system at substantially the time of administration of the dyphylline, wherein the amount of dyphylline administered is between about 3 and about 25 milligrams per kilogram of body weight and the amount of probenecid administered is betwen about 5 and about 20 milligrams per kilogram of body weight.

4,348,398

QUINOLINYL ETHANOLAMINES

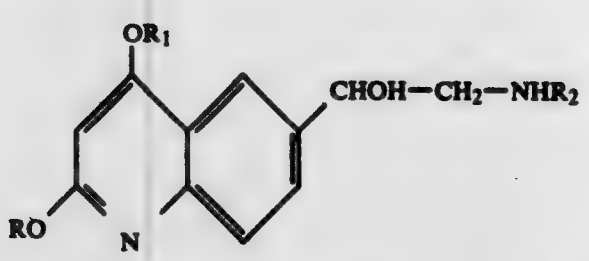
Joseph G. Atkinson, Montreal, and Burton K. Wasson, Ingleside, both of Canada, assignors to Merck Sharp & Dohme (I.A.) Corp., Rahway, N.J.

Filed Dec. 23, 1980, Ser. No. 219,728

Int. Cl.³ A61K *31/47*; C07D *215/22*

U.S. Cl. 424—258 **13 Claims**

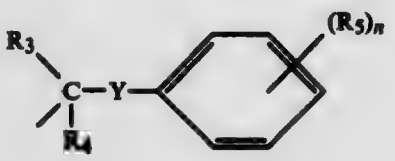
1. Compounds of the formula:



tautomers, pharmaceutically acceptable salts and individual isomers thereof wherein

R and R_1 are independently selected from H and C_1–C_3 alkyl and

R_2 is



wherein

R_3 and R_4 are independently selected from H and C_1–C_3 alkyl,

R_5 is H, OH, O—CH_{1-3} alkyl, halogen or C_{1-3} alkyl

Y is CH_2, $(CH_2)_2$, $(CH_2)_3$, $(CH_2)_4$ or —CH_2O— and

n is 1 or 2.

12. A pharmaceutical composition for (1) treating hypertension (2) reducing intraocular pressure or (3) effecting bronchodilation containing an effective amount of a compound of claim 1.

13. A method of (1) treating hypertension (2) reducing intraocular pressure or (3) effecting bronchodilation by administering an effective amount of claim 1 compound in suitable dosage form.

4,348,399

ANTIATHEROSCLEROTIC AND HYPOLIPIDEMIC 4-(MONOALKYLAMINO)PHENYL ALKANE, ALKENE AND ALKYNE CARBINOLS, ALDEHYDES, CARBOXYLIC ACIDS AND DERIVATIVES

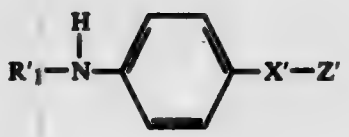
Robert G. Shepherd, South Nyack, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Filed Feb. 2, 1978, Ser. No. 874,431

Int. Cl.³ A61K *31/44*; C07C *59/56, 101/48*; A61K *31/19, 31/20, 31/235, 31/24, 31/27*

U.S. Cl. 424—263 7 Claims

1. A compound represented by the following structured formula:



wherein X′ is selected from the group consisting of an unbranched or branched C_1–C_3 alkylene, C_2–C_4 alkenylene, or ethynylene; Z′ is selected from the group consisting of carboxyl, formyl, carbamoyl and $COOR_3$ wherein R_3 is selected from the group consisting C_1–C_4 branched and unbranched alkyl, C_1–C_3 alkoxyloweralkyl, di(C_1–C_3 dialkyl)aminoloweralkyl, C_1–C_3 mono- or dihydroxyalkyl, phenyl, halophenyl, 3-pyridyl, phenylmethyl, pyridylmethyl, C_3–C_5 carboalkoxyalkyl, and C_2–C_5 carboxyalkyl and R_1 is a branched or unbranched alkyl group C_nH_{2n+1} wherein n is an integer 13 to 17.

7. A compound, 4-(hexadecylmethylamino)hydrocinnamic acid.

4,348,400

PYRIDYLPROPYL ALKYL-SUBSTITUTED BENZOATES AND THEIR USE AS INSECT REPELLENTS

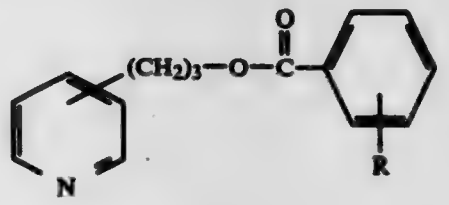
Rayman Y. Wong, Richmond, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Filed May 7, 1981, Ser. No. 261,423

Int. Cl.³ A61K *31/44*; C07D *213/55*

U.S. Cl. 424—263 4 Claims

1. A method of repelling insects from a locus to be protected therefrom, comprising applying to said locus an effective insect repelling amount of a compound having the formula



in which R is C_1–C_4 alkyl.

4,348,401

N-PHENOXYALKYLPIPERIDINE DERIVATIVES

Walter-Gunar Friebe, Darmstadt; Wolfgang Kampe, Hoddesheim; Max Thiel, Mannheim; Wolfgang Schaumann, Heidelberg, and Otto-Henning Wilhelms, Weinheim-Rittersweier, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

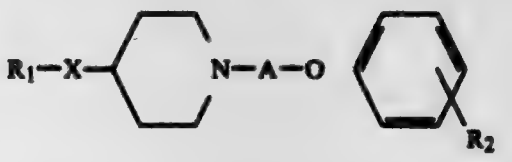
Filed Sep. 10, 1980, Ser. No. 185,839

Claims priority, application Fed. Rep. of Germany, Sep. 28, 1979, 2939292

Int. Cl.³ A61K *31/445, 31/455*; C07D *211/58, 409/12, 407/12, 403/12*

U.S. Cl. 424—267 6 Claims

1. An N-phenoxyalkylpiperidine derivative of the formula



wherein

R_1 is a hydrogen atom or a C_1–C_7 alkanoyl radical, a trifluoroacetyl radical, a phenacetyl radical a C_3–C_7 cycloalkylcarbonyl radical, a furancarbonyl, thiophencarbonyl or pyridinecarbonyl radical, or a benzoyl radical which may be substituted by halogen, hydroxyl, C_1–C_6 alkyl, C_1–C_6 alkoxy, C_1–C_6 alkoxycarbonyl, acetyloxy, carboxyl, nitro, amino, nitrile, trifluoromethyl, carbamoyl, methylmercapto, methylsulfinyl, methylsulfonyl, acetyl, benzoyl, acetylamino, hydroxymethyl or C_1–C_6 alkoxy C_1–C_6 alkyl,

R_2 is a 1H tetrazol-5-yl radical,

X is an imino group, and

A is an alkylene radical containing 2 to 4 carbon atoms,

or a pharmacologically acceptable salt thereof.

4,348,402

2-HYDROXYALKYL-3,4,5-TRIHYDROXY-PIPERIDINE COMPOUNDS, THEIR PRODUCTION AND THEIR MEDICINAL USE

Günther Kinast; Lutz Müller; Rüdiger Sitt, and Walter Puls, all of Wuppertal, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

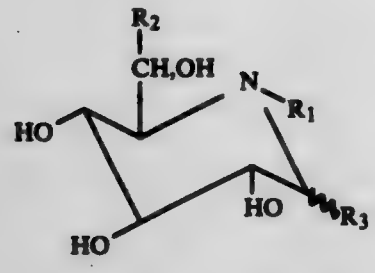
Filed Oct. 2, 1980, Ser. No. 193,498

Claims priority, application Fed. Rep. of Germany, Oct. 19, 1979, 2942365

Int. Cl.³ A61K *31/445;* C07D *211/42*

U.S. Cl. 424—267 19 Claims

1. A compound which is 2-hydroxyalkyl-3,4,5-trihydroxypiperidine of the formula



(I)

in which

R_1 denotes a hydrogen atom

R_2 denotes a C_1 to C_{10} alkyl, C_2 to C_6 alkenyl or C_4 to C_{10} alkadienyl radical which is optionally substituted by hydroxyl, C_1 to C_4 alkoxy or phenyl, which can in turn be substituted by C_1 to C_4 alkyl, C_1 to C_4 alkoxy, halogen, nitro or cyano, or denotes a phenyl radical which is optionally substituted by C_1 to C_4 alkyl, C_1 to C_4 alkoxy, halogen, nitro or cyano, and

R_3 denotes a hydrogen atom or a sulpho or hydroxyl group.

10. A pharmaceutical composition containing as an active ingredient an amount effective for the treatment of adiposity, diabetes or hyperlipoproteinaemia of a compound according to claim 1, in admixture with an inert pharmaceutical carrier.

4,348,403

2-AMINO-4-(4-BENZYLOXYPHENYL)THIAZOLES, AND THEIR USE IN HYPERLIPEMIA

Yutaka Kawamatsu, Kyoto; Takashi Sohda, Takatsuki, and Yoshio Imai, Kawanishi, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

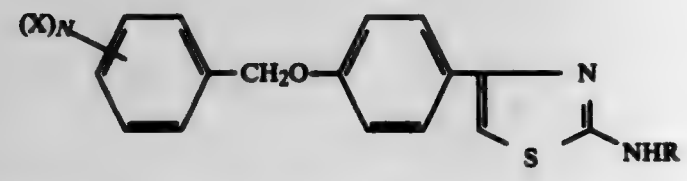
Filed Oct. 16, 1980, Ser. No. 197,755

Claims priority, application Japan, Oct. 17, 1979, 54/134489

Int. Cl.³ A61K *31/425;* C07D *277/40, 277/42, 277/46*

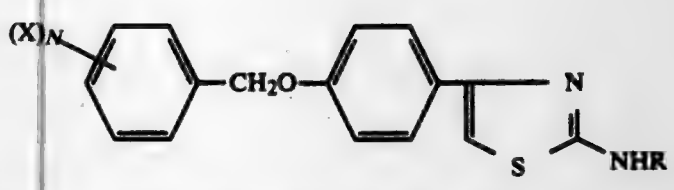
U.S. Cl. 424—270 8 Claims

1. A compound of the formula:



wherein X is hydrogen, halogen, alkyl having 1 to 4 carbon atoms or trifluoromethyl; R is hydrogen, alkyl having 1 to 4 carbon atoms, alkenyl having 2 to 4 carbon atoms, formyl or alkylcarbonyl having 2 to 6 carbon atoms; and n is 1 or 2, or a pharmaceutically acceptable salt thereof.

8. A pharmaceutical composition which contains an effective amount, for the therapy of hyperlipemia in mammals, of a compound of the formula:



wherein X is hydrogen, halogen, alkyl having 1 to 4 carbon atoms or trifluoromethyl; R is hydrogen, alkyl having 1 to 4 carbon atoms, alkenyl having 2 to 4 carbon atoms, formyl or alkylcarbonyl having 2 to 6 carbon atoms; and n is 1 or 2, or a pharmaceutically acceptable salt thereof, and

a pharmaceutically acceptable carrier, vehicle or diluent therefor.

4,348,404

ANTIINFLAMMATORY 4,5-DIARYL-α-POLYFLUOROALKYL-1H-IMIDAZOLE-2-METHANAMINES

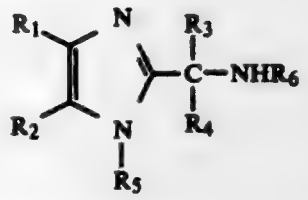
Joel G. Whitney, Kennett Square, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 170,871, Jul. 21, 1980, abandoned. This application Jun. 15, 1981, Ser. No. 271,276

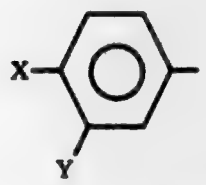
Int. Cl.³ A61K *31/415, 31/44;* C07D *233/64, 401/04*

U.S. Cl. 424—273 R 27 Claims

1. A compound of the formula



R_1 and R_2 independently = 2-pyridyl, 3-pyridyl, 4-pyridyl or



where X = H, F, Cl, Br, C_1–C_2 alkyl, C_1–C_2 alkoxy, di(C_1–C_2 alkyl)amino, (C_1–C_2 alkyl)$S(O)_n$ or NO_2; where n = 0, 1 or 2;

Y = H, F or Cl; provided when Y = F or Cl, then X must be F or Cl; further provided that only one of R_1 and R_2 can be selected from the group of 2-pyridyl and 4-pyridyl;

R_3 and R_4 independently = H, CF_3, CF_2H, CF_2Cl, $CFCl_2$ or CF_2CF_3; provided that no more than one of R_3 or R_4 is H; and further provided that no more than one of R_3 or R_4 is CF_2CF_3;

R_5 and R_6 independently = H or C_1–C_3 alkyl; or a pharmaceutically suitable acid addition salt thereof.

19. A method for treatment of inflammation in a mammal which comprises administering to the mammal an antiinflammatory amount of a compound of claim 1.

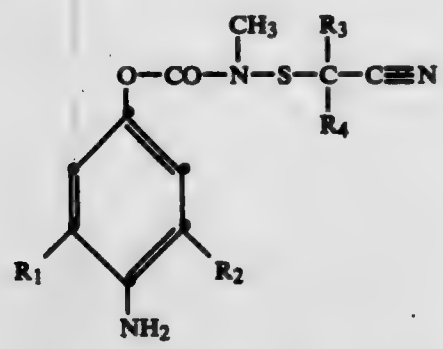
4,348,405

PESTICIDAL SULFENYLS

Manfred Böger, Weil am Rhein, Fed. Rep. of Germany, and Jozef Drabek, Oberwil, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Aug. 17, 1981, Ser. No. 293,805
Claims priority, application Switzerland, Aug. 26, 1980, 6419/80
Int. Cl.³ A01N *41/12*; C07C *149/237*
U.S. Cl. 424—298 10 Claims

1. A N-sulfenyl-N-methylcarbamate, or a salt thereof with an inorganic or organic acid, of the formula



wherein R_1 is C_1–C_4 alkyl, R_2 is hydrogen or methyl, and each of R_3 and R_4 is methyl or, together with the carbon atom to which they are attached, both are a cyclopentyl radical.

9. A method of controlling pests of animals and plants at a locus, which comprises applying to said locus a compound according to claim 1.

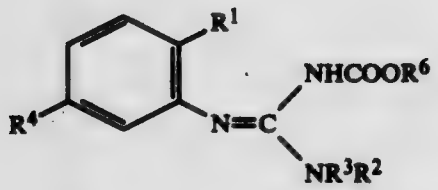
4,348,406

NOVEL GUANIDINE DERIVATIVES

M. Mehdi Nafissi-Varchei, North Caldwell, N.J., assignor to Schering Corporation, Kenilworth, N.J.

Filed Oct. 20, 1980, Ser. No. 198,424
Int. Cl.³ A23L *3/34*; C07C *79/46, 149/40, 143/67*
U.S. Cl. 424—300 9 Claims

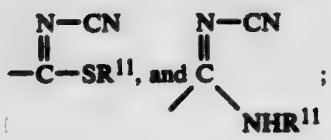
1. A compound of the formula



wherein

R^1 is hydrogen, halo, nitro, $NHCOR^8$, or $NHSO_2R^8$;

R^2 and R^3 are independently selected from hydrogen, N-alkyl piperidyl, wherein the alkyl group has 1 to 4 carbon atoms, tetrahydropyranyl, morpholinyl, piperidyl, C_1 to C_6 alkyl substituted with hydroxy, $—SCH_3$, $COOR^{10}$, piperazinyl, pyridyl, COR^9, amino, and substituted amino, wherein the substituents on the substituted amino are selected from C_1 to C_6 alkyl,



R^4 is C_1 to C_6 alkoxy;

R^6 is C_1 to C_6 alkyl and C_1 to C_6 alkyl substituted with C_1 to C_6 alkoxy, hydroxy, or amino;

R^8 is C_1 to C_6 alkyl, C_1 to C_6 alkyl substituted with phenyl or with halo, phenyl, or phenyl substituted with C_1 to C_6 alkyl or with halo;

R^9 is C_1 to C_6 alkyl, C_1 to C_6 acyl, or a peptide residue having up to three amino acids;

R^{10} is hydrogen or C_1 to C_6 alkyl;

R^{11} is C_1 to C_6 alkyl;

and the pharmaceutically acceptable acid addition salts thereof.

4,348,407

ORALLY ACTIVE TOLCICLATE AND TOLNAFTATE

Anthony R. Imondi, Westerville, and Irving Shemano, Columbus, both of Ohio, assignors to Adria Laboratories, Inc., Columbus, Ohio

Filed Apr. 29, 1981, Ser. No. 258,830
Int. Cl.³ A61K *31/27*
U.S. Cl. 424—300 7 Claims

1. A process of suppressing fungal disease which comprises orally administering to a person infected therewith a therapeutically effective amount for antifungal purposes of an antifungal agent selected from the group consisting of tolciclate and tolnaftate.

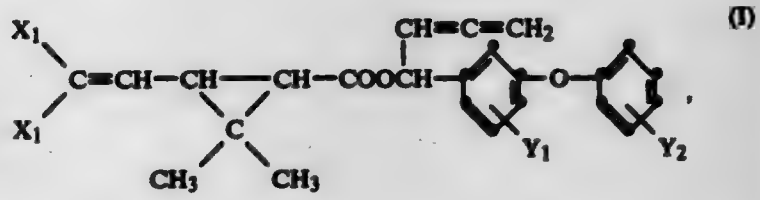
4,348,408

PESTICIDAL α-ALLENYL-3-PHENOXYBENZYL-2,2-DIMETHYL-3-(2,2-DIHALOVINYL)-CYCLOPROPANE-1-CARBOXYLATES

Peter Ackermann, Reinach; Laurenz Goell, Basel, and Rudolf Wehrli, Rheinfelden, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Aug. 12, 1981, Ser. No. 292,080
Claims priority, application Switzerland, Aug. 22, 1980, 6353/80; Jun. 30, 1981, 4304/81
Int. Cl.³ C07C *69/743*; A01N *53/00*
U.S. Cl. 424—305 12 Claims

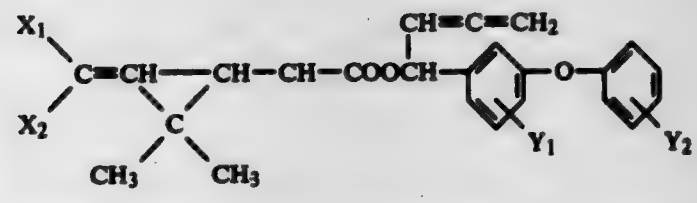
1. A cyclopropanecarboxylic acid α-allenyl-3-phenoxybenzyl ester of the formula



(I)

wherein X_1 is halogen and each of Y_1 and Y_2 is hydrogen or halogen.

11. A method of controlling insects and acarids at a locus, which method comprises applying to said locus an insecticidally or acaricidally effective amount of a cyclopropanecarboxylic acid α-allenyl-3-phenoxybenzyl ester of the formula



wherein X_1 is halogen and each of Y_1 and Y_2 is hydrogen or halogen.

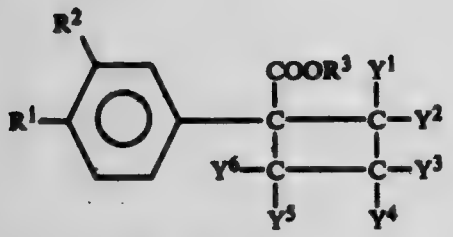
4,348,409

INSECTICIDAL ESTERS

George Holan, Brighton, and David F. O'Keefe, Mt. Waverley, both of Australia, assignors to Commonwealth Scientific and Industrial Research Organization, Australian Capital Territory, Australia

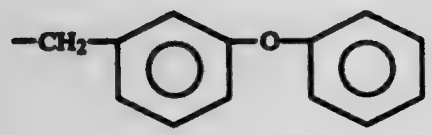
Continuation-in-part of Ser. No. 969,862, Dec. 15, 1978, Pat. No. 4,235,926. This application Jun. 20, 1979, Ser. No. 50,209
Claims priority, application Australia, Dec. 19, 1977, PD2818
Int. Cl.³ A01N *37/10*; C07C *149/40*
U.S. Cl. 424—308 10 Claims

1. The (+), (−) and (±) forms of the compounds of the general formula I

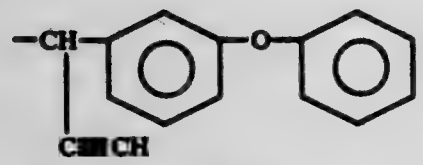


wherein R^1 is hydrogen, fluorine, chlorine, bromine, or a methoxy, ethoxy, propoxy, butoxy, tetrafluoroethoxy, methylthio, ethylthio, propylthio, methyl, ethyl, or nitro group, and R^2 is hydrogen or a methyl group; R^3 is one of the following groups (a) or (b):

(a)



(b)



and Y^1, Y^2, Y^3, Y^4 are all fluoro and Y^5 and Y^6 are hydrogen.

8. Insecticidal compositions comprising an insecticidally effective amount of one or more of the compounds of formula I, as stated in claim 1, where R^3 is one of the groups (a) or (b), incorporated in a suitable inert liquid or solid carrier.

10. The use as insecticides of an insecticidally effective amount of any of the compounds claimed in claim 1.

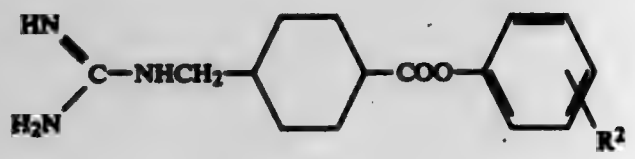
4,348,410

CYCLOHEXANE CARBOXYLIC ACID DERIVATIVES

Mutsumi Muramatsu; Toshio Satoh, both of Takashima; Yukio Yanagimoto, Osaka; Tadami Shimuchi, Kyoto; Toshio Nakajima, Fujisi, and Isao Nakajima, Toyonaka, all of Japan, assignors to Nippon Chemipher Co., Ltd., Tokyo and Teikoku Chemical Industry Co., Ltd., Osaka, both of, Japan

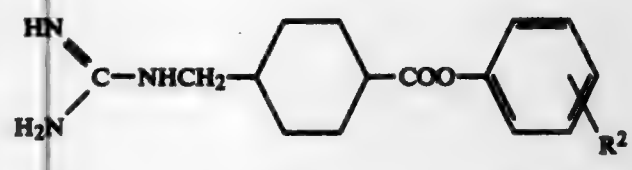
Filed Sep. 15, 1980, Ser. No. 186,849
Claims priority, application Japan, Sep. 20, 1979, 54-120142; Dec. 26, 1979, 54-168271; Dec. 26, 1979, 54-168272
Int. Cl.³ A61K *31/24, 31/215*; C07C *69/773, 69/614*
U.S. Cl. 424—309 11 Claims

1. A compound of the formula:



wherein R_2 represents a hydrogen atom, a lower alkoxy, formyl, lower alkanoyl, phenyl group, or a group of the formula, $-(CH_2)_nCOOR_3$, wherein R_3 represents a hydrogen atom, or a lower alkyl, phenyl, benzyl, anisyl or lower alkoxycarbonylmethyl group, and n represents an integer of 0 to 2, or a pharmaceutically acceptable salt thereof.

8. An anti-ulcer agent comprising a compound of the formula:



wherein R_2 represents a hydrogen atom, a lower alkoxy, formyl, lower alkanoyl, phenyl group, or a group of the formula, $-(CH_2)_nCOOR_3$, wherein R_3 represents a hydrogen atom, or a lower alkyl, phenyl, benzyl, anisyl or lower alkoxycarbonylmethyl group, and n represents an integer of 0 to 2, or a pharmaceutically acceptable salt thereof.

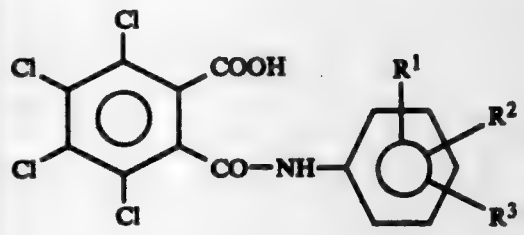
4,348,411

COMBATING BACTERIA WITH HALOGENOMETHYLSULPHONYLPHENYL-PHTHALAMIC ACIDS

Engelbert Kühle, Bergisch-Gladbach; Peter Kraus, Cologne, and Erich Klauke, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 12, 1981, Ser. No. 272,858
Claims priority, application Fed. Rep. of Germany, Jul. 3, 1980, 3025221
Int. Cl.³ C07C *147/13*; A61K *31/195*
U.S. Cl. 424—319 6 Claims

1. A halogenomethylsulphonylphenyl-phthalamic acid of the formula



in which

R^1 represents a trifluoromethylsulphonyl, difluorochloromethylsulphonyl or fluorodichloromethylsulphonyl group,

R^2 represents hydrogen, chlorine, fluorine or a methyl or methoxy group and

R^3 represents hydrogen, chlorine or a methyl, methoxy, methylmercapto or phenoxy group, which group may optionally be substituted by halogen and/or methyl and-/or methoxy, or a salt thereof.

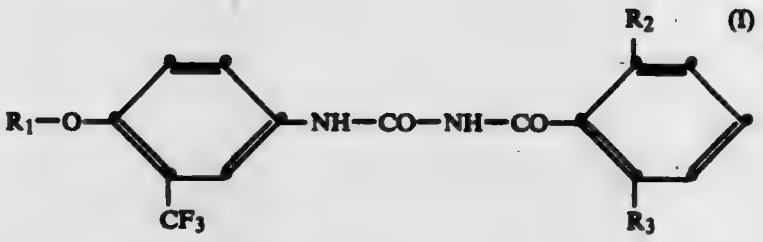
4,348,412

INSECTICIDAL PHENYLUREAS AND METHODS OF USE THEREOF

Josef Ehrenfreund, Allschwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jul. 7, 1980, Ser. No. 166,634
Claims priority, application Switzerland, Jul. 11, 1979, 6475/79; Nov. 22, 1979, 10417/79; Jun. 3, 1980, 4286/80
Int. Cl.³ A01N *47/28*; C07C *127/22*
U.S. Cl. 424—322 8 Claims

1. A compound of the formula I



(I)

wherein

R_1 is the $—CF_2—CHF—CF_3$ group,

R_2 is fluorine or chlorine, and

R_3 is hydrogen, fluorine or chlorine.

7. A method for combatting insects which comprises applying to said insects or to a locus desired to be protected from said insects an insecticidally effective amount of a compound according to claim 1.

4,348,413

ANTI-ARRHYTHMIC N-[3-ALKYLAMINOPROPYL]-N'-PHENYLUREAS

Theodore S. Sulkowski, Wayne; James L. Bergey, Lansdale, and Albert A. Mascitti, Norristown, all of Pa., assignors to American Home Products Corporation, New York, N.Y.

Division of Ser. No. 40,608, May 21, 1979, abandoned, which is a continuation-in-part of Ser. No. 921,295, Jul. 3, 1978, Pat. No. 4,224,242. This application Sep. 22, 1980, Ser. No. 189,556

Int. Cl.³ A61K *31/17*; C07C *127/19*

U.S. Cl. 424—322 13 Claims

1. A method of suppressing cardiac arrhythmias in warm-blooded animals comprising administering to an animal in need thereof an amount effective to suppress such arrhythmia of a compound of the formula:



wherein:

Y is 2,6-dimethylphenyl, 2,5-dimethylphenyl, 5-bromo-2-methylphenyl, or 5-chloro-2-methylphenyl; and

X is n-propyl, isopropyl, n-butyl, or isobutyl;

or a non-toxic, pharmaceutically acceptable acid addition salt thereof.

4,348,414

CYCLOBUTANONE OXIME CARBAMATES, AND USE THEREOF IN PEST CONTROL

Laurenz Gsell, Basel, and Jean-Claude Gehret, Aesch, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

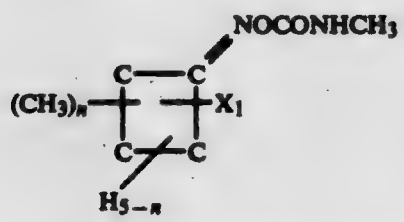
Filed Apr. 9, 1981, Ser. No. 252,527

Claims priority, application Switzerland, Apr. 24, 1980, 3170/80; Feb. 16, 1981, 1007/81

Int. Cl.³ A01N *33/24*

U.S. Cl. 424—327 10 Claims

1. A compound of the formula



(I)

wherein n is 1 to 5 and X_1 is hydrogen, halogen, C_1–C_4alkoxy or C_1–C_4alkylthio.

9. An insecticidal and acaricidal composition which contains an insecticidally or acaricidally effective amount of a compound according to claim 1, together with a suitable carrier.

10. A method for controlling insects and acarids which comprises applying to the locus of said insects and acarids an insecticidally or acaricidally effective amount of a compound according to claim 1.

4,348,415

COSMETIC AND EMULSIFIER COMPOSITIONS

Hisao Tsutsumi, Miyashiro; Kazumi Hori, Koganei, and Junichi Kawano, Sakura, all of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Sep. 29, 1980, Ser. No. 191,847

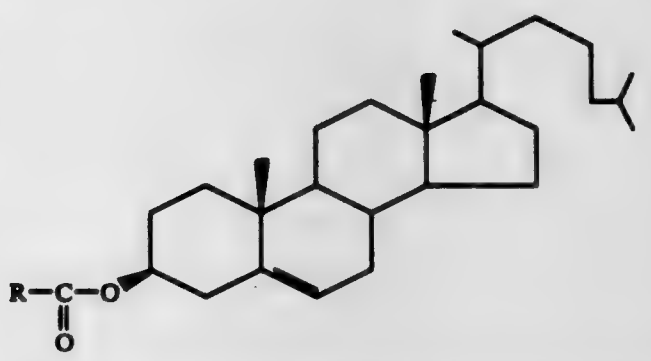
Claims priority, application Japan, Oct. 31, 1979, 54-139789

Int. Cl.³ A61K *7/00, 47/00*; B01F *17/30*

U.S. Cl. 424—365 20 Claims

1. A cosmetic composition which comprises 0.1 to 30% by weight of an emulsifier, a cosmetic oil component and water; wherein said emulsifier consists essentially of

a branched fatty acid cholesterol ester of the formula (I):



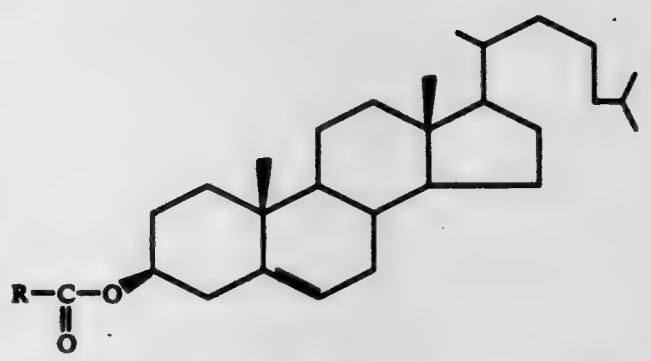
(I)

where R is a saturated aliphatic hydrocarbon group having a total of 11 to 23 carbon atoms and including at least one alkyl substituent group attached on the main chain inbetween the carboxyl-bonding position and the center of the main chain, and cholesterol:

wherein said branched fatty acid cholesterol ester and said cholesterol are in a weight ratio of 90:10 to 10:90.

12. An emulsifier composition consisting essentially of:

a branched fatty acid cholesterol ester of the formula (I)



(I)

where R is a saturated aliphatic hydrocarbon group having a total of 11 to 23 carbon atoms and including at least one alkyl substituent group attached on the main chain inbetween the carboxyl-bonding position and the center of the main chain, and

cholesterol;

wherein said branched fatty acid cholesterol ester and said cholesterol are in a weight ratio of 90:10 to 10:90.

4,348,416

FLAVORING WITH 1-ETHOXY-1-ETHANOL ACETATE - ACETALDEHYDE MIXTURES

Richard M. Boden, Monmouth Beach, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

Continuation-in-part of Ser. No. 176,111, Aug. 7, 1980, Pat. No. 4,296,137. This application Jul. 29, 1981, Ser. No. 287,935

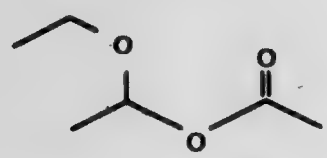
The portion of the term of this patent subsequent to Oct. 20, 1998, has been disclaimed.

Int. Cl.[3] A23L *1/226, 1/235*

U.S. Cl. 426—3 15 Claims

9. A flavoring composition comprising an ingestibly acceptable carrier comprising a non-hygroscopic carbohydrate and a mixture of 1-ethoxy-1-ethanol acetate and acetaldehyde, the range of weight ratios of 1-ethoxy-1-ethanol acetate:acetaldehyde being from 50:50 down to 5:95, the acetaldehyde being present in excess of about 7% by weight based on the total weight of 1-ethoxy-1-ethanol acetate:acetaldehyde mixture, said carbohydrate and water.

13. A process for augmenting or enhancing the aroma or taste of a foodstuff comprising the step of adding to foodstuff from 0.05 parts per million up to about 500 parts per million based on the total composition of a mixture of 1-ethoxy-1-ethanol acetate having the structure:



and acetaldehyde, the range of weight ratios of 1-ethoxy-1-ethanol acetate:acetaldehyde being from 50:50 down to 5:95.

4,348,417

POTATO SNACK AND PREPARATION THEREOF

Dirk H. Group, Voorburg, and Willem Brouwer, Rijswijk, both of Netherlands, assignors to Gist-Brocades N.V., Delft, Netherlands

Continuation of Ser. No. 732,777, Oct. 5, 1976, abandoned, which is a continuation-in-part of Ser. No. 696,504, Jun. 16, 1976, abandoned. This application Jan. 10, 1978, Ser. No. 868,303

Claims priority, application United Kingdom, Oct. 15, 1975, 42329/75; Sep. 16, 1976, 38446/76

Int. Cl.[3] A23L *1/00*

U.S. Cl. 426—19 17 Claims

1. A process for the preparation of crispy snacks of light structure without an oily taste comprising mixing a composition consisting essentially of starch containing component selected from the group consisting of potato flour and potato starch, corn, buckwheat, tapioca, rice flour and soya meals and mixtures thereof, 5 to 20% by weight of an active yeast based on the starch containing component, water and 0.5 to 5% by weight of sugar fermentable by yeast based on the starch containing component and/or 20 to 100 ppm of an enzyme capable of forming such a sugar to form a dough mass, fermenting the dough mass for a period of time and temperature sufficient to form a light structure and frying the fermented dough to obtain a crispy snack of light structure.

4,348,418

SIMULATED FOOD PRODUCT AND METHOD OF MANUFACTURE THEREFOR

John R. Smith, Maidenhead, and Gerhard O. J. Fischer, Gerrards Cross, both of England, assignors to Quaker Oats Limited, Southall, England

Filed Jul. 24, 1980, Ser. No. 172,077

Claims priority, application United Kingdom, Aug. 1, 1979, 7926739; Sep. 19, 1979, 7932490

Int. Cl.[3] A23L *1/04*

U.S. Cl. 426—104 14 Claims

1. A method of forming a food product in the form of shape-retaining pieces which comprises the steps of:

(a) producing an equeous slurry of comminuted food material having a water-soluble alginate salt dissolved therein,

(b) producing a slurry of a sparingly water-soluble calcium salt including as a retarding agent a member selected from the group consisting of sugar, a monohydric alcohol and a polyhydric alcohol,

(c) mixing the slurries of step (a) and (b) for a time period of less than 30 seconds,

(d) allowing the resulting mixture of step (c) to gel; and

(e) cutting into pieces the product of step (d), said water soluble alginate salt being present in an amount of from 0.3 to 5.0 percent by weight of said product.

4,348,419

METHOD FOR INHIBITING THE GROWTH OF *CLOSTRIDIUM BOTULINUM* AND THE FORMATION OF ENTEROTOXIN IN COMMINUTED MEAT PRODUCTS AND PRODUCTS THEREOF

John S. Thompson, Wayne, Pa., and Joseph F. Jadlocki, Jr., Mount Holly, N.J., assignors to FMC Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 184,689, Sep. 8, 1980, Pat. No. 4,277,507, which is a continuation-in-part of Ser. No. 140,328, Apr. 14, 1980, Pat. No. 4,282,260. This application Nov. 17, 1980, Ser. No. 207,566

The portion of the term of this patent subsequent to Aug. 4, 1998, has been disclaimed.

Int. Cl.[3] A23B *4/02;* A23L *1/31*

U.S. Cl. 426—264 16 Claims

1. A comminuted meat product, which inhibits the growth of *Clostridium botulinum* and the production of enterotoxin during storage of said meat product, containing an alkali metal nitrite salt, in an amount less than about 120 ppm, and from about 1,000 ppm to about 3,000 ppm of a compound selected from the group consisting of hypophosphorous acid and non-toxic salts of hypophosphorous acid.

8. A method of inhibiting the production of enterotoxin from *Clostridium botulinum* and, upon cooking, inhibiting formation of nitrosamines from nitrite salt in comminuted meat products which comprises the step of adding thereto an alkali metal nitrite salt, in an amount less than about 120 ppm, and from about 1,000 ppm to about 3,000 ppm of a compound selected from the group consisting of hypophosphorous acid and non-toxic salts of hypophosphorous acid.

4,348,420

PROCESS FOR BINDING COMMINUTED MEAT

Cheryl J. Lynch, Midland Park, N.J.; Chifa F. Lin, Irvington, and Nicholas Melachouris, White Plains, both of N.Y., assignors to Nutrisearch Company, Cincinnati, Ohio

Filed Aug. 25, 1980, Ser. No. 181,253

Int. Cl.[3] A23L *1/31*

U.S. Cl. 426—272 13 Claims

1. A process for binding comminuted meat comprising comminuting meat in the presence of a bindingly effective amount of a blend comprising from about 99.5% to about 50% of a water soluble dairy protein-containing material derived from lacteal fluid, and from about 0.5% to about 50% of a hydrocolloid, selected from the group consisting of algin, carrageenan,

guar, acacia, locust bean gum, carboxymethylcellulose and carboxymethyl starch, wherein said hydrocolloid is present in said comminuted meat in an amount ranging from about 0.01% to about 4% by weight based on the weight of the meat and binder blend before cooking.

4,348,421

PROCESS FOR RECONSTITUTING DEHYDRATED FOOD

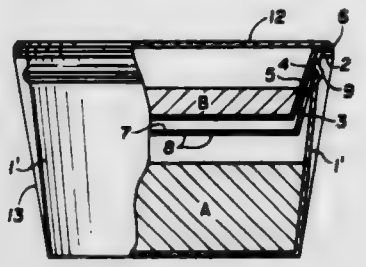
Sakuichi Sakakibara, Kobe; Ko Sugisawa, and Takashi Kimura, both of Nara, all of Japan, assignors to House Food Industrial Company Limited, Osaka, Japan

Continuation of Ser. No. 97,692, Nov. 26, 1979, abandoned, which is a continuation of Ser. No. 746,474, Dec. 1, 1976, abandoned. This application May 21, 1981, Ser. No. 265,807

Claims priority, application Japan, Dec. 9, 1975, 50-165157; Dec. 9, 1975, 50-165158

Int. Cl.³ A23L *1/00*; B65D *81/32, 81/34*; B65B *29/06*

U.S. Cl. 426—394 **3 Claims**



1. A method of packaging and preparing at least two dehydrated food products comprising the steps of providing a lower tray-like container member having an imperforate bottom wall and having a first surrounding wall of a first height and a first upper surrounding rim at the top of the first surrounding wall thereby forming an open end of the lower container member, providing an intermediate tray-like container member having a perforated bottom wall and a second surrounding wall of a second height which is less than said first height and a second upper surrounding rim at the top of the second surrounding wall, providing an upper tray-like container member having an imperforate bottom wall and having a third surrounding wall of a third height which is less than said second height and a third upper surrounding rim at the top of the third surrounding wall thereby forming an open end of said upper tray-like container member, said third upper surrounding rim being a projecting rim, containing a first dehydrated food product in the lower container member, separately containing a second dehydrated food product in the upper container member, positioning the second surrounding wall of the intermediate container member inside the lower container member by contacting the second upper surrounding rim against the lower container member in the region of its open end such that the perforated bottom wall of the intermediate container member is supported above the first dehydrated food product in the lower container member, positioning the third surrounding wall of the upper container member inside the intermediate container member by contacting the third upper surrounding rim against one of the first and the second upper surrounding rims such that said bottom wall of said upper container member is supported in position above the perforated bottom wall and the first dehydrated food product, and enclosing at least said open end of said upper tray-like container member from the atmosphere with enclosing means and, when ready for reconstituting, removing said enclosing means, removing the upper container member including the second dehydrated food product from the position above the first dehydrated food product, applying hot water to the first dehydrated food product in the lower container member thereby reconstituting the first dehydrated food product, draining excess hot water from the first food product through the perforations in the bottom wall of the intermediate member, and separately applying hot water to the second dehydrated food product thereby reconstituting the second dehydrated food product.

4,348,422

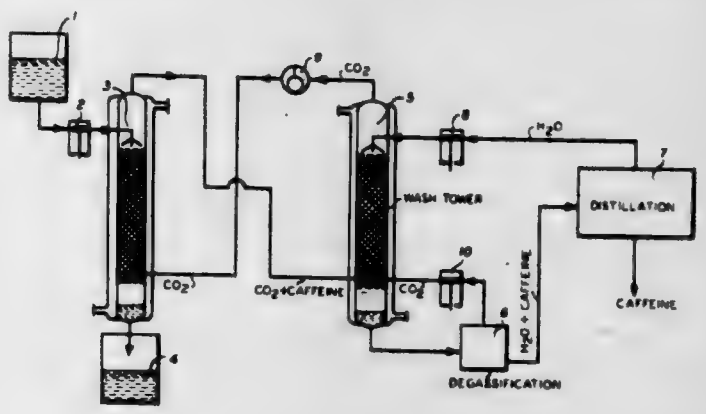
PROCESS FOR THE DIRECT DECAFFEINATION OF AQUEOUS COFFEE EXTRACT SOLUTIONS

Kurt Zosel, Oberhausen, Fed. Rep. of Germany, assignor to Studiengesellschaft Kohle m.b.H., Kaiser-Wilhelm-Platz, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 877,535, Feb. 13, 1978, abandoned. This application May 17, 1978, Ser. No. 906,882

Int. Cl.³ A23F *5/22*

U.S. Cl. 426—475 **16 Claims**



1. Process for the decaffeination of coffee, which comprises contacting the surface of a thin film of an aqueous coffee extract solution with carbon dioxide under supercritical conditions of temperature and pressure to thereby remove the caffeine, and recovering the aqueous coffee extract solution substantially free from caffeine.

4,348,423

METHOD OF PREPARING A COCOA BUTTER SUBSTITUTE

David J. Pairaud; Sandro Musso; Catherine Bouvron nee Ferrenbach, and Xavier J. M. Pages-Xatart Pares, all of Abidjan, Ivory Coast, assignors to Biohora, S.A., Abidjan, Ivory Coast

Filed Oct. 15, 1980, Ser. No. 197,128

Int. Cl.³ A23D *5/02*

U.S. Cl. 426—607 **7 Claims**

1. a method of preparing a cocoa butter substitute, comprising mixing fats consisting essentially of 35 to 45 parts by weight of a fat A having more than 40% by weight of C_{16} and C_{18} fatty acids and selected from the group consisting of shea butter, mango kernel fat, Borneo tallow (Shorea stenoptera, Pentadesma butyracea), sal (Shorea robusta), kokum (Garcinia indica) and mahua (Madhuca latifolia), with 65 to 55 parts by weight of palm oil fraction B containing more than 50% by weight of triglycerides of the palmitic-oleic-palmitine (POP) type and less than 1% by weight of trisaturated triglycerides, to form a mixture, and fractionating said mixture dissolved in a solvent medium by cooling to a temperature effective to precipitate the cocoa butter substitute.

4,348,424

SPRAYABLE PLANT CARE COMPOSITION

George A. Consolazio, Burlington; James A. Sheppard, Newburyport, and Benjamin E. Laramee, East Pepperell, all of Mass., assignors to General Foods Corporation, White Plains, N.Y.

Filed Mar. 27, 1981, Ser. No. 248,083

Int. Cl.³ A01G *5/06*; C05B *17/00*

U.S. Cl. 427—4 **9 Claims**

1. A sprayable plant care composition comprising an emulsion containing: a continuous aqueous phase comprising gelatin hydrolysate, urea, dissolved phosphorus and potassium salts, and an amount of preservative effective to prevent microbial

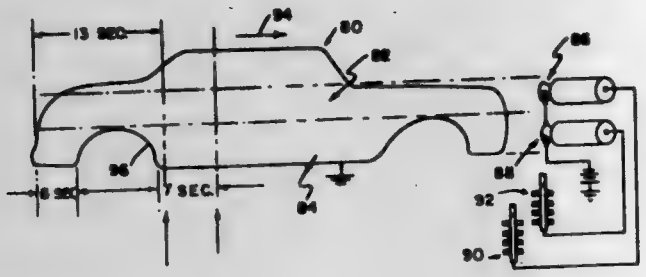
growth in the composition; a dispersed phase comprising plant wax and a diluent for the wax; and an emulsifier in an amount effective to provide a stable emulsion and provide a cleaning action when the composition is applied to the foliage of a plant.

4,348,425

VARIABLE LOW-PRESSURE FLUID COLOR CHANGE CYCLE

James A. Scharfenberger, Indianapolis, Ind., assignor to Ransburg Corporation, Indianapolis, Ind.

Continuation-in-part of Ser. No. 228,166, Jan. 26, 1981, Pat. No. 4,311,724. This application Jun. 22, 1981, Ser. No. 275,872
The portion of the term of this patent subsequent to Jan. 19, 1999, has been disclaimed.
Int. Cl.³ B05D 7/14, 1/00
U.S. Cl. 427—8 10 Claims



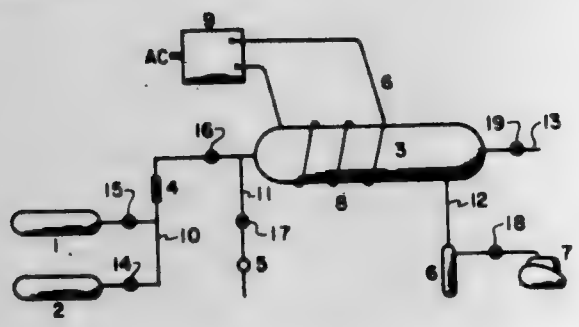
1. A process for terminating the flow of a coating material in a coating material delivery tube which delivers the coating material to a dispensing device from which the material is dispensed during a coating operation and from which flow of the material ceases at the end of the coating operation including the steps of terminating the flow of coating material to the delivery tube before the end of the coating operation, and initiating the flow of a liquid medium at low superatmospheric pressure to the delivery tube to ensure continued delivery of coating material from the delivery tube to the dispensing device during the interval between shut-off of coating material flow to the delivery tube and the end of the coating operation.

4,348,426

METHOD FOR BONDING SILICONE ELASTOMERS TO METAL SUBSTRATES

Donald R. Bienner, Erie; Robert A. Auerbach, Allison Park, and Herman V. Bossig, Erie, all of Pa., assignors to Lord Corporation, Erie, Pa.

Filed Jun. 22, 1981, Ser. No. 276,216
Int. Cl.³ B05D 3/06
U.S. Cl. 427—41 9 Claims



1. A method for bonding vulcanizable silicone elastomer compositions to phosphatized metal substrates comprising:
(a) exposing to a first glow discharge plasma of a gaseous medium consisting essentially of at least one non-reactive gas at least one phosphatized metal element;
(b) applying over at least one plasma-exposed surface of said phosphatized metal element an adhesive composition suitable for bonding silicone elastomers to metal;
(c) contacting said adhesively-coated surface of said plasma-exposed phosphatized metal element with a vulcanizable silicone elastomer composition; and
(d) subjecting the resultant assembly to conditions sufficient to vulcanize said elastomer and cure said adhesive.

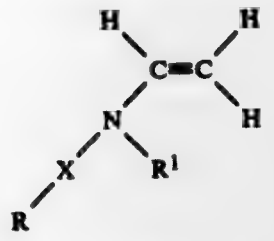
4,348,427

COATING METHOD AND COMPOSITION

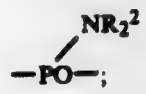
Aldo Priola, and Giampaolo Giuliani, both of San Donato Milanese, Italy, assignors to ANIC, S.p.A., Palermo, Italy

Filed Jul. 11, 1980, Ser. No. 167,701
Claims priority, application Italy, Aug. 10, 1979, 25050 A/79
Int. Cl.³ B05D 3/06
U.S. Cl. 427—44 2 Claims

1. A method for covering various surfaces consisting of applying to said surfaces a layer of material constituted by a mixture of at least one compound chosen from the following classes:
(a) epoxy-acrylic resins
(b) urethane-acrylate resins
and at least one monovinylic compound chosen from those corresponding to the following formula:



in which X can be —CO—, —SO_2— or



R can be a linear or branched aliphatic, alicyclic or unsubstituted aromatic alkyl group with 1 to 18 carbon atoms or can be equal to the group —NR^2_2; and R^1 and R^2 are groups analogous to R and can be equal to or different from it, R and R^1 also being able to be connected together to form a ring, in which case the number of atoms in the ring can vary from 6 to 14; and irradiating the previously obtained layer of material with radiations having a wavelength of between 200 and 400 nanometers, X-rays or electron beams.

4,348,428

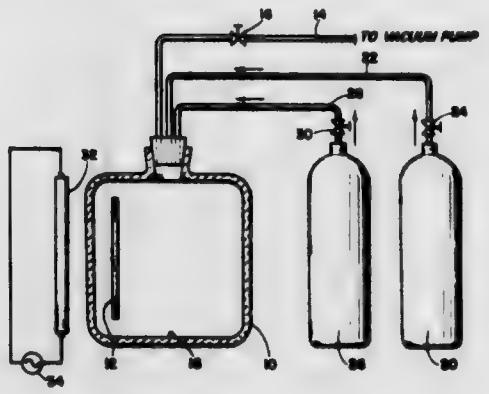
METHOD OF DEPOSITING DOPED AMORPHOUS SEMICONDUCTOR ON A SUBSTRATE

Mark G. Rockley, and Gilbert J. Mains, both of Stillwater, Okla., assignors to Board of Regents for Oklahoma Agriculture and Mechanical Colleges acting for and on behalf of Oklahoma State University of Agriculture and Applied Sciences, Stillwater, Okla.

Filed Dec. 15, 1980, Ser. No. 216,087
Int. Cl.³ C23C 17/02
U.S. Cl. 427—54.1 11 Claims

1. A method of depositing a doped amorphous semiconductor on a base member comprising the steps of:
(a) subjecting the base member to an environment including
(1) a semiconductor gas selected from silane and germane,

(2) a dopant gas selected from arsine, phosphine and diborane, and (3) mercury vapor; and



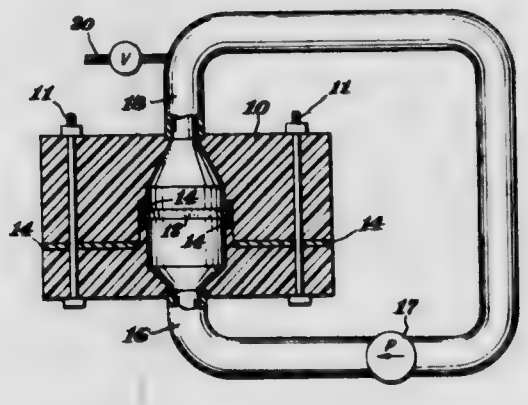
(b) exposing the base member in the environment to ultraviolet radiation to effect mercury photosensitized decomposition of semiconductor and dopant onto the member.

4,348,429

PROCESS FOR SILVER COATING OF PERMEABLE SUBSTRATES

James A. McIntyre; Robert F. Phillips, both of Midland, and Joseph D. Lefevre, Bay City, all of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Sep. 5, 1978, Ser. No. 939,589
Int. Cl.³ B05D 5/12; C23C 3/02
U.S. Cl. 427—125 9 Claims



1. A process for the electroless deposition of a known amount of silver onto a porous substrate wherein an aqueous electroless plating solution containing a reducible silver compound is circulated and recirculated through the porous substrate until the silver content of the solution is substantially exhausted, the circulation of the plating solution being in a direction which forces upwardly hydrogen evolved in the silver deposition reaction.

4,348,430

PROCESS FOR PRODUCING MAGNETIC PARTICLES FOR MAGNETIC RECORDING MEDIUM

Yasumichi Tokuoka, and Takayoshi Kobuke, both of Tokyo, Japan, assignors to TDK Electronics Company, Ltd., Tokyo, Japan

Filed Nov. 26, 1980, Ser. No. 210,801
Claims priority, application Japan, Jan. 19, 1980, 55-5015
Int. Cl.³ B05D 7/00
U.S. Cl. 427—215 4 Claims

1. A process for producing magnetic particles for a magnetic recording medium, comprising: (a) preparing particles of goethite seed crystals; (b) precipitating a layer of goethite on said seed crystals and simultaneously precipitating silicate ions on said crystals with the precipitating goethite material; and (c)



heat treating the coated particles to obtain the desired particulate metallic magnetic product.

4,348,431

PROCESS FOR COATING PLASTIC FILMS

William J. O'Malley, Killington, Vt., assignor to General Electric Company, New York, N.Y.

Filed Feb. 19, 1981, Ser. No. 235,901
Int. Cl.³ B05D 3/02
U.S. Cl. 427—387 14 Claims

1. A method for coating plastic films which comprises the steps of

(i) applying to a moving web of said plastic film an aqueous composition comprising a dispersion of colloidal silica in an aliphatic alcohol-water-solution of the partial condensate of a silanol of the formula $RSi(OH)_3$, wherein R is selected from the group consisting of alkyl having from 1 to 3 carbon atoms and aryl, at least 70 weight percent of the silanol being $CH_3Si(OH)_3$, said composition containing 10 to 50 weight percent solids, said solids consisting essentially of 10 to 70 weight percent colloidal silica and 30 to 90 weight percent of the partial condensate, said composition including a small, catalytic amount of a buffered latent silanol condensation catalyst and a minor proportion, sufficient to promote flow, of a β-hydroxyketone compound; and

(ii) transporting said film into a zone of elevated temperature sufficient to effect substantially complete cure of the silanol in less than about 120 seconds.

4,348,432

METHOD FOR COATING WITH RADIALLY-PROPAGATING, FREE, LIQUID SHEETS

John C. Huang, Roseville, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 8, 1976, Ser. No. 675,068
Int. Cl.³ B05D 1/36, 7/00
U.S. Cl. 427—402 4 Claims

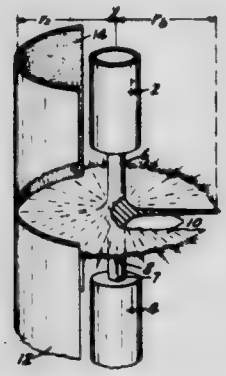
1. A method for coating a liquid on a substrate comprising

(a) providing at least one liquid jet issuing from a nozzle means in laminar flow,

(b) impinging said jet on a deflecting mass to form a continuous, radially-propagating, free, composite liquid sheet comprising a plurality of distinct layers in a laminar flow mode and

(c) moving a sheet-like substrate to be coated relative to the

plane of said liquid sheet so as to intercept at least a portion of said liquid sheet within the periphery, thereby



causing said liquid to impinge on said substrate and to coat one surface of said substrate.

4,348,433

FLAME SPRAY POWDER

Paul A. Kammer, Cold Spring Harbor, and George J. Durmann, Farmingdale, both of N.Y., assignors to Eutectic Corporation, Flushing, N.Y.

Filed Apr. 6, 1981, Ser. No. 250,932
Int. Cl.[3] B05D *1/10*
U.S. Cl. 427—423 24 Claims



1. A free-flowing self-bondable flame spray powder derived from an atomized alloy powder, said powder having particles characterized by aspherical shapes and having an average particle size within the range of about plus 400 mesh to minus 100 mesh,

said aspherically shaped powder being further characterized by a specific surface of about 180 cm^2/gr and higher,

said flame spray powder having a composition consisting essentially of a solvent metal alloy selected from the iron-group base alloys consisting of nickel-base, iron-base, and cobalt-base alloys contaning by weight about 5% to 35% chromium, said solvent metal alloy having a negative free energy of oxidation ranging up to about 80,000 calories per gram atom of oxygen referred to 25° and being pre-alloyed with about 5% to 15% by weight of a highly oxidizable solute metal whose negative free energy of oxidation is at least about 100,000 calories per gram atom of oxygen referred to 25° C.

4,348,434

FLAME SPRAY POWDER

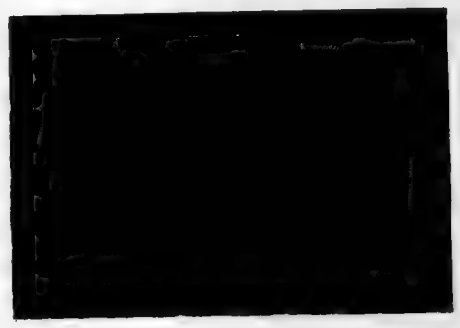
Paul A. Kammer, Cold Spring Harbor; George Yurasko, Jr., Glen Cove, and Karel Zmrzlik, New York, all of N.Y., assignors to Eutectic Corporation, Flushing, N.Y.

Filed Apr. 6, 1981, Ser. No. 251,331
Int. Cl.[3] B05D *1/10*
U.S. Cl. 427—423 12 Claims

1. A free-flowing self-bondable flame spray powder derived from an atomized alloy, said powder having particles characterized by aspherical shapes and having an average particle size within the range of about plus 400 mesh to minus 100 mesh,

said aspherically shaped powder being further characterized by a specific surface of about 180 cm^2/gr and higher,

said flame spray powder having a composition consisting essentially of a solvent metal of melting point in excess of



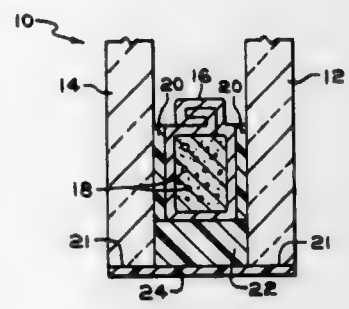
about 1100° C. whose negative free energy of oxidation ranges up to about 80,000 calories per gram atom of oxygen referred to 25° C. and being pre-alloyed with at least one highly oxidizable solute metal in an amount of at least about 3% by weight, said oxidizable metal having a negative free energy of oxidation of at least about 100,000 calories per gram atom of oxygen referred to 25° C.

4,348,435

PRIMED MULTIPLE GLAZED UNITS FOR CURTAINWALL SYSTEMS

George R. Mistrick; George H. Bowser, both of Allegheny Township, Allegheny County, and Renato J. Mazzoni, Creighton, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Mar. 19, 1980, Ser. No. 131,581
Int. Cl.[3] E06B *3/24;* B32B *17/10, 25/18, 27/30*
U.S. Cl. 428—34 15 Claims



1. A multiple glazed unit having a pair of sheets, means for spacing said sheets from one another to provide a space therebetween, and means for sealing said space, said sealing means including an organic elastomer having an exposed surface which is to be adhered to a structural member through the interposition and curing of a silicone elastomer adhesive, wherein the improvement comprises:

a layer of a primer dried on at least said exposed surface of said organic elastomer, the primer selected to improve adhesion between said organic elastomer and said interposed and cured silicone elastomer adhesive, wherein the primer is a material selected from the group consisting of acrylic latex polymers, acrylic emulsion polymers, ethylene copolymers, and hydrocarbon resin emulsion polymers.

4,348,436

ENCLOSURE MEMBER SUBSTANTIALLY IMPERMEABLE TO THE TRANSMISSION OF SOLVENTS AND FUELS

Roger A. Shefford, Aldershot, England, assignor to Koninklijke Emballage Industrie Van Leer B.V., Amstelveen, Netherlands

Filed Dec. 10, 1980, Ser. No. 214,623
Claims priority, application United Kingdom, Feb. 12, 1980, 8004570
Int. Cl.³ B65D *1/00*; B05B *5/02*
U.S. Cl. 428—35 8 Claims

1. An enclosure member substantially impermeable to the transmission of solvents and fuels consisting essentially of solid polyolefins that have a linear carbon to carbon backbone structure and have a plurality of free hydrogen atoms attached to the carbon atoms with a permeability to wet solvents and fuels of less than 1/7 of the permeability of untreated enclosure members having a thickness of 1 mm, the enclosure having an inner and outer surface, at least the inner surface having a portion of the hydrogen atoms replaced by sulfonic or sulfonate groups and being subjected to a treatment with an aqueous solution comprising ferrous sulfate and phenanthroline, both in a concentration of at least 0.05 weight % at 20° C., at which at least a part of the cations of said surface has been replaced by said iron-phenanthroline complex.

4,348,437

PUNCTURE-RESISTANT HEAT SHRINKABLE MULTILAYER PACKAGING FILM

Stanley Lustig, Park Forest, and Stephen J. Vicik, Darien, both of Ill., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Jun. 10, 1981, Ser. No. 272,259
Int. Cl.³ B32B *27/40*; C08G *18/42*
U.S. Cl. 428—35 14 Claims

1. A flexible puncture-resistant, heat shrinkable and biaxially stretched multilayer film suitable for packaging primal red meat cuts, including a layer having a thickness of at least about 0.5 mil comprising a blend of polyurethane polymer and an ethylene vinyl acetate copolymer, wherein the weight fraction of ethylene vinyl acetate copolymer in said blend does not exceed 0.40, with said film having been subjected to a biaxial stretching in the range of from about 12 to about 20.

7. The multilayer film of claim 1, wherein said film has three layers comprising a first layer of a heat sealable polymer; a second layer contiguous to said first layer and providing a barrier to oxygen permeation through the film and a third layer contiguous to said second layer and comprising a blend of a polyurethane polymer and an ethylene vinyl acetate copolymer.

8. A primal meat bag formed from the three layer film of claim 1.

4,348,438

PROCESS FOR PREPARATION OF IMPROVED SHRINK WRAP

Peter J. Canterino, Towaco, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 31, 1980, Ser. No. 221,711
Int. Cl.³ B32B *27/00*; B29D *23/10*
U.S. Cl. 428—36 4 Claims

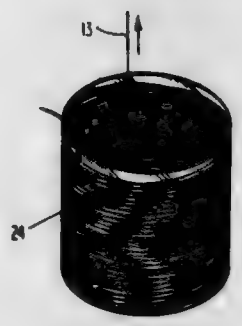
1. A process for preparing a low density polymer shrink wrap which comprises, forming a low density polyethylene film, uniaxially orienting said film at a temperature of between 5° and 70° C. below the melting point of said polymer, irradiating said film with a source of ionizing irradiation, at a dosage of from about 3 to about 15 megarads, forming the film into a sleeve-like article-encompassing enclosure by cutting and sealing said film along a seam which runs generally perpendicular to the direction of said uniaxial orientation in the plane of said film.

4,348,439

PACKAGE OF WOUND STRAND MATERIAL

Otto G. Jones, Burkburnett, Tex., assignor to Certain-teed Corporation, Valley Forge, Pa.

Filed Feb. 18, 1981, Ser. No. 235,518
Int. Cl.³ B32B *1/08*; B65H *55/02*
U.S. Cl. 428—36 39 Claims



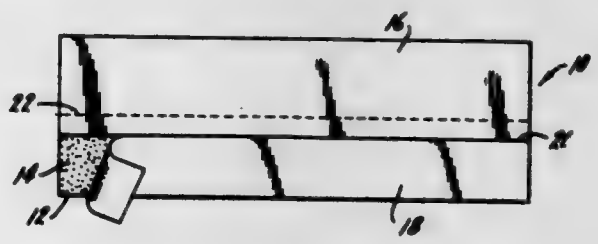
1. A package comprising a strand of filaments or fibers coiled in layers into a generally tubular configuration having a generally cylindrical outer surface and a sheet material extending around said cylindrical outer surface, said sheet material being an ionic copolymer of α-olefins having the formula $R\text{-}CH{=}CH_2$, where R is a radical selected from the class consisting of hydrogen and alkyl radicals having from 1 to 8 carbon atoms, and α,β-ethylenically unsaturated carboxylic acids having from 3 to 8 carbon atoms, said copolymers having from 10% to 90% of the carboxylic acid groups ionized by neutralization with metal ions uniformly distributed throughout the copolymer, said copolymer being a direct copolymer of the α-olefins and the unsaturated carboxylic acid in which the carboxylic acid groups are randomly distributed over all molecules and in which (1) the α-olefin content of the copolymer is at least 50 mol percent, based on the α-olefin-acid copolymer, (2) the unsaturated carboxylic acid content of the copolymer is from 0.2 to 25 mol percent, based on the α-olefin-acid copolymer, and (3) any other monomer component optionally copolymerized in said copolymer is monoethylenically unsaturated, and said metal ions having an ionized valence of from one to three inclusive when the unsaturated acid is a mono-carboxylic acid and an ionized valence of one when the unsaturated acid is a dicarboxylic acid and said metal ions being selected from the group consisting of uncomplexed and complexed metal ions, said ionic copolymers having solid state properties characteristic of crosslinked polymers and melt-fabricability properties characteristic of uncrosslinked, thermoplastic polymers, wherein the cylindrical outer strand portions at the interface with said sheet material and said sheet material comprise means for holding an induced electrostatic charge and remaining in electrostatic co-attracting relation to each other an amount sufficient to hold otherwise unsupported strand coils against the sheet material without coil collapse upon unwinding of the strand.

4,348,440

PRESSURE SENSITIVE SEAL

Richard A. Kriozere, Highland Park, Ill., assignor to Professional Tape Company, Inc., Burr Ridge, Ill.

Filed Mar. 29, 1979, Ser. No. 25,282
Int. Cl.³ B32B *7/06*, *7/12*
U.S. Cl. 428—41 2 Claims



1. A pressure sensitive seal member for providing a complete

adhesive-to-adhesive seal for the open end of a pouch including a strip of face stock having a pressure sensitive adhesive covering one face thereof, removable backing strips covering said adhesive face and being in edge contact along a generally longitudinal line, said face stock having a generally longitudinal fold perforation which is offset from the generally longitudinal edge contact line, said fold perforation being covered by one of said backing strips,

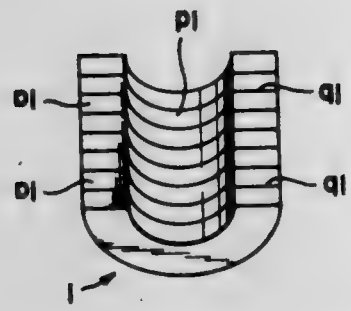
when said seal member is applied, first the other of said backing strips is removed so that said fold perforation remains covered, one side of the pouch open end is applied to the exposed adhesive face, subsequently, the other backing strip is removed, exposing the fold perforation, the face stock is then folded at the fold perforation and that portion of the formerly covered adhesive face on the opposite side of the fold perforation is applied to the other side of the pouch open end whereby the open ends of the pouch each have an adhesive seal with the face stock and directly adjacent and along the pouch open end there is adhesive-to-adhesive contact between folded areas of the face stock, said strip having a length slightly greater than the open end of the pouch whereby there is also adhesive-to-adhesive contact between folded portions of the face stock at opposite sides of the pouch open end.

4,348,441

FIBROUS INSULATING MATERIAL AND INSULATING WALL

Takeo Kato, Toyokawa, Japan, assignor to Isolite Babcock Refractories Co., Ltd., Aichi, Japan

Continuation of Ser. No. 1,386, Jan. 5, 1979, abandoned. This application Sep. 16, 1980, Ser. No. 187,762
Int. Cl.³ C04B *43/02*
U.S. Cl. 428—49 11 Claims



1. A furnace wall construction comprising a furnace wall and a fibrous insulation bonded thereto consisting of an insulating material obtained by stacking ceramic fiber blankets in the thickness direction and bonding together contact surfaces of adjacent fiber blankets by applying adhesive layers to at least one surface of said material, said adhesive being gasified and burnt away at the operating temperature of the furnace, said fibrous insulating material being thereafter bonded to said furnace wall.

4,348,442

STRUCTURAL PANEL

Irving E. Figge, 2174 E. Pepperwood Dr., Sandy, Utah 84070

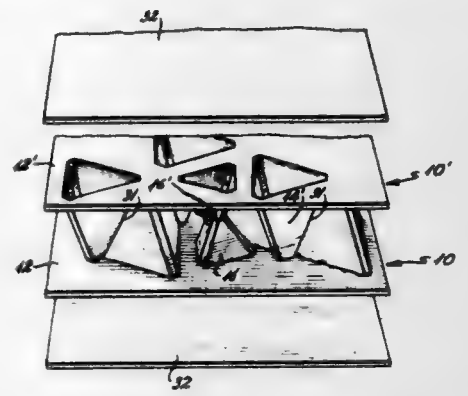
Continuation-in-part of Ser. No. 172,674, Jul. 28, 1980, abandoned, which is a continuation of Ser. No. 45,918, Aug. 17, 1979, abandoned. This application Apr. 22, 1981, Ser. No. 256,630
Int. Cl.³ B32B *3/30*
U.S. Cl. 428—72 10 Claims

1. A combined structural panel comprising:

at least two, substantially duplicate, single structural panels, each of said single structural panels comprising a base sheet, plural generally polyhedral-shaped load bearing elements protruding from said base sheet;

each of said elements comprising a base attached to said base sheet, a truncated apex, and face structure connecting said base and said truncated apex;

at least one of said single panels inverted with respect to at least one other of said single panels to define respective, opposing top and bottom panels, respectively, such that the elements of said top and bottom panels have their respective elements protruding in opposite directions;



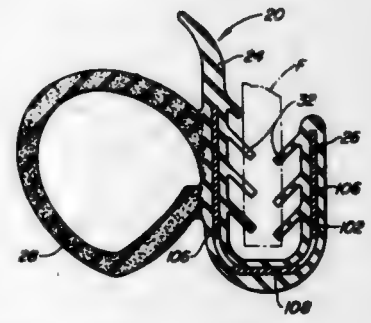
said elements of each single panel further comprising large and small elements, said large elements having a base-to-truncated apex height greater than that of said small elements, said large and small elements of each of said top and bottom panels alternately arranged such that truncated apexes of said small elements of opposing single panels abut and truncated apexes of said large elements of a single panel abut the base of the opposing single panel.

4,348,443

RESILIENT STRIP AND METAL CARRIER THEREFOR

Richard D. Hein, Wabash, Ind., assignor to The General Tire & Rubber Company, Akron, Ohio

Filed Dec. 18, 1980, Ser. No. 217,737
Int. Cl.³ E06B *7/18*
U.S. Cl. 428—122 6 Claims



1. An elongated metal carrier member for holding the legs of an elongated resilient channel-shaped strip pressed against opposite sides of a rigid flange, said carrier member having a channel-shaped cross section with a continuous, longitudinally extending web and a plurality of sheet metal elements extending laterally from both sides of said web and bent to form the legs of said channel-shaped cross-section, said sheet metal elements having distal end portions facing in the same direction away from said web, each of said sheet metal elements having the property of reacting to being outwardly displaced by said rigid flange by exerting a gripping spring force inwardly toward said rigid flange, said carrier member having the improvement characterized by:

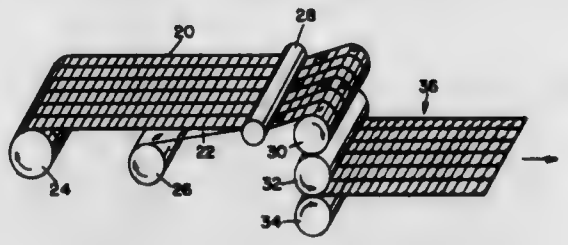
each of said sheet metal elements of said carrier member being relatively wide at the junctures of the elements with said web, and relatively narrow at said distal end portions, and having side edges that extend from said web and converge toward each other in the direction of said distal end portions.

4,348,444

NONWOVEN FABRIC FROM A COMBINATION OF THERMOPLASTIC NETTING AND ORIENTED FILM

Alan D. Craig, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Sep. 8, 1981, Ser. No. 299,710
Int. Cl.³ B32B 5/12
U.S. Cl. 428—137 13 Claims



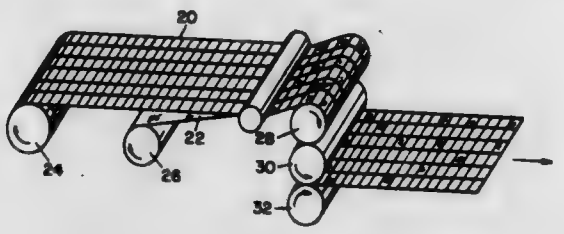
1. A thermoplastic reticulate open netting structure with high sewn seam strength comprising:
a first layer of oriented polypropylene netting,
a second layer consisting essentially of a random copolymer having between about 7% and about 30% 1-butene and between about 93% and 70% propylene, said copolymer having an intrinsic viscosity of between about 1.1 and 4.0,
said first and second layers being bonded together to form an open netting structure.

4,348,445

REINFORCED FILM OF A COMBINATION OF THERMOPLASTIC NETTING AND ORIENTED FILM

Alan D. Craig, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Sep. 8, 1981, Ser. No. 299,753
Int. Cl.³ B32B 5/12
U.S. Cl. 428—138 11 Claims



1. A tear resistant reinforced film comprising:
a first layer of oriented polypropylene netting,
a second layer of random copolymer film consisting essentially of a copolymer having between about 7% to 30% of 1-butene and between about 93% to 70% of propylene, the copolymer of said film having an intrinsic viscosity of between about 1.1 and 4.0,
said first and second layers being bonded together to form a reinforced film.

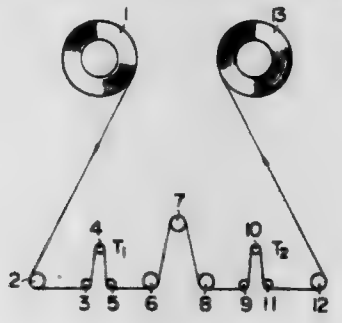
4,348,446

POLYESTER FILM HAVING IMPROVED SLIPPERINESS

Yukio Mitsuishi; Shigeru Shiozaki, both of Machida; Takao Chujo, Sagamihara, and Takeyuki Yokoyama, Fujisawa, all of Japan, assignors to Teijin Limited, Osaka, Japan

Continuation-in-part of Ser. No. 882,467, Mar. 1, 1978, abandoned. This application Sep. 4, 1980, Ser. No. 183,901
Claims priority, application Japan, Mar. 1, 1977, 52-20892; Nov. 24, 1977, 52-139870
Int. Cl.³ G11B 5/70
U.S. Cl. 428—148 15 Claims

1. A magnetic recording tape comprising a substrate with a magnetic coating thereon, said magnetic recording tape having good transportability and high abrasion resistance and being free of a back lubricant layer, said substrate consisting of a biaxially oriented polyester film having a kinetic friction coefficient at a tape speed of 25 cm/sec in the range from 0.05 to 0.25, and having at least one rough surface with protrusions integrated thereto, said protrusions having a maximum size of 1 micron in height and having an average peak-to-valley height of not more than about 0.55 micron and being originated from an insoluble inert substance having a representative particle diameter of not more than 0.55 micron incorporated into said polyester in an amount ranging from 0.08 to 2% by weight, wherein the height denoted by h (micron) in the range $1.0 \geqq h > 0.75$, is not more than $14/mm^2$, $0.75 \geqq h > 0.5$, is from 5 to $150/mm^2$, and $0.5 \geqq h$, is not less than $40/mm^2$, and wherein the insoluble inert substance consists essentially of not more than 8% by weight of a fraction having particle diameters, expressed as d in microns, $2.5 \geqq d > 1.5$ and from 40 to 80% by weight of a fraction of $0.5 \geqq d$, said film having an abrasion resistance grade of at least 2 when transported at a speed of 25 cm/sec at 25° C. and 60% relative humidity with said rough surface in contact with an SUS 27 stationary rod wrapped with tissue paper having a surface roughness of 0.35, an outer diameter of 20 mm ϕ with a wrapping arc angle of $\theta = (152/180)\ \pi$ radius (152°), said abrasion resistance grade being defined as follows:



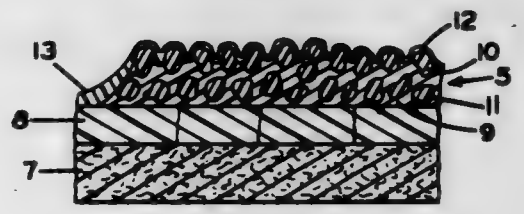
Grade 1: free from white powder;
Grade 2: a small amount of white powder;
Grade 3: white powder speckled all over the tissue paper;
Grade 4: white powder more than Grade 3;
Grade 5: white powder covering the whole surface of the tissue paper.

4,348,447

NON-SKID PLASTIC FLOORING PRODUCT AND METHOD OF MANUFACTURE

Jesse D. Miller, Jr., and James R. Petzold, both of Lancaster, Pa., assignors to Armstrong World Industries, Inc., Lancaster, Pa.

Filed Feb. 24, 1981, Ser. No. 237,666
Int. Cl.³ B32B 5/16, 3/26
U.S. Cl. 428—149 6 Claims



1. A non-skid decorative plastic floor covering comprising a decorative plastic base having a plastic matrix applied thereto, a plurality of slip-resistant elements positioned throughout the matrix and a cured clear or translucent wear layer overlying both the slip-resistant elements and the plastic matrix, a plastic matrix being applied to said base, said slip-resistant elements comprising round particles of quartz having a Moh hardness of about 7 and a particle size distribution such that none are greater than about 715 microns, about 80% are between about 300 and 595 microns and none are smaller than 150 microns,

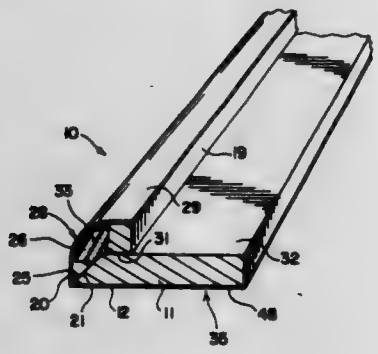
said particles being embedded in the cured plastic matrix and being distributed throughout the plastic matrix in a substantially abutting relationship with the upper most layer of particles protruding above the matrix and thus imparting a rough textured non-skid surface to the overlying wear layer.

4,348,448

MOLDING STRIP HAVING A CURVILINEAR SURFACE AND A METHOD FOR MAKING SAME FROM LAMINAR SHEET MATERIAL

Richard R. Cornell, 334 W. State St., Newcomerstown, Ohio 43832

Filed Sep. 8, 1981, Ser. No. 299,852
Int. Cl.[3] B32B *3/04, 3/12, 3/26*
U.S. Cl. 428—157 7 Claims



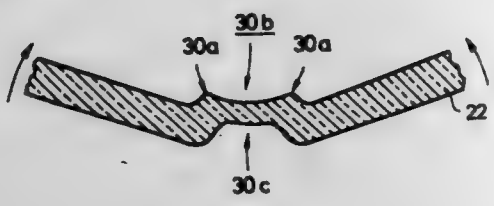
7. A molding strip comprising:
a strip of sheet material in the form of a substrate and a laminar facing secured to the substrate;
a groove in the substrate, said groove having spaced side walls with the laminar facing spanning between said side walls;
said span of laminar facing defining a surface of curvilinear disposition; and,
at least a portion of the laminar facing defining the curvilinear surface being supported and maintained by a foamed plastic material.

4,348,449

PROCESS AND APPARATUS FOR FORMING FLEXIBLE FOLD LINES IN THERMOPLASTIC SHEETS

Gerhard Seufert, Rembrücken, Fed. Rep. of Germany, assignor to Melvin Bernard Herrin, Meadowbrook, Pa.

Division of Ser. No. 830,536, Sep. 6, 1977, Pat. No. 4,179,252, which is a division of Ser. No. 653,053, Jan. 28, 1976, Pat. No. 4,064,206. This application Jul. 9, 1979, Ser. No. 55,736
Claims priority, application Fed. Rep. of Germany, Sep. 17, 1975, 2541345
Int. Cl.[3] B32B *3/30*
U.S. Cl. 428—167 8 Claims



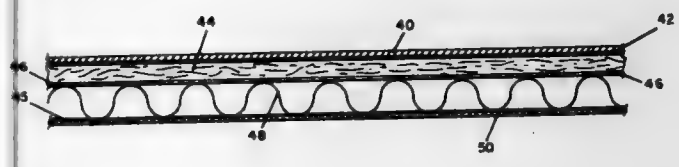
1. A blank comprising a single layer of a sheet material of predetermined thickness composed of a substantially plasticizer-free thermoplastic polymer and having parallel fold lines formed therein, each of said fold lines being substantially free of spring-back resilience when the sheet material on one side of a fold line is folded along said fold line at an angle with respect to the sheet material on the other side of said fold line, each of said fold lines having a rounded configuration extending into one surface of said sheet material and out of the other surface of said sheet material, whereby said fold lines are offset as compared to the plane of said sheet material prior to said sheet material being folded along a fold line, the thickness of said sheet material at said fold lines being about 30–60% of the predetermined thickness of said sheet material, there being a bulge on said other side of said sheet material on opposite sides of each of said fold lines along the length thereof, said bulges being produced by polymer within said sheet material being forced sideways during the formation of said fold lines.

4,348,450

INSULATING AND PACKAGING MATERIAL OF METAL FOIL-NONWOVEN GLASS FABRIC

Julius Shaw, 259 Field St., Bedford, Mass. 02740

Continuation-in-part of Ser. No. 178,794, Aug. 18, 1980, Pat. No. 4,312,909, which is a division of Ser. No. 32,286, Apr. 23, 1979, Pat. No. 4,242,165. This application Jan. 18, 1982, Ser. No. 340,116
Int. Cl.[3] B32B *17/10*
U.S. Cl. 428—182 4 Claims



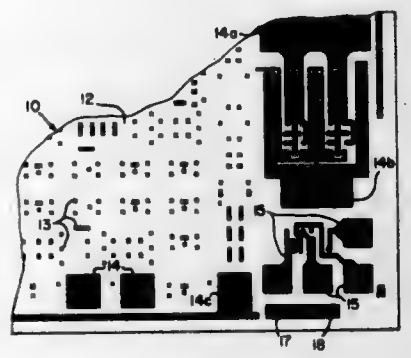
3. A laminate for use as packaging material comprising:
a metal foil sheet such as aluminum foil, having a thickness of between 0.0007–0.005 in.;
a non-woven glass fiber paper-like sheet having a thickness of between 0.010–0.500 in.;
a sheet of Kraft paper of a weight between 30–90 lbs;
a sheet of corrugated cardboard of either single or double-wall type; and
a plasticized ethylene vinyl acetate co-polymer emulsion-type adhesive bonding said metal foil sheet to one side of said non-woven glass fiber paper-like sheet and one side of said sheet of Kraft paper to the other side of said glass fiber sheet and said corrugated cardboard to the other side of said Kraft paper.

4,348,451

METHOD FOR MAKING CUSTOM INTEGRATED CIRCUITS AND METALLIZATION ARTWORK THEREFOR

Walter S. Gontowski, Jr., Thompson, Conn., assignor to Sprague Electric Company, North Adams, Mass.

Filed May 6, 1981, Ser. No. 261,066
Int. Cl.[3] B32B *3/00;* B05D *5/12;* B32B *15/04;* H01L *27/02*
U.S. Cl. 428—203 2 Claims



1. Artwork for making a metallizing mask by which a metal film system for contacting the components of a custom integrated circuit may be made by standard metallization photolithographic and selective etch processes comprising:
a transparent sheet;
separate patches of an opaque cut-and-strip type film ad-

hered to said sheet, one group of said separate patches being at locations, respectively, corresponding to contact areas of said components, another group of said separate patches corresponding to terminal pads for said integrated circuit;

opaque strips adhered to said sheet, said strips overlapping and connecting said patches to effect the necessary interconnection between said components and terminal pads and thus to form a functional principal circuit portion of said integrated circuit; and

islands of said opaque cut-and-strip type film that are adapted to completely form terminal pads and interconnecting metal to a special group of said components that together constitutes a separate test circuit portion of said integrated circuit.

4,348,452

PREFABRICATED SELF-SUPPORTING PANELS AND ITS MANUFACTURING PROCESS

Peccenini Paolo, Villagrappa, and Romini Paolo, Ravenna, both of Italy, assignors to Pantec S.R.L., Forli, Italy

Continuation-in-part of Ser. No. 57,203, Jul. 13, 1979, Pat. No. 4,268,574. This application Mar. 11, 1981, Ser. No. 242,647

The portion of the term of this patent subsequent to May 19, 1998, has been disclaimed.

Int. Cl.³ B32B *5/18, 5/22*

U.S. Cl. 428—312.6 **12 Claims**

1. A prefabricated self-supporting panel comprising two outer layers and at least one inner layer, said at least inner layer consisting of a foamed mixture consisting of:

(a) a foamed unsaturated polyester resin,

(b) an organo-functional silane derivative in a proportion of 0.1% to 5 percent,

(c) a granular filler formed of foamed clay having an average diameter between 15 and 20 mm and a specific gravity of 0.35 Kg/dm^3 in such a quantity as to fill the whole cavity between the two outer layers.

4,348,453

GLAZING POSSESSING SELECTIVE TRANSMISSION AND REFLECTION SPECTRA

Sabatino Cohen, Sceaux, France, assignor to Saint-Gobain Vitrage, Neuilly-sur-Seine, France

Filed Mar. 30, 1981, Ser. No. 248,895

Claims priority, application France, Mar. 28, 1980, 80 06973

Int. Cl.³ B32B *15/04, 17/06*

U.S. Cl. 428—333 **10 Claims**

1. Glass having selective transmission and reflection spectra comprising a transparent substrate on which a reflective layer consisting of a metal or alloy is deposited in which the reflective layer is coated with a protective layer of mixed cadmium and tin oxide.

4,348,454

ULTRAVIOLET LIGHT CURABLE ACRYLIC FUNCTIONAL SILICONE COMPOSITIONS

Richard P. Eckberg, Round Lake, N.Y., assignor to General Electric Company, Waterford, N.Y.

Filed Mar. 2, 1981, Ser. No. 239,297

Int. Cl.³ C08G *77/20*; B32B *27/16*

U.S. Cl. 428—334 **17 Claims**

1. An acrylic functional polyorganosiloxane composition comprising: the reaction product of (A) an omega-haloalkene; (B) a dialkylhydrogen chainstopped polydialkylalkylhydrogensiloxane copolymer; (C) an amount of precious metal catalyst effective for catalyzing a hydrosilation reaction between said alkene and said siloxane copolymer; and (D) an acrylic functional monomer.

4,348,455

THERMOPLASTIC FOOD WRAPPING FILM HAVING IMPROVED CLING

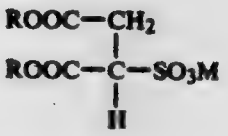
William J. Clayton, Fairport, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Mar. 16, 1981, Ser. No. 244,496

Int. Cl.³ B32B *27/00*; B05D *5/10*

U.S. Cl. 428—336 **19 Claims**

1. A transparent, flexible, thermoplastic, food wrap film having improved shear strength cling, said film comprising having a coating on at least one surface thereof of a composition comprising (a) about 80–95 weight percent of at least one alkali metal dialkyl sulfosuccinate of the formula:



wherein R is alkyl containing 4–18 carbon atoms and M is an alkali metal and (b) about 5–20 weight percent of a lower alcohol soluble high boiling moisturizing liquid selected from the group consisting of dihydric alcohols, trihydric alcohols, higher polyhydric alcohols, esters of adipic acid and esters of phthalic acid.

4,348,456

ABRASION-RESISTANT LAMINATED FILM

Yoshihiko Imanaka; Yoichi Saito, both of Hino, and Akihiro Horike, Musashino, all of Japan, assignors to Teijin Limited, Osaka, Japan

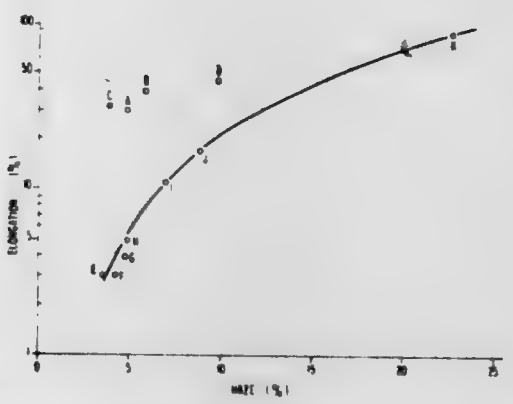
PCT No. PCT/JP79/00097, § 371 Date Dec. 17, 1980, § 102(e) Date Dec. 17, 1980, PCT Pub. No. WO80/02255, PCT Pub. Date Oct. 30, 1980

PCT Filed Apr. 17, 1979, Ser. No. 227,102

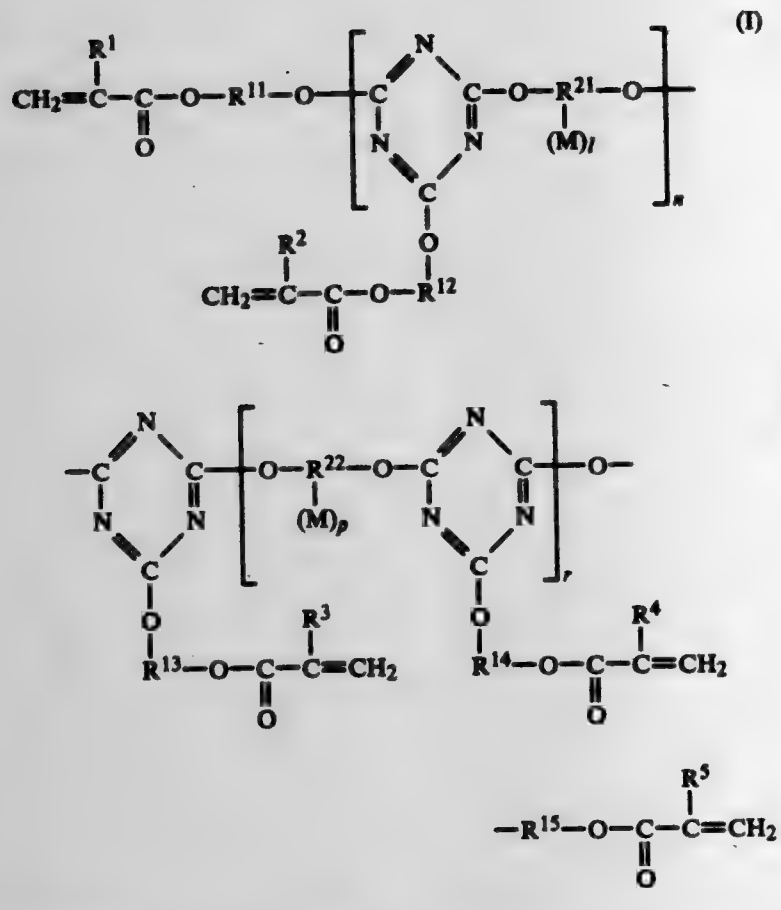
Claims priority, application Japan, Sep. 28, 1977, 52-115509

Int. Cl.³ B32B *27/30, 27/36*

U.S. Cl. 428—336 **6 Claims**

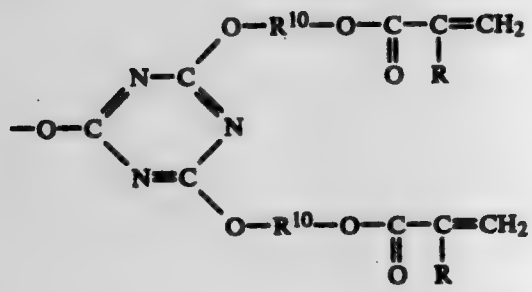


1. A thermoplastic resin film laminate composed of a flexible thermoplastic resin film having a thickness of not more than 500 microns coated or laminated, on one or both sides thereof, with a high elongation and abrasion resistant vinyl polymer layer, which layer has a thickness of 0.5 to 1.5 microns and is composed mainly of a polymerized cyanurate ring-containing (meth)acrylate represented by the general formula (I) wherein the cyanurate ring-containing (meth) acrylate contains essentially not more than 1 weight percent of chlorine atoms



(I)

wherein R^1, R^2, R^3, R^4, and R^5 each represents a hydrogen atom or a methyl group; R^{11}, R^{12}, R^{13}, R^{14}, and R^{15} each represents an alkylene group having a carbon number of 2 to 4; R^{21} and R^{22} each represents a 2–4 valent saturated hydrocarbon group having a carbon number of 2 to 6, wherein a part of the carbon atoms may be replaced by oxygen atoms forming ether linkages; M is —OH and/or a group



(wherein R is hydrogen atom or methyl group; R^{10} is an alkylene group having a carbon number of 2 to 4); l is 0, 1 or 2; (l+2) is equal to the valence of R^{21} and is an integer of 2 to 4; n is 0 or an integer of 1 to 3; p is 0, 1, or 2; (p+2) is equal to the valence of R^{22} and is an integer of 2 to 4; when l or p is 2, both Ms may be the same or different; r is 0 or an integer of 1 to 3.

4,348,457

SEALABLE MULTILAYER FILM OF POLYOLEFINS

Heinrich Rosenthal; Ingo Schinkel, both of Walsrode, and Günter Eger, Bomlitz, all of Fed. Rep. of Germany, assignors to Wolff Walsrode Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 14, 1980, Ser. No. 196,604

Claims priority, application Fed. Rep. of Germany, Oct. 17, 1979, 2941909

Int. Cl.³ B32B *27/32, 31/16*

U.S. Cl. 428—349 10 Claims

1. A multilayer film comprising a polypropylene layer and at least one heat sealable layer comprising polyethylene or an ethylene copolymer containing at least 4% by weight of ethylene, the heat sealable layer containing an additive combination comprising:

(1) from 0.3 to 1% by weight, based on the sealable layer, of a long-chain aliphatic amine;

(2) from 0.1 to 0.7% by weight, based on the sealable layer, of dispersed thermoplastic polymer which is incompatible with the polyethylene or ethylene copolymer and which has a softening range which is not more than either 50° C. below or 50° C. above the softening point of the polyethylene or ethylene copolymer; and

(3) from 0.3 to 0.8% by weight, based on the sealable layer, of a polydialkyl siloxane.

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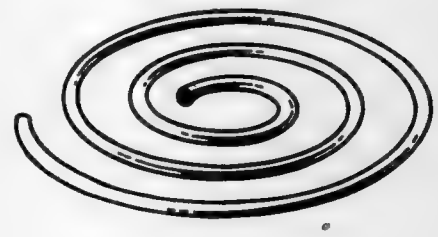
COILED INORGANIC MONOLITHIC HOLLOW FIBERS

Roger S. Otstot, Raleigh, N.C., assignor to Monsanto Company, St. Louis, Mo.

Filed Sep. 8, 1980, Ser. No. 184,878

Int. Cl.³ D02G *3/00;* B32B *9/00*

U.S. Cl. 428—366 17 Claims



1. An essentially inorganic brittle monolithic hollow fiber having an anisotropic internal void volume wall structure, wherein the hollow fiber has at least one segment self-supportingly disposed as a coil.

4,348,459

THERMOPLASTIC ELASTOMER AND ELECTRICAL ARTICLE INSULATED THEREWITH

Robert S. Drzal, Naugatuck, and Charles D. Shedd, Waterbury, both of Conn., assignors to Uniroyal, Inc., New York, N.Y.

Filed Nov. 10, 1980, Ser. No. 205,226

Int. Cl.³ B32B *15/00, 15/08;* C08K *5/01*

U.S. Cl. 428—379 9 Claims

1. An electrical plug or connector made from a composition comprising

(a) ethylene-propylene non-conjugated diene terpolymer rubber having an ethylene content of from 70 to 85 percent by weight and a gel content of from 10 to 45% by weight measured in cyclohexane at room temperature;

(b) an essentially crystalline propylene polymer;

(c) a naphthenic or paraffinic extender oil; and

(d) an inorganic filler suitable to absorb at least a portion of said extender oil (c);

wherein the weight ratio of (a)/(b) is from 90/10 to 25/75, the concentration of (c) is from 20 to 100 parts per 100 parts by weight of (a) plus (b), the concentration of (d) is from 10 to 100 parts per 100 parts by weight of (a) plus (b), and the weight ratio of (c)/(d) does not exceed 2.5/1; said composition having a flexural modulus of from 6,000 to 15,000 psi and an extrusion value of from 80 to 180 pounds measured by capillary rheometer.

4,348,460

POWER INSERTABLE POLYAMIDE-IMIDE COATED MAGNET WIRE

Hollis S. Saunders; Richard V. Carmer, and Lionel J. Payette, all of Fort Wayne, Ind., assignors to Essex Group, Inc., Fort Wayne, Ind.

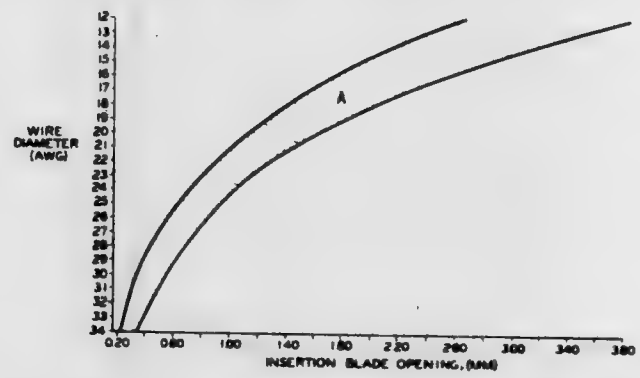
Filed Oct. 19, 1981, Ser. No. 312,215

Int. Cl.³ B32B *27/00;* H01B *7/00*

U.S. Cl. 428—383 9 Claims

1. A lubricated magnet wire comprising an electrically conducting substrate having an electrically insulating polyamide-

imide outer coating, and an external lubricant coating on the polyamide-imide outer coating comprising a mixture of paraffin wax, hydrogenated triglyceride and an ester lubricant composition comprising esters of fatty alcohols and fatty acids, the



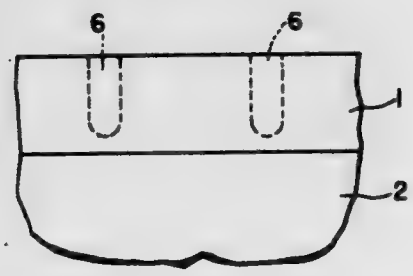
ratio by weight, of paraffin wax to triglyceride being approximately 1:15 to 60:1, and the ratio of triglyceride to ester lubricant being approximately 1:30 to 30:1, the coated magnet wire capable of power insertion into coil slots in its locking wire size range.

4,348,461

RECORDING MEMBER

Motoyasu Terao, Hinodemachi; Yoshio Taniguchi, Hino; Shinkichi Horigome, Tachikawa; Masahiro Ojima, Kokubunji; Kazuo Shigematsu, Kawasaki; Keizo Kato, Hachioji; Yoshinori Miyamura, Hinodemachi, and Seiji Yonezawa, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 18, 1980, Ser. No. 160,661
Claims priority, application Japan, Jun. 22, 1979, 54-78203
Int. Cl.³ B32B *5/14*
U.S. Cl. 428—409 7 Claims



1. A recording member having a predetermined substrate, and a thin film which is formed on the substrate and which is formed with recesses for recording information when irradiated with a working beam; said thin film being formed of an inorganic material containing at least arsenic, selenium and tellurium, with the concentration of the selenium decreasing from a part of the film near the surface of said thin film towards a central part thereof and the concentration of the arsenic increasing from a part of the film near the surface towards the central part of said film; the concentration of selenium being at lest 50 atomic-% in a part of said thin film that is the closest to said surface thereof with the average concentration of selenium being at most 40 atomic-% over the whole thin film, and the concentration of arsenic being at most 15 atomic-% in a part of said thin film that is the closest to said surface thereof with the average concentration of arsenic being 5 to 35 atomic-% over the whole thin film.

4,348,462

ABRASION RESISTANT ULTRAVIOLET LIGHT CURABLE HARD COATING COMPOSITIONS

Rack H. Chung, Clifton Park, N.Y., assignor to General Electric Company, Waterford, N.Y.

Continuation-in-part of Ser. No. 129,297, Mar. 11, 1980. This application Jul. 11, 1980, Ser. No. 167,622
Int. Cl.³ C08F *2/50*
U.S. Cl. 428—412 23 Claims

1. A radiation curable coating composition having improved abrasion resistance, comprising:

(A) 100 parts by weight silica provided as colloidal silica;

(B) 5 to 500 parts by weight of an acid hydrolysis product of a compound selected from acryloxy-functional silanes having a general formula:

$$(R^3O)_bR^4_cSi(R^5OC(=O)C(R^6)=CH_2)_d$$

wherein R^3 and R^4 are the same or different monovalent hydrocarbon radicals, R^5 is a divalent hydrocarbon radical having from 2 to 8 carbon atoms, R^6 is hydrogen or a monovalent hydrocarbon radical, b is an integer from 1 to 3, c is an integer from 0 to 2, and d is an integer equaling 4−b−c; or glycidoxy-functional silanes having a general formula:

$$(R^7O)_eR^8_fSi(R^9OCH_2CH\text{-}CH_2)_g \quad (O)$$

wherein R^7 and R^8 are the same or different monovalent hydrocarbon radicals, R^9 is a divalent hydrocarbon radical having from 2 to 8 carbon atoms, e is an integer from 1 to 3, f is an integer from 0 to 2, and g is a integer equaling 4−e−f, and mixtures thereof;

(C) 10 to 500 parts of a non-silyl acrylate; and

(D) a catalytic amount of ultraviolet light sensitive photoinitiator.

4,348,463

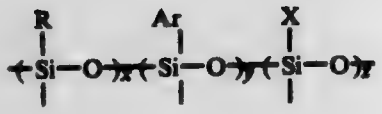
REFLECTOR

Akira Ohno; Hitomi Katayama; Suguru Nomura; Susumu Senaha; Suizo Kyo; Susumu Shimomura; Akira Akagami, and Hiroshi Imai, all of Yokohama, Japan, assignors to NHK Spring Co., Ltd. and Yokohama Kiko Co., Ltd., both of Kanagawa, Japan

Filed Nov. 13, 1979, Ser. No. 93,554
Claims priority, application Japan, Nov. 13, 1978, 53-139905
Int. Cl.³ G02B *5/08*; B32B *17/10, 15/08*
U.S. Cl. 428—429 7 Claims

1. A reflector comprising a resin layer disposed on a substrate surface capable of withstanding a vacuum deposition, operation of a light metal reflective layer and a crystalline ceramic layer thereon, said resin layer consisting essentially of a hard, abrasion-resistant, bending resistant, thermosett resin which in the form of a film has a high heat resistance, does not release low molecular weight substances under vacuum and withstands the heat generated during a vacuum deposition operation of a ceramic material, a vacuum deposited layer of a light reflective metal disposed on the resin layer and a vacuum deposited layer of a light transmittable crystalline ceramic further disposed on the reflective metal layer.

2. A reflector as set forth in claim 1 wherein said resin layer comprises silicone resin is obtained by polymerizing a liquid or low melting polyaralkylsiloxane consisting essentially of structural units having the general formula represented below:



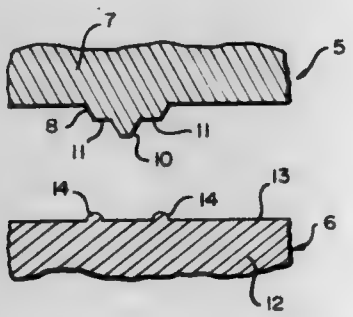
wherein R is lower alkyl radical; Ar is an aryl radical; X represents a functional group which will condense to form a polymer and x, y and z represent the molar proportion for the unit for which it is a subscript, respectively, the free bonds in the structural formula above may carry one of the aforesaid functional groups or the bonds in two structural units may link to form a bridging bond, and wherein (1) the mole faction of aryl radicals to the sum of the aryl and alkyl radicals is 0.65 to 1.00, (2) the polymerizable functionality is 2 to 3 and (3) the ratio of the number of carbon atoms to the number of silicon atoms is 4.25 to 16.

4,348,464

COMBINATION SCORE TOOL AND SCORE ANVIL

Nick S. Khoury, Worth, Ill., assignor to The Continental Group, Inc., New York, N.Y.

Filed Nov. 29, 1978, Ser. No. 964,760
Int. Cl.³ B22F 7/00
U.S. Cl. 428—571 12 Claims



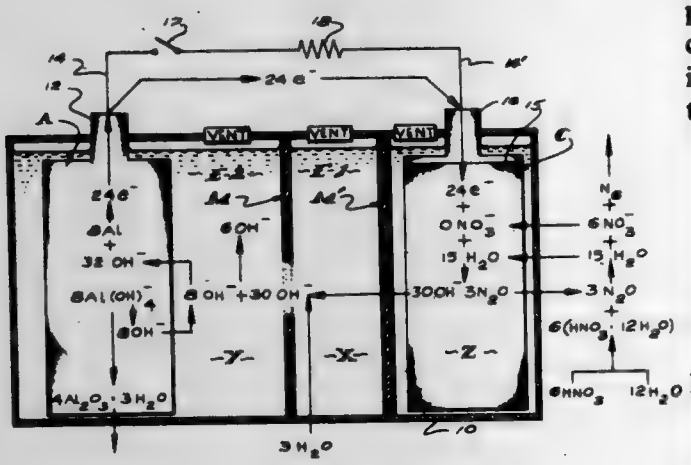
1. The combination of a score tool and score anvil wherein said score tool has a projecting rib for effecting scoring, said anvil has an article supporting surface and two spaced apart metal compressing ribs projecting from said supporting surface and generally opposing said scoring rib, and said scoring rib being positioned intermediate said compressing ribs for initially supporting an article to be scored.

4,348,465

NITROGEN METAL FUEL CELL

Ralph C. Struthers, Saugus, Calif., assignor to Universal Fuel Systems, Inc., Saugus, Calif.

Filed Nov. 10, 1980, Ser. No. 205,866
Int. Cl.³ H01M 8/08
U.S. Cl. 429—27 18 Claims



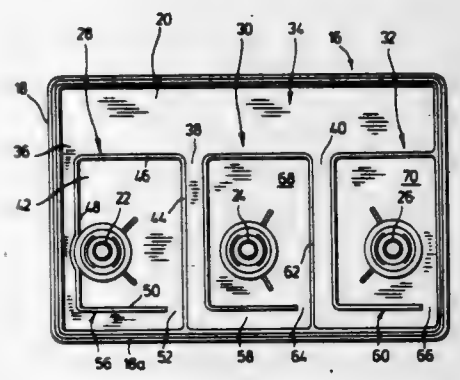
1. A fuel cell comprising a fuel metal anode, a nitrogen compound fuel cathode solution spaced from the anode, a hydroxyl ion transfer membrane between the anode and the cathode solution and carrying a metallic catalyst for the cathode solution, an aqueous electrolyte solution between and contacting the anode and the membrane, and an electric circuit connected with and conducting free electrons from the anode and to the cathode.

4,348,466

ANTI-SPILL DEVICE FOR ELECTROLYTE BATTERY

Wolodymyr R. Elehew, and Peter T. Kong, both of Scarborough, Canada, assignors to Varta Batteries Limited, Willowdale, Canada

Filed Jan. 27, 1981, Ser. No. 227,511
Int. Cl.³ H01M 2/12
U.S. Cl. 429—84 10 Claims



1. In a liquid electrolyte cell type battery having a plurality of cells, a battery container having defined therein a plurality of cell partitions and a battery cover sealed to said battery container to isolate the cells, said cover having means for venting to atmosphere gasses above the cell electrolyte level generated in each cell and means interposed each cell above its electrolyte level and said vent means for containing electrolyte which rises above an opening into said containment means when a battery is tipped to anyone of its sides, said containment means containing electrolyte to at least a level which causes relative to said opening a blockage of further flow of electrolyte into said containment means by preventing air from the venting means entering the respective cell, said containment means being on one level within said cover and comprising a partition arrangement which defines a chamber having said opening as its inlet and an outlet in communication with said vent means, said partition arrangement defining at least a partially convoluted passageway which allows said level of electrolyte effectively covering said inlet to seek a level in the passageway which, once equilibrium of the electrolyte levels in the cell and passageway are achieved, is spaced along said passageway from said outlet, said containment means thereby confining electrolyte away from said vent means and precluding electrolyte spillage regardless to which side the battery is tipped.

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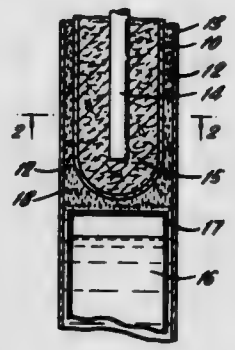
ELECTROCHEMICAL CELLS CONTAINING LIQUID SODIUM AS THE ANODIC MATERIAL

Michael L. Wright, Allestree, England, assignor to Chloride Silent Power Limited, London, England

Filed Jul. 7, 1981, Ser. No. 280,958
Claims priority, application United Kingdom, Jul. 21, 1980, 8023740
Int. Cl.³ H01M 4/00
U.S. Cl. 429—94 4 Claims

1. A sodium sulphur electrochemical cell having a solid

electrolyte separating a cathodic reactant from liquid sodium in an anodic region adjacent the surface of the electrolyte



wherein said anodic region contains aluminium particles in the form of flakes.

4,348,468

BETA ALUMINA SOLID ELECTROLYTE MATERIAL AND ITS MANUFACTURE AND ELECTROCHEMICAL CELLS OR OTHER ENERGY CONVERSION DEVICES CONTAINING SUCH MATERIAL

Michael L. Wright, Allestree, England, assignor to Chloride Silent Power Limited, London, England

Filed Dec. 17, 1980, Ser. No. 217,333
Claims priority, application United Kingdom, Dec. 28, 1979, 7944410
Int. Cl.³ H01M *10/39*
U.S. Cl. 429—193 3 Claims

1. A method of manufacture of a beta-alumina solid electrolyte element, suitable for use in an electrochemical cell or other energy-conversion device employing liquid sodium, which method includes the steps of pre-treating at least part of the surface area of the beta-alumina to be exposed to the liquid sodium with a lead compound and reducing the lead compound to metallic lead.

4,348,469

PHOTO-SENSITIVE MEDIUM FOR ELECTROPHOTOGRAPHY

Takao Komiya, Yokohama, and Mitsuo Minomiya, Tokyo both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 882,632, Mar. 2, 1978, abandoned, which is a continuation of Ser. No. 675,619, Apr. 9, 1976, abandoned, which is a continuation of Ser. No. 605,468, Aug. 18, 1975, abandoned, which is a continuation of Ser. No. 366,352, Jun. 4, 1973, abandoned. This application Jan. 13, 1981, Ser. No. 224,801
Claims priority, application Japan, Jun. 12, 1972, 47-58330
Int. Cl.³ G03G *5/14, 13/10*
U.S. Cl. 430—55 12 Claims



1. A process for developing an electrostatic image with a liquid developer on a photosensitive medium resistant to the deteriorating effects of the liquid developer, said process comprising the steps of applying an electrostatic charge of a first polarity to said photosensitive medium, imagewise exposing the resulting photosensitive medium while applying a charge of the opposite polarity to said first polarity or AC corona discharge thereto to an electric field capable of eliminating the electrostatic charge of said first polarity from the exposed area of said photosensitive medium to thereby form a latent electrostatic image on said photosensitive medium, and then treating said photosensitive medium with a liquid developer to develop the latent image, said photosensitive medium including:

an electrically conductive or dielectric substrate;

a photoconductive layer positioned on a portion of a surface of said substrate, wherein said layer does not extend along the peripheral portions of said substrate;

an adhesive layer positioned on said photoconductive layer and said peripheral margin of said substrate, said adhesive layer being resistant to the liquid developer; and

a transparent, dielectric resinous layer resistant to the liquid developer and capable of retaining an electrostatic charge, said dielectric layer having a thickness greater than about 25 microns and covering said photoconductive layer and extending around the entire periphery of the layer to thereby fully enclose said photoconductive layer and cover at least part of the peripheral portions of the substrate, said adhesive layer preventing separation of said dielectric layer from said photoconductive layer and said peripheral margin of said substrate.

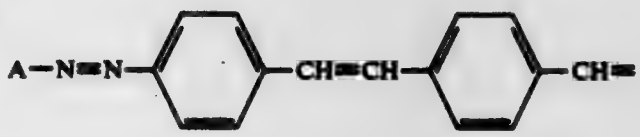
4,348,470

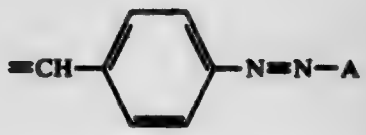
ELECTROPHOTOGRAPHIC ELEMENT CONTAINING DISAZO COMPOUNDS

Akio Kozima, Hiratsuka; Eiichi Akutsu, Ichikawa, and Kiyomi Ichizuka, Tokyo, all of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

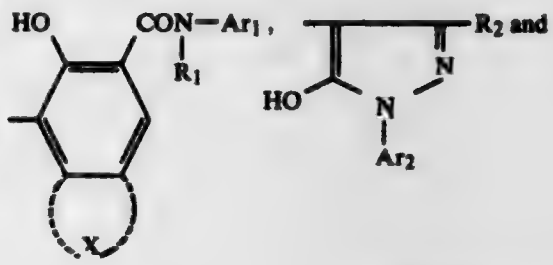
Filed Dec. 4, 1979, Ser. No. 100,066
Claims priority, application Japan, Dec. 13, 1978, 53-154474
Int. Cl.³ G03G *5/06, 13/22*
U.S. Cl. 430—72 5 Claims

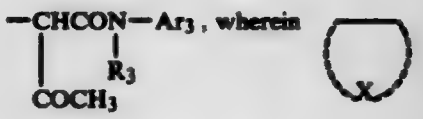
1. An electrophotographic element comprising an electroconductive substrate, a charge generating layer and a charge transport layer, said charge generating layer comprising a disazo pigment having the general formula:





wherein A is a member selected from the group consisting of





is a fused ring selected from the group consisting of benzene ring, halobenzene ring, naphthalene ring, indole ring, carbazole ring and benzofuran ring; Ar_1 is a member selected from the group consisting of phenyl, methylphenyl, methoxyphenyl, chlorophenyl, nitrophenyl, ethoxyphenyl, methylchlorophenyl, dimethylphenyl, methoxychlorophenyl, methoxybromophenyl, methoxymethylphenyl, dimethoxyphenyl, dimethoxychlorophenyl, dimethylaminophenyl, cyanophenyl, carboxyphenyl, benzenesulfonic acid sodium salt, tert-butoxyphenyl, naphthyl, methoxydibenzofuryl and carbazolyl; each

of Ar_2 and Ar_3 is a member selected from the group consisting of phenyl, naphthyl, methoxyphenyl, methylphenyl, acetylaminophenyl, dimethylaminophenyl, cyanophenyl, nitrophenyl, dinitrophenyl, chlorophenyl, trichlorobenzenesulfonic acid, benzenesulfonic acid and benzenesulfonamide; each of R_1 and R_3 is a member selected from the group consisting of hydrogen, methyl, ethyl, phenyl and chlorophenyl; and R_2 is a member selected from the group consisting of methyl, carboxyl and $—COOC_2H_5$, and a binder material consisting essentially of a mixture of polyvinyl butyral and acrylic resin, wherein the weight ratio of polyvinyl butyral to acrylic resin in said mixture is in the range of from 0.1:1 to 1:0.1, the amount of said mixture is 10 to 200% by weight, based on the weight of said disazo pigment, the thickness of said charge generating layer is in the range of from about 0.05 micron to about 2 microns and the thickness of said charge transport layer is in the range of about 5 microns to about 100 microns.

4,348,471

POSITIVE ACTING COMPOSITION YIELDING PRE-DEVELOPMENT HIGH VISIBILITY IMAGE AFTER RADIATION EXPOSURE COMPRISING ACID FREE NOVOLAK, DIAZO OXIDE AND ACID SENSITIVE DYESTUFF

James Shelnut, Carmel, and Richard J. Cohen, New Rochelle, both of N.Y., assignors to Polychrome Corporation, Yonkers, N.Y.

Filed Jun. 15, 1981, Ser. No. 273,819
Int. Cl.³ G03C *1/54, 1/60;* G03F *7/08*
U.S. Cl. 430—165 9 Claims

1. A positive-acting radiation-sensitive composition comprising an admixture of,

I. at least one acid-free novolak resin as the major resin component in the composition;

II. at least one positive-acting, radiation-sensitive diazo oxide which upon irradiation yields acidic products;

III. at least one acid-sensitive dyestuff which upon contact with the product of irradiation of component II is rendered colorless or much less intensely colored than before such contact,

said composition becoming aqueous alkali-soluble and colorless or less intensely colored after irradiation.

4,348,472

METHOD OF APPLYING A LAYER IN ACCORDANCE WITH A PATTERN ON A SUBSTRATE, A NEGATIVE RESIST MATERIAL AND A SUBSTRATE COATED WITH THE RESIST

Jannes C. Jagt, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 2, 1980, Ser. No. 183,521
Claims priority, application Netherlands, Sep. 18, 1979, 7906932
Int. Cl.³ G03C *1/71;* B05D *3/06;* G03C *1/60;* G03F *7/08*
U.S. Cl. 430—195 6 Claims

1. In the method for forming a pattern layer on a substrate wherein a layer of a polymeric material containing resist material is applied onto the substrate, the resist material is selectively exposed to electrons or to X-rays in accordance with a pattern and the unexposed portion of the resist material is removed, the improvement wherein the polymeric material is selected from the group consisting of hetero-aromatic halogenated derivatives of the vinyl carbazole polymer defined by formula 1 of the drawing where n exceeds 30, the vinyl carbazole polymer defined by formula 1 of the drawing where n exceeds 30 and copolymers thereof, and present at least when the polymeric material is other than a hetro-aromatic halogenated derivative of the vinyl carbazole polymer, a bisazide as defined by formula 2 of the drawing wherein R is an organic residue as defined by formulae 3, 4 or 5 of the drawing.

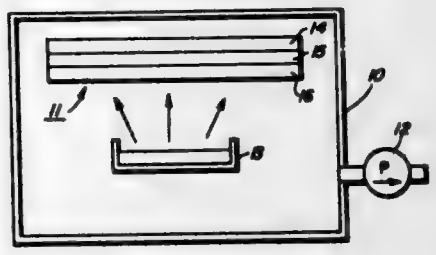
4. A negative electron and/or X-ray polymeric material containing resist material which resist material comprises a mixture of a bisazide defined by formula 2 or the drawing wherein R is an organic residue as defined by formulae 3, 4 or 5 of the drawing and a polymeric material consisting of a polyvinyl carbazole as defined by formula 1 of the drawing wherein n exceeds 30, a hetero-aromatic halogenated derivative of said polyvinyl carbazole or a copolymer of said polyvinyl carbazole and said halogenated polyvinyl carbazole.

4,348,473

DRY PROCESS FOR THE PRODUCTION OF MICROELECTRONIC DEVICES

Koji Okumura, Rochester, and Franklin D. Saeva, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Mar. 4, 1981, Ser. No. 240,354
Int. Cl.³ G03C *5/00*
U.S. Cl. 430—296 9 Claims



1. A method for the preparation of microelectronic devices which comprises:

providing in a vacuum chamber a substrate having coated thereon one or more substantially uniform layers of electronic circuit materials, and carrying out the following steps seriatum without intermediate withdrawal and reinsertion of the coated substrate from the vacuum chamber;

applying reduced pressure to the vacuum chamber;

depositing a thin layer of a monomer on said coated substrate while maintaining the coated substrate below the vaporization temperature of the monomer at the pressure within the vacuum chamber;

selectively polymerizing said thin layer of monomer by electromagnetic radiation or electron beam means according to a pattern of the microelectronic device desired;

heating said selectively polymerized thin layer to evaporate unpolymerized monomers to thus expose the coated substrate under the layer of monomer according to said pattern;

removing the electronic circuit materials so exposed; and

removing the layer of polymerized monomer from the coated substrate.

4,348,474

LIGHT SENSITIVE PHOTOGRAPHIC RECORDING MATERIAL AND THE USE THEREOF FOR THE PRODUCTION OF PHOTOGRAPHIC IMAGES

Rainer Scheerer, Cologne; Erwin Ranz, Leverkusen, and Joachim W. Lohmann, Odenthal, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 23, 1981, Ser. No. 286,261
Claims priority, application Fed. Rep. of Germany, Aug. 1, 1980, 3029209
Int. Cl.³ G03C *1/76*
U.S. Cl. 430—382 9 Claims

1. Photographic recording material having at least two panchromatically sensitised silver halide emulsion layers differing in speed, the faster layer being further removed from the support than the slower layer, and each of these two layers containing at least two colour couplers at least one of which produces a yellow dye on chromogenic development, wherein at least one layer contains a compound capable of splitting off a development inhibitor, and whereby the faster silver halide

emulsion layer contains a yellow coupler in a relatively rapidly coupling form and the slower layer contains a yellow coupler in a relatively slowly coupling form.

8. Process for the production of photographic images, wherein the material according to claim 1 is exposed imagewise and chromogenically developed.

4,348,475

PROCESS FOR THE PRODUCTION OF PHOTOGRAPHIC IMAGES

Ubbo Wernicke, Odenthal, and Heinz Meckl, Bergisch Gladbach, both of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft AG, Leverkusen, Fed. Rep. of Germany

Filed Apr. 23, 1980, Ser. No. 143,152

Claims priority, application Fed. Rep. of Germany, Apr. 26, 1979, 2916836

Int. Cl.³ G03C *5/30*

U.S. Cl. 430—399 1 Claim

1. A photographic development process which comprises processing exposed multi-layer color photographic material under development conditions to produce images of maximum density with a color developer composition having an effective bromide ion concentration equivalent to at least in excess of ten grams of potassium bromide per liter of color developer including the step of maintaining the said bromide ion concentration in said developer at a substantial constant by removing bromide ion from the developer by contacting the developer with a strongly basic ion exchange resin based on styrene-divinyl benzene and thereby removing bromide ions.

4,348,476

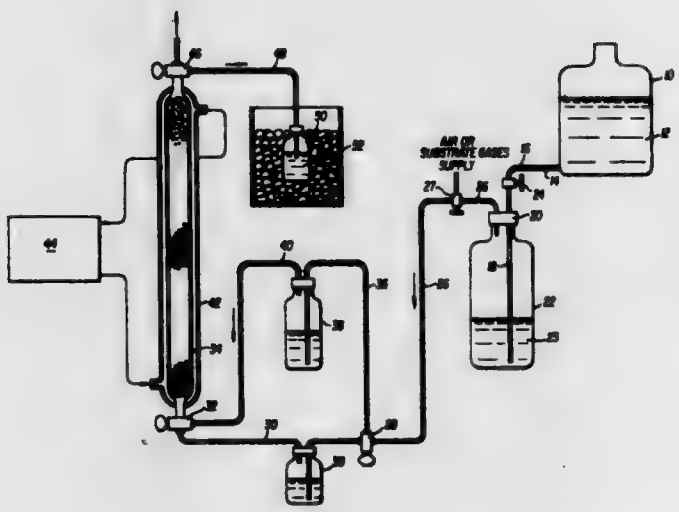
PRODUCTION OF EPOXIDES SUCH AS PROPYLENE OXIDE USING PACKED CATALYTIC BED CONTAINING MOIST RESTING CELLS EXHIBITING OXYGENASE ACTIVITY

Ching T. Hou, Edison, N.J., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Jan. 22, 1981, Ser. No. 227,135

Int. Cl.³ C12P *17/02*

U.S. Cl. 435—123 24 Claims



1. A process for advancing the oxidation state of a gaseous, oxidizable organic substrate through contact with a gaseous source of oxygen and a biocatalyst comprising:

passing through a packed catalytic bed comprising moist, resting cells exhibiting oxygenase activity a gaseous, oxidizable organic substrate and a gaseous source of oxygen until the oxidative state of at least a portion of said substrate is increased, while maintaining the relative humidity in said bed at such a level that said cells remain moist and catalytically active until spent.

4,348,477

METHOD FOR PREPARING A RECOMBINANT DNA PHAGE

Eiichi Nakano, Sattemachi; Tsutomu Masuda; Narimasa Saito, both of Noda, all of Japan, and Danji Fukushima, Lake Genova, Wis., assignors to Noda Institute for Scientific Research, Noda, Japan

Filed Oct. 22, 1979, Ser. No. 87,166

Claims priority, application Japan, Oct. 30, 1978, 53-132631

The portion of the term of this patent subsequent to Sep. 7, 1999, has been disclaimed.

Int. Cl.³ C12N *15/00*

U.S. Cl. 435—172 11 Claims

1. A method for preparing a novel recombinant DNA, which comprises (1) cleaving with an endonuclease a phage DNA having an endonuclease-sensitive region not in the DNA segment participating in temperate phage DNA replication and integration of DNA into a host chromosome but in other DNA segments, a temperate phage DNA having an endonuclease-sensitive region in the DNA segment carrying genetic information for the production of coat protein, and a DNA carrying intended genetic information, (2) mixing together all fragments produced by said cleaving, (3) adding DNA ligase to the mixture, and (4) recovering from the resulting mixture a phage DNA having its coat protein producing ability deleted by the replacement of the DNA segment carrying genetic information for coat protein production with a DNA fragment carrying the intended genetic information.

4,348,478

METHOD FOR PREPARATION OF A RECOMBINANT DNA PHAGE

Eiichi Nakano, Saitama; Tsutomu Masuda; Narimasa Saito, both of Noda, all of Japan, and Danji Fukushima, Lake Jenova, Wis., assignors to Noda Institute for Scientific Research, Noda, Japan

Filed Oct. 22, 1979, Ser. No. 87,167

Claims priority, application Japan, Oct. 25, 1978, 53-130437

The portion of the term of this patent subsequent to Sep. 7, 1999, has been disclaimed.

Int. Cl.³ L12N *15/00*

U.S. Cl. 435—172 13 Claims

1. A method for the preparation of a novel recombinant DNA, which comprises (1) cleaving with an endonuclease a temperate phage DNA having an endonuclease-sensitive region not in the DNA segment participating in the replication of phage DNA and the integration of phage DNA into a host chromosome but at least in the DNA segment carrying genetic information for the coat protein production and another DNA carrying intended genetic information, (2) adding DNA-ligase to the mixture of both cleft DNA's, and (3) recovering from the mixture a phage DNA having its coat protein producing ability deleted by the replacement of the DNA segment carrying genetic information for the coat protein production with a DNA fragment carrying the intended information.

4,348,479

RECOVERY OF PROTEINACEOUS MATERIAL HAVING REDUCED NUCLEIC ACID LEVELS

John E. Kinsella, and Jayarama K. Shetty, both of Ithaca, N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Aug. 18, 1980, Ser. No. 179,382

The portion of the term of this patent subsequent to Sep. 18, 1996, has been disclaimed.

Int. Cl.³ A23J *1/18*

U.S. Cl. 435—183 8 Claims

1. A process of recovering microbially derived proteinaceous material essentially devoid of nucleic acid from nucleoprotein complexes which comprises:

(a) disrupting microbial cells to provide a mixture comprising proteinaceous material and nucleic acid;

(b) treating an aqueous mixture of proteinaceous material

and nucleic acid with an organic dicarboxylic anhydride containing a beta-diene structure at a pH of above about 7.5 thereby derivatizing the proteinaceous material;

(c) reducing the pH to isoelectrically precipitate the derivatized proteinaceous material and recovering the derivatized proteinaceous material which is thereby separated from nucleic acid;

(d) maintaining the recovered derivatized proteinaceous material at an acidic pH until the derivatized proteinaceous material disassociates into the proteinaceous material and the organic dicarboxylic anhydrides or a derivative thereof, and separating and recovering the proteinaceous material.

4,348,480

PROCESS FOR PRODUCING GLUCOSE ISOMERASE

Charles E. Brownewell, Elkhart, Ind., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Filed Jun. 4, 1980, Ser. No. 156,496
Int. Cl.³ C12N *9/92*
U.S. Cl. 435—234 **1 Claim**

1. A process for the production of a glucose isomerase comprising growing under aerobic conditions a culture of *Bacillus licheniformis* ATCC 31604 in a medium containing appropriate nutrients and then recovering the enzyme therefrom.

4,348,481

METHOD OF OBTAINING GLUCOSE ISOMERASE

Mitko S. Popov; Galina M. Djedjeva; Ivan O. Todorov, and Nelly S. Stoeva, all of Sofia, Bulgaria, assignors to Institute Po Microbiologia, Sofia, Bulgaria

Filed Dec. 2, 1980, Ser. No. 212,094
Claims priority, application Bulgaria, Nov. 29, 1979, 45750
Int. Cl.³ C12N *9/92*
U.S. Cl. 435—234 **3 Claims**

1. A method for obtaining of glucose isomerase, wherein the enzyme-producing strain Streptomyces sp.N.765 registration N.143—State Institute for Drug Control, Sofia, Bulgaria, is cultivated for 36 to 72 hours in a culture medium with xylose as an inductor, the temperature being kept from 24° to 36° C., the initial pH of cultivation is from 6.5 to 9.0; the temperature of izomerization is from 50° to 90° C., pH is from 6.0 to 9.0 in the presence of $MgSO_4 \cdot 7H_2O$ in a concentration from 1.10^{-4} to 1.10^{-2}M and substrate concentration from 0.1 to 3 M.

4,348,482

PROCESS FOR DECREASING THE THERMAL STABILITY OF MICROBIAL RENNET

Dennis A. Cornelius, Elkhart, Ind., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Continuation-in-part of Ser. No. 908,575, May 22, 1978, abandoned. This application Sep. 10, 1979, Ser. No. 73,647
Int. Cl.³ C12N *9/58*; A23C *19/032*
U.S. Cl. 435—223 **18 Claims**

1. A process for treating a Mucor microbial rennet whereby the original milk-clotting activity thereof is not substantially reduced prior to any subsequent thermal treatment thereof and whereby the thermal stability of the microbial rennet is decreased to about the thermal stability of calf rennet when heated at the same temperature for pasteurizing whey which comprises contacting an aqueous solution thereof at a temperature between about 4° C. and 30° C.and at a pH between about 3.0 and 8.0 and for a time between about 15 minutes and 72 hours with a methionine-oxidizing means that oxidizes at least a portion of the methionine residues in the Mucor microbial rennet to methionine sulfoxide.

4,348,483

METHOD FOR THE PRODUCTION OF CHROMIUM YEAST

Lawrence E. Skogerson, Milwaukee, Wis., assignor to Universal Foods Corporation, Milwaukee, Wis.

Filed Jan. 23, 1981, Ser. No. 227,962
Int. Cl.³ C12N *1/16, 1/18*
U.S. Cl. 435—255 **14 Claims**

1. A process for producing a chromium yeast product which comprises:

(a) adjusting the pH of an aqueous suspension of live edible, food grade yeast cells from about 4 to about 7;

(b) treating an aqueous suspension of live yeast cells with a water-soluble, non-toxic chromium salt at a chromium ion concentration based on yeast cell solids that is below the concentration at which an inhibitory effect on the growth of the yeast is observed;

(c) maintaining the suspension for an essentially non-growth pre-treatment period sufficient to permit substantial intracellular absorption of chromium by said yeast cells;

(d) adding yeast growth nutrients to the aqueous medium containing the chromium-treated yeast and induce growth of the said yeast to thereby dilute the intracellular chromium content of said yeast to a predetermined level;

(e) recovering and concentrating the yeast cells from the aqueous growth medium;

(f) washing the recovered yeast cells to remove extra-cellular chromium salts; and

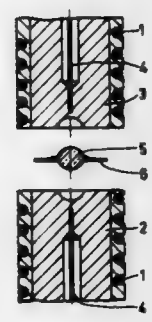
(g) pasteurizing and drying the washed yeast cells containing a substantial amount of intracellular chromium ion.

4,348,484

PRECISION PRESSED GLASS OBJECT, GLASS, METHOD OF PREPARING GLASS

Hendrik J. M. Joormann; Hendrik Verweij, and Jan Haisma, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 19, 1980, Ser. No. 161,196
Claims priority, application Netherlands, May 18, 1979, 7903914
Int. Cl.³ C03C *3/16*
U.S. Cl. 501—45 **1 Claim**



1. A method of preparing glass containing P_2O_5, PbO and BaO by fusing together starting materials of said oxides, characterized in that a glass is prepared which consists essentially of 45–55 mol. % P_2O_5, 15–40 mol. % BaO, 5–35 mol. % PbO, 5–15 mol. % Li_2O, 0–2 mol. % Al_2O_3 and 0–6 mol. % F, wherein up to 25% of the BaO may be replaced by an equimolar quantity of one or more of the oxides CaO, MgO, and SrO, and up to 25% of the Li_2O may be replaced by an equimolar quantity of one or more other alkali metal oxides.

4,348,485

SPINEL TYPE FUSED REFRACTORY PRODUCT

Koji Oohasi; Yutaka Hosoda; Toshio Kitamura, and Eiichi Kudo, all of Takasago, Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan

Filed Mar. 6, 1981, Ser. No. 241,101
Claims priority, application Japan, Mar. 25, 1980, 55/36934
Int. Cl.[3] C04B *35/04, 35/42, 35/44*
U.S. Cl. 501—115 5 Claims

1. A spinel type dense fused refractory product having excellent corrosion resistance which comprises a crystalline structure consisting essentially of (a) 65%–80% by weight of composite spinel phase comprising RO component selected from MgO and FeO and R_2O_3 component selected from Cr_2O_3, Al_2O_3 and Fe_2O_3: (b) 19% to 30% periclase phase and (c) 1% to 8% of glass matrix phase; which product consists essentially of the following constituents, analytically on a weight basis: 20% to 40% of MgO; 30% to 60% of Cr_3O_3; 5% to 15% of Al_2O_3; 0.5% to 5% of SiO_2; 0.3% to 1.5% of CaO; and 15% or less of Fe_2O_3; wherein the ratio of Cr_2O_3 to Al_2O_3 is 3.5 to 5.5.

4,348,486

PRODUCTION OF METHANOL VIA CATALYTIC COAL GASIFICATION

William J. Calvin, Convent Station; Stuart S. Goldstein, Kinnelon, and Harry A. Marshall, Madison, all of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Aug. 27, 1981, Ser. No. 296,713
Int. Cl.[3] C07C *27/06;* C07L *31/04*
U.S. Cl. 518—704 11 Claims

1. A process for the production of methanol from a carbonaceous feed material which comprises:

(a) gasifying said carbonaceous feed material with steam in a gasification zone at a gasification temperature between about 1000° F. and about 1500° F. and at a gasification pressure in excess of about 100 psia in the presence of a carbon-alkali metal catalyst and added hydrogen and carbon monoxide;

(b) withdrawing from said gasification zone an effluent gas containing methane, carbon dioxide, steam, hydrogen, carbon monoxide, and hydrogen sulfide;

(c) treating said effluent gas for the removal of steam, particulates, hydrogen sulfide and carbon dioxide to produce a treated gas containing primarily carbon monoxide, hydrogen and methane;

(d) passing said treated gas to a separation zone wherein said treated gas is separated into a methane-rich gas stream and a gas stream containing primarily carbon monoxide and hydrogen;

(e) passing at least a portion of said methane-rich gas stream to a steam reforming zone wherein at least a portion of said methane is reacted with steam to produce hydrogen and carbon monoxide;

(f) passing the effluent from said steam reforming zone into said gasification zone, thereby supplying said added hydrogen and carbon monoxide required in said gasification zone;

(g) passing said gas stream containing primarily carbon monoxide and hydrogen produced in step (d) to a methanol synthesis zone wherein at least a portion of said carbon monoxide is reacted with at least a portion of said hydrogen in the presence of a methanol synthesis catalyst to form methanol;

(h) recovering methanol product from the effluent stream exiting said methanol synthesis zone, thereby leaving a gas comprised of carbon monoxide, hydrogen, methane and carbon dioxide; and

(i) recycling at least a portion of said gas comprised of carbon monoxide, hydrogen, methane and carbon dioxide produced in step (h) to the separation zone of step (d).

4,348,487

PRODUCTION OF METHANOL VIA CATALYTIC COAL GASIFICATION

Stuart S. Goldstein, Kinnelon; William J. Calvin, Convent Station, and Harry A. Marshall, Madison, all of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Nov. 2, 1981, Ser. No. 317,358
Int. Cl.[3] C07C *27/06, 31/04*
U.S. Cl. 518—704 10 Claims

1. A process for the production of methanol from a carbonaceous feed material which comprises:

(a) gasifying said carbonaceous feed material with steam in a gasification zone at a gasification temperature between about 1000° F. and about 1500° F. and at a gasification pressure in excess of about 100 psia in the presence of a carbon-alkali metal catalyst and added hydrogen and carbon monoxide;

(b) withdrawing from said gasification zone an effluent gas containing methane, carbon monoxide, steam, hydrogen, carbon dioxide and hydrogen sulfide;

(c) treating said effluent gas for the removal of steam, particulates, hydrogen sulfide and carbon dioxide to produce a treated gas containing primarily carbon monoxide, hydrogen and methane;

(d) passing said treated gas to a separation zone wherein said treated gas is separated into a methane-rich gas stream and a gas stream containing primarily carbon monoxide and hydrogen;

(e) passing said gas stream containing primarily carbon monoxide and hydrogen produced in step (d) to a methanol synthesis zone wherein at least a portion of said carbon monoxide is reacted with at least a portion of said hydrogen in the presence of a methanol synthesis catalyst to form methanol;

(f) recovering methanol product from the effluent stream exiting said methanol synthesis zone, thereby leaving a gas comprised of carbon monoxide, hydrogen, methane and carbon dioxide;

(g) passing at least a portion of said gas stream comprised of carbon monoxide, hydrogen, methane and carbon dioxide produced in step (f) to a steam reforming zone wherein at least a portion of said methane in said gas stream is reacted with steam to produce hydrogen and carbon monoxide; and

(h) passing the effluent from said steam reforming zone into said gasification zone, thereby supplying said added hydrogen and carbon monoxide required in said gasification zone.

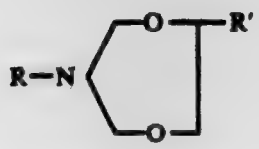
4,348,488

POLYURETHANES USING NOVEL N-SUBSTITUTED PERHYDRODIOXAZEPINES AS CATALYSTS

Robert L. Zimmerman, and Edward E. McEntire, both of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Sep. 8, 1981, Ser. No. 300,311
Int. Cl.[3] C08G *18/20*
U.S. Cl. 521—115 12 Claims

1. A method for producing a polyurethane which comprises reacting an organic polyisocyanate with an organic polyester polyol or polyether polyol in the presence of a catalytic amount of an N-substituted perhydrodioxazepine of the formula



where R is alkyl, alkoxyalkyl, aminoalkyl or aryl alkyl and R′ is hydrogen or lower alkyl.

4,348,489

DIELECTRICALLY MODIFIED POLYURETHANE FOAM MATERIAL

Morey Weisman, 147-23 Charter Rd., Jamaica, N.Y. 11435

Continuation of Ser. No. 329,754, Feb. 3, 1973, abandoned. This application Mar. 27, 1981, Ser. No. 248,228
Int. Cl.³ C08G 18/14
U.S. Cl. 521—130 4 Claims

1. The method of imparting acceptable dielectric heating properties to a flexible polyurethane foam which comprises dispersing in a polyurethane foam-forming reaction mixture, which is polyether or polyester based, a non-plasticized thermoplastic additive chosen from the class consisting of polyvinyl chloride and polyvinyl acetate, said additive having a dielectric loss index which exceeds 0.2 in a proportion which modifies the loss index of the polyurethane foam product to an extent causing the product to have a loss index approaching 0.2 to impart thereto an acceptable heating response in a high-frequency electric field, causing said reaction mixture having the additive dispersed therein to foam and expand, said additive having a gell point in the range of about 275° F. to 300° F. which is lower than the temperature level of the exothermic reaction which takes place when said mixture is caused to foam and expand to an extent causing the additive to be distributed throughout and to interlace with the cellular structure of the foam, said additive being in the form of particles which are generally spherical in form and relatively large in diameter to a degree sufficient to prevent entrapment of air in the mixture, and curing said foamed and expanded mixture to produce a hole-free foam product with dielectric properties having a dielectric loss index approaching 0.2 whereby the product may be welded, sealed, embossed or laminated to similar or dissimilar materials using standard dielectric heating techniques at power and frequency levels comparable to those usable with polyvinyl chloride materials.

4,348,490

FRICTION MATERIAL

Ono Ogiwara, Hanyu, Japan, assignor to Akebono Brake Industry Company, Ltd., Tokyo, Japan

Filed Jan. 23, 1981, Ser. No. 227,706
Claims priority, application Japan, Jan. 30, 1980, 55/9810
Int. Cl.³ C08K 00/00
U.S. Cl. 523—156 4 Claims

1. A friction material for braking, wherein a composition containing 5–60 wt.% of a ferrous fiber, 0.3–20 wt.% of a carbon fiber and/or a phenol fiber less than 10 mm in length and comprising 0.5–15 wt.% of an organic dust, 2–20 wt.% of an inorganic filler, 5–25 wt.% of lubricant, 0.2–10 wt.% of an antimony trioxide and 0–20 wt.% of a metallic powder is formed with 3–15 wt.% of a phenol binder under heat and pressure.

4,348,491

HEAT STABLE MOLDED PHENOLIC RESIN ARTICLE

Michael D. Bertolucci, and John R. Bartolomucci, both of Pittsfield, Mass., assignors to General Electric Company, Pittsfield, Mass.

Continuation-in-part of Ser. No. 123,406, Feb. 21, 1980, abandoned. This application Oct. 7, 1981, Ser. No. 309,376
Int. Cl.³ C08L 61/10
U.S. Cl. 523—214 18 Claims

1. A molded article exhibiting improved thermal stability consisting essentially of, in percent by weight, of:

(i) from about 20 to about 70 percent of an oil unmodified phenolic resin;

(ii) from about 3 to about 25 percent of an acrylonitrile-butadiene copolymer; and

(iii) from about 15 to about 70 percent of at least one silicate mineral.

4,348,492

STARCH ADDUCT ENCASEMENT OF PARTICULATE ELASTOMERS

Baruch S. Shasha, and Thomas P. Abbott, both of Peoria, Ill., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Oct. 30, 1980, Ser. No. 202,395
Int. Cl.³ C08L 3/04, 21/00
U.S. Cl. 524—52 10 Claims

1. A method of preparing a free-flowing, nonagglomerating, particulate elastomer composition from wet, coagulated particles of an emulsion elastomer material, wherein said particles have a pH in the range of about 6-8, said method comprising:

a. preparing a dispersion of said particles in a film-forming material comprising an aqueous paste of a starch-containing material (SCM) alkoxide, wherein said paste has a solids concentration of SCM alkoxide of from about 6-20% and wherein the relative amount of said SCM alkoxide with respect to said elastomer material is in the range of about 4% to about 100%, on a dry weight basis;

b. reacting said SCM alkoxide with a suitable bivalent cation selected from the group consisting of calcium, barium, and strontium to form an insolubilized coating around said particles;

c. removing excess water from said coated elastomer particles; and

d. recovering said free-flowing particulate elastomer composition.

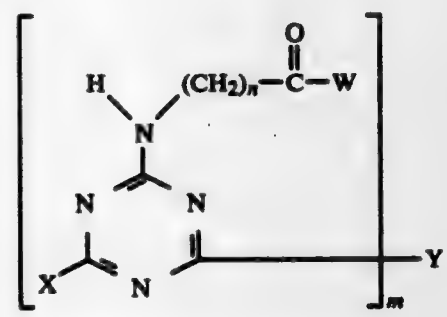
4,348,493

NOVEL LIGHT STABILIZERS FOR POLYMERS

Frank F. Loffelman, Bridgewater, N.J., assignor to American Cyanamid Company, Stamford, Conn.

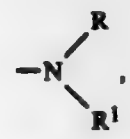
Filed Jul. 20, 1981, Ser. No. 284,885
Int. Cl.³ C07D 401/12, 401/14; C08K 5/34
U.S. Cl. 524—100 15 Claims

1. A compound of the formula (I)



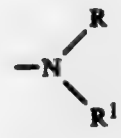
(I)

wherein W represents C_1–C_{20} alkoxy, or



wherein R and R^1 are the same or different and each represent hydrogen, C_1–C_{20} alkyl, or together form a piperidino, pyrrolidyl, or morpholino radical; n is an integer from 1 to 3; and m is an integer from 1 to 6;

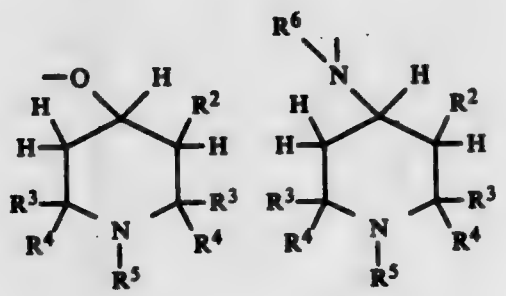
when m is 1, X and Y are the same or different and each represent chloro, bromo,



wherein R and R^1 are as previously defined, C_1–C_{12} alkoxy, C_1–C_{12} alkylthio,

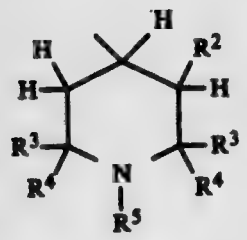


wherein n and W are as previously defined, or the radicals (II) or (III)



(II) (III)

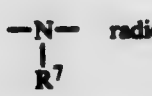
wherein R^2 represents hydrogen, C_1–C_8 alkyl, or benzyl; R^3 and R^4 independently represent C_1–C_8 alkyl, benzyl, or phenethyl, or together with the carbon to which they are attached form a C_5–C_{10} cycloalkyl; R^5 represents hydrogen, C_2–C_3 hydroxyalkyl, C_1–C_8 alkyl, hydroxyl, or oxyl; R^6 represents hydrogen, C_1–C_{20} alkyl, or the radical (IV)



(IV)

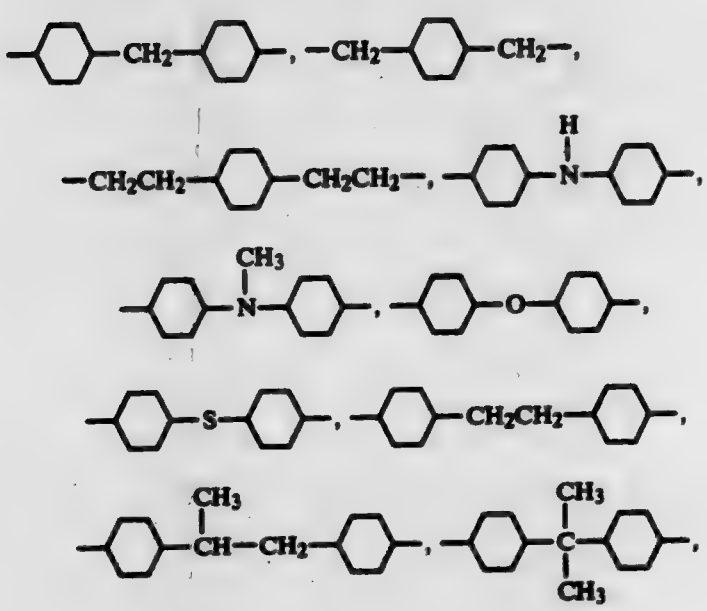
wherein R^2, R^3, R^4, and R^5 are as previously defined; with the proviso that at least one X or Y, must contain a piperidinyl moiety (IV); and

when m is an integer from 2 to 6, X is as previously defined; Y is an m-valent radical derived from a polyamine, polyalcohol, or polymercaptan containing a C_2–C_{20} alkylene chain, either straight-chained or branched, wherein the alkylene chain may be interrupted by oxy, thio, or

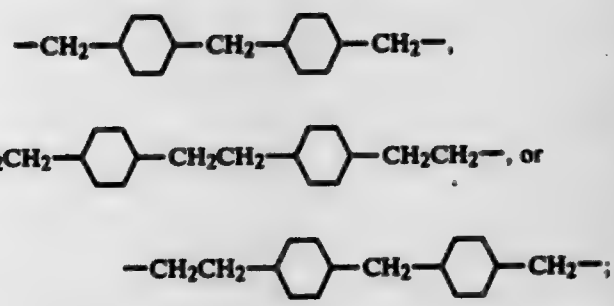


radicals,

wherein R^7 represents hydrogen, C_1–C_{20} alkyl, or the moiety (IV); C_5–C_{10} cycloalkylene,



-continued



C_6–C_{12} arylene; or C_8–C_{14} arylenedialkylene; with the proviso that at least one piperidinyl moiety (IV) is present in X or Y.

9. A method for stabilizing a polymer which is normally subject to degradation by ultraviolet radiation which comprises incorporating into said polymer an ultraviolet stabilizingly effective amount of a compound of claim 1.

4,348,494

LIQUID, SOLVENT-FREE, NON-TOXIC STABILIZERS AND VINYL CHLORIDE RESIN COMPOSITIONS CONTAINING SAME

Mahmoud Kheidr, and Irene A. E. Fraser, both of Toronto, Canada, assignors to Tenneco Chemicals, Inc., Piscataway, N.J.

Filed Jun. 10, 1980, Ser. No. 158,101
Claims priority, application Canada, Sep. 19, 1979, 335950
Int. Cl.³ C08K 5/15
U.S. Cl. 524—114 9 Claims

1. A liquid, solvent-free, non-toxic stabilizer for vinyl chloride resin compositions that comprises

(a) 40% to 90% by weight of a liquid epoxy compound that is an ester of epoxidized fatty acids having 14 to 22 carbon atoms;

(b) 1% to 10% by weight of a magnesium salt of an alkanoic acid having 6 to 26 carbon atoms;

(c) 1% to 10% by weight of a zinc salt of an alkanoic acid having 6 to 26 carbon atoms;

(d) 1% to 10% by weight of a calcium salt of an alkanoic acid having 6 to 26 carbon atoms;

(e) 1% to 10% by weight of thiodipropionic acid; and

(f) 1% to 30% by weight of an organic phosphite selected from the group consisting of secondary and tertiary alkyl, aryl, and alkyl aryl phosphites in which the alkyl groups have 3 to 18 carbon atoms and the aryl groups are phenyl or alkylphenyl in which each alkyl group has 4 to 12 carbon atoms.

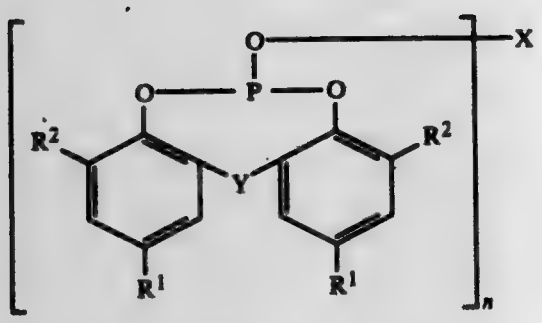
4,348,495

PHOSPHOROUS ACID ESTERS AND THEIR USE FOR STABILIZING POLYAMIDES

Hans-Josef Buysch; Bert Brassat; Erich Einers, and Karl H. Hermanns, all of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 68,210, Aug. 20, 1979, Pat. No. 4,252,750.
This application Sep. 22, 1980, Ser. No. 189,719
Claims priority, application Fed. Rep. of Germany, Aug. 24, 1978, 2837027
Int. Cl.³ C08K 5/52
U.S. Cl. 524—117 7 Claims

1. A polyamide composition containing 0.02 to 5% by weight of a stabilizer of the formula:

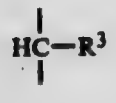


wherein

R^2 is a benzyl, α-methylbenzyl, α,α-dimethyl benzyl, cyclopentyl or cyclohexyl group;

R^1 is an alkyl, a cycloalkyl radical, an aralkyl or an aryl group;

Y is a sulphur atom or a group



in which R^3 is a hydrogen atom, an alkyl, cyclohexyl or cyclohexenyl group;

X is a hydrogen atom, a single-bond to four-bond straight-chain or branched-chain aliphatic group, an aralkyl group or an aromatic group, each of which groups may contain an olefinic double bond or a hetero atom selected from N, O and S and be unsubstituted or substituted by a hydroxyl, alkoxy having 1 to 4 carbon atoms, amino, alkylamino having 1 to 8 carbon atoms, dialkylamino having 1 to 8 carbon atoms in each alkyl, —SH, alkyl mercapto having 1 to 4 carbon atoms, alkyl having 1 to 12 carbon atoms, aralkyl having 7 to 12 carbon atoms, aryl having 6 to 10 carbon atoms or aroxy having 6 to 10 carbon atoms; and

n is an integer of from 1 to 4, with the proviso that when X is a hydrogen atom n is 1.

4,348,496

CARBOXYLATED MONOMER/VINYL CHLORIDE/VINYL ACETATE TERPOLYMER EMULSIONS, PROCESS OF PRODUCTION AND USE

Rudolf Puhe; Werner Frey, and Günter Weinhold, all of Burghausen, Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Jan. 26, 1981, Ser. No. 228,453

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1980, 3009148

Int. Cl.³ C08K *5/11, 5/12, 5/52*

U.S. Cl. 524—127 **7 Claims**

1. A paste capable of being gelled at low temperatures consisting essentially of:

100 parts by weight of a pastable emulsion polymer comprised of carboxylated monomer/vinyl chloride/vinyl acetate terpolymer having improved strength of adhesion produced by emulsion copolymerization and containing, per polymer weight,

from 60% to 98% by weight of vinyl chloride monomer units,

from 1% to 29% by weight of vinyl acetate monomer units, and

from 1% to 15% by weight of carboxyl-containing monomer units selected from the group consisting of olefinically-unsaturated monocarboxylic acids, monoallyl esters of non-ethylenically-unsaturated dicarboxylic acids and monovinyl esters of non-ethylenically-unsaturated dicarboxylic acids, and recovered by spray drying or roll drying,

from 10 to 100 parts by weight of at least one plasticizer selected from the group consisting of esters of alkanols having from 6 to 18 carbon atoms or phenols or alkylphenols having from 1 to 18 carbon atoms in the alkyl with dicarboxylic acids or phosphoric acid,

from 0 to 10 parts by weight of heat stabilizers and

from 0 to 10 parts by weight of additives selected from the group consisting of dyestuffs, pigments, fillers and UV-absorbers.

4,348,497

ACRYLIC RESIN WITH ANTIPLASTICIZER

Jacques M. L. Berghmans, Lint, Belgium, assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 20, 1981, Ser. No. 245,929

Int. Cl.³ C08L *61/28*

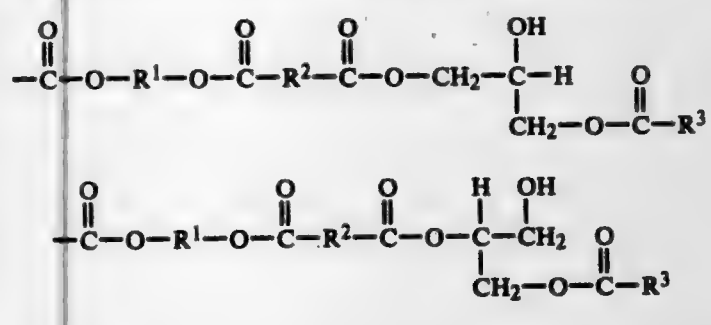
U.S. Cl. 524—293 **4 Claims**

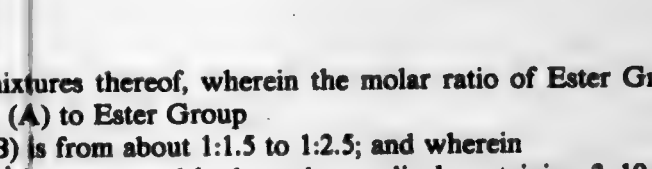
1. A liquid coating composition comprising solvents and

(a) 93–50%, by weight, of a polymer having a backbone of polymerized ethylenically unsaturated monomers and having ester groups attached directly to its backbone, said ester groups comprising about 10 to 75 percent of the total weight of the polymer and consisting essentially of Ester Group (A)



and Ester Group (B) selected from the group consisting of





or

mixtures thereof, wherein the molar ratio of Ester Group (A) to Ester Group

(B) is from about 1:1.5 to 1:2.5; and wherein

R^1 is a saturated hydrocarbon radical containing 2–10 carbon atoms;

R^2 is selected from the group consisting of alkylene, vinylene, aromatic, carbocyclic and heteroradicals, and

R^3 is selected from the group consisting of a saturated aliphatic hydrocarbon radical having one to 26 carbon atoms and an ethylenically unsaturated aliphatic hydrocarbon radical having 12 to 18 carbon atoms;

(b) 5–50% by weight, based on the weight of the polymer, of a melamine formaldehyde resin which has been at least partially reacted with an aliphatic monohydric alcohol having from 1–4 carbon atoms;

(c) 2–15%, by weight, based on the weight of the polymer, of pentaerythritol tetrabenzoate.

4,348,498

ACCELERATED HARDENING OF UNSATURATED POLYESTER RESINS

Hiroyoshi Kamio, Yokohama; Yukio Ogino, Ageo, and Kouichi Nakamura, Urawa, all of Japan, assignors to Nippon Mining Company, Limited, Tokyo, Japan

Filed May 9, 1980, Ser. No. 148,355

Claims priority, application Japan, May 9, 1979, 54-56585

Int. Cl.³ C08L *67/06*

U.S. Cl. 525—13 **14 Claims**

1. In a process for hardening an unsaturated polyester resin using an organic peroxide as a hardener, a method for accelerating the hardening comprising adding to said resin and hardener, (a) a member selected from the group consisting of a

zirconium chelate compound, a titanium chelate compound and a mixture thereof and (b) a member selected from the group consisting of a cobalt compound, a manganese compound and a mixture thereof, as a hardening accelerator.

4,348,499

HEAT RESISTANT LOW SHRINK POLYESTER RESINS

Donald L. Nelson, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 82,245, Oct. 5, 1979, abandoned. This application Aug. 28, 1980, Ser. No. 182,284

Int. Cl.[3] C08G 63/52; C08L 67/06

U.S. Cl. 525—49 14 Claims

1. A polyester resin which has lower shrinkage during curing and excellent thermal stability which is the product produced by the steps comprising

(A) reacting an alpha, beta-ethylenically unsaturated dicarboxylic anhydride with from 0.1 to 0.9 moles of water per mole of anhydride at a temperature ranging from 30° C. to 150° C. for a period of time to complete the anhydride hydrolysis,

(B) adding about 0.2 to 1.3 moles of a C_{10} hydrocarbon concentrate per mole of anhydride to the reaction mixture from step A,

(C) heating the mixture from step B at a temperature ranging from 80° to 130° C. for a period of time sufficient to carry out the addition reaction,

(D) heating the reaction product of step C at a temperature ranging from 140° to 185° C. for a period of time to complete the Diels-Alder reaction,

(E) adding about 0.5 to 1.5 moles of a polyol per mole of anhydride, and

(F) heating the mixture of step E at a temperature range from 140° C. to 215° C. for a time sufficient to produce a polyester resin.

4,348,500

POLYARYLATE COMPOSITIONS HAVING IMPROVED HYDROLYTIC STABILITY

Lloyd M. Robeson, Whitehouse Station, N.J., and Ted T. Szabo, Westport, Conn., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Dec. 24, 1980, Ser. No. 219,872

Int. Cl.[3] C08L 63/00

U.S. Cl. 525—65 46 Claims

1. A molding composition comprising a blend of:

(a) from about 25 to about 90 weight percent of a polyarylate derived from a dihydric phenol and an aromatic dicarboxylic acid,

(b) from about 10 to about 75 weight percent of a polyester derived from an aliphatic or cycloaliphatic diol and at least one aromatic dicarboxylic acid, and

(c) from about 0.1 to about 5.0 weight percent of an epoxide having at least two epoxy groups per molecule and selected from the group consisting of

1. Polyglycidyl ethers and esters of a polyhydric phenol or other active hydrogen containing compounds
2. Cycloaliphatic epoxides, and
3. Copolymers of glycidyl acrylate or glycidyl methacrylate and mixtures thereof.

4,348,501

THERMOPLASTIC COMPOSITIONS OF EPICHLOROHYDRIN RUBBER AND CARBOXY-ETHYLENE POLYMER RESIN

Aubert Y. Coran, and Raman Patel, both of Akron, Ohio, assignors to Monsanto Company, St. Louis, Mo.

Filed Apr. 27, 1981, Ser. No. 258,186

Int. Cl.[3] C08L 15/02, 63/00, 23/08

U.S. Cl. 525—179 11 Claims

1. An elastoplastic composition comprising a blend of carboxy containing ethylene polymer (CEP) resin comprising at least 50 mole percent of ethylene, in an amount sufficient to impart thermoplasticity to the composition, and cross-linked epichlorohydrin rubber in the form of dispersed particles of a size small enough to maintain thermoplasticity of the composition and which rubber is present in an amount sufficient to impart rubberlike elasticity so that the composition has a tension set value of about 50% or less, said cross-linked epichlorohydrin rubber being obtained by dynamic vulcanization of the blend or by vulcanization of the rubber prior to forming the blend.

4,348,502

THERMOPLASTIC COMPOSITIONS OF NYLON AND ETHYLENE-VINYL ACETATE RUBBER

Aubert Y. Coran, and Raman Patel, both of Akron, Ohio, assignors to Monsanto Company, St. Louis, Mo.

Filed Jan. 23, 1981, Ser. No. 227,893

Int. Cl.[3] C08L 77/02, 77/00

U.S. Cl. 525—183 12 Claims

1. A thermoplastic composition comprising a blend of about 15 to 75 parts by weight of nylon and about 85 to 25 parts by weight of cured EVA rubber per 100 parts by weight of nylon and said EVA rubber combined in which the EVA rubber is an essentially amorphous copolymer of ethylene and 40 to 70 weight percent of vinyl acetate and is cured to the extent that the EVA rubber is at least 90 percent insoluble in toluene at room temperature.

4,348,503

ADHESIVE COMPOSITION

Andrew G. Bachmann, Burlington Rd., Harwinton, Conn. 06791

Filed Jun. 4, 1980, Ser. No. 156,475

Int. Cl.[3] C08L 75/12; C05L 75/04

U.S. Cl. 525—455 14 Claims

1. As a nonanaerobic adhesive composition, the combination of an adhesive and a latent catalyst system, said adhesive comprising:

a. about 40 to 90 parts per hundred of an acrylic ester monomer capable of free-radical polymerization, and

b. about 60 to 10 parts per hundred of a monomeric polyacrylate ester prepolymer having terminal acrylate radicals linked by at least two divalent polyurethane or polyureide groups, said acrylic ester monomer and polyacrylate ester prepolymer producing, upon polymerization thereof, an adhesive solid;

said catalyst system comprising, in amounts based upon the weight of said adhesive:

c. about 1 to 10 parts per hundred of an aromatic perester free-radical precursor,

d. about 0.5 to 10 parts per hundred of an organic acid capable of cyclic tautomerism, and

e. up to about 500 parts per million of a soluble compound of a transition metal cure accelerator;

said composition being free from any organic hydroperoxide catalyst.

4,348,504

METHOD FOR MAKING BLOCK SILOXANE COPOLYMERS

Nora Butler; Edward S. Jessop, and John R. Kolb, all of Livermore, Calif., assignors to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Feb. 25, 1981, Ser. No. 238,235

Int. Cl.[3] C08G 67/00, 77/08, 77/32

U.S. Cl. 525—477 11 Claims

1. A method for synthesizing polysiloxane polymers comprising:

(a) interacting the following to produce a first reaction product,

(i) a diorganocyclosiloxane selected from the group consisting of $(Me_2SiO)_4$, $(\phi_2SiO)_4$, $(MeViSiO)_4$, $(Et_2SiO)_3$,

($\phi_2SiO)_3$, $(MeViSiO)_3$, $(Et\phi SiO)_3$, $SiO\phi_2SiOMe_2SiO$, and $SiO\phi_2SiOMeViSiO$,

(ii) an organosilylamine having the general formula,

$$Me_2N(SiR_2O)_nSiMe_2NMe_2$$

wherein each R radical is independently selected from the group consisting of —Me, —Et, —Vi, —ϕ, and mixtures thereof, and n is an integer from 2 to 12 inclusive, and

(iii) a catalyst of the general formula

$$Me_4N^{+-}O(SiMe_2O)_nH$$

wherein n is approximately 4; and

(b) reacting the reaction product of step (a) with a silanediol selected from the group consisting of $Si\phi_2(OH)_2$, $O(Si\phi_2OH)_2$ and $HO(SiMe_2O)_nH$ wherein n is a an integer from 15 to 20 inclusive to produce a second reaction product.

4,348,505

ADDUCTS FROM AMINES AND DI- AND POLYEPOXIDES

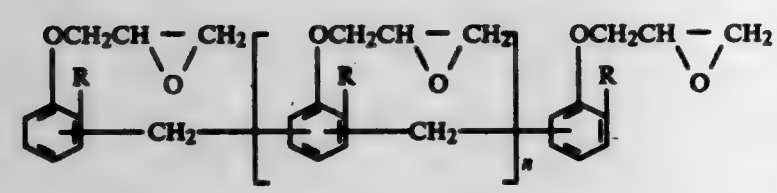
Marianne Di Benedetto, Pleasantville, N.Y., and John A. Gannon, Danbury, Conn., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 171,520, Jul. 23, 1980, abandoned. This application Nov. 28, 1980, Ser. No. 210,890
Int. Cl.³ C08G *59/64, 59/14*
U.S. Cl. 525—504 10 Claims

1. A curing agent for epoxy resins comprising the adduct, free of epoxy groups, obtained from the reaction of

(a) an amine;

(b) a polyepoxide resin having a functionality greater than two and being either (i) the epoxidation product of cresol novolac resins corresponding to the formula



wherein R is CH_3 and n is 0.2–3.4, or

(ii) triglycidyl p-aminophenol; and, optionally, an accelerator for said curing operation and a solvent for said curing agent; said amine being present in excess relative to said polyepoxide resin.

4,348,506

PROCESS FOR CURING VINYL ESTER RESINS AND COMPOSITION USEFUL THEREIN

Kalyan K. Gangali, Broken Arrow, Okla., and David A. Wilson, Richwood, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 64,235, Aug. 6, 1979, abandoned. This application Jan. 19, 1981, Ser. No. 226,343
Int. Cl.³ C08L *63/00, 65/10*
U.S. Cl. 525—512 13 Claims

1. In the method for suppressing foam generation during the cure of a vinyl ester resin with a ketone peroxide initiator and a cobalt salt promoter, the improvement wherein said promoter is selected from the group consisting of (a) a complex of equivalent amounts of a cobalt salt and an aldimine chelating agent which is the reaction product of equivalent amounts of salicylaldehyde and a polyamine or (b) cobalt naphthenate and about an equivalent amount of aldimine chelating agent which is the reaction product of salicylaldehyde and a polyamine or (c) a combination of (a) and (b).

4,348,507

CATALYST COMPONENT FOR USE IN THE POLYMERIZATION OF α-OLEFINS AND A METHOD OF USING THE SAME

Hiroshi Ueno, Namekawa; Masafumi Imai; Naomi Inaba, both of Ooi; Makoto Yoda, all of Kawagoi, and Shozo Wada, Zushi all of Japan, assignors to Toa Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 29,083, Apr. 11, 1979, Pat. No. 4,242,231. This application Jul. 28, 1980, Ser. No. 173,214
Claims priority, application Japan, Apr. 12, 1978, 53/42148
Int. Cl.³ C08F *4/02, 10/06*
U.S. Cl. 526—125 5 Claims

1. In a process for the stereoregular polymerization of α-olefins, wherein an α-olefin is contacted, under α-olefin (co)-polymerization conditions, with a catalyst system comprising a titanium catalyst component and an organo aluminum catalyst component prepared by mixing an organo aluminum compound and an organic acid ester, the improvement comprising:

the titanium catalyst component being obtained by co-grinding, in combination, a magnesium halide, a tetravalent titanium halide in the amount of from about 0.1 to about 10 percent by weight as supported titanium metal in the resulting titanium-containing solid product, from about 0.1 to about 10 moles per 1 gram atom of supported titanium metal of an organic acid ester and an organohalogen compound in proportion of 1 to 100 percent by weight to the magnesium halide, said organohalogen compound being one of mono- or polyhalo-substituted saturated aliphatic or saturated alicyclic hydrocarbons having from 1 to 20 carbon atoms.

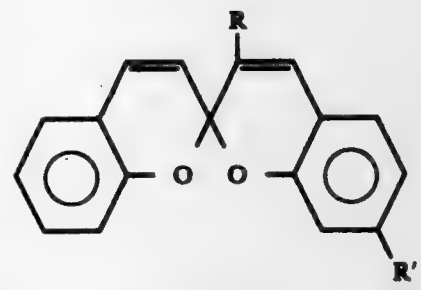
4,348,508

3-SUBSTITUTED-7-ALKOXY-2,2'-SPIROBI[2H-1-BENZOPYRANS]

John E. Herweh, Lancaster; Thomas B. Garrett, Lititz, and Alan B. Magnusson, Lancaster, all of Pa., assignors to Armstrong World Industries, Inc., Lancaster, Pa.

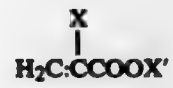
Filed Jun. 25, 1981, Ser. No. 277,175
Int. Cl.³ C08F *234/02;* C07D *311/96*
U.S. Cl. 526—268 5 Claims

1. A spirobipyran compound having the formula



wherein R represents C_1–C_{12} alkyl, alkylene aryl, aryl or unsaturated alkyl and R′ represents alkoxy.

4. A copolymer produced by the free radical polymerization of a spirobipyran compound of claim 1 and an acrylate of the formula



wherein X is H or CH_3 and X′ is H or a straight or branched alkyl group having from 1 to 12 carbon atoms.

4,348,509

ALKOXYALKANOIC ACID PREPARATION

Andrea Sanders, Katy, Tex., and Leo Kim, Modesto, Calif., assignors to Shell Oil Company, Houston, Tex.

Filed Jul. 6, 1981, Ser. No. 280,737
Int. Cl.³ C07C 51/235
U.S. Cl. 562—538 7 Claims

1. A process for preparing an alkoxyalkanoic acid of the formula:

$$RO(CH_2CHR'O)_n CH_2CO_2H$$

wherein R is an alkyl group of 1 to about 22 carbon atoms, R' is hydrogen or methyl or a mixture thereof (on the individual molecule) and n is an integer of from 1 to about 12 by reacting the corresponding alkoxyalkanol with oxygen at a temperature of from about 50° to about 110° C. in the presence of a catalyst comprising platinum supported on a macroreticular crosslinked polystyrene/divinylbenzene resin having a surface area ranging from about 700 to about 900 m^2/g.

4,348,510

LINEAR BLOCK COPOLYESTERS HAVING IMPROVED SLIP CHARACTERISTICS

Max H. Keck, Cuyahoga Falls, and Paul R. Glasings, Wadsworth, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jun. 12, 1981, Ser. No. 273,160
Int. Cl.³ C08G 77/04
U.S. Cl. 528—26 8 Claims

1. A random, linear, thermoplastic block copolyester, extruded and molded articles of which exhibit improved clarity and nonsticking characteristics when tested in accordance with ASTM test D-1894, consisting essentially of the polymeric reaction product of a mixture of reactants comprising

(A) at least one reactant selected from the groups of reactants consisting of

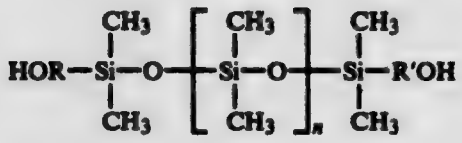
(1) aromatic dicarboxylic acids or the C_1 to C_4 dialkyl esters thereof and

(2) aliphatic dicarboxylic acids or the C_1 to C_4 dialkyl esters thereof

wherein the reactant selected from group (1) constitutes from 100 to 50 mol percent of the total mols of reactant (A) and the reactant selected from group (2) constitutes from 0 to 50 mol percent of the total mols of reactant (A);

(B) from about 100 to about 300 mol percent, based on the total mols of reactant (A) of at least one reactant selected from the group consisting of alkylene glycols containing from 2 to 10 carbon atoms; and

(C) from about 0.75 to about 3.50 weight percent, based on the weight of the polymeric reaction product, of a dihydroxy terminated polydimethylsiloxane block copolymer of the general formula



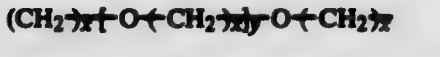
(I)

where n is an integer ranging from about 8 to about 15 and R and R' are divalent polymethylene oxide radicals corresponding to the general formulae



(II)

and



(III)

respectively wherein x is an integer ranging from about 2 to about 8 and y is an integer ranging from about 8 to about 15 and wherein said dihydroxy terminated polymethylsiloxane block copolymer has a molecular weight ranging from about 1600 to about 5500.

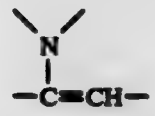
4,348,511

PROCESS FOR THE PREPARATION OF CROSSLINKED, UNSATURATED POLYMERS AND THE POLYMERS THUS OBTAINED

Theobald Haug, Frenkendorf, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Apr. 30, 1981, Ser. No. 259,322
Claims priority, application Switzerland, May 7, 1980, 3554/80
Int. Cl.³ C08G 18/34
U.S. Cl. 528—72 14 Claims

1. A process for the preparation of crosslinked unsaturated polymers, which comprises reacting a mixture, containing substantially stoichiometric amounts of a di-isocyanate or polyisocyanate and of a polyol, with a monomeric or oligomeric β-aminocrotonic acid ester or β-aminocrotononitrile or β-aminocrotonamide, the ratio of the isocyanate component to the β-aminocrotonic acid derivative component being chosen so as to provide not less than one isocyanate group per molecular group of the formula



of the particular β-aminocrotonic acid derivative.

4,348,512

POLYISOCYANATE REACTION PRODUCTS OF DIISOCYANATES AND S-TRIAZINE DERIVATIVES CONTAINING AMINO GROUPS, AND POLYMERS THEREFROM

Gerhard Grögler, Leverkusen, and Holger Meyborg, Odenthal-Gloebusch, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 930,611, Aug. 3, 1978, Pat. No. 4,255,570.
This application Nov. 12, 1980, Ser. No. 206,115
Claims priority, application Fed. Rep. of Germany, Aug. 19, 1977, 2737402
Int. Cl.³ C08G 18/77
U.S. Cl. 528—73 1 Claim

1. A process for the production of polyurethane resins comprising reacting

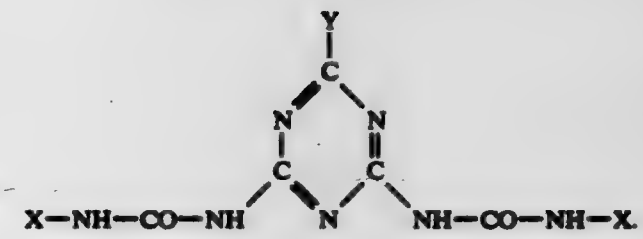
(A) polyisocyanates with

(B) compounds cntaining active hydrogen atoms,

(C) fillers optionally in the presence of

(D) catalysts and other known additives

wherein said fillers comprise polyisocyanates of the general formula



wherein

X represents a radical of the type obtained by removing the more reactive isocyanate group from an organic diisocyanate containing isocyanate groups of different reactivity; and

Y represents a chlorine, bromine, C_1–C_8 alkyl, C_1–C_8 alkoxy, C_6–C_{10} aryl, C_6–C_{10} aroxy radical or a radical corresponding to the general formula: —NH—CO—NH—X.

4,348,513

INJECTION MOLDABLE AMIDE-IMIDE COPOLYMERS AND TERPOLYMERS

Robert G. Keske, and James R. Stephens, both of Naperville, Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

PCT No. PCT/US81/00077, § 371 Date Jan. 7, 1981, § 102(e) Date Jan. 7, 1981
Continuation-in-part of Ser. No. 112,651, Jan. 16, 1980, Pat. No. 4,291,149. This PCT application Jan. 7, 1981, Ser. No. 261,127
The portion of the term of this patent subsequent to Sep. 22, 1998, has been disclaimed.
Int. Cl.³ C08G 73/14
U.S. Cl. 528—188 47 Claims

1. A process for the preparation of tailored linear injection moldable polyamide-imide copolymers and terpolymers containing both aromatic and aliphatic moieties derived from aromatic and aliphatic diamines which process comprises reacting at a temperature of about 50° to 700° F. fully or partially acylated aromatic or aliphatic diamines or mixtures of fully or partially acylated aromatic and aliphatic diamines with tricarboxylic acid anhydride compounds and aliphatic or aromatic diamines or mixtures of aromatic and aliphatic diamines wherein the ratio of the total moles of fully or partially acylated diamines and unacylated diamines to the tricarboxylic acid anhydride compound is about 1:1 and about 40 to 100% of the total amine functionality is acylated.

4,348,514

POLYAMINES CONTAINING UREA GROUPS

Wilfried Löbach, Bonn; Günter Kolb; Wolfgang Lehmann, both of Leverkusen; Günther Cramm, Cologne; Friedhelm Müller, Odenthal, and Janos Muszik, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 5, 1980, Ser. No. 156,832
Claims priority, application Fed. Rep. of Germany, Jun. 25, 1979, 2925567
Int. Cl.³ C08G 73/00
U.S. Cl. 528—367 6 Claims

1. A non-crosslinking, water-soluble polyamine obtained by reacting

(A) a basic polyurea which has been prepared by condensation of a urea with a polyamine containing at least three amino groups, of which at least one is a tertiary amino group, or with a mixture of such a polyamine with an aliphatic, araliphatic, cycloaliphatic or heterocyclic polyamine containing two primary or two secondary amino groups or one primary and one secondary amino group,

(B) a polyalkylenepolyamine of the formula



in which

R denotes H or CH_3, the indices y are in each case identical or different and denote the number 0 or 1 and

x denotes a number from 4 to 2,500,

or a mixture of such a polyalkylenepolyamine with an amine of the same formula,

but in which

x denotes a number from 1 to 3,

and

(C) a compound which is polyfunctional towards amino groups.

4,348,515

HEAT ACTIVATED THIURAM CONTAINING CURABLE COMPOSITIONS

Charles R. Morgan, Brookeville, Md., assignor to W. R. Grace & Co., New York, N.Y.

Filed Sep. 17, 1980, Ser. No. 187,874
Int. Cl.³ C08G 75/00; C08J 9/28; C08K 5/43
U.S. Cl. 526—204 6 Claims

1. A heat activated composition comprising

(1) an ethylenically unsaturated compound containing at least 2 carbon-to-carbon double bonds and

(2) a thiuram.

4,348,516

MICROBIOLOGICAL METHYLATION OF AMINOGLYCOSYL-AMINOGLYCOSIDES

Bong K. Lee; Gerald H. Wagman, both of East Brunswick; Dinanath F. Rane, Emerson; Joseph A. Marquez, Montclair, and Peter J. L. Daniels, Cedar Grove, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Division of Ser. No. 51,790, Jun. 25, 1979, Pat. No. 4,234,685. This application Jun. 12, 1980, Ser. No. 158,850
Int. Cl.³ A61K 31/71; C07H 15/22
U.S. Cl. 536—10 8 Claims

1. A compound selected from the group consisting of (a) the 3″-N-methyl-4″-C-methyl analogs of tobramycin, kanamycin A, kanamycin B, and dibekacin, (b) the 5-epi, the 5-deoxy, 5-epiamino-5-deoxy, 5-epizido-5-deoxy and 5-epifluoro-5-deoxy analogs of 3″-N-methyl tobramycin, 3″-N-methyl-4″-C-methyl tobramycin, 3″-N-methyl kanamycin A, 3″-N-methyl-4″-C-methyl kanamycin B, 3″-N-methyl dibekacin, 3″-N-methyl-4″-C-methyl dibekacin and (c) the 1-N-X analogs of compounds of (a) and (b), wherein X is a (C_1–C_8) alkyl or a (C_1–C_8) acyl group which may bear substituents selected from the group consisting of amino, (C_1–C_8) lower alkylamino and hydroxy, with the proviso that not more than one substituent can be on the same carbon atom—and to the pharmaceutically acceptable non-toxic acid addition salts thereof.

4,348,517

PROCESS AND FINISH COMPOSITION FOR PRODUCING ADHESIVE ACTIVE POLYESTER YARN

Kalidas Chakravarti, Richmond, Va., assignor to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Dec. 9, 1980, Ser. No. 214,554
Int. Cl.³ B05D 1/24, 1/38, 3/12; D06M 13/18
U.S. Cl. 523—425 28 Claims

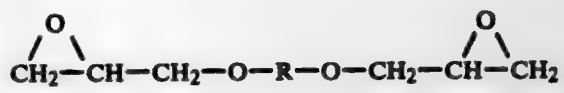
1. A fiber finish composition, comprising:

(a) about 50 to 79 weight percent of a solvent, and

(b) about 21 to 50 weight percent of an oil portion, comprising:

(1) about 6 to 36 weight percent of a triglycidyl ether of glycerol;

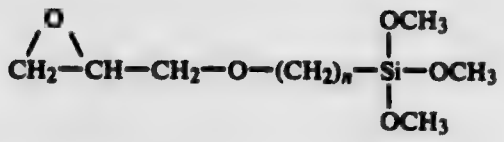
(2) about 6 to 22 weight percent of a diglycidyl ether having a Brookfield viscosity at 25° C. of 10 to 500 centipoises and having the structural formula



wherein R is alkylene or arylene;

(3) about 28 to 82 weight percent of ethoxylated castor oil; and

(4) about 6 to 22 weight percent of an epoxy silane having the structural formula



wherein n=2 to 5.

4,348,518

CEPHALOSPORINS

Marc Montavon, and Roland Reiner, both of Basel, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

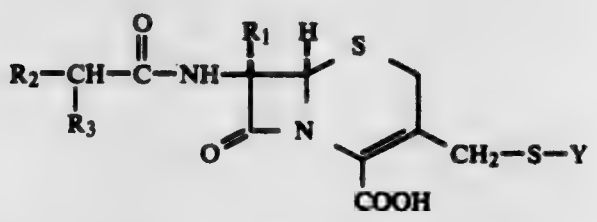
Division of Ser. No. 586,677, Jun. 13, 1975, Pat. No. 4,091,211. This application Jan. 30, 1978, Ser. No. 873,446

Claims priority, application Switzerland, May 5, 1974, 5743/75; May 29, 1974, 6915/75; Jun. 21, 1974, 8537/74

Int. Cl.[3] C07D *501/36, 501/18*

U.S. Cl. 544—026 13 Claims

1. A compound of the formula:



wherein Y is a 5,6-dioxo-as-triazin-3-yl group where at least one nitrogen atom in said triazinyl group is substituted with a member selected from the group consisting of lower alkyl, lower alkenyl, lower alkynyl, cycloalkyl, hydroxyl, lower alkoxy, amino, mono(lower alkyl)amino, di(lower alkyl)amino, formyl lower alkanoyl, lower alkanoylamino, carbamoyl, mono(lower alkyl)aminocarbonyl and di(lower alkyl-)aminocarbonyl; R_1 is hydrogen or methoxy, R_3 is hydrogen, hydroxy, hydroxymethyl, amino, azido, carboxy or sulfo; R_2 is cyano, or a substituent selected from the group consisting of pyridylthio, alkyl containing from 1 to 6 carbon atoms, alkenyl containing from 2 to 6 carbon atoms, saturated or unsaturated non-aromatic cyclic hydrocarbon containing from 3 to 6 carbon atoms, phenyl, phenylalkyl or phenoxyalkyl wherein said substituent can be unsubstituted or substituted with one or more members selected from the group consisting of hydroxy, halo, lower alkyl or lower alkoxy; with the proviso that when R_2 is pyridylthio, R_3 is hydrogen; and pharmaceutically acceptable salts thereof and hydrates thereof.

4,348,519

THIAZINE DERIVATIVES

Rudolf Pfister, Basel, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

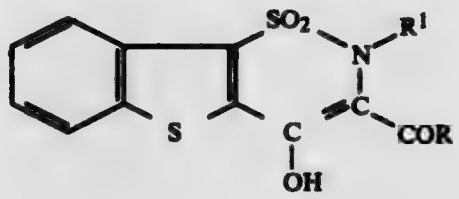
Filed May 16, 1980, Ser. No. 150,507

Claims priority, application Switzerland, Jun. 13, 1979, 5528/79; Mar. 25, 1980, 2325/80

Int. Cl.[3] C07D *513/04*

U.S. Cl. 544—33 6 Claims

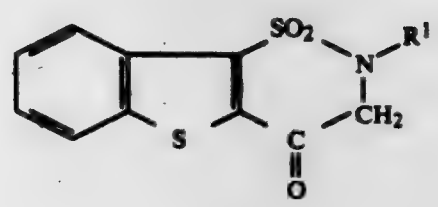
1. A compound of the formula



II

wherein R^1 is lower alkyl and R is a group of the formula $-NR^3R^4$ wherein R^3 and R^4 each is hydrogen or lower alkyl or together with the nitrogen atom is a 5-membered to 7-membered saturated heterocyclic group which can contain an oxygen atom.

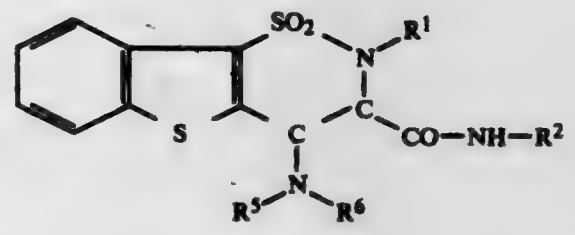
3. A compound of the formula



VI

wherein R^1 is lower alkyl.

5. A compound of the formula



VIII

wherein R^1 is lower alkyl and R^2 is 2-thiazolyl, 4-methyl-2-thiazolyl, 4,5-dimethyl-2-thiazolyl, 5-methyl-1,3,4-thiadiazolyl, 2-pyrazinyl, 2-pyrimidinyl, 1,2,4-triazin-3-yl, 2-pyridyl, 3-pyridyl, 4-pyridyl, 3-methyl-2-pyridyl, 4-methyl-2-pyridyl, 5-methyl-2-pyridyl, 6-methyl-2-pyridyl, 4,6-dimethyl-2-pyridyl, 5-isoxazolyl, 5-methyl-3-isoxazolyl, 3,4-dimethyl-5-isoxazolyl, 2,6-dimethyl-4-pyrimidinyl, 1,2,3,4-tetrazol-5-yl; phenyl; phenyl substituted by halogen, hydroxy, lower alkyl, trifluoromethyl, nitro or lower alkoxy; benzyl; or benzyl substituted by halogen, hydroxy, lower alkyl, trifluoromethyl, nitro or lower alkoxy; R^5 and R^6 each is lower alkyl or together with the nitrogen atom is pyrrolin-1-yl, pyrrolidin-1-yl, piperidino, morpholino or 4-(lower alkyl)-piperazin-1-yl.

4,348,520

METHOD FOR THE PREPARATION OF MELAMINE

Pierre G. M. B. Bruls, Born; Johannes G. van Hinsberg, Ulestraten; Rudolf van Hardeveld, Geleen, and Dominique J. J. S. M. Moreau, Sittard, all of Netherlands, assignors to Stamicarbon, B.V., Geleen, Netherlands

Filed May 2, 1980, Ser. No. 146,181

Claims priority, application Netherlands, May 3, 1979, 7903473

Int. Cl.[3] C07D *251/60*

U.S. Cl. 544—201 9 Claims

1. In a method for the preparation of melamine comprising:

a reaction zone wherein melamine is formed by the conversion of urea and/or thermal decomposition products thereof in a fluidized bed of catalytically active material in the presence of a gas mixture containing ammonia and carbon dioxide, and

a desublimation zone wherein said melamine is desublimated from a melamine containing gas mixture by a dry-capture method leaving a desublimator off-gas mixture containing ammonia, carbon dioxide and gaseous impurities,

the improvement wherein at least a major portion of said desublimator off-gas mixture is compressed and recirculated to said reaction zone as fluidizing gas for the bed of catalytically active material, without intervening treatment to remove said gaseous impurities.

4,348,521

SUBSTITUTED PYRIDOQUINOXALINE-6-CARBOXYLIC ACIDS AND DERIVATIVES THEREOF

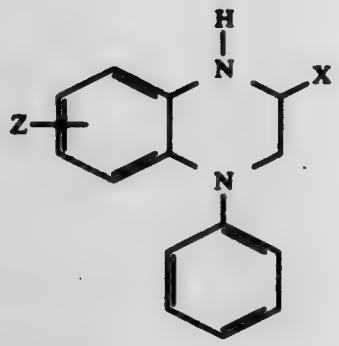
John F. Gerster, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Apr. 16, 1981, Ser. No. 254,973

Int. Cl.[3] C07D *241/06, 487/06, 487/16, 31/495*

U.S. Cl. 544—353 1 Claim

1. A compound of the formula



wherein X is hydrogen or methyl; and Z is hydrogen, halogen, lower alkyl or lower alkoxy.

4,348,522

N-(PHOSPHONACETYL)-L-ASPARTIC ACID SALTS WITH PIPERAZINE, CYCLOHEXYLAMINE AND CALCIUM

Robert J. Schultz, Amherst, and Fred W. Starks, Kenmore, both of N.Y., assignors to Starks Associates, Inc., Buffalo, N.Y.

Division of Ser. No. 114,624, Jan. 23, 1980, Pat. No. 4,267,126, which is a division of Ser. No. 954,579, Oct. 25, 1978, Pat. No. 4,215,070, which is a continuation-in-part of Ser. No. 932,501, Aug. 10, 1978, Pat. No. 4,179,464, which is a continuation-in-part of Ser. No. 851,382, Nov. 14, 1977, abandoned. This application May 8, 1981, Ser. No. 261,915

Int. Cl.³ C07D *295/00*

U.S. Cl. 544—358 4 Claims

1. A salt of N-(phosphonoacetyl)-L-aspartic acid selected from the group consisting of:

(a) the calcium salt;

(b) the piperazine salt; or

(c) the cyclohexylamine salt.

4,348,523

PREPARATION OF THIONAMIDE COMPOUNDS BY SULFURATION OF IMINES

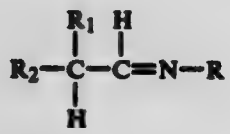
Theodore C. Shields, Ashland, Ky., assignor to Ashland Oil, Inc., Ashland, Ky.

Filed Sep. 8, 1980, Ser. No. 184,924

Int. Cl.³ C07D *295/10*; C07C *155/02*

U.S. Cl. 544—399 17 Claims

1. A method of making thionamides comprising reacting an imine having the structural formula:



where R is an alkyl group, other than a cyclohexyl group, of 1 to 18 carbon atoms, R_1 and R_2 are each phenyl groups or alkyl groups of 1 to 18 carbon atoms, and the sum of the carbon atoms in R_1, and R_2 is less than 36, with free sulfur in the presence of an immiscible polyol compound.

4,348,524

AMIDE DERIVATIVES OF POLYALKYLPIPERIDINES

Friedrich Karrer, Zofingen, and Paul Moser, Riehen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

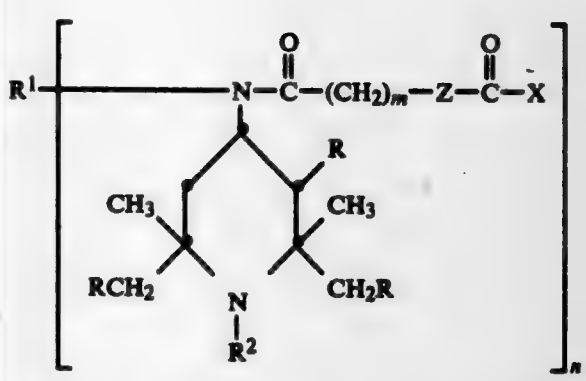
Filed Mar. 17, 1981, Ser. No. 244,551

Claims priority, application Switzerland, Mar. 28, 1980, 2493/80

Int. Cl.³ C07D *211/58*

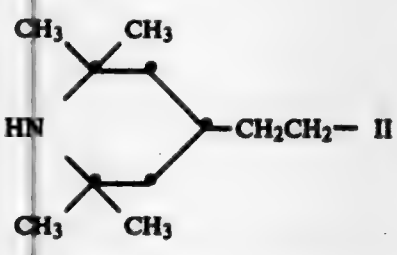
U.S. Cl. 546—187 7 Claims

1. A compound of the formula I

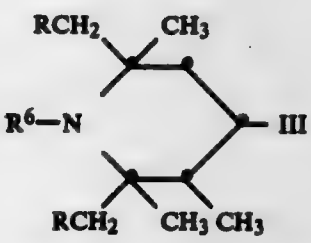


I

in which m is 0 or 1 and n is 1 or 2, X is —OH, —OR^3 or —$N(R^4)(R^5)$, R is hydrogen or CH_3, R^1, if n is 1, is C_1–C_{18}-alkyl, C_2–C_4-hydroxyalkyl, C_3–C_5-methoxyalkyl, C_5–C_8-cycloalkyl, C_6–C_7-cycloalkylmethyl, unsubstituted C_7–C_{12}-aralkyl or C_7–C_{12}-aralkyl substituted by C_1–C_4-alkyl and/or hydroxyl, or phenyl, 2-cyanoethyl, 2-alkoxy(C_1–C_4)-carbonylethyl or a group of the formula II or III

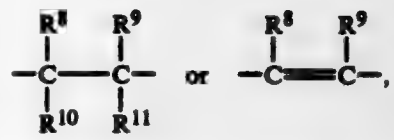


II



III

and if n is 2 is C_2–C_{12}-alkylene, C_2–C_{12}-alkylene interrupted by one or more —O— or —$N(R^7)$— or C_6–C_{18}-cycloalkylene, R^2 is hydrogen, an oxyl radical, C_1–C_{12}-alkyl, C_2–C_4-hydroxyalkyl, C_3–C_5-alkenyl, propargyl, benzyl or acetyl, Z is a group



R^3 is C_1–C_{12}-alkyl, C_2–C_4-hydroxyalkyl, C_3–C_{10}-alkoxyalkyl, C_3–C_5-alkenyl, benzyl, cyclohexyl or a radical of the formula III, R^4 is hydrogen, C_1–C_{12}-alkyl, C_3–C_5-alkenyl, benzyl or cyclohexyl and R^5 is hydrogen, C_1–C_{12}-alkyl, allyl, C_2–C_4-hydroxyalkyl, cyclohexyl or a radical of the formula III, or R^4 and R^5 together with the N atom to which they are bonded form a pyrrolidine, piperidine, hexamethyleneimine or morpholine ring, R^6 is hydrogen or methyl, R^7 is methyl or one of the acyl radicals —CO—$(CH_2)_m$—Z—CO—X, R^8 is hydrogen or C_1–C_{18}-alkyl and R^9 is hydrogen, C_1–C_{18}-alkyl or C_3–C_{12}-alkenyl or phenyl, or R^8 and R^9 together with the two carbon atoms to which they are bonded form a saturated or unsaturated, at least 5-membered, carbocyclic ring, and R^{10} and R^{11} independently of one another are hydrogen or methyl, or a salt of such a compound with a mineral acid, sulfonic acid or organic phosphoric acid, or a salt of a compound of the formula I in which X is —OH with a monovalent to trivalent metal.

7. A compound according to claim 1, of the formula I, in which X is —OH or —OR^3 and R^3 is alkyl, allyl or benzyl.

4,348,525

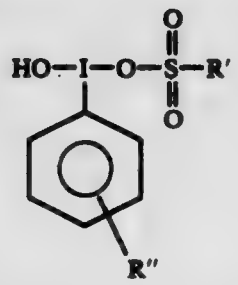
COMPOSITION AND A PROCESS FOR THE PREPARATION OF [HYDROXY(ORGANOSULFONYLOXY)IODO]ARENES AND THEIR USE IN A REGIOSPECIFIC SYNTHESIS OF DIARYLIODONIUM SALTS

Gerald F. Koser, Munroe Falls, and Richard H. Wettach, Toledo, both of Ohio, assignors to The University of Akron, Akron, Ohio

Filed Apr. 9, 1981, Ser. No. 252,455
Int. Cl.³ C07D 213/26; C07C 65/01, 139/00
U.S. Cl. 546—346 38 Claims

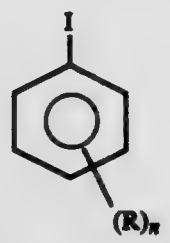
1. A process for preparing a [hydroxy(organosulfonyloxy)iodo]arene compound, comprising the steps of:

obtaining a first compound having the formula



wherein R′ is hydrogen, an alkyl having from 1 to 20 carbon atoms, an aryl having from 6 to 40 carbon atoms, a halo substituted aryl wherein said aryl has from 6 to 40 carbon atoms; a heterosubstituent substituted aryl wherein said aryl has from 6 to 40 carbon atoms and said heterosubstituent is selected from the group consisting of NO_2, CN, COOH, CHO, an alkoxy having from 1 to 6 carbon atoms, an aryloxy having from 6 to 30 carbon atoms, and combinations thereof;

wherein R″ is hydrogen or an ortho, meta, or para alkyl having from 1 to 5 carbon atoms; obtaining a second compound having the formula

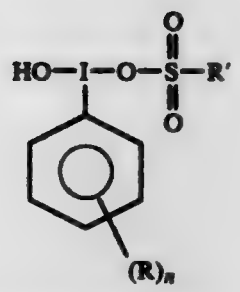


wherein n is from 0 to 5, wherein said $(R)_n$ groups are the same or different, wherein R is benzo, a halo group, an alkyl group having from 1 to 20 carbon atoms, a cycloalkyl group having from 3 to 20 carbon atoms, an aryl group having from 6 to 40 carbon atoms, a halo substituted aryl group wherein said aryl has from 6 to 40 carbon atoms, an alpha or beta naphthyl, a halo substituted alpha or beta naphthyl, a 3 to 20 carbon atom cycle alkyl substituted alpha or beta naphthyl, an alpha or beta alkyl substituted naphthyl wherein said alkyl has from 1 to 20 carbon atoms; a heterosubstituent substituted aryl wherein said aryl has from 6 to 40 carbon atoms, and said heterosubstituent is selected from the group consisting of CN, NO_2, COOH, CHO, OH, an alkoxy having from 1 to 5 carbon atoms, an aryloxy having from 6 to 30 carbon atoms, and combinations thereof; a pyridinyl, an alpha or beta furyl or an alpha or beta thienyl; and

reacting said first compound and said second compound so that the OH and SO_3R' ligands of said first compound are transferred to the iodine atom of said second compound, thereby forming the [hydroxy(organosulfonyloxy)iodo]arene compound.

11. A process for preparing a diaryliodonium salt, comprising the steps of:

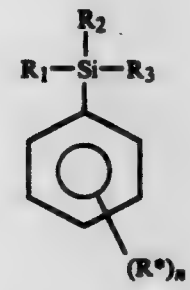
obtaining a compound having the formula



wherein R′ is hydrogen, an alkyl having from 1 to 20 carbon atoms, an aryl having from 6 to 40 carbon atoms, a halo substituted aryl wherein said aryl has from 6 to 40 carbon atoms; a heterosubstituent substituted aryl wherein said aryl has from 6 to 40 carbon atoms and said heterosubstituent is selected from the group consisting of NO_2, CN, COOH, CHO, an alkoxy having from 1 to 6 carbon atoms, an aryloxy having from 6 to 30 carbon atoms, and combinations thereof;

where n of R_n is from 0 to 5, wherein the R groups are the same or different, and wherein R is benzo, a halo group, an alkyl group having from 1 to 20 carbon atoms, a cycloalkyl group having from 3 to 20 carbon atoms, an aryl group having from 6 to 40 carbon atoms, a halo substituted aryl group wherein said aryl has from 6 to 40 carbon atoms, an alpha or beta naphthyl, a halo substituted alpha or beta naphthyl, a 3 to 20 carbon atom cycloalkyl substituted alpha or beta naphthyl, an alkyl substituted alpha or beta naphthyl wherein said alkyl has from 1 to 20 carbon atoms; a heterosubstituent substituted aryl wherein said aryl has from 6 to 40 carbon atoms, and said heterosubstituent is selected from the group consisting of CN, NO_2, COOH, CHO, OH, an alkoxy having from 1 to 5 carbon atoms, an aryloxy having from 6 to 30 carbon atoms, and combinations thereof; a pyridinyl, an alpha or beta furyl or an alpha or beta thienyl;

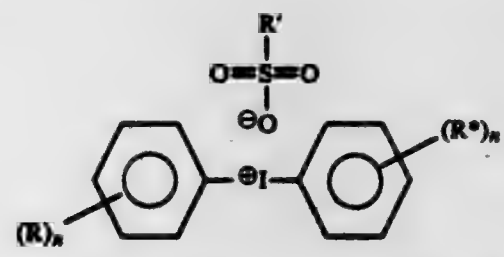
obtaining a compound having the formula



where R_1, R_2, and R_3 are the same or different, wherein R_1, R_2, and R_3 are hydrogen, an alkyl having from 1 to 5 carbon atoms, a halo group, an aryl group having from 6 to 24 atoms, or an alkoxy group having from 1 to 5 carbon atoms;

wherein n of said $(R^*)_n$ is from 1 to 5, wherein R* can be the same or different, and wherein R* is defined by R, and

reacting said compounds and producing a diaryliodonium salt having the formula



wherein R′, $(R)_n$, and $(R^*)_n$ are as set forth herein.

4,348,526

INTERMEDIATES IN THE PREPARATION OF CHIRAL HYDANTOINS

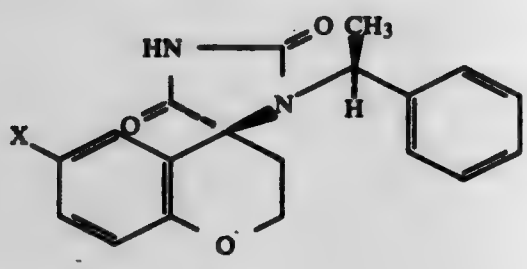
Reinhard Sarges, Mystic, Conn., assignor to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 226,434, Jan. 19, 1981, abandoned, which is a division of Ser. No. 135,137, Mar. 28, 1980, Pat. No. 4,286,098. This application Nov. 12, 1981, Ser. No. 320,051

Int. Cl.³ C07D *491/107*

U.S. Cl. 548—309 **9 Claims**

1. A compound of the formula



wherein X is chloro or fluoro.

4,348,527

3-TRIFLUOROACETYL AMINO-1-ARYL-2-PYRAZOLINES

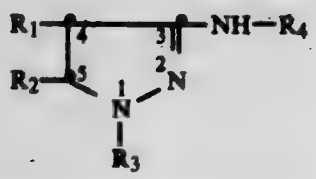
John P. Duaza, Nanuet, N.Y.; Joseph P. Joseph, Montvale, N.J., and Seymour Bernstein, New City, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Jul. 13, 1981, Ser. No. 282,972

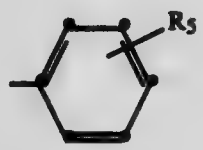
Int. Cl.³ C07D *231/06*

U.S. Cl. 548—362 **15 Claims**

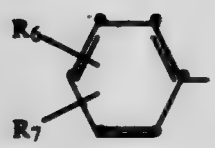
1. A compound selected from the group consisting of those of the formula:



wherein R_1 is hydrogen or lower alkyl (C_1–C_4); R_2 is hydrogen, lower alkyl (C_1–C_4), phenyl or



where R_5 is halogen; R_3 is



where R_6 and R_7 are the same or different and may be hydrogen, chloro, fluoro, lower alkyl (C_1–C_4), trifluoromethyl or $COCF_3$; R_4 is —$COCF_3$; and the pharmacologically acceptable acid-addition salts thereof.

4,348,528

PROCESS FOR THE PREPARATION OF 1-PHENYL-3-CARBAMOYL-5-PYRAZOLONES

Antoine G. L. J. Breda, Craponne, and Jacques G. R. Roussel, Boec Roger en Roumois, both of France, assignors to P C U K Produits Chimiques Ugine Kuhlmann, Courbevoie, France

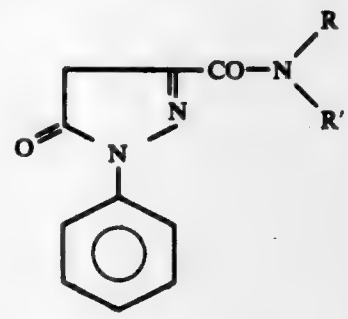
Filed Jul. 13, 1981, Ser. No. 282,903

Claims priority, application France, Jul. 18, 1980, 80 15878

Int. Cl.³ C07D *231/22*

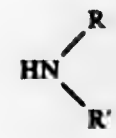
U.S. Cl. 548—367 **4 Claims**

1. A process for the preparation of a 1-phenyl-3-carbamoyl-3-pyrazolone of the formula:



(I)

in which the two symbols R and R′ may be the same or different and each represents a hydrogen atom, an alkyl radical or substituted alkyl radical containing 1 to 4 carbon atoms in which an aqueous paste of diethyl oxalacetate phenylhydrazone is heated at a temperature not greater than 85° C. until the hydrazone is completely melted, then the aqueous phase is removed and the remaining hydrazone is treated with 2 to 12 molar equivalents of a compound of the formula:



(IV)

wherein R and R′ have the same significance as above, at a temperature between 20° and 100° C.

4,348,529

SYNTHESIS OF CYCLIC DISULFONE COMPOUNDS

Alan L. Borror, Lexington; Ernest W. Ellis, Carlisle, and Charles E. Hammond, Burlington, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Aug. 19, 1981, Ser. No. 294,408

Int. Cl.³ C07D *339/00, 339/06, 339/08*

U.S. Cl. 549—22 **8 Claims**

1. A method of synthesizing bis-sulfones which comprises

(a) reacting a 1,3-dithio compound,



wherein n is an integer 2, 3 or 4 with n-butyllithium in tetrahydrofuran to generate the anion of said 1,3-dithio compound;

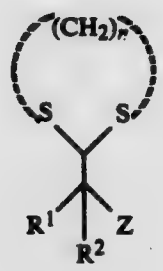
(b) adding to said anion a carbonyl compound



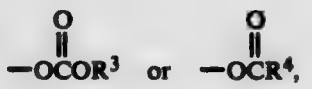
wherein R^1 and R^2 each are hydrogen, alkyl, phenalkyl, phenyl or phenyl-substituted with an electron-donating group or an electron-withdrawing group to give the 2-substituted carbonol anion intermediate:



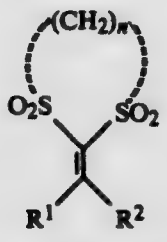
wherein R^1, R^2 and n have the same meaning given above;
(c) reacting said intermediate with a chloroformate or acyl chloride to give the corresponding ester:



wherein Z is



R^3 is benzyl or ethyl; R^4 is methyl or phenyl; and R^1, R^2 and n have the same meaning given above; and
(d) reacting said ester with a peracid to give the bis-sulfone having the formula



wherein R^1, R^2 and n have the same meaning given above.

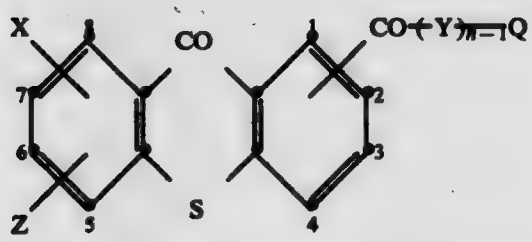
4,348,530

THIOXANTHONECARBOXYLIC ACIDS, ESTERS, THIOESTERS AND AMIDES WITH REACTIVE FUNCTIONAL GROUPS

Vratislav Kvita, Reinach; Hans Zweifel, Basel; Martin Roth, Marly, and Louis Felder, Basel, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

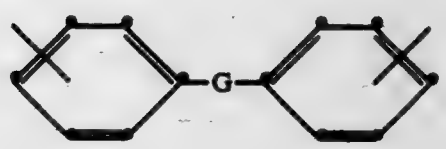
Filed Jan. 26, 1981, Ser. No. 228,533
Claims priority, application Switzerland, Feb. 5, 1980, 917/80
Int. Cl.³ C07D *335/16*
U.S. Cl. 549—27 **6 Claims**

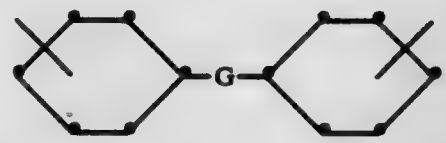
1. A compound of the formula I



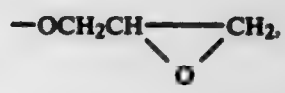
(I)

in which n is the number 1 or 2, X is hydrogen, halogen, —CN, —OH, —SH, —NO_2, —NH_2, phenylsulfonyl or alkylsulfonyl, alkyl, alkoxy, alkylthio, N,N-dialkylamino or —CO-alkyl having, in each case, 1–4 C atoms in the alkyl moieties, Z is hydrogen, halogen, —OH, —SH or alkyl, alkoxy, alkylthio or N,N-dialkylamino having, in each case, 1–4 C atoms in the alkyl moieties, Y is —OR_1—, —SR_1— or —$N(R_2)R_1$—, R_1 is straight-chain or branched alkylene having a total of 2–23 C atoms and 2–13 C atoms in the main chain, cyclopentylene, cyclohexylene, phenylene,

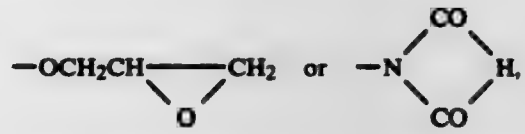




or, if n is 2 and Q is —OH or —OCO—C(R″)=CH_2, also —$(CH_2CH_2O)_x$—CH_2CH_2—, R_2 is hydrogen or straight-chain or branched alkyl having a total of 1–23 C atoms and 1–13 C atoms in the main chain, G is —CH_2—, —CH_2CH_2—, —$C(CH_3)_2$—, —O—, —SO_2— or —NH—, x is an integer from 1 to 5, Q is



—OCH_2—COOH, —OCH=CH_2, —OCH_2CH=CH_2, —SCH_2CH=CH_2 or —$NHCH_2CH$=CH_2 if n is 1, and is —OH, —SH, —NH_2, —NHR′, —SO_3H, —COOH, —COCl, —NCO, —OCO—C(R″)=CH_2, —SCO—C(R″)=CH_2, —NHCO—C(R″)=CH_2, —OCH=CH_2,



if n is 2, or is also —CH=CH_2 if R_1 is alkylene or phenylene, and R′ is alkyl having 1–5 C atoms and R″ is hydrogen or methyl, or a salt of a compound of the formula I in which Q is —NH_2 or —NHR′.

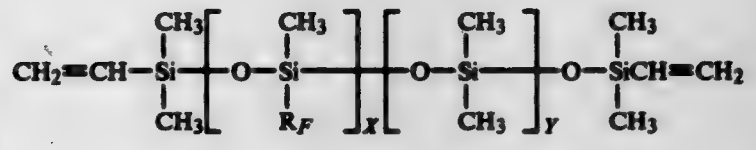
4,348,531

FLUOROSILICONE POLYDIMETHYLSILOXANE EQUILIBRATION CHAINSTOPPER AND PROCESS FOR MANUFACTURE

Edwin R. Evans, Saratoga, N.Y., assignor to General Electric Company, Waterford, N.Y.

Continuation of Ser. No. 71,152, Aug. 30, 1979, abandoned. This application Apr. 1, 1981, Ser. No. 249,785
Int. Cl.³ C07F *7/02*
U.S. Cl. 556—453 **4 Claims**

1. A fluorosilicone polydimethylsiloxane equilibration chainstopper composition having an empirical formula as follows:



wherein R_F is $CF_3CH_2CH_2$—, X is approximately 10 to approximately 30 and Y is approximately 20 to approximately 50, and having a viscosity of, approximately, 30 to 70 centipoise at 25° C. and a density of, approximately, 1.09 to 1.130.

4,348,532

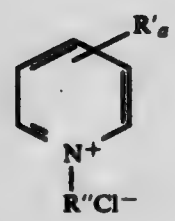
MONOORGANOSILOXY CONTAINING SILOXANE FLUIDS

Allan M. Alanko; Ollie W. Marko; Charles E. Skinner, all of Carrollton, and Larry H. Wood, Campbellsburg, all of Ky., assignors to Dow Corning Corporation, Midland, Mich.

Filed Oct. 5, 1981, Ser. No. 308,341
Int. Cl.³ C07F 7/08, 7/18
U.S. Cl. 556—457 5 Claims

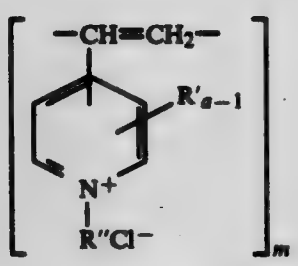
1. In a method for preparing siloxanes and methyl chloride by reacting methanol with chlorosilanes in contact with a quaternary ammonium catalyst of the group consisting of:

(1) pyridinium chlorides of the formula



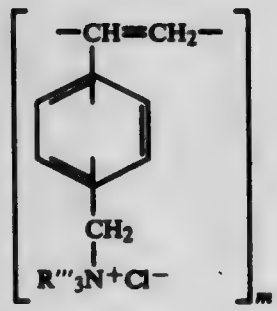
(2) compounds of the formula $R'''_4N^+Cl^-$,

(3)



and

(4)



where R′ is a hydrocarbon radical having 18 or less carbon atoms; "a" is an integer from 0–5; "m" is an integer greater than 1, R″ is a lower alkyl radical; and R‴ is selected from the group consisting of methyl, hydroxy alkyl of 2–4 inclusive carbon atoms, aromatic hydrocarbon radicals, and $ArCH_2$— radicals in which Ar is an aromatic hydrocarbon radical there being no more than 18 carbon atoms total in the R‴ group,

the improvement comprising employing as the chlorosilanes a mixture of R_2SiCl_2 and a silane (A) selected from the group consisting of $RSiCl_3$ and $R_nCl_{3-n}SiSiR_{n'}Cl_{3-n'}$ and optionally R_3SiCl in which mixture there is from 2 to 50 percent by weight based upon the total weight of the chlorosilane mixture of a silane containing at least 3 chlorine atoms per molecule, said reaction being carried out at a temperature of at least about 100° C. and under temperature/pressure relationship such that water escapes from the reaction zone, whereby stable polysiloxane fluids are obtained, in said silanes R is methyl, ethyl, 3-chloropropyl, or 3,3,3-trifluoropropyl and n and n′ are each integers from 0 to 2, the total value of n and n′ being from 1 to 3.

4,348,533

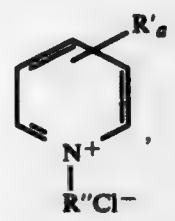
PREPARATION OF LINEAR POLYDIMETHYLSILOXANES

Allan M. Alanko, and David R. Salverson, both of Carrollton, Ky., assignors to Dow Corning Corporation, Midland, Mich.

Filed Oct. 13, 1981, Ser. No. 310,546
Int. Cl.³ C07F 7/08, 7/18
U.S. Cl. 556—457 4 Claims

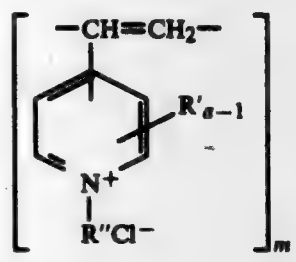
1. In a method of producing linear polysiloxanes by reaction of dimethyldichlorosilane and methanol in contact with a catalyst selected from the group consisting of

(1) pyridinium chlorides of the formula



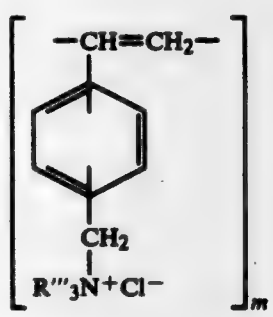
(2) compounds of the formula $R'''_4N^+Cl^-$,

(3)



and

(4)



where R′ is a hydrocarbon radical having 18 or less carbon atoms; "a" is an integer from 0–5; "m" is an integer greater than 1, R″ is a lower alkyl radical; and R‴ is selected from the group consisting of methyl, hydroxy alkyl of 2–4 inclusive carbon atoms, aromatic hydrocarbon radicals, and $ArCH_2$— radicals in which Ar is an aromatic hydrocarbon radical there being no more than 18 carbon atoms total in the R‴ group,

the improvement comprising carrying out the reaction at a pressure of from 15 to 100 psi at a temperature of from 130° to 170° C. and thereafter separating the dimethylpolysiloxane so produced from the catalyst.

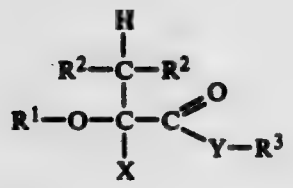
4,348,534

PREPARATION OF 2-ARYLOXY-2-HALOPROPTONIC ACID COMPOUNDS

Gerd Hueslein, Bad Durkheim, and Gerhard Hamprecht, Weinheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jun. 17, 1981, Ser. No. 274,493
Claims priority, application Fed. Rep. of Germany, Jul. 29, 1980, 3028625
Int. Cl.³ C07C 69/76
U.S. Cl. 560—62 8 Claims

1. A process for the preparation of 2-aryloxy-2-halopropionic acid compounds of the formula

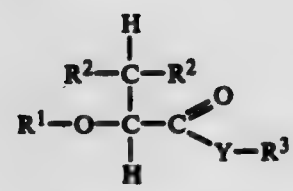


I

where Y is oxygen or

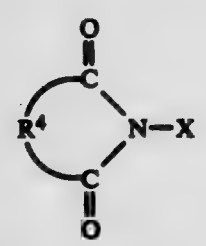


R^1 is an aromatic radical, the R^2's and R^3's can be identical or different and each is hydrogen or an aliphatic or cycloaliphatic radical, and R^3 can also be araliphatic or aromatic radical, and X is chlorine or bromine, by reacting a 2-aryloxypropionic acid compound with an N-halocarboxylic acid imide in the presence of an organic solvent, wherein a 2-aryloxypropionic acid compound of the formula



II

where R^1, R^2, R^3 and Y have the above meanings, is reacted with an N-halocarboxylic acid imide of the formula



III

where X has the above meanings and R^4 is an aliphatic radical, in the presence of an aliphatic halohydrocarbon as the solvent and of from 0.0001 to 0.001 mole of halogen per mole of starting material III, from 0.005 to 0.05 percent by weight of water, based on starting material III, and from 0.0005 to 0.005 mole of azo-bis-isobutyronitrile and/or dibenzoyl peroxide per mole of starting material III.

4,348,535

SUBSTITUTED LACTONES AND PROCESSES FOR THEIR PREPARATION

Hans-Georg Schmidt, Niederkassel, Fed. Rep. of Germany, assignor to Dynamit Nobel AG, Troisdorf, Fed. Rep. of Germany

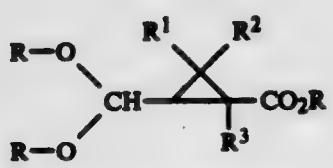
Filed Dec. 19, 1980, Ser. No. 218,593

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1979, 2952068; Dec. 3, 1980, 3045455; Dec. 6, 1980, 3046059

Int. Cl.³ C07C *69/743*

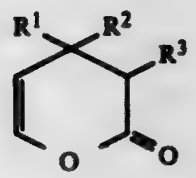
U.S. Cl. 560—124 5 Claims

1. A process for the preparation of an acetal of 2,2-dialkyl-3-formyl-cyclopropane carboxylic acid ester of the formula



wherein each R is a C_1 to C_4 alkyl group, R^1, R^2 and R^3 are hydrogen or C_1 to C_{10} alkyl which comprises:

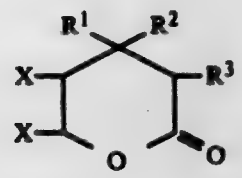
A. contacting the unsubstituted lactone of the formula



(VI)

wherein

R^1, R^2 and R^3 have the meaning stated above with chlorine or bromine to form a dihalo compound of the formula



(IV)

wherein

X is chlorine or bromine; contacting the resultant dihalo lactone with an alcoholate of the formula

M—OR

wherein

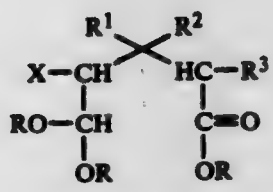
M is alkali metal and

R is an alkyl group of 1 to 4 carbon atoms in the presence of an alcohol of the formula

R—OH

wherein

R is a C_1 to C_4 alkyl group to form an acetal of of the formula



(V)

wherein R^1, R^2 and R^3 have the meaning given above; and contacting the resultant acetal with an alcoholate of the formula MOR wherein M and R have the meaning given above whereby to effect cyclization of the acetal and formation of the acetal of 2,2-dialkyl-3-formyl-cyclopropane carboxylic acid alkyl ester.

4,348,536

ODORLESS CATALYSTS FOR THE SYNTHESIS OF POLYURETHANES

Johannes Blahak, Cologne; Hans Hübner, Katzenellenbogen; Johannes Koster, Dormagen; Hans J. Meiners, Leverkusen-Schlebusch, and Heinz Thomas, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

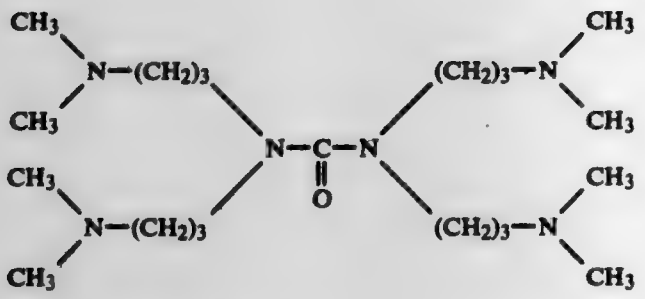
Filed Feb. 6, 1978, Ser. No. 875,278

Claims priority, application Fed. Rep. of Germany, May 28, 1975, 2523633

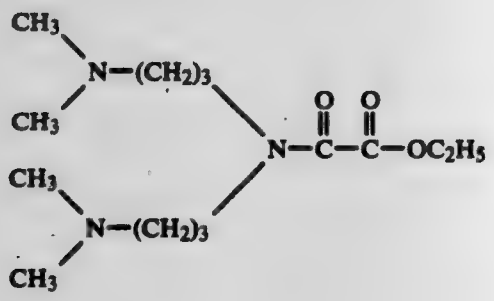
Int. Cl.³ C07C *127/15, 103/44*

U.S. Cl. 560—169 2 Claims

1. Compound of the formula:



2. Compound of the formula:



4,348,537

OLEFIN OXIDATION

Joon T. Kwon, Freehold Township, Monmouth County, and Abraham P. Gelbein, Morristown, both of N.J., assignors to The Lummus Company, Bloomfield, N.J.

Filed Jun. 8, 1981, Ser. No. 271,793
Int. Cl.[3] C07C *67/055*
U.S. Cl. 560—243 14 Claims

1. In a process for preparing glycol mono- and diesters comprising oxidizing an olefin in the presence of a carboxylic acid and water, the improvement comprising:

contacting the olefin, water and the carboxylic acid in the presence of Mn(IV) ion and a noble metal.

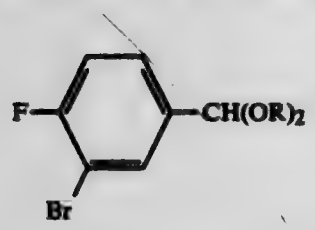
4,348,538

PREPARATION OF 3-BROMO-4-FLUORO-BENZALDEHYDE ACETALS AND INTERMEDIATES THEREFOR

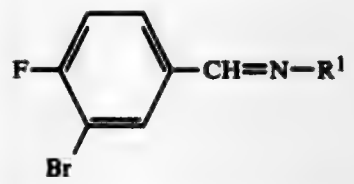
Fritz Maurer, Wuppertal; Uwe Priesnitz, Solingen; Hans-Jochem Riebel; Bernd Gallenkamp, both of Wuppertal, and Erich Klauke, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 16, 1981, Ser. No. 302,913
Claims priority, application Fed. Rep. of Germany, Sep. 24, 1980, 3035921
Int. Cl.[3] C07C *59/153, 43/313, 119/10, 121/76*
U.S. Cl. 562—459 18 Claims

1. A process for the preparation of a 3-bromo-4-fluoro-benzaldehyde acetal of the formula:



in which R each independently is a C_1 to C_4 alkyl group or the radicals R together are a C_2 to C_5 alkanediyl radical, comprising reacting a 3-bromo-4-fluoro-benzaldimine of the formula:

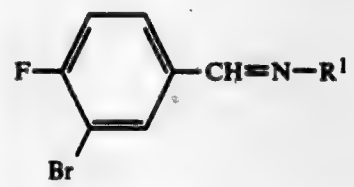


in which R^1 is an alkyl, cycloalkyl or aryl radical, with an alcohol or alkanediol of the formula:

$$(HO)_n—R$$

in which n is 1 or 2, in the presence of sulphuric acid at a temperature between about 0° and 100° C.

8. A 3-bromo-4-fluoro-benzaldimine of the formula:



in which R^1 is an alkyl, cycloalkyl or aryl radical.

4,348,539

HETERONUCLEAR-BRIDGED RHODIUM CLUSTERS

Ernst Billig; Jackie D. Jamerson, both of Charleston, W. Va., and Roy L. Pruett, New Providence, N.J., assignors to Union Carbide Corporation, Danbury, Conn.

Division of Ser. No. 90,140, Nov. 1, 1979, Pat. No. 4,288,380.
This application May 6, 1981, Ser. No. 260,920
Int. Cl.[3] C07C *45/50*
U.S. Cl. 568—454 11 Claims

1. In a hydroformylation process for producing aldehydes by hydroformylating an olefin with hydrogen and carbon monoxide in the presence of a hydroformylation reaction medium comprising a soluble rhodium complex catalyst, a solvent for said catalyst, and at least 2 moles of a free triorgano Group VA element ligand, wherein the reaction conditions consist essentially of (1) a temperature in the range of from about 50° to about 200° C., (2) a total gas pressure of hydrogen, carbon monoxide and olefin of less than about 1500 psia., (3) a carbon monoxide partial pressure of less than about 300 psia. and (4) a hydrogen partial pressure of less than 400 psia., the improvement comprising employing as the catalyst for said process a catalytic amount of a heteronuclear-bridged rhodium cluster compound having the generic formula

$$Rh_f(\mu\text{-}ER_2)_m(CO)_p(E'R'_3)_q$$

wherein E and E' each individually represent a Group VA element selected from the group consisting of phosphorus, arsenic or antimony; wherein R and R' each individually represent a monovalent organic radical selected from the group consisting of alkyl, aryl, alkoxy and aryloxy radicals; wherein f has a value of from 2 to 6, m has a value of from 1 to 6, p has a value of from 1 to 6 and q has a value of from 1 to 6.

4,348,540

MANUFACTURE OF AQUEOUS FORMALDEHYDE

Theodore V. Ferris, and Richard C. Kmetz, both of Longmeadow, Mass., assignors to Monsanto Company, St. Louis, Mo.

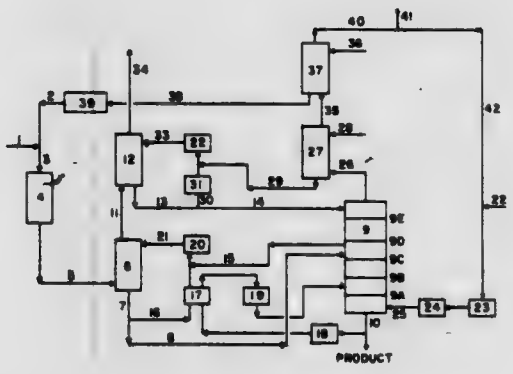
Filed Jun. 29, 1981, Ser. No. 278,811
Int. Cl.[3] B01D *3/16*; C07C *47/055, 47/058*
U.S. Cl. 568—472 19 Claims

1. A process for the manufacture of an aqueous solution of formaldehyde comprising the steps of:

(a) oxidatively dehydrogenating methanol with air in the pres-

ence of a silver or copper catalyst and steam at elevated temperature;

(b) absorbing the reaction product in an absorption train comprising one or more absorption stages in series to form an aqueous formaldehyde solution containing free and combined methanol; and



(c) stripping the methanol from the aqueous formaldehyde solution with a counter-current inert gas stream in a stripping column comprising at least about 1.5 theoretical transfer units for methanol stripping, the stripping being carried out at a temperature and at a ratio of stripping gas to aqueous formaldehyde to provide a concentration of vapors of aqueous methanolic formaldehyde in the gas emerging from the stripping column of no more than about 50 mol percent.

4,348,541

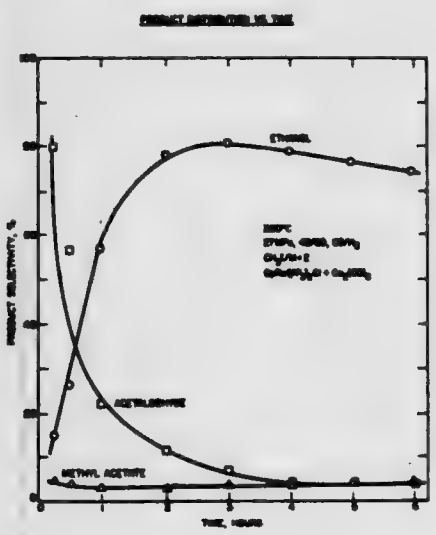
METHANOL HOMOLOGATION USING COBALT-RUTHENIUM CATALYSTS

Gerald Doyle, Bridgewater, N.J., assignor to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Nov. 30, 1979, Ser. No. 98,981

Int. Cl.³ C07C *47/06, 29/00, 27/00, 45/49*

U.S. Cl. 568—487 **16 Claims**



1. A process for the homogeneous conversion of methanol to acetaldehyde, ethanol or mixtures thereof which comprises contacting methanol with carbon monoxide and hydrogen in a $CO:H_2$ ratio of from 10:1 to 1:10 at a temperature of from about 100° to 300° C. and a pressure of from about 2 to 100 MPa in the presence of a catalytically effective amount of a catalyst system, said catalyst system consisting essentially of:

(a) cobalt-ruthenium complexes selected from the group consisting of $HRuCo_3(CO)_{12}$, $M[RuCo_3(CO)_{12}]$, $HCoRu_3(CO)_{13}$, $M[CoRu_3(CO)_{13}]$ and $C_5H_5Ru(P\phi_3)_2Co(CO)_4$ where M is a cation;

(b) an iodine or iodide promoter; and

(c) a phosphorus compound of the formula PR_3 or $P(OR)_3$ where R is independently a C_1 to C_{20} aliphatic radical, C_6 to C_{10} aryl, aralkyl having from 1 to 6 carbon atoms in the alkyl or C_3 to C_8 cycloalkyl, with the proviso that if either the ruthenium or cobalt in component (a) bears a PR_3 or $P(OR)_3$ ligand, component (c) may be omitted.

4,348,542

PROCESS FOR THE PRODUCTION OF MIXTURES OF ALKYLATED AROMATIC HYDROXY COMPOUNDS

Volker Serini; Rainer Neumann; Gerhard Friedhofen; Dieter Freitag; Jürgen Heuser, and Hans-Helmut Schwarz, all of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 9, 1980, Ser. No. 167,376

Claims priority, application Fed. Rep. of Germany, Jul. 13, 1979, 2928443

Int. Cl.³ C07C *39/12*

U.S. Cl. 568—727 **3 Claims**

1. A process for producing a mixture of alkylated aromatic polyhydroxy compounds suitable for the direct production of high molecular weight thermoplastic polycarbonates which comprise reacting commercial 2,6-dialkyl phenol containing 98 to 70% of 2,6-dialkyl phenol, 2 to 30% of monoalkyl phenol, about 0.1 to 5% of phenol and about 0.1 to 2% of an at least trialkylated phenol with a carbonyl compound in the presence of a catalytic amount of an acidic organic ion exchanger and recycling into the reaction unreacted commercial 2,6-dialkyl phenol without intermediate purification.

4,348,543

CYCLOALIPHATIC ALCOHOLS

Edgar R. Rogier, Minnetonka, Minn., assignor to Henkel Corporation, Minneapolis, Minn.

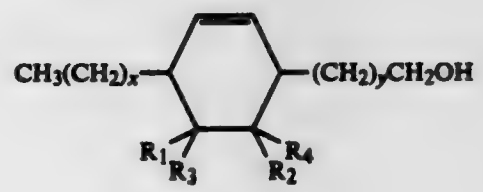
Filed Feb. 12, 1981, Ser. No. 233,793

Int. Cl.³ C07C *35/18, 35/14*

U.S. Cl. 568—823 **10 Claims**

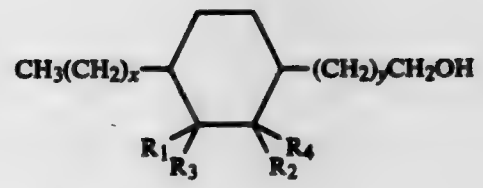
1. A cycloaliphatic alcohol which is a member selected from the group consisting of

I



and

II



and mixtures thereof wherein R_1 and R_2 are selected from the group consisting of hydrogen and methyl and mixtures thereof with the provision that one such member must be hydrogen; and R_3 and R_4 are hydrogen or hydroxymethyl provided that at least one but not both of R_3 and R_4 must be hydroxymethyl;

and further that x is an integer of from 3 through 6 and y is an integer from 6 through 9 and that the sum x plus y is 12.

4,348,544

RECOVERY OF PROPANE FROM HF ALKYLATION VENT GAS

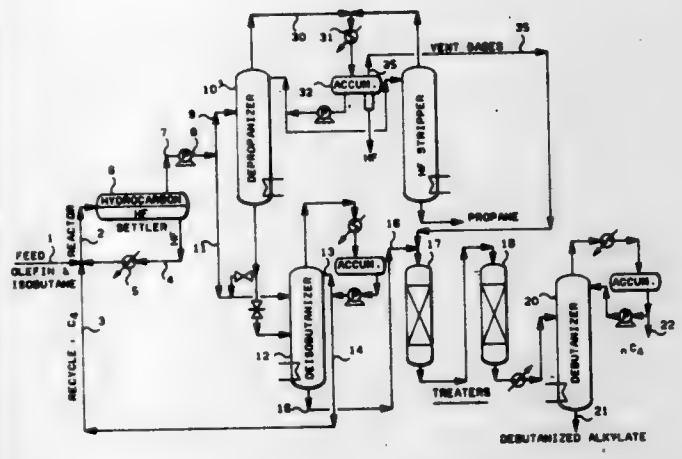
Edgar D. Davis, and David J. Cones, both of Borger, Tex., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 14, 1979, Ser. No. 75,393

Int. Cl.³ C07C 7/00, 2/56

U.S. Cl. 585—300 **4 Claims**

1. A process for improved recovery of HF and propane contained in vent gases resulting from an alkylation of hydrocarbons in the presence of HF under conditions to produce an alkylation effluent from which an alkylate product is recovered by fractionation thus producing an alkylate-containing stream which is treated to remove therefrom HF and a normal butane-containing stream which is recovered downstream of said treatment, which comprises introducing said vent gases into a stream in said fractionation prior to said treatment, thus



recovering said propane in said normal butane-containing stream.

4,348,545

PROCESS FOR MOUNTING A PROTECTION DIODE ON A VERTICAL MULTIJUNCTION PHOTOVOLTAIC CELL STRUCTURE AND PHOTOVOLTAIC CELLS OBTAINED

Jacques Arnould, Paris, France, assignor to Le Silicium Semiconducteur SSC, Paris, France

Filed Jan. 28, 1981, Ser. No. 229,262
Claims priority, application France, Feb. 1, 1980, 80 02253
Int. Cl.³ H01L *31/06, 31/18*
U.S. Cl. 136—244 12 Claims



1. In a process for mounting a protection diode on a vertical multijunction photovoltaic cell structure comprising the steps of (a) stacking photovoltaic diode wafers having the same orientation, (b) securing them firmly to each other and (c) cutting them into bars perpendicular to the direction of the wafers, the improvement comprising essentially and in combination with steps (a), (b) and (c), before the cutting step, the additional steps of (b') disposing on the stack a diode wafer having the reverse polarity of that of the other diodes and (b'') securing this diode to the stack.

5. An integrated photovoltaic cell of the vertical multijunction type in the form of a bar comprising:

a photovoltaic diode stack, and

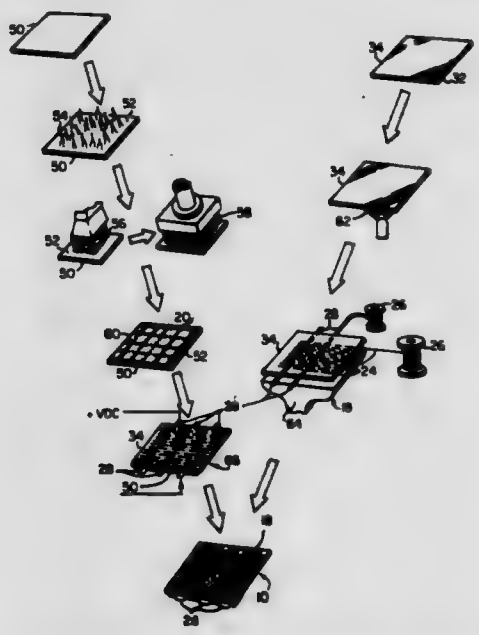
a reversely connected diode integral with the other diodes.

4,348,546

FRONT SURFACE METALLIZATION AND ENCAPSULATION OF SOLAR CELLS

Roger G. Little, Bedford, Mass., assignor to Spire Corporation, Bedford, Mass.

Continuation of Ser. No. 181,106, Aug. 25, 1980, abandoned.
This application Oct. 13, 1981, Ser. No. 310,793
Int. Cl.³ H01L *31/06*
U.S. Cl. 136—256 3 Claims



1. In a solar cell of the type comprising inner front and rear semiconductor strata for generating a photovoltaic effect in response to incident solar radiation and outer front and rear conducting strata constituting electrical contacts, wherein the front conducting stratum is a metallic grid that permits transmission of solar radiation to the semiconductor strata:

(a) the improvement in which said metallic grid is in the form of a mesh of fine wires formed of a first metal coated with a second metal, one of said metals including a highly conductive member of the group consisting of silver and copper and the other of said metals having a sufficiently high tensile strength to be self-supporting while being drawn into contact with one or more components of said solar cell before completion of said cell's fabrication;

(b) said metallic grid further including at least one conductive bus in the form of a metallic strip of sufficiently high tensile strength to be self-supporting while said bus is drawn into contact with one or more components of said solar cell and connected electrically to said mesh of wires and extended beyond the edge of said solar cell for electrical connection to a rear conducting stratum of an adjacent solar cell in order to facilitate the fabrication of a solar module;

(c) said mesh of wires extending in one direction and having a rectangular cross section and said metallic strip extending transversely to said mesh of wires and also having a rectangular cross section;

(d) said solar cell further including a transparent cover plate having an outer and an inner surface, said mesh of wires being interposed between said inner surface of said plate and the exposed surface of said front semiconductor stratum, said inner surface of said plate electrostatically bonded to said front semiconductor stratum, with said mesh of wires encapsulated therebetween;

(e) said transparent cover plate having an antireflective coating on its said inner surface, with said mesh of wires being pressed into the softened inner surface of said plate and said plate electrostatically bonded to the exposed surface of said front semiconductor stratum, with said mesh of wires encapsulated therebetween;

(f) said cover plate forming a permanent hermetic seal about said front semiconductor stratum during its said electrostatic bonding thereto, said hermetic seal preventing oxidation of said mesh of wires, and assuring thereby the preservation of the electrical contact formed between said mesh of wires and said front semiconductor stratum during said electrostatic bonding between said plate and said front semiconductor stratum;

(g) said electrostatic bonding effected between said plate and said front semiconductor stratum permanently entrapping said mesh of wires in said electrical contact with said front semiconductor stratum, said electrical contact being in the nature of a thermocompression bond between said mesh and said semiconductor stratum;

(h) said mesh of wires being characterized in having a wire spacing of about eight wires per centimeter, with said wires having an original diameter range prior to said electrostatic bonding of from about ten to about fifty microns.

4,348,547

ELECTRICAL OUTLET BOX WITH RECESSED PORTS

Wade R. Bowden, Jr., Northport, N.Y., assignor to Slater Electric Inc., Glen Cove, N.Y.

Filed Oct. 24, 1980, Ser. No. 200,423
Int. Cl.³ H02G *3/08*
U.S. Cl. 174—65 R 17 Claims

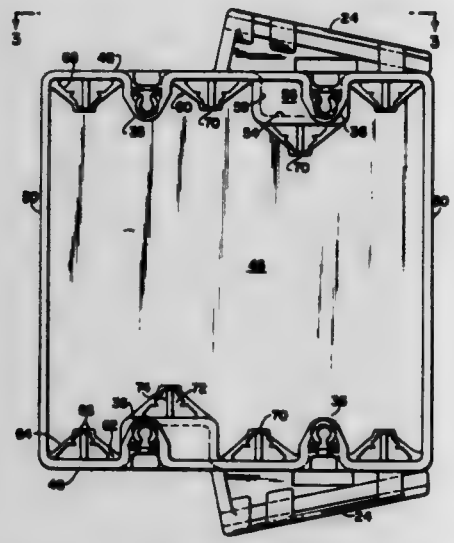
1. An improved electrical outlet box having a backwall and an essentially continuous sidewall upstanding therefrom to define a hollow box chamber interior thereof and generally open along front edges of the sidewall, wherein the improvement comprises:

a plurality of cable entry ports formed in a portion of the sidewall, said sidewall portion being of predetermined width and each said cable entry port adapted to provide access to the box chamber for an electrical power cable;

cable entry port closure means associated with each said cable entry port for generally closing its associated cable entry port when not used to provide access for the cable;

one of said cable entry ports and its associated closure means being recessed inwardly of said box chamber relative to the other cable entry ports in said sidewall portion, such that sufficient spacing is provided to accommodate all of said plurality of cable entry ports and associated closure

means within said predetermined width with greater strength in said sidewall portion than if none of said plurality of cable entry pors were recessed, thereby maximiz-



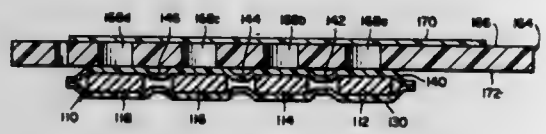
ing the number of said cable entry ports formed in said sidewall portion without reducing wall strength necessary to satisfy industry standards.

4,348,548

INSULATOR FOR COVERING ELECTRICAL CABLES

Michael A. Grundfest, Forest Hills, N.Y., assignor to Thomas & Betts Corporation, Raritan, N.J.

Filed Sep. 11, 1979, Ser. No. 74,428
The portion of the term of this patent subsequent to Mar. 10, 1998, has been disclaimed.
Int. Cl.[3] H01R *9/07*
U.S. Cl. 174—88 R 17 Claims



8. An insulator for insulating the junctures between connected conductors of two or more substantially flat multiconductor cables comprising a spacer member having first and second opposed surfaces, said spacer member having a plurality of openings extending in an ordered pattern through said first and second surfaces and at least two spaced alignment apertures in configuration different from one another, an insulating member on said first surface of expanse sufficient to cover said openings and adhesive means on said second surface.

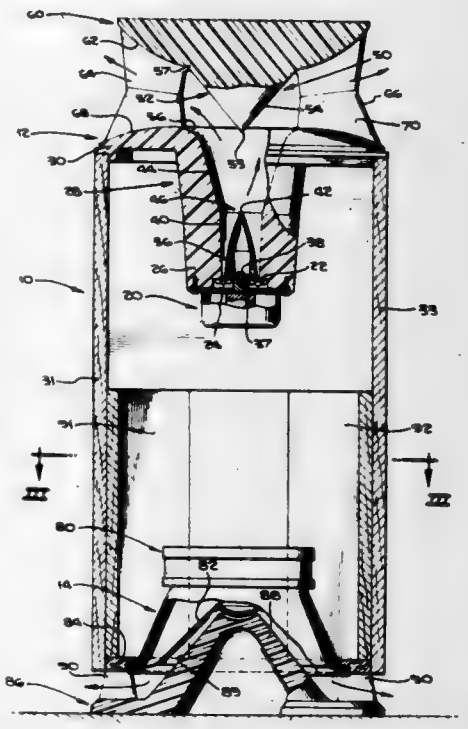
4,348,549

LOUDSPEAKER SYSTEM

Emmanuel Berlant, 9118 Olin St., Los Angeles, Calif. 90034

Continuation of Ser. No. 975,593, Feb. 6, 1978. This application Apr. 9, 1979, Ser. No. 28,599
Int. Cl.[3] H04R *1/20*
U.S. Cl. 179—1 E 7 Claims

1. A loudspeaker system comprising:
a generally tubular housing having a central vertical axis;
a high frequency electroacoustic transducer and a central axis horn receiving acoustic energy from said transducer and radiating said energy along said axis;
means for reflecting and diffracting the radiated energy approximately 90° radially 360° about said axis;
a radial horn for radiating said reflected and diffracted energy 360° about said axis;
a low frequency electroacoustic transducer including a cone centered on said axis for radiating acoustic energy along said axis in a direction opposite to that of the energy radiated by said high frequency transducer;
a loading plug having a contour substantially congruent with the cone and disposed in acoustic loading relation therewith;
and a crossover network for dividing the audio spectrum



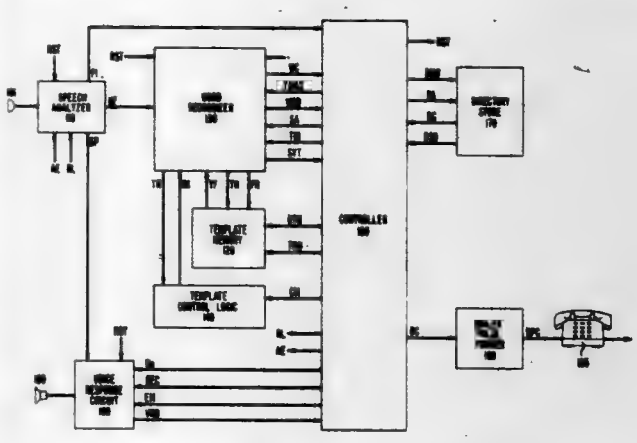
into high band pass and low band pass signals and feeding the signals to the respective transducers,
the effective length of said central axis horn being selected to virtually equalize the arrival times of the radiated acoustic energies in a listening area spaced laterally from the housing, by compensating for phase shift caused by the crossover network and the relative locations of the transducers.

4,348,550

SPOKEN WORD CONTROLLED AUTOMATIC DIALER

Frank C. Pirz, Madison; Lawrence R. Rabiner; Aaron E. Rosenberg, both of Berkeley Heights, and Jay G. Wilpon, North Plainfield, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jun. 9, 1980, Ser. No. 128,842
Int. Cl.[3] G10L *1/00;* H04M *1/274*
U.S. Cl. 179—1 SD 16 Claims



1. A spoken word controlled repertory dialing circuit comprising:
a memory for storing a plurality of template signals representative of the acoustic features of reference words including command words and repertory words;
a directory store for storing a set of dialing signals corresponding to said repertory words;
a speech analyzer responsive to each input spoken word utterance for forming acoustic feature signals representative of said utterance;
a spoken word recognizer jointly responsive to said input

spoken word utterance acoustic feature signals from said speech analyzer and template signals from said memory for generating a signal identifying said input utterance;

means responsive to the input utterance identifying signal corresponding to a repertory word template for retrieving the corresponding dialing signal from said directory store; and

means responsive to each occurring input utterance identifying signal for selecting a predetermined set of template signals to identify the next occurring input utterance.

4,348,551

SERVICE BARGAIN ANNOUNCEMENT IN AN ELECTRONIC CASH REGISTER

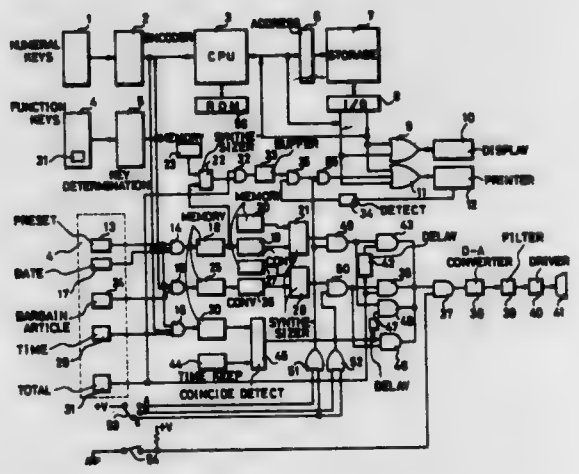
Hiroshi Nakatani; Masahide Ishida, both of Yamatokoriyama, and Hachizou Yamamoto, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 17, 1980, Ser. No. 130,999

Claims priority, application Japan, Mar. 16, 1979, 54-32158; Mar. 16, 1979, 54-32159; Mar. 16, 1979, 54-32160; Mar. 16, 1979, 54-32161

Int. Cl.³ G10L *1/00*

U.S. Cl. 179—1 SM 8 Claims



1. An electronic cash register comprising:

numeral keys for introducing money information related to a register transaction and for introducing specific time information;

function keys for defining the kind of register transaction to be introduced;

a central processor unit responsive to said numeral and function keys for performing calculations with the introduced money information;

synthetic speech data storage means including a first memory means for storing synthetic speech data related to the next service bargain day and a second memory means for storing data related to the bargain article;

mode selection means for selecting said first or second memory means to select the desired synthetic speech data stored in said synthetic speech data storage means;

audio production means for providing an audible announcement through the use of the synthetic speech data selected by said selection means;

control means for applying said selected synthetic speech data to said audio production means in response to actuation of a specific key included in said function key;

time information keeping circuit means for calculating current time information;

time memory means for storing said specific time information;

a coincidence detection circuit for developing a coincidence detection output when the current time information becomes identical with said specific time information stored in said time memory means; and

automatic announcement conducting means for applying said selected synthetic speech data to said audio production means in response to said coincidence detection output.

4,348,552

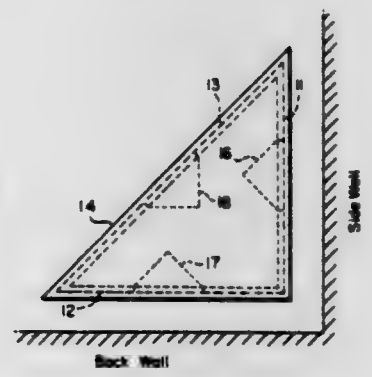
DIRECT/REFLECTING SPEAKER SYSTEM AND TRIANGULAR SHAPED ENCLOSURE

Ralph R. Siccone, 474 Barretts Mill Rd., Concord, Mass. 01742

Filed Jun. 9, 1980, Ser. No. 157,712

Int. Cl.³ H04R *1/20, 5/02*

U.S. Cl. 179—1 E 16 Claims



1. A loud speaker system suitable for exact placement in the corners of a listening room comprising a triangular-shaped speaker enclosure comprising first and second vertically disposed planar side panels intersecting one another at a 90° angle, and a vertically disposed planar front panel intersecting with said first and second side panels and subtending angles of 45°, a woofer for low frequency reproduction in one of said first and second side panels, a tweeter for high frequency sound reproduction in said front panel, and a mid-range driver which reproduces the frequencies between the woofer and tweeter in the other of said first and second side panels, and a three-way electronic cross-over network.

4,348,553

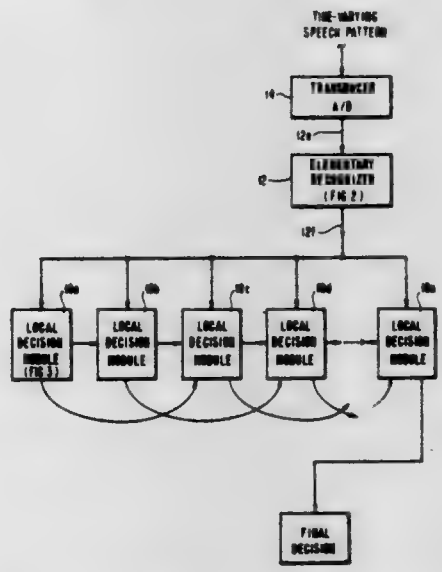
PARALLEL PATTERN VERIFIER WITH DYNAMIC TIME WARPING

James K. Baker, and Janet M. Baker, both of West Newton, Mass., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 2, 1980, Ser. No. 165,466

Int. Cl.³ G10L *1/00*

U.S. Cl. 179—1 SB 9 Claims



1. A speech recognition system, comprising:

an elementary recognizer for classifying the elementary segments of an observed speech pattern as they are received, said elementary recognizer including correlation means for producing at an output node of said elementary

recognizer a score of correlation of said elementary segments with stored spectral speech patterns; and

a plurality of local decision modules each connected to said output node for receiving said score of correlation; said plurality of local decision modules being connected at node points in a network wherein different network paths through the nodes and their corresponding local decisions modules represent an accumulation of speech segments constituting different pronunciations of said speech pattern, the input of each said local decision module connected to said correlation means to receive the measures of correlation;

each local decision module specializing in a particular network node and including, means for determining the probability of how well the input segment of speech matches the particular sound segments associated with a given node, means for receiving from the other local decision modules the prior correlation scores of all preceding sound segments, means for selecting the locally optimum time warping of each segment of speech which are input from other local decision modules, and accumulator memory means for providing an accumulated correlation score for any one path in the network of local decision modules, said path representing an accumulation of segments or parts of a word or sound;

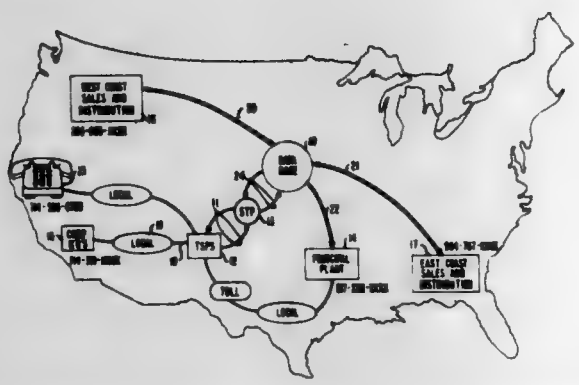
whereby the accumulated correlation score represents the most probable pronunciation of said speech pattern and the best recognition match derived from all the possible paths in the network of local decision modules.

4,348,554

METHOD OF PROVIDING VIRTUAL PRIVATE NETWORK TELEPHONE SERVICE

Richard L. Asmuth, Oldbridge, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 21, 1980, Ser. No. 132,534
Int. Cl.³ H04M *3/42, 7/00, 15/00*
U.S. Cl. 179—18 B 28 Claims



1. In a telephone system including a plurality of telephone offices (12, 18), a plurality of telephone stations (23), and a data base (10) accessible by ones of the offices, a method of providing private network types of services for prescribed ones of the stations via the public switched network, characterized by the steps of

storing information at the data base defining a virtual private telephone network, said information including a description of the capacity of the virtual network in terms of virtual telephone facility resources of a prescribed type,

responsive to a call received at one of the offices directed to the virtual private network, verifying at the data base that the call is entitled to be completed via the virtual network, and that an idle virtual resource remains for assignment to the call,

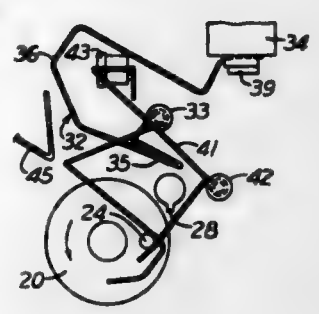
assigning the idle resource to the call, and completing the call over the public switched network.

4,348,555

TELEPHONE WITH LONG DISTANCE DIALING LOCK OUT

Andrew G. Basle, 44 Athinon Ave., Halandri, Greece

PCT No. PCT/US79/00366, § 371 Date Nov. 19, 1979, § 102(e) Date Nov. 19, 1979, PCT Pub. No. WO80/00052, PCT Pub. Date Jan. 10, 1980
PCT Filed May 29, 1979, Ser. No. 308,351
Claims priority, application United Kingdom, Jun. 5, 1978, 26334/78; Greece, Jul. 5, 1978, 56698
Int. Cl.³ H04M *1/66, 1/36*
U.S. Cl. 179—90 D 9 Claims



1. In a telephone having a receiver-transmitter unit, a support normally holding said unit, a dial rotable forward by a finger to selected digits from 1 to 0 following removal of said unit from said support, a spring for returning the dial to a starting position after each digit is dialed, a gear driven in forward and reverse directions by the dial, a boss projecting from the gear and rotable with it in a circular path from a starting position, a pair of normally closed spring contacts, a rotable lug for separating the contacts when the gear rotates in reverse direction, a rotable cam for closing the separating contacts a different number of times for each digit dialed to signal the digit to a central office, and means driven by said gear for rotating the lug and cam in forward and reverse directions, the improvement comprising first blocking-means actuated by said boss when zero is dialed first after removal of said unit from said support for arresting reverse rotation of said lug until after the gear has returned said boss a predetermined distance toward said starting position, whereby said contacts will signal a digit other than zero, second blocking-means actuated by the boss as it moves into starting position for holding said first blocking-means out of engagement with the lug to permit a local number to be called, resetting means actuated by said unit when replaced on its support for moving said second blocking-means away from said first blocking-means, and manually operable means for preventing said lug-stopping actuation of said first blocking-means by said boss when it is desired that said contacts signal zero when zero is dialed first after removal of said unit from its support.

4,348,556

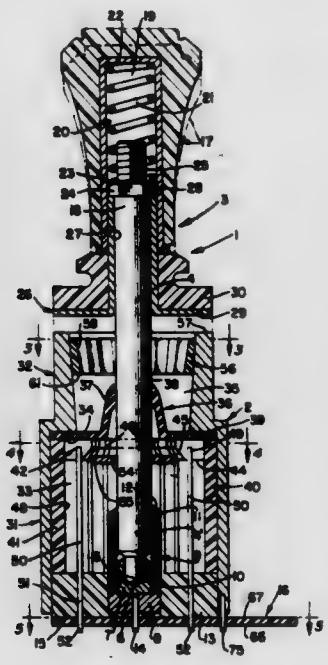
MULTI-POSITION SWITCH

William A. Gettig, and Larry E. Shook, both of Millheim, Pa., assignors to Gettig Engineering & Manufacturing Co., Spring Mills, Pa.

Filed Mar. 30, 1981, Ser. No. 248,975
Int. Cl.³ H01H *25/04*
U.S. Cl. 200—5 R 18 Claims

1. A multi-position switch including, a housing having a cavity therein, an actuator rod provided with a lower portion disposed within said housing cavity, a contactor joined to said rod within said housing cavity, supporting means joined to said rod lower portion to maintain said rod in a normal at-rest axial position within said housing and allow radial displacement thereof, said joined contactor, rod and supporting means of electrically conductive material and defining a common primary side of a plurality of circuits to be completed upon said radial displacement of said rod, a plurality of normally free-standing longitudinal conductive contacts surrounding said

contactor and spaced therefrom when said rod is in said at-rest position, selected ones of said contacts representing the secondary side of a plurality of circuits, said housing including a control element surrounding said rod and adapted to restrict the displacement of said rod into a plurality of radial directions aligned with respective ones of said contacts and alternately disposed intermediate other ones of said contacts, said control element including a plurality of radially extending valleys for receiving said rod and allowing its radial displacement, alternate ones of said valleys aligned with at least one of said



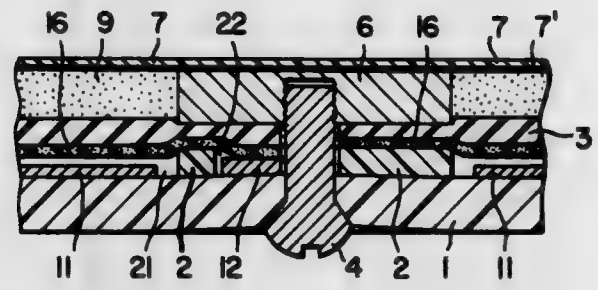
contacts associated with a single circuit whereby displacement of said rod into one of said alternate valleys directs said contactor into engagement with at least one of said associated contacts to complete a single circuit, and intermediate ones of said valleys vertically disposed intermediate two of said contacts associated with two separate circuits whereby displacement of said rod into one of said intermediate valleys directs said contactor into engagement with said contacts associated with two separate circuits to complete both of said two circuits.

4,348,557

KEY-BOARD SWITCH UNIT

Ryoichi Sado, Saitama, Japan, assignor to Shin-Etsu Polymer Co., Ltd., Tokyo, Japan

Filed Mar. 31, 1981, Ser. No. 249,361
Claims priority, application Japan, Apr. 4, 1980, 55-45388[U]
Int. Cl.³ H01H *13/12*
U.S. Cl. 200—5 A 3 Claims



1. A key-board switch unit which comprises

(a) a printed circuit board having, on one surface thereof, a plurality of fixed contact points, fixed terminals, a plurality of lead-out terminals and wiring circuits interconnecting the fixed contact points, fixed terminals and lead-out terminals with each other,

(b) an electrically insulating spacer sheet placed on the printed circuit board and provided with openings at positions corresponding each to one of the fixed contact points and fixed terminals on the printed circuit board,

(c) an elastically resilient and electrically insulating covering sheet member placed on the spacer sheet and provided with flexible and electroconductive contacting sheet members formed on the surface thereof facing the spacer sheet, each of the contacting sheet members facing at least one fixed contact point and at least one fixed terminal on the printed circuit board across the openings in the spacer sheet, and

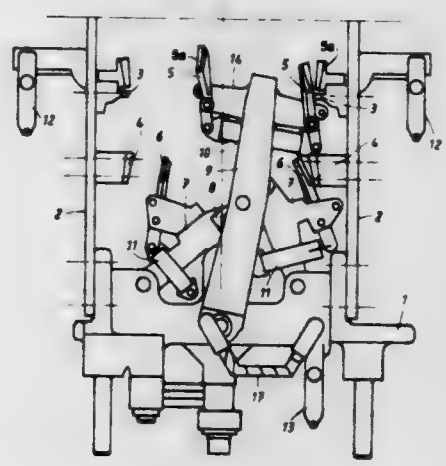
(d) at least one screw bolt penetrating the fixed terminal on the printed circuit board and the covering sheet member at the position corresponding to the fixed terminal through an opening in the spacer sheet to fasten together the printed circuit board and the covering sheet member with the spacer sheet sandwiched therebetween in such a manner that each of the contacting sheet members on the covering sheet member is contacted with at least one fixed terminal across an opening in the spacer sheet but a space for key stroke is left between the fixed contact point and the contacting sheet member on the covering sheet member, said space for key stroke being sufficiently narrow so that the contacting sheet member is brought into contact with the fixed contact point across an opening in the spacer sheet when the covering sheet member is pushed at the position corresponding to the opening in the spacer sheet at the fixed contact point.

4,348,558

DIVERTER SWITCH FOR AN ON-LOAD TRANSFORMER TAP CHANGER

Folke Johansson, Ludvika, Sweden, assignor to ASEA Aktiebolag, Vasteras, Sweden

Filed Dec. 28, 1979, Ser. No. 107,763
Claims priority, application Sweden, Jan. 5, 1979, 7900091
Int. Cl.³ H01H *3/32*
U.S. Cl. 200—6 R 4 Claims



1. A diverter switch for an on-load transformer tap changer, comprising

a frame (1),

an electrically-conducting, movable contact carrier (9,14) mounted on said frame,

at least one first and one second contact pair, each of said contact pairs having a fixed contact (3) and a movable contact (5), said fixed contacts being mounted on said frame and said movable contacts being rotatably journalled on said contact carrier,

operating means for moving said contact carrier between a first end position, in which said first contact pair is closed and said second contact pair is open, and a second end position, in which said first contact pair is open and said second contact pair is closed, and

a first contact spring means (10) for generating contact pressure between the fixed and movable contacts of each

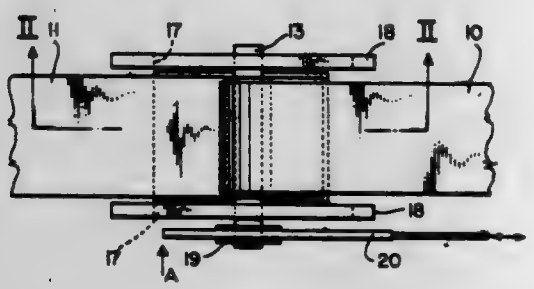
respective contact pair when being closed, characterized in that each of said movable contacts comprises two contact elements (5*a*, 5*b*), which are positioned on opposite sides of said contact carrier, that a second contact spring means (15) is provided for pressing said contact elements against said contact carrier, and that said contact elements and said contact carrier are provided with sliding contact surfaces facing each other for transmitting current between said contact elements and said contact carrier.

4,348,559

ROTARY SWITCH USING A FLEXIBLE CIRCUIT MEMBER

Pak-Jong Chu, Nepean, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Dec. 3, 1980, Ser. No. 212,272
Int. Cl.³ H01L *19/54*
U.S. Cl. 200—11 R **6 Claims**



1. A rotary switch using a flexible circuit member, comprising:

a support member;

a first circuit member having at least a portion supported on said support member and a plurality of contact areas on a surface of said portion, said contact areas in a pattern extending in a longitudinal direction on said surfaces;

a side member extending along each side of said support member;

a roller mounted at opposite ends in slots in said side members, the roller mounted for rotation about an axis transverse of said longitudinal direction and for movement along said longitudinal direction;

a second, flexible, circuit member attached at one end to said roller and adapted to wrap around said roller on rotation thereof, the flexible circuit member held in contact with said first circuit member by said roller;

said flexible circuit member having at least one contact area on a surface thereof and extending in said longitudinal direction, said surface on said flexible circuit member in rolling contact with said surface on said first circuit member.

means for moving said roller in said longitudinal direction, the roller rotating about said axis, whereby contact between said contact area on said flexible circuit member and said contact areas on said first circuit member is varied.

4,348,560

TIMING MECHANISM HAVING A SHORT PULSE PRIOR TO ITS OVERALL PROGRAM

Donald L. Ray, Oaklandon, and Elmo Voland, Indianapolis, both of Ind., assignors to Emhart Industries, Inc., Indianapolis, Ind.

Continuation-in-part of Ser. No. 967,917, Dec. 11, 1979, Pat. No. 4,246,454. This application Nov. 10, 1980, Ser. No. 205,737
Int. Cl.³ H01H *7/00*
U.S. Cl. 200—38 A **2 Claims**

1. A timing mechanism comprising:

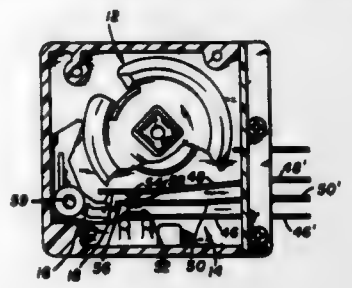
(a) shaft means,

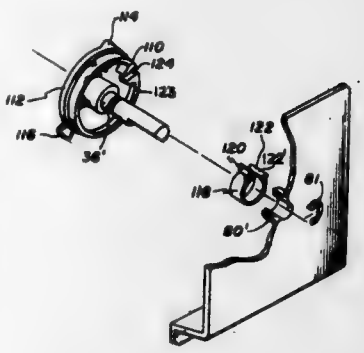
(b) integrally constructed first ramp means and locator means for positioning said first ramp means rotatably carried by said shft means,

(c) clutch means comprising a clip ring coupled to said integrally constructed first ramp means and locator means and functionally engaging a boss through which said shaft means extends,

(d) a single cam slideably carried on said shaft means and coupling means coupling same to said shaft means for rotation therewith,

(e) spring means axially biasing said single cam,





(f) second ramp means coupled to said single cam and engaging said first ramp means to selectively axially displace said single cam in a predetermined direction,

(g) first and second cam followers engaging said single cam to be sequentially actuated in accordance with an axial displacement of said single cam, and switch means opening and closing in response to said cam followers, and

(h) release means permitting said single cam to axially displace past said cam followers to its original position.

4,348,561

MECHANICAL DEVICE FOR PICKING UP AN ELECTRICAL LOAD

Marvin D. McKelvy, Centralia, Mo., assignor to A. B. Chance Company, Centralia, Mo.

Filed Aug. 5, 1980, Ser. No. 175,402
Int. Cl.³ H01H *13/28*
U.S. Cl. 200—51 R **8 Claims**

1. A load pick-up tool for transferring electrical current from an energized conductor to a non-energized conductor, said tool comprising:

an elongated dielectric tube;

a conductive head secured to the tube at one end of the latter;

said head having means for clamping the same to an energized conductor and being provided with a first, fixed electric contact;

an elongated, tubular, conductive guide in the tube spaced from said head;

means holding the guide against movement relative to the tube toward and away from the head,

said guide having means for connecting the same to a non-energized conductor and being provided with a second, fixed electric contact;

an elongated, conductive rod in the guide,

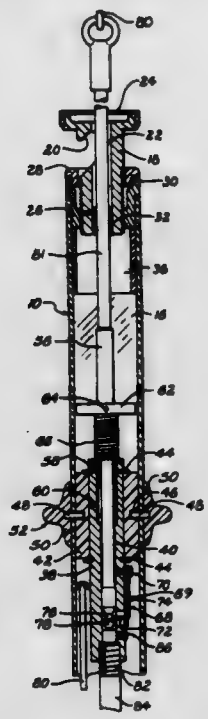
said guide supporting the rod for rectilinear reciprocation longitudinally of the tube and the guide along the longitu-

dinal axis of the rod toward and away from said first contact;

a releasable latch in the tube engageable with the rod for holding the rod at one end of its reciprocable path of travel remote from the first contact;

means operably connected to said latch for selectively releasing said latch for disengagement of said rod from said latch; and

spring means in the tube for forcing the rod toward the opposite end of its path of travel upon release of said latch,



said rod engaging both contacts when the rod is at said opposite end of its path of travel and having a latch-receiving groove at one end thereof remote from the first contact,

said latch being L-shaped, being mounted on the guide and having a leg disposed within the groove when the rod is at said one end of its path of travel,

said head having a passage therethrough for receiving an elongated device used to push the rod to said one end of its path of travel against the action of the spring.

4,348,562

POSITION SENSITIVE MERCURY SWITCH

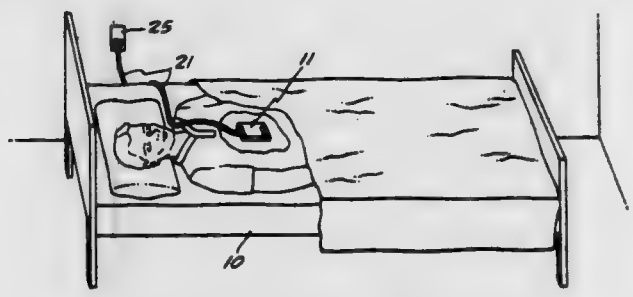
Robert E. Floria, 7921 S. Painter Ave., Whittier, Calif. 90602

Continuation-in-part of Ser. No. 133,002, Mar. 24, 1980, Pat. No. 4,282,412, which is a continuation-in-part of Ser. No. 935,363, Aug. 21, 1978, abandoned. This application Jan. 19, 1981, Ser. No. 226,367

The portion of the term of this patent subsequent to Aug. 4, 1998, has been disclaimed.

Int. Cl.³ H01H *29/20*

U.S. Cl. 200—52 R **12 Claims**



1. A mercury swtich assembly adapted to be secured to a patient for detecting changes in position, comprising in combination: a body having electrically non-conducting wall surfaces defining a head chamber and a foot chamber spaced by a connecting narrow throat passageway, said chambers being deeper and wider than said throat passageway, spaced electrodes projecting into said foot chamber, a ball of mercury capable of contacting said electrodes to form an electrical connection between them, said ball of mercury having a volume less than the volume of the head chamber and being normally contained within said head chamber when the switch assembly is in normal horizontal position, said walls being so shaped that said ball of mercury moves by gravity without delay from said head chamber through said narrow throat passageway and into said foot chamber when the switch assembly is tilted to incline said throat passageway to a slope of from 40° to 70° from horizontal, said head chamber having lateral extensions of substantial depth for continuously retaining said ball of mercury in said head chamber during lateral turning movement of the switch assembly when the inclination of said throat passageway is less than said slope inclination.

4,348,563

SNAP ACTION SWITCHES

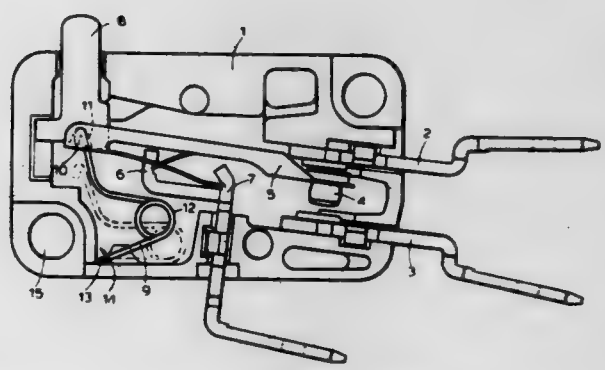
Michael I. Henville, Maidenhead, England, assignor to Unimax Switch Limited, Maidenhead, England

Filed Aug. 28, 1980, Ser. No. 182,222

Claims priority, application United Kingdom, Aug. 31, 1979, 7930347

Int. Cl.³ H01H *13/38*

U.S. Cl. 200—67 D **1 Claim**



1. A snap-action micro-switch comprising:

a casing having a plurality of mounting holes formed therein at preselected locations;

a fixed contact mounted within said casing;

An over-center snap action spring-loaded contact carrier mounting a movable contact and movable within said casing between a normal rest position occupied in the absence of an externally applied force and an operative position, said fixed contact being engaged by said movable contact in the rest position of said carrier;

an actuating button having first and second ends and guided for linear sliding movement within said casing;

said first end of said actuating button projecting outwards of said casing and said second end of said button engaging said carrier at a point displaced from said movable contact for movement of said carrier from said rest position to said operative position on inward sliding movement of said button in an actuating direction relative to said casing, said movement being effectable against the spring force of said spring-loaded carrier; and

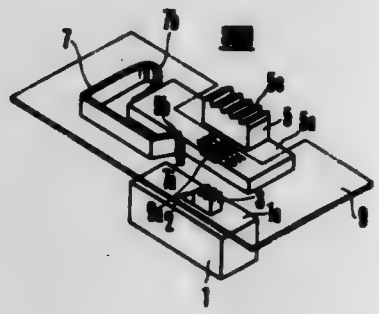
auxiliary spring means acting on said actuating button comprising a hairpin spring located wholly within said casing on the opposite side of said carrier from said button and clear of said mounting holes and having first and second limbs;

said first limb of said hairpin spring being located in a recess in said casing and said second limb of said hairpin spring engaging directly said second end of said actuating button, said hairpin spring being free of any contact with said contact carrier and being stressed such as to apply a force urging said button outwards of the casing.

4,348,564
SLIDE SWITCH

Shohei Ohtaki, Yokohama, and Masanori Yamada, Yokosuka, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 14, 1980, Ser. No. 196,438
Claims priority, application Japan, Oct. 17, 1979, 54-134460
Int. Cl.[3] H01H *13/28*
U.S. Cl. 200—67 F 11 Claims



1. A slide switch comprising:

(a) sliding means slidable between a first position and a second position;

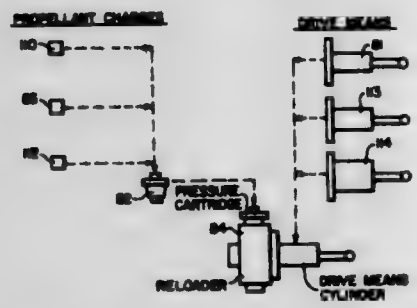
(b) holding means for releasably holding the sliding means in the second position when the sliding means assumes the second position and automatically enabling the sliding means to return from the second position to the first position after the lapse of a predetermined time; and

(c) a manually operable lever over the sliding means to cover the sliding means and coupled with the sliding means to operate the sliding means; said lever being held at least at one position and having a recess sufficient for enabling the sliding means to return from the second position to the first position when the sliding means has been held at the second position.

4,348,565
INTERCHANGEABLE CHEMICALLY OPERATED CIRCUIT BREAKER

Russell N. Yeckley, Murrysville, and Harvey E. Spindle, Wilkins Township, Allegheny County, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 24, 1980, Ser. No. 171,700
Int. Cl.[3] H01H *33/28*
U.S. Cl. 200—82 B 11 Claims



1. A circuit interrupter comprising:

a pair of separable contacts;

a movable operating mechanism connected to one of said separable contacts to cause movement thereof, said operating mechanism including a movable drive rod having a first end thereto; and

drive means for causing movement of said operating mechanism connected to said drive rod first end, said drive means comprising:

a reloader;

a drive means cylinder secured to said reloader and having disposed therein a movable piston and a piston rod secured to said piston, said piston rod extending outwardly of said drive means cylinder and being secured to said drive rod first end; and

pressure generating means in communication with the interior of said drive means cylinder, said pressure generating means generating a pressure within said drive means cylinder against said piston to cause movement thereof;

said drive means cylinder being preselected from a plurality of drive means cylinders each having a different cross-sectional interior area such that the amount of pressure generated within said drive means cylinder against said piston can be preselected from a plurality of pressures, each of said plurality of drive means cylinders capable of being secured to said reloader and said drive rod first end the same as each other of said plurality of drive means cylinders.

4,348,566
RHODIUM ELECTRICAL CONTACT OF A SWITCH PARTICULARLY A REED SWITCH

Masanori Baba, Suzaka, and Toshito Hara, Sagamihara, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 28, 1980, Ser. No. 135,180
Claims priority, application Japan, Mar. 29, 1979, 54/36275
Int. Cl.[3] H01H *33/66*
U.S. Cl. 200—144 B 19 Claims





1. An electrical contact of a switch, wherein said contact consists essentially of rhodium and 0.1 to 10 atomic % of silver;

said electrical contact being formed on at least one movable body, said movable body being moved in said switch due to a magnetic field applied to said movable body;

said movable body also being sealed gas-tight in an ampoule;

said at least one movable body comprising a pair of reed pieces of a reed switch, said reed pieces being attracted to each other due to the applied magnetic field;

said reed pieces being inserted through said ampoule at opposite ends of said ampoule, wherein the front opposing ends of the respective reed pieces overlap each other to form a gap therebetween within said ampoule;

said electrical contact being formed by an electrolytic plating process.

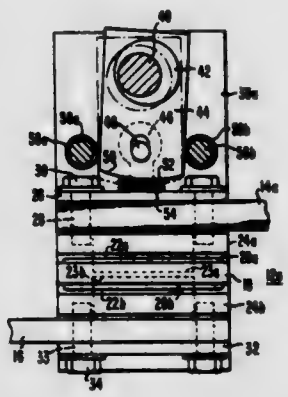
4,348,567
LOW-VOLTAGE VACUUM SWITCH OPERATING MECHANISM

Robert M. Hruda, Horseheads, N.Y., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 23, 1980, Ser. No. 162,265
Int. Cl.[3] H01H *33/66*
U.S. Cl. 200—144 B 4 Claims

1. An improved low-voltage vacuum switching means and operating mechanism including at least one low-voltage vacuum switch which includes axially movable contacts, which switch is connected via eccentric means to a rotary motion operating mechanism by linking means for translating the rotary motion to axial motion, which linking means has one end connected to the eccentric means, with the opposed linking means end pivotally connected to one axially movable

contact of the low-voltage switch, which linking means is axially movable with rotation of the eccentric means to effect opening and closing of the switch contacts, and wherein the linking means can move in a direction transverse to the axial movement direction as the eccentric means is rotated.



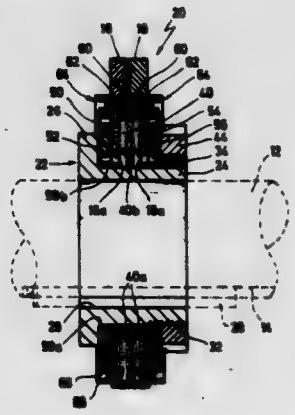
the improvement wherein linking means restraining guide means are disposed on opposed transverse sides of the linking means to limit and restrain the transverse movement of the linking means as the eccentric is rotated to move the linking means in essentially an axial direction.

4,348,568

SWITCHING MECHANISM

Eduard Hernle, Kirchstr. 20, D 7303 Neuhausen a.d.F., Fed. Rep. of Germany

Filed Oct. 24, 1979, Ser. No. 88,060
Claims priority, application Fed. Rep. of Germany, Oct. 25, 1978, 2846369
The portion of the term of this patent subsequent to Dec. 9, 1997, has been disclaimed.
Int. Cl.³ H01H *3/42*
U.S. Cl. 200—153 LB 9 Claims



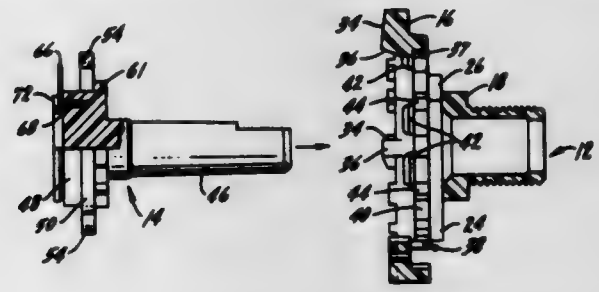
1. A switching mechanism comprising:
(a) a rotatable switch spindle having a length dimension;
(b) means defining an unround portion on said switch spindle;
(c) at least one annular disc cam having a recess and being inserted on said switch spindle; and
(d) an annular washer having an unround central aperture; said washer being mounted adjacent said disc cam on said switch spindle about said unround portion whereby relative rotation between said washer and said switch spindle is prevented; said washer being of a plastically deformable material, whereby arbitrarily selected portions of said washer are deformable in a direction generally parallel to said length dimension; said recess of said disc cam and said washer being so positioned with respect to one another that in any angular position of said disc cam on said switch spindle a portion of said washer being plastically deformable into said recess for preventing a relative rotation between said washer and said disc cam, whereby said disc cam rotates as a unit with said switch spindle for cooperating with a switch alongside the switch spindle; said disc cam being angularly adjustable with respect to said switch spindle in the absence of said portion of said washer from said recess of said disc cam.

4,348,569

ROTARY SWITCH

Bernard J. Golbeck, Crystal Lake; Raymond F. Lewandowski, Mount Prospect, both of Ill.; Donald A. Rentsch, Burlington, Wis., and Lonnie J. Richardson, Elgin, Ill., assignors to Oak Industries Inc., Rancho Bernardo, Calif.

Filed Aug. 15, 1980, Ser. No. 178,455
Int. Cl.³ H01H *19/14*
U.S. Cl. 200—155 R 14 Claims



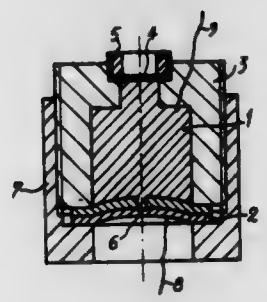
1. A rotary switch comprising a rotor having a flexible rim, a stator having a pocket for receiving the rotor, and retainer means formed on the stator for holding the rotor in the stator, the rim flexing past the retainer means upon initial assembly of the switch to permit entry of the rotor into the pocket, the rim thereafter snapping back to engage the retainer and hold the rotor in the pocket.

4,348,570

ELECTRIC CONTACT DEVICE WITH LIQUID CONDUCTORS

Francois J. Hanssonne, Rue des sept tourrants, Lannion, France (22300); Guy Moisan, Croix Gollo, Trebeurden, France (22560), and Hubert Prigent, 8, Res. "Place ar goer", Lannion, France (22300)

Filed May 9, 1980, Ser. No. 148,413
Claims priority, application France, May 10, 1979, 79 12372
Int. Cl.³ H01H *29/22, 29/00*
U.S. Cl. 200—191 5 Claims



1. Electric contact devices using an electrically conductive liquid enclosed in a sealed container, at least one surface or coating which is made of an electrically conductive material; an insulating material which will not absorb said liquid, said insulating material positioned intermediate said liquid and said conductive material; means of exerting pressure on said liquid; said insulating material being penetrated by at least one duct of a width such that, in a state of rest, capillary forces prevent the penetration of said liquid in said duct, while, when sufficient pressure is exerted, said liquid penetrates into said duct, establishing an electrically conductive path between said liquid and said conductive material, and such that, when said pressure ceases and the liquid returns to said state of rest, said liquid withdraws from said duct, thus breaking off said electrically conductive path; said device being characterized by the fact that the unit constituted by said insulating material and said

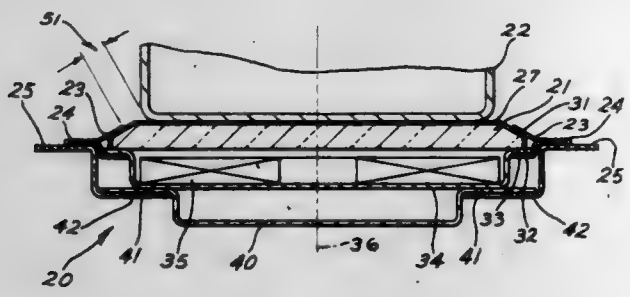
conductive material is formed as a single composite enamelled metal insulator-conductor unit.

4,348,571

FLUX SHAPING ARRANGEMENT FOR INDUCTION SURFACE UNIT

Raymond L. Dills, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Mar. 18, 1981, Ser. No. 244,845
Int. Cl.³ H05B 6/12
U.S. Cl. 219—10.49 R **7 Claims**



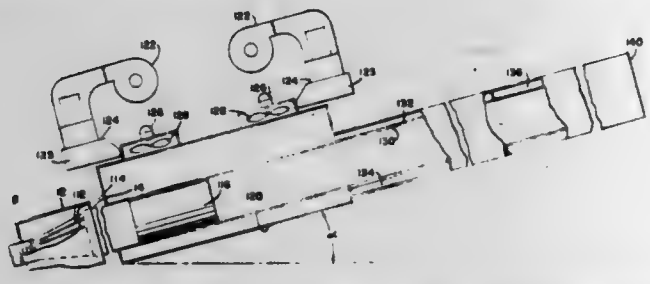
1. An induction cooktop comprising:
a planar horizontally disposed metallic surface having a plurality of openings therein;
an induction cooking unit disposed in one of said openings and adapted to support a cooking utensil thereon, said cooking unit including:
a metallic frame, said frame resting on portions of said surface bordering said opening,
a ceramic utensil support plate supported by said frame overlying said opening,
an induction heating coil,
means supporting said coil subjacent said plate, the axis of said coil being substantially coincident with the geometric center of said plate, and
a conductive layer carried on the outer peripheral portion of said plate in contact with said frame and adapted to contact a utensil when the utensil is in position on said plate, thereby forming a continuous low reluctance flux path between said frame and the utensil whereby said layer limits flux leakage between the utensil and said frame.

4,348,572

SELF-SURFACED MEAT PRODUCT MANUFACTURING METHOD AND APPARATUS

Rex E. Moule, 370 Grant Ave., Satellite Beach, Fla. 32937

Division of Ser. No. 134,605, Mar. 27, 1980, Pat. No. 4,294,858.
This application Mar. 23, 1981, Ser. No. 246,812
Int. Cl.³ H05B 6/78
U.S. Cl. 219—10.55 A **10 Claims**



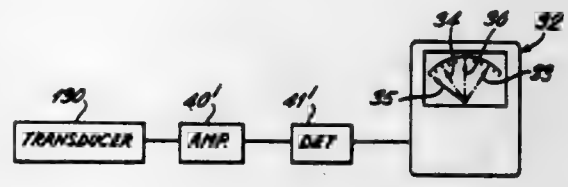
1. Apparatus for production of a meat product comprising container means for storing a liquefied product, forcing means for forcing the liquefied product from the container means, rate control means for controlling flow of product against a back pressure, tube means for receiving the product from the rate control means, said tube means including means for laterally constraining the product and thereby providing back pressure, microwave energy means surrounding the tube means for flowing microwave energy through the tube means and into the product, heating means connected to the tube means sequentially with the microwave energy means for heating the surface of the product to a high temperature, cooling means connected to the tube means sequentially following the heating means for cooling the surface of the product and means for releasing the product from the tube means.

4,348,573

METHODS AND APPARATUS FOR ELECTRICAL DISCHARGE MACHINING

Mohamed F. El-Menshawy, Selly Oak; Peter A. Woodrow, Sevenoaks, and Sushantha K. Bhattacharyya, Birmingham, all of England, assignors to National Research Development Corporation, London, England

PCT No. PCT/GB78/00052, § 371 Date Aug. 13, 1979, § 102(e) Date Aug. 6, 1979, PCT Pub. No. WO79/00380, PCT Pub. Date Jun. 28, 1979
PCT Filed Dec. 8, 1978, Ser. No. 154,408
Int. Cl.³ B23P 1/08
U.S. Cl. 219—69 M **23 Claims**



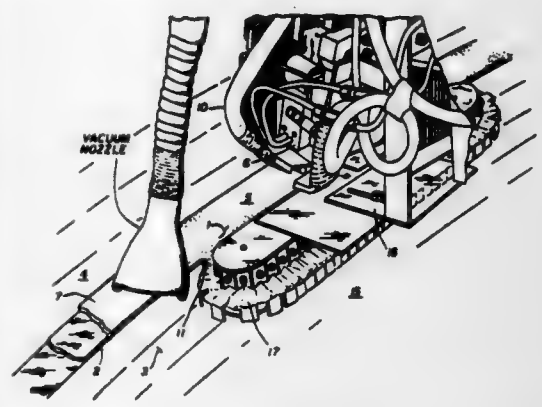
1. A method of electrical discharge machining characterized by receiving energy transmitted by the vibration of particles and emitted from the vicinity of the gap between an electrode and a workpiece when the electrode is being used to machine the workpiece, the energy having a characteristic which differs in some way or ways between first and second electrical discharge-conditions, and deriving a monitoring signal representative of the said characteristic from the energy received.

4,348,574

FLUX DAM FOR SUBMERGED ARC WELDING

John J. Barger, Ringgold, Ga., and James R. Underwood, Cleveland, Tenn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Jun. 13, 1980, Ser. No. 159,035
Int. Cl.³ B23K 9/04, 9/18
U.S. Cl. 219—73.21 **3 Claims**



1. A system for welding cladding on a horizontal surface of a workpiece, including,
a workpiece oriented to have a surface extended substantially horizontal,
an arc welding head oriented relative to the horizontal work surface describing a track over the surface to lay down a bead of metal on the surface of the workpiece along an edge of the surface above a side of the workpiece,
a dam in the form of a series of abutting segments with each segment having a profile of chair-like configuration which segments are connected through their backs to a continu-

ous belt while the front of the segments are brought into frictional engagement with the side of the workpiece below the edge to form a groove below the horizontal surface of the workpiece at the location along which the arc welding head lays down its bead,

and a supply of flux in granular form directed to flow as an overburden of the arc and between the dam and the workpiece,

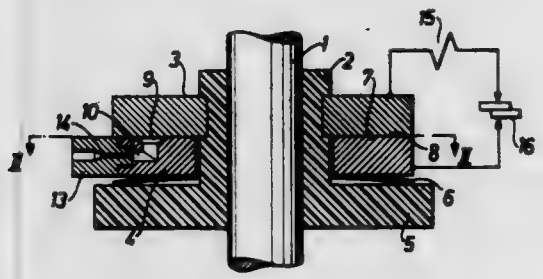
whereby, the flux between the dam and the workpiece is positioned to function as a molding body to limit the molten materials of the welding process and form a bead substantially flush with the edge of the substantially horizontal work surface.

4,348,575

CONTACT DEVICE

A. Thomas Hedren, Askersund, and Rolf G. Larsson, Laxa, both of Sweden, assignors to ESAB Aktiebolag, Gothenburg, Sweden

Filed Jun. 24, 1980, Ser. No. 162,428
Claims priority, application Sweden, Jun. 28, 1979, 7905678
Int. Cl.³ B23K *11/24*
U.S. Cl. 219—86.33 **8 Claims**



1. In a resistance welder, a combined pivot joint and electric contact device between two welding current conductors forming part of the welding circuit of the resistance welder, comprising:

a joint pin,

a pair of flat contact plates extending at right angles to said joint pin and connected each to one of said conductors, said contact plates being supported for relative rotation about said joint pin and being axially displaceable with respect to each other between a contact position in which the contact plates engage each other and an idle position in which the contact plates are out of engagement with each other,

means for yieldably urging at least one of said contact plates towards the other contact plate, and

means for moving said contact plates out of engagement with each other including

a channel provided in at least one of the contact plates, said channel having an outlet port in the plate surface facing the other contact plate and an inlet, and,

means including a valve and a supply conduit for connecting said inlet to a source of compressed gas.

4,348,576

POSITION REGULATION OF A CHARGE CARRIER BEAM

Peter Anderl, Munich, and Clauspeter Mönch, Grafrath, both of Fed. Rep. of Germany, assignors to Steigerwald Strahltechnik GmbH, Puchheim, Fed. Rep. of Germany

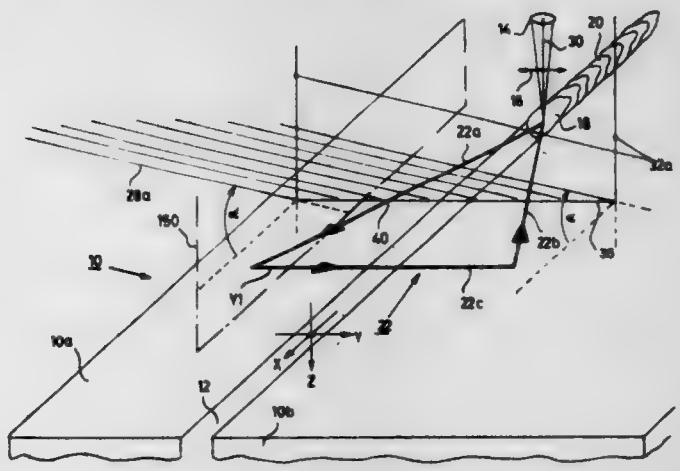
Filed Jan. 8, 1980, Ser. No. 110,555
Claims priority, application Fed. Rep. of Germany, Jan. 12, 1979, 2901148; Sep. 13, 1979, 2937094
Int. Cl.³ B23K *15/00*
U.S. Cl. 219—121 EW **13 Claims**

1. In a charged particle beam process, wherein a charged particle beam generator generates a beam of charged particles directed at a workpiece along an axis and said beam impinges upon a surface of said workpiece at a working beam impingement point, wherein said beam generator is moved relative to said workpiece in a first direction, thereby to move said working beam impingement point along a working path on said workpiece, a method for measuring the deviation of said working beam impingement point from an ideal beam impingement point comprising the steps of:

positioning an X-ray radiation sensor having an angular region of sensitivity defined by a boundary, said sensor being positioned at a fixed location relative to said beam generator such that said boundary comprises a boundary line on said workpiece spaced from said ideal beam impingement point;

periodically deflecting said beam of charged particles to move said working beam impingement point during a deflection time interval, with predetermined deflection speed, along a predetermined closed measuring path on said workpiece surface, said measuring path crossing said boundary line on said workpiece surface;

detecting the output of said sensor during said deflection time interval and comparing said detected output to a threshold value, said threshold value being selected to have a value between the value of said output signal when said working beam impingement point is in said angular region of sensitivity and the value of said output signal when said working beam impingement point is outside said region, thereby to measure the time during said interval at which the working beam impingement point of said beam crosses said boundary line;



and analyzing said time measurement with respect to said deflection speed and path, thereby to determine the deviation of said working beam impingement point from said ideal beam impingement point.

13. In a charged particle beam apparatus having a charged particle beam generator for emitting a beam of charged particles along a beam axis onto a surface of a workpiece, wherein said workpiece is moved in a first direction relative to said beam axis whereby a working point of impingement of said beam moves across said surface, apparatus for determining the location of the working point of impingement of said beam on said surface relative to said generator comprising:

a sensor for X-ray radiation, located in a fixed position relative to said generator and having an angular region of sensitivity defined by boundary surfaces which intersects said workpiece surface to form a boundary line spaced from said working point of impingement;

timing means for generating periodic measurement deflection timing signals;

deflection means, responsive to said deflection timing signals, for deflecting said charged particle beam to move the actual impingement point during a deflection time interval, with predetermined deflection speed, along a predetermined closed measuring path on said workpiece surface, said measuring path crossing said boundary line on said workpiece surface;

threshold means, responsive to the output of said sensor during said deflection time interval, for comparing said

output to a threshold value, said threshold value being selected to have a value between the value of said output signal when said actual impingement point is in said angular region of sensitivity and the value of said output signal when said actual impingement point is outside said region, thereby to generate a threshold timing signal representative of the time during said interval at which the actual impingement point of said beam crosses said boundary line;

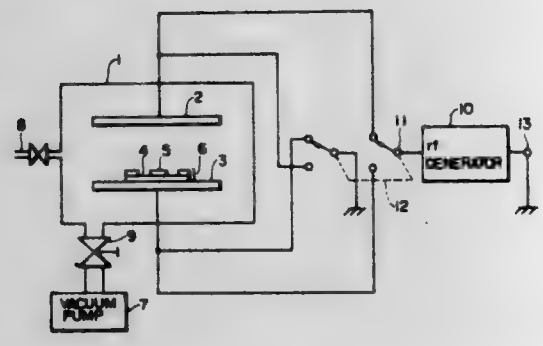
and signal processing means, responsive to said deflection timing signals and said threshold timing signals for generating signals representative of the location of said working impingement point of beam impingement relative to said generator.

4,348,577

HIGH SELECTIVITY PLASMA ETCHING METHOD

Hiroyasu Toyoda; Hiroyoshi Komiya, and Hideaki Itakura, all of Kawasaki, Japan, assignors to VLSI Technology Research Association, Kanagawa, Japan

Filed Sep. 3, 1980, Ser. No. 183,710
Claims priority, application Japan, Dec. 12, 1979, 54-163006
Int. Cl.[3] B23K *9/00;* H01L *21/306*
U.S. Cl. 219—121 PE 3 Claims



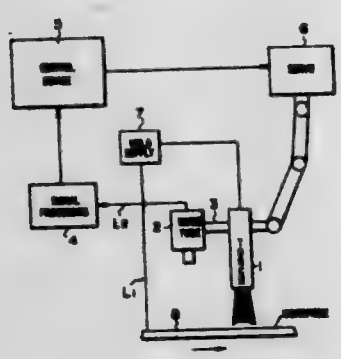
1. A method for preferentially etching a workpiece having a multilayer structure composed of layers of Si and SiO_2, comprising the steps of: disposing a workpiece having layers of Si and SiO_2 upon a cathode plate of a pair of parallel-plate electrodes disposed in a reactor; providing etching gas to said reactor at a predetermined pressure; and applying rf power between said electrodes at a frequency of 400 kHz to 10 MHz with a high voltage terminal of said rf power generator coupled to said cathode plate upon which said workpiece is disposed.

4,348,578

WORKPIECE MONITORING MEANS FOR ELECTRIC DISCHARGE WORKING APPARATUS

Ichiro Masaki, Kobe, Japan, assignor to Unimation, Inc., Danbury, Conn.

Filed Aug. 14, 1979, Ser. No. 66,323
Claims priority, application Japan, Aug. 15, 1978, 53/99319
Int. Cl.[3] B23K *9/10*
U.S. Cl. 219—130.01 13 Claims



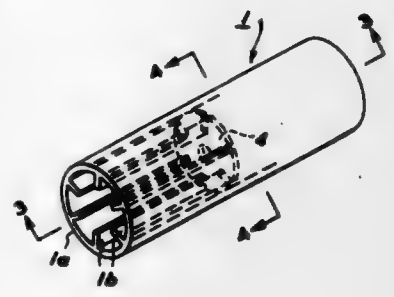
1. A method for monitoring a workpiece in a light generating arc welding process, wherein arc welding is performed by optically detecting the position of the workpiece to be arc welded and controlling the position of a welding torch on the basis of the result of the detection, the method comprising the steps of substantially repetitively interrupting the welding process at selected intervals by control of the power to the welding torch, and optically detecting the position of the workpiece via a positional image signal at said selected, repetitive intervals when the welding process is substantially interrupted and the light generation of the arc welding arrangement is reduced.

4,348,579

FIXING ROLL IN A COPYING MACHINE

Yoshiharu Namba, Ebina, Japan, assignor to Rank Xerox Limited, London, England

Filed Jun. 16, 1980, Ser. No. 160,766
Claims priority, application Japan, Jun. 28, 1979, 54-087569
Int. Cl.[3] H05B *3/02;* B21B *27/06*
U.S. Cl. 219—216 3 Claims



1. Heat and pressure fuser apparatus for fixing toner images to copy substrates passing through a nip formed between two pressure engaged roll structures, at least one of the roll structures being heated and contacting the toner images as the substrates pass through said nip, the improvement comprising:

said at least one of said roll structures being characterized by a cylindrical configuration having an outer circumferential wall which is relatively thin thereby having a relatively small heat capacity for minimizing the time required to elevate it to the fusing temperature,

said at least one of said roll structures further characterized by reinforcing means associated with said circumferential wall for rendering said relatively thin wall sufficiently rigid to withstand the pressures to which it is subjected during fusing, said reinforcing means comprising a plurality of reinforcing ribs extending along the length of said wall and radially inward toward the center of said at least one roll structure,

said at least one of said roll structures being further characterized by the provision of a plurality of plate members disposed transversely relative to the longitudinal axis of said at least one of said roll structures and provided with slots for receiving said reinforcing ribs,

said plate members cooperating with said reinforcing ribs to render said circumferential wall rigid.

4,348,580

ENERGY EFFICIENT FURNACE WITH MOVABLE END WALL

Charles F. Drexel, Rolling Hills Estates, Calif., assignor to Tylan Corporation, Carson, Calif.

Filed May 7, 1980, Ser. No. 147,660
Int. Cl.[3] F27B *5/14;* F27D *19/00*
U.S. Cl. 219—390 14 Claims

1. A furnace, comprising:

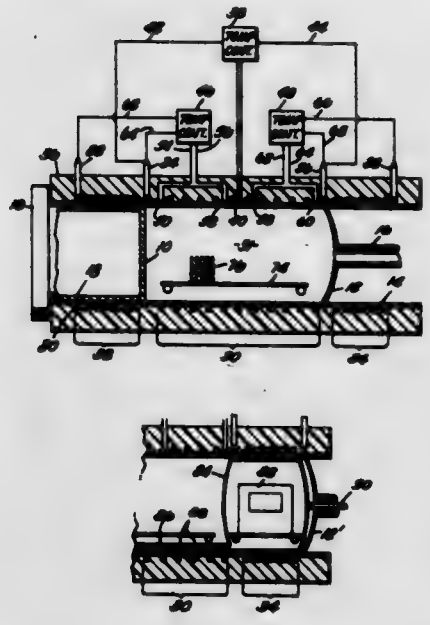
a first tubular member having opposite first and second ends, said tubular member being open on at least said first end and defining an elongate chamber having an elongate

inner section spaced inwardly from said open end and at least a first outer section terminating at said first end;

means for introducing process gas through said second end;

means for separately heating said inner and outer sections, comprising means for heating said elongate inner section and a guard heater on said first outer section for heating a substantial portion of said first outer section;

means for closing said open end, comprising a first wall normal to the axis of said tubular member disposed in the open end of said tubular member, said wall being movable



to and from a position in said first outer section that is adjacent the outer edge of said inner chamber section;

means for sensing a differential in temperature between a central portion of said inner chamber section and the outer edge of said inner chamber section proximal to said open end; and

means for varying the extent of heating of said first outer section in accordance with said sensed temperature differential to provide a predetermined temperature relationship between said first outer chamber section and said inner chamber section.

4,348,581

ELECTRIC HOTPLATE

Karl Fischer, Am Gänsberg 23, D-7519 Oberderdingen, and Felix Schreder, Oberderdingen, both of Fed. Rep. of Germany, assignors to Karl Fischer, Fed. Rep. of Germany

Filed Aug. 14, 1980, Ser. No. 177,873

Claims priority, application Fed. Rep. of Germany, Aug. 17, 1979, 2933296

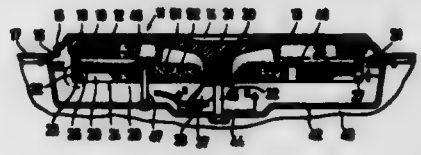
Int. Cl.³ H05B *3/68*

U.S. Cl. 219—460 17 Claims

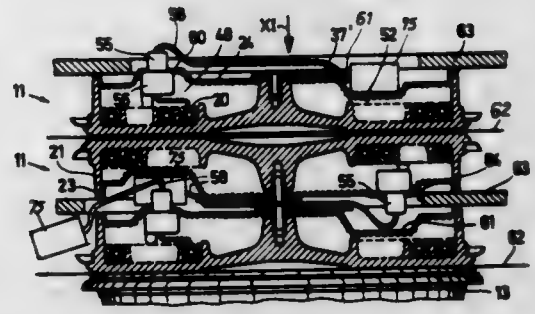
1. Stackable hotplates, each having a hotplate member with a downwardly directed annular border on its outer periphery, the border having a free lower edge, and each comprising:

a covering sheet having an outwardly directed flange and having adjacent to the flange a step directed towards the inside of the hotplate, said flange resting on the free lower edge of the border and said step cooperating with the inner circumference of the border in order to center the covering sheet, the covering sheet having an opening and an upwardly projecting depression, the opening and the depression being radially equally spaced from the center of the covering sheet but angularly displaced from one another; and,

an insulating member disposed in the opening and projecting downwardly from the covering sheet, electrical connections for the hotplate member passing through the insulating member, whereby stacking two of said hotplates together, with their covering sheets facing one another, the







insulating member of each hotplate fits into the depression of the other hotplate, minimizing the stacked height.

4,348,582

COMMUNICATION VIA AN ELECTRICITY SUPPLY MAIN

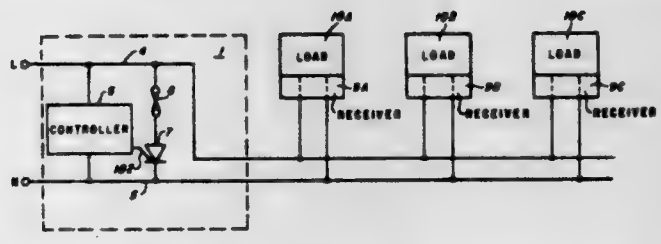
Jerzy A. Budek, Bedford, England, assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 14, 1979, Ser. No. 20,296

Claims priority, application United Kingdom, Mar. 14, 1978, 10039/78

Int. Cl.³ H05B *1/02*

U.S. Cl. 219—483 6 Claims



1. A control system for remotely controlling at least one alternating current electric-mains-operated appliance, including:

a controller having electronic switch means for superimposing a control signal on an alternating current mains supply by interrupting the mains supply for a period adjacent a zero crossing in one or more selected half-cycles of the mains supply and substantially less than the mains supply cycle period thereby to hold the mains supply voltage substantially at zero during said interruption;

at least one receiver means for monitoring the mains supply and for controlling said electrical appliance said receiver having

(A) interruption detector means including a full wave rectifier means for providing a full-wave rectified signal from said mains supply; voltage threshold detector means for receiving said full-wave rectified signal and producing an output whenever the voltage of said full-wave rectified signal is lower than a threshold voltage;

and means for responding to the durations of said outputs from said voltage threshold detector means to produce an indication of the occurrence of a said interruption; and

(b) means responsive to said indications of the occurrence of an interruption to produce outputs for controlling said electric appliance in accordance with the control signal from the controller.

4,348,583

RAPIDLY-HEATED PERIODICALLY-MAINTAINED HEATER FOR MOTOR VEHICLE APPARATUS

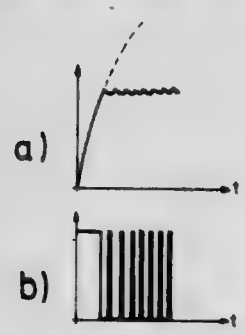
Carsten Bube, Ludwigsburg; Gerd Thiele, Stuttgart, and Hans Zeller, Grafenau, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 898,758, Apr. 20, 1978, abandoned. This application Mar. 10, 1980, Ser. No. 128,765

Claims priority, application Fed. Rep. of Germany, Jun. 11, 1977, 2726458

Int. Cl.³ H05B *1/02*

U.S. Cl. 219—497 12 Claims



1. An electric heater, for heating apparatus in a motor vehicle which includes a combustion engine, a d.c. power source, an engine starter, starter energizing means for energizing the starter from the d.c. power source, and heater energizing means for energizing the electric heater from the d.c. power source, wherein the electric heater comprises:

a heating element;

switch means for connecting said heating element to said d.c. power source; and

switch control means for controlling said switch means so as to deliver to said heating element a predetermined amount of electrical energy during a first time interval and a heater current during a second, consecutive time interval during which said heater current varies periodically as a function of the heating element temperature and current supplied to the engine starter, said switch control means including

temperature simulating means for simulating the temperature of said heating element electronically, said temperature simulating means being adapted to continuously provide an electrical output signal corresponding to said heating element temperature whenever said electric heater is energized, and

synchronizing means for synchronizing maximum portions of said heater current with respective minimum portions of the undulating starter current.

4,348,584

FLEXIBLE HEATING ELEMENTS AND PROCESSES FOR THE PRODUCTION THEREOF

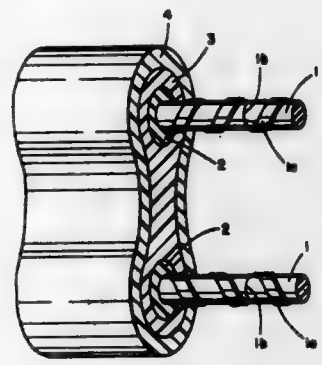
George M. Gale, Shrewsbury; David I. James, Wem, and John V. B. Meyer, Salford, all of England, assignors to Sunbeam Corporation, Chicago, Ill.

Filed May 9, 1980, Ser. No. 148,378

Claims priority, application United Kingdom, May 10, 1979, 7916273

Int. Cl.³ H05B *3/34, 3/54*

U.S. Cl. 219—549 7 Claims



1. A flexible heating element which comprises at least two flexible electrical conductors spaced apart by a PTC material, an amorphous highly conductive rubber compatible with the said PTC material and adhered to and completely surrounding each conductor, said conductive rubber being interposed between the PTC material and each conductor whereby in use current passes from one conductor to another through the PTC material via the said highly conductive rubber, said conductors and said conductive rubber which coats said conductors being completely enveloped by said PTC material, the conductors being spaced sufficiently close to one another to ensure that when energized the PTC material heats substantially uniformly without exhibiting a significant temperature gradient between the conductors and that any abnormal temperature increase increases the temperature of all the PTC material between the conductors in the region of the abnormal temperature increase, the amorphous highly conductive rubber interposed therebetween providing improved current conduction between the conductors and said PTC material.

4,348,585

FREQUENCY/SPEED CONTROLLER

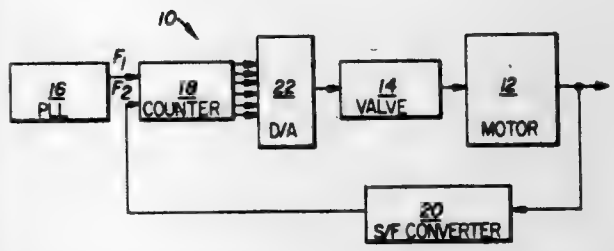
John P. Hoffman, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US79/00209, § 371 Date Apr. 2, 1979, § 102(e) Date Apr. 2, 1979

PCT Filed Apr. 2, 1979, Ser. No. 83,997

Int. Cl.³ G06M *3/04*

U.S. Cl. 235—92 CT 14 Claims



1. An integrating frequency-difference counter (18) comprising:

an up/down counter (24) having an up/down input (26), a clock input (28) and an output (30), said counter (24) being free to count in response to receiving a clock signal at the clock input (28), free to count up in response to receiving an up count signal at the up/down input (26), and free to

count down in response to receiving a down count signal at the up/down input (26);

signal generating means (64,66) for generating first, second, third and fourth outputs (68,70,72, 74), said outputs (68,70,72,74) being generated at a preselected frequency in a preselected sequential order;

first means (94,96,98,100) for receiving a first reference frequency signal of frequency f_1, combining the first frequency signal with the first output (68) in a preselected manner, and producing the clock signal;

second means (94',96',98',100') for receiving a second controlled frequency signal of frequency f_2, combining the second frequency signal with the third output (72) in a preselected manner, and producing the clock signal;

third means (76,78) for receiving the second output (70) and producing the down count signal; and

fourth means (78,80) for receiving the fourth output (74) and producing the up count signal, the output (30) of the counter (24) at any time being the digital guantized form of

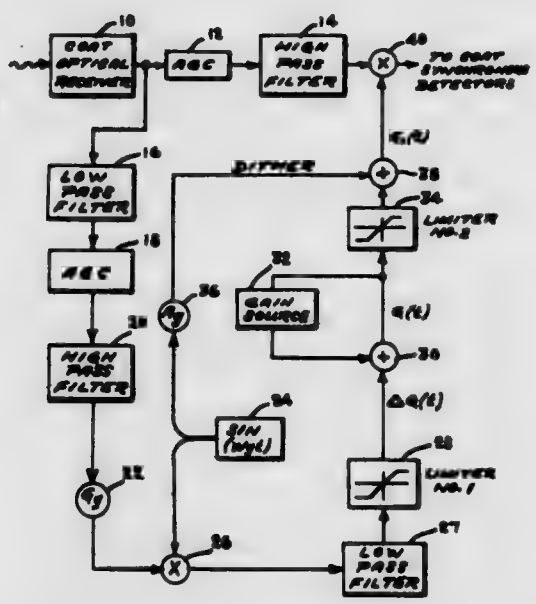
$$\int_0^t (f_1 - f_2)dt.$$

4,348,586

AUTOMATIC BANDWIDTH CONTROL SYSTEM

Stanislaw A. Kokorowski, Canoga Park, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Sep. 9, 1980, Ser. No. 185,472
Int. Cl.³ H01J *40/14*
U.S. Cl. 250—214 R **6 Claims**



1. An automatic bandwidth control system for an adaptive optics servo comprising in combination:

a bandpass filter means receiving a photodetected signal, said bandpass filter means removing unwanted high and low signals, said bandpass filter means maintaining a predetermined signal level,

a gain parameter means receiving the output signal from said bandpass filter means, said gain parameter means multiplying said output signal by a gain parameter to provide a gain correction signal,

a modulation means operating at a dither frequency, ω_g, said modulation means providing a modulation signal,

a multiplier means receiving said gain correction signal and said modulation signal, said multiplier means providing a DC gain correction signal,

a low pass filter means receives and filters said DC gain correction signal to remove noise and unwanted signals,

a first limiter means receives said DC gain correction signal from said low pass filter means to maintain the signal within predetermined limits,

a gain source provides a gain factor that is added to said DC gain correction signal to provide a gain signal,

a second limiter means receives said gain signal and limits said gain signal to a predetermined level,

a gain modulation means receives said modulation signal, said gain modulation means multiplies said modulation signal by an amplitude factor to provide a dither signal, and

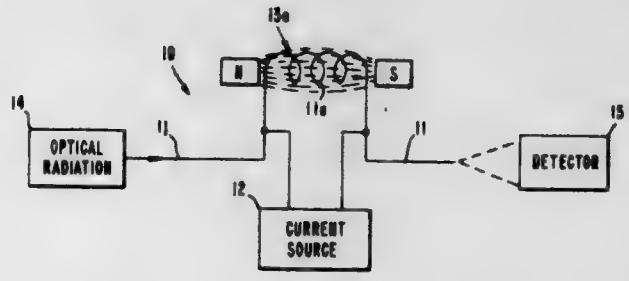
an adder means receives and adds together said dither signal and said gain signal to provide a bandwidth correction signal.

4,348,587

FIBER OPTIC TRANSDUCER FOR MEASURING CURRENT OR MAGNETIC FIELD

Gregory L. Tangonan, Oxnard; Robert J. Morrison, Thousand Oaks; Joseph A. Wysocki, Oxnard, and David L. Persechini, Santa Monica, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Nov. 17, 1980, Ser. No. 207,107
Int. Cl.³ G01R *31/00*
U.S. Cl. 250—227 **10 Claims**



1. A fiber optic transducer including:

(a) a multi-mode optical fiber adapted to transmit optical radiation, at least a portion of said optical fiber also adapted to conduct electricity;

(b) means for introducing optical radiation into said optical fiber;

(c) means for impressing a current on said portion adapted to conduct electricity;

(d) means for applying a magnetic field to a portion of the current-carrying optical fiber; and

(e) means for providing an optical output from said optical fiber.

4,348,588

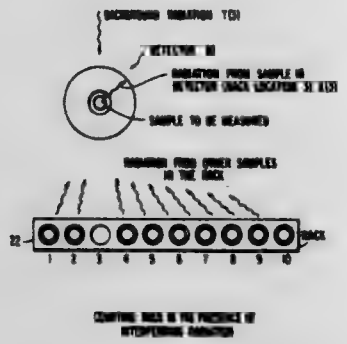
METHOD FOR COMPENSATING MEASURING VALUES WHEN MEASURING THE RADIATION FROM A NUMBER OF RADIOACTIVE SAMPLES IN AN AUTOMATIC RADIATION DETECTING INSTRUMENT

Tapio Yrjönen; Urpo Pietilä, both of Turku, and Tim Rawlins, Yliskulma, all of Finland, assignors to Wallac Oy, Turku, Finland

Filed Oct. 19, 1979, Ser. No. 86,513
Int. Cl.³ G01D *18/00*; G01T *1/00, 1/20*
U.S. Cl. 250—252.1 **3 Claims**

1. Method for correction of measuring values when measuring the radiation from a number of radioactive samples in a radiation measuring instrument where a radiation detector in addition to the radiation from sample is affected by the radiation from a number of other sources of radiation which during the measurement have predetermined locations in respect to the detector, characterized in that first the degree of affection in the detector from the radiation of the sample and from sources in said locations is determined by means of locating a known radiation source of known activity in each of said

locations and determining and storing the measuring values thus obtained, whereafter the measuring value for each sample



is compensated for by considering the measuring value from the other sources and said degree of affection.

4,348,589

MICROPHONIC NOISE COMPENSATION FOR AN IONIZATION DETECTOR

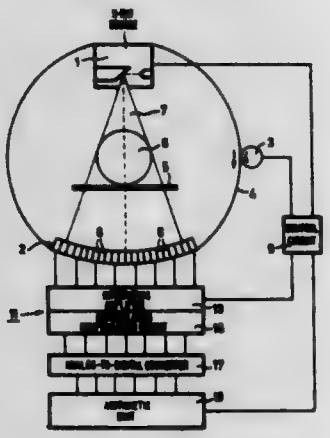
Petrus N. J. Vis, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 18, 1980, Ser. No. 160,702

Claims priority, application Netherlands, Jun. 25, 1979, 7904923

Int. Cl.³ H01J *39/28*

U.S. Cl. 250—387 **3 Claims**



1. A device for measuring local absorption differences in an object, said device comprising a detector comprising:

a chamber filled with gas;

a high-voltage electrode in the chamber;

a signal electrode arranged in the chamber adjacent to, but spaced from, the high-voltage electrode;

a high-voltage source connected to the high-voltage electrode; and

a signal measuring circuit connected to the signal electrode;

wherein, in operation the detector has an output signal at the signal electrode comprising a real measuring signal modulated by a microphonic noise signal;

CHARACTERIZED IN THAT the device further comprises:

an alternating voltage source for producing a high-frequency alternating voltage which modulates the high-voltage source and the detector output; and

a demodulator compensation circuit for isolating the microphonic noise signal from the detector output.

4,348,590

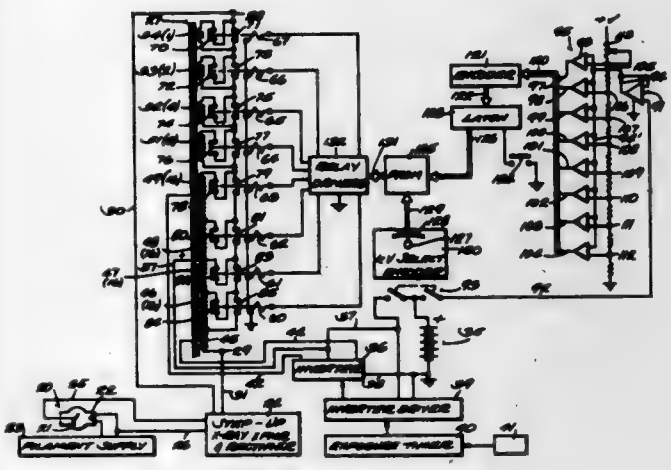
X-RAY TUBE ANODE VOLTAGE COMPENSATOR

Herbert E. Daniels, Brown Deer; Harold E. Stehman, Hales Corners, and Brian P. Moran, Mukwonago, all of Wis., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 27, 1980, Ser. No. 200,644

Int. Cl.³ H05G *1/32, 1/34*

U.S. Cl. 378—112 **6 Claims**



6. A method of compensating the voltage applied between the anode and cathode of an x-ray tube for power source voltage variations, comprising:

providing a transformer having its input supplied from the power source and having an output circuit comprised of a plurality of windings for being connected with switches in various combinations to provide corresponding voltages to another step-up transformer which supplies the anode-to-cathode voltage to the x-ray tube,

performing the steps of adjusting the power source to provide a particular voltage and opening and closing the switches in various combinations while making a series of x-ray exposures with the x-ray tube conducting for each combination and recording the data indicative of the voltage actually applied to the x-ray tube and the source voltage,

repeating said steps at incremental changes in the source voltage through at least the expected range of source voltage variations,

then programming a read-only memory so it will respond to binary coded addresses representative of particular source voltages and related x-ray tube applied voltages, respectively, corresponding with said data by producing a digital code word representative of the switch combination existing when the data was obtained,

developing addresses for the read-only memory representative of prevailing source voltage and desired applied voltage for addressing the read-only memory to produce the digital code word representative of the switch combination, and providing means which respond to said digital words by establishing the switch combination.

4,348,591

UTILIZING GAMMA CAMERAS FOR UPTAKE STUDIES AND RESTRICTED FIELDS OF VIEW AND MULTIPLE APERTURE COLLIMATOR SYSTEMS THEREFOR

Alan M. Wunderlich, Pringle Rd., Miller Place, N.Y. 11764

Filed Nov. 26, 1979, Ser. No. 97,168

Int. Cl.³ G21K *1/00;* G01T *1/20;* G21K *1/04*

U.S. Cl. 250—505.1 **10 Claims**

1. A straight bore flat field masking collimator for multiple detector imaging gamma cameras comprising:

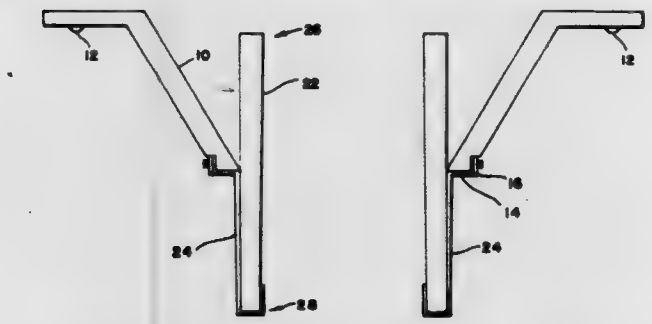
(A) an open generally cylindrical radiation shield, having a camera end and an aperture end, the greatest inner dimension thereof being substantially between two and five inches, and

(B) a radiation shielding portion at the camera end of said

cylindrical radiation shield for mounting to a gamma camera and for masking off the greater portion of the gamma camera's multiple detectors.

8. A masking collimator for a multiple detector imaging gamma camera comprising:

(A) a generally cylindrical radiation shield having a camera end and an aperture end, the greatest inner dimension



thereof being substantially between two and five inches, said shield being a solid cylinder of radiation shielding material having a plurality of channels, and

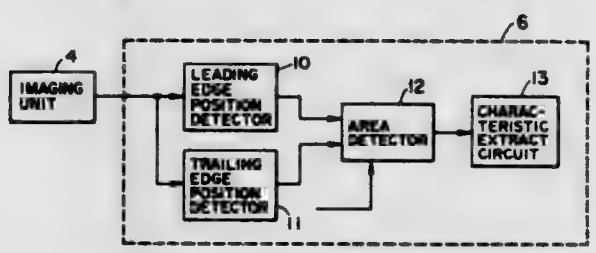
(B) a radiation shielding portion at the camera end of said cylindrical radiation shield for mounting to a gamma camera and for masking off the greater portion of the gamma camera's multiple detectors.

4,348,592

APPARATUS FOR READING PATTERNS

Seiichiro Kimura, Komae; Yuhei Iwasaki, Fujisawa, and Yuji Kozaki, Yokohama, all of Japan, assignors to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 19, 1980, Ser. No. 131,833
Claims priority, application Japan, Jan. 31, 1980, 55-9295
Int. Cl.[3] G01N *21/86*
U.S. Cl. 250—560 9 Claims



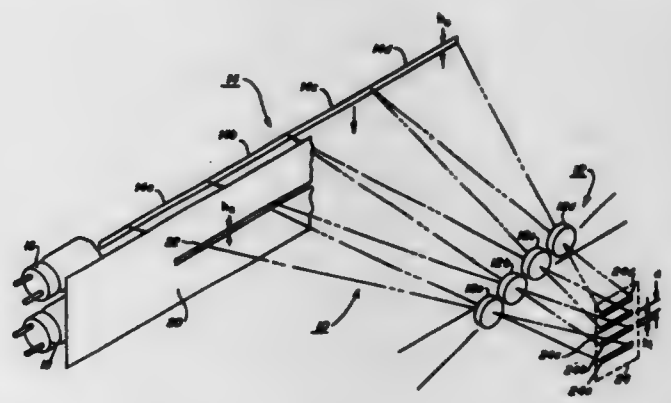
1. In an automatic apparatus for reading object portions of a pattern, said object portions having a light reflective characteristic different from other portions of the pattern, said apparatus having a light source for uniformly illuminating said pattern, an imaging unit for receiving light from said pattern to produce an image signal when receiving light from said object portion, and drive means for moving said pattern relative to said imaging unit to scan said pattern in successive increments, the improvement comprising means responsive to said image signals for producing a leading-edge signal upon first encountering said object portion after a previous scan not encountering said object portion, means responsive to said image signals for producing a trailing edge signal upon last encountering said object pattern, area detection means for detecting the area of said object pattern scanned between producing said leading edge signal and said trailing edge signal determining a selected characteristic of said object portion.

4,348,593

TWISTING GEOMETRY OPTICAL SYSTEM UTILIZING IMAGING ARRAY WITH TIME DELAY SEGMENTS

Ned J. Seachman, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 29, 1981, Ser. No. 229,375
Int. Cl.[3] H04N *1/10*
U.S. Cl. 250—578 6 Claims



1. An optical apparatus for line-by-line scanning of an original document comprising:

means for illuminating an information-bearing scan line on said document, said line extending in a predetermined axial direction;

an area detector array including a plurality of detector units oriented along an axis perpendicular to said axial direction;

said detector units comprising a plurality of multiple time delay integrator detectors; and

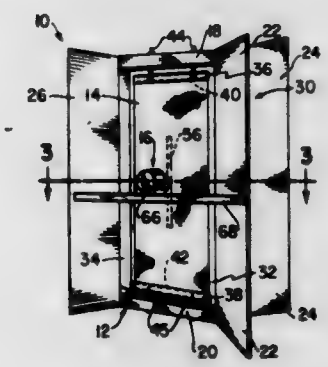
means for projecting an image of said illuminated scan line onto said detector array, said means including an array of lenses oriented along an axis tilted with respect to the axial direction of said scan line in a manner whereby the information content of a plurality of segments of said scan line is each projected upon a predetermined detector unit.

4,348,594

WIND POWER GENERATOR

Donald E. Lipfert, Box 142 River Rd., Woolwich, Me. 04579

Filed Jul. 14, 1980, Ser. No. 168,129
Int. Cl.[3] F03D *5/06*
U.S. Cl. 290—54 16 Claims



1. A device for generating energy derived from a moving fluid comprising:

a. housing means for guiding the moving fluid generally parallel to a predetermined direction;

b. means disposed within the housing means for oscillating generally transversely to the predetermined direction in response to the movement of the fluid, said oscillating means including a generally flat flexible membrane supported within the housing means under tension, said membrane positioned so as to have at least one edge disposed so as to divide the fluid flow to pass over the surfaces of

said membrane such that vortices are created which cause said membrane to oscillate; and

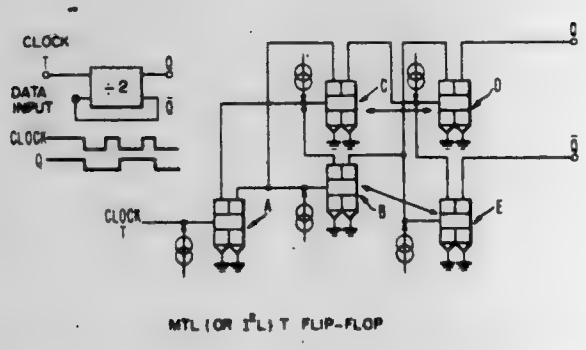
c. means coupled to at least a portion of the surface of said membrane for converting the oscillatory motion thereof into energy which is derived from the energy of the moving fluid.

4,348,595

CIRCUIT INCLUDING AT LEAST TWO MTL SEMI-CONDUCTING DEVICES SHOWING DIFFERENT RISE TIMES AND LOGIC CIRCUITS MADE-UP THEREFROM

Gerard M. Lebesnerais, Perthes, France, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 12, 1980, Ser. No. 186,829
Claims priority, application France, Oct. 30, 1979, 79 27386
Int. Cl.³ H03K *3/286*; G11C *19/28*
U.S. Cl. 307—221 R **41 Claims**



MTL (OR I^2L) T FLIP-FLOP

1. A bistable device having first and second stable states and control means for causing said bistable device to preferentially assume said second state, said bistable device and control means comprising:

a first I^2L circuit having a data input and first and second outputs;

a second I^2L circuit having an input and an output;

a third I^2L circuit having an input and an output;

a fourth I^2L circuit having at least a control input;

first passive connection means for connecting in common said first output of said first I^2L circuit, said input of said second I^2L circuit and said output of said third I^2L circuit;

second passive connection means for connecting in common said second output of said first I^2L circuit, said input of said third I^2L circuit and said output of said second I^2L circuit; and

solid state circuit means coupling said fourth I^2L circuit means to said second I^2L circuit.

4,348,596

SIGNAL COMPARISON CIRCUIT

James H. Atherton, Flemington, and Clifford P. Jindra, North Plainfield, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Dec. 27, 1979, Ser. No. 107,403
Int. Cl.³ H03K *17/687, 19/092*
U.S. Cl. 307—264 **9 Claims**

1. The combination comprising:

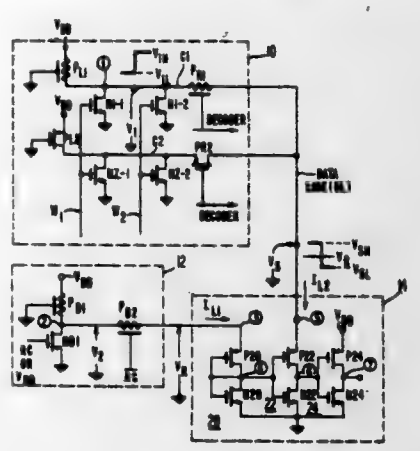
a signal generator having an equivalent source impedance R_1 and producing signals at its output having either one of first (V_{1H}) and second (V_{1L}) values;

a reference generator having an equivalent source impedance R_3, and producing a signal at its output having a value intermediate V_{1H} and V_{1L};

a sense amplifier having first and second inputs and an output, said sense amplifier being responsive to the signals at its first and second inputs and producing a signal at its output indicative of the signal at its first input being more positive than, equal to, or less positive than, the signal at its second input, said sense amplifier being further characterized in that there is a load current associated with each one of its first and second inputs in response to the applied input signals;

a first coupling means having an impedance R_2 connected between the output of the signal generator and said first input of said sense amplifier; and

a second coupling means connected between the output of said reference generator and said second input, said second coupling means having an impedance R_4 such that: $R_4=K(R_1+R_2)-R_3$, where K is equal to the ratio of the current flowing through said first input to that flowing through said second input of said sense amplifier, and R_1, R_2, and R_3 represent the ohmic values of said signal generator source impedance, of said first coupling means impedance, and of said reference generator source impedance, respectively.

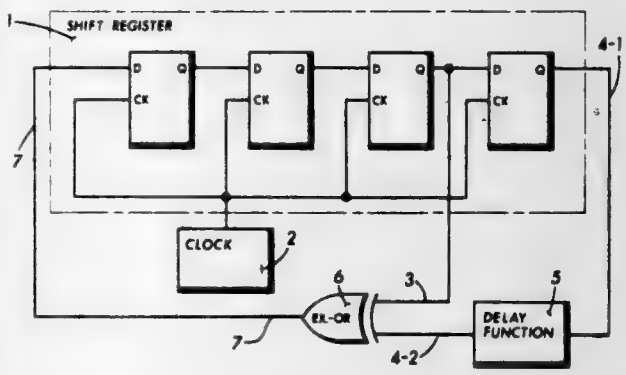


4,348,597

LATCHUP RESISTANT PSEUDORANDOM BINARY SEQUENCE GENERATOR

Harold J. Weber, 20 Whitney Dr., Sherborn, Mass. 01770

Filed May 27, 1980, Ser. No. 153,401
Int. Cl.³ H03K *3/84*
U.S. Cl. 307—269 **9 Claims**



1. A pseudorandom binary sequence generator including means adapted thereto for providing latchup resistance, including in combination:

a. a source of clock signal;

b. a shift register means coupled with said clock signal, having a data input thereto and plural stage outputs therefrom;

c. dynamic imbalance means coupled to at least one said stage output and cooperative therewith to produce at least one delayed output therefrom exceeding intrinsic transmission gate delay but less than said clock signal period;

d. combinational logic means directly coupled with two inputs between said stage output and said dynamic imbalance means output and an output coupled to said register data input, operative therebetween so as to produce a pseudorandom flow of binary pulses; and further,

e. whereby resistance to latchup is provided through the effective dynamic imbalance introduced by the time delay

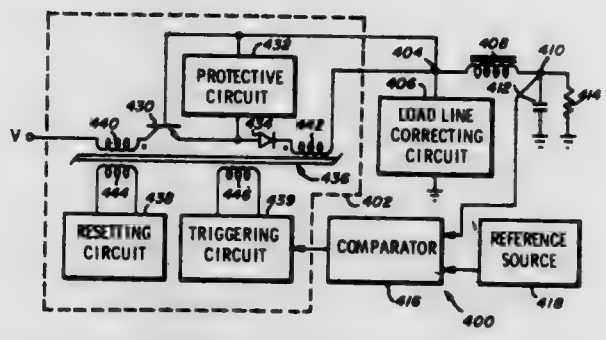
of the signal flow coupled between at least one said stage output and the said logic means.

4,348,598

POWER-PULSE SWITCHING CIRCUIT

Steve Smith, 1220 S. 49th St., Richmond, Calif. 94804

Filed Jan. 25, 1980, Ser. No. 115,498
Int. Cl.[3] H03K *3/45, 3/33*
U.S. Cl. 307—300 21 Claims



1. A power-pulse switching circuit for conducting a pulse of current between a first and a second terminal in response to a triggering signal, said switching circuit comprising in combination:

coupling means;

a transistor including a base connected to the first terminal, an emitter and a collector;

a transformer including a collector winding having a first plurality of turns coupling said collector to the second terminal, an emitter winding having a second plurality of turns delineated by a first end connected to said first terminal and a second end coupled to said emitter by said coupling means and a saturable core coupling said collector winding to said emitter winding, said first plurality of turns being greater than said second plurality of turns whereby regenerative current feedback is provided from said collector to said emitter; and

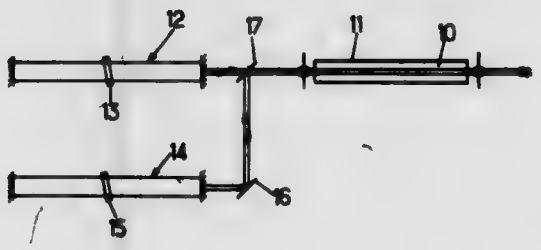
triggering means for initiating conduction of said transistor in response to said triggering signal whereby regenerative action of said transistor and said transformer cause saturation of said transistor until such time as saturation of said core occurs.

4,348,599

PROCESS AND DEVICE FOR DELIVERING A MONOCHROMATIC LIGHT BEAM BY STIMULATED SCATTERING

Francois Pradere, Soisy sur Montmorency, and Robert Frey, Paris, both of France, assignors to Centre Nationale de la Recherche Scientifique, Paris, France

Filed May 15, 1981, Ser. No. 264,095
Claims priority, application France, May 16, 1981, 80 11064
Int. Cl.[3] H03F *7/00*
U.S. Cl. 307—426 8 Claims



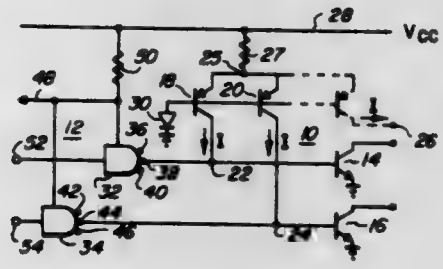
1. A process for generation of a light beam with a narrow spectrum linewidth, comprising: superimposing, in an amplifying medium exhibiting a large stimulated light emission spectrum linewidth, an energy extraction light beam having a narrow spectrum linewidth at a first frequency and a pump light beam at a second frequency, higher than said first frequency, the first frequency being contained in the stimulated emission spectrum linewidth of the medium induced by the second frequency.

4,348,600

CONTROLLED CURRENT SOURCE FOR I^2L TO ANALOG INTERFACES

Robert B. Jarrett, and Wilson D. Pace, both of Tempe, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 877,626, Feb. 14, 1978, abandoned.
This application Mar. 21, 1980, Ser. No. 132,704
Int. Cl.[3] H03K *19/081;* H01L *27/04*
U.S. Cl. 307—475 6 Claims



1. A monolithic circuit comprising:

logic gate means including a first and second transistor of complementary conductivity type, said first transistor having an emitter region, a base region, and at least one collector region, said emitter region being coupled to a source of reference potential, said base region being coupled to an input of said logic gate means, said collector region being an output of said logic gate means, said second transistor having an emitter region, a base region and a collector region, said emitter region being coupled to a source of operating potential, said base region being formed in common with said emitter region of said first transistor, said collector region being formed in common with said base region of said first transistor;

output circuit means including a third transistor of like conductivity type as said first transistor having an emitter region, a base region and a collector region, said base region being coupled at a circuit node to said collector region of said first transistor, said emitter region being coupled to said source of reference potential and said collector region being coupled to an output circuit node; and

current source means for sourcing current to said circuit node including a fourth transistor of like conductivity type as said second transistor having a common emitter region, a base region and at least one collector region, said common emitter region being coupled to said source of operating potential, said base region receiving a bias potential thereat wherein said bias potential is different from said reference potential, said at least one collector region being coupled to said circuit node.

4,348,601

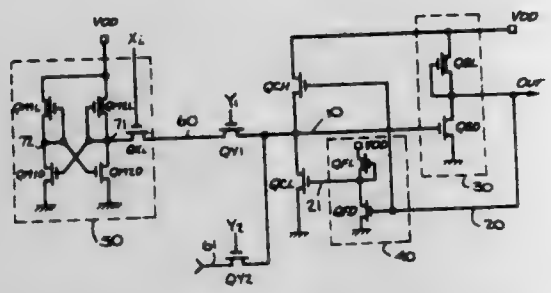
BUFFER CIRCUIT

Yoshishige Kitamura, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Aug. 8, 1979, Ser. No. 64,809
Int. Cl.[3] G11C *7/06;* G01R *19/165;* H03K *5/24, 5/08*
U.S. Cl. 307—530 8 Claims

1. A buffer circuit for producing output signals of opposite phase relative to applied input signals, said buffer circuit comprising an input node; a first power source having a high potential; a second power source having a low potential; means for supplying said input node with input signals which change between high and low potential levels; a first inverter circuit including a series circuit of a load element and an input transistor, said input transistor being connected to said input node so

as to perform a switching operation in response to said input signal to produce output signals of opposite phase to said input signals, said output signals being derived from an intermediate junction between said load element and said input transistor, the level of each output signal being changed opposite to each corresponding change of input signal level; a first transistor connected between said first power source and said input node; a second transistor connected between said second power source and said input node; means for connecting a gate of said first transistor to said intermediate junction; and a second inverter having an input terminal coupled to a gate of said intermediate junction and an output terminal connected to said



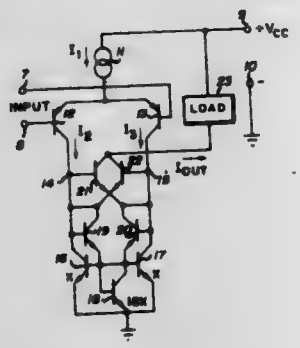
second transistor, said first transistor being made conductive when said input signals change from a high to a low potential level and said output signal changes from a low to a high potential level thereby to shift the level of the potential at said input node toward that of said first power source without changing the phase of the level at said input node and said second transistor being made conductive when said input signals change from a low to a high potential level and said output signal changes from a high to a low potential level thereby to shift the level of the potential at said input node toward that of said second power source without changing the phase of the level of said input node.

4,348,602

CURRENT COMPARATOR CIRCUIT WITH DEADBAND

Don R. Sauer, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Sep. 15, 1980, Ser. No. 187,007
Int. Cl.³ H03K *5/153;* 307 *291;299 B;354;360;530*
U.S. Cl. 307—530 **8 Claims**



1. A current comparator circuit with controlled deadband wherein the difference between differential currents is sensed and an output provided when said difference exceeds a predetermined value, said circuit comprising:

a pair of circuit nodes;

means for passing differential currents through said nodes;

current mirror means coupled to said nodes, said current mirror means having a common control terminal, a pair of current reflecting terminals coupled to said nodes, and deadband control means coupled to said common control terminal;

level shifting means coupled between said common control terminal and ech of said nodes; and

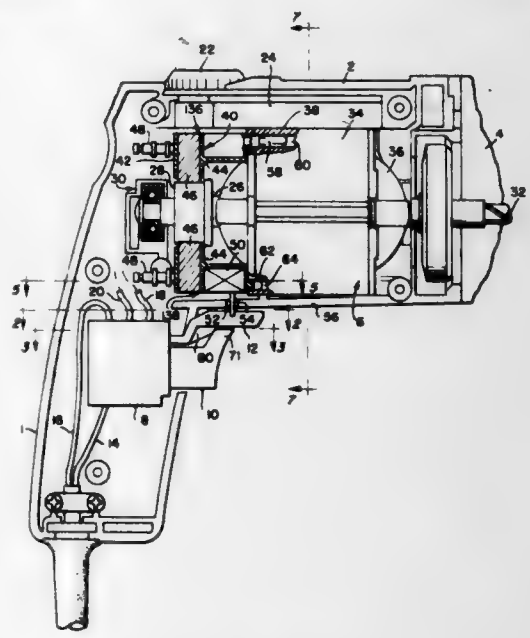
a pair of output transistors having their collectors commonly coupled to provide said output, their bases coupled to said nodes and their emitters cross coupled to said nodes whereby said output only occurs when said differential currents exceed a difference limit determined by said deadband control means.

4,348,603

PRINTED-CIRCUIT BOARD AND TRIGGER-SWITCH ARRANGEMENT FOR A PORTABLE ELECTRIC TOOL

Siegfried Huber, Johannesberg, Fed. Rep. of Germany, assignor to Black & Decker Inc., Newark, Del.

Filed Jan. 29, 1981, Ser. No. 229,452
Int. Cl.³ H02K *7/14;* B23B *45/2*
U.S. Cl. 310—50 **28 Claims**



1. A portable electric tool, comprising:

an electric motor capable of drivingly rotating in either of two rotational directions;

a housing having a handle and a motor compartment, said motor being contained in said motor compartment;

a printed circuit board in said motor compartment;

a first switch in said handle for energizing said tool;

a second switch comprising a discrete integral component mounted on said printed circuit board in said motor compartment; said second switch determining the rotational direction of drive of said motor; and

means, interrelating said first and second switches, for rendering said first switch inoperative until said second switch is positioned to allow said motor to be energized to drivingly rotate in either one or other of said rotational directions.

4,348,604

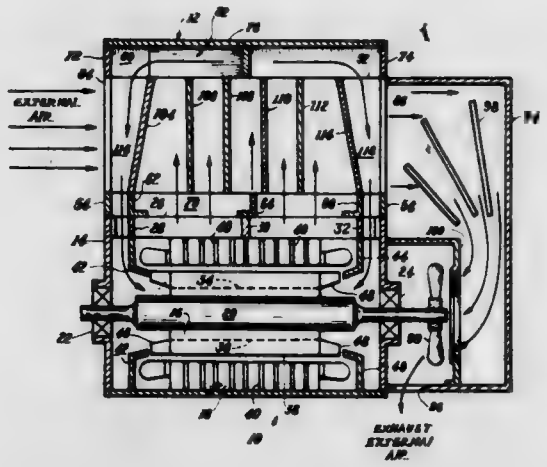
TOTALLY ENCLOSED AIR COOLED ELECTRICAL MACHINES

Herbert W. Thode, Oradell, N.J., assignor to General Dynamics Corp., St. Louis, Mo.

Filed Jun. 13, 1980, Ser. No. 159,408
Int. Cl.³ H02K *9/00*
U.S. Cl. 310—62 **21 Claims**

1. An enclosed air cooled electrodynamic machine comprising a frame housing said machine, said frame being open on one side thereof, a cross flow plate heat exchanger mounted on said frame on said one side thereof, partitions between alternate pairs of the plates in said heat exchanger defining a plurality of separate ducts having opposite ends, said ducts communicating at one of said opposite ends with the interior of said frame, a baffle disposed adjacent to the other opposite ends directing the flow of internal air in opposite directions through different

ones of said ducts so that said internal air circulates through said machine and said heat exchanger where said internal air is



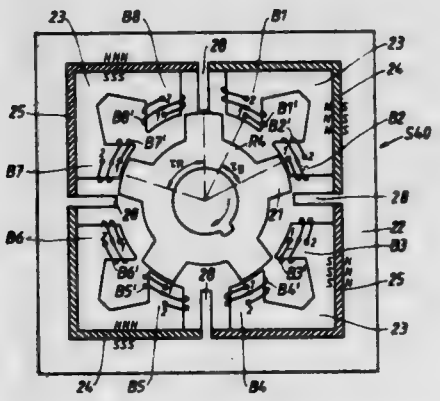
cooled by external air passing through said heat exchanger in cross flow relationship with said internal air.

4,348,605

ELECTRICAL RELUCTANCE MACHINE

Vilmos Török, Lidingö, Sweden, assignor to ASEA Aktiebolag, Vasteras, Sweden

Filed Mar. 19, 1980, Ser. No. 131,590
Claims priority, application Sweden, Mar. 30, 1979, 7902845
Int. Cl.³ H02K *19/06*
U.S. Cl. 310—168 14 Claims



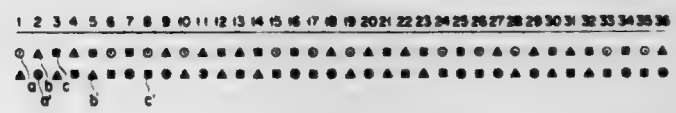
1. An electrical reluctance machine comprising at least one stator unit with an even number of mutually equal groups of salient stator poles, said groups being evenly distributed around the inner circumference of the stator unit, means for pre-magnetizing said stator poles with one and the same polarity within each of said stator pole groups, but with differing polarity from group to group around the entire stator circumference, said stator pole groups supporting a plurality of working coils, which are distributed between at least two working windings provided with individual rectifying means, said rectifying means being arranged to establish the current directions and thus the directions of magnetization of said working coils, and a rotor shaft supporting at least one rotor within said stator unit, said rotor having a plurality of salient rotor poles having substantially the same width as the stator poles, in which each of said working coils surrounds one stator pole only, the magnetization direction of each of said working coils always coincides with the direction of the pre-magnetization applied to the corresponding stator pole, and two stator poles whose working coils belong to one and the same working winding are always separated from each other in the circumferential direction of the stator by at least one intermediate stator pole which supports a working coil belonging to a different working winding.

4,348,606

POLYPHASE ARMATURE WINDINGS

Sadayoshi Hibino, Suzuka, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Continuation-in-part of Ser. No. 940,603, Sep. 8, 1978. This application Jul. 30, 1980, Ser. No. 173,446
Int. Cl.³ H02K *3/00*
U.S. Cl. 310—184 2 Claims



1. An armature winding for a three-phase induction motor, said winding being of a double-layer structure of a plurality of coils placed in a plurality of slots provided in a stator core thereby forming a plurality of poles, wherein:

the number of slots (q) per pole per phase is less than ½, said number of slots per pole per phase being represented as $z/3\times P$ where z denotes the number of slots in said stator core and P represents the number of poles;

the number of coils (Q) per phase is equal to the number of slots divided by 3, said coils being inserted in said slots and connected in such a manner that the voltage vector of each phase is completely balanced;

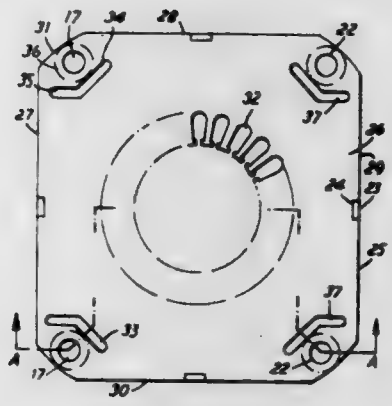
whereby at least one consequent pole occurs between the real poles.

4,348,607

ELECTRIC MOTOR, PARTICULARLY MOTOR-COMPRESSOR

Hans J. Tankred, Sonderborg; Per J. Madsen, Nordborg, and Jorgen C. Stannow, Sonderborg, all of Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Continuation of Ser. No. 30,512, Apr. 16, 1979, abandoned. This application Feb. 27, 1981, Ser. No. 239,168
Claims priority, application Fed. Rep. of Germany, Apr. 21, 1978, 2817532
Int. Cl.³ H02K *1/06*
U.S. Cl. 310—217 6 Claims



1. An electric motor and compressor assembly, comprising, a motor unit having rotor shaft and a packet of rectangularly shaped stator laminations, said laminations having an end face and at least two corners of said packet on one side of said shaft having first and second bolt holes extending through said laminations and said end face, said packet corners forming corner edges of said end face, a compressor unit having a frame member with a bearing for said shaft and two legs with planar base surface portions engaging said packet end face in respective surrounding relation to said first and second bolt holes, threaded bores in said legs in alignment with said bolt holes, threaded bolts extending through said bolt holes into said threaded bores, a slot extending through said packet and being so formed and spaced from said first bolt hole and the corresponding said corner edge if said end face so that an approximately symmetrical characteristic bending moment curve is

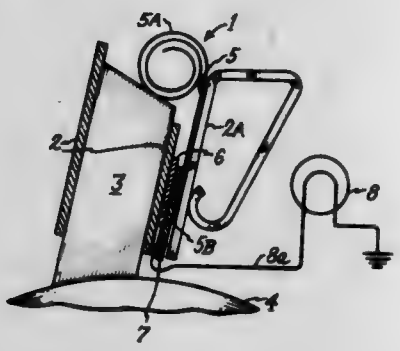
obtained along a first line passing through the axis of said first bolt hole and to both sides thereof, said planar base surface portion surrounding said first bolt hole extending in the direction of said first line only short distances to both sides of said first hole.

4,348,608

BRUSH WEAR INDICATOR

Richard N. Michael, McKean, Pa., assignor to General Electric Co., Schenectady, N.Y.

Filed Sep. 4, 1980, Ser. No. 183,920
Int. Cl.[3] H02K *13/00*
U.S. Cl. 310—242 9 Claims



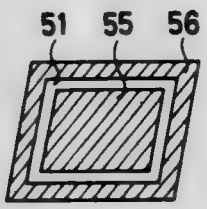
1. A brush wear indicator comprising a brush holder for supporting a brush in slidable relationship thereto, a self-winding spring having one of its ends mounted in generally fixed operative position relative to the holder and having a coiled portion that is operable to apply a biasing force to a brush supported in the holder thereby biasing one end of the brush into engagement with a rotatable electrical conductor positioned adjacent to the holder, an electrical terminal mounted in electrically isolated relationship to said one end of the spring and positioned to be contacted by the coiled portion of the spring responsive to a predetermined degree of brush wear occurring that enables the spring to wind up and move its coiled portion a given distance toward said one end of the spring, and signal means electrically connected to said terminal and operable to indicate said predetermined degree of brush wear responsive to the coiled portion of the spring contacting said terminal.

4,348,609

PIEZOELECTRIC VIBRATOR WITH SPURIOUS MODE SUPPRESSION

Jiro Inoue, Kanazawa, Japan, assignor to Murata Manufacturing Co., Ltd., Japan

Filed Apr. 16, 1980, Ser. No. 140,848
Claims priority, application Japan, Apr. 20, 1979, 54-49280; Apr. 20, 1979, 54-49281; Apr. 20, 1979, 54-49282
Int. Cl.[3] H01L *41/08*
U.S. Cl. 310—367 7 Claims



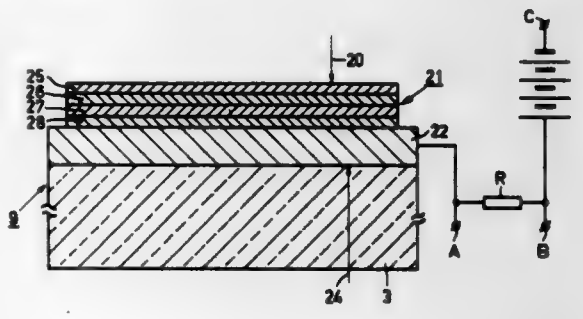
1. An expansion mode piezoelectric vibrator, comprising:
a ceramic piezoelectric plate having first and second opposed major surfaces;
first electrode means disposed on said first major surface;
second electrode means disposed on said second major surface, the position and geometry of said first and second electrode means causing said piezoelectric vibrator to vibrate primarily in an expansion mode; and
said ceramic piezoelectric plate having the shape of a quadrilateral, the four corner angles of said quadrilateral having values which cause said corner angles to cooperate to suppress at least one predetermined spurious mode of vibration of said vibrator, said at least one spurious mode of vibration being at least one of an edge mode and a bending mode vibration, at least one said corner angle being an acute angle.

4,348,610

CAMERA TUBE WITH GRADED TELLURIUM OR ARSENIC TARGET

Jan Dieleman; Joannes H. J. Van Dommelen, and Petrus J. A. M. Derks, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 17, 1980, Ser. No. 130,891
Claims priority, application Netherlands, Apr. 11, 1979, 7902838
Int. Cl.[3] H01J *29/45, 31/38*
U.S. Cl. 313—386 7 Claims



1. A camera tube including an electron source and a target to be scanned on one side by an electron beam emanating from the source, said target comprising a vitreous layer containing the elements selenium, tellurium and arsenic, the concentration of at least one of these elements varying across the thickness of the vitreous layer, characterized in that said layer comprises a plurality of sub-layers, starting at the side to be scanned by the electron beam, including:
(a) a first sub-layer in which the concentration of at least one of the elements tellurium and arsenic increases, toward the side to be scanned, to a concentration at which the sum of the concentrations of tellurium and arsenic is at most 30 atomic percent;
(b) a second sub-layer; and
(c) a third sub-layer in which the concentration of at least one of the elements tellurium and arsenic is larger than its concentration in the second sub-layer;
the arsenic concentration everywhere in the vitreous layer being larger than 1.5 atomic percent.

4,348,611

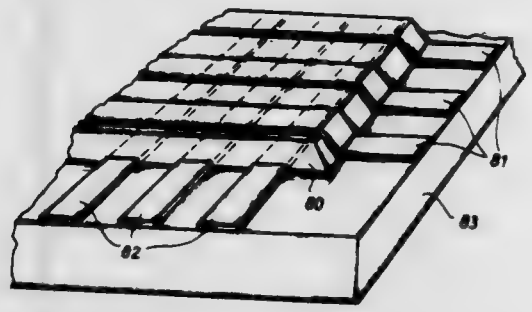
FERROELECTRIC OR PYROELECTRIC SENSOR UTILIZING A SODIUM NITRITE LAYER

Wolfgang Ruppel, Stolper Strasse 6a; Ullrich Hetzler, Machstrasse 11; Horst Vogt, Roonstrasse 17, and Peter Wurfel, Schneidemuhler Str. 24b, all of 7500 Karlsruhe, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 882,796, Mar. 2, 1978, Pat. No. 4,259,365. This application Dec. 5, 1980, Ser. No. 213,649
Int. Cl.[3] H01J *31/00, 31/26;* G01J *1/48*
U.S. Cl. 313—388 19 Claims

1. Improved ferroelectric or pyroelectric sensing element comprising
a substrate;

a crystalline sodium nitrite layer deposited on said substrate; and



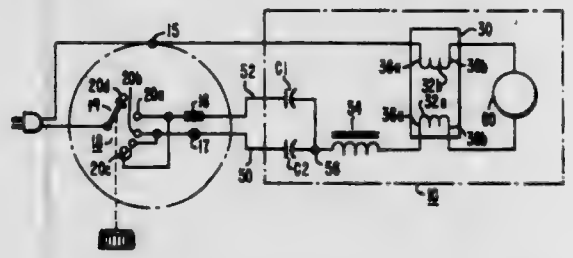
at least one electrode in contact with said crystalline sodium nitrite layer.

4,348,612

COMPACT FLUORESCENT LAMP UNIT FOR THREE-WAY FLUORESCENT LAMP FIXTURE

Edward W. Morton, Teaneck, N.J., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 6, 1981, Ser. No. 232,286
Int. Cl.[3] H01J *7/44;* H05B *37/02*
U.S. Cl. 315—58 1 Claim



1. A compact fluorescent lamp unit for use with a three-way incandescent-lamp fixture, said fixture including an incandescent-lamp type socket comprising a generally cylindrical metallic screw-type socket member which forms a first metallic conductive member, second and third metallic conductive members mounted in the bottom portion of said socket, and a four-position switching means including first and second contacts, said switching means has a first open position, a second position in which potential is applied between said first and second metallic conductive members, a third position in which potential is applied between said first and third metallic conductive members and a fourth position in which potential is applied between said first and second metallic conductive members and said first and third metallic conductive members, and electrical conductor means adapted to connect said socket to a source of energizing potential, said compact fluorescent lamp unit comprising:

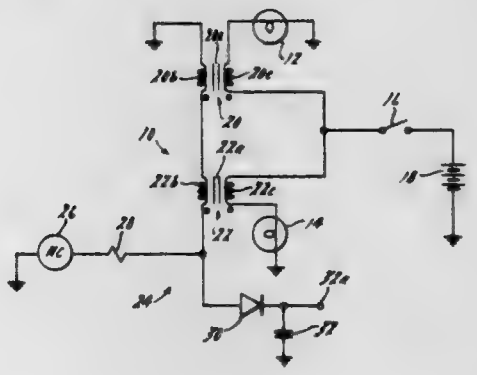
a compact fluorescent discharge device comprising an elongated vitreous bulb of predetermined configuration defining an elongated circuitous discharge path and enclosing a discharge-sustaining filling comprising mercury and inert gas and having electrodes operatively disposed proximate the ends of said defined discharge path, end cap means hermetically sealed to the ends of said bulb, each of said electrodes having lead-in members affixed to the ends thereof and sealed through said end cap means, housing and support means having an upper and a lower portion, the upper portion of said housing and support means supporting said bulb in a rigidly fixed position, the lower portion of said housing and support means having affixed thereto a screw-type base comprising a metallic shell, a glass plug affixed to the bottom portion of said metallic shell, said glass plug securing a portion of a conductive center eyelet member to fix said center eyelet member in predetermined position such that when said lamp unit is screwed into said socket, said eyelet electrically contacts said third metallic conductive member, a conductive ring member affixed to said glass plug in predetermined position and encircling said conductive center eyelet member in electrical isolation from it, said conductive ring member positioned such that when said lamp unit is screwed into said socket said ring member electrically contacts said second metallic conductive member, a ballast inductor having at least a portion thereof supported by said housing and support means, one end of said ballast inductor connected in circuit with a common electrical point and the other end of said ballast inductor connected in circuit with one of said lead-in members of a first of said electrodes, capacitive energy storage means comprising two individual capacitors, the first of said capacitors connected in circuit between said common electrical point and said second metallic conductive member, the second of said capacitors connected in circuit between said common electrical point and said third metallic conductive member, one of said lead-in members of a second of said electrodes connected in circuit with said metallic shell, the other of the lead-in members of said first and second electrodes connected in circuit with a starting means, whereby in said first switch position said ballast inductor is deenergized and said lamp unit is off; in said second switch position said first capacitor and said ballast inductor are energized and said lamp unit is in a low-light output state; in said third switch position said second capacitor and said ballast inductor are energized and said lamp unit is in a medium-light output state; and, in said fourth switch position both said first and second capacitors and said ballast conductor are energized and said lamp unit is in a high-light output state.

4,348,613

LAMP FAILURE INDICATING CIRCUIT

Ronald F. Hormel, Mt. Clemens, and Frederick O. R. Miesterfeld, Troy, both of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Oct. 1, 1980, Ser. No. 192,652
Int. Cl.[3] H05B *37/03*
U.S. Cl. 315—130 3 Claims



1. In a lamp circuit comprising a source of energizing potential, a control switch and a pair of branch circuits each containing a corresponding lamp load which are selectively connected to the power source via the switch, a failure indicating circuit in association with said lamp circuit comprising:

a pair of transformers each comprising a pair of coils;

means connecting one coil of each transformer in a corresponding one of the branch circuits and the two branch circuits together to form a complete circuit which is independent of the power source and the control switch;

means connecting the other coil of each transformer in series with each other;

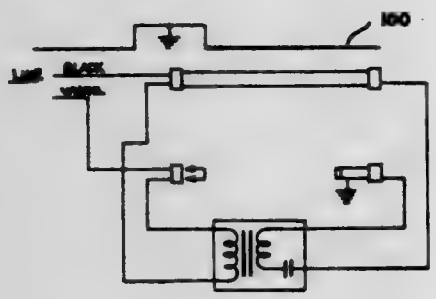
and means applying a test signal to the last mentioned series circuit and monitoring its response whereby to provide an indication of a failure in either or both branch circuits.

4,348,614

NON-LIGHT PRODUCING SUBSTITUTE APPARATUS FOR USE IN PLACE OF PHOSPHOR EXCITABLE LAMPS

David Burgess, 1341 W. 130th St., Gardena, Calif. 90247

Continuation-in-part of Ser. No. 73,223, Sep. 7, 1979, Pat. No. 4,255,692. This application Jan. 28, 1980, Ser. No. 116,288
Int. Cl.³ H05B 41/16
U.S. Cl. 315—189 28 Claims



1. A lamp substitute as a replacement for a phosphor energizable lamp in a plural lamp fixture with a pair of spaced apart sockets for each lamp and adapted to receive end terminals on said lamps, said lamp substitute comprising:

(a) a housing having a length substantially less than the distance between said sockets,

(b) a power factor compensating element in said housing and adapted to have one electrode operatively electrically connected to one of said sockets, and

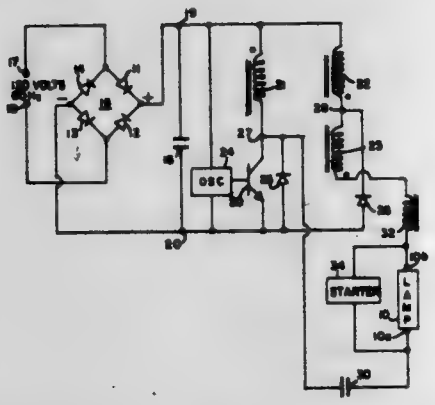
(c) a ground conductor connected to another electrode of said power factor compensating element and adapted to be grounded to the same ground potential as said fixture.

4,348,615

DISCHARGE LAMP OPERATING CIRCUIT

Robert L. Garrison, Henniker, N.H., and Harold L. Rothwell, Jr., Rowley, Mass., assignors to GTE Products Corporation, Stamford, Conn.

Filed Jul. 1, 1980, Ser. No. 164,866
Int. Cl.³ H05B 37/02
U.S. Cl. 315—219 8 Claims



1. An operating circuit for a high intensity discharge lamp, said circuit comprising, in combination:

a DC power source having first and second output terminals;

a first inductance means and a controlled switch means series-connected in that order between the first and second output terminals of said DC power source;

a second inductance means and a first diode series-connected in that order between the first and second output terminals of said DC power source, said second inductance means being transformer-coupled to said first inductance means;

an oscillator coupled to said a controlled switch means for respectively operating the same at predetermined intervals, whereby said controlled switch means and first and second inductance means function as an inverter having and AC output across the combination of said first and second inductance means, the junction of said first inductance means and said controlled switch means comprising a first inverter output terminal, and the junction of said second inductance means and said first diode comprising a second inverter output terminal;

and means for connecting first and second terminals of a low wattage high intensity discharge lamp across said inverter output terminals; said connecting means including a ballast capacitor means coupled between said first inverter output terminal and the first terminal of said lamp, and a ballast inductance means coupled between said second inverter output terminal and the second terminal of said lamp;

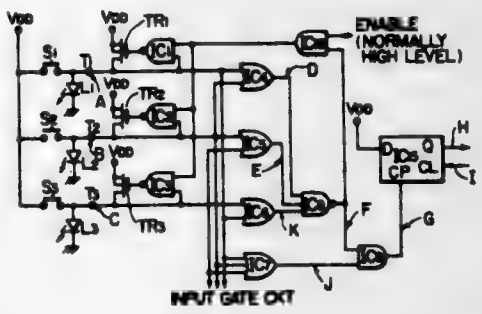
said ballast inductance means being selected to resonate with said ballast capacitor means at a frequency having a half period which coincides with the on-time of said controlled switch means whereby the switching current waveform is substantially a half sinewave pulse, with both the turn-on and turn-off transition of said switching means occurring at zero current, thereby substantially eliminating switching losses, said ballast inductance means being operative during the conducting period of said switch means to provide an impedance load in the lamp circuit for permitting full conduction of said switch means with a minimized power loss.

4,348,616

PRESET LIGHTING DEVICE

Kazuyuki Tanaka, Yamanashi; Yoshiharu Ueki, Kawagoe; Yoshiro Kunugi, Kawagoe, and Shozaburo Sakaguchi, Kawagoe, all of Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jan. 28, 1981, Ser. No. 229,213
Claims priority, application Japan, Nov. 15, 1979, 54-158379
Int. Cl.³ H05B 37/02
U.S. Cl. 315—314 5 Claims

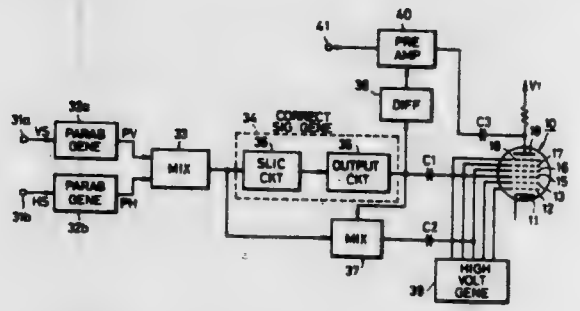


1. A preset lighting device comprising: input switches and output lighting elements connected to be activated by corresponding ones of said input switches, each of said input switches and output lighting elements being connected to a corresponding terminal commonly used for input and output; a plurality of latch circuits, one of said latch circuits being provided for latching an input applied to the corresponding one of said terminals, each said latch circuit being connected to a corresponding lighting element; a first gate circuit operatively coupled to said common terminals for detecting a state of duplicate switching when more than a single switch is activated; and a second gate circuit operative to turn off at least a predetermined one of said output lighting elements in response to an output of said first gate circuit indicative of duplicate switching and to turn on an element corresponding to one of said switches which has been activated.

4,348,617
IMAGE PICKUP DEVICE

Kenichi Miyazaki, Segamihara; Tadayoshi Miyoshi, Yokohama; Itsuo Takanashi, Yokohama; Shintaro Nakagaki, Yokohama; Koichiro Motoyama, Ninomiya, and Sumio Yokokawa, Yokohama, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Oct. 29, 1980, Ser. No. 201,735
Claims priority, application Japan, Oct. 31, 1979, 54/141069
Int. Cl.[3] H01J *29/56*
U.S. Cl. 315—370 8 Claims



1. An image pickup device comprising:

an image pickup tube having a target scanned by an electron beam and a pair of electrodes which form a collimation;

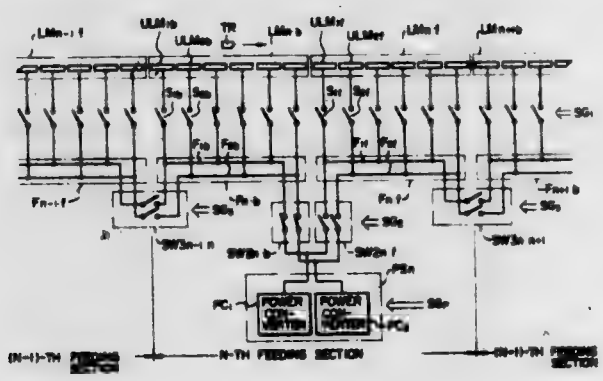
voltage applying means for respectively applying predetermined voltages for forming said collimation to said collimation forming electrodes of said image pickup tube, said collimation being formed responsive to a voltage ratio of said voltage applied to each of said collimation forming electrodes; and

correction voltage applying means for applying a correction voltage which varies said voltage ratio of said collimation forming electrodes to one of said collimation forming electrodes, upon scanning of the peripheral parts of an effective scanning surface of said target by said electron beam.

4,348,618
FEEDING SYSTEM FOR LINEAR MOTOR TYPE TRANSPORTING SYSTEM

Kiyoshi Nakamura, Katsuta, and Masayoshi Isaka, Hitachi, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 21, 1980, Ser. No. 132,641
Claims priority, application Japan, Mar. 28, 1979, 54-36692
Int. Cl.[3] H02K *41/03*; B60L *15/22*
U.S. Cl. 318—38 32 Claims



1. A feeding system for a linear motor transportation system having a number of discrete drive coil units or linear motor units serially arranged along a track to generate a moving magnetic field for driving vehicles, said feeding system comprising:

a number of feeding sections serially contiguously extending along said track, said linear motor units being assigned to said feeding sections;

at least one power supply station arranged at each of said feed sections;

each of said feeding sections being divided into at least two linear motor blocks so as to extend serially contiguously along said track;

two feeder means arranged respectively corresponding to said at least two linear motor blocks in each of said feeding sections;

a first group of switch means, each of the linear motor units belonging to one of said two linear motor blocks of each of said feeding sections being connected to the associated one of said two feeder means through a corresponding one of said first group of switch means, and each of the linear motor units belonging to the other of said two linear motor blocks being connected to the other of said two feeder means through a corresponding one of said first group of switch means;

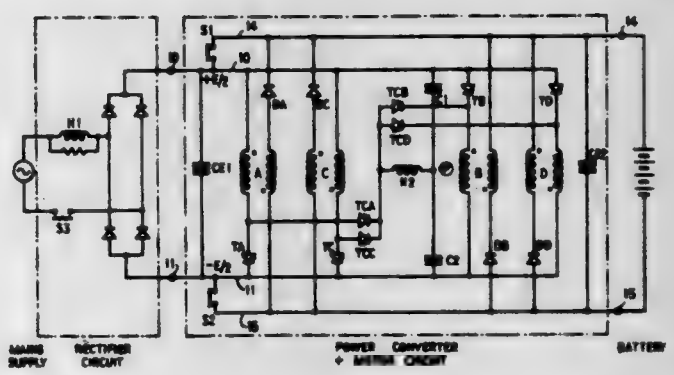
a second group of switch means, each of said two feeder means arranged in each of said feeding sections being connected to the associated power supply station through corresponding ones of said second group of switch means; and

means for controlling said second group of switch means in a manner so that at least one of said second group of switch means connected to a corresponding one of said linear motor blocks through a corresponding one of said feeder means and corresponding ones of said first group of switch means is closed when a vehicle exists within said corresponding one linear motor block and that when before another vehicle succeeding said first mentioned vehicle enters a linear motor block backwardly adjacent to said corresponding one linear motor block at least another one of said second group of switch means connected to said backwardly adjacent linear motor block is opened at latest before said succeeding vehicle enters said backwardly adjacent linear motor block.

4,348,619
VARIABLE RELUCTANCE ELECTRIC MOTOR SYSTEMS

William F. Ray, Nottinghamshire, and Rex M. Davis, Loughborough, both of England, assignors to Chloride Group Limited, London, England

PCT No. PCT/GB79/00083, § 371 Date Dec. 13, 1979, § 102(e) Date Dec. 13, 1979, PCT Pub. No. WO79/01134, PCT Pub. Date Dec. 27, 1979
PCT Filed May 25, 1979, Ser. No. 187,838
Claims priority, application United Kingdom, May 26, 1978, 22890/78
Int. Cl.[3] H02P *5/00*
U.S. Cl. 318—139 16 Claims



1. A variable reluctance electric motor system including a variable reluctance motor having main windings and auxiliary windings closely coupled to the main windings, a main storage battery for driving the motor, D.C. supply terminals, and a power converter circuit for charging the battery from an external D.C. supply, in which the motor is included in the power converter circuit to function as an isolating transformer to isolate the battery from the supply when on charge, and

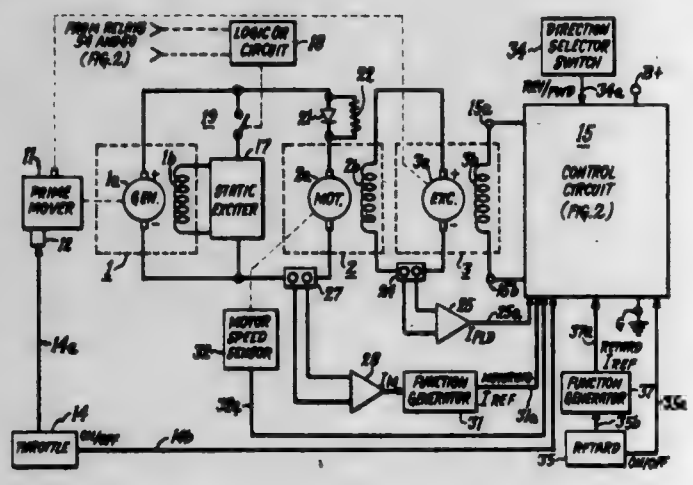
including switch means for disconnecting the battery from the main windings during charging.

4,348,620

MAGNETIC FIELD PRESETTING CIRCUIT FOR AN EXCITER FIELD WINDING IN AN ELECTRICAL PROPULSION SYSTEM FOR TRACTION VEHICLES

Martin Simon, Erie, Pa., assignor to General Electric Company, Erie, Pa.

Filed Sep. 15, 1980, Ser. No. 187,126
Int. Cl.[3] H02K *23/00*
U.S. Cl. 318—154 8 Claims



1. In a propulsion system for a traction vehicle including a separately excited d-c motor having an armature and a field winding, means for supplying d-c electric power to the armature of said motor, and an excitation generator having both an armature connected across said motor field winding and an excitation generator field winding, an improved control circuit for the excitation generator field winding comprising:

(a) first and second voltage supply terminals adapted to be connected to a d-c electric power source so that the potential on said first terminal differs from that on said second terminal;

(b) first means for connecting one end of said excitation generator field winding to said first terminal;

(c) second means including controllable switching means for connecting the other end of said excitation generator field winding to said second terminal, said switching means in normal operation being periodically switchable between conducting and non-conducting states;

(d) means for producing an acceleration command signal when movement of the vehicle from rest is desired; and

(e) acceleration relay means responsive to said acceleration command signal for temporarily disconnecting said other end of said excitation generator field winding from said switching means and for connecting it through a relatively low impedance path to said second terminal, thereby to bias the magnetic field of the excitation generator field winding in a predetermined direction regardless of the state of said switching means.

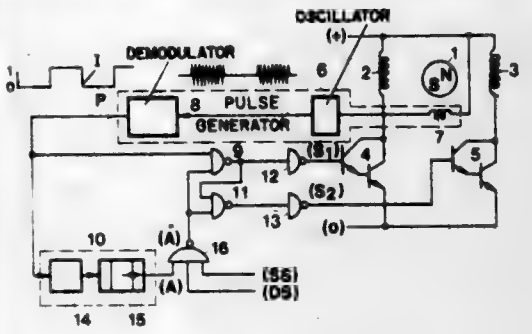
4,348,621

CONTROL CIRCUIT FOR A MULTI-PHASE LOAD

Jorgen Hyldal, Guderup, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Filed Jan. 2, 1981, Ser. No. 222,128
Claims priority, application Fed. Rep. of Germany, Jan. 8, 1980, 3000403
Int. Cl.[3] H02K *29/02*
U.S. Cl. 318—254 2 Claims

1. A DC motor assembly comprising, a permanent magnet rotor, a pair of poles, parallel circuit branches having a pair of windings with a common positive terminal connection for a DC voltage source, a pair of controllable switching elements in said branches in respective series with said windings, detector means for detecting the angular position of said rotor, pulse generating means responsive to said detector means forming a symmetrical square wave output for switching said switching elements on and off in a push-pull mode, drive means responsive to said square wave output having dual outputs for driving said switching elements, said dual outputs having alternate pulses in time spaced relation to each other for driving said switching elements in underlapping relation to each other.

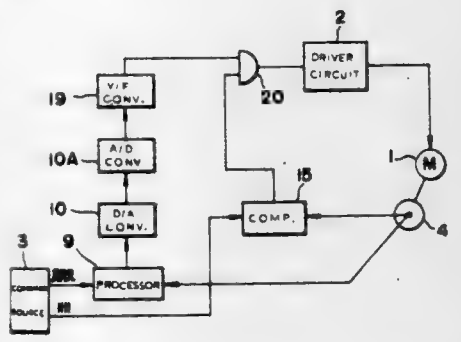


4,348,622

DC MOTOR DRIVE CONTROL SYSTEM

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Filed Jun. 28, 1979, Ser. No. 52,780
Claims priority, application Japan, Jul. 1, 1978, 53-80198; Oct. 24, 1978, 53-131381
Int. Cl.[3] H02P *5/16*
U.S. Cl. 318—318 7 Claims



1. A DC motor drive control system, comprising:

a driver circuit for energizing a DC motor;

a command source for applying an input command signal comprising a first pulse train to said driver circuit to cause said motor to rotate in accordance therewith;

single encoder means coupled with said DC motor so as to respond to an angular displacement thereof for providing a first sensing signal comprising a second pulse train and representing an angular position of said DC motor and a second sensing signal representing an angular velocity thereof; and

processor circuit means responsive to said input command signal and said first and second sensing signals to produce a control drive signal and to apply it to said driver circuit so that said motor is driven controlledly as to its position and velocity, said processor circuit means including:

(a) a first comparator responsive to said input command signal from said command source and to said first sensing signal from said encoder means to provide a position drive signal, said first comparator comprising a differential counter responsive to said first and second pulse trains to produce differentiated digital pulses;

(b) a digital-analog converter connected to said first comparator for converting said digital pulses to an analog signal;

(c) a frequency-voltage converter responsive to said second pulse train to produce a voltage signal representing the frequency thereof;

(d) a differential amplifier constituting a second compara-

tor and responsive to said analog signal and said voltage signal to produce a differentiated voltage signal; and

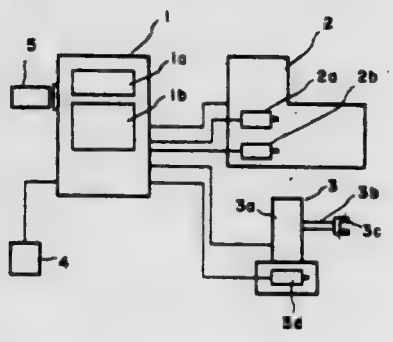
(e) a voltage-frequency converter for transforming said differentiated voltage signal to a third pulse train constituting said control drive signal.

4,348,623

NUMERICAL CONTROL SYSTEM FOR CONTROLLING BOTH A MACHINE TOOL AND A ROBOT

Kengo Kobayashi, Kawasaki; Hajimu Inaba, Hino, and Shinsuke Sakakibara, Kunitachi, all of Japan, assignors to Fujitsu Fanuc Limited, Tokyo, Japan

Filed Jul. 7, 1980, Ser. No. 165,989
Claims priority, application Japan, Jul. 10, 1979, 54-87319
Int. Cl.³ G05B *19/42*
U.S. Cl. 318—568 11 Claims



1. A numerical control system comprising:

a numerical control device having a robot control function and a numerical control function;

a machine tool, controlled by said numerical control device in accordance with the numerical control function, for machining a workpiece; and

a robot for executing prescribed tasks in cooperation with said machine tool;

a teaching control panel, coupled to said numerical control device, for teaching robot operation by providing the robot command data from said teaching control panel; and

an interface circuit, operatively connected between said numerical control device and said robot, for administering the exchange of data therebetween;

said numerical control device including control means for controlling said robot in accordance with the robot control function, and memory means for storing machine tool command data and the robot command data supplied by said teaching control panel;

the machine tool command data and robot command data being successively read out of said memory means to actuate said machine tool and said robot;

said robot being instructed by the robot command data through said interface circuit to execute a prescribed task.

4,348,624

THERMAL SERVO SYSTEM FOR MECHANICAL POSITIONING

Harold M. Anderson, Rancho Palos Verdes; Norman E. Marcum, Laguna Beach, and Wilbur E. DuVall, Victorville, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Mar. 3, 1980, Ser. No. 126,736
Int. Cl.³ G05D *23/275*
U.S. Cl. 318—634 2 Claims

1. A thermally controlled servo system for achieving accurate positioning of a member, comprising:

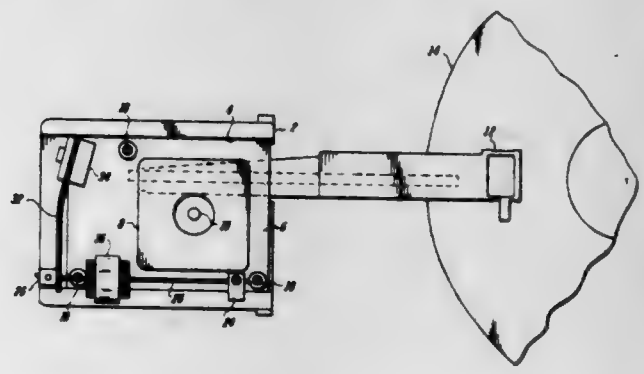
a support member having a fixed position;

a positioning member supported by said support member in a manner that permits said positioning member to have limited movement relative to said support member;

an elongated member supported by said support and positioning members, said elongated member being capable of supporting an electrical current and changeable in length in response to changes in its temperature due to changes in the magnitude of said electrical current; and

control means for varying the magnitude of said electrical current in response to an error signal representing incorrect positioning of said positioning means;

said control means including memory means for generating a digital representation of the magnitude of the electrical current to be passed through said elongated member to correct said incorrect positioning, a digital power amplifier including a plurality of gates which receive said digital representation and an alternating current reference signal and a plurality of summing resistors for providing at the output of the digital power amplifier a current



summed analog signal having a magnitude equal to a multiple of the currrent to be passed through said elongated member, and an inductor including tuned circuit coupled to said power amplifier and tuned to the frequency of said reference signal;

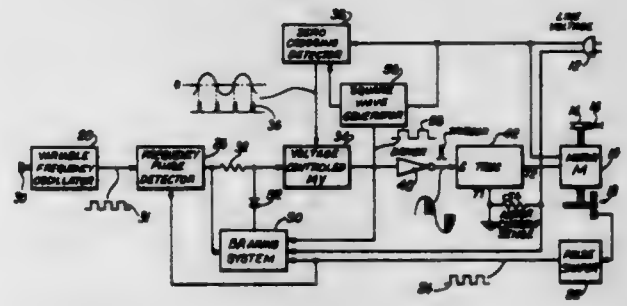
the inductor of said tuned circuit surrounding said elongated member, said inductor and said elongated member comprising a transformer whereby a constant current signal, stepped up by the ratio of turns of said inductor to said elongated member, is generated in said elongated member to provide changes in the temperature and length of said elongated member, is generated in said elongated member to provide changes in the temperature and length of said elongated member to thereby correct the position of said positioning member.

4,348,625

VARIABLE SPEED MOTOR SYSTEM

Paul H. Sharp, Pasadena, Calif., assignor to Marmon Company, Chicago, Ill.

Filed Dec. 21, 1979, Ser. No. 105,952
Int. Cl.³ H02P *3/18*
U.S. Cl. 318—757 8 Claims



2. A circuit for controlling the rate of rotation of a shaded-pole motor comprising:

means for sensing the actual rate of rotation of said motor and for generating a signal having at least one parameter proportional to said actual rate;

means for selecting a desired rate of rotation of said motor and for generating a signal having at least one parameter proportional to said desired rate;

means responsive to said actual and desired rate proportional signals for generating a signal having at least one parameter proportional to the difference between said actual and desired rates;

a source of line power connected to said motor;

means for sensing the zero-crossing points of the AC voltage of said line power and for generating a pulse at each zero-crossing point;

switching means connected in series between said source of power and said motor for applying line current to said motor during a portion of each half-cycle of line voltage;

delayed activation means responsive to said zero-crossing pulse and said difference proportional signal and having an output signal for activiating said switching means to apply line current to said motor during a portion of each half-cycle of line voltage at a time delayed from the zero-crossing point of said line voltage, the amount of said time delay being dependent on said difference proportional signal, said applied line current renders said actual rate equal to said desired rate after several half-cycles of line voltage;

sensing means for generating a signal representative of the magnitude of line current flowing through said motor;

inhibit means responsive to said difference proportional signal for generating an override signal to inhibit said delayed activation means when said actual rate exceeds said desired rate by a predetermined amount; and

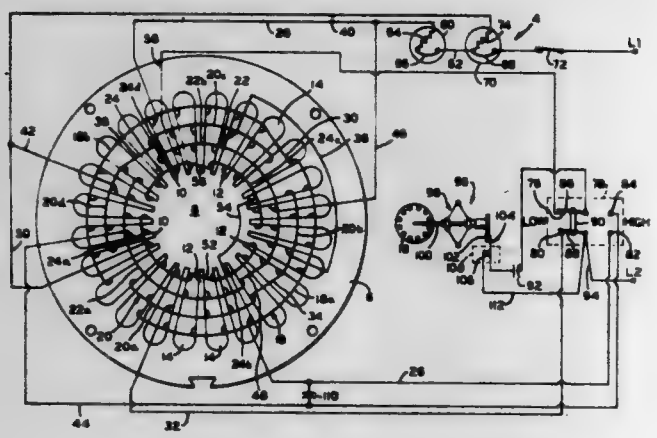
automatic braking circuit means receiving said line current sensing signal and said zero-crossing pulses for activating said switching means during every second half-cycle of line voltage at a time delayed from the zero-crossing point of said line voltage to produce a variable half-wave direct braking current in said motor.

4,348,626

TWO-SPEED SINGLE PHASE MOTOR WITH CENTRIFUGAL SWITCH

Solomon London, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Filed Sep. 16, 1980, Ser. No. 187,757
Int. Cl.³ H02P 1/18
U.S. Cl. 318—772 18 Claims



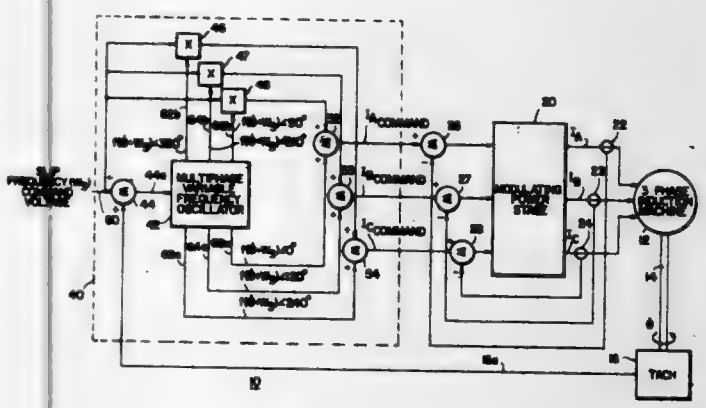
1. A multiple speed capacitor start induction motor adapted for connection to a source of excitation voltage comprising: a stator core, a rotor rotatable within said stator core, a first main winding wound on said core, a second main winding wound on said core, a first start winding wound on said core, a second start winding wound on said core, a start capacitor, a pair of terminals adapted to be connected to the source of excitation voltage, a double pole double throw selector switch means having first and second switch elements movable between a high speed position and an alternative low speed position for connecting said first main winding in parallel across said terminals and said first start winding in parallel across said terminals and said starting capacitor in series with said first start winding while at the same time disconnecting said second main winding and said second start winding from across said terminals when in its said high speed position and for connecting said second main winding in parallel across said terminals and said second start winding in parallel across said terminals and said start capacitor in series with said second start winding while at the same time disconnecting said first main winding and said first start winding from across said terminals when in its said low speed position, one of said first and second switch elements being connected in series with said start capacitor and the other of said first and second elements being connected with one of said terminals, a single pole single throw centrifugally actuated switch means associated for conjoint rotation with said rotor and having a single contact pair connected in series with said start capacitor and one of said one terminal and the other of said terminals, said centrifugally actuated switch means electrically disconnecting said start capacitor from said one of said one terminal and said other terminal when said rotor exceeds a predetermined rotational speed, and a run capacitor connected in series with at least one of said first and second start windings.

4,348,627

INDUCTION MOTOR CONTROLLER WITH RAPID TORQUE RESPONSE

Donald E. Fulton, Stoneham, Mass., assignor to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Filed Mar. 24, 1980, Ser. No. 133,414
Int. Cl.³ H02P 5/40
U.S. Cl. 318—807 7 Claims



1. A controller for an induction motor having an output shaft, comprising:

means for receiving a slip frequency command signal representative of a desired slip frequency for said motor, w_s,

means for receiving a shaft frequency signal representative of the rate of rotation of said shaft, θ,

oscillator means responsive to said slip frequency command signal and said shaft frequency signal, said oscillator including means for generating at least one pair of associated signals, wherein the associated signals of each of said pairs have frequencies proportional to the sum of said desired slip frequency and said shaft rotation rate, $\theta + w_s$, and are in phase quadrature,

weighting means for amplitude scaling only one signal of each of said pairs of signals by a factor proportional to said desired slip frequency,

adding means for generating stator command signals representative of the sum of each of said amplitude scaled signals and its associated quatrature signal.

4,348,628

ELECTRIC MOTOR ALTERNATING POWER SUPPLY FOR VEHICLES

Carl C. Loucks, 3009 Harding Way, Costa Mesa, Calif. 92626

Continuation-in-part of Ser. No. 161,609, Jun. 20, 1980, abandoned. This application Oct. 19, 1981, Ser. No. 312,427
Int. Cl.³ H02J 7/00
U.S. Cl. 320—61 5 Claims

1. An electric power-supply system for powering a vehicle having an electric motor, comprising:

an electric motor adapted to be energized by DC-current flow;

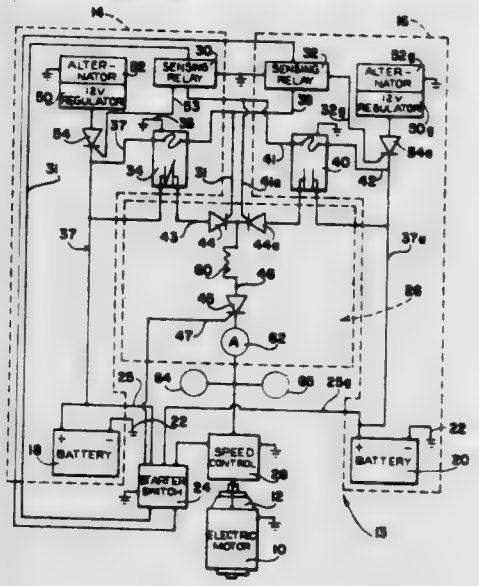
a speed-control means operably connected to said motor to regulate the rotational speed of said motor;

a first alternating circuit including a first battery and a first sensing-relay means;

a second alternating circuit including a second battery and a second sensing-relay means, wherein said first and second alternating circuits are integrated with each other, whereby said sensing relays determine the charge or discharge mode of a given alternating circuit;

a control circuit interconnected to said first and second alternating circuits, and interconnected between said speed-control means and said alternating circuits; and

a starter switch connected to said speed-control means, and



to said first and second batteries of said first and second circuits; and

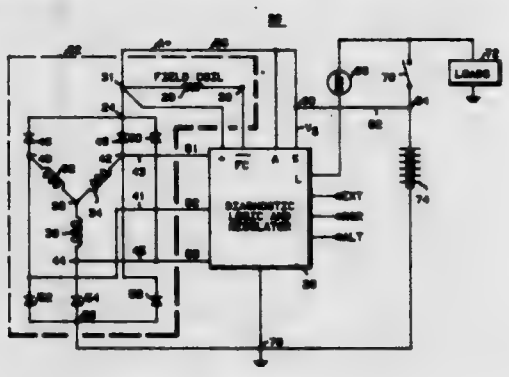
wherein said first sensing-relay means is interconnected to said second alternating circuit; and said second sensing-relay means is interconnected to said first alternating circuit, wherein said first sensing-relay means is adapted to sense the voltage output of said second battery to selectively provide a charge or discharge mode of said second alternating circuit; and wherein said second sensing-relay means is adapted to sense the voltage output of said first battery to selectively provide a charge or discharge mode of said first alternating circuit.

4,348,629

STATOR FAULT DETECTOR FOR AUTOMOTIVE ALTERNATOR BATTERY CHARGING SYSTEMS

Kirk A. Sievers, Roselle, Ill., assignor to Motorola, Inc., Fort Lauderdale, Fla.

Filed May 22, 1980, Ser. No. 152,224
Int. Cl.³ G01R *31/00*; G08B *21/00*
U.S. Cl. 322—99 **7 Claims**



1. In a multiphase alternator battery charging system, said alternator producing a rectified electrical signal for charging said battery, a detector monitoring the function of the stator and rectifying diodes of said alternator comprising:

means coupled between said stator and said rectifying diodes, combining the individual phase signals of said alternator to produce a normally symmetric wave signal representative of the proper performance of said stator and diodes in said alternator;

first and second comparison means coupled to said combining means; said first comparison means detecting deviations in said normally symmetric wave signal greater in magnitude than a first threshold value, and said second comparison means detecting deviations in said normally symmetric wave signal lesser in magnitude than a second threshold value; and

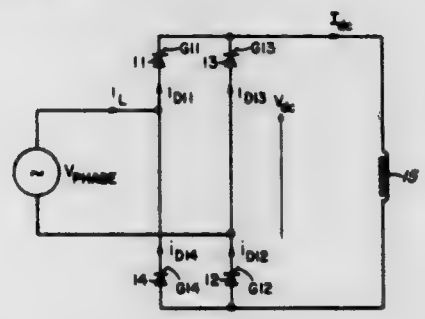
means producing an output signal whenever said normally symmetric wave signal deviates above said first threshold value or below said second threshold value.

4,348,630

SUPERCONDUCTING VAR CONTROL

Heinrich J. Boenig, Los Alamos, N. Mex., and William V. Hassenzahl, Piedmont, Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Dec. 5, 1980, Ser. No. 213,275
Int. Cl.³ G05F *1/70*
U.S. Cl. 323—207 **7 Claims**



1. Static VAR control means comprising:

a superconducting coil; and

a single phase asymmetrical full wave Graetz bridge connected in parallel with said superconducting coil and adapted for connection to an ac power source, said Graetz bridge having first, second, third and fourth silicon controlled rectifiers connected in a bridge rectifier configuration having first and second opposing terminals adapted for connection to a single phase ac line;

a gate electrode on each of said first, second, third, and fourth silicon controlled rectifiers;

said superconducting coil connected to third and fourth opposing terminals on said bridge; and

circuit means connected to said gate electrodes enabling conduction of said silicon controlled rectifiers whereby current flowing in said superconducting coil is constant, said circuit means including trigger pulse generating means and pulse delay means connected in circit with each of said gate electrodes, said trigger pulse generating means adapted for connection to a single phase ac line.

4,348,631

STATIC VAR GENERATOR

Laszlo Gyugyi, Penn Hills, and Peter Wood, Murrysville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 4, 1981, Ser. No. 270,470
Int. Cl.³ H02J *3/18*
U.S. Cl. 323—211 **1 Claim**

1. A static var generator, comprising:

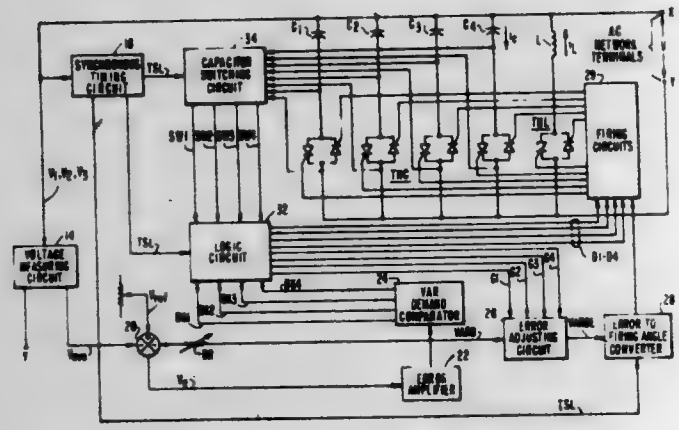
(a) a reactance means disposed for connection into an AC network;

(b) a monitoring means for monitoring the reactive requirements of said AC network;

(c) a control means connected to said reactance means and said monitoring means for connection of said reactance

means into said AC network in response to the reactive requirements of said AC network; and

(d) an error adjusting circuit in combination with said control means disposed to predetermine an amount of capacitive surging current and connect an inductive reactance in synchronism with capacitive reactance to suppress said capacitive surging current resulting in minimizing voltage transients in said AC network.

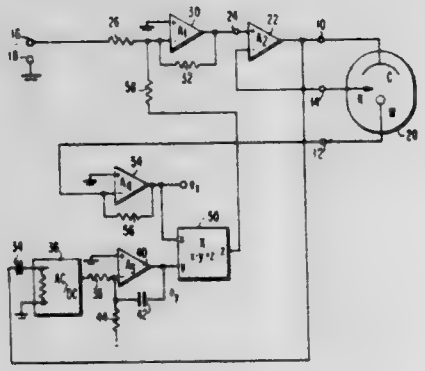


4,348,632

SERVOSYSTEM OPERATING ABOUT NOISE COMPONENT ERROR SIGNAL

Ronald K. Galwey, Los Gatos, and Kay K. Kanazawa, San Jose, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 15, 1980, Ser. No. 187,120
Int. Cl.³ G05F *1/56*; C25B *15/00*; C25D *21/00*
U.S. Cl. 323—280 **10 Claims**



1. A closed loop servocircuit arrangement for controlling the operation of an electric circuit element having at least two terminals, comprising

circuitry for controlling and applying operating energy across said electric circuit element for passing electric current therethrough, which electric current includes an inherent electric noise current component which also manifests an electric noise potential,

servocircuitry having input terminals coupled to points on said circuitry at which said noise current component and said noise potential components are manifested and having an output terminal at which a processed error signal is presented and combined with said operating energy for controlling the flow of electric current through said electric circuit element,

said servocircuitry comprising

an inverting summing circuit having balanced input terminals and having an output terminal,

a control amplifying circuit having an input terminal connected to said output terminal of said summing circuit, and having an output terminal connected to one terminal of said electric circuit element,

a current following circuit having an input terminal connected to the other terminal of said electric circuit element and having an output terminal,

a converting circuit having an input circuit connected to said output terminal of said control amplifying circuit and having an output terminal,

an integrating circuit having an input terminal connected to said converting circuit and having an output terminal, and

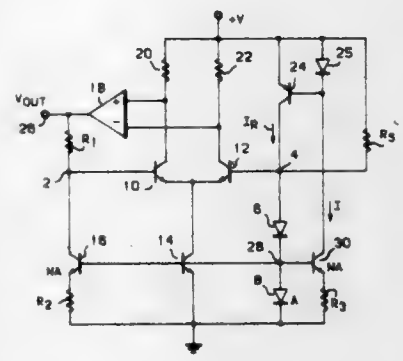
a multiplying circuit having input terminals individually connected to said output terminals of said current following circuit and said integrating circuit and having a product output terminal connected to one of said input terminals of said summing circuit.

4,348,633

BANDGAP VOLTAGE REGULATOR HAVING LOW OUTPUT IMPEDANCE AND WIDE BANDWIDTH

William F. Davis, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 22, 1981, Ser. No. 276,147
Int. Cl.³ G05F *3/20*
U.S. Cl. 323—314 **8 Claims**



1. A solid state voltage supply for generating a temperature compensated voltage at an output node thereof, comprising:

first and second emitter coupled differential transistors each having base, emitter and collector terminals, the base of said first transistor adapted to be coupled to a first voltage having a negative temperature coefficient;

circuit means coupled to the collectors of said first and second transistors for furnishing a first supply voltage thereto to develop current flow therethrough;

current sinking means coupled to the emitters of said first and second transistors;

first means responsive to differential currents flowing through said first and second transistors and having an output coupled to said output node;

first impedance means having a first terminal coupled to said output node and a second terminal coupled to the base of said second transistor, the voltage at the base of said second transistor being substantially equal to said first voltage during steady state conditions; and

second means coupled to said first impedance means for producing a second voltage across said first impedance means having a positive temperature coefficient, said second voltage being added to the voltage at the base of said second transistor to produce said temperature compensated voltage.

4,348,634

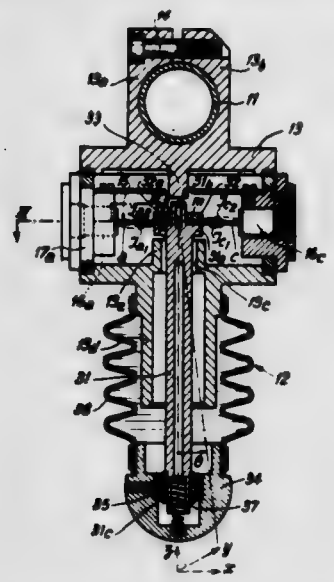
MANUAL CONTROL MEANS FOR CONTROLLING THE MOVEMENTS OF A MOTOR-DRIVEN ELEMENT

Roger J. P. David, Essonne, and Maurice A. Lande, Paris, both of France, assignors to Association des Ouvriers en Instruments de Precision, Paris, France

Filed Jul. 30, 1980, Ser. No. 173,454
Claims priority, application France, Aug. 2, 1979, 79 19844
Int. Cl.³ G05B *24/02*
U.S. Cl. 323—353 **8 Claims**

1. A manual control means for controlling the movements of

a motor-driven element in three perpendicular directions, said means comprising a deformable diaphragm in the form of a cross including a central portion and projecting arms, the central portion of which is subjected to the action of a manually displaceable handle acting on the said central portion, a pair of strain gauges secured one on each of the two faces of



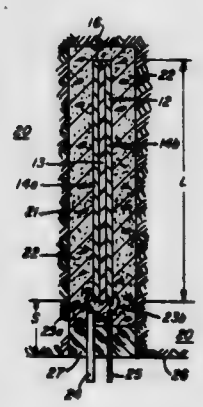
each arm, and a support means connecting the free end of each arm of the diaphragm to means solidly attached to the element to be moved, said support means enabling the corresponding arm of the diaphragm to turn, without torsion, about its longitudinal axis when the handle is subjected to a force applied in the direction perpendicular to said axis.

4,348,635

DETECTING AND MEASURING THE POSITION OF A BREAK IN SOLID FORMATIONS BY MEASURING THE CAPACITANCE OF AN ENLONGATED ELEMENT EMBEDDED THEREIN

David Wright, Vershire, Vt., and Ivor Hawkes, Hanover, N.H., assignors to Joy Manufacturing Company, Pittsburgh, Pa.

Continuation of Ser. No. 867,393, Jan. 6, 1978, abandoned. This application Nov. 23, 1979, Ser. No. 97,107
Int. Cl.[3] G01B *7/22;* G01R *31/08;* G01L *1/14*
U.S. Cl. 324—52 11 Claims



1. An apparatus for determining the position of a structural break in a solid formation comprising:

a continuous, elongated, linearly extending electrical element adapted to be embedded in solid formation, said element comprising;

two flat continuous, elongated, linearly extending frangible conductive tape means for conducting an electric current and storing an electric charge and adapted to be connected to a capacitance measuring instrument;

a flat continuous, elongated, linearly extending dielectric paper tape disposed intermediate said two flat continuous, elongated, linearly extending frangible conductive tape means with one said flat continuous, elongated, linearly extending frangible conductive tape means abutting the first surface of said flat continuous, elongated, linearly extending flexible dielectric paper tape along said flat continuous, elongated, linearly extending flexible dielectric paper tape length and another said flat continuous, elongated, linearly extending frangible conductive tape means abutting the second surface of said flat continuous, elongated, linearly extending flexible dielectric paper tape along said flat continuous, elongated, linearly extending flexible dielectric paper tape length whereby the electrical capacitance formed between said two flat continuous, elongated, linearly extending frangible conductive tape means is a function of the length of said flat continuous, elongated, linearly extending frangible conductive tape means and;

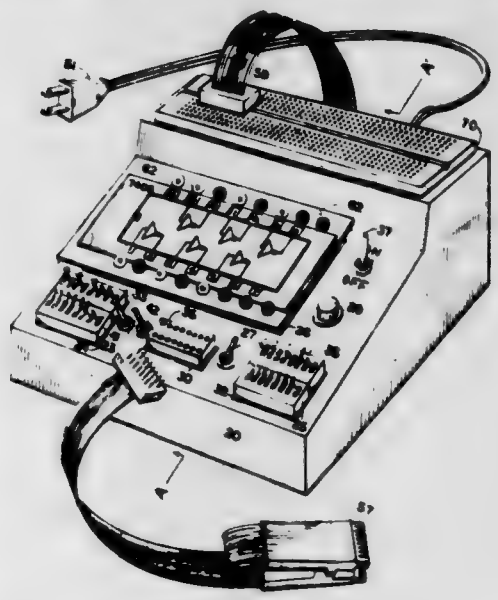
grouting means surrounding said electrical element rigidly embedding said electrical element in such solid formation, whereby a fracture in said grouting means due to structural break in the solid formation causes a severing of said flat continuous, elongated, linearly extending frangible conductive tape means in close proximity to said fracture and wherein the location at which said severing occurs may be determined by the capacitance measured between said two flat continuous, elongated, linearly extending frangible conductive tape means by said capacitance measuring means.

4,348,636

INTEGRATED CIRCUIT TESTER

George J. Doundoulakis, 2498 Kayron La., North Bellmore, N.Y. 11710

Filed Jul. 9, 1980, Ser. No. 167,136
Int. Cl.[3] G01R *15/12*
U.S. Cl. 324—73 R 10 Claims



1. An integrated circuit tester comprising:

a test socket means, having a predetermined number of pin stations for receiving an I.C. chip to be tested;

logic state electronic detection means for detecting the logic state of each pin of said test socket means;

luminous display means, driven by said logic state electronic detection means, for continuously indicating the logic state of pins;

display card means, providing a logic diagram and showing the number and logic significance of each pin of the chip under test;

display card supporting and positioning means for supporting and adjustment of said display card means, so that it can register next to said luminous display means, thereby providing correlation of the displayed logic states with the inherent logic operation of the chip under test;

logic state adjusting means for setting a predetermined combination of pins of said test socket means to a logic value

of "1" and "0", depending on the logic function and mode of operation of the chip under test.

logic state pulsating means for temporarily switching the logic state of any combination of pins, of said test socket means, between the logic states "1" and logic state "0", and,

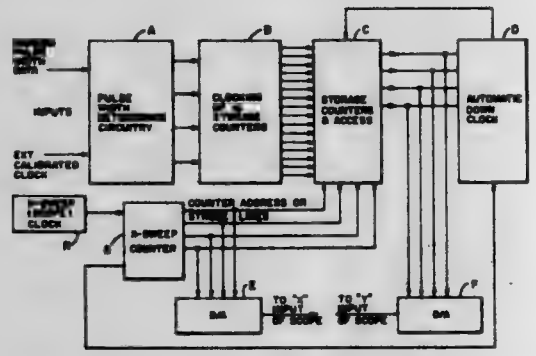
power supply switching means for providing the power requirement of the chip under test such as ground and operating voltage to appropriate pins.

4,348,637

PULSE WIDTH SPECTRUM ANALYZER

Frank Hayes, III, Huntsville, and Joseph R. McGinty, Madison, both of Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 10, 1980, Ser. No. 205,359
Int. Cl.³ G01R *23/16*
U.S. Cl. 324—77 B 8 Claims



1. A pulse width spectrum analyzer for analyzing the pulse widths of a source of random pulse width data comprising a pulse width determining means having as its input said source of random pulse width data and having outputs whose magnitudes are directly portional to the widths of the input pulse width data; a plurality of storage counters; first means for directing the outputs of said pulse width determining means to a selected storage counter in accordance with its magnitude; a sweep counter connected to said storage counters so as to cause the storage counters to serially present outputs as the sweep counter counts; electronic display means having an X-input and a Y-input for representing a graph display in accordance to its inputs; said sweep counter having its output connected to the X-input of said display means; and said storage counters having their outputs connected to the Y-input of the display means.

4,348,638

POWER MEASURING APPARATUS

Austin G. Boldridge, Jr., Freehold, N.J., assignor to Conversational Systems, Inc., New York, N.Y.

Division of Ser. No. 925,105, Jul. 17, 1978, Pat. No. 4,236,112. This application Apr. 24, 1980, Ser. No. 143,377
Int. Cl.³ G01R *1/20*; H01F *27/30*
U.S. Cl. 324—127 1 Claim



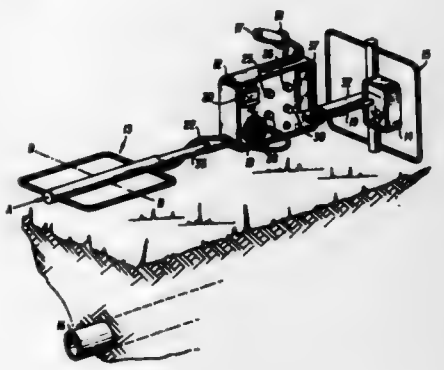
1. A transformer secondary winding comprising: a flexible hollow tube of dielectric material; a multiturn wire winding wound around the peripheral surface of said hollow tube; fastening means for interconnecting the ends of said hollow tube, said fastening means comprising a tape of flexible dielectric material passing through said hollow tube and extending beyond the ends thereof; and an integrated circuit amplifier affixed to said hollow tube and electrically connected to said winding.

4,348,639

TRANSMITTER-RECEIVER LOOP BURIED METAL OBJECT LOCATOR WITH SWITCH CONTROLLED REFERENCE VOLTAGE

James P. Karbowski, Philomath, Oreg., assignor to Triple Dee Electronics Inc., Lebanon, Oreg.

Filed May 18, 1979, Ser. No. 40,399
Int. Cl.³ G01V *3/11, 3/165*
U.S. Cl. 324—329 8 Claims



8. An apparatus for locating a buried metal object comprising:

first and second rectangular loops, said loops being spaced apart and lying in perpendicular planes;

means for energizing said first loop with an alternating current;

means for detecting a signal induced in said second loop in response to an electromagnetic field generated by said metal object when in the presence of said first loop;

comparator means for detecting the difference between the magnitude of a signal induced in said second loop and the magnitude of a reference signal and providing at an output thereof a voltage indicating said difference;

means connected to said comparator means output for supplying a reference signal having a selectable magnitude to said comparator means, said means including a switch, said means providing in response to the momentary closure of said switch a reference signal voltage for establishing the comparator means output voltage to a predetermined level; and

means for monitoring said difference during the positioning of said first and second loops whereby increases in said difference resulting from the proximity of said second loop with respect to said metal object may be reduced by successive increases in the magnitude of said reference signal until said loops are optimally positioned with respect to said metal object.

4,348,640

DIVIDE BY THREE CLOCK DIVIDER WITH SYMMERTICAL OUTPUT

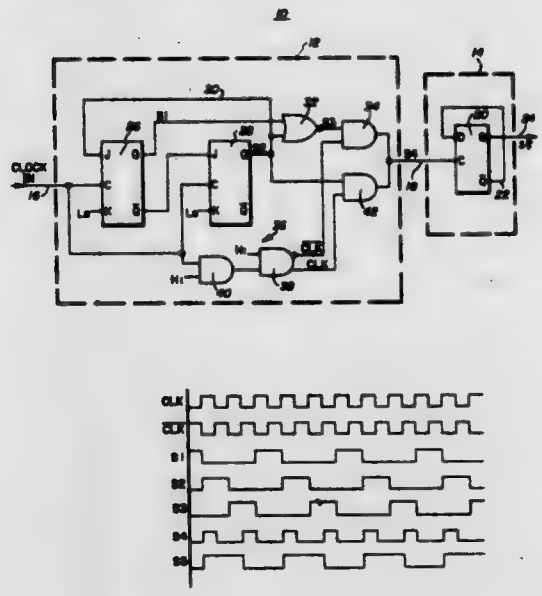
Steven J. Clendening, Plano, Tex., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Sep. 25, 1980, Ser. No. 190,682
Int. Cl.³ H03K *21/00*
U.S. Cl. 328—41 8 Claims

1. A divide by three digital clock divider circuit providing a symmetrical output, comprising:

a divide by one and one-half circuit comprising flip-flop means and gate means for receiving clock pulses of frequency F and generating nonsymmetrical pulses of frequency $\frac{1}{3}$F, and for gating said clock pulses with said

nonsymmetrical pulses and generating pulses of frequency ½F; and



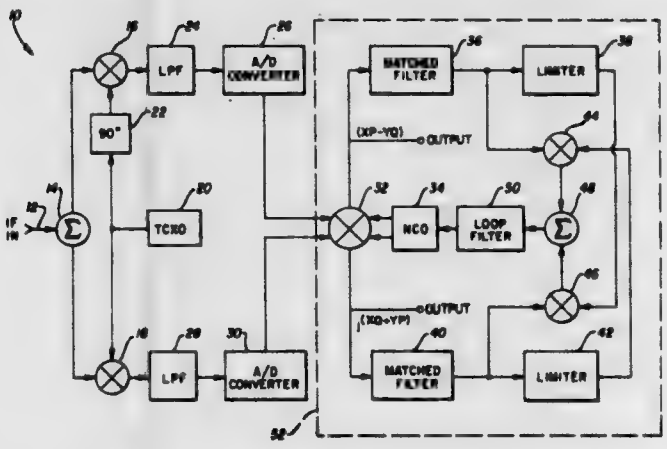
divide by two means receiving said pulses of frequency ½F and outputting symmetrical pulses of frequency ¼F.

4,348,641

DIGITAL BASEBAND CARRIER RECOVERY CIRCUIT

Lex A. Scott, Huntsville, Ala.; William H. Mosley, Jr., St. Petersburg, and Carl F. Andren, Indialantic, both of Fla., assignors to E-Systems, Inc., Dallas, Tex.

Filed Jan. 8, 1980, Ser. No. 110,462
Int. Cl.³ H03D *3/00*; H03K *9/00*
U.S. Cl. 329—50 18 Claims



1. A circuit for demodulating a data modulated signal that includes a data signal and a carrier signal having a design center frequency, comprising:

a fixed frequency oscillator for producing an oscillator signal at the design center frequency with a frequency offset existing between the oscillator signal and the carrier signal;

first mixing means for mixing the data modulated signal with the oscillator signal phase shifted by 90 degrees to produce a first product signal;

second mixing means for mixing the data modulated signal with the oscillator signal to produce a second product signal;

said first and second product signals being the quadrature components of the data signal and the frequency offset existing between the oscillator signal and the data modulated signal;

processing means responsive to the first and second product signals for producing a complex number signal; and

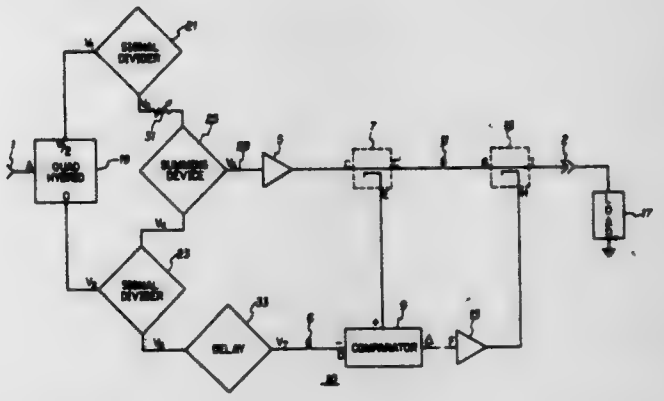
said processing means operative to combine the first and second product signals and the complex number signal for removing the frequency offset to produce the data signal.

4,348,642

FEEDFORWARD WIDEBAND AMPLIFIER

Timothy A. Harrington, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Aug. 29, 1980, Ser. No. 182,533
Int. Cl.³ H03F *1/26*
U.S. Cl. 330—149 6 Claims



1. A feedforward wideband power amplifier for amplifying an electromagnetic wave signal, comprising:

first signal path including in cascade arrangement, signal amplifier means for amplifying the electromagnetic wave signal and a first delay network;

a second signal path including in cascade arrangement, a second delay network, summing device and an error amplifier;

a phase intercept distortion compensation means for dividing the electromagnetic wave signal into two signals in phase quadrature with each other to obtain a first signal and a second signal, for matching the phase and amplitude of the first signal to the second signal and for applying the first signal to the first signal path and the second signal to the second signal path;

a coupler means for coupling an amplified sample of the first signal to the one input terinal of the summing device; and

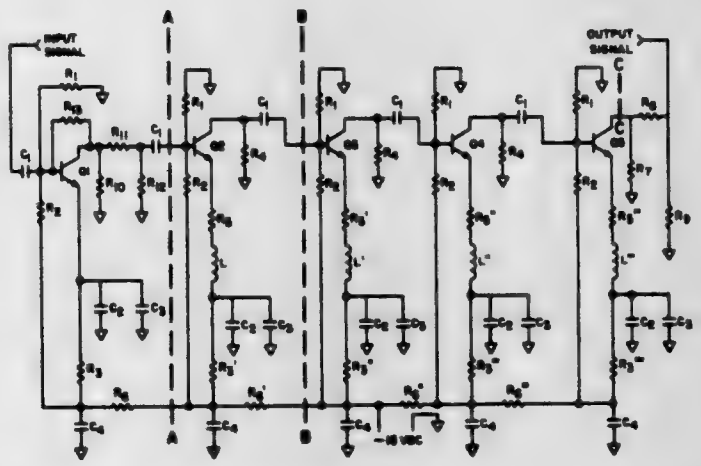
recombiner means for recombining the output signal of the first signal path with the output signal of the second signal path.

4,348,643

CONSTANT PHASE LIMITER

W. Richard Tennyson, Utica, N.Y., assignor to General Electric Company, Utica, N.Y.

Filed Nov. 5, 1980, Ser. No. 204,091
Int. Cl.³ H03F *3/191, 1/34*
U.S. Cl. 330—294 5 Claims



1. A constant phase limiter comprising:

(a) a plurality of substantially identical cascaded transistor stages, each of said stages including a transistor having a base, an emitter, and a collector electrode and having an input circuit between said base and said emitter electrode,

and an output circuit between said emitter and said collector electrode;

(b) an impedance means having a first end and a second end, said first end being connected to said emitter electrode;

(c) a first bias means having a first end and a second end, said first end being connected to said second end of said impedance means;

(d) a first bypass means having a first and a second end, said first end being connected to said second end of said impedance means, and having said second end being connected to a reference potential;

(e) a second bias means having a first and a second end, said first end being connected to said base electrode and having said second end being connected to said second end of said first bias means;

(f) a third bias means having a first and a second end, said first end being connected to said base electrode and having said second end being connected to a reference potential;

(g) a loading means having a first and a second end, said first end being connected to said collector electrode and having said second end being connected to a reference potential;

(h) a coupling capacitor means having a first and a second end, said first end being connected to said collector electrode and having said second end being a first terminal of the output circuit;

(i) a decoupling means having a first and a second end, said first end being connected to said second end of said first bias means and having said second end being connected to a second terminal of the output circuit;

(j) a bypass and decoupling means having a first and a second end, said first end being connected to said second end of said first bias means and having said second end being connected to a reference potential; and

(k) said impedance means further comprising a feedback resistor and a feedback inductor chosen so as to provide an overall constant phase limited output characteristic for a desired range of input signal levels.

4,348,644

POWER AMPLIFYING CIRCUIT WITH CHANGING MEANS FOR SUPPLY VOLTAGE

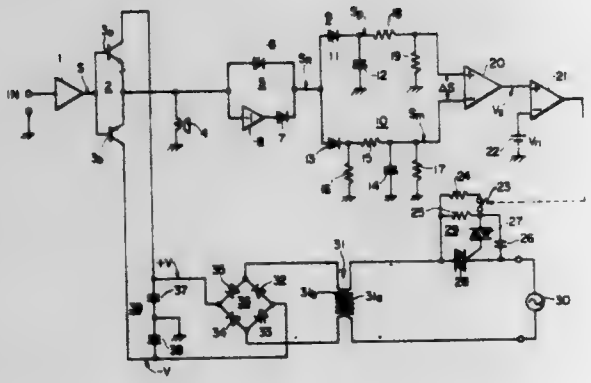
Shingo Kamiya, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Mar. 24, 1980, Ser. No. 133,360

Claims priority, application Japan, Sep. 14, 1979, 54-118029; Sep. 14, 1979, 54-118030

Int. Cl.³ H03F *3/21, 3/26*

U.S. Cl. 330—297 **15 Claims**



1. A power amplifying circuit, comprising:

a power amplifying element for amplifying an input electrical signal thereto;

detecting means for detecting a crest factor of a waveshape of an input signal amplified by said power amplifying element, the crest factor being proportional to the difference between a peak value of the input signal and a mean value of the input signal and providing a crest factor signal indicative thereof; and

controlling means for controlling a supply voltage for the power amplifying element of said power amplifying circuit in response to the crest factor signal such that the supply voltage (a) elevates as the crest factor becomes larger and (b) lowers as the crest factor becomes smaller.

4,348,645

BUFFER AMPLIFIER CIRCUIT USED IN WIDEBAND TUNER

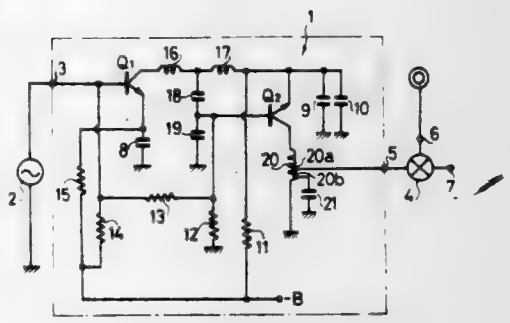
Susumu Ushida, and Hiroyuki Yanagida, both of Soma, Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Filed Aug. 27, 1980, Ser. No. 181,672

Claims priority, application Japan, Aug. 28, 1979, 54-118238[U]

Int. Cl.³ H03F *3/191;* H04N *5/50*

U.S. Cl. 330—306 **1 Claim**



1. A buffer amplifier circuit adapted to receive the output from a local oscillator and to amplify and deliver said output signal to a mixer, said buffer amplifier comprising:

an input terminal for receiving said output signal from said local oscillator;

an amplification means for amplifying said output signal;

an output transistor for delivering a signal to said mixer, said output transistor having an output electrode grounded through a matching transformer having first and second taps;

a capacitor connected between said first tap and the ground, said capacitor constituting in combination with said matching transformer a trap circuit adapted to have resonance oscillation at a frequency of an order twice as high as the low region oscillation frequency of said local oscillator; and

an output terminal connected to said second tap and adapted to deliver the amplified local oscillation signal to said mixer.

4,348,646

TIME-DELAY-TRIGGERED TRAPATT OSCILLATOR WITH DIRECTIONAL FILTER

Barrie H. Newton, Copthorne; Peter L. Booth, Reigate, and Robert Davies, Copthorne, all of England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 19, 1980, Ser. No. 151,218

Claims priority, application United Kingdom, May 23, 1979, 7917969

Int. Cl.³ H03B *9/14*

U.S. Cl. 331—77 **2 Claims**

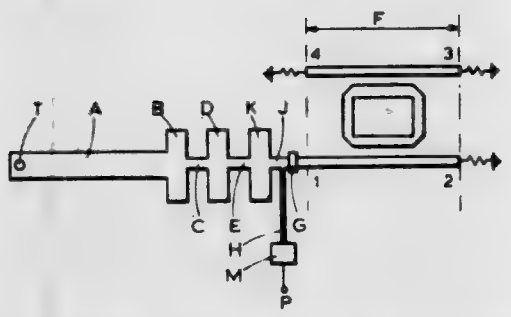
1. A time-delay-triggered TRAPATT oscillator circuit for operating at a predetermined frequency, comprising:

a delay line;

a TRAPATT diode connected to one end of the delay line;

a matching filter having one end connected to the delay line at a predetermined distance from the diode, said filter comprising successive sections of transmission line of different impedances;

a directional filter connected to an end of the matching filter remote from the delay line; and



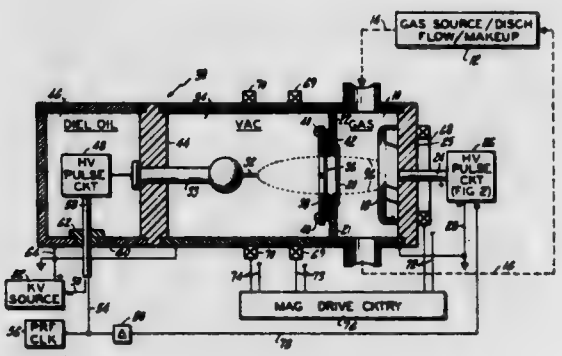
means for extracting energy from the directional filter at the predetermined frequency.

4,348,647

STABILITY ENHANCED RARE-GAS MONOFLUORIDE LASERS

William L. Nighan, and Robert T. Brown, both of Manchester, Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jun. 5, 1980, Ser. No. 156,547
Int. Cl.[3] H01S *3/22, 3/97*
U.S. Cl. 372—74 1 Claim



1. An improved rare-gas monofluoride pulse laser, pumped by an electron beam sustained electric discharge, including:

a laser chamber containing a mixture of a rare-gas buffer gas, a rare-gas energy transfer gas, and a fluorine fuel gas, and providing a laser gain region;

electron beam sustained electric discharge means including a high voltage source connected between an anode and a cathode disposed to provide an electric field in said laser gain region and a pulsed electron gun for injecting high energy primary electrons into said laser gain region;

wherein the improvement for delaying the onset of instability of the electric discharge comprises a fractional concentration, on the order of one-tenth of the fractional concentration of fluorine fuel gas, of nitrogen trifluoride in said mixture, whereby said laser chamber contains both said fluorine fuel gas and said nitrogen trifluoride.

4,348,648

TRANSIENT SUPPRESSION CIRCUIT

Richard B. Childs, White Plains, N.Y., assignor to Optical Information Systems, Inc., Elmsford, N.Y.

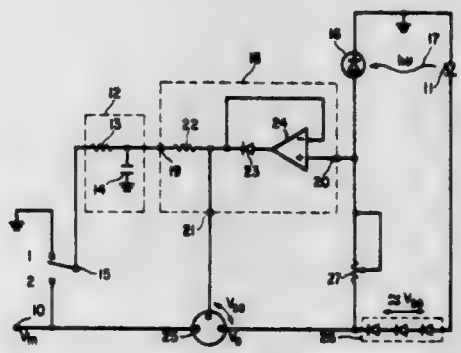
Filed Jul. 25, 1979, Ser. No. 60,722
Int. Cl.[3] H01S *3/10*
U.S. Cl. 372—29 8 Claims

1. Transient suppression circuit for substantially eliminating transients or overshoot during turn-on/turn-off of a light emitting diode comprising:

(a) a voltage input means for providing a bias to the light emitting diode, the voltage input means including a time delayed portion which provides a first voltage whose magnitude increases with time;

(b) detecting means for detecting electromagnetic radiation emitted by the light emitting diode, said detecting means generating a second voltage in response to the detected radiation of the light emitting diode;

(c) diode circuit means including at least one diode coupled between an output of said delay portion and an output of said detecting means to receive said first and second voltages and functioning to clamp an output of said diode circuit at a voltage substantially equal to the higher of said first and second voltages; and



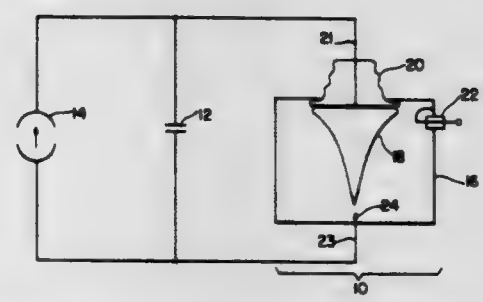
(d) voltage regulator means for regulating voltage to the light emitting diode and responsive to the voltage output of the diode circuit.

4,348,649

MICROWAVE POWER PULSE GENERATOR

Dieter R. Lohrmann, Lanham, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 8, 1980, Ser. No. 176,319
Int. Cl.[3] H03K *3/05*
U.S. Cl. 331—96 8 Claims



1. A self-pulsing microwave generator comprising:

a means for emitting electrons at a threshold potential;

a resonator means for producing oscillations at an rf frequency comprising a quarter-wavelength resonator shaped to minimize the interelectrode capacitance between said resonator means and said means for emitting electrons;

an electron transit space between said resonator means and said means for emitting electrons; and

a DC voltage means for producing a time variant potential between said resonator means and said means for emitting electrons.

4,348,650

SURFACE-ACOUSTIC-WAVE PARAMETRIC DEVICE

Shoichi Minagawa, and Takeshi Okamoto, both of Toda, Japan, assignors to Clarion Co., Ltd., Tokyo, Japan

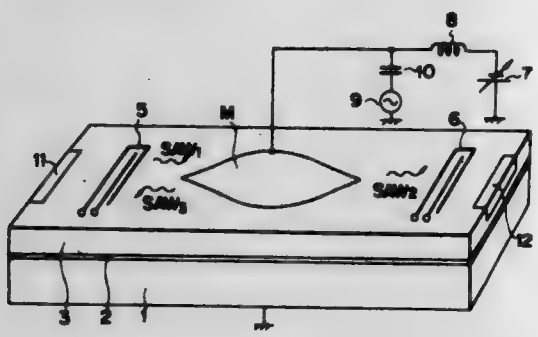
Filed Dec. 29, 1980, Ser. No. 220,678
Claims priority, application Japan, Dec. 27, 1979, 54-169299
Int. Cl.[3] H03H *9/64;* H01L *27/20, 19/00*
U.S. Cl. 333—195 10 Claims

1. A surface-acoustic-wave parametric device which comprises:

a laminate formed of a semiconductor layer and a piezoelectric layer;

means for applying a pumping voltage to said laminate;

means for inputting surface acoustic wave to said laminate; and means for outputting surface acoustic wave subjected to a parametric interaction;



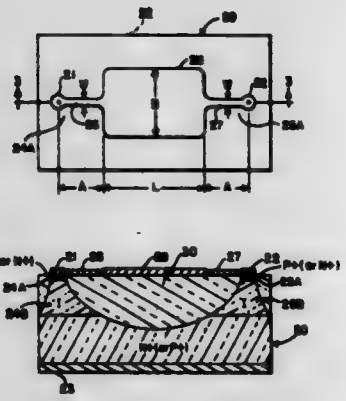
said laminate having a parametric interaction region having a width perpendicular to a propagation direction of surface acoustic wave which varies, in the propagation direction of the surface acoustic wave, corresponding to a desired frequency characteristic of the output surface acoustic wave.

4,348,651

CASCADING DIODE SWITCHES

Martin J. Reid, Chelmsford, Mass., assignor to Alpha Industries, Inc., Woburn, Mass.

Filed Jan. 30, 1981, Ser. No. 229,975
Int. Cl.³ H01P *1/15, 11/00, 3/08;* H01L *21/98*
U.S. Cl. 333—262 **10 Claims**



1. Microwave switching apparatus comprising,

a semiconductor substrate formed with at least first and second diodes between top and bottom surfaces,

first and second conducting portions on opposed surfaces of said substrate,

said first conducting portion interconnecting regions of like conductivity type of said first and second diodes and having like end portions of end width and length interconnected by an intermediate portion of intermediate width and length,

said end width being less than said intermediate width,

said end length being sufficiently less than a quarter wavelength of microwave energy to be selectively transmitted so that each end portion presents an inductive reactance between a respective one of said diode portions and said intermediate portion,

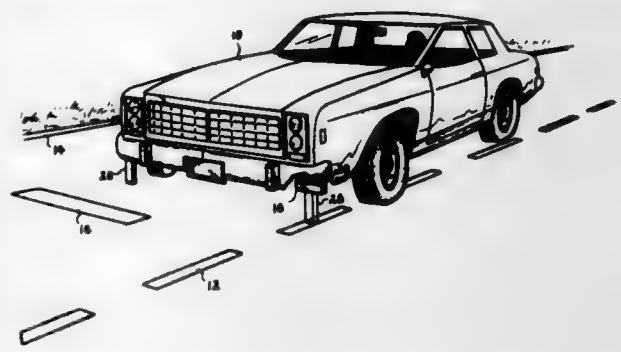
said intermediate portion coacting with said second conducting portion to form a transmission line having a characteristic impedance less than that of the transmission line portion formed by each end portion with said second conducting portion.

4,348,652

DRIVER ALERT SYSTEM

Robert R. Barnes, 1542 SW. Glick Rd., Topeka, Kans. 66604, and Charles L. Myers, Lexington, N.C., assignors to Robert R. Barnes, Emporia, Kans.

Filed Sep. 29, 1980, Ser. No. 191,697
Int. Cl.³ G05B *1/00;* G08B *21/00*
U.S. Cl. 340—52 R **15 Claims**



1. Apparatus for warning the driver of a motor vehicle when the vehicle is about to drift across a line on a road surface having a width within a predetermined range of minimum and maximum widths indicative of a center line or an edge line, said apparatus comprising:

a light source adapted to be carried by said vehicle adjacent a side thereof for directing light rays downwardly toward the road surface,

a photoresponsive receiver adapted to be carried by said vehicle for receiving said light rays reflected from said surface,

said receiver having photoelectric means for producing an output corresponding to reflected rays received at a plurality of points spaced horizontally transversely of the fore-and-aft axis of the vehicle, and means responsive to said output for producing an alarm-activating signal when said output is indicative of the reflection of said received rays from a line on said surface of at least said minimum width but no greater than said maximum width, and

alarm means responsive to said activating signal for warning the driver, whereby to alert the driver to the detection of a center or edge line and discriminate against other markings of greater or lesser width.

4,348,653

METHOD AND SYSTEM FOR INDICATING AUTOMOBILE ABNORMAL CONDITIONS

Yoshihiko Tsuzuki, Anjo; Hiroshi Okazaki, Okazaki; Shinji Shirasaki, Kariya; Masahiro Matsuyama, Kariya; Masanobu Kobayashi, Kariya, and Yoji Ito, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Mar. 17, 1981, Ser. No. 244,776
Claims priority, application Japan, Mar. 21, 1980, 55-36613
Int. Cl.³ B60Q *5/00*
U.S. Cl. 340—52 F **16 Claims**

1. A method of indicating an abnormal condition of an automobile, comprising the steps of:

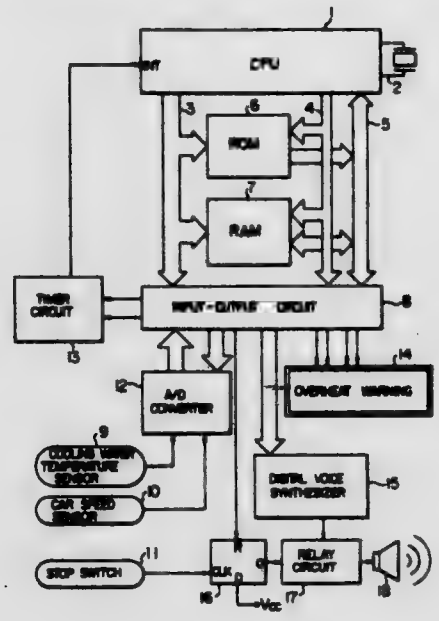
monitoring inspection items relating to the driving of the automobile;

deciding that the condition of an inspection item has reached a first abnormal condition;

automatically generating a voice cautioning the driver of the abnormal condition of said inspection item when a parameter for determining the generation of a cautioning voice has reached a predetermined level of generation of the cautioning voice after the time point of said decision of the first abnormal level;

deciding that the condition of said inspection item has reached a second abnormal level higher than said first abnormal level;

and automatically generating a voice warning the driver of an abnormal condition of said inspection item regardless of the



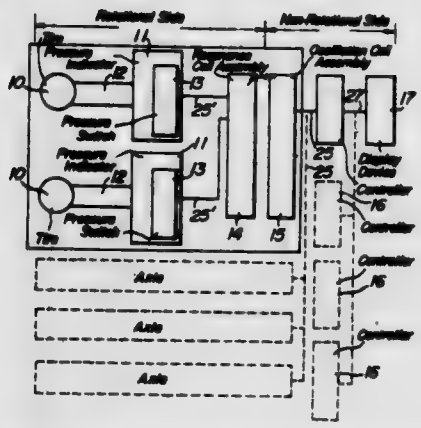
driving condition of said car at the time of said decision on the reaching of said second abnormal level.

4,348,654

TIRE INTERNAL PRESSURE MONITORING AND DISPLAY APPARATUS FOR TIRED VEHICLES

Akira Matsuda, Higashimurayama; Yoshihiro Hayakawa, Akigawa; Shigeo Yasuda, and Motoaki Iwasaki, both of Musashino, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Dec. 9, 1980, Ser. No. 214,898
Claims priority, application Japan, Dec. 29, 1979, 54/170654
Int. Cl.³ B60C *23/02*
U.S. Cl. 340—58 **5 Claims**



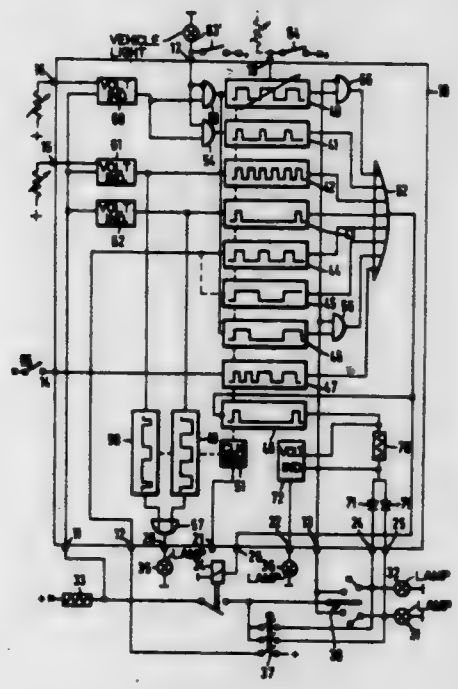
1. A tire internal pressure monitoring apparatus for tired vehicles, comprising: a rubber hose connected to a valve provided on a tire for vehicles, a pressure indicator secured to that position of a rotational body of the vehicle which is near the center of the rotational shaft of said rotational body and operative to indicate the internal pressure of the tire supplied from the tire through said rubber hose, a pressure switch incorporated into said pressure indicator and operative to transduce a decrease in the internal pressure of the tire to a value lower than a given value into an electrical signal, a resonance coil assembly electrically connected to said pressure switch and secured to a given position on the periphery of said rotational body so as to transmit a signal for detecting a decrease of the internal pressure of the tire to a stationary body side of the vehicle, an oscillation coil assembly secured to that position of the vehicle body side which is near said rotational body and operative to normally generate a high frequency signal, said resonance coil assembly being brought into a position opposed to and near said oscillation coil assembly everytime said rotational body is rotated by one turn to generate a signal sensitive to the internal pressure of the tire in response to the presence or absence of the resonance of said resonance coil assembly, a controller connected to said oscillation coil assembly and operative to treat said signal delivered from said oscillation coil assembly and a signal representing presence or absence of the run of the vehicle so as to generate an alarm signal, and a display device connected to said controller and displaying said alarm signal delivered from said controller to a driver, wherein said controller comprises an input signal treatment circuit for treating said signal delivered from said oscillation coil assembly, a run discrimination switch operative to become ON at a speed lower than a given speed and prohibit generation of said alarm, a contact point signal treatment circuit connected to said run discrimination switch and generating an electrical signal when said run discrimination switch is ON or OFF, a run discrimination circuit connected to said contact point signal treatment circuit and operative to discriminate the vehicle's run and treat the signal delivered from said input signal treatment circuit, a signal hold circuit including a gate and operative to be rendered conductive when said gate receives the signal delivered from said run discrimination circuit and hold the current flowing main current path thereof, an alarm display circuit connected to said main current path of said signal hold circuit, a reset switch connected to said alarm display circuit and resetting said signal hold circuit, a failure check switch connected to said contact point signal treatment circuit and operative to check the failure induced in the apparatus when the vehicle is stopped, and an electric source operative to supply current.

4,348,655

CONTROL CIRCUIT FOR VEHICLE TURN-SIGNAL FLASHER SYSTEMS

Horst Goertler, Sachsenheim; Friedrich Hetzel, Muhlacker; Hans Prohaska; Horst Rachner, both of Bietigheim-Bissingen; Wolf Seitter, Marbach, and Josef Swoboda, Bietigheim-Bissingen, all of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Sep. 29, 1980, Ser. No. 192,087
Claims priority, application Fed. Rep. of Germany, Nov. 3, 1979, 2944526
Int. Cl.³ B60Q *1/38*; G08B *5/38*, *21/00*
U.S. Cl. 340—73 **4 Claims**



1. A control circuit for the turn-signal flasher system of an automotive vehicle and being of the type in which a source of operating current is selectively applied to one of two turn-signal lamps by way of a serially coupled direction indicator switch and in which the current is periodically interrupted by

a switching element serially coupled between said source and said lamps, said control circuit comprising:

a measuring resistor serially coupled between said source and said lamps;

a first pulse generator having an input and output wherein said output is coupled to said switching element for interrupting said current;

a second pulse generator having an output coupled to said switching element for interrupting said current and having an input for activating said second pulse generator;

a voltage indicator coupled to said resistor and to said inputs of said first and second pulse generators for activating one of said first and second pulse generators when the voltage drop across said resistor is within a predetermined voltage range corresponding to normal current levels;

gating means coupled between said voltage indicator and the inputs of the pulse generators for selecting one of said first and second pulse generators in response to an external input signal;

a third pulse generator having an output coupled to said switching element for interrupting said current and having an input for activating said third pulse generator;

a second voltage indicator coupled to said measuring resistor and to said input of said third pulse generator for activating said third pulse generator when the voltage drop across said resistor is within a predetermined voltage range corresponding to current levels which are less than said normal current levels;

a fourth pulse generator having an output coupled to said switching element for interrupting said current and having an input for actuating said fourth pulse generator; and,

a third voltage indicator coupled to said measuring resistor and to said input of said fourth pulse generator for activating

said fourth pulse generator when the voltage drop across said resistor is within a predetermined voltage range corresponding to current levels which are greater than said normal current levels.

4,348,656

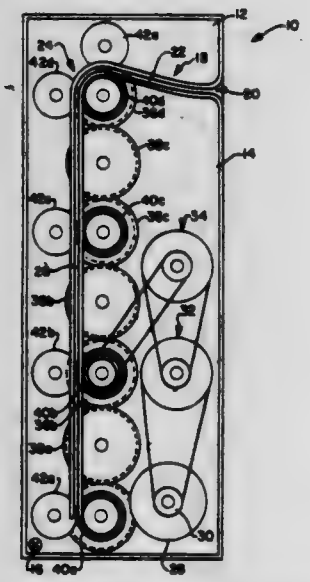
SECURITY VALIDATOR

Robert L. Gorgone, Mentor; Gerald M. Iannadrea, Painesville; Anthony H. Doleja, Bedford Heights; Bruce R. Knox, Wickliffe, and Alan J. Kovach, Cleveland, all of Ohio, assignors to Ardac, Inc., Willoughby, Ohio

Filed Oct. 16, 1979, Ser. No. 85,394

Int. Cl.³ G06K 9/00

U.S. Cl. 340—146.3 R 33 Claims



1. A note acceptor for receiving and determining the authenticity of a paper security such as a currency, bank notes, and the like, comprising:

top and bottom plates defining a note path therebetween for receiving a paper offered as a valid security;

paired top and bottom rollers respectively received by said top and bottom plates in contacting engagement within said note path;

drive means connected to and driving said bottom rollers;

sensing means interposed along said note path between said top and bottom plates for acquiring data from specific areas on said paper as it passes along said note path;

control means interconnecting said drive means and said sensing means for synchronizing the passing of said paper along said note path and the acquisition of data therefrom;

comparison means operatively connected to and receiving said data from said sensing means and determining the validity of the paper as a function of the difference between said data and reference values obtained from a plurality of valid securities; and

first gate means within said note path closely adjacent a first end for selectively engaging and inhibiting the passage of the security along said note path, said first gate means including a plurality of aligned spaced-apart, positionally alternating slots in said top and bottom plates and spaced-apart, positionally alternating teeth positively driven into and withdrawn from said slots in straight line action.

4,348,657

METHOD FOR TRANSMITTING BINARY SIGNALS OVER A FOREIGN WIRING NETWORK

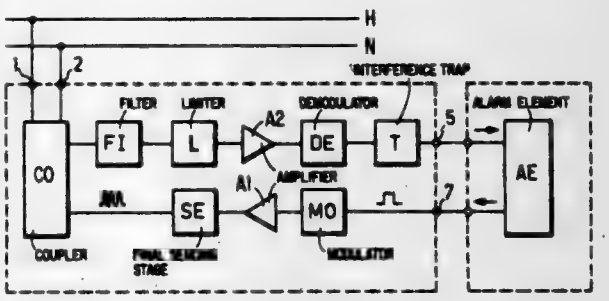
Willi Merkel, Albstadt, Fed. Rep. of Germany, assignor to Fritz Fuss Kom. Ges. Elektrotechnische Fabrik, Albstadt, Fed. Rep. of Germany

Filed Jun. 12, 1980, Ser. No. 158,878

Claims priority, application Fed. Rep. of Germany, Jun. 12, 1979, 2923716

Int. Cl.³ H04B 3/54

U.S. Cl. 340—310 R 6 Claims



1. A method for transmitting binary signals having two logical states over a foreign wiring network, in particular for transmitting signals between the structural elements of an alarm installation over the electrical supply wiring network, wherein at least one of the two logical states of the binary signals is converted into a particular frequency, provided to the foreign network, and selected on a receiving end by filtering devices, said method comprising the steps of:

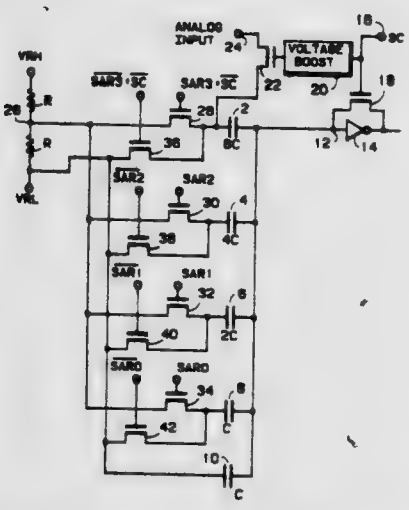
recovering the binary signals on the receiving end; and

passing the recovered binary signals through a first and a second differentiating network having resistors bridged, in each network, by a diode, said diode in said first differentiating network being connected in a direction opposite to that of the diode in the second differentiating network, said first and second differentiating networks operating as an interference trap to identify and block interference pulses.

4,348,658
ANALOG-TO-DIGITAL CONVERTER USING HALF RANGE TECHNIQUE

Ernest A. Carter, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed May 9, 1980, Ser. No. 148,097
Int. Cl.³ H03K 13/08
U.S. Cl. 340—347 AD 7 Claims



1. A successive-approximation charge-redistribution analog-to-digital converter comprising:

comparator means for producing an output in response to an input thereto exceeding a predetermined threshold voltage;

a plurality of binary weighted capacitors, each having a first terminal coupled in common to the input of the comparator means, and a second terminal;

voltage reference means for producing first and second predetermined reference voltages;

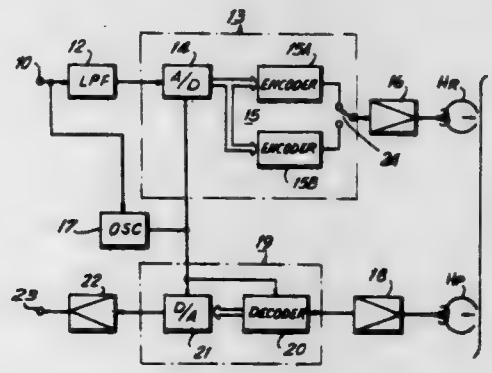
sample means for sampling, during a sample phase, an unknown analog input voltage onto the largest of the capacitors, and for simultaneously coupling the second terminals of each of the other capacitors to the first reference voltage while shorting the comparator means; and successive approximation means for successively coupling, during a conversion phase, the second terminals of the capacitors, from the largest to the smallest, to the second reference voltage, and, in response to each such coupling which produces said output from the comparator means, recoupling such second terminal to the first reference voltage.

4,348,659
METHOD AND APPARATUS FOR ENCODING A DIGITAL SIGNAL TO HAVE MINIMAL DC COMPONENT

Yasuhiro Fujimori, Tokyo, and Kaichi Yamamoto, Zama, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Oct. 22, 1980, Ser. No. 199,598
Claims priority, application Japan, Oct. 29, 1979, 54-139662
Int. Cl.³ H03K 13/00, 13/24
U.S. Cl. 340—347 AD 29 Claims

16. Apparatus for converting an analog signal to an m-bit digital signal having minimal DC component, comprising quantizing means for quantizing said analog signal over a range of l quantizing levels; storage means having plural addressable storage locations, a respective storage location being addressed in response to the particular quantized level of said analog signal, for storing l m-bit digital signals representing said l quantizing levels, respectively; each m-bit digital signal having an intrinsic run-length of "1" and "0", and those m-bit digital signals having zero disparity representing a predetermined band of said l quantizing levels, with said zero-disparity signals having the smallest run-lengths stored at those locations which are addressed in response to those quantized levels disposed substantially in the center of said range of l quantizing levels and those zero-disparity signals having progressively larger run-lengths stored at those locations which are addressed in response to those quantized levels disposed progressively farther from said center; and address means for addressing a

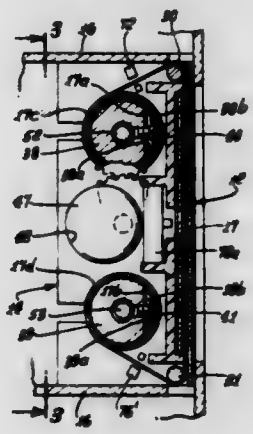


storage location of said storage means as a function of the quantized analog signal to read out the m-bit digital signal stored at said addressed location.

4,348,660
AUTOMATICALLY RELEGENDABLE KEYBOARD

Anthony L. Robertsen, Mission Viejo, and Andrew M. McInnis, Los Alamitos, both of Calif., assignors to Sheldon Industries Inc., Monrovia, Calif.

Filed Sep. 9, 1980, Ser. No. 185,542
Int. Cl.³ G06C 7/02
U.S. Cl. 340—365 VL 21 Claims



1. In automatically relegendable keyboard apparatus, the combination comprising

(a) an endwise elongated belt having keyboard legends thereon,

(b) drive means engaging the belt to drive the belt endwise and present a selected portion of the keyboard belt in a planar viewing zone, and

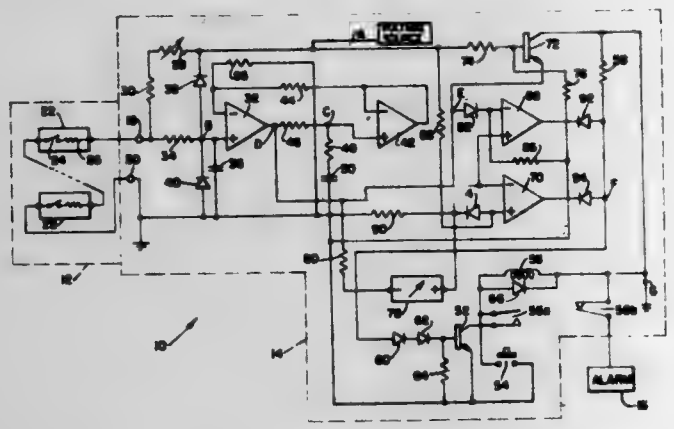
(c) a transparent key panel at the front side of said belt portion presented at said viewing zone, with associated means to provide an electrical output corresponding to the location of a selected area of the panel to which the user's finger is applied, there being multiple of said selected areas of the key panel corresponding to legends on said selected portion of the belt which are viewable through the transparent key panel,

(d) the key panel overlying the belt, and there being a rigid protective transparent panel sandwiched between said selected portion of the belt and said key panel so that the rigid panel and the key panel both overlie the belt, the rigid panel blocking motion transmission from the key panel to the belt.

4,348,661
SELF-BALANCING ALARM SYSTEM

Armand P. Lacchesi, Jersey City, N.J., assignor to J. C. Penney Company, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 963,133, Nov. 22, 1978, abandoned. This application Sep. 26, 1980, Ser. No. 190,991
Int. Cl.³ G08B 29/00
U.S. Cl. 340—510 2 Claims

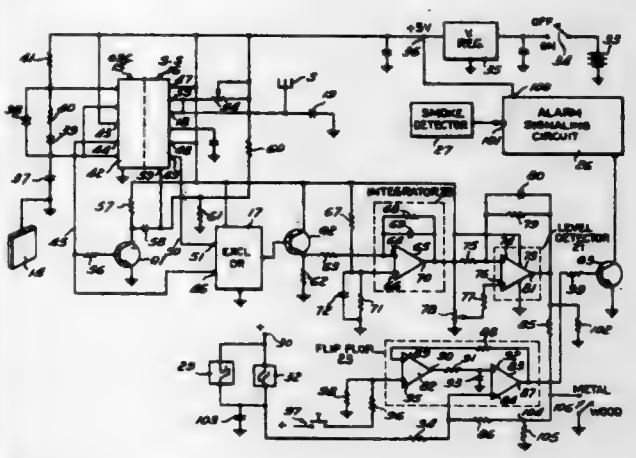


1. A detection circuit for use in an alarm system comprising:
a security loop having a plurality of sensing means adapted to be located at respective entries into a zone under protection;
voltage producing means;
alarm means;
a responsive circuit adapted to respond to a change in condition of said security loop to enable said alarm means from a disabled condition;
said security loop connected between said voltage producing means and ground to provide a predetermined voltage level at an input to said responsive circuit when said security loop is uncomprised;
said responsive circuit including means for linearly balancing a change in voltage at said input from said predetermined voltage level which may be bi-directional to maintain said alarm disabled except when said change equals at least a threshold change in voltage from said predetermined voltage level or said change occurs more rapidly than it can be balanced;
said balancing means comprising a pair of amplifiers connected together in negative feedback fashion, delay means connecting the output of one amplifier to an input of the other amplifier, and the input of said one amplifier comprising said input of said responsive circuit;
two comparators, each said comparator having a pair of input terminals, means providing a reference voltage at one input terminal of each comparator, the other input terminal of each comparator being connected to said output of said one amplifier, said reference voltage at said one input terminal of each comparator differing from the voltage level at said other input terminals by a substantially equal positive and negative value;
said reference voltage providing means comprising two independent sources of a constant voltage potential, voltage divider means connected to each independent source, and each said one input terminal connected to a respective one of said voltage divider means;
one independent source of a constant voltage potential comprising a regulated source of D.C. potential, and said voltage producing means including said regulated source; and
said other independent source of a constant voltage potential comprising an unregulated source of D.C. potential, a transistor, the base of said transistor connected to and controlled by said regulated source, while the collector being connected to said unregulated source, and said other independent source of voltage potential being derived at the emitter of said transistor.

4,348,662
CAPACITY SENSING INTRUSION ALARM APPARATUS

William G. Fontaine, Pompano Beach, and Willes W. Reeder, Fort Lauderdale, both of Fla., assignors to Sleep Safe, Limited, Pompano Beach, Fla.

Filed Nov. 24, 1980, Ser. No. 210,056
Int. Cl.³ G08B 13/26, 17/10, 19/00
U.S. Cl. 340—562 19 Claims

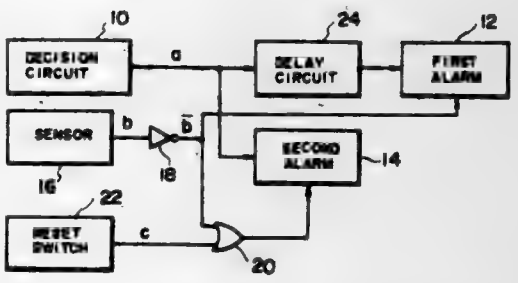


1. In an intrusion alarm apparatus having an oscillator producing a first series of output pulses at a predetermined frequency, the improvement which comprises:
means for producing a second series of output pulses synchronized with the output pulses of said first series and of shorter duration than the latter;
means responsive to said first and second series of output pulses for producing a control signal representing the difference in duration between the pulses of said first and second series;
a sensor operatively arranged to change the duration of the pulses of said second series and thereby change said control signal in response to the body capacitance of a person touching said sensor;
and an alarm signalling circuit operable by said control signal to signal an alarm when a person touches said sensor.

4,348,663
SAFETY ASSURANCE SYSTEM FOR ROAD VEHICLES

Takayuki Yanagishima, Yokosuka, and Yasutoshi Seko, Yokohama, both of Japan, assignors to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Aug. 26, 1980, Ser. No. 181,654
Claims priority, application Japan, Aug. 29, 1979, 54-109199
Int. Cl.³ G08B 21/00
U.S. Cl. 340—576 11 Claims



1. A system for use in a road vehicle, comprising:
(a) means for providing a warning signal;
(b) means for providing a rest signal when said road vehicle is at rest;
(c) means for providing a reset signal;
(d) first alarm means responsive to the warning signal for making an alarm until receiving the rest signal; and
(e) second alarm means responsive to the warning signal for

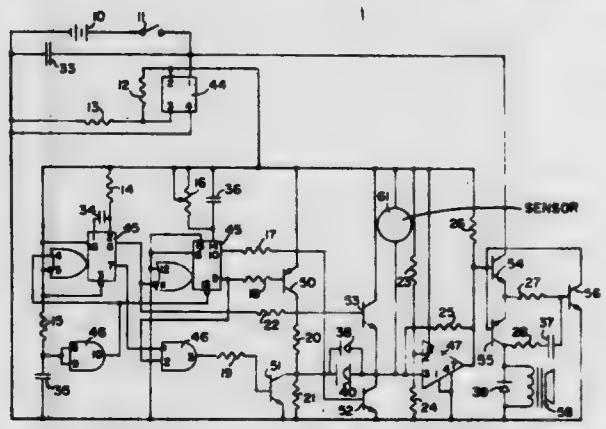
making an alarm until receiving the rest signal or reset signal.

4,348,664

DEVICE FOR MEASURING ULTRAVIOLET LIGHT EXPOSURE

Armando Boschetti, Bryan, Ohio, and David J. Snoek, Grand Rapids, Mich., assignors to Elder Pharmaceuticals, Inc., Hamilton, Ind.

Continuation-in-part of Ser. No. 956,202, Oct. 30, 1978, Pat. No. 4,279,254. This application Nov. 26, 1979, Ser. No. 97,500
Int. Cl.³ G08B *21/00*
U.S. Cl. 340—600 10 Claims



1. An apparatus for rendering safer the application of ultraviolet light radiation to the skin of a subject, comprising means for precisely monitoring the total ultraviolet light radiation energy per unit area impinging upon the subject, and providing notification when a predetermined amount of energy per unit area has been applied to the subject, said apparatus comprising:

(a) photoelectric means for providing an electrical signal proportional to the intensity of the ultraviolet light which impinges thereon,

(b) rechargeable electrochemical means for integrating the signal from said photoelectric means, and means for recharging said electrochemical means to a state of charge corresponding to the total amount of ultraviolet light radiation that is desired to be applied per unit area upon the subject, and

(c) means for providing notification when the total light energy received by the subject reaches predetermined value as determined by the discharged state of said electrochemical means.

4,348,665

METHOD AND APPARATUS FOR MONITORING BEARING WEAR

Heinz A. Rode, Solon; Meter Fromel, Austintown, and Perry L. Beaver, Vienna, all of Ohio, assignors to Republic Steel Corporation, Cleveland, Ohio

Filed Mar. 6, 1980, Ser. No. 127,580
Int. Cl.³ G08B *21/00*
U.S. Cl. 340—682 5 Claims

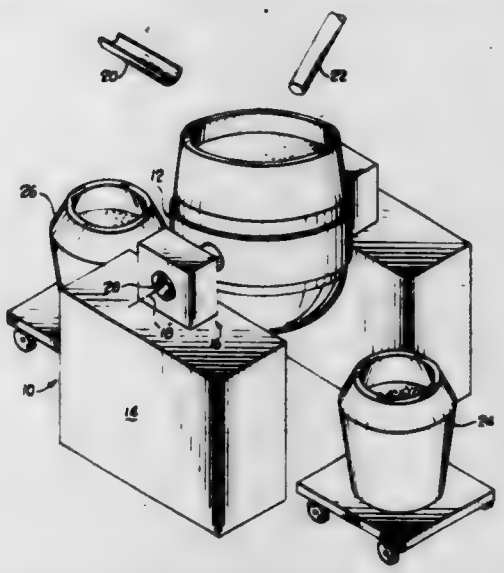
1. A system for monitoring wear of a trunnion bearing supporting a basic oxygen furnace vessel, said bearing including a housing and bearing structure for receiving a shaft, said system comprising:

(a) a first transducer for producing a first output representing the distance between an idler side of said shaft and said first transducer;

(b) a second transducer for producing an output representing the distance between the drive side of said shaft and said second transducer;

(c) circuitry for monitoring said first and second transducer outputs and producing an alarm signal when the distance between the shaft and either transducer exceeds a predetermined value, and

(d) a detector for indicating rotational orientation of the shaft with respect to a reference orientation; and



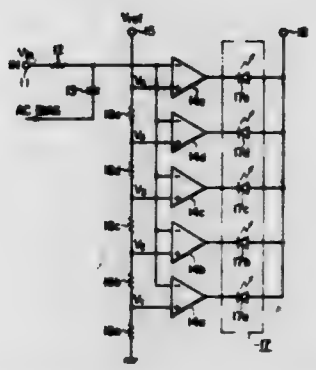
(e) a data generator coupled to said circuitry for producing an indication of both the idler side and drive side shaft-to-transducer distances and of the angular orientation of said shaft.

4,348,666

SIGNAL LEVEL DISPLAY APPARATUS

Minoru Ogita, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Jun. 19, 1980, Ser. No. 160,844
Claims priority, application Japan, Jun. 20, 1979, 54-84331[U]; Jul. 18, 1979, 54-91306
Int. Cl.³ G09G *3/32*
U.S. Cl. 340—753 19 Claims



1. In a signal level display apparatus comprising:

a plurality of comparators having two input terminals respectively for receiving at one of the two input terminals mutually different reference voltages respectively, and at the other input terminals a same input signal; and a plurality of light-emitting elements driven separately by outputs of said comparators and forming a display unit,

the improvement comprising:

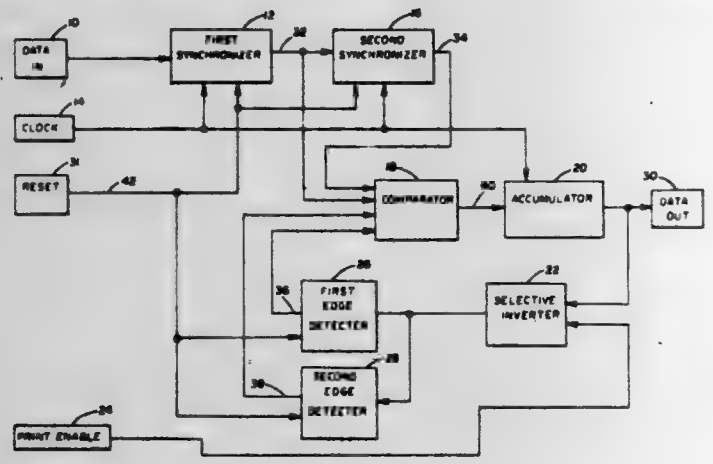
means for varying, with time and repetitively, the relative magnitudes of one of said input signal and said reference voltages so as to cause differences in brightness of illumination between said light-emitting elements.

4,348,667

AUTOMATIC LINE SEGMENT GENERATOR FOR USE WITH LINEAR ARRAY DISPLAY DEVICES

Glenn L. Williams, Bay Village; A. Dix Brown, Cleveland Heights, and Edward J. Reilly, Mayfield Heights, all of Ohio, assignors to Gould Inc., Rolling Meadows, Ill.

Filed Sep. 3, 1980, Ser. No. 183,841
Int. Cl.[3] G09G *3/20*
U.S. Cl. 340—753 9 Claims



1. An apparatus for automatically generating line segments for use with linear array display devices, said apparatus comprising:

clock means;

synchronizing means operatively connected to said clock means for receiving and synchronizing incoming digital data to said clock means;

comparing means operatively connected to said synchronizing means to compare the output of said synchronizing means to another signal and produce line segment data;

accumulator means operatively connected to said comparing means to accumulate said line segment data; and

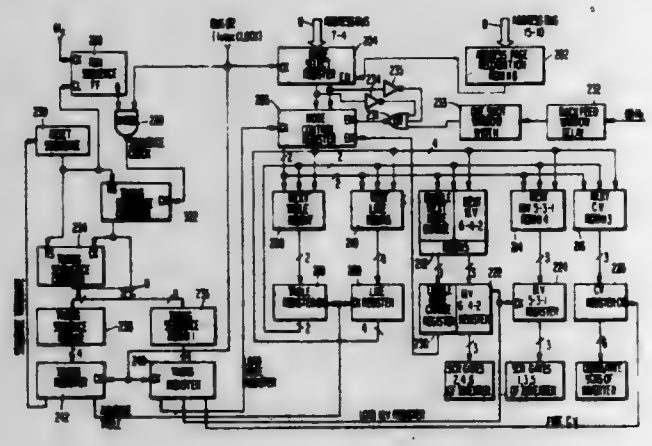
edge detecting means to detect changes in digital states of said accumulator means, the output of said edge detecting means being said another signal to said comparing means, said comparing means automatically generating line segment data beginning when data is first synchronized or first detected and ending when data is last synchronized or detected.

4,348,668

SYSTEM FOR CONTROLLING POWER DISTRIBUTION TO CUSTOMER LOADS

George P. Gurr, Dunwoody, and Bruce J. Nelson, Lilburn, both of Ga., assignors to Sangamo Weston, Inc., Atlanta, Ga.

Filed Jul. 2, 1979, Ser. No. 53,710
Int. Cl.[3] H04Q *9/00*; G01R *21/00*; H02J *4/00*
U.S. Cl. 340—825.06 5 Claims



1. A method for regulating a plurality of loads connected by power lines of an electric power utility to a remote utility station, said utility station having an electronic digital computer for controlling communications to the loads, said loads being classified into load control groups, each of said groups being responsive to at least one of a plurality of group control command signals for causing the loads in the respective group to be turned on or off, which comprises the steps of:

(a) storing in the computer at the station preselected first, second and third types of control lists, each of said lists including at least one group control command;

(b) selecting one of said control lists for activation and then executing the respective group control commands in the selected list as follows:

(i) upon selecting said first type of control list, executing each group control command therein only once;

(ii) upon selecting said second or said third type of control lists, executing each group control command therein repetitively;

(c) generating a group control command signal in response to the execution of each of said group control commands;

(d) transmitting said group control command signal through said power lines to said loads to effect turning on or off of said loads; and

(e) periodically adjusting the duty cycle of the loads in those of said load control groups appearing on said third type of control list in accordance with the power demand on said utility, wherein said step of periodically adjusting includes the steps of:

(i) selecting the maximum off interval MO per time cycle and the minimum off interval per time cycle desired for loads in each of said groups classified in said third type of control list;

(ii) monitoring the total power demand X on said utility;

(iii) selecting a minimum value AV and a maximum value MV for the total power demand which correspond respectively to said minimum and maximum off intervals; and

(iv) adjusting the actual off interval Y of said loads according to the following formula:

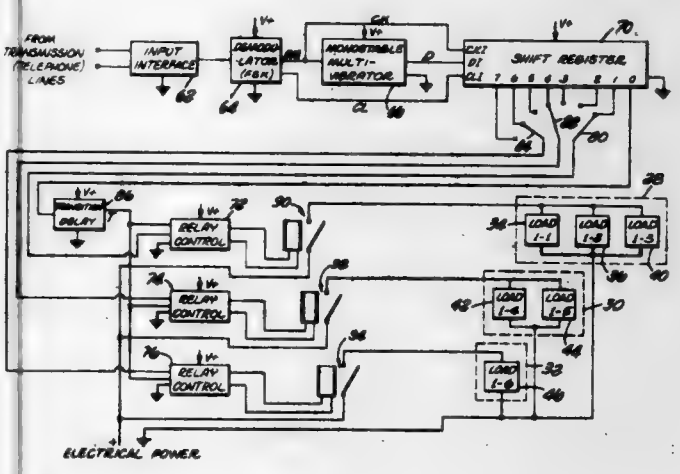
$$Y=(MO)((X-AV)/(MV-AV).$$

4,348,669

LOAD ENERGIZING AND DE-ENERGIZING CONTROL SYSTEM AND METHOD

Dudley E. Braun, 1700 Lynngrove Dr., Manhattan Beach, Calif. 90266

Filed May 5, 1980, Ser. No. 146,886
Int. Cl.[3] H04Q *9/00*
U.S. Cl. 340—825.58 18 Claims



1. A system for controlling the energizing and de-energizing of energy-utilizing loads at facilities remote from each other, comprising:

(a) a transmitter, remote from each of the facilities, for generating and transmitting successive signal groups carrying a plurality of channels of information for controlling the

energizing and de-energizing of a plurality of loads at each of the facilities, each of said signal groups carrying said plurality of channels of information;

(b) a communication and control terminal at each of the remote facilities adapted for controlling the energizing and de-energizing of said plurality of loads at the facility in response to each of said same successive signal groups as the other of the facilities, including,

(1) receiving and generating means for receiving each of said transmitted successive signal groups and for generating successive signal groups, carrying said plurality of channels of information, representative of said transmitted successive signal groups, each of said generated signal groups carrying said plurality of channels of information;

(2) channel-selection means for said plurality of loads at the facility, operatively coupled to said receiving and generating means, for selecting one of said channels carried by said generated successive signal groups to control the energizing and de-energizing of each of said plurality of loads at the facility, and

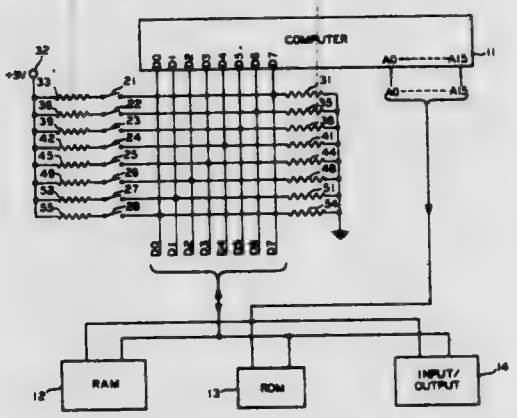
(3) switching means for said plurality of loads at the facility, operatively coupled to said selection means and to said plurality of loads, for receiving said channel of information selected for each of said loads and for electrically coupling said load to an energy source and electrically decoupling said load from the energy source, in response to said selected channel of information.

4,348,670

COMPUTER ACQUISITION OF DATA FROM NONADDRESSABLE SWITCHES

Wallace E. DeShon, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 29, 1980, Ser. No. 116,438
Int. Cl.³ H04Q *9/00*; G08C *9/00*
U.S. Cl. 340—825.78 3 Claims



1. In a computer system in which a computer is interfaced to at least one computer bus device through address bus lines and data bus lines and in which an address from said computer which is not decoded by said at least one computer bus device results in said data bus lines being in a high impedance mode, the improvement comprising:

at least one switch having first and second terminals;

means for electrically connecting the first terminal of said at least one switch to a first data bus line;

a pull-up resistor;

a positive voltage supply;

means for electrically connecting the second terminal of said at least one switch through said pull-up resistor to said positive voltage supply;

a pull-down resistor; and

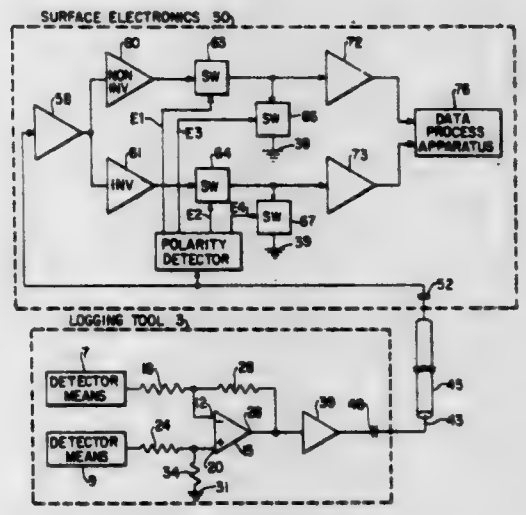
means for electrically connecting said first data bus line through said pull-down resistor to ground, the opening of said at least one switch resulting in a low logic level on said first data bus line when said first data bus line is in a high impedance mode, the closing of said at least one switch resulting in a high logic level on said first data bus line when said first data bus line is in a high impedance mode.

4,348,671

DUAL SPECTRA WELL LOGGING SYSTEM

Theodore W. Nussbaum, Houston, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Nov. 28, 1980, Ser. No. 210,881
Int. Cl.³ G01V *1/40*, *5/00*
U.S. Cl. 340—853 7 Claims



1. A dual spectra well logging system comprising

a well logging tool adapted to be passed through a bore hole in an earth formation including

at least two sensing means for sensing at least one condition of the earth formation and providing pulse signals corresponding to the sensed condition,

means connected to both sensing means for providing a combined pulse signal in which the pulses of the pulse signal from one sensing means has one polarity while the pulses of the pulse signal from the other sensing means has an opposite polarity, and

means for applying the combined pulse signal to cable means;

cable means connected to the applying means in the well logging tool for conducting the combined pulse signal from the well logging tool within the bore hole to the surface of the earth formation; and

surface apparatus includes

means connected to the cable means for providing control signals in accordance with the polarity of pulses in the combined pulse signal,

means for amplifying the combined pulse signal,

inverting means connected to the amplifying means for inverting the first combined pulse signal to provide an inverted combined pulse signal,

first switch means receiving the combined pulse signal means and to the control signal means for passing the pulses of the combined pulse signal derived from the pulses of one polarity in accordance with the control signals,

second switching means connected to the inverted combined pulse signal means and to the control signal means for passing the pulses of the inverted combined pulse signal derived from the pulses of the opposite polarity, and

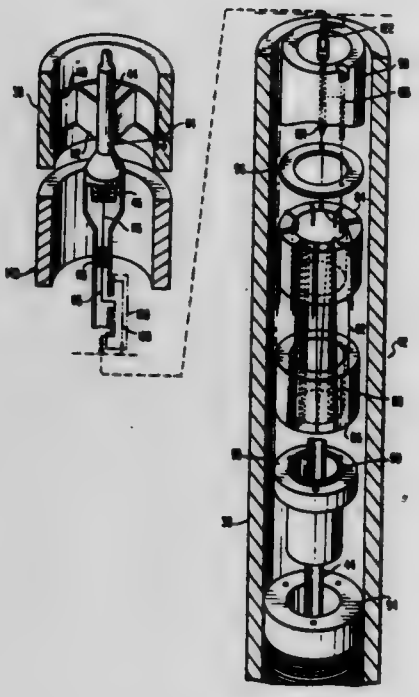
output means connected to both switching means for providing an output corresponding to the sensed condition of the earth formation in accordance with the pulses from both switching means.

4,348,672

INSULATED DRILL COLLAR GAP SUB ASSEMBLY FOR A TOROIDAL COUPLED TELEMETRY SYSTEM

Gregory C. Givler, Champaign, Ill., assignor to Tele-Drill, Inc., Richardson, Tex.

Filed Mar. 4, 1981, Ser. No. 240,264
Int. Cl.³ G01V *1/40*
U.S. Cl. 340—854 9 Claims



1. An insulated drill collar and gap for a toroidal coupled telemetry system comprising:

a first annular sub member operable to be connected at one end to a drill collar and form a part of the drill collar, said first annular sub member having

a base portion at said one end thereof, and

an axial extension at the other end thereof, having a cross-sectional dimension less than the cross-sectional dimension of said base portion;

a second annular sub member operable to be connected at one end to a drill collar, and form a part of the drill collar, said second annular sub member having

a base portion at said one end thereof, and

an axially extending recess at the other end thereof, and having a cross-sectional dimension compatible with but greater than the cross-sectional dimension of said axial extension to form a peripheral gap between said axial extension and said axially extending recess;

dielectric material positioned within and occupying said gap between said axial extension and said axially extending recess to form an electrical isolation between said axial extension and said axially extending recess;

axial bearing means connecting said first annular sub member to said second annular sub member;

dielectric means positioned between said first and second annular sub members at said axial bearing means to electrically isolate said first and second annular sub members at said bearing location; and

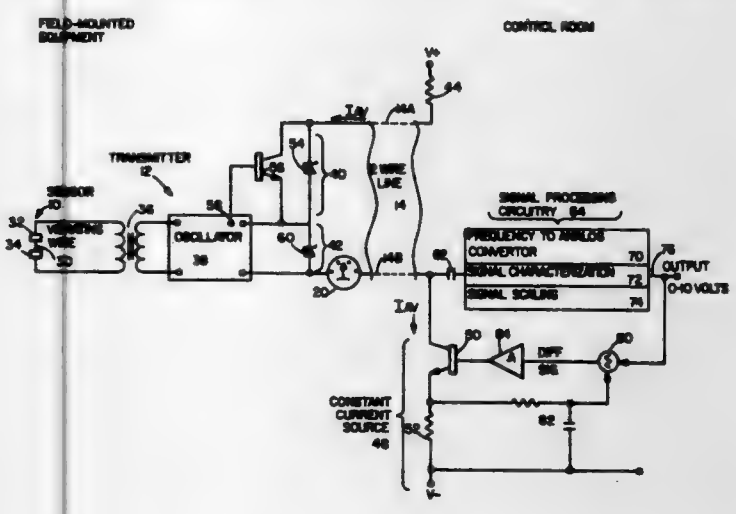
longitudinally extending means for preventing relative rotation between said first annular sub member and said second annular sub member wherein a connection between said first annular sub member and said second annular sub member is formed of structural integrity and concomitant electrical isolation.

4,348,673

INSTRUMENTATION SYSTEM WITH ELECTRIC SIGNAL TRANSMITTER

David A. Richardson, Sheldonville, Mass., assignor to The Foxboro Company, Foxboro, Mass.

Continuation of Ser. No. 951,520, Oct. 13, 1978, abandoned. This application Dec. 18, 1980, Ser. No. 217,700
Int. Cl.³ G08C *19/12, 25/00*
U.S. Cl. 340—870.18 36 Claims



1. In an instrument system of the type comprising a force sensor having a vibratable wire tensioned in accordance with the input force so that the resonant frequency of the wire is a measure of the applied force;

the combination of:

an oscillator coupled to said wire and operable therewith to develop an oscillator signal at the wire resonant frequency;

signal-processing means including frequency-to-analog converter means;

a two-wire transmission line coupled at one end to said oscillator and at the other end to said signal-processing means, said transmission line serving to direct to said frequency-to-analog converter means a rapidly-varying alternating signal corresponding in frequency to the oscillator signal, whereby said converter means produces an analog measurement signal responsive to the oscillator frequency;

d-c signal means operable to produce in said transmission line a direct-current signal corresponding to said analog measurement signal; and

indicator means coupled to said one end of said transmission line and arranged to produce a visual indication of the magnitude of said direct-current signal flowing in said transmission line.

4,348,674

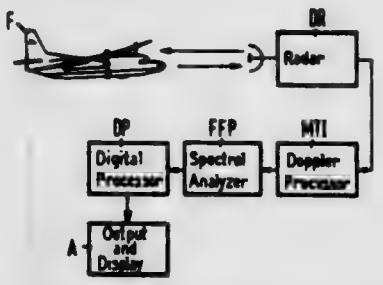
APPARATUS AND METHOD FOR CLASSIFYING MOVING TARGETS

Klaus Muth, Icking, and Philipp Federspieler, Hohenschaeftlarn, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 2, 1980, Ser. No. 165,296
Claims priority, application Fed. Rep. of Germany, Jul. 18, 1979, 2928907
Int. Cl.³ G01S *13/58*
U.S. Cl. 343—5 SA 5 Claims

1. Apparatus for identifying targets comprising, a Doppler radar which transmits and receives radient energy to detect a

primary Doppler frequency line and a plurality of frequency spaced side Doppler frequency lines, and means for processing



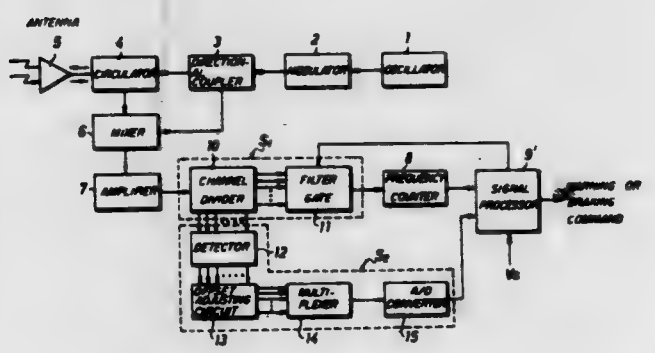
and analyzing said primary and side Doppler lines to identify a target.

4,348,675

FM-CW RADAR SYSTEM FOR USE IN AN AUTOMOTIVE VEHICLE

Takaya Senzaki, Iruma, and Eiji Murao, Asaka, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 22, 1980, Ser. No. 171,149
Claims priority, application Japan, May 23, 1979, 55-69198; Jul. 24, 1979, 54/94104
Int. Cl.³ G01S *13/32*
U.S. Cl. 343—7 VM 3 Claims



1. An FM-CW type radar system for use in an automotive vehicle for emitting a radio wave beam having the oscillating frequency thereof modulated at a given frequency, receiving reflected-to-return waves from an object or objects to be detected and determining a distance to the object by way of beat frequency signals produced from the emitting and receiving waves, which comprises:

means for dividing said beat frequency signals into a plurality of equal fractional frequency bands and detecting the thus-divided beat frequency signals;

signal processing means for operating arithmetically in a predetermined manner to provide an appropriate safe vehicle interval on each signal component of said divided frequency signals, whereby a warning or a command for actuating the brake of said vehicle is produced in accordance with said appropriate or safe vehicle interval distance;

signal extraction circuit means for selectively passing a beat frequency having a given frequency band width channel-by-channel in the beat frequency signal system thereof; and

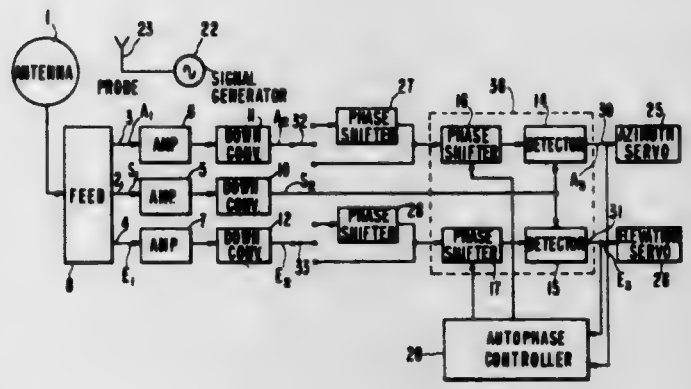
channel selection circuit means for setting the frequency signal of each said channel at an appropriate reference level as a threshold value and offsetting each of said frequency signals set at said reference level, and thereafter optionally selecting the channel corresponding to the object to be detected in accordance with the output level of each said channel.

4,348,676

AUTOMATIC PHASE ALIGNMENT SYSTEM FOR A TRACKING ANTENNA

Nelson N. Tom, San Jose, Calif., assignor to Ford Aerospace & Communications Corporation, Detroit, Mich.

Filed Sep. 9, 1980, Ser. No. 185,479
Int. Cl.³ G01S *5/02, 7/40, 13/00*
U.S. Cl. 343—114 16 Claims



1. An apparatus for phase aligning a steerable directional antenna's tracking system having a reference channel and a first tracking error channel, comprising:

a probe connected to a radiation signal generator, said probe placed within the near field aperture of the antenna but off of the antenna's boresight axis; and

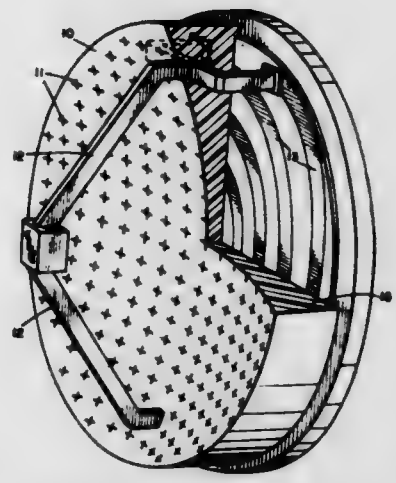
a phase shifter switchably placed within one of said channels wherein adjustment of said shifter compensates for phase shifts introduced by the placement of the probe.

4,348,677

COMMON APERTURE DUAL MODE SEEKER ANTENNA

William E. Salmond, Claremont, Calif., assignor to General Dynamics, Pomona Division, Pomona, Calif.

Filed Jun. 25, 1979, Ser. No. 51,471
Int. Cl.³ H01Q *1/00*
U.S. Cl. 343—729 7 Claims



1. A common aperture seeker antenna comprised of:

a parabolic array of crossed dipoles being substantially reflective for radiated electrical signals in a band centered at a predetermined frequency f_0, and being substantially transmissive for radiated electrical signals outside of said band;

a monopulse waveguide feed fixedly positioned on the concave side of said parabolic array at the focal point thereof for operating at frequencies within said band; and

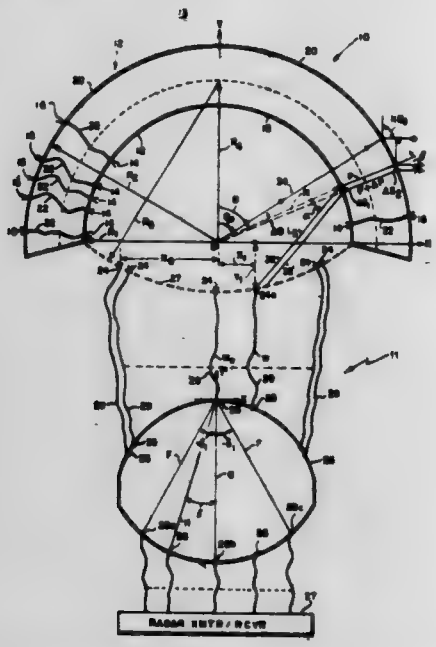
a planar spiral antenna fixedly positioned on the convex side of said parabolic array in axial alignment with said first antenna for operating at frequencies outside of said band.

4,348,678

ANTENNA WITH A CURVED LENS AND FEED PROBES SPACED ON A CURVED SURFACE

David T. Thomas, Santa Barbara, Calif., assignor to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 962,460, Nov. 20, 1978, abandoned.
This application Nov. 17, 1980, Ser. No. 207,832
Int. Cl.[3] H01Q 3/26
U.S. Cl. 343—754 14 Claims



1. A radio frequency antenna system for producing collimated beams of radio frequency energy in free space, comprising:

(a) curved array means for providing differently directed, noncollimated beams of radio frequency energy, each one disposed along a first nonlinear path, the direction of the noncollimated beams being produced in accordance with the distribution of the phase of the radio frequency energy across the first nonlinear path of the common aperture, each one of such noncollimated beams having a different phase distribution across the first nonlinear path of the common aperture; and

(b) radio frequency lens means, disposed between the curved array means and free space, for collimating the radio frequency energy in the directed, noncollimated beams to produce corresponding collimated and angularly redirected beams of radio frequency energy in free space, such radio frequency lens means comprising:

(i) antenna means disposed along a second nonlinear path;

(ii) a second probe means disposed along a third nonlinear path, such directed noncollimated beams being provided between the first probe means and the second probe means; and

(iii) means for providing fixed, predetermined electrical length coupling between the antenna means and the second probe means.

4,348,679

MULTI-MODE DUAL-FEED ARRAY RADAR ANTENNA

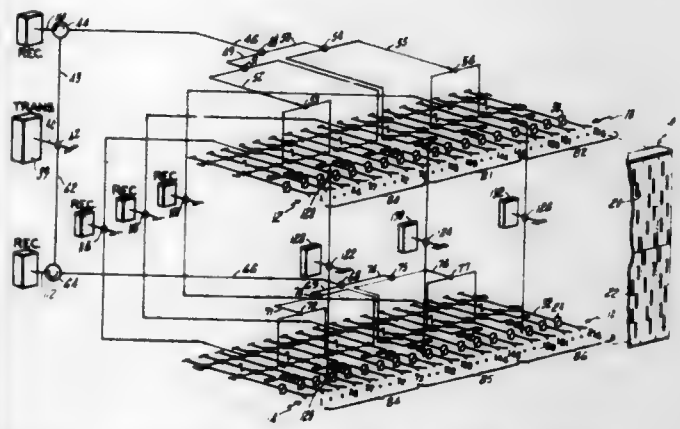
Harold Shaitkin, Roslyn, N.Y., and Peter W. Smith, Westport, Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Oct. 6, 1980, Ser. No. 194,155
Int. Cl.[3] H01Q 13/10, 3/30
U.S. Cl. 343—768 10 Claims

1. An array antenna capable of sequentially operating in either a transmit mode and one of several receive mode, comprising:

means including a plurality of array elements disposed in a planar configuration, said array elements being positioned in at least one laterally extending row, adjacent ones of said array elements being separated by a distance corresponding to about one-half of the wavelength ($\lambda_0/2$), of said radar signals;

phase shifting means connected to each one of said plurality of array elements for directing the beam of said antenna in said transmit mode and also for selecting one of said several receive modes and then for directing the receive beam in such receive mode, each of said phase shifting means being individually controllable to vary the phase of radar signals propagating therethrough in response to a control



signal for collimating either of said transmit aperture or said receive aperture in a preselected direction;

an array feed means connected to each of said plurality of array elements through said phase shifting means, said feed means being in a ladder configuration and having a front feed and a rear feed which are interconnected by transmission lines; and

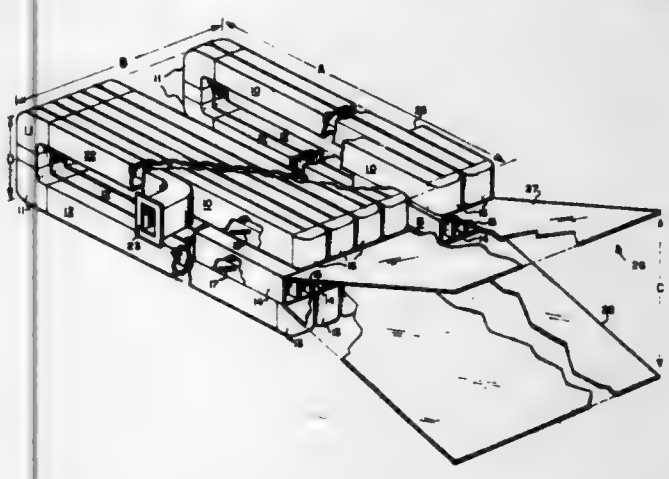
antenna feed means connected to said array feed means for providing a propagation path for said radar signals to, and from, said plurality of array elements.

4,348,680

MICROWAVE ANTENNA WITH SINUOUS WAVEGUIDE FEED

Donald C. Collier, Rte. 1, Box 80C, Plano, Tex. 75074

Filed Jan. 26, 1981, Ser. No. 228,558
Int. Cl.[3] H01Q 13/00
U.S. Cl. 343—778 14 Claims



1. A compact, electronically scanned waveguide antenna comprising:

(1) a continuous sinuous waveguide feed structure including

(a) a first bank of a selected number of straight rectangular waveguide sections horizontally disposed in parallel with the vertical broad sidewall of a section contiguous with the broad vertical sidewall of an adjacent section,

(b) a second bank of said selected number of straight rectangular waveguide sections horizontally disposed in parallel having their broad vertical sidewalls contiguous, said second bank disposed immediately below said first bank a distance essentially equal to the thickness of said first bank such that each one of said straight sec-

tions of said second bank is directly below and essentially parallel with a corresponding straight section in said first bank,

(c) 180° horizontal waveguide bends coupling alternate straight sections at one end of said first bank and at the corresponding end of said second bank,

(d) 180° vertical waveguide bends coupling said corresponding straight sections of said first and second banks at the other end thereof;

(2) an input for receiving swept-frequency electromagnetic energy coupled to the first straight section of said first bank;

(3) a waveguide termination coupled to the last straight section of said first bank; and

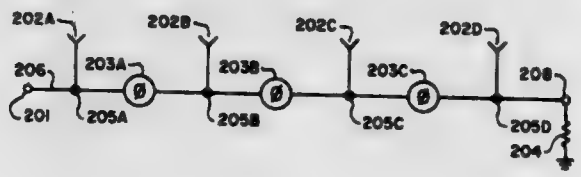
(4) a multiplicity of radiating elements disposed in parallel and formed from straight waveguide sections with one of said multiplicity of elements having its narrow wall contiguous with and coupled to the narrow wall of each alternate straight section in said first bank and one of said multiplicity of elements coupled to each alternate straight section in said second bank, said elements disposed between said first and second bank wherein each radiating element is parallel and contiguous to a straight section in said first and second banks thereby forming an array of contiguous open waveguide ends from which electromagnetic energy is radiated in a narrow beam in azimuth, said beam being scanned in azimuth responsive to said varying frequency.

4,348,681

SERIES FED PHASED ARRAY ANTENNA EXHIBITING CONSTANT INPUT IMPEDANCE DURING ELECTRONIC SCANNING

Peter J. McVeigh, Hauppauge, and Ronald M. Rudish, Commack, both of N.Y., assignors to Eaton Corporation, Cleveland, Ohio

Filed Aug. 29, 1980, Ser. No. 182,381
Int. Cl.³ H01Q 3/34
U.S. Cl. 343—854 **11 Claims**



1. A traveling wave distribution system for a phased array antenna, comprising:

(a) means for propagating an electromagnetic signal, said means having an input port and an output port,

(b) a plurality of means for coupling from the means for propagating to the antenna elements in the phased array, said means for coupling supplying the antenna elements in series and said means for coupling being positioned along the means for propagating at nonresonant points,

(c) a plurality of antireciprocal means for shifting the phase of the electromagnetic signal, each of the means for shifting the phase remaining substantially antireciprocal over the useful scanning range of the array and being connected in series with the means for propagating between the means for coupling,

(d) a resistive termination connected to the output port of the means for propagating, and

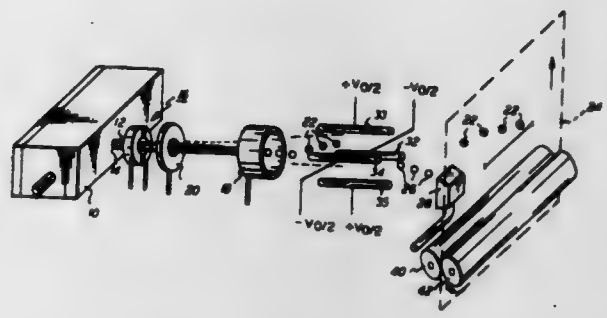
(e) means for controlling the phase shift of the plurality of antireciprocal means for shifting the phase to produce an equal phase shift through each of such elements.

4,348,682

LINEAR INK JET DEFLECTION METHOD AND APPARATUS

Roger G. Markham, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 19, 1981, Ser. No. 275,090
Int. Cl.³ G01D 15/18, 18/00
U.S. Cl. 346—1.1 **11 Claims**



7. In an ink jet printer of the type wherein ink under pressure is forced from a plurality of ink jet nozzles toward a moving recording medium, a process for controlling the trajectory of ink forced through said nozzles comprising the steps of:

controllably deflecting ink columns from each of said nozzles to cause said columns to sweep from side to side in a direction transverse to recording medium movement,

perturbing said ink to insure said plurality of columns break up into droplets at a specified distance from said nozzles,

charging said ink droplets at the point of droplet formation according to a scheme whereby those droplets having a first polarity charge strike said recording medium and those droplets havng a second opposed polarity charge miss said medium and are recirculated for subsequent use by said printer,

generating a steady state electric field through which droplets of either charge must pass in their trajectory toward said recording medium such that droplets having said first polarity charge are deflected or defocused in a direction transverse to recording medium movement thereby amplifying the earlier provided controlled deflection, and

catching or intercepting droplets with said opposed polarity charge as they are defocused away from said medium by said steady state field.

4,348,683

CHART RECORDING APPARATUS

Everett O. Olsen, Wrentham, Mass., assignor to The Foxboro Company, Foxboro, Mass.

Division of Ser. No. 923,009, Jul. 10, 1978, Pat. No. 4,310,841, which is a division of Ser. No. 641,075, Dec. 15, 1975, Pat. No. 4,123,696, which is a division of Ser. No. 543,443, Jan. 23, 1975, abandoned, which is a continuation of Ser. No. 333,997, Feb. 20, 1973, abandoned. This application Aug. 17, 1981, Ser. No. 293,392
Int. Cl.³ G01D 11/16
U.S. Cl. 346—31 **5 Claims**

1. Recorder apparatus comprising:

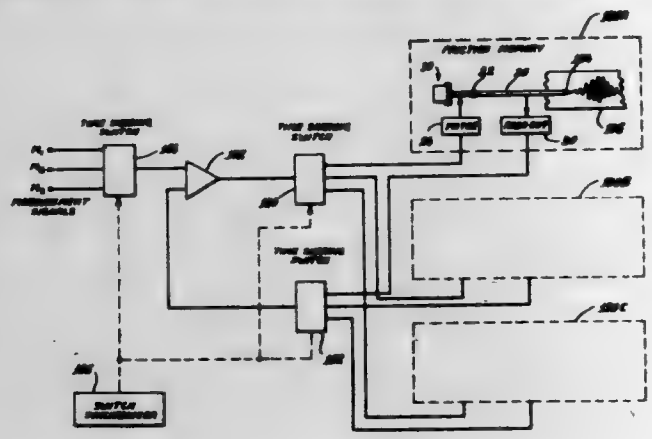
movably-mounted marking means for producing a mark on a chart record;

actuator means responsive to an input signal and operable to apply a force to said marking means to move it towards a new position;

feedback means for producing a feedback signal proportional to the position of said marking means and for directing said feedback signal to said actuator means to oppose said input signal, so that the marking means is driven to a position corresponding to said input signal; and

friction means restraining movement of said marking means, said friction means comprising a mass of small magnetized particles engaging the surface of a part movable with said marking means, to produce a friction restraint which is

relatively small at initial movement of said marking means away from a start point and which thereafter grows in magnitude as the movement continues, said friction means



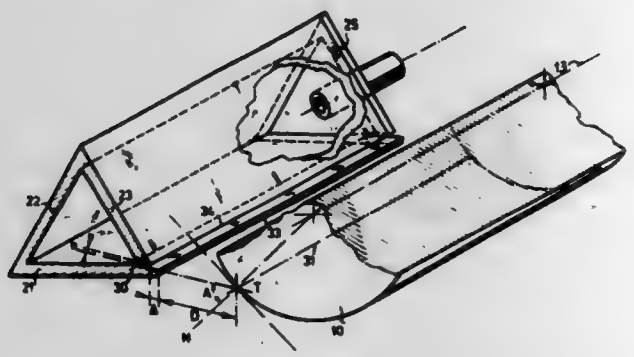
serving to maintain said marking means securely in position during periods intervening activation of said actuator means.

4,348,684

DEVICE FOR REMOVING EXCESS PIGMENT FROM THE SURFACE OF THE IMAGE CARRIER OF A NON-IMPACT PRINTING MACHINE

Jean-Jacques Binder, Valdoie, France, assignor to Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme), Paris, France

Continuation of Ser. No. 965,412, Dec. 1, 1978, abandoned. This application Nov. 25, 1980, Ser. No. 210,312
Claims priority, application France, Dec. 12, 1977, 77 37289
Int. Cl.³ G03G *15/00*
U.S. Cl. 346—153.1 7 Claims



1. A device for removing excess particles of pigment from a surface on which a powdered pigment has been deposited and adhered, comprising:

a pneumatic pressure device for establishing a positive air pressure, and

a chamber having at least an entrance orifice connected to said pressure device, and an exit orifice disposed opposite the said surface and extending in a direction parallel to said surface, said exit orifice having a width between 0.2 mm and 0.02 mm, said chamber comprising two plates disposed on either side of and forming said exit orifice, said plates being inclined to one another and terminated by two mutually parallel edges along said exit orifice, one of said edges being set back from the other edge by a distance at least equal to 1 mm,

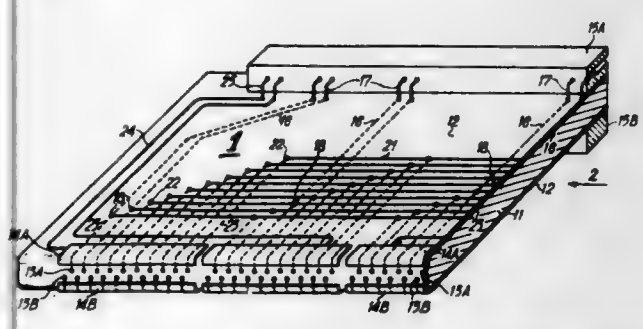
said device being disposed relative to said surface so that the path followed by the gas emerging from the exit orifice of said chamber forms, with a normal to said surface at the point where said path strikes that surface, an angle at least equal to 30°.

4,348,685

WRITING HEAD FOR AN ELECTROSTATIC POINT PRINTER

Alain Jaouannet, 5, rue E. Branly; Louis G. Henaff, Pen an Allée, both of Perros Guirec, France (22700), and Jean-Pierre R. Ramy, 3, Résidence Duroux, Lannion, France (22300)

Filed May 13, 1980, Ser. No. 149,422
Claims priority, application France, May 14, 1979, 79 12225
Int. Cl.³ G03G *15/048*
U.S. Cl. 346—155 10 Claims



2. A printed head for an electrostatic point printer comprising:

a rigid substrate support having the shape of a rectangular prism having two large lateral faces and a narrow front face;

a flexible dielectric substrate sheet, said sheet having first and second faces with a thickness between the first and second faces;

a connector mechanically connected to said substrate support and responsive to signals for controlling printing;

a plurality of first parallel conductive leads extending in a first direction printed on the first face of said substrate sheet electrically connected to the connector to be responsive to the signals;

aligned electrode studs passing through said thickness of said substrate sheet, each of said studs being in ohmic contact with a respectived one of said first conductive leads and being flush with said substrate sheet second face;

a plurality of parallel second conductive leads extending in a second direction perpendicular to said first direction, printed on said second face of said substrate sheet;

through contacts passing through said thickness of said substrate sheet, each of said contacts making an ohmic contact between one of the first leads and one of the second leads; and

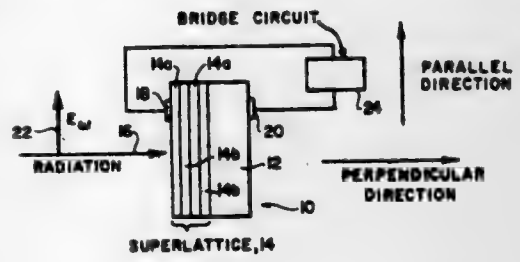
said first face of said substrate sheet being bonded to said lateral and front faces of the substrate support, said electrode studs being aligned along said narrow front face.

4,348,686

MICROWAVE-INFRARED DETECTOR WITH SEMICONDUCTOR SUPERLATTICE REGION

Leo Esaki, Chappaqua, and George A. Sai-Halasz, Mount Kisco, both of N.Y., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 28, 1980, Ser. No. 172,794
Int. Cl.³ H01L *27/14*
U.S. Cl. 357—30 10 Claims



1. A semiconductor device adapted for operation as a detec-

tor and/or mixer of electromagnetic radiation and whose operating range extends from DC into the infrared region of the electromagnetic spectrum, comprising:

a body of semiconductor material including a superlattice region having two different materials arranged alternately in a plurality of parallel planar layers, said planar layers having a respective predetermined relatively thin thickness dimension of a value wherein an impinging electric field parallel to said planar layer increases the carrier energy in the plane of said layers to the extent that the perpendicular carrier mobility transverse to the plane of said layers is affected and reduced thereby;

electrode means on said body of semiconductor material for sensing current resulting from said perpendicular carrier mobility in response to incident radiation; and

means for directing incident radition on said superlattice structure in a direction perpendicular to said parallel planar layers whereby an accompanying transverse electric field is applied in a direction parallel to said planar layers.

4,348,687

CLAMPING ASSEMBLY FOR THYRISTOR COLUMN

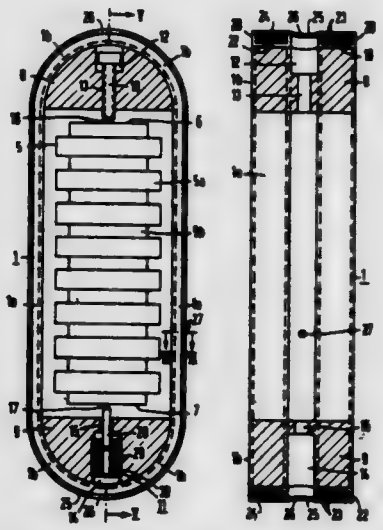
Roman Keller, Neunkirchen, and Günter Kliesch, Erlangen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Feb. 26, 1980, Ser. No. 124,724

Claims priority, application Fed. Rep. of Germany, Mar. 8, 1979, 2909138

Int. Cl.³ H01L 23/42, 23/44, 23/46

U.S. Cl. 357—79 19 Claims



1. In a thyristor column having a stack of thyristors and cooling capsules, two end pieces, each end piece having a clamping element, and a frame-like clamping device surrounding the stack the end pieces in an electrically insulating manner, and each clamping element resting on an apposite end of the stack and at least one of the clamping elements being resilient, the improvement comprising:

the frame-like clamping device having two identical half-shells of insulating material with continuous outer surfaces and end faces which meet each other, providing a smooth transition of outer surfaces;

each of the two half-shells having at least one straight part and at least one curved part and having two lateral surfaces;

each of the two end pieces lying in an approximately form-fitting manner in a curved part of the clamping device;

at least one groove being arranged on at least parts of the outer surface of each half-shell and parallel to the lateral surfaces thereof; and

a bundle comprising more than one turn of fibers wound in the groove and embedded in a casting compound.

4,348,688

MULTIBEAM CATHODE RAY TUBE APPARATUS

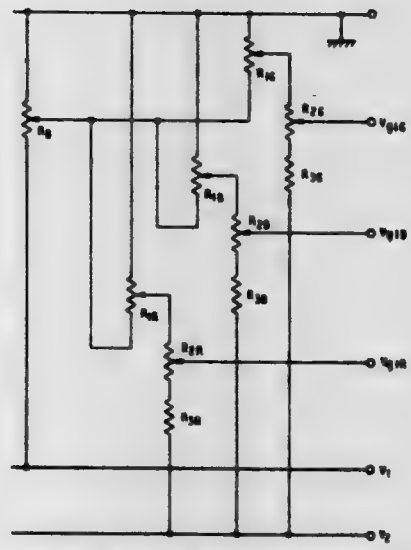
Frank Aisacow, Hampshire, England, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 7, 1980, Ser. No. 175,996

Claims priority, application United Kingdom, Aug. 31, 1979, 7930261

Int. Cl.³ H04N 9/535

U.S. Cl. 358—29 13 Claims



1. Multibeam cathode ray tube apparatus comprising a cathode ray tube including means to generate a plurality of electron beams, a control grid for each beam, and a brightness control incorporating a source of variable voltage for varying the brightness of the display, characterized in that between said variable voltage source and all save at most one of said control grids there is provided means for applying a linear transformation to said variable voltage so that the transformed brightness versus voltage characteristic substantially coincides with a predetermined characteristic.

4,348,689

PHASE ADJUSTING SYSTEM FOR CARRIER CHROMINANCE SIGNAL

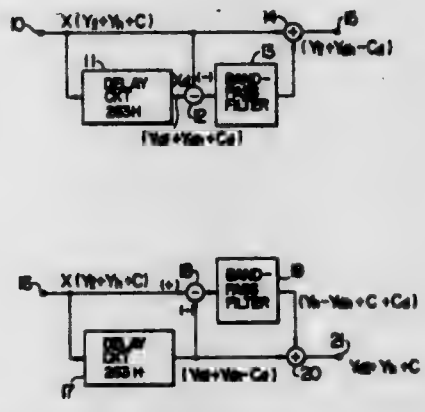
Masahiko Achiha, Iruma, Japan, assignor to Hitachi, Ltd. and Hitachi Denshi Kabushiki Kaisha, both of Tokyo, Japan

Filed Sep. 12, 1980, Ser. No. 186,744

Claims priority, application Japan, Sep. 12, 1979, 54-116204

Int. Cl.³ H04N 9/535

U.S. Cl. 358—31 7 Claims



1. A circuit arrangement for changing a phase of a carrier chrominance signal of a composite color television signal comprising:

a source of a composite color television signal in which a chrominance subcarrier modulated with chrominance components is superimposed on a luminance signal;

a delay means for delaying said composite color television signal by one-field period;

a means for producing a difference signal between said

composite color television signal and an output signal of said delay means;

a filter for extracting a high frequency component of said difference signal; and

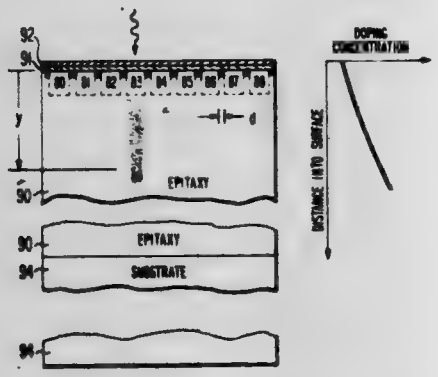
an adder means for adding an output signal of said filter to said composite color television signal to change the phase of the carrier chrominance signal of said composite color television signal.

4,348,690

SEMICONDUCTOR IMAGERS

Lubomir L. Jastrzebski, Plainsboro, and Peter A. Levine, Trenton, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Apr. 30, 1981, Ser. No. 259,360
Int. Cl.[3] H04N *3/14, 9/07*
U.S. Cl. 358—44 9 Claims



1. In a charge-coupled-device imager system having:

an optical lens system for projecting a light image in a plane;

a color discriminating optical filter, included in said optical system, for causing said projected light image to be projected in a prescribed pattern of separated colors;

a charge-coupled-device including

a region of semiconductive material arranged so said light image is projected thereinto for generating charge carriers at sites therein, said region of semiconductive material having a plane surface normal to the direction of projection of said light image into said region of semiconductive material including

a dielectric layer having a first surface at the plane surface of said region of semiconductive material and having a second surface opposing its first surface, and including

means inducing potential wells in said region of semiconductive material adjacent to its plane surface, for collecting charge carriers generated in their respective vicinities and integrating the collected charge carriers to form respective charge signals, which means includes electrodes disposed on the second surface of said dielectric layer; and

means for recurrently sampling in prescribed temporal order the charge signals from selected ones of said potential wells to generate color video signals—the improvement wherein said region of semiconductive material is of a type having an internal drift field for accelerating the diffusion of said charge carriers through said semiconductive material in a direction towards said plane surface to substantially reduce the likelihood of any of them being collected in a potential well other than the closest one to its respective generation site in said region of semiconductive material.

2. A semiconductor imager comprising:

a semiconductor region having a front and a back surface, receptive of an image projected through one of its surfaces;

means for inducing potential wells in the front surface of said semiconductor region; and

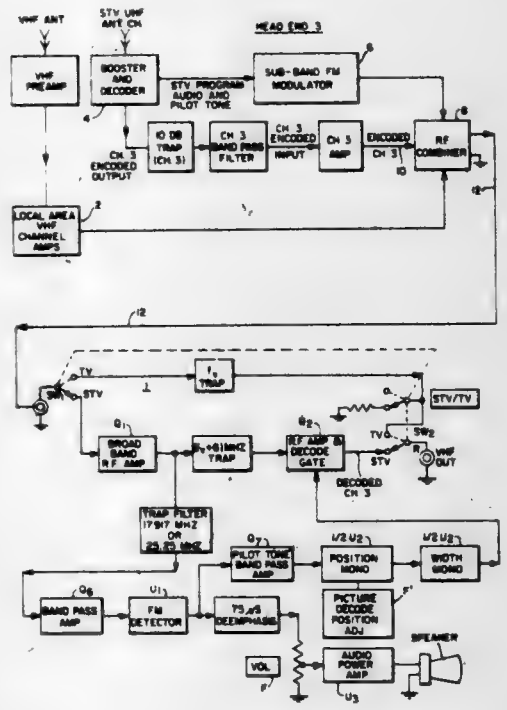
an impurity concentration gradient in said semiconductor region between said front and back surfaces providing a built-in electric field gradient for accelerating the charge carriers created in response to the image projected onto its image receiving surface, and directing the charge carriers from the charge generation sites to said potential wells along paths predominantly normal to said front surface.

4,348,691

MASTER ANTENNA SUBSCRIPTION TELEVISION SYSTEM AND THE LIKE

Kantilal Mistry, Freehold, N.J., assignor to Blonder-Tongue Laboratories, Inc., Old Bridge, N.J.

Filed Nov. 10, 1980, Ser. No. 205,528
Int. Cl.[3] H04N *7/16*
U.S. Cl. 358—114 3 Claims



1. In a master antenna system and the like for receiving scrambled video signal sync subscription television signals and the like, having STV pilot tone and program audio signals, the combination of head end means for receiving UHF STV signals and provided with means for converting the same to a VHF channel while leaving the video signal sync in its scrambled state and extracting the STV pilot tone and program audio signals; FM modulator means at said head end means connected to modulate a separate carrier with the extracted signals; means for sending the scrambled STV signals and the FM modulated separate carrier from the head end means along cable means to a plurality of separate television receivers; and each television receiver being provided with simplified decoder means comprising pilot-tone controlled R F decoding gate means to restore the scrambled sync to produce an unscrambled video signal, and FM detector means for demodulating said pilot tone to enable such control of the gate means and demodulating said program audio signals.

4,348,692

VTR WITH EQUALIZER

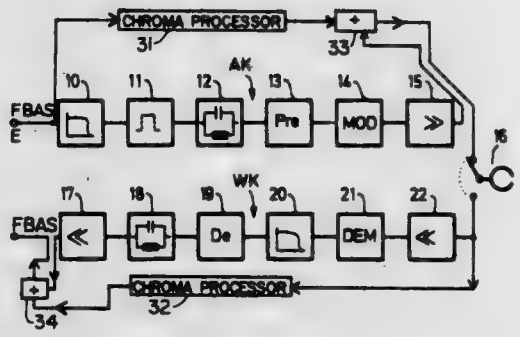
Andreas Ilmer, Ludwigshafen, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Mar. 13, 1980, Ser. No. 129,838
Claims priority, application Fed. Rep. of Germany, Dec. 17, 1979, 2950764
Int. Cl.[3] H04N *5/76*
U.S. Cl. 358—127 2 Claims

1. An arrangement for equalizing a video signal in a system in which the video signal is recorded in frequency modulated form and then played back upon frequency demodulation,

wherein, in addition to a pre-emphasis circuit with an emphasizing factor in the recording channel, and similarly in addition to a de-emphasis circuit in the playback channel, a group-delay equalization circuit for the video signal is provided

such that in a curve representing the frequency response on the output side of the frequency modulator, overshoot spikes of opposite polarity are simultaneously and substantially symmetrically produced for a black/white transition as well as a white/black transition, of the incoming video signal



and such that, in light of the attendant reduction in overshoot, the emphasizing factor is increased until the overshoot limits represented by the maximum and minimum permissible frequencies of the system have been reached.

4,348,693

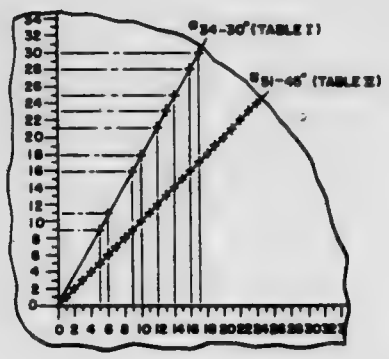
TELEVISION WEATHER RADAR SYSTEM

Jack D. Cauldwell, Carroll, Ohio, assignor to Arvin Industries, Inc., Columbus, Ind.

Continuation-in-part of Ser. No. 34,898, Apr. 30, 1979. This application May 1, 1980, Ser. No. 145,631

Int. Cl.³ H04N 5/02

U.S. Cl. 358—140 **13 Claims**



1. Method for transmitting data generated in polar coordinate format from a weather radar having a rotating antenna to a remote location for storage in a rectangular coordinate format, the method comprising the steps of

dividing the radar data in polar coordinate format into picture elements,

selecting those picture elements having a corresponding position within a rectangular coordinate format,

transmitting the selected picture elements to the remote location, and

storing the selected picture elements at predetermined locations within a memory at the remote location.

4,348,694

HORIZONTAL PHASE DETECTOR GAIN CONTROL

Michael McGinn, Tempe, Ariz., assignor to Motorola, Inc., Schaumberg, Ill.

Filed Dec. 29, 1980, Ser. No. 220,604

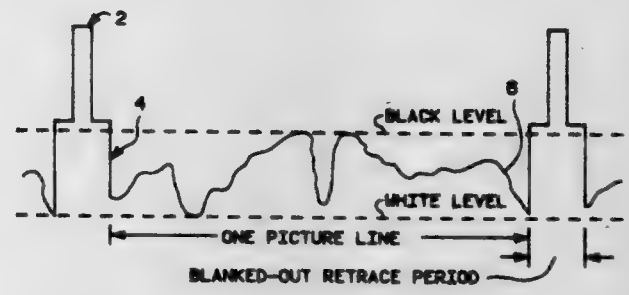
Int. Cl.³ H04N 5/04

U.S. Cl. 358—158 **9 Claims**

1. An apparatus for altering the loop bandwidth of a horizontal phase lock loop in a television receiver by changing the gain of a phase detector within the phase lock loop, said television receiver receiving horizontal and vertical synchronization pulses and including a vertical countdown counter which is reset by a vertical countdown counter reset signal; comprising:

first means for detecting coincidence between a predetermined state of said countdown counter and said vertical synchronization pulses;

second means coupled to said first means for generating a first potential when said countdown counter is synchronized with said vertical synchronization pulses and for generating a second potential when said countdown counter is not synchronized with said vertical synchronization pulses; and



switching means coupled to said second means and to said phase detector and responsive to said first and second potentials for altering the current in said phase detector to alter its gain.

4,348,695

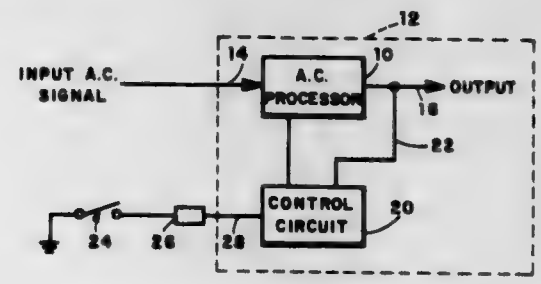
NOISE PROCESSOR DEFEAT SWITCH

Alain H. d'Hautecourt, Prospect Heights, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Continuation-in-part of Ser. No. 187,222, Sep. 15, 1980, abandoned. This application Nov. 10, 1980, Ser. No. 205,824

Int. Cl.³ H04N 5/14

U.S. Cl. 358—160 **11 Claims**



1. In a television receiver of the type having an AC signal processing circuit including an output terminal and means enableable for developing a constant level current signal for rendering said processing circuit operative, the improvement comprising:

switch means having a single output conductor, said switch means being selectively operable for developing only a first control signal or only a second control signal on said single output conductor; and

control means connected to said single output conductor and operable in response to said first control signal for enabling the development of said constant level current signal and operable in response to said second control signal for inhibiting the development of said constant level current signal while causing said output terminal to assume a controlled DC voltage level.

4,348,696

TELEVISION VIEWING CONTROL DEVICE

Galen C. Beier, 1200 Kaplan St., Waterloo, Iowa 50702

Filed Sep. 8, 1980, Ser. No. 185,226

Int. Cl.³ H04N 5/44

U.S. Cl. 358—188 **7 Claims**

1. A television viewing control device for recording the

viewing time of a plurality of viewers watching a controlled television set, and turning said set off when a predetermined viewing time limit of any one of said viewers is exceeded, said control device comprising:

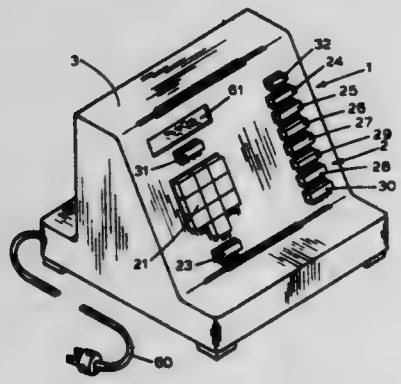
(a) a memory circuit means having the capacity for semipermanently storing an assigned individual password for each of said viewers and a predetermined viewing time associated with each of said passwords;

(b) control means for turning said controlled television set on and off;

(c) processing means including:

(1) data storage means having the capacity for temporarily storing the individual password of each of said viewers watching said controlled set, and

(2) polling means operated at predetermined intervals of time to compare the passwords in said data storage means and said memory circuit means and to subtract a period of time equal to said predetermined interval from the viewing time associated with each of said passwords in said data storage means;



(d) a first means to actuate said control means to turn said television set off when any one of said time limits associated with said passwords reaches zero;

(e) programming means for supplying said assigned passwords and said associated time limits to said memory circuit means,

(f) input means for use by each of said viewers to feed their assigned password to said data storage means when said viewers desire to view said television set;

(g) a programmed memory means to direct the operation of said polling means in response to the input of one of said passwords to said data storage means;

(h) a second means to actuate said control means to turn said controlled set to an on condition in response to the input of at least one of said passwords to said data storage means; and

(i) clock means for providing internal timing for said polling means.

4,348,697

FACSIMILE APPARATUS

Shuichi Takahashi, Sagamihara; Fumihiro Ogasawara, Kawasaki, and Syuichi Ohta, Atsugi, all of Japan, assignors to Ricoh Company, Limited, Tokyo, Japan

Filed Apr. 4, 1980, Ser. No. 137,258

Claims priority, application Japan, Apr. 16, 1979, 54-46223

Int. Cl.³ H04N *1/04, 1/10, 1/14*

U.S. Cl. 358—286 6 Claims

1. A facsimile apparatus comprising:

a reading head;

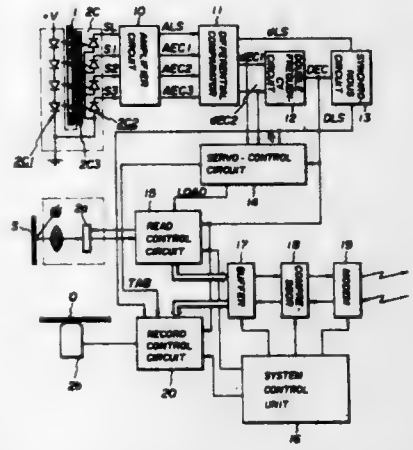
a recording head;

a carriage means on which said reading head and said recording head are mounted and which can be reciprocated in the main scanning direction;

a scale plate having a plurality of slits formed therein in the main scanning direction with a predetermined pitch;

a detector means which is mounted on said carriage and which traces said scale plate as said carriage means is reciprocated and which outputs a predetermined signal corresponding to each of said slits; and

a D.C. motor for reciprocating said carriage means, the speed of said D.C. motor and the speed of said carriage means in



the main scanning direction thereof being controlled in accordance with said signal output from said detector means so that said carriage means is caused to run at a constant speed.

4,348,698

MAGNETIC DEVICES FOR CHANGING VIDEO RECORDINGS

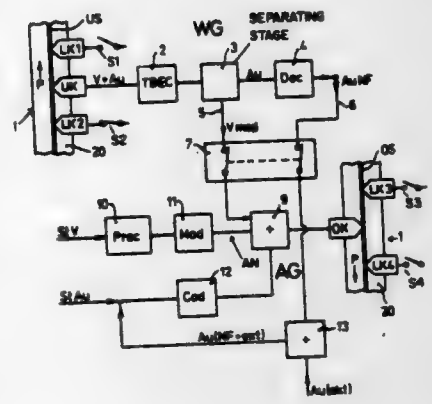
Klaus D. Schomann, Ludwigshafen, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Oct. 22, 1979, Ser. No. 87,555

Claims priority, application Fed. Rep. of Germany, Nov. 2, 1978, 2847440

Int. Cl.³ H04N *5/78*

U.S. Cl. 360—14 9 Claims



1. In a video recording/playback system having recording and playback heads for recording signals on, and playing signals back from, a recording medium having a plurality of parallel tracks,

a method for audio-dubbing in a single recording/playback unit, the originally recorded signals, which last-mentioned signals have been recorded in modulated form, with an existing audio component, on a first of said tracks, said method comprising:

playing the modulated signals back from said first track,

separating the audio component of the played back signal from the undemodulated video component of said signal,

demodulating the separated audio component for reducing said audio component to base band,

providing at audio base band an audio signal to be dubbed in,

combining the audio component reduced to base band and the base band audio signal to be dubbed in, and encoding the audio combination,

combining the encoded audio combination with said undemodulated video component,

rerecording the combined video and audio signal on a second of said plurality of tracks, and

erasing said originally recorded signals after at least temporary rerecording, in order to vacate said first track for further new recordings.

4,348,699

APPARATUS FOR RECORDING AND/OR REPRODUCING DIGITAL SIGNAL

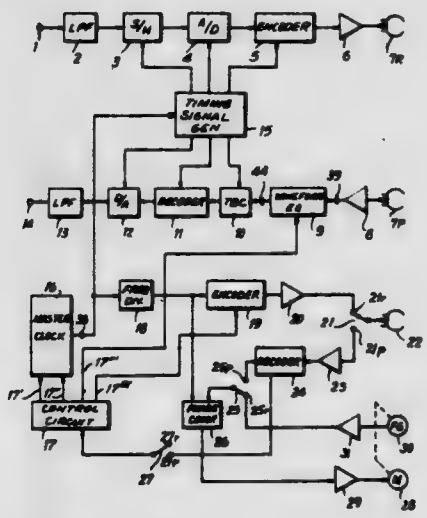
Yoshikazu Tsuchiya; Masato Tanaka; Takenori Sonoda; Tetsu Watanabe, all of Tokyo; Chiaki Kanai, Kanagawa-ken, and Nobuhiko Watanabe, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed May 13, 1980, Ser. No. 149,299

Claims priority, application Japan, May 15, 1979, 54-59254

Int. Cl.[3] G11B *5/00, 5/09*

U.S. Cl. 360—32 11 Claims



1. An apparatus for digitally recording an analog signal on a movable recording medium, with a predetermined data density, comprising:

means for generating fundamental clock pulses having a selected clock frequency;

means for sampling said analog signal at a sampling frequency which is related to said selected clock frequency;

means for digitizing the samples from said means for sampling;

means including a transducer for recording the digitized samples on said recording medium; and

means for moving said recording medium at a speed which is varied in response to changes in said selected clock frequency such that said samples are recorded on said medium with said predetermined data density independently of said sampling frequency.

4,348,700

ERASE ATTACHMENT FOR TAPE CASSETTES

Jerry Iovino, 2 Geraldine Rd., North Arlington, N.J. 07032

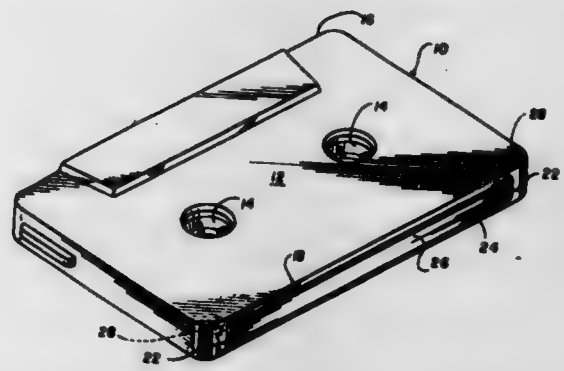
Continuation-in-part of Ser. No. 970,118, Dec. 18, 1978. This application Apr. 22, 1980, Ser. No. 142,777

Int. Cl.[3] G11B *15/04*

U.S. Cl. 360—60 10 Claims

1. An erasing attachment for a conventional tape cassette having spaced erase openings in a portion thereof, said attachment comprising:

an elongated body portion of a length sufficient to extend longitudinally along the exterior of the cassette portion from one erase opening to another, and end portions extending laterally from the ends of said body portion and being removably receivable within the erase



openings to position the attachment on the cassette so that said body portion covers the erase openings.

4,348,701

MODE SWITCHING CIRCUIT

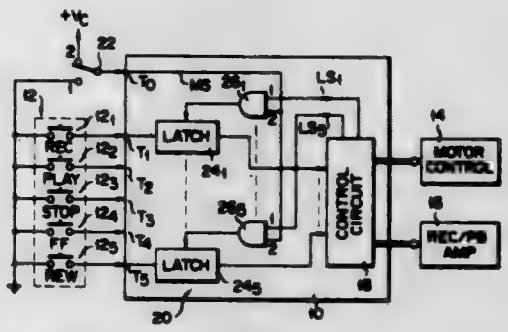
Katsumi Kanayama; Kenzi Furuta, and Kazuyasu Motoyama, all of Hachioji, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed May 19, 1980, Ser. No. 151,469

Claims priority, application Japan, May 28, 1979, 54-65837

Int. Cl.[3] G11B *15/12*

U.S. Cl. 360—61 9 Claims



1. In a mode switching circuit for a multi-mode electronically controlled tape recorder, the mode switching circuit including an operation switch section for issuing operating instruction signals to set the mode of operation of the tape recorder; and a control device including a control circuit for controlling the operation mode of the tape recorder according to the operating instruction signals from the operation switch section, said control device having terminals through which said operation switch section is coupled to said control circuit of said control device,

the improvement wherein said mode switching circuit further comprises: mode switch means coupled to said control device and generating a mode selection signal having a given logic level; and

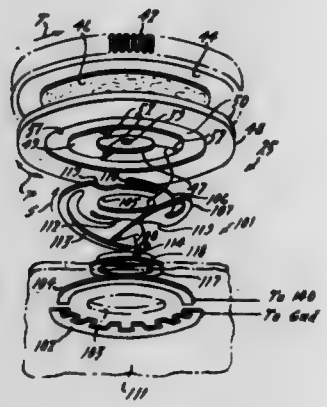
mode selection means coupled to said mode switch means, to said operation switch section and to said control circuit for setting the transmission state of said operating instruction signals from said operation switch section to one of at least two selectable transmission states, and for coupling said operating instruction signals to said control circuit according to the set transmission state as a function of the logical level of said mode selection signal.

4,348,702

DEVICE FOR PREVENTING TAPE WINDUP ON THE CAPSTAN OF A TAPE DECK

Orlando Taraborrelli, Bryn Mawr, Pa., assignor to Ford Aerospace and Communications Corporation, Detroit, Mich.

Filed Jul. 25, 1980, Ser. No. 172,342
Int. Cl.[3] G11B *15/32, 15/43, 19/26*
U.S. Cl. 360—71 7 Claims



1. A device for preventing tape windup on the capstan of a tape deck which includes a tape supply reel, a take-up reel and means for driving said take-up reel in a first predetermined rotational direction and for driving said capstan in a second predetermined rotational direction, comprising:

means mounted to rotate only in said first direction with said takeup reel for sensing the rotation of said take-up reel in said first predetermined rotational direction

means responsive to said sensing means for producing a holding signal only when said take-up reel is sensed as rotating in said first predetermined direction; and

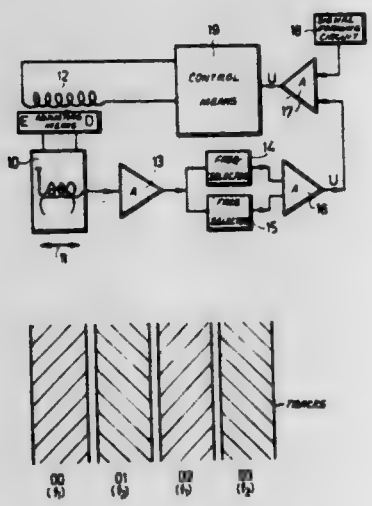
means responsive to only said holding signal for activating said driving means.

4,348,703

FLEXIBLE MAGNETIC DISC HAVING TRACK MARKING INFORMATION RECORDED THEREON

Marcell Jánosi, Budapest, Hungary, assignor to Budapesti Rádiótechnikai Gyár, Hungary

Filed Apr. 2, 1980, Ser. No. 136,560
Claims priority, application Hungary, May 6, 1979, BU 937
Int. Cl.[3] G11B *21/10*
U.S. Cl. 360—77 4 Claims



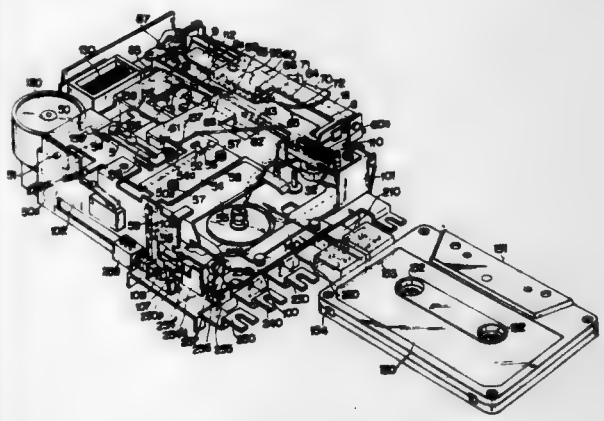
1. An apparatus for fine adjustment of the position of a reading head associated with a flexible magnetic information carrier disc relative to the circular information recording tracks of the disc, in which each of said tracks comprise an information sector and a track-marking sector each track-marking sector having at most about 30° angular width of the respective track, and on every track-marking sector a marking frequency being recorded with a frequency value being distinguishable from the marking frequency recorded on the neighbouring tracks, said apparatus comprising circuit means selective to said marking frequencies and coupled to said reading head for providing an output signal proportional to the amplitudes of the marking frequency components of signals read out by said reading head, and a control unit which in response to said output signal adjusts the radial position of said reading head to control that component of said output signal to a maximum which is associated with said frequency value of the track to which fine adjustment should be made, wherein the tracks with even track numbers comprise a first marking frequency value, and the tracks with odd track numbers comprise a second marking frequency value, and wherein said first and second marking frequency values correspond respectively to frequencies represented by the "0" bits and "1" bits recorded in the information carrying sector of said tracks.

4,348,704

MAGNETIC TAPE RECORDING/REPRODUCING APPARATUS

Satoshi Takagi, and Toshio Watanabe, both of Toda, Japan, assignors to Clarion Co., Ltd., Tokyo, Japan

Filed Mar. 21, 1979, Ser. No. 25,740
Claims priority, application Japan, Mar. 24, 1978, 53-32920; Mar. 28, 1978, 53-34800; Mar. 29, 1978, 53-35331; Mar. 31, 1978, 53-36705; Mar. 31, 1978, 53-40988; Mar. 31, 1978, 53-40989
Int. Cl.[3] G11B *15/32, 15/04, 15/10, 15/02*
U.S. Cl. 360—96.5 9 Claims



1. In a magnetic tape cassette recording/reproducing apparatus, said apparatus including a cassette-receiving frame movable from a cassette-receiving position to a cassette recording /reproducing position; first slide means; spring means urging said first slide means into an initial first position; said first slide means having a cassette abutment portion engageable by the cassette being inserted into said cassette-receiving frame when the first slide means is moved into a second position against the return force of the spring means as the user pushes the cassette into the apparatus; locking means for automatically locking said first slide means into said second position when the first slide means reaches the same; cassette-receiving frame moving means for effecting the movement of said cassette-receiving frame from said cassette-receiving position to at least a given second position preparatory to a recording/reproducing operation when said first slide means is moved into said second position where it is locked by said locking means; the improvement for facilitating the easier movement of said cassette against the return force of the spring means operating on said first slide means comprising swaying means positioned to be swayed in first and second directions with movement of said first slide means respectively toward and away from said second position, said swaying means being provided with at least one operating portion; pivotable floating means having opposite end portions provided with projections, respectively, an intermediate side of said floating means confronting said operating portion of the swaying means, and a pair of engaging means for respectively engaging and disengaging said projec-

tions of the floating means as the floating means is moved by said swaying means, spring means for urging one of said engaging means in a first direction said floating means having a cam surface with first and second portions respectively engaged in succession by said operating portion of the swaying means which portion when the swaying means is moved in said first direction as the first slide means moves toward said second position pivots said floating means in a given direction, one of the projections of said floating means then being held by the other of said engaging means which projection forms a pivot point for the floating means while the other projection moves sad one engaging means initially against the spring return force of the spring means operating thereon during the engagement of said operating portion with said first cam surface portion, the force of said other projection on said other engaging means being relieved as said operating portion thereafter engages said second cam surface portion so that the latter spring means aids the further movement of said first slide means toward said second position.

4,348,705

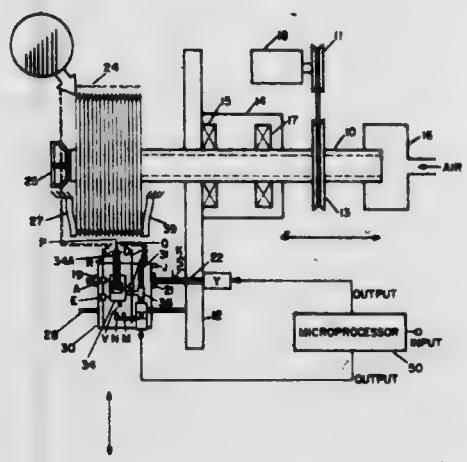
RANDOM ACCESS FLEXIBLE DISK MEMORY

Faquir C. Mittal, Audubon; Frank J. Arrison, Warrington, and Arnold Schonfeld, Norristown, all of Pa., assignors to Sperry Corporation, New York, Nebr.W YORK

Continuation of Ser. No. 958,599, Nov. 7, 1978. This application May 7, 1980, Ser. No. 147,039

Int. Cl.³ G11B *5/012, 21/02*

U.S. Cl. 360—98 **10 Claims**



1. A method for randomly accessing by means of a pair of parallel and unequal length picker arms, which carry a read/-write means thereon, a thin, flexible, magnetic multi-track disk from a plurality of closely-spaced, rotating, flexible and axially arranged magnetic disks in a stack having different outside diameters which are arranged in a uniformly ascending order comprising steps of:

(a) rotating said disks in their respective planes of rotation, each said disk being characterized by a natural tendency to flutter while rotating in its dynamic state;

(b) moving the larger of said picker arms by contacting a disk to be accessed while in its dynamic state such that said disk is moved in a direction beyond the range wherein it has a natural tendency to flutter, to a position where said disk becomes relatively stable while rotating;

(c) moving said picker arms radially inward a distance while the accessed disk has become relatively stable, such that free ends of said longer and shorter arms are within diameter dimensions of adjacent disks, to locate said to be accessed disk between said picker arms wherein the disk is positively captured therebetween;

(d) moving said picker arms so as to return said positively captured disk to its normal plane of rotation where said disk may freely rotate between said picker arms for reading or writing information on said disk,

(e) whereby said random accessing is performed with minimum error and relatively rapid access time.

4,348,706

EDGE GUIDE FOR A MAGNETIC TAPE

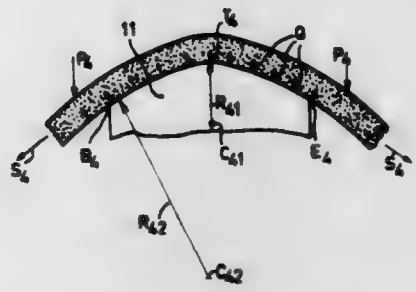
Bernard P. Videc, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 3, 1980, Ser. No. 165,890

Claims priority, application Netherlands, Jul. 6, 1979, 7905278

Int. Cl.³ G11B *15/60*

U.S. Cl. 360—130.24 **8 Claims**



1. An apparatus for recording and/or reading signals arranged in tracks on an elongated tape having substantially parallel longitudinal edges and having a specific resistance to bending in the plane of the tape, comprising:

a tape guide member defining a path between a tape-supporting entry point and a tape-supporting exit point, said member having a tape-supporting edge for supporting one of the longitudinal edges of such a tape accommodated in the apparatus and disposed along said path between said points,

means for sustaining a tape tension of a given magnitude in the longitudinal direction on the tape disposed along said path,

pressure members for exerting transverse pressure forces on the tape, to press the tape against the tape-supporting edge with a transverse force as constant as possible per unit of length between said points, and

means for recording and/or reading signals arranged in tracks on said tape along said path, characterized in that,

the tape-supporting edge has a curvature which is convex toward the tape having a peak substantially midway between the tape-support entry point and the tape-support exit point,

said curvature, relative to an arc of a circle described by said entry and exit points and the peak of the curve, has a slightly smaller radius at the location of the peak and a slightly larger radius substantially midway between the peak and each of said entry and exit points respectively, and

said pressure members are disposed at locations longitudinally spaced beyond said entry and exit points respectively, near said points, so as to subject the tape guided along said edge to a curvature in the plane of the tape in conformity with the convex curvature of the tape-supporting edge.

4,348,707

ANTI ERASE INTERLOCK FOR A MAGNETIC TAPE CASSETTE

Heinrich Maly, and Franz Werner, both of Vienna, Austria, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 25, 1979, Ser. No. 51,609

Claims priority, application Austria, Jul. 13, 1978, 5074/78

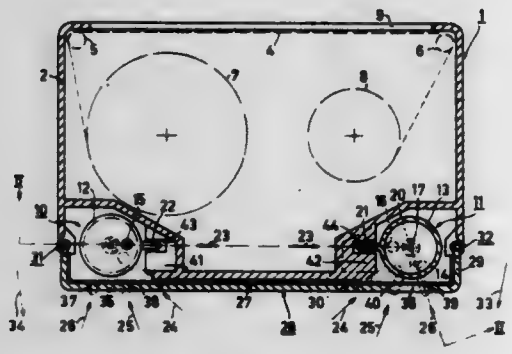
Int. Cl.³ G11B *23/04, 15/04*

U.S. Cl. 360—132 **4 Claims**

1. A magnetic tape cassette for a tape recorder, comprising a housing and at least one anti-erase interlock device, said

device including an actuating member arranged in the cassette to be movable over a defined path between at least first and second operating positions, in one only of said operating positions said member closing an opening formed in the housing,

wherein the actuating member is arranged to be settable to at least one further operating position, and the device further includes a latching element for blocking movement of the



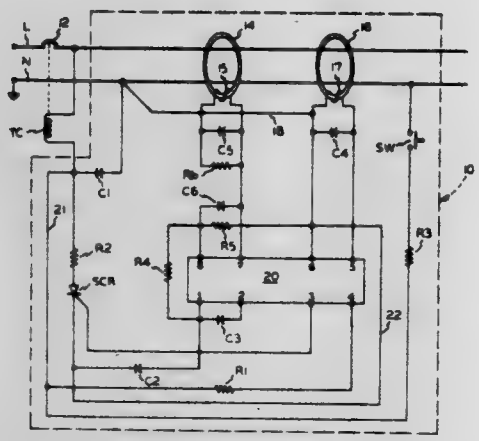
actuating member, disposed between said further operating position and the first and second operating positions, said latching element comprising a projection connected to the cassette housing so arranged as to block movement of the actuating member from the further operating position to said first or second operating positions without disassembly of the cassette.

4,348,708

GROUND FAULT CIRCUIT INTERRUPTING DEVICE WITH IMPROVED COORDINATION OF ELECTRONIC CIRCUIT OPERATION

Edward K. Howell, Simsbury, Conn., assignor to General Electric Company, New York, N.Y.

Filed May 4, 1981, Ser. No. 260,513
Int. Cl.³ H02H *3/33*
U.S. Cl. 361—45 7 Claims



1. An integrated circuit for utilization in a ground fault circuit interrupting device including a differential current transformer having a secondary winding in which is developed a fault signal proportional to any imbalance in the currents flowing in the line and neutral conductors of an AC power distribution circuit occasioned by a line to ground fault, a neutral transformer having a primary winding which is driven to develop a differential transformer imbalancing current in the neutral conductor if faulted to ground through a desensitizing low impedance, separable contacts for interrupting at least the line side of the distribution circuit, a trip solenoid, a thyristor operating when triggered into conduction to draw activating current through the solenoid to initiate separation of the contacts, an integrating capacitor and an energy storage filter capacitor, said integrated circuit comprising, in combination:

A. a differential amplifier having a first input connected with the differential current transformer secondary winding for amplifying a fault signal developed therein by a current imbalance exceeding a pre-selected threshold level established by a bias voltage applied to a second amplifier input, said amplifier developing an integrating capacitor charging current of a magnitude exponentially related to the fault signal magnitude;

B. an oscillator connected to drive the primary winding of the neutral transformer;

C. a comparator for sensing the voltage developing across the integrating capacitor;

D. a thyristor gate driver controlled by said comparator for producing gate pulses to trigger the thyristor into conduction when the voltage across the integrating capacitor achieves a pre-established reference level;

E. a clamp connected with said gate driver for inhibiting the triggering of the thyristor; and

F. a power supply including

(1) a first diode conducting half-cycle line current from the distribution circuit onto a first power supply bus,

(2) a regulating means connected with said bus for establishing a regulated supply voltage thereon during a substantial portion of each conducting half-cycle of said first diode,

(3) means responsive to said regulating means for

(a) conditioning said clamp to inhibit triggering of the thyristor while the supply voltage is in regulation,

(b) turning on said oscillator while the supply voltage is in regulation, and

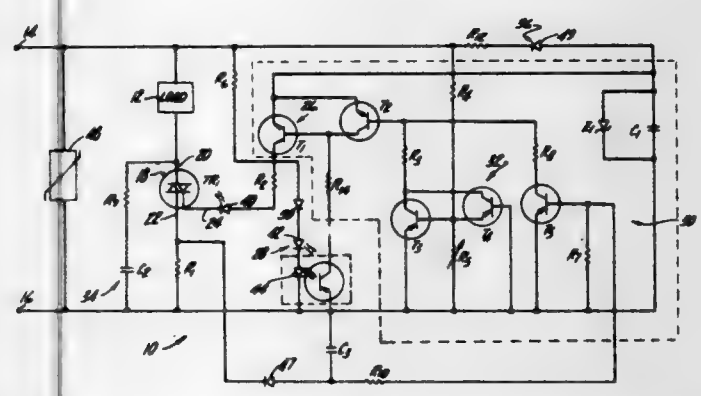
(c) strobing said comparator as said supply voltage achieves regulation to determine if the voltage across the integrating capacitor has achieved said pre-established reference level.

4,348,709

ELECTRONIC LOAD PROTECTION CIRCUIT

Ernest R. Mauk, 4991 Ormand Rd., Davisburg, Mich. 48019, and William A. Van Norman, 2055 Wardlow, Highland, Mich. 48031

Filed Dec. 15, 1980, Ser. No. 216,508
Int. Cl.³ H02H *3/38*
U.S. Cl. 361—92 9 Claims



1. A load protecting circuit for interrupting current flow to the load line during voltage drops or current surges in the AC power line comprising:

a first means for sensing a voltage drop in the power line;

a second means for sensing excessive current applied to the load line;

switching means for interrupting and restoring current in the load; and

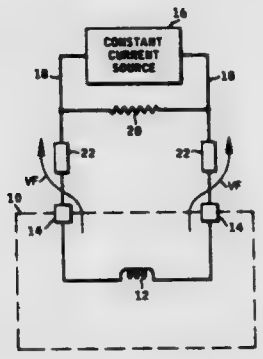
gating means powered by said AC power line exclusively of any separate source responsive to said first and second means for automatically operating the switching means, said gating means comprising an AC line operated, zero-crossing switch means having means for sensing the zero-crossings of the AC line, whereby power for operating the switching means is derived only from the AC line.

4,348,710

METHOD AND STRUCTURE FOR COMPENSATING FOR VARIATIONS IN VAPOR COOLED LEAD RESISTANCE OF SUPERCONDUCTING MAGNETS

Eugene L. Woods, San Diego, Calif., assignor to General Dynamics Corporation, San Diego, Calif.

Filed Jun. 22, 1981, Ser. No. 275,923
Int. Cl.³ H01H 47/00
U.S. Cl. 361—141 13 Claims



1. In a superconducting magnet arrangement having a sealed cryogenic environment utilizing liquid helium, a superconducting coil immersed in the liquid helium, a constant current power supply exterior of the cryogenic environment and connected to said superconducting coil by electrical leads that penetrate the sealed cryogenic environment and are adapted to be cooled by vapor from the helium that is boiled off the helium due to frictional power losses and flux jump power losses within said superconducting coil, an electrical shunt connected to the superconducting magnet exterior of the cryogenic environment, the improvement comprising:

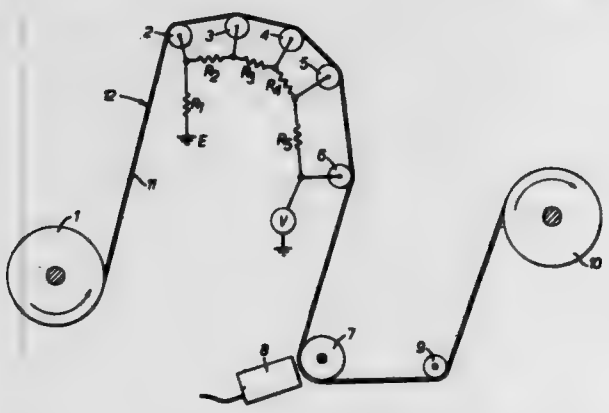
electrical means coupled to the constant current power supply and to the superconducting coil and arranged to be cooled by the same vapor flow applied to said electrical leads whereby the constant current power supply is permitted to maintain a constant current through the superconducting coil and constant resultant magnetic field as variations in the electrical resistance of said leads occur to vapor boil off of the liquid helium within the sealed cryogenic environment.

4,348,711

METHOD AND APPARATUS FOR IMPLANTING A CHARGE IN AN ELECTRET FOIL

Ronald Else, Martlesham, and Michael A. O'Sullivan, Ipswich, both of England, assignors to The Post Office, London, England

Filed Jun. 25, 1980, Ser. No. 162,904
Claims priority, application United Kingdom, Jul. 6, 1979, 7923737
Int. Cl.³ H01G 7/02
U.S. Cl. 361—233 20 Claims



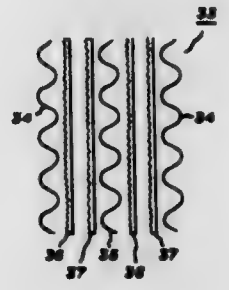
1. A method of implanting an electret charge into a foil capable of retaining an effective electret charge, the method including applying a first electric field and thereafter a second electric field across the foil, the second electric field being of greater magnitude than the first, whereby an effective electret charge is implanted into the foil.

4,348,712

CAPACITOR WITH EMBOSSED ELECTRODES

George R. Newcomb, South Glen Falls, N.Y., assignor to General Electric Company, Hudson Falls, N.Y.

Continuation-in-part of Ser. No. 952,384, Oct. 18, 1978, abandoned. This application Jun. 11, 1979, Ser. No. 47,425
The portion of the term of this patent subsequent to Oct. 14, 1980, has been disclaimed.
Int. Cl.³ H01G 4/22
U.S. Cl. 361—315 23 Claims



1. In an electrical capacitor including a casing with electrical terminals thereon and one or more capacitor rolls in said casing and connected to the terminals and a dielectric fluid in the casing and impregnating the roll, the combination of

(a) said roll comprising a pair of spaced metallic electrode foil strips and a dielectric therebetween consisting solely of a synthetic resin material and comprising at least one synthetic resin strip,

(b) said electrode foil strips having a full pattern of continuous uniform dimple-like structures coterminously on the surfaces thereof,

(c) said dimple-like structures providing a foil thickness which is about 2 to 10 times the original thickness before winding in said roll,

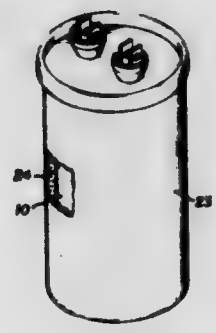
(d) said resin strip comprising polypropylene having one of its surfaces covered by a layer of fibrils forming discontinuities and craters coextensively to provide a film space factor above about 3.0%.

4,348,713

IMPREGNANTS FOR METALLIZED PAPER ELECTRODE CAPACITORS

Frederick Grahame, Glens Falls, N.Y., assignor to General Electric Company, Hudson Falls, N.Y.

Filed May 6, 1980, Ser. No. 147,031
Int. Cl.³ H01G 4/22
U.S. Cl. 361—315 8 Claims



1. In an electrical capacitor comprising a pair of spaced strip electrodes and a synthetic resin film dielectric therebetween to form a laminate which is tightly wound in a roll form and placed in a casing and impregnated with a dielectric fluid, the combination comprising

(a) the said strip electrodes comprising capacitor tissue paper

having both sides metallized with a thick layer coating of aluminum,

(b) and a dielectric fluid impregnating said roll and paper strips,

(c) said fluid consisting essentially of a blend of about 25–50 percent by volume of an aromatic hydrocarbon selected from the group consisting of phenyl xylyl ethane, monoisopropyl biphenyl and mixtures thereof and a 50–75 percent by volume of a phthalate ester.

4,348,714

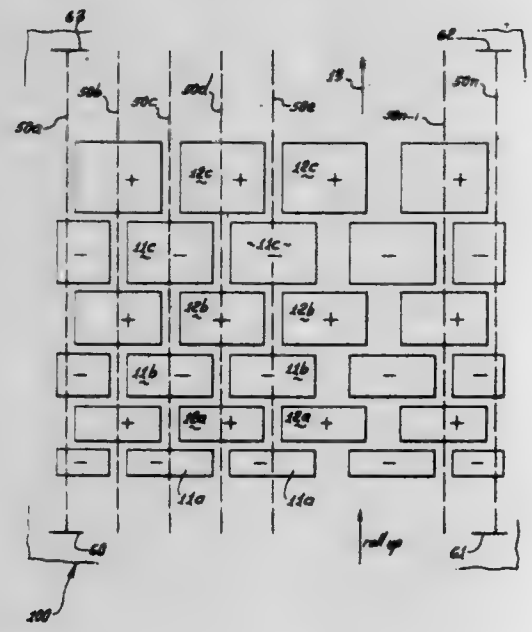
MULTILAYER TUBULAR CAPACITOR AND FABRICATION THEREOF

Clarence L. Wallace, Solana Beach, Calif., assignor to Cladan Incorporated, San Marcos, Calif.

Filed Nov. 14, 1980, Ser. No. 207,028

Int. Cl.³ H01G *1/015, 13/00*

U.S. Cl. 361—328 **8 Claims**



1. In capacitor structure adapted to be cut and rolled up,

(a) a carrier sheet having width and length dimensions, and

(b) metallic ink electrodes on said sheet in spaced relation along the length dimension of said sheet, the electrodes having progressively increasing surface dimension along said sheet length dimension,

(c) said electrodes being arranged in first multiple parallel columns spaced apart laterally along the sheet width dimension, and second multiple parallel columns spaced apart laterally along the sheet width dimension,

(d) lengthwise successive electrodes in the first columns being in widthwise alighnment, and lengthwise successive electrodes in the second columns being in widthwise alignment,

(e) said successive electrodes in each of the second columns projecting laterally between said successive electrodes in each of two of the first columns.

4,348,715

LIGHTED TOOL HOLDER

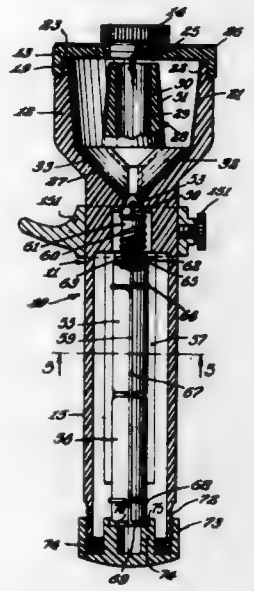
Leonard R. Christensen, 4205 Fullerton Ave., Chicago, Ill. 60639, and Hiroshi Horibata, Takane-So, 29-18, 5-Chome, Kamirenjaku, Mitaka-Shi, Tokyo, Japan

Filed Jan. 14, 1980, Ser. No. 111,841

Int. Cl.³ F21V *33/00*

U.S. Cl. 362—109 **15 Claims**

1. A lighted tool holder for releasably holding a tool, comprising; a holder body having a tool holding adapter mounted centrally therein at one end thereof, said body having a hollow projecting portion at the end opposite the tool holding adapter, a light bulb having a contact ground mounted in the body beneath the adapter, battery means having a contact and a ground in the hollow projecting body portion axially movable therein to effect electrical contact with the bulb contact, a holder for the battery means including a spring wire surrounding said battery means and providing electrical contact with the bulb contact, a holder for the battery means including a



spring wire surrounding said battery means and providing electrical contact between the battery ground and the bulb ground, and an end cap threadedly engaging the hollow body portion for axially shifting the battery means into electrical contact with the light bulb.

4,348,716

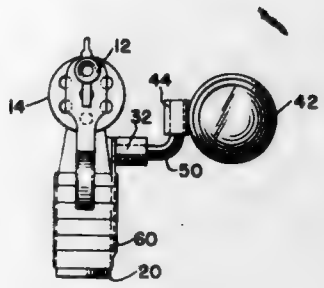
FLASHLIGHT GUN MOUNT

Nelson Storm, and Gregory A. Storm, both of 213 Perry, Rossville, Ill. 60963

Continuation-in-part of Ser. No. 79,190, Sep. 26, 1979, abandoned. This application Jul. 23, 1980, Ser. No. 171,322

Int. Cl.³ F41G *1/34;* F21M *9/00;* F21L *1/00*

U.S. Cl. 362—188 **9 Claims**



1. A flashlight mounting bracket assembly for adjustably mounting a flashlight on a gun whereby the beam of light produced by the flashlight may be adjusted so that it generally coincides with the line of sight taken through the bore of the gun barrel, said mounting bracket assembly comprising:

a first bracket and support means adapted for securement to the gun,

a second bracket and suppoert means adapted for attachment to and for support of a flashlight, and

pivot arm means comprising a rod-like portion bent at right angle to form an outwardly extending pair of arms at right angle to each other, one arm of the pivot arm being rotatably connected to the first bracket and support means, and the other arm being rotatably connected to the second bracket and support means whereby the flashlight held by the second bracket and support means has freedom of adjustability in the horizontal and vertical positions.

4,348,717
LUMINAIRE LOWERING DEVICE WITH CENTERING MEANS

Richard L. Thompson, Hendersonville, N.C., assignor to General Electric Company, Schenectady, N.Y.

Filed Jul. 25, 1977, Ser. No. 818,368
Int. Cl.³ F21V *21/36*
U.S. Cl. 362—403 10 Claims

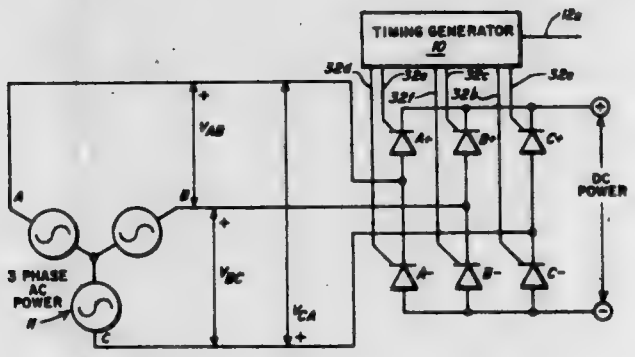


1. Centering apparatus for maintaining a ring-like luminaire support substantially coaxial with a pole on which the support is adapted to be mounted comprising, in combination, a ring-like support member, a plurality of generally U-shaped guide members each having opposite arms securing said guide members at circumferentially spaced locations on said support member for movement of said guide members toward and away from the axis of said support member, the maximum radial extent of said guide members toward the axis of said support member being less than the radius of said support member, resilient means on said guide members constantly urging the respective guide members toward the axis of said support member for yieldably engaging the proximate surface of the pole, each of said generally U-shaped guide members being respectively entirely on one side of the pole when said support member is mounted encircling the pole, whereby when said ring-like support member is mounted encircling the pole and moved up and down therealong, said support member is automatically maintained in substantial coaxial alignment with the pole.

4,348,718
TIMING GENERATOR FOR USE WITH MULTI-PHASE CONTROL RECTIFIER SYSTEMS

Donald E. Vollrath, Greenfield, Wis., assignor to Litton Industrial Products, Inc., Beverly Hills, Calif.

Filed Feb. 12, 1981, Ser. No. 234,064
Int. Cl.³ H02P *13/24*
U.S. Cl. 363—87 13 Claims



1. For use with a multi-phase rectifier system of the type including a plurality of selectively gateable semiconductive devices coupled between a multi-phase power source and a d.c. load and arranged to couple rectified D.C. voltage across the load,

a timing generator for selectively gating appropriate semiconductive devices at appropriate power line phase angles so as to controllably vary the rectified voltage, the timing generator comprising:

means for producing a first signal having unique values representative of respective power line phase angles;

comparator means adapted to receive a command signal indicative of the ignition phase angle at which gating is desired and for comparing the first and command signal values; the comparator means undergoing a transition in output state when the two signals are substantially equal;

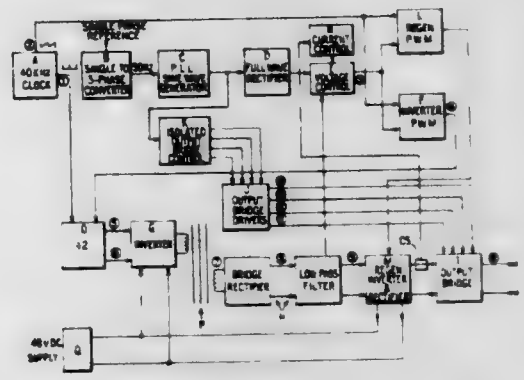
sequence means having a plurality of sequentially occuring output states and being responsive to the comparator means transition to assume the sequentially next output state when gating occurs,

the sequence means including first decoding means responsive to the output states to couple uniquely respective semi-conductive devices to a source of gating pulses in accordance with the ignition pattern associated with the multi-phase source.

4,348,719
STATIC INVERTER WITH ENERGY RETURN

Graham P. Hicks, Guildford, and Michael C. Carter, Dorking, both of England, assignors to ERA Patents Limited, Leatherhead, England

Filed Oct. 19, 1979, Ser. No. 86,359
Claims priority, application United Kingdom, Oct. 23, 1978, 41632/78
Int. Cl.³ H02M *7/537*
U.S. Cl. 363—132 24 Claims

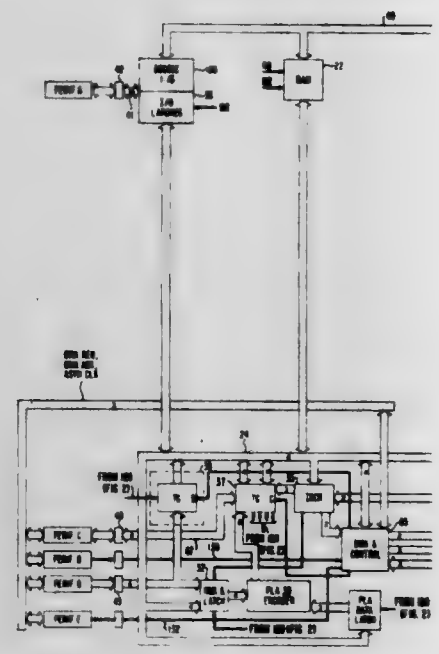


15. A static inverter for connection to a d.c. supply to provide a relatively low-frequency alternating voltage output, comprising: means to generate a first train of electrical pulses of relatively high frequency; means to cause successive pulses of said first train to represent required successive instantaneous unidirectional amplitudes of said alternating voltage output which is to be provided; a transformer having primary and secondary windings; means to cause the passage through said transformer primary winding of pulses of current from said d.c. supply in response to said first pulse train so that a corresponding second pulse train is induced across said transformer secondary winding; means to produce from said second pulse train a unidirectional voltage having said required instantaneous amplitudes; switching means to which said unidirectional voltage is fed and which cyclically reverses the polarity of said voltage at said relatively low frequency to produce said alternating voltage output; and means operative selectively to by-pass said bridge circuit to provide a reverse path through the inverter from the output to the d.c. supply in the event of excess power being available at the inverter output due to load conditions existing on said output.

4,348,720
MICROCOMPUTER ARRANGED FOR DIRECT MEMORY ACCESS

Donald E. Blahut, Holmdel; Victor K. Huang, Scotch Plains, and Richard L. Townsend, Jr., Berkeley Heights, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 31, 1979, Ser. No. 71,750
Int. Cl.[3] G06F *1/00*
U.S. Cl. 364—200 14 Claims



1. A microcomputer system fabricated on a single chip comprising an addressable memory (20,22) and a processing unit (27, 30, 32, 70, 96) interconnected by an internal data bus (24); addressing means (60, 62, 78, 99, 102) connected by way of an address bus (40) to the addressable memory for applying by way of the address bus a first address from which data is read to the processing unit during a first period; and

a direct memory access circuit (85) interconnected with the internal data bus; the addressing means being arranged for applying directly by way of the address bus to the addressable memory a second address, from which data is to be transferred to the direct memory access circuit during a second period or to which data is to be transferred from the direct memory access circuit during the second period.

4,348,721
SYSTEM FOR SELECTIVELY ADDRESSING NESTED LINK RETURN ADDRESSES IN A MICROCONTROLLER

David A. Brereton, and Buddy F. Stansbury, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

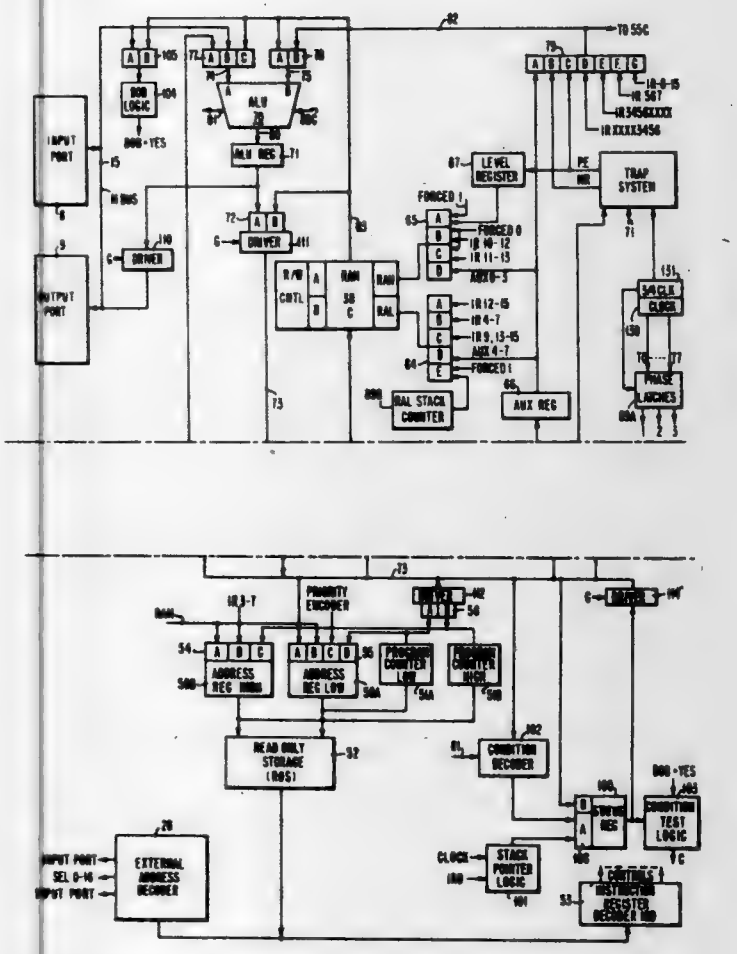
Division of Ser. No. 921,147, Jun. 30, 1978, Pat. No. 4,276,595.
This application Mar. 26, 1980, Ser. No. 133,991
Int. Cl.[3] G06F *9/22*
U.S. Cl. 364—200 14 Claims

1. In a microprocessor having a memory for storing a plurality of different instructions at individually addressable locations, and means for controlling the operation of said microprocessor to execute each one of said instructions in accordance with the information contained in said instruction during one machine cycle; and

means for transferring the next instruction from said memory to said controlling means during the execution of a current instruction including means for addressing a location in said memory of said next instruction;

a storage means having a plurality of storage locations for storing link addresses transferred from said addressing means of said memory during the execution of certain link type instructions which cause said addressing means to branch to an address which is not the next sequential address to permit a return to said branch point by another instruction at a subsequent time;

means for addressing said storage means during the execution of said certain link type instructions including means for incrementing said storage addressing means when a plurality of said link type instructions are executed in a sequence without the execution of said another instruction resulting in a nested link condition wherein said plurality of storage locations each contain a link address associated with one of



said plurality of said executed link type instructions, the improvement comprising:

means for transferring any selected one of said link addresses from said storage means to said memory addressing means in response to said another instruction including means for resetting said storage addressing means to select said any one of said nested link addresses, said link address transferring means and said link address resetting means being operable in response to signals from said means for controlling during the execution of said another instruction.

4,348,722
BUS ERROR RECOGNITION FOR MICROPROGRAMMED DATA PROCESSOR

Thomas G. Gunter, Lester M. Crudele, John E. Zolnowsky, and David S. Mothersole, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 3, 1980, Ser. No. 136,845
Int. Cl.[3] G06F *11/00;* H04L *1/00*
U.S. Cl. 364—200 4 Claims

3. A microprocessor for communicating with equipment peripheral thereto over a bus during a bus cycle, said microprocessor comprising:

a control unit for generating bus logic control signals indicative of how a bus cycle is to be run

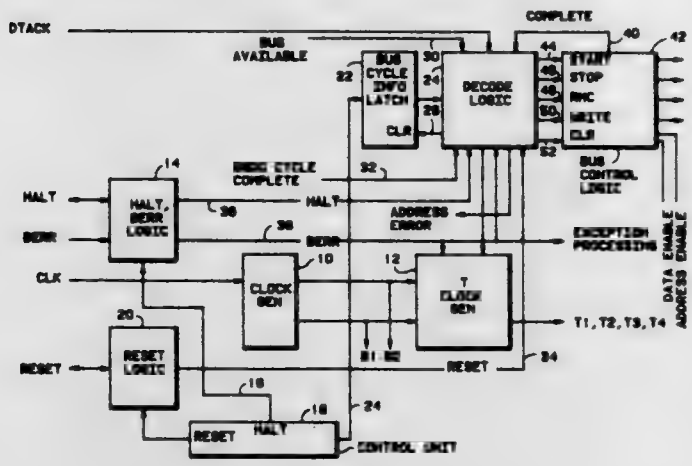
first means for receiving a bus error signal from said peripheral equipment indicating that a transfer error has occurred during said bus cycle;

second means for receiving a halt signal from said peripheral equipment indicating that the bus cycle associated with said error signal should be rerun;

third means coupled to said first and second means and to said control unit, for forcing a bus control logic means to rerun said bus cycle when said halt signal terminates, said third means comprising:

storage means for storing said bus logic control signals;

fourth means for resetting said storage means to a predetermined state in response to said error signal; and



fifth means for disabling said fourth means when said halt signal is present so as to prevent resetting said storage means in response to said error signal;

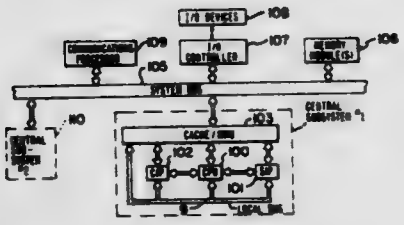
said bus control logic means coupled to said third means and to said bus, for running said bus cycle, including generating bus control signals via said bus for controlling the use of said bus by said peripheral equipment, in response to said stored bus logic control signals.

4,348,723

CONTROL STORE TEST SELECTION LOGIC FOR A DATA PROCESSING SYSTEM

William E. Woods, Natick; David E. Cushing, Chelmsford, and Philip E. Stanley, Westboro, all of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Apr. 15, 1980, Ser. No. 140,642
Int. Cl.³ G06F *11/00*
U.S. Cl. 364—200 6 Claims



1. A data processing system comprising:

means for receiving a plurality of test signals, each of said test signals having either a first polarity or a second polarity indicative of the status of various elements included in said system, and for generating a plurality of selected output signals comprising selected ones of said received test signals;

first multiplexer means having a plurality of first multiplexer inputs and a first selector enable terminal, said first multiplexer means for generating a first multiplexer output;

second multiplexer means having a plurality of second multiplexer inputs and a second selection enable terminal, each of said second multiplexer inputs corresponding to a different one of said plurality of first multiplexer inputs, said second multiplexer means for generating a second multiplexer output;

first means for coupling each of said plurality of selected output signals from said receiving and generating means to a different one of said first multiplexer inputs and corresponding second multiplexer inputs;

a control store having a first part and a second part, said first part of said control store having a first plurality of addressable storage locations for storing control store words and a first address enable terminal, said second part of said control store having a second plurality of addressable storage locations for storing control store words and a second address enable terminal, said control store words for use in controlling the operation of said system;

second means for coupling the output of said first multiplexer means to said first address enable terminal and for coupling the output of said second multiplexer means to said second address enable terminal; and

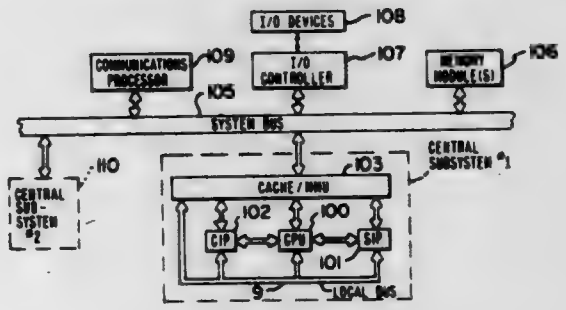
third means for coupling one of said test signals to said first selection enable terminal and to said second selection enable terminal to control said first multiplexer means to generate said first multiplexer output responsive to said one test signal having said first polarity and to control said second multiplexer means to generate said second multiplexer output responsive to said one test signal having said second polarity.

4,348,724

ADDRESS PAIRING APPARATUS FOR A CONTROL STORE OF A DATA PROCESSING SYSTEM

David E. Cushing, Chelmsford, and Philip E. Stanley, Westboro, both of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Apr. 15, 1980, Ser. No. 140,643
Int. Cl.³ G06F *9/26*
U.S. Cl. 364—200 3 Claims



1. In a data processing system wherein a processor executes a series of addressable microinstructions to control the functions performed by the system and wherein the execution of a microinstruction by the processor generates the address of the next microinstruction to be executed and a next address selection signal having either a first value or a second value, a microinstruction storage and transfer apparatus comprising:

a microinstruction output register;

a control store comprising:

a first memory for storing microinstructions in a first plurality of storage locations, said first memory being addressed by said microinstruction addresses generated by said processor, said first memory for selectively outputting from a first output terminal microinstructions stored in said first plurality of storage locations responsive to said addresses generated by said processor and having a first output enable terminal for controlling the outputting of a said addressed microinstruction from said first output terminal;

a second memory for storing microinstructions in a second plurality of storage locations, said second memory normally being addressed by said microinstruction addresses generated by said processor concurrently with said addressing of said first memory, said second memory for selectively outputting from a second output terminal mi-

croinstructions stored in said second plurality of storage locations responsive to said addresses generated by said processor and said second memory having a second output enable terminal for controlling the outputting of said addressed microinstructions from said second output terminal;

means for coupling said outputs of said first memory and said second memory to said microinstruction output register; and

means for concurrently supplying said next address selection signal to said first output enable terminal and said second enable terminal to enable said first memory to output said addressed microinstructions when said next address selection signal has said first value and to enable said second memory to output said addressed microinstructions when said next address selection signal has said second value.

4,348,725

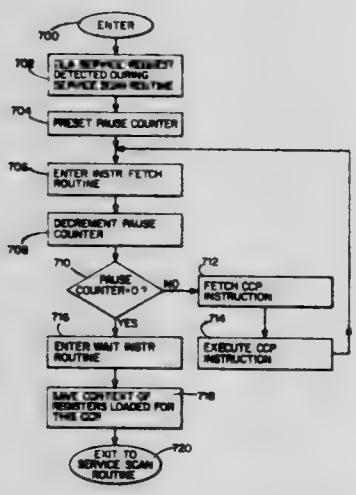
COMMUNICATION LINE SERVICE INTERRUPT TECHNIQUE FOR A COMMUNICATIONS PROCESSING SYSTEM

Robert J. Farrell, Wakefield, Mass.; Kenneth T. Coit, Milford, N.H.; John H. Vernon, Milford, Mass.; Kin C. Yu, Burlington, Mass.; Robert E. Huettner, Acton, Mass., and John P. Grandmaison, Hampton, N.H., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Jan. 19, 1977, Ser. No. 760,772

Int. Cl.³ G06F *9/22*

U.S. Cl. 364—300 **15 Claims**



1. In a data processing system including a communications processor coupled to transfer information between a plurality of communication channels and a main memory included in said system, processing means being included in said processor for executing a plurality of information transfer routines in response to information transfer service requests from sources coupled to said communication channels, each routine including a plurality of instructions adapted to control the transfer of said information, a machine implemented process in which said processing means is controlled by stored microprogram instructions to perform the method steps of:

A. scanning a plurality of said sources to determine whether any of said sources is requesting servicing;

B. presetting register counting means included in said processing means to indicate a given value in response to a determination that a first of said sources is requesting that servicing be performed through operation of one of said routines;

C. changing said given value each time the fetching of an instruction from said routines is called for to service said first source;

D. determining whether said register counting means has been changed to indicate a predetermined value;

E. executing said called for instruction and repeating said steps of changing, determining, and executing as long as said predetermined value is not indicated; and

F. reentering said step of scanning if said predetermined value is indicated, thereby temporarily suspending the servicing of said first source and enabling the servicing of another source which may be requesting servicing.

4,348,726

METHOD OF CONTROLLING AUTOMOBILE EQUIPMENT AND CONTROL APPARATUS

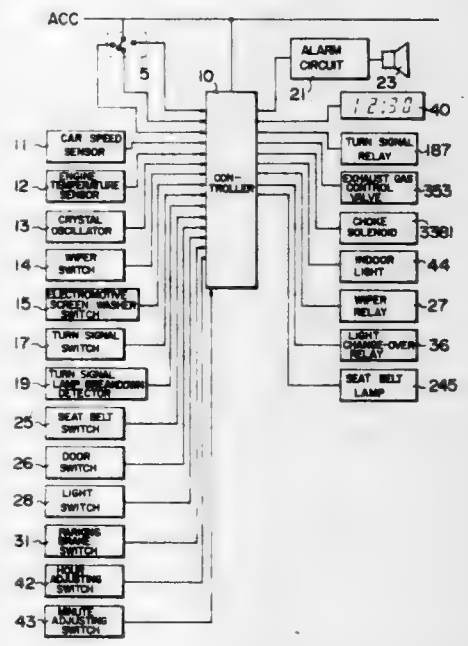
Osamu Igarashi, Katsuta; Masaru Kugo, Ogawamura, and Shizuhisa Watanabe, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 2, 1980, Ser. No. 136,732

Claims priority, application Japan, Apr. 4, 1979, 54/39788; Jul. 27, 1979, 54/94954; Jul. 27, 1979, 54/94985

Int. Cl.³ G06F *15/46*

U.S. Cl. 364—424 **9 Claims**



1. A method of operating a processor-controlled system, through which the operation of automotive equipment is controlled in accordance with the state of operation of the automobile for which said automotive equipment is provided, comprising the steps of:

(a) monitoring the operational state of said automobile and coupling signals representative thereof to said processor; and

(b) periodically interrupting said monitoring step (a) and causing said processor to control the operation of selected ones of said automotive equipment during respective interruption control intervals, the selection of said ones of said automotive equipment occurring at times corresponding to preselected numbers of successive occurrences of the periodic interruption of step (a).

4,348,727

AIR-FUEL RATIO CONTROL APPARATUS

Akio Kobayashi; Takehiro Kikuchi, both of Kariya; Toshio Kondo, Anjo, and Masahiko Tajima, Takahama, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jan. 4, 1980, Ser. No. 109,516

Claims priority, application Japan, Jan. 13, 1979, 54-3322

Int. Cl.³ G06F *15/20;* F02D *5/00;* F02B *3/12*

U.S. Cl. 364—431.06 **7 Claims**

4. An apparatus for controlling the supply of fuel to a combustion engine comprising:

intake sensor means for sensing an intake condition of said combustion engine;

means for generating a signal related to a rotational speed of said combustion engine;

means for generating a ratio signal corresponding to the

relation between an air-fuel ratio in a mixture supplied to said combustion engine and a predetermined ratio;

read only memory means for storing a control program;

read/write memory means having a plurality of memory locations assigned in relation to at least intake conditions of said engine;

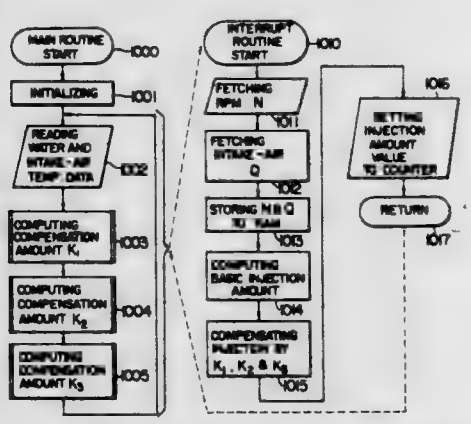
processor means for receiving said sensed intake condition, rotational speed and ratio signal and for:

generating a first value indicative of a basic amount of fuel to be supplied to said engine, said first value being determined from at least said sensed intake condition and said rotational speed,

generating a second value for correcting said first value when a closed loop fuel control is effected in response to said ratio signal, said second value being increased or decreased at predetermined intervals in relation to the magnitude of said ratio signal relative to a reference value indicative of a stoichiometric air-fuel ratio,

addressing one of said plurality of memory locations of said read/write memory means related to at least said sensed intake condition to read one of a plurality of third values stored therein,

generating a new third value at every predetermined interval by increasing or decreasing said one of third valves in relation to the magnitude of said second value relative to a reference value indicative of no correction of said first value and writing said new third value as said one of said third values in said one of said plurality of memory locations, and



generating a fourth value indicative of the required amount of fuel to be supplied to said engine, said fourth value being determined by correcting said first value by said second and third values when said closed loop fuel control is effected and by correcting said first value by said third value when an open loop fuel control is effected; and

fuel supply means for supplying fuel to said combustion engine by the amount of fuel determined by said fourth value.

7. A method for controlling the supply of fuel to a combustion engine comprising the steps of:

generating an intake signal related to an intake condition of said combustion engine;

generating a speed signal related to the rotational speed of said combustion engine;

generating a ratio signal related to the relation between an air-fuel ratio in a mixture supplied to said combustion engine and a predetermined ratio;

determining a first value indicative of a basic amount of fuel to be supplied to said engine, said first value being determined from at least said intake signal and said speed signal;

determining a second value for correcting said first value when a closed loop fuel control is effected in response to said ratio signal, said second value being increased or decreased at predetermined intervals in relation to the magnitude of said ratio signal relative to a predetermined reference value indicative of a stoichiometric air-fuel ratio;

addressing one of a plurality of memory locations of a read/-write memory means related to at least said intake signal to read one of a plurality of third values stored therein;

incrementally changing said one of a plurality of third values at predetermined intervals in relation to the magnitude of said second value relative to a predetermined reference value indicative of no correction of said first value;

storing said incrementally changed third value as one of said third values in said one of said plurality of memory locations;

determining a fourth value indicative of the required amount of fuel to be supplied to said engine, said forth value being determined by correcting said first value by said second and third values when said closed loop fuel control is effected and by correcting said first value by said third value when an open loop fuel control is effected; and

supplying fuel to said combustion engine by the amount of fuel determined by said fourth value.

4,348,728

AIR-FUEL RATIO CONTROLLING METHOD AND APPARATUS THEREFOR

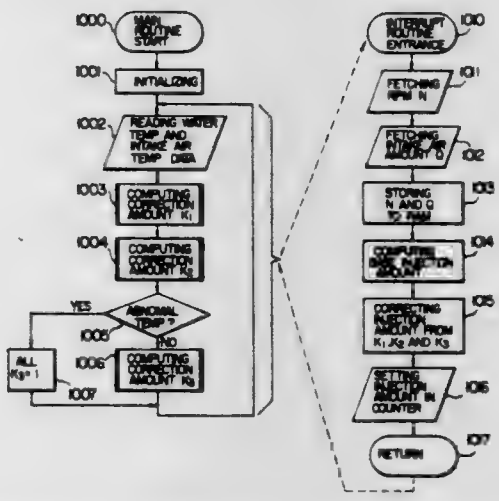
Yasuo Sagisaka, Kariya; Toshio Kondo, Anjo, and Masahiko Tajima, Takahama, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jun. 11, 1980, Ser. No. 158,636

Claims priority, application Japan, Jun. 19, 1979, 54-77079

Int. Cl.[3] **G06F** *15/20;* **F02D** *5/00;* **F02B** *3/12*

U.S. Cl. 364—431.06 **7 Claims**



1. A method of controlling the air-fuel ratio of a mixture to be supplied to an internal combustion engine comprising the steps of:

monitoring at least one operating condition of said engine to determine if said at least one operating condition is abnormal;

storing in a first storage location of memory means integrated data read out from said first storage location and integrated in accordance with an output signal of an air-fuel ratio sensor for sensing the air-fuel ratio from the composition of exhaust gases therefrom;

storing in one of a plurality of second storage locations of said memory means engine condition correction data read out from said one of second storage locations in accordance with then existing operating conditions of said engine and corrected in accordance with said stored integrated data;

determining a basic mixture air-fuel ratio control amount in accordance with said engine operating conditions and correcting said basic air-fuel ratio control amount in accordance with said integrated data and said corrected engine condition correction data; and

resetting all of the engine condition correction data stored in said second storage locations of said memory means to a predetermined value when said at least one engine condition is abnormal.

7. An apparatus for controlling the air-fuel ratio of a mixture to be supplied to an internal combustion engine comprising:

sensor means for sensing various operating conditions of said engine, said sensor means including an air-fuel ratio sensor for sensing the air-fuel ratio from the composition of exhaust gases therefrom;

input port means connected to said sensor means to receive therefrom data indicative of operating conditions of said engine;

timer means for measuring an elapsed time interval;

interrupt control means for generating an interrupt request signal;

random access memory means at least part of which functions as a nonvolatile memory;

read-only memory means storing a program and constants;

a presettable counter;

power amplifier means connected to said presettable counter to drive fuel injection valve means for an interval of time corresponding to the content of said counter; and

a microprocessor connected to said input port means, said timer means, said interrupt control means, said random access memory means, said read-only memory means and said presettable counter to respond to starting of said engine to initialize said random access memory means in accordance with said program stored in said read-only memory means and execute said program comprising the following steps as a main routine:

at intervals of a time determined by an elapsed time indicative data from said timer means, increasing or decreasing integrated data read out from said random access memory means by a predetermined value in accordance with output signal data of said air-fuel ratio sensor read out from said input port means and storing said varied integrated data in said random access memory means;

determining whether engine operating condition indicative data read out from said input port means is indicative of an abnormal condition;

when said engine is not in abnormal condition, at intervals of another time determined by another elapsed time indicative data from said timer means, increasing or decreasing correction data read out from one of storage locations of said nonvolatile memory part determined by said engine operation condition indicative data by a predetermined value in accordance with the value of said varied integrated data and storing said varied correction data in said one of storage locations of said nonvolatile memory part;

when said engine is in abnormal condition, resetting all the correction data stored in said storage locations of said nonvolatile memory part to a predetermined value;

said microprocessor being responsive to said interrupt request signal from said interrupt control means to execute as an interrupt handling routine the following steps of said program in said read-only memory means;

reading said engine operating condition indicative data from said input port means and storing the same in said random access memory means;

computing a base fuel injection amount in accordance with said engine operating condition indicative data stored in said random access memory means;

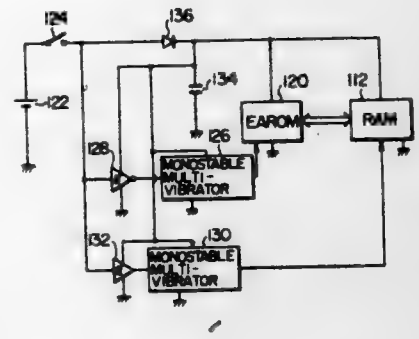
correcting said computed base fuel injection amount in accordance with said varied integrated data and said varied correction data stored in said random access memory means; and setting a value corresponding to said corrected fuel injection amount in said presettable counter.

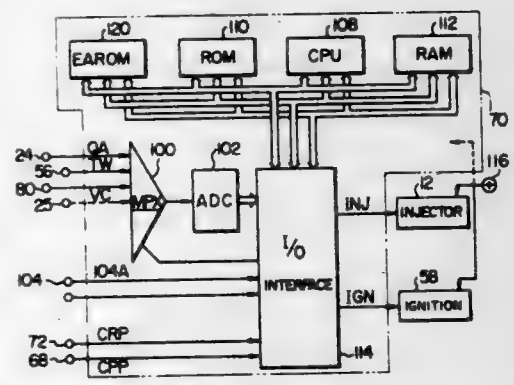
4,348,729

ENGINE CONTROL SYSTEM INCLUDING NON-VOLATILE MEMORY AND CORRECTION DATA TRANSFER METHOD

Takao Sasayama, Hitachi, and Seiji Suda, Mito, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 11, 1980, Ser. No. 139,550
Claims priority, application Japan, Apr. 13, 1979, 54-44392
Int. Cl.³ G06F *15/20*; G11C *7/00, 9/00*
U.S. Cl. 364—431.12 35 Claims





25. A method of operating a processor-controlled system in which system control signals are generated in response to processing operations carried out in accordance with data stored in memory, said memory having a first, random access, portion capable of rapid read/write access and a second, electronically alterable read only, portion having the capability of holding data stored therein or coupled thereto irrespective of the application of operational energy thereto, comprising the steps of:

(a) successively storing data to be accessed for system operation in said first portion of said memory during a first prescribed condition of operation of said system;

(b) successively causing selected data stored in said first portion of said memory to be transferred to said second portion of said memory in response to the occurrence of a second prescribed condition of operation of said system, the time between successive occurrences of said second prescirbed condition being greater than the time between successive occurrences of said first prescribed condition; and

(c) reading out data in accordance with which said system control signals are generated exclusively from said first portion of said memory.

30. For use in a processor-controlled system in which system control signals are generated in response to processing operations carried out in accordance with predetermined information, an information storage and retrieval system comprising:

memory means having a first, random access, portion capable of rapid read/write access and a second, electronically alterable read only, portion having the capability of holding information stored therein or coupled thereto irrespective of the application of operational energy thereto; and

means, coupled to said memory, for causing information to be stored in said first portion of said memory during a first prescribed condition of operation of said system, and for causing selected information stored in said first portion of

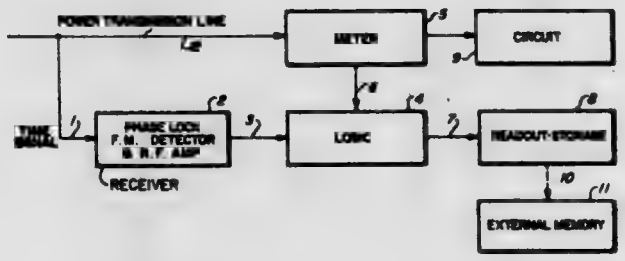
said memory to be transferred to said second portion of said memory in response to the occurrence of a second prescribed condition of operation of said system corresponding to a prescribed historical state of operation of said system.

4,348,730

SYSTEM FOR METERING ELECTRICAL ENERGY WITH REMOTE TIME SIGNAL CORRELATION

Paul J. Emerson, Scottsdale, and Walter P. Hedges, Laveen, both of Ariz., assignors to Cyborex Laboratories, Inc., Phoenix, Ariz.

Continuation of Ser. No. 914,029, Jun. 9, 1978, Pat. No. 4,216,527. This application May 30, 1980, Ser. No. 154,774
The portion of the term of this patent subsequent to Aug. 5, 1997, has been disclaimed.
Int. Cl.³ G01R *21/06;* G06F *15/20*
U.S. Cl. 364—483 **6 Claims**



1. In a system for metering the electrical energy consumption in each of a plurality of separate circuits and correlating said electrical energy consumption with time, said system including in each of said separate circuits

meter means for sensing a quantity indicative of the amount of electrical energy consumption in each of said circuits and for generating signals indicative of the amount of said electrical energy consumption in response to said sensing,

timing means for generating time signals, and

logic means in each of said circuits for correlating said signals indicative of said amount of said electrical energy consumption and said time signals,

the improvements comprising receiver-logic means in each of said plurality of separate circuits for receiving a common time signal generated at and transmitted from a location remote from said plurality of separate circuits and for separately correlating said time signals with said signals indicative of said amount of said electrical energy consumption for each of said circuits to provide data correlating said time signals with said signals indicative of said amount of electrical energy consumption for each of said separate circuits.

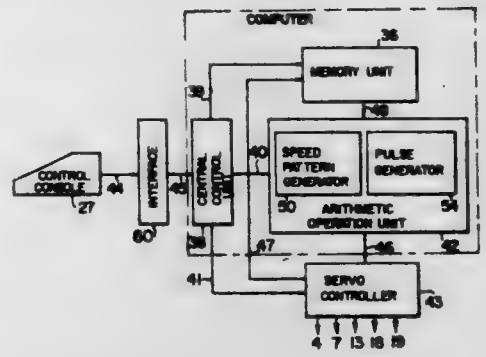
4,348,731

AUTOMATIC WORKING APPARATUS AND METHOD OF CONTROLLING THE SAME

Takashi Kogawa, Sakura, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 18, 1979, Ser. No. 31,301
Claims priority, application Japan, Mar. 5, 1979, 54-24514
Int. Cl.³ G06F *15/46;* G05B *15/00*
U.S. Cl. 364—513 **11 Claims**

1. An automatic working apparatus comprising a route-controlled object to be controlled in respect of a path along which said object is moved, a base portion, drive means including a plurality of actuator means provided between said route-controlled object and said base portion and capable of moving said route-controlled object sequentially to a plurality of positions in different directions, arithmetical operation control means for arithmetically determining bend angles at bend points to be traced sequentially by said route-controlled object and producing output signals for changing the moving speed of said route controlled object at the time when said route-controlled object passes by said bend point as a function of said bend angle in such manner that said moving speed of said route-controlled object is correspondingly decreased for a relatively greater value of said bend angle, said arithmetical operation control means calculating the bend angle at each bend point and amount of change for respective actuator means to move the route-controlled object to the bend point, said arithmetical operation control means producing an output signal for changing the moving speed of respective actuator means in accordance with the calculated bend angle, the moving speed being the speed at the time when the route-controlled object passes the bend angle, and servo control means for operating respective actuator means of said drive means in response to said output signals from said arithmetical operation control means.

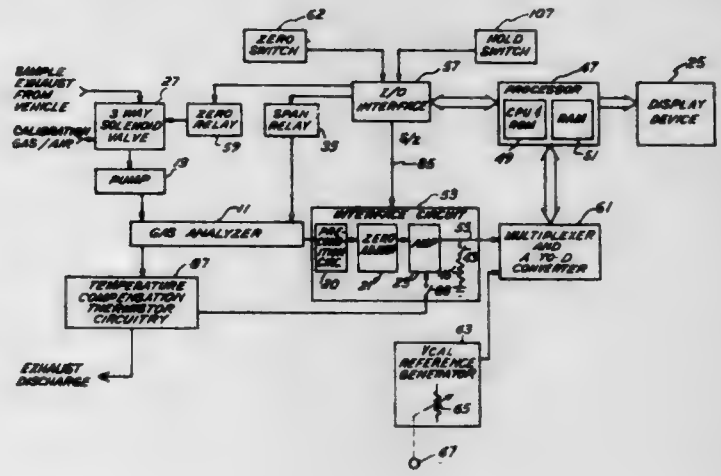


4,348,732

METHOD AND APPARATUS FOR ENGINE EXHAUST ANALYZER

Keith A. Kreft, Mount Prospect, Ill., assignor to Sun Electric Corporation, Crystal Lake, Ill.

Filed Jan. 29, 1980, Ser. No. 116,406
Int. Cl.³ G01N *1/22*
U.S. Cl. 364—571 **19 Claims**



1. A gas analyzation system for analyzing an unknown gas, comprising:

gas analyzing means for receiving an unknown gas to be analyzed and generating an electrical signal output representative of the analyzation of the unknown gas;

span reference means selectively actuable for simulating a reference gas, said gas analyzer means cooperating with said span reference means for generating a reference signal output representative of said reference gas in response to actuation of said span reference means;

display means responsive to display data for visually displaying an indication of gas analyzation;

data entry means for inputing a sole scaler data, said data entry means being controllable for selectively changing said sole scaler data; and

processing means including memory,

(i) for receiving said electrical signal output representative of the analyzation of the unknown gas and converting the same to gas data,

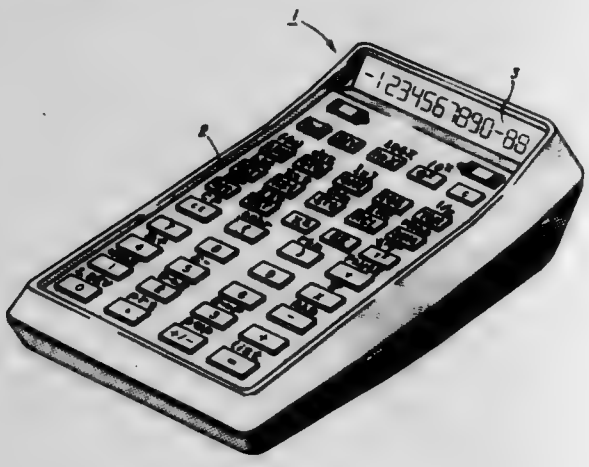
(ii) for actuating said span reference means for generating a reference signal output, for receiving said reference signal output and converting the same to reference data,
(iii) for reading said sole scalar data,
(iv) for generating display data from said gas data by adjusting said gas data in view of said reference data and said sole scalar data, and
(v) for transmitting said display data to said display device.

4,348,733

CALCULATOR WITH ALGEBRAIC OPERATING SYSTEM

Herman W. Harrison, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 708,958, Jul. 26, 1976, Pat. No. 4,208,720.
This application Nov. 19, 1979, Ser. No. 95,838
The portion of the term of this patent subsequent to Jun. 17, 1997, has been disclaimed.
Int. Cl.[3] G06F *7/38, 15/02*
U.S. Cl. 364—709 8 Claims



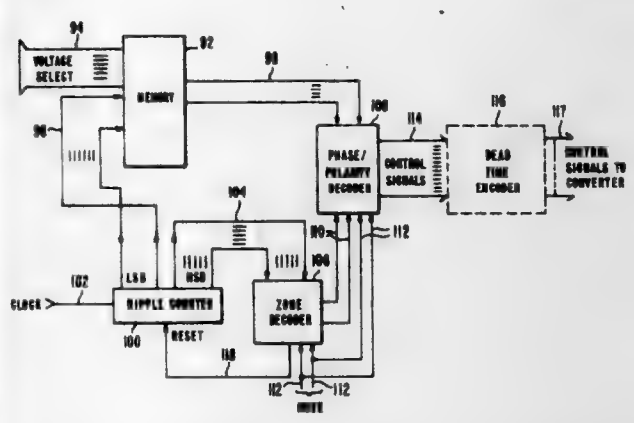
1. An electronic calculator comprising:
(a) data entry means including a keyboard having a plurality of keys arranged for inputting algebraic expressions, including numeric data, hierarchical mathematical commands, left and right-hand algebraic parentheses and a sign which indicates the completion of an algebraic expression;
(b) memory means for storing numeric data, mathematical commands and an indication of parentheses entered into said calculator;
(c) arithmetic means for performing arithmetic operations on the entered numeric data in accordance with the entered mathematical commands associated therewith;
(d) logic means for controlling said arithmetic means to perform arithmetic operations on numeric data within each pair of parentheses according to fixed hierarchy so that said arithmetic means performs higher order mathematical commands before lower order mathematical commands within the same respective pair of parentheses, said logic means being responsive to entry of said sign which indicates the completion of an algebraic expression for controlling said arithmetic means to perform arithmetic operations on all previously stored numeric data according to the stored mathematical commands associated therewith, said logic means being further responsive to the entry of said sign for supplying any missing right-hand parentheses; and
(e) display means for displaying numeric data entered into said calculator via said keyboard entry means and for displaying the results of said arithmetic operations performed on said numeric data.

4,348,734

CONVERTER BY STORED SWITCHING PATTERN

John J. Dougherty, Fanwood, N.J., assignor to Reliance Electric Company, Cleveland, Ohio

Filed Jul. 10, 1980, Ser. No. 168,460
Int. Cl.[3] G06F *15/34*
U.S. Cl. 364—721 21 Claims



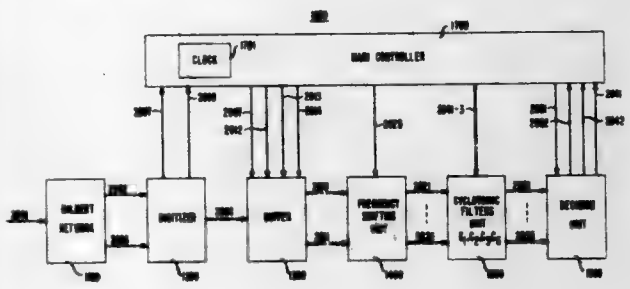
1. A method for digitally producing control signals for operating a converter to produce predetermined waveforms, comprising the steps of:
(1) storing in memory a digital representation of one predetermined segment of each one of a plurality of waveforms desired for selective reproduction, each segment being divided into a fixed number of equally spaced switching angles, said digital representation being the switching pattern for operating said converter to synthesize said predetermined segment of a selected waveform;
(2) selecting from memory at least a desired one of the switching patterns for said predetermined segments;
(3) decoding the switching patterns(s) for digitally arranging the phase and polarity of each segment, respectively, to correspond to a desired portion of the respective waveform(s) being reproduced;
(4) repeating steps (2) and (3) as required for assembling digital representations of the entire switching pattern for a desired waveform(s) for driving said converter to synthesize the desired waveform(s).

4,348,735

CYCLOTOMIC TONE DETECTOR AND LOCATOR

David Hertz, Akko, Israel; Robert P. Kurshan, New York, N.Y., and David Malah, Kiryat-Bialik, Israel, assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jun. 23, 1980, Ser. No. 162,262
Int. Cl.[3] G06F *15/31*
U.S. Cl. 364—724 7 Claims



1. A frequency measuring system for detecting and estimating the frequency of an analog tone
characterized by
means (1100) for receiving and transforming said tone to obtain both a real tone corresponding to a phase-shifted version of said tone and an imaginary tone corresponding to the quadrature of said real tone;
means (1200), responsive to said means for transforming, for

sampling said real tone and said imaginary tone to provide a sequence of real and imaginary word pairs;

buffer means (1300), coupled to said means for sampling, for storing a plurality of said word pairs;

modulus-one means (1400), connected to said buffer means, for generating frequency-shifted real words and imaginary words from selected ones of said word pairs;

digital filter means (1500), responsive to said modulus-one means and said buffer means, comprising two pairs of first-order cyclotomic filters (1501,1502) and two pairs of second-order cyclotomic filters (1503,1504), with one filter from each of said pairs arranged to process real words and the other arranged to process imaginary words, each of said pairs producing a real output and an imaginary output; and

decision means (1600), responsive to said filter means, for processing said real output and said imaginary output of each of said pairs of filters and indicating the appropriate frequency subband containing said tone based on predetermined relationships involving each said output.

4,348,736

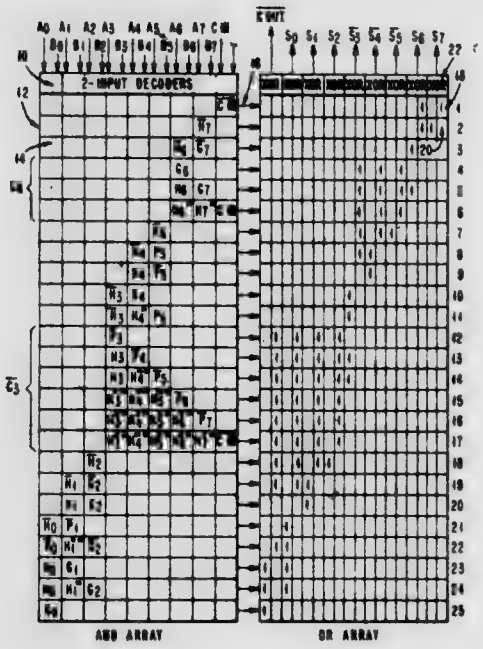
PROGRAMMABLE LOGIC ARRAY ADDER

Arnold Weinberger, Poughkeepsie, N.Y., assignor to International Business Machines Corp., Armonk, N.Y.

Continuation of Ser. No. 948,720, Oct. 5, 1978, abandoned, which is a continuation-in-part of Ser. No. 866,688, Jan. 3, 1978, abandoned. This application Jul. 22, 1980, Ser. No. 171,215

Int. Cl.³ G06F *7/50*

U.S. Cl. 364—787 13 Claims



1. In a carry look ahead adder for the addition of two multi digit numbers A_0, $A_1 \ldots A_{n-1}$ and B_0, $B_1 \ldots B_{n-1}$ (0 to n-1 high-to-low order) and an input carry digit C_{in} to generate a multi digit binary sum S_0, $S_1 \ldots S_{n-1}$ and a carry out digit C_{out} using programmable logic arrays each such programmable logic array including a plurality of multi bit input decoders feeding signals to a product term generating array which in turn feeds signals to a sum of product term generating array that supplies signals to Exclusive-OR circuits providing an Exclusive-OR function of two inputs, the improvement comprising:

means feeding like order digits A_i, B_i of the two multi digit numbers to the same multi bit input decoder; and

circuit means in the product term and sum of product term generating arrays to generate a sum digit S_i as the output of one of the Exclusive-OR circuits in accordance with the following formula:

$$S_i = (H_i \, V \, \overline{G}_{i+1}) \cdot \overline{(GH}^{+3}_{i+2})$$

-continued

$$\left\{ \begin{array}{l} + (H_i \, V \, \overline{G}_{i+1}) \cdot (H^{+3}_{i+2\bullet\bullet}) \cdot \overline{(GH}^{+5}_{i+4}) \\ \cdot \\ \cdot \\ \cdot \\ + (H_i \, V \, \overline{G}_{i+1}) \cdot (H^{+3}_{i+2\bullet\bullet}) \cdot \ldots \cdot \overline{(GH}^{-2}_{j-3}) \\ + (H_i \, V \, \overline{G}_{i+1}) \cdot (H^{+3}_{i+2\bullet\bullet}) \cdot \ldots \cdot (H^{-2}_{j-3\bullet\bullet}) \cdot (\overline{G}^{}_{j-1}) \\ + (H_i \, V \, \overline{P}_{i+1}) \cdot (G^{+3}_{i+2}) \\ + (H_i \, V \, \overline{P}_{i+1}) \cdot (H^{+3}_{i+2\bullet}) \cdot (G^{+5}_{i+4}) \\ \cdot \\ \cdot \\ \cdot \\ + (H_i \, V \, \overline{P}_{i+1}) \cdot (H^{+3}_{i+2\bullet}) \cdot \ldots \cdot (H^{-2}_{j-3\bullet}) \cdot (G^{}_{j-1}) \end{array} \right\} V$$

$$\left\{ \begin{array}{l} (\overline{H}_{i+1}) \cdot (H^{+3}_{i+2\bullet\bullet}) \cdot \ldots \cdot (H^{-2}_{j-3\bullet\bullet}) \cdot (\overline{G}^{}_{j-1}) \\ + (H_{i+2} \, V \, \overline{G}_{i+3}) \cdot (H^{+5}_{i+4\bullet\bullet}) \cdot \ldots \cdot (H^{-2}_{j-3\bullet\bullet}) \cdot (\overline{G}^{}_{j-1}) \\ \cdot \\ \cdot \\ \cdot \\ + (\overline{H}_{j-4}) \cdot (H^{-2}_{j-3\bullet\bullet}) \cdot (\overline{G}^{}_{j-1}) \\ + (H_{j-3} \, V \, \overline{G}_{j-2}) \cdot (\overline{G}^{}_{j-1}) \\ + (\overline{H}_{j-2}) \cdot (\overline{G}^{}_{j-1}) + (H_{j-1} \, V \, \overline{G}_j) \\ + (\overline{H}_j) + \overline{C}_{j+1} \end{array} \right\}$$

where $G_i = A_i \cdot B_i$ $\overline{G}_i = \overline{A}_i + \overline{B}_i$

$P_i = A_i + B_i$ $\overline{P}_i = \overline{A}_1 \cdot \overline{B}_i$

$H_i = A_i \, V \, B_i$ $\overline{H}_1 = \overline{A_i \, V \, B_i}$

i = ith bit position

j = bit position of lower order than i.

$H^{\bullet}$ is one of $A \, V \, B$ and $\overline{A} + \overline{B}$

$H^{\bullet\bullet}$ is one of $A \, V \, B$ and $\overline{A} + \overline{B}$

4,348,737

MULTIPLE-FUNCTION PROGRAMMABLE LOGIC ARRAYS

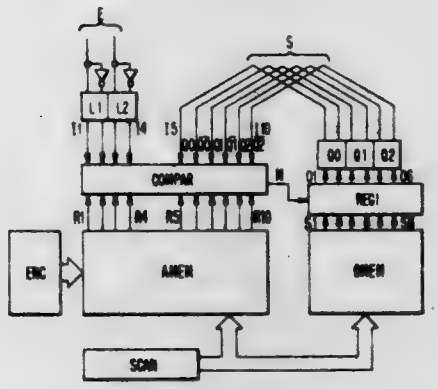
Maurice Cukier, Vence, and Daniel Sellier, La Gaude, both of France, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 9, 1979, Ser. No. 83,146

Claims priority, application France, Oct. 31, 1978, 78 31281

Int. Cl.³ H03K *19/00, 19/08*

U.S. Cl. 364—900 6 Claims



1. A programmable logic array comprising:

a. an input terminal;

b. an output terminal;

c. an input register connected to the input terminal;

d. an output register connected to the output terminal;

e. a first random access memory adapted to receive a prescribed data pattern;

f. a second random access memory adapted to receive a prescribed data pattern complimentary to the data pattern of the first randon access memory;

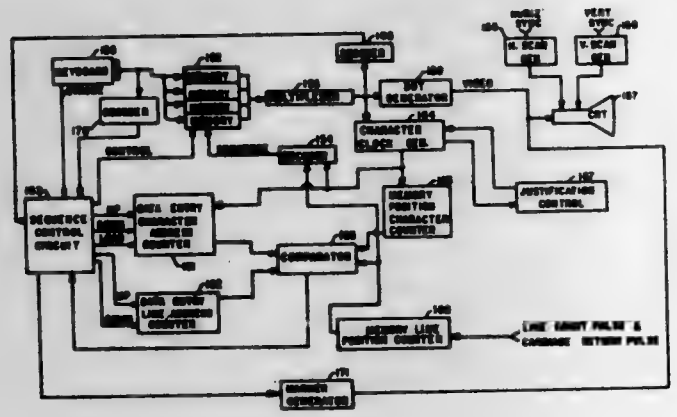
g. a buffer register having an input connected to the output of the second random access memory and an output connected to the input of the output register;
h. means for resetting the buffer register;
i. a comparator having a first input connected to the output of the first random access memory and a second input connected to the output of the input register and the output of the output register, the comparator output controlling the transfer of the buffer register contents; and
j. addressing means connected to the first random access memory and the second random access memory for sequentially and cyclically presenting segments of the first random access memory data pattern to the comparator and segments of the second random access memory data pattern complimentary to the data segment of the first memory to the buffer register such that when the inputs to the comparator satisfy a prescribed condition, the comparator output causes transfer of the buffer register contents.

4,348,738

ELECTRONIC TYPOGRAPHICAL DISPLAY DEVICE WITH JUSTIFICATION FEATURE

William R. Grier, New Vernon; Francis H. Shepard, Jr., Summit, and Arthur L. Arledge, Basking Ridge, all of N.J., assignors to R & I Patent Corporation, Morristown, N.J.

Division of Ser. No. 820,579, Aug. 1, 1977, which is a division of Ser. No. 622,172, Oct. 14, 1975, Pat. No. 4,054,948. This application Nov. 15, 1979, Ser. No. 94,652
Int. Cl.³ G06F *5/00, 5/02*
U.S. Cl. 364—900 1 Claim



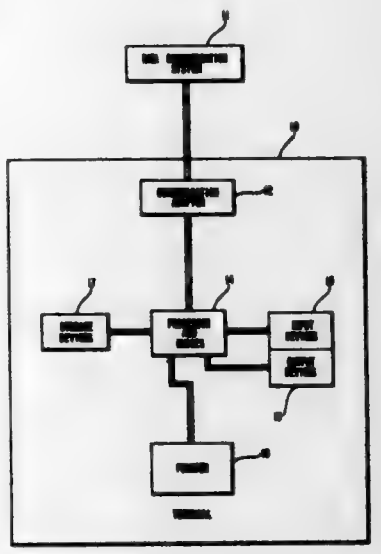
1. An electronic typographical device, comprising:
a keyboard having character keys for producing character code signals, a space key for producing a space code signal, and a backspace key for producing a backspace code signal;
an electronic display device responsive to said character and space code signals for displaying characters and for moving the print point of said display device by a predetermined distance increment in response to each one of said character, space and backspace code signals;
timing means coupled to said keyboard for generating a keyboard control signal so long as any one of said keys is depressed, said control signal having an initial delay interval for disabling said keyboard, said initial delay interval being greater than a maximum preselected time that an operator would normally be expected to hold a key depressed, said control signal initial delay interval being followed by a series of keyboard enabling and disabling pulses at a rapid rate, to cause said keyboard to produce a series of code signals corresponding to said one key, when said any one key is depressed for a time interval greater than said maximum preselected time,
whereby said display device responds to said code signals by displaying a corresponding series of characters or spaces as though said any one key had been repeatedly depressed.

4,348,739

TERMINAL PROVIDING COMMUNICATION SYSTEM INFORMATION OUTPUT

Randall L. Deaver, Boulder; Thomas J. Freund, Longmont, and Patrick J. Gerstle, Boulder, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 12, 1980, Ser. No. 120,941
Int. Cl.³ G06F *3/04*
U.S. Cl. 364—900 3 Claims



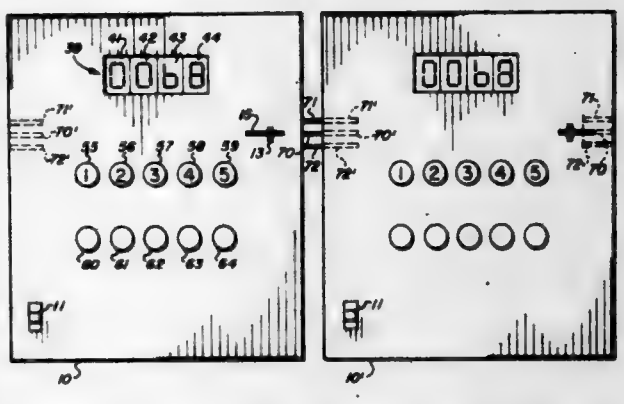
1. In a data communication system of the type wherein a data terminal means can be coupled via a data link means for carrying signals representative of data, a portion of said data signals comprising protocol parameters for establishing the communication procedures between said terminal means and said data communication system, the improvement comprising:
means for displaying said protocol parameters to a user of said data terminal means, said displaying means comprising
memory means in said data terminal means for storing said portion of said data signals comprising protocol parameters received by said data terminal means from said data communication system;
converting means coupled to said memory means for retrieving said stored protocol parameters and for converting said protocol parameters to a predetermined format; and
output means coupled to said converting means for supplying output data indicative of said protocol parameters to said data terminal means.

4,348,740

METHOD AND PORTABLE APPARATUS FOR COMPARISON OF STORED SETS OF DATA

Edward A. White, 5780 Echo Canyon Cir., Phoenix, Ariz. 85018

Continuation-in-part of Ser. No. 893,342, Apr. 4, 1978, abandoned. This application Jun. 13, 1980, Ser. No. 159,206
Int. Cl.³ G06F *7/02, 15/16, 15/336*
U.S. Cl. 364—900 6 Claims



1. A first portable computing device for comparing a first set

of data stored in said first portable computing device with a second set of data stored in a second computing device to which said first portable computing device can be temporarily coupled, said first portable computing device comprising in combination:

(a) coupling means for temporarily coupling said first portable computing device to said second computing device to effect transmission of data of said first set from said first portable computing device to said second computing device and to effect transmission of data from said second set from said second computing device to said first portable computing device, said first set of data including a plurality of items of information about a first subject, said second set of data including a plurality of items of information which correspond with said plurality of items of said first set, wherein said items of said first set are to be respectively compared with said corresponding items of said second set;

(b) first storage means in said first portable computing device for storing said first set of data, said first storage means being capable of storing said first set of data with only a negligable amount of dissipation of power supplied to said first storage means;

(c) first transmitting means connected to said coupling means for transmitting data of said first set from said portable computing device to said second computing device via said coupling means;

(d) first receiving means responsive to said coupling means for receiving data of said second set from said second computing device;

(e) data entry means for effecting manual entry of said first set of data into said first storage means and also effecting manual entry of said second set of data into said first portable computing device;

(f) second storage means in said first portable computing device for receiving said data of said second set from said first receiving means or said data entry means and storing said data of said second set;

(g) first comparing means in said first portable computing device responsive to said first storage means and said second storage means for comparing said data of said first set with said data of said second set to produce a plurality of comparison data items corresponding, respectively, to said items of said first set;

(h) first computing means in said first portable computing device responsive to said first comparing means for operating on said plurality of comparison data items to compute a first number, said first number being indicative of the degree of similarity between said data of said first and second sets; and

(i) first display means in said first portable computing device responsive to said first computing means for displaying said first number.

4,348,741

PRIORITY ENCODER

Doyle V. McAlister, Pflugerville; Thomas G. Gunter, Austin; Michael E. Spak, Kyle, and Gene A. Schriber, Austin, all of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

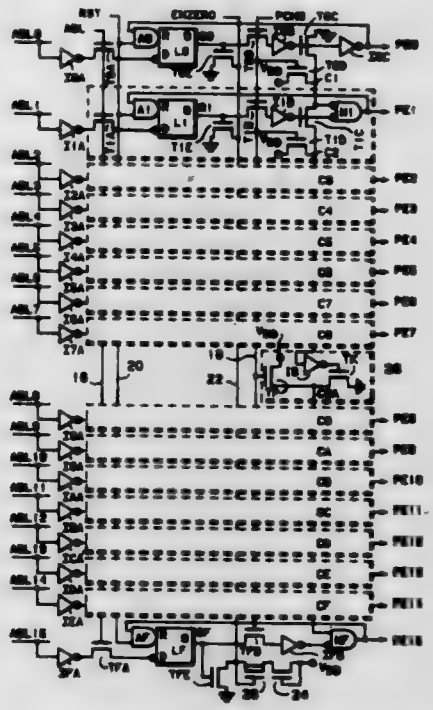
Filed Jul. 17, 1980, Ser. No. 169,558
Int. Cl.³ G06F *7/00*
U.S. Cl. 364—900 15 Claims

1. A priority encoder register for receiving a plurality of binary input signals and generating output signals in accordance with a prescribed priority sequence, comprising:

a plurality of input means, each coupled to receive one of said binary input signals;

a plurality of output means, each coupled to an associated one of said input means and to adjacent ones of said output means, each for generating an output signal if its associated input means has received an input signal of a first logic level; and

first means coupled to each of said plurality of output means for blocking all but one of said output signals at a time, said one of said output signals being associated with one of said output means of higher priority, each of said output



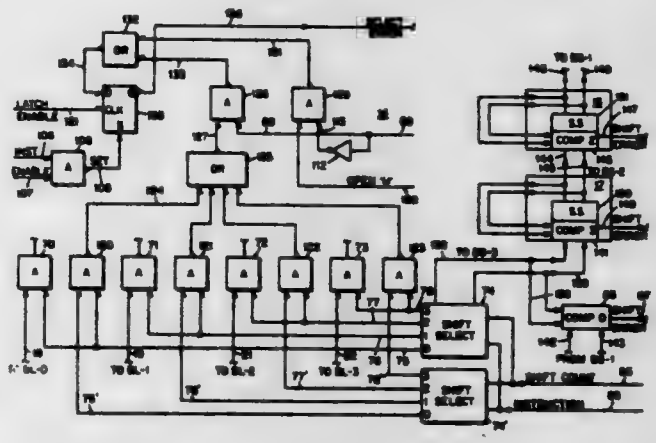
signals resetting its associated input means to a second logic level to enable another one of said output means of a next lower priority.

4,348,742

HIGH SPEED BYTE SHIFTER ERROR CHECKING CIRCUITS

Steven M. O'Brien, Norristown, Pa., assignor to Sperry Corporation, New York, N.Y.

Filed Jan. 23, 1981, Ser. No. 227,859
Int. Cl.³ G06F *11/10*
U.S. Cl. 364—900 10 Claims



1. Apparatus for checking the correct operation of a byte shifter of the type having a plurality of input ports connected to individual byte lines of a data bus for supplying bytes of data to the byte shifter, said byte shifter being provided with control means for enabling one of said input ports to supply a selected byte of data from one of said byte lines to a buffer register and for enabling a return byte line for returning said selected byte of data to a different byte line of said data bus, the improvement comprising:

a first shift select means adapted to enable a predetermined one of said input ports of said byte shifter,

a second shift select means being adapted to enable a logic gate indicative of the input port being enabled,

said logic gate having a second input connected to said first shift select means for generating an output when said first and said second shift select means are present at the inputs,

select error storage means coupled to the output of said logic

gating means for storing the signal indicative of proper input port selection in said byte shifter, and

clock means coupled to said select error storage means for reading out the signal stored in said storage means.

4,348,743

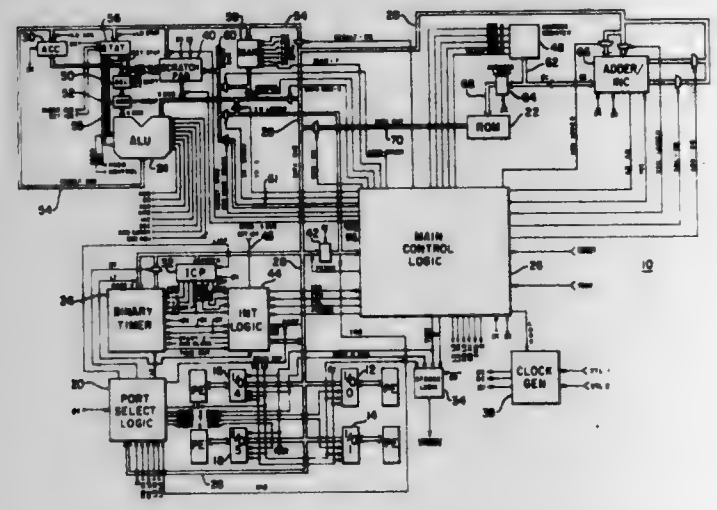
SINGLE CHIP MOS/LSI MICROCOMPUTER WITH BINARY TIMER

Harold W. Dozier, Carrollton, Tex., assignor to Mostek Corporation, Carrollton, Tex.

Continuation of Ser. No. 136,587, Apr. 2, 1980, abandoned, which is a continuation of Ser. No. 2,425, Jan. 10, 1979, abandoned, which is a continuation of Ser. No. 815,932, Jul. 15, 1977, abandoned, which is a continuation-in-part of Ser. No. 726,579, Sep. 27, 1976, Pat. No. 4,142,176. This application Feb. 13, 1981, Ser. No. 234,174

Int. Cl.[3] G06F *7/38, 1/00*

U.S. Cl. 364—900 10 Claims



1. A counter circuit for producing a time-out signal comprising:

a time register for storing a particular count number;

a decrementor coupled to the count number output of the time register and which produces an output equal to the counter number minus one;

a decoder coupled to the count number output of the time register and which produces a first voltage level when the count number output of the time register is equal to one;

external means for producing a main count pulse;

external means for producing a load signal;

a time register load control unit which receives the output signal from the decoder, the main count pulse and the load signal and which produces a count signal when the main count pulse occurs, the decoder output is not at the first voltage level and the load signal is not occurring, and which produces a reload signal when the main count pulse occurs and the decoder output is at the first voltage level, or when the load signal occurs;

first gating means for transferring the output of the decrementor into the time register when the count signal is produced by the time register load control unit;

a modulo-N data storage means for storing an initial count number N for the time register, N being a positive integer;

second gating means for transferring the initial count number N from the modulo-N data storage means to the time register when the reload signal is produced by the time register load control unit; and

a third gating means for producing at time out signal when the decoder output is at a first voltage level, the main count pulse occurs and the load signal is not occurring.

4,348,744

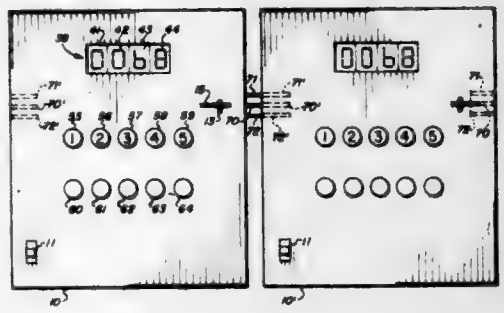
METHOD AND PORTABLE APPARATUS FOR COMPARISON OF STORED SETS OF DATA

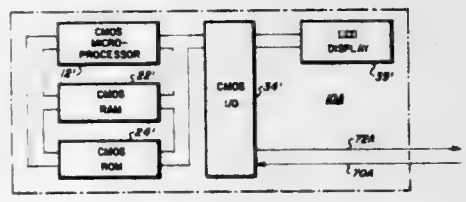
Edward A. White, 5780 Echo Canyon Cir., Phoenix, Ariz. 85018

Continuation of Ser. No. 893,342, Apr. 4, 1978, abandoned. This application Apr. 29, 1981, Ser. No. 258,767

Int. Cl.[3] G06F *15/336, 7/20, 15/16, 15/44*

U.S. Cl. 364—900 35 Claims





1. A system for comparing first and second sets of data, said system comprising:

(a) first and second portable computing devices;

(b) first storage means in said first computing device for storing said first set of data, said first set of data including a plurality of items of information, said second set of data including items of information with which corresponding items of information of said first set of data are to be respectively compared, and second storage means in said second computing device for storing said second set of data, said plurality of items of said first set corresponding respectively on an item-by-item basis to said plurality of items of said second set;

(c) switch means in one of said first and second portable computing devices for producing a first signal to initiate data transmission;

(d) first transmitting means in said first computing device for transmitting data of said first set from said first computing device to said second computing device in response to said first signal;

(e) data entry means for entering said first set of data into said first storage means while said first computing device is not coupled to said second computing device and before said producing of said first signal to initiate said transmitting data of said first set;

(f) first receiving means in said second computing device for receiving said data of said first set transmitted from said first computing device;

(g) first comparing means in said second computing device responsive to said second storage means and said first receiving means for comparing said items of said data of said second set stored in said second storage means with said corresponding items of said received data of said first set to produce a plurality of comparison data items corresponding to respective ones of said items of said first set;

(h) computing means in said second computing device responsive to said first comparing means for operating on said plurality of comparison data items to effect computing of a first number, said first number being indicative of the degree of similarity between all of said data of said first and second sets; and

(i) first display means in said second computing device responsive to said first comparing means for displaying

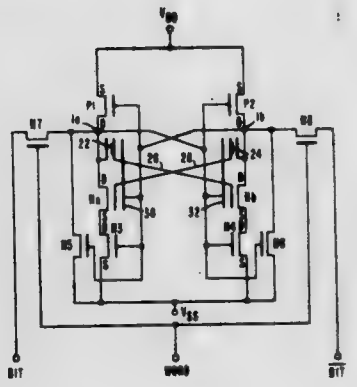
information representative of said first number to provide an indication of the compatability of things or persons represented by said first and second sets of data, respectively.

4,348,745

NON-VOLATILE RANDOM ACCESS MEMORY HAVING NON-INVERTED STORAGE

Lawrence S. Schmitz, Costa Mesa, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Oct. 27, 1980, Ser. No. 200,758
Int. Cl.³ G11C *11/40, 13/00*
U.S. Cl. 365—154 **5 Claims**



3. In a latch having two branches, each branch comprising a source-drain channel with a series load connected thereto to define a node therebetween and a voltage source connected across each of the branches, the channel of at least one of said branches having an associated electron tunneling region, a floating gate overlying said tunneling region and overlying the source-drain channel of the other of said branches, and a control gate overlying said tunnelling region and said floating gate, a method for performing nonvolatile storage of a logic bit comprising:

holding one of said nodes at a voltage level corresponding to the logic bit while holding the other node at a voltage level corresponding to the complement of said bit so that one of said channels conducts charge while the other does not; and

changing the resistance to charge flow in said other channel by increasing the magnitude of the voltage source connected across said branches to cause electrons to tunnel across said tunneling region so as to change the amount of charge stored on said floating gate in accordance with the voltage levels of said nodes.

4,348,746

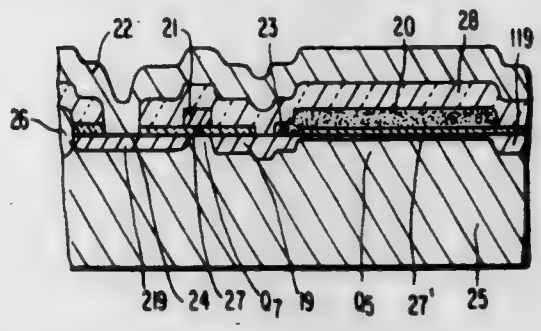
SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE HAVING A PLURALITY OF INSULATED GATE FIELD EFFECT TRANSISTORS

Hidekazu Okabeyashi; Kohei Higuchi, and Tadatoshi Nozaki, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Mar. 28, 1980, Ser. No. 135,032
Claims priority, application Japan, Mar. 30, 1979, 54-39171
Int. Cl.³ G11C *11/40;* H01L *27/04*
U.S. Cl. 365—182 **16 Claims**

1. A semiconductor integrated circuit device comprising:

a first insulated gate field effect transistor including source and drain regions of N conductivity type formed along a major surface of a semiconductor substrate of P conductivity type, a channel region positioned between said source and drain regions, a gate insulator film formed on said channel region, and a gate electrode made of a high-melting-point metal and formed on said gate insulator film; and a second insulated gate field effect transistor including a gate insulator film formed on said major surface of said substrate and a gate elecgtrode made of a semi-conductor material, formed on said gate insulator film of said second



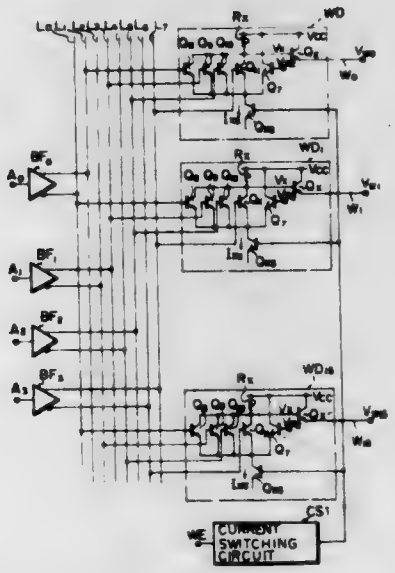
transistor and contacting directly with a surface of one of said source and drain regions of said first transistor.

4,348,747

SYSTEM FOR DRIVING BIPOLAR RAM

Yukio Takahashi, Shiga, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Feb. 22, 1980, Ser. No. 123,643
Claims priority, application Japan, Feb. 28, 1979, 54-23086
Int. Cl.³ G11C *7/00*
U.S. Cl. 365—189 **37 Claims**



26. A word driver for driving a word line into a selected or non-selected state defined as levels of potential, operatively connected to a reference voltage, to a power supply, to a plurality of bus lines having active and inactive states, and to a current switching circuit having read and write states, said word driver comprising:

a first means for driving the word line at the potential corresponding to said selected state of the word line if and only if all of the bus lines are in an active state; and

a second means for selectively driving the word line, only if any one of the bus lines is in an inactive state, at the potential corresponding to the non-selected state of the word line in accordance with the read or write state of the current switching circuit.

4,348,748

DIPMETER DISPLACEMENT PROCESSING TECHNIQUE

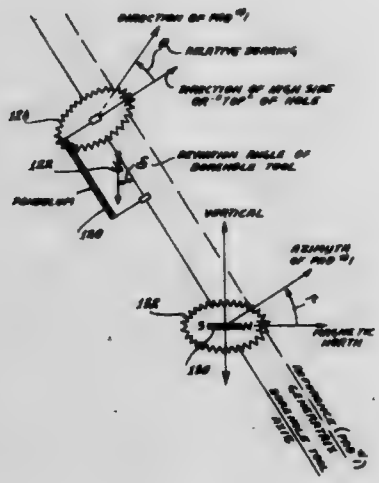
Christian M. J. Clavier, Paris, France; Vincent R. Hepp, Ridgefield, Conn., and Alexis C. Dumestre, Houston, Tex., assignors to Schlumberger Technology Corporation, New York, N.Y.

Filed Dec. 30, 1974, Ser. No. 537,998
Int. Cl.³ G01V *1/40*
U.S. Cl. 367—25 **70 Claims**

2. A method of automatically processing with a machine

displacements obtained between geophysical signals derived from sources spaced at different positions to determine and produce recorded representatives of the relative position of the features on said signals, comprising:

(a) producing displacements obtained between similar features in overlapping intervals of geophysical signals derived from said spaced sources, each of said intervals overlapping adjacent intervals on a signal derived from a given source;



(b) combining possibly corresponding displacement between said signals;

(c) classifying each combination as a function of the relative position of said sources;

(d) analyzing said classified combinations to determine the position of the dominant class and the corresponding relative position of features on said signals; and

(e) producing recorded representations of the corresponding relative position of features on said signals.

4,348,749

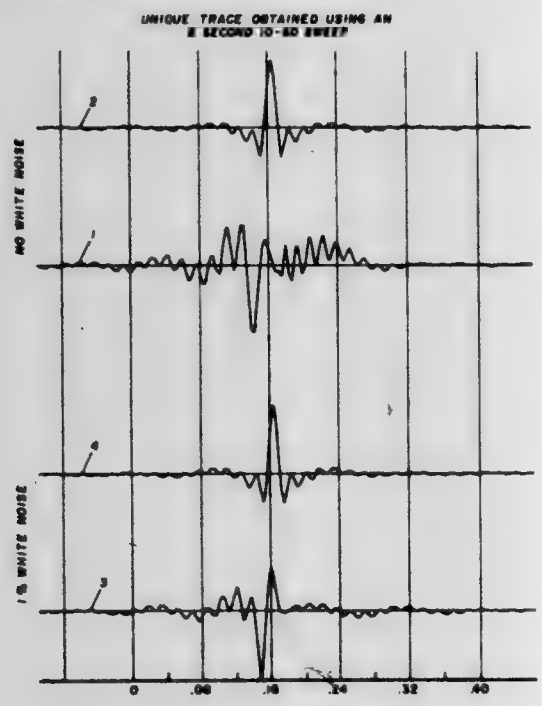
PHASE CORRECTING SEISMIC TRACES

James N. Galbraith, Jr., Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jun. 30, 1975, Ser. No. 591,914

Int. Cl.³ G01V *1/28*

U.S. Cl. 367—46 **13 Claims**



1. An automatic method of processing in an automatic data processing machine signals representing deconvolved seismic traces obtained by applying to the earth seismic energy, the signal pulse of which is known, comprising:

(a) generating a signal representing the minimum phase inverse of said signal pulse;

(b) convolving said signal representing the minimum phase inverse of said signal pulse with said signal pulse to obtain a signal representing a function g(t);

(c) generating a signal representing the time reverse of said signal representing a function g(t) to obtain a signal representing a function h(t); and

(d) convolving said signal representing a function h(t) with said signals representing deconvolved seismic traces to phase correct said deconvolved seismic traces.

4,348,750

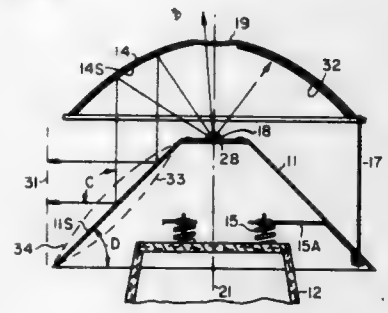
ENERGY CONTROL DEVICE

David R. Schwind, 557 Peralta Ave., San Francisco, Calif. 94110

Filed Aug. 6, 1979, Ser. No. 64,067

Int. Cl.³ H04R *23/00*

U.S. Cl. 367—140 **4 Claims**



1. A radiant energy control device to control dispersion of radiant energy is 360° comprised of:

a first reflector having a concave parabolic reflecting surface symmetrical about an axis which contains the focal point;

a second reflector having an outer reflecting surface which is conical and converges toward the first reflector and which is symmetrical about an extension of said axis and oriented to effect a change of direction of radiant energy between a direction parallel to said axis extension and directions radial to said axis extension, and oriented for the reflection of energy between said first and second reflecting surfaces;

a source of radiant energy positioned on the second reflector and mounted symmetrically along said axis, said source being directional and radiating energy that substantially propagates from said source along straight lines as rays toward the concave reflecting surface of the first reflector for reflection from said first reflector substantially parallel to said axis and onto said second reflector.

4,348,751

ELECTRONIC DEVICE AND METHOD OF FABRICATING THE SAME

Hideki Kosaka, Kodaira; Tsutomu Mimata, Akikawa; Tsuyoshi Shimizu; Hideharu Yamamoto, both of Hinode; Kaoru Itoh, Kodaira, and Yasuhusa Shima, Sayama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 19, 1978, Ser. No. 916,923

Claims priority, application Japan, Jun. 20, 1977, 52/72041; Aug. 10, 1977, 52/95020; Aug. 10, 1977, 52/95021; Aug. 10, 1977, 52/95022; Dec. 9, 1977, 52/147084; Dec. 19, 1977, 52/151762; Dec. 19, 1977, 52/151763; Dec. 23, 1977, 52/154442; Dec. 23, 1977, 52/154443; Dec. 23, 1977, 52/154480; Jan. 20, 1978, 53/4365; May 15, 1978, 53/56697

Int. Cl.³ G04C *19/00, 23/02*

U.S. Cl. 368—82 **17 Claims**

1. An electronic device for an electronic watch comprising:

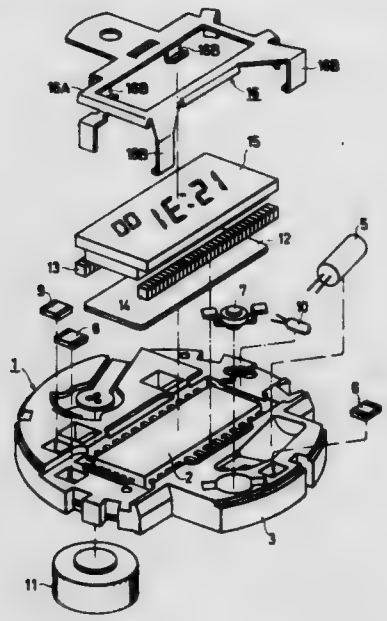
(a) a display device for receiving electric display signals;

(b) a plurality of electronic parts including a semiconductor integrated circuit element for a watch circuit;

(c) an enclosure within which said semiconductor integrated circuit is embedded;

(d) a block having receiving sections, said electronic parts, except for the semiconductor integrated circuit element, being respectively disposed in said receiving sections;

(e) plate-like lead conductors extending in a common plane between said enclosure and said block for electrically interconnecting said electronic parts, said lead conductors each having a first portion embedded in said enclosure and connected to said semiconductor integrated circuit element, a second portion embedded in said block and a third portion exposed between said enclosure and block, said third portion being held at opposite ends by said first and



second portions embedded in the enclosure and block, respectively; and

(f) connection means for electrically connecting said display device to the third portion of selected ones of said lead conductors at upper surfaces of said third portions;

wherein said block has holes at said receiving sections for exposing parts of the second portion of select ones of said lead conductors and said electronic parts disposed in said receiving sectors are electrically connected to upper surfaces of said exposed parts of the second portion of the lead conductors, respectively.

4,348,752

ELECTRONIC WATCH WITH MOVABLE DETECTING MEMBER

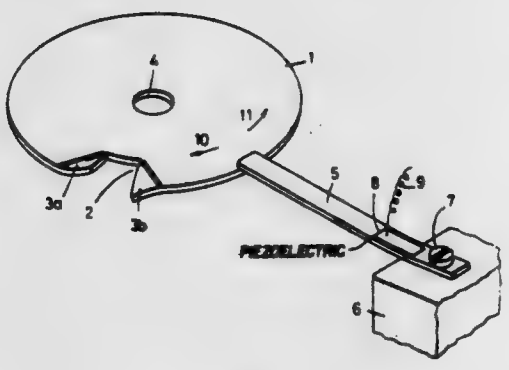
Norberto Perucchi, St. Blaise, Switzerland, assignor to Eta A.G. Ebauches-Fabrik, Grenchen, Switzerland

Filed Jun. 10, 1980, Ser. No. 158,204

Claims priority, application Switzerland, Jun. 28, 1979, 6047/79

Int. Cl.³ G04C 9/00

U.S. Cl. 368—187 3 Claims



1. An electronic watch, comprising:

a frame;

hands;

a gear train for driving said hands, comprising a disk-shaped counterwheel having position-indicating means, comprising a radial slot in said counterwheel, said slot having edges which form projecting elements;

a stepping motor for driving said gear train;

a detection circuit;

a counter;

movable detecting means comprising a resilient blade disposed radially from said counterwheel at a fixed location and a piezoelectric element secured to said blade, cooperating with said position-indicating means and connected to said detection circuit and to said counter, said detecting means being capable of causing the transmission of signals in said detection circuit upon rotation of said counter wheel, said projecting elements being adapted to move said detecting means differently depending upon the direction of rotation of said counterwheel, whereby said signals cause the algebraic counting of the number of revolutions effected by said counterwheel, said blade normally being kept bent by pressing against one or the other of the faces of said counterwheel, said slot being so arranged that when said slot is aligned with said blade, said blade straightens out, then either vibrates and again presses against the same face of said counterwheel or passes to the other face of said counterwheel without vibrating, according to the direction of rotation of said counterwheel.

4,348,753

ELECTRO-MECHANICAL PULSE GENERATOR

Arnold Werner, Nuremberg; Peter Ennen, Allersberg; Josef Nuebauer, Grobechwarzenlohe; Hans Flaig, Schramberg, and Juergen Allgaier, Lauterbach, all of Fed. Rep. of Germany, assignors to Firma D I E H L, Nuremberg, Fed. Rep. of Germany

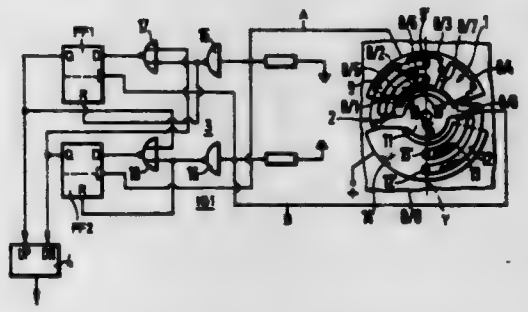
Continuation of Ser. No. 861,444, Dec. 16, 1977, abandoned.

This application May 21, 1980, Ser. No. 152,036

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1976, 2658105

Int. Cl.³ G04C 9/00; G04B 29/00; H03K 17/56

U.S. Cl. 368—188 18 Claims



1. An electro-mechanical pulse generator for producing electronic pulses for setting or correcting an electronic digital display, comprising:

a first assembly including several pulse-generating components which are arranged substantially at regular intervals within a circular track, concentric with an axle of rotation;

a second assembly, rotatable relative to said first assembly at variable speeds in a desired direction, including several sensing elements which cooperate with the pulse-generating components of said first assembly to actuate pairs of electrical contacts which are spaced relative to one another so that rotation of said first and second assemblies relative to one another causes at least two pairs of electrical contacts to be separately closed to directly produce at least two pulses which are displaced timewise, wherein the frequency of the pulses is proportional to the relative speed between said first and second assemblies and the phase shift of one pulse relative to another is dependent upon the direction of rotation of one of said assemblies relative to the other;

an UP-DOWN counter;

control logic for determining the phase shift between pulses and controlling the forward or backward actuation of said counter in response to the pulses; and

a latching device coupled to said axle of rotation, said latching device maintaining all of said pairs of contacts open when the pulse generator is not actuated; and wherein said pulse-generating components of said first assembly and said sensing elements of said second assembly are angularly offset about said axle of rotation with respect to each other so that said at least two pulses which are directly produced by closure of said two pairs of electrical contacts upon actuation of the pulse generator will partially overlap in at least one direction of relative rotation of the assemblies.

4,348,754

DIGITAL DELAY FOR HIGH QUALITY AUDIO USE

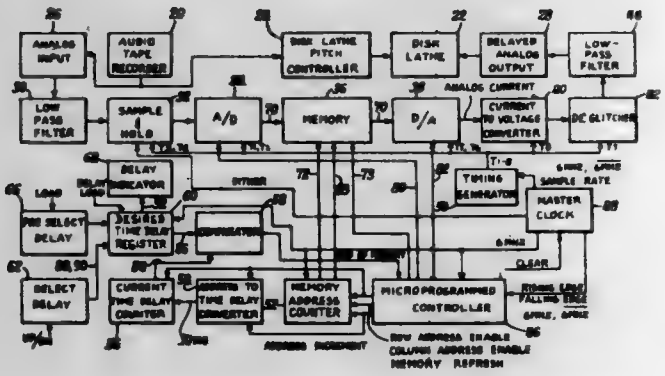
David L. Haynes, San Mateo, and John M. Brennan, San Jose, both of Calif., assignors to Ampex Corporation, Redwood City, Calif.

Filed May 15, 1980, Ser. No. 149,819

Continuation-in-part of PCT/US79/00314, United States of America, abandoned.

Int. Cl.[3] G11B *3/00*; G11C *15/00*

U.S. Cl. 369—60 5 Claims



1. A digital delay apparatus for use in a disk mastering preview system wherein audio signals from an audio source are delayed by a predetermined and adjustable time delay for previewing the audio signals to be recorded by a disk lathe, characterized by sampling means for sampling the audio signal to produce analog sample signals of said audio signal; analog to digital conversion means for converting said analog sample signals to digital sample signals; memory means for storing said digital sample signals and having a sufficient number of memory address locations to store the number of digital sample signals that correspond to the maximum predetermined delay; means for addressing said memory locations and for controlling the writing and reading of said digital sample signals into and out of said memory means at said address locations, respectively, said addressing means successively addressing said address locations of said memory means at a predetermined rate corresponding to the rate at which said analog samples were taken, the total number of address locations of said memory means that are addressed corresponding to the number of digital sample signals that occur during the predetermined delay, said addressing and controlling means being operable to sequence through said number of address locations and read the digital sample signals from each address location followed by writing a new digital sample signal at each address location before the next address location is addressed, the total number of address locations being addressed being adjustable in accordance with the amount of delay that is desired; and digital to analog conversion means for converting said digital sample signals read from the memory into analog signals for recording.

4,348,755

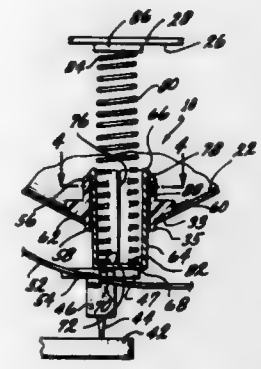
SPLIT TUBULAR MEMBER FOR COUPLING A TONEARM TO A SPEAKER CONE

John T. Benson, Canoga Park, Calif., assignor to Mattel, Inc., Hawthorne, Calif.

Filed Jan. 23, 1981, Ser. No. 228,034

Int. Cl.[3] G11B *3/00*

U.S. Cl. 369—155 4 Claims



1. In combination with a phonograph device including a record, a speaker cone having a collar, a tonearm including a needle, means mounting said tonearm in said phonograph device in a manner such that said needle may move toward and from said record, a tubular member reciprocably mounted in said collar for providing a connection between the tonearm and speaker cone which allows movement of the needle relative to the record without movement of the speaker cone, said tubular member having a closed end, and a compression spring biasing said closed end of said tubular member into engagement with said tonearm, the improvement which comprises:

means for conforming said tubular member to the inside diameter of said collar, said conforming means including means for changing the external configuration of said tubular member.

4,348,756

RECORD PLAYER CONTROL MECHANISM

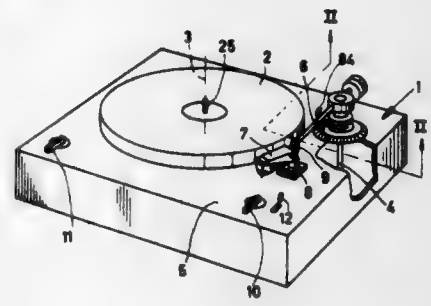
Michel H. F. Decoster, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 5, 1981, Ser. No. 231,711

Claims priority, application Netherlands, Feb. 12, 1980, 8000860

Int. Cl.[3] G11B *17/06*

U.S. Cl. 369—226 11 Claims



1. A record player having a frame (1) on which a turntable (2) is mounted for rotation and in which a pick-up arm spindle (4) is journalled; a pick-up arm (6) and a pick-up arm lever (13) connected to said spindle; a control member (27) carried on the frame by which the pick-up arm can be controlled in a first direction of movement about the axis of the spindle away from the turntable and in a second direction of movement about the axis of the spindle towards the turntable; a rod (47) connected to the control member; a control element (52) which cooperates with said rod and which comprises a coupling portion (59) which, at least for controlling the pick-up arm in the second direction of movement, is engageable with a coupling portion (16) of the pick-up arm lever, characterized in that the frame (1) carries guide means (63, 64; 87) for the control element (52).

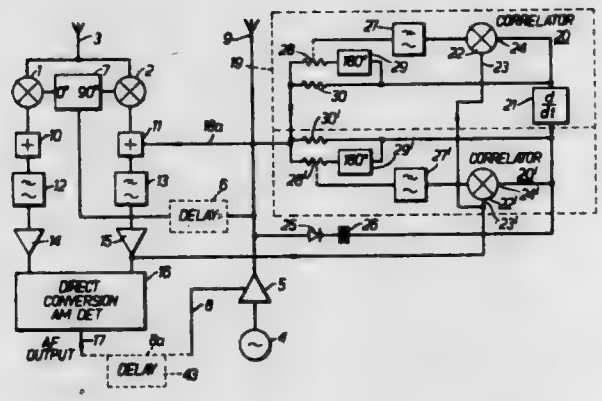
arranged such that when the pick-up arm (6) is controlled in the first or the second direction of movement, said guide means guide the coupling portion (59) of the control element over a first and a second path respectively, which paths are substantially concentric with the axis of the pick-up arm spindle (4), the first path being situated at a greater radial distance from said axis than the second path, and the coupling portion of the control element being engageable with the coupling portion (16) of the pick-up arm lever (13) in the second path only.

4,348,757

TRANSCEIVERS

Christopher K. Richardson, Romsey, England, assignor to Plessey Handel und Investments AG, Zug, Switzerland

Filed Jun. 23, 1980, Ser. No. 161,786
Claims priority, application United Kingdom, Jun. 29, 1979, 7922701
Int. Cl.³ H04J 3/04
U.S. Cl. 370—32 8 Claims



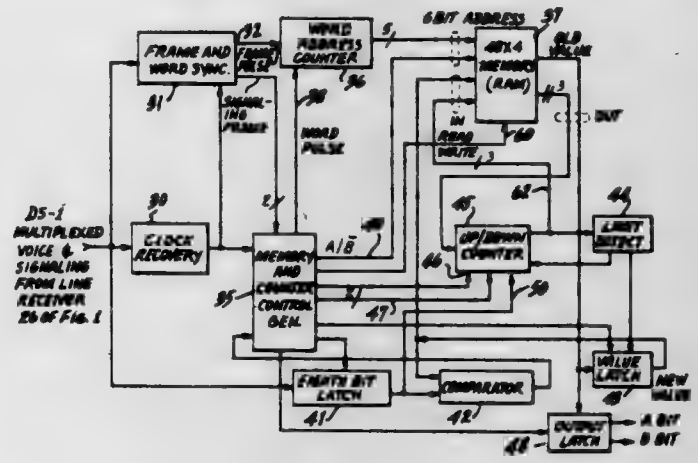
1. A common channel duplex a.m. transceiver comprising a pair of multiplicative mixers arranged to receive signals from two sources, receiver aerial means constituting one of the sources and arranged to feed received signals to the multiplicative mixers, transmitter aerial means, and oscillator/modulator means constituting the other of the sources and arranged to feed signals for transmission to the serial means and to provide for the mixers of the pair local oscillator signals which are at the same frequency as the carrier frequency for transmission, and wherein it is arranged that the carrier frequency for transmission and the carrier frequency of the received signals are common to a single channel of the transceiver, phase quadrature means connected to provide a phase quadrature relationship between two signals fed to the mixers of the pair from one of the sources, a pair of signal combiners fed one from each mixer, a pair of low pass filters fed one from each combiner, a pair of correlator arrangements each having first and second input ports and an output port, the first input port of each correlator arrangement being fed one from each low pass filter, detector means via which signals from the oscillator/modulator means are fed to respective second input ports of the correlators, the correlator arrangements being operative to correlate signals derived from the low pass filters with detected signals from the oscillator/modulator means thereby to provide at the said output ports feedback signals which are fed one from each correlator to respective combiners, and an a.m. demodulator responsive to signals fed from the low pass filters for providing a.m. output signals corresponding to a.m. modulation carried by the received signals.

4,348,758

DIGITAL DEBOUNCING AND STORAGE APPARATUS FOR USE IN A TELEPHONE SWITCHING SYSTEM

Joseph E. Sutherland, Raleigh, N.C., assignor to International Standard Electric Corporation, New York, N.Y.

Filed Jun. 4, 1980, Ser. No. 156,298
Int. Cl.³ H04J 3/12
U.S. Cl. 370—110.2 7 Claims



1. A digital debouncing and storage apparatus for use in recovering status signaling information contained in a serially transmitted digital multiplex signal as transmitted in a telephone system with said signal having repetitive frames of information each frame consisting a group of channels, each channel having the same given number of bits, with certain first ones of said frames reserved for first status information with at least one A status bit in each channel of said first frames indicative of a first status condition of said associated channel and with second different ones of said frames reserved for second status information with at least one B status bit at the same location as said A bit in each channel of said second frames indicative of a second status condition of said associated channel, with both said status bits as generated by said telephone system capable of undesirably providing a false indication of the proper status of said channel due to contact bounce which may undesirably occur during the generation of said first and second status information comprising:

means responsive to said multiplex signal for generating a first signal indicative of each of said transmitted frames, a second signal indicative of only said first ones of said frames, a third signal indicative of only said second ones of said frames, a fourth signal indicative of each channel in each frame, and a fifth signal indicative of said location of said A or B bit in each of said channels,

memory means having a plurality of addressable storge locations, with a first plurality of said storage locations each one associated with one channel in said group and capable of storing therein a given number of bits with at least one bit indicative of said A bit in said associated channel, and with a second plurality of said storage locations each one associated with one channel in said group and capable of storing therein said given number of bits with at least one bit indicative of said B bit, with said additional bits as stored in said first and second locations indicative of timing information associated with said respective status bit,

a word address counter coupled to said memory means and said timing means and responsive to said fourth signal to provide a plurality of binary address codes for each channel in said group, and responsive to said second and third signals to modify said address codes by one bit to thereby provide first address codes to access said memory means at said first plurality of locations indicative of A status bits, and second address codes to access said memory means at said second plurality of locations indicative of B status bits,

an up-down counter coupled to said memory means and

having a first input adapted when activated to cause said counter to count-up from a stored count and a second input adapted when activated to cause said counter to count down from said stored count, said up-down counter adapted to sequentially store said timing information for each channel as stored in said memory for said A and B bits,

a status bit latch responsive to said multiplex signal and said fifth signal for storing therein said respective present status bit for each channel during said first or second ones of said frames,

logic means coupled to said first and second inputs of said up-down counter and responsive to said present status bit as stored in said status bit latch to cause said counter to count up from said stored count for a first binary value of said present status bit and to count down from said stored count for a second binary value of said status bit for each channel,

control means coupled to said up-down counter and responsive to said count contained therein for said channel for causing said count indicative of new timing information to be stored in said memory means, and

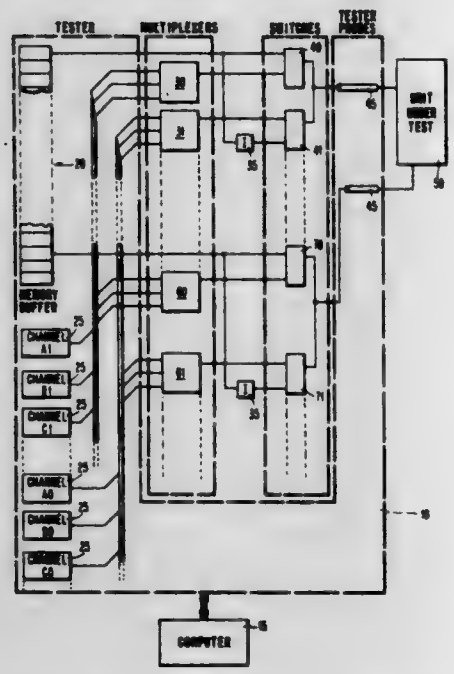
limit means coupled to said up-down counter and responsive to said count reaching a predetermined limit during successive first and second ones of said frames for changing the value of said status bit as stored in said memory upon detection of said predetermined limit.

4,348,759

AUTOMATIC TESTING OF COMPLEX SEMICONDUCTOR COMPONENTS WITH TEST EQUIPMENT HAVING LESS CHANNELS THAN THOSE REQUIRED BY THE COMPONENT UNDER TEST

Henri D. Schnurmann, Monsey, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 17, 1979, Ser. No. 104,481
Int. Cl.[3] G06F *11/12*; G01R *15/12*
U.S. Cl. 371—20 5 Claims



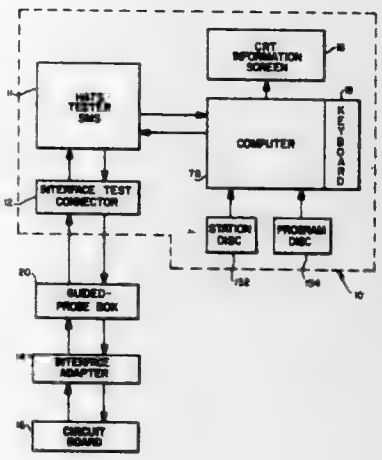
1. An apparatus for testing large or very large integrated circuit packages, said apparatus including: a stored program computer; a tester interconnected with said computer said tester including, a memory buffer having m binary outputs, n tester channels, a plurality of multiplexer circuits connected to said n tester channels, a plurality of tester probes for contacting input and output contacts of a unit under test (UUT), and a plurality of solid state switches interconnecting said memory buffer, said plurality of multiplexer circuits and said plurality of test probes; and, said apparatus being characterized by the ability to effectively test a unit under test having a greater number of inputs and outputs than said n tester channels.

4,348,760

DIGITAL-FAULT LOOP PROBE AND SYSTEM

Steven J. Rice, Redlands, and Donald E. Sherman, Mission Hills, both of Calif., assignors to Lockheed Corporation, Burbank, Calif.

Filed Sep. 25, 1980, Ser. No. 190,684
Int. Cl.[3] G01R *31/28*
U.S. Cl. 371—20 25 Claims



1. In a dynamic automatic test system for testing circuits, said system including a stimulus measurement system, a computer arranged for receiving and delivering signals from and to said stimulus measurement system, an information screen for receiving signals from said computer, an interface test connector electrically connected to said stimulus measurement system, and an interface adapter arranged for electronically connecting said interface test connector to said circuits, the improvement comprising:

a guided-logic probe box interposed between and connected to said interface adapter and said interface test connector, said guided-logic probe box including:

means for detecting Hi, Lo, forbidden zone, and impulse voltages generated by said circuit; and

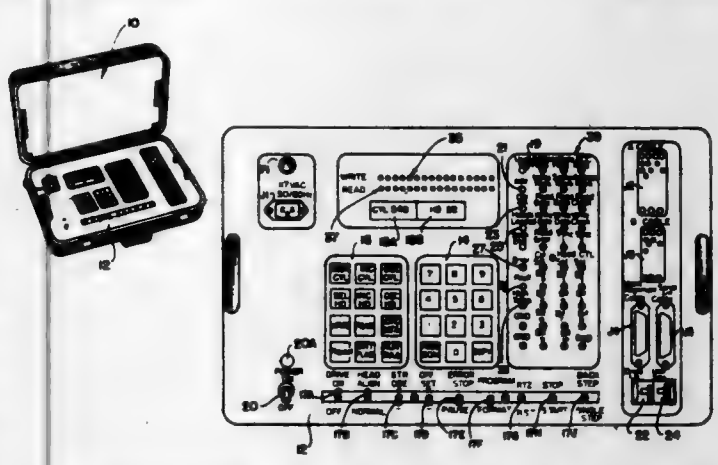
means for presenting signals representative of said generated voltages to said automatic test system computer, whereby said dynamic automatic test system is provided with a guided-probe capability.

4,348,761

PORTABLE FIELD TEST UNIT FOR COMPUTER DATA AND PROGRAM STORAGE DISC DRIVE

James K. Berger, Malibu, Calif., assignor to Pioneer Research, Inc., Santa Monica, Calif.

Filed Sep. 8, 1980, Ser. No. 184,811
Int. Cl.[3] G06F *11/22*
U.S. Cl. 371—21 10 Claims



1. A programmable test unit for qualifying a disc drive comprising: programmable format memory means for storing different sector format programs for different disc drives; address circuitry connected to said format memory mean for selecting different formats from said format memory means

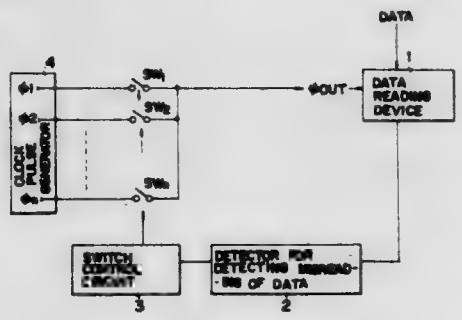
and following the byte count of each disc sector in real time of the disc drive being qualified; and output circuitry connected to said format memory means for establishing the sector format of the disc drive being qualified.

4,348,762

CIRCUIT FOR CORRECTING DATA READING CLOCK PULSES

Toshimi Shiun; Hideo Fujii, and Yoshio Kizaki, all of Toda, Japan, assignors to Clarion Co., Ltd., Tokyo, Japan

Filed Aug. 11, 1980, Ser. No. 176,974
Claims priority, application Japan, Sep. 14, 1979, 54-117375
Int. Cl.³ H04L 7/00
U.S. Cl. 371—47 **4 Claims**



1. A circuit for correcting data reading clock pulses, which comprises:

a means for generating a plurality of groups of clock pulses of different phases;

a switch means for selecting and outputting one or more groups of clock pulses from said plurality of groups of clock pulses;

a means for reading data in response to said one or more groups of clock pulses selected by said switch means;

a means for detecting mis-reading of the data and outputting a detection signal indicating mis-reading; and

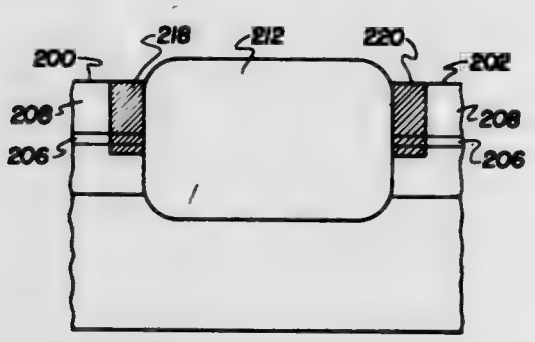
a switch control means responsive to said detection signal to control said switch means so as to repeatedly select another group or groups of clock pulses until correct data reading is accomplished as determined by absence of said detection signal.

4,348,763

MULTIPLE STRIPE LEAKY MODE LASER

Donald E. Ackley, Los Altos; Reinhart W. H. Engelmann, Mountain View, and Dietrich Kerps, Palo Alto, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 7, 1980, Ser. No. 176,166
Int. Cl.³ H01S 3/19
U.S. Cl. 372—45 **1 Claim**



1. A semiconductor laser comprising:

a substrate of semiconducting material;

a plurality of stripe regions on the substrate, each having an active layer in which lasing is induceable by injection of charge carriers; each of the stripe regions including:

(a) a first clad layer of semiconducting material positioned on the substrate and having lower refractive index than the active layer, the active layer being positioned on the first clad layer;

(b) a second clad layer of semiconducting material positioned on the active layer and having lower refractive index than the active layer;

a plurality of passive regions of semiconducting material positioned on the substrate, adjacent stripe regions being laterally separated by one of the passive regions, the passive regions and the stripe regions being configured to provide leaky mode optical coupling between adjacent stripe regions; each passive region having a refractive index higher than the effective refractive indices of adjoining stripe regions, at least one of the stripe regions including a zone at a lateral boundary having refractive index higher than the effective refractive index of the stripe region but lower than the refractive index of the passive region adjoining the boundary;

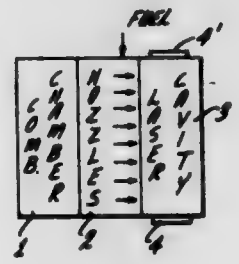
a pair of mirrored facets at opposite ends of the substrate; and electrode means for supplying electrical current.

4,348,764

NOZZLE CONSTRUCTION FOR CHEMICAL LASER

Robert J. Cavalleri, Cocoa Beach, Fla.; Lamar F. Moon, Agoura, and John F. Hon, Tarzana, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Nov. 15, 1979, Ser. No. 94,522
Int. Cl.³ H01S 3/02
U.S. Cl. 372—58 **11 Claims**



1. A nozzle construction, particularly for a chemical laser for combining a primary flow of a first gas such as an oxidizer, with a second gas such as a fuel, comprising:

a first nozzle having an entry and an exit for providing a supersonic source flow expanding through said first nozzle in parallel planes at right angles to a line defining the source of the flow, the planes including a direction oriented radially through said first nozzle towards a laser optical cavity; and

a plurality of curved, second nozzles disposed adjacent to the exit of said first nozzle, said second nozzles being curved in said planes and arranged side by side in the direction of said line, said second nozzles being spaced along the direction of said line for the passage of said primary flow between adjacent ones of the second nozzles.

4,348,765

THERMIONIC LASER

Peter E. Oettinger, Acton, Mass., assignor to Thermo Electron Corporation, Waltham, Mass.

Filed Feb. 25, 1980, Ser. No. 124,394
Int. Cl.³ H01S 3/09
U.S. Cl. 372—78 **10 Claims**

1. A thermally driven laser operable in the d.c. mode comprising:

(1) an emitter for emitting electrons;

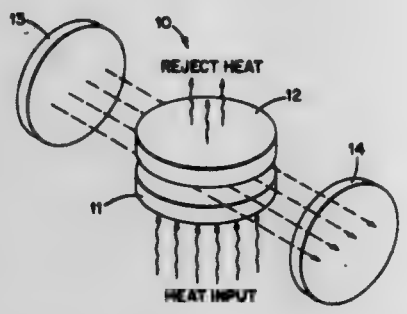
(2) a collector spaced apart from said emitter and defining a region therebetween, said collector operable to collect electrons emitted by said emitter;

(3) a fully reflecting element disposed adjacent to the region separating said emitter and said collector;

(4) a partially reflecting element disposed adjacent to said region separating said emitter and said collector and opposite to said fully reflecting element, said fully reflecting element and said partially reflecting element defining therebetween an optical cavity suitable for lasing;

(5) a vapor disposed in said optical cavity between said emitter and said collector, said vapor being a vapor of an element selected from the group consisting of cesium, rubidium, potassium, sodium, lithium, barium, and mixtures thereof;

(6) an additive intermixed with said vapor to form therewith



a lasing material, said additive consisting of atoms or molecules whose excited state populations are minimally affected by electromotive forces between said emitter and said collector, said atoms or molecules having excited states in resonance with specific lower energy states of said vapor so as to depopulate said specific lower energy states thereby to produce a population inversion in the atoms of said vapor; and

(7) a heat source for providing thermal energy to pump said lasing material, said heat source operable to drive electrons from said emitter toward said collector, thereby generating a current.

4,348,766

CHEMICALLY FUELLED LASER AND METHOD FOR INCREASING THE EFFICIENCY OF SUCH LASERS

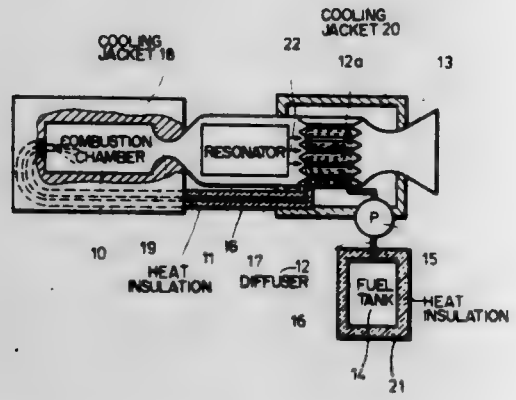
Gunthard Born, Munich, Fed. Rep. of Germany, assignor to Messerschmitt-Boelkow-Blohm GmbH, Munich, Fed. Rep. of Germany

Filed Feb. 11, 1980, Ser. No. 120,504

Claims priority, application Fed. Rep. of Germany, Feb. 21, 1979, 2906632

Int. Cl.³ H01S *3/09*

U.S. Cl. 372—89 **8 Claims**



1. A method for increasing the efficiency of a chemically fuelled CO_2 laser including a combustion chamber and a diffuser, comprising the steps of cooling said diffuser by means of chemical laser fuels selected from the group consisting of CO_2, N_2O, C_6H_6, and N_2, whereby the heat content of said laser fuels is increased, and supplying said laser fuels with the increased heat content into the combustion chamber through a heat insulated supply conduit, whereby the heat content gained by said laser fuels in the diffuser is supplied to the combustion chamber and thus to a laser gas produced in said combustion chamber from said laser fuels through said heat insulated supply conduit, whereby the CO_2 content of said laser gas is substantially reduced to 50% as compared to the CO_2 content of a laser gas in a conventional CO_2 laser.

4,348,767

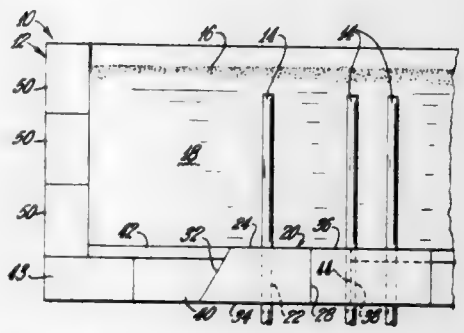
WEDGE SHAPED ELECTRODE BLOCK

Gordon A. Farrar, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Dec. 29, 1980, Ser. No. 220,322

Int. Cl.³ C03B *5/027*

U.S. Cl. 373—30 **5 Claims**



1. An electric furnace for melting thermoplastic material, said furnace comprising: a chamber having a bottom wall and sidewall and being adapted for holding said thermoplastic material; a first block having an aperture adapted for mating with an electrode and having a top and a first side that is perpendicular to said top, said first block being located in said bottom wall of said chamber; a second block having an aperture adapted for mating with an electrode and having a top, bottom, a first side that is perpendicular to said top of said second block and located adjacent to said first side of said first block and a second side opposite said first side of said second block, said second side being slanted such that said top of said second block has an area that is smaller than the area of said bottom of said second block; a third block having a top, bottom, and a first side that is slanted such that the area of said top of said third block is larger than the area of said bottom of said third block, said first side of said third block being slanted at substantially the same angle as said second side of said second block and said first side of said third block being positioned adjacent said second side of said second block.

4,348,768

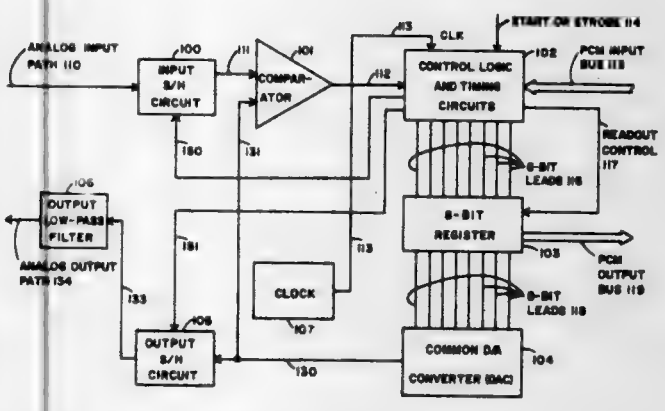
PCM CODEC USING COMMON D/A CONVERTER FOR ENCODING AND DECODING

Carl G. Svala, Delaware, Ohio, assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Continuation of Ser. No. 830,779, Sep. 6, 1977, abandoned. This application Aug. 24, 1979, Ser. No. 69,374

Int. Cl.³ H03K *13/02*

U.S. Cl. 375—26 **18 Claims**



1. In a communication coding and decoding system for encoding an incoming analog signal into an outgoing PCM

signal and also decoding an incoming PCM signal into an outgoing analog signal, all within a selected time period corresponding to one cycle at a basic sampling frequency, the combination comprising:

means for receiving said incoming PCM signal within said time period;

decoding means comprising a common digital-to-analog converter (DAC) and control means for setting said DAC in accordance with said received PCM signal to a first decision level adjacent to one side of a desired analog reconstruction level within a first predetermined portion of said time period;

means for modifying said received PCM signal; said control means utilizing said modified PCM signal for resetting said DAC to a second decision level adjacent to the opposite side of said reconstruction level within a second predetermined portion of said time period;

encoding means comprising said common DAC for encoding said incoming analog signal into an outgoing PCM signal during a third predetermined portion of said time period;

means for sequentially reading out resultant analog signal levels from said DAC corresponding to said first and second decisions levels; and

means for averaging said resultant analog signal levels to provide an outgoing analog signal having a value intermediate said decision levels.

4,348,769

CIRCUITRY FOR EXTRACTION OF A TRANSMISSION CLOCK SIGNAL FROM-MODULATED DATA TRANSMISSIONS

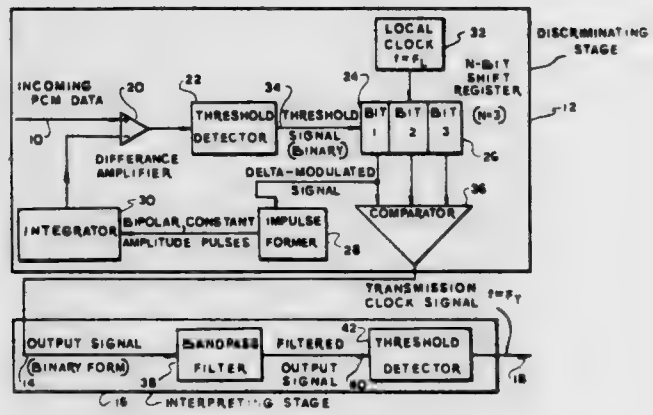
Ludwig Kittel, Heroldsberg, Fed. Rep. of Germany, assignor to TE KA DE Felten & Guilleaume Fernmeldeanlagen GmbH, Nuremberg, Fed. Rep. of Germany

Filed Feb. 19, 1980, Ser. No. 122,688

Claims priority, application Fed. Rep. of Germany, Feb. 22, 1979, 2906886

Int. Cl.³ H03K *13/22*

U.S. Cl. 375—28 **5 Claims**



1. In an electronic circuit for extraction of a transmission clock signal from modulated data transmissions, comprising:

a local clock producing a local clock pulse signal at a high frequency;

a delta-modulation circuit responsive to the data modulated transmissions and the local clock pulse signals and producing a delta-modulated signal in response thereto;

a shift register clocked by the clock and responsive to the delta-modulated signal to produce a data word in parallel form;

a comparator connected to the shift register and operating in a manner that the comparator produces a logically high output signal when all bits are identical and producing a logically low output signal otherwise; and an interpreting stage responsive to periodicity of the output signals generated by the comparator and producing an extracted transmission clock signal having a periodicity equal to periodicity of the transmission clock signal and being in phase therewith.

4,348,770

MANUAL CHANNEL SELECTION APPARATUS

Tatsuo Ito, Kobe, Japan, assignor to Fujitsu-Ten, Ltd., Kobe, Japan

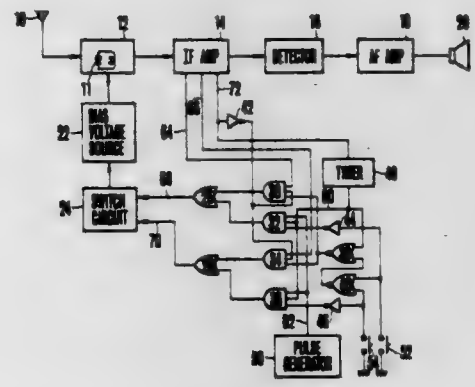
PCT No. PCT/JP79/00015, § 371 Date Sep. 24, 1979, § 102(e) Date Sep. 24, 1979, PCT Pub. No. WO79/00544, PCT Pub. Date Aug. 9, 1979

PCT Filed Jan. 23, 1979, Ser. No. 217,321

Claims priority, application Japan, Jan. 24, 1978, 53-7189[U]

Int. Cl.³ H03J *7/26*; H04B *1/26*

U.S. Cl. 455—164 **1 Claim**



1. A manual channel selection apparatus in an electronic tuning radio receiver having variable reactance elements comprising:

manual selection switches for each of the upward and downward directions;

voltage source for generating a bias voltage which is gradually increased or decreased during input of an upward signal or a downward signal and applied to said reactance elements; and

gate circuit means for temporarily interrupting the upward or downward output signal from said switches to said voltage source upon reception of a broadcasting wave and inputting an automatic frequency control voltage to said voltage source during said interruption whereby said gate circuit means includes a first logic means for passing the output of a pulse generator therethrough while the upward manual channel selection switch is being pushed and during issue of an "H" level output from a timer which issues "L" level output for a certain period upon generation of an intermediate frequency output, further including a second logic means for passing the output of said pulse generator therethrough while the downward manual channel selection switch is being pushed and during issue of an "H" level output from said timer, and a third and a fourth logic means for passing therethrough an automatic frequency control signal in the upward or the downward direction respectively while said timer issues an "L" level output and either of the upward or the downward manual selection switch is being pushed.

4,348,771

DIGITAL TUNING SYSTEM FOR A RADIO RECEIVER

Otto Klank, Arpke; Dieter Rottmann, Hanover, and Helmut Wösner, Ronnenberg, all of Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 3, 1979, Ser. No. 81,383

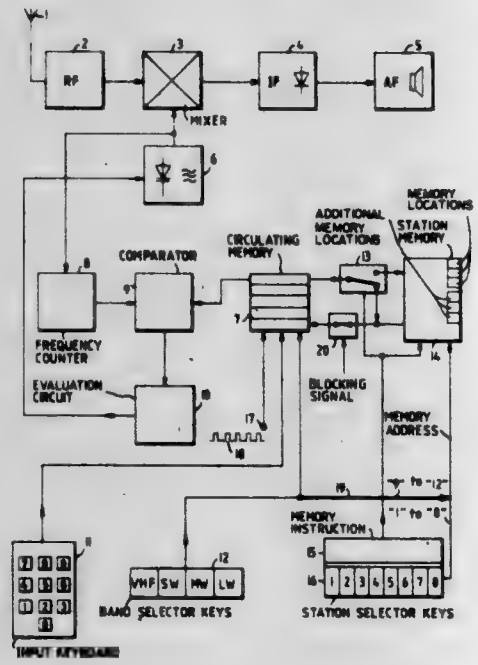
Claims priority, application Fed. Rep. of Germany, Oct. 4, 1978, 2843214

Int. Cl.³ H04B *1/16*

U.S. Cl. 455—180 **9 Claims**

1. In a digital tuning system for a radio receiver, which system includes a station memory having a plurality of mem-

ory locations for storing digit representations identifying respective broadcast frequencies to be received, a plurality of station selector elements each connected to be manually actuatable for addressing a respective memory location to cause the tuning system to tune the receiver to the broadcast frequency identified by the representations stored in the addressed memory location, and a plurality of band selector elements each connected to be manually actuatable for causing the receiver to be tuned within a respective signal band, the improvement



wherein said station memory comprises a plurality of additional memory locations each storing a digit representation of a selected broadcast frequency in a respective signal band, and each said band selector element is connected to address, upon being actuated, a respective additional memory location to cause the tuning system to tune the receiver to the broadcast frequency identified by representations stored in a said additional memory location when addressed by an actuated band selector element, said additional memory locations not being addressable by said station selector elements.

4,348,772

FREQUENCY STABILIZATION CIRCUIT FOR A LOCAL OSCILLATOR

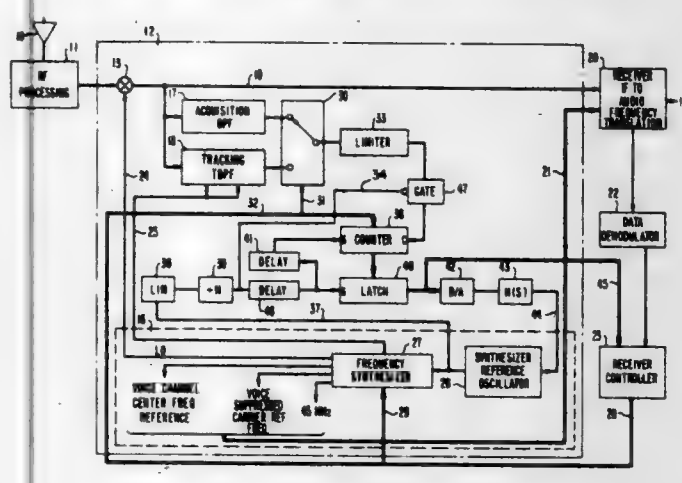
Kenneth W. Leland, Howell, and Nelson R. Sollenberger, Ocean, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 26, 1979, Ser. No. 97,422
Int. Cl.³ H04B *1/16*
U.S. Cl. 455—260 **14 Claims**

1. In a frequency stabilization circuit in which the offset between a prdetermined frequency and a received signal frequency related to an output of a local oscillator includes a slowly changing local oscillator drift component and a rapidly changing received signal frequency modulation component, the improvement comprising

means for counting (36) cycles in said received signal frequency,

means, responsive to an output of said local oscillator, for controlling (38, 39, 46, 41) said counting means to produce therefrom a control signal having a magnitude representing the average of said offset over a time interval which is defined by an output of said local oscillator, and



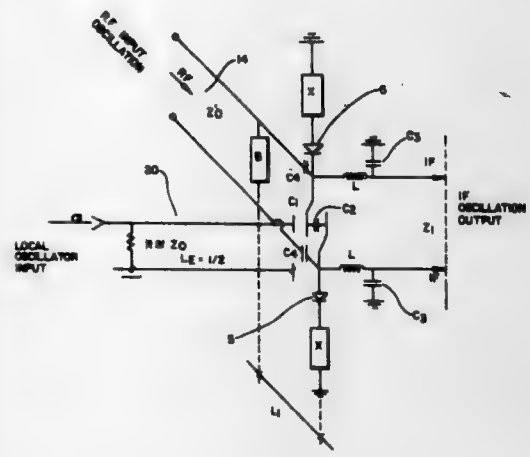
means for applying (40, 42, 43) said control signal to control the frequency of said local oscillator.

4,348,773

MICROWAVE RECEIVER CONVERTERS HAVING A HYBRID WAVEGUIDE STRUCTURE

Ignazio Caroli, Via Luigi Capuana, 135, 00137 Roma, Italy

Filed Jan. 15, 1980, Ser. No. 112,285
Int. Cl.³ H04B *1/26*; H03D *7/14*
U.S. Cl. 455—326 **6 Claims**



1. A balanced microwave receiver converter of a hybrid structure with RF input in a ridged waveguide comprising:

a pair of RF input lines coupled to a source of RF oscillation,

a pair of diodes terminating said RF input lines with a characteristic impedance Zo',

an adjustable susceptance B disposed across said RF input lines at a distance l_1, from said diodes,

means for connecting first ends of said diodes to said RF input lines, and further means connecting the other ends of said diodes to ground via reactances X,

means for capacitive coupling C_2 for coupling together the first ends of said diodes,

a pair of output lines for an IF signal and having a characteristic impedance Z,

means for connecting one ends of said IF output lines to said first ends of said diodes, said connecting means including a pair of helical inductive elements L, having junction ends connected to said IF output lines,

means for capacitive coupling C_3 for coupling said junction ends to ground,

means associated with a structure of said waveguide for coupling a source of LO oscillation to said IF output lines and to said first ends of the diodes, said coupling means including a capacitive coupling C_1 and a resistance R having a value of Zo being disposed in parallel with said capacitive coupling C_1 at a distance of l_2 from said diodes.

DESIGN PATENTS

GRANTED SEP. 7, 1982

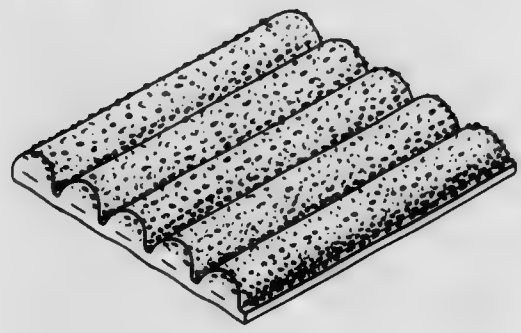
ERRATA

For CLASS	See PATENT NO.
D34–004	266,052

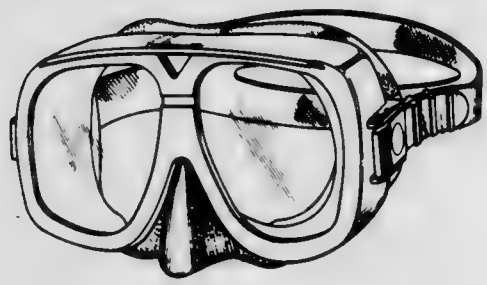
DESIGNS

SEPTEMBER 7, 1982

266,030
TOASTER BREAD STICK PRODUCT
Anthony F. Madonia, 15 Villa Moraine Dr., Cheektowaga, N.Y. 14225, assignor to Anthony F. Madonia, Grand Island, N.Y.
Filed Apr. 10, 1980, Ser. No. 139,016
Term of patent 14 years
Int. Cl. D01—*01*
U.S. Cl. D1—23



266,031
DIVER'S MASK
Hiromasa Sato, Zuahi, Japan, assignor to Tabata Co., Ltd., Tokyo, Japan
Fileu Nov. 6, 1979, Ser. No. 91,901
Claims priority, application Japan, Apr. 15, 1979, 54-15087
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—234



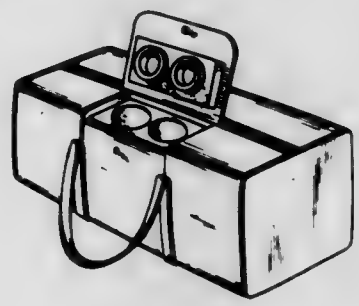
266,032
LUGGAGE
Ted Stark, Jersey City, N.J., assignor to M & M Luggage Co., Inc., Jersey City, N.J.
Filed Aug. 14, 1978, Ser. No. 933,723
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—71



266,033
LUGGAGE
Ted Stark, Jersey City, N.J., assignor to M & M Luggage Co., Inc., Jersey City, N.J.
Filed Aug. 14, 1978, Ser. No. 933,727
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—71



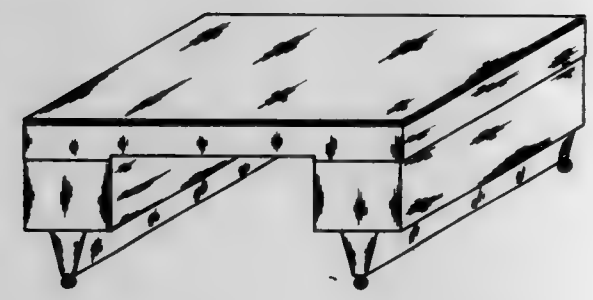
266,034
COMBINED CARRYING BAG AND INSULATED CONTAINER HOLDER
Martin Zoland, Preston, Australia, assignor to Zoland Fischer Nominees Pty. Ltd., Australia
Filed May 14, 1980, Ser. No. 149,669
Claims priority, application Australia, Nov. 15, 1979, 79582
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—71

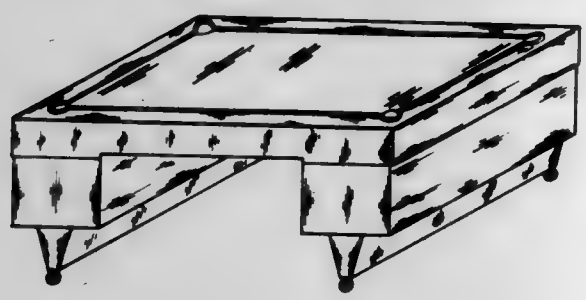


266,035
TOILET BRUSH
Bruce R. Thompson, Tranmere, Australia, assignor to UPL Group Limited, Brisbane, Australia
Filed Feb. 13, 1980, Ser. No. 121,212
Term of patent 14 years
Int. Cl. D4—*01*
U.S. Cl. D4—12

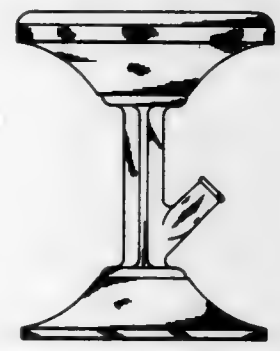


266,036
COMBINED DESK AND BILLIARD TABLE
Leonides Y. Teves, 623 39th St., West Bradenton, Fla. 33505
Filed Feb. 20, 1980, Ser. No. 122,991
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—4





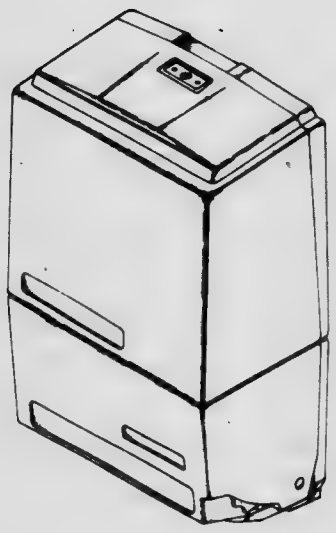
266,037
STOOL
R. N. Heighberger, c/o Jos. Dyson & Sons, Inc., 33300 Lakeland Blvd., Eastlake, Ohio 44094
Filed Jan. 4, 1980, Ser. No. 109,633
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—26



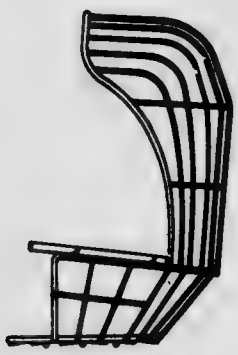
266,038
SEAT
William B. Raftery, Ann Arbor, and Ronald L. Whitwam, Caledonia, both of Mich., assignors to Steelcase Inc., Grand Rapids, Mich.
Filed Jun. 11, 1979, Ser. No. 47,099
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—69



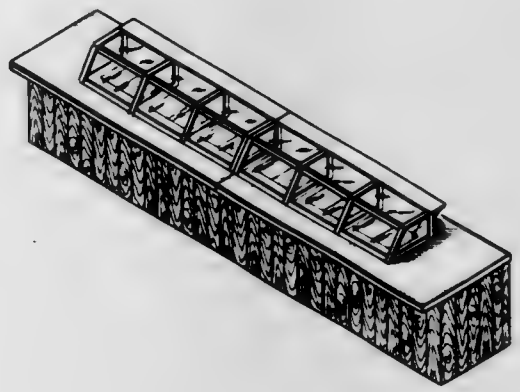
266,039
TOWEL DISPENSER
Raymond F. DeLuca, Stamford, Conn., assignor to Georgia-Pacific Corporation, Portland, Oreg.
Filed Mar. 21, 1980, Ser. No. 132,695
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D6—96



266,040
SUSPENDED CHAIR
Michael J. Cope, 195 Boulevard Dr., St. Ignace, Mich. 49781
Filed Jan. 17, 1980, Ser. No. 113,086
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—113



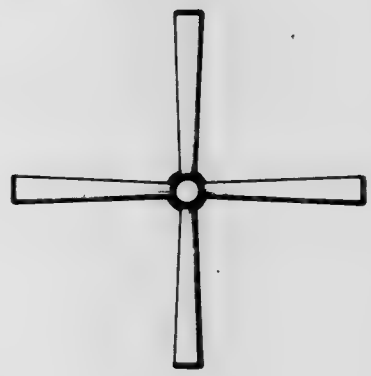
266,041
SERVING COUNTER
Henry N. Saurage, III, and Donna M. Saurage, both of Baton Rouge, La., assignors to Community Coffee Company Inc., Baton Rouge, La.
Filed Apr. 28, 1980, Ser. No. 144,627
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—144



266,042
COMBINED KITCHEN CABINET DOOR AND SUPPORT FRAME THEREFOR
Basil T. Moore, Rte. #2, Falls City, Nebr. 68355, and Morley Zipursky, 1021 N. 63rd St., Omaha, Nebr. 68132
Filed Sep. 17, 1979, Ser. No. 76,044
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—192



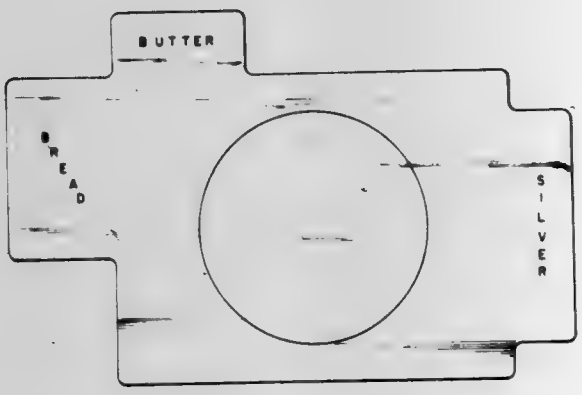
266,043
FURNITURE BASE
Kenneth H. Striebel, Kokomo, Ind., assignor to Kofabco, Inc., Peru, Ind.
Filed Sep. 12, 1979, Ser. No. 74,877
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—194



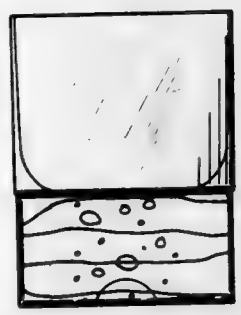
266,044
AUXILIARY SEAT FOR A CHILD
Gaynor J. Blanchard, 2 Chilton Parade, Turramurra, New South Wales 2074, Australia
Continuation-in-part of Ser. No. 968,143, Dec. 11, 1978. This application Jul. 30, 1979, Ser. No. 62,209
Claims priority, application Australia, Jun. 14, 1978, 75053
The portion of the term of this patent subsequent to Jun. 8, 1996, has been disclaimed.
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—201



266,045
PLACE MAT
Medhat M. Kamel, Alexandria, and Mortimer R. Dock, Arlington, both of Va., assignors to T-Star Research, Inc., Alexandria, Va.
Filed Sep. 13, 1979, Ser. No. 75,504
Term of patent 14 years
Int. Cl. D6—*13*
U.S. Cl. D6—271



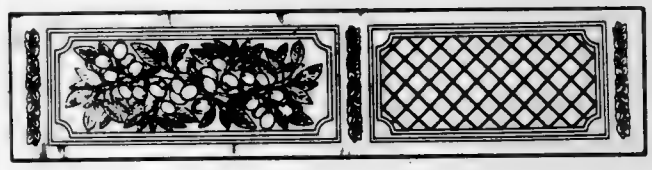
266,046
TUMBLER OR SIMILAR ARTICLE
Timo Sarpaneva, Helsinki, Finland, assignor to A. Ahlstrom Osakeyhtio, Noormarkku, Finland
Filed Nov. 9, 1979, Ser. No. 92,662
Claims priority, application Finland, May 18, 1979, 333/79
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—15





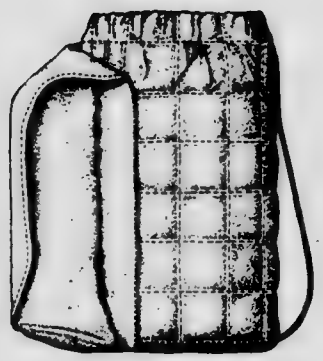


266,047
DECORATIVE BAND FOR CASSEROLE HOLDERS OR THE LIKE
Cynthia S. Gerow, Ballston Spa, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed May 14, 1980, Ser. No. 149,678
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D7—39

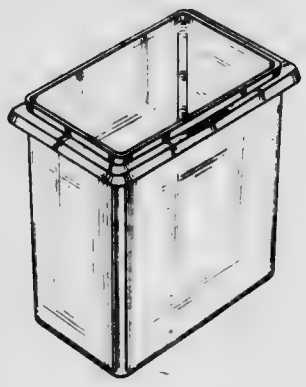


266,048
COLLAPSIBLE BOTTLE OR CAN HOLDER
Robert V. Zilla, 1816 16th St., NW., Winter Haven, Fla. 33880
Filed Aug. 11, 1980, Ser. No. 177,362
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D7—70

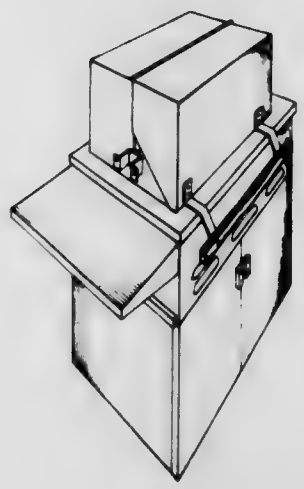




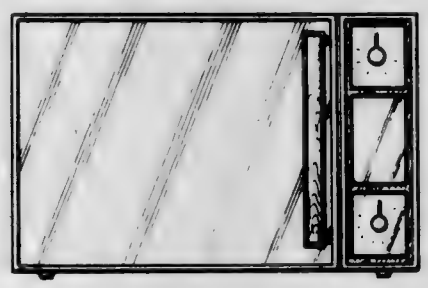
266,049
FOOD STORAGE CONTAINER OR THE LIKE
Rino Conti, Stoughton, Mass., assignor to Dart Industries Inc., Northbrook, Ill.
Filed Jan. 16, 1980, Ser. No. 112,663
Term of patent 14 years
Int. Cl. D7—*01, 07*
U.S. Cl. D7—76



266,050
GRILL ASSEMBLY
Willie H. Best, 18C The Heritage, Columbia, S.C. 29201
Filed Mar. 13, 1980, Ser. No. 130,129
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—108



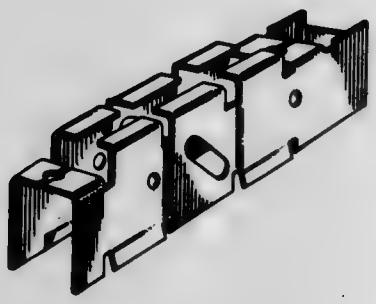
266,051
MICROWAVE OVEN
Donald G. Wolfe, Lake Barrington, and Joseph R. Mango, Midlothian, both of Ill., assignors to Litton Systems, Inc., Beverly Hills, Calif.
Division of Ser. No. 909,210, May 24, 1978. This application Mar. 3, 1980, Ser. No. 162,556
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—128



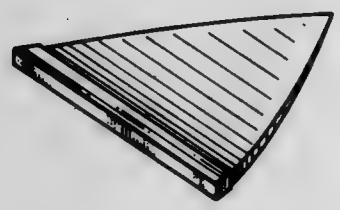
266,052
CORSET-SHAPED RECEPTACLE
David C. Moser, P.O. Box 9, Watervliet, Mich. 49098
Filed Sep. 10, 1979, Ser. No. 74,106
Term of patent 14 years
Int. Cl. D7—*07*
U.S. Cl. D34—4



266,053
CAGE FOR THE SUPPORT ROLLERS OF A SLIDING WINDOW OR SIMILAR ARTICLE
Raymond Dallaire, P.O. Box 220, Levis, Quebec, Canada
Filed Oct. 23, 1978, Ser. No. 953,956
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—402



266,054
INSERTABLE WEDGE GUARD FOR DOOR LOCKS
Joan L. Goodman, 11527 Wickersham, Houston, Tex. 77077
Filed Mar. 24, 1980, Ser. No. 133,654
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—343



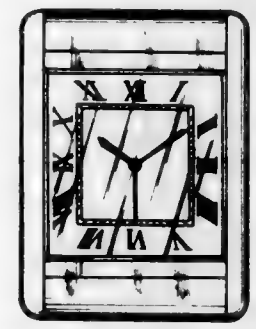
266,055
BOTTLE GUARD
William Schroeder, Jr., North Muskegon, and Raymond N. Fink, Williamston, both of Mich., assignors to Hoffmann-La Roche Inc., Nutley, N.J.
Filed Nov. 5, 1979, Ser. No. 91,319
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—434



266,056
COVER FOR WATERCOOLER BOTTLES
Magda C. Lear, 22532 Ventura Blvd., Woodland Hills, Calif. 91364
Filed Nov. 13, 1979, Ser. No. 93,189
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—444



266,057
ALARM CLOCK
Joseph Kanoui, Geneva, Switzerland, assignor to Interdica S.A., Villars-sur-Glane, Switzerland
Filed Apr. 9, 1980, Ser. No. 138,270
Claims priority, application Switzerland, Oct. 11, 1979, 69435
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—26

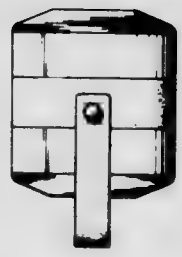


266,058
WATCH
Joseph Kanoui, Geneva, Switzerland, assignor to Interdica S.A., Villars-sur-Glane, Switzerland
Filed Apr. 9, 1980, Ser. No. 138,271
Claims priority, application Switzerland, Oct. 11, 1979, 69436
Term of patent 14 years
Int. Cl. D10—*02*
U.S. Cl. D10—39

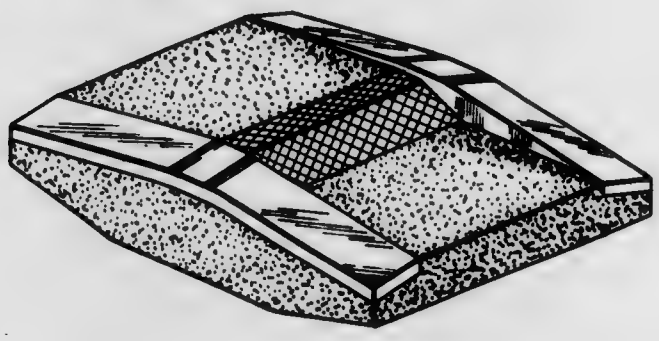


266,059
COMPASS
Thomas T. Drake, Slip 152 Old Port Cove, N. Palm Beach, Fla. 33480
Filed Feb. 1, 1980, Ser. No. 117,807
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—68





266,060
REFLECTIVE PAVEMENT MARKER FOR ROADS
Angelo V. Beretta, Lincoln, R.I., assignor to Durastone Company, Inc., Lincoln, R.I.
Filed Nov. 12, 1980, Ser. No. 208,132
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D10—113



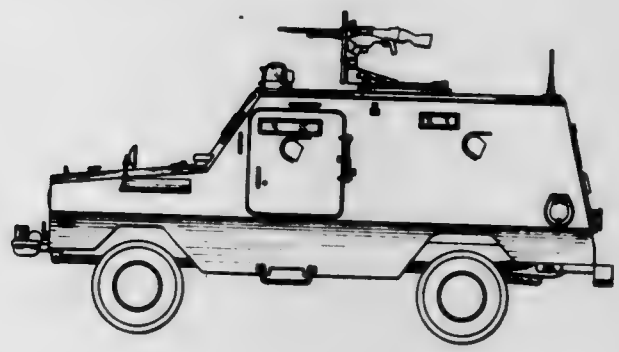
266,061
COMBINED EMERGENCY SIGNAL LIGHT AND MOUNTING BRACKET THEREFOR
Karl H. Wenziaff, 9800 Baseline Rd., Space 107, Alta Loma, Calif. 91701
Filed Sep. 21, 1979, Ser. No. 77,590
Term of patent 14 years
Int. Cl. D10—*06*; D26—*06*
U.S. Cl. D10—114



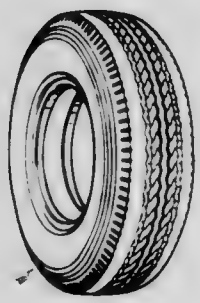
266,062
RING BAND
Clyde A. Austin, 60 Paul Ave., Mountain View, Calif. 94041
Filed Jun. 8, 1979, Ser. No. 46,768
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—26



266,063
ARMORED VEHICLE
James M. Bemiss, St. Clair Shores, Mich., assignor to Ex-Cell-O Corporation, Troy, Mich.
Filed Mar. 30, 1979, Ser. No. 25,318
Term of patent 14 years
Int. Cl. D12—*13*
U.S. Cl. D12—12



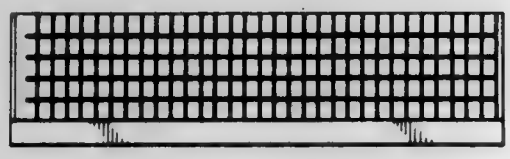
266,064
AUTOMOBILE TIRE
Yukio Sone, Atsugi, Japan, assignor to The Yokohama Rubber Co., Ltd., Shinbashi, Japan
Filed Jan. 7, 1980, Ser. No. 110,200
Claims priority, application Japan, Jul. 9, 1979, 54-28545
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—142



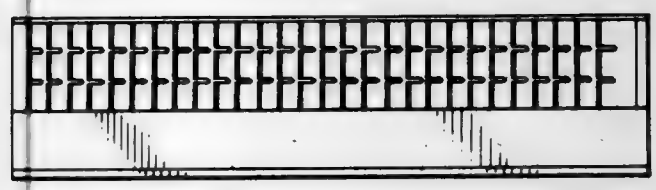
266,065
HEAT RELEASING PLATE FOR MOUNTING SEMICONDUCTOR COMPONENTS
Yoshihiko Asanuma, Tochigi, Japan, assignor to Showa Aluminum Kabushiki Kaisha, Osaka, Japan
Filed May 30, 1980, Ser. No. 154,964
Claims priority, application Taiwan, Apr. 1, 1980, 6930623
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—23



266,066
HEAT RELEASING PLATE FOR MOUNTING SEMICONDUCTOR COMPONENTS
Yoshihiko Asanuma, Tochigi, Japan, assignor to Showa Aluminum Kabushiki Kaisha, Osaka, Japan
Filed May 30, 1980, Ser. No. 154,965
Claims priority, application Taiwan, Apr. 1, 1980, 6930622
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—23



266,067
HEAT RELEASING PLATE FOR MOUNTING SEMICONDUCTOR COMPONENTS
Yoshihiko Asanuma, Tochigi, Japan, assignor to Showa Aluminum Kabushiki Kaisha, Osaka, Japan
Filed May 30, 1980, Ser. No. 154,966
Claims priority, application Taiwan, Apr. 1, 1980, 6930620
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—23



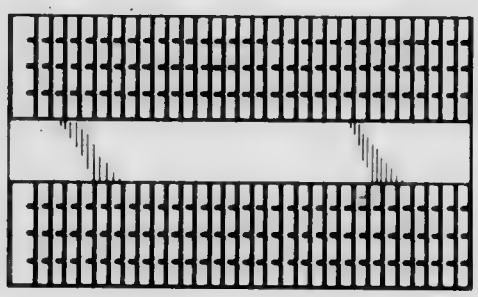
266,068
HEAT RELEASING PLATE FOR MOUNTING SEMICONDUCTOR COMPONENTS
Yoshihiko Asanuma, Tochigi, Japan, assignor to Showa Aluminum Kabushiki Kaisha, Osaka, Japan
Filed May 30, 1980, Ser. No. 154,967
Claims priority, application Taiwan, Apr. 1, 1980, 6930621
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—23



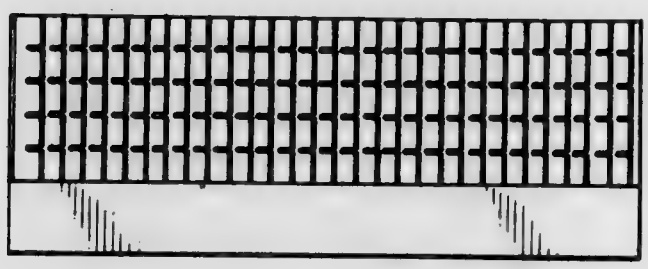
266,069
HEAT RELEASING PLATE FOR MOUNTING SEMICONDUCTOR COMPONENTS
Yoshihiko Asanuma, Tochigi, Japan, assignor to Showa Aluminum Kabushiki Kaisha, Osaka, Japan
Filed May 30, 1980, Ser. No. 154,970
Claims priority, application Taiwan, Mar. 31, 1980, 6930606
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—23



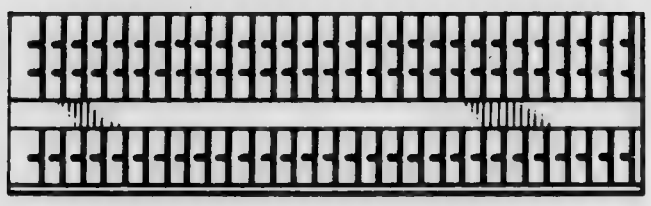
266,070
HEAT RELEASING PLATE FOR MOUNTING SEMICONDUCTOR COMPONENTS
Yoshihiko Asanuma, Tochigi, Japan, assignor to Showa Aluminum Kabushiki Kaisha, Osaka, Japan
Filed May 30, 1980, Ser. No. 154,971
Claims priority, application Taiwan, Mar. 31, 1980, 6930607
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—23



266,071
HEAT RELEASING PLATE FOR MOUNTING SEMICONDUCTOR COMPONENTS
Yoshihiko Asanuma, Tochigi, Japan, assignor to Showa Aluminum Kabushiki Kaisha, Osaka, Japan
Filed May 30, 1980, Ser. No. 154,972
Claims priority, application Taiwan, Apr. 1, 1980, 6930618
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—23



266,072
HEAT RELEASING PLATE FOR MOUNTING SEMICONDUCTOR COMPONENTS
Yoshihiko Asanuma, Tochigi, Japan, assignor to Showa Aluminum Kabushiki Kaisha, Osaka, Japan
Filed May 30, 1980, Ser. No. 154,973
Claims priority, application Taiwan, Apr. 1, 1980, 6930619
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—23



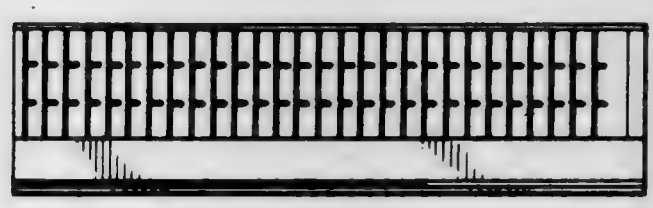
266,073
HEAT RELEASING PLATE FOR MOUNTING SEMICONDUCTOR COMPONENTS
Yoshihiko Asanuma, Tochigi, Japan, assignor to Showa Aluminum Kabushiki Kaisha, Osaka, Japan
Filed May 30, 1980, Ser. No. 154,974
Claims priority, application Taiwan, Mar. 31, 1980, 6930604
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—23



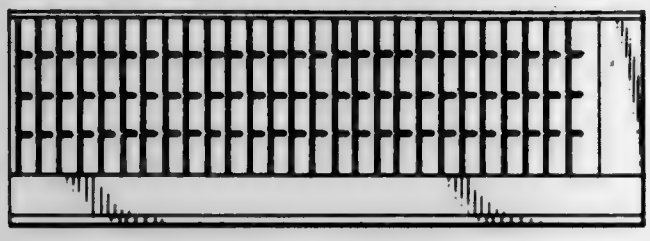
266,074
HEAT RELEASING PLATE FOR MOUNTING SEMICONDUCTOR COMPONENTS
Yoshihiko Asanuma, Tochigi, Japan, assignor to Showa Aluminum Kabushiki Kaisha, Osaka, Japan
Filed May 30, 1980, Ser. No. 154,975
Claims priority, application Taiwan, Mar. 31, 1981, 6930603
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—23



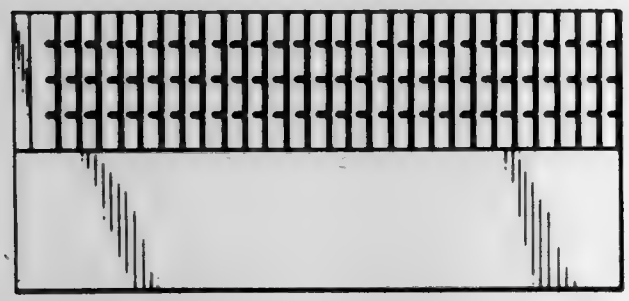
266,075
HEAT RELEASING PLATE FOR MOUNTING SEMICONDUCTOR COMPONENTS
Yoshihiko Asanuma, Tochigi, Japan, assignor to Showa Aluminum Kabushiki Kaisha, Osaka, Japan
Filed May 30, 1980, Ser. No. 154,976
Claims priority, application Taiwan, Apr. 1, 1980, 6930616
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—23



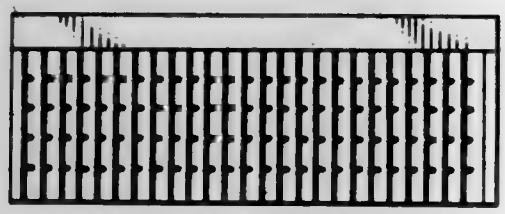
266,076
HEAT RELEASING PLATE FOR MOUNTING SEMICONDUCTOR COMPONENTS
Yoshihiko Asanuma, Oyama, Japan, assignor to Showa Aluminum Kabushiki Kaisha, Osaka, Japan
Filed May 30, 1980, Ser. No. 154,977
Claims priority, application Taiwan, Apr. 1, 1980, 6930617
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—23



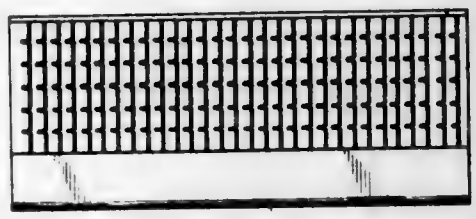
266,077
HEAT RELEASING PLATE FOR MOUNTING SEMICONDUCTOR COMPONENTS
Yoshihiko Asanuma, Oyama, Japan, assignor to Showa Aluminum Kabushiki Kaisha, Osaka, Japan
Filed May 30, 1980, Ser. No. 154,978
Claims priority, application Taiwan, Mar. 31, 1980, 6930602
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—23



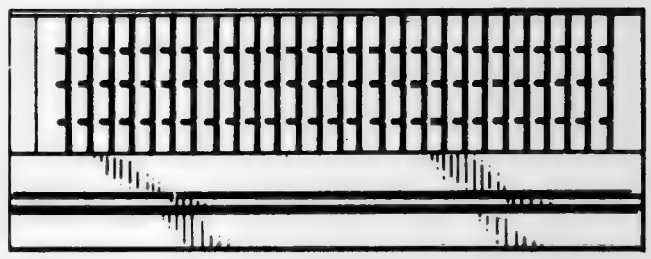
266,078
HEAT RELEASING PLATE FOR MOUNTING SEMICONDUCTOR COMPONENTS
Yoshihiko Asanuma, Oyama, Japan, assignor to Showa Aluminum Kabushiki Kaisha, Osaka, Japan
Filed May 30, 1980, Ser. No. 154,979
Claims priority, application Taiwan, Mar. 31, 1980, 6930610
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—23



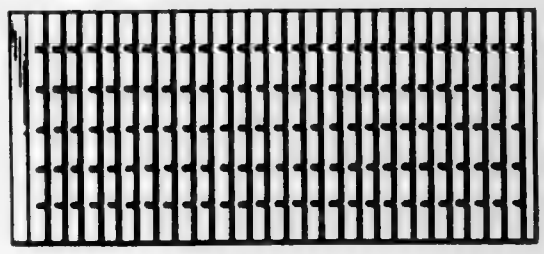
266,079
HEAT RELEASING PLATE FOR MOUNTING SEMICONDUCTOR COMPONENTS
Yoshihiko Asanuma, Oyama, Japan, assignor to Showa Aluminum Kabushiki Kaisha, Osaka, Japan
Filed May 30, 1980, Ser. No. 154,980
Claims priority, application Taiwan, Apr. 1, 1980, 6930615
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—23



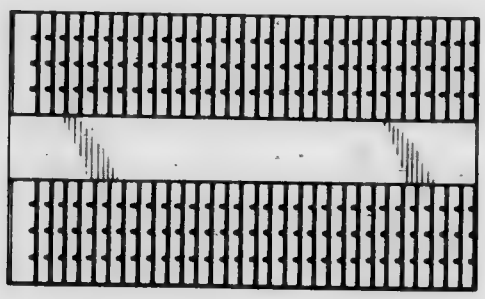
266,080
HEAT RELEASING PLATE FOR MOUNTING SEMICONDUCTOR COMPONENTS
Yoshihiko Asanuma, Oyama, Japan, assignor to Showa Aluminum Kabushiki Kaisha, Osaka, Japan
Filed May 30, 1980, Ser. No. 154,981
Claims priority, application Taiwan, Mar. 31, 1980, 6930608
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—23



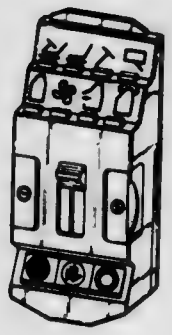
266,081
HEAT RELEASING PLATE FOR MOUNTING SEMICONDUCTOR COMPONENTS
Yoshihiko Asanuma, Tochigi, Japan, assignor to Showa Aluminum Kabushiki Kaisha, Osaka, Japan
Filed May 30, 1980, Ser. No. 154,982
Claims priority, application Taiwan, Mar. 31, 1980, 6930609
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—23



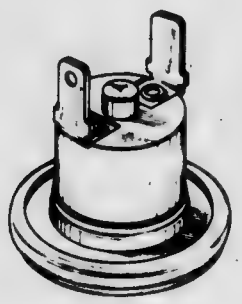
266,082
HEAT RELEASING PLATE FOR MOUNTING SEMICONDUCTOR COMPONENTS
Yoshihiko Asanuma, Tochigi, Japan, assignor to Showa Aluminum Kabushiki Kaisha, Osaka, Japan
Filed May 30, 1980, Ser. No. 154,984
Claims priority, application Taiwan, Mar. 30, 1980, 6930605
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—23



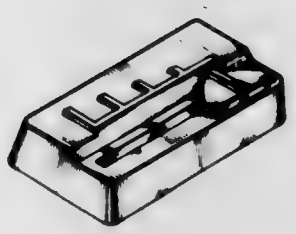
266,083
CONTROL UNIT FOR INTERIOR OF A MOTOR VEHICLE
Helmut Klaus, Remshalden, Fed. Rep. of Germany, assignor to Keiper Automobiltechnik GmbH & Co. KG, Fed. Rep. of Germany
Filed Mar. 5, 1980, Ser. No. 127,497
Claims priority, application Fed. Rep. of Germany, Sep. 11, 1979, 2MR 751
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—32



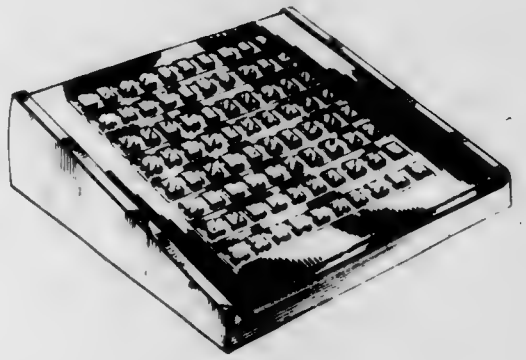
266,084
THERMOSTATIC SWITCH
Robert J. Colavecchio, Johnston, R.I., assignor to Elmwood Sensors, Inc., Cranston, R.I.
Filed Apr. 14, 1980, Ser. No. 139,976
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—35



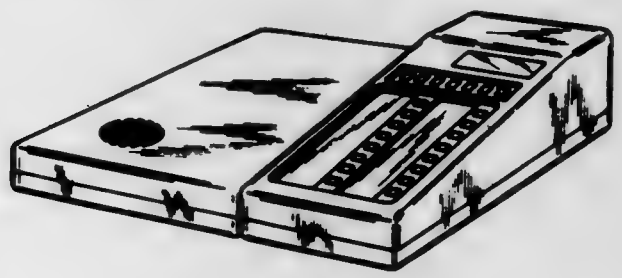
266,085
TELEPHONE HANDSET AMPLIFIER
Leslie Perhacs, Jr., Port Ludlow, Wash., assignor to Proctor & Associates Company, Redmond, Wash.
Filed Apr. 30, 1979, Ser. No. 34,257
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—57



266,086
DIRECT STATION SELECTION CONSOLE
Donald A. Foggia, Ocean, N.J., and Roman F. Pomponi, Norwalk, Conn., assignors to TIE/Communications, Inc., Shelton, Conn.
Filed Sep. 24, 1979, Ser. No. 78,105
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—58



266,087
AUTOMATIC DIALING APPARATUS FOR TELEPHONE
Kenji Nakamura, and Naoko Hayashi, both of Aichi, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan
Filed Jun. 13, 1980, Ser. No. 159,432
Claims priority, application Japan, Feb. 22, 1980, 55-6546
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—66



266,088
RADIO RECEIVER

Peter H. J. Van De Ven, Valkenswaard, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

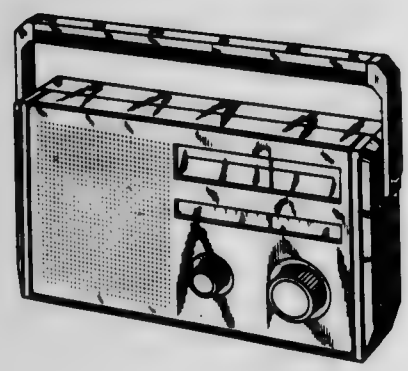
Filed Jun. 27, 1980, Ser. No. 163,764

Claims priority, application United Kingdom, Jan. 3, 1980, 993031

Term of patent 14 years

Int. Cl. D14—*03*

U.S. Cl. D14—70



266,089
RADIO RECEIVER

Peter H. J. Van De Ven, Valkenswaard, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

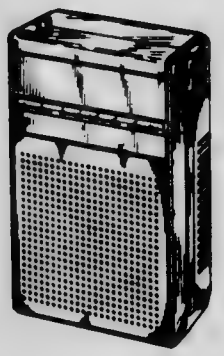
Filed Jun. 27, 1980, Ser. No. 163,680

Claims priority, application United Kingdom, Jan. 3, 1980, 993034

Term of patent 14 years

Int. Cl. D14—*03*

U.S. Cl. D14—71



266,090
DATA PROCESSING CONSOLE

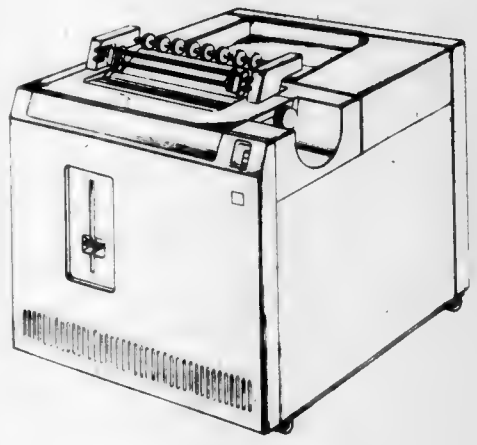
Myron F. Davis, Jr., and Joseph F. Talerico, both of Boca Raton, Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 19, 1980, Ser. No. 122,381

Term of patent 14 years

Int. Cl. D14—*02*

U.S. Cl. D14—102



266,091
HYDRAULIC POWER PUMP

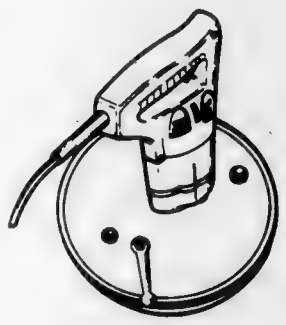
Robert E. Richards, Rte. 3, Box 145-E, Waxhaw, N.C. 28173, and Eckart F. Schultze, 3008 Goneaway Rd., Charlotte, N.C. 28210

Filed Jan. 14, 1980, Ser. No. 111,860

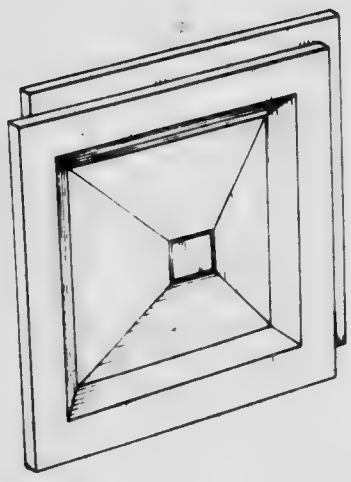
Term of patent 14 years

Int. Cl. D15—*99*

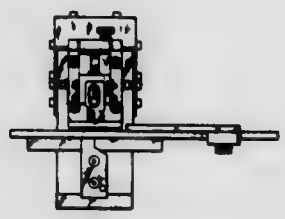
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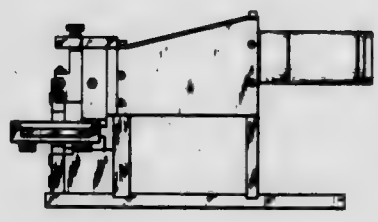


266,092
LINING TILE FOR AN ABRASIVE BLASTING MACHINE
William G. G. Tutton, Belper, England, assignor to Auto Alloys R&D Ltd., Derbyshire, England
Filed Oct. 23, 1979, Ser. No. 87,571
Claims priority, application United Kingdom, Apr. 24, 1979, 989626
Term of patent 14 years
Int. Cl. D15—*09*; D25—*01*
U.S. Cl. D15—126



266,093
CHAIN CUTTER
Everett E. Cook, West View Rd., Wakefield, R.I. 02879
Filed Jul. 14, 1980, Ser. No. 168,032
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—129

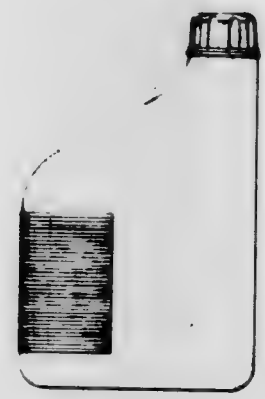




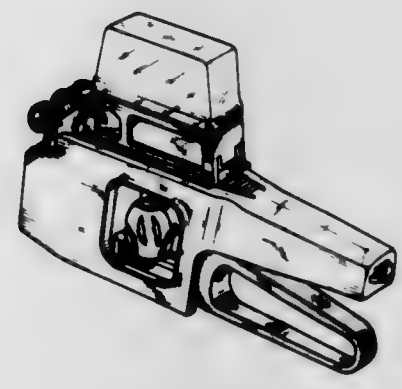
266,094
COLLAPSIBLE IMAGE VIEWING DEVICE
Marlin E. Gher, 12919 Valleywood Dr., Silver Spring, Md. 20906, and Steven G. Detsch, 4146 Bryan St., Oceanside, Calif. 92054
Filed Jul. 15, 1980, Ser. No. 169,262
Term of patent 14 years
Int. Cl. D16—*99*
U.S. Cl. D16—18



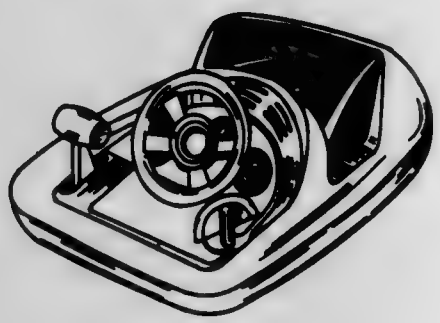
266,095
TONER CONTAINER OR THE LIKE
Kunio Hara, Chiba, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan
Filed Apr. 15, 1980, Ser. No. 140,587
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D16—27



266,096
PORTABLE APPARATUS FOR PRINTING AND DISPENSING LABELS
Werner Becker, Hirschhorn, Fed. Rep. of Germany, assignor to Esselte Pendaflex Corporation, Garden City, N.Y.
Filed Dec. 18, 1978, Ser. No. 972,026
Claims priority, application Fed. Rep. of Germany, Jun. 19, 1978, URA 578/78
Term of patent 14 years
Int. Cl. D18—*99*
U.S. Cl. D18—19



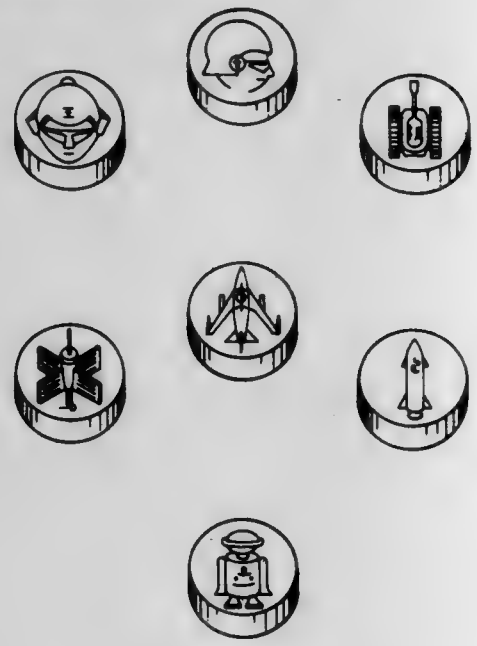
266,097
TOY DRIVING SIMULATOR
Ronald R. Klawitter, Gasconade County, Mo., assignor to Steven Manufacturing Company, Hermann, Mo.
Filed Jan. 3, 1980, Ser. No. 109,239
Term of patent 14 years
Int. Cl. D19—*07*
U.S. Cl. D19—63



266,098
MEMO HOLDER
Richard A. Thornton, 2323-40th St., Des Moines, Iowa 50310
Filed Jan. 21, 1980, Ser. No. 113,787
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—86



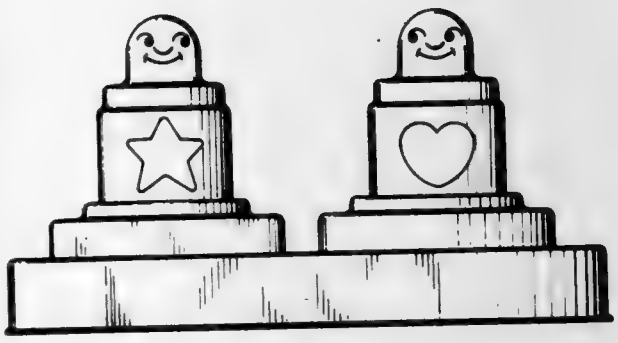
266,099
SET OF CHINESE CHESS PIECES
Mingder Shyu, 3105 Kipling Pl., Fremont, Calif. 94536
Filed Oct. 5, 1979, Ser. No. 82,151
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—52



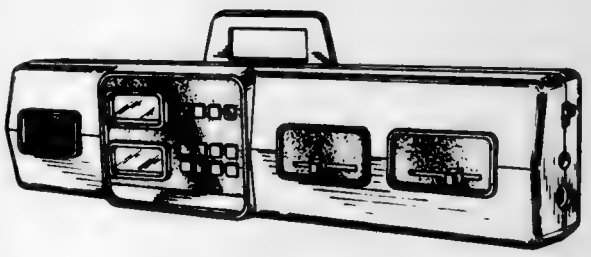
266,100
SCOOTER
Frank P. Miller, P.O. Box 402, Brigham City, Utah 84302
Filed Jan. 24, 1980, Ser. No. 115,078
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—76



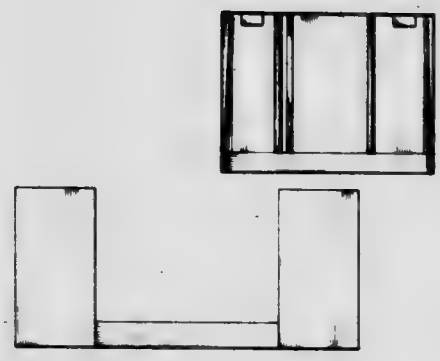
266,101
COMBINED PUZZLE AND CONSTRUCTION TOY
Lawrence B. Grubb, Monkton; Danny E. Simpson, Baltimore, both of Md.; Louis S. Hoffman, Morristown, N.J., and David M. Williams, Montreal, Canada, assignors to Johnson & Johnson Baby Products Company, New Brunswick, N.J.
Filed Nov. 20, 1979, Ser. No. 96,259
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—107



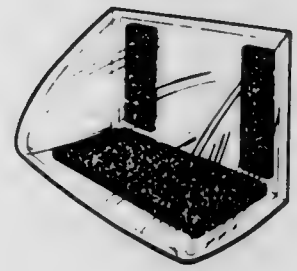
266,102
CONTROL UNIT FOR EXERCISER
Clifford E. Grube, Niles, Ill., assignor to Associated Mills, Inc., Chicago, Ill.
Filed Nov. 30, 1979, Ser. No. 98,856
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—191

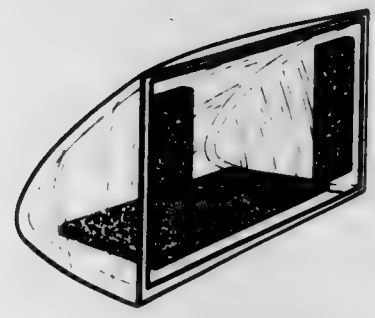


266,103
WATER CONTROL GATE
Wayne M. Carter, P.O. Box 666, Orinda, Calif. 94563
Filed Mar. 25, 1980, Ser. No. 133,891
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—1

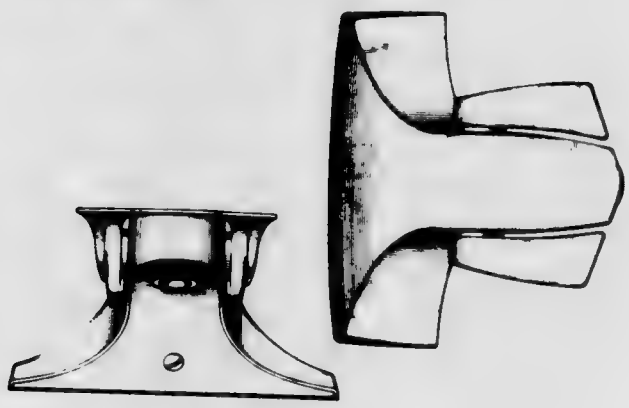


266,105
SOLAR ENERGY COLLECTOR FOR MOUNTING OVER WINDOWS OF BUILDINGS FOR SPACE HEATING THEREOF
Patricia M. Arrington, 3222 Denson Pl., Charlotte, N.C. 28215
Filed Mar. 21, 1980, Ser. No. 133,497
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—72

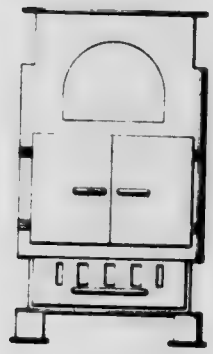




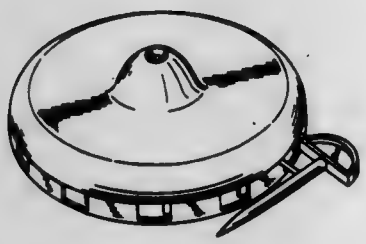
266,104
FAUCET
Dwight N. Johnson, San Marcos, Calif., assignor to JH Industries, Inc., San Marcos, Calif.
Filed May 8, 1980, Ser. No. 147,702
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—25



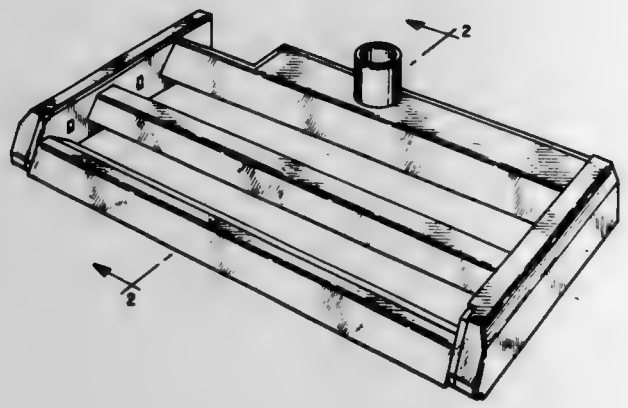
266,106
FURNACE
Ole A. Simonsen, N-4290 Forsvik, Norway
Filed May 5, 1980, Ser. No. 148,156
Claims priority, application Norway, Nov. 5, 1979, 60574
Term of patent 3½ years
Int. Cl. D23—*03*
U.S. Cl. D23—97



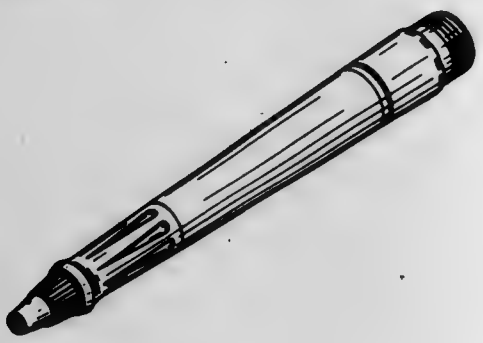
266,107
AIR FRESHNER OR SIMILAR ARTICLE
Georg Schimanski, Hagen, Fed. Rep. of Germany, assignor to Globol-Werk GmbH, Neuburg, Fed. Rep. of Germany
Filed Mar. 11, 1980, Ser. No. 129,491
Claims priority, application Fed. Rep. of Germany, Sep. 18, 1979, 408
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—150



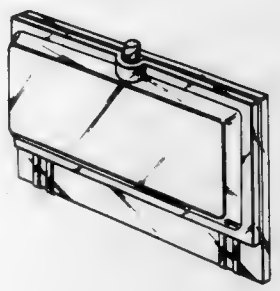
266,108
VENTILATING HOOD FOR AN ELECTROPLATING TANK
Steve A. Acero, 21089 Lavina Ct., Cupertino, Calif. 95014, and Edward L. Rougeau, 2592 Glade, Santa Clara, Calif. 95051
Filed Apr. 28, 1980, Ser. No. 144,265
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—151



266,109
DENTAL SCALER
Anthony T. Sertich, New York, N.Y., and N. Dominic Marucci, Philadelphia, Pa., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.
Filed Dec. 10, 1979, Ser. No. 101,608
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—12



266,110
ELECTRIC DISCHARGE LAMP
Kazuo Ariga, Tokyo, and Mitunari Yoshida, Yokohama, both of Japan, assignors to Stanley Electric Co., Ltd., Tokyo, Japan
Filed Dec. 4, 1979, Ser. No. 100,137
Claims priority, application Japan, Oct. 12, 1979, 54-42957
Term of patent 14 years
Int. Cl. D26—*04*
U.S. Cl. D26—3



266,111
PERSONAL CARE APPLIANCE
John S. Doyel, 404 W. 20th St., New York, N.Y. 10011
Filed Jun. 19, 1980, Ser. No. 161,016
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—58



266,112
ANIMAL COMB
Mickey D. Culp, R.R. 2, Box 65-B, Francesville, Ind. 47946
Filed Aug. 8, 1980, Ser. No. 176,393
Term of patent 14 years
Int. Cl. D30—*99*
U.S. Cl. D30—40





266,113

SAFE

Dieter Eppler, Geesthacht, and Karl-Heinz Kremson, Hamburg, both of Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co. KG., Hamburg, Fed. Rep. of Germany

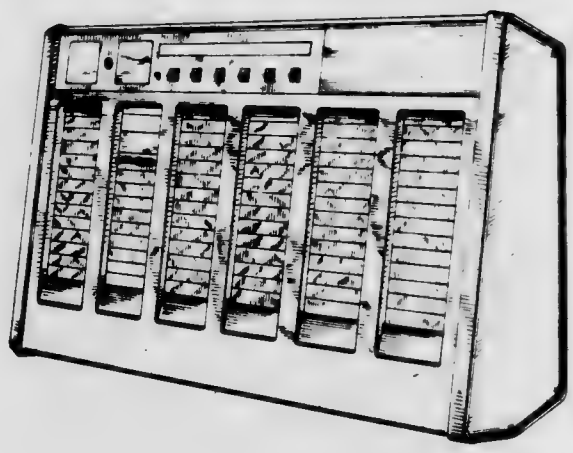
Filed Apr. 30, 1980, Ser. No. 145,044

Claims priority, application Fed. Rep. of Germany, Nov. 8, 1979, 10887

Term of patent 14 years

Int. Cl. D99—*00*

U.S. Cl. D99—28



266,114

MONEY CHEST

Johannes C. Berkheij, Driebergen, Netherlands, assignor to Metaalwarenfabriek Hoogmerk B.V., Netherlands

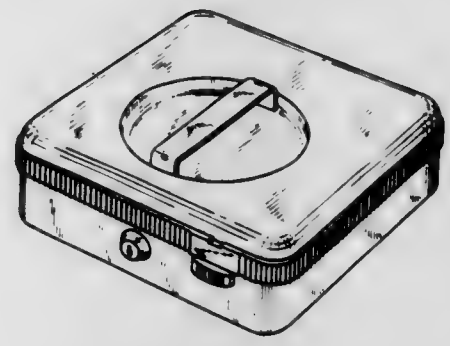
Filed Oct. 17, 1979, Ser. No. 85,727

Claims priority, application Benelux, Jul. 16, 1979, 53845-00

Term of patent 14 years

Int. Cl. D3—*02*

U.S. Cl. D99—34



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TO WHOM

PATENTS WERE ISSUED ON THE 7TH DAY OF SEPTEMBER, 1982

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. B. Chance Company: *See*—
McKelvy, Marvin D., 4,348,561, Cl. 200-51.00R.

A. Ott GmbH: *See*—
Claussen, Reimer; and Jung, Liebhard, 4,347,753, Cl. 74-110.000.

AB Asea-Atom: *See*—
Nylund, Olov, 4,348,355, Cl. 376-434.000.

AB CTC: *See*—
Hillerstrom, Bjorn; Fransson, Lennarth; and Thuvander, Arne, 4,347,972, Cl. 236-18.000.

Abbott, Clinton E.; and Rice, Larry J., to International Business Machines Corporation. Tabulation rack with spring pin holding. 4,348,123, Cl. 400-298.000.

Abbott Laboratories: *See*—
Chau, Kue H., 4,348,374, Cl. 424-1.000.

Abbott, Thomas P.: *See*—
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Abe, Seikou: *See*—
Nomura, Ken; Igashira, Toshihiko; and Abe, Seikou, 4,347,826, Cl. 123-549.000.

Acheson, John L., to Rexnord Inc. Convertible pump servo-valve control. 4,348,159, Cl. 417-220.000.

Achiha, Masahiko, to Hitachi, Ltd.; and Hitachi Denshi Kabushiki Kaisha. Phase adjusting system for carrier chrominance signal. 4,348,689, Cl. 358-31.000.

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Ackley, Donald E.; Engelmann, Reinhart W. H.; and Kerps, Dietrich, to Hewlett-Packard Company. Multiple stripe leaky mode laser. 4,348,763, Cl. 372-45.000.

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Hayashi, Saburo; Okada, Syohiti; Okamoto, Kazuyoshi; Mizutani, Mochifumi; Isono, Teizo; Osada, Toshio; Okabe, Tohru; and Adachi, Mitsuji, 4,348,201, Cl. 8-94.180.

Adams, Gary V.: *See*—
Law, Bliss W.; Kirchoff, George F.; and Adams, Gary V., 4,348,037, Cl. 280-733.000.

Adams, Gerald M., to Orthotech, Incorporated. Orthopedic correctional support system. 4,347,840, Cl. 128-70.000.

Adeka Argus Chemical Co., Ltd.: *See*—
Minagawa, Motonobu; Nakahara, Yutaka; and Kitsukawa, Kazumi, 4,348,308, Cl. 524-110.000.

Adelphi Research Center, Inc.: *See*—
Wright, Donald G., 4,347,982, Cl. 239-405.000.

Adria Laboratories, Inc.: *See*—
Imondi, Anthony R.; and Shemano, Irving, 4,348,407, Cl. 424-300.000.

Agfa-Gevaert Aktiengesellschaft: *See*—
Scheerer, Rainer; Ranz, Erwin; and Lohmann, Joachim W., 4,348,474, Cl. 430-382.000.

Agfa-Gevaert Aktiengesellschaft AG: *See*—
Wernicke, Ubbo; and Meckl, Heinz, 4,348,475, Cl. 430-399.000.

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Stievenart, Emile F.; Plessers, Hendrik S.; and Hellemans, Julianus J., 4,348,019, Cl. 271-10.000.

Ago, Nobuhiro: *See*—
Suzuki, Toyotosi; and Ago, Nobuhiro, 4,348,095, Cl. 354-288.000.

Agrawal, Giridhari L.; and Hockey, Edward J., to Garrett Corporation, The. Foil bearing mounting. 4,348,066, Cl. 308-9.000.

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Ahrens, Paul W., to Miracle Recreation Equipment Company. Playground design kit and method of using the same. 4,348,188, Cl. 434-72.000.

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Sakakibara, Shiro; Tsukamoto, Kazumasa; Sakai, Takahiro; and Terakura, Yukio, 4,347,763, Cl. 74-789.000.

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Akagawa, Masaki: *See*—
Sugimoto, Osamu; and Akagawa, Masaki, 4,347,925, Cl. 194-1.00N.

Akebono Brake Industry Company, Ltd.: *See*—
Ogiwara, Osao, 4,348,490, Cl. 523-156.000.

Akerberg, Denis W.; Huffman, George W.; and Rude, Carl A., to Quaker Oats Company, The. Method and composition for a furan-modified phenolic novolak binder system. 4,348,343, Cl. 264-29.500.

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Staudenrausch, Georg, 4,347,646, Cl. 17-49.000.

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O'Dette, John H.; and Jack, Stanton E., 4,348,242, Cl. 149-7.000.

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Luebke, Clement J.; and Daniels, Lowell W., 4,347,833, Cl. 126-369.000.

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Alig, Leo: *See*—
Nickolson, Robert; Kerb, Ulrich; Wiechert, Rudolf; Alig, Leo; Furst, Andor; and Muller, Marcel, 4,348,327, Cl. 260-397.100.

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Werner, Arnold; Ennen, Peter; Nuebauer, Josef; Flaig, Hans; and Allgaier, Juergen, 4,348,753, Cl. 368-188.000.

Allied Chemical Corporation: *See*—
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Allied Corporation: *See*—
Lazarus, Stanley D.; and Lofquist, Robert A., 4,348,314, Cl. 525-439.000.

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Reid, Martin J., 4,348,651, Cl. 333-262.000.

Alps Electric Co., Ltd.: *See*—
Ushida, Susumu; and Yanagida, Hiroyuki, 4,348,645, Cl. 330-306.000.

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Hines, James E., Jr.; and LaBar, Richard G., deceased, 4,348,236, Cl. 106-38.270.

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Katsuma, Makoto; Shinbori, Kenichi; Kiuchi, Masayoshi; and Alyfuku, Kiyoshi, 4,348,096, Cl. 354-289.000.

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Pauls, Walter L.; and Dunleavy, Raymond A., III, 4,348,251, Cl. 156-500.000.
American Cyanamid Company: *See—*
Dusza, John P.; Joseph, Joseph P.; and Bernstein, Seymour, 4,348,527, Cl. 548-362.000.
Loffelman, Frank F., 4,348,493, Cl. 524-100.000.
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Shepherd, Robert G., 4,348,399, Cl. 424-263.000.
American Home Products Corporation: *See—*
Sulkowski, Theodore S.; Bergey, James L.; and Mascitti, Albert A., 4,348,413, Cl. 424-322.000.
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Gammons, Clifford E.; Moore, Francis C.; Pagel, Kenneth L.; and Jackson, Barry N., 4,347,633, Cl. 5-453.000.
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American Standard Inc.: *See—*
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Felton, Herman R., 4,348,286, Cl. 210-658.000.
Ancher, Jean-Francois R.: *See—*
Bourgery, Guy R.; Douzon, Colette A.; Ancher, Jean-Francois R.; Lacour, Alain P.; Guerret, Patrick G.; Langlois, Michel; and Dostert, Phillippe L., 4,348,393, Cl. 424-248.570.
Anderl, Peter; and Monch, Clauspeter, to Steigerwald Strahltechnik GmbH. Position regulation of a charge carrier beam. 4,348,576, Cl. 219-121.0EW.
Anderson, Harold M.; Marcum, Norman E.; and DuVall, Wilbur E., to Xerox Corporation. Thermal servo system for mechanical positioning. 4,348,624, Cl. 318-634.000.
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Andren, Carl F.: *See—*
Scott, Lex A.; Mosley, William H., Jr.; and Andren, Carl F., 4,348,641, Cl. 329-50.000.
Andrews, Merritt B., to United Technologies Corporation. Blade pitch actuation system. 4,348,156, Cl. 416-48.000.
ANIC, S.p.A.: *See—*
Priola, Aldo; and Giuliani, Giampaolo, 4,348,427, Cl. 427-44.000.
Anthony, Richard A.: *See—*
Le Tarte, Walter, 4,347,639, Cl. 15-21.00D.
Anzai, Kuniaki: *See—*
Tateishi, Kazushi; Anzai, Kuniaki; and Tomita, Taketoshi, 4,348,276, Cl. 209-573.000.
Aoki, Mamoru; Tomita, Masahiro; Utsunomiya, Kei; Sako, Hironobu; Kaneko, Dentaro; Shimazaki, Katsunori; and Ishii, Yoshitomo, to Kobe Steel, Ltd. Direct reduction process for producing metallic iron. 4,348,226, Cl. 75-35.000.
Arai, Hirotake; and Arai, Michio. Fastener for helmet jaw band. 4,347,630, Cl. 2-421.000.
Arai, Michio: *See—*
Arai, Hirotake; and Arai, Michio, 4,347,630, Cl. 2-421.000.
Ardac, Inc.: *See—*
Gorgone, Robert L.; Iannadrea, Gerald M.; Doleja, Anthony H.; Knox, Bruce R.; and Kovach, Alan J., 4,348,656, Cl. 340-146.30R.
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Grier, William R.; Shepard, Francis H., Jr.; and Arledge, Arthur L., 4,348,738, Cl. 364-900.000.
Armond, John W., to BOC Limited. Process for the separation of a gaseous mixture. 4,348,213, Cl. 55-25.000.
Armstrong World Industries, Inc.: *See—*
Herweh, John E.; Garrett, Thomas B.; and Magnusson, Alan B., 4,348,508, Cl. 526-268.000.
Miller, Jesse D., Jr.; and Petzold, James R., 4,348,447, Cl. 428-149.000.
Arndt, Walter E. Foot steering apparatus for outboard motor boats. 4,348,193, Cl. 440-62.000.
Arnould, Jacques, to Le Silicium Semiconducteur SSC. Process for mounting a protection diode on a vertical multijunction photovoltaic cell structure and photovoltaic cells obtained. 4,348,545, Cl. 136-244.000.
Arrison, Frank J.: *See—*
Mittal, Faquir C.; Arrison, Frank J.; and Schonfeld, Arnold, 4,348,705, Cl. 360-98.000.
Artaud, Robert; Aubert, Michel; Elbeze, Richard; and Jogand, Patrick, to Commissariat a l'Energie Atomique. Semi-modular heat exchanger for nuclear reactors. 4,348,354, Cl. 376-405.000.
Arvin Industries, Inc.: *See—*
Cauldwell, Jack D., 4,348,693, Cl. 358-140.000.
Asahi Glass Company, Ltd.: *See—*
Oohasi, Koji; Hosoda, Yutaka; Kitamura, Toshio; and Kudo, Eiichi, 4,348,485, Cl. 501-115.000.
Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Shindow, Osamu, 4,348,108, Cl. 356-125.000.
Asahi Kogalu Kogyo Kabushiki Kaisha: *See—*
Ogawa, Ryota, 4,348,082, Cl. 350-423.000.
ASEA Aktiebolag: *See—*
Johansson, Folke, 4,348,558, Cl. 200-6.00R.
Torok, Vilmos, 4,348,605, Cl. 310-168.000.
Ash, Stephen R., to Purdue Research Foundation. Reciprocating dialyzer having spacers. 4,348,283, Cl. 210-321.300.
Ashland Oil, Inc.: *See—*
Shields, Theodore C., 4,348,523, Cl. 544-399.000.
Asmuth, Richard L., to Bell Telephone Laboratories, Incorporated. Method of providing virtual private network telephone service. 4,348,554, Cl. 179-18.00B.
Assmann, Helmut; Brandau, Egbert; Dorr, Wolfgang; Mathieu, Viktor; and Dichtjar, Gerhard, to Kraftwerk Union Aktiengesellschaft; and Reaktor-Brennelement Union GmbH. Method for manufacturing oxidic nuclear fuel bodies. 4,348,339, Cl. 264-0.500.
Association des Ouvriers en Instruments de Precision: *See—*
David, Roger J. P.; and Lande, Maurice A., 4,348,634, Cl. 323-353.000.
Astec Industries, Inc.: *See—*
Brock, J. Donald, 4,348,146, Cl. 414-332.000.
Atherton, James H.; and Jindra, Clifford P., to RCA Corporation. Signal comparison circuit. 4,348,596, Cl. 307-264.000.
Atkinson, Joseph G.; and Wasson, Burton K., to Merck Sharp & Dohme (I.A.) Corp. Quinolinyl ethanolamines. 4,348,398, Cl. 424-258.000.
Aubert, Michel: *See—*
Artaud, Robert; Aubert, Michel; Elbeze, Richard; and Jogand, Patrick, 4,348,354, Cl. 376-405.000.
Audio in Motion: *See—*
Bertagna, Richard A.; Stansbury, Benjamin H.; and Tarlow, Kenneth A., 4,347,911, Cl. 181-130.000.
Auerbach, Robert A.: *See—*
Blenner, Donald R.; Auerbach, Robert A.; and Boenig, Herman V., 4,348,426, Cl. 427-41.000.
Auterson, James, to Marconi Company Limited, The. Sights. 4,348,109, Cl. 356-252.000.
AVX Corporation: *See—*
Mc Larney, Joseph C.; and Lightweis, David J., 4,347,650, Cl. 29-25.420.
B & J Manufacturing Company: *See—*
Parenti, Joseph A.; and Charles, Malcolm J. (said Malcolm Jean Charles assors. to), 4,348,057, Cl. 299-12.000.
Baba, Masanori; and Hara, Toshito, to Fujitsu Limited. Rhodium electrical contact of a switch particularly a reed switch. 4,348,566, Cl. 200-144.00B.
Bachman, Gerald L., to Monsanto Company. Recovery of L-phenylalanine and L-aspartic acid during preparation of α-L-aspartyl-L-phenylalanine methyl ester. 4,348,317, Cl. 260-112.50R.
Bachmann, Andrew G. Adhesive composition. 4,348,503, Cl. 525-455.000.
Bachmann, Rainer, to Black & Decker Inc. Cutterhead for a power planer. 4,347,882, Cl. 144-225.000.
Backman, Bo G., to Linden-Alimak AB. Apparatus for separating fine material from coarse material. 4,348,275, Cl. 209-310.000.
Bair, Scott S., III, to Singer Company, The. Power assist drive upright vacuum cleaner and power assist drive system therefor. 4,347,643, Cl. 15-340.000.
Baker, James K.; and Baker, Janet M., to International Business Machines Corporation. Parallel pattern verifier with dynamic time warping. 4,348,553, Cl. 179-1.0SB.
Baker, Janet M.: *See—*
Baker, James K.; and Baker, Janet M., 4,348,553, Cl. 179-1.0SB.
Bakhir, Tatyana M.: *See—*
Mamadzhanov, Ulmas D.; Bakhir, Vitold M.; Alekhin, Stanislav A.; and Bakhir, Tatyana M., 4,347,736, Cl. 73-155.000.
Bakhir, Vitold M.: *See—*
Mamadzhanov, Ulmas D.; Bakhir, Vitold M.; Alekhin, Stanislav A.; and Bakhir, Tatyana M., 4,347,736, Cl. 73-155.000.
Tikhonov, Jury P.; Alekhin, Stanislav A.; Bakhir, Vitold M.; and Zadorozhny, Jury G., 4,348,279, Cl. 210-96.100.
Balaban, John A. Racket stringing apparatus and method. 4,348,024, Cl. 273-73.00A.
Baldwin, Mark H., to NesTier Corporation. Shelf support bracket. 4,348,001, Cl. 248-243.000.
Balta, Justin O.; and Nelson, Edward I. Shift lock and position indicating torsion spring activated key switch. 4,348,122, Cl. 400-276.000.
Baran, Rowland S.: *See—*
Gamble, James R.; Herrold, Lear C.; and Baran, Rowland S., 4,348,176, Cl. 432-258.000.
Barger, John J.; and Underwood, James R., to Combustion Engineering, Inc. Flux dam for submerged arc welding. 4,348,574, Cl. 219-73.210.
Barlow, Gordon A., to Gordon Barlow Design. Board game with random water distribution for dunking playing pieces. 4,348,028, Cl. 273-249.000.
Barmag Barmer Maschinenfabrik AG: *See—*
Pieper, Werner; and Worpenberg, Reinhard, 4,347,989, Cl. 242-35.50R.
Barnes, Philip E.; Mayo, Millard G.; and Sherman, Robert, to United Technologies Corporation. Wind turbine blade pitch control system. 4,348,155, Cl. 416-46.000.
Barnes, Robert R.; and Myers, Charles L., to Barnes, Robert R. Driver alert system. 4,348,652, Cl. 340-52.00R.

Barrera, Giorgio, to Officine Meccaniche Pavesi & C. S.p.A. Method for the insertion of pre-wound coils into stator slots. 4,347,657, Cl. 29-596.000.

Barrett, Edward J. Interlocking molecular model system. 4,348,190, Cl. 434-278.000.

Barrington, Burchus Q., to Halliburton Company. Hydraulic connector apparatus and method. 4,347,900, Cl. 166-380.000.

Bartolomucci, John R.: *See*—
Bertolucci, Michael D.; and Bartolomucci, John R., 4,348,491, Cl. 523-214.000.

Barton, Edwin A.: *See*—
Jernberg, Robert H.; and Barton, Edwin A., 4,347,942, Cl. 220-89.00A.

BASF Aktiengesellschaft: *See*—
Husslein, Gerd; and Hamprecht, Gerhard, 4,348,534, Cl. 560-62.000.
Ilmer, Andreas, 4,348,692, Cl. 358-127.000.
Schomann, Klaus D., 4,348,698, Cl. 360-14.000.

BASF Wyandotte Corporation: *See*—
Patil, Arvind S.; Kersten, Siegfried P.; and Fliege, Werner P., 4,348,240, Cl. 106-304.000.

Basle, Andrew G. Telephone with long distance dialing lock out. 4,348,555, Cl. 179-90.00D.

Bastian, Franklin E.: *See*—
Schonfeld, Arnold; Eibner, Jules A.; and Bastian, Franklin E., 4,348,101, Cl. 355-14.00R.

Bauer, Kurt; and Roth, Christian, to ITT Industries, Inc. Wiper arm. 4,347,642, Cl. 15-250.350.

Bauer, Peter. Elastomer bulb dispensing pump. 4,347,953, Cl. 222-207.000.

Bauer, Wolfgang; Dickmanns, Heinz; Morgenroth, Konstantin; Reh, Kuno; and Ribka, Joachim, to Cassella Aktiengesellschaft. Aqueous dyestuff formulation, a process for its preparation and its use for dyeing and printing. 4,348,204, Cl. 8-527.000.

Bauman, William C.; Lee, John M.; and Burba, John L., III, to Dow Chemical Company, The. Crystalline lithium aluminates. 4,348,296, Cl. 252-184.000.

Bauman, William C.; and Lee, John M., to Dow Chemical Company, The. Crystalline lithium aluminates. 4,348,297, Cl. 252-184.000.

Baxter, David H. Motorcycle jack. 4,348,010, Cl. 254-131.000.

Baxter Travenol Laboratories, Inc.: *See*—
George, Richard W.; and Schnell, William J., 4,348,280, Cl. 210-101.000.
Murtaugh, J. Barry; Laurin, Dean G.; Kling, John E.; and Woodworth, Archie G., 4,348,209, Cl. 23-232.00R.

Bayer Aktiengesellschaft: *See*—
Albrecht, Bernhard; Frey, Hans; Habermacher, Vinzenz; Behre, Horst; Kienitz, Lutz; Schenk, Wolfgang; Steffan, Guido; and Vogel, Axel, 4,348,334, Cl. 260-505.00C.
Blahak, Johannes; Hubner, Hans; Koster, Johannes; Meiners, Hans J.; and Thomas, Heinz, 4,348,536, Cl. 560-169.000.
Blank, Heinz U.; Behre, Horst; and Linden, Hans W., 4,348,336, Cl. 260-508.000.
Buysch, Hans-Josef; Brassat, Bert; Eimers, Erich; and Hermann, Karl H., 4,348,495, Cl. 524-117.000.
Dickore, Karlfried; and Kuhle, Engelbert, 4,348,331, Cl. 260-465.00D.
Franckowiak, Gerhard; Meyer, Horst; Bossert, Friedrich; Heise, Arend; Kazda, Stanislav; Stoepel, Kurt; Towart, Robertson; and Wehinger, Egbert, 4,348,395, Cl. 424-250.000.
Fuchs, Rainer; Klauke, Erich; Hammann, Ingeborg; Homeyer, Bernhard; Behrenz, Wolfgang; St-Noel, Wilhelm; Lantzsch, Reinhard; and Harhold, Albrecht, 4,348,323, Cl. 549-362.000.
Grogler, Gerhard; and Meyborg, Holger, 4,348,512, Cl. 528-73.000.
Hamprecht, Rainer, 4,348,319, Cl. 260-208.000.
Kinast, Gunther; Muller, Lutz; Sitt, Rudiger; and Pula, Walter, 4,348,402, Cl. 424-267.000.
Kuhle, Engelbert; Kraus, Peter; and Klauke, Erich, 4,348,411, Cl. 424-319.000.
Linhart, Karl; Pawellek, Dieter; and Gleinig, Harald, 4,348,335, Cl. 260-508.000.
Lobach, Wilfried; Kolb, Gunter; Lehmann, Wolfgang; Cramm, Gunther; Muller, Friedhelm; and Muszik, Janos, 4,348,514, Cl. 528-367.000.
Maurer, Fritz; Priesnitz, Uwe; Riebel, Hans-Jochem; Gallenkamp, Bernd; and Klauke, Erich, 4,348,538, Cl. 562-459.000.
Oediger, Hermann; Lieb, Folker; and Disselnkotter, Hans, 4,348,332, Cl. 260-502.40R.
Serini, Volker; Neumann, Rainer; Friedhofen, Gerhard; Freitag, Dieter; Heuser, Jurgen; and Schwarz, Hans-Helmut, 4,348,542, Cl. 568-727.000.
Sirrenberg, Wilhelm; Klauke, Erich; Hammann, Ingeborg; Krehan, Ingomar; and Stendel, Wilhelm, 4,348,394, Cl. 424-248.570.

BBC Brown, Boveri & Company: *See*—
Muller, Rene, 4,348,268, Cl. 204-290.00R.

BBC Brown, Boveri & Co. Ltd.: *See*—
Bezencon, Jean-Jacques, deceased; Menzi, Georges; and Mermoud, Lucien, 4,347,918, Cl. 192-0.02R.
Schmidt, Walter, 4,348,255, Cl. 156-656.000.

Beach, Kenneth A., to Ford Motor Company. High temperature outdoor weathering chamber. 4,347,737, Cl. 73-159.000.

Beale, Mark. Disposable electrical surgical suction tube and instrument. 4,347,842, Cl. 128-276.000.

Bearden, Roby, Jr.; Aldridge, Clyde L.; and Pine, Lloyd A., to Exxon Research And Engineering Co. Catalysts and hydrocarbon treating processes utilizing the same. 4,348,270, Cl. 208-9.000.

Beaver, Perry L.: *See*—
Rode, Heinz A.; Fromel, Meter; and Beaver, Perry L., 4,348,665, Cl. 340-682.000.

Becher, Albert P.: *See*—
King, Paul V.; Becher, Albert P.; and Henderson, Wilmer P., 4,347,796, Cl. 109-49.500.

Bechtel International Corporation: *See*—
Sandhu, Avtar S., 4,348,206, Cl. 23-230.00A.

Becker, Herbert; and Tischler, Josef, to Metallwerk Max Brose GmbH & Co. Window lifter. 4,347,755, Cl. 74-421.00A.

Behre, Horst: *See*—
Albrecht, Bernhard; Frey, Hans; Habermacher, Vinzenz; Behre, Horst; Kienitz, Lutz; Schenk, Wolfgang; Steffan, Guido; and Vogel, Axel, 4,348,334, Cl. 260-505.00C.
Blank, Heinz U.; Behre, Horst; and Linden, Hans W., 4,348,336, Cl. 260-508.000.

Behrenz, Wolfgang: *See*—
Fuchs, Rainer; Klauke, Erich; Hammann, Ingeborg; Homeyer, Bernhard; Behrenz, Wolfgang; St-Noel, Wilhelm; Lantzsch, Reinhard; and Harhold, Albrecht, 4,348,323, Cl. 549-362.000.

Behringwerke Aktiengesellschaft: *See*—
Bohn, Hans, 4,348,316, Cl. 260-112.00R.

Beier, Galen C. Television viewing control device. 4,348,696, Cl. 358-188.000.

Belart, Juan, to ITT Industries, Inc. Vacuum brake booster. 4,347,779, Cl. 91-369.00A.

Bell Telephone Laboratories, Incorporated: *See*—
Asmuth, Richard L., 4,348,554, Cl. 179-18.00B.
Blahut, Donald E.; Huang, Victor K.; and Townsend, Richard L., Jr., 4,348,720, Cl. 364-200.000.
Draper, Clifton W.; and Sharma, Satya P., 4,348,263, Cl. 204-29.000.
Hertz, David; Kurshan, Robert P.; and Malah, David, 4,348,735, Cl. 364-724.000.
Leland, Kenneth W.; and Sollenberger, Nelson R., 4,348,772, Cl. 455-260.000.
McIntyre, James D. E., 4,348,078, Cl. 350-357.000.
Pirz, Frank C.; Rabiner, Lawrence R.; Rosenberg, Aaron E.; and Wilpon, Jay G., 4,348,550, Cl. 179-1.0SD.
Smith, George E.; and Strain, Robert J., 4,347,656, Cl. 29-591.000.

Bendix Corporation, The: *See*—
Casey, Gary L., 4,347,822, Cl. 123-445.000.
Koenig, James P., 4,348,062, Cl. 303-6.00C.
Martin, Michael D., 4,347,757, Cl. 74-493.000.

Beneteau, Charles, to Patrick S.A. Mold for the production of spiked soles for sport shoes. 4,348,003, Cl. 249-96.000.

Bennett, Robert B., to Dow Chemical Co., The. Insulated tank. 4,347,949, Cl. 220-415.000.

Bennett, William G.; and Speese, Arthur L., to Teleflex Incorporated. Method for making a remote control assembly with vibration dampener. 4,348,348, Cl. 264-255.000.

Benson, John T., to Mattel, Inc. Split tubular member for coupling a tonearm to a speaker cone. 4,348,755, Cl. 369-155.000.

Benton, Ronald; Kidder, Kenneth B.; Linderberg, Robert L.; Tinsley, Timothy M.; and Westley, Curtis E., to Honeywell Inc. Microprocessor discharge temperature air controller for multi-stage heating and/or cooling apparatus and outdoor air usage controller. 4,347,712, Cl. 62-175.000.

Benyo, Janos; Papp, Tibor; and Tolnay, Janos, to Human Oltoanyagtermelo es Kutato Intezet. Biological wound covering and method for producing same. 4,347,841, Cl. 128-156.000.

Berckes, David H. Test weight scale. 4,347,905, Cl. 177-149.000.

Berger, James K., to Pioneer Research, Inc. Portable field test unit for computer data and program storage disc drive. 4,348,761, Cl. 371-21.000.

Berger, Rosemary K. Hearing air sheath and body harness. 4,347,956, Cl. 224-202.000.

Bergey, James L.: *See*—
Sulkowski, Theodore S.; Bergey, James L.; and Mascitti, Albert A., 4,348,413, Cl. 424-322.000.

Berghmans, Jacques M. L., to Du Pont de Nemours, E. I., and Company. Acrylic resin with antiplasticizer. 4,348,497, Cl. 524-293.000.

Bergholz, Helmut; and Tams, Walter, to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung. Connecting device, preferably for sheet metal components of light metal allows. 4,348,140, Cl. 411-103.000.

Bergstrom, John R.; and Haggstrom, Sten L., to Mo och Domsjo Aktiebolag. Process for controlling the supply of delignifying and/or bleaching chemicals in the continuous delignification of lignocellulosic material. 4,348,256, Cl. 162-49.000.

Berlant, Emmanuel. Loudspeaker system. 4,348,549, Cl. 179-1.00E.

Bernstein, Seymour: *See*—
Dusza, John P.; Joseph, Joseph P.; and Bernstein, Seymour, 4,348,527, Cl. 548-362.000.

Bertagna, Richard A.; Stansbury, Benjamin H.; and Tarlow, Kenneth A., to Audio in Motion. Acoustic headset. 4,347,911, Cl. 181-130.000.

Bertagnoli, Leopoldo, to Officine Savio S.p.A. Circular knitting machines for knitting articles of terry fabric. 4,347,719, Cl. 66-91.000.

Bertolucci, Michael D.; and Bartolomucci, John R., to General Electric Company. Heat stable molded phenolic resin article. 4,348,491, Cl. 523-214.000.

Bertus, Brent J.: *See*—
Roberts, John S.; Bertus, Brent J.; and McKay, Dwight L., 4,348,304, Cl. 252-455.00Z.

Besslein, Wulf, to Daimler-Benz Aktiengesellschaft. Prechamber for an air-compressing injection internal combustion engine. 4,347,814, Cl. 123-261.000.
Betensky, Ellis I., to U.S. Precision Lens Inc. Projection lens. 4,348,081, Cl. 350-412.000.
Bezencon, Jean-Jacques, deceased (by Bezencon, Madeleine, Corinne Bezencon and Serge Bezencon, heirs); Menzi, Georges; and Mermoud, Lucien, to BBC Brown, Boveri & Co. Ltd. Drive device for a vehicle. 4,347,918, Cl. 192-0.02R.
Bezencon, Madeleine, Corinne Bezencon and Serge Bezencon, heirs: *See*—
Bezencon, Jean-Jacques, deceased; Menzi, Georges; and Mermoud, Lucien, 4,347,918, Cl. 192-0.02R.
Bhattacharyya, Sushantha K.: *See*—
El-Menshawy, Mohamed F.; Woodrow, Peter A.; and Bhattacharyya, Sushantha K., 4,348,573, Cl. 219-69.00M.
Bhatti, Mohinder S.; and Marzocchi, Alfred, to Owens-Corning Fiberglas Corporation. Method and apparatus for forming glass fibers. 4,348,216, Cl. 65-1.000.
Big Inch Marine Systems, Inc.: *See*—
Miller, Jack E., 4,348,039, Cl. 285-1.000.
Bijttebier, Gaspar A. H.; and Vangheluwe, Jozef, to Bijttebier, Gaspar A. H. Method and apparatus for the separation of flexible sheets from a stack and their transportation to a processing unit. 4,348,018, Cl. 271-10.000.
Billig, Ernst; Jamerson, Jackie D.; and Pruett, Roy L., to Union Carbide Corporation. Heteronuclear-bridged rhodium clusters. 4,348,539, Cl. 568-454.000.
Billing, Lars J. T. Hydraulic nailing machine. 4,347,963, Cl. 227-8.000.
Binder, Jean-Jacques, to Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme). Device for removing excess pigment from the surface of the image carrier of a non-impact printing machine. 4,348,684, Cl. 346-153.100.
Birbara, Philip J., to United Technologies Corporation. Catalyst for hydrazine decomposition. 4,348,303, Cl. 252-447.000.
Bithell, Roger M., to Motorola, Inc. Plasma pressure pulse sterilization. 4,348,357, Cl. 422-22.000.
Black & Decker Inc.: *See*—
Bachmann, Rainer, 4,347,882, Cl. 144-225.000.
Huber, Siegfried, 4,348,603, Cl. 310-50.000.
Blahak, Johannes; Hubner, Hans; Koster, Johannes; Meiners, Hans J.; and Thomas, Heinz, to Bayer Aktiengesellschaft. Odorless catalysts for the synthesis of polyurethanes. 4,348,536, Cl. 560-169.000.
Blahut, Donald E.; Huang, Victor K.; and Townsend, Richard L., Jr., to Bell Telephone Laboratories, Incorporated. Microcomputer arranged for direct memory access. 4,348,720, Cl. 364-200.000.
Blampain, Guy; and Grandfils, Pierre, to Charbonnages de France. Sliding supporting gallery. 4,348,138, Cl. 405-297.000.
Blank, Heinz U.; Behre, Horst; and Linden, Hans W., to Bayer Aktiengesellschaft. Process for the isolation of 1-naphthylamine-4,6- and 1-naphthylamine-4,7-disulphonic acid. 4,348,336, Cl. 260-508.000.
Blaser, Anton J. Bottle neck coupling device. 4,347,879, Cl. 141-364.000.
Blenner, Donald R.; Auerbach, Robert A.; and Boenig, Herman V., to Lord Corporation. Method for bonding silicone elastomers to metal substrates. 4,348,426, Cl. 427-41.000.
Blodgett, Gerry A.: *See*—
Jundanian, Richard H., 4,347,851, Cl. 128-668.000.
Blodgett, Norman S.: *See*—
Jundanian, Richard H., 4,347,851, Cl. 128-668.000.
Blohorn, S.A.: *See*—
Pairaud, David J.; Musso, Sandro; Bouvron nee Ferrenbach, Catherine; and Pages-Xatart Pares, Xavier J. M., 4,348,423, Cl. 426-607.000.
Blomback, E. G. Birger; and Thorell, Lars G. Process in purification and concentration of the factor VIII-complex. 4,348,315, Cl. 260-112.00B.
Blonder-Tongue Laboratories, Inc.: *See*—
Mistry, Kantilal, 4,348,691, Cl. 358-114.000.
Blytas, George C.; and Diaz, Zaida, to Shell Oil Company. Method of removing hydrogen sulfide from gases. 4,348,368, Cl. 423-226.000.
Board of Regents for Oklahoma Agriculture and Mechanical Colleges acting for and on behalf of Oklahoma State University of Agriculture and Applied Sciences: *See*—
Rockley, Mark G.; and Mains, Gilbert J., 4,348,428, Cl. 427-54.100.
BOC Limited: *See*—
Armond, John W., 4,348,213, Cl. 55-25.000.
Bodai, Conrad A., to Sontek Industries, Inc. Hyperbolic frequency modulation related to aero/hydrodynamic flow systems. 4,347,983, Cl. 239-466.000.
Boden, Richard M., to International Flavors & Fragrances Inc. 1-Ethoxy-1-ethanol acetate and uses thereof for augmenting or enhancing the aroma or taste of consumable materials. 4,347,857, Cl. 131-276.000.
Boden, Richard M., to International Flavors & Fragrances Inc. Flavoring with 1-ethoxy-1-ethanol acetate - acetaldehyde mixtures. 4,348,416, Cl. 426-3.000.
Boehm, Edgar, to Hilti Aktiengesellschaft. Drilling tool for producing an undercut bore. 4,347,768, Cl. 82-1.500.
Boehringer Mannheim GmbH: *See*—
Friebe, Walter-Gunar; Kampe, Wolfgang; Thiel, Max; Schaumann, Wolfgang; and Wilhelms, Otto-Henning, 4,348,401, Cl. 424-267.000.
Boeing Company, The: *See*—
Cannon, Michael R.; Fuller, Robert L., Jr.; and Proff, Dwayne E., 4,347,660, Cl. 29-790.000.
Loree, Thomas J., 4,347,998, Cl. 248-68.00R.
Boenig, Heinrich J.; and Hassenzahl, William V., to United States of America, Energy. Superconducting VAR control. 4,348,630, Cl. 323-207.000.
Boenig, Herman V.: *See*—
Blenner, Donald R.; Auerbach, Robert A.; and Boenig, Herman V., 4,348,426, Cl. 427-41.000.
Boger, Manfred; and Drabek, Jozef, to Ciba-Geigy Corporation. Pesticidal sulfenyls. 4,348,405, Cl. 424-298.000.
Bohn, Hans, to Behringwerke Aktiengesellschaft. New protein PP_{15}, a process for its preparation and its use. 4,348,316, Cl. 260-112.00R.
Bohner, Beat: *See*—
Szczepanski, Henry; Rohr, Otto; Pissiotas, Georg; Bohner, Beat; and Rempfler, Hermann, 4,348,221, Cl. 71-94.000.
Bolk, Elmer J.; and Marshall, F. Paul, to Continental Group, Inc., The. Lever-off tamper-indicating composite closure. 4,347,940, Cl. 215-253.000.
Bokelman, Gordon H.; and Gooden, Dewitt T., III, to Philip Morris Incorporated. Acid curing of tobacco. 4,347,859, Cl. 131-290.000.
Bolam, Charles W.: *See*—
Schmitt, Edward L.; Caroleo, Steven J.; Bolam, Charles W.; and Conley, Richard W., 4,348,006, Cl. 251-288.000.
Boldridge, Austin G., Jr., to Conversational Systems, Inc. Power measuring apparatus. 4,348,638, Cl. 324-127.000.
Boller, George E.: *See*—
Renk, Richard J.; and Boller, George E., 4,347,759, Cl. 74-606.00R.
Bolz, Ralph C.: *See*—
Leonard, Allan S.; Bolz, Ralph C.; and Burcz, Lawrence D., 4,347,765, Cl. 74-869.000.
Bond, Allen M., Jr., to International Spike, Inc. Fertilizer briquette adapted to be hammered into the ground. 4,348,218, Cl. 71-1.000.
Bonfils, Georges L. A., to Societe Francaise d'Equipements pour la Navigation Aerienne. Process and apparatus for attenuating linearily errors in a ring type laser rate gyro. 4,348,113, Cl. 356-350.000.
Bontoft, Frederick J.: *See*—
Neale, Denis M.; Bontoft, Frederick J.; and Ikin, John B., 4,348,114, Cl. 356-431.000.
Bookout, Floyd V., to Rock-Ola Manufacturing Corporation. Serpentine magazine for can venders. 4,347,952, Cl. 221-129.000.
Booth, Peter L.: *See*—
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Holdeman, John W., 4,347,762, Cl. 74-788.000.
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Borgman, Randall W., to Haworth Mfg., Inc. Plug-type lock with increased stroke. 4,347,721, Cl. 70-380.000.
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Boucher, Guy, to La Telemecanique Electrique. Seat with adjustable foot-rest. 4,348,051, Cl. 297-423.000.
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Singh, Gurnam, 4,347,745, Cl. 73-721.000.
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Bowden, Wade R., Jr., to Slater Electric Inc. Electrical outlet box with recessed ports. 4,348,547, Cl. 174-65.00R.

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Bradley, John J., to Paper Converting Machine Company. Apparatus for sharpening a disc. 4,347,771, Cl. 83-174.000.
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Bridgeman, Gerald L. Launcher for flying discs. 4,347,828, Cl. 124-5.000.
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Bromley, Harold, to Masson Scott Thrissell Engineering. Single facer for making single faced corrugated material. 4,348,250, Cl. 156-473.000.
Brotzmann, Karl, to Eisenwerk-Gesellschaft Maximilianshutte mbH. Process for producing steel with low hydrogen content in a through-blowing oxygen converter. 4,348,227, Cl. 75-60.000.
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Brown, Gary G., to United States of America, Navy. Stretch-staging of resin-based fiber-impregnated tape. 4,348,347, Cl. 264-231.000.
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Bulger, Mary L., executrix: *See*—
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Burgess, David. Non-light producing substitute apparatus for use in place of phosphor excitable lamps. 4,348,614, Cl. 315-189.000.
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Butler, Melvyn P. Method of making forms for investment casting and products produced therefrom. 4,347,888, Cl. 164-34.000.
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Katsuma, Makoto; Shinbori, Kenichi; Kiuchi, Masayoshi; and Alyfuku, Kiyoshi, 4,348,096, Cl. 354-289.000.
Kitagishi, Nozomu; and Fujibayashi, Kazuo, 4,348,084, Cl. 350-454.000.
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Canterino, Peter J., to Mobil Oil Corporation. Process for preparation of improved shrink wrap. 4,348,438, Cl. 428-36.000.
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Caprari, Fausto, to RCA Corporation. Radiation shadow projection exposure system. 4,348,105, Cl. 355-67.000.
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Caras, Bernard, to Burroughs Corporation. Fixture for making an assembly of fine wires. 4,347,873, Cl. 140-71.500.
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Carson, Andrew B., Jr.; and Hanger, William A., to General Electric Company. Bounce control system for moving coil printing element. 4,348,119, Cl. 400-121.000.
Carter, Ernest A., to Motorola, Inc. Analog-to-digital converter using half range technique. 4,348,658, Cl. 340-347.0AD.
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Thompson, Kenneth P., 4,348,346, Cl. 264-146.000.
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Chubb, Talbot A., to United States of America, Navy. Thermochemical energy transport process. 4,347,891, Cl. 165-1.000.
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Chung, Rack H., to General Electric Company. Abrasion resistant ultraviolet light curable hard coating compositions. 4,348,462, Cl. 428-412.000.
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Clark, Richard J.: *See*—
Hawkins, Harold R.; Gardner, Clive A.; Roke, Lindsey J.; Clark, Richard J.; and Rumble, Warwick F., 4,348,068, Cl. 312-257.00R.
Clarke, David E.; Davies, James F.; and Tune, John B., to Lever Brothers Company. Water-insoluble, water-permeable bag having a

water-soluble or water-dispersable protective layer and containing a particulate detergent composition. 4,348,293, Cl. 252-90.000.

Claussen, Reimer; and Jung, Liebhard, to A. Ott GmbH. Mechanism for operating a collet chuck. 4,347,753, Cl. 74-110.000.

Clavel, Raymond, to Hermes Precisa International S.A. Strike and non-strike impact control mechanism for typewriter. 4,348,121, Cl. 400-166.000.

Clavier, Christian M. J.; Hepp, Vincent R.; and Dumestre, Alexis C., to Schlumberger Technology Corporation. Dipmeter displacement processing technique. 4,348,748, Cl. 367-25.000.

Clayton, William J., to Mobil Oil Corporation. Thermoplastic food wrapping film having improved cling. 4,348,455, Cl. 428-336.000.

Clearman, Jack F.; and Gurubatham, Vincent P., to Whirlpool Corporation. Dishwasher soil separator. 4,347,861, Cl. 134-104.000.

Clements Industries, Inc.: *See*—
Furutu, Akira, 4,347,932, Cl. 206-343.000.

Clendening, Steven J., to Rockwell International Corporation. Divide by three clock divider with symmertical output. 4,348,640, Cl. 328-41.000.

Clewett, Merle E.: *See*—
Curry, Robert D.; Larson, Richard C.; and Clewett, Merle E., 4,347,922, Cl. 193-23.000.

Clyne, Arthur J.; Knarr, John E.; and Miller, Stanley, to Energy Recycling Company of Michigan. Energy storage unit and system. 4,347,892, Cl. 165-10.000.

Co-Gen, Inc.: *See*—
Tawse, Ian S., 4,347,702, Cl. 60-618.000.

Coakley, John E.; and Nolan, James J., to Slurry Mining Engineering Inc. Method and apparatus for slurry borehole mining. 4,348,058, Cl. 299-17.000.

Cockerill and Centre de Technologies Nouvelles: *See*—
Lizen, Christian E., 4,347,790, Cl. 102-304.000.

Cohen, Richard J.: *See*—
Shelnut, James; and Cohen, Richard J., 4,348,471, Cl. 430-165.000.

Cohen, Sabatino, to Saint-Gobain Vitrage. Glazing possessing selective transmission and reflection spectra. 4,348,453, Cl. 428-333.000.

Coit, Kenneth T.: *See*—
Farrell, Robert J.; Coit, Kenneth T.; Vernon, John H.; Yu, Kin C.; Huettner, Robert E.; and Grandmaison, John P., 4,348,725, Cl. 364-300.000.

Colgate-Palmolive Company: *See*—
Gaffar, Abdul; and Davis, Calvin B., 4,348,381, Cl. 424-52.000.
Nardone, Robert M., 4,347,970, Cl. 229-39.00R.
Pierce, Robert C.; and Mitchell, Robert L., 4,348,382, Cl. 424-52.000.

Colin, Jean P., to Bretagne ACB Corporation. Barge and tug connection system. 4,347,801, Cl. 114-248.000.

Collier, Donald C. Microwave antenna with sinuous waveguide feed. 4,348,680, Cl. 343-778.000.

Columbus, Richard L., to Eastman Kodak Company. Self-cleaning nozzle construction for aspirators. 4,347,875, Cl. 141-18.000.

Combustion Engineering, Inc.: *See*—
Barger, John J.; and Underwood, James R., 4,348,574, Cl. 219-73.210.

Commissariat a l'Energie Atomique: *See*—
Artaud, Robert; Aubert, Michel; Elbeze, Richard; and Jogand, Patrick, 4,348,354, Cl. 376-405.000.
Feutrel, Claude, 4,347,966, Cl. 228-173.00F.

Commonwealth Scientific and Industrial Research Organization: *See*—
Holan, George; and O'Keefe, David F., 4,348,409, Cl. 424-308.000.

Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme): *See*—
Binder, Jean-Jacques, 4,348,684, Cl. 346-153.100.

Cones, David J.: *See*—
Davis, Edgar D.; and Cones, David J., 4,348,544, Cl. 585-300.000.

Conforti, Maurizio. Coupling joint. 4,348,129, Cl. 403-218.000.

Congdon, George L., to Norland Corporation. Cardiac pacer having quick-connect lead terminals. 4,347,849, Cl. 128-419.00P.

Conley, Richard W.: *See*—
Schmitt, Edward L.; Caroleo, Steven J.; Bolam, Charles W.; and Conley, Richard W., 4,348,006, Cl. 251-288.000.

Conoco Inc.: *See*—
Ruckel, P. Jay, 4,348,237, Cl. 106-122.000.

Consolazio, George A.; Sheppard, James A.; and Laramee, Benjamin E., to General Foods Corporation. Sprayable plant care composition. 4,348,424, Cl. 427-4.000.

Consolidated Foods Corporation: *See*—
Goodman, James A., 4,347,934, Cl. 206-633.000.

Consumers Glass Company Limited: *See*—
Mancini, Derek V., 4,348,162, Cl. 417-431.000.

Continental Group, Inc., The: *See*—
Boik, Elmer J.; and Marshall, F. Paul, 4,347,940, Cl. 215-253.000.
Khoury, Nick S., 4,348,464, Cl. 428-571.000.
Millspaugh, Russell E., 4,347,928, Cl. 198-690.000.

Continental-Wirt Electronics Corp.: *See*—
Worth, Sidney V.; and Nelson, Keith D., 4,348,073, Cl. 339-186.00M.

Conversational Systems, Inc.: *See*—
Boldridge, Austin G., Jr., 4,348,638, Cl. 324-127.000.

Cooper, Frank W., Jr.; and Gastner, Raymond P., to Westinghouse Electric Corp. Method for servicing a steam generator. 4,347,652, Cl. 29-407.000.

Cooper, Jack M., to General Screw Products Company. Grease fitting. 4,347,915, Cl. 184-105.00B.

Cooper, Jerry W.: *See*—
Medford, Richard D.; Henry, Pearison W.; and Cooper, Jerry W., 4,347,685, Cl. 47-28.00R.

Cooper Laboratories, Inc.: *See*—
Cappel, Leona R., 4,348,207, Cl. 23-230.00B.

Copal Company Limited: *See*—
Fujiwara, Toshimasa; and Sudo, Yoshiyuki, 4,348,125, Cl. 400-645.100.

Coran, Aubert Y.; and Patel, Raman, to Monsanto Company. Irradiated blends of polyethylene and neoprene rubber. 4,348,266, Cl. 204-159.170.

Coran, Aubert Y.; and Patel, Raman, to Monsanto Company. Thermoplastic compositions of epichlorohydrin rubber and carboxy-ethylene polymer resin. 4,348,501, Cl. 525-179.000.

Coran, Aubert Y.; and Patel, Raman, to Monsanto Company. Thermoplastic compositions of nylon and ethylene-vinyl acetate rubber. 4,348,502, Cl. 525-183.000.

Cornelius, Dennis A., to Miles Laboratories, Inc. Process for decreasing the thermal stability of microbial rennet. 4,348,482, Cl. 435-223.000.

Cornell Research Foundation, Inc.: *See*—
Kinsella, John E.; and Shetty, Jayarama K., 4,348,479, Cl. 435-183.000.

Cornell, Richard R. Molding strip having a curvilinear surface and a method for making same from laminar sheet material. 4,348,448, Cl. 428-157.000.

Cornell, William F.; Vear, John P.; and Pascuzzi, E. Anthony, to Champion International Corporation. Stackable carton for perishable commodities. 4,347,968, Cl. 229-33.000.

Coulon, Christian. Process and apparatus for atomizing and burning liquid fuels. 4,348,168, Cl. 431-9.000.

Coulter Electronics, Inc.: *See*—
Leif, Robert C., 4,348,107, Cl. 356-72.000.

Cowlin, Robert M.; and Helsby, Nigel C., to Lockwood Graders (UK) Limited. Article sorting apparatus and method. 4,348,277, Cl. 209-705.000.

Craig, Alan D., to Hercules Incorporated. Nonwoven fabric from a combination of thermoplastic netting and oriented film. 4,348,444, Cl. 428-137.000.

Craig, Alan D., to Hercules Incorporated. Reinforced film of a combination of thermoplastic netting and oriented film. 4,348,445, Cl. 428-138.000.

Crain, Jack A. Blowout preventor test system. 4,347,733, Cl. 73-40.50R.

Cramm, Gunther: *See*—
Lobach, Wilfried; Kolb, Gunter; Lehmann, Wolfgang; Cramm, Gunther; Muller, Friedhelm; and Muazik, Janos, 4,348,514, Cl. 528-367.000.

Craubner, Ingo, to Wacker-Chemie GmbH. Thermal insulation, a process for preparing said insulation and a pipe insulated therewith. 4,348,243, Cl. 156-71.000.

Criss, Jeremy F. Organic material recycling method and device. 4,347,632, Cl. 4-449.000.

Cromer, John A., Jr. Chair lift. 4,347,913, Cl. 182-142.000.

Crompton, Charles E.; Kazi, Abdulla M. Z.; and Soni, Inderjit S., to PPG Industries, Inc. Process for making colloidal sols of antimony pentoxide in an aqueous medium. 4,348,301, Cl. 252-313.00R.

Crosfield Electronics Limited: *See*—
Chase, Bryan B.; and Yi, Alberto, 4,347,785, Cl. 101-1.000.

Crudele, Lester M.: *See*—
Gunter, Thomas G.; Crudele, Lester M.; and Zolnowsky, John E., 4,348,722, Cl. 364-200.000.

Cukier, Maurice; and Sellier, Daniel, to International Business Machines Corporation. Multiple-function programmable logic arrays. 4,348,737, Cl. 364-900.000.

Culver, Frederick H., to Fritz Culver, Inc. Retractable towing pin. 4,347,800, Cl. 114-218.000.

Culver, Robert B. Portable drilling rig. 4,347,692, Cl. 52-117.000.

Curry, Robert D.; Larson, Richard C.; and Clewett, Merle E., to Union Iron Works, Inc. Grain distributor assembly for grain elevator. 4,347,922, Cl. 193-23.000.

Cushing, David E.; and Stanley, Philip E., to Honeywell Information Systems Inc. Address pairing apparatus for a control store of a data processing system. 4,348,724, Cl. 364-200.000.

Cushing, David E.: *See*—
Woods, William E.; Cushing, David E.; and Stanley, Philip E., 4,348,723, Cl. 364-200.000.

Cyborex Laboratories, Inc.: *See*—
Emerson, Paul J.; and Hedges, Walter P., 4,348,730, Cl. 364-483.000.

D I E H L, Firma: *See*—
Werner, Arnold; Ennen, Peter; Nuebauer, Josef; Flaig, Hans; and Allgaier, Juergen, 4,348,753, Cl. 368-188.000.

Dahl, Norman C. Hollow externally threaded fasteners having greatly increased ductility. 4,348,141, Cl. 411-389.000.

Daikin Kogyo Co., Ltd.: *See*—
Akiyama, Toru; Kamihigoshi, Tsutomu; Takagi, Shoji; and Maeda, Tadayuki, 4,348,363, Cl. 422-192.000.

Daimler-Benz Aktiengesellschaft: *See*—
Besslein, Wulf, 4,347,814, Cl. 123-261.000.
Schmidt, Hans-Georg, 4,347,815, Cl. 123-269.000.

Dainippon Pharmaceutical Co., Ltd.: *See*—
Horikoshi, Isamu; Sakuragawa, Nobuo; Ueno, Masaharu; and Takahashi, Kaoru, 4,348,384, Cl. 424-101.000.

Dalton, Richard L., Jr., to Tecumseh Products Company. Method of making stick wound coils. 4,347,659, Cl. 29-605.000.

Danfoss A/S: *See*—
Hyldal, Jorgen, 4,348,621, Cl. 318-254.000.

Jakobsen, Jakob S., 4,347,976, Cl. 236-68.00B.
Tankred, Hans J.; Madsen, Per J.; and Stannow, Jorgen C., 4,348,607, Cl. 310-217.000.
Daniels, Herbert E.; Stehman, Harold E.; and Moran, Brian P., to General Electric Company. X-ray tube anode voltage compensator. 4,348,590, Cl. 378-112.000.
Daniels, Lowell W.: *See*—
Luebke, Clement J.; and Daniels, Lowell W., 4,347,833, Cl. 126-369.000.
Daniels, Peter J. L.: *See*—
Lee, Bong K.; Wagman, Gerald H.; Rane, Dinanath F.; Marquez, Joseph A.; and Daniels, Peter J. L., 4,348,516, Cl. 536-10.000.
David, Roger J. P.; and Lande, Maurice A., to Association des Ouvriers en Instruments de Precision. Manual control means for controlling the movements of a motor-driven element. 4,348,634, Cl. 323-353.000.
Davies, James F.: *See*—
Clarke, David E.; Davies, James F.; and Tune, John B., 4,348,293, Cl. 252-90.000.
Davies, Robert: *See*—
Newton, Barrie H.; Booth, Peter L.; and Davies, Robert, 4,348,646, Cl. 331-77.000.
Davis, Calvin B.: *See*—
Gaffar, Abdul; and Davis, Calvin B., 4,348,381, Cl. 424-52.000.
Davis, Edgar D.; and Cones, David J., to Phillips Petroleum Company. Recovery of propane from HF alkylation vent gas. 4,348,544, Cl. 585-300.000.
Davis, Rex M.: *See*—
Ray, William F.; and Davis, Rex M., 4,348,619, Cl. 318-139.000.
Davis, William F., to Motorola, Inc. Bandgap voltage regulator having low output impedance and wide bandwidth. 4,348,633, Cl. 323-314.000.
Dawson, Peter E., to Ipco Corporation. Retaining device for a removable dental prosthesis. 4,348,181, Cl. 433-172.000.
Dayco Corporation: *See*—
Medford, Richard D.; Henry, Pearison W.; and Cooper, Jerry W., 4,347,685, Cl. 47-28.00R.
Oliver, Larry R., 4,348,197, Cl. 474-28.000.
Deamer, Charles R., to Noyes Bros. Pty. Limited. Mobile transporter for mines. 4,348,149, Cl. 414-458.000.
Deaver, Randall L.; Freund, Thomas J.; and Gerstle, Patrick J., to International Business Machines Corporation. Terminal providing communication system information output. 4,348,739, Cl. 364-900.000.
de Boer, Jacob, to U.S. Philips Corporation. Magnetic tape drive arrangement. 4,347,994, Cl. 242-203.000.
DeBoer, Jonathan J.: *See*—
Alter, William F.; DeBoer, Jonathan J.; and Shellenberger, Charles R., 4,347,926, Cl. 198-388.000.
Decoster, Michel H. F., to U.S. Philips Corporation. Record player control mechaniam. 4,348,756, Cl. 369-226.000.
Deepsea Ventures, Inc.: *See*—
Latimer, John P., 4,347,675, Cl. 37-57.000.
Deguara, Albert. Safety apparatus for vehicles. 4,347,910, Cl. 180-268.000.
Dehen, Frederick L. Apparatus for converting rotary motion to a rectilinear force. 4,347,752, Cl. 74-84.00R.
Dehne, Manfred F. Particulate separation device. 4,348,215, Cl. 55-349.000.
Dekkers, Leo P., to Dennison Manufacturing Company. Ladder strap harnessing device with webbed tail. 4,347,648, Cl. 24-16.0PB.
Delalande S.A.: *See*—
Bourgery, Guy R.; Douzon, Colette A.; Ancher, Jean-Francois R.; Lacour, Alain P.; Guerret, Patrick G.; Langlois, Michel; and Dostert, Phillippe L., 4,348,393, Cl. 424-248.570.
Deleris, Robert, to Regie Nationale des Usines Renault. Process and apparatus for electronic angle of advance correction in response to pinging and engine charge. 4,347,820, Cl. 123-417.000.
Demny, Werner, to Friedrich Kocks GmbH & Co. Rolling blocks. 4,347,725, Cl. 72-234.000.
Demus, Dietrich; Zaschke, Horst; Vorbrodt, Hans-Mathias; Kresse, Horst; and Weissflog, Wolfgang, to VEB Werk fur Fernsehelektronik im Veb Kombinat Mikroelektronik. Liquid crystalline substituted 1,3-dioxanes and mixtures containing these. 4,348,324, Cl. 549-369.000.
Demus, Dietrich: *See*—
Zaschke, Horst; Wolff, Rudolf; Pelzl, Gerhard; and Demus, Dietrich, 4,348,298, Cl. 252-299.100.
Denki Kagaku Kogyo Kabushiki Kaisha: *See*—
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Dennison Manufacturing Company: *See*—
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Denzin, Horst, to Francotyp GmbH. Well sides in letter feeding and letter sealing machines. 4,348,249, Cl. 156-442.200.
Derks, Petrus J. A. M.: *See*—
Dieleman, Jan; Van Dommelen, Joannes H. J.; and Derks, Petrus J. A. M., 4,348,610, Cl. 313-386.000.
Desai, Kamalesh S.; and Melvin, George E., to International Business Machines Corporation. Process for monitoring solvent content of green ceramic sheet, and apparatus therefor. 4,347,735, Cl. 73-73.000.
DeShon, Wallace E., to Phillips Petroleum Company. Computer acquisition of data from nonaddressable switches. 4,348,670, Cl. 340-825.780.
DeVere, James W.: *See*—
Wilding, Edwin; and DeVere, James W., 4,348,148, Cl. 414-421.000.
De Zaepffel, Brigitte C. R. Ileostomic bag. 4,347,843, Cl. 128-283.000.
d'Hautecourt, Alain H., to Zenith Radio Corporation. Noise processor defeat switch. 4,348,695, Cl. 358-160.000.
Dias, Francisco J.; Hannen, Willi; Luhleich, Hartmut; and Pflaum, Peter, to Kernforschungsanlage Juich, Gesellschaft mit beschrankter Haftung. Vacuum-drying method and apparatus. 4,347,671, Cl. 34-15.000.
Diaz, Zaida: *See*—
Blytas, George C.; and Diaz, Zaida, 4,348,368, Cl. 423-226.000.
Di Benedetto, Marianne; and Gannon, John A., to Ciba-Geigy Corporation. Adducts from amines and di- and polyepoxides. 4,348,505, Cl. 525-504.000.
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Assmann, Helmut; Brandau, Egbert; Dorr, Wolfgang; Mathieu, Viktor; and Dichtjar, Gerhard, 4,348,339, Cl. 264-0.500.
Dickmanns, Heinz: *See*—
Bauer, Wolfgang; Dickmanns, Heinz; Morgenroth, Konstantin; Reh, Kuno; and Ribka, Joachim, 4,348,204, Cl. 8-527.000.
Dickore, Karlfried; and Kuhle, Engelbert, to Bayer Aktiengesellschaft. Process for the preparation of N-substituted imido-dicarboxylic acid diaryl esters. 4,348,331, Cl. 260-465.00D.
Didier Engineering GmbH: *See*—
Friedrichs, Gregor, 4,347,672, Cl. 34-57.00R.
Dieleman, Jan; Van Dommelen, Joannes H. J.; and Derks, Petrus J. A. M., to U.S. Philips Corporation. Camera tube with graded tellurium or arsenic target. 4,348,610, Cl. 313-386.000.
DiFulvio, Anthony P.: *See*—
Tersteeg, Glenn E.; and DiFulvio, Anthony P., 4,347,750, Cl. 73-864.310.
Dills, Raymond L., to General Electric Company. Flux shaping arrangement for induction surface unit. 4,348,571, Cl. 219-10.49R.
Disselnkotter, Hans: *See*—
Oediger, Hermann; Lieb, Folker; and Disselnkotter, Hans, 4,348,332, Cl. 260-502.40R.
Djedjeva, Galina M.: *See*—
Popov, Mitko S.; Djedjeva, Galina M.; Todorov, Ivan O.; and Stoeva, Nelly S., 4,348,481, Cl. 435-234.000.
Dr. C. Otto & Comp. G.m.b.H.: *See*—
Struck, Carl-Heinz; and Schumacher, Ralf, 4,348,258, Cl. 202-255.000.
Dolejs, Anthony H.: *See*—
Gorgone, Robert L.; Iannadrea, Gerald M.; Dolejs, Anthony H.; Knox, Bruce R.; and Kovach, Alan J., 4,348,656, Cl. 340-146.30R.
Dombrowski, Theodor; and Luzina, Max, to Wilhelm Hegenscheidt Gesellschaft mbH. Underfloor lathe for profiling wheel sets. 4,347,769, Cl. 82-8.000.
Domer, Michel, to Hutchinson-Mapa. Shock absorbers. 4,348,015, Cl. 267-140.400.
Donovan, David M., to Waldemar S. Nelson & Co. Spill oil containment system. 4,348,136, Cl. 405-65.000.
Dormia, Enrico, to Porges. Surgical extractor. 4,347,846, Cl. 128-328.000.
Dorr, Wolfgang: *See*—
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Dostert, Phillippe L.: *See*—
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Dotsko, Martin, to Singer Company, The. Aerial image visual display. 4,348,187, Cl. 434-44.000.
Dougherty, John J., to Reliance Electric Company. Converter by stored switching pattern. 4,348,734, Cl. 364-721.000.
Doundoulakis, George J. Integrated circuit tester. 4,348,636, Cl. 324-73.00R.
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Bourgery, Guy R.; Douzon, Colette A.; Ancher, Jean-Francois R.; Lacour, Alain P.; Guerret, Patrick G.; Langlois, Michel; and Dostert, Phillippe L., 4,348,393, Cl. 424-248.570.
Dow Chemical Company, The: *See*—
Bauman, William C.; Lee, John M.; and Burba, John L., III, 4,348,296, Cl. 252-184.000.
Bauman, William C.; and Lee, John M., 4,348,297, Cl. 252-184.000.
Bennett, Robert B., 4,347,949, Cl. 220-415.000.
Burba, John L., III, 4,348,295, Cl. 252-184.000.
Burnett, Edward L.; and Stack, Eugene V., 4,348,345, Cl. 264-127.000.
Ganguli, Kalyan K.; and Wilson, David A., 4,348,506, Cl. 525-512.000.
McIntyre, James A.; Phillips, Robert F.; and Lefevre, Joseph D., 4,348,429, Cl. 427-125.000.
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Pruess, Warren W., 4,348,309, Cl. 523-336.000.
Strom, Robert M., 4,348,265, Cl. 204-158.0HA.
Dow Corning Corporation: *See*—
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Alanko, Allan M.; and Salverson, David R., 4,348,533, Cl. 556-457.000.
Downing, James H., Jr. All-electric A.C. tractor. 4,347,907, Cl. 180-65.00C.
Doyle, Gerald, to Exxon Research and Engineering Company. Methanol homologation using cobalt-ruthenium catalysts. 4,348,541, Cl. 568-487.000.

Dozier Equipment International Company: *See*—
Helm, J. Thomas, 4,348,147, Cl. 414-420.000.
Dozier, Harold W., to Mostek Corporation. Single chip MOS/LSI microcomputer with binary timer. 4,348,743, Cl. 364-900.000.
Drabek, Jozef: *See*—
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Draper, Clifton W.; and Sharma, Satya P., to Western Electric Company, Inc.; and Bell Telephone Laboratories, Incorporated. Surface melting of a substrate prior to plating. 4,348,263, Cl. 204-29.000.
Drexel, Charles F., to Tylan Corporation. Energy efficient furnace with movable end wall. 4,348,580, Cl. 219-390.000.
Drost, Monte K., to United States of America, Energy. Electric power generating plant having direct coupled steam and compressed air cycles. 4,347,706, Cl. 60-659.000.
Drzal, Robert S.; and Shedd, Charles D., to Uniroyal, Inc. Thermoplastic elastomer and electrical article insulated therewith. 4,348,459, Cl. 428-379.000.
DuBois, Grant E., to United States of America, Health and Human Services. β-Ketocarboxyl and phosphonate dihydro-chalcone sweeteners. 4,348,333, Cl. 260-502.40R.
Ducker, William L., to Wind Engineering Corporation. Adjustable vane windmills. 4,348,154, Cl. 416-43.000.
Dufour, Charles H.; Gelinas, W. Robert; Stankosky, Michael J.; and Washchynsky, Bohdan D., to Harris Corporation. Plate lockup mechanism. 4,347,788, Cl. 101-415.100.
Dumestre, Alexis C.: *See*—
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Dunbar, Glenn G. Weight cart calibration apparatus. 4,347,904, Cl. 177-50.000.
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Dunleavy, Raymond A., III: *See*—
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Du Pont de Nemours, E. I., and Company: *See*—
Berghmans, Jacques M. L., 4,348,497, Cl. 524-293.000.
Levitt, George, 4,348,219, Cl. 71-92.000.
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Schwing, Gregory W., 4,348,220, Cl. 71-92.000.
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Durette, Philippe L., to Merck & Co., Inc. Methyl 3-azido-4-C-cyano-2,3,4,6-tetradeoxy-α-D-arabino-hexopyranoside. 4,348,325, Cl. 549-419.000.
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Durtnal, Graham, to Trico Products Corporation. Connector assemblies for connecting wiper blades to wiper arms. 4,347,640, Cl. 15-250.320.
Dusza, John P.; Joseph, Joseph P.; and Bernstein, Seymour, to American Cyanamid Company. 3-Trifluoroacetyl amino-1-aryl-2-pyrazolines. 4,348,527, Cl. 548-362.000.
DuVall, Wilbur E.: *See*—
Anderson, Harold M.; Marcum, Norman E.; and DuVall, Wilbur E., 4,348,624, Cl. 318-634.000.
Dwyer Instruments, Inc.: *See*—
Buchanan, Steven O., 4,347,744, Cl. 73-715.000.
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Schmidt, Hans-Georg, 4,348,535, Cl. 560-124.000.
E-Systems, Inc.: *See*—
Scott, Lex A.; Mosley, William H., Jr.; and Andren, Carl F., 4,348,641, Cl. 329-50.000.
Easter, Holton C.: *See*—
Brown, Birchel S.; Myers, Ted L.; and Easter, Holton C., 4,347,724, Cl. 72-203.000.
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Columbus, Richard L., 4,347,875, Cl. 141-18.000.
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McVeigh, Peter J.; and Rudish, Ronald M., 4,348,681, Cl. 343-854.000.
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Eisenhauer, Leigh E., 4,347,635, Cl. 441-40.000.
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Brotzmann, Karl, 4,348,227, Cl. 75-60.000.
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Artaud, Robert; Aubert, Michel; Elbeze, Richard; and Jogand, Patrick, 4,348,354, Cl. 376-405.000.
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Ray, Donald L.; and Voland, Elmo, 4,348,560, Cl. 200-38.00A.
Endress & Hauser, Inc.: *See*—
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Enercon Systems, Incorporated: *See*—
Hoecke, David A., 4,347,782, Cl. 98-33.00A.
Energy Conversion Devices, Inc.: *See*—
Ovshinsky, Herbert C., 4,348,104, Cl. 355-41.000.
Energy Recycling Company of Michigan: *See*—
Clyne, Arthur J.; Knarr, John E.; and Miller, Stanley, 4,347,892, Cl. 165-10.000.
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English Electric Company Limited, The: *See*—
Goulas, Apostolos; Moon, Brian R.; and Ross, Michael M., 4,348,111, Cl. 356-336.000.
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Werner, Arnold; Ennen, Peter; Nuebauer, Josef; Flaig, Hans; and Allgaier, Juergen, 4,348,753, Cl. 368-188.000.
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Tuson, Samuel; and Ghilardi, Jean-Pierre, 4,348,137, Cl. 405-202.000.
ERA Patents Limited: *See*—
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Ernest, Robert T., to National Steel Corporation. Apparatus for liquid coating thickness control. 4,347,805, Cl. 118-63.000.
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Escamilla-Kelly, Ricardo. Multi-level game board apparatus. 4,348,027, Cl. 273-241.000.

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Saunders, Hollis S.; Carmer, Richard V.; and Payette, Lionel J., 4,348,460, Cl. 428-383.000.
Eta A.G. Ebauches-Fabrik: *See*—
Perucchi, Norberto, 4,348,752, Cl. 368-187.000.
Eutectic Corporation: *See*—
Kammer, Paul A.; and Durmann, George J., 4,348,433, Cl. 427-423.000.
Kammer, Paul A.; Yurasko, George, Jr.; and Zmrzlik, Karel, 4,348,434, Cl. 427-423.000.
Evans, David G.: *See*—
Skelly, James K.; Evans, David G.; and Broadbent, Barrie, 4,348,203, Cl. 8-501.000.
Evans, Edwin R., to General Electric Company. Fluorosilicone polydimethylsiloxane equilibration chainstopper and process for manufacture. 4,348,531, Cl. 556-453.000.
Ex-Cell-O Corporation: *See*—
Scrivo, Jerry V., 4,348,042, Cl. 293-120.000.
Exxon Research And Engineering Co.: *See*—
Bearden, Roby, Jr.; Aldridge, Clyde L.; and Pine, Lloyd A., 4,348,270, Cl. 208-9.000.
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Calvin, William J.; Goldstein, Stuart S.; and Marshall, Harry A., 4,348,486, Cl. 518-704.000.
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Hou, Ching T., 4,348,476, Cl. 435-123.000.
Swan, George A., 4,348,271, Cl. 208-89.000.
Worley, Arthur C., 4,347,865, Cl. 137-375.000.
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Wong, Lungchuck, 4,347,923, Cl. 193-35.00S.
Falcone, James S., Jr.: *See*—
Ailin-Pyzik, Iris B.; and Falcone, James S., Jr., 4,347,890, Cl. 164-528.000.
Fandel, Joseph N., to Whittaker Corporation. Disengaging apparatus. 4,348,043, Cl. 294-83.00R.
Fantl, Jiri: *See*—
Pavek, Miloslav; Novacek, Miroslav; Fantl, Jiri; Kara, an; and Kasparek, Zdenek, 4,347,649, Cl. 28-254.000.
Fantozzi, Louis J., to Xerox Corporation. Closed loop control of reproduction machine. 4,348,099, Cl. 355-14.00E.
Fariss, James D., Jr., to Innovation Enterprises, Inc. Easily removable handle means for axes and the like. 4,347,883, Cl. 145-61.00R.
Farrar, Gordon A., to Owens-Corning Fiberglas Corporation. Wedge shaped electrode block. 4,348,767, Cl. 373-30.000.
Farrell, Robert J.; Coit, Kenneth T.; Vernon, John H.; Yu, Kin C.; Huettner, Robert E.; and Grandmaison, John P., to Honeywell Information Systems Inc. Communication line service interrupt technique for a communications processing system. 4,348,725, Cl. 364-300.000.
Fasig, Harold A., to Burroughs Corporation. Black band detector for document sorting machines. 4,347,936, Cl. 209-3.300.
Federspieler, Philipp: *See*—
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Fehlau, Rudolf, to Borg-Warner Corporation. Pump closure fastening means. 4,347,945, Cl. 220-327.000.
Fehr, Theodor; Stadler, Paul; and Stutz, Peter, to Sandoz Ltd. 8α-Substituted ergoline-I derivatives. 4,348,392, Cl. 424-246.000.
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Stutz, Peter; Fehr, Theodor; and Stadler, Paul, 4,348,391, Cl. 424-246.000.
Feinwerkbau, Westinger & Alterburger GmbH & Co.: *See*—
Grunig, Kurt; Elmiger, Heinz; and Schneider, Franz, 4,347,679, Cl. 42-84.000.
Felcht, Utz-Hellmuth, to Hoechst Aktiengesellschaft. Process for the manufacture of 1-halogen-1-oxo-Δ^3-phospholenes. 4,348,337, Cl. 260-543.00P.
Felder, Ernst; and Pitre, Davide, to Bracco Industria Chimica S.p.A. New derivatives of 2,4,6-triiodo-isophthalic acid, proceses for their synthesis and X-ray contrasting materials containing these. 4,348,377, Cl. 424-5.000.
Felder, Louis: *See*—
Kvita, Vratislav; Zweifel, Hans; Roth, Martin; and Felder, Louis, 4,348,530, Cl. 549-27.000.
Felton, Herman R., to Analtech, Incorporated. Large sample thin layer chromatography. 4,348,286, Cl. 210-658.000.
Ferag AG: *See*—
Reist, Walter, 4,347,694, Cl. 53-399.000.
Ferris, Theodore V.; and Kmetz, Richard C., to Monsanto Company. Manufacture of aqueous formaldehyde. 4,348,540, Cl. 568-472.000.
Feutrel, Claude, to Commissariat a l'Energie Atomique. Method for fixing a guide tube of a nuclear reactor fuel assembly. 4,347,966, Cl. 228-173.00F.
Fiberglas Canada Inc.: *See*—
Simpson, Robert B., 4,347,985, Cl. 241-1.000.
Figge, Irving E. Structural panel. 4,348,442, Cl. 428-72.000.
Figour, Jean, to Regie Nationale des Usines Renault. Six-axes manipulator. 4,348,142, Cl. 414-2.000.
Fima, Raoul G. Intermittently illuminated fishing lure with travelling electrical contact. 4,347,681, Cl. 43-17.600.
Finike Italiana Marposs S.p.A.: *See*—
Albertazzi, Gastone, 4,347,667, Cl. 33-174.00L.
Finn, Charles E.: *See*—
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Fischer, Gerhard O. J.: *See*—
Smith, John R.; and Fischer, Gerhard O. J., 4,348,418, Cl. 426-104.000.
Fischer, Jochen: *See*—
Scholl, Hans; and Fischer, Jochen, 4,347,797, Cl. 112-121.120.
Fischer, Karl; and Schreder, Felix, to Fischer, Karl. Electric hotplate. 4,348,581, Cl. 219-460.000.
Fisher, Harry W.; and Perrine, Eugene B., to Rockwell International Corporation. Control apparatus for meter prover. 4,347,731, Cl. 73-3.000.
Fisher, Matthew J.; and Gregory, William J., Jr., to United States of America, Army. Method and apparatus for calibrating gyroscopically-stabilized, magnetically-slaved heading reference system. 4,347,730, Cl. 73-1.00E.
Fisher & Paykel Limited: *See*—
Hawkins, Harold R.; Gardner, Clive A.; Roke, Lindsey J.; Clark, Richard J.; and Rumble, Warwick F., 4,348,068, Cl. 312-257.00R.
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Werner, Arnold; Ennen, Peter; Nuebauer, Josef; Flaig, Hans; and Allgaier, Juergen, 4,348,753, Cl. 368-188.000.
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Patil, Arvind S.; Kersten, Siegfried P.; and Fliege, Werner P., 4,348,240, Cl. 106-304.000.
Flocke, Heinz A.; and Weuster, Udo, to Freudenberg, Carl. Airborne-sound-absorbing wall or ceiling paneling. 4,347,912, Cl. 181-286.000.
Florin, Robert E. Position sensitive mercury switch. 4,348,562, Cl. 200-52.00R.
Fluorocarbon Company, The: *See*—
Hanson, Larry K.; and Bosdachin, Silvano A., 4,348,032, Cl. 277-235.00B.
FMC Corporation: *See*—
Inghram, Donald M.; and Walker, William B., 4,348,150, Cl. 414-529.000.
Thompson, John S.; and Jadlocki, Joseph F., Jr., 4,348,419, Cl. 426-264.000.
Van Saun, William A., Jr., 4,348,326, Cl. 549-463.000.
Foller, Werner, to GESTRA-KSB Vertriebsgesellschaft mbH & Co. KG. Bimetallic-controlled steam trap. 4,347,975, Cl. 236-59.000.
Fombellida, Miguel: *See*—
Hope, Thomasz S.; and Fombellida, Miguel, 4,347,697, Cl. 57-9.000.
Fontaine, William G.; and Reeder, Willes W., to Sleep Safe, Limited. Capacity sensing intrusion alarm apparatus. 4,348,662, Cl. 340-562.000.
Ford Aerospace and Communications Corporation: *See*—
Taraborrelli, Orlando, 4,348,702, Cl. 360-71.000.
Tom, Nelson N., 4,348,676, Cl. 343-114.000.
Ford Motor Company: *See*—
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Lipsitz, Barry R.; and Forman, Charles D., 4,348,191, Cl. 434-308.000.
Forscher, Martin. Camera attachment for obtaining instantaneous contact prints. 4,348,086, Cl. 354-83.000.
Forster, Ernst: *See*—
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Fortin, Roland: *See*—
Aitcin, Pierre C.; Pinsonneault, Philippe; and Fortin, Roland, 4,348,230, Cl. 75-129.000.
Foss, George D., to Minnesota Mining and Manufacturing Company. Air pollution control apparatus and process. 4,348,362, Cl. 422-171.000.
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Vatsky, Joel; and Trozzi, Norman K., 4,348,170, Cl. 431-188.000.
Fourcadier, Chantal: *See*—
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Foxboro Company, The: *See*—
Olsen, Everett O., 4,348,683, Cl. 346-31.000.
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Franckowiak, Gerhard; Meyer, Horst; Bossert, Friedrich; Heise, Arend; Kazda, Stanislav; Stoepel, Kurt; Towart, Robertson; and Wehinger, Egbert, to Bayer Aktiengesellschaft. 1,4-Dihydropyridazine compounds. 4,348,395, Cl. 424-250.000.
Francotyp GmbH: *See*—
Denzin, Horst, 4,348,249, Cl. 156-442.200.
Frank, Arthur M., to Grumman Aerospace Corporation. Solar heating system. 4,347,836, Cl. 126-450.000.
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Hillerstrom, Bjorn; Fransson, Lennarth; and Thuvander, Arne, 4,347,972, Cl. 236-18.000.
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Freitag, Dieter: *See—*
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Freund, Thomas J.: *See—*
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Frey, Hans: *See—*
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Frey, Robert: *See—*
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Frey, Werner: *See—*
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Friebe, Walter-Gunar; Kampe, Wolfgang; Thiel, Max; Schaumann, Wolfgang; and Wilhelms, Otto-Henning, to Boehringer Mannheim GmbH. N-Phenoxyalkylpiperidine derivatives. 4,348,401, Cl. 424-267.000.

Friedhofen, Gerhard: *See—*
Serini, Volker; Neumann, Rainer; Friedhofen, Gerhard; Freitag, Dieter; Heuser, Jurgen; and Schwarz, Hans-Helmut, 4,348,542, Cl. 568-727.000.

Friedman, David W.: *See—*
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Friedrich Kocks GmbH & Co.: *See—*
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Friedrichs, Gregor, to Thyssengas GmbH; and Didier Engineering GmbH. Inflow bottom for a fluidized bed reactor. 4,347,672, Cl. 34-57.00R.

Fries, Ortwin; and Luhring, Claus, to C. Luhring-Schiffswerft-Trockendock. Oil-collecting ship. 4,348,282, Cl. 210-242.300.

Frito-Lay, Inc.: *See—*
Fowler, David P., 4,348,166, Cl. 425-310.000.

Fritz Culver, Inc.: *See—*
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Fritz Fuss Kom. Ges. Elektrotechnische Fabrik: *See—*
Merkel, Willi, 4,348,657, Cl. 340-310.00R.

Frohlich, Horst; and Helwerth, Rainer, to Hoechst Aktiengesellschaft. Anticorrosive agent stable to hard water. 4,348,302, Cl. 252-389.00R.

Fromel, Meter: *See—*
Rode, Heinz A.; Fromel, Meter; and Beaver, Perry L., 4,348,665, Cl. 340-682.000.

Fry, Francis J.: *See—*
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Fuchs, Rainer; Klauke, Erich; Hammann, Ingeborg; Homeyer, Bernhard; Behrenz, Wolfgang; St-Noel, Wilhelm; Lantzsch, Reinhard; and Harhold, Albrecht, to Bayer Aktiengesellschaft. Intermediates and derivatives thereof. 4,348,323, Cl. 549-362.000.

Fujibayashi, Kazuo: *See—*
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Fujii, Hideo: *See—*
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Fujii, Osamu; Kishimoto, Toshio; Kosuge, Hisao; and Nagamine, Ryoji, to Toyo Rubber Chemical Industrial Corporation. Apparatus for continuous production of a slab of polyurethane foam. 4,348,164, Cl. 425-89.000.

Fujimori, Yasuhiro; and Yamamoto, Kaichi, to Sony Corporation. Method and apparatus for encoding a digital signal to have minimal DC component. 4,348,659, Cl. 340-347.0AD.

Fujinaga, Yasuhiro: *See—*
Yano, Shozo; Miyake, Toshiyuki; Fujinaga, Yasuhiro; Koomoto, Akira; Kawara, Toshio; Yagi, Akio; Tsuji, Tomohiro; and Nagaoka, Tadashi, 4,347,903, Cl. 177-25.000.

Fujitsu Fanuc Limited: *See—*
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Baba, Masanori; and Hara, Toshito, 4,348,566, Cl. 200-144.00B.
Takahashi, Yukio, 4,348,747, Cl. 365-189.000.

Fujitsu-Ten, Ltd.: *See—*
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Fujiwara, Kiyoshi: *See—*
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Fujiwara, Toshimasa; and Sudo, Yoshiyuki, to Copal Company Limited. Paper guide mechanism of printer. 4,348,125, Cl. 400-645.100.

Fukushima, Danji: *See—*
Nakano, Eiichi; Masuda, Tsutomu; Saito, Narimasa; and Fukushima, Danji, 4,348,477, Cl. 435-172.000.
Nakano, Eiichi; Masuda, Tsutomu; Saito, Narimasa; and Fukushima, Danji, 4,348,478, Cl. 435-172.000.

Fuller, Robert L., Jr.: *See—*
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Fulton, Donald E., to Charles Stark Draper Laboratory, Inc., The. Induction motor controller with rapid torque response. 4,348,627, Cl. 318-807.000.

Funato, Hiroyoshi, to Ricoh Company, Ltd. Optical scanning apparatus and method. 4,348,080, Cl. 350-3.710.

Furst, Andor: *See—*
Nickolson, Robert; Kerb, Ulrich; Wiechert, Rudolf; Alig, Leo; Furst, Andor; and Muller, Marcel, 4,348,327, Cl. 260-397.100.

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Furutu, Akira, to Clements Industries, Inc.; and Japan Bano'k Co. Ltd. Tag pin. 4,347,932, Cl. 206-343.000.

Furuya, Takeshi; Uchiyama, Yoshihisa; and Kouda, Akinori, to Denki Kagaku Kogyo Kabushiki Kaisha. Process for production of precursor of alumina fiber. 4,348,341, Cl. 264-8.000.

G.D. Searle & Co.: *See—*
Chorvat, Robert J., 4,348,328, Cl. 260-397.200.
Garland, Robert B.; Pappo, Raphael; and Soliman, Paul B., 4,348,388, Cl. 424-180.000.

Gaffar, Abdul; and Davis, Calvin B., to Colgate-Palmolive Company. Dental remineralization composition. 4,348,381, Cl. 424-52.000.

Gageur, Fritz, to Hoechst Aktiengesellschaft. Apparatus for loading runs of fabrics. 4,347,960, Cl. 226-97.000.

Gagneraud, Francis. Production of spheroidal granules from molten inorganic materials. 4,348,340, Cl. 264-8.000.

Galbraith, James N., Jr., to Mobil Oil Corporation. Phase correcting seismic traces. 4,348,749, Cl. 367-46.000.

Gale, George M.; James, David I.; and Meyer, John V. B., to Sunbeam Corporation. Flexible heating elements and processes for the production thereof. 4,348,584, Cl. 219-549.000.

Gale, Philip D.: *See—*
Hackwell, Roger E.; Gale, Philip D.; and Mason, Eric K. L., 4,347,943, Cl. 220-306.000.

Galiger, Barry J. Programmable upward-stroke insert mechanism for bending brakes and method of use. 4,347,727, Cl. 72-389.000.

Gallagher, John J. Buffer system for tankvessels. 4,347,798, Cl. 114-74.00R.

Gallenkamp, Bernd: *See—*
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Gingerich, Richard G. W.; Vanderpool, Clarence D.; Scheithauer, Richard A.; and Ritsko, Joseph E., to GTE Products Corporation. Method for producing cobalt metal powder. 4,348,224, Cl. 75-0.5AA.
Ginn, Martin E., to Walton-March, Inc. Multi-layered liquid detergent-builder concentrate compositions which on addition to water produce stable cleaning solutions. 4,348,292, Cl. 252-90.000.
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Glesser, Louis S. Pocket knife. 4,347,665, Cl. 30-161.000.
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Goehler, Robert F., to Ingersoll-Rand Company. Scraper assembly for a padfoot compactor, and method of forming same. 4,348,134, Cl. 404-129.000.
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Golden, Martin P.; and Holley, John C., to United States of America, Energy. Reactor vessel support system. 4,348,356, Cl. 376-461.000.
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Gorsh, Joseph W., to United States of America, Agriculture. Running skyline intermediate support and multi-span carriage. 4,347,938, Cl. 212-121.000.
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Grossman, Gershon; Sivan, Gideon; Chefner, Tudor; and Matania, Eliyahu. Method of connecting thin metal sheets to metal tubes. 4,347,965, Cl. 228-107.000.
Grosso, Vincent A., to Raytheon Company. Spin-stabilized projectile and guidance system therefor. 4,347,996, Cl. 244-3.160.
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Harjar, Martin J., to Nordson Corporation. Flanged pipe fitting. 4,348,040, Cl. 285-175.000.
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Haug, Theobald, to Ciba-Geigy Corporation. Process for the preparation of crosslinked, unsaturated polymers and the polymers thus obtained. 4,348,511, Cl. 528-72.000.
Haussonne, Francois J.; Moisan, Guy; and Prigent, Hubert. Electric contact device with liquid conductors. 4,348,570, Cl. 200-191.000.

Haverland, William H.; and Hiler, Albert R., to Hospal Medical Corporation. Cutting elements for knitting machines. 4,347,718, Cl. 66-84.00A.

Hawkes, Ivor: *See*—
Wright, David; and Hawkes, Ivor, 4,348,635, Cl. 324-52.000.

Hawkins, Harold R.; Gardner, Clive A.; Roke, Lindsey J.; Clark, Richard J.; and Rumble, Warwick F., to Fisher & Paykel Limited. Refrigerator casing. 4,348,068, Cl. 312-257.00R.

Haworth Mfg., Inc.: *See*—
Borgman, Randall W., 4,347,721, Cl. 70-380.000.

Hayakawa, Yoshihiro: *See*—
Matsuda, Akira; Hayakawa, Yoshihiro; Yasuda, Shigeo; and Iwasaki, Motoaki, 4,348,654, Cl. 340-58.000.

Hayashi, Saburo; Okada, Syohiti; Okamoto, Kazuyoshi; Mizutani, Mochifumi; Isono, Teizo; Osada, Toshio; Okabe, Tohru; and Adachi, Mitsuji, to Seitetsu Kagaku Co., Ltd. Tanning process and tanning compositions. 4,348,201, Cl. 8-94.180.

Hayashi, Yukichi; Sugimoto, Osamu; and Yokohda, Yutaka, to Kabushiki Kaisha Nippon Coinco. General coin counting device for automatic vending machine. 4,347,860, Cl. 133-1.00R.

Hayashi, Yukichi; Tamara, Masayuki; Sugimoto, Osamu; Takizawa, Masayoshi; and Nishioka, Tatsujiro, to Nippon Coinco Co. Ltd. Control system for a vending machine. 4,347,924, Cl. 194-1.00N.

Hayes, Frank, III; and McGinty, Joseph R., to United States of America, Army. Pulse width spectrum analyzer. 4,348,637, Cl. 324-77.00B.

Hayes, Jerry R., to L. R. Nelson Corporation. Turret type sprinkler with improved turret assembly. 4,347,981, Cl. 239-394.000.

Haynes, David L.; and Brennan, John M., to Ampex Corporation. Digital delay for high quality audio use. 4,348,754, Cl. 369-60.000.

Hays, George O., Jr. Connector for extruded sections such as picture frame members. 4,348,127, Cl. 403-9.000.

Head, Brian E., to International Standard Electric Corporation. Method of making magnetic reed contact unit. 4,347,658, Cl. 29-602.00R.

Hedges, Walter P.: *See*—
Emerson, Paul J.; and Hedges, Walter P., 4,348,730, Cl. 364-483.000.

Hedgespeth, Clofford L. Large round hay bale mover. 4,348,143, Cl. 414-24.500.

Hedren, A. Thomas; and Larsson, Rolf G., to ESAB Aktiebolag. Contact device. 4,348,575, Cl. 219-86.330.

Hein, Richard D., to General Tire & Rubber Company, The. Resilient strip and metal carrier therefor. 4,348,443, Cl. 428-122.000.

Heinlein, Hans. Sharpener for steel edges of skis. 4,347,766, Cl. 76-83.000.

Heintze, Hans U. Press roller contamination measurement. 4,347,749, Cl. 73-863.210.

Heinz, Werner. Rotary viscometer. 4,347,734, Cl. 73-59.000.

Heise, Arend: *See*—
Franckowiak, Gerhard; Meyer, Horst; Bossert, Friedrich; Heise, Arend; Kazda, Stanislav; Stoepel, Kurt; Towart, Robertson; and Wehinger, Egbert, 4,348,395, Cl. 424-250.000.

Held, Hans-Dieter; and Schaller, Waldemar, to Matth. Hohner AG. Plug for mouthpiece of a wooden recorder. 4,347,775, Cl. 84-380.00C.

Hellemans, Julianus J.: *See*—
Stievenart, Emile F.; Plessers, Hendrik S.; and Hellemans, Julianus J., 4,348,019, Cl. 271-10.000.

Helm, J. Thomas, to Dozier Equipment International Company. High-level dumping apparatus. 4,348,147, Cl. 414-420.000.

Helsby, Nigel C.: *See*—
Cowlin, Robert M.; and Helsby, Nigel C., 4,348,277, Cl. 209-705.000.

Helwerth, Rainer: *See*—
Frohlich, Horst; and Helwerth, Rainer, 4,348,302, Cl. 252-389.00R.

Hemminger, Herbert: *See*—
Schlayer, Wolfgang; and Hemminger, Herbert, 4,348,017, Cl. 269-296.000.

Henaff, Louis G.: *See*—
Jacuannet, Alain; Henaff, Louis G.; and Ramy, Jean-Pierre R., 4,348,685, Cl. 346-155.000.

Henderson, Wilmer P.: *See*—
King, Paul V.; Becher, Albert P.; and Henderson, Wilmer P., 4,347,796, Cl. 109-49.500.

Henkel Corporation: *See*—
Rogier, Edgar R., 4,348,543, Cl. 568-823.000.

Henkel Kommanditgesellschaft auf Aktien: *See*—
Hennemann, Manfred; and Lohr, Albrecht, 4,348,305, Cl. 252-542.000.

Hennemann, Manfred; and Lohr, Albrecht, to Henkel Kommanditgesellschaft auf Aktien. Liquid detergent compositions comprising mixtures of alkyl polyglycol ethers and quaternary ammonium fabric softening agents. 4,348,305, Cl. 252-542.000.

Henry, Pearison W.: *See*—
Medford, Richard D.; Henry, Pearison W.; and Cooper, Jerry W., 4,347,685, Cl. 47-28.00R.

Henshall, John B.: *See*—
Clark, Malcolm C.; and Henshall, John B., 4,348,330, Cl. 260-456.0NS.

Henson, Thomas L.: *See*—
Ritsko, Joseph E.; MacInnis, Martin B.; and Henson, Thomas L., 4,348,231, Cl. 75-203.000.

Hentschel, Peter: *See*—
Stegmann, Horst; Meyl, Wolfgang; and Hentschel, Peter, 4,347,739, Cl. 73-170.00R.

Henville, Michael I., to Unimax Switch Limited. Snap action switches. 4,348,563, Cl. 200-67.00D.

Hepp, Vincent R.: *See*—
Clavier, Christian M. J.; Hepp, Vincent R.; and Dumestre, Alexis C., 4,348,748, Cl. 367-25.000.

Hercules Incorporated: *See*—
Craig, Alan D., 4,348,444, Cl. 428-137.000.
Craig, Alan D., 4,348,445, Cl. 428-138.000.
Maslanka, William W.; and Spence, Gavin G., 4,348,257, Cl. 162-162.000.

Hermann, Karl H.: *See*—
Buysch, Hans-Josef; Brassat, Bert; Eimers, Erich; and Hermann, Karl H., 4,348,495, Cl. 524-117.000.

Hermes Precisa International S.A.: *See*—
Clavel, Raymond, 4,348,121, Cl. 400-166.000.

Hermle, Eduard. Switching mechanism. 4,348,568, Cl. 200-153.0LB.

Herrin, Lenny, to Regent Paper Box Company. Hanging package. 4,347,930, Cl. 206-45.340.

Herrin, Melvin Bernard: *See*—
Seufert, Gerhard, 4,348,449, Cl. 428-167.000.

Herrold, Lear C.: *See*—
Gamble, James R.; Herrold, Lear C.; and Baran, Rowland S., 4,348,176, Cl. 432-258.000.

Hertz, David; Kurshan, Robert P.; and Malah, David, to Bell Telephone Laboratories, Incorporated. Cyclotomic tone detector and locator. 4,348,735, Cl. 364-724.000.

Herweh, John E.; Garrett, Thomas B.; and Magnusson, Alan B., to Armstrong World Industries, Inc. 3-Substituted-7-alkoxy-2,2'-Spirobi[2H-1-benzopyrans]. 4,348,508, Cl. 526-268.000.

Hetzel, Friedrich: *See*—
Goertler, Horst; Hetzel, Friedrich; Prohaska, Hans; Rachner, Horst; Seitter, Wolf; and Swoboda, Josef, 4,348,655, Cl. 340-73.000.

Hetzler, Ullrich: *See*—
Ruppel, Wolfgang; Hetzler, Ullrich; Vogt, Horst; and Wurfel, Peter, 4,348,611, Cl. 313-388.000.

Heuser, Jurgen: *See*—
Serini, Volker; Neumann, Rainer; Friedhofen, Gerhard; Freitag, Dieter; Heuser, Jurgen; and Schwarz, Hans-Helmut, 4,348,542, Cl. 568-727.000.

Hewlett-Packard Company: *See*—
Ackley, Donald E.; Engelmann, Reinhart W. H.; and Kerps, Dietrich, 4,348,763, Cl. 372-45.000.

Heyneman, Guido, to Siemens Aktiengesellschaft. Metering syringe. 4,348,160, Cl. 417-403.000.

Hibino, Sadayoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Polyphase armature windings. 4,348,606, Cl. 310-184.000.

Hicks, Graham P.; and Carter, Michael C., to ERA Patents Limited. Static inverter with energy return. 4,348,719, Cl. 363-132.000.

Higuchi, Kohei: *See*—
Okabayashi, Hidekazu; Higuchi, Kohei; and Nozaki, Tadatoshi, 4,348,746, Cl. 365-182.000.

Higuchi, Megumu: *See*—
Takahashi, Koichi; Higuchi, Megumu; and Watanabe, Minoru, 4,347,780, Cl. 91-375.00A.

Hiler, Albert R.: *See*—
Haverland, William H.; and Hiler, Albert R., 4,347,718, Cl. 66-84.00A.

Hillerstrom, Bjorn; Fransson, Lennarth; and Thuvander, Arne, to AB CTC. Apparatus for production of hot water. 4,347,972, Cl. 236-18.000.

Hilti Aktiengesellschaft: *See*—
Boehm, Edgar, 4,347,768, Cl. 82-1.500.

Hinchey, Richard J.; and Weber, Willis W., to Union Carbide Corporation. Zeolite LZ-200. 4,348,369, Cl. 423-328.000.

Hines, James E., Jr.; and LaBar, Richard G., deceased (by LaBar, Judith LePage, executor), to Aluminum Company of America. Composition for castable refractory block. 4,348,236, Cl. 106-38.270.

Hinson, Robin A. Racket sports training aid. 4,348,023, Cl. 273-29.00A.

Hiraoka, Takeshi; Urano, Shigeru; Takeshita, Masajiro; and Nakamura, Keiji, to Nippon Piston Ring Co., Ltd. Abrasion resistant ferro-based sintered alloy. 4,348,232, Cl. 75-238.000.

Hirohata, Michio; and Tezuka, Nobuo, to Canon Kabushiki Kaisha. Electromagnetically driven shutter. 4,348,092, Cl. 354-230.000.

Hirohata, Michio; and Sugitani, Hirosi, to Canon Kabushiki Kaisha. Rotor of electromagnetically driven device for exposure control. 4,348,094, Cl. 354-234.000.

Hisaka Works, Ltd.: *See*—
Sumitomo, Hiroyuki; and Uehara, Haruo, 4,347,897, Cl. 165-167.000.

Hitachi Denshi Kabushiki Kaisha: *See*—
Achiha, Masahiko, 4,348,689, Cl. 358-31.000.

Hitachi, Ltd.: *See*—
Achiha, Masahiko, 4,348,689, Cl. 358-31.000.
Igarashi, Osamu; Kugo, Masaru; and Watanabe, Shizuhisa, 4,348,726, Cl. 364-424.000.
Imai, Katsuyuki; Masaoka, Isao; Chiba, Yochiteru; Kanno, Masayoshi; Kuniya, Jiro; and Itow, Hisao, 4,348,041, Cl. 285-286.000.
Ito, Tetsuo, 4,348,110, Cl. 356-328.000.
Kogawa, Takashi, 4,348,731, Cl. 364-513.000.
Kosaka, Hideki; Mimata, Tsutomu; Shimizu, Tsuyoshi; Yamamoto, Hideharu; Itoh, Kaoru; and Shima, Yasuhusa, 4,348,751, Cl. 368-82.000.
Nakamura, Kiyoshi; and Isaka, Masayoshi, 4,348,618, Cl. 318-38.000.
Sasayama, Takao; and Suda, Seiji, 4,348,729, Cl. 364-431.120.
Shimanuki, Shizuka; Matsumoto, Toshimi; Sato, Hiroshi; Onuma, Tsutomu; and Kirihara, Seishin, 4,348,131, Cl. 403-272.000.

Takasugi, Nobuhiro; and Kyomasu, Ryuichi, 4,347,964, Cl. 228-4.500.
Terao, Motoyasu; Taniguchi, Yoshio; Horigome, Shinkichi; Ojima, Masahiro; Shigematsu, Kazuo; Kato, Keizo; Miyamura, Yoshinori; and Yonezawa, Seiji, 4,348,461, Cl. 428-409.000.
Yoshinaga, Shoji; Kawano, Hirosige; Todo, Matsuzo; Takahasi, Toshiko; Fujiwara, Kiyoshi; and Inoue, Yukio, 4,348,288, Cl. 210-708.000.
Yoshioka, Masahiro; and Koike, Toshifumi, 4,348,065, Cl. 308-9.000.

Hockey, Edward J.: *See*—
Agrawal, Giridhari L.; and Hockey, Edward J., 4,348,066, Cl. 308-9.000.

Hoechst Aktiengesellschaft: *See*—
Felcht, Utz-Hellmuth, 4,348,337, Cl. 260-543.00P.
Frohlich, Horst; and Helwerth, Rainer, 4,348,302, Cl. 252-389.00R.
Gageur, Fritz, 4,347,960, Cl. 226-97.000.

Hoecke, David A., to Enercon Systems, Incorporated. Telescopable winter/summer air recirculator. 4,347,782, Cl. 98-33.00A.

Hoffman, John P., to Caterpillar Tractor Co. Frequency/speed controller. 4,348,585, Cl. 235-92.0CT.

Hoffmann-La Roche Inc.: *See*—
Kierstead, Richard W.; and Tilley, Jefferson W., 4,348,396, Cl. 424-251.000.
Montavon, Marc; and Reiner, Roland, 4,348,518, Cl. 544-026.000.
Pfister, Rudolf, 4,348,519, Cl. 544-33.000.

Hoiss, Jakob. Apparatus for aseptically discharging flowable substances. 4,347,877, Cl. 141-91.000.

Hokari, Hiroshi; and Nishitai, Iwaki, to Nippon Zeon Co., Ltd. Method for inhibiting polymerization of conjugated dienes. 4,348,260, Cl. 203-9.000.

Holan, George; and O'Keefe, David F., to Commonwealth Scientific and Industrial Research Organization. Insecticidal esters. 4,348,409, Cl. 424-308.000.

Holdeman, John W., to Borg-Warner Corporation. Planetary gear assembly. 4,347,762, Cl. 74-788.000.

Holley, John C.: *See*—
Golden, Martin P.; and Holley, John C., 4,348,356, Cl. 376-461.000.

Homeyer, Bernhard: *See*—
Fuchs, Rainer; Klauke, Erich; Hammann, Ingeborg; Homeyer, Bernhard; Behrenz, Wolfgang; St-Noel, Wilhelm; Lantzsch, Reinhard; and Harhold, Albrecht, 4,348,323, Cl. 549-362.000.

Hon, John F.: *See*—
Cavalleri, Robert J.; Moon, Lamar F.; and Hon, John F., 4,348,764, Cl. 372-58.000.

Honda Giken Kogyo Kabushiki Kaisha: *See*—
Oonuma, Koichiro; Kawashima, Yoshinori; and Hanai, Toshinori, 4,348,199, Cl. 474-156.000.
Senzaki, Takaya; and Murao, Eiji, 4,348,675, Cl. 343-7.0VM.
Takemura, Hiroo; and Noda, Azusa, 4,347,909, Cl. 180-219.000.

Honda, Munenobu, to Elephant Chain Block Co., Ltd. Hoist with improved overload protection. 4,348,011, Cl. 254-350.000.

Honeywell Inc.: *See*—
Benton, Ronald; Kidder, Kenneth B.; Linderberg, Robert L.; Tinsley, Timothy M.; and Westley, Curtis E., 4,347,712, Cl. 62-175.000.
Mahnken, Walter J., 4,347,995, Cl. 242-204.000.
Pinckaers, B. Hubert; and Ruminsky, Robert T., 4,347,974, Cl. 236-46.00R.
Wu, M. T.; and Chai, Thomas Y., 4,347,709, Cl. 62-140.000.

Honeywell Information Systems Inc.: *See*—
Cushing, David E.; and Stanley, Philip E., 4,348,724, Cl. 364-200.000.
Farrell, Robert J.; Coit, Kenneth T.; Vernon, John H.; Yu, Kin C.; Huettner, Robert E.; and Grandmaison, John P., 4,348,725, Cl. 364-300.000.
Woods, William E.; Cushing, David E.; and Stanley, Philip E., 4,348,723, Cl. 364-200.000.

Hoover Universal, Inc.: *See*—
Straus, Albert E., 4,347,866, Cl. 137-436.000.

Hope, Thomasz S.; and Fombellida, Miguel, to Northern Telecom Limited. Control of a support filament for optical waveguides. 4,347,697, Cl. 57-9.000.

Hori, Hisashi: *See*—
Hori, Masaki; and Hori, Hisashi, 4,348,045, Cl. 296-14.000.

Hori, Kazumi: *See*—
Tsutsumi, Hisao; Hori, Kazumi; and Kawano, Junichi, 4,348,415, Cl. 424-365.000.

Hori, Masaki; and Hori, Hisashi, to Jidosha Seiko Co., Ltd. Device for opening and closing a side plate of a loading box on a motor truck under no-load condition. 4,348,045, Cl. 296-14.000.

Horibata, Hiroshi: *See*—
Christensen, Leonard R.; and Horibata, Hiroshi, 4,348,715, Cl. 362-109.000.

Horigome, Shinkichi: *See*—
Terao, Motoyasu; Taniguchi, Yoshio; Horigome, Shinkichi; Ojima, Masahiro; Shigematsu, Kazuo; Kato, Keizo; Miyamura, Yoshinori; and Yonezawa, Seiji, 4,348,461, Cl. 428-409.000.

Horike, Akihiro: *See*—
Imanaka, Yoshihiko; Saito, Yoichi; and Horike, Akihiro, 4,348,456, Cl. 428-336.000.

Horikoshi, Isamu; Sakuragawa, Nobuo; Ueno, Masaharu; and Takahashi, Kaoru, to Dainippon Pharmaceutical Co., Ltd. Pharmaceutical composition for oral administration containing coagulation factor VIII or IX. 4,348,384, Cl. 424-101.000.

Hormel, Ronald F.; and Miesterfeld, Frederick O. R., to Chrysler Corporation. Lamp failure indicating circuit. 4,348,613, Cl. 315-130.000.

Hosoda, Yutaka: *See*—
Oohasi, Koji; Hosoda, Yutaka; Kitamura, Toshio; and Kudo, Eiichi, 4,348,485, Cl. 501-115.000.

Hosono, Saburo, to Olympus Optical Co., Ltd. Structure for preventing the breakage of end portions of a protective covering for the adjustable bend section of an endoscope. 4,347,837, Cl. 128-6.000.

Hospal Medical Corporation: *See*—
Haverland, William H.; and Hiler, Albert R., 4,347,718, Cl. 66-84.00A.

Hosfeld, William R. Self-burying anchor system. 4,347,802, Cl. 114-295.000.

Hou, Ching T., to Exxon Research and Engineering Co. Production of epoxides such as propylene oxide using packed catalytic bed containing moist resting cells exhibiting oxygenase activity. 4,348,476, Cl. 435-123.000.

House Food Industrial Company Limited: *See*—
Sakakibara, Sakuichi; Sugisawa, Ko; and Kimura, Takashi, 4,348,421, Cl. 426-394.000.

Howell, Edward K., to General Electric Company. Ground fault circuit interrupting device with improved coordination of electronic circuit operation. 4,348,708, Cl. 361-45.000.

Hruda, Robert M., to Westinghouse Electric Corp. Low-voltage vacuum switch operating mechanism. 4,348,567, Cl. 200-144.00B.

Hsieh, Shao-Chung, to General Motors Corporation. Printed circuit connector. 4,348,071, Cl. 339-75.0MP.

Hu, Daniel C.: *See*—
Allen, Bert L.; Wourms, Robert L.; and Hu, Daniel C., 4,347,654, Cl. 29-576.00B.

Huang, Ho-Chung: *See*—
Subbarao, Saligrama N.; and Huang, Ho-Chung, 4,348,253, Cl. 156-643.000.

Huang, John C., to Minnesota Mining and Manufacturing Company. Method for coating with radially-propagating, free, liquid sheets, 4,348,432, Cl. 427-402.000.

Huang, Victor K.: *See*—
Blahut, Donald E.; Huang, Victor K.; and Townsend, Richard L., Jr., 4,348,720, Cl. 364-200.000.

Hubbard, Vance M.; and Brunson, Welton K., to Tecnol, Inc. Small ice pack. 4,347,848, Cl. 128-402.000.

Huber, Siegfried, to Black & Decker Inc. Printed-circuit board and trigger-switch arrangement for a portable electric tool. 4,348,603, Cl. 310-50.000.

Hubner, Hans: *See*—
Blahak, Johannes; Hubner, Hans; Koster, Johannes; Meiners, Hans J.; and Thomas, Heinz, 4,348,536, Cl. 560-169.000.

Huck Manufacturing Company: *See*—
Smith, Walter J., 4,347,728, Cl. 72-391.000.

Huettner, Robert E.: *See*—
Farrell, Robert J.; Coit, Kenneth T.; Vernon, John H.; Yu, Kin C.; Huettner, Robert E.; and Grandmaison, John P., 4,348,725, Cl. 364-300.000.

Huffman, George W.: *See*—
Akerberg, Denis W.; Huffman, George W.; and Rude, Carl A., 4,348,343, Cl. 264-29.500.

Hughes Aircraft Company: *See*—
Schmitz, Lawrence S., 4,348,745, Cl. 365-154.000.
Tangonan, Gregory L.; Morrison, Robert J.; Wysocki, Joseph A.; and Persechini, David L., 4,348,587, Cl. 250-227.000.

Human Oltoanyagtermelo es Kutato Intezet: *See*—
Benyo, Janos; Papp, Tibor; and Tolnay, Janos, 4,347,841, Cl. 128-156.000.

Husslein, Gerd; and Hamprecht, Gerhard, to BASF Aktiengesellschaft. Preparation of 2-aryloxy-2-halopropionic acid compounds. 4,348,534, Cl. 560-62.000.

Hutchinson-Mapa: *See*—
Domer, Michel, 4,348,015, Cl. 267-140.400.

Huxley, Edward E.: *See*—
Gordon, Bruce W.; and Huxley, Edward E., 4,348,214, Cl. 55-48.000.

Hybrid Technology Corporation: *See*—
Spigarelli, Donald J., 4,348,174, Cl. 432-1.000.

Hyldal, Jorgen, to Danfoss A/S. Control circuit for a multi-phase load. 4,348,621, Cl. 318-254.000.

I.C.E. Company, Inc.: *See*—
Pierson, William V., 4,347,824, Cl. 123-527.000.

Iannadrea, Gerald M.: *See*—
Gorgone, Robert L.; Iannadrea, Gerald M.; Doleja, Anthony H.; Knox, Bruce R.; and Kovach, Alan J., 4,348,656, Cl. 340-146.30R.

Ibrahim, Fayez F., to Tyler Refrigeration Corporation. Glass door merchandizer with tertiary air band. 4,347,710, Cl. 62-155.000.

Ichizuka, Kiyomi: *See*—
Kozima, Akio; Akutsu, Eiichi; and Ichizuka, Kiyomi, 4,348,470, Cl. 430-72.000.

Igarashi, Osamu; Kugo, Masaru; and Watanabe, Shizuhisa, to Hitachi, Ltd. Method of controlling automobile equipment and control apparatus. 4,348,726, Cl. 364-424.000.

Igashira, Toshihiko: *See*—
Nomura, Ken; Igashira, Toshihiko; and Abe, Seikou, 4,347,826, Cl. 123-549.000.

Iizuka, Yutaka, to Nippon Kogaku K.K. Inverted Galilean finder. 4,348,090, Cl. 354-224.000.

Iizuka, Yutaka, to Nippon Kogaku K.K. Indicator device in an inverted Galilean finder. 4,348,091, Cl. 354-225.000.
Ikin, John B.: *See*—
Neale, Denis M.; Bontoft, Frederick J.; and Ikin, John B., 4,348,114, Cl. 356-431.000.
Ilmer, Andreas, to BASF Aktiengesellschaft. VTR With equalizer. 4,348,692, Cl. 358-127.000.
Imai, Hironobu, to NSK-Warner K.K. Webbing take-up device. 4,347,992, Cl. 242-68.400.
Imai, Hiroshi: *See*—
Ohno, Akira; Katayama, Hitomi; Nomura, Suguru; Senaha, Susumu; Kyo, Suizo; Shmomura, Susumu; Akagami, Akira; and Imai, Hiroshi, 4,348,463, Cl. 428-429.000.
Imai, Katsuyuki; Masaoka, Isao; Chiba, Yochiteru; Kanno, Masayoshi; Kuniya, Jiro; and Itow, Hisao, to Hitachi, Ltd. Butt welded tubular structure of austenite stainless steel. 4,348,041, Cl. 285-286.000.
Imai, Masafumi: *See*—
Ueno, Hiroshi; Imai, Masafumi; Inaba, Naomi; Yoda, Makoto; and Wada, Shozo, 4,348,507, Cl. 526-125.000.
Imai, Mithuo: *See*—
Takada, Yukihiro; Sugiyama, Kimikazu; and Imai, Mithuo, 4,347,787, Cl. 101-333.000.
Imai, Yoshio: *See*—
Kawamatsu, Yutaka; Sohda, Takashi; and Imai, Yoshio, 4,348,403, Cl. 424-270.000.
Imanaka, Yoshihiko; Saito, Yoichi; and Horike, Akihiro, to Teijin Limited. Abrasion-resistant laminated film. 4,348,456, Cl. 428-336.000.
Imondi, Anthony R.; and Shemano, Irving, to Adria Laboratories, Inc. Orally active tolciclate and tolnaftate. 4,348,407, Cl. 424-300.000.
Imperial Chemical Industries Limited: *See*—
Edwards, Philip N.; and Martin, David M. G., 4,348,322, Cl. 549-296.000.
Ginger, Rodney E.; and Jungeblut, Manfred, 4,347,931, Cl. 206-438.000.
Inaba, Hajimu: *See*—
Kobayashi, Kengo; Inaba, Hajimu; and Sakakibara, Shinsuke, 4,348,623, Cl. 318-568.000.
Inaba, Naomi: *See*—
Ueno, Hiroshi; Imai, Masafumi; Inaba, Naomi; Yoda, Makoto; and Wada, Shozo, 4,348,507, Cl. 526-125.000.
Indianapolis Center for Advanced Research, Inc.: *See*—
Kelly-Fry, Elizabeth; Fry, Francis J.; and Gardner, George W., 4,347,850, Cl. 128-660.000.
Ingersoll-Rand Company: *See*—
Goehler, Robert F., 4,348,134, Cl. 404-129.000.
Inghram, Donald M.; and Walker, William B., to FMC Corporation. Mobile cargo handling system and method. 4,348,150, Cl. 414-529.000.
Inland Steel Company: *See*—
Brown, Birchel S.; Myers, Ted L.; and Easter, Holton C., 4,347,724, Cl. 72-203.000.
Innovation Enterprises, Inc.: *See*—
Farias, James D., Jr., 4,347,883, Cl. 145-61.00R.
Inoue-Japax Research Incorporated: *See*—
Inoue, Kiyoshi, 4,348,622, Cl. 318-318.000.
Inoue, Jiro, to Murata Manufacturing Co., Ltd. Piezoelectric vibrator with spurious mode suppression. 4,348,609, Cl. 310-367.000.
Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. DC Motor drive control system. 4,348,622, Cl. 318-318.000.
Inoue, Mitsumasa: *See*—
Saito, Masaaki; Kawamura, Yoshihisa; Sugo, Yuko; and Inoue, Mitsumasa, 4,347,816, Cl. 123-308.000.
Inoue, Takayuki; and Iwasa, Tatsuya, to Mitsubishi Denki Kabushiki Kaisha. System for manufacturing connection wires. 4,347,651, Cl. 29-33.00M.
Inoue, Yukio: *See*—
Yoshinaga, Shoji; Kawano, Hirosige; Todo, Matsuzo; Takahasi, Toshihiko; Fujiwara, Kiyoshi; and Inoue, Yukio, 4,348,288, Cl. 210-708.000.
Institut de Recherches de la Siderurgie Francaise: *See*—
Groselean, Jean-Claude; and Grave, Roland, 4,348,013, Cl. 266-220.000.
Institute Po Microbiologia: *See*—
Popov, Mitko S.; Djedjeva, Galina M.; Todorov, Ivan O.; and Stoeva, Nelly S., 4,348,481, Cl. 435-234.000.
Intercollection Development SA: *See*—
Strasale, Alex, 4,348,053, Cl. 297-445.000.
International Business Machines Corporation: *See*—
Abbott, Clinton E.; and Rice, Larry J., 4,348,123, Cl. 400-298.000.
Ainscow, Frank, 4,348,688, Cl. 358-29.000.
Baker, James K.; and Baker, Janet M., 4,348,553, Cl. 179-1.0SB.
Brereton, David A.; and Stansbury, Buddy F., 4,348,721, Cl. 364-200.000.
Cukier, Maurice; and Sellier, Daniel, 4,348,737, Cl. 364-900.000.
Deaver, Randall L.; Freund, Thomas J.; and Gerstle, Patrick J., 4,348,739, Cl. 364-900.000.
Desai, Kamalesh S.; and Melvin, George E., 4,347,735, Cl. 73-73.000.
Galwey, Ronald K.; and Kanazawa, Kay K., 4,348,632, Cl. 323-280.000.
Hassan, Javathu K.; and Paivanas, John A., 4,348,139, Cl. 406-10.000.
Lebesnerais, Gerard M., 4,348,595, Cl. 307-221.00R.
Rice, Larry J., 4,348,124, Cl. 400-298.000.
Schnurmann, Henri D., 4,348,759, Cl. 371-20.000.
Sweat, Robert H., Jr.; and Thornhill, William J., 4,347,786, Cl. 101-93.030.
Weinberger, Arnold, 4,348,736, Cl. 364-787.000.
International Flavors & Fragrances Inc.: *See*—
Boden, Richard M., 4,347,857, Cl. 131-276.000.
Boden, Richard M., 4,348,416, Cl. 426-3.000.
Klemarczyk, Philip T.; Sanders, James M.; Vock, Manfred H.; Vinals, Joaquin F.; Schmitt, Frederick L.; and Granda, Edward J., 4,347,858, Cl. 131-276.000.
International Harvester Co.: *See*—
Meisner, David B.; and Vacval, Dusan M., 4,348,055, Cl. 298-23.0DF.
International Minerals & Chemical Corp.: *See*—
Young, Vernon V.; and Bright, David R., 4,348,389, Cl. 424-228.000.
International Spike, Inc.: *See*—
Bond, Allen M., Jr., 4,348,218, Cl. 71-1.000.
International Standard Electric Corporation: *See*—
Head, Brian E., 4,347,658, Cl. 29-602.00R.
Oldham, Ronald C., 4,348,076, Cl. 350-96.220.
Schlayer, Wolfgang; and Hemminger, Herbert, 4,348,017, Cl. 269-296.000.
Sutherland, Joseph E., 4,348,758, Cl. 370-110.200.
International Telephone and Telegraph Corporation: *See*—
Svala, Carl G., 4,348,768, Cl. 375-26.000.
Inventio AG: *See*—
Schroder, Joris, 4,347,916, Cl. 187-95.000.
Iovino, Jerry. Erase attachment for tape cassettes. 4,348,700, Cl. 360-60.000.
Ipco Corporation: *See*—
Dawson, Peter E., 4,348,181, Cl. 433-172.000.
Weissman, Bernard, 4,348,183, Cl. 433-221.000.
Isaka, Masayoshi: *See*—
Nakamura, Kiyoshi; and Isaka, Masayoshi, 4,348,618, Cl. 318-38.000.
Iseki, Kazuo, to Ohta Company Limited. Self closing hinge. 4,347,645, Cl. 16-291.000.
Ishida, Masahide: *See*—
Nakatani, Hiroshi; Ishida, Masahide; and Yamamoto, Hachizou, 4,348,551, Cl. 179-1.0SM.
Ishida, Toshihiko; and Tanaka, Kimio, to TDK Electronics Co., Ltd. Case for holding magnetic tape cassette. 4,347,933, Cl. 206-387.000.
Ishii, Yoshitomo: *See*—
Aoki, Mamoru; Tomita, Masahiro; Utsunomiya, Kei; Sako, Hironobu; Kaneko, Dentaro; Shimazaki, Katsunori; and Ishii, Yoshitomo, 4,348,226, Cl. 75-35.000.
Isobe, Minoru; Kikuchi, Hiroshi; Teshima, Minoru; Kodama, Tadasi; and Ohara, Wataru, to Oki Electric Industry Co. Ltd.; and Nippon Telegraph & Telephone Public Corporation. Printing head for a dot printer. 4,348,120, Cl. 400-124.000.
Isolite Babcock Refractories Co., Ltd.: *See*—
Kato, Takeo, 4,348,441, Cl. 428-49.000.
Isono, Teizo: *See*—
Hayashi, Saburo; Okada, Syohiti; Okamoto, Kazuyoshi; Mizutani, Mochifumi; Isono, Teizo; Osada, Toshio; Okabe, Tohru; and Adachi, Mitsuji, 4,348,201, Cl. 8-94.180.
Issenmann, Olivier. Apparatus for burning crude oil. 4,348,171, Cl. 431-202.000.
Itakura, Hideaki: *See*—
Toyoda, Hiroyasu; Komiya, Hiroyoshi; and Itakura, Hideaki, 4,348,577, Cl. 219-121.0PE.
Ito, Tatsuo, to Fujitsu-Ten, Ltd. Manual channel selection apparatus. 4,348,770, Cl. 455-164.000.
Ito, Tetsuo, to Hitachi, Ltd. Charging current integrating type photodetectors. 4,348,110, Cl. 356-328.000.
Ito, Yoji: *See*—
Tsuzuki, Yoshihiko; Okazaki, Hiroshi; Shirasaki, Shinji; Matsuyama, Masahiro; Kobayashi, Masanobu; and Ito, Yoji, 4,348,653, Cl. 340-52.00F.
Itoh, Kaoru: *See*—
Kosaka, Hideki; Mimata, Tsutomu; Shimizu, Tsuyoshi; Yamamoto, Hideharu; Itoh, Kaoru; and Shima, Yasuhusa, 4,348,751, Cl. 368-82.000.
Itoi, Toru. Outerwear used both as jacket and bag. 4,347,629, Cl. 2-108.000.
Itoki Co., Ltd.: *See*—
Takamatsu, Shunichi, 4,348,152, Cl. 414-785.000.
Itow, Hisao: *See*—
Imai, Katsuyuki; Masaoka, Isao; Chiba, Yochiteru; Kanno, Masayoshi; Kuniya, Jiro; and Itow, Hisao, 4,348,041, Cl. 285-286.000.
ITT Industries, Inc.: *See*—
Bauer, Kurt; and Roth, Christian, 4,347,642, Cl. 15-250.350.
Belart, Juan, 4,347,779, Cl. 91-369.00A.
Goertler, Horst; Hetzel, Friedrich; Prohaska, Hans; Rachner, Horst; Seitter, Wolf; and Swoboda, Josef, 4,348,655, Cl. 340-73.000.
Kohler, Alfred; and Prohaska, Hans, 4,347,641, Cl. 15-250.350.
Ivinger, Kjell E. G., to Granges Aluminium AB. Apparatus for dividing strip material. 4,347,959, Cl. 225-97.000.
Iwasa, Tatsuya: *See*—
Inoue, Takayuki; and Iwasa, Tatsuya, 4,347,651, Cl. 29-33.00M.
Iwasaki, Motoaki: *See*—
Matsuda, Akira; Hayakawa, Yoshihiro; Yasuda, Shigeo; and Iwasaki, Motoaki, 4,348,654, Cl. 340-58.000.

Iwasaki, Yuhei: *See*—
Kimura, Seiichiro; Iwasaki, Yuhei; and Kozaki, Yuji, 4,348,592, Cl. 250-560.000.

J. C. Penney Company, Inc.: *See*—
Lucchesi, Armand P., 4,348,661, Cl. 340-510.000.

J. Connell Associates: *See*—
Bowling, James T., 4,348,061, Cl. 301-37.00R.

Jack, Stanton E.: *See*—
O'Dette, John H.; and Jack, Stanton E., 4,348,242, Cl. 149-7.000.

Jackson, Barry N.: *See*—
Gammons, Clifford E.; Moore, Francis C.; Pagel, Kenneth L.; and Jackson, Barry N., 4,347,633, Cl. 5-453.000.

Jackson, Byron L., to Robertshaw Controls Company. Internal combustion engine coolant system, thermostat therefor and methods of making the same. 4,347,973, Cl. 236-34.500.

Jacquet, Bernard; Papantoniou, Christos; and Mondet, Jean, to L'Oreal. Cosmetic compositions for the hair and skin based on copolymers having tertiary amine and/or quaternary ammonium functions. 4,348,380, Cl. 424-47.000.

Jadlocki, Joseph F., Jr.: *See*—
Thompson, John S.; and Jadlocki, Joseph F., Jr., 4,348,419, Cl. 426-264.000.

Jagt, Jannes C., to U.S. Philips Corporation. Method of applying a layer in accordance with a pattern on a substrate, a negative resist material and a substrate coated with the resist. 4,348,472, Cl. 430-195.000.

Jakobsen, Jakob S., to Danfoss A/S. Regulating circuit for the valve of a refrigeration plant. 4,347,976, Cl. 236-68.00B.

Jakubowski, Thaddeus, Jr.; Lockhart, Jess W.; and Robinson, Norman F., to McDonnell Douglas Corporation. Rack with compliant wedge actuated swaybraces. 4,347,777, Cl. 89-1.50G.

Jamerson, Jackie D.: *See*—
Billig, Ernst; Jamerson, Jackie D.; and Pruett, Roy L., 4,348,539, Cl. 568-454.000.

James, David I.: *See*—
Gale, George M.; James, David I.; and Meyer, John V. B., 4,348,584, Cl. 219-549.000.

Jandy Industries, Inc.: *See*—
Pansini, Andrew L., 4,348,192, Cl. 440-38.000.

Janosi, Marcell, to Budapesti Radiotechnikai Gyar. Flexible magnetic disc having track marking information recorded thereon. 4,348,703, Cl. 360-77.000.

Jaouannet, Alain; Henaff, Louis G.; and Ramy, Jean-Pierre R. Writing head for an electrostatic point printer. 4,348,685, Cl. 346-155.000.

Japan Bano'k Co. Ltd.: *See*—
Furutu, Akira, 4,347,932, Cl. 206-343.000.

Jarboe, Charles H.: *See*—
May, David C.; and Jarboe, Charles H., 4,348,397, Cl. 424-253.000.

Jarecki, Leszek: *See*—
Meier, Dale J.; and Jarecki, Leszek, 4,348,350, Cl. 264-570.000.

Jarrett, Robert B.; and Pace, Wilson D., to Motorola, Inc. Controlled current source for I^2L to analog interfaces. 4,348,600, Cl. 307-475.000.

Jastrzebski, Lubomir L.; and Levine, Peter A., to RCA Corporation. Semiconductor imagers. 4,348,690, Cl. 358-44.000.

Jenkins, Fred W., to Petrolite Corporation. Zirconium compounds as flotation aid. 4,348,287, Cl. 210-705.000.

Jenoptik Jena GmbH: *See*—
Stegmann, Horst; Meyl, Wolfgang; and Hentschel, Peter, 4,347,739, Cl. 73-170.00R.

Jensen, Bruce A., to Phillips Petroleum Company. Control of sidedraw on distillation column. 4,348,259, Cl. 203-1.000.

Jernberg, Robert H.; and Barton, Edwin A., to Pressure-Pak Container Co., Inc. Pressure relief device and method of fabrication thereof. 4,347,942, Cl. 220-89.00A.

Jessop, Edward S.: *See*—
Butler, Nora; Jessop, Edward S.; and Kolb, John R., 4,348,504, Cl. 525-477.000.

Jewett, Mark D., to Massey-Ferguson, Inc. Locking differential control system. 4,347,760, Cl. 74-710.500.

Jidosha Seiko Co., Ltd.: *See*—
Hori, Masaki; and Hori, Hisashi, 4,348,045, Cl. 296-14.000.

Jindra, Clifford P.: *See*—
Atherton, James H.; and Jindra, Clifford P., 4,348,596, Cl. 307-264.000.

Jogand, Patrick: *See*—
Artaud, Robert; Aubert, Michel; Elbeze, Richard; and Jogand, Patrick, 4,348,354, Cl. 376-405.000.

Johansson, Folke, to ASEA Aktiebolag. Diverter switch for an on-load transformer tap changer. 4,348,558, Cl. 200-6.00R.

Johansson, Sigvard; and Pearson, Wells R. S., to Gnosjoplast Aktiebolag. Pallet collar. 4,347,941, Cl. 220-6.000.

Johnson, Ardell W. Rock box. 4,348,153, Cl. 414-786.000.

Johnson, Don R., to Harris & Thrush Manufacturing Company. Module dump. 4,347,696, Cl. 56-16.600.

Johnson, Marvin M.; Tabler, Donald C.; and Nowack, Gerhard P., to Phillips Petroleum Company. Ammonia synthesis with catalyst derived by heating on a support a salt selected from alkali metal, alkaline earth metal, iron and cobalt hexacyanocobaltates and hexacyanoruthenates. 4,348,370, Cl. 423-362.000.

Johnson, Paul H., to Phillips Petroleum Company. Carbon black recovery. 4,348,361, Cl. 422-150.000.

Johnson, Richard V., to Xerox Corporation. Acousto-optic device utilizing Fresnel zone plate electrode array. 4,348,079, Cl. 350-358.000.

Johnston, David B. R.: *See*—
Bouffard, F. Aileen; Christensen, Burton G.; and Johnston, David B. R., 4,348,320, Cl. 260-239.00A.

Johnston, David E., to George Angus & Company Limited. Toggle-action face seal for relatively rotatable members. 4,348,030, Cl. 277-40.000.

Johnston, David E., to George Angus & Company Limited. Rotary fluid seals with floating sealing rings. 4,348,031, Cl. 277-83.000.

Johnston, Harry R. Devices for use in aligning axles. 4,347,668, Cl. 33-193.000.

Jolenn Energy Products Ltd.: *See*—
Muller, John E., 4,347,817, Cl. 123-325.000.

Jones, Marvin R., to Cameron Iron Works, Inc. Shear ram blowout preventer. 4,347,898, Cl. 166-55.000.

Jones, Otto G., to Certain-teed Corporation. Package of wound strand material. 4,348,439, Cl. 428-36.000.

Joormann, Hendrik J. M.; Verweij, Hendrik; and Haisma, Jan, to U.S. Philips Corporation. Precision pressed glass object, glass, method of preparing glass. 4,348,484, Cl. 501-45.000.

Joseph, Joseph P.: *See*—
Dusza, John P.; Joseph, Joseph P.; and Bernstein, Seymour, 4,348,527, Cl. 548-362.000.

Joy Manufacturing Company: *See*—
Novoselac, John, 4,347,971, Cl. 233-20.00R.
Wright, David; and Hawkes, Ivor, 4,348,635, Cl. 324-52.000.

Jundanian, Richard H., to Blodgett, Norman S.; and Blodgett, Gerry A., part interest to each. Vital signs monitor. 4,347,851, Cl. 128-668.000.

Jung, Liebhard: *See*—
Claussen, Reimer; and Jung, Liebhard, 4,347,753, Cl. 74-110.000.

Jungesblut, Manfred: *See*—
Ginger, Rodney E.; and Jungesblut, Manfred, 4,347,931, Cl. 206-438.000.

Kabushiki Kaisha Cubic Engineering: *See*—
Nakanishi, Motoyasu, 4,348,246, Cl. 156-73.100.

Kabushiki Kaisha Mino Seisakusho: *See*—
Mino, Masao; and Ohno, Takeshi, 4,347,991, Cl. 242-43.200.

Kabushiki Kaisha Nippon Coinco: *See*—
Hayashi, Yukichi; Sugimoto, Osamu; and Yokohda, Yutaka, 4,347,860, Cl. 133-1.00R.
Sugimoto, Osamu; and Akagawa, Masaki, 4,347,925, Cl. 194-1.00N.

Kabushiki Kaisha Saginomiya Seisakusho: *See*—
Kaneko, Morio, 4,347,977, Cl. 236-92.00B.

Kaestner, Eugene D. Gill net hauling and fish removing system. 4,347,680, Cl. 43-10.000.

Kamal, Nabil. Reversed moving die folding and creasing machine. 4,347,955, Cl. 223-38.000.

Kameno, Yoshito: *See*—
Kojima, Shinichi; Koide, Ten; Ogino, Shigeo; Tsuchiya, Toshiro; and Kameno, Yoshito, 4,348,386, Cl. 424-177.000.

Kamihigoshi, Tsutomu: *See*—
Akiyama, Toru; Kamihigoshi, Tsutomu; Takagi, Shoji; and Maeda, Tadayuki, 4,348,363, Cl. 422-192.000.

Kamimura, Yasushi. Crime preventive door viewer. 4,348,083, Cl. 350-453.000.

Kamio, Hiroyoshi; Ogino, Yukio; and Nakamura, Kouichi, to Nippon Mining Company, Limited. Accelerated hardening of unsaturated polyester resins. 4,348,498, Cl. 525-13.000.

Kamiya, Shingo, to Nippon Gakki Seizo Kabushiki Kaisha. Power amplifying circuit with changing means for supply voltage. 4,348,644, Cl. 330-297.000.

Kammer, Paul A.; and Durmann, George J., to Eutectic Corporation. Flame spray powder. 4,348,433, Cl. 427-423.000.

Kammer, Paul A.; Yurasko, George, Jr.; and Zmrzlik, Karel, to Eutectic Corporation. Flame spray powder. 4,348,434, Cl. 427-423.000.

Kampe, Wolfgang: *See*—
Friebe, Walter-Gunar; Kampe, Wolfgang; Thiel, Max; Schaumann, Wolfgang; and Wilhelms, Otto-Henning, 4,348,401, Cl. 424-267.000.

Kanai, Chiaki: *See*—
Tsuchiya, Yoshikazu; Tanaka, Masato; Sonoda, Takenori; Watanabe, Tetsu; Kanai, Chiaki; and Watanabe, Nobuhiko, 4,348,699, Cl. 360-32.000.

Kanayama, Katsumi; Furuta, Kenzi; and Motoyama, Kazuyasu, to Olympus Optical Co., Ltd. Mode switching circuit. 4,348,701, Cl. 360-61.000.

Kanazawa, Kay K.: *See*—
Galwey, Ronald K.; and Kanazawa, Kay K., 4,348,632, Cl. 323-280.000.

Kaneko, Dentaro: *See*—
Aoki, Mamoru; Tomita, Masahiro; Utsumomiya, Kei; Sako, Hironobu; Kaneko, Dentaro; Shimazaki, Katsunori; and Ishii, Yoshitomo, 4,348,226, Cl. 75-35.000.

Kaneko, Morio, to Kabushiki Kaisha Saginomiya Seisakusho. Temperature responsive expansion valve. 4,347,977, Cl. 236-92.00B.

Kanno, Masayoshi: *See*—
Imai, Katsuyuki; Masaoka, Isao; Chiba, Yochiteru; Kanno, Masayoshi; Kuniya, Jiro; and Itow, Hisao, 4,348,041, Cl. 285-286.000.

Kantner, Harold H.; and Scott, Stephen D., to Transcience Associates, Inc. Direct-drive hydraulic pump-motor. 4,347,700, Cl. 60-325.000.

Kao Soap Co., Ltd.: *See*—
Ohki, Kenji; Tokuyama, Mistru; Sagae, Masayuki; and Kawabuchi, Kenji, 4,347,844, Cl. 128-287.000.
Tsutsumi, Hisao; Hori, Kazumi; and Kawano, Junichi, 4,348,415, Cl. 424-365.000.

Kara, an: *See—*
Pavek, Miloslav; Novacek, Miroslav; Fantl, Jiri; Kara, an; and Kasparek, Zdenek, 4,347,649, Cl. 28-254.000.
Karbowski, James P., to Triple Dee Electronics Inc. Transmitter-receiver loop buried metal object locator with switch controlled reference voltage. 4,348,639, Cl. 324-329.000.
Karl Lautenschlager KG Mobelbeschlagfabrik: *See—*
Lautenschlager, Karl; and Lautenschlager, Gerhard W., 4,347,644, Cl. 16-50.000.
Lautenschlager, Karl, 4,348,130, Cl. 403-231.000.
Karrer, Friedrich; and Moser, Paul, to Ciba-Geigy Corporation. Amide derivatives of polyalkylpiperidines. 4,348,524, Cl. 546-187.000.
Kasparek, Zdenek: *See—*
Pavek, Miloslav; Novacek, Miroslav; Fantl, Jiri; Kara, an; and Kasparek, Zdenek, 4,347,649, Cl. 28-254.000.
Katayama, Hitomi: *See—*
Ohno, Akira; Katayama, Hitomi; Nomura, Suguru; Senaha, Susumu; Kyo, Suizo; Shmomura, Susumu; Akagami, Akira; and Imai, Hiroshi, 4,348,463, Cl. 428-429.000.
Kato Hatsujo Kaisha Limited: *See—*
Sato, Toshio; and Ogawa, Yasuyuki, 4,347,999, Cl. 248-73.000.
Kato, Katsuhiro: *See—*
Okamoto, Fumio; and Kato, Katsuhiro, 4,348,299, Cl. 252-301.40S.
Kato, Keizo: *See—*
Terao, Motoyasu; Taniguchi, Yoshio; Horigome, Shinkichi; Ojima, Masahiro; Shigematsu, Kazuo; Kato, Keizo; Miyamura, Yoshinori; and Yonezawa, Seiji, 4,348,461, Cl. 428-409.000.
Kato, Takeo, to Isolite Babcock Refractories Co., Ltd. Fibrous insulating material and insulating wall. 4,348,441, Cl. 428-49.000.
Katsuma, Makoto; Shinbori, Kenichi; Kiuchi, Masayoshi; and Alyfuku, Kiyoshi, to Canon Kabushiki Kaisha. Sound mode selector device in a camera incorporating a buzzer. 4,348,096, Cl. 354-289.000.
Katsuno, Yasumitsu: *See—*
Kojima, Tomonori; and Katsuno, Yasumitsu, 4,348,359, Cl. 422-76.000.
Kauffmann, Russell E. Disc game apparatus. 4,348,026, Cl. 273-126.00R.
Kawabuchi, Kenji: *See—*
Ohki, Kenji; Tokuyama, Mistru; Sagae, Masayuki; and Kawabuchi, Kenji, 4,347,844, Cl. 128-287.000.
Kawaguchi, Hatsuo: *See—*
Kunioka, Saburo; Kawaguchi, Hatsuo; and Ono, Minoru, 4,348,241, Cl. 148-6.350.
Kawaishi, Yasunori: *See—*
Suzuki, Shigeru; Ohno, Yukihiro; Yanagawa, Nobuyuki; and Kawaishi, Yasunori, 4,348,106, Cl. 355-75.000.
Kawamatsu, Yutaka; Sohda, Takashi; and Imai, Yoshio, to Takeda Chemical Industries, Ltd. 2-Amino-4-(4-benzyloxyphenyl)thiazoles, and their use in hyperlipemia. 4,348,403, Cl. 424-270.000.
Kawamura, Yoshihisa: *See—*
Saito, Masaaki; Kawamura, Yoshihisa; Sugo, Yuko; and Inoue, Mitsumasa, 4,347,816, Cl. 123-308.000.
Kawano, Hirosige: *See—*
Yoshinaga, Shoji; Kawano, Hirosige; Todo, Matsuzo; Takahasi, Tosihiko; Fujiwara, Kiyoshi; and Inoue, Yukio, 4,348,288, Cl. 210-708.000.
Kawano, Junichi: *See—*
Tsutsumi, Hisao; Hori, Kazumi; and Kawano, Junichi, 4,348,415, Cl. 424-365.000.
Kawara, Toshio: *See—*
Yano, Shozo; Miyake, Toshiyuki; Fujinaga, Yasuhiro; Koomoto, Akira; Kawara, Toshio; Yagi, Akio; Tsuji, Tomohiro; and Nagaoka, Tadashi, 4,347,903, Cl. 177-25.000.
Kawasaki Jukogyo Kabushiki Kaisha: *See—*
Maeda, Takuya; Yamada, Tsutomu; and Kishimoto, Mitsuharu, 4,348,225, Cl. 75-34.000.
Kawashima, Yoshinori: *See—*
Oonuma, Koichiro; Kawashima, Yoshinori; and Hanai, Toshinori, 4,348,199, Cl. 474-156.000.
Kawazu, Hideyuki; and Suzuki, Yoshiro, to Olympus Optical Company Ltd. Cleaning apparatus for photosensitive member of electrophotographic copying machine. 4,348,103, Cl. 355-15.000.
Kazda, Stanislav: *See—*
Franckowiak, Gerhard; Meyer, Horst; Bossert, Friedrich; Heise, Arend; Kazda, Stanislav; Stoepel, Kurt; Towart, Robertson; and Wehinger, Egbert, 4,348,395, Cl. 424-250.000.
Kazi, Abdulla M. Z.: *See—*
Crompton, Charles E.; Kazi, Abdulla M. Z.; and Soni, Inderjit S., 4,348,301, Cl. 252-313.00R.
Keck, Max H.; and Ginninga, Paul R., to Goodyear Tire & Rubber Company, The. Linear block copolyesters having improved slip characteristics. 4,348,510, Cl. 528-26.000.
Keeton, John H. Herbicide row applicator. 4,347,684, Cl. 47-1.500.
Kelder, Jan, to AKZO nv. Novel bis- and mono-quaternary ammonium derivatives of 2β,16β-dipiperidino-5α-androstanes, processes for their preparation and pharmaceutical preparations. 4,348,390, Cl. 424-241.000.
Keller, Roman; and Kliesch, Gunter, to Siemens Aktiengesellschaft. Clamping assembly for thyristor column. 4,348,687, Cl. 357-79.000.
Keller, Ronald L.: *See—*
Brown, Raymond J.; Keller, Ronald L.; and Lang, Charles F., 4,348,366, Cl. 423-111.000.
Kelly-Fry, Elizabeth; Fry, Francis J.; and Gardner, George W., to Indianapolis Center for Advanced Research, Inc. Direct water coupling device for ultrasound breast scanning in a supine position. 4,347,850, Cl. 128-660.000.
Kelsey-Hayes Company: *See—*
Rozmus, Walter J., 4,348,212, Cl. 55-2.000.
Kenyon, David L. Chain lock. 4,347,720, Cl. 70-14.000.
Kerb, Ulrich: *See—*
Nickolson, Robert; Kerb, Ulrich; Wiechert, Rudolf; Alig, Leo; Furst, Andor; and Muller, Marcel, 4,348,327, Cl. 260-397.100.
Kernforschungsanlage Juich, Gesellschaft mit beschrankter Haftung: *See—*
Dias, Francisco J.; Hannen, Willi; Luhleich, Hartmut; and Pflaum, Peter, 4,347,671, Cl. 34-15.000.
Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung: *See—*
Groeneweg, Joost; and Schluer, Manfred, 4,348,285, Cl. 210-602.000.
Kerotest Manufacturing Corp.: *See—*
Schmitt, Edward L.; Caroleo, Steven J.; Bolam, Charles W.; and Conley, Richard W., 4,348,006, Cl. 251-288.000.
Kerps, Dietrich: *See—*
Ackley, Donald E.; Engelmann, Reinhart W. H.; and Kerps, Dietrich, 4,348,763, Cl. 372-45.000.
Kersten, Peter; Meixner, Peter; and Muller, Erich, to Veb Schwermachinenbaukombinat Takraf. Bucket-wheel excavator. 4,347,676, Cl. 37-94.000.
Kersten, Siegfried P.: *See—*
Patil, Arvind S.; Kersten, Siegfried P.; and Fliege, Werner P., 4,348,240, Cl. 106-304.000.
Keske, Robert G.; and Stephens, James R., to Standard Oil Company (Indiana). Injection moldable amide-imide copolymers and terpolymers. 4,348,513, Cl. 528-188.000.
Kessler, David R.; Gutmann, Thomas J.; and Finn, Charles E., to General Motors Corporation. Throttle body injection apparatus with distribution skirt. 4,347,823, Cl. 123-472.000.
Keyes, John T., to Union Tank Car Company. Combined safety vent and siphon unloading nozzle for liquid transportation vehicle. 4,347,863, Cl. 137-212.000.
Kheidr, Mahmoud; and Fraser, Irene A. E., to Tenneco Chemicals, Inc. Liquid, solvent-free, non-toxic stabilizers and vinyl chloride resin compositions containing same. 4,348,494, Cl. 524-114.000.
Khoury, Nick S., to Continental Group, Inc., The. Combination score tool and score anvil. 4,348,464, Cl. 428-571.000.
Kidder, Kenneth B.: *See—*
Benton, Ronald; Kidder, Kenneth B.; Linderberg, Robert L.; Tinsley, Timothy M.; and Westley, Curtis E., 4,347,712, Cl. 62-175.000.
Kienitz, Lutz: *See—*
Albrecht, Bernhard; Frey, Hans; Habermacher, Vinzenz; Behre, Horst; Kienitz, Lutz; Schenk, Wolfgang; Steffan, Guido; and Vogel, Axel, 4,348,334, Cl. 260-505.00C.
Kierstead, Richard W.; and Tilley, Jefferson W., to Hoffmann-La Roche Inc. Substituted 11-oxo-11H-pyrido[2,1-b]quinazolines and method of inhibiting allergic reactions with them. 4,348,396, Cl. 424-251.000.
Kikuchi, Hiroshi: *See—*
Isobe, Minoru; Kikuchi, Hiroshi; Teshima, Minoru; Kodama, Tadasi; and Ohara, Wataru, 4,348,120, Cl. 400-124.000.
Kikuchi, Takehiro: *See—*
Kobayashi, Akio; Kikuchi, Takehiro; Kondo, Toshio; and Tajima, Masahiko, 4,348,727, Cl. 364-431.060.
Kim, Leo: *See—*
Sanders, Andrea; and Kim, Leo, 4,348,509, Cl. 562-538.000.
Kimura, Seiichiro; Iwasaki, Yuhei; and Kozaki, Yuji, to Nippon Seiko Kabushiki Kaisha. Apparatus for reading patterns. 4,348,592, Cl. 250-560.000.
Kimura, Takashi: *See—*
Sakakibara, Sakuichi; Sugisawa, Ko; and Kimura, Takashi, 4,348,421, Cl. 426-394.000.
Kinast, Gunther; Muller, Lutz; Sitt, Rudiger; and Puls, Walter, to Bayer Aktiengesellschaft. 2-Hydroxyalkyl-3,4,5-trihydroxy-piperidine compounds, their production and their medicinal use. 4,348,402, Cl. 424-267.000.
King, Paul V.; Becher, Albert P.; and Henderson, Wilmer P., to United States of America, Army. Blast suppressive shielding. 4,347,796, Cl. 109-49.500.
King, Peter F., to Occidental Chemical Corporation. One package replenisher for aluminum cleaner. 4,348,294, Cl. 252-142.000.
Kinsell, Robert C.; and Noe, James C., to Garrett Corporation, The. Heat pump systems for residential use. 4,347,714, Cl. 62-402.000.
Kinsella, John E.; and Shetty, Jayarama K., to Cornell Research Foundation, Inc. Recovery of proteinaceous material having reduced nucleic acid levels. 4,348,479, Cl. 435-183.000.
Kirchoff, George F.: *See—*
Law, Bliss W.; Kirchoff, George F.; and Adams, Gary V., 4,348,037, Cl. 280-733.000.
Kirihara, Seishin: *See—*
Shimanuki, Shizuka; Matsumoto, Toshimi; Sato, Hiroshi; Onuma, Tsutomu; and Kirihara, Seishin, 4,348,131, Cl. 403-272.000.
Kishi, Mitsuhiro. Lifting apparatus. 4,348,008, Cl. 254-122.000.
Kishimoto, Mitsuharu: *See—*
Maeda, Takuya; Yamada, Tsutomu; and Kishimoto, Mitsuharu, 4,348,225, Cl. 75-34.000.
Kishimoto, Toshio: *See—*
Fujii, Osamu; Kishimoto, Toshio; Kosuge, Hisao; and Nagamine, Ryoji, 4,348,164, Cl. 425-89.000.
Kita, Yasuo, to Sumitomo Electric Industries, Ltd. Floating type disc brake. 4,347,917, Cl. 188-73.450.

Kitagishi, Nozomu; and Fujibayashi, Kazuo, to Canon Kabushiki Kaisha. Tele-photographic lens of large aperture ratio. 4,348,084, Cl. 350-454.000.

Kitamura, Kazuhiko, to Aisin Seiki Kabushiki Kaisha. Exhaust cleaning fluid control system and vacuum control valve device for use therein. 4,347,699, Cl. 60-290.000.

Kitamura, Toshio: *See*—
Oohasi, Koji; Hosoda, Yutaka; Kitamura, Toshio; and Kudo, Eiichi, 4,348,485, Cl. 501-115.000.

Kitamura, Yoshishige, to Nippon Electric Co., Ltd. Buffer circuit. 4,348,601, Cl. 307-530.000.

Kitsukawa, Kazumi: *See*—
Minagawa, Motonobu; Nakahara, Yutaka; and Kitsukawa, Kazumi, 4,348,308, Cl. 524-110.000.

Kittel, Ludwig, to TE KA DE Felten & Guilleaume Fernmeldeanlagen GmbH. Circuitry for extraction of a transmission clock signal from-modulated data transmissions. 4,348,769, Cl. 375-28.000.

Kiuchi, Masayoshi: *See*—
Katsuma, Makoto; Shinbori, Kenichi; Kiuchi, Masayoshi; and Alyfuku, Kiyoshi, 4,348,096, Cl. 354-289.000.

Kizaki, Yoshio: *See*—
Shiun, Toshimi; Fujii, Hideo; and Kizaki, Yoshio, 4,348,762, Cl. 371-47.000.

Klank, Otto; Rottmann, Dieter; and Wossner, Helmut, to Licentia Patent-Verwaltungs-G.m.b.H. Digital tuning system for a radio receiver. 4,348,771, Cl. 455-180.000.

Klauke, Erich: *See*—
Fuchs, Rainer; Klauke, Erich; Hammann, Ingeborg; Homeyer, Bernhard; Behrenz, Wolfgang; St-Noel, Wilhelm; Lantzsch, Reinhard; and Harhold, Albrecht, 4,348,323, Cl. 549-362.000.
Kuhle, Engelbert; Kraus, Peter; and Klauke, Erich, 4,348,411, Cl. 424-319.000.
Maurer, Fritz; Priesnitz, Uwe; Riebel, Hans-Jochem; Gallenkamp, Bernd; and Klauke, Erich, 4,348,538, Cl. 562-459.000.
Sirrenberg, Wilhelm; Klauke, Erich; Hammann, Ingeborg; Krehan, Ingomar; and Stendel, Wilhelm, 4,348,394, Cl. 424-248.570.

Klein, Fred T.: *See*—
Walker, Starnes E.; and Klein, Fred T., 4,348,115, Cl. 356-436.000.

Kleiner, Fredric: *See*—
Zemelman, Valery B.; Kleiner, Fredric; and Kuchman, Michael J., 4,347,707, Cl. 62-69.000.

Kleinewefers GmbH: *See*—
Pav, Josef; Hartwich, Gerhard; and Prey, Jorg, 4,347,784, Cl. 100-162.00R.

Klemarczyk, Philip T.; Sanders, James M.; Vock, Manfred H.; Vinals, Joaquin F.; Schmitt, Frederick L.; and Granda, Edward J., to International Flavors & Fragrances Inc. Use of carboalkoxy alkyl norbornanes for augmenting or enhancing the aroma or taste of a smoking tobacco composition or at least a portion of a smoking tobacco article. 4,347,858, Cl. 131-276.000.

Kliesch, Gunter: *See*—
Keller, Roman; and Kliesch, Gunter, 4,348,687, Cl. 357-79.000.

Kling, John E.: *See*—
Murtaugh, J. Barry; Laurin, Dean G.; Kling, John E.; and Woodworth, Archie G., 4,348,209, Cl. 23-232.00R.

Kmetz, Richard C.: *See*—
Ferris, Theodore V.; and Kmetz, Richard C., 4,348,540, Cl. 568-472.000.

Knarr, John E.: *See*—
Clyne, Arthur J.; Knarr, John E.; and Miller, Stanley, 4,347,892, Cl. 165-10.000.

Knecht, Max, to Sulzer Brothers Limited. Rack for intermediate storage of nuclear reactor fuel element bundles. 4,348,352, Cl. 376-272.000.

Knoop, Heinrich; and Pfeiffer, Heinrich, to Maschinenfabrik J. Dieffenbacher GmbH & Co. Device for the insertion and extraction of a laminating pack in and from a press. 4,348,252, Cl. 156-538.000.

Knox, Bruce R.: *See*—
Gorgone, Robert L.; Iannadrea, Gerald M.; Dolejs, Anthony H.; Knox, Bruce R.; and Kovach, Alan J., 4,348,656, Cl. 340-146.30R.

Kobayashi, Akio; Kikuchi, Takehiro; Kondo, Toshio; and Tajima, Masahiko, to Nippondenso Co., Ltd. Air-fuel ratio control apparatus. 4,348,727, Cl. 364-431.060.

Kobayashi, Kengo; Inaba, Hajimu; and Sakakibara, Shinsuke, to Fujitsu Fanuc Limited. Numerical control system for controlling both a machine tool and a robot. 4,348,623, Cl. 318-568.000.

Kobayashi, Masanobu: *See*—
Tsuzuki, Yoshihiko; Okazaki, Hiroshi; Shirasaki, Shinji; Matsuyama, Masahiro; Kobayashi, Masanobu; and Ito, Yoji, 4,348,653, Cl. 340-52.00F.

Kobe Steel, Ltd.: *See*—
Aoki, Mamoru; Tomita, Masahiro; Utsunomiya, Kei; Sako, Hironobu; Kaneko, Dentaro; Shimazaki, Katsunori; and Ishii, Yoshitomo, 4,348,226, Cl. 75-35.000.

Kobuke, Takayoshi: *See*—
Tokuoka, Yasumichi; and Kobuke, Takayoshi, 4,348,430, Cl. 427-215.000.

Kobzina, John W., to Chevron Research Company. Herbicidal N-haloacetyl-2-alkyl-6-acylanilines. 4,348,222, Cl. 71-118.000.

Kochs Adler AG: *See*—
Scholl, Hans; and Fischer, Jochen, 4,347,797, Cl. 112-121.120.

Kodama, Tadasi: *See*—
Isobe, Minoru; Kikuchi, Hiroshi; Teshima, Minoru; Kodama, Tadasi; and Ohara, Wataru, 4,348,120, Cl. 400-124.000.

Koenig, James P., to Bendix Corporation, The. Tractor air brake proportioning system. 4,348,062, Cl. 303-6.00C.

Kogawa, Takashi, to Hitachi, Ltd. Automatic working apparatus and method of controlling the same. 4,348,731, Cl. 364-513.000.

Kohler, Alfred; and Prohaska, Hans, to ITT Industries, Inc. Wiper arm. 4,347,641, Cl. 15-250.350.

Koide, Ten: *See*—
Kojima, Shinichi; Koide, Ten; Ogino, Shigeo; Tsuchiya, Toshiro; and Kameno, Yoshito, 4,348,386, Cl. 424-177.000.

Koike, Toshifumi: *See*—
Yoshioka, Masahiro; and Koike, Toshifumi, 4,348,065, Cl. 308-9.000.

Koizumi, Yutaka, to Ricoh Company, Ltd. Electrophotographic apparatus. 4,348,098, Cl. 355-3.0TR.

Kojima, Shinichi; Koide, Ten; Ogino, Shigeo; Tsuchiya, Toshiro; and Kameno, Yoshito, to Sumitomo Chemical Company, Limited. Protease inhibitors. 4,348,386, Cl. 424-177.000.

Kojima, Tomonori; and Katsuno, Yasumitsu, to Mitsubishi Chemical Industries, Limited. Device for determining various types of trace nitrogen. 4,348,359, Cl. 422-76.000.

Kokorowski, Stanislaw A., to United States of America, Air Force. Automatic bandwidth control system. 4,348,586, Cl. 250-214.00R.

Kolb, Gunter: *See*—
Lobach, Wilfried; Kolb, Gunter; Lehmann, Wolfgang; Cramm, Gunther; Muller, Friedhelm; and Muszik, Janos, 4,348,514, Cl. 528-367.000.

Kolb, John R.: *See*—
Butler, Nora; Jessop, Edward S.; and Kolb, John R., 4,348,504, Cl. 525-477.000.

Komatsu, Mikiya; Suzuki, Shunsuke; and Maruyama, Takasumi, to Nissan Motor Co., Ltd. Diecasting apparatus. 4,347,889, Cl. 164-250.100.

Komiya, Hiroyoshi: *See*—
Toyoda, Hiroyasu; Komiya, Hiroyoshi; and Itakura, Hideaki, 4,348,577, Cl. 219-121.0PE.

Komiya, Takao; and Minomiya, Mitsuo, to Canon Kabushiki Kaisha. Photo-sensitive medium for electrophotography. 4,348,469, Cl. 430-55.000.

Kondo, Shigeo; and Yoshiike, Nobuyuki, to Matsushita Electric Industrial Co., Ltd. Electrochromic display device. 4,348,077, Cl. 350-357.000.

Kondo, Toshio: *See*—
Kobayashi, Akio; Kikuchi, Takehiro; Kondo, Toshio; and Tajima, Masahiko, 4,348,727, Cl. 364-431.060.
Sagisaka, Yasuo; Kondo, Toshio; and Tajima, Masahiko, 4,348,728, Cl. 364-431.060.

Kong, Peter T.: *See*—
Elehew, Wolodymyr R.; and Kong, Peter T., 4,348,466, Cl. 429-84.000.

Koninklijke Emballage Industrie Van Leer B.V.: *See*—
Shefford, Roger A., 4,348,436, Cl. 428-35.000.

Koomoto, Akira: *See*—
Yano, Shozo; Miyake, Toshiyuki; Fujinaga, Yasuhiro; Koomoto, Akira; Kawara, Toshio; Yagi, Akio; Tsuji, Tomohiro; and Nagaoka, Tadashi, 4,347,903, Cl. 177-25.000.

Koppers Company, Inc.: *See*—
Carman, Kenneth K.; and Webb, Stanley G., 4,347,715, Cl. 464-32.000.

Kosaka, Hideki; Mimata, Tsutomu; Shimizu, Tsuyoshi; Yamamoto, Hideharu; Itoh, Kaoru; and Shima, Yasuhusa, to Hitachi, Ltd. Electronic device and method of fabricating the same. 4,348,751, Cl. 368-82.000.

Koser, Gerald F.; and Wettach, Richard H., to University of Akron, The. Composition and a process for the preparation of [hydroxy(organosulfonyloxy)iodo]arenes and their use in a regiospecific synthesis of diaryliodonium salts. 4,348,525, Cl. 546-346.000.

Kost, William E.; and Schoenberger, Norman, Jr., to Weyerhaeuser Company. Tray. 4,347,969, Cl. 229-34.0HW.

Koster, Johannes: *See*—
Blahak, Johannes; Hubner, Hans; Koster, Johannes; Meiners, Hans J.; and Thomas, Heinz, 4,348,536, Cl. 560-169.000.

Kosti, Carl M. Plaque disclosing dentifrice compositions with semi-solid microcapsules of dye. 4,348,378, Cl. 424-7.000.

Kosuda, Tooru; Ohashi, Michihiro; Takeuchi, Yasuhiro; Toda, Tadahide; Matsubara, Noboru; and Takizawa, Masaaki, to Nippon Soken, Inc.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Hydraulic valve lift device. 4,347,812, Cl. 123-90.550.

Kosuge, Hisao: *See*—
Fujii, Osamu; Kishimoto, Toshio; Kosuge, Hisao; and Nagamine, Ryoji, 4,348,164, Cl. 425-89.000.

Kouda, Akinori: *See*—
Furuya, Takeshi; Uchiyama, Yoshihisa; and Kouda, Akinori, 4,348,341, Cl. 264-8.000.

Kovach, Alan J.: *See*—
Gorgone, Robert L.; Iannadrea, Gerald M.; Dolejs, Anthony H.; Knox, Bruce R.; and Kovach, Alan J., 4,348,656, Cl. 340-146.30R.

Kowalsky, Horst; and Scheer, Horst. Dietetic composition for natural digestion regulation. 4,348,379, Cl. 424-34.000.

Kozaki, Yuji: *See*—
Kimura, Seiichiro; Iwasaki, Yuhei; and Kozaki, Yuji, 4,348,592, Cl. 250-560.000.

Kozima, Akio; Akutsu, Eiichi; and Ichizuka, Kiyomi, to Ricoh Co., Ltd. Electrophotographic element containing disazo compounds. 4,348,470, Cl. 430-72.000.

Kraftwerk Union Aktiengesellschaft: *See*—
Assmann, Helmut; Brandau, Egbert; Dorr, Wolfgang; Mathieu, Viktor; and Dichtjar, Gerhard, 4,348,339, Cl. 264-0.500.
Krall, Harry J., to Eastman Kodak Company. Manufacture of cellulose ester film. 4,348,238, Cl. 106-177.000.
Kramer, Horst G., to Monsanto Company. Method for producing neutron doped silicon having controlled dopant variation. 4,348,351, Cl. 376-183.000.
Kraus, Peter: *See*—
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Krauss-Maffei Aktiengesellschaft: *See*—
Vostrovsky, Ernst, 4,348,165, Cl. 425-185.000.
Kreft, Keith A., to Sun Electric Corporation. Method and apparatus for engine exhaust analyzer. 4,348,732, Cl. 364-571.000.
Krehan, Ingomar: *See*—
Sirrenberg, Wilhelm; Klauke, Erich; Hammann, Ingeborg; Krehan, Ingomar; and Stendel, Wilhelm, 4,348,394, Cl. 424-248.570.
Kresse, Horst: *See*—
Demus, Dietrich; Zaschke, Horst; Vorbrodt, Hans-Mathias; Kresse, Horst; and Weissflog, Wolfgang, 4,348,324, Cl. 549-369.000.
Kriozere, Richard A., to Professional Tape Company, Inc. Pressure sensitive seal. 4,348,440, Cl. 428-41.000.
Krishnaswamy, Srinivasan, to Shell Oil Company. Single phase flow measurement. 4,347,747, Cl. 73-861.180.
Krude, Werner; and Harz, Peter, to Uni-Cardan Aktiengesellschaft. Universal joint. 4,348,196, Cl. 464-11.000.
Kruschwitz, Werner, to Draftex Development, AG. Window glass mounting arrangements. 4,347,693, Cl. 52-208.000.
Kuchman, Michael J.: *See*—
Zemelman, Valery B.; Kleiner, Fredric; and Kuchman, Michael J., 4,347,707, Cl. 62-69.000.
Kudo, Eiichi: *See*—
Oohasi, Koji; Hosoda, Yutaka; Kitamura, Toshio; and Kudo, Eiichi, 4,348,485, Cl. 501-115.000.
Kugo, Masaru: *See*—
Igarashi, Osamu; Kugo, Masaru; and Watanabe, Shizuhisa, 4,348,726, Cl. 364-424.000.
Kuhle, Engelbert; Kraus, Peter; and Klauke, Erich, to Bayer Aktiengesellschaft. Combating bacteria with halogenomethylsulphonylphenyl-phthalamic acids. 4,348,411, Cl. 424-319.000.
Kuhle, Engelbert: *See*—
Dickore, Karlfried; and Kuhle, Engelbert, 4,348,331, Cl. 260-465.00D.
Kulik, John J.: *See*—
Harvey, James F.; Chambers, Walter S.; and Kulik, John J., 4,348,186, Cl. 434-44.000.
Kunioka, Saburo; Kawaguchi, Hatsuo; and Ono, Minoru, to Shinhokoku Steel Corporation. Heat-treatment of semifinished product-sliding surface of shaping members in plastic metal-working apparatus. 4,348,241, Cl. 148-6.350.
Kuniya, Jiro: *See*—
Imai, Katsuyuki; Masaoka, Isao; Chiba, Yochiteru; Kanno, Masayoshi; Kuniya, Jiro; and Itow, Hisao, 4,348,041, Cl. 285-286.000.
Kunugi, Yoshiro: *See*—
Tanaka, Kazuyuki; Ueki, Yoshiharu; Kunugi, Yoshiro; and Sakaguchi, Shozaburo, 4,348,616, Cl. 315-314.000.
Kuper, Walter, to Gummi Kuper GmbH & Co. KG. Snow removal bar for the snow removal plate of a snow plow. 4,347,677, Cl. 37-233.000.
Kurshan, Robert P.: *See*—
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Kurtz, Stuart J., to Union Carbide Corporation. Method for reducing melt fracture during extrusion of a molten narrow molecular weight distribution, linear, ethylene copolymer. 4,348,349, Cl. 264-564.000.
Kurz, Craven H. Pulsating orthodontic appliance. 4,348,177, Cl. 433-5.000.
Kurz, Craven H. Vibrational orthodontic appliance. 4,348,178, Cl. 433-6.000.
Kvita, Vratislav; Zweifel, Hans; Roth, Martin; and Felder, Louis, to Ciba-Geigy Corporation. Thioxanthonecarboxylic acids, esters, thioesters and amides with reactive functional groups. 4,348,530, Cl. 549-27.000.
Kwiatkowski, Sigmund: *See*—
Wills, Neville D.; and Kwiatkowski, Sigmund, 4,348,025, Cl. 273-73.00R.
Kwon, Joon T.; and Gelbein, Abraham P., to Lummus Company, The. Olefin oxidation. 4,348,537, Cl. 560-243.000.
Kyo, Suizo: *See*—
Ohno, Akira; Katayama, Hitomi; Nomura, Suguru; Senaha, Susumu; Kyo, Suizo; Shmomura, Susumu; Akagami, Akira; and Imai, Hiroshi, 4,348,463, Cl. 428-429.000.
Kyomasu, Ryuichi: *See*—
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L. R. Nelson Corporation: *See*—
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Boucher, Guy, 4,348,051, Cl. 297-423.000.
Bouteille, Daniel; Nicolas, Michel; and Prudhomme, Pierre, 4,347,864, Cl. 137-269.000.
Lasko, John K., to Marketing Displays, Inc. Multi-sided display device. 4,347,678, Cl. 40-607.000.
LaBar, Judith LePage, executor: *See*—
Hines, James E., Jr.; and LaBar, Richard G., deceased, 4,348,236, Cl. 106-38.270.
LaBar, Richard G., deceased: *See*—
Hines, James E., Jr.; and LaBar, Richard G., deceased, 4,348,236, Cl. 106-38.270.
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Lamarche, Paul E., to Borg-Warner Corporation. Two-stage torsional vibration damper. 4,347,717, Cl. 464-64.000.
Lamson & Sessions Co.: *See*—
Capuano, Terry D., 4,347,636, Cl. 10-86.00F.
Land Combustion Limited: *See*—
Swithenbank, Joshua; and Taylor, David S., 4,348,169, Cl. 431-89.000.
Lande, Maurice A.: *See*—
David, Roger J. P.; and Lande, Maurice A., 4,348,634, Cl. 323-353.000.
Landes, Raymond L., to Libbey-Owens-Ford Company. Sheet aligning apparatus. 4,347,927, Cl. 198-434.000.
Lang, Charles F.: *See*—
Brown, Raymond J.; Keller, Ronald L.; and Lang, Charles F., 4,348,366, Cl. 423-111.000.
Langlois, Michel: *See*—
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Lantz, George H. Multiple step vented hull. 4,348,195, Cl. 440-100.000.
Lantzsch, Reinhard: *See*—
Fuchs, Rainer; Klauke, Erich; Hammann, Ingeborg; Homeyer, Bernhard; Behrenz, Wolfgang; St-Noel, Wilhelm; Lantzsch, Reinhard; and Harhold, Albrecht, 4,348,323, Cl. 549-362.000.
Lanzillotti, Harry V.; Burnett, George H.; Wayte, Alline R.; Osdene, Thomas S.; Claflin, Warren E.; Lilly, A. Clifton, Jr.; and Nienow, John F., to Philip Morris Incorporated. Method of making smoking articles. 4,347,855, Cl. 131-78.000.
Laramee, Benjamin E.: *See*—
Consolazio, George A.; Sheppard, James A.; and Laramee, Benjamin E., 4,348,424, Cl. 427-4.000.
Larson, Richard C.: *See*—
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Larsson, Rolf G.: *See*—
Hedren, A. Thomas; and Larsson, Rolf G., 4,348,575, Cl. 219-86.330.
Laswell, Tull C.; and Monier, John L., to Tri-X Corporation. Stop-leak composition for automobile cooling systems and the like. 4,348,235, Cl. 106-33.000.
Latimer, John P., to Deepsea Ventures, Inc. Dredging means having means for excluding oversized slender objects. 4,347,675, Cl. 37-57.000.
Laurin, Dean G.: *See*—
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Lautenschlager, Gerhard W.: *See*—
Lautenschlager, Karl; and Lautenschlager, Gerhard W., 4,347,644, Cl. 16-50.000.
Lautenschlager, Karl; and Lautenschlager, Gerhard W., to Karl Lautenschlager KG Mobelbeschlagfabrik. Over-center self closing hinge. 4,347,644, Cl. 16-50.000.
Lautenschlager, Karl, to Karl Lautenschlager, KG Mobelbeschlagfabrik. Joining device. 4,348,130, Cl. 403-231.000.
Lauven, Walter, to Ford Motor Company. Hydraulic control valve system for a planet gear transmission particularly for motor vehicles. 4,347,764, Cl. 74-867.000.
Law, Bliss W.; Kirchoff, George F.; and Adams, Gary V., to Thiokol Corporation. Safety cushion attachable to belt-type restraints. 4,348,037, Cl. 280-733.000.
Lazarus, Stanley D.; and Lofquist, Robert A., to Allied Corporation. Production of thermally stabilized polyester with alkylene carbonates and sodium or potassium thiocyanate. 4,348,314, Cl. 525-439.000.
Le Silicium Semiconducteur SSC: *See*—
Arnould, Jacques, 4,348,545, Cl. 136-244.000.
Lear Siegler, Inc.: *See*—
Litkewycz, Stanley, 4,348,014, Cl. 267-87.000.
Leary, David J. Gas monitoring apparatus. 4,347,732, Cl. 73-23.000.
Lebesnerais, Gerard M., to International Business Machines Corporation. Circuit including at least two MTL semi-conducting devices showing different rise times and logic circuits made-up therefrom. 4,348,595, Cl. 307-221.00R.
Lee, Bong K.; Wagman, Gerald H.; Rane, Dinanath F.; Marquez, Joseph A.; and Daniels, Peter J. L., to Schering Corporation. Microbiological methylation of aminoglycosyl-aminoglycosides. 4,348,516, Cl. 536-10.000.
Lee, John M.: *See*—
Bauman, William C.; Lee, John M.; and Burba, John L., III, 4,348,296, Cl. 252-184.000.
Bauman, William C.; and Lee, John M., 4,348,297, Cl. 252-184.000.
Lee, Roy C., to Phillips Petroleum Company. Method and apparatus for removing hydrogen sulfide from fuel for an internal combustion engine. 4,347,811, Cl. 123-1.00A.
Leesona Corporation: *See*—
Brouwer, Charles W.; Osbon, H. Gary; and Wueger, Karl W., 4,347,872, Cl. 139-435.000.

Lefevre, Joseph D.: *See*—
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Lehmann, Wolfgang: *See*—
Lobach, Wilfried; Kolb, Gunter; Lehmann, Wolfgang; Cramm, Gunther; Muller, Friedhelm; and Muszik, Janos, 4,348,514, Cl. 528-367.000.
Leif, Robert C., to Coulter Electronics, Inc. Orifice inside optical element. 4,348,107, Cl. 356-72.000.
Leland, Kenneth W.; and Sollenberger, Nelson R., to Bell Telephone Laboratories, Incorporated. Frequency-stabilization circuit for a local oscillator. 4,348,772, Cl. 455-260.000.
Lenhardt, Theodore, to Raym Company, Inc. Agricultural sprayer. 4,347,978, Cl. 239-78.000.
Leonard, Allan S.; Bolz, Ralph C.; and Burcz, Lawrence D., to Ford Motor Company. Multiple ratio overdrive transmission. 4,347,765, Cl. 74-869.000.
Leonard, Michael R., to W. J. Industries, Incorporated. Tension monitor means and system. 4,347,993, Cl. 242-75.510.
Les Fils d'Auguste Scheuchzer S.A.: *See*—
Scheuchzer, Fredy; and Buhler, Fritz, 4,347,688, Cl. 51-178.000.
Lester, Dozier. Frog feeding apparatus. 4,347,808, Cl. 119-51.00R.
Le Tarte, Walter, to Anthony, Richard A., a part interest. Deburring apparatus. 4,347,639, Cl. 15-21.00D.
Letournoux, Alain; and Raye, Christian, to Societe Industrielle Bertrand Faure. Hinging devices for seat backs. 4,348,050, Cl. 297-365.000.
Lever Brothers Company: *See*—
Clarke, David E.; Davies, James F.; and Tune, John B., 4,348,293, Cl. 252-90.000.
Levine, Peter A.: *See*—
Jastrzebski, Lubomir L.; and Levine, Peter A., 4,348,690, Cl. 358-44.000.
Levitt, George, to Du Pont de Nemours, E. I., and Company. Herbicidal sulfonamides. 4,348,219, Cl. 71-92.000.
Lewandowski, Raymond F.: *See*—
Golbeck, Bernard J.; Lewandowski, Raymond F.; Rentzsch, Donald A.; and Richardson, Lonnie J., 4,348,569, Cl. 200-155.00R.
Lewis, John C., Jr., to Tucel Industries, Inc. Method for making a tufted brush. 4,348,060, Cl. 300-21.000.
Libbey-Owens-Ford Company: *See*—
Landes, Raymond L., 4,347,927, Cl. 198-434.000.
Licentia Patent-Verwaltungs-G.m.b.H.: *See*—
Klank, Otto; Rottmann, Dieter; and Wossner, Helmut, 4,348,771, Cl. 455-180.000.
Lieb, Folker: *See*—
Oediger, Hermann; Lieb, Folker; and Disselnkotter, Hans, 4,348,332, Cl. 260-502.40R.
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Likins, Garland E., Jr.: *See*—
Rausche, Frank; and Likins, Garland E., Jr., 4,347,743, Cl. 73-654.000.
Lilly, A. Clifton, Jr.: *See*—
Lanzillotti, Harry V.; Burnett, George H.; Wayte, Alline R.; Osdene, Thomas S.; Claflin, Warren E.; Lilly, A. Clifton, Jr.; and Nienow, John F., 4,347,855, Cl. 131-78.000.
Lin, Chifa F.: *See*—
Lynch, Cheryl J.; Lin, Chifa F.; and Melachouris, Nicholas, 4,348,420, Cl. 426-272.000.
Linden-Alimak AB: *See*—
Backman, Bo G., 4,348,275, Cl. 209-310.000.
Linden, Hans W.: *See*—
Blank, Heinz U.; Behre, Horst; and Linden, Hans W., 4,348,336, Cl. 260-508.000.
Linderberg, Robert L.: *See*—
Benton, Ronald; Kidder, Kenneth B.; Linderberg, Robert L.; Tinsley, Timothy M.; and Westley, Curtis E., 4,347,712, Cl. 62-175.000.
Lindmayer, Joseph, to Solarex Corporation. Method of making solar cell. 4,348,254, Cl. 156-647.000.
Lindsay, John A., to Lynwood Products Limited. Cabinets and doors therefor. 4,348,069, Cl. 312-324.000.
Lindstrom, Lars: *See*—
Marklund, Erland; and Lindstrom, Lars, 4,348,145, Cl. 414-288.000.
Linhart, Karl; Pawellek, Dieter; and Gleinig, Harald, to Bayer Aktiengesellschaft. Process for the partial reduction of polynitrated diaryl compounds. 4,348,335, Cl. 260-508.000.
Lipfert, Donald E. Wind power generator. 4,348,594, Cl. 290-54.000.
Lipsitz, Barry R.; and Forman, Charles D. Electronic game board. 4,348,191, Cl. 434-308.000.
Lipton, Stuart A.; and Manzione, James V., Jr. Measuring beta-hydroxybutyrate concentration in urine. 4,348,205, Cl. 23-230.00B.
Litkewycz, Stanley, to Lear Siegler, Inc. Torsion bar spring auxiliary panel for bedding unit. 4,348,014, Cl. 267-87.000.
Little, Roger G., to Spire Corporation. Front surface metallization and encapsulation of solar cells. 4,348,546, Cl. 136-256.000.
Litton Industrial Products, Inc.: *See*—
Vollrath, Donald E., 4,348,718, Cl. 363-87.000.
Lizen, Christian E., to Cockerill and Centre de Technologies Nouvelles. Explosive plug for blocking tubes. 4,347,790, Cl. 102-304.000.
Lloyd-Jones, Robert, to Salkhad Pty. Limited. Soffit and fascia panel. 4,347,691, Cl. 52-95.000.
Lobach, Wilfried; Kolb, Gunter; Lehmann, Wolfgang; Cramm, Gunther; Muller, Friedhelm; and Muszik, Janos, to Bayer Aktiengesellschaft. Polyamines containing urea groups. 4,348,514, Cl. 528-367.000.
LoCascio, James J., to Motorola, Inc. Noise blanker circuit for use with electronic ignition systems or the like. 4,347,827, Cl. 123-618.000.
Lockhart, Jess W.: *See*—
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Lockheed Corporation: *See*—
Rice, Steven J.; and Sherman, Donald E., 4,348,760, Cl. 371-20.000.
Lockwood Graders (UK) Limited: *See*—
Cowlin, Robert M.; and Helsby, Nigel C., 4,348,277, Cl. 209-705.000.
Lockwood, Harry F.: *See*—
Zory, Peter S.; Scholl, Frederick W.; and Lockwood, Harry F., 4,347,655, Cl. 29-589.000.
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Argazzi, Dennis J.; and Burger, Robert, 4,347,806, Cl. 118-710.000.
Loffelman, Frank F., to American Cyanamid Company. Novel light stabilizers for polymers. 4,348,493, Cl. 524-100.000.
Lofquist, Robert A.: *See*—
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Lohmann, Joachim W.: *See*—
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Lohr, Albrecht: *See*—
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Lohr, Joseph E., Jr., to Stepan Chemical Company. Evaluating sprayability. 4,347,742, Cl. 73-432.0SD.
Lohrmann, Dieter R., to United States of America, Army. Microwave power pulse generator. 4,348,649, Cl. 331-96.000.
London, Solomon, to General Electric Company. Two-speed single phase motor with centrifugal switch. 4,348,626, Cl. 318-772.000.
Long, Robert L., to American Monitor Corporation. Uric acid assay and reagent system therefor. 4,348,208, Cl. 23-230.00B.
Lord Corporation: *See*—
Blenner, Donald R.; Auerbach, Robert A.; and Boenig, Herman V., 4,348,426, Cl. 427-41.000.
L'Oreal: *See*—
Bouillon, Claude; and Maignan, Jean, 4,348,383, Cl. 424-70.000.
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Jacquet, Bernard; Papantoniou, Christos; and Mondet, Jean, 4,348,380, Cl. 424-47.000.
Loree, Thomas J., to Boeing Company, The. Multiple wire bundle support assembly. 4,347,998, Cl. 248-68.00R.
Loucks, Carl C. Electric motor alternating power supply for vehicles. 4,348,628, Cl. 320-61.000.
Loudermilk, Jake, Jr. Multicompartment folding carton. 4,347,967, Cl. 229-27.000.
Louis, Gain L.: *See*—
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Loyd, Morris S.; and McGann, Timothy W., to Rockwell International Corporation. Method of fabricating a reinforced tubular structure. 4,348,247, Cl. 156-156.000.
Lucchesi, Armand P., to J. C. Penney Company, Inc. Self-balancing alarm system. 4,348,661, Cl. 340-510.000.
Ludwig, Heinz: *See*—
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Luebke, Clement J.; and Daniels, Lowell W., to Alco Standard Corporation. Pressure cooking device with exhaust and drain valves. 4,347,833, Cl. 126-369.000.
Luhleich, Hartmut: *See*—
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Luhring, Claus: *See*—
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Luk Lamellen und Kupplungsbau GmbH: *See*—
Maucher, Paul; and Geschka, Hugo-Werner, 4,347,813, Cl. 123-179.00J.
Lukasavage, William. Rankine cycle system employing seasonal temperature variations. 4,347,703, Cl. 60-641.600.
Lummus Company, The: *See*—
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Lustig, Stanley; and Vicik, Stephen J., to Union Carbide Corporation. Puncture-resistant heat shrinkable multilayer packaging film. 4,348,437, Cl. 428-35.000.
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Lynch, Cheryl J.; Lin, Chifa F.; and Melachouris, Nicholas, to Nutrisearch Company. Process for binding comminuted meat. 4,348,420, Cl. 426-272.000.
Lynch, Peter. Map. 4,348,038, Cl. 283-34.000.
Lynwood Products Limited: *See*—
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Strobel, Richard A.; and Lyons, Michael D., 4,347,869, Cl. 137-488.000.

MacFee, Norman W. Method and apparatus for ultrasonic bonding of coupling elements to a tape. 4,348,245, Cl. 156-73.100.
Machurat, Jean; Morawski, Jean-Claude; and Soula, Gerard, to Rhone-Poulenc Industries. Coupling agent compositions for coupling an elastomer to a filler and elastomer/filler compositions containing same. 4,348,311, Cl. 524-530.000.
MacInnis, Martin B.: *See*—
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Maeda, Katsumi, to Star Seimitsu Kabushiki Kaisha. One revolution clutch assembly using gears. 4,347,919, Cl. 192-33.00R.
Maeda, Tadayuki: *See*—
Akiyama, Toru; Kamihigoshi, Tsutomu; Takagi, Shoji; and Maeda, Tadayuki, 4,348,363, Cl. 422-192.000.
Maeda, Takuya; Yamada, Tsutomu; and Kishimoto, Mitsuharu, to Kawasaki Jukogyo Kabushiki Kaisha. Batch process and static-bed type apparatus for reducing iron ore. 4,348,225, Cl. 75-34.000.
Magnetrol International, Incorporated: *See*—
Townsend, Lawrence B., 4,347,740, Cl. 73-304.00C.
Magnusson, Alan B.: *See*—
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Mahnken, Walter J., to Honeywell Inc. Bi-directional tape reel brake. 4,347,995, Cl. 242-204.000.
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Makinen, Pekka. Set of shelves. 4,347,795, Cl. 108-152.000.
Malah, David: *See*—
Hertz, David; Kurshan, Robert P.; and Malah, David, 4,348,735, Cl. 364-724.000.
Maldavs, Ojars, to Gould Inc. Lever-type quick disconnect coupling. 4,347,870, Cl. 137-614.050.
Maly, Heinrich; and Werner, Franz, to U.S. Philips Corporation. Anti erase interlock for a magnetic tape cassette. 4,348,707, Cl. 360-132.000.
Malzacher, Fred. Gripper system for moving drilling rigs. 4,348,007, Cl. 254-106.000.
Mamadzhanov, Ulmas D.; Bakhir, Vitold M.; Alekhin, Stanislav A.; and Bakhir, Tatyana M. Continuous borehole-logging method. 4,347,736, Cl. 73-155.000.
Mancini, Derek V., to Consumers Glass Company Limited. Combination autoclave pump and nozzle. 4,348,162, Cl. 417-431.000.
Mandros, James A. Vehicle guideway system. 4,347,791, Cl. 104-156.000.
Manzione, James V., Jr.: *See*—
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Marconi Company Limited, The: *See*—
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Marketing Displays, Inc.: *See*—
Laakso, John K., 4,347,678, Cl. 40-607.000.
Markham, Roger G., to Xerox Corporation. Linear ink jet deflection method and apparatus. 4,348,682, Cl. 346-1.100.
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Marko, Ollie W.: *See*—
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Marley/Wylain Company: *See*—
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Marmon Company: *See*—
Sharp, Paul H., 4,348,625, Cl. 318-757.000.
Marquardt, Kurt; and Ludwig, Heinz, to Hager and Elsasser GmbH. Thermal power plant water treatment process. 4,347,704, Cl. 60-648.000.
Marquez, Joseph A.: *See*—
Lee, Bong K.; Wagman, Gerald H.; Rane, Dinanath F.; Marquez, Joseph A.; and Daniels, Peter J. L., 4,348,516, Cl. 536-10.000.
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Goldstein, Stuart S.; Calvin, William J.; and Marshall, Harry A., 4,348,487, Cl. 518-704.000.
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Martin, David O.; and Martin, Lawrence G., to Martin Overhead Door and Electronics Company. Method of preparing a section for an overhead door. 4,347,653, Cl. 29-526.00R.
Martin, Lawrence G.: *See*—
Martin, David O.; and Martin, Lawrence G., 4,347,653, Cl. 29-526.00R.
Martin, Michael D., to Bendix Corporation, The. Telescoping steering shaft. 4,347,757, Cl. 74-493.000.
Martin Overhead Door and Electronics Company: *See*—
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Martin, Walter L., Jr.: *See*—
Williamson, Kenneth T., Jr.; Bruce, Samuel S., Jr.; and Martin, Walter L., Jr., 4,348,217, Cl. 65-2.000.
Martinez, Jose L. P.; and Osorio, Jose P. Injection-type pressure-freed carburetor. 4,348,338, Cl. 261-142.000.
Maruyama, Takasumi: *See*—
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Masaki, Ichiro, to Unimation, Inc. Workpiece monitoring means for electric discharge working apparatus. 4,348,578, Cl. 219-130.010.
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Maschinenfabrik J. Dieffenbacher GmbH & Co.: *See*—
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Maslanka, William W.; and Spence, Gavin G., to Hercules Incorporated. Organic pigments. 4,348,257, Cl. 162-162.000.
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Matsuda, Akira; Hayakawa, Yoshihiro; Yasuda, Shigeo; and Iwasaki, Motoaki, to Bridgestone Tire Company Limited. Tire internal pressure monitoring and display apparatus for tired vehicles. 4,348,654, Cl. 340-58.000.
Matsumoto, Toshimi: *See*—
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Mattel, Inc.: *See*—
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Maucher, Paul; and Geschka, Hugo-Werner, to Luk Lamellen und Kupplungsbau GmbH. Apparatus for starting an internal combustion engine. 4,347,813, Cl. 123-179.00J.
Mauk, Ernest R.; and Van Norman, William A. Electronic load protection circuit. 4,348,709, Cl. 361-92.000.
Maurer, Fritz; Priesnitz, Uwe; Riebel, Hans-Jochem; Gallenkamp, Bernd; and Klauke, Erich, to Bayer Aktiengesellschaft. Preparation of 3-bromo-4-fluoro-benzaldehyde acetals and intermediates therefor. 4,348,538, Cl. 562-459.000.
Mauser-Kommandit Gesellschaft: *See*—
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Maxim, John. Conductive fluid activated devices. 4,347,683, Cl. 46-251.000.
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May, David C.; and Jarboe, Charles H., to Research Corporation. Probenecid-dyphylline therapy. 4,348,397, Cl. 424-253.000.
Mayfield, Jack K. Hook inserter device. 4,347,845, Cl. 128-303.00R.
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McAlister, Doyle V.; Gunter, Thomas G.; Spak, Michael E.; and Schriber, Gene A., to Motorola, Inc. Priority encoder. 4,348,741, Cl. 364-900.000.
McBee, William C.; and Sullivan, Thomas A., to United States of America, Commerce. Concrete formulation comprising polymeric reaction product of sulfur/cyclopentadiene oligomer/dicyclopentadiene. 4,348,313, Cl. 524-788.000.
McCartney, Robert F.; and Nazarenko, Nicholas, to Du Pont de Nemours, E. I., and Company. Stabilization of sodium dispersion. 4,348,300, Cl. 252-309.000.
McCauley, Kerry. Foot massager. 4,347,838, Cl. 128-33.000.
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McIntyre, James A.; Phillips, Robert F.; and Lefevre, Joseph D., to Dow Chemical Company, The. Process for silver coating of permeable substrates. 4,348,429, Cl. 427-125.000.
McIntyre, James D. E., to Bell Telephone Laboratories, Incorporated. Enhancement of optical absorption and contrast of electrochromic devices. 4,348,078, Cl. 350-357.000.
McKay, Dwight L.: *See*—
Roberts, John S.; Bertus, Brent J.; and McKay, Dwight L., 4,348,304, Cl. 252-455.00Z.
McKee, Elmer S.; and McConnaughey, Paul W., to Mine Safety Appliances Company. Colorimetric dosimeter. 4,348,358, Cl. 422-56.000.
McKelvy, Marvin D., to A. B. Chance Company. Mechanical device for picking up an electrical load. 4,348,561, Cl. 200-51.00R.
McKinney, Howard F.: *See*—
Wear, Frederick C.; Durant, Dick Q.; and McKinney, Howard F., 4,347,670, Cl. 34-1.000.
Mc Larney, Joseph C.; and Lightweis, David J., to AVX Corporation. Method of making marginless multi-layer ceramic capacitors. 4,347,650, Cl. 29-25.420.
McLeod, Ian Campbell: *See*—
Price, Donald R., 4,347,884, Cl. 152-158.000.
McLoughlin, Thomas P., to MNJ Engineering Company Limited. Intruder barrier. 4,348,012, Cl. 256-12.000.
McVeigh, Peter J.; and Rudish, Ronald M., to Eaton Corporation. Series fed phased array antenna exhibiting constant input impedance during electronic scanning. 4,348,681, Cl. 343-854.000.
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Wernicke, Ubbo; and Meckl, Heinz, 4,348,475, Cl. 430-399.000.
Medford, Richard D.; Henry, Pearison W.; and Cooper, Jerry W., to Dayco Corporation. Protective cover and method of making same. 4,347,685, Cl. 47-28.00R.
Medi-Timer Corporation: *See*—
Villa-Real, Antony-Euclid C., 4,347,804, Cl. 116-308.000.
Meier, Dale J.; and Jarecki, Leszek, to Michigan Molecular Institute. Ultra-drawing crystalline polymers under high pressure. 4,348,350, Cl. 264-570.000.
Meiners, Hans J.: *See*—
Blahak, Johannes; Hubner, Hans; Koster, Johannes; Meiners, Hans J.; and Thomas, Heinz, 4,348,536, Cl. 560-169.000.
Meisner, David B.; and Vacval, Dusan M., to International Harvester Co. Single cable actuated tailgate. 4,348,055, Cl. 298-23.0DF.
Meixner, Peter: *See*—
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Melachouris, Nicholas: *See*—
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Merck & Co., Inc.: *See*—
Bouffard, F. Aileen; Christensen, Burton G.; and Johnston, David B. R., 4,348,320, Cl. 260-239.00A.
Durette, Philippe L., 4,348,325, Cl. 549-419.000.
Merck Sharp & Dohme (I.A.) Corp.: *See*—
Atkinson, Joseph G.; and Wasson, Burton K., 4,348,398, Cl. 424-258.000.
Meric, Jean-Paul: *See*—
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Merkel, Willi, to Fritz Fuss Kom. Ges. Elektrotechnische Fabrik. Method for transmitting binary signals over a foreign wiring network. 4,348,657, Cl. 340-310.00R.
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Merrill, John T., to United States of America, Energy. Method and apparatus for electrostatically sorting biological cells. 4,347,935, Cl. 209-3.200.
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Messerschmitt-Boelkow-Blohm GmbH: *See*—
Born, Gunthard, 4,348,766, Cl. 372-89.000.
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Becker, Herbert; and Tischler, Josef, 4,347,755, Cl. 74-421.00A.
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Meyer, Horst: *See*—
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Meyl, Wolfgang: *See*—
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Michael, Richard N., to General Electric Co. Brush wear indicator. 4,348,608, Cl. 310-242.000.
Michels, Donald, to Republic Geothermal. Apparatus and method for measuring boiling or flash pressure of pressurized fluid. 4,348,117, Cl. 374-24.000.
Michigan Molecular Institute: *See*—
Meier, Dale J.; and Jarecki, Leszek, 4,348,350, Cl. 264-570.000.
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Miles Laboratories, Inc.: *See*—
Brownewell, Charles E., 4,348,480, Cl. 435-234.000.
Cornelius, Dennis A., 4,348,482, Cl. 435-223.000.
Miller, Harry C. Portable propane gas hand torch. 4,348,172, Cl. 431-255.000.
Miller, Jack E., to Big Inch Marine Systems, Inc. Release coupling. 4,348,039, Cl. 285-1.000.
Miller, Jesse D., Jr.; and Petzold, James R., to Armstrong World Industries, Inc. Non-skid plastic flooring product and method of manufacture. 4,348,447, Cl. 428-149.000.
Miller, Stanley: *See*—
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Millspaugh, Russell E., to Continental Group, Inc., The. Magnetic conveyor. 4,347,928, Cl. 198-690.000.
Milly, Lucien. Process and device for suspension of vehicle wheels. 4,348,016, Cl. 267-177.000.
Mimata, Tsutomu: *See*—
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Minagawa, Motonobu; Nakahara, Yutaka; and Kitsukawa, Kazumi, to Adeka Argus Chemical Co., Ltd. Ortho-substituted aryl phosphite additive composition. 4,348,308, Cl. 524-110.000.
Minagawa, Shoichi; and Okamoto, Takeshi, to Clarion Co., Ltd. Surface-acoustic-wave parametric device. 4,348,650, Cl. 333-195.000.
Mine Safety Appliances Company: *See*—
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Minnesota Mining and Manufacturing Company: *See*—
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Foss, George D., 4,348,362, Cl. 422-171.000.
Gerster, John F., 4,348,521, Cl. 544-353.000.
Huang, John C., 4,348,432, Cl. 427-402.000.
Tung, Chi F., 4,348,312, Cl. 428-144.000.
Mino, Masao; and Ohno, Takeshi, to Kabushiki Kaisha Mino Seisakusho. Grooved traverse drum for use in drum winder. 4,347,991, Cl. 242-43.200.
Minomiya, Mitsuo: *See*—
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Miracle Recreation Equipment Company: *See*—
Ahrens, Paul W., 4,348,188, Cl. 434-72.000.
Mirante, Arthur J. Closed fluid flow system for producing power. 4,347,705, Cl. 60-651.000.

Miachutin, Vladimir, to White Chemical Corporation. Flame retardants. 4,348,306, Cl. 252-608.000.

Mistrick, George R.; Bowser, George H.; and Mazzoni, Renato J., to PPG Industries, Inc. Primed multiple glazed units for curtainwall systems. 4,348,435, Cl. 428-34.000.

Mistry, Kantilal, to Blonder-Tongue Laboratories, Inc. Master antenna subscription television system and the like. 4,348,691, Cl. 358-114.000.

Mitani, Kiyoshi. Hand riveter. 4,347,729, Cl. 72-391.000.

Mitchell, Robert L.: *See*—
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Mitchell, William T.: *See*—
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Mitsubishi Chemical Industries, Limited: *See*—
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Mitsubishi Denki Kabushiki Kaisha: *See*—
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Oishi, Norio; Shimazu, Toshinari; Suganami, Takuya; and Masuda, Takahiro, 4,348,029, Cl. 277-26.000.

Mitsuishi, Yukio; Shiozaki, Shigeru; Chujo, Takao; and Yokoyama, Takeyuki, to Teijin Limited. Polyester film having improved slipperiness. 4,348,446, Cl. 428-148.000.

Mittal, Faquir C.; Arrison, Frank J.; and Schonfeld, Arnold, to Sperry Corporation. Random access flexible disk memory. 4,348,705, Cl. 360-98.000.

Miyake, Toshiyuki: *See*—
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Miyazaki, Kenichi; Miyoshi, Tadayoshi; Takanashi, Itsuo; Nakagaki, Shintaro; Motoyama, Koichiro; and Yokokawa, Sumio, to Victor Company of Japan, Ltd. Image pickup device. 4,348,617, Cl. 315-370.000.

Miyoshi, Tadayoshi: *See*—
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Mo och Domsjo Aktiebolag: *See*—
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Snavely, Earl S., Jr.; and Caldwell, Paul L., Jr., 4,348,289, Cl. 210-749.000.
Weeter, Robert F., 4,347,899, Cl. 166-310.000.

Mogami, Satoshi, to Nippon Kogaku K.K. Inverted telephoto type wide angle lens. 4,348,085, Cl. 350-458.000.

Moisan, Guy: *See*—
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Moldrup, Niels. Cover for a cylinder-shaped pressure container. 4,347,944, Cl. 220-320.000.

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Bradlee, Charles R., 4,347,723, Cl. 72-130.000.

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Bachman, Gerald L., 4,348,317, Cl. 260-112.50R.
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Coran, Aubert Y.; and Patel, Raman, 4,348,501, Cl. 525-179.000.
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Montes, David M., to Xerox Corporation. Sheet feeding apparatus. 4,348,021, Cl. 271-112.000.

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Moore, Francis C.: *See*—
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Moore, Randy W., to Singer Company, The. Landing light pattern generator for digital image systems. 4,348,184, Cl. 434-42.000.

Moore, Robert J., to Emerson Electric Co. Apparatus for cutting vegetation. 4,347,666, Cl. 30-276.000.

Moore, Robert S.: *See*—
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Moreaud, Henri; and Meric, Jean-Paul, to Omnium d'Assainissement; and Societe des Applications Biologiques du Laser a l'Environnement (SABLE) S.a.r.l. Method of and apparatus for measuring the volume of material in suspension in a liquid. 4,348,112, Cl. 356-338.000.

Morgan, Charles R., to W. R. Grace & Co. Heat activated thiuram containing curable compositions. 4,348,515, Cl. 526-204.000.

Morgan, George W., to Sun Oil Company, Ltd. Multiple-tine ice disaggregation system. 4,348,059, Cl. 299-25.000.

Morgan, John H., to Richards Structural Steel Co., Ltd. Handling and/or treatment of particulate materials. 4,347,876, Cl. 141-70.000.

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Morrison, Howard J.; and Montague, Douglas P., to Marvin Glass & Associates. Device for chilling condiments and the like. 4,347,713, Cl. 62-371.000.

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Mosey, Charles G.; Mosey, George N.; Mosey, Charles J.; and Mosey, Stephen A. Apparatus and method for radially cutting cylindrical material. 4,347,770, Cl. 82-90.000.

Mosey, Charles J.: *See*—
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Carter, Ernest A., 4,348,658, Cl. 340-347.0AD.
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Gunter, Thomas G.; Crudele, Lester M.; and Zolnowsky, John E., 4,348,722, Cl. 364-200.000.
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McAlister, Doyle V.; Gunter, Thomas G.; Spak, Michael E.; and Schriber, Gene A., 4,348,741, Cl. 364-900.000.
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Moule, Rex E. Self-surfaced meat product manufacturing method and apparatus. 4,348,572, Cl. 219-10.55A.
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Murray, Jerome L. Reversible fluid unit. 4,347,778, Cl. 91-180.000.
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Nakanishi, Motoyasu, to Suzuki Sogyo Kabushiki Kaisha; and Kabushiki Kaisha Cubic Engineering. Method of printing. 4,348,246, Cl. 156-73.100.
Nakano, Eiichi; Masuda, Tsutomu; Saito, Narimasa; and Fukushima, Danji, to Noda Institute for Scientific Research. Method for preparing a recombinant DNA phage. 4,348,477, Cl. 435-172.000.
Nakano, Eiichi; Masuda, Tsutomu; Saito, Narimasa; and Fukushima, Danji, to Noda Institute for Scientific Research. Method for preparation of a recombinant DNA phage. 4,348,478, Cl. 435-172.000.
Nakatani, Hiroshi; Ishida, Masahide; and Yamamoto, Hachizou, to Sharp Kabushiki Kaisha. Service bargain announcement in an electronic cash register. 4,348,551, Cl. 179-1.0SM.
Namba, Yoshiharu, to Rank Xerox Limited. Fixing roll in a copying machine. 4,348,579, Cl. 219-216.000.
Nardella, Alessandro, to Pedrazzini, Francesco. Adjustable orthodontic screw assembly. 4,348,179, Cl. 433-7.000.
Nardone, Robert M., to Colgate-Palmolive Company. Container closure. 4,347,970, Cl. 229-39.00R.
Naslund, Gustav, to Groko Maskin AB. Method and device for bending sheet-metal sections. 4,347,726, Cl. 72-385.000.
National Plastics Limited: *See*—
Hackwell, Roger E.; Gale, Philip D.; and Mason, Eric K. L., 4,347,943, Cl. 220-306.000.
National Research Development Corporation: *See*—
El-Menshawy, Mohamed F.; Woodrow, Peter A.; and Bhattacharyya, Sushantha K., 4,348,573, Cl. 219-69.00M.
National Semiconductor Corporation: *See*—
Allen, Bert L.; Wourms, Robert L.; and Hu, Daniel C., 4,347,654, Cl. 29-576.00B.
Sauer, Don R., 4,348,602, Cl. 307-530.000.
National Steel Corporation: *See*—
Ernest, Robert T., 4,347,805, Cl. 118-63.000.
Nazarenko, Nicholas: *See*—
McCartney, Robert F.; and Nazarenko, Nicholas, 4,348,300, Cl. 252-309.000.
NCR Corporation: *See*—
Chambers, William I., 4,348,063, Cl. 308-3.800.
Neale, Denis M.; Bontoft, Frederick J.; and Ikin, John B., to Ciba-Geigy AG. Method of inspecting coated web material to detect the presence of downlines thereon. 4,348,114, Cl. 356-431.000.
Nelson, Alexander. Rotary-reactive internal combustion engine 2-360. 4,347,698, Cl. 60-39.340.
Nelson, Bruce J.: *See*—
Gurr, George P.; and Nelson, Bruce J., 4,348,668, Cl. 340-825.060.
Nelson, Donald L., to Dow Chemical Company, The. Heat resistant low shrink polyester resins. 4,348,499, Cl. 525-49.000.
Nelson, Edward I.: *See*—
Balta, Justin O.; and Nelson, Edward I., 4,348,122, Cl. 400-276.000.
Nelson, Keith D.: *See*—
Worth, Sidney V.; and Nelson, Keith D., 4,348,073, Cl. 339-186.00M.
Nelson, Victor R. Method and apparatus for loading a multi-platen press. 4,348,144, Cl. 414-277.000.
NesTier Corporation: *See*—
Baldwin, Mark H., 4,348,001, Cl. 248-243.000.
Neumann, Rainer: *See*—
Serini, Volker; Neumann, Rainer; Friedhofen, Gerhard; Freitag, Dieter; Heuser, Jurgen; and Schwarz, Hans-Helmut, 4,348,542, Cl. 568-727.000.
Newcomb, George R., to General Electric Company. Capacitor with embossed electrodes. 4,348,712, Cl. 361-315.000.
Newcomb, William E., to Norton Company. Ear muff accessory for safety hard hat. 4,347,631, Cl. 2-423.000.
Newton, Barrie H.; Booth, Peter L.; and Davies, Robert, to U.S. Philips Corporation. Time-delay-triggered TRAPATT oscillator with directional filter. 4,348,646, Cl. 331-77.000.
NHK Spring Co., Ltd.: *See*—
Ohno, Akira; Katayama, Hitomi; Nomura, Suguru; Senaha, Susumu; Kyo, Suizo; Shimomura, Susumu; Akagami, Akira; and Imai, Hiroshi, 4,348,463, Cl. 428-429.000.
Nichols, Robert L. Suction system with cover-port cap attachment breakaway tab. 4,347,946, Cl. 220-375.000.
Nickolson, Robert; Kerb, Ulrich; Wiechert, Rudolf; Alig, Leo; Furst, Andor; and Muller, Marcel, to Schering Aktiengesellschaft. Process for the preparation of 17α-hydroxy- and 17aα-hydroxy-D-homoetiocarboxylic acids. 4,348,327, Cl. 260-397.100.
Nicolas, Michel: *See*—
Bouteille, Daniel; Nicolas, Michel; and Prudhomme, Pierre, 4,347,864, Cl. 137-269.000.
Nielsen, Richard H., to Phillips Petroleum Company. Treating cracking catalyst fines containing a passivating material. 4,348,273, Cl. 208-113.000.
Nienow, John F.: *See*—
Lanzillotti, Harry V.; Burnett, George H.; Wayte, Alline R.; Osdene, Thomas S.; Claflin, Warren E.; Lilly, A. Clifton, Jr.; and Nienow, John F., 4,347,855, Cl. 131-78.000.

Nighan, William L.; and Brown, Robert T., to United Technologies Corporation. Stability enhanced rare-gas monofluoride lasers. 4,348,647, Cl. 372-74.000.
Nigro, Louis V., to Gillette Company, The. Brush assembly. 4,348,126, Cl. 401-135.000.
Nippon Chemiphar Co., Ltd.: *See*—
Muramatsu, Mutsumi; Satoh, Toshio; Yanagimoto, Yukio; Shinuchi, Tadami; Nakajima, Toshio; and Nakajima, Isao, 4,348,410, Cl. 424-309.000.
Nippon Coinco Co. Ltd.: *See*—
Hayashi, Yukichi; Tamara, Masayuki; Sugimoto, Osamu; Takizawa, Masayoshi; and Nishioka, Tatsujiro, 4,347,924, Cl. 194-1.00N.
Nippon Electric Co., Ltd.: *See*—
Kitamura, Yoshishige, 4,348,601, Cl. 307-530.000.
Okabayashi, Hidekazu; Higuchi, Kohei; and Nozaki, Tadatoshi, 4,348,746, Cl. 365-182.000.
Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Kamiya, Shingo, 4,348,644, Cl. 330-297.000.
Nishimoto, Tetsuo, 4,347,772, Cl. 84-1.030.
Ogita, Minoru, 4,348,666, Cl. 340-753.000.
Nippon Kogaku K.K.: *See*—
Iizuka, Yutaka, 4,348,090, Cl. 354-224.000.
Iizuka, Yutaka, 4,348,091, Cl. 354-225.000.
Mogami, Satoshi, 4,348,085, Cl. 350-458.000.
Nippon Mining Company, Limited: *See*—
Kamio, Hiroyoshi; Ogino, Yukio; and Nakamura, Kouichi, 4,348,498, Cl. 525-13.000.
Nippon Paint Co.; Ltd.: *See*—
Hamada, Minoru; Nakamura, Nobuyuki; and Odajima, Akira, 4,347,948, Cl. 220-404.000.
Nippon Piston Ring Co., Ltd.: *See*—
Hiraoka, Takeshi; Urano, Shigeru; Takeshita, Masajiro; and Nakamura, Keiji, 4,348,232, Cl. 75-238.000.
Nippon Seiko Kabushiki Kaisha: *See*—
Kimura, Seiichiro; Iwasaki, Yuhei; and Kozaki, Yuji, 4,348,592, Cl. 250-560.000.
Nippon Soken, Inc.: *See*—
Kosuda, Tooru; Ohashi, Michihiro; Takeuchi, Yasuhiro; Toda, Tadahide; Matsubara, Noboru; and Takizawa, Masaaki, 4,347,812, Cl. 123-90.550.
Nomura, Ken; Igashira, Toshihiko; and Abe, Seikou, 4,347,826, Cl. 123-549.000.
Nippon Steel Corporation: *See*—
Suemura, Kenichiro; and Osawa, Masami, 4,348,229, Cl. 75-124.000.
Nippon Telegraph & Telephone Public Corporation: *See*—
Isobe, Minoru; Kikuchi, Hiroshi; Teshima, Minoru; Kodama, Tadasi; and Ohara, Wataru, 4,348,120, Cl. 400-124.000.
Nippon Zeon Co., Ltd.: *See*—
Hokari, Hiroshi; and Nishitai, Iwaki, 4,348,260, Cl. 203-9.000.
Nippondenso Co., Ltd.: *See*—
Kobayashi, Akio; Kikuchi, Takehiro; Kondo, Toshio; and Tajima, Masahiko, 4,348,727, Cl. 364-431.060.
Sagisaka, Yasuo; Kondo, Toshio; and Tajima, Masahiko, 4,348,728, Cl. 364-431.060.
Tsuzuki, Yoshihiko; Okazaki, Hiroshi; Shirasaki, Shinji; Matsuyama, Masahiro; Kobayashi, Masanobu; and Ito, Yoji, 4,348,653, Cl. 340-52.00F.
Nishimoto, Tetsuo, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instruments capable of varying tone pitch during one key depression. 4,347,772, Cl. 84-1.030.
Nishioka, Tatsujiro: *See*—
Hayashi, Yukichi; Tamara, Masayuki; Sugimoto, Osamu; Takizawa, Masayoshi; and Nishioka, Tatsujiro, 4,347,924, Cl. 194-1.00N.
Nishitai, Iwaki: *See*—
Hokari, Hiroshi; and Nishitai, Iwaki, 4,348,260, Cl. 203-9.000.
Niskin, Shale J.; and Williams, Gerald J. Electric water sampling device. 4,347,751, Cl. 73-864.330.
Nissan Motor Co., Ltd.: *See*—
Komatsu, Mikiya; Suzuki, Shunsuke; and Maruyama, Takasumi, 4,347,889, Cl. 164-250.100.
Saito, Masaaki; Kawamura, Yoshihisa; Sugo, Yuko; and Inoue, Mitsumasa, 4,347,816, Cl. 123-308.000.
Saito, Masaaki, 4,347,821, Cl. 123-440.000.
Sato, Toshio; and Ogawa, Yasuyuki, 4,347,999, Cl. 248-73.000.
Suzuki, Suzuo; Nakagawa, Yasuhiko; Aihara, Hisamoto; and Matsumoto, Yasuo, 4,347,825, Cl. 123-537.000.
Takahashi, Koichi; Higuchi, Megumu; and Watanabe, Minoru, 4,347,780, Cl. 91-375.00A.
Yanagishima, Takayuki; and Seko, Yasutoshi, 4,348,663, Cl. 340-576.000.
Nobbe, Paul J. Method and device for producing slotted concrete walls in place. 4,348,344, Cl. 264-31.000.
Noda, Azusa: *See*—
Takemura, Hiroo; and Noda, Azusa, 4,347,909, Cl. 180-219.000.
Noda Institute for Scientific Research: *See*—
Nakano, Eiichi; Masuda, Tsutomu; Saito, Narimasa; and Fukushima, Danji, 4,348,477, Cl. 435-172.000.
Nakano, Eiichi; Masuda, Tsutomu; Saito, Narimasa; and Fukushima, Danji, 4,348,478, Cl. 435-172.000.
Noe, James C.; and Friedman, David W., to Garrett Corporation, The. Heat-actuated space conditioning unit with bottoming cycle. 4,347,711, Cl. 62-160.000.
Noe, James C.: *See*—
Kinsell, Robert C.; and Noe, James C., 4,347,714, Cl. 62-402.000.
Noethe, Bjoern, to Siemens Aktiengesellschaft. Sealing materials for electrical and optical communication cables and cable connectors. 4,348,307, Cl. 528-49.000.
Nolan, James J.: *See*—
Coakley, John E.; and Nolan, James J., 4,348,058, Cl. 299-17.000.
Nomura, Ken; Igashira, Toshihiko; and Abe, Seikou, to Nippon Soken, Inc. Fuel evaporator for internal combustion engine. 4,347,826, Cl. 123-549.000.
Nomura, Suguru: *See*—
Ohno, Akira; Katayama, Hitomi; Nomura, Suguru; Senaha, Susumu; Kyo, Suizo; Shmomura, Susumu; Akagami, Akira; and Imai, Hiroshi, 4,348,463, Cl. 428-429.000.
Nordson Corporation: *See*—
Harjar, Martin J., 4,348,040, Cl. 285-175.000.
Nordstrom, Claes. Pallet for use as a load-carrying support. 4,347,794, Cl. 108-51.100.
Norland Corporation: *See*—
Congdon, George L., 4,347,849, Cl. 128-419.00P.
Northern Telecom Limited: *See*—
Chu, Pak-Jong, 4,348,559, Cl. 200-11.00R.
Hope, Thomasz S.; and Fombellida, Miguel, 4,347,697, Cl. 57-9.000.
Norton Company: *See*—
Newcomb, William E., 4,347,631, Cl. 2-423.000.
Novacek, Miroslav: *See*—
Pavek, Miloslav; Novacek, Miroslav; Fantl, Jiri; Kara, an; and Kasparek, Zdenek, 4,347,649, Cl. 28-254.000.
Novoselac, John, to Joy Manufacturing Company. Centrifuge apparatus. 4,347,971, Cl. 233-20.00R.
Nowack, Gerhard P.: *See*—
Johnson, Marvin M.; Tabler, Donald C.; and Nowack, Gerhard P., 4,348,370, Cl. 423-362.000.
Noyes Bros. Pty. Limited: *See*—
Deamer, Charles R., 4,348,149, Cl. 414-458.000.
Nozaki, Tadatoshi: *See*—
Okabayashi, Hidekazu; Higuchi, Kohei; and Nozaki, Tadatoshi, 4,348,746, Cl. 365-182.000.
NSK-Warner K.K.: *See*—
Imai, Hironobu, 4,347,992, Cl. 242-68.400.
Nuebauer, Josef: *See*—
Werner, Arnold; Ennen, Peter; Nuebauer, Josef; Flaig, Hans; and Allgaier, Juergen, 4,348,753, Cl. 368-188.000.
Nussbaum, Theodore W., to Texaco Inc. Dual spectra well logging system. 4,348,671, Cl. 340-853.000.
Nutrisearch Company: *See*—
Lynch, Cheryl J.; Lin, Chifa F.; and Melachouris, Nicholas, 4,348,420, Cl. 426-272.000.
Nylund, Olov, to AB Asea-Atom. Fuel assembly for a boiling nuclear reactor. 4,348,355, Cl. 376-434.000.
Oak Industries Inc.: *See*—
Golbeck, Bernard J.; Lewandowski, Raymond F.; Rentzsch, Donald A.; and Richardson, Lonnie J., 4,348,569, Cl. 200-155.00R.
O'Brien, Steven M., to Sperry Corporation. High speed byte shifter error checking circuits. 4,348,742, Cl. 364-900.000.
Occidental Chemical Corporation: *See*—
King, Peter F., 4,348,294, Cl. 252-142.000.
Occidental Oil Shale, Inc.: *See*—
Ricketts, Thomas E., 4,347,789, Cl. 102-275.300.
Oce-Nederland B.V.: *See*—
Sessink, Bernardus W. L. M., 4,348,102, Cl. 355-14.0SH.
Odajima, Akira: *See*—
Hamada, Minoru; Nakamura, Nobuyuki; and Odajima, Akira, 4,347,948, Cl. 220-404.000.
O'Dette, John H.; and Jack, Stanton E., to Alcan Research and Development Limited. Aluminum powder blasting slurry sensitizer. 4,348,242, Cl. 149-7.000.
O'Donnell, John F., to Safelex Systems. Mounting assembly of controlled resilience for basketball goal hoop. 4,348,022, Cl. 273-1.50R.
Oediger, Hermann; Lieb, Folker; and Disselnkotter, Hans, to Bayer Aktiengesellschaft. Phosphonoformaldehyde, a process for its preparation and its use as an intermediate product for the preparation of medicaments. 4,348,332, Cl. 260-502.40R.
Oettinger, Peter E., to Thermo Electron Corporation. Thermionic laser. 4,348,765, Cl. 372-78.000.
Officine Meccaniche Pavesi & C. S.p.A.: *See*—
Barrera, Giorgio, 4,347,657, Cl. 29-596.000.
Officine Savio S.p.A.: *See*—
Bertagnoli, Leopoldo, 4,347,719, Cl. 66-91.000.
Ogasawara, Fumihiro: *See*—
Takahashi, Shuichi; Ogasawara, Fumihiro; and Ohta, Syuichi, 4,348,697, Cl. 358-286.000.
Ogawa, Ryota, to Asahi Kogalu Kogyo Kabushiki Kaisha. Zoom lens having high zoom ratio including wide angle range. 4,348,082, Cl. 350-423.000.
Ogawa, Yasuyuki: *See*—
Sato, Toshio; and Ogawa, Yasuyuki, 4,347,999, Cl. 248-73.000.
Ogden, Ralph. Beverage carbonator device. 4,347,783, Cl. 99-323.100.
Ogino, Shigeo: *See*—
Kojima, Shinichi; Koide, Ten; Ogino, Shigeo; Tsuchiya, Toshiro; and Kameno, Yoshito, 4,348,386, Cl. 424-177.000.
Ogino, Yukio: *See*—
Kamio, Hiroyoshi; Ogino, Yukio; and Nakamura, Kouichi, 4,348,498, Cl. 525-13.000.
Ogita, Minoru, to Nippon Gakki Seizo Kabushiki Kaisha. Signal level display apparatus. 4,348,666, Cl. 340-753.000.

Ogiwara, Osao, to Akebono Brake Industry Company, Ltd. Friction material. 4,348,490, Cl. 523-156.000.

Ohara, Wataru: *See*—
Isobe, Minoru; Kikuchi, Hiroshi; Teshima, Minoru; Kodama, Tadasi; and Ohara, Wataru, 4,348,120, Cl. 400-124.000.

Ohashi, Kenji, to Murata Kikai Kabushiki Kaisha. Method and apparatus for stopping packages in automatic winder. 4,347,990, Cl. 242-36.000.

Ohashi, Michihiro: *See*—
Kosuda, Tooru; Ohashi, Michihiro; Takeuchi, Yasuhiro; Toda, Tadahide; Matsubara, Noboru; and Takizawa, Masaaki, 4,347,812, Cl. 123-90.550.

Ohba, Masaharu, to Toyota Jidosha Kogyo Kabushiki Kaisha. Display device providing magnified indication. 4,347,803, Cl. 116-28.100.

Ohki, Kenji; Tokuyama, Mistru; Sagae, Masayuki; and Kawabuchi, Kenji, to Kao Soap Co., Ltd. Porous sheet and process for preparation thereof. 4,347,844, Cl. 128-287.000.

Ohno, Akira; Katayama, Hitomi; Nomura, Suguru; Senaha, Susumu; Kyo, Suizo; Shmomura, Susumu; Akagami, Akira; and Imai, Hiroshi, to NHK Spring Co., Ltd.; and Yokohama Kiko Co., Ltd. Reflector. 4,348,463, Cl. 428-429.000.

Ohno, Takeshi: *See*—
Mino, Masao; and Ohno, Takeshi, 4,347,991, Cl. 242-43.200.

Ohno, Yukihiro: *See*—
Suzuki, Shigeru; Ohno, Yukihiro; Yanagawa, Nobuyuki; and Kawaishi, Yasunori, 4,348,106, Cl. 355-75.000.

Ohta Company Limited: *See*—
Iseki, Kazuo, 4,347,645, Cl. 16-291.000.

Ohta, Syuichi: *See*—
Takahashi, Shuichi; Ogasawara, Fumihiro; and Ohta, Syuichi, 4,348,697, Cl. 358-286.000.

Ohtaki, Shohei; and Yamada, Masanori, to Canon Kabushiki Kaisha. Slide switch. 4,348,564, Cl. 200-67.00F.

Ohya, Takeji, to Toyo Kogyo Co., Ltd. Rear side door structure for a four-door type automobile. 4,348,046, Cl. 296-201.000.

Oishi, Norio; Shimazu, Toshinari; Suganami, Takuya; and Masuda, Takahiro, to Mitsubishi Denki Kabushiki Kaisha. Seal-ring type shaft-sealing device. 4,348,029, Cl. 277-26.000.

Ojima, Masahiro: *See*—
Terao, Motoyasu; Taniguchi, Yoshio; Horigome, Shinkichi; Ojima, Masahiro; Shigematsu, Kazuo; Kato, Keizo; Miyamura, Yoshinori; and Yonezawa, Seiji, 4,348,461, Cl. 428-409.000.

Okabayashi, Hidekazu; Higuchi, Kohei; and Nozaki, Tadatoshi, to Nippon Electric Co., Ltd. Semiconductor integrated circuit device having a plurality of insulated gate field effect transistors. 4,348,746, Cl. 365-182.000.

Okabe, Tohru: *See*—
Hayashi, Saburo; Okada, Syohiti; Okamoto, Kazuyoshi; Mizutani, Mochifumi; Isono, Teizo; Osada, Toshio; Okabe, Tohru; and Adachi, Mitsuji, 4,348,201, Cl. 8-94.180.

Okada, Syohiti: *See*—
Hayashi, Saburo; Okada, Syohiti; Okamoto, Kazuyoshi; Mizutani, Mochifumi; Isono, Teizo; Osada, Toshio; Okabe, Tohru; and Adachi, Mitsuji, 4,348,201, Cl. 8-94.180.

Okamoto, Fumio; and Kato, Katsuhiro, to RCA Corporation. Method for preparing inorganic sulfides. 4,348,299, Cl. 252-301.40S.

Okamoto, Kazuyoshi: *See*—
Hayashi, Saburo; Okada, Syohiti; Okamoto, Kazuyoshi; Mizutani, Mochifumi; Isono, Teizo; Osada, Toshio; Okabe, Tohru; and Adachi, Mitsuji, 4,348,201, Cl. 8-94.180.

Okamoto, Takeshi: *See*—
Minagawa, Shoichi; and Okamoto, Takeshi, 4,348,650, Cl. 333-195.000.

Okazaki, Hiroshi: *See*—
Tsuzuki, Yoshihiko; Okazaki, Hiroshi; Shirasaki, Shinji; Matsuyama, Masahiro; Kobayashi, Masanobu; and Ito, Yoji, 4,348,653, Cl. 340-52.00F.

O'Keefe, David F.: *See*—
Holan, George; and O'Keefe, David F., 4,348,409, Cl. 424-308.000.

Oki Electric Industry Co. Ltd.: *See*—
Isobe, Minoru; Kikuchi, Hiroshi; Teshima, Minoru; Kodama, Tadasi; and Ohara, Wataru, 4,348,120, Cl. 400-124.000.

Okumura, Koji; and Saeva, Franklin D., to Xerox Corporation. Dry process for the production of microelectronic devices. 4,348,473, Cl. 430-296.000.

Okupniak, Rudolf. Archery bow and arrow guide support and adjustment means. 4,347,829, Cl. 124-24.00R.

Oldham, Ronald C., to International Standard Electric Corporation. Fibre-optic cable joints. 4,348,076, Cl. 350-96.220.

Olin Corporation: *See*—
Duncan, Budd L.; and Madden, Ian L., 4,348,372, Cl. 423-497.000.
Saeman, Walter C., 4,348,371, Cl. 423-475.000.

Oliver, Larry R., to Dayco Corporation. Torque-sensing pulley and drive system. 4,348,197, Cl. 474-28.000.

Olsen, Everett O., to Foxboro Company, The. Chart recording apparatus. 4,348,683, Cl. 346-31.000.

Olson, Lorimer, to WGM Safety Corp. Truck winch assembly. 4,348,151, Cl. 414-542.000.

Olympus Optical Co., Ltd.: *See*—
Hosono, Saburo, 4,347,837, Cl. 128-6.000.
Kanayama, Katsumi; Furuta, Kenzi; and Motoyama, Kazuyasu, 4,348,701, Cl. 360-61.000.
Kawazu, Hideyuki; and Suzuki, Yoshiro, 4,348,103, Cl. 355-15.000.
Sakagami, Toshio, 4,348,269, Cl. 204-299.00R.

O'Malley, William J., to General Electric Company. Process for coating plastic films. 4,348,431, Cl. 427-387.000.

Omnium d'Assainissement: *See*—
Moreaud, Henri; and Meric, Jean-Paul, 4,348,112, Cl. 356-338.000.

Onishi, Masami, to Taiyo Shokai Co., Ltd. Packing machine with apparatus for automatically stopping bag material transfer rollers. 4,347,950, Cl. 221-13.000.

Ono, Minoru: *See*—
Kunioka, Saburo; Kawaguchi, Hatsuo; and Ono, Minoru, 4,348,241, Cl. 148-6.350.

Onuma, Tsutomu: *See*—
Shimanuki, Shizuka; Matsumoto, Toshimi; Sato, Hiroshi; Onuma, Tsutomu; and Kirihara, Seishin, 4,348,131, Cl. 403-272.000.

Oohasi, Koji; Hosoda, Yutaka; Kitamura, Toshio; and Kudo, Eiichi, to Asahi Glass Company, Ltd. Spinel type fused refractory product. 4,348,485, Cl. 501-115.000.

Oonuma, Koichiro; Kawashima, Yoshinori; and Hanai, Toshinori, to Honda Giken Kogyo Kabushiki Kaisha. Buffer device for a roller chain and sprocket coupling. 4,348,199, Cl. 474-156.000.

Optical Information Systems, Inc.: *See*—
Childs, Richard B., 4,348,648, Cl. 372-29.000.
Zory, Peter S.; Scholl, Frederick W.; and Lockwood, Harry F., 4,347,655, Cl. 29-589.000.

Optima Spanntechnik GmbH: *See*—
Wehler, Herbert, 4,347,754, Cl. 74-110.000.

Orthotech, Incorporated: *See*—
Adams, Gerald M., 4,347,840, Cl. 128-70.000.

Osada, Toshio: *See*—
Hayashi, Saburo; Okada, Syohiti; Okamoto, Kazuyoshi; Mizutani, Mochifumi; Isono, Teizo; Osada, Toshio; Okabe, Tohru; and Adachi, Mitsuji, 4,348,201, Cl. 8-94.180.

Osawa, Masami: *See*—
Suemura, Kenichiro; and Osawa, Masami, 4,348,229, Cl. 75-124.000.

Osbon, H. Gary: *See*—
Brouwer, Charles W.; Osbon, H. Gary; and Wueger, Karl W., 4,347,872, Cl. 139-435.000.

Osdene, Thomas S.: *See*—
Lanzillotti, Harry V.; Burnett, George H.; Wayte, Alline R.; Osdene, Thomas S.; Claflin, Warren E.; Lilly, A. Clifton, Jr.; and Nienow, John F., 4,347,855, Cl. 131-78.000.

Osorio, Jose P.: *See*—
Martinez, Jose L. P.; and Osorio, Jose P., 4,348,338, Cl. 261-142.000.

O'Sullivan, Michael A.: *See*—
Else, Ronald; and O'Sullivan, Michael A., 4,348,711, Cl. 361-233.000.

Otstot, Roger S., to Monsanto Company. Coiled inorganic monolithic hollow fibers. 4,348,458, Cl. 428-366.000.

Ovshinsky, Herbert C., to Energy Conversion Devices, Inc. Double exposure control for microfiche recording system. 4,348,104, Cl. 355-41.000.

Owens-Corning Fiberglas Corporation: *See*—
Bhatti, Mohinder S.; and Marzocchi, Alfred, 4,348,216, Cl. 65-1.000.
Farrar, Gordon A., 4,348,767, Cl. 373-30.000.

P C U K Produits Chimiques Ugine Kuhlmann: *See*—
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Robertsen, Anthony L.; and McInnis, Andrew M., to Sheldon Industries Inc. Automatically relegendable keyboard. 4,348,660, Cl. 340-365.0VL.
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Jackson, Byron L., 4,347,973, Cl. 236-34.500.
Robertson, Allan J.: *See*—
Rickelton, William A.; Robertson, Allan J.; and Burley, David R., 4,348,367, Cl. 423-139.000.
Robeson, Lloyd M.; and Szabo, Ted T., to Union Carbide Corporation. Polyarylate compositions having improved hydrolytic stability. 4,348,500, Cl. 525-65.000.
Robinson, Norman F.: *See*—
Jakubowski, Thaddeus, Jr.; Lockhart, Jess W.; and Robinson, Norman F., 4,347,777, Cl. 89-1.50G.
Rock-Ola Manufacturing Corporation: *See*—
Bookout, Floyd V., 4,347,952, Cl. 221-129.000.
Rockefeller University, The: *See*—
Brownlee, Michael; and Cerami, Anthony, 4,348,387, Cl. 424-178.000.
Rockley, Mark G.; and Mains, Gilbert J., to Board of Regents for Oklahoma Agriculture and Mechanical Colleges acting for and on behalf of Oklahoma State University of Agriculture and Applied Sciences. Method of depositing doped amorphous semiconductor on a substrate. 4,348,428, Cl. 427-54.100.
Rockwell International Corporation: *See*—
Cavalleri, Robert J.; Moon, Lamar F.; and Hon, John F., 4,348,764, Cl. 372-58.000.
Clendening, Steven J., 4,348,640, Cl. 328-41.000.
Fisher, Harry W.; and Perrine, Eugene B., 4,347,731, Cl. 73-3.000.
Harrington, Timothy A., 4,348,642, Cl. 330-149.000.
Loyd, Morris S.; and McGann, Timothy W., 4,348,247, Cl. 156-156.000.
Rosman, Irwin E.; and Wagner, William R., 4,347,896, Cl. 165-166.000.
Rode, Heinz A.; Fromel, Meter; and Beaver, Perry L., to Republic Steel Corporation. Method and apparatus for monitoring bearing wear. 4,348,665, Cl. 340-682.000.
Rodemann, Alfred H.: *See*—
Breglia, Denis R.; and Rodemann, Alfred H., 4,348,185, Cl. 434-43.000.
Rogener, Peter, to Universal Maschinen-u Apparatebau GmbH & Co., KG. Apparatus for de-burring of workpieces. 4,347,957, Cl. 225-93.000.
Rogier, Edgar R., to Henkel Corporation. Cycloaliphatic alcohols. 4,348,543, Cl. 568-823.000.
Rohr, Otto: *See*—
Szczepanski, Henry; Rohr, Otto; Pissiotas, Georg; Bohner, Beat; and Rempfler, Hermann, 4,348,221, Cl. 71-94.000.
Roke, Lindsey J.: *See*—
Hawkins, Harold R.; Gardner, Clive A.; Roke, Lindsey J.; Clark, Richard J.; and Rumble, Warwick F., 4,348,068, Cl. 312-257.00R.
Roland, Billy F. Knock down chair. 4,348,052, Cl. 297-440.000.
Rolls-Royce Limited: *See*—
Campbell, David A.; and Morley, Frederick W. W., 4,348,157, Cl. 41.6-95.000.
Rosati, Robert L., to Pfizer Inc. Photocatalyzed process for producing carbapenams and carbapen-2-ems. 4,348,264, Cl. 204-158.00R.
Rosenberg, Aaron E.: *See*—
Pirz, Frank C.; Rabiner, Lawrence R.; Rosenberg, Aaron E.; and Wilpon, Jay G., 4,348,550, Cl. 179-1.0SD.
Rosenthal, Heinrich; Schinkel, Ingo; and Eger, Gunter, to Wolff Walsrode Aktiengesellschaft. Sealable multilayer film of polyolefins. 4,348,457, Cl. 428-349.000.
Rosman, Irwin E.; and Wagner, William R., to Rockwell International Corporation. Internally manifolded unibody plate for a plate/fin-type heat exchanger. 4,347,896, Cl. 165-166.000.
Ross, Michael M.: *See*—
Goulas, Apostolos; Moon, Brian R.; and Ross, Michael M., 4,348,111, Cl. 356-336.000.
Roth, Christian: *See*—
Bauer, Kurt; and Roth, Christian, 4,347,642, Cl. 15-250.350.
Roth, Martin: *See*—
Kvita, Vratislav; Zweifel, Hans; Roth, Martin; and Felder, Louis, 4,348,530, Cl. 549-27.000.
Rothwell, Harold L., Jr.: *See*—
Garrison, Robert L.; and Rothwell, Harold L., Jr., 4,348,615, Cl. 315-219.000.
Rottmann, Dieter: *See*—
Klank, Otto; Rottmann, Dieter; and Wossner, Helmut, 4,348,771, Cl. 455-180.000.
Roussel, Jacques G. R.: *See*—
Breda, Antoine G. L. J.; and Roussel, Jacques G. R., 4,348,528, Cl. 548-367.000.
Rowley, William N.: *See*—
Perry, Stephen J.; Ehret, Gordon F.; and Rowley, William N., 4,348,281, Cl. 210-129.000.
Roy, Irene. Actuator for capture type combination system in organs. 4,347,774, Cl. 84-345.000.
Roznus, Walter J., to Kelsey-Hayes Company. Method and apparatus for cyclic degassing particulate material. 4,348,212, Cl. 55-2.000.
Ruckel, P. Jay, to Conoco Inc. Additive composition and method of using same. 4,348,237, Cl. 106-122.000.
Rude, Carl A.: *See*—
Akerberg, Denis W.; Huffman, George W.; and Rude, Carl A., 4,348,343, Cl. 264-29.500.
Rudish, Ronald M.: *See*—
McVeigh, Peter J.; and Rudish, Ronald M., 4,348,681, Cl. 343-854.000.
Ruhlmann, Edmond, to Ciba-Geigy Corporation. Azo-dyes, their preparation and use. 4,348,318, Cl. 260-153.000.
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Ruminsky, Robert T.: *See*—
Pinckaers, B. Hubert; and Ruminsky, Robert T., 4,347,974, Cl. 236-46.00R.
Runyan, Gary D. Collapsibly supported outdoor cooking apparatus. 4,347,830, Cl. 126-9.00R.
Ruppel, Wolfgang; Hetzler, Ullrich; Vogt, Horst; and Wurfel, Peter. Ferroelectric or pyroelectric sensor utilizing a sodium nitrite layer. 4,348,611, Cl. 313-388.000.
S.R.M. Hydromekanik Aktiebolag: *See*—
Ahlen, Karl G., 4,347,761, Cl. 74-732.000.
Saari, Risto. Method for distilling a liquid. 4,348,261, Cl. 203-25.000.
Sado, Ryoichi, to Shin-Etsu Polymer Co., Ltd. Key-board switch unit. 4,348,557, Cl. 200-5.00A.
Saeman, Walter C., to Olin Corporation. Process for the recovery of calcium salts from calcium hypochlorite process effluents. 4,348,371, Cl. 423-475.000.
Saeva, Franklin D.: *See*—
Okumura, Koji; and Saeva, Franklin D., 4,348,473, Cl. 430-296.000.
Safelex Systems: *See*—
O'Donnell, John F., 4,348,022, Cl. 273-1.50R.
Sagae, Masayuki: *See*—
Ohki, Kenji; Tokuyama, Mistru; Sagae, Masayuki; and Kawabuchi, Kenji, 4,347,844, Cl. 128-287.000.
Sagisaka, Yasuo; Kondo, Toshio; and Tajima, Masahiko, to Nippondenso Co., Ltd. Air-fuel ratio controlling method and apparatus therefor. 4,348,728, Cl. 364-431.060.
Sai-Halasz, George A.: *See*—
Esaki, Leo; and Sai-Halasz, George A., 4,348,686, Cl. 357-30.000.
St. Clair, John C. Draining, irrigating and aeration of soil and heating or cooling of soil. 4,348,135, Cl. 405-36.000.
Saint-Gobain Vitrage: *See*—
Cohen, Sabatino, 4,348,453, Cl. 428-333.000.
St-Noel, Wilhelm: *See*—
Fuchs, Rainer; Klauke, Erich; Hammann, Ingeborg; Homeyer, Bernhard; Behrenz, Wolfgang; St-Noel, Wilhelm; Lantzsch, Reinhard; and Harhold, Albrecht, 4,348,323, Cl. 549-362.000.
Saito, Masaaki; Kawamura, Yoshihisa; Sugo, Yuko; and Inoue, Mitsumasa, to Nissan Motor Company, Limited. Fuel/air mixture supply system with additional air supply. 4,347,816, Cl. 123-308.000.
Saito, Masaaki, to Nissan Motor Company, Limited. Air/fuel ratio control system for internal combustion engine having rotary valve and step motor. 4,347,821, Cl. 123-440.000.
Saito, Narimasa: *See*—
Nakano, Eiichi; Masuda, Tsutomu; Saito, Narimasa; and Fukushima, Danji, 4,348,477, Cl. 435-172.000.
Nakano, Eiichi; Masuda, Tsutomu; Saito, Narimasa; and Fukushima, Danji, 4,348,478, Cl. 435-172.000.
Saito, Yoichi: *See*—
Imanaka, Yoshihiko; Saito, Yoichi; and Horike, Akihiro, 4,348,456, Cl. 428-336.000.
Sakagami, Toshio, to Olympus Optical Co., Ltd. Carrier conveying mechanism for electrophoretic apparatus. 4,348,269, Cl. 204-299.00R.
Sakaguchi, Shozaburo: *See*—
Tanaka, Kazuyuki; Ueki, Yoshiharu; Kunugi, Yoshiro; and Sakaguchi, Shozaburo, 4,348,616, Cl. 315-314.000.
Sakai, Takahiro: *See*—
Sakakibara, Shiro; Tsukamoto, Kazumasa; Sakai, Takahiro; and Terakura, Yukio, 4,347,763, Cl. 74-789.000.
Sakakibara, Sakuichi; Sugisawa, Ko; and Kimura, Takashi, to House Food Industrial Company Limited. Process for reconstituting dehydrated food. 4,348,421, Cl. 426-394.000.
Sakakibara, Shinsuke: *See*—
Kobayashi, Kengo; Inaba, Hajimu; and Sakakibara, Shinsuke, 4,348,623, Cl. 318-568.000.

Sakakibara, Shiro; Tsukamoto, Kazumasa; Sakai, Takahiro; and Terakura, Yukio, to Aisin Warner K.K. One-way brake. 4,347,763, Cl. 74-789.000.

Sako, Hironobu: *See*—
Aoki, Mamoru; Tomita, Masahiro; Utsunomiya, Kei; Sako, Hironobu; Kaneko, Dentaro; Shimazaki, Katsunori; and Ishii, Yoshitomo, 4,348,226, Cl. 75-35.000.

Sakuragawa, Nobuo: *See*—
Horikoshi, Isamu; Sakuragawa, Nobuo; Ueno, Masaharu; and Takahashi, Kaoru, 4,348,384, Cl. 424-101.000.

Salaun, Harold L., Jr.: *See*—
Brown, Roger S.; Salaun, Harold L., Jr.; and Louis, Gain L., 4,347,647, Cl. 19-128.000.

Salkhad Pty. Limited: *See*—
Lloyd-Jones, Robert, 4,347,691, Cl. 52-95.000.

Salmond, William E., to General Dynamics, Pomona Division. Common aperture dual mode seeker antenna. 4,348,677, Cl. 343-729.000.

Salverson, David R.: *See*—
Alanko, Allan M.; and Salverson, David R., 4,348,533, Cl. 556-457.000.

Sanders, Andrea; and Kim, Leo, to Shell Oil Company. Alkoxyalkanoic acid preparation. 4,348,509, Cl. 562-538.000.

Sanders, James M.: *See*—
Klemarczyk, Philip T.; Sanders, James M.; Vock, Manfred H.; Vinals, Joaquin F.; Schmitt, Frederick L.; and Granda, Edward J., 4,347,858, Cl. 131-276.000.

Sanderson, Edward L., to United States of America, Navy. Oceanographic transducer. 4,347,738, Cl. 73-170.00A.

Sandhu, Avtar S., to Bechtel International Corporation. Slurry pipeline simulation method. 4,348,206, Cl. 23-230.00A.

Sandoz Ltd.: *See*—
Fehr, Theodor; Stadler, Paul; and Stutz, Peter, 4,348,392, Cl. 424-246.000.
Stutz, Peter; Fehr, Theodor; and Stadler, Paul, 4,348,391, Cl. 424-246.000.

Sangamo Weston, Inc.: *See*—
Gurr, George P.; and Nelson, Bruce J., 4,348,668, Cl. 340-825.060.

Sapp, Michael L. Method for reading typing and spacing errors. 4,348,189, Cl. 434-227.000.

Sarges, Reinhard, to Pfizer Inc. Intermediates in the preparation of chiral hydantoins. 4,348,526, Cl. 548-309.000.

Sasayama, Takao; and Suda, Seiji, to Hitachi, Ltd. Engine control system including non-volatile memory and correction data transfer method. 4,348,729, Cl. 364-431.120.

Sato, Hiroshi: *See*—
Shimanuki, Shizuka; Matsumoto, Toshimi; Sato, Hiroshi; Onuma, Tsutomu; and Kirihara, Seishin, 4,348,131, Cl. 403-272.000.

Sato, Toshio; and Ogawa, Yasuyuki, to Nissan Motor Company, Limited; and Kato Hatsujo Kaisha Limited. Holder for a wire member. 4,347,999, Cl. 248-73.000.

Satoh, Toshio: *See*—
Muramatsu, Mutsumi; Satoh, Toshio; Yanagimoto, Yukio; Shinuchi, Tadami; Nakajima, Toshio; and Nakajima, Isao, 4,348,410, Cl. 424-309.000.

Sauer, Don R., to National Semiconductor Corporation. Current comparator circuit with deadband. 4,348,602, Cl. 307-530.000.

Saunders, Hollis S.; Carmer, Richard V.; and Payette, Lionel J., to Essex Group, Inc. Power insertable polyamide-imide coated magnet wire. 4,348,460, Cl. 428-383.000.

Sawan, Anis S. Precision pipe cutter and reamer combination. 4,347,634, Cl. 7-157.000.

Schaller, Waldemar: *See*—
Held, Hans-Dieter; and Schaller, Waldemar, 4,347,775, Cl. 84-380.00C.

Scharfenberger, James A., to Ransburg Corporation. Variable low-pressure fluid color change cycle. 4,348,425, Cl. 427-8.000.

Schaumann, Wolfgang: *See*—
Friebe, Walter-Gunar; Kampe, Wolfgang; Thiel, Max; Schaumann, Wolfgang; and Wilhelms, Otto-Henning, 4,348,401, Cl. 424-267.000.

Scheer, Horst: *See*—
Kowalsky, Horst; and Scheer, Horst, 4,348,379, Cl. 424-34.000.

Scheerer, Rainer; Ranz, Erwin; and Lohmann, Joachim W., to Agfa-Gevaert Aktiengesellschaft. Light sensitive photographic recording material and the use thereof for the production of photographic images. 4,348,474, Cl. 430-382.000.

Scheithauer, Richard A.: *See*—
Gingerich, Richard G. W.; Vanderpool, Clarence D.; Scheithauer, Richard A.; and Ritsko, Joseph E., 4,348,224, Cl. 75-0.5AA.

Schenk, Wolfgang: *See*—
Albrecht, Bernhard; Frey, Hans; Habermacher, Vinzenz; Behre, Horst; Kienitz, Lutz; Schenk, Wolfgang; Steffan, Guido; and Vogel, Axel, 4,348,334, Cl. 260-505.00C.

Schering Aktiengesellschaft: *See*—
Nickolson, Robert; Kerb, Ulrich; Wiechert, Rudolf; Alig, Leo; Furst, Andor; and Muller, Marcel, 4,348,327, Cl. 260-397.100.

Schering Corporation: *See*—
Lee, Bong K.; Wagman, Gerald H.; Rane, Dinanath F.; Marquez, Joseph A.; and Daniels, Peter J. L., 4,348,516, Cl. 536-10.000.
Nafissi-Varchei, M. Mehdi, 4,348,406, Cl. 424-300.000.

Scheuchzer, Fredy; and Buhler, Fritz, to Les Fils d'Auguste Scheuchzer S.A. Railroad rail grinding truck. 4,347,688, Cl. 51-178.000.

Schiemann, Wolfram. Closure for a canister. 4,347,954, Cl. 222-484.000.

Schinkel, Ingo: *See*—
Rosenthal, Heinrich; Schinkel, Ingo; and Eger, Gunter, 4,348,457, Cl. 428-349.000.

Schipper, Hendricus H., to B.V. Machinefabriek v/h Pannevis & Zn. Method and device for removing a fluid from a mixture of a fluid and a solid substance. 4,348,290, Cl. 210-783.000.

Schlayer, Wolfgang; and Hemminger, Herbert, to International Standard Electric Corporation. Bearing for faceplate panels of color-picture tubes. 4,348,017, Cl. 269-296.000.

Schluer, Manfred: *See*—
Groeneweg, Joost; and Schluer, Manfred, 4,348,285, Cl. 210-602.000.

Schlumberger Technology Corporation: *See*—
Clavier, Christian M. J.; Hepp, Vincent R.; and Dumestre, Alexis C., 4,348,748, Cl. 367-25.000.

Schmidt, Hans-Georg, to Daimler-Benz Aktiengesellschaft. Air-compressing internal combustion engine with a precombustion chamber. 4,347,815, Cl. 123-269.000.

Schmidt, Hans-Georg, to Dynamit Nobel AG. Substituted lactones and processes for their preparation. 4,348,535, Cl. 560-124.000.

Schmidt, Walter, to BBC Brown, Boveri & Company, Ltd. Process for the preparation of an optically transparent and electrically conductive film pattern. 4,348,255, Cl. 156-656.000.

Schmitt, Edward L.; Caroleo, Steven J.; Bolam, Charles W.; and Conley, Richard W., to Kerotest Manufacturing Corp. Plastic valve assembly. 4,348,006, Cl. 251-288.000.

Schmitt, Frederick L.: *See*—
Klemarczyk, Philip T.; Sanders, James M.; Vock, Manfred H.; Vinals, Joaquin F.; Schmitt, Frederick L.; and Granda, Edward J., 4,347,858, Cl. 131-276.000.

Schmitz, Lawrence S., to Hughes Aircraft Company. Non-volatile random access memory having non-inverted storage. 4,348,745, Cl. 365-154.000.

Schneider, Franz: *See*—
Grunig, Kurt; Elmiger, Heinz; and Schneider, Franz, 4,347,679, Cl. 42-84.000.

Schnell, William J.: *See*—
George, Richard W.; and Schnell, William J., 4,348,280, Cl. 210-101.000.

Schnurmann, Henri D., to International Business Machines Corporation. Automatic testing of complex semiconductor components with test equipment having less channels than those required by the component under test. 4,348,759, Cl. 371-20.000.

Schoenberger, Norman, Jr.: *See*—
Kost, William E.; and Schoenberger, Norman, Jr., 4,347,969, Cl. 229-34.0HW.

Schofield, Miles E. Funnel. 4,347,878, Cl. 141-300.000.

Scholl, Frederick W.: *See*—
Zory, Peter S.; Scholl, Frederick W.; and Lockwood, Harry F., 4,347,655, Cl. 29-589.000.

Scholl, Hans; and Fischer, Jochen, to Kochs Adler AG. Sewing device for producing fastening stitches and tack stitches. 4,347,797, Cl. 112-121.120.

Scholz, John A.: *See*—
English, George J.; and Scholz, John A., 4,348,173, Cl. 431-362.000.

Schomann, Klaus D., to BASF Aktiengesellschaft. Magnetic devices for changing video recordings. 4,348,698, Cl. 360-14.000.

Schonfeld, Arnold; Eibner, Jules A.; and Bastian, Franklin E., to Sperry Corporation. Duplex printing apparatus. 4,348,101, Cl. 355-14.00R.

Schonfeld, Arnold: *See*—
Mittal, Faquir C.; Arrison, Frank J.; and Schonfeld, Arnold, 4,348,705, Cl. 360-98.000.

Schoubye, Peter C. S., to Haldor Topsoe A/S. Process for the preparation of sulfuric acid. 4,348,373, Cl. 423-522.000.

Schreder, Felix: *See*—
Fischer, Karl; and Schreder, Felix, 4,348,581, Cl. 219-460.000.

Schriber, Gene A.: *See*—
McAlister, Doyle V.; Gunter, Thomas G.; Spak, Michael E.; and Schriber, Gene A., 4,348,741, Cl. 364-900.000.

Schroder, Joris, to Inventio AG. Roll guide shoe for elevators or the like. 4,347,916, Cl. 187-95.000.

Schuler, Malcolm R.: *See*—
Gubitose, Nicholas F.; Schuler, Malcolm R.; and Patterson, David L., 4,348,365, Cl. 422-249.000.

Schultz, Robert J.; and Starks, Fred W., to Starks Associates, Inc. N-(phosphonacetyl)-L-aspartic acid salts with piperazine, cyclohexylamine and calcium. 4,348,522, Cl. 544-358.000.

Schumacher, Ralf: *See*—
Struck, Carl-Heinz; and Schumacher, Ralf, 4,348,258, Cl. 202-255.000.

Schuss, Werner, to Siemens Aktiengesellschaft. Device for releasably connecting a head part to a handle part of a dental handpiece. 4,348,180, Cl. 433-126.000.

Schwarz, Hans-Helmut: *See*—
Serini, Volker; Neumann, Rainer; Friedhofen, Gerhard; Freitag, Dieter; Heuser, Jurgen; and Schwarz, Hans-Helmut, 4,348,542, Cl. 568-727.000.

Schwind, David R. Energy control device. 4,348,750, Cl. 367-140.000.

Schwing, Gregory W., to Du Pont de Nemours, E. I., and Company. Herbicidal salfonamides. 4,348,220, Cl. 71-92.000.

Scott, Lex A.; Mosley, William H., Jr.; and Andren, Carl F., to E-Systems, Inc. Digital baseband carrier recovery circuit. 4,348,641, Cl. 329-50.000.

Scott, Michael J., to Allflex International Limited. Relating to devices for the closure of fluid flow lines. 4,347,868, Cl. 137-462.000.

Scott, Stephen D.: *See*—
Kantner, Harold H.; and Scott, Stephen D., 4,347,700, Cl. 60-325.000.

Scrivo, Jerry V., to Ex-Cell-O Corporation. Vehicle bumper assembly. 4,348,042, Cl. 293-120.000.

Seachman, Ned J., to Xerox Corporation. Twisting geometry optical system utilizing imaging array with time delay segments. 4,348,593, Cl. 250-578.000.

Secon, Edward, to Sherwood Corporation, The. Lawn umbrella. 4,347,862, Cl. 135-20.00R.

Seemann, Robert A. All season window. 4,347,835, Cl. 126-431.000.

Seitetsu Kagaku Co., Ltd.: *See*—
Hayashi, Saburo; Okada, Syohiti; Okamoto, Kazuyoshi; Mizutani, Mochifumi; Isono, Teizo; Osada, Toshio; Okabe, Tohru; and Adachi, Mitsuji, 4,348,201, Cl. 8-94.180.

Seitter, Wolf: *See*—
Goertler, Horst; Hetzel, Friedrich; Prohaska, Hans; Rachner, Horst; Seitter, Wolf; and Swoboda, Josef, 4,348,655, Cl. 340-73.000.

Seki, Michinori, to Tokushu Aerosol Co. Ltd. Ornamental spraying apparatus and a sprayer therefor. 4,347,980, Cl. 239-289.000.

Seko, Yasutoshi: *See*—
Yanagishima, Takayuki; and Seko, Yasutoshi, 4,348,663, Cl. 340-576.000.

Sellier, Daniel: *See*—
Cukier, Maurice; and Sellier, Daniel, 4,348,737, Cl. 364-900.000.

Senaha, Susumu: *See*—
Ohno, Akira; Katayama, Hitomi; Nomura, Suguru; Senaha, Susumu; Kyo, Suizo; Shmomura, Susumu; Akagami, Akira; and Imai, Hiroshi, 4,348,463, Cl. 428-429.000.

Senzaki, Takaya; and Murao, Eiji, to Honda Giken Kogyo Kabushiki Kaisha. FM-CW Radar system for use in an automotive vehicle. 4,348,675, Cl. 343-7.0VM.

Serini, Volker; Neumann, Rainer; Friedhofen, Gerhard; Freitag, Dieter; Heuser, Jurgen; and Schwarz, Hans-Helmut, to Bayer Aktiengesellschaft. Process for the production of mixtures of alkylated aromatic hydroxy compounds. 4,348,542, Cl. 568-727.000.

Sessink, Bernardus W. L. M., to Oce-Nederland B.V. Electrographic apparatus with control system for fixing powder images by heat and contact. 4,348,102, Cl. 355-14.0SH.

Settembre, Richard J. Safety binding for nordic skis. 4,348,036, Cl. 280-615.000.

Seufert, Gerhard, to Herrin, Melvin Bernard. Process and apparatus for forming flexible fold lines in thermoplastic sheets. 4,348,449, Cl. 428-167.000.

Sharma, Satya P.: *See*—
Draper, Clifton W.; and Sharma, Satya P., 4,348,263, Cl. 204-29.000.

Sharp Kabushiki Kaisha: *See*—
Nakatani, Hiroshi; Ishida, Masahide; and Yamamoto, Hachizou, 4,348,551, Cl. 179-1.0SM.

Sharp, Paul H., to Marmon Company. Variable speed motor system. 4,348,625, Cl. 318-757.000.

Shasha, Baruch S.; and Abbott, Thomas P., to United States of America, Agriculture. Starch adduct encasement of particulate elastomers. 4,348,492, Cl. 524-52.000.

Shaw, Julius. Insulating and packaging material of metal foil-nonwoven glass fabric. 4,348,450, Cl. 428-182.000.

Shedd, Charles D.: *See*—
Drzal, Robert S.; and Shedd, Charles D., 4,348,459, Cl. 428-379.000.

Shefford, Roger A., to Koninklijke Emballage Industrie Van Leer B.V. Enclosure member substantially impermeable to the transmission of solvents and fuels. 4,348,436, Cl. 428-35.000.

Sheldon Industries Inc.: *See*—
Robertsen, Anthony L.; and McInnis, Andrew M., 4,348,660, Cl. 340-365.0VL.

Shell Oil Company: *See*—
Blytas, George C.; and Diaz, Zaida, 4,348,368, Cl. 423-226.000.
Krishnaswamy, Srinivasan, 4,347,747, Cl. 73-861.180.
Sanders, Andrea; and Kim, Leo, 4,348,509, Cl. 562-538.000.
Shepley, John D.; and Muijs, Herman M., 4,348,244, Cl. 156-72.000.

Shellenberger, Charles R.: *See*—
Alter, William F.; DeBoer, Jonathan J.; and Shellenberger, Charles R., 4,347,926, Cl. 198-388.000.

Shelnut, James; and Cohen, Richard J., to Polychrome Corporation. Positive acting composition yielding pre-development high visibility image after radiation exposure comprising acid free novolak, diazo oxide and acid sensitive dyestuff. 4,348,471, Cl. 430-165.000.

Shemano, Irving: *See*—
Imondi, Anthony R.; and Shemano, Irving, 4,348,407, Cl. 424-300.000.

Shenk, Edwin K., to Polaroid Corporation. Lens movement actuated reference and sequencing means for cameras having unidirectional automatic focusing. 4,348,089, Cl. 354-195.000.

Shepard, Francis H., Jr.: *See*—
Grier, William R.; Shepard, Francis H., Jr.; and Arledge, Arthur L., 4,348,738, Cl. 364-900.000.

Shepherd, Robert G., to American Cyanamid Company. Antiatherosclerotic and hypolipidemic 4-(monoalkylamino)phenyl alkane, alkene and alkyne carbinols, aldehydes, carboxylic acids and derivatives. 4,348,399, Cl. 424-263.000.

Shepley, John D.; and Muijs, Herman M., to Shell Oil Company. Lubricating compositions for primary backing fabrics used in the manufacture of tufted textile articles. 4,348,244, Cl. 156-72.000.

Sheppard, James A.: *See*—
Consolazio, George A.; Sheppard, James A.; and Laramee, Benjamin E., 4,348,424, Cl. 427-4.000.

Sherman, Donald E.: *See*—
Rice, Steven J.; and Sherman, Donald E., 4,348,760, Cl. 371-20.000.

Sherman, Robert: *See*—
Barnes, Philip E.; Mayo, Millard G.; and Sherman, Robert, 4,348,155, Cl. 416-46.000.

Sherry, Charles Edward: *See*—
Price, Donald R., 4,347,884, Cl. 152-158.000.

Sherwood Corporation, The: *See*—
Secon, Edward, 4,347,862, Cl. 135-20.00R.

Shetty, Jayarama K.: *See*—
Kinsella, John E.; and Shetty, Jayarama K., 4,348,479, Cl. 435-183.000.

Shibata, Tsugio. Pressure converting apparatus. 4,348,161, Cl. 417-403.000.

Shields, Theodore C., to Ashland Oil, Inc. Preparation of thionamide compounds by sulfuration of imines. 4,348,523, Cl. 544-399.000.

Shigematsu, Kazuo: *See*—
Terao, Motoyasu; Taniguchi, Yoshio; Horigome, Shinkichi; Ojima, Masahiro; Shigematsu, Kazuo; Kato, Keizo; Miyamura, Yoshinori; and Yonezawa, Seiji, 4,348,461, Cl. 428-409.000.

Shim, Kyung S., to Stauffer Chemical Company. Novel phosphoramides, lubricating compositions and method of improving wear and extreme pressure characteristics of lubricating oil. 4,348,291, Cl. 252-49.900.

Shima, Yasuhusa: *See*—
Kosaka, Hideki; Mimata, Tsutomu; Shimizu, Tsuyoshi; Yamamoto, Hideharu; Itoh, Kaoru; and Shima, Yasuhusa, 4,348,751, Cl. 368-82.000.

Shimadzu Corporation: *See*—
Yano, Shozo; Miyake, Toshiyuki; Fujinaga, Yasuhiro; Koomoto, Akira; Kawara, Toshio; Yagi, Akio; Tsuji, Tomohiro; and Nagaoka, Tadashi, 4,347,903, Cl. 177-25.000.

Shimamura, Kouichi, to Sonix Limited. Plating means. 4,348,267, Cl. 204-206.000.

Shimano Industrial Company Limited: *See*—
Shimano, Keizo, 4,348,198, Cl. 474-82.000.
Terada, Masao, 4,348,200, Cl. 474-160.000.

Shimano, Keizo, to Shimano Industrial Company Limited. Bicycle derailleur having a reduced lateral width. 4,348,198, Cl. 474-82.000.

Shimanuki, Shizuka; Matsumoto, Toshimi; Sato, Hiroshi; Onuma, Tsutomu; and Kirihara, Seishin, to Hitachi, Ltd. Welded structure having improved mechanical strength and process for making same. 4,348,131, Cl. 403-272.000.

Shimazaki, Katsunori: *See*—
Aoki, Mamoru; Tomita, Masahiro; Utsunomiya, Kei; Sako, Hironobu; Kaneko, Dentaro; Shimazaki, Katsunori; and Ishii, Yoshitomo, 4,348,226, Cl. 75-35.000.

Shimazu, Toshinari: *See*—
Oishi, Norio; Shimazu, Toshinari; Suganami, Takuya; and Masuda, Takahiro, 4,348,029, Cl. 277-26.000.

Shimizu, Tsuyoshi: *See*—
Kosaka, Hideki; Mimata, Tsutomu; Shimizu, Tsuyoshi; Yamamoto, Hideharu; Itoh, Kaoru; and Shima, Yasuhusa, 4,348,751, Cl. 368-82.000.

Shin-Etsu Polymer Co., Ltd.: *See*—
Sado, Ryoichi, 4,348,557, Cl. 200-5.00A.

Shinbori, Kenichi: *See*—
Katsuma, Makoto; Shinbori, Kenichi; Kiuchi, Masayoshi; and Alyfuku, Kiyoshi, 4,348,096, Cl. 354-289.000.

Shindow, Osamu, to Asahi Kogaku Kogyo Kabushiki Kaisha. Automatic lens meter. 4,348,108, Cl. 356-125.000.

Shinhokoku Steel Corporation: *See*—
Kunioka, Saburo; Kawaguchi, Hatsuo; and Ono, Minoru, 4,348,241, Cl. 148-6.350.

Shinuchi, Tadami: *See*—
Muramatsu, Mutsumi; Satoh, Toshio; Yanagimoto, Yukio; Shinuchi, Tadami; Nakajima, Toshio; and Nakajima, Isao, 4,348,410, Cl. 424-309.000.

Shiozaki, Shigeru: *See*—
Mitsuishi, Yukio; Shiozaki, Shigeru; Chujo, Takao; and Yokoyama, Takeyuki, 4,348,446, Cl. 428-148.000.

Shirasaki, Shinji: *See*—
Tsuzuki, Yoshihiko; Okazaki, Hiroshi; Shirasaki, Shinji; Matsuyama, Masahiro; Kobayashi, Masanobu; and Ito, Yoji, 4,348,653, Cl. 340-52.00F.

Shirota Denki Kozai Kabushiki-Kaisha: *See*—
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Shirota, Kazunari, to Shirota Denki Kozai Kabushiki-Kaisha. Reinforcement wire for material for the impression of decayed tooth. 4,348,182, Cl. 433-214.000.

Shiun, Toshimi; Fujii, Hideo; and Kizaki, Yoshio, to Clarion Co., Ltd. Circuit for correcting data reading clock pulses. 4,348,762, Cl. 371-47.000.

Shmomura, Susumu: *See*—
Ohno, Akira; Katayama, Hitomi; Nomura, Suguru; Senaha, Susumu; Kyo, Suizo; Shmomura, Susumu; Akagami, Akira; and Imai, Hiroshi, 4,348,463, Cl. 428-429.000.

Shnitkin, Harold; and Smith, Peter W., to United Technologies Corporation. Multi-mode dual-feed array radar antenna. 4,348,679, Cl. 343-768.000.

Shonkwiler, Forest M.: *See*—
Shonkwiler, Gary L.; and Shonkwiler, Forest M., 4,348,054, Cl. 298-11.000.

Shonkwiler, Gary L.; and Shonkwiler, Forest M. Convertible adjustable bed vehicle. 4,348,054, Cl. 298-11.000.
Shook, Larry E.: *See*—
Gettig, William A.; and Shook, Larry E., 4,348,556, Cl. 200-5.00R.
SI Handling Systems, Inc.: *See*—
Nagahori, Katsuhiro, 4,347,792, Cl. 104-166.000.
Sibbel, Uwe. Watering system for flower pots and plant boxes. 4,347,687, Cl. 47-79.000.
Siccone, Ralph R. Direct/reflecting speaker system and triangular shaped enclosure. 4,348,552, Cl. 179-1.00E.
Sickles, James E., to PPG Industries, Inc. Electrostatic spray coating apparatus. 4,347,984, Cl. 239-707.000.
Siemens Aktiengesellschaft: *See*—
Heyneman, Guido, 4,348,160, Cl. 417-403.000.
Keller, Roman; and Kliesch, Gunter, 4,348,687, Cl. 357-79.000.
Muth, Klaus; and Federspieler, Philipp, 4,348,674, Cl. 343-5.0SA.
Noethe, Bjoern, 4,348,307, Cl. 528-49.000.
Schuss, Werner, 4,348,180, Cl. 433-126.000.
Skafvenstedt, Bengt; and Ahlgren, Sture, 4,348,118, Cl. 400-54.000.
Sievers, Kirk A., to Motorola, Inc. Stator fault detector for automotive alternator battery charging systems. 4,348,629, Cl. 322-99.000.
Silva, Raimund H.; Resnick, Paul R.; and Smith, Roger A., to Du Pont de Nemours, E. I., and Company. Solutions of sulfonyl fluoride compounds and fluoropolymers. 4,348,310, Cl. 524-167.000.
Simic, Milutin, to Chevron Research Company. Plasticized sulfur composition. 4,348,233, Cl. 106-18.230.
Simon, Hans. Insulation for flat connectors. 4,348,070, Cl. 339-59.00R.
Simon, Martin, to General Electric Company. Magnetic field presetting circuit for an exciter field winding in an electrical propulsion system for traction vehicles. 4,348,620, Cl. 318-154.000.
Simpson, Robert B., to Fiberglas Canada Inc. Manufacture of glass fibre blowing wool. 4,347,985, Cl. 241-1.000.
Sims, Robert: *See*—
Gary, David A., 4,347,914, Cl. 182-142.000.
Singer Company, The: *See*—
Bair, Scott S., III, 4,347,643, Cl. 15-340.000.
Dotsko, Martin, 4,348,187, Cl. 434-44.000.
Moore, Randy W., 4,348,184, Cl. 434-42.000.
Singh, Gurnam, to Bourns Instruments, Inc. Pressure measuring apparatus. 4,347,745, Cl. 73-721.000.
Sippel, Charles, to LogEtronics, Inc. Camera positioning apparatus. 4,348,097, Cl. 354-293.000.
Sirrenberg, Wilhelm; Klauke, Erich; Hammann, Ingeborg; Krehan, Ingomar; and Stendel, Wilhelm, to Bayer Aktiengesellschaft. Combating pests with substituted 3,6-diphenyl-3,4-dihydro-2H-1,3,5-oxadiazine-2,4-diones. 4,348,394, Cl. 424-248.570.
Sitt, Rudiger: *See*—
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Sivan, Gideon: *See*—
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Skafvenstedt, Bengt; and Ahlgren, Sture, to Siemens Aktiengesellschaft. Paper transport means for a recording device. 4,348,118, Cl. 400-54.000.
Skelly, James K.; Evans, David G.; and Broadbent, Barrie, to Ciba-Geigy Corporation. Dyeing process. 4,348,203, Cl. 8-501.000.
SKF Compagnie d'Applications Mecaniques: *See*—
Bordes, Alain, 4,347,920, Cl. 192-41.00A.
Bordes, Alain, 4,347,921, Cl. 192-41.00A.
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Alanko, Allan M.; Marko, Ollie W.; Skinner, Charles E.; and Wood, Larry H., 4,348,532, Cl. 556-457.000.
Skogerson, Lawrence E., to Universal Foods Corporation. Method for the production of chromium yeast. 4,348,483, Cl. 435-255.000.
Slater Electric Inc.: *See*—
Bowden, Wade R., Jr., 4,348,547, Cl. 174-65.00R.
Sleep Safe, Limited: *See*—
Fontaine, William G.; and Reeder, Willes W., 4,348,662, Cl. 340-562.000.
Slurry Mining Engineering Inc.: *See*—
Coakley, John E.; and Nolan, James J., 4,348,058, Cl. 299-17.000.
Smith, Bob G.: *See*—
Christiansen, David W.; and Smith, Bob G., 4,348,353, Cl. 376-364.000.
Smith, Frank G. Rapid advance long dwell feed mechanism for multiple slide machines. 4,347,961, Cl. 226-158.000.
Smith, George E.; and Strain, Robert J., to Bell Telephone Laboratories, Incorporated. Method of fabricating polysilicon electrodes. 4,347,656, Cl. 29-591.000.
Smith, John R.; and Fischer, Gerhard O. J., to Quaker Oats Limited. Simulated food product and method of manufacture therefor. 4,348,418, Cl. 426-104.000.
Smith & Loveless, Inc.: *See*—
Wood, Marvin E., 4,348,158, Cl. 417-40.000.
Smith, Peter W.: *See*—
Shnitkin, Harold; and Smith, Peter W., 4,348,679, Cl. 343-768.000.
Smith, Roger A.: *See*—
Silva, Raimund H.; Resnick, Paul R.; and Smith, Roger A., 4,348,310, Cl. 524-167.000.
Smith, Ronald V.: *See*—
Byham, Geoffrey M.; and Smith, Ronald V., 4,347,997, Cl. 244-17.190.
Smith, Steve. Power-pulse switching circuit. 4,348,598, Cl. 307-300.000.
Smith, Walter J., to Huck Manufacturing Company. Apparatus and system for setting fasteners. 4,347,728, Cl. 72-391.000.
Snavely, Earl S., Jr.; and Caldwell, Paul L., Jr., to Mobil Oil Corporation. Water treatment method to remove dissolved oxygen therefrom. 4,348,289, Cl. 210-749.000.
Snelling, Christopher, to Xerox Corporation. Control for xerographic system. 4,348,100, Cl. 355-14.00R.
Snoek, David J.: *See*—
Boschetti, Armando; and Snoek, David J., 4,348,664, Cl. 340-600.000.
Societe des Applications Biologiques du Laser a l'Environnement (SABLE) S.a.r.l.: *See*—
Moreaud, Henri; and Meric, Jean-Paul, 4,348,112, Cl. 356-338.000.
Societe Francaise d'Equipements pour la Navigation Aerienne: *See*—
Bonfils, Georges L. A., 4,348,113, Cl. 356-350.000.
Societe Industrielle Bertrand Faure: *See*—
Letournoux, Alain; and Raye, Christian, 4,348,050, Cl. 297-365.000.
Sogo, Yoshitaka, to Toyota Jidosha Kogyo Kabushiki Kaisha. Transmission. 4,347,756, Cl. 74-467.000.
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Solarex Corporation: *See*—
Lindmayer, Joseph, 4,348,254, Cl. 156-647.000.
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Sollman, Paul B.: *See*—
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Soni, Inderjit S.: *See*—
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Sony Corporation: *See*—
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Tsuchiya, Yoshikazu; Tanaka, Masato; Sonoda, Takenori; Watanabe, Tetsu; Kanai, Chiaki; and Watanabe, Nobuhiko, 4,348,699, Cl. 360-32.000.
Soula, Gerard: *See*—
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Spence, Gavin G.: *See*—
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Mittal, Faquir C.; Arrison, Frank J.; and Schonfeld, Arnold, 4,348,705, Cl. 360-98.000.
O'Brien, Steven M., 4,348,742, Cl. 364-900.000.
Schonfeld, Arnold; Eibner, Jules A.; and Bastian, Franklin E., 4,348,101, Cl. 355-14.00R.
Spigarelli, Donald J., to Hybrid Technology Corporation. Method and apparatus for vapor conservation and control. 4,348,174, Cl. 432-1.000.
Spindle, Harvey E.: *See*—
Yeckley, Russell N.; and Spindle, Harvey E., 4,348,565, Cl. 200-82.00B.
Spire Corporation: *See*—
Little, Roger G., 4,348,546, Cl. 136-256.000.
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Alter, William F.; DeBoer, Jonathan J.; and Shellenberger, Charles R., 4,347,926, Cl. 198-388.000.
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Stutz, Peter; Fehr, Theodor; and Stadler, Paul, 4,348,391, Cl. 424-246.000.
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Starks Associates, Inc.: *See—*
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Starks, Fred W.: *See—*
Schultz, Robert J.; and Starks, Fred W., 4,348,522, Cl. 544-358.000.
Staudenrausch, Georg, to Albert Handtmann GmbH & Co. Method and apparatus for sequential portioning of a plastically deformable mass, in particular sausage stuffing. 4,347,646, Cl. 17-49.000.
Stauffer Chemical Company: *See—*
Shim, Kyung S., 4,348,291, Cl. 252-49.900.
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Stegmann, Horst; Meyl, Wolfgang; and Hentschel, Peter, to Jenoptik Jena GmbH. Measuring equipment for the determination of terrestrial refraction. 4,347,739, Cl. 73-170.00R.
Stehman, Harold E.: *See—*
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Steigerwald Strahltechnik GmbH: *See—*
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Stevens, David B. Bobsled. 4,348,033, Cl. 280-16.000.
Stievenart, Emile F.; Plessers, Hendrik S.; and Hellemans, Julianus J., to Agfa-Gevaert N.V. Method and device for separating a sheet from a stack of sheets. 4,348,019, Cl. 271-10.000.
Stock, Albert M.; and Tse, Wilson S., to Du Pont de Nemours, E. I., and Company. Refining tetrahydrofuran. 4,348,262, Cl. 203-37.000.
Stoepel, Kurt: *See—*
Franckowiak, Gerhard; Meyer, Horst; Bossert, Friedrich; Heise, Arend; Kazda, Stanislav; Stoepel, Kurt; Towart, Robertson; and Wehinger, Egbert, 4,348,395, Cl. 424-250.000.
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Storm, Gregory A.: *See—*
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Storm, Nelson; and Storm, Gregory A. Flashlight gun mount. 4,348,716, Cl. 362-188.000.
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Strain, Robert J.: *See—*
Smith, George E.; and Strain, Robert J., 4,347,656, Cl. 29-591.000.
Strasale, Alex, to Intercollection Development SA. Foam padded chair with screw assembly of seat, backrest and legs. 4,348,053, Cl. 297-445.000.
Straus, Albert E., to Hoover Universal, Inc. Ballcock assembly. 4,347,866, Cl. 137-436.000.
Strobel, Richard A.; and Lyons, Michael D., to American Standard Inc. Hydraulic valve position control system for regulating smokestack exhaust pressure. 4,347,869, Cl. 137-488.000.
Strom, Robert M., to Dow Chemical Company, The. Process for the selective aliphatic chlorination of alkylbenzenes. 4,348,265, Cl. 204-158.0HA.
Struck, Carl-Heinz; and Schumacher, Ralf, to Dr. C. Otto & Comp. G.m.b.H. Spray nozzle for coke oven gas-collecting system. 4,348,258, Cl. 202-255.000.
Struthers, Ralph C., to Universal Fuel Systems, Inc. Nitrogen metal fuel cell. 4,348,465, Cl. 429-27.000.
Studiengesellschaft Kohle m.b.H.: *See—*
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Stutz, Peter; Fehr, Theodor; and Stadler, Paul, to Sandoz Ltd. Sulfonamido and sulfamoylamino-ergoline-I derivatives. 4,348,391, Cl. 424-246.000.
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Fehr, Theodor; Stadler, Paul; and Stutz, Peter, 4,348,392, Cl. 424-246.000.
Subbarao, Saligrama N.; and Huang, Ho-Chung, to RCA Corporation. Method for fabricating via holes in a semiconductor wafer. 4,348,253, Cl. 156-643.000.
Suda, Seiji: *See—*
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Sudo, Yoshiyuki: *See—*
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Suemura, Kenichiro; and Osawa, Masami, to Nippon Steel Corporation. Enamelling steel sheet. 4,348,229, Cl. 75-124.000.
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Sugimoto, Osamu; and Akagawa, Masaki, to Kabushiki Kaisha Nippon Coinco. Malfunction indication device for a vending machine. 4,347,925, Cl. 194-1.00N.
Sugimoto, Osamu: *See—*
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Sulkowski, Theodore S.; Bergey, James L.; and Mascitti, Albert A., to American Home Products Corporation. Anti-arrhythmic N-[3-alkylaminopropyl]-N'-phenylureas. 4,348,413, Cl. 424-322.000.
Sullivan, James J.; and Grey, Charles M. High speed sterile fluid transfer unit. 4,347,874, Cl. 141-1.000.
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Sulzer Brothers Limited: *See—*
Knecht, Max, 4,348,352, Cl. 376-272.000.
Rees, Karl, 4,347,810, Cl. 122-6.00A.
Sumitomo Chemical Company, Limited: *See—*
Kojima, Shinichi; Koide, Ten; Ogino, Shigeo; Tsuchiya, Toshiro; and Kameno, Yoshito, 4,348,386, Cl. 424-177.000.
Sumitomo Electric Industries, Ltd.: *See—*
Kita, Yasuo, 4,347,917, Cl. 188-73.450.
Sumitomo, Hiroyuki; and Uehara, Haruo, to Hisaka Works, Ltd. Plate type heat exchanger. 4,347,897, Cl. 165-167.000.
Sun Electric Corporation: *See—*
Kreft, Keith A., 4,348,732, Cl. 364-571.000.
Sun Oil Company, Ltd.: *See—*
Morgan, George W., 4,348,059, Cl. 299-25.000.
Sunbeam Corporation: *See—*
Gale, George M.; James, David I.; and Meyer, John V. B., 4,348,584, Cl. 219-549.000.
Sunderland, Alec: *See—*
Eaton, Alan; Mitchell, William T.; and Sunderland, Alec, 4,348,005, Cl. 251-268.000.
Sundwiger Eisenhutte Maschinenfabrik Grah & Co.: *See—*
Uphues, Ewald, 4,347,962, Cl. 226-195.000.
Sung, Rodney L., to Texaco Inc. Novel process and product. 4,348,210, Cl. 44-56.000.
Sutherland, Joseph E., to International Standard Electric Corporation. Digital debouncing and storage apparatus for use in a telephone switching system. 4,348,758, Cl. 370-110.200.
Suzuki, Shigeru; Ohno, Yukihiro; Yanagawa, Nobuyuki; and Kawaishi, Yasunori, to Ricoh Co., Ltd. Guide apparatus for movable contact glass in electrophotographic copying machines. 4,348,106, Cl. 355-75.000.
Suzuki, Shunsuke: *See—*
Komatsu, Mikiya; Suzuki, Shunsuke; and Maruyama, Takasumi, 4,347,889, Cl. 164-250.100.
Suzuki Sogyo Kabushiki Kaisha: *See—*
Nakanishi, Motoyasu, 4,348,246, Cl. 156-73.100.

Suzuki, Suzuo; Nakagawa, Yasuhiko; Aihara, Hisamoto; and Matsumoto, Yasuo, to Nissan Motor Co., Ltd. Fuel injection apparatus for an internal combustion engine. 4,347,825, Cl. 123-537.000.

Suzuki, Toyotosi; and Ago, Nobuhiro, to Canon Kabushiki Kaisha. Strap mounting device. 4,348,095, Cl. 354-288.000.

Suzuki, Yoshiro: *See*—
Kawazu, Hideyuki; and Suzuki, Yoshiro, 4,348,103, Cl. 355-15.000.

Svala, Carl G., to International Telephone and Telegraph Corporation. PCM Codec using common D/A converter for encoding and decoding. 4,348,768, Cl. 375-26.000.

Svetlik, Joseph F., to Phillips Petroleum Company. Display soles for articles of footwear. 4,347,673, Cl. 36-32.00R.

Swan, George A., to Exxon Research & Engineering Co. Catalytic reforming process. 4,348,271, Cl. 208-89.000.

Sweat, Robert H., Jr.; and Thornhill, William J., to International Business Machines Corporation. Impact printer hammer flight time and velocity sensing means. 4,347,786, Cl. 101-93.030.

Swensson, Torsten F.: *See*—
von Knorring, Enar S.; and Swensson, Torsten F., 4,347,885, Cl. 160-242.000.

Swithenbank, Joshua; and Taylor, David S., to Land Combustion Limited. Control of burners. 4,348,169, Cl. 431-89.000.

Swoboda, Josef: *See*—
Goertler, Horst; Hetzel, Friedrich; Prohaska, Hans; Rachner, Horst; Seitter, Wolf; and Swoboda, Josef, 4,348,655, Cl. 340-73.000.

Synek, Joseph, to Mobay Chemical Corporation. Flowable pesticides. 4,348,385, Cl. 424-173.000.

Szabo, Ted T.: *See*—
Robeson, Lloyd M.; and Szabo, Ted T., 4,348,500, Cl. 525-65.000.

Szczepanski, Henry; Rohr, Otto; Pissiotas, Georg; Bohner, Beat; and Rempfler, Hermann, to Ciba-Geigy Corporation. Herbicidal derivatives of pyrid-2-yloxyphenoxy-acetic acids and esters. 4,348,221, Cl. 71-94.000.

Tabler, Donald C.: *See*—
Johnson, Marvin M.; Tabler, Donald C.; and Nowack, Gerhard P., 4,348,370, Cl. 423-362.000.

Taiyo Shokai Co., Ltd.: *See*—
Onishi, Masami, 4,347,950, Cl. 221-13.000.

Tajima, Masahiko: *See*—
Kobayashi, Akio; Kikuchi, Takehiro; Kondo, Toshio; and Tajima, Masahiko, 4,348,727, Cl. 364-431.060.
Sagisaka, Yasuo; Kondo, Toshio; and Tajima, Masahiko, 4,348,728, Cl. 364-431.060.

Takada, Yukihiro; Sugiyama, Kimikazu; and Imai, Mithuo, to Tokyo Electric Co., Ltd. Product name stamping device of label printers. 4,347,787, Cl. 101-333.000.

Takagi, Satoshi; and Watanabe, Toshio, to Clarion Co., Ltd. Magnetic tape recording/reproducing apparatus. 4,348,704, Cl. 360-96.500.

Takagi, Shoji: *See*—
Akiyama, Toru; Kamihigoshi, Tsutomu; Takagi, Shoji; and Maeda, Tadayuki, 4,348,363, Cl. 422-192.000.

Takahashi, Kaoru: *See*—
Horikoshi, Isamu; Sakuragawa, Nobuo; Ueno, Masaharu; and Takahashi, Kaoru, 4,348,384, Cl. 424-101.000.

Takahashi, Koichi; Higuchi, Megumu; and Watanabe, Minoru, to Nissan Motor Co., Ltd. Operating valve assembly for a power steering. 4,347,780, Cl. 91-375.00A.

Takahashi, Shuichi; Ogasawara, Fumihiro; and Ohta, Syuichi, to Ricoh Company, Limited. Facsimile apparatus. 4,348,697, Cl. 358-286.000.

Takahashi, Yukio, to Fujitsu Limited. System for driving bipolar ram. 4,348,747, Cl. 365-189.000.

Takahasi, Tosihiko: *See*—
Yoshinaga, Shoji; Kawano, Hirosige; Todo, Matsuzo; Takahasi, Tosihiko; Fujiwara, Kiyoshi; and Inoue, Yukio, 4,348,288, Cl. 210-708.000.

Takamatsu, Shunichi, to Itoki Co., Ltd. Article retrieval device. 4,348,152, Cl. 414-785.000.

Takanashi, Itsuo: *See*—
Miyazaki, Kenichi; Miyoshi, Tadayoshi; Takanashi, Itsuo; Nakagaki, Shintaro; Motoyama, Koichiro; and Yokokawa, Sumio, 4,348,617, Cl. 315-370.000.

Takasugi, Nobuhiro; and Kyomasu, Ryuichi, to Hitachi, Ltd. Wire bonding apparatus. 4,347,964, Cl. 228-4.500.

Takeda Chemical Industries, Ltd.: *See*—
Kawamatsu, Yutaka; Sohda, Takashi; and Imai, Yoshio, 4,348,403, Cl. 424-270.000.

Takemura, Hiroo; and Noda, Azusa, to Honda Giken Kogyo Kabushiki Kaisha. Two-wheeled motorcycle with pivotable seat arrangement. 4,347,909, Cl. 180-219.000.

Takeshita, Masajiro: *See*—
Hiraoka, Takeshi; Urano, Shigeru; Takeshita, Masajiro; and Nakamura, Keiji, 4,348,232, Cl. 75-238.000.

Takeuchi, Yasuhiro: *See*—
Kosuda, Tooru; Ohashi, Michihiro; Takeuchi, Yasuhiro; Toda, Tadahide; Matsubara, Noboru; and Takizawa, Masaaki, 4,347,812, Cl. 123-90.550.

Takizawa, Masaaki: *See*—
Kosuda, Tooru; Ohashi, Michihiro; Takeuchi, Yasuhiro; Toda, Tadahide; Matsubara, Noboru; and Takizawa, Masaaki, 4,347,812, Cl. 123-90.550.

Takizawa, Masayoshi: *See*—
Hayashi, Yukichi; Tamara, Masayuki; Sugimoto, Osamu; Takizawa, Masayoshi; and Nishioka, Tatsujiro, 4,347,924, Cl. 194-1.00N.

Tamara, Masayuki: *See*—
Hayashi, Yukichi; Tamara, Masayuki; Sugimoto, Osamu; Takizawa, Masayoshi; and Nishioka, Tatsujiro, 4,347,924, Cl. 194-1.00N.

Tams, Walter: *See*—
Bergholz, Helmut; and Tams, Walter, 4,348,140, Cl. 411-103.000.

Tan, Josef K. S. Heartbeat sensor holding device. 4,347,852, Cl. 128-687.000.

Tanaka, Kazuyuki; Ueki, Yoshiharu; Kunugi, Yoshiro; and Sakaguchi, Shozaburo, to Pioneer Electronic Corporation. Preset lighting device. 4,348,616, Cl. 315-314.000.

Tanaka, Kimio: *See*—
Ishida, Toshihiko; and Tanaka, Kimio, 4,347,933, Cl. 206-387.000.

Tanaka, Masato: *See*—
Tsuchiya, Yoshikazu; Tanaka, Masato; Sonoda, Takenori; Watanabe, Tetsu; Kanai, Chiaki; and Watanabe, Nobuhiko, 4,348,699, Cl. 360-32.000.

Tangonan, Gregory L.; Morrison, Robert J.; Wysocki, Joseph A.; and Persechini, David L., to Hughes Aircraft Company. Fiber optic transducer for measuring current or magnetic field. 4,348,587, Cl. 250-227.000.

Taniguchi, Yoshio: *See*—
Terao, Motoyasu; Taniguchi, Yoshio; Horigome, Shinkichi; Ojima, Masahiro; Shigematsu, Kazuo; Kato, Keizo; Miyamura, Yoshinori; and Yonezawa, Seiji, 4,348,461, Cl. 428-409.000.

Tankred, Hans J.; Madsen, Per J.; and Stannow, Jorgen C., to Danfoss A/S. Electric motor, particularly motor-compressor. 4,348,607, Cl. 310-217.000.

Taraborrelli, Orlando, to Ford Aerospace and Communications Corporation. Device for preventing tape windup on the capstan of a tape deck. 4,348,702, Cl. 360-71.000.

Tarlow, Kenneth A.: *See*—
Bertagna, Richard A.; Stansbury, Benjamin H.; and Tarlow, Kenneth A., 4,347,911, Cl. 181-130.000.

Tateishi, Kazushi; Anzai, Kuniaki; and Tomita, Taketoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Automatic testing apparatus for automatically testing a printed circuit board. 4,348,276, Cl. 209-573.000.

Tawse, Ian S., to Co-Gen, Inc. Power system. 4,347,702, Cl. 60-618.000.

Taylor, David S.: *See*—
Swithenbank, Joshua; and Taylor, David S., 4,348,169, Cl. 431-89.000.

TDK Electronics Co., Ltd.: *See*—
Ishida, Toshihiko; and Tanaka, Kimio, 4,347,933, Cl. 206-387.000.
Tokuoka, Yasumichi; and Kobuke, Takayoshi, 4,348,430, Cl. 427-215.000.

TE KA DE Felten & Guilleaume Fernmeldeanlagen GmbH: *See*—
Kittel, Ludwig, 4,348,769, Cl. 375-28.000.

Tecnol, Inc.: *See*—
Hubbard, Vance M.; and Brunson, Welton K., 4,347,848, Cl. 128-402.000.

Tecumseh Products Company: *See*—
Dalton, Richard L., Jr., 4,347,659, Cl. 29-605.000.

Teijin Limited: *See*—
Imanaka, Yoshihiko; Saito, Yoichi; and Horike, Akihiro, 4,348,456, Cl. 428-336.000.
Mitsuishi, Yukio; Shiozaki, Shigeru; Chujo, Takao; and Yokoyama, Takeyuki, 4,348,446, Cl. 428-148.000.

Teikoku Chemical Industry Co., Ltd.: *See*—
Muramatsu, Mutsumi; Satoh, Toshio; Yanagimoto, Yukio; Shinuchi, Tadami; Nakajima, Toshio; and Nakajima, Isao, 4,348,410, Cl. 424-309.000.

Tele-Drill, Inc.: *See*—
Givler, Gregory C., 4,348,672, Cl. 340-854.000.

Teleflex Incorporated: *See*—
Bennett, William G.; and Spease, Arthur L., 4,348,348, Cl. 264-255.000.

Tenneco Chemicals, Inc.: *See*—
Kheidr, Mahmoud; and Fraser, Irene A. E., 4,348,494, Cl. 524-114.000.

Tennyson, W. Richard, to General Electric Company. Constant phase limiter. 4,348,643, Cl. 330-294.000.

Tenold, Gregory G.: *See*—
Warren, Kenneth D.; and Tenold, Gregory G., 4,347,988, Cl. 241-300.000.

Terada, Masao, to Shimano Industrial Company Limited. Multi-speed sprocket assembly for a bicycle. 4,348,200, Cl. 474-160.000.

Terakura, Yukio: *See*—
Sakakibara, Shiro; Tsukamoto, Kazumasa; Sakai, Takahiro; and Terakura, Yukio, 4,347,763, Cl. 74-789.000.

Teramachi, Hiroshi. Linear ball bearing unit. 4,348,064, Cl. 308-6.00C.

Terao, Motoyasu; Taniguchi, Yoshio; Horigome, Shinkichi; Ojima, Masahiro; Shigematsu, Kazuo; Kato, Keizo; Miyamura, Yoshinori; and Yonezawa, Seiji, to Hitachi, Ltd. Recording member. 4,348,461, Cl. 428-409.000.

Tersteeg, Glenn E.; and DiFulvio, Anthony P., to Eastman Kodak Company. Potentiometric metering apparatus. 4,347,750, Cl. 73-864.310.

Teshima, Minoru: *See*—
Isobe, Minoru; Kikuchi, Hiroshi; Teshima, Minoru; Kodama, Tadasi; and Ohara, Wataru, 4,348,120, Cl. 400-124.000.

Texaco Inc.: *See*—
Nussbaum, Theodore W., 4,348,671, Cl. 340-853.000.
Sung, Rodney L., 4,348,210, Cl. 44-56.000.
Zimmerman, Robert L.; and McEntire, Edward E., 4,348,488, Cl. 521-115.000.

Texas Instruments Incorporated: *See*—
Budek, Jerzy A., 4,348,582, Cl. 219-483.000.
Harrison, Herman W., 4,348,733, Cl. 364-709.000.

Tezuka, Nobuo: *See*—
Hirohata, Michio; and Tezuka, Nobuo, 4,348,092, Cl. 354-230.000.
Yamamichi, Masayoshi; and Tezuka, Nobuo, 4,348,088, Cl. 354-152.000.

Thermo Electron Corporation: *See*—
Oettinger, Peter E., 4,348,765, Cl. 372-78.000.

Thevenot, Gilles, to Storchenmuhle Kinderausstattungs-GmbH & Co., Textile & Hartwarenwerk KG. Adjustable curved seat for infants. 4,348,048, Cl. 297-250.000.

Thiel, Max: *See*—
Friebe, Walter-Gunar; Kampe, Wolfgang; Thiel, Max; Schaumann, Wolfgang; and Wilhelms, Otto-Henning, 4,348,401, Cl. 424-267.000.

Thiele, Gerd: *See*—
Bube, Carsten; Thiele, Gerd; and Zeller, Hans, 4,348,583, Cl. 219-497.000.

Thiokol Corporation: *See*—
Law, Bliss W.; Kirchoff, George F.; and Adams, Gary V., 4,348,037, Cl. 280-733.000.

Thode, Herbert W., to General Dynamics Corp. Totally enclosed air cooled electrical machines. 4,348,604, Cl. 310-62.000.

Thomas & Betts Corporation: *See*—
Grundfest, Michael A., 4,348,548, Cl. 174-88.00R.
Gudaitis, Bernard V.; and Maximoff, Paul, 4,348,072, Cl. 339-97.00R.

Thomas, David T., to Raytheon Company. Antenna with a curved lens and feed probes spaced on a curved surface. 4,348,678, Cl. 343-754.000.

Thomas, Heinz: *See*—
Blahak, Johannes; Hubner, Hans; Koster, Johannes; Meiners, Hans J.; and Thomas, Heinz, 4,348,536, Cl. 560-169.000.

Thompson, John S.; and Jadlocki, Joseph F., Jr., to FMC Corporation. Method for inhibiting the growth of *Clostridium botulinum* and the formation of enterotoxin in comminuted meat products and products thereof. 4,348,419, Cl. 426-264.000.

Thompson, Kenneth P., to Champion International Corporation. Polyester film extrusion with edge bead control. 4,348,346, Cl. 264-146.000.

Thompson, Richard L., to General Electric Company. Luminaire lowering device with centering means. 4,348,717, Cl. 362-403.000.

Thorell, Lars G.: *See*—
Blombeck, E. G. Birger; and Thorell, Lars G., 4,348,315, Cl. 260-112.00B.

Thornhill, William J.: *See*—
Sweat, Robert H., Jr.; and Thornhill, William J., 4,347,786, Cl. 101-93.030.

Thuvander, Arne: *See*—
Hillerstrom, Bjorn; Fransson, Lennarth; and Thuvander, Arne, 4,347,972, Cl. 236-18.000.

Thyssengas GmbH: *See*—
Friedrichs, Gregor, 4,347,672, Cl. 34-57.00R.

Tietjens, Eduard W., to U.S. Philips Corporation. Shaving apparatus. 4,347,662, Cl. 30-34.200.

Tikhonov, Jury P.; Alekhin, Stanislav A.; Bakhir, Vitold M.; and Zadorozhny, Jury G. Apparatus for cleaning drilling mud. 4,348,279, Cl. 210-96.100.

Till, Maxwell J.: *See*—
Wickham, Ian W.; Till, Maxwell J.; and Forster, Ernst, 4,347,881, Cl. 144-194.000.

Tilley, Jefferson W.: *See*—
Kierstead, Richard W.; and Tilley, Jefferson W., 4,348,396, Cl. 424-251.000.

Tinker, Richard E.: *See*—
Geil, Ronald J.; Tinker, Richard E.; and Carmo, Robert A., 4,347,758, Cl. 74-531.000.

Tinsley, Timothy M.: *See*—
Benton, Ronald; Kidder, Kenneth B.; Linderberg, Robert L.; Tinsley, Timothy M.; and Westley, Curtis E., 4,347,712, Cl. 62-175.000.

Tischler, Josef: *See*—
Becker, Herbert; and Tischler, Josef, 4,347,755, Cl. 74-421.00A.

Toa Nenryo Kogyo Kabushiki Kaisha: *See*—
Ueno, Hiroshi; Imai, Masafumi; Inaba, Naomi; Yoda, Makoto; and Wada, Shozo, 4,348,507, Cl. 526-125.000.

Toda, Tadahide: *See*—
Kosuda, Tooru; Ohashi, Michihiro; Takeuchi, Yasuhiro; Toda, Tadahide; Matsubara, Noboru; and Takizawa, Masaaki, 4,347,812, Cl. 123-90.550.

Todo, Matsuzo: *See*—
Yoshinaga, Shoji; Kawano, Hirosige; Todo, Matsuzo; Takahasi, Toshiko; Fujiwara, Kiyoshi; and Inoue, Yukio, 4,348,288, Cl. 210-708.000.

Todorov, Ivan O.: *See*—
Popov, Mitko S.; Djedjeva, Galina M.; Todorov, Ivan O.; and Stoeva, Nelly S., 4,348,481, Cl. 435-234.000.

Tokuoka, Yasumichi; and Kobuke, Takayoshi, to TDK Electronics Company, Ltd. Process for producing magnetic particles for magnetic recording medium. 4,348,430, Cl. 427-215.000.

Tokushu Aerosol Co. Ltd.: *See*—
Seki, Michinori, 4,347,980, Cl. 239-289.000.

Tokuyama, Mistru: *See*—
Ohki, Kenji; Tokuyama, Mistru; Sagae, Masayuki; and Kawabuchi, Kenji, 4,347,844, Cl. 128-287.000.

Tokyo Electric Co., Ltd.: *See*—
Eddens, Fletcher C.; Moore, Robert S.; and Munkittrick, Kenneth R., 4,347,701, Cl. 60-413.000.
Takada, Yukihiro; Sugiyama, Kimikazu; and Imai, Mithuo, 4,347,787, Cl. 101-333.000.

Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
Hibino, Sadayoshi, 4,348,606, Cl. 310-184.000.
Tateishi, Kazushi; Anzai, Kuniaki; and Tomita, Taketoshi, 4,348,276, Cl. 209-573.000.

Tolnay, Janos: *See*—
Benyo, Janos; Papp, Tibor; and Tolnay, Janos, 4,347,841, Cl. 128-156.000.

Tom, Nelson N., to Ford Aerospace & Communications Corporation. Automatic phase alignment system for a tracking antenna. 4,348,676, Cl. 343-114.000.

Tomita, Masahiro: *See*—
Aoki, Mamoru; Tomita, Masahiro; Utsunomiya, Kei; Sako, Hironobu; Kaneko, Dentaro; Shimazaki, Katsunori; and Ishii, Yoshitomo, 4,348,226, Cl. 75-35.000.

Tomita, Taketoshi: *See*—
Tateishi, Kazushi; Anzai, Kuniaki; and Tomita, Taketoshi, 4,348,276, Cl. 209-573.000.

Tooley, Robert W., to Reliance Electric Company. Bearing seal. 4,348,067, Cl. 308-187.100.

Torok, Vilmos, to ASEA Aktiebolag. Electrical reluctance machine. 4,348,605, Cl. 310-168.000.

Towart, Robertson: *See*—
Franckowiak, Gerhard; Meyer, Horst; Bossert, Friedrich; Heise, Arend; Kazda, Stanislav; Stoepel, Kurt; Towart, Robertson; and Wehinger, Egbert, 4,348,395, Cl. 424-250.000.

Townsend, Lawrence B., to Magnetrol International, Incorporated. Capacitive level sensing device. 4,347,740, Cl. 73-304.00C.

Townsend, Richard L., Jr.: *See*—
Blahut, Donald E.; Huang, Victor K.; and Townsend, Richard L., Jr., 4,348,720, Cl. 364-200.000.

Toyo Kogyo Co., Ltd.: *See*—
Ohya, Takeji, 4,348,046, Cl. 296-201.000.

Toyo Rubber Chemical Industrial Corporation: *See*—
Fujii, Osamu; Kishimoto, Toshio; Kosuge, Hisao; and Nagamine, Ryoji, 4,348,164, Cl. 425-89.000.

Toyoda, Hiroyasu; Komiya, Hiroyoshi; and Itakura, Hideaki, to VLSI Technology Research Association. High selectivity plasma etching method. 4,348,577, Cl. 219-121.0PE.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See*—
Kosuda, Tooru; Ohashi, Michihiro; Takeuchi, Yasuhiro; Toda, Tadahide; Matsubara, Noboru; and Takizawa, Masaaki, 4,347,812, Cl. 123-90.550.
Ohba, Masaharu, 4,347,803, Cl. 116-28.100.
Sogo, Yoshitaka, 4,347,756, Cl. 74-467.000.

Transcience Associates, Inc.: *See*—
Kantner, Harold H.; and Scott, Stephen D., 4,347,700, Cl. 60-325.000.

Trent, Peter F.; and Charlebois, Raymond, to Plastibeton Canada Inc. Median barrier construction. 4,348,133, Cl. 404-6.000.

Tri-X Corporation: *See*—
Lasswell, Tull C.; and Monier, John L., 4,348,235, Cl. 106-33.000.

Trico Products Corporation: *See*—
Durtnal, Graham, 4,347,640, Cl. 15-250.320.

Triple Dee Electronics Inc.: *See*—
Karbowski, James P., 4,348,639, Cl. 324-329.000.

Triple R Designs, Inc.: *See*—
Reich, Robert R., 4,347,937, Cl. 209-622.000.

Trozzi, Norman K.: *See*—
Vatsky, Joel; and Trozzi, Norman K., 4,348,170, Cl. 431-188.000.

Tse, Wilson S.: *See*—
Stock, Albert M.; and Tse, Wilson S., 4,348,262, Cl. 203-37.000.

Tsuchiya, Toshiro: *See*—
Kojima, Shinichi; Koide, Ten; Ogino, Shigeo; Tsuchiya, Toshiro; and Kameno, Yoshito, 4,348,386, Cl. 424-177.000.

Tsuchiya, Yoshikazu; Tanaka, Masato; Sonoda, Takenori; Watanabe, Tetsu; Kanai, Chiaki; and Watanabe, Nobuhiko, to Sony Corporation. Apparatus for recording and/or reproducing digital signal. 4,348,699, Cl. 360-32.000.

Tsuji, Tomohiro: *See*—
Yano, Shozo; Miyake, Toshiyuki; Fujinaga, Yasuhiro; Koomoto, Akira; Kawara, Toshio; Yagi, Akio; Tsuji, Tomohiro; and Nagaoka, Tadashi, 4,347,903, Cl. 177-25.000.

Tsukamoto, Kazumasa: *See*—
Sakakibara, Shiro; Tsukamoto, Kazumasa; Sakai, Takahiro; and Terakura, Yukio, 4,347,763, Cl. 74-789.000.

Tsutsumi, Hisao; Hori, Kazumi; and Kawano, Junichi, to Kao Soap Co., Ltd. Cosmetic and emulsifier compositions. 4,348,415, Cl. 424-365.000.

Tsuzuki, Yoshihiko; Okazaki, Hiroshi; Shirasaki, Shinji; Matsuyama, Masahiro; Kobayashi, Masanobu; and Ito, Yoji, to Nippondenso Co., Ltd. Method and system for indicating automobile abnormal conditions. 4,348,653, Cl. 340-52.00F.

Tu, Hosheng, to UOP, Inc. Hydrogen utilization in fluid catalytic cracking. 4,348,272, Cl. 208-111.000.

Tucel Industries, Inc.: *See*—
Lewis, John C., Jr., 4,348,060, Cl. 300-21.000.

Tune, John B.: *See*—
Clarke, David E.; Davies, James F.; and Tune, John B., 4,348,293, Cl. 252-90.000.

Tung, Chi F., to Minnesota Mining and Manufacturing Company. Ultra-high-index glass microspheres and products made therefrom

with a fluoropolymer and an ester polymer blend. 4,348,312, Cl. 428-144.000.
Tuson, Samuel; and Ghilardi, Jean-Pierre, to Entreprise d'Equipements Mecaniques et Hydrauliques EMH. Pivotal connection for articulated column of sea-bed working structure. 4,348,137, Cl. 405-202.000.
Tylan Corporation: *See*—
Drexel, Charles F., 4,348,580, Cl. 219-390.000.
Tyler Refrigeration Corporation: *See*—
Ibrahim, Fayez F., 4,347,710, Cl. 62-155.000.
Uchiyama, Yoshihisa: *See*—
Furuya, Takeshi; Uchiyama, Yoshihisa; and Kouda, Akinori, 4,348,341, Cl. 264-8.000.
Uehara, Haruo: *See*—
Sumitomo, Hiroyuki; and Uehara, Haruo, 4,347,897, Cl. 165-167.000.
Ueki, Yoshiharu: *See*—
Tanaka, Kazuyuki; Ueki, Yoshiharu; Kunugi, Yoshiro; and Sakaguchi, Shozaburo, 4,348,616, Cl. 315-314.000.
Ueno, Hiroshi; Imai, Masafumi; Inaba, Naomi; Yoda, Makoto; and Wada, Shozo, to Toa Nenryo Kogyo Kabushiki Kaisha. Catalyst component for use in the polymerization of α-olefins and a method of using the same. 4,348,507, Cl. 526-125.000.
Ueno, Masaharu: *See*—
Horikoshi, Isamu; Sakuragawa, Nobuo; Ueno, Masaharu; and Takahashi, Kaoru, 4,348,384, Cl. 424-101.000.
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Upton, John D. Thermoformed closure of composite material. 4,347,939, Cl. 215-252.000.
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Von Kohorn, Henry. Method for above-ground leaching of metal bearing ores at below-freezing temperatures. 4,348,056, Cl. 299-4.000.
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Wallace, William K.; and Giardino, David A., to Chicago Pneumatic Tool Company. Rotary impact wrench clutch. 4,347,902, Cl. 173-93.500.
Walsh, James R., to Brunswick Corporation. Cowl for an outboard motor. 4,348,194, Cl. 440-77.000.
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Wear, Frederick C.; Durant, Dick Q.; and McKinney, Howard F., to McDonnell Douglas Corporation. Apparatus and process for drying granular products. 4,347,670, Cl. 34-1.000.
Weaver, Murland L. Retractable porch and stair apparatus for trailers. 4,347,638, Cl. 14-71.100.
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Werner, Arnold; Ennen, Peter; Nuebauer, Josef; Flaig, Hans; and Allgaier, Juergen, to D I E H L, Firma. Electro-mechanical pulse generator. 4,348,753, Cl. 368-188.000.
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Williamson, Kenneth T., Jr.; Bruce, Samuel S., Jr.; and Martin, Walter L., Jr., to PPG Industries, Inc. Method of controlling filament formation in a glass fiber bushing. 4,348,217, Cl. 65-2.000.
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Wolff, Rudolf: *See*—
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Woltman, John; Zarfos, Donald W.; and Bulger, Robert F., deceased (by Bulger, Mary L., executrix), to United States Tobacco Company. Method and apparatus for removing cigar wrappers from the web of a bobbin. 4,347,856, Cl. 131-105.000.
Wong, Lungchuck, to F. Jos. Lamb Company. Gravity chuting conveyor. 4,347,923, Cl. 193-35.00S.
Wong, Rayman Y., to Stauffer Chemical Company. Pyridylpropyl alkyl-substituted benzoates and their use as insect repellents. 4,348,400, Cl. 424-263.000.
Wood, Arthur D., to Canadian Patents & Development Limited. Fin-stabilized container of foldable sheet material. 4,347,686, Cl. 47-73.000.
Wood, Arthur D., to Canadian Patents & Development Limited. Aerial dispensing apparatus. 4,347,951, Cl. 221-86.000.
Wood, David B., III, to Cincinnati Milacron Inc. Article gripping apparatus. 4,348,044, Cl. 294-88.000.
Wood, Donald C. Apparatus for cutting glass. 4,347,958, Cl. 225-96.500.
Wood, Larry H.: *See*—
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Wood, Marvin E., to Smith & Loveless, Inc. Sewage pumping station. 4,348,158, Cl. 417-40.000.
Wood, Peter: *See*—
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Woods, Eugene L., to General Dynamics Corporation. Method and structure for compensating for variations in vapor cooled lead resistance of superconducting magnets. 4,348,710, Cl. 361-141.000.
Woods, William E.; Cushing, David E.; and Stanley, Philip E., to Honeywell Information Systems Inc. Control store test selection logic for a data processing system. 4,348,723, Cl. 364-200.000.
Woodworth, Archie G.: *See*—
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Worley, Arthur C., to Exxon Research & Engineering Co. Fabricated gate valves. 4,347,865, Cl. 137-375.000.
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Worth, Sidney V.; and Nelson, Keith D., to Continental-Wirt Electronics Corp. Frangible polarizing rib for multiple contact header. 4,348,073, Cl. 339-186.00M.
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Wright, David; and Hawkes, Ivor, to Joy Manufacturing Company. Detecting and measuring the position of a break in solid formations by measuring the capacitance of an enlongated element embedded therein. 4,348,635, Cl. 324-52.000.
Wright, Donald G., to Adelphi Research Center, Inc. Oil burner nozzle. 4,347,982, Cl. 239-405.000.
Wright, Michael L., to Chloride Silent Power Limited. Electrochemical cells containing liquid sodium as the anodic material. 4,348,467, Cl. 429-94.000.
Wright, Michael L., to Chloride Silent Power Limited. Beta alumina solid electrolyte material and its manufacture and electrochemical cells or other energy conversion devices containing such material. 4,348,468, Cl. 429-193.000.
Wu, M. T.; and Chai, Thomas Y., to Honeywell Inc. Demand defrost sensor. 4,347,709, Cl. 62-140.000.
Wueger, Karl W.: *See*—
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Wurfel, Peter: *See*—
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Wysocki, Joseph A.: *See*—
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Wysong, Bryan M., to Stanadyne, Inc. Externally controlled fuel delivery curve adjustment mechanism for a fuel injection pump. 4,347,818, Cl. 123-369.000.

Xerox Corporation: *See*—
Anderson, Harold M.; Marcum, Norman E.; and DuVall, Wilbur E., 4,348,624, Cl. 318-634.000.
Fantozzi, Louis J., 4,348,099, Cl. 355-14.00E.
Johnson, Richard V., 4,348,079, Cl. 350-358.000.
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Yamada, Tsutomu: *See*—
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Yamamichi, Masayoshi; and Tezuka, Nobuo, to Canon Kabushiki Kaisha. Single lens reflex camera. 4,348,088, Cl. 354-152.000.

Yamamoto, Hachizou: *See*—
Nakatani, Hiroshi; Ishida, Masahide; and Yamamoto, Hachizou, 4,348,551, Cl. 179-1.0SM.

Yamamoto, Hideharu: *See*—
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Yamamoto, Kaichi: *See*—
Fujimori, Yasuhiro; and Yamamoto, Kaichi, 4,348,659, Cl. 340-347.0AD.

Yanagawa, Nobuyuki: *See*—
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Yanagida, Hiroyuki: *See*—
Ushida, Susumu; and Yanagida, Hiroyuki, 4,348,645, Cl. 330-306.000.

Yanagimoto, Yukio: *See*—
Muramatsu, Mutsumi; Satoh, Toshio; Yanagimoto, Yukio; Shinuchi, Tadami; Nakajima, Toshio; and Nakajima, Isao, 4,348,410, Cl. 424-309.000.

Yanagishima, Takayuki; and Seko, Yasutoshi, to Nissan Motor Company, Limited. Safety assurance system for road vehicles. 4,348,663, Cl. 340-576.000.

Yano, Shozo; Miyake, Toshiyuki; Fujinaga, Yasuhiro; Koomoto, Akira; Kawara, Toshio; Yagi, Akio; Tsuji, Tomohiro; and Nagaoka, Tadashi, to Shimadzu Corporation. Electronic reading balance. 4,347,903, Cl. 177-25.000.

Yasuda, Shigeo: *See*—
Matsuda, Akira; Hayakawa, Yoshihiro; Yasuda, Shigeo; and Iwasaki, Motoaki, 4,348,654, Cl. 340-58.000.

Yeckley, Russell N.; and Spindle, Harvey E., to Westinghouse Electric Corp. Interchangeable chemically operated circuit breaker. 4,348,565, Cl. 200-82.00B.

Yi, Alberto: *See*—
Chase, Bryan B.; and Yi, Alberto, 4,347,785, Cl. 101-1.000.

Yoda, Makoto: *See*—
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Yokohama Kiko Co., Ltd.: *See*—
Ohno, Akira; Katayama, Hitomi; Nomura, Suguru; Senaha, Susumu; Kyo, Suizo; Shmomura, Susumu; Akagami, Akira; and Imai, Hiroshi, 4,348,463, Cl. 428-429.000.

Yokohda, Yutaka: *See*—
Hayashi, Yukichi; Sugimoto, Osamu; and Yokohda, Yutaka, 4,347,860, Cl. 133-1.00R.

Yokokawa, Sumio: *See*—
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Yokoyama, Takeyuki: *See*—
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Yonezawa, Seiji: *See*—
Terao, Motoyasu; Taniguchi, Yoshio; Horigome, Shinkichi; Ojima, Masahiro; Shigematsu, Kazuo; Kato, Keizo; Miyamura, Yoshinori; and Yonezawa, Seiji, 4,348,461, Cl. 428-409.000.

York, Bernard H. Variable entropy solar energy harvester. 4,347,834, Cl. 126-424.000.

Yoshiike, Nobuyuki: *See*—
Kondo, Shigeo; and Yoshiike, Nobuyuki, 4,348,077, Cl. 350-357.000.

Yoshinaga, Shoji; Kawano, Hirosige; Todo, Matsuzo; Takahasi, Toshiko; Fujiwara, Kiyoshi; and Inoue, Yukio, to Hitachi, Ltd. Process for desalting fuel oil. 4,348,288, Cl. 210-708.000.

Yoshioka, Masahiro; and Koike, Toshifumi, to Hitachi, Ltd. Thrust bearing. 4,348,065, Cl. 308-9.000.

Young, Vernon V.; and Bright, David R., to International Minerals & Chemical Corp. Quinoxaline adducts useful as anthelmintics. 4,348,389, Cl. 424-228.000.

Youngclaus, William P., Jr., to Haljun, William R. Gum massage device. 4,347,839, Cl. 128-62.00A.

Yrjonen, Tapio; Pietila, Urpo; and Rawlins, Tim, to Wallac Oy. Method for compensating measuring values when measuring the radiation from a number of radioactive samples in an automatic radiation detecting instrument. 4,348,588, Cl. 250-252.100.

Yu, Kin C.: *See*—
Farrell, Robert J.; Coit, Kenneth T.; Vernon, John H.; Yu, Kin C.; Huettner, Robert E.; and Grandmaison, John P., 4,348,725, Cl. 364-300.000.

Yurasko, George, Jr.: *See*—
Kammer, Paul A.; Yurasko, George, Jr.; and Zmrzlik, Karel, 4,348,434, Cl. 427-423.000.

Zadorozhny, Jury G.: *See*—
Tikhonov, Jury P.; Alekhin, Stanislav A.; Bakhir, Vitold M.; and Zadorozhny, Jury G., 4,348,279, Cl. 210-96.100.

Zahid, Abduz, to Greer Hydraulics, Inc. Pressure accumulator with locking nut. 4,347,871, Cl. 138-30.000.

Zambrow, John L., to Borg-Warner Corporation. Heat exchanger with bilayered metal end container for anticorrosive addition. 4,347,895, Cl. 165-134.00R.

Zarfos, Donald W.: *See*—
Woltman, John; Zarfos, Donald W.; and Bulger, Robert F., deceased, 4,347,856, Cl. 131-105.000.

Zarur, George L., to World Resources Company. Yield of metal values from incinerated sludges. 4,348,228, Cl. 75-97.00R.

Zaschke, Horst; Wolff, Rudolf; Pelzl, Gerhard; and Demus, Dietrich, to VEB Werk fur Fernsehelektronik im Veb Kombinat Mikroelektronik. Nematic liquid crystal mixtures. 4,348,298, Cl. 252-299.100.

Zaschke, Horst: *See*—
Demus, Dietrich; Zaschke, Horst; Vorbrodt, Hans-Mathias; Kresse, Horst; and Weissflog, Wolfgang, 4,348,324, Cl. 549-369.000.

Zeller, Hans: *See*—
Bube, Carsten; Thiele, Gerd; and Zeller, Hans, 4,348,583, Cl. 219-497.000.

Zemelman, Valery B.; Kleiner, Fredric; and Kuchman, Michael J., to General Foods Corporation. Gasified ice product and process having improved storage stability. 4,347,707, Cl. 62-69.000.

Zenith Radio Corporation: *See*—
d'Hautecourt, Alain H., 4,348,695, Cl. 358-160.000.

Zimmerman, Edwin H. Gas generating system. 4,348,211, Cl. 48-76.000.

Zimmerman, Robert L.; and McEntire, Edward E., to Texaco Inc. Polyurethanes using novel N-substituted perhydrodioxazepines as catalysts. 4,348,488, Cl. 521-115.000.

Zmrzlik, Karel: *See*—
Kammer, Paul A.; Yurasko, George, Jr.; and Zmrzlik, Karel, 4,348,434, Cl. 427-423.000.

Zobel, Frederick A.; and Burke, Joseph D., to General Foods Corporation. Beverage bottling method. 4,347,695, Cl. 53-432.000.

Zoecon Corporation: *See*—
McDaniel, Joe D., Jr.; and Pruitt, Paul L., 4,348,321, Cl. 260-326.00E.

Zolnowsky, John E.: *See*—
Gunter, Thomas G.; Crudele, Lester M.; and Zolnowsky, John E., 4,348,722, Cl. 364-200.000.

Zook, Steven T., to Vaughn, Ronald F. Musician's pick. 4,347,773, Cl. 84-322.000.

Zory, Peter S.; Scholl, Frederick W.; and Lockwood, Harry F., to Optical Information Systems, Inc. Mounting arrangement for semiconductor optoelectronic devices. 4,347,655, Cl. 29-589.000.

Zosel, Kurt, to Studiengesellschaft Kohle m.b.H. Process for the direct decaffeination of aqueous coffee extract solutions. 4,348,422, Cl. 426-475.000.

Zweifel, Hans: *See*—
Kvita, Vratislav; Zweifel, Hans; Roth, Martin; and Felder, Louis, 4,348,530, Cl. 549-27.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 7TH DAY OF SEPTEMBER, 1982

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Advanced Decision Handling, Inc.: *See*—
Hall, Arthur D., III, Re. 31,023, Cl. 47-1.00R.

Hall, Arthur D., III, to Advanced Decision Handling, Inc. Highly automated agricultural production system. Re. 31,023, Cl. 47-1.00R.

Otto Zollinger, Inc.: *See*—
Zollinger, Otto, Re. 31,024, Cl. 242-152.100.

Santa Fe International Corporation: *See*—
Shatto, Harry H., Re. 31,026, Cl. 367-106.000.

Shatto, Harry H., to Santa Fe International Corporation. Navigation system for maneuvering a structure about a submerged object. Re. 31,026, Cl. 367-106.000.

Zollinger, Otto, to Otto Zollinger, Inc. Yarn tensioning device. Re. 31,024, Cl. 242-152.100.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Wittman, Erwin Johann, to RCA Corporation. Synchronous detector control. B1 3,651,418, Cl. 329-50.

RCA Corporation: *See*—
Wittman, Erwin Johann, B1 3,651,418, Cl. 329-50.

Griswold, Augusta W., to Xerox Corporation. Semi-automatic document handler. B1 3,888,582, Cl. 355-69.

Xerox Corporation: *See*—
Griswold, Augusta W., B1 3,888,582, Cl. 355-69.

Muranaka, Dwight M., to Y 2 Associates, Inc. Selective signal-responsive circuit. B1 3,187,234, Cl. 361-182.

Y 2 Associates, Inc.: *See*—
Muranaka, Dwight M., B1 3,187,234, Cl. 361-182.

LIST OF DESIGN PATENTEES

A. Ahlstrom Osakeyhtio: *See*—
Sarpaneva, Timo, 266,046, Cl. D7-15.000.

Acero, Steve A.; and Rougeau, Edward L. Ventilating hood for an electroplating tank. 266,108, 9-7-82, Cl. D23-151.000.

Ariga, Kazuo; and Yoshida, Mitunari, to Stanley Electric Co., Ltd. Electric discharge lamp. 266,110, 9-7-82, Cl. D26-3.000.

Arrington, Patricia M. Solar energy collector for mounting over windows of buildings for space heating thereof. 266,105, 9-7-82, Cl. D23-72.000.

Asanuma, Yoshihiko, to Showa Aluminum Kabushiki Kaisha. Heat releasing plate for mounting semiconductor components. 266,065, 9-7-82, Cl. D13-23.000.

Asanuma, Yoshihiko, to Showa Aluminum Kabushiki Kaisha. Heat releasing plate for mounting semiconductor components. 266,066, 9-7-82, Cl. D13-23.000.

Asanuma, Yoshihiko, to Showa Aluminum Kabushiki Kaisha. Heat releasing plate for mounting semiconductor components. 266,067, 9-7-82, Cl. D13-23.000.

Asanuma, Yoshihiko, to Showa Aluminum Kabushiki Kaisha. Heat releasing plate for mounting semiconductor components. 266,068, 9-7-82, Cl. D13-23.000.

Asanuma, Yoshihiko, to Showa Aluminum Kabushiki Kaisha. Heat releasing plate for mounting semiconductor components. 266,069, 9-7-82, Cl. D13-23.000.

Asanuma, Yoshihiko, to Showa Aluminum Kabushiki Kaisha. Heat releasing plate for mounting semiconductor components. 266,070, 9-7-82, Cl. D13-23.000.

Asanuma, Yoshihiko, to Showa Aluminum Kabushiki Kaisha. Heat releasing plate for mounting semiconductor components. 266,071, 9-7-82, Cl. D13-23.000.

Asanuma, Yoshihiko, to Showa Aluminum Kabushiki Kaisha. Heat releasing plate for mounting semiconductor components. 266,072, 9-7-82, Cl. D13-23.000.

Asanuma, Yoshihiko, to Showa Aluminum Kabushiki Kaisha. Heat releasing plate for mounting semiconductor components. 266,073, 9-7-82, Cl. D13-23.000.

Asanuma, Yoshihiko, to Showa Aluminum Kabushiki Kaisha. Heat releasing plate for mounting semiconductor components. 266,074, 9-7-82, Cl. D13-23.000.

Asanuma, Yoshihiko, to Showa Aluminum Kabushiki Kaisha. Heat releasing plate for mounting semiconductor components. 266,075, 9-7-82, Cl. D13-23.000.

Asanuma, Yoshihiko, to Showa Aluminum Kabushiki Kaisha. Heat releasing plate for mounting semiconductor components. 266,076, 9-7-82, Cl. D13-23.000.

Asanuma, Yoshihiko, to Showa Aluminum Kabushiki Kaisha. Heat releasing plate for mounting semiconductor components. 266,077, 9-7-82, Cl. D13-23.000.

Asanuma, Yoshihiko, to Showa Aluminum Kabushiki Kaisha. Heat releasing plate for mounting semiconductor components. 266,078, 9-7-82, Cl. D13-23.000.

Asanuma, Yoshihiko, to Showa Aluminum Kabushiki Kaisha. Heat releasing plate for mounting semiconductor components. 266,079, 9-7-82, Cl. D13-23.000.

Asanuma, Yoshihiko, to Showa Aluminum Kabushiki Kaisha. Heat releasing plate for mounting semiconductor components. 266,080, 9-7-82, Cl. D13-23.000.

Asanuma, Yoshihiko, to Showa Aluminum Kabushiki Kaisha. Heat releasing plate for mounting semiconductor components. 266,081, 9-7-82, Cl. D13-23.000.

Asanuma, Yoshihiko, to Showa Aluminum Kabushiki Kaisha. Heat releasing plate for mounting semiconductor components. 266,082, 9-7-82, Cl. D13-23.000.

Associated Mills, Inc.: *See*—
Grube, Clifford E., 266,102, Cl. D21-191.000.

Austin, Clyde A. Ring band. 266,062, 9-7-82, Cl. D11-26.000.

Auto Alloys R&D Ltd.: *See*—
Tutton, William G. G., 266,092, Cl. D15-126.000.

Becker, Werner, to Esselte Pendaflex Corporation. Portable apparatus for printing and dispensing labels. 266,096, 9-7-82, Cl. D18-19.000.

Bemiss, James M., to Ex-Cell-O Corporation. Armored vehicle. 266,063, 9-7-82, Cl. D12-12.000.

Beretta, Angelo V., to Durastone Company, Inc. Reflective pavement marker for roads. 266,060, 9-7-82, Cl. D10-113.000.
Berkheij, Johannes C., to Metaalwarenfabriek Hoogmerk B.V. Money chest. 266,114, 9-7-82, Cl. D99-34.000.
Best, Willie H. Grill assembly. 266,050, 9-7-82, Cl. D7-108.000.
Blanchard, Gaynor J. Auxiliary seat for a child. 266,044, 9-7-82, Cl. D6-201.000.
Carter, Wayne M. Water control gate. 266,103, 9-7-82, Cl. D23-1.000.
Colavecchio, Robert J., to Elmwood Sensors, Inc. Thermostatic switch. 266,084, 9-7-82, Cl. D13-35.000.
Community Coffee Company Inc.: *See*—
Saurage, Henry N., III; and Saurage, Donna M., 266,041, Cl. D6-144.000.
Conti, Rino, to Dart Industries Inc. Food storage container or the like. 266,049, 9-7-82, Cl. D7-76.000.
Cook, Everett E. Chain cutter. 266,093, 9-7-82, Cl. D15-129.000.
Cope, Michael J. Suspended chair. 266,040, 9-7-82, Cl. D6-113.000.
Corning Glass Works: *See*—
Gerow, Cynthia S., 266,047, Cl. D7-39.000.
Culp, Mickey D. Animal comb. 266,112, 9-7-82, Cl. D30-40.000.
Dallaire, Raymond. Cage for the support rollers of a sliding window or similar article. 266,053, 9-7-82, Cl. D8-402.000.
Dart Industries Inc.: *See*—
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Davis, Myron F., Jr.; and Talerico, Joseph F., to International Business Machines Corporation. Data processing console. 266,090, 9-7-82, Cl. D14-102.000.
DeLuca, Raymond F., to Georgia-Pacific Corporation. Towel dispenser. 266,039, 9-7-82, Cl. D6-96.000.
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Dock, Mortimer R.: *See*—
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Doyel, John S. Personal care appliance. 266,111, 9-7-82, Cl. D28-58.000.
Drake, Thomas T. Compass. 266,059, 9-7-82, Cl. D10-68.000.
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Colavecchio, Robert J., 266,084, Cl. D13-35.000.
Eppler, Dieter; and Kremson, Karl-Heinz, to Hauni-Werke Korber & Co. KG. Safe. 266,113, 9-7-82, Cl. D99-28.000.
Esselte Pendaflex Corporation: *See*—
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Ex-Cell-O Corporation: *See*—
Bemiss, James M., 266,063, Cl. D12-12.000.
Fink, Raymond N.: *See*—
Schroeder, William, Jr.; and Fink, Raymond N., 266,055, Cl. D9-434.000.
Foggia, Donald A.; and Pomponi, Roman F., to TIE/Communications, Inc. Direct station selection console. 266,086, 9-7-82, Cl. D14-58.000.
Georgia-Pacific Corporation: *See*—
DeLuca, Raymond F., 266,039, Cl. D6-96.000.
Gerow, Cynthia S., to Corning Glass Works. Decorative band for casserole holders or the like. 266,047, 9-7-82, Cl. D7-39.000.
Gher, Marlin E.; and Detsch, Steven G. Collapsible image viewing device. 266,094, 9-7-82, Cl. D16-18.000.
Globol-Werk GmbH: *See*—
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Goodman, Joan L. Insertable wedge guard for door locks. 266,054, 9-7-82, Cl. D8-343.000.
Grubb, Lawrence B.; Simpson, Danny E.; Hoffman, Louis S.; and Williams, David M., to Johnson & Johnson Baby Products Company. Combined puzzle and construction toy. 266,101, 9-7-82, Cl. D21-107.000.
Grube, Clifford E., to Associated Mills, Inc. Control unit for exerciser. 266,102, 9-7-82, Cl. D21-191.000.
Hara, Kunio, to Tokyo Shibaura Denki Kabushiki Kaisha. Toner container or the like. 266,095, 9-7-82, Cl. D16-27.000.
Hauni-Werke Korber & Co. KG.: *See*—
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Heighberger, R. N. Stool. 266,037, 9-7-82, Cl. D6-26.000.
Hoffman, Louis S.: *See*—
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Interdica S.A.: *See*—
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International Business Machines Corporation: *See*—
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JH Industries, Inc.: *See*—
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93 4,347,957
96.5 4,347,958
97 4,347,959

CLASS 226

4,347,960
158 4,347,961
195 4,347,962

CLASS 227

8 4,347,963

CLASS 228

4.5 4,347,964
107 4,347,965
173 F 4,347,966

CLASS 229

27 4,347,967
33 4,347,968
34 HW 4,347,969
39 R 4,347,970

CLASS 233

20 R 4,347,971

CLASS 235

92 CT 4,348,585

CLASS 236

18 4,347,972
34.5 4,347,973
46 R 4,347,974
59 4,347,975
68 B 4,347,976
92 B 4,347,977

CLASS 239

78 4,347,978
206 4,347,979
289 4,347,980
394 4,347,981
405 4,347,982
466 4,347,983
707 4,347,984

CLASS 241

1 4,347,985
74 4,347,986
300 4,347,988

CLASS 242

35.5 R 4,347,989
36 4,347,990
43.2 4,347,991
68.4 4,347,992
75.51 4,347,993
152.1 Re.31,024
203 4,347,994
204 4,347,995

CLASS 244

3.16 4,347,996
17.19 4,347,997

CLASS 248

68 R 4,347,998
73 4,347,999
231 4,348,000
243 4,348,001

CLASS 249

19 4,348,002
96 4,348,003
210 4,348,004

CLASS 250

214 R 4,348,586
227 4,348,587
252.1 4,348,588
387 4,348,589
505.1 4,348,591
560 4,348,592
578 4,348,593

CLASS 251

268 4,348,005

288 4,348,006

CLASS 252

49.9 4,348,291
90 4,348,292
4,348,293
142 4,348,294
184 4,348,295
4,348,296
4,348,297
299.1 4,348,298
301.4 S 4,348,299
309 4,348,300
313 R 4,348,301
389 R 4,348,302
447 4,348,303
455 Z 4,348,304
542 4,348,305
608 4,348,306

CLASS 254

106 4,348,007
122 4,348,008
131 4,348,010
134.3 R 4,348,009
350 4,348,011

CLASS 256

12 4,348,012

CLASS 260

112 B 4,348,315
112 R 4,348,316
112.5 R 4,348,317
153 4,348,318
208 4,348,319
239 A 4,348,320
326 E 4,348,321
397.1 4,348,327
397.2 4,348,328
403 4,348,329
456 NS 4,348,330
465 D 4,348,331
502.4 R 4,348,332
4,348,333
505 C 4,348,334
508 4,348,335
4,348,336
543 P 4,348,337

CLASS 261

142 4,348,338

CLASS 264

0.5 4,348,339
8 4,348,340
4,348,341
28 4,348,342
29.5 4,348,343
31 4,348,344
127 4,348,345
146 4,348,346
231 4,348,347
255 4,348,348
564 4,348,349
570 4,348,350

CLASS 266

220 4,348,013

CLASS 267

87 4,348,014
140.4 4,348,015
177 4,348,016

CLASS 269

296 4,348,017

CLASS 271

10 4,348,018
4,348,019
35 4,348,020
112 4,348,021

CLASS 273

1.5 R 4,348,022
29 A 4,348,023
73 A 4,348,024
73 R 4,348,025
126 R 4,348,026
241 4,348,027
249 4,348,028

CLASS 277

26 4,348,029
40 4,348,030
83 4,348,031
235 B 4,348,032

CLASS 280

16 4,348,033
35 4,348,034
478 R 4,348,035
615 4,348,036
733 4,348,037

CLASS 283

34 4,348,038

CLASS 285

1 4,348,039
175 4,348,040
286 4,348,041

CLASS 290

54 4,348,594

CLASS 293

120 4,348,042

CLASS 294

83 R 4,348,043
88 4,348,044

CLASS 296

14 4,348,045
184 4,348,047
201 4,348,046

CLASS 297

250 4,348,048
254 4,348,049
365 4,348,050
423 4,348,051
440 4,348,052
445 4,348,053

CLASS 298

11 4,348,054
23 DF 4,348,055

CLASS 299

4 4,348,056
12 4,348,057
17 4,348,058
25 4,348,059

CLASS 300

21 4,348,060

CLASS 301

37 R 4,348,061

CLASS 303

6 C 4,348,062

CLASS 307

221 R 4,348,595
264 4,348,596
269 4,348,597
300 4,348,598
426 4,348,599
475 4,348,600
530 4,348,601
4,348,602

CLASS 308

3.8 4,348,063
6 C 4,348,064
9 4,348,065
4,348,066
187.1 4,348,067

CLASS 310

50 4,348,603
62 4,348,604
168 4,348,605
184 4,348,606
217 4,348,607
242 4,348,608
367 4,348,609

CLASS 312

257 R 4,348,068
324 4,348,069

CLASS 313

386 4,348,610
388 4,348,611

CLASS 315

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130 4,348,613
189 4,348,614
219 4,348,615
314 4,348,616
370 4,348,617

CLASS 318

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154 4,348,620
254 4,348,621
318 4,348,622
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634 4,348,624
757 4,348,625
772 4,348,626
807 4,348,627

CLASS 320

61 4,348,628

CLASS 321

99 4,348,629

CLASS 323

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211 4,348,631
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314 4,348,633
353 4,348,634

CLASS 324

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CLASS 328

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CLASS 329

50 B1 3,651,418
50 4,348,641

CLASS 330

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294 4,348,643
297 4,348,644
306 4,348,645

CLASS 331

77 4,348,646
96 4,348,649

CLASS 333

195 4,348,650
262 4,348,651

CLASS 339

59 R 4,348,070
75 MP 4,348,071
97 R 4,348,072
186 M 4,348,073

CLASS 340

52 F 4,348,653
52 R 4,348,652
58 4,348,654
73 4,348,655
146.3 R 4,348,656
310 R 4,348,657
347 AD 4,348,658
4,348,659
365 VL 4,348,660
510 4,348,661
562 4,348,662
576 4,348,663
600 4,348,664
682 4,348,665
753 4,348,666
4,348,667
825.06 4,348,668
825.58 4,348,669
825.78 4,348,670
853 4,348,671
854 4,348,672
870.18 4,348,673

CLASS 343

5 SA 4,348,674
7 VM 4,348,675
114 4,348,676
729 4,348,677
754 4,348,678
768 4,348,679
778 4,348,680
854 4,348,681

CLASS 346

1.1 4,348,682
31 4,348,683
153.1 4,348,684
155 4,348,685

CLASS 350

3.71 4,348,080
96.11 4,348,074
96.13 4,348,075
96.22 4,348,076
357 4,348,077
4,348,078
358 4,348,079
412 4,348,081
423 4,348,082
453 4,348,083
454 4,348,084
458 4,348,085

CLASS 354

83 4,348,086
139 4,348,087
152 4,348,088
195 4,348,089
224 4,348,090
225 4,348,091
230 4,348,092
233 4,348,093
234 4,348,094
288 4,348,095

289 4,348,096
293 4,348,097

CLASS 355

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14 E 4,348,099
14 R 4,348,100
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69 B1 3,888,582
75 4,348,106

CLASS 356

72 4,348,107
125 4,348,108
252 4,348,109
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336 4,348,111
338 4,348,112
350 4,348,113
431 4,348,114
436 4,348,115

CLASS 357

30 4,348,686
79 4,348,687

CLASS 358

29 4,348,688
31 4,348,689
44 4,348,690
114 4,348,691
127 4,348,692
140 4,348,693
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160 4,348,695
188 4,348,696
286 4,348,697

CLASS 360

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32 4,348,699
60 4,348,700
61 4,348,701
71 4,348,702
77 4,348,703
96.5 4,348,704
98 4,348,705
130.24 4,348,706
132 4,348,707

CLASS 361

45 4,348,708
92 4,348,709
141 4,348,710
182 B1 3,187,234
233 4,348,711
315 4,348,712
4,348,713
328 4,348,714

CLASS 362

109 4,348,715
188 4,348,716
403 4,348,717

CLASS 363

87 4,348,718
132 4,348,719

CLASS 364

200 4,348,720
4,348,721
4,348,722
4,348,723
4,348,724
300 4,348,725
424 4,348,726
431.06 4,348,727
4,348,728
431.12 4,348,729
483 4,348,730
513 4,348,731
571 4,348,732
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721 4,348,734
724 4,348,735
787 4,348,736
900 4,348,737
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4,348,739
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4,348,742
4,348,743
4,348,744

CLASS 365

154 4,348,745
182 4,348,746
189 4,348,747

CLASS 366

340 4,348,116

CLASS 367

25	4,348,748
46	4,348,749
106	Re.31,026
140	4,348,750

CLASS 368

82	4,348,751
187	4,348,752
188	4,348,753

CLASS 369

60	4,348,754
155	4,348,755
226	4,348,756

CLASS 370

32	4,348,757
110.2	4,348,758

CLASS 371

20	4,348,759
	4,348,760
21	4,348,761
47	4,348,762

CLASS 372

29	4,348,648
45	4,348,763
58	4,348,764
74	4,348,647
78	4,348,765
89	4,348,766

CLASS 373

30	4,348,767

CLASS 374

24	4,348,117

CLASS 375

26	4,348,768
28	4,348,769

CLASS 376

183	4,348,351
272	4,348,352
364	4,348,353
405	4,348,354
434	4,348,355
461	4,348,356

CLASS 378

112	4,348,590

CLASS 400

54	4,348,118
121	4,348,119
124	4,348,120
166	4,348,121
276	4,348,122
298	4,348,123
	4,348,124
645.1	4,348,125

CLASS 401

135	4,348,126

CLASS 403

9	4,348,127
49	4,348,128
218	4,348,129
231	4,348,130
272	4,348,131
356	4,348,132

CLASS 404

6	4,348,133
129	4,348,134

CLASS 405

36	4,348,135
65	4,348,136
202	4,348,137
297	4,348,138

CLASS 406

10	4,348,139

CLASS 411

103	4,348,140
389	4,348,141

CLASS 414

2	4,348,142
24.5	4,348,143
277	4,348,144
288	4,348,145
332	4,348,146
420	4,348,147
421	4,348,148
458	4,348,149
529	4,348,150
542	4,348,151
785	4,348,152
786	4,348,153

CLASS 416

43	4,348,154
46	4,348,155
48	4,348,156

CLASS 417

40	4,348,158
220	4,348,159
403	4,348,160
	4,348,161
431	4,348,162
462	4,348,163

CLASS 422

22	4,348,357
56	4,348,358
76	4,348,359
122	4,348,360
150	4,348,361
171	4,348,362
192	4,348,363
214	4,348,364
249	4,348,365

CLASS 423

111	4,348,366
139	4,348,367
226	4,348,368
328	4,348,369
362	4,348,370
475	4,348,371
497	4,348,372
522	4,348,373

CLASS 424

1	4,348,374
	4,348,375
	4,348,376
5	4,348,377
7	4,348,378
34	4,348,379
47	4,348,380
52	4,348,381
	4,348,382
70	4,348,383
101	4,348,384
173	4,348,385
177	4,348,386
178	4,348,387
180	4,348,388
228	4,348,389
241	4,348,390
246	4,348,391
	4,348,392
248.57	4,348,393
	4,348,394
250	4,348,395
251	4,348,396
253	4,348,397
258	4,348,398
263	4,348,399
	4,348,400
267	4,348,401
	4,348,402
270	4,348,403
273 R	4,348,404
298	4,348,405
300	4,348,406
	4,348,407
305	4,348,408
308	4,348,409
309	4,348,410
319	4,348,411
322	4,348,412
	4,348,413
327	4,348,414
365	4,348,415

CLASS 425

89	4,348,164
185	4,348,165
310	4,348,166
522	4,348,167

CLASS 426

3	4,348,416
19	4,348,417
104	4,348,418
264	4,348,419
272	4,348,420
394	4,348,421
475	4,348,422
607	4,348,423

CLASS 427

4	4,348,424
8	4,348,425
41	4,348,426
44	4,348,427
54.1	4,348,428
125	4,348,429
215	4,348,430
387	4,348,431
402	4,348,432
423	4,348,433
	4,348,434

CLASS 428

34	4,348,435
35	4,348,436
	4,348,437
36	4,348,438
	4,348,439
41	4,348,440
49	4,348,441
72	4,348,442
122	4,348,443
137	4,348,444
138	4,348,445
144	4,348,312
148	4,348,446
149	4,348,447
157	4,348,448
167	4,348,449
182	4,348,450
203	4,348,451
312.6	4,348,452
333	4,348,453
334	4,348,454
336	4,348,455
	4,348,456
349	4,348,457
366	4,348,458
379	4,348,459
383	4,348,460
409	4,348,461
412	4,348,462
429	4,348,463
571	4,348,464

CLASS 429

27	4,348,465
84	4,348,466
94	4,348,467
193	4,348,468

CLASS 430

55	4,348,469
72	4,348,470
165	4,348,471
195	4,348,472
296	4,348,473
382	4,348,474
399	4,348,475

CLASS 431

9	4,348,168
89	4,348,169
188	4,348,170
202	4,348,171
255	4,348,172
362	4,348,173

CLASS 432

1	4,348,174
241	4,348,175
258	4,348,176

CLASS 433

5	4,348,177
6	4,348,178
7	4,348,179
126	4,348,180
172	4,348,181
214	4,348,182
221	4,348,183

CLASS 434

42	4,348,184
43	4,348,185
44	4,348,186
	4,348,187
72	4,348,188
227	4,348,189
278	4,348,190
308	4,348,191

CLASS 435

123	4,348,476
172	4,348,477
	4,348,478
183	4,348,479
223	4,348,482
234	4,348,480
	4,348,481
255	4,348,483

CLASS 440

38	4,348,192
62	4,348,193
77	4,348,194
100	4,348,195

CLASS 441

40	4,347,635

CLASS 485

164	4,348,770
180	4,348,771
260	4,348,772
326	4,348,773

CLASS 464

11	4,348,196
32	4,347,715
64	4,347,717
83	4,347,716

CLASS 474

28	4,348,197
82	4,348,198
156	4,348,199
160	4,348,200

CLASS 501

45	4,348,484
115	4,348,485

CLASS 518

704	4,348,486
	4,348,487

CLASS 521

115	4,348,488
130	4,348,489

CLASS 523

156	4,348,490
214	4,348,491
336	4,348,309
425	4,348,517

CLASS 524

52	4,348,492
100	4,348,493
110	4,348,308
114	4,348,494
117	4,348,495
127	4,348,496
167	4,348,310
293	4,348,497
530	4,348,311
788	4,348,313

CLASS 525

13	4,348,498
49	4,348,499
65	4,348,500
179	4,348,501
183	4,348,502
439	4,348,314
455	4,348,503
477	4,348,504
504	4,348,505
512	4,348,506

CLASS 526

125	4,348,507
204	4,348,515
268	4,348,508

CLASS 528

26	4,348,510
49	4,348,307
72	4,348,511
73	4,348,512
188	4,348,513
367	4,348,514

CLASS 536

10	4,348,516

CLASS 544

33	4,348,519
026	4,348,518
201	4,348,520
353	4,348,521
358	4,348,522
399	4,348,523

CLASS 546

187	4,348,524
346	4,348,525

CLASS 548

309	4,348,526
362	4,348,527
367	4,348,528

CLASS 549

22	4,348,929
27	4,348,530
296	4,348,322
362	4,348,323
369	4,348,324
419	4,348,325
463	4,348,326

CLASS 556

453	4,348,531
457	4,348,532
	4,348,533

CLASS 560

62	4,348,534
124	4,348,535
169	4,348,536
243	4,348,537

CLASS 562

459	4,348,538
538	4,348,509

CLASS 568

454	4,348,539
472	4,348,540
487	4,348,541
727	4,348,542
823	4,348,543

CLASS 585

300	4,348,544

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D6—	4	266,036
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	69	266,038
	96	266,039
	113	266,040
	144	266,041
	192	266,042
	194	266,043
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	271	266,045
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	70	266,048
	76	266,049
	108	266,050
	128	266,051
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	402	266,053
D9—	434	266,055
	444	266,056
D10—	26	266,057
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	68	266,059
	113	266,060
	114	266,061
D11—	26	266,062
D12—	12	266,063
	142	266,064
D13—	23	266,065
		266,066
		266,067
		266,068
		266,069
		266,070
		266,071
		266,072
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		266,076
		266,077
		266,078
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		266,080
		266,081
		266,082
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	35	266,084
D14—	57	266,085
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	70	266,088
	71	266,089
	102	266,090
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	86	266,098
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	76	266,100
	107	266,101
	191	266,102
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	72	266,105
	97	266,106
	150	266,107
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04 : 4,347,681
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	4,348,543	4,348,691	4,348,648	4,348,115	4,348,742	49 : 4,347,638
29 :	4,347,670	4,348,700	4,348,679	4,348,237	44 : 4,347,631	4,347,653
	4,347,937	4,348,720	4,348,681	4,348,259	4,347,788	4,348,037
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	4,348,197	4,348,738	4,348,686	4,348,304	45 : Re.31,024	50 : 4,348,060
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	4,348,317	35 : 4,348,630	4,348,713	4,348,370	4,347,863	4,348,635
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	4,348,561	4,347,655	4,348,759	4,348,506	4,348,127	4,347,855
30 :	4,347,938	4,347,695	37 : 4,347,685	4,348,670	47 : 4,347,842	4,347,891
31 :	4,347,870	4,347,708	4,347,701	41 : 4,348,047	4,347,973	4,347,907
32 :	4,347,804	4,347,735	4,347,958	4,348,144	4,348,146	4,348,074
	4,348,313	4,347,750	4,348,346	4,348,639	4,348,147	4,348,119
33 :	4,348,042	4,347,767	4,348,458	42 : 4,347,652	4,348,371	4,348,228
	4,348,615	4,347,778	4,348,717	4,347,664	4,348,372	4,348,314
34 :	4,347,656	4,347,793	4,348,758	4,347,668	48 : 4,347,696	4,348,517
	4,347,703	4,347,817	38 : 4,348,193	4,347,690	4,347,728	53 : 4,347,660
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	4,348,306	4,348,187	4,347,949	4,348,101	4,348,039	4,347,839
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	4,348,326	4,348,238	4,348,040	4,348,211	4,348,214	4,348,159
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	4,348,381	4,348,291	4,348,062	4,348,220	4,348,262	4,348,251
	4,348,382	4,348,369	4,348,071	4,348,224	4,348,274	4,348,362
	4,348,396	4,348,399	4,348,135	4,348,231	4,348,289	4,348,483
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DESIGN PATENTS

06 :	266,056	12 :	266,036	19 :	266,098		266,055		266,047		266,084
	266,061		266,048	22 :	266,041		266,063		266,109		266,093
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	266,103	17 :	266,051	25 :	266,049	34 :	266,032		266,105	49 :	266,100
	266,104		266,102	26 :	266,038		266,033	39 :	266,037	51 :	266,045
	266,108	18 :	266,043		266,040		266,086	44 :	266,060	53 :	266,085
09 :	266,039		266,112		266,052	36 :	266,030				

PLANT PATENTS

06 :	4,884	4,885				

DEFENSIVE PUBLICATIONS APPLICATIONS

[Notice of Dec. 16, 1969, 869 O.G. 6877]

01 :	T102,201					

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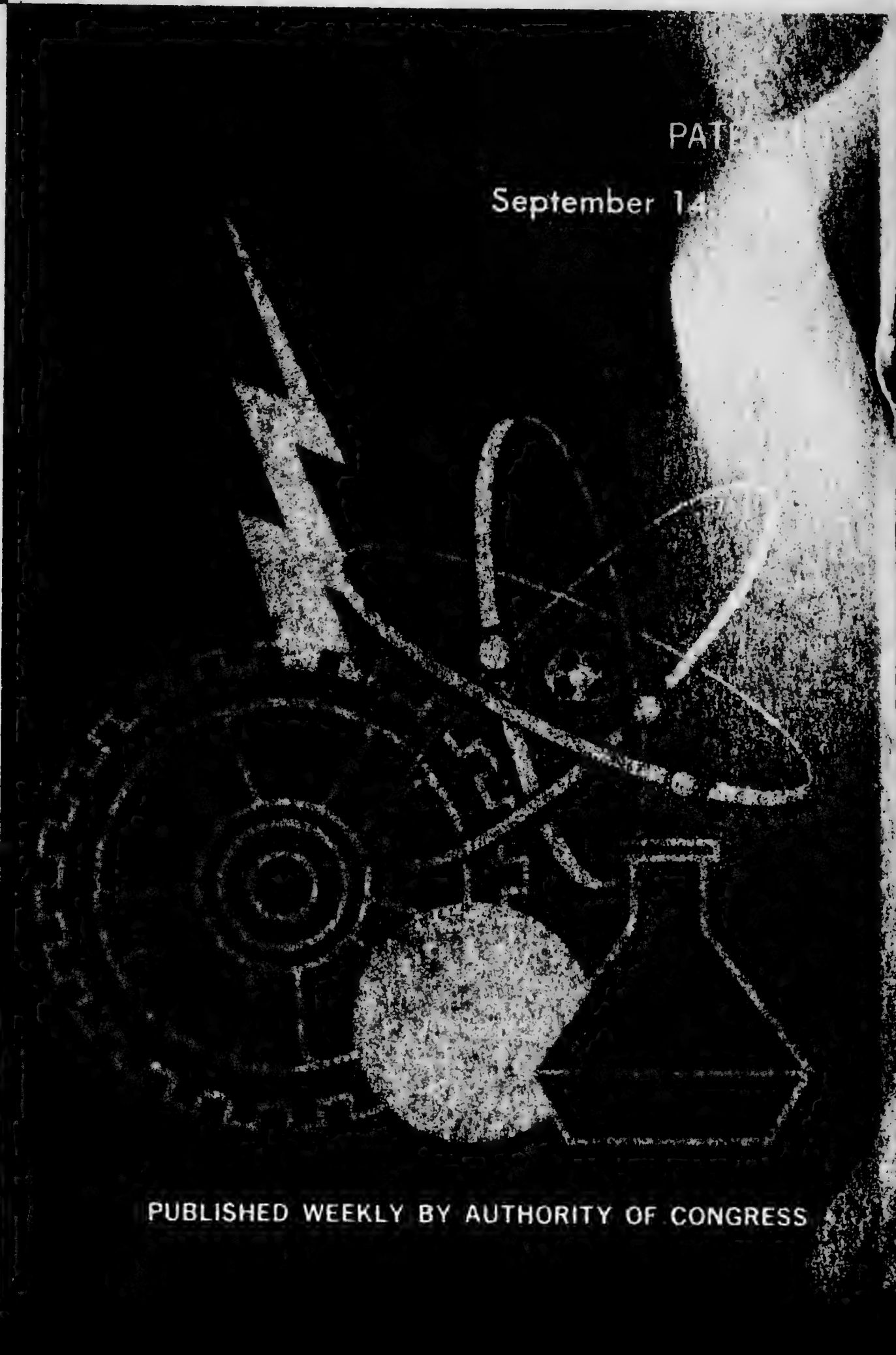
Vol. 1022 Number 2

OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

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September 1

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OFFICIAL GAZETTE of the UNITED STATES PATENT AND TRADEMARK OFFICE

September 14, 1982 Volume 1022 Number 2

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT member countries and the most recent PCT rule changes see the notices appearing in the Official Gazette at 1001 O.G. 14 on Dec. 9, 1980 and at 1012 O.G. 20 on Nov. 17, 1981.

Note that the international fees have been increased as of Jan. 1, 1982. The current schedule of fees is as follows:

Transmittal fee	$ 35.00
Search fee	300.00
International Fees	
Basic Fee (first 30 pages)	270.00
Basic Supplemental Fee (for each sheet over 30)	6.00
Designation Fees	65.00

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

Jan. 19, 1982.

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,645,835, Re. S.N. 393,084, Filed June 28, 1982, Cl. 428/195, MOISTURE-VAPOR-PREMEABLE PRESSURE-SENSITIVE ADHESIVE MATERIALS, Martin E. Hodgson, Owner of Record: *T.J. Smith & Nephew Ltd., Yorkshire, England,* Attorney or Agent: Albert L. Jacobs, Jr., Ex. Gp.: 164,

4,136,160, Re. S.N. 393,347, Filed June 29, 1982, Cl. 424/1, SPECIFIC ASSAY FOR ACTIVE DEMYELINIZATION, Steven R. Cohen, Owner of Record: *Inventor,* Attorney or Agent: Arthur Schwartz, et al., Ex. Gp.: 223

4,248,802, Re. S.N. 393,439, Filed June 29, 1982, Cl. 260/604.86, CATALYTIC HYDROFORMYLATION OF OLEFINS, Emile Kuntz, Owner of Record: *Rhone-Poulenc Industries, Paris, France,* Attorney or Agent: William L. Mathis, et al., Ex. Gp.: 126

4,293,948, Re. S.N. 394,099, Filed July 1, 1982, Cl. 370/90, DATA TRANSMISSION SYSTEM, Olof Soderblom, Owner of Record: *Willemijn Houdstermaatschappij B. V., Rotterdam, the Netherlands,* Attorney or Agent: Elliott I. Pollock, et al., Ex. Gp.: 234

4,326,319, Re. S.N. 382,170, Filed May 26, 1982, Cl. 024/205.11R, SLIDE FASTENER WITH IMPROVED END CONNECTIONS, Martin F. Friedberg, Owner of Record: *Inventor,* Attorney or Agent: Richard A. Bachand, Ex. Gp.: 333

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b).

3,597,549, Reexam. No. 90/000,242, Requested: Aug. 11, 1982, Cl. 370/88, HIGH SPEED DATA COMMUNICATION SYSTEM, Wayne D. Farmer, et al., Owner of Record: *Bell Telephone Laboratories, Inc. Murray Hill, Berkeley Height, N.J.,* Attorney or Agent: W. L. Keefauver, Ex. Gp.: 234, Requester: Willemijn Houdstermaatschappij B.V., Rotterdam, the Netherlands

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Errata

In the Official Gazette, Vol. 1021, No. 2, Aug. 10, 1982, an incorrect patent number was listed on page 568 stating, "Patent Not Issued For This Number." The correct patent number is 4,343,748.

National Technical Information Service

U.S. GOVERNMENT-OWNED INVENTIONS

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Office of Government Inventions and Patents
National Technical Information Service
U.S. Department of Commerce.

SN 6-199,781. CHEMICAL MODIFICATIONS OF PROTEINS WHICH INDUCE NEW RECEPTOR SPECIFICITIES AND THEREFORE ELICIT NEW EFFECTS IN CELLS. National Institutes of Health.

SN 6-341,572. RICIN AND MODECCIN REAGENTS EFFECTIVE AS TUMOR SUPPRESSIVE CYTOTOXIC REAGENTS. National Institutes of Health.

SN 6-350,223. MONOCLONAL ANTIBODY-RICIN OR RICIN A CHAIN HYBRIDS. National Institutes of Health.

SN 6-350,222. INACTIVATING PROTEIN SYNTHESIS BY INCUBATING ANTI-THY 1.1-RICIN A CHAIN HYBRIDS WITH TARGET PROTEIN CELLS. National Institutes of Health.

SN 6-385,674. FLUORINATION BY INORGANIC FLUORIDES IN GLOW DISCHARGE. Department of Agriculture.

SN 6-168,816. (4,340,253) PREFLUSH-LIXIVIANT PROCESS FOR SOLUTION MINING OF URANIUM ORE BEDS. Department of the Interior.

PATENT NOTICES

Certificates of Correction for the Week of Sept. 14, 1982

D. 263,701	4,296,117	4,325,656	4,333,944
3,653,745	4,297,722	4,325,743	4,334,255
4,153,201	4,300,835	4,325,990	4,334,316
4,180,640	4,301,443	4,326,209	4,334,398
4,181,713	4,304,739	4,326,241	4,334,995
4,201,146	4,306,278	4,326,509	4,335,090
4,202,688	4,307,073	4,326,616	4,335,301
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4,211,795	4,309,933	4,327,020	4,335,673
4,215,720	4,311,171	4,327,100	4,336,068
4,226,629	4,311,609	4,327,578	4,336,164
4,235,501	4,311,834	4,327,947	4,336,273
4,242,456	4,312,098	4,328,165	4,336,442
4,243,592	4,312,387	4,328,168	4,336,540
4,252,542	4,312,810	4,328,361	4,336,659
4,259,699	4,313,410	4,328,656	4,336,744
4,263,368	4,313,580	4,328,902	4,336,841
4,264,264	4,314,906	4,329,242	4,337,337
4,265,792	4,316,330	4,329,285	4,337,412
4,268,651	4,318,201	4,329,442	4,337,420
4,268,781	4,318,953	4,329,478	4,337,421
4,274,560	4,319,270	4,329,660	4,337,956
4,275,094	4,319,443	4,330,264	4,338,142
4,276,202	4,320,038	4,330,291	4,338,336
4,276,353	4,321,525	4,330,621	4,338,414
4,279,000	4,321,530	4,330,641	4,338,415
4,279,259	4,321,647	4,330,667	4,338,416
4,279,951	4,321,666	4,330,761	4,338,561
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4,280,903	4,321,864	4,331,388	4,338,734
4,280,917	4,322,068	4,331,546	4,338,962
4,284,741	4,322,914	4,331,941	4,339,065
4,284,997	4,323,052	4,331,984	4,339,089
4,285,065	4,323,607	4,332,045	4,339,469
4,288,780	4,323,827	4,332,095	4,339,475
4,288,786	4,324,542	4,332,141	4,339,726
4,289,954	4,324,668	4,332,693	4,339,877
4,292,333	4,324,985	4,332,798	4,340,430
4,292,585	4,325,086	4,332,800	4,340,612
4,293,634	4,325,107	4,332,892	4,340,760
4,294,313	4,325,120	4,333,442	
4,294,624	4,325,327	4,333,757	

Disclaimers

3,286,087.—*Edward E. Sheldon,* New York, N.Y. DEVICE FOR ILLUMINATION. Patent dated Nov. 15, 1966. Disclaimer filed Apr. 30, 1979, by the inventor.

The term of this patent subsequent to Oct 18, 1983 has been disclaimed.

3,524,255.—*Peter F. Kurer,* Manchester, Lancashire, England. EMETHOD OF ATTACHING A TOOTH CROWN TO A TOOTH ROOT. Patent dated Aug. 18, 1970. Disclaimer filed Aug. 14, 1978, by the inventor.

Hereby enters this disclaimer to claims 2 and 3 of said patent.

3,783,083.—*William A. Jenkins,* Englewood, Oh. COMPOSITE WEB OF PRESSURE SENSITIVE LABELS. Patent dated Dec. 25, 1973. Disclaimer filed Aug. 6, 1979, by the assignee, *Monarch Marking Systems, Inc.*

Hereby enters this disclaimer to claims 1, 2, 3, 5, 6, 7, 11, 32, 33, 34 and 35 of said patent.

3,821,959.—*Otto K. Schmidt,* So. Windsor, Conn. RECONSTITUTED TOBACCO COMPOSITION. Patent dated July 2, 1974. Disclaimer filed Dec. 29, 1980, by the assignee, *AMF Incorporated.*

Hereby enters this disclaimer to claims 1 through 4, of said patent.

3,965,538.—*Jack E. Caveney,* Chicago; and *Roy A. Moody,* Flossmoor, Ill. INTEGRAL CABLE TIE. Patent dated June 29, 1976. Disclaimer filed Dec. 23, 1981, by the assignee, *Panduit Corp.*

The term of this patent subsequent of Mar. 25, 1992 has been disclaimed.

4,011,929.—*Edward M. Jeram,* Burnt Hills, and *Richard A. Striker,* Troy, N.Y. DAMPENING DEVICE USING A SILICONE RUBBER. Patent dated Mar. 15, 1977. Diclaimer filed July 22, 1982, by the assignee, *General Electric Co.*

Hereby enters this disclaimer to the entire term of said patent.

4,255,172.—*Michael L. Smith,* Atlanta, Ga. JET IMPACTION PRESEPARATOR. Patent dated Mar. 10, 1981. Disclaimer filed Jan. 25, 1982, by the assignee, *Andersen Samplers, Inc.*

Hereby enters this disclaimer to all claims of said patent.

Dedications

3,801,466.—*Jerry W. Denney,* Carmel Ind. URIC ACID ASSAY AND REAGENTS THEREFOR. Patent dated Apr. 2, 1974. Dedication filed Feb. 25, 1982, by the assignee, *American Monitor Corp.*

Hereby dedicates to the Public the entire term of said patent.

4,154,020.—*Uriel Paz; Moshe Levy;* and *Zwy Levy,* Havazelet Hasharon, Israel. PROCESS FOR THE PROPAGATION OF ROSE PLANTS. Patent dated May 15, 1976. Dedication filed Dec. 28, 1981, by the assignee, *The Conard-Pyle Co.*

Hereby dedicates to the People of the United States of America the remaining term of said patent.

4,201,045.—*Elo N. Vani,* Cherry Hill, N.J. and *Roy W. Kiscaden,* Morton, Pa. FUEL LIMITER FOR COMBUSTION TURBINES. Patent dated May 6, 1980. Dedication filed Oct. 28, 1981, by the assignee, *Westinghouse Electric Corp.*

Hereby dedicates to the Public the entire term of said patent.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

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California	Los Angeles Public Library	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware	(302) 738-2238
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Illinois	Chicago Public Library	(312) 269-2865
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Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6552
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214, 215
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7814
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1321**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
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Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

**Call only between the hours of 10:00 a.m. and 5:00 p.m.

ENACTMENT OF H.R.6260

STATEMENT BY THE PRESIDENT

August 28, 1982

The following is the text of President Reagan's Statement at the signing of H.R.6260 into law:

"I am pleased to sign into law H.R.6260 which authorizes appropriations for the Patent and Trademark Office for fiscal years 1983-1985. Throughout our Nation's history, the patent system has played a critically important role in stimulating technological advances. This legislation will make it possible for the Patent and Trademark Office to improve its operations and thus revitalize its traditional role of encouraging technical innovation.

"This measure reflects the policy of this Administration that those who benefit most directly from services should pay their fair share for them. For years the Patent and Trademark Office has not had the resources to carry out its mission properly or to modernize its operations. Now that this legislation is in place, most users will pay the actual cost of processing patents and trademarks. This means that even though the expenditure of tax revenue in FY 1983 to support the Patent and Trademark Office will be $21 million lower than in FY 1982, the total resources available to the Office through increased user fees will permit it to become a first-class service organization.

"We neither want nor expect the increased user fees to discourage the ingenuity and creativity of individual inventors. Many of our most important inventions have come from individuals working alone. Accordingly, the bill provides that independent and small business inventors, as well as nonprofit corporations, will pay only fifty percent of the actual patent processing costs.

"A major deterrent to using the patent system, especially by small businesses and independent inventors, is the inordinately high cost of patent litigation. This bill authorizes voluntary arbitration of patent validity and infringement disputes. This will not only improve the patent system and encourage innovation, but will help relieve the burden on the Federal courts.

"Development of new technology is a vital ingredient in my Administration's plan for economic recovery. This measure is a significant step in this process. At the same time, it symbolizes our commitment to making the Federal Government more effective and efficient. It is an excellent example of how the Federal Government can provide better service at less cost to the taxpayers, and I commend the Congress for enacting this important measure."

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF July 24, 1982

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director ..... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	9-18-80
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director ..... Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	1-09-81
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director .... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	3-18-81
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director ..... Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	4-13-81
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director ..... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	4-09-81
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	8-20-80
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director ..... Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	9-18-80
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—EARL LEVY, Director ..... Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	6-20-80
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director ..... Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling; Shaft; Impellers; Rotary Fluid Motors.	4-09-80
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director ..... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	11-26-79
DESIGN, GROUP 290—KENNETH L. CAGE, Director ..... Industrial Arts; Household, Personal and Fine Arts.	7-07-80
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director ..... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	11-14-80
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director ... Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	10-27-80
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director ..... Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	2-13-80
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director ..... Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	5-24-82
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—A. L. SMITH, Director ..... Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	11-27-79

Expiration of patents: The patents within the range of numbers indicated below expire during July 1982, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,192,536 to 3,197,783, inclusive

Plant Patents ..... Numbers 2,543 to 2,545 inclusive

REISSUES

SEPTEMBER 14, 1982

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 31,027

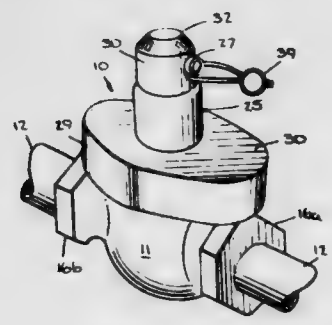
LOCKING HOOD ASSEMBLY FOR FLOW CONTROL DEVICE

Bernard A. Di Giovanni, 96 Davis Ave., Hauppage, N.Y. 11787

Original No. 4,024,740, dated May 24, 1977, Ser. No. 684,573, May 10, 1976. Application for reissue Sep. 25, 1978, Ser. No. 945,561

Int. Cl.[3] G05G *5/00*; F16K *35/00*

U.S. Cl. 70—175 23 Claims



1. A flow control device having a fixed portion and an operating member which is movable with respect to said fixed portion; a locking hood assembly mounted on said flow control device for preventing said movement of its said operating member, said locking hood assembly comprising a main body having an interior configuration fitting on and substantially surrounding said operating member; and releasable means retaining said main body in its said fitting relation with respect to said operating member; said locking hood assembly further comprising a removable cover cap on said main body covering and thereby preventing access to said releasable retaining means, and removable lock means for locking said cover cap in said position on said main body.

Re. 31,028

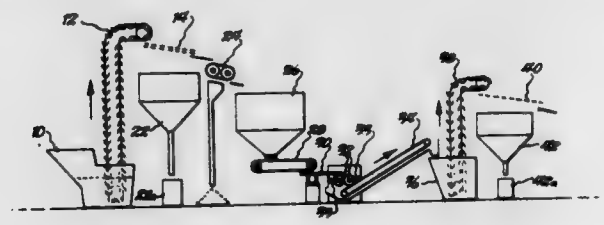
METHOD FOR PROCESSING DROSS

Paul J. Cromwell, Williamsville, N.Y., assignor to Cromwell Metals, Inc., Buffalo, N.Y.

Original No. 4,126,673, dated Nov. 21, 1978, Ser. No. 902,481, May 8, 1978. Continuation-in-part of Ser. No. 796,729, May 13, 1977, abandoned. Application for reissue Nov. 20, 1980, Ser. No. 208,722

Int. Cl.[3] B02C *23/14*

U.S. Cl. 241—14 43 Claims



39. A method for reclaiming, in relatively high metallic concentrate form, aluminum substances entrained in dross, said method comprising the steps of:

conveying said dross to a pair of roller means having a predetermined spacing, said dross comprising particles of a predetermined size range,

compressing said dross to a limited degree without substantially crushing the same between said pair of roller means by passing said dross therebetween so as to substantially break the bonds between the metallic and non-metallic substances in said dross, and

separating said non-metallic substances from said metallic substances so that relatively concentrated metallic substances remain whereby metallic dust-like particles become disassociated from said metallic substances and are commingled with said non-metallic substances after separation of the latter from said metallic substances.

Re. 31,029

DIALYZER CARTRIDGE AND METHOD FOR ITS MANUFACTURE

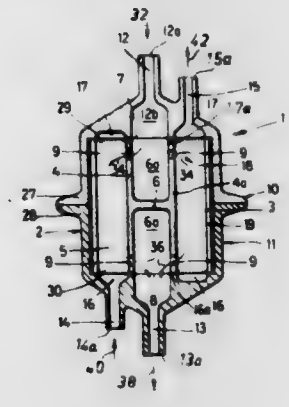
Wilfried Schael, Bad Homburg, Fed. Rep. of Germany, assignor to Dr. Eduard Fresenius Chemisch-pharmazeutische Industrie KG, Apparatebau KG, Bad Homburg, Fed. Rep. of Germany

Original No. 4,141,836, dated Feb. 27, 1979, Ser. No. 724,935, Sep. 20, 1976. Application for reissue Dec. 1, 1980, Ser. No. 212,081

Claims priority, application Fed. Rep. of Germany, Aug. 24, 1975, 2542438

Int. Cl.[3] B01D *31/00*

U.S. Cl. 210—321.2 15 Claims



14. A dialyzer comprising housing means (10, 11), a first set of ports including inflow port means (14) for blood in said housing means and outflow port means (15) for blood in said housing means, a second set of ports including dialysis liquid inflow port means (12) in said housing means and dialysis outflow port means (13) in said housing means, tubular core means (4) in said housing means to provide an annular space between said housing means and said core means (4), hollow filament means (3, 18) having open filament ends, sealing and bonding means (29, 30) operatively bonding the hollow filament means (3, 18) to one another adjacent said open ends, said hollow filament means occupying said annular space, first flow communication means in said housing means (16, 17) for providing flow communication into and out of said open filament ends and the respective one of said port sets arranged at each end of said hollow filament means, interstices extending between said hollow filament means substantially all along said hollow filament means between said bonding means (29, 30), second flow communication means (9) in said core means (4) for providing flow communication between said interstices and said second set of ports, said second flow communication means consisting of first and second passage openings (9) extending radially outwardly through said core means (4) and located only substantially directly adjacent to each of said bonding means (29, 30), and separation means (6) in said core means (4) for closing off said first passage openings (9) from said second passage openings (9) except through said interstices whereby a liquid flowing from said inflow port means to said outflow port means of said second set of ports is forced to flow through said interstices substantially along the entire effective length of said filament means between said first and second passage openings, for optimally using the available interface surface formed by said hollow filament means.

Re. 31,030

PROCESS FOR THE PRODUCTION OF NOVEL POLYSACCHARIDE

Kenichi Hisatsuka; Saburo Ishiyama; Akira Inoue; Osamu Tsumura, all of Sodegaura, and Mikio Sato, Ichihara, all of Japan, assignors to Idemitsu Kosan Company Limited, Tokyo, Japan

Original No. 4,153,508, dated May 8, 1979, Ser. No. 839,900, Oct. 6, 1977. Division of Ser. No. 759,627, Jan. 17, 1977, Pat. No. 4,146,706. Application for reissue Sep. 4, 1980, Ser. No. 184,017

Claims priority, application Japan, Jan. 19, 1976, 51/4051; Apr. 5, 1976, 51/37224

Int. Cl.[3] C12P *19/04;* C12R *1/38*

U.S. Cl. 435—101 1 Claim

1. A process of producing a polysaccharide having a gel forming property which is characterized by the following properties: (1) comprising (a) glucose, (b) mannose, (c) dihydrostreptose and (d) 3-O-(1′ carboxyethyl)-L-rhamnose, the molar ratio of said constituents being (a):(b):(c):(d)=10:10:1–3:3–8, and (2) containing an O-acetyl group in an amount of from 8 to 14 weight percent calculated as acetic acid;

which comprises cultivating [a] *the* microorganism [Arthrobacter carbazolum] *strain FERM 2574 (ATCC-31258) or a polysaccharide producing mutant thereof* in a medium containing assimilable carbon sources and nitrogen sources until said polysaccharide is formed and substantially accumulated in the culture, and recovering the accumulated polysaccharide therefrom

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Re. 31,031

IMPLANTABLE ELECTRONIC HEARING AID

Adam M. Kissiah, Jr., 155 E. Brandy La., Merritt Island, Fla. 32952

Original No. 4,063,048, dated Dec. 13, 1977, Ser. No. 778,193, Mar. 16, 1977. Application for reissue Dec. 11, 1979, Ser. No. 102,377

Int. Cl.[3] H04R *25/00*

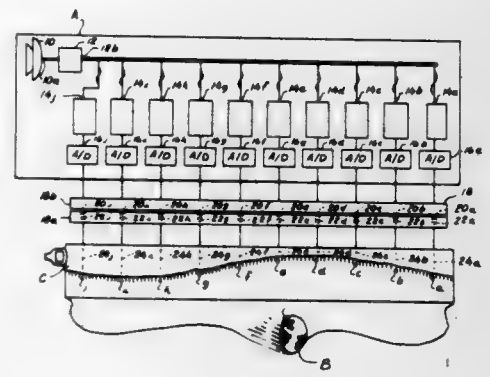
U.S. Cl. 179—107 R 8 Claims

1. An electronic hearing aid device for use in aiding a person having a [non-functioning] *malfunctioning* inner ear mechanism comprising:

receiver means for receiving an external audio signal and converting said signal into an analog voltage signal;

amplifier means connected to said receiver means for receiving said analog voltage signal and amplifying said voltage signal;

a plurality of frequency filter networks each having an input connected to an output of said amplifier means for receiving said amplified voltage signal and filtering said analog signal into a number of separate frequency component signals corresponding to a predetermined frequency range of each respective filter network;



[analog-digital] *analog-pulse* converter circuit means connected to the output of each filter network for receiving each said frequency component signal and converting said signal into a [digital] *pulsed* component signal; and

a plurality of [elongated] electrode members each having one end connected to an output of one of said converter circuit means with the remote end thereof adapted for being implanted adjacent a portion of the auditory nerve system [of the inner ear] for transmitting said [digital] *pulsed* component signals for interpretation in the hearing portion of the brain.

PLANT PATENTS

GRANTED SEPTEMBER 14, 1982

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,886

SEEDLING ROSE NO. 78-2R

Lowell L. Hoy, Jr., Richmond, Ind., assignor to Joseph H. Hill Company, Richmond, Ind.

Filed Jan. 5, 1981, Ser. No. 222,492
Int. Cl.³ A01H 5/00
U.S. Cl. Plt.—21 1 Claim

1. A new and distinct variety of rose plant substantially as herein shown and described, characterized, in particular, by its free, abundant and continuous production of flowers borne on long, strong stems and which have an improved vase life; its moderately abundant production of medium large leaves throughout the entire length of the stem; and by its vigorous and much branched growth habit.

4,887

LILY NAMED MERCI

Ted T. Kirsch, Myrtle Point, Oreg., assignor to Sun Valley Bulb Farms, Inc., Myrtle Point, Oreg.

Filed Dec. 12, 1980, Ser. No. 216,066
Int. Cl.³ A01H 5/00
U.S. Cl. Plt.—68 1 Claim

1. A new and distinct variety of Oriental Hybrid lily plant, substantially as herein shown and described, characterized by its medium-large, upwardly-facing flowers borne on strong, stiff and close to vertically upstanding pedicels, and by its generally flat, moderately spotted and reddish-pink appearing petals on which the color fades laterally from a dark red central and longitudinally-extending stripe.

PATENTS

GRANTED SEP. 14, 1982

ERRATA

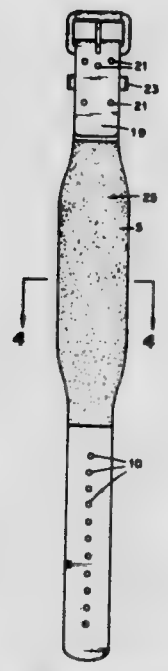
For CLASS	See PATENT NO.
114–345	4,348,779
336–125	4,348,824
464–162	4,348,874
464–170	4,348,875
374–124	4,348,898
525–054	4,349,467
524–302	4,349,468
524–765	4,349,469
549–297	4,349,481
549–518	4,349,482
378–083	4,349,736
378–049	4,349,738
378–099	4,349,739
378–025	4,349,740
290–040	4,349,744
360–015	4,349,757

PATENTS

GRANTED SEPTEMBER 14, 1982

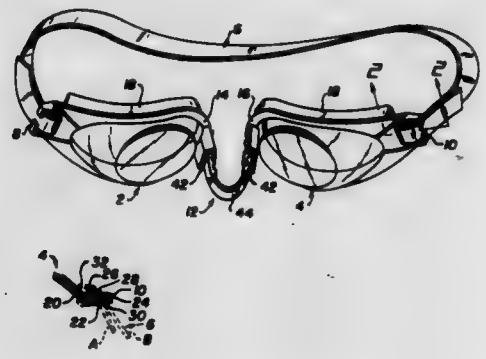
GENERAL AND MECHANICAL

4,348,774
WEIGHT LIFTER'S BELT
Thomas W. Woodson, Knoxville, Tenn., assignor to The Christian Leather Company, Inc., Knoxville, Tenn.
Filed Jul. 18, 1980, Ser. No. 170,171
Int. Cl.[3] A41F *9/00*
U.S. Cl. 2—338 4 Claims



1. In a weight lifting belt fabricated from leather having a relatively wide portion to cover the back and flanks of the wearer and having means to cinch the belt around the wearer, the improvement which comprises providing a liner which extends across the entire inner surface of the belt in the area of the back and flanks of the wearer, said liner being of a thickness less than the thickness of the leather belt, said liner being fabricated from a foamed flexible plastic having a Shore A Durometer hardness of between about 10 and 25 and the liner being attached to the inner surface of said belt by a flexible adhesive.

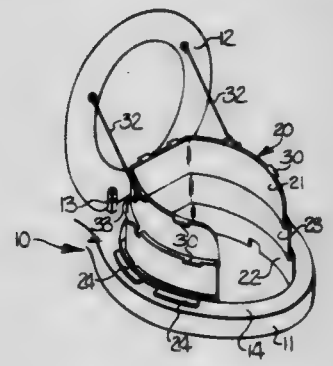
4,348,775
EYE PROTECTOR
Joseph Haalbeck, West Vancouver, Canada, assignor to Highland Mfg. Company, Ltd., Burnaby, Canada
Filed Dec. 4, 1980, Ser. No. 213,055
Int. Cl.[3] A61F *9/02*
U.S. Cl. 2—452 12 Claims

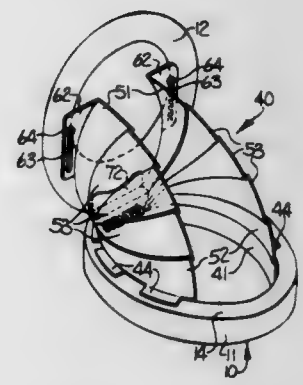


1. In an eye protector to be secured over at least one eye by a stretchable, imperforate, resilient head strap to attach the eye protector to the head of a wearer;

at least one inner slot and at least one outer slot formed at one edge of the protector through which slots the head strap is positioned and retained by frictional force, the improvement comprising the provision of a third slot extending outwardly from the outer slot to an outer edge of the protector, generally transverse to the outer slot, whereby the strap may be engaged in the outer slot by feeding an edge of the strap through the generally transverse third slot to engage in the outer slot.

4,348,776
COLLAPSIBLE SPLASH SHIELD FOR TOILET
Dale C. Sarjeant, 1425 Meadowood La., Charlotte, N.C. 28211
Filed Jul. 27, 1981, Ser. No. 287,055
Int. Cl.[3] E03D *1/00, 3/00, 5/00*
U.S. Cl. 4—300.3 9 Claims



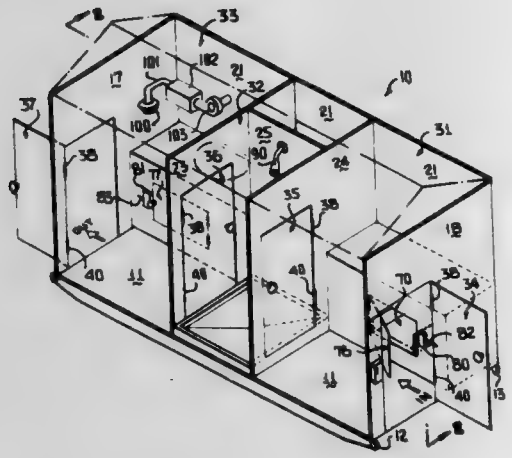


1. A collapsible splash guard for use with a toilet having a bowl and a seat hingedly connected to the bowl adjacent the rear of the bowl, said splash guard being adapted for movement between an extended operative position when the toilet seat is in the raised position and a collapsed storage position when the seat is in a lowered position, and said collapsible splash guard comprising a plurality of segments assembled in nested relationship and adapted to extend along opposite side portions of the toilet bowl, said segments being arranged in a collapsed storage position within the bowl of the toilet when the seat is in the lowered position, means for connecting one of said nested segments to the toilet seat so that said one segment is lifted upwardly from within the bowl when the toilet seat is moved to the raised position, means interconnecting the respective nested segments so that when the toilet seat is raised and said one segment is lifted upwardly, the other segments are moved with respect to one another from said collapsed nested relationship to an extended overlapping relationship positioned above the toilet bowl and forming an enclosure shieldingly surrounding the toilet bowl.

4,348,777
PORTABLE SHOWER

Guy E. Peterson, Rte. 3, Box 519, Irwin, Tenn. 37650

Filed Mar. 2, 1981, Ser. No. 239,475
Int. Cl.[3] A47K *3/22*
U.S. Cl. 4—596 29 Claims

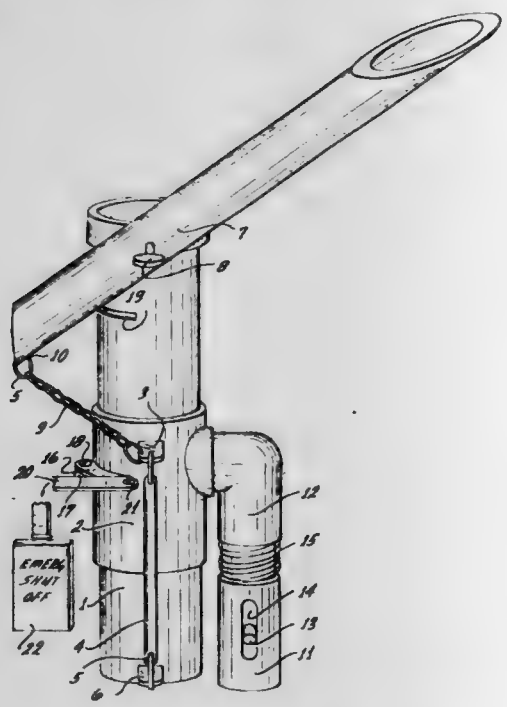


1. A shower module particularly adapted for use at construction sites, campgrounds, industrial plants, truck and auto service stations and the like in which persons can conveniently and efficiently shower comprising partition means for forming three compartments, first door means for entering a first of said compartments within which a person can disrobe, second door means for entering a second of said compartments from said first compartment, means for showering in said second compartment, third door means for entering a third of said compartments from said second compartment, fourth door means for exiting said third compartment, and conveyor means for conveying clothing from said first compartment to said third compartment whereby clothing placed upon said conveyor means by a person when in said first compartment can be reobtained from the conveyor means by the person when in said third compartment.

4,348,778
EMERGENCY TOILET WATER PROTECTION UNIT

Joseph P. Rau, 15351 Woodruff Pl., Bellflower, Calif. 90607

Filed Oct. 15, 1979, Ser. No. 84,603
Int. Cl.[3] A47K *17/00*
U.S. Cl. 4—661 6 Claims



1. In combination with a flush toilet having a toilet bowl and a water supply tank, said tank including a ball float and an outlet water control plunger located adjacent to an upwardly extending pipe mounted inside said supply tank, a device for preventing toilet water overflow, comprising:

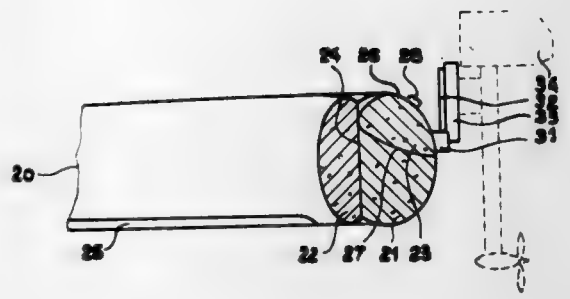
means for stopping the flow of water into and out of said supply tank, said means including a tubular sleeve member installed over said pipe, said tubular member including thereon an outer sleeve member, a control arm pivotedly attached to said tubular member and positioned below and in generally faced opposed relation to said ball float, a plunger member mounted onto and extending out from said outer sleeve member and positioned above and in generally faced opposed relation to said water control plunger, and,

means for triggering said means for stopping the flow of water so that said control arm and said plunger member contact said ball float and said water control plunger, respectively, to stop the flow of water into and out of said supply tank.

4,348,779
INFLATABLE BOAT WITH ADDITIONAL INFLATABLE ELEMENTS COMPENSATING FOR LOSS IN BUOYANCY

Edmond Leber, Buhl, France, assignor to Sevylor, France

Continuation of Ser. No. 851,189, Nov. 14, 1977, abandoned.
This application Aug. 9, 1979, Ser. No. 65,105
Claims priority, application France, Nov. 15, 1976, 76 34836
Int. Cl.[3] B63B *7/00;* B63C *9/04*
U.S. Cl. 114—345 5 Claims



1. An inflatable boat comprising, a hull comprising first and second inflatable elements disposed side-by-side and inflatable separately of sufficient buoyancy for supporting at least one of relatively heavy members secured to the hull, a plurality of additional separately inflatable elements in said hull disposed for buoyantly supporting at least one of said relatively heavy members and having a common wall and at least one of said additional inflatable elements being effectively expandable upon an adjacent one of the additional inflatable elements having said common wall rupturing, said at least one of said additional inflatable elements being disposed internally of one of said additional inflatable elements for effectively assisting in buoyantly supporting said at least one relatively heavy member upon expanding thereof, and said at least one additional inflatable element effectively expanding to maintain substantially the same buoyancy of said hull in the vicinity of said relatively heavy member prior to the rupturing of said adjacent one of the additional inflatable elements.

4,348,780
APPARATUS FOR ELEVATING A MOBILE RIG

Lawrence F. Angelo, Conroe; Frank A. Bryant, and John D. McLain, both of Houston, all of Tex., assignors to WellTech, Inc., Houston, Tex.

Filed May 23, 1980, Ser. No. 152,790
Int. Cl.[3] E01D *1/00*
U.S. Cl. 14—1 5 Claims

2. Apparatus for elevating a mobile rig positioned adjacent to a structure to an elevation above the ground level, which comprises:

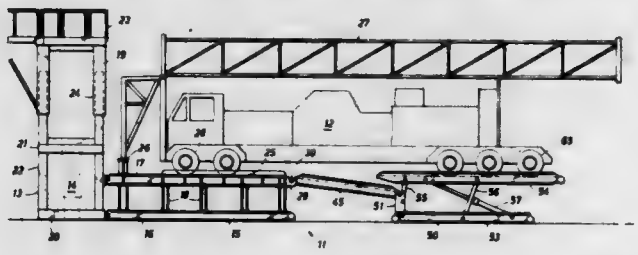
a portable first ramp adapted for supporting said rig and

positionable adjacent to said structure, said first ramp having a forward end and a rearward end with said rearward end being spaced more distant from said structure than said forward end, said first ramp being movable from a first position wherein said rearward end is proximate to said ground level to provide an inclined ramp to a second position wherein said forward and rearward ends are substantially at said elevation above said ground level;

means connected to said first ramp for moving said first ramp between said first and second positions;

a portable forward platform positionable between said structure and said forward end of said first ramp, said forward platform having forward and rearward ends, said forward end being adapted for attachment to said structure and said forward platform having a substantially level portion adapted for supporting said rig at said elevation above said ground level;

an inclined portable intermediate ramp positionable between said forward platform and said first ramp, said intermediate ramp having forward and rearward ends, said forward



end positionable proximate to said rearward end of said forward platform and said rearward end positionable proximate to said forward end of said first ramp when said first ramp is in said first position, wherein the slope of said intermediate ramp is substantially the same as the slope of said first ramp when said first ramp is in said first position;

said first ramp including a base having forward and rearward ends, a support for supporting said rig, forward legs pivotally connected between said base and said upper support; and rearward legs pivotally connected between said base and said upper support, wherein the lengths and positions of attachment of said forward and rearward legs are such that said upper support is pivotal between said first position and said second position;

said moving means including hydraulic cylinder means connected between said base and said upper support;

means for locking said upper support in said second position, including post means attached to said forward end of said base;

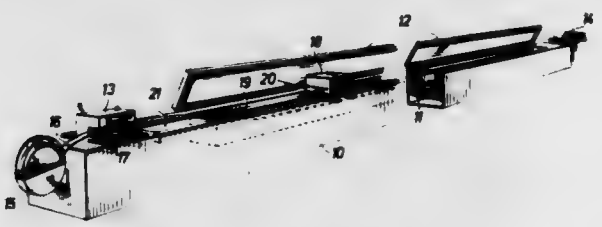
and means associated with said post means for pinning said forward legs to said post means.

4,348,781

HOSE CLEANING PLANT

Hans V. Wahlström, Bergasstigen 3, 182 33 Danderyd; Rolf E. Nilsson, Uttervägen 9, 195 00 Märsta, both of Sweden, and Kjell A. Pihlgren, Upplands Väsby, Sweden, assignors to Hans V. Wahlström, Danderyd and Rolf E. Nilsson, Märsta, both of, Sweden

Filed Apr. 1, 1981, Ser. No. 249,839
Int. Cl.³ A46B *13/02;* D06G *1/00*
U.S. Cl. 15—40 **6 Claims**



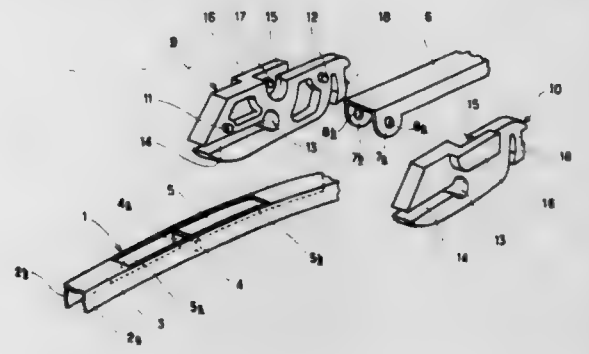
1. A plant for use in connection with cleaning fire hoses or other similar hoses, said plant comprising an elongated horizontal receptacle, in which a number of hoses may be placed side by side in extended positions, washing equipment provided at one end of the receptacle, and a transport device which is movable along the receptacle and by which a hose may be drawn through the washing equipment and along the receptacle, above the same, in order to be laid down in the receptacle upon the completion of a washing operation on said hose, characterized in that said transport device is formed by a carriage which is supported on rails, provided adjacent to the longitudinal upper edges of the receptacle, and which is provided with means for releasably holding an end portion of a hose in a selected position in the transversal direction of the receptacle.

4,348,782

WINDSCREEN WIPER COMPRISING AN ARM WITH AN ATTACHED END FITTING, IN PARTICULAR FOR MOTOR VEHICLES

Gerard R. Fournier, Chelles, France, assignor to Equipements Automobiles Marchal, Issy-les-Moulineaux, France

Filed Jul. 6, 1981, Ser. No. 280,202
Claims priority, application France, Jul. 7, 1980, 80 15081
Int. Cl.³ B60S *1/40*
U.S. Cl. 15—250.32 **15 Claims**



1. In a windscreen wiper comprising a windscreen wiper arm; a windscreen wiper blade fitting carried by said arm, and having two substantially parallel side flanges; an articulated wiper arm end fitting made of a plastic material and carried by the end of the arm, and itself pivotally supporting the wiper blade fitting, said wiper arm end fitting having first and second side surfaces and cooperating with said two substantially parallel side flanges of the said blade fitting, said plastic wiper arm end fitting comprising first and second components, said components including means defining, in assembled configuration of the wiper arm end fitting components, a recess whose shape corresponds to that of said wiper arm which carries the end fitting and which is positioned in said recess; the improvement wherein the thickness of the wiper arm end fitting, measured perpendicularly to said first and second side surfaces of the wiper arm end fitting, is substantially equal to the distance separating said two side flanges of the blade fitting whereby said first and second components of the end fitting may be locked together by the said side flanges after having been inserted therebetween.

4,348,783

SCRUBBING MACHINE WITH SELECTIVE RECYCLE

Albert S. Swanson, Robbinsdale, and Robert A. Geyer, Dayton, both of Minn., assignors to Tennant Company, Minneapolis, Minn.

Filed Nov. 10, 1980, Ser. No. 205,294
Int. Cl.³ A47L *11/30*
U.S. Cl. 15—320 **14 Claims**

1. A scrubbing machine comprising:

body means supported on a plurality of wheels;

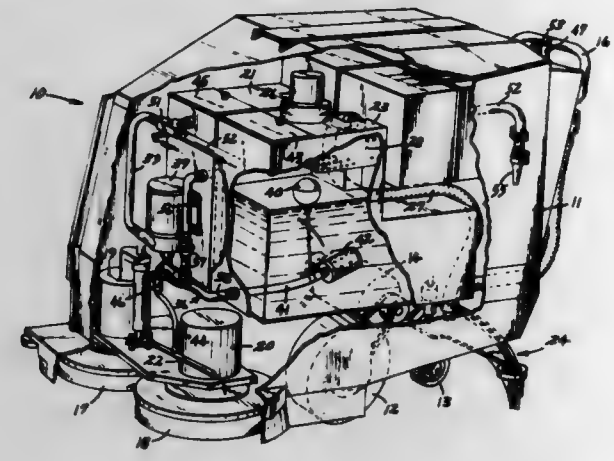
power means for rotatably driving at least one of said wheels;

a pair of tanks adapted to contain scrubbing solution;

means associated with one of said tanks for applying scrubbing solution from said one tank to a surface to be scrubbed;

means for working said solution on said surface;

means associated with the other of said tanks for picking up said solution from said surface to said other tank, said pick up means including a vacuum squeegee and pump means for lifting said solution from said squeegee to said other tank;



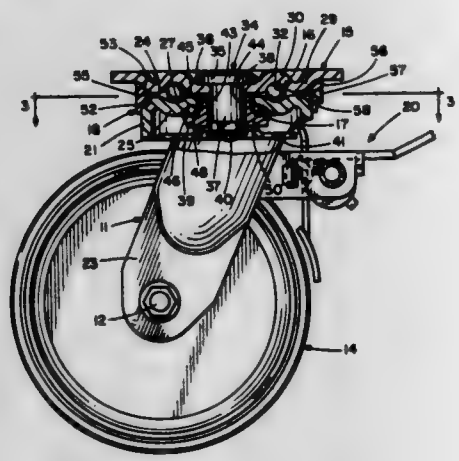
selective means, said selective means being adapted to selectively retain said solution in said other tank during scrubbing thereby providing single cycle scrubbing, said selective means being adapted to selectively pump said solution from said other tank to said one tank thereby providing recycle scrubbing, said selective means further being adapted to selectively pump said solution from said other tank to a discharge thereby providing rapid discharge of used scrubbing solution.

4,348,784

SWIVEL TYPE CASTER WITH SEAL AND LUBRICATION RING

Frank J. Fontana, Stratford, Conn., assignor to Stewart-Warner Corporation, Chicago, Ill.

Filed Jun. 23, 1980, Ser. No. 161,861
Int. Cl.[3] B60B *33/00*
U.S. Cl. 16—36 10 Claims



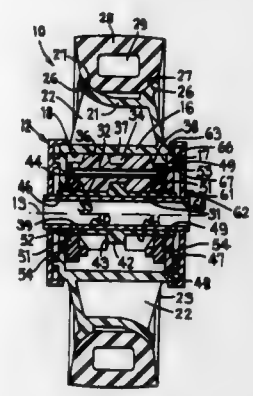
1. A swivel type caster assembly, comprising; horm means carrying an axle, a wheel mounted on the axle for rotation, said horn means having an upper bearing surface, a swivel plate mounted for rotation adjacent said horn means bearing surface, pin means interconnecting the swivel plate and the horn means, a plurality of ball bearings in annular array between the swivel plate and the horn means bearing surface, and a non-metallic seal surrounding and engaging the swivel plate and the horn means to prevent the escape of lubricant from the area of the ball bearings, said seal having a generally radially outwardly extending lubrication fitting communicating with said area.

4,348,785

WHEEL ASSEMBLY

Gerald J. Jordan, P.O. Box 93, Marceline, Mo. 64658

Continuation-in-part of Ser. No. 185,108, Sep. 8, 1980, Pat. No. 4,322,869. This application May 18, 1981, Ser. No. 264,383
Int. Cl.[3] A47B *91/00*
U.S. Cl. 16—046 10 Claims



1. A freely rotatable wheel assembly, comprising:

a one-piece freely-rotatable annular rim having an axially-elongated inner annular hub defining therein an elongated central opening in coaxial alignment with the rotational axis of said rim, said rim being constructed of a hard low-friction material, and said inner annular hub having an inner annular surface thereon which surrounds said opening for defining an outer bearing race;

bearing means positioned within said central opening for creating a low-friction rolling engagement between said rim and a shaft which is coaxially and centrally positionable within said opening;

said bearing means including an inner bearing race member formed as an axially-elongated sleeve which is concentrically disposed within said central opening and spaced radially inwardly from said outer bearing race for defining an annular region therebetween;

said bearing means also including a plurality of cylindrical rollers which are constructed of hard low-friction nonmetallic material, said rollers being positioned within said annular region and being angularly spaced apart around said rotational axis so that the axes of said rollers define a circular locus which is generated about said rotational axis, said rollers being individually disposed in direct rolling engagement with said outer bearing race and with an inner annular bearing race as defined on the exterior periphery of said inner bearing race member;

a pair of end caps fixedly mounted on said rim adjacent the opposite axial ends of said central opening for closing the opposite axial ends of said annular region, at least one of said end caps being fixedly connected to but removable from said rim, said pair of end caps defining therein coaxially aligned central openings which are coaxially aligned with said rotational axis, and said inner bearing race member having opposite end portions thereof which are snugly but rotatably positioned within the central openings defined by said end caps;

each said roller being constructed of one piece and having an encircling annular groove formed therein which separates said roller into two cylindrical roller portions which are both disposed in rolling engagement with the inner and outer bearing races, and said inner bearing race member having an annular rib fixedly and integrally associated therewith and projecting radially outwardly therefrom, said rib being snugly but rotatably accommodated within the annular groove formed on each said roller, said annular rib having opposite side surfaces which are positioned

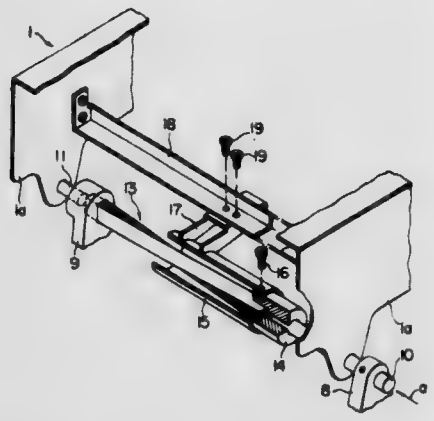
for slidable engagement with annular side surfaces formed on said roller at opposite sides of said groove.

4,348,786

OPENING AND CLOSING APPARATUS

Akira Hirose, Tokyo, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed Sep. 28, 1979, Ser. No. 80,791
Claims priority, application Japan, Oct. 18, 1978, 53/127998
Int. Cl.³ E05F *1/12, 5/00*
U.S. Cl. 16—75 **6 Claims**



1. An opening and closing apparatus for opening and closing a swingable member, comprising:

a swingable member which is to be opened and closed with respect to a base member thereof,

support means for supporting pivotally one end portion of said swingable member in a manner that said swingable member can be opened and closed with respect to said base member,

spring means having one end fixed to a portion for supporting said swingable member pivotally, said spring means being adapted to be twisted forcibly in the closing direction of said swingable member, and

transmission means for transmitting the resilient restoring force generated when said spring means is twisted in the closing direction of said swingable member to said swingable member during opening of said swingable member from its closed position, said transmission means being connected to said swingable member through a single arm extending in the vertical plane containing the center of gravity of said swingable member.

4,348,787

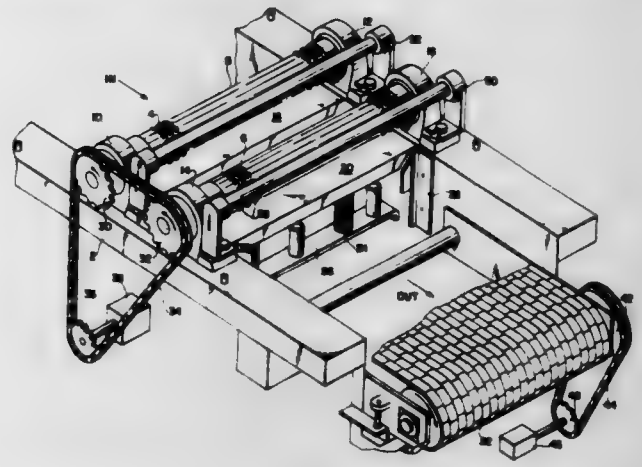
APPARATUS FOR TREATING MEAT PRODUCTS PRIOR TO PACKAGING

Guenter G. Wolff, R.D. 2, Box 441, Leesburg Rd., New Wilmington, Pa. 16142

Filed Sep. 18, 1978, Ser. No. 943,426
Int. Cl.³ A22C *9/00*
U.S. Cl. 17—27 **6 Claims**

1. An apparatus for treating meat products comprising:

a conveyor frame having an input end, an output end and a midportion, a first conveyor support roller mounted for rotation at said input end, a second conveyor support roller mounted for rotation at said output end, an endless foraminous metal conveyor passing around and frictionally engaging said conveyor support rollers for transporting said meat products, and having an upper band with an upper surface and a lower surface, said upper band transported from said input end to said output end, a first roller having a plurality of blunt teeth mounted for rotation on said frame above said upper surface for beginning treatment of said meat products, and positioned short of said midportion, a second roller having a plurality of blunt teeth mounted for rotation on said frame above said upper surface and positioned beyond said midportion in a direction of said upper band transport for finishing treatment of said meat products, a first tension plate mounted on said frame below said first roller having a plurality of blunt teeth in pressing relationship with said lower surface comprising said meat products into said first roller having a plurality of blunt teeth and a second tension plate



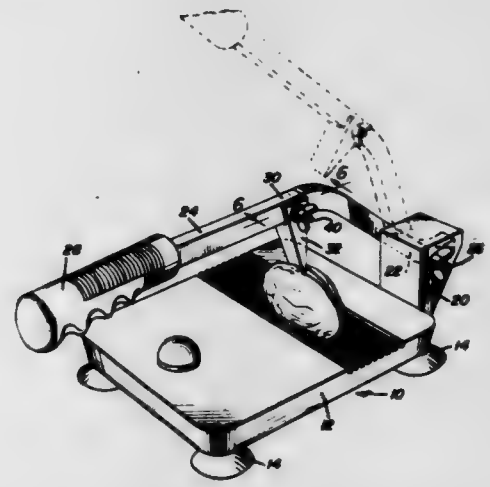
mounted on said frame below said second roller having a plurality of blunt teeth in pressing relationship with said lower surface for compressing said meat products into said second roller having a plurality of blunt teeth.

4,348,788

OYSTER OPENER

Frank C. Jurcak, P.O. Box 124, Lostant, Ill. 61334

Filed May 19, 1980, Ser. No. 151,423
Int. Cl.³ A22C *29/04*
U.S. Cl. 17—76 **4 Claims**



1. An oyster opener including a base defining an upwardly facing roughened surface portion, said base including a raised mounting point horizontally spaced to one side of said roughened surface portion, an elongated lever having one end pivotally anchored to said mounting point for swinging movement in an upright plane containing said mounting point and the roughened surface portion and about an axis disposed transverse to said one lever end, an intermediate portion of the said lever being disposed over said roughened portion and including a depending downwardly tapered wedge member supported therefrom for movement toward and away from said roughened surface portion upon similar swinging of said intermediate portion, the other end of said lever defining a handle portion, said wedge member including a generally horizontal lower apex edge extending transverse of said lever and generally paralleling said axis, said roughened surface portion being defined by a plurality of upwardly opening side-by-side grooves formed in the upper surface of said base and disposed generally normal to said plane, said wedge member extending vertically downwardly when said other end portion of said lever is generally horizontally disposed, the lower end of said wedge member being generally horizontally aligned with said

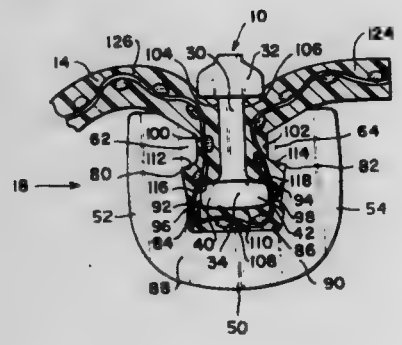
mounting point when said other end portion of said lever is generally horizontally disposed, the lower end of said wedge member being spaced generally (X) distance above said surface portion when said other end of said lever is horizontally disposed, the distance between the lower end of said wedge member and said mounting point being generally 2(X), and the effective vertical extent of said wedge member from the lower end thereof to said intermediate portion of said lever being generally 1½(X).

4,348,769

SLIDE FASTENER WITH IMPROVED CLAMPS AND METHOD OF MANUFACTURE

Robert H. Brown, Meadville, Pa., assignor to Talon, Inc., Meadville, Pa.

Filed Nov. 4, 1980, Ser. No. 204,119
Int. Cl.³ A44B *19/04, 19/32*
U.S. Cl. 24—205.1 R **8 Claims**



1. A slide fastener chain comprising

a pair of rows of spaced coupling elements;

each coupling element having a shank, a head on one end of the shank for interlocking with heads of the opposite row of coupling elements, and a base on the other end of the shank forming flanges protruding perpendicularly from opposite sides of the shank;

each base defining a bottom surface, a pair of opposite outer flange edges, and upper flange surfaces disposed toward the respective head;

a pair of tape-like flexible supporting portions defining an opening therebetween and having respective inner portions folded around the bases and over the shanks of the respective rows of coupling elements with the head portions protruding from the folded portions;

a pair of rows of clamps corresponding to the coupling elements and secured on the outside of the folded portions of the supporting portions to secure the folded portions on the bases and shanks of the corresponding coupling elements;

each clamp having a heel engaging the respective folded portion against the bottom surface of the corresponding base, and having a pair of legs extending from opposite sides of the heel over opposite sides of the respectve folded portion and engaging the respective folded portion with the outer flange edges and with the opposite sides of the shank of the corresponding coupling element;

each pair of legs having respective lips extending inward toward intermediate portions of the opposite sides of the shanks, and having land areas raised toward the respective outer flange edges for positioning the corresponding clamp relative to each coupling element in directions perpendicular to the opposite sides of the shank;

each lip having a lower inner surface facing the respective upper flange surface, and each heel having a flat inner surface positioning the corresponding clamp relative to each coupling element in directions parallel to the shank; and

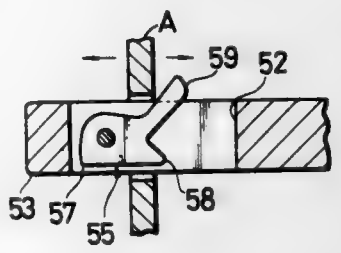
each of said heel and said pairs of legs defining junctions therebetween having substantially reduced thickness relative to central portions of the heels and the legs forming inner corners at the junctions for receiving displaced portions of the flexible supporting portions from between the bottom surface of each base and the flat inner surface of each heel and from between the raised land areas of legs and the outer flange edges.

4,348,790

LOCKING DEVICE

Kikuzo Kuramoto, and Takahiro Enoki, both of Nihonbashi, Japan, assignors to Nisso Industries Co. Ltd., Japan

Filed Dec. 19, 1979, Ser. No. 105,015
Claims priority, application Japan, Dec. 29, 1978, 53-182271[U]
Int. Cl.³ F16B *21/00;* A43C *11/08;* E05C *3/02*
U.S. Cl. 24—211 P **3 Claims**



1. A gravity locking device for locking a brace having an opening therein comprising:

a bar member having a front end engageable into the brace opening, and a groove spaced from said front end defining a thick bar portion;

a stopping piece rotatably mounted in said groove about a pivot axis which is nearer said bar member front end than a center of gravity of said stopping piece;

said stopping piece having an abutment portion extending from a front end of said stopping piece adjacent said bar member front end, engageable with said groove to hold said stopping piece in a locking position;

said stopping piece further including an engaging stop position defining a vertical surface with said stopping piece in its locking position, extending from a rear end of said stopping piece opposite the front end thereof; and

said stopping piece including a projection portion projecting from said stopping piece rear end at an angle to said vertical surface;

said groove extending through said bar member, said engaging stop portion extending from one side of said groove in said stopping piece locking position and projection extendable from an opposite side of said groove with said stopping piece out of its locking position, whereby said projection is engageable by the brace to be locked to rotate said stopping piece into its locking position.

4,348,791

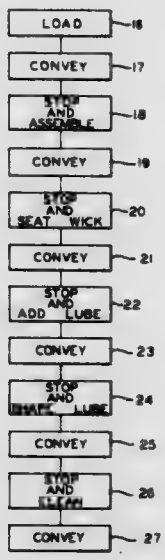
APPARATUS AND METHODS FOR ASSEMBLING END SHIELD ASSEMBLIES FOR DYNAMOELECTRIC MACHINES

James M. Tomson, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Filed Mar. 7, 1980, Ser. No. 128,085
Int. Cl.³ H02K *15/14*
U.S. Cl. 29—598 **18 Claims**

1. A method of assembling an end shield assembly for an electric motor wherein the assembly includes at least an end frame, a bearing supported by the end frame, lubricant for the bearing, a feed wick for transmitting lubricant to the bearing, and an oil well cover that at least partly defines a lubricant storage reservoir, the method comprising: intentionally placing a feed wick on the end frame in a proper temporary position relative to the end frame wherein such proper temporary position is improper for properly feeding oil to a shaft but proper for permitting mechanized assembly of an oil well cover and end frame; assembling an oil well cover with the end

frame by pressing the oil well cover onto a centrally located hub that forms part of the end frame and thereby substantially surrounding the temporarily properly positioned feed wick;



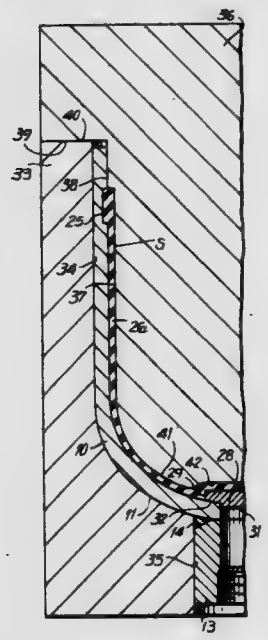
seating the feed wick in a final position relative to the oil well cover after the oil well cover and end frame are assembled together; and thereafter admitting an initial charge of bearing lubricant to the oil reservoir.

4,348,792

METHOD OF MAKING LOW COST ACCUMULATOR

Abduz Zahid, Los Angeles, Calif., assignor to Greer Hydraulics, Incorporated, Chatsworth, Calif.

Filed Nov. 18, 1980, Ser. No. 207,883
Int. Cl.³ B21D *53/00*; B21K *29/00*; B23P *15/26*
U.S. Cl. 29—157 R **3 Claims**



1. The method of manufacturing a hydraulic accumulator device of the type which comprises a pressure vessel including an oil port at one end, a gas charging port at the other end and a resilient elastomeric bladder member disposed within said vessel and dividing the same into two chambers in communication, respectively, with said oil port and said gas port, which comprises the steps of

providing a pressure vessel in the form of a generally cylindrical shell having an open mouth portion at one end, a restricted orifice defining an oil port at the other end, and an internal annular retainer groove adjacent said open mouth portion,

providing a valve button member sized to seal said oil port,

seating said button in sealing position of said oil port,

applying a bonding agent to the walls defining said groove and to surfaces of said button,

thereafter introducing into the interior of said vessel a volumetrically controlled charge of uncured elastomeric prepolymer,

thereafter introducing concentrically into said pressure vessel a male mold member sized to define with the interior of said vessel and button a predetermined clearance space, having a volume corresponding substantially to the volume of said change, thereby to distribute said charge of prepolymer into said clearance space,

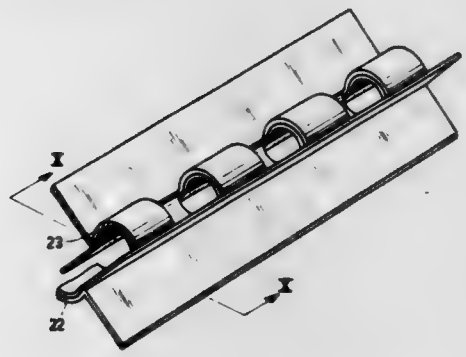
thereafter subjecting said distributed charge to heat and pressure to cause said charge to cure in the shape of a bladder lining said vessel, and to bond said bladder to said button and said annular groove while leaving the remainder of said bladder free of connection to said vessel, and thereafter securing a cap having a gas charging port to said mouth portion of said vessel.

4,348,793

METHOD OF CONNECTING A PLATE-SHAPED ABSORBER FOR SOLAR HEAT TO A TUBULAR HEAT TRANSPORT SYSTEM

Herman Bloem, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 9, 1980, Ser. No. 158,001
Claims priority, application Netherlands, Jun. 29, 1979, 7905056
Int. Cl.³ B23P *15/26*
U.S. Cl. 29—157.3 A **2 Claims**



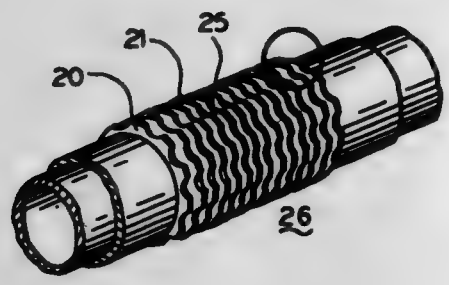
1. A method of connecting a straight tubular metal heat pipe having an evaporator section and a condenser section to two elongate flat solar-heat metal absorber plates, which comprises forming a plurality of equally spaced parallel cuts in each absorber plate, said cuts extending transversely of the longitudinal direction of each absorber plate; disposing the two absorber plates one on the other with their respective parallel cuts in alignment; deforming alternate portions between consecutive cuts in opposite directions to provide alternate oppositely disposed semi-cylindrical portions, the two absorber plates remaining in contact with each other; inserting the evaporator section of the tubular heat pipe in the cylindrical space formed by said alternate oppositely disposed semi-cylindrical portions; mechanically pressing said semi-cylindrical portions against the evaporator section of the heat pipe to clamp the absorber plates thereto and to provide thermal conductive contact therewith; and bending the respective remainders of the two absorber plates away from each other into an outwardly extending X-shape with respect to the heat pipe.

4,348,794

DOUBLE-WALLED FINNED HEAT TRANSFER TUBE

Sung C. Kim, Des Plaines, and Marvin P. Schwartz, Arlington Heights, both of Ill., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Division of Ser. No. 903,049, May 5, 1979, Pat. No. 4,232,735.
This application Jul. 11, 1980, Ser. No. 168,033
Int. Cl.[3] B23P *15/26*
U.S. Cl. 29—157.3 AH 7 Claims



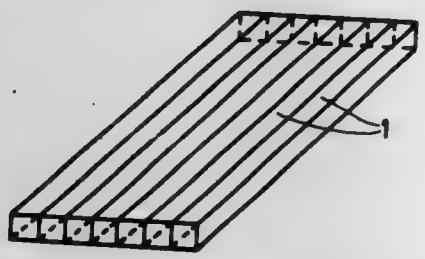
1. The method of forming a double-walled heat transfer tube comprising the steps of:
(a) forming an elongated inner tubular member;
(b) forming an elongated outer tubular member having dimensions such that said ouer tubular member fits over said inner tubular member;
(c) subjecting at least a portion of the outside surface of said outer tubular member to an operation so as to produce external fins on the outer tubular member;
(d) assembling said inner tubular member inside outer tubular member;
(e) subjecting said assembly to inward crimping forces to lock said inner tubular member within said outer tubular member
and to reshape said outer tubular member to form a plurality of radial convexities and concavities, the inner surface of said convexities being in intimate contact with the outer surface of said inner tubular member and said radial concavities forming channels between said inner and outer tubular members.

4,348,795

METHOD OF MANUFACTURING COOLING BLOCKS FOR SEMICONDUCTOR LASERS

Anthony H. Deunhouwer, and Hendrikus G. Kock, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 6, 1980, Ser. No. 157,139
Claims priority, application Netherlands, Jun. 11, 1979, 7904550
Int. Cl.[3] B23P *17/00*
U.S. Cl. 29—411 5 Claims



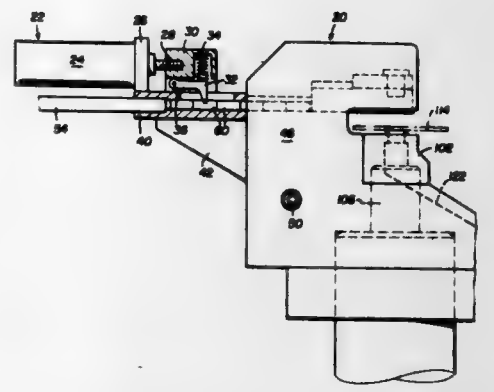
1. A method of manufacturing cooling blocks for semiconductor lasers, which comprises:
providing each of a plurality of bodies to be formed into cooling blocks with flat surfaces;
fastening said flat surfaces together with a thin layer of a curing adhesive;
machining said bodies in a direction transverse to that of said flat surfaces to obtain a further flat surface which intersects said flat surfaces of said bodies to define edges for each of said bodies, said edges having rounding-off radii of less than about two microns, said thin layer of curing adhesive substantially preventing deformation and burring of the edges of said bodies at said further flat surface during machining;
further machining said bodies to form said cooling blocks; and
removing said adhesive and separating said bodies into individual cooling bodies.

4,348,796

NUT INSTALLATION APPARATUS AND METHOD

Jon M. Smallegan, Farmington Hills, Mich., assignor to Multifastener Corporation, Detroit, Mich.

Filed Feb. 6, 1980, Ser. No. 118,931
Int. Cl.[3] B21P *19/04*
U.S. Cl. 29—432 11 Claims



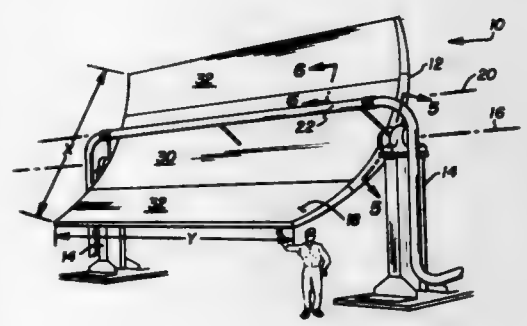
1. A method of attaching nuts to a panel, said nuts interconnected by frangible connector means in serial alignment to form a strip of nuts, the method comprising the steps of:
(a) supporting said panel on a support means opposite the end nut of said strip,
(b) removing the end nut of said strip of nuts by breaking said frangible connector means, and
(c) attaching said end nut to said panel by moving said panel into locking engagement with said end nut while moving the remaining nuts of said strip away from the engagement of the end nut with said panel.

4,348,797

METHOD OF INSTALLING A SOLAR COLLECTOR

Joseph A. Hutchison, Dallas, Tex., assignor to Solar Kinetics, Inc., Dallas, Tex.

Division of Ser. No. 86,314, Oct. 19, 1979, Pat. No. 4,297,003.
This application Jun. 22, 1981, Ser. No. 275,636
Int. Cl.[3] B23P *19/00*
U.S. Cl. 29—434 2 Claims



1. A method of installing an extended width parabolic trough type solar collector comprising the steps of: (a) erecting at least two vertically extending supports: (b) pivotally supporting a central module having a curved front surface on a front skin and a spaced rear skin from said supports to extend horizontally between said supports whereby said module will rotate about a horizontally extending axis; (c) connecting at

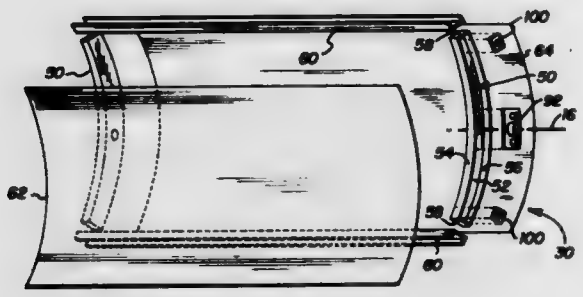
least one wing module to an edge of said center module in a position whereby the front surface of said center module and the front surface of said wing module cooperate to form a single parabolic surface.

4,348,798

METHOD OF MANUFACTURING SOLAR COLLECTOR MODULE

Joseph A. Hutchison, Dallas, Tex., assignor to Solar Kinetics, Inc., Dallas, Tex.

Division of Ser. No. 86,314, Oct. 19, 1979, Pat. No. 4,297,003. This application Jun. 22, 1981, Ser. No. 275,637
Int. Cl.³ B23P *11/02*
U.S. Cl. 29—448 3 Claims



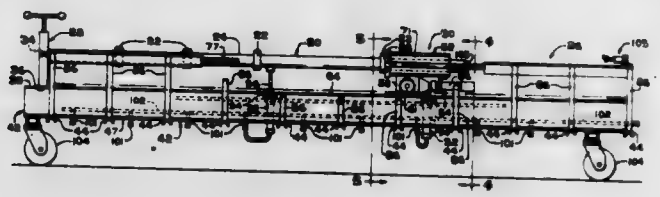
1. A method of manufacturing a curved solar collector module comprising the steps of: forming a plurality of bulkheads and connector means with at least one corresponding front edge of each of said bulkheads conforming to a predetermined curved shape; forming flanges on the front and rear edges of said bulkheads and said connector means; forming a rigid four-sided curved frame by rigidly affixing connector means to spaced bulkheads whereby said bulkheads and said connector means each have flanges extending outwardly from said frame to form a flange which extends around each of the front and rear surfaces of said frame; rigidly affixing front and rear skins respectively to the front and rear flanges of said frame to form a monocoque having a curved front surface.

4,348,799

APPARATUS FOR INSTALLING ROLLS ON A CONVEYOR SHAFT

Tom J. Lord, Athens, Ga., and William V. Snyder, Carlisle, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 22,906, Mar. 22, 1979, Pat. No. 4,279,071. This application Mar. 2, 1981, Ser. No. 239,255
Int. Cl.³ B23P *11/02*
U.S. Cl. 29—450 1 Claim



1. A method of mounting rings made of resilient, flexible material on a rigid shaft wherein outside diameter of the shaft is at least equal to inside diameter of the rings, comprising the steps of:

mounting the shaft against movement in a predetermined direction along a path generally parallel to the longitudinal axis of the shaft;

supporting the shaft in the path by engaging the shaft at selected positions intermediate to its ends;

moving a ring over the shaft;

disengaging the shaft at the selected positions as the ring moves toward the selected positions;

engaging the shaft at the selected positions as the ring passes the selected positions;

positioning the ring in a preselected position on the shaft; and

repeat the above steps to mount additional rings on the shaft.

4,348,800

PRODUCTION OF STEEL PRODUCTS WITH MEDIUM TO HIGH CONTENTS OF CARBON AND MANGANESE AND SUPERIOR SURFACE QUALITY

Dionisyj Demianczuk, Parma; Gregory J. McLean, Brecksville, and Joseph E. Franklin, Medina, all of Ohio, assignors to Republic Steel Corporation, Cleveland, Ohio

Filed Apr. 14, 1980, Ser. No. 139,873
Int. Cl.³ B22D *23/06*
U.S. Cl. 29—527.7 9 Claims

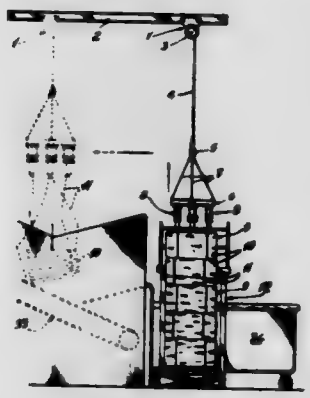
1. A method of making a high-strength steel product, comprising pouring an ingot mold 80% to 95% full of molten steel consisting essentially of 0.01 to 0.12% C, 0.1 to 0.6% Mn, 0 to 2.0% Cu, 0.15 max. % P, and 0.20 max. % S, balance iron and incidental elements, allowing said filling to undergo rimming action while a shell of rimmed steel solidifies next to the mold surrounding a still-molten core, and then completing pouring of said molten steel into said ingot mold while adding to the molten steel in the mold sufficient carbon so that the core of the ultimate, filled ingot contains carbon in the range above 0.12%, to 0.9%, said addition to the molten steel in the mold during said completion of pouring also including adding material to provide a total core content of 0 to 0.20% P, 0 to 0.5% S, 0 to 3.5% Si, 0 to 0.5% Al, 0 to 0.75% of each of one or more of the elements Cb, V, Ti and Zr, 0 to 0.075% B, 0 to 2.0% Cu, 0 to 2.0% Cr, 0 to 3.5% Ni and 0 to 1.0% Mo; and after solidification of the said ferrite-shell-carrying ingot, converting, by rolling, that part of the solid ingot which was poured first and which constitutes at least about the lower 80% of the solid ingot, to a rolled product having a skin of rimmed steel which is essentially ferrite over the principal surface area of the product, and beneath said skin a core containing carbon in greater proportion than 0.12%, said addition of carbon during said completion of pouring of the first-defined molten steel being effected by injecting solid material containing carbon so that such carbon enters the molten steel in the mold while the stream of molten steel, which completes the pouring, falls into the steel in the mold.

4,348,801

BALE UNTYING MACHINE

Antonio J. Dumont, 74 Boucher St., Edmundston, New Brunswick, Canada E3V 1P7, and Mario Therianlt, R.R. #1, Edmundston, New Brunswick, Canada E3V 3K3

Filed Sep. 16, 1980, Ser. No. 187,952
Int. Cl.³ B26D *7/02*; B65B *69/00*
U.S. Cl. 29—564.3 7 Claims



1. A bale untying tool comprising a first catch member having a lateral projection engageable under a tie secured around a bale of material, said lateral projection having a first cutting edge at one end and a tie-supporting surface adjacent

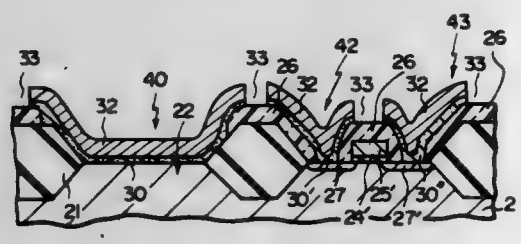
said first cutting edge, a second catch member movably mounted on said first catch member and co-operating with said tie-supporting surface to engage and clamp said tie with said tie extending over said cutting edge, a cutter member mounted on said first catch member for movement relative to the same independently of said second catch member and having a second cutting edge co-operable with said first cutting edge to engage and shear said tie, means to move said cutter member towards and away from said first cutting edge, biasing means extending between said second catch member and said cutter member and biasing said second catch member to clamp said tie against said tie-supporting surface prior to shearing of said tie by said cutting edges, and means operable by movement of said cutter away from said first cutting edge to cause release of said tie by said second catch member.

4,348,802

PROCESS FOR PRODUCING A SEMICONDUCTOR DEVICE

Takehide Shirato, Hiratsuka, Japan, assignor to Fijitsu Limited, Kawasaki, Japan

Filed Apr. 11, 1980, Ser. No. 139,168
Claims priority, application Japan, Apr. 18, 1979, 54-47417
Int. Cl.[3] H01L *21/208, 21/26, 21/28*
U.S. Cl. 29—571 13 Claims



1. A process for producing a semiconductor device with shallow doped regions in a substrate and at least one substrate contact, said process comprising the steps of:

defining on said semiconductor substrate borders of at least one semiconductor element region wherein said shallow doped regions are to be formed and at least one substrate-contact region;

forming on each said semiconductor element region at least one layer of a material which is comprised in a part of a semiconductor element, this part being located on the surface of said substrate, and simultaneously forming on said at least one substrate-contact region masking layer consisting of said material;

doping each said shallow region while preventing the doping of said substrate contact-region by use of said masking layer; and

thereafter, removing said masking layer and forming on each said substrate-contact region a contact electrode which is ohmically connected to said semiconductor substrate.

4,348,803

PROCESS FOR PRODUCING A SEMICONDUCTOR DEVICE HAVING AN IDENTIFICATION MARK IN AN INSULATING SUBSTRATE

Nobuo Sasaki, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

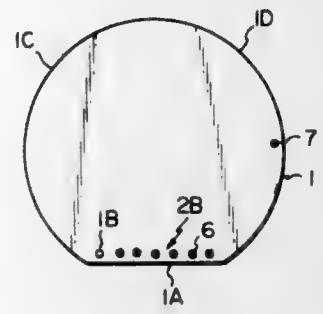
Filed Jun. 4, 1980, Ser. No. 156,372
Claims priority, application Japan, Jun. 4, 1979, 54-69798
Int. Cl.[3] H01L *21/66, 21/84*
U.S. Cl. 29—574 23 Claims

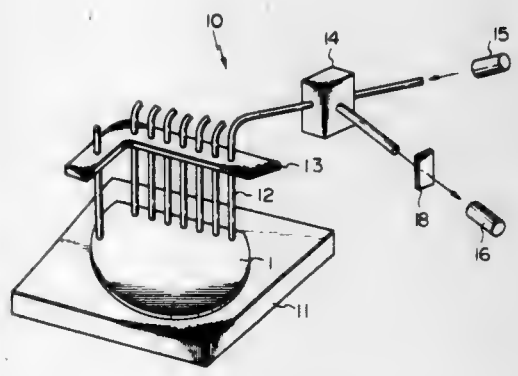
1. A process for producing a semiconductor device having a identification mark in an insulating substrate, said device including a semiconductor layer formed on said insulating substrate and semiconductor elements formed in said semiconductor layer, said process comprising the steps of:

selecting said insulating substrate to be of sapphire or spinel;

ion implanting a selected material into a selected part of said insulating substrate, said selected material comprising chromium or titanium; and

completing the formation of said semiconductor device, wherein





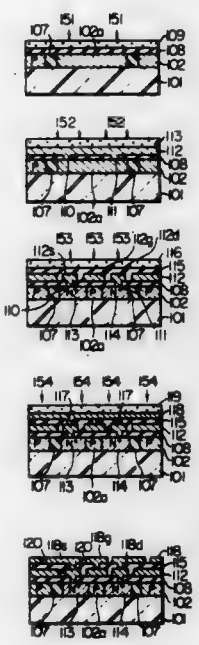
a selected one of said steps of ion implanting and completing the device formation includes a heating of said substrate for developing said identification mark.

4,348,804

METHOD OF FABRICATING AN INTEGRATED CIRCUIT DEVICE UTILIZING ELECTRON BEAM IRRADIATION AND SELECTIVE OXIDATION

Mitsuru Ogawa, Fuchu, and Seiichi Iwamatsu, Hamuramachi, both of Japan, assignors to VLSI Technology Research Association, Kanagawa, Japan

Filed Jul. 10, 1979, Ser. No. 56,239
Claims priority, application Japan, Jul. 12, 1978, 53-84030; Jul. 26, 1978, 53-90496
Int. Cl.[3] H01L *21/302, 21/312*
U.S. Cl. 29—580 6 Claims



1. A method of fabricating a semiconductor integrated circuit device comprising the steps of:

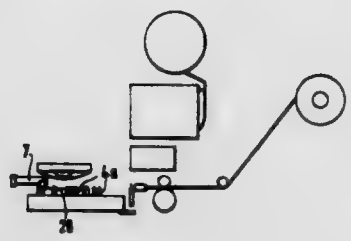
(a) forming a first insulation film on a first semiconductor layer formed on an insulation substrate;
(b) removing selectively said first insulation film linearly along the profiles of first desired pattern regions in which circuit elements are to be formed in said first semiconductor layer through electron beam irradiation thereby to form a first linear aperture pattern in said first insulation film;
(c) etching selectively first semiconductor layer exposed in said first aperture pattern in said first insulation film thereby to form in said first semiconductor layer a groove which is located along said profiles of first desired pattern regions and penetrates said first semiconductor layer;
(d) oxidizing the wall of said groove so as to completely fill said groove with formed oxide of said semiconductor layer at substantially the same time thereby to form an isolating oxide region which isolates said first pattern regions of said first semiconductor layer from each other;
(e) removing said first insulation film and forming a second insulation film on said first semiconductor layer having said isolating oxide region;
(f) removing selectively said second insulation film through electron beam irradiation thereby to form at least one aperture for allowing impurity diffusion to at least one of said first pattern regions of said first semiconductor layer;
(g) forming a second semiconductor layer on said second insulation film;
(h) removing selectively said second semiconductor layer through electron beam irradiation along the profiles of second desired pattern regions in which wirings are to be formed in said second semiconductor layer thereby to form a second linear aperture pattern; and
(i) diffusing impurity contained in the pattern regions of said second semiconductor layer selectively into at least one of the first pattern regions of said first semiconductor layer through said aperture formed in said second insulation film.

4,348,805

METHOD FOR THE PRODUCTION OF WIRING LOOMS

Ralph D. Gibbons, Basingstoke, England, assignor to Lansing Bagnall Limited, Hampshire, England

Filed Jun. 13, 1979, Ser. No. 48,582
Claims priority, application United Kingdom, Jun. 15, 1978, 27015/78
Int. Cl.³ H01R *43/00*
U.S. Cl. 29—857 **4 Claims**



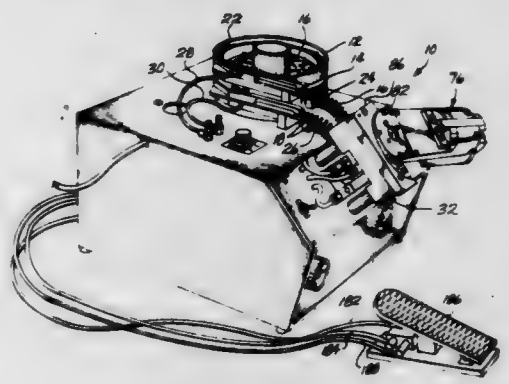
1. A method of providing wires for making a wiring loom, using a loom board adapted to receive releasable guide pins such that said guide pins protrude from a surface of said loom board, and an automatic manipulator means which moves and is actuated in accordance with pre-programmed stored commands, the method comprising the steps of:
(i) causing said manipulator means to remove said guide pins from a supply thereof and to place said guide pins at predetermined positions on said loom board so that said guide pins project from said loom board surface and define a plurality of predetermined paths for wires of said loom, each of said paths extending between said guide pins defining the respective path;
(ii) presenting a plurality of wires from supplies thereof;
(iii) causing said manipulator means to grip a selected wire;
(iv) feeding a predetermined length of the selected wire to the said manipulator means;
(v) cutting the wire to sever the length thereof;
(vi) causing the said manipulator means to anchor the length of wire at one end thereof and to lay said length along a respective one of said predetermined paths;
(vii) repeating the steps (iii) to (vi) so that a length of a respectively selected wire is laid along each of said predetermined paths;
(viii) fastening the lengths of wire together while they are located along said predetermined paths, so as to form a bundle of wires constituting the required wiring loom; and
(ix) removing said bundle of wires from said loom board.

4,348,806

SELECTIVE CONTACT CRIMPER

William J. Eves, Woodinville, and Luis J. Lazaro, Jr., Seattle, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Mar. 17, 1980, Ser. No. 130,791
Int. Cl.³ H01R *43/04*; B23P *19/00*
U.S. Cl. 29—863 **17 Claims**



1. An apparatus for selectively crimping one of a pair of contacts comprising: means for automatically feeding a succession of first wire contacts to a first reference hole in a guide block, means for automatically feeding a succession of second wire contacts to a second reference hole in the guide block, a crimping device above the guide block and pivotally mounted on said apparatus to permit selectively positioning a crimping head in alignment with one of the reference holes in the guide block, and means for selectively moving one of the wire contacts in the reference hole up to the aligned crimping head for crimping to a wire end.

14. A method for selectively crimping one of a pair of wire contacts, with steps comprising separately feeding two separate lines of wire contacts into terminating parallel holes in a guide block, selectively placing a crimper head of a pivotally mounted crimper into alignment with the parallel holes, raising a contact from one of said separate lines located in an aligned one of said terminating parallel holes up into the crimper, and placing a wire end into the contact and crimping.

4,348,807

PEELING DEVICE

Raymond G. Ashdown, and Barbara P. Ashdown, both of 32 Nundah St., Kedron, Queensland, 4031, Australia

Filed Feb. 19, 1981, Ser. No. 236,059
Claims priority, application Australia, Feb. 28, 1980, PE 2586
Int. Cl.³ A47J *17/02*; B26B *7/00*
U.S. Cl. 30—123.6 **6 Claims**

1. A vegetable peeler including:
a pair of arms interconnected adjacently for relative reciprocal movement,
a cutter on each arm, the cutters extending laterally in opposite directions from the adjacent arms and having cutting leading edges,

means for reciprocating the arms and the cutters thereon so one cutter is advanced as the other is retracted, and



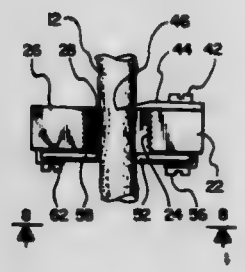
depth gauge means connected to the cutters for limiting their penetration into an article being peeled thereby.

4,348,808

HARVESTING TOOL

Harutyun G. Nalbandyan, 4421 Melbourne Ave. #5, Los Angeles, Calif. 90027

Filed Dec. 15, 1980, Ser. No. 216,294
Int. Cl.[3] B26B *13/20*
U.S. Cl. 30—134 4 Claims



1. A harvesting tool comprising:

a first elongated member having a first outer end and a first inner end, said first outer end having first grasping means, said first inner end having first handle means;

a second elongated member having a second outer end and a second inner end, said second outer end having second grasping means, said second inner end having second handle means, said second elongated member being pivotally connected by pivot means to said first elongated member, said pivot means being located intermediate said ends of both said first and second elongated members, said first grasping means to cooperate with said second grasping means to facilitate manual grasping and holding of a plant stem;

said first grasping means including a first preliminary grasping member and a first main grasping member, said second grasping means including a second preliminary grasping member and a second main grasping member, said first and second main grasping members to be in secure contact with the plant stem when said first main grasping member is located directly adjacent said second main grasping member, initial grasping of the plant stem is achieved by the combined grasping action of said first and second preliminary grasping members prior to movement into contact with the plant's stem by said first and second main grasping members; and

cutting means mounted on said first outer end for cutting the plant stem.

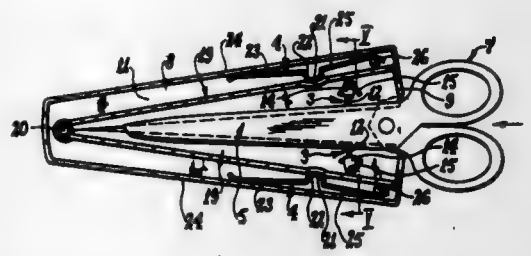
4,348,809

COMBINATION SHARPENER DEVICE AND SCISSORS

Dennis B. Jackson, Nunawading, Australia, assignor to Wiltshire Cutlery Company Proprietary Limited, South Melbourne, Australia

Filed Nov. 19, 1979, Ser. No. 95,264
Int. Cl.[3] B24B *3/52*
U.S. Cl. 30—138 12 Claims

1. In combination, a sharpening device and scissors, the sharpening device including, a hollow housing for receiving scissor blades, a pair of sharpener units located within said housing adjacent an open front end thereof and being arranged in opposed relationship to receive said blades between them, means mounting at least one said sharpener unit for movement towards and away from the other, and biasing means acting on said movable sharpener unit to urge it in a direction towards the other said sharpener unit, the scissors having two pivotally connected blades each having a cutting edge and a back edge,



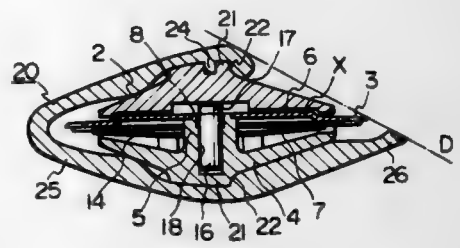
the scissors having a closed condition in which the cutting edge of each blade is in substantially the same plane as the back edge of the other blade, so that upon passing the blades between the sharpener units of the sharpening device material is removed simultaneously from a respective said cutting edge and the adjacent said back edge.

4,348,810

BLADE PART ASSEMBLING STRUCTURE FOR ELECTRIC SHAVER

Takeshi Oda, and Hiroshi Kikuchi, both of Kadoma, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

PCT No. PCT/JP79/00165, § 371 Date Feb. 29, 1980, § 102(e) Date Feb. 29, 1980, PCT Pub. No. WO80/00141, PCT Pub. Date Feb. 7, 1980
PCT Filed Jun. 26, 1979, Ser. No. 250,741
Claims priority, application Japan, Jun. 30, 1978, 53/80383
Int. Cl.[3] B26B *19/04*
U.S. Cl. 30—210 9 Claims



1. A blade part assembling structure for electric shaver characterized in comprising a stationary blade having comb-shaped teeth at edge portions, a movable blade having comb-shaped teeth corresponding to said comb-shaped teeth of said stationary blade and slidable with respect to the stationary blade, a push-up means for pressing said movable blade against the stationary blade, and fitting pins for mounting the stationary blade to a base, said fitting pin being formed to be rectangular or elliptic at upper end flange part and being rotatably fitted to be at least displaceable in a first position where the lengthwise direction of said upper end flange part coincides with sliding direction of the movable blade and a second position where the lengthwise direction of the upper end flange part coincides with the direction intersecting at right angles said sliding direction of the movable blade, said movable blade being provided with fitting holes longer in the sliding direction of the movable blade than the length in the lengthwise direction of the upper end flange part of the fitting pin but shorter in the direction intersecting at right angles the sliding direction, said stationary blade being provided with fitting holes shorter in the sliding direction than the length in the lengthwise direction of the upper end flange part of the fitting pin but longer in the direction intersecting at right angles the sliding direction, said movable blade allowing the flange parts of the

fitting pins to pass through its fitting holes in said first positions of the fitting pins to mount the blade to the blade holder and allowing the lower surfaces of the flange parts to engage with the peripheral edges of the short sides of the fitting holes in the second positions of the fitting pins, and said stationary blade further allowing the flange parts of the fitting pins to pass through the fitting holes in the second positions of the fitting pins to mount the blade to the base and allowing the lower surfaces of the flange parts to engage with the peripheral edges of the short sides of the fitting holes in the first positions of the fitting pins.

4,348,811

VEE BELT MEASURING APPARATUS

Wilhelm Brand, and Dietmar Baasner, both of Hanover, Fed. Rep. of Germany, assignors to Hermann Berstorff Maschinenbau GmbH, Hannover Kleefeld, Fed. Rep. of Germany

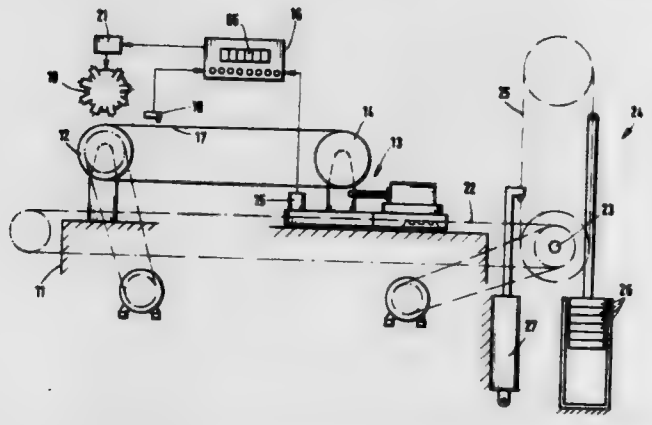
Filed Nov. 18, 1980, Ser. No. 208,073

Claims priority, application Fed. Rep. of Germany, Nov. 29, 1979, 2948087

Int. Cl.³ G01B 5/10

U.S. Cl. 33—125 R

10 Claims



1. Apparatus for measuring the length of a vee belt, comprising

(a) a machine bed mounted on a frame;

(b) first and second measuring pulleys mounted above said bed and each having an axis of rotation;

(c) a tensioning carriage mounted for longitudinal movement on said machine bed and having mounted thereon said second pulley, movement of said carriage along said machine bed varying the distance between the axes of said pulleys;

(d) a drag chain fixed to said tensioning carriage for moving the same along said bed;

(e) a travel drive operatively connected to said drag chain for selectively and alternatively driving said drag chain and thus said carriage in a first direction;

(f) tensioning means operatively connected to said drag chain for selectively acting on said drag chain for moving said chain and said carriage in the opposite direction, said tensioning means including an endless chain with disc-shaped tensioning weights hooked onto said endless chain, a cylinder to guide said weights and a pair of gripping tongs adjustably mounted on said cylinder, said tongs engaging through apertures in said cylinder to engage said weights selectively in different combinations;

(g) an absolute length measuring device;

(h) an electronic control and arithmetic unit adapted to receive an input from said absolute length measuring device, said control and arithmetic unit having an assessing circuit to compare an actual measured value of the length of the vee belt with stored values of part-ranges of an appropriate length tolerance of said vee belt, and

(i) recording means to mark the vee belt if it has been measured and allocated to a tolerance part-range.

4,348,812

GUN BARREL INTERNAL DIAMETER INDICATOR

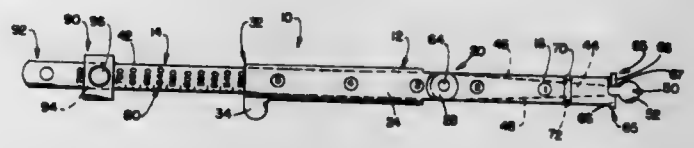
Forest L. Middleton, 611 Bowens Mill Rd., Middleville, Mich. 49333

Filed Jan. 29, 1981, Ser. No. 229,332

Int. Cl.³ G01B 5/12

U.S. Cl. 33—147 K

17 Claims



1. A bore gauge for checking the internal diameter of a gun barrel, said gauge comprising:

an elongated, one-piece body defining a generally rectangular through passage and a pair of transversely spaced pivot ears on one end;

an elongated, flat bar slidably disposed within said body, said bar including an indicator portion and a tapered portion having converging lateral edges; and

a pair of flat arms, each arm including an end pivoted to one of said pivot ears, each arm further including a cam follower riding on one of said lateral edges of said tapered portion of said bar whereby said body may be inserted into a gun barrel and said bar may be slid through said body causing said arms to pivot and spread apart into contact with the inner diameter of said barrel and the internal diameter of the barrel may be read on the indicator portion of the bar.

4,348,813

ELEVATION MEASURING INSTRUMENT WITH SELECTABLE MEASUREMENT SCALES

Jean Berney, Les Bioux, France, assignor to Les Fabriques d'Assortiments Reunies, Le Locle, Switzerland

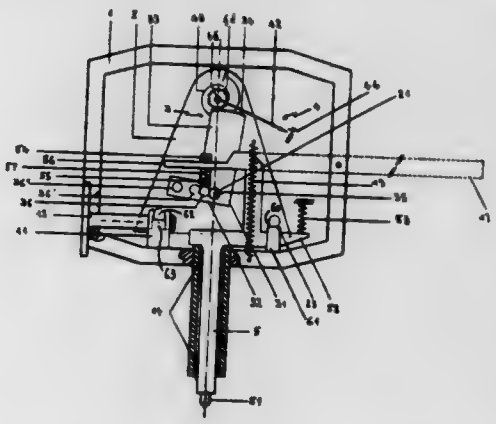
Filed Dec. 12, 1980, Ser. No. 215,860

Claims priority, application Switzerland, Dec. 14, 1979, 11075/79

Int. Cl.³ G01B 3/22

U.S. Cl. 33—172 R

16 Claims



1. A microcomparator measuring instrument comprising a housing, and a feeler extending therefrom, a feeler piston activated by said feeler, said piston being axially displaceable, an amplification mechanism for amplifying the displacements of the feeler piston onto display means, said amplification mechanism and said display means being mounted in a carriage disposed in said housing, said amplification means comprising an L-shaped lever pivoting around an axle at its base in relation to the carriage, said L-shaped lever having a longer leg segment and a shorter foot segment, said display means driven by the longer leg segment of said lever, wherein said shorter foot segment contacts a rectilinear bearing edge of a stop mounted on said feeler piston, said shorter foot segment comprising a plurality of adjacent cylindrical calibrated rods mounted paral-

lel to the pivoting axle of the lever, said scale of amplification being changed as said contact surface bears on a selected rod of said plurality of calibrated rods.

4,348,814

GAUGE FOR CHECKING LINEAR SIZES OF MECHANICAL PARTS

Mario Possati; Guido Golinelli, both of Bologna, and Narciso Selleri, Monteveglio, all of Italy, assignors to Finike Italiana Marposs, S.p.A., S. Marino di Bentivoglio, Italy

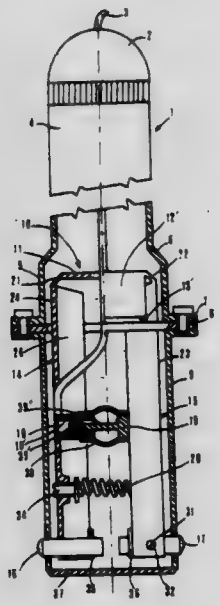
Filed Jul. 22, 1980, Ser. No. 171,160

Claims priority, application Italy, Jul. 24, 1979, 3464 A/79; Jun. 2, 1980, 3432 A/80

Int. Cl.³ G01B 5/12

U.S. Cl. 33—178 E

12 Claims



1. A gauge for checking linear sizes of mechanical parts, comprising: a support; an integral member including a first section coupled to the support, two resiliently flexible sections connected to the first section and defining relevant fulcrum devices; two further sections, each defining a relevant movable arm, connected to the flexible sections for rotation movement about the relevant fulcrum devices; two feelers coupled to the movable arms, respectively, for contacting the part to be checked; and transducer means coupled to the movable arms for providing a signal responsive to the mutual position of the movable arms, the transducer means including two transducer parts coupled to the movable arms, respectively, each transducer part and each feeler being coupled to the relevant movable arm on the same side with respect to the relevant fulcrum device, wherein the gauge further includes a protective nosepiece substantially housing the movable arms, said support being substantially a plate defining first and second sides and at least a through hole, the moving arms passing through the plate.

4,348,815

MULTI-PURPOSE SQUARE

Alfred A. Hurt, 116 Harvey Ave., Oak Hill, W. Va. 25901

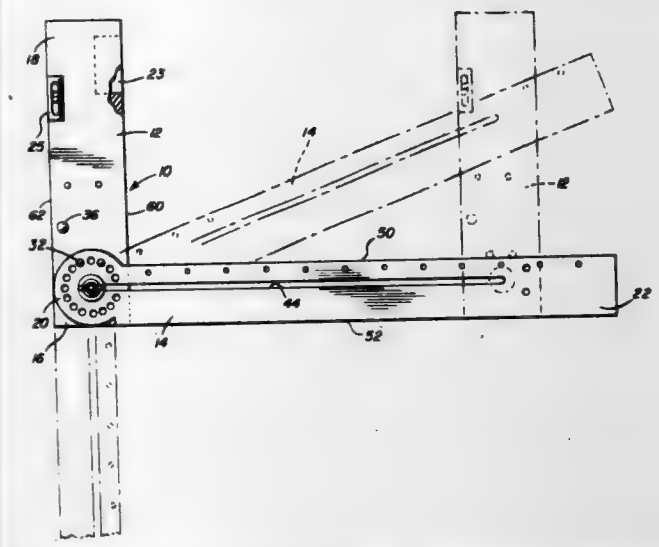
Filed Nov. 13, 1980, Ser. No. 206,473

Int. Cl.³ B43L 7/06

U.S. Cl. 33—419

7 Claims

1. In combination, elongated first and second arms including corresponding base and free ends, pivot means pivotally connecting said base ends for relative angular displacement of said arms a full 360°, said pivot means and one of said arms including means operative to variably adjustably position said pivot means longitudinally of said one arm toward the free end thereof, said first and second arms including coacting latch means operative to releasably lock said arms in a plurality of predetermined relatively angularly displaced positions when said pivot means is disposed adjacent the base end of said one arm, said latch means also including means operative to releasably lock said arms in 90° relative positions during at least a major portion of the total length of adjustment of said pivot means along said one arm from said base end thereof toward the free end thereof, said pivot means comprising a pivot shank carried by the other arm and a longitudinal slot formed in said one arm through which said shank is received, said latch means including on the base end of said one arm a circular arrangement of a plurality of bores equally spaced from and disposed about the adjacent end of said slot, said slot being of a width substantially equal to the diameter of said bores and equally spaced between a pair of said bores, said latch means including



on the other arm a pair of retractable pins supported therefrom receivable in said bores and said slot for maintaining said arms in a plurality of predetermined relatively angularly displaced positions, said one arm including a longitudinal side edge generally paralleling said slot and spaced from the longitudinal center line of said slot a distance equal to the spacing of said pins from the axis of pivotal movement of said arms defined by said pivot means, said pins being engageable with said longitudinal side edge when said arms are disposed at 90° relative to each other and said pivot means is spaced along said slot toward the free end of said one arm in order to lock said arms in right angularly disposed positions.

4,348,816

METHOD AND APPARATUS FOR RAPID DRYING OF CONTAINER COVERS

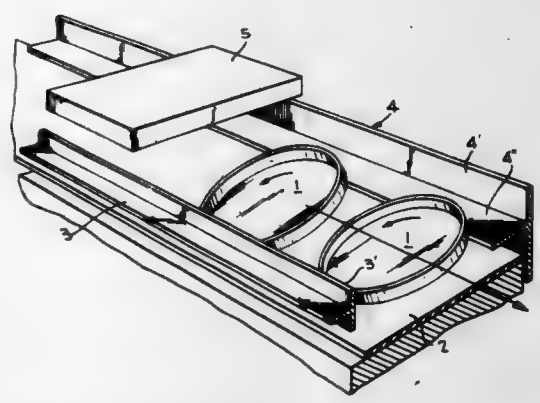
Raimondo Arippol, Avenida dos Autonomistas 1117, Osasco, Sao Paulo, Brazil

Filed Jan. 29, 1981, Ser. No. 229,657

Int. Cl.³ F26B 3/04

U.S. Cl. 34—13

16 Claims



1. A method of drying a substantially flattened and approximately circular workpiece comprising:

transporting said workpiece on an apparatus comprising a structural support having

conveyor belt means movably mounted therein and adapted to transport said workpiece, said conveyor belt

means having a first lateral edge and a second lateral edge,

an upstanding laterally fixed elevated guide means comprising an inwardly-projecting substantially horizontal member and an upwardly-projecting member extending therefrom, said elevated guide means extending above and parallel to the second lateral edge, and

an upstanding laterally fixed deflector guide means extending parallel to the first lateral edge, such that the workpiece is transported by the conveyor belt means in a plane defined by the first lateral edge and the elevated guide means at an acute angle, the workpiece having both a rotational motion and a linear motion imparted to it by the movement of the conveyor belt means; and

heating the workpiece with a heating means disposed along said conveyor belt means capable of evaporating liquids associated with said workpiece.

4,348,817

DRYING APPARATUS

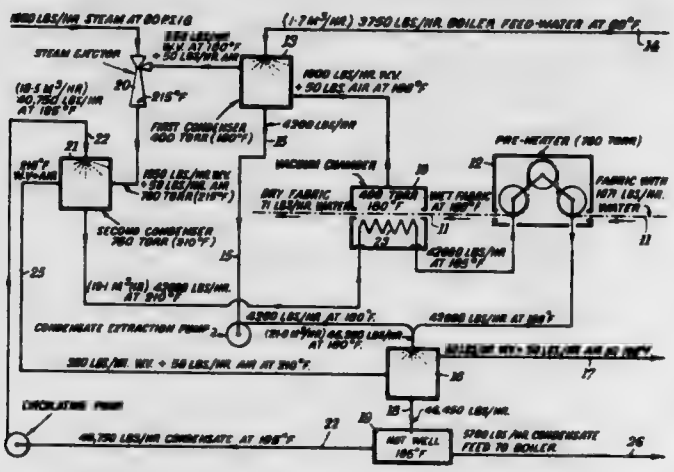
William Bradshaw, Rimington, nr. Clitheroe, England, assignor to Edgar Pickering (Blackburn) Ltd., Lancashire, England

Filed May 5, 1980, Ser. No. 146,431

Claims priority, application United Kingdom, May 11, 1979, 7916514; Oct. 1, 1979, 7933983; Feb. 13, 1980, 8004758

Int. Cl.³ F26B *21/08*

U.S. Cl. 34—75 **20 Claims**



1. Apparatus for drying a material by removing a quantity of a wetting liquid from the material in the form of a vapour, through evaporation of the wetting liquid from the material, the apparatus comprising:

i. a drying chamber;

ii. a vapour condenser in which at least some of the vapour is contacted by a supply of the wetting liquid thereby to condense the vapour in the liquid supply and transfer the associated latent heat of condensation to the supply of wetting liquid;

iii. a reservoir for the heated wetting liquid, including condensed vapour, from the condenser;

iv. means to maintain the temperature of the reservoir higher than the temperature of the vapour in the drying chamber;

v. fluid connections between the chamber and the condenser, and the condenser and the reservoir;

vi. means for flowing the vapour from the chamber to the condenser;

vii. a heat exchanger within the drying chamber for imparting heat to the material to be dried;

viii. a fluid connection between the reservoir and the heat exchanger; and

ix. means for flowing the wetting liquid from the reservoir to and through the heat exchanger; whereby such latent heat as is given out by condensation of the vapour within the condenser is absorbed by the liquid supply and carried thereby from said condenser to the heat exchanger for heating the material to be dried.

4,348,818

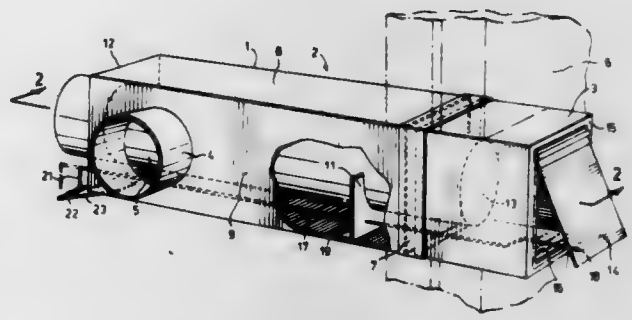
DEVICE FOR RECOVERING THE EXHAUST HEAT OF A CLOTHES DRYER

Robert C. Brown, P.O. Box 62, Stroud. Ontario, Canada L0L 2M0

Filed Jul. 24, 1980, Ser. No. 171,900

Int. Cl.³ F26B *11/04*

U.S. Cl. 34—77 **11 Claims**



1. A device for recovering heat from an appliance located in a building which provides an exhaust of warm moist air, comprising an appliance exhaust duct connectable between the exhaust outlets of the appliance and a condensing chamber placed outside of the building, the chamber being cooled by direct contact with the ambient air external to the building and being capable of condensing moisture from the exhaust when the ambient air external to the building is sufficiently cool, means for draining condensate from the condensing chamber, and a return duct having an outlet to allow warm dry air to flow from the condensing chamber into the building.

4,348,819

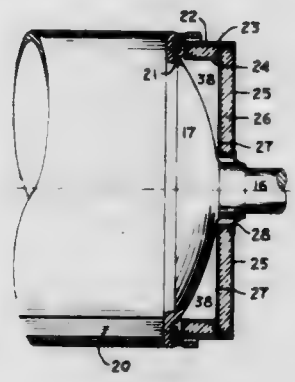
HEATED CAN ROLLS OF HIGH THERMAL EFFICIENCY

James E. Gamble, 436 Orchard Rd., Newark, Del. 19711

Filed Sep. 18, 1978, Ser. No. 942,942

Int. Cl.² F26B *13/08*

U.S. Cl. 34—110 **6 Claims**



1. In a papermaking machine having multiple cylindrical can rolls for drying a continuous sheet of paper fibers, said can rolls:

A. being comprised of a cylindrical shell of a finite wall thickness having ends that are enclosed with head members that are bolted with bolt means into the wall thickness circumferentially around the shell to provide a fluid tight seal, and shaft means extending from each head member in axial alignment with said cylindrical shell to provide a rotatable can roll;

B. having associated internal heating means for heating the rolls with high pressure steam; the improvement which comprises providing head member insulating means operatively associated with at least one of the head members of A, said insulating means comprising;

(1) outer rim means having an inboard edge and an outboard edge of a diameter not exceeding the diameter of

the head member, said outer rim means having a substantial width and further having heat insulating material adjacent to an interior portion of the width;

(2) clip means affixed to the bolt means of A and further affixed to an inboard edge of the outer rim of (1) to hold the inboard edge of the outer rim in a sealing relationship with the head member;

(3) segmental face heat insulating means affixed to the outboard edge of the outer rim, said segmental face heat insulating means having heat insulating material adjacent to its inboard portion and being formed of at least two semicircular segments adapted to allow the shaft means to pass therethrough, said segments being held together in a sealing relationship with splice plate means; said outer rim means of (1) and its insulating material in conjunction with the segmental face heat insulating means of (3) and its insulating material defining an air space between the insulating materials of (1) and (3) and the associated head member;

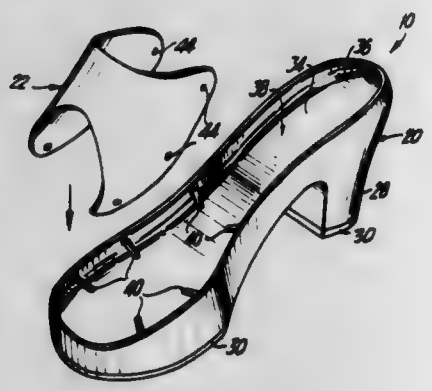
to provide a heated can roll of greatly improved thermal efficiency by reducing all forms of heat loss from the head member, including heat loss through natural convection, convection due to rotation, forced convection due to air draft, and radiation.

4,348,820

SHOE STRUCTURE

Antonio D'Alessio, 208 Bay 44th St., Brooklyn, N.Y. 11214

Filed Feb. 2, 1981, Ser. No. 230,443
Int. Cl.³ A43B *3/24, 3/12*
U.S. Cl. 36—101 10 Claims



1. A shoe structure comprising:

an elongated base member having a top surface which is circumscribed by an upstanding ridge, said top surface and said ridge cooperating to define a hollowed-out recess, said base member further including a plurality of locking pins projecting from said ridge towards the interior of said recess;

an elongated strap member having a plurality of pin receiving apertures located at the opposed ends thereof, said strap member being mounted to said base member with said pins of said base member being received in said apertures of said strap member; and

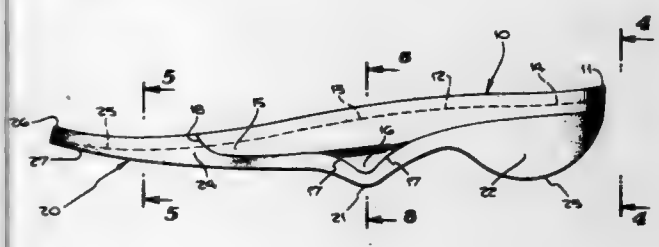
an insole member having a configuration substantially conforming to said hollowed-out recess and mounted therein, with the lower surface thereof being bonded to said top surface of said base member and with said locking pins and said opposed ends of said strap member being interposed between said inside and base members, whereby said base, strap and insole members form a sturdy integral shoe.

4,348,821

SHOE SOLE STRUCTURE

Alexander C. Daswick, 700 Orange Grove, Apt. 210, South Pasadena, Calif. 91030

Filed Jun. 2, 1980, Ser. No. 155,589
Int. Cl.³ A43B *13/12, 13/18, 5/06*
U.S. Cl. 36—103 28 Claims



1. In a running shoe, a sole structure adapted to support and protect the foot of the wearer while permitting movement at the metatarsal arch thereof, comprising:

means providing an elongated generally flat base extending from heel to toe, the portion of said base extending rearwardly of the metatarsal arch being substantially rigid, the portion of said base forward of the metatarsal arch being adapted to selectively bend upwardly relative to said rigid rear portion thereof;

resilient means carried underneath said base for cushioning the movements of the wearer's foot; and

pedestal means under the instep region of said base;

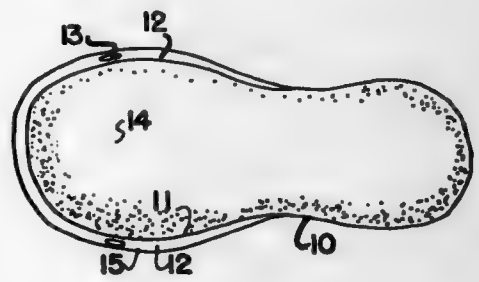
said pedestal means cooperating with said rigid rear portion of said base for supporting the entire weight of the wearer's body during horizontal transitional movement, and having a longitudinally curved under surface for imparting a rolling motion to the wearer's foot without any bending thereof.

4,348,822

SNOWSHOE FOOTWEAR

Stephen J. Lesavage, 150 Robindale Rd., Winnipeg, Manitoba, Canada R3R 1G7

Filed Dec. 31, 1980, Ser. No. 221,926
Claims priority, application Canada, Jan. 17, 1980, 344212
Int. Cl.³ A43B *5/04*
U.S. Cl. 36—122 7 Claims



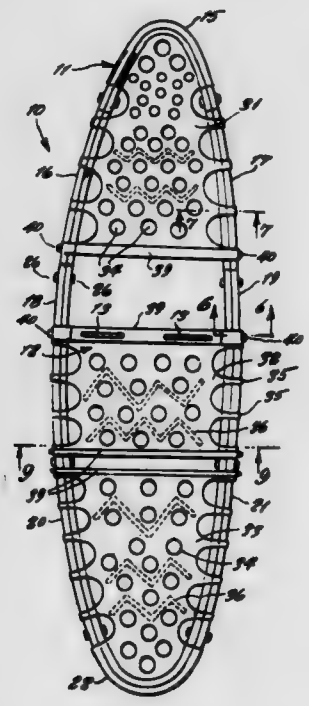
1. In a boot or shoe which includes a sole, for use with snowshoes, said snowshoes including detachable fastening means for securing the snowshoes to the boot or shoe; means on said boot or shoe to detachably retain the fastening means onto the sole of the boot or shoe, said means including a planar portion of the sole extending beyond the welt of the boot or shoe adjacent the fastening area and an elongated slot formed vertically through the planar portion to detachably receive and retain the fastening means in position relative to the boot or shoe.

4,348,823

SNOW LIFE SHOES

Frank H. Knapp, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y. 10007

Filed Jul. 24, 1980, Ser. No. 171,885
Int. Cl.³ A43B 5/04
U.S. Cl. 36—123 2 Claims



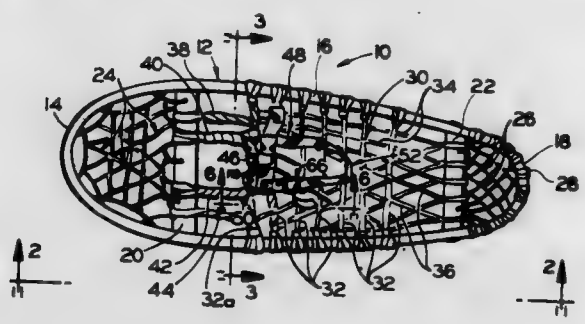
1. A pair of snow life shoes, each one of which comprises in combination a snowshoe including a foldable frame around a web, and a pair of shoe binding holders supported upon cross members of said frame, and said web including cleats on an underside thereof said cleats including means to tend said snowshoes to spread apart from each other, wherein said frame includes a plurality of tubes telescopically snap fitted together wherein an endless elastic cord extends through all said tubes for pulling them together under tension.

4,348,824

SNOWSHOE AND HARNESS ASSEMBLY

Buford W. Treadwell, 10301 E. Division St., Cadillac, Mich. 49601

Filed Jan. 19, 1981, Ser. No. 226,437
Int. Cl.³ A43B 5/04
U.S. Cl. 36—125 8 Claims



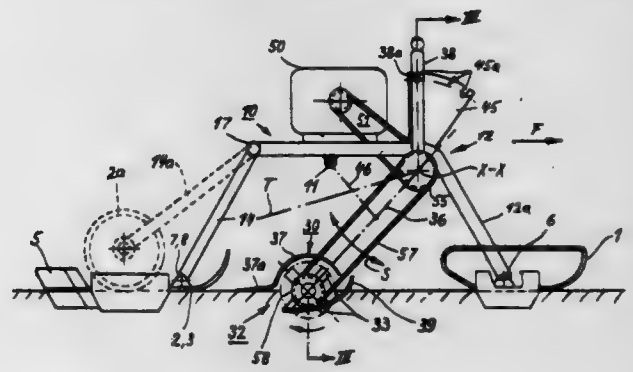
1. A harness for a snowshoe having toe chord means, comprising an elongated binding extending generally transversely of said snowshoe and being secured generally medially of opposite first and second ends to said toe chord means as to have said first and second ends movable with respect to said snowshoe, first and second toe strap means respectively secured to said first and second ends of said binding, a first strap fastener carried by said first strap means, third and fourth heel strap means respectively secured to said first and second ends of said binding, a second strap fastener carried by said third heel strap means, said first and second toe strap means being operative for drawing said first and second ends of said binding against opposite sides of a boot worn by a person walking on said snowshoe and said first fastener being effective to maintain said first and second ends tightly against said boot regardless of the size or configuration of said boot, said third and fourth heel strap means being operative for drawing and holding the toe portion of said boot within said tightly engaging first and second ends and said second fastener being effective to maintain said third and fourth heel strap means against the heel of said boot regardless of the size and configuration of said boot, said binding being formed of moisture impervious material which is flexible in one direction and substantially rigid in directions generally transverse to said one direction and which is substantially stable regardless of exposure to moisture and frigid temperatures.

4,348,825

TRACKING OR GRADING UNIT FOR SKI-TRAILS AND PATHS

Anton R. Bächler, Seeburgstrasse 10, 6006 Luzern, Switzerland

Filed Jul. 14, 1980, Ser. No. 168,132
Claims priority, application Austria, Jul. 13, 1979, 4882/79
Int. Cl.³ E01H 4/00; E01C 19/41
U.S. Cl. 37—222 1 Claim



1. An apparatus for grading ski trails or paths comprising at least one front support and at least one rear support, a frame for mounting said front and rear supports, said frame including a transverse pivotable tubular member, a pivot arm fixedly connected at one end thereof to said tubular member for joint rotation therewith, a cutting device for cutting the snow cover, said cutting device being attached to the other end of said pivot arm, rotary spring means for biasing said cutting device toward the snow cover, said rotary spring means including a torsion spring sleeve, one end portion of said torsion spring sleeve being fixedly connected with said tubular member, and adjusting means for adjustably connecting the opposite end portion of said spring sleeve with said frame to thereby adjust the force applied to said cutting device, said adjusting means including a locking disc attached to said frame and having a plurality of recesses around the outer periphery thereof, and a pivot lever fixedly secured to said other end of said torsion spring sleeve, said pivot lever including a pin which is adapted to engage any of said plurality of recesses in said disc to adjust the force applied to said cutting device.

4,348,826

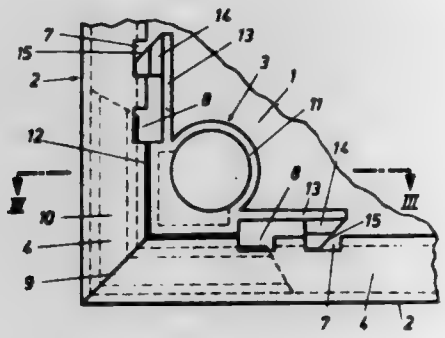
FRAME FOR PICTURES AND THE LIKE

Paul Reim, Rathausgasse 5, D 7100 Heilbronn, Fed. Rep. of Germany

Filed Sep. 8, 1980, Ser. No. 184,887
Claims priority, application Austria, Sep. 7, 1979, 5900/79
Int. Cl.³ A47G 1/06; G09F 1/12
U.S. Cl. 40—155 11 Claims

1. A frame for front insertion of pictures and the like, comprising a plurality of elongated frame elements which together bound an inner opening having corners, each of said frame elements having two end portions spaced from one another in direction of elongation and each having an inclined edge, said frame elements being movable relative to one another between

a proximal position in which the inclined edges of each pair of neighboring frame elements abut against one another and a distal position in which they are spaced from one another, each said end portion of each of said frame elements having two arresting recesses spaced from one another in direction of elongation of the respective frame element; means for holding a picture and the like in the frame and including engaging formations provided in said frame elements; and means for connecting said frame elements with one another, said connecting means comprising a plurality of connecting elements each including an angled member having two legs insertable into each pair of the neighboring frame elements outside of a



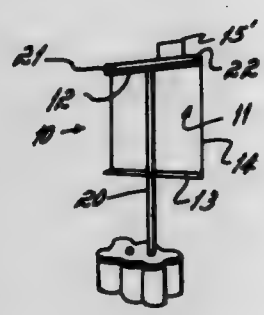
respective one of said corners so that the frame elements of said pair can move over said legs relative to one another between said positions, a supporting member connected with said angled member and extending inside of said one corner into said inner opening so as to support a picture and the like, and two springy tongue members each extending in direction of elongation of the respective frame element of each pair of neighboring frame elements and each having an arresting projection alternately engageable in one of said recesses in said proximal position and in the other of said recesses in said distal position so as to retain each pair of neighboring frame elements in a respective one of said positions.

4,348,827

DISPLAY DEVICE

Gerald W. Brinker, 8384 Squirrelridge Dr., Cincinnati, Ohio 45243

Filed Jun. 26, 1981, Ser. No. 277,723
Int. Cl.[3] G09F *15/00*
U.S. Cl. 40—607 7 Claims



1. A display device for use in conjunction with a display of several types of similar articles comprising: a first sheet of material having front and back faces; first horizontal creases extending across the width of said sheet one each near the upper and lower ends thereof dividing said sheet into a first narrow upper support section and a lower narrow support section, and a large center display section the face of which is adapted to be imprinted with information concerning one of the several types of articles in the display, said creases being of a nature as to permit the front faces of said support sections to be folded toward the back face of said center display section so as to be positioned at approximately 90° to the front face of the latter; an aperture at approximately the center of each support section for receiving means for supporting said first sheet in a vertical position; at least one slit in said sheet, and a second smaller sheet of material having front and back faces, the front face of said second sheet being imprinted with information concerning a second one of the several types of articles, said second sheet having a tab extending through said slit for securing said second sheet to said first sheet.

4,348,828

LASER-AIMING SYSTEM WITH MEANS FOR ELECTRICAL ARC SUPPRESSION

Wesley L. Snyder, 1103 Forest Home Dr., Houston, Tex. 77077

Filed Sep. 24, 1979, Ser. No. 77,990
Int. Cl.[3] F41G *1/34*
U.S. Cl. 42—1 A 33 Claims



1. An aiming system for weapons comprising:

a light source for projecting a coherent beam of light onto a target to mark the impact point of a projectile from said weapon, said light source electrically operated by a high frequency, high voltage power source;

a member supporting said light source attached to said weapon, whereby said light source being susceptible of producing electrical arcing and corona between said power supply and said member;

an electrical arc suppressor disposed between said member and said light source for eliminating electrical arc and corona between said member and said power supply; and

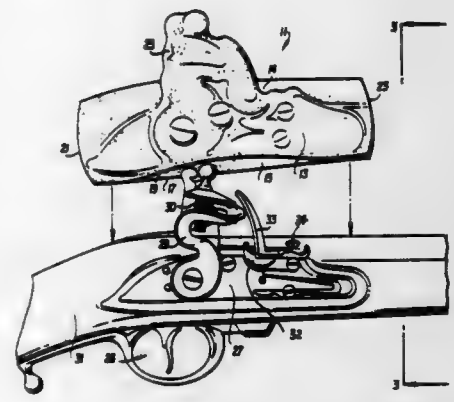
a buffer disposed within said member for absorbing shock to said light source upon recoil of said weapon.

4,348,829

WEATHER SHIELD FOR THE FIRING MECHANISM OF A GUN AND ITS METHOD OF MANUFACTURE

Lewis R. Bosco, P.O. Box 189, East Berlin, Pa. 17316, and Richard J. Bosco, Hampton Ct., Butler, Pa. 16001

Filed Feb. 22, 1980, Ser. No. 123,943
Int. Cl.[3] F41C *27/08*
U.S. Cl. 42—1 N 5 Claims



1. A removable weather shield for protecting exterior ignition elements forming a firing mechanism of a firearm, said ignition elements including a hammer, a flint clamp, a strike plate, a charge pan and a port adjacent said charge pan and communicating with an interior bore of said firearm, said weather shield comprising:

a one-piece resilient shield body having a linear extent exceeding the linear extent of said exterior ignition elements of said firearm and a generally C-shaped cross sectional shape formed by a generally curved continuous top and integrally connected depending side walls, said shield body having an interior profile substantially conforming to an exterior profile of a portion of said firearm contain-

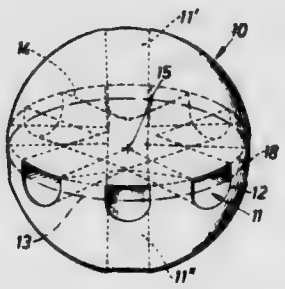
ing said ignition elements and providing a friction fit between the interior of said body and an exterior portion of said firearm including said ignition elements, the sidewalls of said body being separated by a widthwise interior space which has a dimension slightly less than the widthwise dimension of said firearm portion and being slightly deformable against a natural bias of said body to permit expansion of said widthwise dimension for aiding in mounting and removal of said shield to and from said firearm, said shield, when mounted on said firearm, covering and protecting said ignition elements from the environment, said natural bias causing said sidewalls to press against the sides of said firearm portion when said body is mounted in place.

4,348,830

BODY HAVING THROUGH HOLES AND A METHOD FOR MANUFACTURING SAID BODY

Carl E. Hagberg, Stockholm, Sweden, assignor to Intermatch S.A., Nyon, Switzerland

Filed Oct. 2, 1978, Ser. No. 948,042
Claims priority, application Sweden, Oct. 17, 1977, 116549
Int. Cl.[3] A63H *33/10, 33/04;* B25G *3/28, 3/00*
U.S. Cl. 46—26 25 Claims



1. A kit for building toy-like configurations having at least one selectable geometrical shape, said kit comprising:

(a) a plurality of blocks having exterior surfaces, each of said exterior surfaces having at least an extreme outer surface portion, a central inner region circumscribed by said extreme outer surface portion; at least one aperture on the extreme outer exterior surface of each of said blocks, said at least one aperture defining a hole, said hole having a substantially central longitudinal axis extending from substantially adjacent said outer surface generally toward said central inner region, said hole having a progressive variation in cross-sectional area along said longitudinal axis, the variation resulting in the cross-sectional area being greater adjacent said outer surface and smaller towards said central region; and

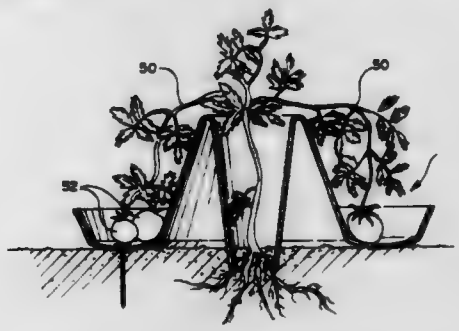
(b) plurality of disposable elongated elements being formed of substantially a deformable material and having ends which have a cross section adapted to be insertable into the holes in said blocks at least for interconnecting a selectable portion of said blocks one with the other, said elongated elements having ends with sectional profile dissimilar as compared with the sectional profile of a said hole such that a selectable end of each of said elongated elements in assembly is compressibly grippable by material deformation in and by its corresponding hole at one of at least several locations along said portion of decreasing cross-sectional area of the hole, said blocks each having a first part and a second part; said first part having a first contacting surface for making contact with said second part; said second part having a second contacting surface for making contact with said first contacting surface; said first contacting surface being substantially smooth; said second contacting surface having at least one groove therein, said at least one hole being formed in assembly by said groove of said second surface and a portion of said first surface adjacent said at least one groove.

4,348,831

DEVICE TO ASSIST GROWTH OF TOMATO PLANTS AND METHOD OF USING THE SAME

Michael Chambers, 6704 North Star Rd., Ferndale, Wash. 98248

Filed Sep. 29, 1980, Ser. No. 191,391
Int. Cl.[3] A01G *13/10*
U.S. Cl. 47—32 21 Claims



1. A device to assist the growth of a plant, such as a tomato plant which has a root portion, a stalk portion and an upper growth portion, said device being adapted to be positioned at a ground location and comprising:

(a) an inner tubular portion comprising a vertically extending first wall means defining a substantially vertical passageway, said first wall means having a lower end and an upper end, said first wall means adapted to be positioned with the lower end at a lower ground location and the upper end further above the ground location, with the vertical passageway permitting growth of the stalk portion of the plant upwardly therethrough and being of a height sufficient to surround at least a substantial part of said stalk portion,

(b) an outer support portion comprising:

1. a downwardly and outwardly sloping second wall means surrounding and spaced radially outwardly from the first wall means, and having an upper inner edge portion adjacent to the upper end of the first wall means, in a manner that said upper growth portion is permitted to grow downwardly over said second wall means,

2. a lower trough means extending around and connected to the second wall means to support the upper growth portion,

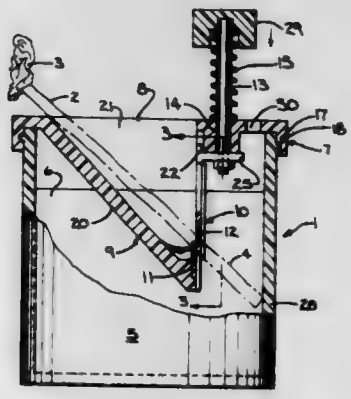
3. an upwardly turned outer rim means connected to and surrounding the trough means.

4,348,832

SINGLE FLOWER STEM CUTTER

Allan H. Hauser, 15295 Westover Rd., Elm Grove, Wis. 53122

Filed Oct. 27, 1981, Ser. No. 315,499
Int. Cl.[3] A01G *1/00*
U.S. Cl. 47—1 R 11 Claims



1. A flower stem cutter, comprising a hand portable container for confining a bath of liquid sufficient to cover the lower end of a flower stem beyond a severing location, a support blade located within said container below the water

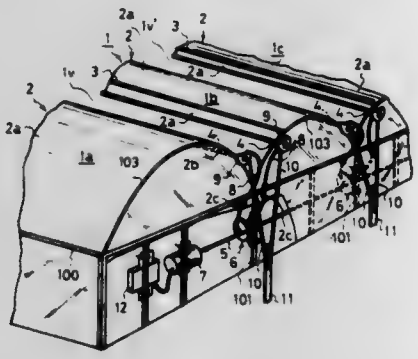
level, means for locating a flower stem resting on said support blade and extending laterally and upwardly of the support blade, a guillotine blade in the plane immediately adjacent the plane of said support blade, and means for relatively moving of said blades to move pass each other blade and thereby sever a flower stem supported therebetween.

4,348,833

OPENING AND CLOSING A FLEXIBLE SCREEN IN A GREENHOUSE OR THE LIKE

Takato Nagoya, Oyama, Japan, assignor to Seiwa Kagaku Kabushiki Kaisha, Japan

Filed Feb. 18, 1981, Ser. No. 235,637
Int. Cl.[3] A01G *9/14*
U.S. Cl. 47—17 10 Claims



1. In apparatus for opening and closing a flexible screen of a greenhouse or the like of the type wherein a rotatable winding rod is fixed by one end edge of the flexible screen and wherein the screen is opened or closed by rotating the winding rod in a normal or reverse direction, respectively, the improvement comprising:

an elongated driving shaft rotatably mounted about a fixed axis of rotation;

drive means for selectively rotating said driving shaft in either one of the normal and reverse directions;

transmission gear means operatively connected to said driving shaft;

an elongated flexible driving shaft operatively connected at one end to said transmission gear means and adapted to be rotated through said transmission gear means upon the rotation of said driving shaft;

reduction gear means operatively connected to the other end of said elongated flexible driving shaft, said reduction gear means being mounted for movement with respect to said greenhouse;

a winding rod operatively connected at one end to said reduction gear means and which is fixed to one end edge of the flexible screen adapted to be rotated through said reduction gear means upon rotation of said flexible driving shaft; and

means for guiding the movement of said reduction gear means with respect to said greenhouse according to the rotary motion of said winding rod and for preventing spontaneous rotation of said reduction gear means.

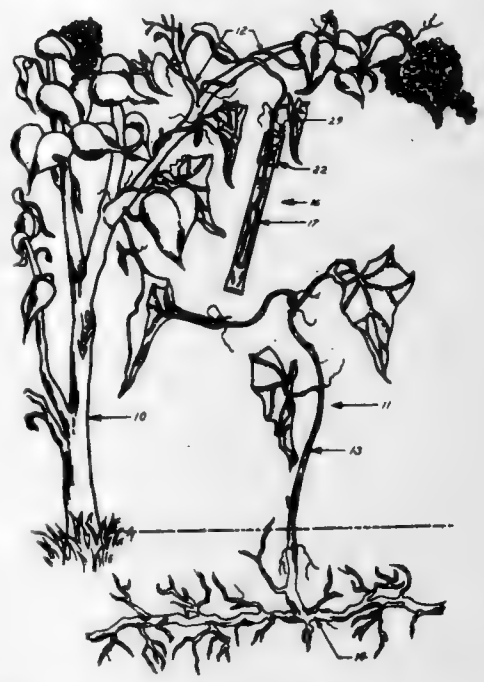
4,348,834

VINE-TYPE VEGETATION ERADICATOR

Robert P. Martin, Jr., c/o Martin Sheet Metal, Inc., 7108 Madison Ave., Cleveland, Ohio 44102

Filed Feb. 9, 1981, Ser. No. 232,635
Int. Cl.[3] A01G *1/00*
U.S. Cl. 47—58 7 Claims

1. A device for eradicating vine-type vegetation comprising a liquidtight, substantially closed container having an interior for holding a liquid herbicide and receiving the natural or cut end of the stem or stalk of undesirable vegetation, a herbicide in the container, the container having an open neck leading to the interior of the container for receiving the stem end, and



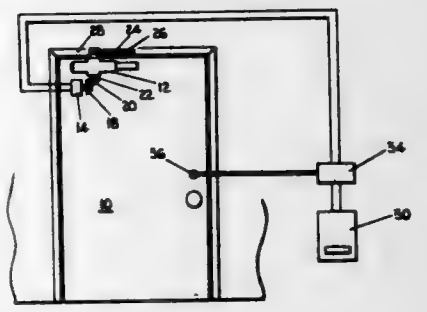
means adjacent the neck to retain the stem immersed in a liquid herbicide contained in said interior.

4,348,835

AUTOMATIC DOOR OPENING DEVICE

Stanley Jones, 1918 Lake St., Holland, Mich. 49423, and Willard Nyenbrink, 6549 Fillmore St., Allendale, Mich. 49401

Filed Dec. 31, 1979, Ser. No. 108,676
Int. Cl.[3] E05F *15/00*
U.S. Cl. 49—139 17 Claims



1. An auxiliary power-assisted door opening device for use in connection with a door closing mechanism that includes a pair of pivotally connected arms extending between a door and a door jamb and rotation control means connected to at least one of the arms for urging the arms to pivot so as to close the door at a controlled rate of speed, wherein the auxiliary door opening device comprises:

electromechanical drive means adapted to be mounted on the door or door jamb adjacent the rotation control means for positively pivoting the arms of the door closing mechanism so as to open the door when the drive means is activated, said electromechanical drive means comprising an electrical motor having a rotatable output shaft and a gear mechanism operably coupling the rotation control means to the output shaft of the motor, such that rotation of the output shaft causes the gear mechanism to mechanically drive the rotation control means to open the door; and

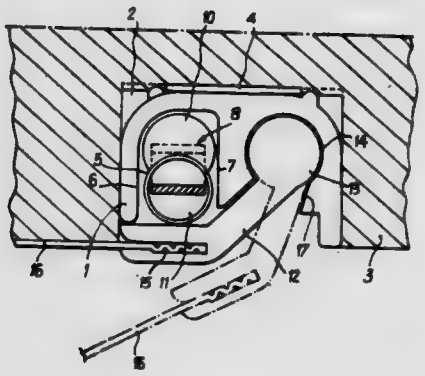
selective activation means for activating the drive means to automatically open the door.

4,348,836

AUTOMATIC BASE SEAL

Claude G. Dumenil, and Louis P. Dumenil, both of 4075, Route de Neufchatel, 76230 Bois-Guillaume, France

Filed May 13, 1980, Ser. No. 149,489
Claims priority, application France, May 16, 1979, 79 12424
Int. Cl.³ E06B 7/20
U.S. Cl. 49—311
6 Claims



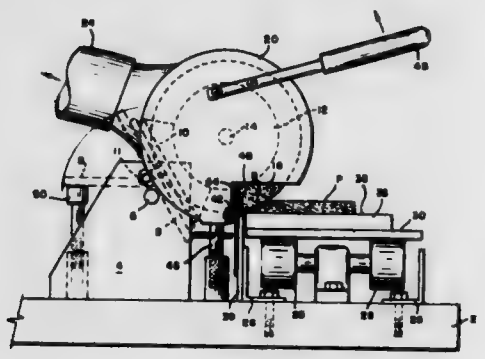
1. Automatic base seal constituted of a profile molding to be attached to a panel, particularly a door, pivoting in a door frame, within an elongated rectangular channel formed in a bottom edge of the panel, said base seal comprising an elongated sealing means pivotable between a retracted position with respect to the base seal and a sealing position extended with respect to the latter under the effect of an actuating device, said profile molding having at least two internal longitudinal grooves in side by side relation to each other and within the confines of the profile molding, a first groove receiving the actuating device of the pivoting sealing element, and a second groove pivotally mounting the sealing element which, in its retracted position with respect to the base seal, extends generally across the first groove, said actuating device in the first groove being operable in response to closing the panel to be at least partially extended downwardly from said first groove to engage and pivot the sealing element to its sealing position, said profile molding comprising an inverted U-shaped section permitting it to be positioned in and attached to the inside of the rectangular channel formed in the bottom edge of the panel, and wherein the sealing element pivoting in the profile molding has at its extremity a flexible sealing lip made in the form of a strip having a cross section between 1 and 9 tenths of a mm.

4,348,837

METHOD AND APPARATUS FOR BEVELING THE FRONT END OF A FELT PAD

David R. Crooks, Medina, Ohio, assignor to Hapad, Inc., Bethel Park, Pa.

Filed Jul. 7, 1980, Ser. No. 166,137
Int. Cl.³ B24B 9/00, 9/02; C14B 1/14
U.S. Cl. 51—5 R
9 Claims



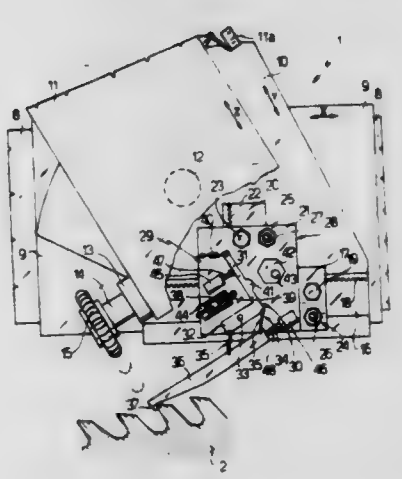
1. Apparatus for beveling the front end of a felt workpiece having a substantially straight front edge which includes a housing, a motor mounted on said housing, a shaft rotated by said motor, a wire wheel brush mounted on said shaft for rotation therewith, a shroud surrounding said brush, means for applying a suction to said shroud, said brush having a cylindrical portion on the side adjacent said motor and a tapered portion on the side opposite said motor extending away from said cylindrical portion toward said shaft, a blade mounted on said shaft adjacent the cylindrical portion of said brush for rotation therewith, a shearplate mounted on said housing adjacent said blade and having a cutting surface for substantially contacting the face of said blade, at least one of said blade and shear plate having an abrasive surface, a table mounted on said housing for supporting the bottom of said workpiece with its front end facing said wire wheel and substantially parallel to the axis thereof, and a table support, said table being movable on said table support substantially parallel to the axis of said brush from a loading position with the workpiece on the side of said brush remote from said motor to a position on the opposite side of said brush whereby the front end of said workpiece is beveled.

4,348,838

BROACH SHARPENING MACHINE

Elio Tacchella, Acqui Terme, Italy, assignor to Tacchella Macchine S.p.A., Alessandria, Italy

Filed Nov. 13, 1980, Ser. No. 206,398
Int. Cl.³ B24B 19/00
U.S. Cl. 51—34 C
8 Claims



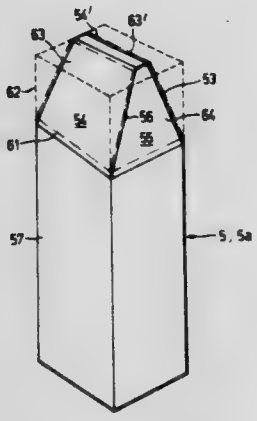
1. A broach sharpening machine, of the type comprising a first sharpening slide arranged to impart, to a grinding wheel supported by it, a movement having a constant stroke away from and towards said broach in a direction transverse to the longitudinal axis of the broach, a second and a third slide mobile along two axes which form a contained angle, the axis of movement of said second slide being parallel to said longitudinal axis, and a feeler unit arranged to determine the position of said grinding wheel relative to each tooth of said broach in succession, characterised in that said third slide supports both said feeler unit and said first slide, and that said feeler unit comprises an articulated parallelogram constituted by a frame rotatable relative to said third slide about an axis perpendicular to the broach axis and to the axis of movement of said second slide, a drag link, and two resilient cranks which connect said drag link and said frame together; the feeler unit also comprising first means for detecting the movements of said frame about its axis of rotation, and second means for detecting the axial movement of said drag link, this latter comprising coupling means arranged to engage with the teeth of said broach positively and in succession, resilient means being connected to said frame in order to move said coupling means towards said broach teeth.

4,348,839

METHOD FOR PRODUCING SURFACES AT A BLADE CUTTER HEAD FORMED OF HARDENED CUTTER BLADE STEEL

Erhard Konersmann, Zurich, Switzerland, assignor to Werkzeugmaschinenfabrik Oerlikon-Bührle, Zurich, Switzerland

Filed Dec. 26, 1979, Ser. No. 107,133
Claims priority, application Switzerland, Jan. 9, 1979, 152/79
Int. Cl.³ B24B *1/00*
U.S. Cl. 51—281 R 4 Claims



1. A method of producing cutting surfaces on a cutter blade head of a cutter blade, formed of hardened steel, for use in a cutter head assembly of a gear cutting machine, comprising the steps of:

producing blade surfaces of a pre-profile of the cutter blade head by means of a cutting-off grinding disk having a front surface and a side surface;

forming an acute angle with a plane of movement of the cutting-off grinding disk along the side surface of the cutting-off grinding disk such that said side surface does not substantially cut part of the cutter blade head already cut by the front surface of the cutting-off grinding disk;

moving the cutting-off grinding disk in its plane of movement in order to confront the cutter blade head and to produce the cutting surfaces on said cutter blade head; and

thereafter grinding the pre-profiled blade surfaces of the pre-profile of the cutter blade head at a cutter blade grinding machine;

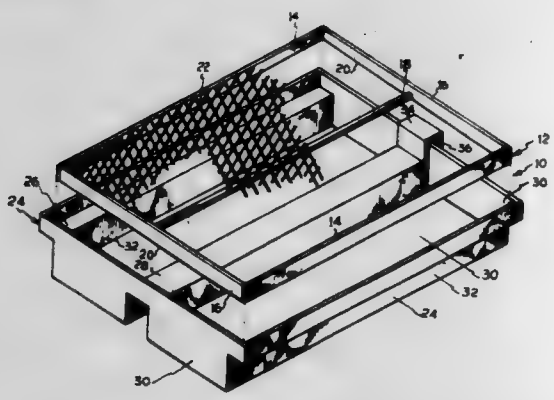
whereby excessive heating of the cutting surfaces produced on the cutter blade head is avoided.

4,348,840

MODULAR HAZARDOUS DUST COLLECTION PAN AND WALKWAY

Charles J. Strader, Perrysburgh, and Richard V. Walle, Toledo, both of Ohio, assignors to Eltra Corporation, Toledo, Ohio

Filed May 22, 1980, Ser. No. 152,454
Int. Cl.³ E04F *19/10*
U.S. Cl. 52—180 6 Claims



1. A dust collection and walkway device, comprising:

a first generally pan-shaped member;

a cover member forming a frame and adapted to cooperate with said first member and be supported upon said first member;

said cover member including a perforated planar member attached to said frame;

said frame including a support member;

said first member including a second support member adapted to be in alignment with said support member when said first member and said cover member are aligned;

said first member including means adapted to engage a second said first member for attaching said first member to said second said first member;

said perforated planar member and said support member being resiliently deformable,

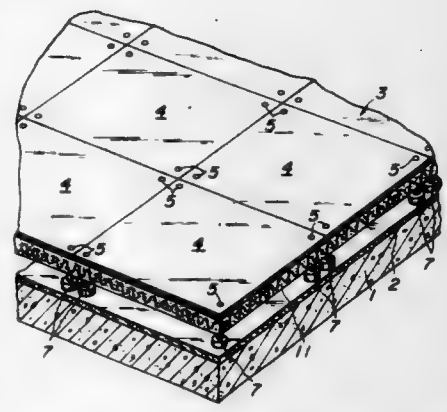
whereby said perforated planar member and said support member may be deformed by the weight of a user, said deformation of said support member being limited by contact with said second support member when said second member and said first member are aligned.

4,348,841

OUTER HEAT INSULATING STRUCTURE ON A BUILDING ROOF

Kazunori Ueno, Higashimurayama, and Toru Kobayashi, Kodaira, both of Japan, assignors to Bridgestone Tire Co., Ltd., Tokyo, Japan

Filed May 13, 1980, Ser. No. 149,594
Claims priority, application Japan, May 18, 1979, 54-61763; Aug. 28, 1979, 54-117386[U]
Int. Cl.³ E04D *15/00*
U.S. Cl. 52—126.5 4 Claims



1. An outer heat insulating structure on a building roof comprising; a plurality of covering layer panels formed by superposing concrete slabs on supporting panels made of a heat insulating material and adjacently arranged with one another and provided with through-apertures, female screw members secured to the supporting panels to be in alignment with said through-apertures, threaded rods capable of being threadedly engaged with the female screw members, rubbery elastic members arranged on a waterproof layer provided on the building roof, said rubbery elastic members each provided with aperture supporting members secured to the rubbery elastic members to rotatably support lower ends of the threaded rods, said threaded rods engaging said female screw members and lower ends of said rods supported by said supporting members secured in said rubbery elastic members wherein an air space is formed between the supporting panels and the waterproof layer by adjustment of the threaded rods.

4,348,842

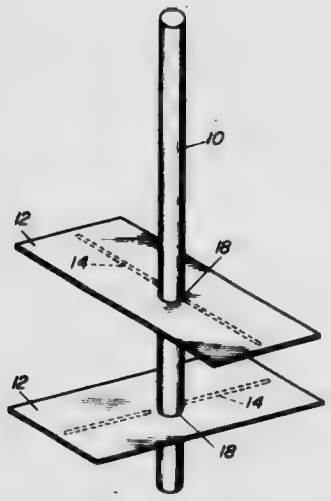
LOCKING POST

Henry L. Wilkinson, 210 W. Latimer, Tulsa, Okla. 74106

Filed Jul. 11, 1980, Ser. No. 167,648
Int. Cl.³ E02D *5/74*
U.S. Cl. 52—166 1 Claim

1. A locking post comprising an elongated cylindrical verti-

cal post having a pair of vertically spaced and horizontally extending holes located above but adjacent to the bottom of the post, said holes being oriented in directions at right angles to each other, a pair of spaced horizontal flat rectangular plates mounted on the posts above the holes and extending in a generally right angular relationship with respect to each other, and



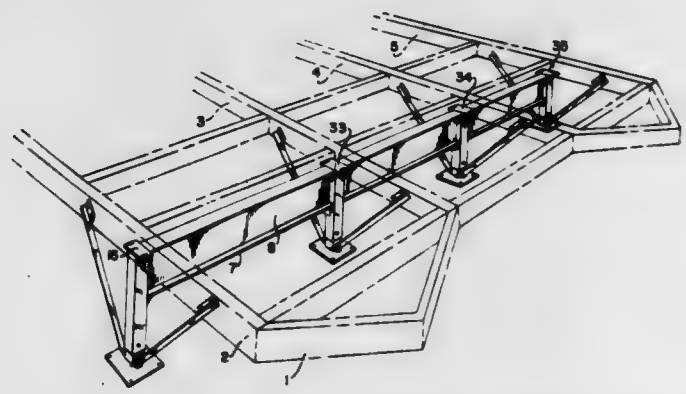
a horizontal rod passing through each hole immediately below each plate to maintain the plates in position on the posts, whereby the assembly can be placed in a suitable hole in the ground with the plates below the surface of the ground and whereby the suitable hole can be filled in with dirt to cover both plates.

4,348,843

MOBILE HOME SUPPORT SYSTEM

Neil S. Cairns, 31361 McWade St., Homeland, Calif. 92348, and Loyd Hendershott, 215 N. "A" St., Perris, Calif. 92370

Filed Aug. 4, 1980, Ser. No. 174,752
Int. Cl.³ E04H *9/02*
U.S. Cl. 52—167 2 Claims



1. An earthquake protection system for a mobile home having a frame, the combination comprising:

support means for supporting said mobile home frame on the ground,

said support means including a plurality of telescoping stanchions carried on an I-beam, spaced along the bottom of said mobile home and support on the ground,

each of said stanchions comprising an outer telescoping section, support arms and a base, and

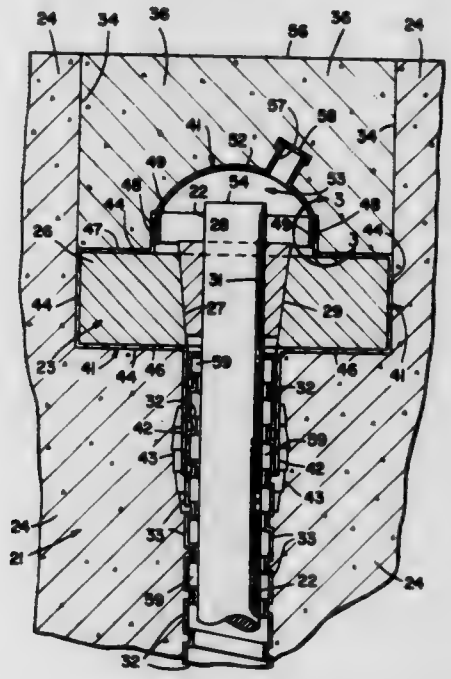
each bottom of said support arms rotatably connected to the inner telescoping section of said stanchion and the tops of said support arms secured to the mobile home frame.

4,348,844

ELECTRICALLY ISOLATED REINFORCING TENDON ASSEMBLY AND METHOD

Morris Schupack, 37 Splitrock Rd., South Norwalk, Conn. 06854, and Mario G. Suarez, 117 Sutton Manor, New Rochelle, N.Y. 10905

Filed Sep. 25, 1980, Ser. No. 190,178
Int. Cl.³ E04C *3/10, 5/08*
U.S. Cl. 52—230 17 Claims



1. A reinforcing tendon assembly for use in a concrete structure or the like, said assembly including a pair of tendon anchorages mounted in relatively spaced-apart relation in said structure, an elongated reinforcing tendon extending between and anchored by said anchorages, and electrically insulating conduit means mounted on said tendon and extending between said anchorages, wherein the improvement in said tendon assembly is comprised of:

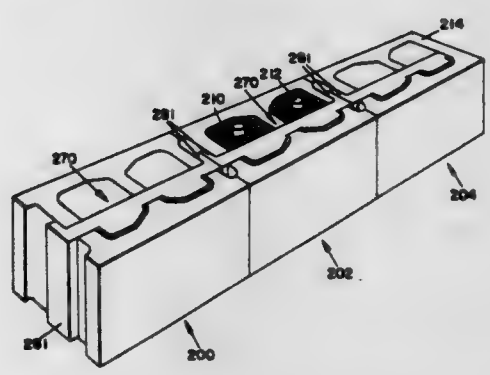
an electrically insulating anchorage envelope means mounted at each of said anchorages in sealed relation to said conduit means, said anchorage envelope means extending around and encasing each of said anchorages and said tendon to completely electrically isolate said tendon assembly from said structure.

4,348,845

THERMALLY INSULATED MASONRY BLOCK

Anthony N. Iannarelli, 345 N. Washington St., Belchertown, Mass. 01007

Filed Jun. 2, 1980, Ser. No. 156,048
Int. Cl.³ E04B *2/00*
U.S. Cl. 52—405 2 Claims



1. A two-part composite insulated building block the parts of which may be assembled into a unitary configuration at the construction site or elsewhere and comprising: a first part in the form of a component of cementitious material of generally

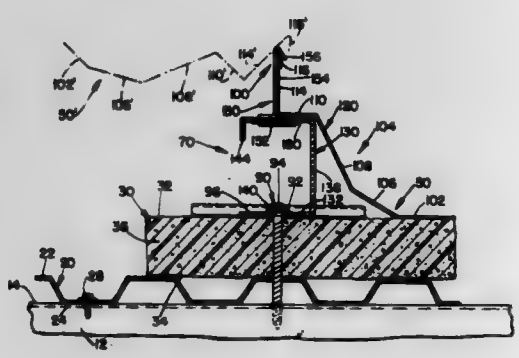
rectangular configuration and extending from a lower horizontal plane to an upper horizontal plane and further extending between opposite end planes and first having spaced outer and opposite side walls extending vertically between the said horizontal planes, a transverse central web interconnecting the said side walls centrally thereof and a pair of transverse end webs interconnecting the said side walls outboard of the central web and inboard of each respective end plane with the adjacent webs defining therebetween a of open ended air cells extending between the upper and lower planes, the webs each being provided with a tapered thermal break extending upwardly from the said lower plane to substantially midway of the vertical web height and in alignment with each other transversely from end to end of the first component, and a second part in the form of a component of rigid insulative foam extending along a longitudinal plane and configured with spaced strategically-located tapered notches extending downwardly through substantially half of its extent for the seating of the second component between and in general parallelism with the side walls of the first component and into the respective tapered thermal breaks in interdigitating relationship, the second component being further provided with an end tab at each terminus extending in a plane normal to the longitudinal plane for embracement with the adjacent end web, the second component being nestably receivable entirely within the area defined by the outermost dimensions of the first component.

4,348,846

INSULATED ROOF

Norman A. Bellem, Kansas City, Mo., assignor to Butler Manufacturing Company, Kansas City, Mo.

Filed Oct. 2, 1980, Ser. No. 193,003
Int. Cl.[3] E04B *1/76*
U.S. Cl. 52—410 14 Claims



1. A building roof comprising:

a corrugated roof deck securely mounted on structural elements of a building;

a layer of rigid insulation on said roof deck layer;

a plurality of roof panels on said insulation and joined together by a joint which does not penetrate said roof panels;

a clip unit which includes a body, a bottom plate and a hook means joined to said roof panel joint, said hook means being movably connected to said body so that said joined roof panels are movably connected to said clip unit;

a bearing plate located between said clip unit bottom and the top of said insulation, said bearing plate having a surface area greater than the surface area of said clip unit bottom plate to distribute any force generated by said clip unit on said insulation over an area which is large compared to said clip unit bottom plate to protect said insulation from damage thereto caused by said clip unit;

fastening means securely connecting said clip unit, said bearing plate, said insulation and said roof deck to a building structural element so that said joined roof panels are movably mounted on the building structural element, said bearing plate permitting secure fastening of said clip units, said insulation and said roof deck to said structural elements without endangering said insulation;

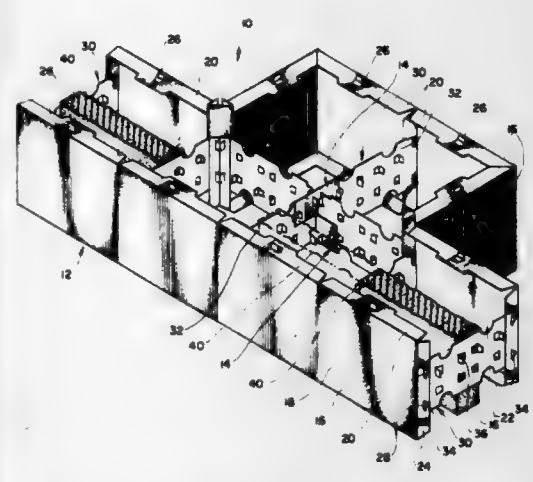
said roof deck accommodating horizontally directed loading on a building and said movably mounted roof panels accommodating expansion and/or contraction of said joined rood panels, by reason of said insulation being securely positioned on top of said roof deck said roof deck horizontal load accommodating capability is increased by said insulation and roof panels over such capability of a roof deck alone.

4,348,847

SPACER EXTENDER

Christopher E. Jukes, Vancouver, Canada, assignor to Mod-Lok Industries Ltd., Vancouver, Canada

Filed Oct. 6, 1980, Ser. No. 194,007
Int. Cl.[3] E04B *1/16*
U.S. Cl. 52—426 8 Claims



1. A spacer extender adapted to be used with a consumable modular predetermined dimensional building block to effectively increase the normal lateral dimension of said block when forming a frame for a pilaster along a wall formed of a plurality of said blocks, wherein said block includes a pair of side plates and a pair of identical transverse tie members at each end of said plates, opposed edge lugs projecting from said tie members to unite with said plates to create a block of rectangular configuration and strength lugs projecting in the same direction as said edge lugs, said block adapted to receive sheet insulation between the interior and exterior of a course of said blocks and to receive concrete therein surrounding said insulation, the improvement comprising,

a locking plate to unite at least two tie members, said plate including an upper and lower edge and end edges;

a first pair of slots adjacent said upper edge, one of said slots being adapted to receive one of the edge lugs projecting from one of said tie members and the other of said slots being adapted to receive the edge lug projecting from another tie member when said members are arranged in end to end relationship one with the other;

a second pair of slots in said plate adapted to receive the strength lug from one of said tie members and the other of said second slot adapted to receive the strength lug from said another tie member to increase stability;

said lugs being pliable whereby they may be distorted to permanently affix said locking plate and at least a pair of said tie members together; and

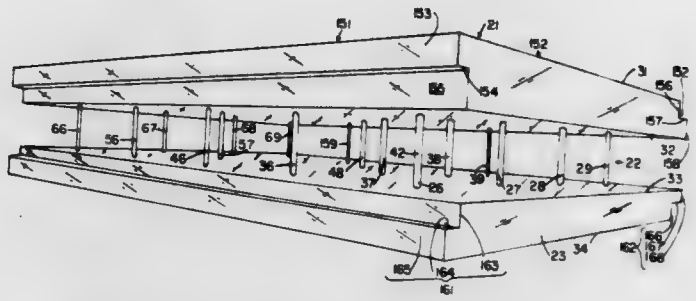
said other of said opposed edge lug of one of said united tie members united with one of said side plates and the opposed edge lug of another of said united tie members united with another of said side plates, whereby said side plates are in parallel relationship but of a width greater than the normal predetermined dimensional building block.

4,348,848

SEGREGATED SLAB STRUCTURAL PRODUCTS

Walter L. Denzer, P.O. Box 12013, Lubbock, Tex. 79452

Filed Apr. 1, 1980, Ser. No. 136,383
Int. Cl.³ E04B 1/02
U.S. Cl. 52—432 6 Claims



1. A structural precast structure assembly product comprising a first rigid slab comprising strong concrete and reinforcing steel, a second rigid slab comprising strong concrete and reinforcing steel and an array of steel bar members therebetween;

said first and second slab spaced away from each other, the first slab extending between a first plane and a second plane, said first and second planes parallel to each other, and the space between said first and second planes occupied by a rigid material comprising concrete and steel,

the second slab extending between a third plane and a fourth plane and said third and fourth planes parallel to each other and spaced away from each other and the space between said third and fourth planes occupied by a rigid material comprising concrete and reinforcing steel;

said first and fourth planes spaced apart from each other and parallel to each other, said second and third planes located between said first and fourth planes, said second plane located between said third and first planes, said third plane located between said second and fourth planes;

said second and third planes spaced apart from each other by an interslab spaced, rigid steel bar members extending from said material between said third and fourth planes to the material between said first and second planes, each of said steel bar members having one part thereof located between said second and third planes and directly exposed to the interslab space, and another part of each of those steel bar members being firmly and rigidly attached to the material between said first and second planes and another part of each of said steel bar members being firmly and rigidly attached to the material between said third and fourth planes, the length of each of said steel bar members extending between said slabs located in a parallel array of such members in parallel flat planes, said slabs connected to each other only by said steel bar members whereby the slabs are movable relative to each other in two directions transverse to each other and to the length of said steel members to the limit of the flexibility of said steel bar members.

4,348,849

STARTER STRIP FOR HORIZONTAL SIDING PANELS

Carl A. Wollam, Cortland, and Lynn Gailey, Newton Falls, both of Ohio, assignors to Alcan Aluminum Corporation, Cleveland, Ohio

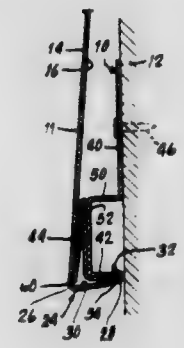
Filed Aug. 11, 1980, Ser. No. 177,091
Int. Cl.³ E04D 1/34
U.S. Cl. 52—545 6 Claims

1. For use with a wall-mounted array of overlapping parallel courses of horizontally elongated siding panels mounted one above another on a wall, each of said panels having outwardly and inwardly facing major surfaces, a top margin securable to the wall, and a bottom margin bent inwardly and upwardly to form an inwardly projecting, upwardly opening longitudinal channel flange with an upstanding inner leg, a starter strip for anchoring the bottom margin of at least one panel of the lowermost of the courses to the wall, said starter strip comprising:

(a) a leg mountable on the wall;

(b) a locking flange connected to the starter strip leg, positioned and dimensioned to be received in the channel flange of said one panel and having an inner dge, spaced from the starter strip leg, for bearing against the upstanding leg of the channel flange; and

(c) resilient biasing means, receivable with the locking flange in the panel channel flange and disposed to act against the inwardly-facing surface of said one panel adjacent the



bottom of the channel flange of the panel, for urging the last-mentioned panel surface outwardly, thereby to hold the upstanding leg of the panel chanel flange against said locking flange inner edge when the locking flange is received in the channel flange;

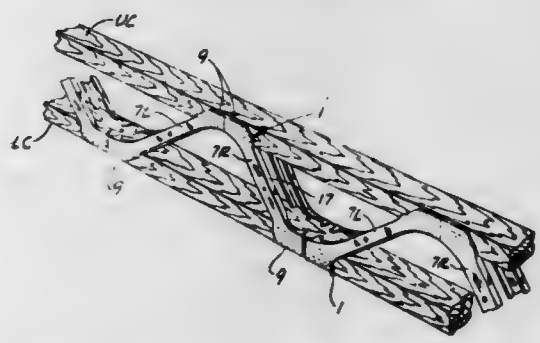
(c) said biasing means comprising a depending spring leg having a free, outwardly projecting lower end for engaging the aforesaid inwardly-facing panel surface, said lower end of said spring leg being so disposed that said spring leg is compressed inwardly by the panel when said spring leg and said locking flange are received in the panel channel flange.

4,348,850

WEB MEMBER

Milton E. Reeder, Ballwin, and Walter G. Moehlenpah, Ladue, both of Mo., assignors to Moehlenpah Industries, Inc., St. Louis, Mo.

Filed Aug. 6, 1979, Ser. No. 63,791
Int. Cl.³ E04C 3/02
U.S. Cl. 52—693 23 Claims



1. A relatively flat sheet metal structural web member for interconnecting a pair of generally parallel spaced-apart wood chord members to form a floor truss or the like, said web member being generally V-shaped, comprising first and second legs integrally joined at one of their respective ends, a plurality of teeth struck from said one end of each leg and extending from one face, constituting the inside face, of the web member, said teeth being adapted to be driven into one of the chord members, and a plurality of teeth struck from the other end of each leg and extending from the inside face of the web member, said teeth being adapted to be driven into the other of said chord members, each tooth being relatively wide in relation to its thickness, thereby having opposed relatively wide surfaces, the teeth struck from opposite ends of the first leg being oriented to present said surfaces generally broadside within the

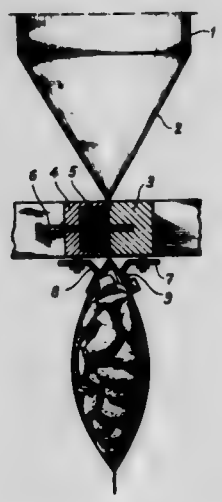
range of 45°–90° with respect to the central longitudinal plane of the first leg or a plane parallel thereto, and the teeth struck from opposite ends of the second leg being oriented to present said surfaces generally broadside within the range of 45°–90° with respect to the central longitudinal plane of the second leg or a plane parallel thereto, the resistance of the teeth to movement through the wood of the chord members thereby being maximized so as to increase the load-holding capacity of the web member.

4,348,851

PACKING MACHINE FOR THE PRODUCTION OF FILLED SEALED BAGS

Bouwe Prakken, Spijkerlaan 9, 3471 EG Kamerik, Netherlands

Filed Jul. 3, 1980, Ser. No. 165,617
Claims priority, application Netherlands, Jul. 5, 1979, 795262
Int. Cl.³ B65B *57/08*
U.S. Cl. 53—75 **5 Claims**



1. A packing machine for packaging a product in bags of sealable material, comprising a fill pipe, means for forming a tube of sealable material surrounding said pipe, sealing jaws for forming end seals on said tube thereby forming a sealed bag, and detecting means for detecting leaks in said bags, said detecting means including pressure means for exerting pressure on a bag after it has been sealed by said sealing jaws, said detecting means also including a switch operable in response to little or no resistance to said pressure means when exerting pressure on said bag to detect a defectively sealed bag.

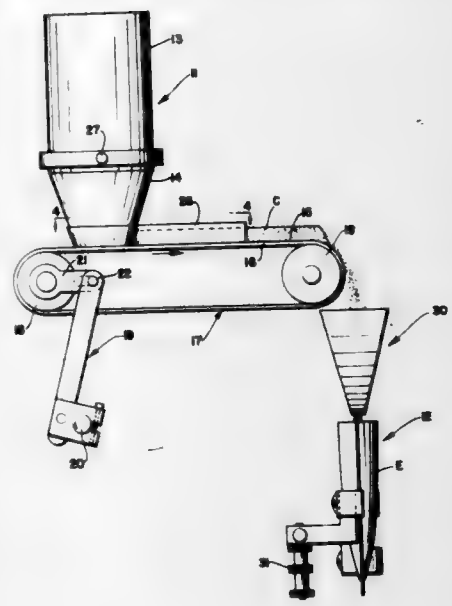
4,348,852

METHOD AND APPARATUS FOR PACKAGING LOOSE MATERIAL

David Clancy, Canaan, Conn., assignor to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 521,771, Nov. 7, 1974, abandoned. This application Oct. 6, 1977, Ser. No. 840,093
Int. Cl.³ B65B *1/04*
U.S. Cl. 53—469 **14 Claims**

1. A method of automatically packaging relatively loose particulate material in substantially uniform volumetric amounts in a series of receptacles such as envelopes comprising the steps of providing a supported generally horizontal column of said material of substantially uniform lateral cross section, intermittently advancing said column longitudinally in equal increments of advance spaced by dwell periods toward an envelope filling station while positioning in predetermined succession a series of spaced open-top envelopes to be filled at said station in stationary condition and in such sequential timed relation that during each advance a leading section of predetermined volume falls from the end of said column into an envelope being maintained in position at said station, and after each envelope has received its predetermined volume of material



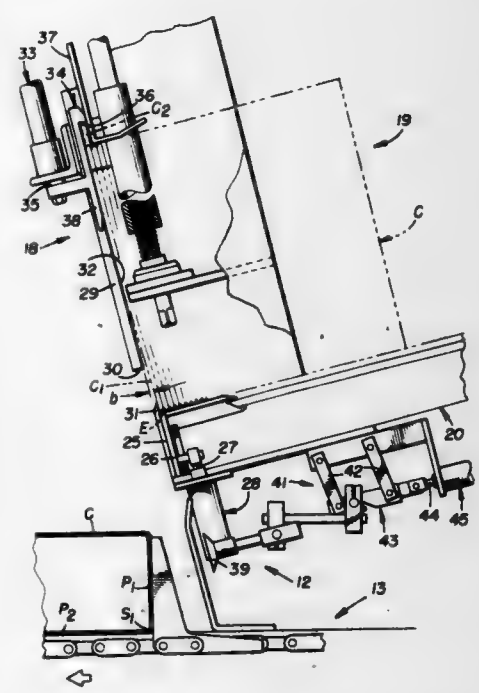
from said column moving that envelope to a station wherein the top thereof is closed.

4,348,853

CASE OPENING AND SEALING APPARATUS

Hugh B. Morse, 1840 Campbell Ave., San Jose, Calif. 95125, and Helmut E. Masch, 764 Asbury St., San Jose, Calif. 95126

Filed Aug. 8, 1980, Ser. No. 176,507
Int. Cl.³ B65B *7/20, 43/30*
U.S. Cl. 53—566 **10 Claims**



1. In a case opening and sealing apparatus comprising a magazine having a plurality of flattened case blanks stacked in upstanding relationship therein, a conveyor underlying said magazine, and opening means for opening said case blanks, the improvement comprising

shuttle means for sequentially (1) engaging a lower edge of a leading one of said case blanks to prevent removal thereof from said magazine, (2) moving said case blank upwardly to release the lower edge thereof from said magazine, and (3) pushing said case blank downwardly onto said conveyor, said shuttle means including a fixed first stop means secured at a forward end of said magazine for engaging a lower end of said case blank, and a fixed second stop means having a lower end disposed vertically above and closely adjacent to said first stop means for defining an opening therebetween for permitting down-

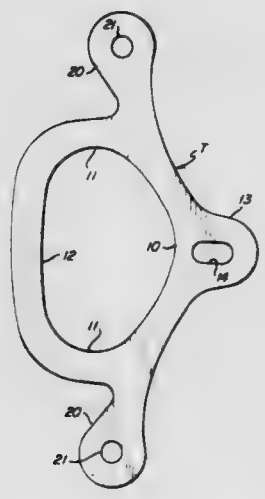
ward movement of said case blank therethrough when said blank is pushed downwardly onto said conveyor, a rearward side of said second stop means engaging upper portions of said case blank being disposed forwardly in offset relationship relative to a rearward side of said first stop means engaging the lower end of said case blank whereby upward movement of said case blank will permit the lower edge thereof to snap forwardly over said first stop means for subsequent downward pushing thereof onto said conveyor.

4,348,854

TIEDOWN AND INSTEP STRAPS FOR SPURS

Pershing R. Van Scoyk, 7193 W. 32nd Ave., Wheatridge, Colo. 80033, and Charles L. Welton, Rte. 1, Box 505 V, Golden, Colo. 80401

Filed Apr. 17, 1981, Ser. No. 255,232
Int. Cl.³ A43C *17/00*
U.S. Cl. 54—83 R **11 Claims**



1. A tiedown strap for a spur having a band, a shank extending rearwardly from said band and a rowel mounted on said shank, said band having arms extending forwardly alongside a counter of a boot having a sole and a heel below said counter, said tiedown strap comprising:

a body having a rear extension detachably connectable to the rear of said spur;

a front loop stretchable onto the front of said boot heel; and

means at each side detachably connectable to the respective arms of said spur.

4,348,855

CROP DAMAGE RESPONSIVE CONTROL OF ROTOR SPEED

Richard A. DePauw, East Moline, and Richard W. Staiert, Geneseo, both of Ill., assignors to International Harvester Company, Chicago, Ill.

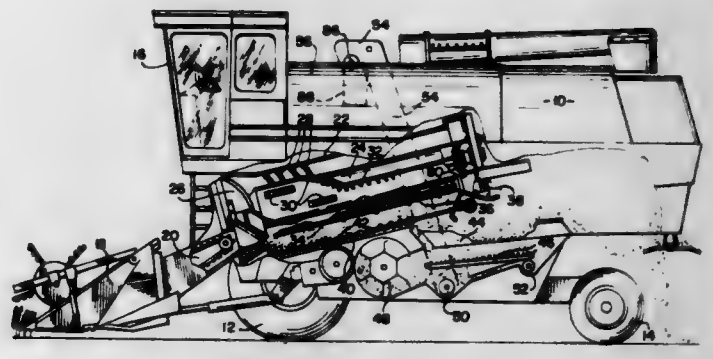
Filed Sep. 22, 1980, Ser. No. 189,238
Int. Cl.³ A01F *12/00*
U.S. Cl. 56—10.2 **15 Claims**

1. In a crop harvesting combine comprising:

a variable speed crop threshing mechanism for separating grain from the crop material;

means for determining the ratio of damaged to undamaged grain received from said threshing mechanism;

and control means for varying the speed of said threshing mechanism in response to changes effected in said ratio by said determining means, whereby the threshing mechanism is automatically speed-adjusted to maximum effective speed without exceeding a selected amount of damage to the grain in the threshing process.

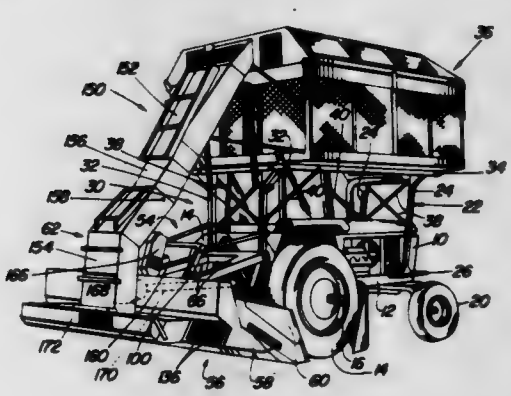


4,348,856

TRACTOR MOUNTED COTTON HARVESTER

Russell D. Copley, Ankeny, and Francis E. Schlueter, Des Moines, both of Iowa, assignors to Deere & Company, Moline, Ill.

Filed May 26, 1981, Ser. No. 266,876
Int. Cl.³ H01D *46/08*
U.S. Cl. 56—30 **44 Claims**



1. A cotton harvester adapted for forward movement over a field of transversely spaced rows of cotton plants, the harvester comprising:

a transverse frame assembly;

a plurality of transversely spaced harvesting units, each unit including a fore-and-aft extending plant passage with a forward mouth for receiving a row of cotton plants and means for removing the cotton from the plants;

means for mounting the harvesting units on the transverse frame assembly with the respective plant passage mouths extending generally forwardly of said frame assembly;

a mobile power unit including a fore-and-aft extending body and front and rear wheels supporting the body for forward movement through the field, said wheels being transversely spaced to run between rows of cotton plants;

a cotton basket supported on and above the power unit;

means for supporting the transverse frame assembly from the mobile body substantially rearwardly of the rear wheels with the plant passage mouths of the mounted units located adjacent a transverse upright plane intersecting the rearmost extremeties of the rear wheel, wherein a substantial portion of the plant passage extends rearwardly of the upright plane; and

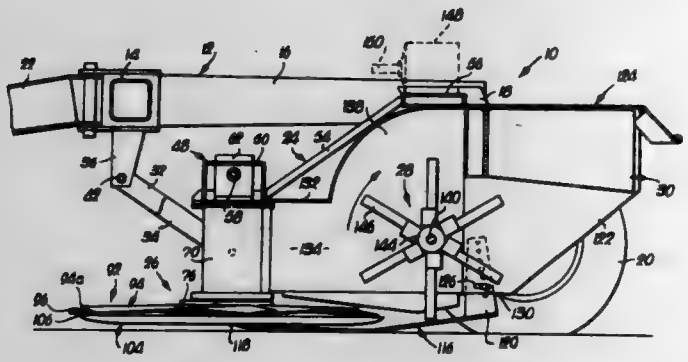
cotton conveying means extending upwardly from the harvesting units to the cotton basket for conveying the removed cotton to the basket.

4,348,857

ROTARY MOWER CONDITIONER

Marc A. Berlivet, and Abel A. J. Guerineau, both of Coex, France, assignors to Hesston Corporation, Hesston, Kans.

Division of Ser. No. 94,883, Nov. 16, 1979, abandoned. This application Mar. 30, 1981, Ser. No. 248,859
Claims priority, application France, Mar. 27, 1979, 79 07657
Int. Cl.³ A01D *57/26, 57/30*
U.S. Cl. 56—192 4 Claims



1. In a mobile crop-harvesting machine:

front frame structure including a front, transverse beam and at least a pair of upright, stationary housings depending from said front beam at spaced locations along the latter;

an upright, rotatable drive shaft contained within each of said housings, respectively;

a mowing rotor attached to the lower end of each of said shafts, respectively and projecting radially outwardly from below the lower termination of the corresponding housing;

means coupled with said shafts for effecting said rotation to drive said rotors in a direction to sever standing crop and throw it rearwardly between said housings;

rear frame structure spaced rearwardly from said front frame structure including upright portions on opposite sides of the path of travel of severed crop from said rotors; and

fore-and-aft, interconnecting frame structure extending between said front frame structure and said rear frame structure,

said interconnecting frame structure including a pair of side members affixed to respective ones of said housings at least adjacent said lower terminations thereof above said rotors and extending rearwardly therefrom along opposite sides of said path of travel of the severed crop to said upright portions,

each of said side members comprising a panel connected to and extending along substantially the full upright length of its corresponding housing at the front end of the panel and connected to and extending along substantially the full upright length of its corresponding upright portion at the rear end of the panel.

4,348,858

METHOD OF AND APPARATUS FOR MAKING A DOUBLED YARN

Johann Rottmayr, Reutlingen, Fed. Rep. of Germany, assignor to Zinser Textilmaschinen GmbH, Ebersbach, Fed. Rep. of Germany

Filed May 12, 1981, Ser. No. 262,930
Claims priority, application Fed. Rep. of Germany, May 14, 1980, 3018551
Int. Cl.³ D02G *3/36, 3/38;* D01H *11/00*
U.S. Cl. 57—18 18 Claims

1. A method of making a doubled yarn comprising the steps of:

drawing a core yarn off a core-yarn supply and pulling said core yarn longitudinally in a travel direction along a yarn path;

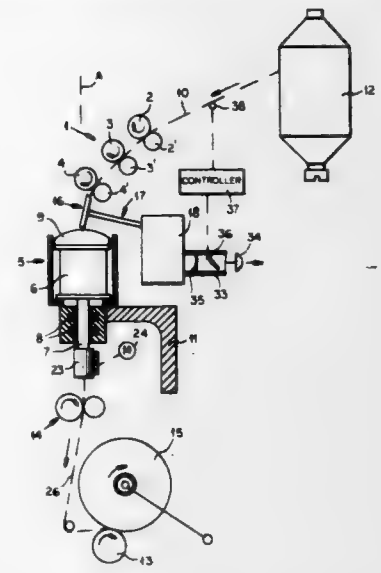
drafting said core yarn longitudinally at a drafting station along said path;

winding a winder yarn around said core yarn at a winding location downstream of said drafting station and thereby doubling said core yarn;

passing a current of air longitudinally in said direction along said core yarn along an upstream section of said path downstream of said station and upstream of said winding location; and

passing a current of air longitudinally opposite to said direction along said core yarn along a downstream section of said path immediately downstream of air upstream section and immediately upstream of said winding location.

2. An apparatus for making a doubled yarn, said apparatus comprising:



means for drawing a core yarn off a core-yarn supply, for pulling said core yarn longitudinally in a travel direction along a yarn path, and for drafting said core yarn longitudinally at a drafting station along said path;

a tube extending along and surrounding said path downstream of said drafting station and having relative to said direction an upstream portion and a downstream portion;

means for passing a current of air longitudinally in said direction along said core yarn in said upstream portion and for passing a current of air longitudinally opposite to said direction along said core yarn in said downstream portion; and

means for winding a winder yarn around said core yarn at a winding location immediately downstream of said tube.

4,348,859

METHOD AND APPARATUS FOR THE PRODUCTION OF FANCY YARN

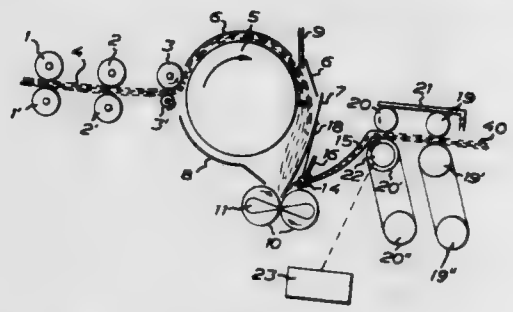
Per O. Olsson, Bruksgatan, S-312 02 Laholm, Sweden

PCT No. PCT/SE79/00002, § 371 Date Sep. 5, 1979, § 102(e) Date Sep. 5, 1979, PCT Pub. No. WO79/00489, PCT Pub. Date Jul. 26, 1979
PCT Filed Jan. 9, 1979, Ser. No. 143,584
Claims priority, application Sweden, Jan. 10, 1978, 7800246
Int. Cl.³ D01H *1/12*
U.S. Cl. 57—401 10 Claims

1. Method of producing fancy yarn, in which method basic yarn material is formed to basic yarn twist in the nip between rotating spinning cylinders, the nip being subjected to a partial vacuum, and fancy material pieces being introduced into the nip in order to be included in the basic yarn twist, wherein the fancy material pieces, within the region of said partial vacuum, are flung against a screen for further conveyance to the nip.

6. Apparatus for producing fancy yarn comprising two spinning cylinders positioned together with a nip therebetween for yarn spinning, means for causing a partial vacuum in the nip

between the cylinders, means for supplying basic yarn material to the nip, a screen in the proximity of the nip, a source of gas



under pressure, and means for flinging, with the assistance of gas under pressure, fancy material pieces against the screen.

4,348,860

SPINNING OR TWISTING MACHINE

Max Hartmannsgruber, Kirchheim, Fed. Rep. of Germany, assignor to Firma Zinser Textilmaschinen GmbH, Ebersbach, Fed. Rep. of Germany

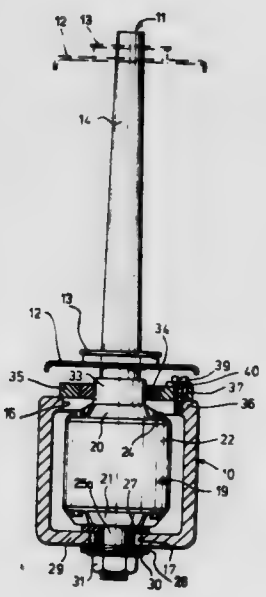
PCT No. PCT/EP79/00082, § 371 Date Jun. 21, 1980, § 102(e) Date Jan. 28, 1980, PCT Pub. No. WO80/00853, PCT Pub. Date May 1, 1980

PCT Filed Oct. 22, 1979, Ser. No. 195,017

Claims priority, application Fed. Rep. of Germany, Oct. 21, 1978, 2845933

Int. Cl.³ D01H *7/10, 1/244*

U.S. Cl. 57—100 **7 Claims**



1. A spinning or twisting machine comprising:

a spindle rail having a linear axis, said spindle rail including an upper opening and a lower opening coaxial with the linear axis,

a textile spindle disposed in an upright position on said spindle rail,

a rotatable shaft cooperating with the textile spindle,

an electromotor disposed within said spindle rail and having a rotor shaft driven by the electromotor, said rotor shaft being connected with said rotatable shaft to drive said textile spindle,

an upper bearing bracket and a lower bearing bracket of the electromotor disposed on said spindle rail,

said upper bracket being connected to said spindle rail by at least one elastic member,

said lower bearing bracket including a dependent rigid tang,

said rigid tang extending into a cup that protrudes through said lower opening in said spindle rail and is radially adjustable relative to said lower opening,

an elastomeric holder ring interposed between said lower bearing bracket and said cup,

a damping means including oil as a damping medium disposed in said cup for reducing oscillations of said electromotor and said spindle shaft,

a ring disposed on a ring rail with the spindle passing coaxially through the ring,

said upper and lower bearing brackets are disposed on the spindle rail and are adjustable in position radially on all sides independently of one another relative to said spindle rail.

4,348,861

JEWELRY CHAINS BY ELECTRO-FORMING

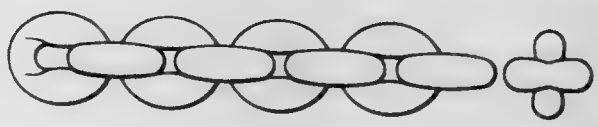
Shigesaburo Nakagawa, Ichikawa, Japan, assignor to Nakagawa Corporation, Tokyo, Japan

Filed Sep. 28, 1979, Ser. No. 79,996

Claims priority, application Japan, Mar. 29, 1978, 53-36385; Mar. 31, 1978, 53-37935; May 18, 1979, 54-66678

Int. Cl.³ A44C *11/00*

U.S. Cl. 59—82 **7 Claims**



1. A jewelry chain thickened by electroforming wherein a jewelry chain as an original material is smoothly thickened by electroforming in a bath containing copper sulphate and sulfuric acid at a temperature of about 30° C. to obtain a fattened chain link thereof such that a distance between interlinked pivotting points of each chain links of said chain becomes smaller in relation to thickness of said chain link thus produced to make the chain in a denser construction.

4,348,862

EXHAUST SYSTEM FOR A TWO-CYCLE ENGINE

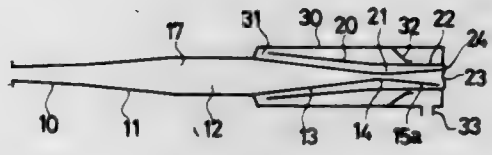
Tetsuzo Fujikawa, Kawogawa, and Shinichi Tamba, Kobe, both of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Hyogo, Japan

Continuation of Ser. No. 921,679, Jul. 3, 1978, abandoned. This application Jan. 9, 1981, Ser. No. 223,644

Claims priority, application Japan, Jul. 1, 1977, 52-79381; Oct. 27, 1977, 52-129468; Dec. 15, 1977, 52-169138[U]; Dec. 16, 1977, 52-170307[U]

Int. Cl.³ F01N *1/08;* F02B *27/02*

U.S. Cl. 60—314 **1 Claim**



1. In an exhaust system for a two-cycle engine and of the type having a first expansion chamber including an exhaust gas inlet opening and a diverging pipe portion which decreases the gas pressure in the inlet opening, and including a rear cone-shaped converging portion which increases the gas pressure, the improvement comprising:

a second expansion chamber having a discharge end open to the atmosphere and an inlet end for receiving the exhaust gas from said first expansion chamber so as to decrease the gas pressure; said second expansion chamber comprising:

an outwardly tapered pipe portion;

a constant diameter portion surrounding said tapered pipe portion and closed by an undulated reflector plate spaced from the outlet of said tapered pipe portion;

an outwardly flared expansion portion connected to the open end of said constant diameter portion and extending back toward said first expansion chamber;

a hollow cylindrical housing enclosing said rear cone-shaped portion, said outwardly tapered pipe portion, said constant diameter portion, and said outwardly flared expansion portion; and

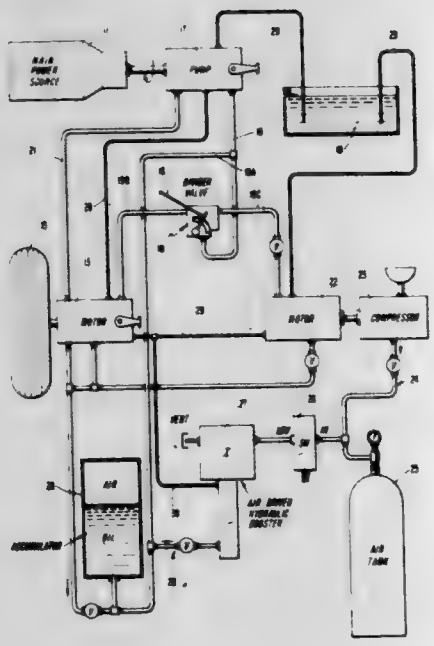
annular divider means disposed in said cylindrical housing and defining a muffling chamber, said chamber being open to the atmosphere.

4,348,863

REGENERATIVE ENERGY TRANSFER SYSTEM

Heyward T. Taylor, 1604 Evers Dr., McLean, Va. 22101, and Michael B. Lambert, 5018 King David Blvd., Annandale, Va. 22003

Filed Oct. 31, 1978, Ser. No. 956,316
Int. Cl.[3] F15B *1/02, 3/00, 11/08*
U.S. Cl. 60—327 23 Claims



1. In a system having a power source driving a mechanical output means through an energy transmission system, a compressed fluid system for storing kinetic energy not used in driving the mechanical output means connected to a power source by an energy transmission assembly, said compressed fluid system comprising:

(a) storing means for maintaining stored amounts of compressed fluid,

(b) means for compressing fluid from a continuous supply of fluid for said storing means,

(c) drive means for operating said fluid compressing means to direct fluid from said continuous supply to said storing means, and

(d) diverting means connected between said transmission assembly and said drive means for directing the amount of said kinetic energy proportionally not used in driving said mechanical output means away from said transmission assembly to said drive means,

(e) said drive means being effective to produce a stored amount of compressed fluid from said continuous supply by operating said fluid compressing means,

(f) said stored amount being directly related to said proportionally directed amount of kinetic energy,

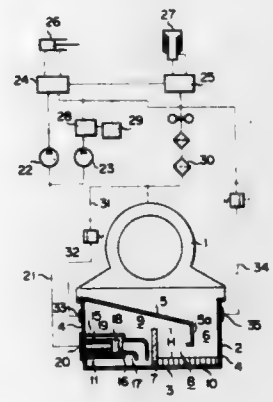
(g) means connected to said energy transmission assembly to recapture kinetic energy on demand from the stored amounts of compressed fluid produced by said diverted unused kinetic energy for driving said mechanical output means.

4,348,864

TANK ASSEMBLY FOR HYDRAULIC SYSTEM

Masaaki Ichimura; Yasumasa Tarumizu, and Kiyouzi Uranaka, all of Kawasaki, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Apr. 17, 1980, Ser. No. 140,441
Claims priority, application Japan, Apr. 17, 1979, 54-50095[U]
Int. Cl.[3] B01D *35/06*
U.S. Cl. 60—454 10 Claims



5. A tank assembly for a hydraulic system including a hydraulic load device, a transmission, a first pump for said hydraulic load device and a second pump for said transmission, said tank assembly comprising:

a tank having a bottom and side walls;

a partition wall for dividing the inside of said tank into a first and a second reservoirs, said first reservoir being adapted to receive fluid from said hydraulic system;

dust collector mat means disposed on the bottom wall of said tank in said first reservoir for collecting dust from drained fluid and keeping it therein;

strainer means mounted inboard on one of the side walls of said tank within said second reservoir, said strainer means being adapted to supply fluid to said hydraulic system; and

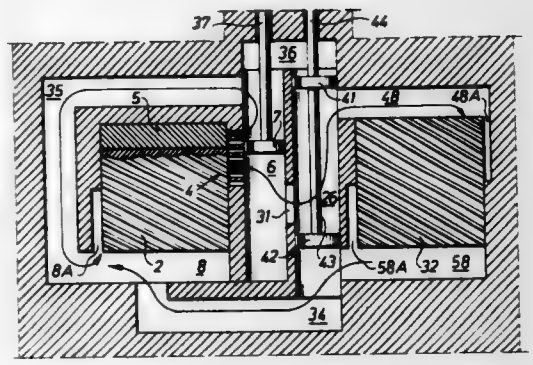
means for communicating said first reservoir with said second reservoir.

4,348,865

HELICAL GEAR MACHINE WITH REGULATED OUTLET

Berth U. Gustafsson, Österskär, Sweden, assignor to AB Bonnierföretagen, Sweden

PCT No. PCT/SE79/00181, § 371 Date May 2, 1980, § 102(e) Date May 2, 1980, PCT Pub. No. WO80/00591, PCT Pub. Date Apr. 3, 1980
PCT Filed Sep. 6, 1979, Ser. No. 194,296
Claims priority, application Sweden, Sep. 6, 1978, 7809392
Int. Cl.[3] F16D *31/04;* F04B *49/02;* F01C *1/16;* F04C *18/16*
U.S. Cl. 60—493 7 Claims



1. A gear machine comprising two helical gears having a plurality of teeth and running in mesh with each other, a first sealing body arranged against one end surface of the gear pair, and fluid port in the first sealing body, a second sealing body

arranged against outside circles of the gears at one meshing zone, tooth profiles of the two gears are alike with each tooth profile including a flank which continuously merges into a rounded top and a rounded bottom, the tops of the teeth of one of the gears being adapted for sealing against the bottoms of the teeth of the other gear in a plane through the axes of the gears, the port includes a plurality of holes at one end opening out at said end surface of the gear pair in a zone comprising an area substantially including the union of the surfaces which are each defined by the outside circle and a circle defined by the bottoms of the respective gear teeth between the axes plane and a gear radius (R) forming an angle (α) with the axes plane, said angle (α) does not exceed a value of $B \times (1/R) \times$ tangent β, where B is the width of the gear pair, R is the outside circle radius of the respective gear and β is the helix angle of the gears, the plurality of holes at their other ends opening out in a duct at axially separated places in the duct in the same order as the holes open out at said one end to said end surface in the direction of rotation of the gears, a sealing piston displaceably arranged in the duct, one end of the duct communicates with a fluid outlet of the machine, and means for displacing the piston in the duct to enable the machine to be regulated at a constant rate of revolutions.

4,348,866

MASTER CYLINDER

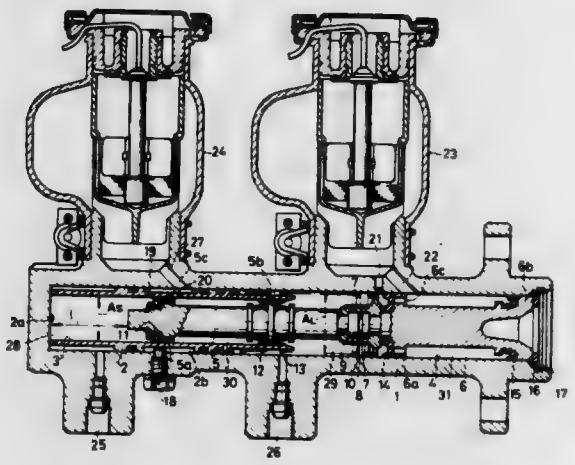
Yoshihiro Hayashida, Chigasaki, Japan, assignor to Tokico Ltd., Kanagawa, Japan

Continuation of Ser. No. 828,844, Aug. 29, 1977, abandoned. This application Mar. 4, 1980, Ser. No. 127,062

Claims priority, application Japan, Sep. 4, 1976, 51-106061; Sep. 4, 1976, 51-106062

Int. Cl.³ B60T *11/06*

U.S. Cl. 60—561 **1 Claim**



1. A tandem-type master cylinder for a vehicular brake comprising:

a cylinder body having extending therethrough a uniform inner diameter bore having a first closed end and a second open end;

a sleeve slidably received within said bore, said sleeve defining therein a small diameter cylinder portion;

a plurality of axially spaced flanges provided on the outer surface of said sleeve;

a piston assembly including a smaller diameter piston slidably received within said cylinder portion of said sleeve and a larger diameter piston slidably received within said bore of said cylinder body, said smaller and larger diameter pistons being rigidly connected;

stop means within said bore adjacent said second end thereof for preventing said piston assembly from removal from said bore;

a single spring positioned between said sleeve and said piston assembly and normally biasing a first end of said sleeve into contact with said closed first end of said bore and normally biasing said piston assembly against said stop means;

a first oil pressure chamber defined between said smaller diameter piston and said closed first end of said bore within said bore, said first oil pressure chamber adapted to be connected to a first brake system;

a second oil pressure chamber defined between said smaller and larger diameter pistons within said bore, said second oil pressure chamber adapted to be connected to a second brake system;

a relief port extending radially through said sleeve;

a supply port extending radially through said sleeve at a position axially spaced from said relief port;

axially spaced first and second annular flanges provided on the outer surface of said smaller diameter piston;

said first annular flange having axially extending therethrough at least one axially extending port;

a replenishment chamber defined between the inner surface of said sleeve, said first and second annular flanges and the outer surface of said smaller diameter piston;

an oil reservoir communicating with said replenishment chamber through said supply port;

cup seal means mounted about said smaller diameter piston at said first annular flange for blocking said relief port and said axial port when said piston assembly moves toward said first closed end of said bore and for allowing oil to pass from said replenishment chamber through said axial port into said first oil pressure chamber when said piston assembly moves in a return direction toward said second open end of said bore;

whereby, upon movement of said piston assembly toward said first closed end of said bore during normal operation, oil pressures within said first and second oil pressure chambers will be increased and transmitted to the first and second brake systems;

whereby, upon movement of said piston assembly in said return direction toward said second open end of said bore during normal operation, said sleeve is moved toward said larger diameter piston against the force of said single spring solely in response to a difference in the oil pressures due to a difference in amounts of oil remaining in said first and second oil pressure chambers, and any excess oil within said first oil pressure chamber will escape therefrom by passing outwardly through said relief port; and

stopping means, extending through said cylinder body into said bore at a position between certain of said axially spaced flanges of said sleeve, for limiting the extent of axial movement of said sleeve in a direction toward said second open end of said bore.

4,348,867

METHOD FOR TREATING MOIST PULVERULENT MATERIAL

Albert Musschoot, Barrington, Ill., assignor to General Kinematics Corporation, Barrington, Ill.

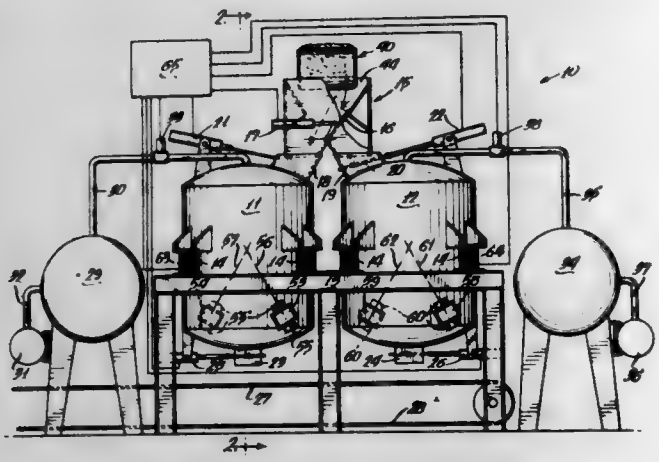
Division of Ser. No. 63,577, Aug. 3, 1979, Pat. No. 4,252,001, which is a continuation-in-part of Ser. No. 918,515, Jun. 23, 1978, abandoned, which is a continuation-in-part of Ser. No. 780,670, Mar. 23, 1977, abandoned, which is a continuation-in-part of Ser. No. 761,414, Jan. 27, 1977, abandoned. This application Oct. 20, 1980, Ser. No. 198,462

Int. Cl.³ F25D *17/02*

U.S. Cl. 62—64 **4 Claims**

1. The method for cooling foundry sand which comprises, determining the Btu content of hot foundry sand, adding water to the hot sand at a ratio of approximately one pound of water for each 1100 Btu content of the sand, introducing the moistened sand into a container, applying a vacuum to the container

to evaporate the water from the sand, vibrating the container and sand while under vacuum, removing and condensing the



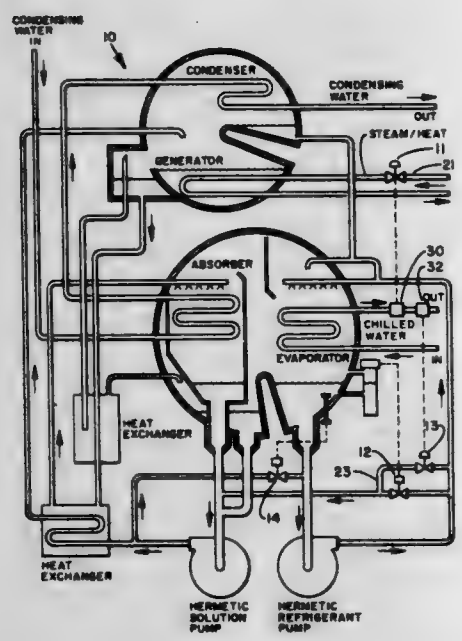
water vapor produced by said evaporation and removing the cooled sand from the container.

4,348,868

AUTOMATIC DILUTION CONTROL FOR ABSORPTION REFRIGERATION

Glenn B. Foster, Baldwinsville, N.Y., and John E. Post, Cincinnati, Ohio, assignors to Carrier Corporation, Syracuse, N.Y.

Filed Oct. 27, 1980, Ser. No. 200,860
Int. Cl.[3] F25B *15/00*
U.S. Cl. 62—101 4 Claims



1. A method for operating an absorption refrigeration system wherein the generator provides the cooling load for a process while the system continues to supply chilled water including the steps of:

supplying heated gases from a process to the generator of an absorption refrigeration system to drive off refrigerant from the absorbent-refrigerant solution and be cooled thereby; and

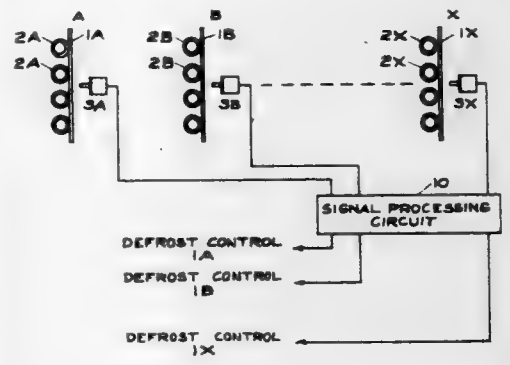
adding refrigerant to the absorbent-refrigerant solution in response to the temperature of the chilled water whereby the system is responsive to the heat supplied to the generator rather than the cooling demand.

4,348,869

MEANS FOR DETECTING THE ACCUMULATION OF FROST IN A LOW TEMPERATURE REFRIGERATION SYSTEM

Frank Massa, Cohasset, Mass., assignor to The Stoneleigh Trust, Cohasset, Mass., Fred M. Dellorfano, Jr. and Donald P. Massa, Trustees

Filed Sep. 2, 1980, Ser. No. 183,231
Int. Cl.[3] F25D *21/02*
U.S. Cl. 62—140 4 Claims



1. Means for detecting the accumulation of a layer of frost of a specified thickness on a sub-freezing surface of a refrigeration system, said detection means includes an electroacoustic transducer, said transducer characterized in that it includes a vibratile element that can be operated at a resonant frequency mode, mounting means for holding said electroacoustic transducer with its vibratile element in close proximity to the sub-freezing surface on which the layer of frost is to be detected, an oscillator circuit, said oscillator circuit characterized in that its frequency of oscillation is controlled by the resonant frequency of said vibratile element, said vibratile element further characterized in that a vibrating portion of said vibratile element includes a projecting probe-like tip portion which is located at a fixed distance from said sub-freezing surface, said fixed distance is determined by the specified thickness layer of accumulated frost which is to be detected, said oscillator circuit further characterized in that the circuit stops oscillating when the frost layer accumulates to a thickness sufficient to reach said projecting probe-like tip portion of said vibratile element and prevents the continued resonant frequency mode of vibration of said vibratile element, detection circuit means connected to the output of said oscillator circuit for detecting the presence of said oscillator signal, said detection circuit means characterized in that the stopping of the oscillation of said oscillator circuit is recognized by said detector, the recognition by said detector of said change in state of said oscillator circuit output signal indicates that the frost layer thickness has accumulated to said specified thickness.

4,348,870

TEMPERATURE PROBE FOR AIR CONDITIONING DEVICE

John C. Stein, and Donald W. Hutchison, both of Fort Wayne, Ind., assignors to Essex Group, Inc., Fort Wayne, Ind.

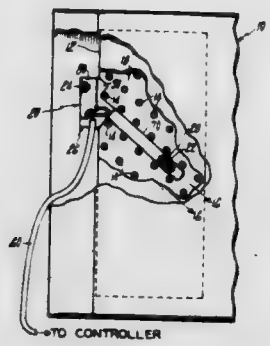
Filed May 1, 1981, Ser. No. 259,341
Int. Cl.[3] F25D *21/02*
U.S. Cl. 62—140 17 Claims

1. A temperature probe for use with an air conditioning device of the type including a heat exchanger tube array comprised of a plurality of tube runs, said probe comprising:

a substantially rigid support member having an elongated portion, said elongated portion being slidably insertable into and out of said tube array externally of the respective tube runs;

temperature sensing means mounted to said elongated portion of said support member for insertion therewith into

said tube array to provide a signal representative of the temperature thereat; and



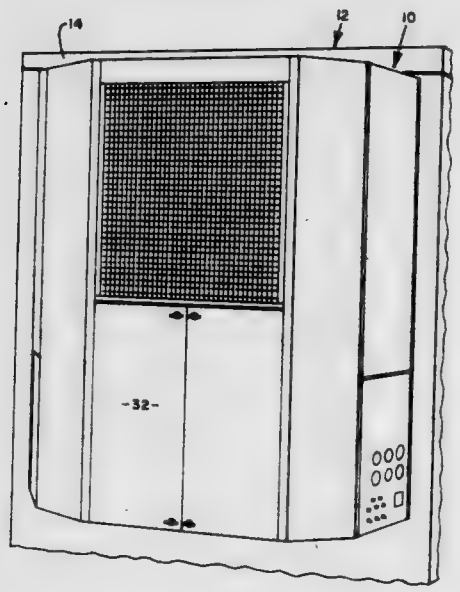
means for transmitting the temperature signal of said sensing means to a use location.

4,348,871

TRANSPORT REFRIGERATION MACHINE

Joel W. Androff, Rowland Heights, Calif., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Feb. 24, 1981, Ser. No. 238,389
Int. Cl.³ F25D *23/12*
U.S. Cl. 62—239 **4 Claims**



1. A transport refrigeration machine for conditioning the interior of a trailer, comprising:

a refrigerant compressor;

a condenser assembly including a condenser fan;

an evaporator assembly located rearward of the condenser assembly and including an evaporator fan;

shaft means for driving the condenser and evaporator fans;

power means for driving the compressor and the shaft means;

a frame supporting the refrigeration machine and for connecting the machine to the trailer, and including

a box sub-frame including a pair of vertically extending outside back beams, a pair of vertically extending outside front posts located forward of the back beams, horizontally extending top and bottom back beams extending between the outside back beams, and horizontally extending top and bottom front beams extending between the outside front posts,

a condenser assembly support sub-frame supported by and extending between the outside front posts of the box sub-frame and supporting the condenser assembly,

an evaporator assembly support sub-frame supported by the box sub-frame and supporting the evaporator assembly, and

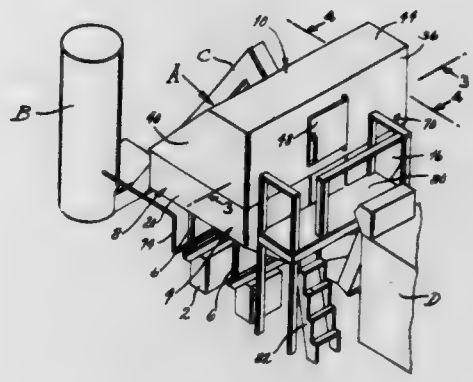
a shaft support sub-frame secured to the condenser assembly support sub-frame, projecting rearward therefrom, and rotatably supporting the shaft means rearward of the condenser assembly and forward of the evaporator assembly.

4,348,872

BULK ICE BIN

Kenneth W. Hill, R.R. 5, Mexico, Mo. 65265

Filed Jan. 19, 1981, Ser. No. 226,193
Int. Cl.³ F25C *5/18*
U.S. Cl. 62—459 **6 Claims**



1. An apparatus for storing ice cubes, said apparatus comprising: a housing having a lower section and an upper section supported on the lower section, the lower section having a generally planar and vertical front wall provided with an opening that is located midway between its sides and along its bottom, the lower section also having a pair of side walls and a bottom wall all of which slope downwardly toward the opening in the front wall, so that ice which is directed into the lower section will gravitate toward the opening, the upper section having a generally planar and vertical front wall that aligns with and forms an upward continuation of the front wall on the lower section, the front wall of the upper section also having an opening that is located generally above the opening in the front wall of the lower section, the upper section also having side walls that extend upwardly from the side walls of the lower section, and a planar back wall that extends upwardly from the back of the lower section, with the back wall being inclined such that the top of the upper section is considerably smaller than the bottom of the upper section, the inclined back wall having an opening near its upper end, whereby an inclined conveyor may be placed over the inclined back wall to bring its discharge end into close proximity and alignment with the opening in the back wall; a lower door supported on the front wall of the lower section and normally closing the opening in that front wall; an upper door supported on the front wall of the upper section and normally closing the opening in that wall; and means attached to the lower section for supporting it in an upright position.

4,348,873

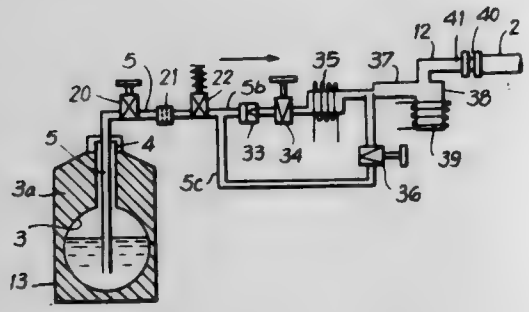
APPARATUS FOR REFRIGERATION TREATMENT

Toshima Yamauchi, Oita; Sadao Nogami, Heppu; Kengi Sawada, Oita; Jyunichiro Moriya, Kokubunji; Hiroomi Sawada, Ichikawa, and Keizou Kobayashi, Hanno, all of Japan, assignors to Kabushiki Kaisha Kurio-Medikaru, Tokyo, Japan

Division of Ser. No. 109,271, Jan. 3, 1980, Pat. No. 4,292,973.
This application Jun. 23, 1981, Ser. No. 276,647
Claims priority, application Japan, Sep. 25, 1977, 52-114967; Aug. 28, 1978, 53-22900
Int. Cl.³ F25B *19/00*
U.S. Cl. 62—514 R **5 Claims**

1. An apparatus for refrigeration treatment comprising a liquefied gas source, an evaporator for evaporating the liquefied gas at an optimum temperature, an exhaust tube connected between said gas source and said evaporator to conduct the liquefied gas from said gas source to said evaporator, a conduit for introducing the gas vaporized by said evaporator and being connected to said evaporator by means of an outflow port, and

a cup provided with a non-return expansion valve attached at the end of said conduit, said cup adapted to apply said vaporized gas to an affected portion of a patient in order to refrigerate said portion with said vaporized gas, said evaporator being provided with an evaporator chamber in which said liquid is accommodated and then evaporated by heat conduction from the wall surface thereof for evaporating the liquefied gas to a gaseous state to be blown out from the cup at a specified tem-



perature and wherein said evaporating chamber comprises a float which floats on the surface of the liquid in the chamber in the area under the outflow port to the conduit and which blocks the outflow port when the liquid surface rises, said exhaust tube being opened below said outflow port, and being provided with a check valve between the evaporating chamber and the source which blocks the liquid from flowing back upstream toward the source.

4,348,874

MULTIPLE SPLINE HUB, PARTICULARLY FOR A TELESCOPIC SHAFT

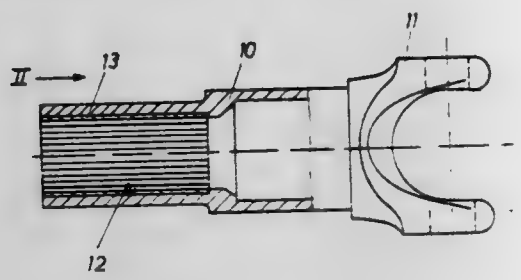
Helmut Müller, and Heinz Schweizer, both of Heidenheim, Fed. Rep. of Germany, assignors to Voith Transmit GmbH, Fed. Rep. of Germany

Filed Apr. 11, 1980, Ser. No. 139,473

Claims priority, application Fed. Rep. of Germany, Apr. 28, 1979, 2917391

Int. Cl.³ F16C *1/00*

U.S. Cl. 464—162 8 Claims



1. A multiple-spline hub for a telescopic shaft for transmitting torque, the hub comprising:

a thin-walled circular-cylindrical tube section, developed as a toothed profile tube having teeth which extend linearly and parallel to the axis of the telescopic shaft; the teeth being adapted over their entire length for transmission of torque and the teeth being shaped for permitting displacement of the profile tube over a cooperating spline shaft;

a second tube which is thick-walled; a connecting element of the telescopic shaft being connected to the second tube for moving therewith; the second tube having a bore with an inner surface, and the second tube bore being sized so that the inner surface of the bore engages the teeth of the profile tube; the toothed profile tube being inserted over substantially its entire length in the bore of the second tube and the profile tube being connected with the second tube bore inner surface.

4,348,875

CLOSURE MEMBER FOR AN AUTOMOTIVE DRIVE SHAFT ASSEMBLY

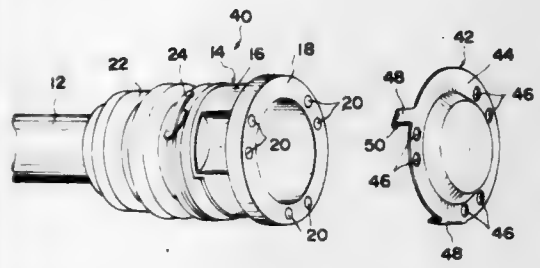
Mario Tsuru, Yokosuka, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jun. 18, 1980, Ser. No. 160,713

Claims priority, application Japan, Jun. 23, 1979, 54-86230

Int. Cl.³ F16C *1/06*

U.S. Cl. 464—170 4 Claims



1. In an automotive drive shaft assembly having a joint housing with a flanged, open end, a closure member for closing the open end, being of unitary construction and comprising a covering portion extending over the open end and engaging the outer side face of the flange, the periphery of the closure member being formed with a plurality of arms extending substantially perpendicularly to the covering portion along the periphery of the flange and defining cantilever springs supported by the covering portion, free ends of the arms being inturned to define detents engaging the inner side face of the flange.

4,348,876

WEFT THREAD LAYING APPARATUS

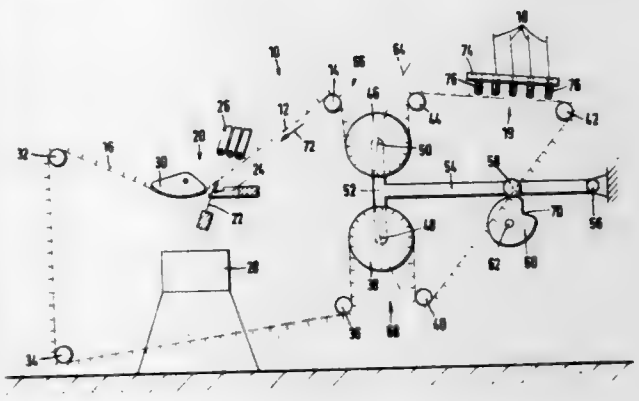
Josef Roth, Seligenstadt, Fed. Rep. of Germany, assignor to Karl Mayer Textilmaschinen fabrik GmbH, Fed. Rep. of Germany

Filed Sep. 25, 1980, Ser. No. 190,579

Claims priority, application Fed. Rep. of Germany, Sep. 26, 1979, 2938860

Int. Cl.³ D04B *23/06, 23/08, 23/10, 23/12*

U.S. Cl. 66—84 A 15 Claims



1. A weft thread laying apparatus for warp knitting

(a) a pair of endless transfer chain means generally disposed perpendicular to the needle bed of said warp knitting machine and proximate the ends thereof for continually carrying weft threads from a pick-up area to a delivery area proximate said needle bed, said transfer chains being provided with a plurality of holding elements disposed thereon;

(b) carriage means disposed above said pair of transfer chain means in said pick-up area, movable back and forth perpendicular to said transfer chain means;

(c) a plurality of thread guide means disposed upon said carriage means for laying a plurality of weft threads about said holding elements disposed on one of said pair of transfer chain means and then about the holding elements

disposed on the other of said pair of transfer chain means in a continuing sequence; and

(d) means for periodically additionally moving each said transfer chain means relative to said thread guide means when said carriage means is proximate each said transfer chain means for permitting said weft threads to lay around said holding elements on said transfer chain means.

4,348,877

AUTOMATIC TOWEL DISPENSER

Hugo W. Geschka, Düsseldorf, and Bernd Beitecke, Dortmund, both of Fed. Rep. of Germany, assignors to Luk Lamellen und Kupplungsbau GmbH, Bühl, Fed. Rep. of Germany

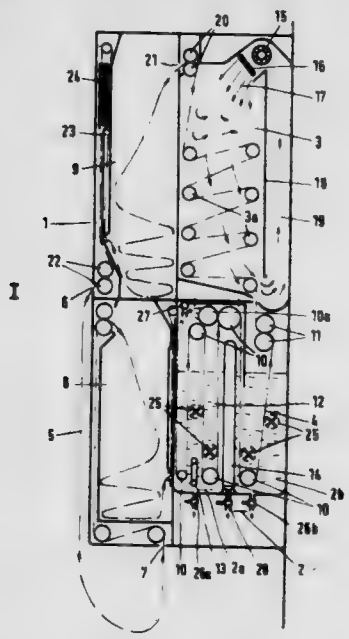
Continuation of Ser. No. 50,642, Jun. 21, 1979, abandoned. This application Feb. 25, 1981, Ser. No. 237,943

Claims priority, application Fed. Rep. of Germany, Jun. 21, 1978, 2827183

Int. Cl.³ A47K *10/30*

U.S. Cl. 68—13 R

5 Claims



1. In an automatic towel dispenser with a housing having a delivery slot and an inlet slot and containing washing and drying chambers for an endless towel which is movable therethrough and has a cleaned section available for use and extending from the housing between the delivery and inlet slots, means defining a path for travel of the towel from the inlet slot to the washing chamber and from the drying chamber to the delivery slot, a first supply chamber provided in the housing and arranged to variably store a plurality of looped soiled towel sections between the inlet slot and the washing chamber, as viewed in the direction of movement of the towel, a second supply chamber provided in the housing and arranged to variably store a plurality of looped cleaned towel sections between the drying chamber and the delivery slot, as viewed in said direction, the path of movement of the towel including a portion along which the soiled towel sections advance through the washing and drying chambers to be respectively washed and dried, at least one wash tub and at least one rinsing tub in the washing chamber, means for advancing the towel through the tubs in the form or loops, water feed and water discharge valves connected to the washing chamber, and means for respectively operating the water feed and water discharge valves at the start and on completion of a washing cycle, the improvement which consists in the provision of a device for flushing residues out of the washing chamber including means for flooding the wash tub and the towel disposed therein, means for draining liquid from the wash tub, and means for first actuating said flooding means and for thereupon actuating said draining means during intervals between successive washing cycles.

4,348,878

LOCKS OF SUITCASES WITH CHANGEABLE COMBINATIONS

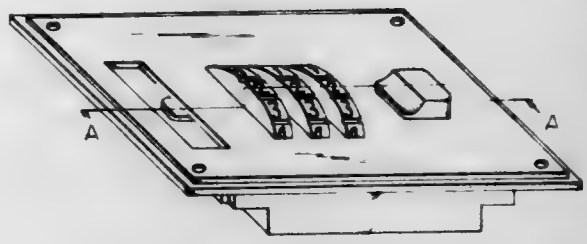
Orson Chang, 476-478 Fu Hsin N. Rd., Taipei, Taiwan

Filed Feb. 22, 1980, Ser. No. 123,709

Int. Cl.³ E05B *37/02, 65/48*

U.S. Cl. 70—5

4 Claims



1. A combination lock having changeable combinations applicable to a suitcase comprising:

a case having an open top, a hollow interior, a plurality of paired protrusions bilaterally symmetrically located on both inside side walls of said interior partially partitioning said case into a plurality of interconnecting compartments, and a pair of end recesses at opposite ends of said interior;

a lid fitted to completely cover said open top having a plurality of slots therein;

a shaft extending from one of said recesses to the other;

a plurality of gate bodies in said case in a series parallel to each other, each one in one of said interconnecting compartments, each gate body having a hole therethrough through which said shaft extends, each said hole having a notch therein;

a plurality of warded bosses rotatably mounted on said shaft, each having a ward in a specified position on an inner margin and adapted to interact with one of said notches;

a plurality of annular dials mounted in a series parallel on said shaft, each dial having on its inner periphery corresponding cuts engageable with said wards;

a sliding sheet slidably retained between said lid and said case having a portion adapted to engage with a shackle on the suitcase and at least one claw extending interiorly of said case;

a switch engaged with said sliding sheet to move the same;

a stop piece housed in one of said recesses and engaged with one end of said shaft, said claw engaging said stop piece; and

a spring mounted on said shaft biasing said gate bodies, warded bosses and annular dials towards said stop piece, said spring being in the recess opposite the recess housing said stop piece.

4,348,879

SECURITY DEVICE

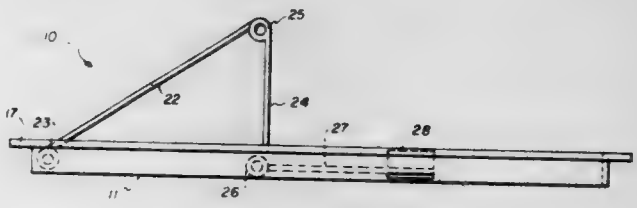
Donald V. Knierim, 866 S. Cavalier Dr., Springfield, Mo. 65804

Filed Nov. 7, 1980, Ser. No. 204,794

Int. Cl.³ E05B *65/00*; E05C *17/44*

U.S. Cl. 70—93

4 Claims



1. A security device for limiting the amount of travel of a hinged swinging door comprising a housing which defines a trackway perpendicular to said door when it is closed, said housing being recessed in a floor proximate to said door so that the top portion of said housing is substantially flush with said floor, slots in said housing, lock means slideably disposed

within said housing oriented so that said lock means can engage and be retained by said slots, and linkage means connected to said lock means which define upstanding projections when said lock is engaged thereby providing a barrier that said door would abut against thereby thwarting an unauthorized entry through said door, and when said lock is disengaged and slid along said trackway said linkage means collapses into said housing, wherein said linkage means includes three arms serially disposed and hingedly interconnected with the outer arms at their opposite respective extremities respectively hinged to said housing and fixed to said lock.

4,348,880

KEY HOLDER

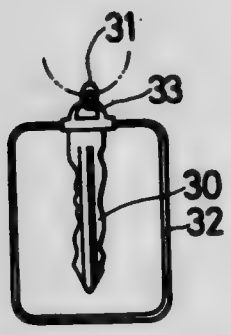
Minoru Toyoda, Nagoya, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Division of Ser. No. 68,568, Aug. 22, 1979. This application Dec. 5, 1980, Ser. No. 213,354

Claims priority, application Japan, Sep. 8, 1978, 53-110845; Feb. 6, 1979, 54-13025; Feb. 6, 1979, 54-13026; Feb. 6, 1979, 54-13027; Feb. 6, 1979, 54-13028; Feb. 6, 1979, 54-13029

Int. Cl.³ A47G *29/10*

U.S. Cl. 70—456 R **3 Claims**



1. A pendant type key holder comprising:
an elongated key extending in a first direction within a plane;
a support member secured to one end of said key;
a planar hollow elongated tubular body member freely rotatably supported by said support member for rotation about an axis lying within said plane and extending transverse to said first direction, a first portion of said body member adjacent said axis extending in the direction of said axis; and
connecting means for freely rotatably connecting said support member to a supporting body,
whereby gravity tends to cause said key and said body member to rotate into coincident vertical planes beneath said supporting body with said key lying framed within the hollow of said body member and wherein said key may be rotated about its longitudinal axis by applying rotational forces to said first portion of said body member.

4,348,881

KEY HOLDER

Minoru Toyoda, Nagoya, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

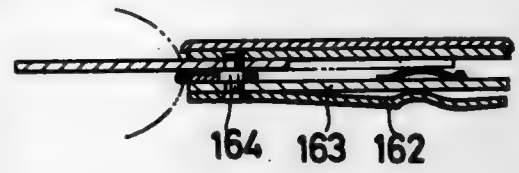
Division of Ser. No. 68,568, Aug. 22, 1979. This application Dec. 5, 1980, Ser. No. 213,358

Claims priority, application Japan, Sep. 8, 1978, 53-110845; Feb. 6, 1979, 54-13025; Feb. 6, 1979, 54-13026; Feb. 6, 1979, 54-13027; Feb. 6, 1979, 54-13028; Feb. 6, 1979, 54-13029

Int. Cl.³ A47G *29/10*

U.S. Cl. 70—456 R **15 Claims**

1. A tie pin type key holder within which a tie can be inserted comprising:
a body having first and second elongated parallel spaced members;
a pin extending between said body members at one end of said body, for connecting said body members;
a key pivotably mounted by said pin between said members of said body at one end portion of said body and movable between an operating position in which the key is disposed outside said body and a non-operating position in which the key is housed between said members and within said body;
a resilient supporting member mounted by said pin at said end portion of only one of said body members and extending over only said one body member for guiding said tie upon insertion between said key holder and said guide member; and



biasing means positioned between said body members and having one end connected to one of said body members for maintaining said key at the non-operating position thereof.

4,348,882

HOT ROLLING STRIP

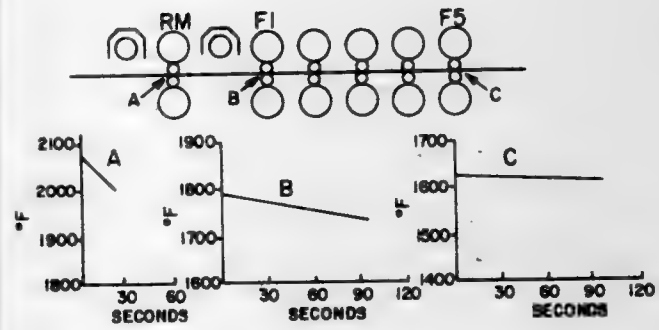
George W. Tippins, Pittsburgh, Pa., assignor to Tippins Machinery Company, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 115,611, Jan. 28, 1980, Pat. No. 4,308,739. This application Jan. 23, 1981, Ser. No. 228,795

The portion of the term of this patent subsequent to Jan. 5, 1999, has been disclaimed.

Int. Cl.³ B21B *41/02*

U.S. Cl. 72—202 **9 Claims**



3. In the hot rolling of metal slabs to strip thickness, the steps comprising:
A. passing a heated metal slab into and through a roughing mill and reducing the said slab to a transfer bar on the order of one to three inches in thickness;
B. passing said transfer bar immediately to and between the work rolls of a reversing finishing mill stand and reducing it in thickness;
C. passing the workpiece immediately into a heated furnace on the downstream side of said reversing finishing mill stand and coiling it in said furnace;
D. discharging the workpiece from said downstream heated furnace and passing it back through and further reducing the workpiece in said reversing finishing mill stand;
E. immediately passing the workpiece into and coiling it in the heated furnace on the upstream side of said mill stand;
F. thereafter uncoiling and discharging the workpiece from said upstream coiling furnace and passing it between the work rolls of said reversing finishing mill stand and further reducing it therein, the rolling speed on said pass being consonant with the speed cone on subsequent passes through continuous finishing stands and the rolling speeds on the two preceding passes on the reversing mill stand being higher than the speed on the third pass and unrelated to the aforesaid speed cone;
G. immediately thereafter passing said workpiece succes-

sively through and reducing it further in a plurality of continuous finishing stands; and

H. thereafter cooling the strip and coiling it on a finish coiler.

4,348,883

AUXILIARY DIE CONVEYOR FOR A PRESSING OR PUNCHING MACHINE

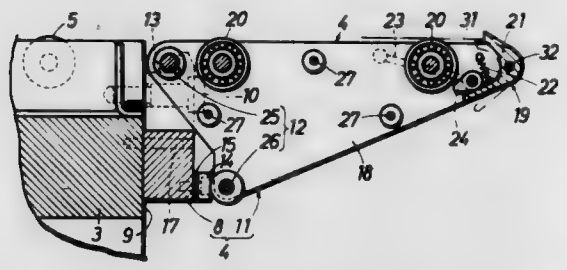
Keitaro Yonezawa, c/o Aioi Seiki K.K., 1-9 Aza Kaidoshita Kouniike, Itamishi, Hyogoken, Japan

Filed Aug. 11, 1980, Ser. No. 177,122

Claims priority, application Japan, Oct. 1, 1979, 54-136345[U]

Int. Cl.³ B21J *13/00*

U.S. Cl. 72—446 7 Claims



1. An auxiliary die conveyor for attachment to a punching or pressing machine, said conveyor comprising:

a metal support adapted to be jointed to the bolster of said machine;

a die carrier including a pair of side plates and rollers for allowing a die to roll thereon;

said die carrier having an upper tail section and a lower section and including a hanging means in its upper tail section;

said metal support including a depression in its upper section, said depression being adapted to interlock with said hanging means;

said metal support including an abutment means in its lower section, said abutment means being adapted to allow said carrier to rest thereon.

4,348,884

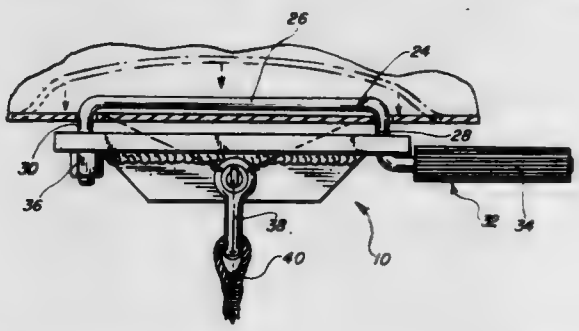
PULLING TOOL

Gerald P. Wivinis, Vacation Village 18-4, Fox Lake, Ill. 60020

Filed Feb. 6, 1981, Ser. No. 232,232

Int. Cl.³ B21D *1/12*

U.S. Cl. 72—479 5 Claims



1. A pulling tool comprising, in combination, a first pulling member comprising a generally rectangular-shaped flat bar having a front side and a back side, a pair of apertures formed in said bar extending from the front side to the back side thereof, and a pull bar having an aperture therein fixedly secured to and extending outward perpendicular to one of said front and back sides of said flat bars, said first pulling member with said pair of apertures in said flat bar forming a template for drilling holes in a surface to be repaired; a second generally U-shaped pulling member having a straight portion and a pair of legs which are spaced-apart a distance corresponding to the distance between said pair of apertures in said flat bar, at least one of said pair of legs being threaded to receive a lock nut and the other one of said pair of legs having a handle integrally formed with and extending perpendicular thereto; and at least one lock nut; said pulling tool being affixed to a surface to be repaired by drilling two apertures in said surface using said first pulling member as a template, extending said pair of legs of said second pulling element through said two apertures in said first pulling element and through said two apertures in said surface with said straight portion disposed behind said surface to be repaired and with the two legs thereof projecting to the front of said surface and through the apertures in said first pulling member, said first and second pulling members being affixed together by said lock nut being threadedly affixed to said one leg.

4,348,885

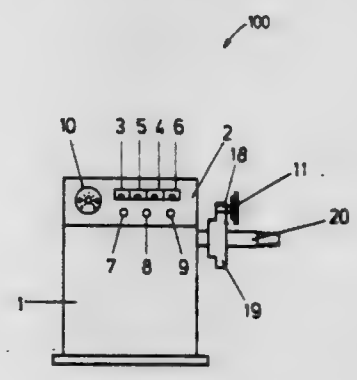
METHOD AND SYSTEM FOR OPERATIONAL TESTING OF A DEVICE FOR BALANCING BODIES OF ROTATION

H. Richard Mueller, Lynchburg, Va., assignor to Gebr. Hofmann GmbH & Co. KG, Maschinenfabrik, Darmstadt, Fed. Rep. of Germany

Filed Dec. 12, 1980, Ser. No. 215,703

Int. Cl.³ G01M *1/22*

U.S. Cl. 73—1 B 19 Claims



3. In a device for the balancing of a rotor in two balancing planes, said device including:

a clamping fixture,

a housing,

pickup means for bracing said clamping fixture in relation to said housing, and for developing pickup signals corresponding to unbalance of said rotor, and

computing means responsive to said pickup signals for computing and indicating a size and direction of said unbalance;

a system for testing said device, wherein said device is provided with a weight of known size mounted on said housing, and wherein said known weight is removable from said housing and mountable on said clamping fixture at a predetermined axial and radial location thereon, and comprising automatic entering means responsive to removal of said weight from said housing for automatically entering data corresponding to geometrical measurement of the position of said weight as mounted on said clamping fixture into said computing means.

4,348,886

MONITOR FOR OXYGEN CONCENTRATION IN ALUMINUM-BASED FILMS

Thomas J. Faith, Jr., Lawrenceville, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 19, 1980, Ser. No. 208,704

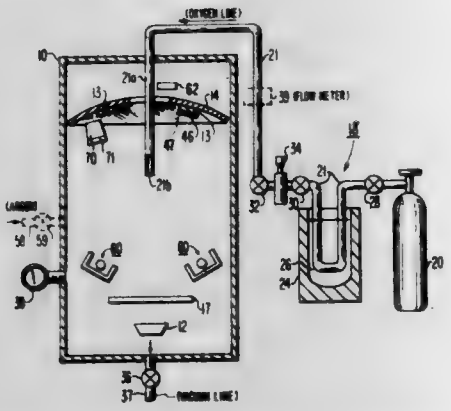
Int. Cl.³ G01N *27/12*

U.S. Cl. 73—19 15 Claims

1. A method of monitoring the concentration of oxygen in an aluminum-based film deposited in a vacuum chamber in which there is residual gaseous oxygen-specie comprising the steps of:

providing a flux of aluminum in the chamber;

depositing aluminum simultaneously both on a monitor substrate and at least one IC substrate such that the ratio of oxygen concentration to aluminum concentration on said monitor substrate is significantly greater than said ratio on said IC substrate; and



measuring the resistivity of the deposited aluminum film on said monitor substrate, the resistivity value on said monitor substrate having a much higher sensitivity to the oxygen content in said monitor film as compared to the sensitivity of the resistivity of the IC film to its oxygen content.

4,348,887

APPARATUS FOR DETERMINING THE EFFECTS OF DILUTION AND/OR DIFFUSION ON THE GASEOUS COMPONENTS OF A GAS FLOW

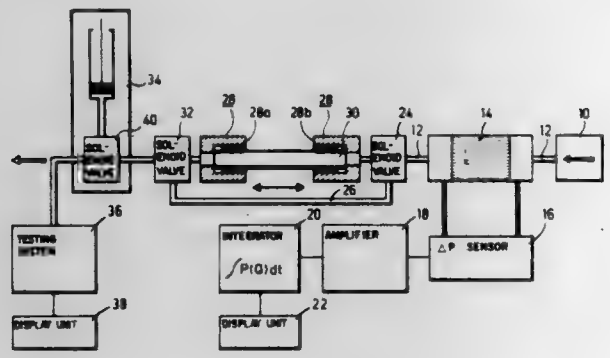
Hans-Walther Lorenz, Hamburg; Gerd Schumacher, Pinneberg, and Helmut Kirchner, Hamburg, all of Fed. Rep. of Germany, assignors to B.A.T. Cigaretten-Fabriken GmbH, Hamburg, Fed. Rep. of Germany

Filed Aug. 4, 1980, Ser. No. 174,573

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1979, 2931647

Int. Cl.³ G01N *31/08*

U.S. Cl. 73—23 **9 Claims**



1. An apparatus for determining the effect of dilution and/or diffusion of the gaseous components of a gas flow passing through a gas permeable test object said apparatus comprising:

(a) a source of calibrating gas;

(b) laminar resistance means coupled to said source of calibrating gas, said gas flowing through said laminar resistance means;

(c) volumeter means coupled to said laminar resistance means for measuring the volume of gas flowing therethrough;

(d) a test object, wherein said gas from said laminar resistance means flow through said test object;

(e) gas concentration measuring means for receiving gas from said test object and for measuring the concentration thereof;

(f) bypass means for bypassing the flow of gas around said test object; and

(g) suction means for drawing air from said source to said measuring means.

4,348,888

EXPLOSIMETER

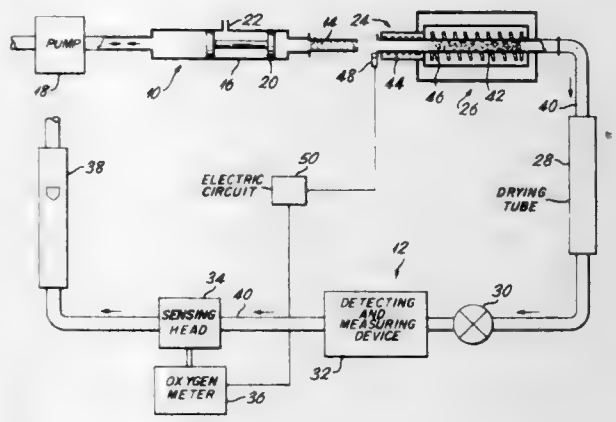
Timothy J. Snee, Buxton, England, assignor to National Research Development Corporation, London, England

Filed Oct. 1, 1980, Ser. No. 192,938

Claims priority, application United Kingdom, Oct. 11, 1979, 7935394

Int. Cl.³ G01N *31/12*

U.S. Cl. 73—23 **11 Claims**



1. A method of sensing the explosibility of an atmosphere which may contain a combustible gas or vapour or mist or aerosol comprises drawing a known volume of the atmosphere through a filter on which any condensible material condenses and into a container;

in a safe environment, establishing a steady flow of oxygen-containing gas through a combustion chamber and past an oxygen sensor, heating the filter and drawing the gas sample from the container through the heated filter as part of the steady gas flow through the combustion chamber so that any combustible material is completely oxidised causing a decrease in oxygen concentration in the gas flow; and

sensing and integrating any such decrease, and from the integrand determining the explosibility of the known volume.

4,348,889

MEASURING SHEET THICKNESS

Anthony C. Haynes, Newick, and Derek K. Unwin, Bexhill-on-Sea, both of England, assignors to Sussex Instruments Limited, England

Filed Oct. 7, 1980, Ser. No. 194,835

Claims priority, application United Kingdom, Oct. 8, 1979, 7934826

Int. Cl.³ G01B *13/06*

U.S. Cl. 73—37.7 **14 Claims**

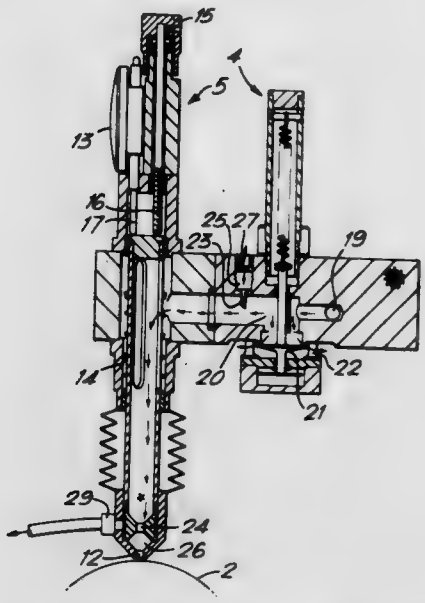
1. A method of indicating the thickness of a sheet of material which may vary about a nominal thickness, in which air is directed onto the surface of the material from a nozzle which communicates with a first chamber which is supplied with air via a restriction, comprising the steps of:

(a) positioning the nozzle such that, with a sheet of nominal thickness, the effective area of the nozzle from which air can escape is smaller than the area of the restriction;

(b) supplying air from the same source as that from which the first chamber is supplied to a second chamber having an outlet nozzle and an inlet restriction, the ratio of effective areas of which is substantially the same as that of said nozzle and said restriction of said first chamber; and,

(c) monitoring the difference in the pressures in the two

chambers with a differential pressure transducer so that the monitored output is substantially insensitive to pressure variations of said source, said monitored output indicating said thickness.

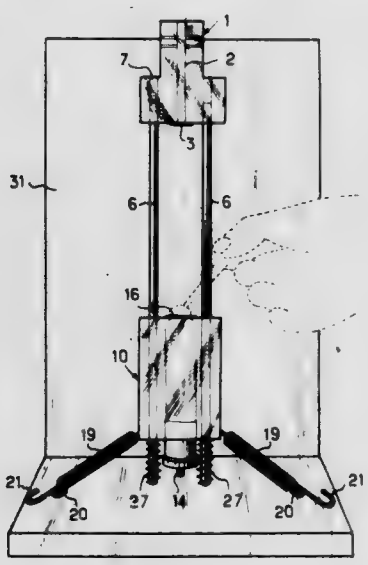


4,348,890

APPARATUS AND A PROCESS FOR DETERMINING THE RHEOLOGICAL PROPERTIES OF BIOLOGICAL FLUIDS

Maxime F. Hanss, 2 Allee de la Mairie d'Antan, Saint Witz, 95470 Survilliers, France

Filed Aug. 4, 1980, Ser. No. 175,329
Claims priority, application France, Aug. 17, 1979, 79 20833
Int. Cl.[3] G01N *15/04*
U.S. Cl. 73—61.4 21 Claims



1. An apparatus for determining the rheological properties of biological fluids and particularly the deformability of the red corpuscles of the blood, comprising in combination:

a first upper transparent block containing in its center a capillary having an inner diameter between 1 and 10 mm, which block is provided with two level detectors;

a second lower transparent block provided with a central duct—facing the capillary of the upper block—inside which duct is housed a droptaking device, said duct being connected on the one hand to a drain circuit and on the other to a pressure-regulating circuit;

a filtering membrane housed between the two blocks; and

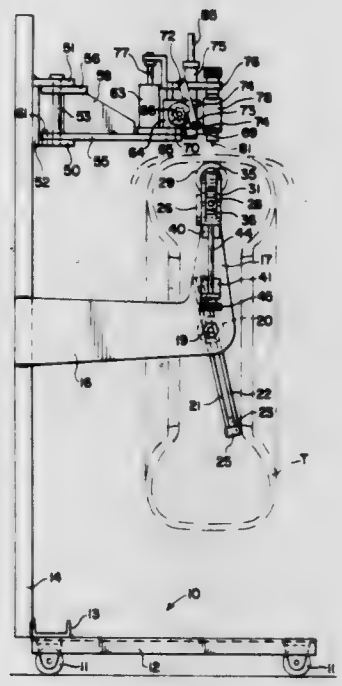
a frame for holding the apparatus.

4,348,891

TIRE HARDNESS TESTER

John M. Stickler, Stow, and George L. Shook, Akron, both of Ohio, assignors to The B F Goodrich Company, New York, N.Y.

Filed Feb. 4, 1981, Ser. No. 231,207
Int. Cl.[3] G01N *3/42*
U.S. Cl. 73—81 12 Claims



1. An apparatus for gauging the hardness of tire treads comprising a support, said support having bracket means at the upper end thereof, a durometer support means mounted on said bracket means, a durometer mounted on said support means for vertical movement, said durometer having a penetrator for contact with a tire tread to provide a hardness reading on said durometer, control means mounted on said durometer support means and operatively connected to said durometer for controlling the movement of said durometer at a uniform rate of descent, a tire support means connected to said intermediate portion of said support for presenting an upper tread portion to said durometer, and said tire support means having a tread support member located on the inner peripheral surface of a tire in alignment with said penetrator of said durometer.

4,348,892

APPARATUS AND METHOD FOR TESTING THE PERFORMANCE OF ELECTRICAL MACHINES

Ervin M. Emanuel, P.O. Box 2175, Prairie View, Tex. 77445

Filed Oct. 19, 1979, Ser. No. 86,532
Int. Cl.[3] G01R *35/00*
U.S. Cl. 73—116 16 Claims

16. A method for determining the power angle of an A.C. generator including the steps of:

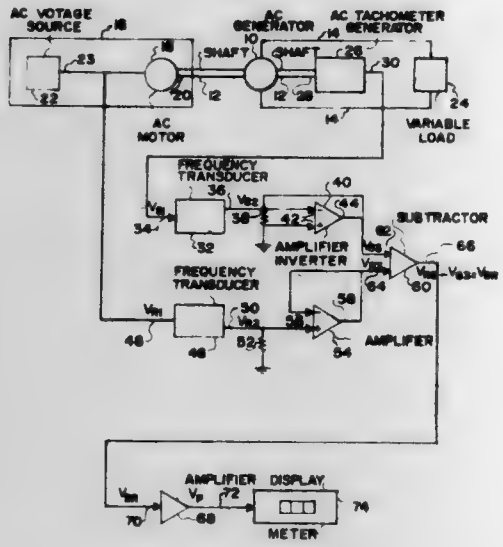
activating a generator;

varying a load on the generator;

determining the rotor speed of the generator and producing a first signal proportional to the rotor speed;

determining the synchronous rotating magnetic field of the generator and producing a second signal proportional to the synchronous rotating magnetic field;

producing a third signal which is equal to the difference between the first signal and second signal; and



multiplying the third signal by a predetermined constant to produce a signal representing the power angle of the generator.

4,348,893

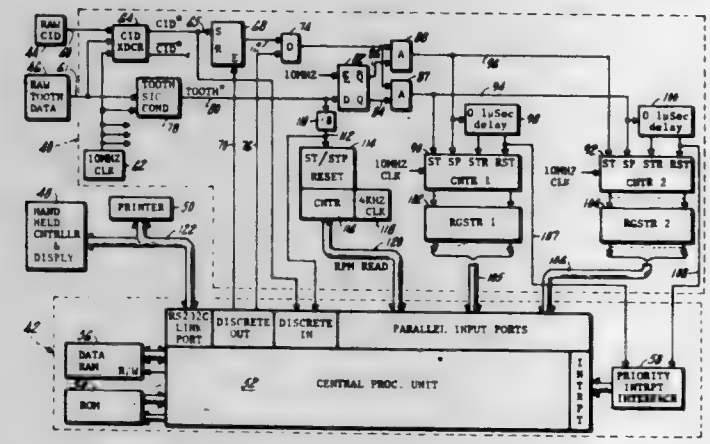
RELATIVE COMPRESSION OF AN ASYMMETRIC INTERNAL COMBUSTION ENGINE

Tony D. Hendrix, Kokomo, Ind., and Rinaldo R. Tedeschi, Newington, Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Nov. 13, 1979, Ser. No. 93,656

Int. Cl.³ G01M *15/00*

U.S. Cl. 73—116 **7 Claims**



1. A method of measuring the relative compression of the cylinders of an asymmetric firing internal combustion engine of the type having cylinders grouped in one or more pairs where the cylinders in each pair are spaced from each other by a first crankshaft angle and each pair is spaced from adjacent pairs by a second crankshaft angle value greater than the first, the steps of:

cranking the engine without ignition,

detecting the occurrence in each engine cycle of an engine event occurring in each cycle at a defined crankshaft angle,

measuring the angular rotation of an engine member mounted to and rotating with the engine crankshaft to provide a signal manifestation of the angular speed of the crankshaft and recording the successively sampled signal manifestations of crankshaft speed versus successive equal intervals of crankshaft angle referenced to the crankshaft index signal in each cycle to provide information of the change in crankshaft speed as a function of crank shaft angular displacement from said index point;

measuring the rate of change of the signal manifestation of crankshaft speed versus crankshaft angle provided by each cylinder and recording a speed change value associated with each cylinder;

determining the maximum speed change signal from among the plurality of cylinders; and comparing the recorded values of speed change for each cylinder with the maximum speed change to provide as a ratio of the speed change for each cylinder divided by the maximum speed change an indication of relative compression for each cylinder.

4,348,894

FUEL QUANTITY MEASURING APPARATUS

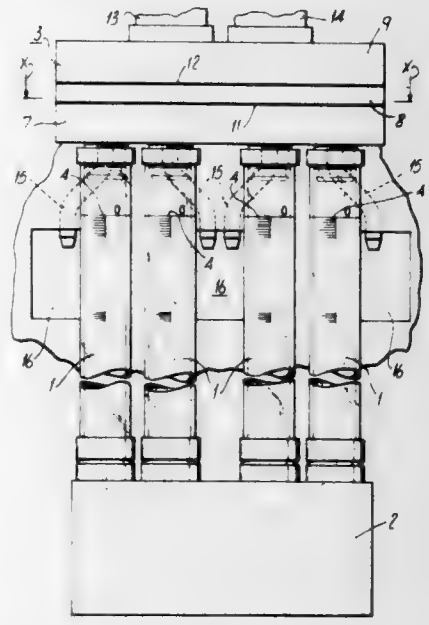
Reginald S. Emerson, and John E. Lovelock, both of Buckingham, England, assignors to Leslie Hartridge Limited, Buckingham, England

Filed Jun. 24, 1980, Ser. No. 162,662

Claims priority, application United Kingdom, Jun. 29, 1979, 7922649

Int. Cl.³ G01M *15/00*

U.S. Cl. 73—119 A **11 Claims**



1. Measuring apparatus for measuring the quantity of calibration fluid delivered by engine-fuel injection means, comprising:

(a) at least one vertically arranged hollow cylinder;

(b) a piston contained within said cylinder and able to slide within and along the interior thereof, and free to slide out of the bottom end of said cylinder to avoid excess pressure in the event of overfilling of said cylinder with calibration fluid;

(c) a bell-mouthed bottom end of said cylinder for easy re-engagement of said piston in the event that it does slide out of said bottom end;

(d) sealing means on said piston to seal the interior of said cylinder on one side of said piston from the interior of said cylinder on the other side of said piston;

(e) calibration-fluid receiving means connected to one end of said cylinder to enable calibration fluid to be conveyed to the interior of said cylinder on one side of said piston to displace the latter in one direction along said cylinder's interior;

(f) indicating means to indicate the position of said piston in relation to said cylinder, whereby the volume of calibration fluid which displaces said piston can be measured;

(g) draining means connected to said one end of said cylinder to enable calibration fluid to be drained from said cylinder's interior; and

(h) pressurized gas pressure-transmitting means connected to the other end of said cylinder to enable the pressure of pressurized gas to be transmitted to the interior of said cylinder on the other side of said piston to displace the latter in the opposite direction along said cylinder's inte-

rior whereby calibration fluid is drained from said cylinder's interior through said draining means.

4,348,895

METHOD FOR ANGULARLY CORRECT MOUNTING OF A FUEL INJECTION PUMP ON AN INTERNAL COMBUSTION ENGINE

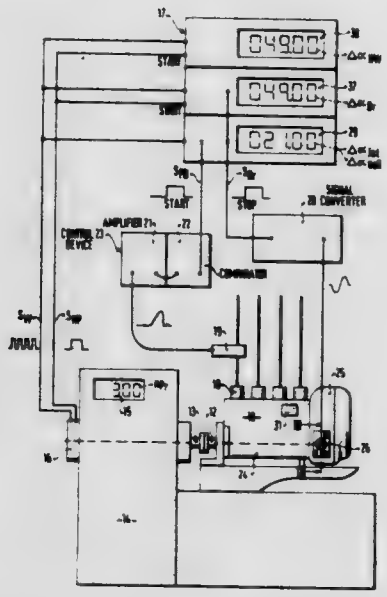
Max Straubel; Reinhard Schwartz; Ernst Ritter; Ilija Djordjevic, all of Stuttgart, and Reinhard Döll, Böblingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 5, 1980, Ser. No. 213,712

Claims priority, application Fed. Rep. of Germany, Dec. 6, 1979, 2949018

Int. Cl.³ G01M *15/00*

U.S. Cl. 73—119 A 15 Claims



1. A method for ascertaining the correct angular mounting of a fuel injection pump having a housing and a camshaft with an angle transducer mark on an internal combustion engine having a crankshaft, the angular mounting system including a test bench having an electronic evaluation circuit, an electronic dynamic supply onset signal transducer, a rotary position transducer to detect camshaft position, a display, and a camshaft lock, said method comprising the steps of:

mounting the injection pump on the test bench,

operating the injection pump at a test rpm,

measuring the injection pump supply onset with the electric dynamic supply onset transducer which generates a signal indicative thereof,

feeding the supply onset signal to the electronic evaluation circuit,

revolving the camshaft and the angle transducer mark thereon,

triggering the rotary position transducer by means of the angle transducer mark to generate a signal representing camshaft rotary position,

feeding the rotary position signal into the electronic evaluation circuit,

ascertaining a first signal distance between the rotary-position signal and the supply onset signal in the electronic evaluation circuit,

indicating the signal distance on the injection display,

marking the first signal distance on the injection pump,

shutting off the test bench,

rotating the camshaft to a predetermined position relative to the dynamic supply onset, taking into consideration the marked first signal distance,

locking the camshaft,

positioning the crankshaft at a predetermined distance from top dead center,

mounting the injection pump on the internal combustion engine.

4,348,896

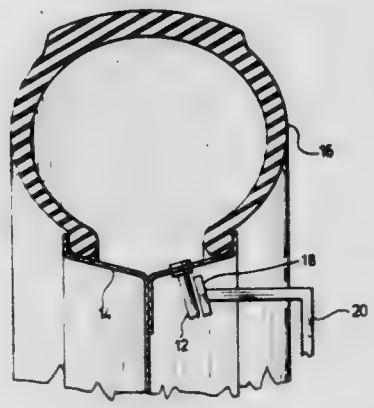
APPARATUS FOR INDICATING PRESSURE IN PNEUMATIC TIRES

Athanase K. Sarides, 88 Baroness Crescent, Willowdale, Ontario M1P 4T6, Canada

Filed Sep. 24, 1980, Ser. No. 190,124

Int. Cl.³ B60C *23/02*

U.S. Cl. 73—146.5 5 Claims



1. Apparatus for indicating pressure in a pneumatic tire on a wheel while in motion on a vehicle, comprising an actuator secured to the wheel so as to rotate therewith, the actuator including an extensable bag member in communication with air in the tire, resilient means controlling extension of the bag member along a linear path extending substantially radially of the tire by air in the tire to cause the bag member to be extended by an amount indicative of the air pressure in the tire, and magnetic means positioned along said liner path in accordance with the amount of extension of the bag member and therefore in accordance with the air pressure in the tire, a plurality of magnetically actuated means mounted on the vehicle adjacent said linear path for selective actuation by the magnetic means of the actuator in accordance with the position of the magnetic means as it rotates with the tire, and indicating means connected to the magnetically actuated means to indicate air pressure in the tire by indicating the magnetically actuated means selectively actuated.

4,348,897

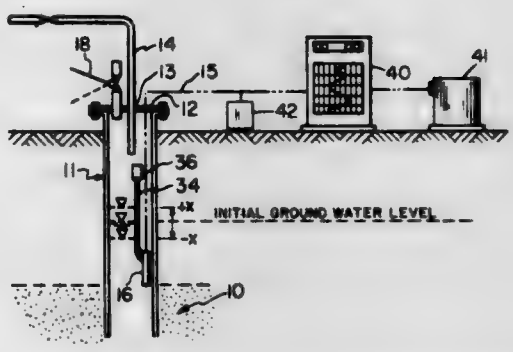
METHOD AND DEVICE FOR DETERMINING THE TRANSMISSIBILITY OF A FLUID-CONDUCTING BOREHOLE LAYER

Irene Krauss-Kalweit, Schwarzwaldweg 5a, 6094 Bischofsheim, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 58,519, Jul. 18, 1979, abandoned. This application Aug. 1, 1980, Ser. No. 174,632

Int. Cl.³ E21B *47/10*

U.S. Cl. 73—155 6 Claims



1. Method for the determination of the transmissibility of a fluid-conducting borehole layer, especially of an aquifer, comprising the steps of

stimulating the fluid-level in a borehole to a periodic or an aperiodic damped oscillation,

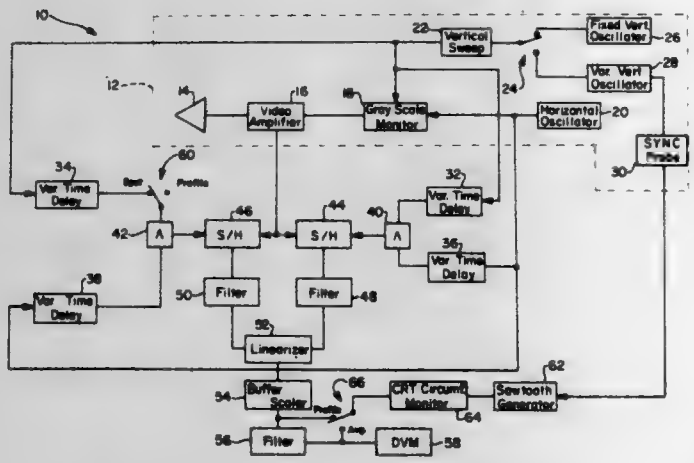
measuring the movement of the fluid-level with a pressure transducer,
recording the movement of the fluid-level on a digital or analog recorder, and
evaluating the recorded movement to produce a factor related to the transmissibility.

4,348,898

DIRECT READING TEMPERATURE AND CIRCUMFERENTIAL TIRE MONITOR

Aurel V. Stan, North Canton, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Feb. 11, 1980, Ser. No. 120,242
Int. Cl.³ G01J *5/00*; G01M *17/02*
U.S. Cl. 374—124 **16 Claims**



1. In a thermal scanner having an infrared detector and a video amplifier for sensing an object of unknown temperature and a reference of known temperature and presenting output signals corresponding to said temperatures, and a monitor connected to the video amplifier and controlled by a horizontal oscillator and a vertical sweep circuit for creating a raster scan of the object and reference, the improvement, comprising:
first delay means interconnected between the video amplifier, horizontal oscillator, and vertical sweep circuit for selecting a first video signal from the raster scan indicative of the temperature of the reference, said first video signal occurring at a coincidence of first outputs from the horizontal oscillator and vertical sweep circuit;
second delay means interconnected between the video amplifier, horizontal oscillator, and vertical sweep circuit for selecting a second video signal from the raster scan indicative of the temperature of the object, said second video signal occurring at a coincidence of second outputs from the horizontal oscillator and vertical sweep circuit;
circuit means connected to said first and second delay means, receiving said first and second video signals and producing therefrom an electrical signal indicative of the temperature of the object as a function of said first and second video signals; and
third and fourth delay means operatively connected to said horizontal oscillator for defining within the raster scan the physical boundaries of the object of unknown temperature.

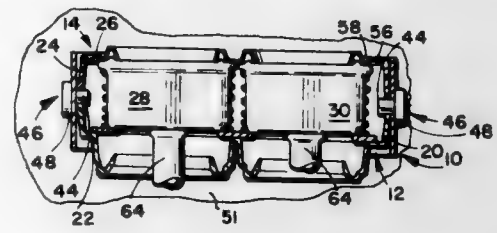
4,348,899

REVERSIBLE GAUGES

Leslie D. Muller, Pacific Palisades, Calif., assignor to Orion Industries, Inc., Compton, Calif.

Filed Mar. 14, 1980, Ser. No. 130,479
Int. Cl.³ B60K *37/02*; G01D *11/30*
U.S. Cl. 73—431 **7 Claims**

1. A gauge mount for location facing forward the interior of a vehicle cab in the instrument panel area in the cab of the vehicle comprising first and second gauge frames releasably secured each to the other, each of said gauge frames having a rim about the perimeter thereof, and said frames are arranged to fit together in back to back fashion each with an outer surface having at least one bezel therein, said bezels in said back to back frames facing in opposite directions, and said rims are congruently aligned, and each bezel of each of said frames is mutually congruent to a bezel in the other frame, and said outer surfaces of said frames have markings distinct from one



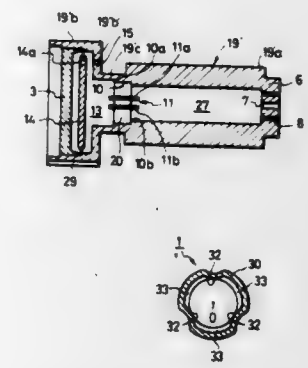
another, and further comprising a gauge resiliently confined between means on the interior of said frames and fitted against said pair of mutually congruent bezels and arranged to be reversibly mounted between said gauge frames to selectively and alternatively face each of said bezels in said pair.

4,348,900

ANGULAR VELOCITY SENSOR

Fumitaka Takahashi, Houya, and Hiroshi Gotoh, Asaka, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 2, 1980, Ser. No. 155,428
Claims priority, application Japan, Jun. 8, 1979, 54-77877[U]
Int. Cl.³ G01P *15/08, 3/26*
U.S. Cl. 73—505 **1 Claim**



1. An angular velocity sensor, which comprises: an outer casing including a central space extending axially thereof, said outer casing being formed of a hollow cylindrical member having one end opened and the other end closed, said hollow cylindrical member having an inner peripheral wall thereof formed with a plurality of inward protuberances extending axially thereof and arranged at circumferentially equal intervals, wherein axially extending gas flow passages are defined between adjacent ones of said inward protuberances and associated outer peripheral surfaces of said inner casing, a plurality of axial gas flow passages formed around said central space, an opening formed in one end thereof and an end wall closing the other end thereof; an inner casing mounted within said outer casing, said inner casing including an opening formed in one end thereof, a hollow cylindrical portion fitted within said central space of said outer casing and defining therein a central gas flow passage extending axially thereof, an end wall provided at the other end thereof and having an axial nozzle hole formed diametrically centrally thereof and communicating with said central gas flow passage and axial gas flow passage in said outer casing, a gas flow sensor holding portion provided in said hollow cylindrical portion in spaced and concentric relation to said nozzle hole, and a pump housing portion provided in said opening in said inner casing; a gas flow sensor fitted in said gas flow sensor holding portion, said gas flow sensor including a pair of thermo-sensitive elements arranged in symmetrical relation with respect to the axis of said nozzle hole for detecting the temperature of a gas jet supplied thereto through

said nozzle hole; and pump means incorporated in said pump housing portion for supplying gas into said axial gas flow passages in said outer casing, wherein said hollow cylindrical portion, end wall, gas flow sensor holding portion and pump housing portion of said inner casing are integrally formed of a one-piece structure.

4,348,901

APPARATUS FOR MONITORING THE DEGREE OF COMPACTION

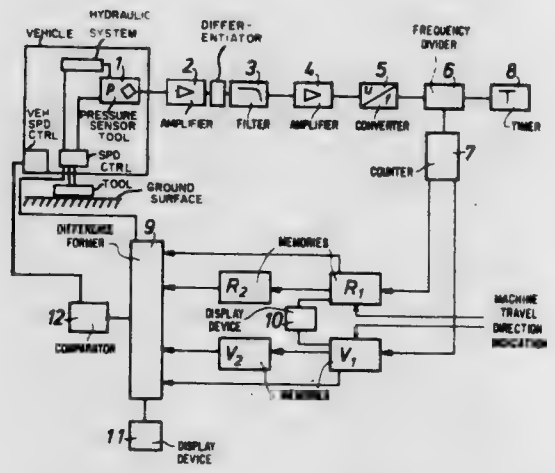
Gülertan Vural, Emmelshausen, and Uwe Blancke, Koblenz, both of Fed. Rep. of Germany, assignors to Koehring GmbH-BOMAG Division, Boppard, Fed. Rep. of Germany

Filed Oct. 17, 1980, Ser. No. 198,266

Claims priority, application Fed. Rep. of Germany, Oct. 19, 1979, 2942334

Int. Cl.³ G01N *3/36*; E01C *19/34*

U.S. Cl. 73—594 **10 Claims**



1. In apparatus for monitoring the degree of compaction achieved by a compacting device including at least one vibrating compacting tool which device is mounted on a vehicle arranged to travel back and forth over a surface to be compacted, the apparatus including means for detecting the value of an operating parameter which has a known relationship to the effective power of the vibrating compacting tool during each pass of the vehicle over the surface and which is representative of the degree of compaction achieved, the improvement comprising:

representation storage means connected to said detecting means for separately storing representations of the detected values associated with each direction of travel of the vehicle;

and difference forming means connected to said storage means for providing a representation of the difference between detected values associated with successive passes of the vehicle in the same direction.

4,348,902

ULTRASONIC IMAGING SYSTEM USING PLURAL SQUARE WAVE PULSE TRAINS OF SUCCESSIVELY DELAYED INTERVALS

Ryobun Tachita, Kawasaki; Yoshihiro Hayakawa; Kazuyoshi Irioka, both of Sagamihara; Hiroshi Fukukita, Tokyo; Tsutomu Yano, Kawasaki, and Akira Fukumoto, Michida, all of Japan, assignors to Matsushita Electric Industrial Company, Limited, Osaka, Japan

Filed Nov. 14, 1980, Ser. No. 206,827

Claims priority, application Japan, Nov. 16, 1979, 54-149385

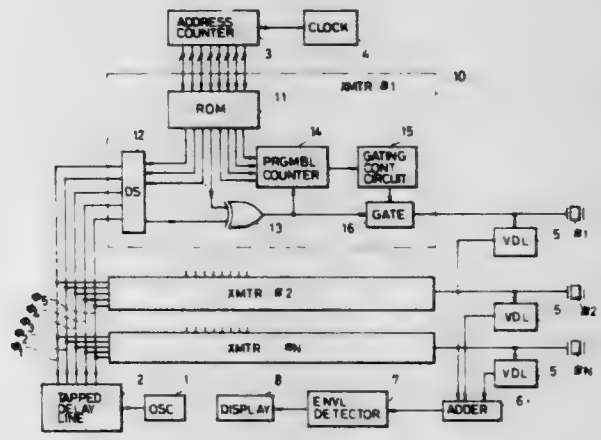
Int. Cl.³ G01N *29/00*

U.S. Cl. 73—626 **4 Claims**

1. An ultrasonic imaging system having an array of successively arranged piezoelectric transducers, comprising:

a clock pulse source for generating a plurality of trains of square wave pulses each having a duration that is an integral multiple of a unit quantization time interval, the square wave pulses of each train being delayed by said unit quantization time interval with respect to the square wave pulses of adjacent trains;

a plurality of transmitter circuits respectively corresponding to said piezoelectric transducers, each of said transmitter circuits comprising: a memory in which a set of different digital delay time data is stored, each of the delay time data including a first selection data, a bit inversion data and a second selection data; a selector for selecting one of said pulse trains in accordance with said first selection; an Exclusive-OR function means for inverting or not inverting the binary state of said selected square wave pulses



depending on the binary states of said bit inversion data; a programmable counter for counting the output of said Exclusive-OR function means to generate an output in accordance with said second selection data; and means for gating the output of said Exclusive-OR function means to the corresponding piezoelectric transducer in response to the output of said counter; and

means for retrieving each delay time data from each memory of said transmitter circuits at periodic intervals corresponding to angular increments of an ultrasonic beam transmitted from said transducer array.

4,348,903

ELECTROMAGNETIC ULTRASONIC APPARATUS

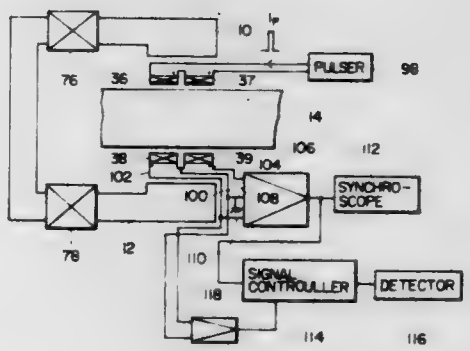
Ichiya Sato, Hitachi; Kazuo Miyagawa; Yukito Sasaki, both of Kisarazu; Koji Kawamura; Shuichi Sato, both of Kimitsu; Soji Sasaki, Hitachi; Jun Kubota, Hitachi, and Susumu Itoh, Hitachi, all of Japan, assignors to Nippon Steel Corporation and Hitachi, Ltd., both of Tokyo, Japan

Filed Aug. 21, 1980, Ser. No. 180,043

Claims priority, application Japan, Aug. 24, 1979, 54-107190

Int. Cl.³ G01N *29/00*

U.S. Cl. 73—643 **7 Claims**



1. An electromagnetic ultrasonic apparatus for examining materials by using ultrasonic waves, comprising a first magnetic pole having a continuous end surface which is in close proximity and in opposition to a material to be examined; a second magnetic pole having a continuous end surface which is in close proximity and in opposition to the material, and having a polarity opposite to that of said first magnetic pole; DC

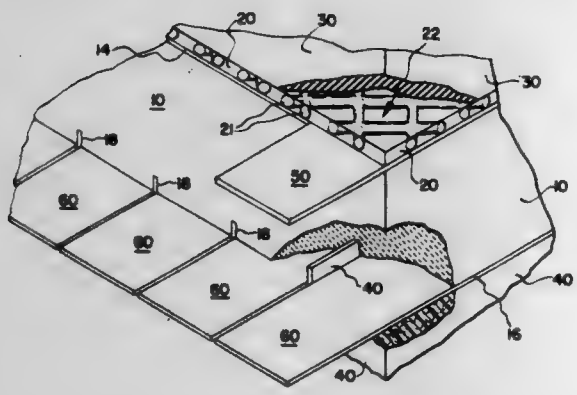
magnetic field generating means for supplying a DC magnetic field to said first and second magnetic poles; a pair of transmitting coils which are provided between the material and the end surface of said first magnetic pole and which face different portions of a surface of the material; a pair of receiving coils which are provided in a space between the material and the end surface of said second magnetic pole and which are opposed to said transmitting coils, respectively; pulse signal generating means for supplying a pulse current to said transmitting coils; and signal control means for amplifying and controlling output signals generated in said receiving coils, said transmitting coils and said receiving coils being connected together such that output signals generated in said receiving coils have differential relationship with each other.

4,348,904

ACOUSTIC IMPEDANCE MATCHING DEVICE

Peter Bautista, Jr., Buena Park, Calif., assignor to North American Philips Corporation, New York, N.Y.

Filed Aug. 8, 1980, Ser. No. 176,312
Int. Cl.³ G01N *29/00*
U.S. Cl. 73—644 **17 Claims**



1. An impedence matching device for coupling wideband acoustic energy between an active surface of one or more acoustic transducers having a first acoustic impedence and an object having a second acoustic impedence, comprising:

a layer of sound conductive material having an acoustic impedence intermediate the first acoustic impedence and the second acoustic impedence disposed over the active surface of the transducers; and

a mesh disposed over the active surface of the transducers, the mesh having strands which define open spaces therebetween; wherein

the sound conductive material comprises loaded regions which are disposed within the open spaces of the mesh and which have an acoustic impedence which is greater than the acoustic impedence of the mesh and further comprises an unloaded region which has an acoustic impedence which is lower than the acoustic impedence of the loaded regions.

4,348,905

VIBRATION SENSOR FOR AN AUTOMOTIVE VEHICLE

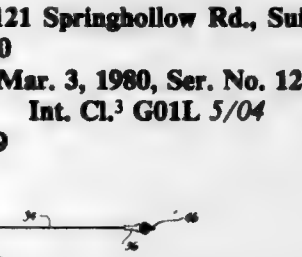
Toshifumi Nishimura, Yokosuka, and Kunihiko Sugihara, Takasho, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jul. 8, 1980, Ser. No. 166,947
Claims priority, application Japan, Jul. 13, 1979, 54-96577[U]
Int. Cl.³ G01L *23/22*
U.S. Cl. 73—654 **4 Claims**

1. A vibration sensor for an automotive vehicle comprising:

(a) a housing having a first cavity, a second cavity, and an opening in said housing between said cavities;

(b) an elongated piezoelectric vibration element extending through said opening, the free end of said element being positioned within said first cavity to vibrate freely therein in cantilever fashion, the fixed end of said element being positioned within said second cavity and being fixed in position therein by a bonding material; and



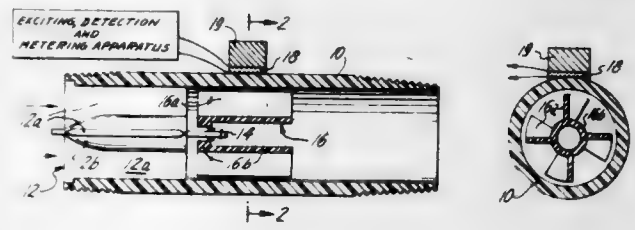
(c) means for conducting a piezoelectric signal in response to the vibration of said piezoelectric element, said means for conducting the signal being fixed in position within said second cavity by a bonding material.

4,348,906

ACOUSTIC FLOW SENSORS

Murray F. Feller, Citrus County, Fla., assignor to Wilgood Corporation, Jacksonville, Fla.

Filed Aug. 11, 1980, Ser. No. 176,904
Int. Cl.³ G01F *1/00*
U.S. Cl. 73—861.77 **9 Claims**



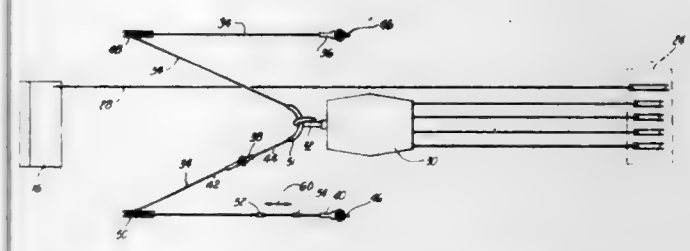
9. A method of producing signals representing the flow of fluid in a passage, including the steps of disposing a flow-metering rotor having vanes defining a series of pockets in the path of the fluid for operation thereby, emitting an acoustic carrier from a fixed position toward the pockets of the rotor, at a fixed position receiving the carrier modulated by the shifting pockets of the rotor, and from the received signal deriving a signal representing the operation of the flow-metering rotor.

4,348,907

RETIREMENT ELONGATION INDICATOR FOR MAST RAISING LINES

Gene E. Giese, 11121 Springhollow Rd., Suite 111, Oklahoma City, Okla. 73120

Filed Mar. 3, 1980, Ser. No. 126,177
Int. Cl.³ G01L *5/04*
U.S. Cl. 73—862.39 **8 Claims**



1. Apparatus for use in raising or lowering a derrick drilling mast on a substructure including A-leg sheaves and a drawworks extending a drilling line to the travelling hook, comprising:

a mast raising line connected to move the derrick arcuately in response to a corresponding movement of a drilling line by the drawworks;

first and second sleeves secured on said cable at a preselected distance X in separation; and

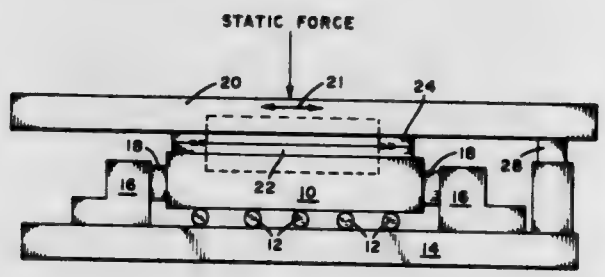
measuring bar means for periodically measuring between said first and second sleeves when said mast raising line is unstressed to detect a permanent elongation distance X plus E of said mast raising line, where E is approximately 70 percent of the specified elongation limit per unit length X and Elongation Limit = (Tension·Length X) ÷ (Metallic Area·Modulus of Elasticity).

4,348,908

POWER MEASURING ARRANGEMENT FOR VIBRATORY WELDER

Andrew Shoh, Ridgefield, Conn., assignor to Branson Ultrasonics Corporation, Newtown, Conn.

Filed Jan. 19, 1981, Ser. No. 226,195
Int. Cl.³ G01L *3/24*
U.S. Cl. 73—862.54 **7 Claims**



1. A power measuring arrangement in combination with a vibratory welder wherein two workpiece parts to be welded are disposed respectively in a substantially stationary plate and an opposing driver plate and wherein said plates are urged toward contact with each other to provide forced contact between said workpiece parts perpendicular to a weld plane defined by the surface along which the parts are to be welded and wherein said driver plate is reciprocatingly vibrated along said weld plane, the improvement comprising:

means disposed for providing a first electrical signal commensurate with the force exerted by the substantially stationary plate in the weld plane;

means disposed for providing a second electrical signal responsive to the velocity of the driver plate relative to said stationary plate in the weld plane;

multiplying means coupled for receiving said first signal and said second signal and providing an output signal which is proportional to the product of said first signal and of said second signal, and

means coupled for averaging said output signal and indicating a value commensurate with the averaged output signal.

4,348,909

SAMPLING PROBE FOR TAKING PARTIAL LIQUID QUANTITIES FROM VARIOUS PHASES OF TWO IMMISCIBLE LIQUIDS

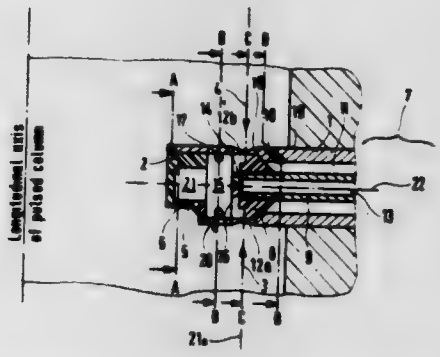
Manfred Kluth, Neuthard; Heinz Antoni, Eggenstein-Leopoldshafen, and Werner Stich, Linkenheim-Hochstetten, all of Fed. Rep. of Germany, assignors to Kernforschungszentrum Karlsruhe GmbH, Karlsruhe, Fed. Rep. of Germany

Filed Aug. 15, 1980, Ser. No. 178,570
Claims priority, application Fed. Rep. of Germany, Aug. 17, 1979, 2933368
Int. Cl.³ G01N *1/20*
U.S. Cl. 73—863.21 **9 Claims**

1. A sampling probe for sampling partial quantities of liquid in a countercurrent extraction column wherein said liquid has first and second immiscible phases moving in mutually opposite directions, said probe comprising:

(a) an extraction tube having first and second radially opposed ports in the surface thereof, said extraction tube being adapted for extending into the liquid within said column and positioned so that said first and second phases impinge upon the respective opposite portions of the extraction tube surface containing said radially opposing ports;

(b) a stopper formed of a material which promotes coalescence with respect to said first phase fitted into one end of said extraction tube, said stopper having a cavity therein and a plurality of apertures located in the side of said stopper aligned with the portion of said extraction tube aganst which said first phase impinges; and



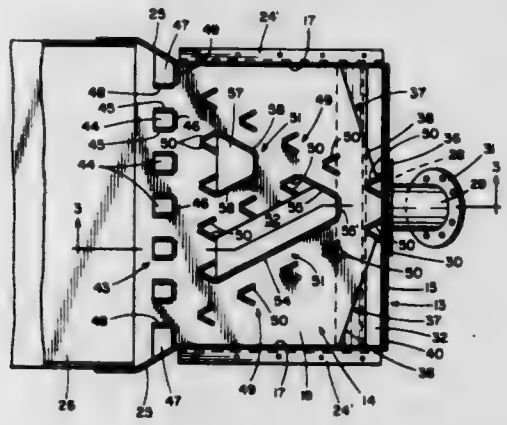
(c) a conical valve formed of a material having substantially the same coalescing properties as said stopper material slidably positioned within said extraction tube between said stopper and the other end of said tube, said valve having channels therein for connecting the cavity in said stopper with the interior of said extraction tube.

4,348,910

SPONGE IRON PRODUCTS SAMPLING DEVICE

Gorden F. Johnson, Pittsburgh, Pa., assignor to Pullman Incorporated, Chicago, Ill.

Continuation of Ser. No. 88,887, Oct. 29, 1979, abandoned. This application Mar. 13, 1981, Ser. No. 243,291
Int. Cl.³ G01N *1/20*
U.S. Cl. 73—863.51 **8 Claims**



1. For a conveyor adapted to convey a pelletized product, said conveyor having a tubular wall provided with an opening in one side thereof, the improvement of a product sampling apparatus comprising:

a housing including side walls and end walls,

a lower wall,

an intermediate wall,

a cover wall, with said walls interconnected to provide an upper and lower chamber,

a first outlet connection communication with said upper chamber adjacent a first end thereof,

a second outlet connection communicating with said lower chamber,

an inlet chute connected to said upper chamber adjacent a second opposite end thereof,

means connecting said sampling apparatus in inclined planar relation to said conveyor side wall whereby said inlet chute communicates with the interior of the conveyor to direct product to said upper chamber,

baffle means on said intermediate wall in said upper chamber disposed in the path of movement of said product,

sorting apertures in said intermediate wall communicating with said lower chamber,

said baffle means and sorting apertures being arranged and constructed to direct and divide a larger quantity of product into smaller representative pelletized samples whereupon they are respectively discharged from said chambers through said first and second outlet connectors,

said sorting apertures including a first row positioned adjacent to said inlet chute and said row extending transversely with respect thereto,

said row of apertures including at opposite ends thereof apertures of larger size than the other apertures of said row, the latter being positioned adjacent to the side walls of said apparatus.

4,348,911

PUSHBUTTON

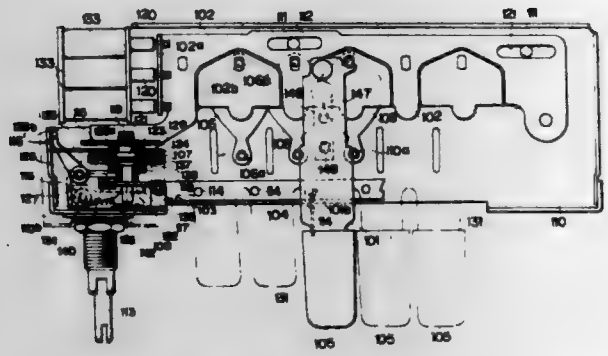
Yoshio Tanaka; Yasuhisa Nishikawa, and Ryoichi Hasumi, all of Toda, Japan, assignors to Clarion Co., Ltd., Japan

Filed Dec. 11, 1979, Ser. No. 102,421

Claims priority, application Japan, Dec. 13, 1978, 53-153221; Dec. 18, 1978, 53-172141[U]; Dec. 19, 1978, 53-173109[U]; Feb. 22, 1979, 54-021009[U]

Int. Cl.³ H03J *5/12*; F16D *13/50*

U.S. Cl. 74—10.33 **10 Claims**



1. In a pushbutton tuner which comprises: a baseplate; a plurality of button slides arranged in a plane parallel with a major face of the baseplate; setting pins provided to the button slides, respectively; a plurality of link members pivotally supported with respect to said major face of the baseplate, a plane parallel therewith, a tuning mechanism; and a memory slide engaged with said link members for operating said tuning mechanism; said memory slide being displaceable upon rotation of any of the link members which has been actuated through an engagement thereof with the associated setting pin in response to depression of the associated button slide; the improvement wherein each of said link members have oppositely angled edges on opposite sides thereof, and each of said setting pins being adapted to act on the confronting edges of the respective adjacent two link members to pivot the same.

4,348,912

VARIABLE AMPLITUDE VIBRATOR APPARATUS

Hubert E. Thomas, 300 Prospectors Rd., #25, Diamond Bar, Calif. 91765

Continuation-in-part of Ser. No. 68,343, Aug. 21, 1979. This application May 27, 1980, Ser. No. 153,203

Int. Cl.³ F16H *33/00*

U.S. Cl. 74—61 **12 Claims**

1. A variable amplitude vibratory apparatus comprising:

shaft means supported for rotation about an axis;

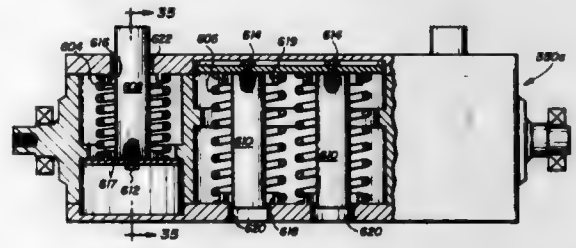
first movable weight means mounted eccentrically on said shaft means for rotation therewith for movement between a position of relatively reduced eccentricity and a position of relatively increased eccentricity with respect to the axis of rotation;

first spring means biasing said first movable weight means toward the position of relatively reduced eccentricity;

second movable weight means mounted eccentrically on said shaft means for rotation therewith for movement between a position of relatively reduced eccentricity and a position of relatively increased eccentricity with respect to the axis of rotation, said second movable weight means being mounted with its center of mass on the opposite side of said shaft means from the center of mass of said first movable weight means;

second spring means biasing said second movable weight means toward the position of relatively reduced eccentricity;

said first spring means being preloaded to retain said first movable weight means in the position of relatively reduced eccentricity so that said shaft means remains balanced until the rotational shaft velocity increases above a first predetermined magnitude whereupon said first movable weight means begins outward movement against the action of said first spring means, the center of mass of said first spring means being positioned substantially on the axis of rotation while said first movable weight means is retained in the position of relatively reduced eccentricity, said first spring means moving toward a first spring means eccentric position with respect to the axis of rotation as said first movable weight means moves outward against the action of said first spring means, the regulated movement of said first movable weight means and said first spring means combining to progressively unbalance said shaft means until maximum unbalance is achieved at a higher, second predetermined magnitude of rotational shaft velocity;



said second spring means being preloaded to retain said second movable weight means in the position of relatively reduced eccentricity until the rotational shaft velocity increases beyond a higher, third predetermined magnitude whereupon said second movable weight means begins outward movement against the action of said second spring means toward the position of relatively increased eccentricity, the center of mass of said second spring means being positioned substantially on the axis of rotation while said second movable weight means is retained in the position of relatively reduced eccentricity, said second spring means moving toward a second spring means eccentric position with respect to the axis of rotation as said second movable weight means moves outward against the action of said second spring means, the movement of said second movable weight means and said second spring means combining to substantially reduce the unbalance of the shaft means caused by the positioning of said first weight means and first spring means in the position of maximum eccentricity until said shaft is balance at a higher, fourth predetermined magnitude of rotational shaft velocity, said second spring means being selected to define a predetermined range of rotational velocity between the third and fourth predetermined magnitude of rotational shaft velocity so that the amplitude of said apparatus may be selectively varied within the predetermined range;

first rod means mounted on said shaft means and having a first spring retainer, said first rod means extending substantially perpendicularly to the axis of rotation of said shaft means and slidably supporting said first movable

weight means, said first spring means comprising a helical compression spring mounted concentrically about said first rod means and preloaded by said first spring retainer;

second rod means mounted on said shaft means and having a second spring retainer, said second rod means extending substantially perpendicularly to the axis of rotation of said shaft means and slidably supporting said second movable weight means, said second spring means comprising a helical compression spring mounted concentrically about said second rod means and preloaded by said second spring retainer;

first stop means for limiting outward movement of said first movable weight means and first spring means;

second stop means for limiting outward movement of said second movable weight means and second spring means; and

said shaft means comprising enclosing structure extending between two end plates containing said first and second movable weight means and said first and second spring means therein and having first and second apertures for passage of the respective movable weight means, said first and second movable weight means comprising elongate hollow members, said first and second spring means being contained within the fist and second movable weight means, said first and second rod means extending from the enclosing structure into the first and second movable weight means, said first and second spring means being compressed between the interior of the first and second movable weight means and the first and second spring retainers, respectively.

4,348,913

TRANSMISSION FOR A VEHICLE

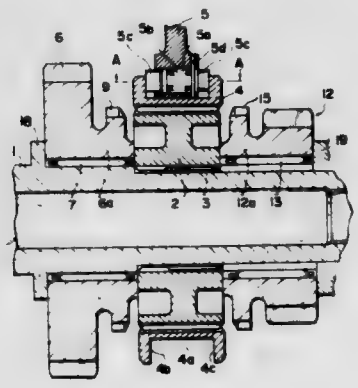
Koji Nozawa, Higashikurume, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Nov. 30, 1979, Ser. No. 98,857

Claims priority, application Japan, Dec. 8, 1978, 53-152172

Int. Cl.³ F16H *3/38*

U.S. Cl. 74—339 **4 Claims**



1. A transmission for an automotive vehicle, comprising:

a main shaft;

a synchrohub fixedly supported on said main shaft;

a forward gear rotatably supported on said main shaft on one side of said synchrohub;

a reverse gear rotatably supported on said main shaft on the side opposite to the said one side of said synchrohub;

a first clutch gear integrally formed on a side of said forward gear adjacent to the said one side of said synchrohub;

a second clutch gear integrally formed on a side of said reverse gear adjacent to the said opposite side of said synchrohub;

a coupling sleeve mounted on said synchrohub for movement along said main shaft to effect selective engagement with said first or second clutch gears, said coupling sleeve having a circular external groove;

a shift fork having one end portion which is received in the circular external groove of said coupling sleeve with a predetermined range of relative motion available therebetween, for shifting said coupling sleeve along said main shaft, the said one end of said shift fork having a plurality of holes therein which are parallel to said main shaft;

springs received in said holes; and

slide pieces having oppositely disposed back and front ends, the back ends of said slide pieces being received in said holes and being biased by said springs and the front ends of said slide pieces abutting against the sides of said circular external groove, whereupon said shift fork is biased to an intermediate position in said range.

4,348,914

MOUNTING STRUCTURE FOR A LUBRICATING OIL CHANNEL OF AN EXTENSION BUSHING

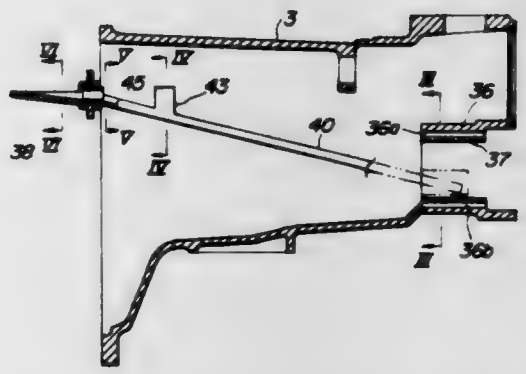
Tamio Kawamoto, Sagamihara, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jan. 25, 1980, Ser. No. 115,201

Claims priority, application Japan, Jan. 30, 1979, 54-9861

Int. Cl.³ F01M *9/10*; F16H *57/04*

U.S. Cl. 74—467 **3 Claims**



1. In a vehicle transmission housing having a lubricating oil channel connected at one end to an oil reservoir and connected at the other end adjacent to an element requiring lubrication, improved means for mounting the channel to the interior surface of the transmission housing comprising:

(a) resilient anchoring means formed on said channel intermediate the channel ends;

(b) an interiorly opening cavity formed in the interior surface of the transmission housing; and

(c) said anchoring means and said cavity both having similar substantially C-shaped cross-sections which progressively taper in a direction parallel to the major dimension of the channel, said anchoring means being initially resiliently compressed and inserted into said cavity, and being subsequently expanded and prevented by its size and shape from being removed from said cavity.

4,348,915

SWITCHING APPARATUS FOR THE MECHANICAL REMOTE CONTROL OF THE GEAR BOX OF A MOTOR VEHICLE

Wulf Leitermann, Bad Wimpfen, and Karl Pflugfelder, Neckarsulm, both of Fed. Rep. of Germany, assignors to Audi NsU Auto Union Aktiengesellschaft, Fed. Rep. of Germany

Filed May 12, 1980, Ser. No. 149,016

Claims priority, application Fed. Rep. of Germany, May 31, 1979, 2922137

Int. Cl.³ G05G *9/16*

U.S. Cl. 74—473 R **4 Claims**

1. Switching arrangement for the mechanical remote control of a motor vehicle gear box having a main shaft comprising:

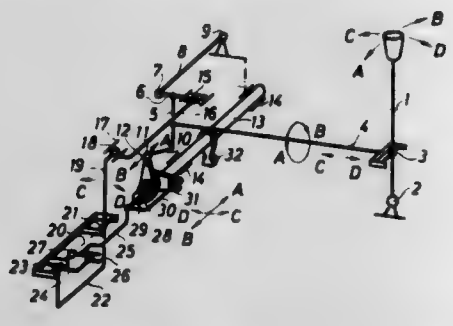
a gear lever;

means for mounting the gear lever for longitudinal and transverse movement with respect to the motor vehicle;

a gear selector rod having an at least two armed intermediate link;

means for connecting the gear lever to the gear selector rod;

means for connecting one arm of the intermediate link to the gear box comprising a first ball and socket joint means, a pin mounted on the one arm to extend roughly parallel to the gear selector rod such that its longitudinal axis intersects the centre of rotation of the first ball and socket joint means, a transmission rod for converting longitudinal movement of the gear selector rod into rotating movement, said transmission rod extending substantially perpendicular to the gear selector rod; means for rotatably mounting one end of the transmission rod on the pin, a transmission lever, means for connecting the other end of the transmission rod to the transmission lever, second ball and socket joint means for rotatably mounting the transmission lever about an axis fixed with respect to the vehicle frame and roughly coaxial with the main shaft and for movement perpendicular, in use, to the vehicle frame or to the transmission rod, a rotatable shaft, its axis of rotation extending substantially parallel to the main shaft, means for connecting the transmission lever to the rotatable shaft, a control lever, means for non-rotatably mounting the control lever on the main shaft and means for engaging the rotatable shaft in the control lever; and



means for connecting the second arm of the intermediate link to the gear box comprising a selector lever, means for rotatably mounting the selector lever on the main shaft and for holding the selector lever against axial movement thereon and a third ball and socket joint means for connecting the arm to the selector lever.

4,348,916

BRAKE OPERATING DEVICE FOR A BICYCLE

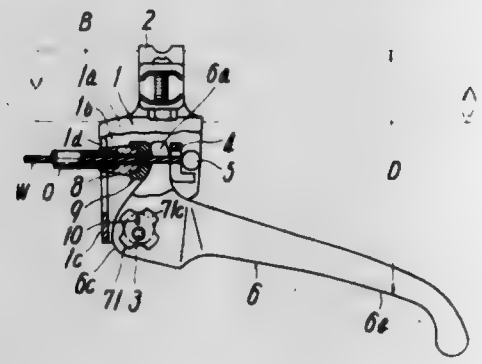
Keizo Shimano, Sakai, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

Filed Jun. 24, 1980, Ser. No. 162,586

Claims priority, application Japan, Jul. 2, 1979, 54-91975[U]; Jul. 23, 1979, 54-102173[U]; Jul. 27, 1979, 54-104394[U]

Int. Cl.³ G05G *7/00*; F16C *3/28*; B62L *3/02*

U.S. Cl. 74—489 **5 Claims**



1. A brake operating device for operating bicycle brakes through a control wire comprising a bracket member fixed to a handle bar of said bicycle, a lever shaft supported to said bracket member, and a control lever pivoted to said bracket member through said lever shaft, said control lever having a pivot portion surrounding said lever shaft and a grip portion, said grip portion being displaceably between a brake applying position in closest proximity with respect to said handle bar and a rest position farthest away from said handle bar, said lever shaft being positioned on a straight line passing through a substantially central portion between the brake applying position and the rest position of the distal end of said grip portion, said lever shaft including bushes having eccentric shaft holes respectively so that said lever is supported swingably to said lever shaft through said bushes, said brake operating device further comprising means for circumferentially rotating said bushes with respect to said bracket member to alter the position of said lever shaft and a grip dimension existing between said lever and said handle bar, and means for moving said control wire to operate said brakes in accordance with swinging motion of said lever about said lever shaft.

4,348,917

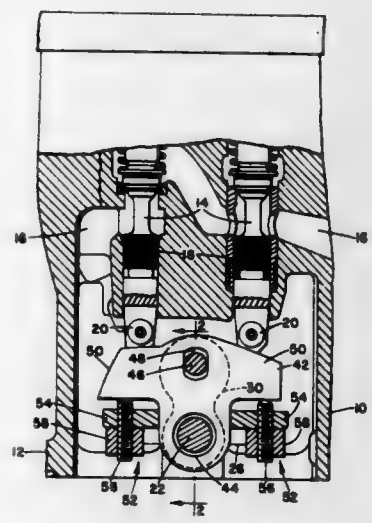
CONTROL MECHANISM WITH ADJUSTABLE FLOATING CAM

Frank H. Gardner, Hudson, and Carl E. Kittle, Cedar Falls, both of Iowa, assignors to Deere & Company, Moline, Ill.

Filed Sep. 26, 1980, Ser. No. 191,643

Int. Cl.³ F16H *53/00*

U.S. Cl. 74—568 R **3 Claims**



1. Control mechanism comprising a support, a rockshaft carried by the support for rocking about a horizontal axis, a rocker element having an arm including a lower end portion fixed to the rockshaft and rising therefrom to an upper end portion, a cam element disposed lengthwise and alongside of the arm and having a lower end portion provided with an opening loosely receiving the rockshaft so as to enable movement of the cam element relative to and both lengthwise and crosswise of the rocker element arm, and a connection between the elements for effecting rocking thereof in unison and including lost-motion means for limiting lengthwise relative movement of the cam element, said lost-motion means including a pivot spaced vertically from the rockshaft axis and about which the lower end portion of the cam element may swing relative to the rocker arm element within the limits of said opening.

4,348,918

SPEED CHANGE DEVICE

Kiyozumi Fukui, Gifu, Japan, assignor to Teijin Seiki Company Limited, Osaka, Japan

Filed Jan. 30, 1980, Ser. No. 116,750

Claims priority, application Japan, Feb. 21, 1979, 54/19394; Aug. 31, 1979, 54/110236

Int. Cl.³ F16H *1/28*

U.S. Cl. 74—805 **9 Claims**

1. A speed change device which comprises:

a first outer gear secured to an input shaft;

a plurality of second outer gears meshing with said first outer gear;

a plurality of rotatably mounted crankpins which are connected to said second outer gears so that the rotary move-

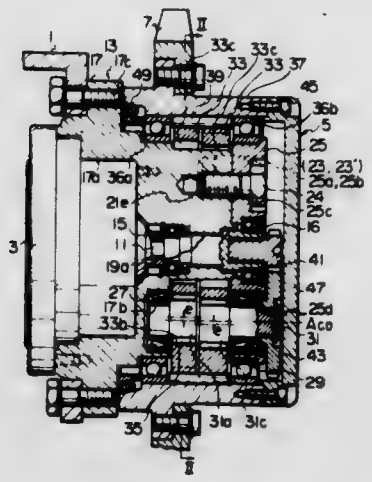
ment of said second outer gears is transmitted into a rotational movement of said crankpins;

an eccentrically revolving pinion which has a plurality of pin holes formed therein, and which are circumferentially spaced from each other, and outer gear teeth formed on a periphery thereof;

said crankpins being inserted into said pin holes so that the eccentric revolutional movement of said pinion is generated by means of said rotational movement of said crankpins; and

a hub surrounding said outer gear teeth of said pinion and having inner gear teeth which mesh with said outer gear teeth, said speed change gear being characterized in that:

said pinion having a plurality of through holes, each through



hole being formed in a space between adjacent pin holes thereof;

a support block arranged to permit a relative rotation to occur between said hub and said support block, having a plurality of column portions formed thereon and loosely inserted into said through holes of said pinion, and wherein the opposite ends of said block rotatably support said crakpins;

said through holes in said pinion and said column portion of the said support block including a first portion extending circumferentially and a second portion extending radially and inwardly from said first portion; and

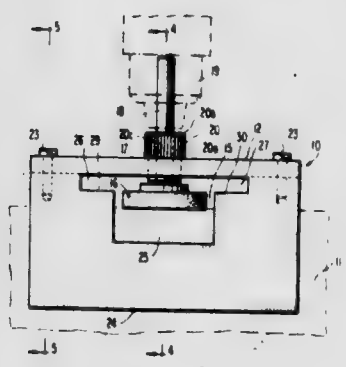
at least one bearing which is mounted between said support block and said hub so that the relative rotational movement of said support block and said hub is permitted.

4,348,919

ATTACHMENT AND METHOD FOR GRINDING AND FILING CHAIN SAW BARS

William E. Sherman, P.O. Box 95, Silver City, N. Mex. 88061

Filed Sep. 4, 1979, Ser. No. 72,425
Int. Cl.[3] B23D *63/00*
U.S. Cl. 76—112 11 Claims



1. A chain saw bar grinding attachment comprising:

(a) a support member of L-shaped cross section including a first leg and a second leg;

(b) said first leg being arranged to engage one face of the chain saw bar when said attachment is employed for grinding the edge of the chain saw bar;

(c) said first leg including a first aperture through which a grinding wheel may extend;

(d) said second leg including a second aperture for receiving the shaft of the grinding wheel;

(e) an elongated plate connectable to said second leg and having a third aperture therein similar to said first aperture; and

(f) means for adjustably holding said plate in engagement with said second leg and in spaced relationship with said first leg for sliding engagement with the other face of the chain saw bar;

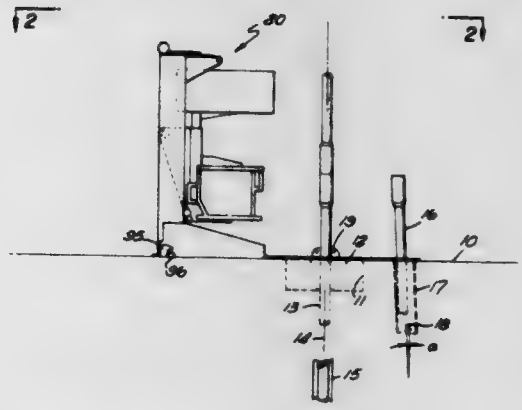
(g) said chain saw bar being receivable between said plate and said first leg when said attachment is employed for grinding the edge of the chain saw bar whereby said plate and said first leg provide guides slidably engaging opposite faces of chain saw bar.

4,348,920

WELL PIPE CONNECTING AND DISCONNECTING APPARATUS

George I. Boyadjieff, Anaheim, Calif., assignor to Varco International, Inc., Orange, Calif.

Filed Jul. 31, 1980, Ser. No. 174,154
Int. Cl.[3] B25B *17/00*
U.S. Cl. 81—57.25 15 Claims



1. A well tool comprising:

two parallel tracks adapted to extend along a rig floor at opposite sides of a rotary table opening;

a carriage having wheels engaging said tracks and movable therealong to guide the carriage for movement between a central position at the location of said rotary table opening, a mousehole position offset in one direction from said central position, and a retracted position offset in the opposite direction from said central position;

motor means for driving at least one of said wheels to move the carriage between said three positions thereof;

vertical guides carried by said carriage;

a mounting structure having rollers engaging said vertical guides and adapted to roll therealong to guide said structure for upward and downward movement relative to the carriage;

power means for moving said structure upwardly and downwardly relative to the carriage;

a torque wrench carried by said structure for upward and downward movement therewith and for movement along said tracks with the carriage and adapted to apply torque to make or break threadedly connected pipe sections at said central and mousehole positions of the carriage;

a spinner mounted to said structure above the torque wrench and for movement with the structure and upwardly and downwardly relative to it and the torque wrench; and

power actuated means for moving at least one of said rollers carried by said structure relative to the structure in a direction pivoting the structure and carried torque wrench and spinner about the axis of another of said rollers carried by the structure and between a position in

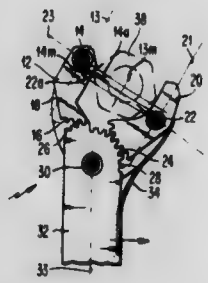
which an axis of the torque wrench and spinner is disposed directly vertically and a position in which said axis is disposed at a slight angle relative to the true vertical for engaging a pipe section at said mousehole location.

4,348,921

OPEN END WRENCH

Anthony D. White, Apartment GLH, 254 Park Ave. South, New York, N.Y. 10010

Filed Sep. 12, 1980, Ser. No. 186,488
Int. Cl.³ B25B *13/28*
U.S. Cl. 81—91 C **51 Claims**



1. A wrench comprising a handle, a first jaw and a second jaw, each said jaw having an axis along which a moment of force is transmitted from said handle, said handle having an axis along which a moment of force is applied to each of said jaws, adjusting means in said wrench for moving each of said jaws towards one another when said handle is moved in one direction and for moving each of said jaws away from one another when said handle is moved in another direction, said handle being operatively associated with each of said jaws through said adjusting means, said adjusting means comprising (1) a pivot; (2) means in said wrench for moving each of said jaws towards one another when said handle is moved in one direction to transmit a moment of force to each of said jaws, and for moving each of said jaws away from one another when said handle is moved in the opposite direction, said pivot being at a fixed point when said jaws are moved toward and away from one another by moving said handle; and (3) plate means for holding said jaws, said first jaw being pivotally secured to said plate means by means of a first pivot operatively associated with said first jaw, the longitudinal axis of said first pivot being transverse to the direction in which said handle is moved, said second jaw being pivotally secured to said plate means opposite said first jaw by means of a second pivot operatively associated with said second jaw and intermediate the ends thereof, the longitudinal axis of said second pivot being transverse to the direction in which said handle is moved, said handle being pivotally secured to said plate means by a plate pivot, the longitudinal axis thereof being transverse to the direction in which said handle is moved, said handle extending to jaw engaging means for engaging and pivotally moving each of said jaws when a moment of force is applied to said handle.

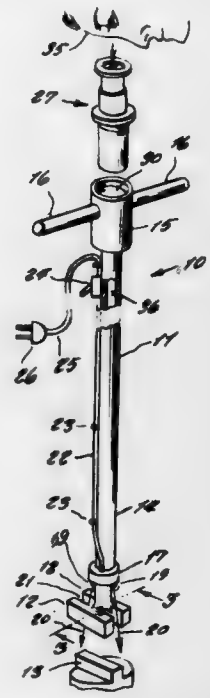
4,348,922

STOP BOX PEAK LIGHT

Albert Harris, 19669 Hull St., Detroit, Mich. 48203, and George Spector, 3615 Woolworth Bldg., 233 Broadway, New York, N.Y. 10007

Filed Jul. 7, 1980, Ser. No. 166,033
Int. Cl.³ B25B *13/58*
U.S. Cl. 81—180 R **2 Claims**

1. A key wrench for a stop box, comprising in combination a pipe having spaced apart jaws at its lower end for grasping a crosshead of a valve therebetween, illumination means on said wrench being located near said jaws, a magnifying unit upon an upper end of said wrench, and cross handles near said upper



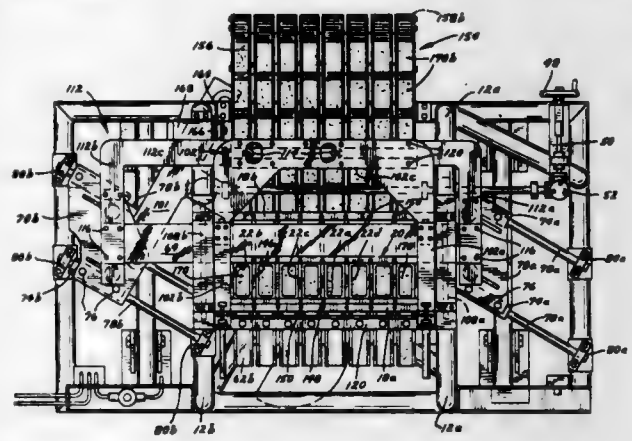
end for turning said wrench, wherein said illumination means comprises lamps aligned with a slot between said jaws.

4,348,923

METHOD FOR SEVERING PORTIONS FROM A PLURALITY OF FROZEN COLUMNS OF FISH OR THE LIKE

Larry Huston, Buffalo; Clifton H. Morrison, St. Paul; Glenn Rasmussen, Champlin, and Takuzo Tsuchiya, Minneapolis, all of Minn., assignors to General Mills, Inc., Minneapolis, Minn.

Division of Ser. No. 43,978, May 31, 1979, Pat. No. 4,299,150.
This application Jun. 22, 1981, Ser. No. 276,145
Int. Cl.³ B26D *3/20, 1/06, 7/06*
U.S. Cl. 83—23 **6 Claims**

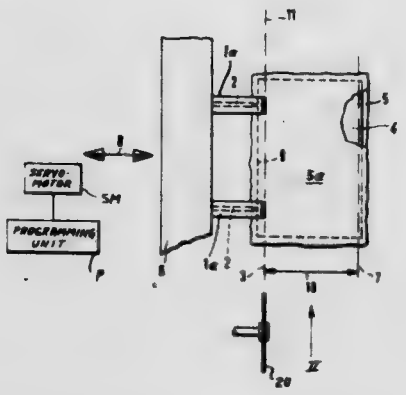


1. A method of severing frozen columns of fish or the like into individual portions comprising the steps of arranging a number of said columns in a generally parallel relation at a first location, severing portions from the corresponding ends of each column with a flat blade having a straight knife edge, said severing step including the angular advancing of said blade while maintaining said knife edge generally parallel to said columns, and moving said severed portions from said first location to a second location in the same relation in which said portions are oriented when severed in said first location.

4,348,924
METHOD AND APPARATUS FOR TRIMMING LAMINATES

Erwin Jenkner, Lindenstrasse 13, D-7261 Gechingen, Fed. Rep. of Germany

Filed Aug. 20, 1980, Ser. No. 179,688
Claims priority, application Switzerland, Apr. 14, 1980, 2845/80
Int. Cl.³ B27B 5/00
U.S. Cl. 83—39 9 Claims

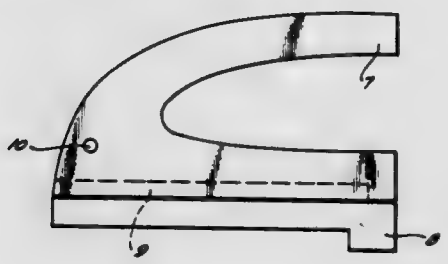


6. A method of manipulating a laminated workpiece of the type having at least two layers, one of which extends laterally beyond an edge face of the other layer, comprising the steps of moving the edge face of the other layer in contact with a mobile reference surface disposed between and spaced apart from a pair of jaws; moving at least one of said jaws to couple the workpiece to the reference surface while the latter continues to remain in contact with the edge face of the other layer; and moving the reference surface and the workpiece to at least one predetermined position.

4,348,925
CIRCULAR SAW SAFETY PUSHER DEVICE

Jack Manweiler, 1407 Laster Ave., Anaheim, Calif. 92802

Filed May 4, 1981, Ser. No. 260,372
Int. Cl.³ B27B 25/10
U.S. Cl. 83—435.1 1 Claim



1. A safety pusher device to aid in the cutting of wood pieces by a circular saw comprising:

(a) an elongated pusher handle member;

(b) an elongated insert member;

(c) said elongated pusher handle member having an upper gripping portion and a lower body portion provided with a channel along its lower portion;

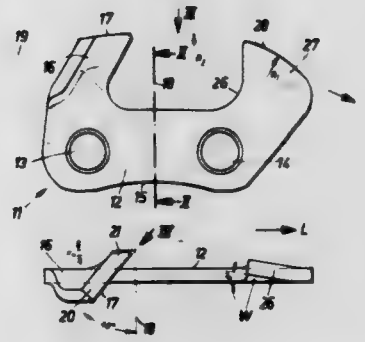
(d) said elongated insert member having an extension portion along its upper portion shaped to conform to channel in said body portion of said pusher handle member and slidably received in said channel of said pusher handle member; and

(e) said insert member is L-shaped comprising an elongated body supporting said extension portion and depending a block portion so that said block portion contacts and pushes a wood piece to be cut by said circular saw.

4,348,926
SAW CHAIN FOR MOTOR CHAIN SAWS

Hans Dolata, Waiblingen; Werner Meyle, Murr, and Günther Weyda, Waiblingen-Hohenacker, all of Fed. Rep. of Germany, assignors to Andreas Stihl, Waiblingen, Fed. Rep. of Germany

Filed Oct. 6, 1980, Ser. No. 193,898
Claims priority, application Fed. Rep. of Germany, Oct. 5, 1979, 2940406
Int. Cl.³ B27B 33/14
U.S. Cl. 83—833 7 Claims



1. A saw chain, for motor chain saws, having a plurality of cutting tooth members, each of which comprises:

a base body;

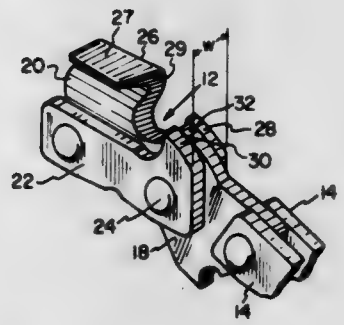
a depth limiter or gauge; and

a cutting tooth arranged behind said depth limiter when viewed in the direction of cutting movement of said saw chain, said cutting tooth projecting outwardly from said base body transverse to the direction of cutting movement, and being twisted with respect to the plane of said base body, said cutting tooth being provided with a transverse cutter formed by a cutting back surface and an outer surface of said twisted cutting tooth, said depth limiter for automatically post-sharpening in common with said cutting tooth to the same extent during movement of said saw chain being bent laterally out of the plane of said base body and forming with this plane, when viewed in the direction of cutting movement, a rearwardly open, acute chamfered angle such that during post-sharpening there occurs a type of drawing or pulling grinding procedure in common over collective width of said cutting tooth and said depth limiter uniformly and accurately in one operation.

4,348,927
SAFETY SAW CHAIN

Jaroslav J. Olmr, Columbia, S.C., assignor to Textron Inc., Providence, R.I.

Filed Dec. 15, 1980, Ser. No. 216,150
Int. Cl.³ B27B 33/14
U.S. Cl. 83—833 9 Claims



1. In an endless safety saw chain for cutting wood including a plurality of center links and a plurality of pairs of side links pivotally joining said center links and defining a saw chain width with certain of said side links being cutter links, the improvement comprising a depth gauge means associated with said cutter links having a coincident facial area for engaging the wood substantially equal to the saw chain width.

4,348,928

ELECTRONIC MUSICAL INSTRUMENT

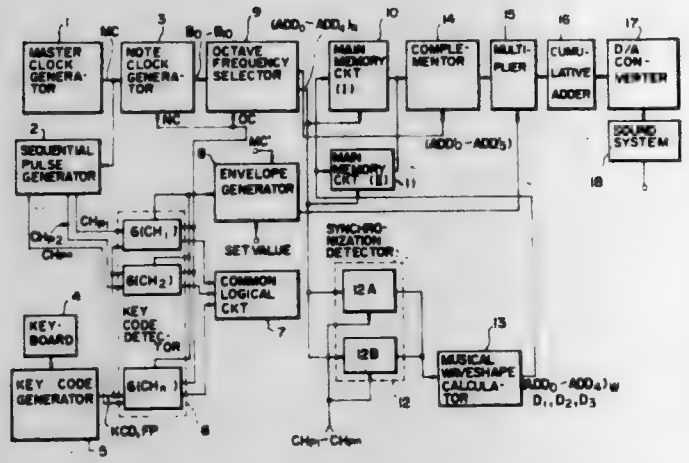
Noriji Sakashita; Toshio Kugisawa; Hironori Watanabe, and Hiroshi Kitagawa, all of Hamamatsu, Japan, assignors to Kabushiki Kaishi Kawai Gakki Seisakusho, Japan

Filed Sep. 19, 1977, Ser. No. 834,427

Claims priority, application Japan, Sep. 24, 1976, 51-114505; Sep. 24, 1976, 51-114506; Sep. 24, 1976, 51-114507; Sep. 24, 1976, 51-114508; Sep. 27, 1976, 51-115599; Sep. 27, 1976, 51-115600; Sep. 27, 1976, 51-115601; Sep. 27, 1976, 51-115602

Int. Cl.[3] G10H *1/00*

U.S. Cl. 84—1.01 3 Claims



1. An electronic musical instrument for digital processing having a tone control in which required musical waveshape data are computed to obtain a complex waveshape, a keyboard having key switches on which a musical note having a frequency and a period is selected by closure of a key switch, and in which the complex waveshape is read out by a read-out frequency of the selected note to produce the selected musical note, the electronic musical instrument comprising:

a calculator coupled to the tone control for calculating the musical waveshape in association with the operation of the tone control in a period of time independent of the period of the selected musical tone;

a read out signal generator for generating a memory read-out signal based on the closure of the key switch;

a period detector for detecting the read-out signal period resulting from the closure of the key switch;

first and second memories storing the musical waveshape from the calculator and read out by the read-out signal; and

means for controlling the first and second memories to be written into and read out alternately with each other so that while the first memory is read out by the read-out signal, the musical waveshape from the calculator is written into the second memory, the read out operation is then switched to the second memory by a signal from the period detector in synchronism with the period of the musical note, and after completion of the read out of the first memory, the waveshape from the calculator is written into the first memory while the second memory is read out by the read-out signal, and further comprising:

a memory having stored therein quantized amplitude values of an envelope waveshape, the different values between successive amplitude values of the envelope waveshape, and sign bits representing the positive or negative of the difference values, and for providing high-order and low-order count values of the envelope waveshape, an envelope waveshape generator provided with a high-order and a low-order envelope counter for executing at all times and read-out of said memory; a coincidence circuit for detecting the coincidence between the count value of the high-order envelope counter and an address signal of the memory; a gate circuit opened by a coincidence signal from the coincidence circuit; a first multiplier having two inputs, the amplitude values stored in the memory being applied to one input of the first multiplier and a multiplier value dependent on the number of bits of the low-order envelope counter being applied to the other input of the first multiplier; a second multiplier having two inputs, the difference values stored in the memory being applied to one input of the second multiplier and the count value of the low-order envelope counter being applied as a multiplier value to the other input of the second multiplier; an adder-subtractor clock, the outputs from the first and second multipliers being applied to the adder-subtractor clock; a plurality of channels corresponding to the maximum number of sounds to be simultaneously produced, each channel having a key-code detector; a main oscillator providing a signal to said adder-subtractor clock, said adder subtractor clock producing pulses to the key code detectors of the respective channels based on the signal from the main oscillator; time division clocks for time dividing note signals identifying the note of the closed key switch; a note clock generator circuit having a decoder for distributing the time divided note signals from the time division clocks; note clock generator pulsed by said decoder for variably frequency-dividing the signal from the main oscillator based on the stored data of the first and second memories to thereby generate frequencies within desired sound ranges in a sample period of the musical waveshape written in the first and second memories and read out therefrom, and gate circuit means for gating output signals from the note clock generators for addition or subtraction depending upon the sign bits being positive or negative.

4,348,929

WAVE FORM GENERATOR FOR SOUND FORMATION IN AN ELECTRONIC MUSICAL INSTRUMENT

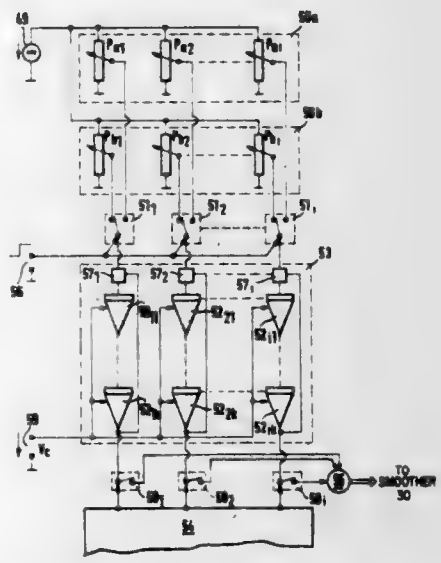
Rainer J. Gallitzendörfer, Hochstrasse 8, Karlsfeld, Fed. Rep. of Germany

Filed Jun. 23, 1980, Ser. No. 162,310

Claims priority, application Fed. Rep. of Germany, Jun. 30, 1979, 2926548

Int. Cl.[3] G10H *1/00*

U.S. Cl. 84—1.01 17 Claims



1. A wave form generator providing a signal useful for sound formation in an electronic musical instrument, said generator comprising:

a storage unit having a plurality of portions each storing scanning values corresponding to predefined sequential scanning points of a different predetermined wave form;

a set of storage cells in each of said storage unit portions, each cell in a set storing the scanning value at a corresponding scanning point of the wave form of the corresponding storage unit portion;

switching means having for each scanning point a corresponding output and a corresponding plurality of inputs, each input of said plurality being associated with a differ-

ent wave form by being connected to a different storage unit portion at a storage cell corresponding to the scanning point of the respective switching means output, and means for selectively connecting one input of each plurality to the respective output;

interpolation means for providing transition values between successive scanning values of the same switching means output for each switching means output thereby providing interpolation between different wave forms;

smoothing unit means for providing intermediate values between the scanning values of different switching means outputs, thereby providing smoothing for each wave form; and

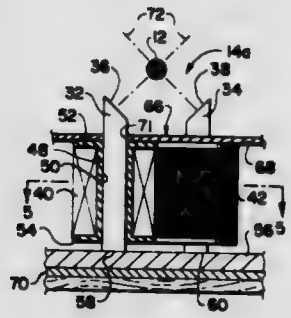
means for combining said scanning values, said intermediate values and said transition values, the scanning values being combined in the sequence of the respective scanning points, the intermediate values being inserted in sequence between the respective scanning points between which they are provided by said smoothing unit means and the transition points being inserted in sequence between the respective scanning values between which they are provided by said interpolation means.

4,348,930

TRANSDUCER FOR SENSING STRING VIBRATIONAL MOVEMENT IN TWO MUTUALLY PERPENDICULAR PLANES

Dennis A. Chobanian, P.O. Box 3067, Eldorado Springs, Colo. 80025, and R. Alan McNaughton, Rte. 1, Golden, Colo. 80401

Filed Jan. 25, 1980, Ser. No. 115,267
Int. Cl.³ G10H *3/00*
U.S. Cl. 84—1.15 15 Claims



1. A transducer for a stringed instrument having at least one magnetically permeable string, said transducer being of the variable reluctance type for obtaining electrical signals respectively corresponding to vibrational movement of the string in two mutually perpendicular planes, comprising:

first and second magnetically permeable pole pieces;

magnetic means for creating a magnetic flux in each of said pole pieces;

first and second pole faces formed respectively on said first and second pole pieces, each said pole face for emanating magnetic flux from the pole piece upon which said pole face is formed;

support means for supporting and positioning said first and second pole pieces relative to the string, said support means positioning said pole faces in stationary predetermined positions relative to said string under non-vibratory conditions, said support means also positioning said first pole face from said string at a predetermined distance at which vibratory motion of said string in a first plane toward and away from said first pole face changes the magnetic flux in said first pole piece by a substantially greater amount than any change in the magnetic flux in said second pole piece, said support means also positioning said second pole face from said string at a predetermined distance at which vibratory motion of said string in a second plane toward and away from said second pole face changes the magnetic flux in said second pole face by a substantially greater amount than any change in magnetic flux in said first pole piece, said support means further positioning both pole faces in a predetermined configuration by which vibratory motion of the string in the first plane is substantially perpendicular to vibratory motion of the string in the second plane, said support means including said magnetic means,

means associated with said first pole piece for supplying a first electrical signal related to the change in flux in said first pole piece; and

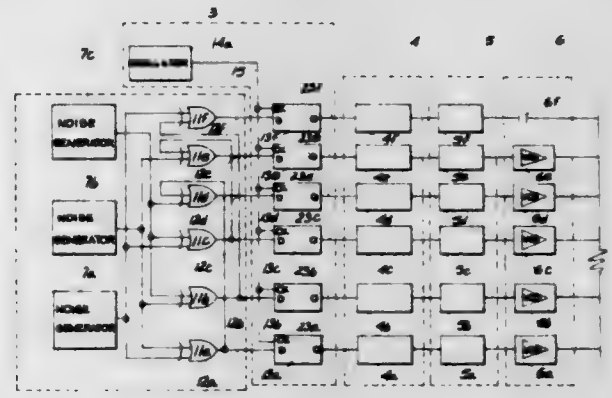
means associated with said second pole piece for supplying a second electrical signal related to the change in flux in said second pole piece.

4,348,931

SIMULATING WIND NOISE IN ELECTRONIC ORGANS USING DIGITAL NOISE GENERATORS

David R. Wade, Cincinnati, Ohio, assignor to Baldwin Piano & Organ Company, Cincinnati, Ohio

Filed Apr. 21, 1980, Ser. No. 142,381
Int. Cl.³ G10H *1/02*
U.S. Cl. 84—1.24 26 Claims



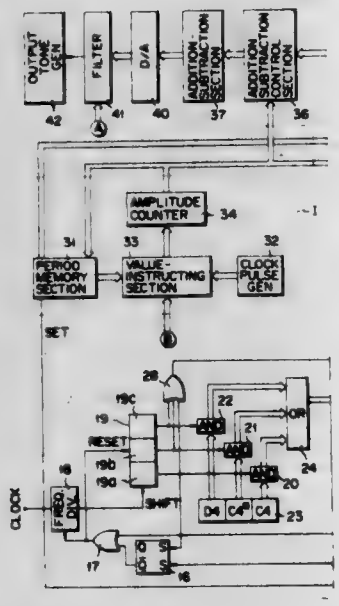
1. In an electronic musical instrument of the type having tone generator means for producing a continuous oscillating output signal having a relatively stable nominal frequency from which other tones of a lesser frequency may be derived and means for frequency modulating said output signal in accordance with a noise modulating signal, the improvement in combination therewith comprising means connected to said tone generator means for generating said modulating signal, said modulating signal generating means comprising a digital noise source producing an output signal having digital noise pulses of substantially constant amplitude and varying pulse width, said noise source comprising a plurality of digital noise generators producing output signal pulses of substantially constant amplitude but varying pulse width, means comprising a plurality of exclusive OR gates each having a pair of inputs and an output for mixing said digital noise generator output signal pulses to produce said digital noise source output signal, each of said digital noise generator output signals being connected to at least one different exclusive OR input, at least one of said exclusive OR outputs being connected to a different one of said exclusive OR inputs, some at least of said exclusive OR outputs forming the digital noise source output signals, and filtering means for limiting the frequency band of said noise source output signal to produce said noise modulating signal, said noise modulating signal causing substantially random perturbation in the frequency of said tone generator means output signal.

4,348,932

MUSICAL INSTRUMENT TYPE-SELECTING SYSTEM FOR AN ELECTRONIC MUSICAL INSTRUMENT

Toshio Kashio, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 15,748, Feb. 27, 1979, abandoned. This application Nov. 25, 1980, Ser. No. 210,286
Claims priority, application Japan, Mar. 14, 1978, 53/29378
Int. Cl.³ G10H *1/057, 1/12*
U.S. Cl. 84—1.19 8 Claims



1. A musical tone designating system for an electronic musical instrument comprising:

performance keys for producing electronic coded signals when operated, each of the electronic coded signals corresponding to a respective one of the performance keys;

changeover means for switching the operation mode of said performance keys to first and second modes, in said first mode the performance keys designating selected ones of a plurality of different timbres and in a second mode the performance keys designating the pitch of the musical tones;

musical tone settable means including circuit means responsive to said electronic coded signals produced by an operation of said performance keys when said changeover means switches said operation mode to said first mode, for setting conditions corresponding to one of said plurality of different timbres; and

musical tone producing means responsive to said electronic coded signals produced by an operation of said performance keys when said changeover means switches said operation mode to said second mode, for producing musical tones corresponding to the conditions set in said musical tone settable means and corresponding to the pitch designated by operation of said performance keys.

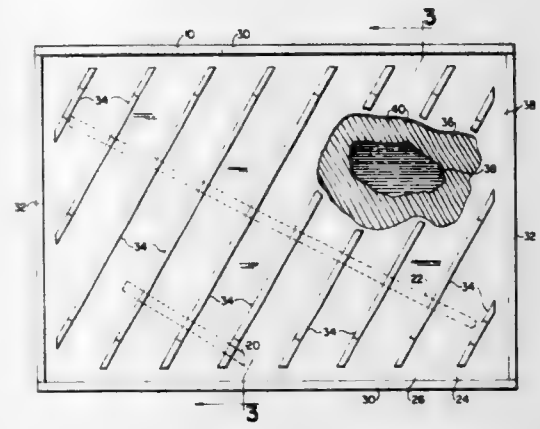
4,348,933

SOUNDBOARD ASSEMBLY FOR PIANOS OR THE LIKE

Charles H. Kaman, Farmington, and Robert J. Mayerjak, Torrington, both of Conn., assignors to Currier Piano Company, Inc., Marion, N.C.

Filed Oct. 9, 1980, Ser. No. 195,416
Int. Cl.³ G10C *3/06*
U.S. Cl. 84—193 16 Claims

1. In a piano or similar stringed instrument, the combination comprising: a soundboard assembly with two major parallel soundboard faces, and an elongated bridge which engages one of said soundboard faces of said assembly to transmit vibrations of associated strings thereto, said soundboard assembly comprising a soundboard consisting of a center single sheet of wood, and two outer layers of composite material each bonded to a respective one of the opposite faces of said center sheet and each providing a respective one of said soundboard faces, and a plurality of generally parallel spaced ribs secured to said soundboard in engagement with said face thereof opposite said face engaged by said bridge, said ribs being arranged at an angle of between 30° and 90° to said bridge, said center sheet of wood of said soundboard having a grain with a generally uniform direction throughout said sheet and which grain direc-



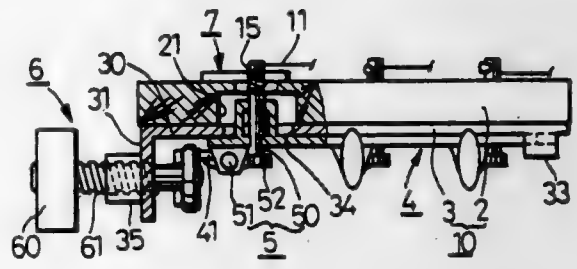
tions is arranged at an angle of between 30° and 90° to said ribs, and each of said two outer layers of composite material consisting substantially solely of a plurality of unidirectional carbon fibers embedded in a resin matrix and which carbon fibers are oriented at an angle of between 30° and 90° to said grain direction of said center sheet of wood.

4,348,934

TUNING DEVICE FOR STRINGED MUSICAL INSTRUMENTS

Saburo Ogata, 2-11, Shonai Higashimachi 4-chome, Toyonaka-shi, Osaka 560, Japan

PCT No. PCT/JP78/00016, § 371 Date Jun. 25, 1980, § 102(e) Date Jun. 25, 1980, PCT Pub. No. WO80/01013, PCT Pub. Date May 15, 1980
PCT Filed Oct. 31, 1978, Ser. No. 198,956
Int. Cl.³ G10D *3/14*
U.S. Cl. 84—306 5 Claims

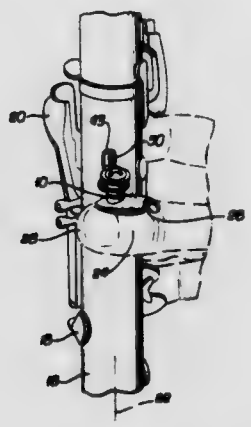


1. A tuning device for a stringed musical instrument comprising a movable support (4) supported by the head (10) of the instrument and reciprocally movable along strings (11), string winding assemblies (5) mounted on the movable support (4) and each having a string winding pin (50) for winding an end of the string thereon, and a reciprocating assembly (6) provided between the head (10) and the movable support (4) for forcibly moving the movable support (4), the string winding pin (50) being formed with a string insertion bore (54), a holding portion (55) provided by an enlarged opening of the insertion bore and a string engaging groove (56) formed in the surface of the pin and communicating with the insertion bore (54), the string end having attached thereto a holder (15) engageable with the holding portion (55).

4,348,935
THUMB REST FOR WOODWIND MUSICAL INSTRUMENTS

Charles L. Bay, 1285 Brookview Ave., Westlake Village, Calif. 91361

Filed May 1, 1980, Ser. No. 145,717
Int. Cl.[3] G10D *3/18*
U.S. Cl. 84—380 R 7 Claims

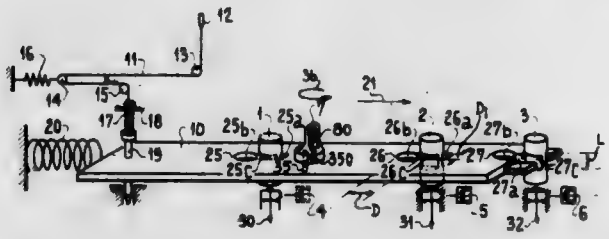


1. In a woodwind musical instrument wherein at least a portion of the weight of the instrument is supported by a thumb of the player through a thumb rest, the improvement comprising a concave thumb support plate portion of the thumb rest shaped to conform to the lateral curvature of the player's thumb, said support plate having its concave shape prior to contacting the player's thumb.

4,348,936
SAFETY RELEASE DEVICE FOR A LOAD SUSPENDED FROM AN AIRCRAFT FOR TRANSPORT AND CHARGE EQUIPPED WITH SUCH A DEVICE

Noël Fulchiron, and Bernard Naillon, both of Paris, France, assignors to "Thomson-Brandt", Paris, France

Filed May 20, 1980, Ser. No. 151,668
Claims priority, application France, May 23, 1979, 79 13200
Int. Cl.[3] B64D *1/04*
U.S. Cl. 89—1.5 D 5 Claims



1. A safety device for a munition suspended beneath an aircraft, said safety device comprising:

a sliding bar movable between a first position and a second position;

first blocking means for locking said bar in said first position;

cable release means connected between said aircraft and said first blocking means for actuating the release of said first blocking means;

at least one suspending ring engageable with a hook integral with said aircraft;

second blocking means mechanically connected to said at least one ring for locking said bar in said first position when said at least one ring is engaged with said hook;

at least two apertures in said sliding bar, each of said apertures having first and second cross sections;

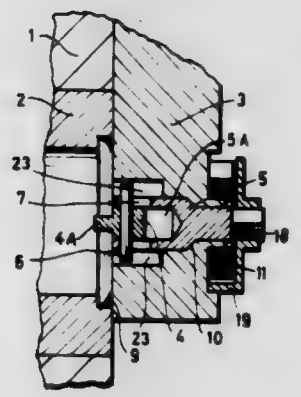
a fuse lock engageable with each of said apertures, each said fuse lock including a first rectangular cross section portion engageable with said first cross section of one of said apertures when said sliding bar is in said first position for maintaining said fuse lock in a safety position and a second circular cross section engageable with said second cross section of said one of said apertures when said sliding bar is in said second position for releasing said fuse lock into an armed position,

whereby said fuse locks are released into an armed position only when said release means is actuated and said at least one ring is disengaged from said hook.

4,348,937
IGNITION ARRANGEMENT FOR AMMUNITION IN A BARREL WEAPON

Hans Kuffer, Obertraubling, Fed. Rep. of Germany, assignor to Rheinmetall GmbH, Dusseldorf, Fed. Rep. of Germany

Filed Dec. 5, 1980, Ser. No. 213,575
Claims priority, application Fed. Rep. of Germany, Dec. 7, 1979, 2949218
Int. Cl.[3] F41D *11/16*
U.S. Cl. 89—24 7 Claims



1. An ignition arrangement in a barrel weapon having a sliding wedge-type breech block, comprising in combination,

a pressure bolt rotatably mounted in said wedge-type breech block; said pressure bolt having cylindrical walls defining an axial bore in the pressure bolt;

a firing pin coaxially slidably movably mounted in said bore of said pressure bolt;

a control disc coaxially connected to said pressure bolt, said control disc having first and second cams disposed thereon;

first and second cam surface means adjustably mounted in said barrel weapon and adapted to operatively coact with said first and second cams respectively;

biasing means connected to said control disc adapted to move between a biased and unbiased position;

whereby said biasing means bias said control disc in such a way during the opening movement of said wedge-type breech block that said first cam of said control disc is contacted by said first cam surface means and is thereby rotationally biased against the action of said biasing means and the firing pin is retracted from the gun barrel due to the rotation imparted on the pressure bolt by the control disc; whereas during the closing movement of said wedge-type breech block said second cam of said control disc coacts with said second cam surface means to retain said control disc in a predetermined angular position until the axis of the firing pin coincides with the axis of the gun barrel, so that only then the biasing means are fully released to move their unbiased position and thereby propel the firing pin forwardly into the barrel of the weapon.

4,348,938
TWO STAGE SHELL FEEDING APPARATUS WITH SHELL FEEDING PATH CONTROL

Richard R. Gillum, Marblehead, Ohio, assignor to ARES, Inc., Port Clinton, Ohio

Filed Oct. 30, 1979, Ser. No. 89,308
Int. Cl.[3] F41D *10/04*
U.S. Cl. 89—33 BA 31 Claims

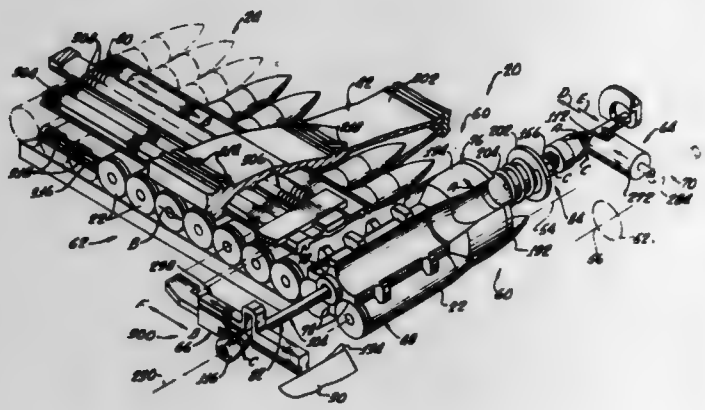
1. Shell feeding apparatus for an automatic gun having a

shell supply means for containing shells to be fed into the gun and a bolt operative for axially reciprocating past a shell pick up position and picking up shells therefrom on forward bolt travel for loading into a gun firing chamber, the apparatus comprising:

(a) first stage shell feeding means for transferring shells from the shell supply means to the shell pick up position, said first stage feeding means including a shell rotor rotatably mounted on an axial rotor shaft, said shell rotor having surface regions defining a plurality of equally spaced apart, peripheral shell holding cavities;

(b) means for bidirectionally rotatably mounting the rotor shaft between the shell supply means and the shell pick up position, said mounting means positioning the shell rotor means relative to the shell supply means and the pick up position for causing, when any one of the rotor cavities is indexed into the shell pick up position, another one of the rotor cavities to be positioned in shell receiving relationship with the supply means;

(c) first stage actuation means, operated by pressurized gases caused by firing the gun, for causing, as the bolt is moving rearwardly after the gun is fired, partial rotation of the rotor to index a rotor cavity holding a shell into the shell pick up position to enable picking up of the shell by the bolt on forward bolt travel, and to simultaneously index an empty cavity into shell receiving relationship with the supply means;



said first stage actuating means including a first crankarm fixed to a first end of the rotor shaft, a gas cylinder having a piston connected to said crankarm for causing pivotal crankarm movement in response to piston movement and means for supplying pressurized gas from the gun barrel to the cylinder;

(d) second stage feeding means, operated by pressurized gases caused by firing of the gun, for causing, after the first stage feeding means has rotatably indexed the rotor and before a next firing of the gun, transfer of a shell from the shell supply means into the empty rotor cavity indexed therewith, said second stage feeding means including spring loaded shell advancing means connected to the shell supply means;

(e) second stage actuation means for actuating said second stage feeding means, including a second crankarm fixed to a second end of the rotor shaft and means for interconnecting the second crankarm with the shell advancing means to enable compressing of springs in the shell advancing means in response to pivotal movement of the second crankarm; and,

(f) racheting means interconnecting the rotor with the rotor shaft for limiting rotational movement of the rotor to a single rotational direction, thereby enabling return rotation of the rotor shaft without rotational movement of the rotor.

4,348,939

MECHANICAL-OPTOELECTRONIC ANGLE COMPARATOR FOR DETERMINATION OF THE ANGULAR POSITION OF A WEAPON MOUNTED BY A COMBAT VEHICLE RELATIVE TO THE LINE OF SIGHT

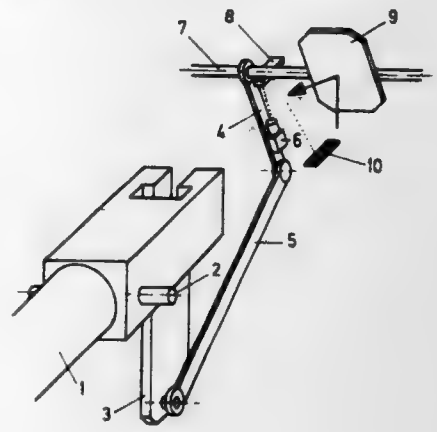
Johann F. Hipp, Hamburg, Fed. Rep. of Germany, assignor to Wegman & Co., Kassel, Fed. Rep. of Germany

Filed Jun. 30, 1980, Ser. No. 164,108

Claims priority, application Fed. Rep. of Germany, Jul. 4, 1979, 2927037

Int. Cl.³ F41G *1/30*

U.S. Cl. 89—41 ME 6 Claims



1. A mechanical-optoelectronic angle comparator for determining the angular position relative to the line of sight of a weapon mounted on a combat vehicle having a sighting device comprising an objective mirror which pivots on a first axis that is parallel to the axis of rotation of the weapon, the comparator comprising:

a. means for mechanically transmitting the angular position of the weapon comprising an intermediate member and means mounting same perpendicular to the axis of rotation of the objective mirror for pivotal movement about an axis of rotation coinciding with the first axis of rotation of the objective mirror and independent of the movement of the objective mirror;

b. at least one deflecting mirror rigidly connected with the objective mirror to dispose the reflecting surface thereof parallel to the first axis of rotation;

c. at least one light projecting means disposed on the intermediate member and having an optical axis perpendicular to the first axis of rotation of the objective mirror such that the light beam emanating therefrom impinges on the reflecting surface of a deflecting mirror;

d. at least one electro-optical light sensing means fixed with respect to the first axis and comprising a plurality of aligned light-sensitive regions disposed such that within a predetermined range of angular positions of the intermediate member relative to the deflecting mirror there is at all times at least one light-sensitive region of the sensor field on which the light beam reflected by the deflecting mirror impinges; and

e. means receptive of the output of the optical sensing means for electronically evaluating the region on which light impinges.

4,348,940

SERVO-RELEASE MECHANISM FOR AN AUTOMATIC WEAPON

Clemens Bremer, and Walter Klumpp, both of Duesseldorf, Fed. Rep. of Germany, assignors to Rheinmetall GmbH, Duesseldorf, Fed. Rep. of Germany

Filed Aug. 28, 1979, Ser. No. 63,388

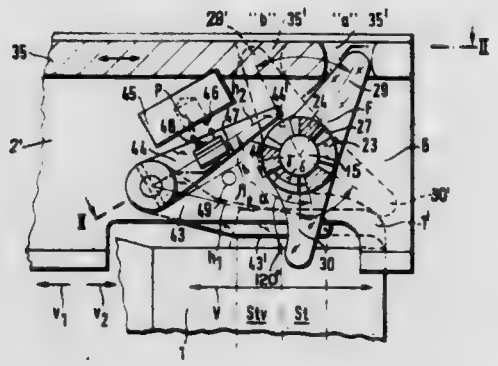
Claims priority, application Fed. Rep. of Germany, Aug. 3, 1978, 2833976

Int. Cl.³ F41D *11/02*

U.S. Cl. 89—140 26 Claims

1. In a gun having a trigger, a servo-release mechanism for

the trigger, and a breech movable along a guide path in a rearward, recoil direction and a forward counter-recoil direction, said guide path for the breech having a precontrol region, and a control region rearwardly of the precontrol region, the improved servo-release mechanism which comprises a disengageable coupling having first and second coaxial parts, the confronting ends of the first and second parts of the coupling each having a reference surface normal to the axis of the coupling and locking surfaces adaptable to interlock with each other, means forming a precontrol signal upon a "stop firing" signal and the passage of the breech moving in the recoil direction through the precontrol region of the guide path of the breech, means for providing a precontrol position of the coupling parts relative to each other upon receiving a precontrol



signal, said precontrol position being caused by a restoring force generating a first change in the relative axial positions of the first and second parts of the coupling, in said precontrol position of the coupling the reference surfaces thereof having sliding contact with each other, means for removing the first and second parts of the coupling from engagement with each other upon counter-recoil motion of the breech and its passage through the control region and upon the presence of a defined relative angular position of the two parts of the coupling so that they may interlock with each other, and means for providing by a relative axial movement of the first and second parts toward each other a locking position of the coupling in which full surface engagement between the locking surfaces of the first and second coupling parts takes place with a consequent loss of contact between the reference surfaces thereof.

4,348,941

SHOULDER ARM WITH SWIVEL BREECH MEMBER

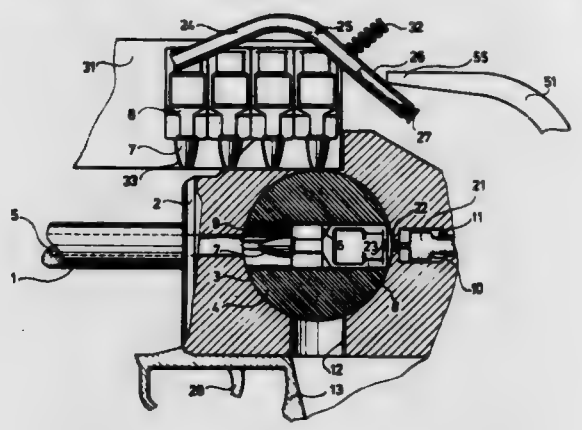
Dieter Ketterer; Horst Jakubaschk, both of Oberndorf, and Emil Rommel, Dornhan, all of Fed. Rep. of Germany, assignors to Heckler & Koch GmbH, Oberndorf, Fed. Rep. of Germany

Continuation of Ser. No. 21,314, Mar. 16, 1979, abandoned. This application Feb. 9, 1981, Ser. No. 232,970

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1978, 2813633

Int. Cl.³ F41D *10/20*

U.S. Cl. 89—155 **15 Claims**



1. In a shoulder arm, especially a rifle, having a barrel, a recess, extending perpendicular to the axis of said barrel, formed in a member which is fixedly connected with said barrel, and a roller-shaped breech member coaxially arranged in said recess and capable of being swivelled about its longitudinal axis for loading, said breech member containing a firing chamber which is designed symmetrically to a transverse center plane and is capable of assuming two firing positions separated from one another by a 180° rotation of said breech member and which, in each said firing position of said breech member, is in alignment with said barrel and is closed to the rear, and further having an arrangement for swivelling said breech member out of said firing positions and into a loading position in which said firing chamber is accessible for the introduction of a cartridge; and wherein said recess is designed in the form of a cylindrical hole whose wall serves to mount said roller-shaped breech member and to directly close said firing chamber when it is located in said firing position, said breech member is retained in its respective position by means of said swivelling arrangement, and said breech member can only be rotated in one direction by said swivel arrangement; the improvement wherein: an ejector and a magazine are arranged on the same side of the weapon, above said barrel, and in an operative position with said firing chamber when it is in said loading position; the loading end, which introduces the cartridges into said firing chamber in the breech member, of a loading lever acts outside the center of the cartridge and leaves said center of the cartridge free; said ejector is arranged in the center plane and swivels into an attitude, under the force of a spring, in which it is located opposite said firing chamber should there be no cartridge.

4,348,942

PRESSURE-MEDIUM CONNECTION BETWEEN A VALVE BLOCK AND A LOAD WHICH HAS AT LEAST ONE DOUBLE-ACTING PRESSURE-MEDIUM MOTOR

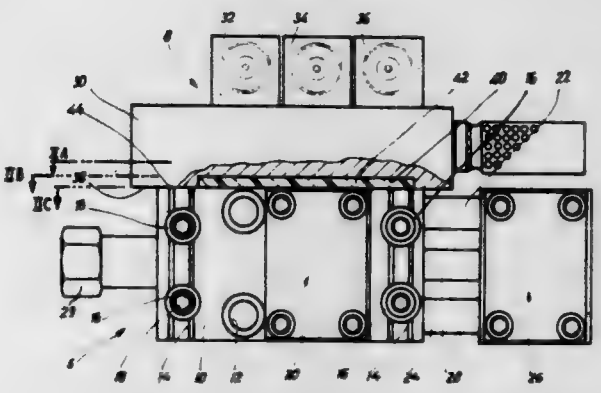
Kurt Stoll, Lenzhalde 72, 7300 Esslingen, Neckar, Fed. Rep. of Germany

Filed Aug. 19, 1980, Ser. No. 179,602

Claims priority, application Fed. Rep. of Germany, Aug. 21, 1979, 2933704

Int. Cl.³ F15B *13/00*

U.S. Cl. 91—54 **6 Claims**



1. A pressure-medium connection between a valve block and a load which has at least one double-acting pressure-medium motor, including two connecting openings constructed in the valve-block housing for the pressure-medium motor, two connecting openings constructed in the load housing for the pressure-medium motor and including a sealing plate which has openings through which the connecting openings of the valve-block housing can be connected to the connecting openings of the load housing, the improvement comprised wherein

(a) the connecting openings of the valve-block housing are offset with respect to the connecting openings of the load housing; and

(b) the openings of the sealing plate are constructed as control channels which extend in the plane of the sealing plate, said channels in a first operating position of the sealing plate connecting the first connecting openings of

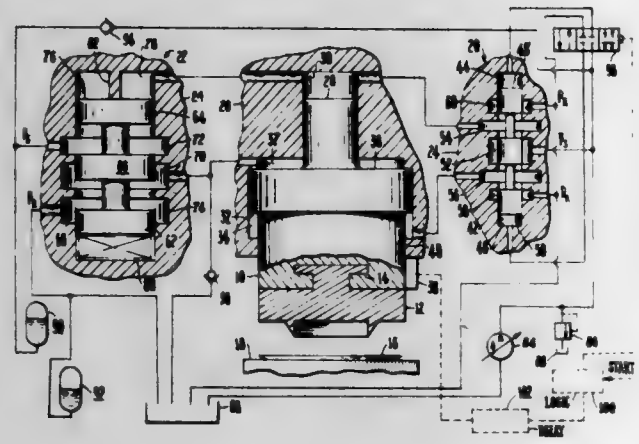
valve-block housing and load housing and the second connecting openings of valve-block housing and load housing and in a second operating position of the sealing plate connected the first connecting opening of the valve block housing to the second connecting opening of the load housing and the second connecting opening of the valve-block housing to the first connecting opening of the load housing.

4,348,943

HYDRAULIC PRESS APPARATUS

John V. Bouyoucos, Rochester, N.Y., assignor to Hydroacoustics Inc., Henrietta, N.Y.

Filed Apr. 28, 1980, Ser. No. 144,476
Int. Cl.[3] F15B *11/15, 13/07*
U.S. Cl. 91—355 21 Claims



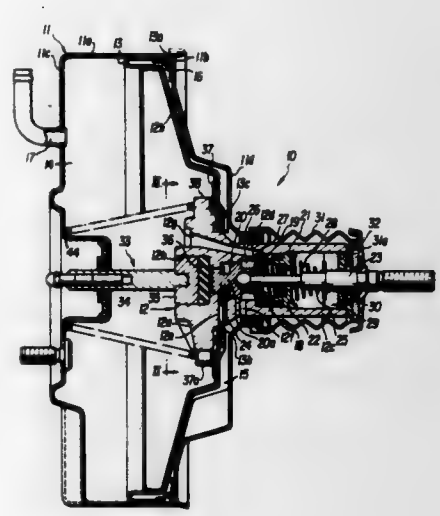
1. Hydraulic press apparatus which comprises a ram for applying force to a workpiece, a cylinder in which said ram is moveable along forward and return strokes toward and away from the workpiece, said ram having first and second opposed areas which define first and second chambers in said cylinder, said ram also having a third area opposed to said second area which defines a third chamber in said cylinder, said third area being larger than said first or second areas, means for providing hydraulic fluid at relatively high pressure and for providing hydraulic fluid at relatively low pressure, a first valve means for alternately supplying said hydraulic fluid from said providing means at high and low pressure to said first chamber to move said ram along its forward and return strokes respectively, said second chamber being supplied with said hydraulic fluid at said high pressure at least during said return stroke, a second valve, said first valve being connected between said providing means and said first chamber via connections for hydraulic fluid flow therebetween, said second valve being connected between said providing means and said third chamber via connections for hydraulic fluid flow therebetween, said first and second valves producing flow of said fluid at said high pressure into said first chamber and flow of said fluid at said low pressure into said third chamber to enable movement of said ram along said forward stroke, said second valve having hydraulic pressure responsive means for operating said valve to move at a velocity greater than said ram, said first chamber being connected to said second valve for supplying fluid from said first chamber to said pressure responsive means to operate such second valve when the pressure in said first chamber exceeds a certain magnitude during the portion of said forward strokes when said force is applied to said workpiece for supplying said third chamber with said high pressure fluid thereby increasing the force applied to said ram against said workpiece and also to provide for a short operating cycle for said press apparatus.

4,348,944

BRAKE BOOSTER

Chiaki Ochiai, Chiwyu, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Jun. 20, 1980, Ser. No. 161,305
Claims priority, application Japan, Jun. 22, 1979, 54-84876[U]
Int. Cl.[3] F15B *9/10;* F01B *19/00;* F16J *3/02*
U.S. Cl. 91—369 A 4 Claims



1. A brake booster for operation and connection with a brake pedal, comprising:

a housing having an inner wall;

a diaphragm, an outer end portion thereof being secured to the inner wall of the housing;

a power piston movably disposed in the housing and airtightly connected to an inner end portion of said diaphragm to thereby divide an interior space of said housing into first and second compartments, wherein said power piston further comprises a central portion which comprises resin and a metallic disc member surrounding and connected to said central portion;

control valve means positioned within said power piston for generating a pressure difference between said first and second compartments in response to operation of said brake pedal;

connecting means for connecting said central portion and said metallic disc member wherein said connecting means comprises a flange portion formed on an outer peripheral portion of said central portion of said piston and positioned in front of a radially inner peripheral portion of said metallic disc member; and

plate means, having a plurality of detent members operatively associated therewith, interposed between said flange portion and said inner peripheral portion of said metallic disc member and secured to said inner peripheral portion of said metallic disc, said flange portion having a plurality of recesses axially formed therein and which further comprises a plurality of stopper members positioned on a front surface of a said flange portion wherein said plate means further comprises a plurality of projecting members respectively axially extending into said plurality of recesses and wherein said plurality of detent members respectively engage said plurality of stopper members.

4,348,945

DEVICE FOR CONTROLLING A HYDRAULIC POWER CIRCUIT

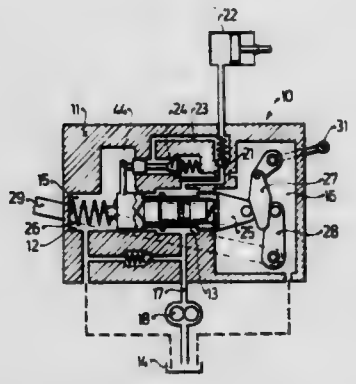
Werner Schuhmacher, Asperg, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 928,412, Jul. 16, 1978, abandoned. This application Jul. 10, 1980, Ser. No. 167,230

Claims priority, application Fed. Rep. of Germany, Aug. 20, 1977, 2737653

Int. Cl.³ F15B *13/042;* F16K *31/143*

U.S. Cl. 91—452 6 Claims



1. In a control device for hydraulic unit power circuit having a fluid supply source, a combination comprising a housing having a boring; a preselector valve arranged for reciprocating movement within said boring between a working position and a neutral position, opposite ends of said preselector valve being open to a pressure relieving space means; first spring means biasing said preselector valve within said housing, said housing defining within said boring a recessed pressure chamber and a control section associated therewith and having first and second control edges spaced apart from each other for a predetermined distance, said pressure chamber being associated with a pressure fluid supply conduit and with a working conduit, said preselector valve having a blind boring defining an annulus and being formed with a first annular groove having third and fourth control edges at each end thereof corresponding to the first-mentioned control edges, respectively and a second annular groove arranged within the range of said pressure chamber, said preselector valve having a bore for communicating said first groove with said blind boring, said second and fourth control edges being adjacent said recessed pressure chamber and said first and third control edges being adjacent said pressure relieving space means; a main selector valve arranged within said blind boring of the preselector valve for slidable movement therein; second spring means biasing said main selector valve, said main selector valve having an axial opening adapted to be connected to said pressure relieving space means in said housing; a first radial channel formed in said preselector valve between said second groove and said main selector valve; and a second radial channel formed in said main selector valve between said preselector valve and said axial opening of the main selector valve, said first radial channel being out of register with said second radial channel when said preselector valve is in working position to permit a working fluid to flow to said working conduit, and being in register with said second radial channel when said preselector valve is in neutral position to permit the working fluid to flow to said pressure relieving space means, said fourth control edge being in overlapping relation with said second control edge and said third control edge being spaced relative to said first control edge when the preselector valve is in working position, said third control edge being in overlapping relation with said first control edge and said fourth control edge being spaced relative to said second control edge when the preselector valve is in neutral position, said second radial groove having a thin annular bottom portion forming a part of said annulas and lateral end pressure responsive surfaces being so dimensioned as to produce extension and contraction of said bottom portion in axial direction within the limits of elastic deformability of a material of said preselector valve in response to pressure changes in said pressure chamber, said extension causing relative axial displacement and increased overlapping of said second and fourth control edges in the working position to prevent a tight choking.

4,348,946

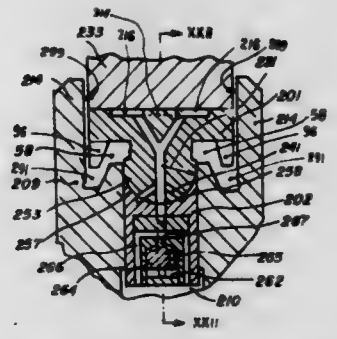
RADIAL PISTON MACHINE WITH FREE—FLOATING PISTON AND PISTON—SHOE ASSEMBLIES

Karl Eickmann, 2420 Isshiki, Hayama-machi, Kanagawa-ken, Japan (240-01)

Division of Ser. No. 765,221, Feb. 3, 1977, Pat. No. 4,193,336, which is a continuation-in-part of Ser. No. 528,346, Nov. 29, 1974, Pat. No. 4,037,523. This application Nov. 19, 1979, Ser. No. 95,900

Int. Cl.³ F01B *13/06*

U.S. Cl. 91—489 2 Claims



1. A radial piston type fluid machine; comprising a housing means, a rotor member rotatable in said housing means about a rotor axis and formed with a plurality of angularly spaced and radially outwardly opening cylinders; a piston radially displaceable in each of said cylinders and having a piston head forming a reception-face of a configuration defined by a constant and permanent radius;

a piston shoe associated to each of said pistons and having a radially inwardly projecting portion provided partially with a configuration complementary to that of said reception face and with a radius equal to said radius of said reception face and able to radially engage the respective piston head of the respective piston and pivot thereon; said piston shoe further having end faces on the axial ends thereof; an actuator ring member radially of said rotor member, pistons and piston shoes; a pair of end elements located on one of said members having a radially plane innermost face on each of said elements and flanking said piston shoes; said radially inwardly projecting portions being at all times at least partially received within said cylinders and said pistons and piston shoes remaining radially moveably contained between said rotor member, said actuator ring member and said innermost faces of said elements,

wherein said pistons and piston shoes are not connected to each other, but wherein flow-through restriction means are provided in said piston for prevention of too much flow of fluid through said piston, and;

wherein said flow-through restriction means includes a pressure responsive portion, which is radially movable and able to partially open and close a respective passage.

4,348,947

SELF-CLEANING CHIMNEY STACK

John J. Carty, Rocky Point, N.Y., assignor to Luftek, Inc., Shoreham, N.Y.

Filed Jan. 21, 1981, Ser. No. 226,928

Int. Cl.³ F23L *17/02*

U.S. Cl. 98—58 5 Claims

1. A double shell chimney stack capable of conveying hot gases that is self-cleaning by design comprising the following:

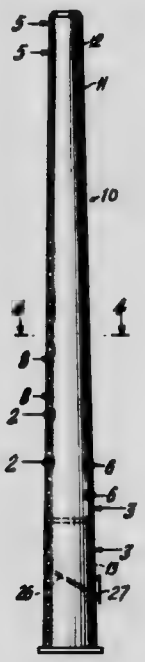
(a) an outer hollow structural column member;

(b) a hollow inner core member contained within said outer hollow structural column member, said hollow inner core

member consisting of an upper inner core member and a lower inner core member, said upper inner core member and said lower inner core member being separate and distinct independent structures with said upper inner core member receiving structural support from said outer hollow structural column member;

(c) a flexible seal joining said upper and lower portions of said hollow inner core member so as to permit the movement of said upper inner core member and said lower inner core member independent of each other while providing an air-tight seal between said upper inner core member and said lower inner core member so as to prevent the escape of hot gases being conveyed by said double chimney stack prior to said gases exiting at the top of said double shell chimney stack;

(d) means incorporated within the design of said hollow inner core member for selectively maintaining the temperature level of the hot gases being conveyed by said double



shell chimney stack at a predetermined point above the dew point of the acid vapors contained within said hot gases being conveyed so as to avoid the condensation upon the internal structure of said double shell chimney stack of said acid vapor contained within said hot gases;

(e) vibratory means affixed to the exterior surface of said hollow inner core member capable of selectively vibrating said hollow inner core member so as to dislodge therefrom as well as preventing the adhering thereto of particulate material; and

(f) means for generating between the air space defined between said hollow inner core member and said outer hollow structural member a selective pressure level that is greater than the pressure level within the center passageway of said double shell chimney stack so as to inhibit said hot gases being conveyed by said double shell chimney stack from coming into contact with any physical portion of said double shell chimney stack.

4,348,948

COOKING APPARATUS

Clint Allison, Wichita Falls, Tex., assignor to Hager and Allison Corp., Wichita Falls, Tex.

Filed Jan. 28, 1980, Ser. No. 116,050

Int. Cl.³ A21B *1/24*; A47J *37/04*; A23B *4/04*

U.S. Cl. 99—339 **12 Claims**

1. A cooking apparatus comprising:

means for producing heat and smoke,

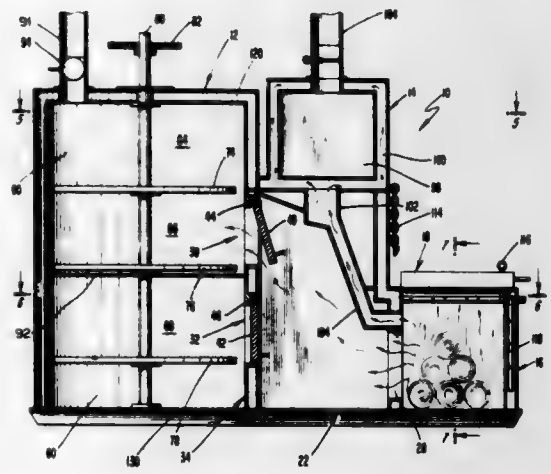
a smoke oven forming a cooking chamber therein,

a plurality of vertically spaced food support means disposed within said chamber for carrying food to be cooked,

means for rotating said food support means about a generally vertical axis,

heat shield means positioned beneath one of said food support means and above another of said food support means to retard the travel of heat to and from the space above said other food support means,

first and second vertically spaced openings in said chamber communicating with said heat and smoke producing



means to conduct heat and smoke into said chamber, said first opening communicating with said chamber at a first location above said heat shield and said second opening communicating with said chamber at a second location below said heat shield, and

adjustable gate means for opening and closing said openings independently of one another to independently regulate the passage of heat and smoke through said openings and into said chamber.

4,348,949

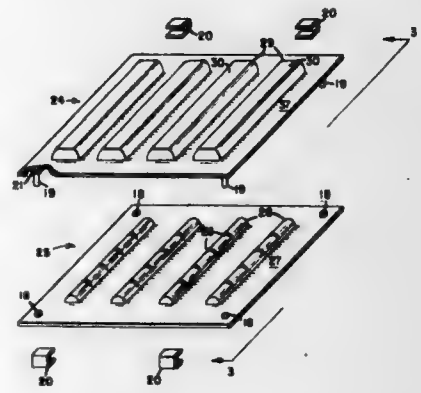
NON-SATURABLE BUN

George L. Selleck, 16-B Division St., Glens Falls, N.Y. 12801

Division of Ser. No. 583,806, Jun. 4, 1975, abandoned, which is a division of Ser. No. 30,764, Apr. 22, 1970, Pat. No. 3,908,022. This application Jul. 6, 1976, Ser. No. 702,828

Int. Cl.³ A21D *13/00*; A21B *3/13*

U.S. Cl. 99—426 **7 Claims**



1. Apparatus for baking a bun or the like of the type having a substantially liquid impermeable hard baked channel in its top surface for holding solid food and/or a liquid food substance, a relatively thinner crust on its bottom surface and a soft, smooth bread texture in its interior, said apparatus comprising:

first means defining at least one downwardly opening recess for forming the lower exterior of at least one bun said first means having a first downwardly facing surface extending beyond the boundaries of said recess,

second means defining at least one upwardly extending thin-walled protuberance for forming at least one hard baked channel, said second means having a second, upwardly facing surface extending beyond the boundaries of said protuberance, the underside of each said protuber-

ance being hollow for capturing heat to cause hard baking of the bun channel and to promote rising of the dough during operation of the apparatus,

means including spacers for positioning said second means in mating relation beneath said first means with each said protuberance extending upwardly at least partly into a corresponding recess in said first part and with a predetermined open spacing between said first and second surfaces,

means for applying heat to both sides of said first and second means in assembled mating relationship whereby said underside of each said protuberance of said second means is heated due to heat captured therein to a higher temperature than said first means, to thereby form a hard baked channel in the bun while the rest of the bun is baked less hard,

means for positioning said first and second means in assembled mating relationship a predetermined open spacing above the heat source included in said means for applying heat, and

means for preventing said first means and said second means from moving apart as the pressure of baking breads develops during operation of the apparatus.

4,348,950

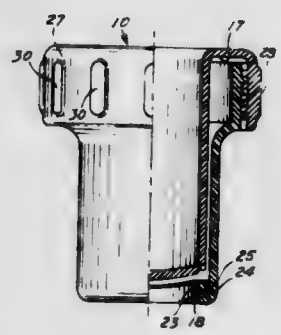
GARLIC PRESS

David P. Harris, 2523 S. Acoma, Denver, Colo. 80223

Continuation of Ser. No. 99,429, Dec. 3, 1979, abandoned. This application Dec. 19, 1980, Ser. No. 218,077

Int. Cl.³ B30B 9/02

U.S. Cl. 99—510 6 Claims



1. A press for crushing herbs or the like comprising:

a rigid generally hollow cylindrical outer shell having a bottom portion defining a bottom opening and an enlarged externally threaded top portion defining a top opening of relatively larger diameter than said bottom opening, said top portion being integrally connected through a radius to said bottom portion;

a circumferential shoulder integrally connected to the bottom portion of said cylindrical outer shell, said shoulder being spaced from the interior surface of the bottom portion of the outer shell, said shoulder extending a relatively short distance upward from the bottom portion toward the top portion of said outer shell and defining an interior channel within said bottom portion;

a foraminous plate releasably connected to said shoulder by a downwardly extending peripheral flange extending downwardly into said channel;

a hollow cylindrical ram telescopingly received within the interior of said outer shell, a grinding surface defined on the circular bottom portion of said cylindrical ram, said grinding surface including shallow radially extending grooves over the surface thereof, said grinding surface having a diameter smaller than said circumferential shoulder and substantially equal to the diameter of the cylindrical ram; and

a cap integrally connected to and extending radially outward from the top of said cylindrical ram and having a depending skirt portion extending downwardly over the enlarged threaded top portion of said outer shell, said depending skirt portion further having raised ribs at equal arcuate locations around said cap and being internally threaded for threaded engagement with said threaded top portion of said shell, whereby an herb placed on the foraminous plate is crushed between said plate and the descending grinding surface of said ram as said cap is turned and juices contained in the herb are thereby squeezed out through the foraminous plate and the open bottom of said outer shell.

4,348,951

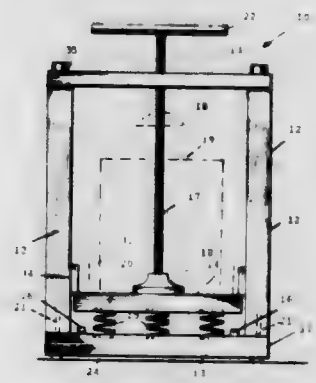
COTTAGE CHEESE PROCESSOR

Angelo F. LaPaglia, 7700 W. Bargain Rd., Erie, Pa. 16509

Filed Nov. 10, 1980, Ser. No. 205,883

Int. Cl.³ B30B 9/06

U.S. Cl. 100—127 4 Claims



1. A cheese press comprising a base 11, spaced uprights 12 attached to the base 11, and extending upwardly therefrom, a cross member 13 attached to the uprights,

and a platen 14 between said uprights and above said base,

an upper stop 34 on each of the uprights above said platen limiting the upward movement of the platen and a lower stop adjacent each of the uprights spaced from said upper stops limiting the downward movement of the platen,

a screw 17 extending through said cross member and a plunger attached to said screw,

said base being adapted to be supported on a supporting surface,

a colander on said platen for receiving cheese material adapted to receive said plunger whereby liquid can be squeezed from said cheese,

springs on said base supporting said platen urging said platen into engagement with said upper stops,

the pressure on cheese by said plunger being adapted to compress said springs forcing said platen away from said upper stops whereby the pressure on said cheese is limited.

4,348,952

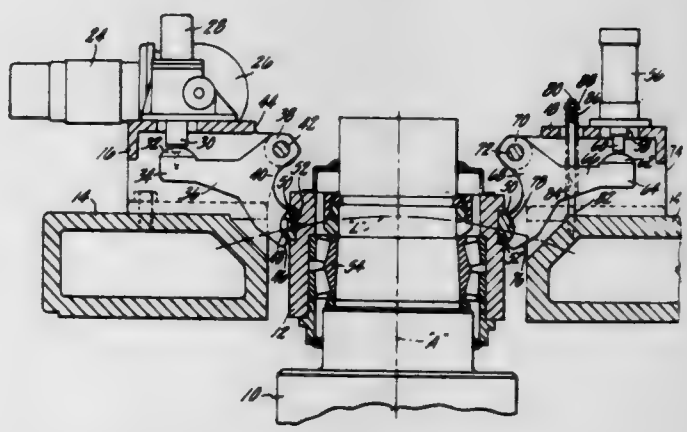
CROSS AXIS MECHANISM

Kendrick J. Gooch, Bethany, Conn., assignor to USM Corporation, Farmington, Conn.

Filed Jan. 19, 1981, Ser. No. 226,189

Int. Cl.³ B30B 3/04

U.S. Cl. 100—158 R 13 Claims



1. A calender roll machine having a frame arrangement

within which at least a first and a second roll, is each rotatively journalled, said machine including:

a cross-axis means disposed at an end of at least said first roll, said cross-axis means permitting the axis of said first roll to be controllably skewed with respect to the axis of said second roll;

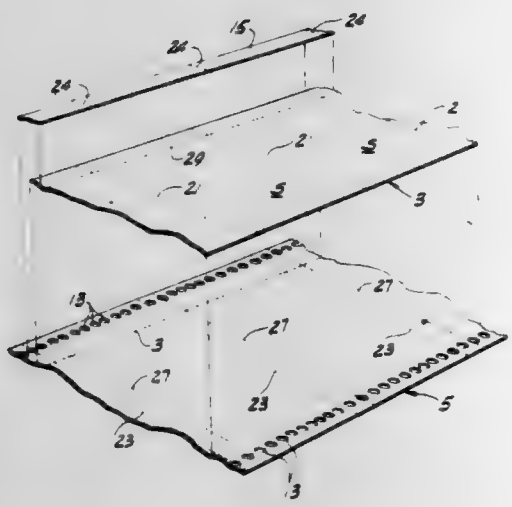
said cross-axis means comprising a primary mechanism and a secondary mechanism including cooperating levers diametrically arranged at opposite sides of a bearing disposed near the end of said first roll at least one of said levers being empowerable for skewing said first roll.

4,348,953

CONTINUOUS STENCIL ASSEMBLY AND METHOD OF MANUFACTURING IT

Jean R. Cole, Carterville, and Raymond R. Panaia, Carbondale, both of Ill., assignors to Diagraph-Bradley Industries, Inc., Herrin, Ill.

Filed Jan. 2, 1981, Ser. No. 222,179
Int. Cl.³ B41N *1/24*; B41C *1/14*
U.S. Cl. 101—128.21 **13 Claims**



1. A continuous stencil assembly comprising,

a continuous stencil strip of stencil material,

a continuous carrier strip carrying the stencil strip,

said stencil strip extending longitudinally of the carrier strip on one face of the carrier strip,

the stencil strip and the carrier strip each having a first series of lines of weakness extending transversely thereof spaced at stencil height intervals along the length of the strips with each of said lines of weakness of the first series in the stencil strip at least generally in register with a respective line of weakness of the first series in the carrier strip,

said strips being adapted to be torn on said lines of weakness of the first series for providing individual stencil assemblies each comprising the segment of the stencil strip and the segment of the carrier strip between two successive lines of weakness of the first series,

the carrier strip further having a second series of lines of weakness extending transversely thereof spaced at intervals corresponding to the spacing of the lines of weakness of the first series but offset longitudinally of the strips from the lines of weakness of the first series,

each line of weakness of the second series being adjacent one of the two successive lines of weakness of said first series in the carrier strip and between said two successive lines of weakness of said first series in the carrier strip,

each individual stencil assembly, as torn from said continuous stencil assembly on the respective two successive lines of weakness of said first series, being of rectangular shape having transverse edges where torn at said two successive lines of weakness of the first series and end edges, and having a line of weakness of the second series in the segment of the carrier strip in said individual stencil assembly adjacent one of said transverse edges, and

means securing the stencil strip to the carrier strip holding the said segments of the strips in each of said individual stencil assemblies together but with a portion of the carrier strip between the said line of weakness of the second series therein and the other of said transverse edges free of the segment of the stencil strip in the individual stencil assembly,

thereby permitting securement to an imprinter of each individual stencil assembly along said one transverse edge thereof including both the carrier strip segment and the stencil strip segment of the individual stencil assembly and subsequent tearing away of the free portion of the carrier strip segment, leaving a portion of the carrier strip segment along said one transverse edge secured to the imprinter.

9. The method of making a continuous stencil assembly as set forth in claim 1 comprising feeding forward from respective supplies thereof a continuous stencil strip and a continuous carrier strip, bringing these strips together with the stencil strip extending longitudinally of the carrier strip on one face of the carrier strip, forming lines of weakness in the carrier strip as it is fed forward toward the stencil strip with these lines of weakness extending transversely of the carrier strip and spaced at stencil height intervals along the length of the carrier strip, these lines constituting the said second series of lines of weakness, and forming lines of weakness in the combined stencil and carrier strips with said lines extending transversely of the strips and also spaced at stencil height intervals but offset longitudinally from the lines of weakness of said second series in the carrier strip and constituting the said first series of lines of weakness, the stencil strip being secured to the carrier strip in the manner specified in claim 1 as the strips are brought together.

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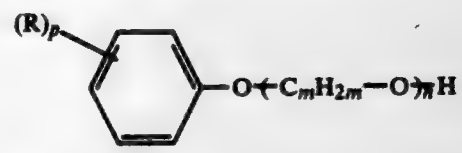
AGENT FOR PROTECTING THE SURFACE OF LITHOGRAPHIC PRINTING PLATE

Yoshio Okishi, Shizuoka, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 51,300, Jun. 22, 1979, abandoned. This application Dec. 5, 1980, Ser. No. 213,525
Claims priority, application Japan, Jun. 23, 1978, 53-76164; Nov. 29, 1978, 53-148519
The portion of the term of this patent subsequent to Mar. 3, 1998, has been disclaimed.
Int. Cl.³ G03F *7/02*
U.S. Cl. 101—465 **44 Claims**

1. A process for gumming a lithiographic printing plate having a hydrophilic non-image area and a lipophilic image area which comprises the steps of:

(a) preparing a protective agent comprising an aqueous phase having dissolved therein a film-forming hydrophilic high molecular weight compound for protecting the non-image area and an oil phase containing a water-insoluble organic solvent and a surfactant, wherein said surfactant is comprised of an alkylphenyl type nonionic surfactant represented by the general formula (I)



(I)

where R is an alkyl group, p is 1 or 2, m is an integer of 1 to 4 and n is an integer of 2 or more, the surfactant having an HLB less than 14 and a sodium salt of a dialkylsulfosuccinate; and

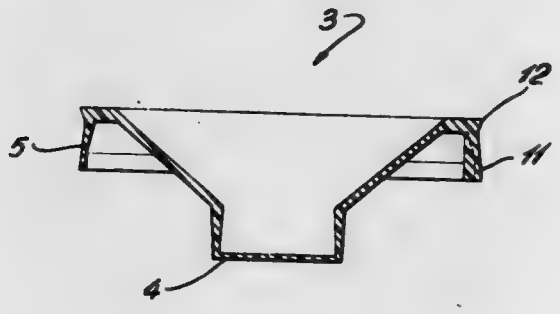
(b) coating a plate with said emulsion-type protective agent.

4,348,955

EXPLOSIVE CONTAINER

Edward K. Rowley, Beloeil, and Allison A. Sprague, Ville Lemoyne, both of Canada, assignors to C-I-L Inc., Ontario, Canada

Filed Nov. 21, 1980, Ser. No. 208,944
Claims priority, application Canada, Dec. 14, 1979, 342100
Int. Cl.³ F42B 3/00
U.S. Cl. 102—317 5 Claims



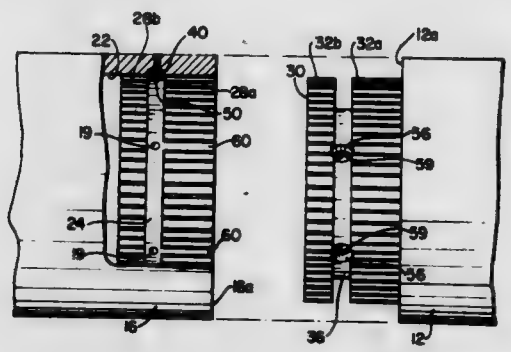
1. In a blow-molded cylindrical plastic container adapted for filling with explosives and for connection with a like container to form a column of containers, said container comprising an external engagement means and integrally sealed end closure on a reduced diameter male end thereof and an internal engagement means on an open female end thereof, the said male and female ends being adapted for interconnection between like containers, the improvement comprising a section of reduced diameter in a portion of said container immediately adjacent but beyond the said female engagement means, said reduced diameter section being adapted to receive and retain therein in substantially hermetic engagement a sealing member comprising a substantially disc-like, conically recessed, yieldable plastic member having a diameter equivalent to the diameter of the said reduced diameter section, said sealing member also comprising an integral, outwardly flared skirt-like section around its circumference extending in a direction of the apex of said conical recess and adapted for sealable, slidable, engagement with the inner wall of said section of reduced container diameter.

4,348,956

ARTILLERY SHELL COMPRISING TWO SECTIONS HAVING COMPLEMENTARY COUPLING MEMBERS FOR CONNECTING THE SECTIONS TOGETHER

Albertus E. Schmidlin, Caldwell, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 29, 1980, Ser. No. 182,358
Int. Cl.³ F42B 15/10
U.S. Cl. 102—377 10 Claims



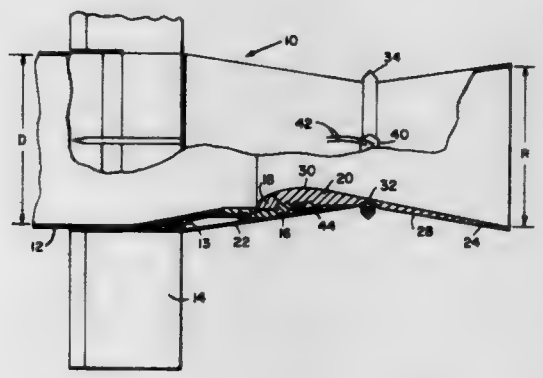
1. An artillery shell comprising:
a first section including a first end section,
a second section including a second end section which abuts said first end section when said sections are connected to each other,
complementary coupling means for removably connecting said first and second sections to each other, said complementary coupling means including coaxial coupling means for coaxially coupling said sections, wherein said coaxial coupling means comprises a cylindrical coaxial projection connected at one end to said first end section and a coaxial bore located in said second end section configured to slidably receive said projection when said end sections are brought together in an abutting relationship,
relative rotation means for preventing relative rotation of the coupled sections, and
locking means for preventing relative axial movement of the coupled sections,
wherein said locking means includes:
(a) a circumferential external groove about the periphery of said cylindrical projection and a circumferential internal groove located about the internal periphery of said bore, said internal groove located within said bore so as to be disposed opposite to and surround said external groove when said end sections are brought together, and
(b) at least two locking assemblies which can be engaged to prevent axial movement or disengaged to permit the disconnection of said sections, wherein each of said locking assemblies includes a movable segment and a threaded member for threadably engaging said movable segment, for moving said segment into said internal groove to a locking position and for moving said segment out of said internal groove to an unlocked position whereby said sections can be disconnected, and wherein each of said segments is an arcuate member having a radius of curvature which is greater than the radius of said internal groove, whereby said radius of curvature of said arcuate member decreases as said segments are moved into their locked positions.

4,348,957

BOATTAIL EMERGENCE BY EJECTING NOZZLE EXIT CONE

James W. White, Huntsville, Ala., and Joseph J. McDermott, deceased, late of Huntsville, Ala. by Rosalie L. McDermott, executrix, assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 28, 1980, Ser. No. 172,879
Int. Cl.³ F42B 15/10
U.S. Cl. 102—378 2 Claims



1. A missile having a rocket motor structure with a nozzle structure attached thereto, said nozzle structure having an outwardly tapering outer surface, a frustaconical boattail structure mounted over and about an end portion of said rocket motor structure and a forward portion of said rocket nozzle structure, said boattail structure having an outward surface that tapers inwardly from a forward portion to a point of tangency with the outwardly tapering outer surface of said rocket nozzle, means about said rocket nozzle at said point of tangency and mounted relative to the rocket nozzle, means for causing said portion of said rocket nozzle with said outwardly tapering surface to be separated from the remainder of said rocket nozzle structure by said means about said rocket nozzle at said tangency point to cause a boattail end structure of about

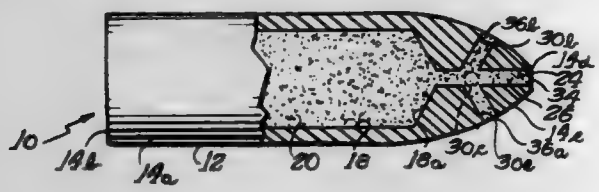
1-caliber in length to be formed on said missile, said rocket motor having a predetermined internal diameter and said rocket motor nozzle having a predetermined internal diameter at an exit end of said rocket nozzle which is substantially equal to said predetermined internal diameter of said rocket motor, said means about said rocket nozzle at said point of tangency being a shaped charge that is spaced a predetermined distance from said rocket motor nozzle and has means for setting off said shaped charge at the appropriate time to sever said nozzle end structure and leave said boattail structure on the missile, and said means for setting off said shaped charge including a power supply and timing means that are inner connected to said shaped charge to cause said shaped charge to be set off at the appropriate time.

4,348,958

PROJECTILE HAVING IMPACT RESPONSIVE INITIATOR MEANS

Edward A. Day, Rancho Santa Fe, Calif., assignor to Systems, Science and Software, La Jolla, Calif.

Filed May 15, 1980, Ser. No. 150,061
Int. Cl.³ F42B *13/12*; F42C *1/10*
U.S. Cl. 102—499 **13 Claims**



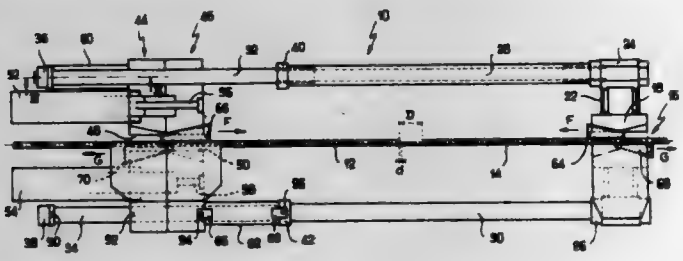
1. An explosive projectile comprising a body having a forward flight end and defining an internal chamber, a main high explosive charge disposed within said internal chamber and being capable of detonation, at least one passage formed within said body in direct communicating relation with said chamber and opening outwardly of said flight end of said body, impact responsive initiator material disposed within said passage so as to completely fill said passage between said high explosive charge and the forwardmost end of said passage, and a thin cover formed over the outer exposed end of said passage, said initiator material enabling safe handling and high velocity launching of said projectile but being capable of impact responsive detonation to effect detonation of said main explosive charge upon predetermined impact of said flight end of said projectile with a target surface.

4,348,959

RAIL GAP ADJUSTING DEVICE

Patrick Bommart, Rueil-Malmaison, France, assignor to C. Delachaux, Gennevilliers, France

Filed May 16, 1980, Ser. No. 150,579
Claims priority, application France, May 18, 1979, 79 12686
Int. Cl.³ B23K *37/02*; E01B *29/20, 33/00*
U.S. Cl. 104—15 **6 Claims**



1. An apparatus for adjusting the distance between the butt-ends of a first and second rail to be connected comprising: a fixed frame for enclosing the first rail and means for securing said fixed frame thereto; two parallel bars integral with said fixed frame and extending therefrom toward the second rail, first and second movable frames, slidably mounted for limited movement along said parallel bars in the region of the second rail, means for selectively securing one of said movable frames relative to said parallel bars and means for selectively securing the other of said movable frames relative to the second rail; and jacks in communication with said first and second movable frames for effecting relative movement therebetween such that said movable frame selectively secured to said parallel bars together with said fixed frame and the first rail onto which said fixed frame is secured, is integrally shiftable relative to the second rail and said other movable frame selectively secured thereto.

6. An apparatus for adjusting the distance between the butt-ends of a first and second rail to be connected comprising in combination an adjusting apparatus comprising:

a fixed frame for enclosing the first rail and means for securing said fixed frame thereto; two prallel bars integral with said fixed frame and extending therefrom toward the second rail, first and second movable frames, slidably mounted for limited movement along said parallel bars in the region of the second rail, means for selectively securing one of said movable frames relative to said parallel bars and means for selectively securing the other of said movable frames relative to the second rail; and jacks in communication with said first and second movable frames for effecting relative movement therebetween such that said movable frame selectively secured to said parallel bars together with said fixed frame and the first rail onto which said fixed frame is secured, is integrally shiftable relative to the second rail and said other movable frame selectively secured thereto; and

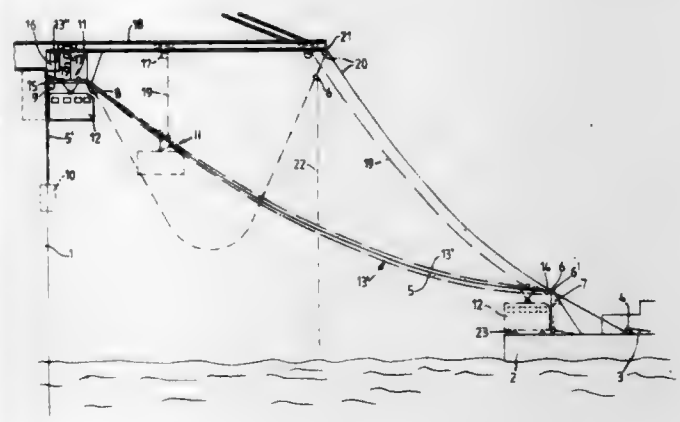
a carriage onto which said adjusting apparatus is mounted for the support and transport thereof.

4,348,960

AERIAL CABLEWAY BETWEEN A SEA VESSEL AND A FIXED INSTALLATION

Erik Staurseth, Mandal, Norway, assignor to Westamarin A/S, Mandal, Norway

Filed Sep. 30, 1980, Ser. No. 192,236
Claims priority, application Norway, Oct. 10, 1979, 793262
Int. Cl.³ B61B *7/02*
U.S. Cl. 104—114 **2 Claims**



1. An aerial cableway for transportation between a vessel and a fixed installation at sea, consisting of a support cable stretched between the vessel and the fixed installation, means for maintaining constant tension in the support cable, means for releasably attaching the suport cable to the vessel, a gondola suspended from a trolley on the support cable, a pulling line attached to the trolley, of the pulling line travelling over a pulley on the vessel and running back to the fixed installation onto pulling winches one at each end of the pulling line on the fixed installation, whereby one end of the pulling line pays out when the other end is heaved in, and vice-versa, an outrigger on the fixed installation, at the outer end of which a securing member for the support cable is fastened so as to enable said support cable to be raised and lowered, a hoisting cable which

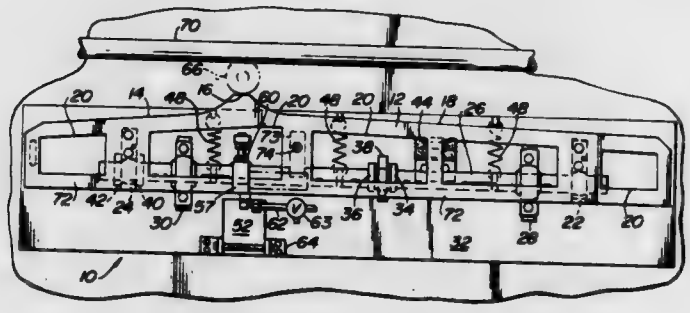
is maneouverable from the fixed installation for raising and lowering said securing member and a drop line attached to the securing member which, when the securing member and thus also the support cable have been hoisted into an elevated, not-in-use position, hangs down toward the surface of the sea.

4,348,961

FAIL-SAFE CONTROL DEVICE FOR DRIVERLESS VEHICLES

Peter H. Rohrbach, Bethlehem, Pa., assignor to SI Handling Systems, Inc., Easton, Pa.

Filed Jul. 7, 1980, Ser. No. 166,511
Int. Cl.³ B61K *7/02*
U.S. Cl. 104—252 **9 Claims**



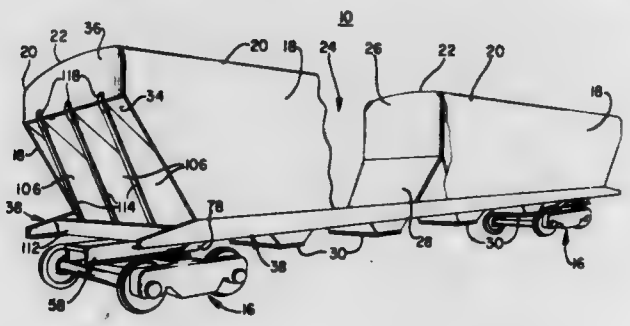
1. A control device for controlling the speed of a vehicle in a conveyor system of vehicles which move along a track comprising a cam having a cam surface for contact with a cam follower on a vehicle, means mounting said cam surface for movement between operative and inoperative positions, said cam having converging cam surfaces along one side edge, said cam having a flat straight surface area for contact with a roller on a vehicle whose speed is controlled by said cam surfaces, said mounting means including horizontally disposed shaft below the elevation of said cam, said area being on one side of the axis of said shaft and said cam surfaces being on the other side of said axis, a motor coupled to said cam for selectively retaining said cam in an operative position, and means for automatically moving said cam surface to an operative position from an inoperative position upon failure of supply of power to said motor.

4,348,962

RAILWAY HOPPER CAR BOLSTER ASSEMBLY

Stephen W. Smith, Carrollton, Tex., assignor to Trinity Industries, Inc., Dallas, Tex.

Filed May 31, 1979, Ser. No. 44,257
Int. Cl.³ B61D *7/04*; B61F *1/10, 1/12*
U.S. Cl. 105—248 **12 Claims**



1. In a railway hopper car of the type including a car body defined by opposite arcuate side sheets having a side sill extending longitudinally along the lower margin of each side sheet and at least a first end slope sheet partially defining an end hopper compartment, the combination with the car body of an end support structure for the end hopper compartment, the end support structure including a bolster assembly comprising:

a substantially horizontally disposed shear plate having opposite side portions secured to the side sills, said shear plate forming a channel provided by a first upturned end portion forming a first end sill secured to the first end slope sheet and a second upturned end portion forming a second end sill;

a stub center sill disposed subjacent and connected to the shear plate substantially in alignment with the longitudinal axis of the car body;

a bolster beam extending transversely with respect to the longitudinal axis of the car body on either side of the stub center sill and interconnecting the stub center sill with each side sill;

a bolster web assembly interconnecting the stub center sill, the shear plate and the bolster beam;

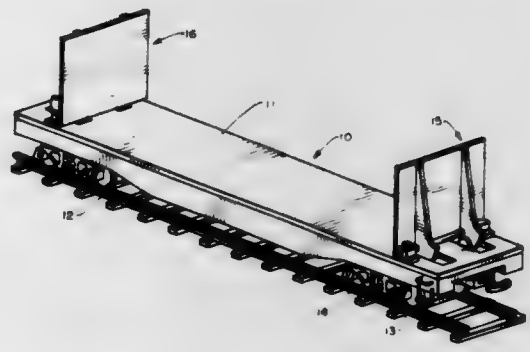
a plurality of vertical gusset plates interconnecting the first end slope sheet and shear plate, each of the gusset plates having a first edge portion connected to the first end slope sheet and a second edge portion connected to the shear plate, the gusset plates being disposed in spaced parallel relation with respect to each other in an array which extends laterally with respect to the longitudinal axis of the car.

4,348,963

RETRACTABLE BULKHEADS FOR RAILROAD FLAT CARS

Curtis Dancy, 30903 S. Kaster Rd., Tracy, Calif. 95376

Filed Oct. 28, 1980, Ser. No. 201,572
Int. Cl.³ B61D *17/06*
U.S. Cl. 105—363 **8 Claims**



1. In a railroad bulkhead flatcar having a flat bed and spaced bulkheads for enclosing material therebetween on said flat bed, the improvement which comprises:

bulkhead moving means coupled to each of said bulkheads for rotating each of said bulkheads from a first upright vertical position with respect to the plane of said flat bed downwardly and inwardly to a second position substantially parallel to the plane of said flat bed

wherein said moving means comprises a pair of spaced upright members each of which is secured to the external side of said bulkhead,

each of said upright members being interconnected at their lower ends by a rotating shaft fixedly secured to said upright members, and rotatably mounted on said car,

and piston means mounted on said car operatively connected to at least one of said upright members to rotate same.

4,348,964

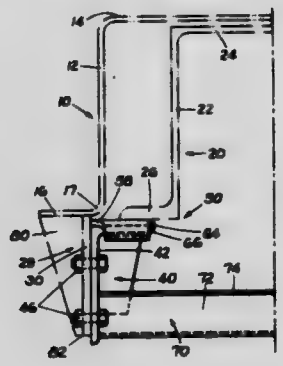
SLIDING SILL LOW FRICTION SUPPORTING PLATE ASSEMBLY

Robert W. Randolph, St. Charles, Mo., assignor to ACF Industries, Inc., New York, N.Y.

Filed Sep. 22, 1980, Ser. No. 189,259
Int. Cl.³ B61D *17/04*; B61F *1/08*; B61G *9/20*
U.S. Cl. 105—42 D **7 Claims**

1. A low friction sliding sill support assembly comprising: a fixed sill including a pair of lower, outwardly extending fixed sill flanges; a generally vertical longitudinally extending sup-

port plate integrally connected to each fixed sill flange on each side of the fixed sill; a separate longitudinally extending sliding sill support rigidly connected to each support plate; each said sliding sill support also including a horizontal portion that extends transversely inwardly of the car; said sliding sill supports being spaced apart and located below said fixed sill flanges; a pair of low friction material wear plates adopted to be slipped in place upon said sliding sill supports; said wear



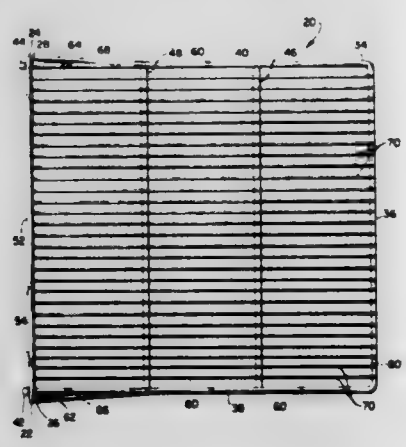
plates including horizontal body portions on each side of the fixed sill upon which the sliding sill rides moving back and forth relative to said fixed sill; each wear plate including means for engaging the inner and outer ends of its respective sliding sill support; said wear plates being made of resilient material having a low coefficient of friction with steel; and good strength in compression to withstand the longitudinal movement of the sliding sill.

4,348,965

CANTILEVERED SHELF CONSTRUCTION

Richard H. Swanson, Manitowoc, Wis., assignor to Kelvinator Commercial Products, Inc., Manitowoc, Wis.

Division of Ser. No. 931,101, Aug. 4, 1978, Pat. No. 4,250,815. This application Sep. 5, 1980, Ser. No. 184,533
Int. Cl.³ A47B *55/02*
U.S. Cl. 108—152 **11 Claims**



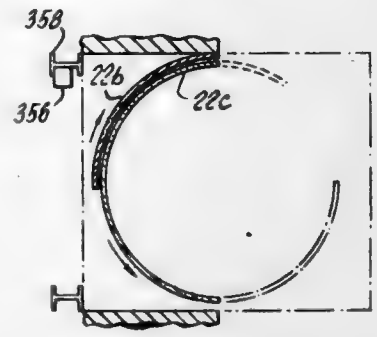
1. A shelf construction comprising: a planar shelf means; a cross bar secured at the upper rear of said shelf means providing a short lateral trunnion-like projection extending from adjacent each top rear corner of said shelf means; abutment means depending from the rear side edges of said planar shelf means having terminal abutment portions disposed below said projections; said shelf means being made from a U-shaped rod; said trunnion-like projections are end portions of said cross bar which is rigidly secured to the ends of said U-shaped rod, said end portions being projected beyond the side legs of said U-shaped rod; a second U-shaped rod spaced below said first named U-shaped rod; means rigidly securing the front and side leg portions of both U-shaped rods to each other with the rear portions of said second U-shaped rod being bent at a downward and slightly outward inclination and terminating in abutment ends and comprising said abutment means.

4,348,966

TRANSACTION SECURITY SYSTEM AND MODULAR TRANSACTION PROCESSING CENTER

Otis H. Hastings, 130 E. Crescent Ave., Mahwah, N.J. 07430

Division of Ser. No. 827,593, Aug. 25, 1977, Pat. No. 4,121,523, which is a continuation-in-part of Ser. No. 602,404, Aug. 6, 1975, abandoned. This application Oct. 19, 1978, Ser. No. 952,782
Int. Cl.³ E05G *5/00*
U.S. Cl. 109—2 **11 Claims**



1. A personnel entry means comprising two arcuate shields, a first shield defining an arc of about 180° and a second shield defining an arc of 90° or slightly in excess thereof mounted for rotation concentrically about a common axis to provide sequentially for movement between first, second and third primary positions relative to each other and about an object passing through the perimeter defined by the path of rotation of said shields; said shields being adapted to provide a concentric arc in said first position, in which, in combination, the arc defined thereby does not exceed about 180° while occluding the passage spanned by and behind said shields, barring access thereto to the occupant within said perimeter; said first shield being adapted to rotate to said second position, where in said latter position, one lateral border of each of said shields is in registry with the other of said shields defining a closed area about said perimeter that is equal to the sum of the arcs defined by both of said shields; said shields in this latter position continuing to occlude the passage spanned thereby in said first position; said shields being adapted further to rotate to said third position in which said shields are arrayed concentrically on the side of said perimeter opposite to that of said first position and in which said shields define an arc not in excess of about 180° while providing by movement of both of said shields in opposing arcuate paths about said perimeter unimpeded passage into the space occluded by said shields in said first and second positions; and completely occluding the previously unoccluded space about said perimeter in said third position.

4,348,967

PUBLIC SECURITY LOCKER

Robert L. Schattner, Marlton, N.J., and Allen S. Schattner, Pittsburgh, Pa., assignors to Omnimed, Inc., Maple Shade, N.J.

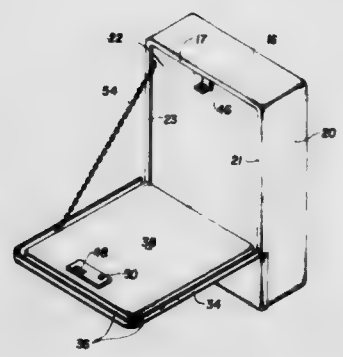
Filed Sep. 25, 1980, Ser. No. 190,514
Int. Cl.³ E05G *1/04*
U.S. Cl. 109—51 **7 Claims**

1. A security locker for use by the public comprising:
a housing having a back wall, two side walls, a top wall and a front wall;
said front wall having a stationary portion and an opening providing access to the interior of said housing;
a door pivotally mounted at its bottom to said stationary portion of said front wall to pivot about a horizontal axis (housing) for covering said opening, wherein said stationary portion of said front wall and said door include a base portion and a rim portion extending from the periphery of said base portion toward said housing, the periphery exterior of said top, bottom and two side walls being enclosed by said base and rim portion of said stationary portion of

said front wall and said door, when said door is in the closed position;

combination lock means for locking said door closed to said housing;

dial means of said lock means accessible from the exterior of said housing for locking said lock means when said dial means does not have a predetermined sequence of symbols



and unlocking said door when said dial means has said predetermined sequence of symbols;

setting means unaccessible from the exterior of said housing when said door is closed for changing said predetermined sequence whereby the sequence can be secretly personalized by each of a plurality of short-term users; and

fastener means for permanently mounting said housing to a pre-existing structure in an area used by the public.

4,348,968

METHOD AND APPARATUS FOR BURNING SOLID FUEL

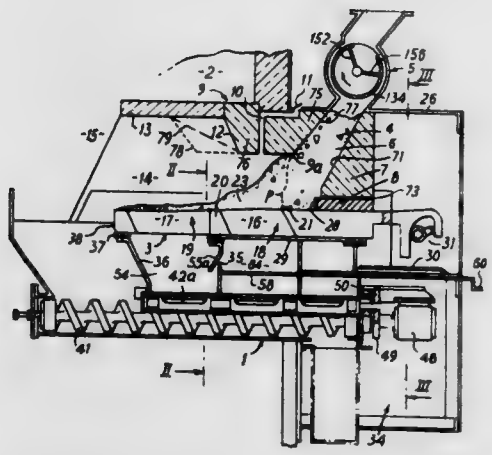
Viking V. Demar, Ave. Conde Sallent 17v, Palma-Mallorca, Spain

Filed Jul. 30, 1980, Ser. No. 173,522

Claims priority, application United Kingdom, Aug. 10, 1979, 7927988

Int. Cl.³ F23B 7/00

U.S. Cl. 110—344 **23 Claims**



1. A high intensity method of burning solid fuel in pieces, comprising the steps of:

advancing the fuel along a path having an upstream portion from which air is excluded;

metering the height of the fuel leaving the upstream path portion to define a predetermined cross section for the fuel as it leaves the upstream path portion and enters a first downstream path portion in a reverberatory combustion space as a thick fuel bed;

passing a first high velocity stream of air from below the first downstream path portion upwardly through the fuel bed in a self-sustaining ignition zone, the first stream of air supplying the major portion of the oxygen required for combustion and having upstream and downstream boundaries extending transversely of the path, the fuel being rapidly heated and ignited as it moves through the upstream boundary, the metered height of the fuel fed being such in relation to the speed of advance of the fuel and the distance between the upstream and downstream boundaries that the size of the fuel pieces and the thickness of the burning fuel bed at the downstream boundary is still sufficient to prevent destabilization of the fuel bed by the first stream; and

passing a second, lower velocity stream of air, sufficient to complete combustion, through the fuel bed at a second downstream path portion which is downstream of the first downstream path portion, the second stream being diffused over a sufficient length of the path downstream of the first stream so as to be of sufficiently low velocity to avoid entrainment of the burning-out fuel particles from the fuel bed.

4,348,969

SEWING MACHINE WITH A HORIZONTAL-TYPE LOOP TAKER

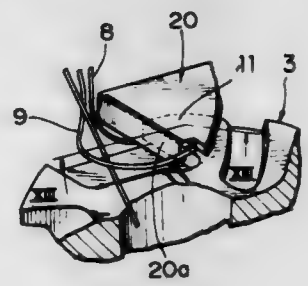
Noboru Kasuga, Hachioji; Kazumasa Hara, Tama, and Mikio Koike, Oume, all of Japan, assignors to Janome Sewing Machine Co. Ltd., Tokyo, Japan

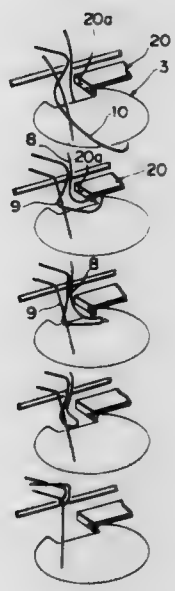
Filed Mar. 11, 1980, Ser. No. 129,206

Claims priority, application Japan, Mar. 26, 1979, 54-38906[U]

Int. Cl.³ D05B 57/14, 3/02

U.S. Cl. 112—184 **1 Claim**





1. In a sewing machine having a main shaft rotated to vertically reciprocate a needle carrying an upper thread, said needle being swingable transversally of the fabric feeding direction, a throat plate having an upperside and an underside and secured to a machine bed, said throat plate having an aperture formed therein through which the needle traverses to penetrate a fabric to be sewn to thereby produce a thread loop under the throat plate, and loop taking means of horizontal type, a combination comprising a loop taker including a loop taking hook rotated by the main shaft; a bobbin carrier supported in the loop taker and carrying therein a bobbin loaded with a lower thread for forming stitches together with the upper thread, said loop taking hook adapted to take said thread loop to enlarge the same around the bobbin carrier and release the same in the

vicinity of the aperture of the throat plate; and thread loop regulating means including a flat plate having a downwardly directed lip formed at one end thereof and extended in the fabric feeding direction, said flat plate being secured to the underside of the throat plate, said bobbin carrier being formed with an upper raised portion, said flat plate and said upper raised portion together with said downwardly directed lip defining a path for guiding the thread loop after the thread loop has been released from the hook of the loop taker, said loop guiding path being so formed as to guide the thread loop, substantially in a direction opposite to the normal fabric feeding direction, said downwardly directed lip providing an end at which the guided thread is released.

4,348,970

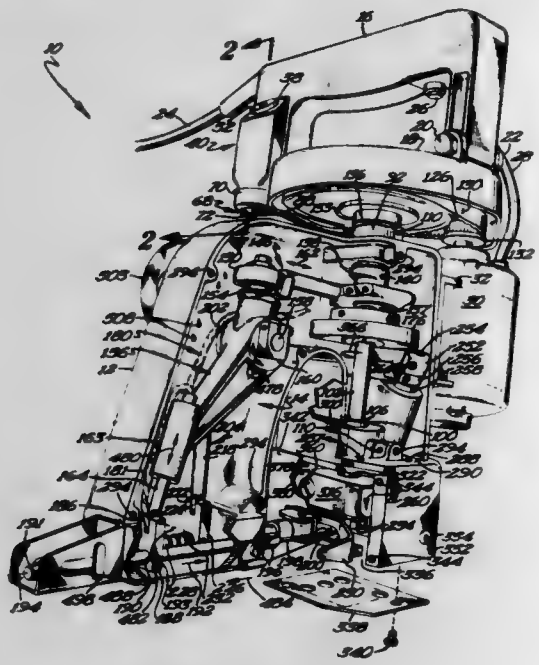
SELF-OILING PORTABLE BAG-CLOSING SEWING MACHINE

Robert J. Robinson, North Oaks; David B. Johnson, and Verdell H. Schroeder, both of Minneapolis, all of Minn., assignors to Bliss & Laughlin Industries, Incorporated, Oak Brook, Ill.

Filed Apr. 1, 1980, Ser. No. 136,312

Int. Cl.³ D05B *71/00*

U.S. Cl. 112—256 **33 Claims**



1. A self-oiling portable bag-closing sewing machine energizable from a power source, and capable of using thread to stitch a bag closed comprising:

a housing having an internal drive train chamber and said housing including a handle for carrying the machine;

first and second main drive shaft bearings, each said bearing having a central axis, each being carried by said housing, said bearings being positioned substantially coaxially, and each said bearing having an inner and an outer periphery, and an upper and a lower end;

driving means selectively connectable to the power source, carried by said housing, and including a motor and a main drive shaft rotatably mounted in said first and second main drive shaft bearings for rotation about the longitudinal axis of said main drive shaft, and said main drive shaft extending within said drive train chamber and being drivingly connected with said motor to rotate said main drive shaft when the motor is energized;

a needle driving assembly including a needle having a longitudinal axis, said needle driving assembly being operatively movingly connected with said driving means to move said needle along said longitudinal axis of said needle in reciprocating movement in response to energizing of said driving means;

a feed dog assembly carried by said housing and operatively connected to said driving means to actuate said feed dog assembly for cooperation with said needle driving assembly in response to energizing of said driving means;

a presser foot unit carried by said housing and selectively bearing against said feed dog assembly and cooperating with said feed dog assembly to urge the bag against said feed dog assembly and thereby assist in moving the bag along a path past the needle;

a looper assembly carried by said housing and operatively connected with said driving means, said looper assembly cooperating with said reciprocating needle to form a stitch with the thread so as to cause the bag to be stitched closed as the bag moves along the path;

an oil reservoir capable of storing the oil and carried by said housing; and

oil delivery means connected in fluid flow relation with said oil reservoir and with said housing to direct oil to said drive train chamber and onto at least one of said assemblies for dispersion within said drive train chamber by outward flinging of such oil within said chamber by at least one of said assemblies during operation of the sewing machine.

4,348,971

MULTI-HULL BOATS

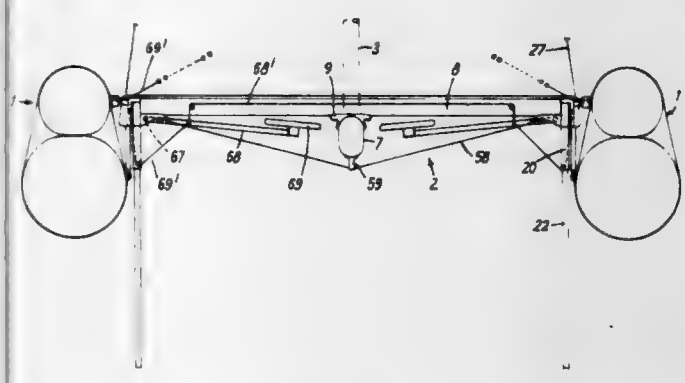
Jon A. Montgomery, Teddington, England, assignor to Roger Derek Morrison-Jones, Waterloo, Belgium, a part interest

Filed Mar. 30, 1978, Ser. No. 892,094

Claims priority, application United Kingdom, Apr. 4, 1977, 14196/77

Int. Cl.³ B63B *7/08*

U.S. Cl. 114—61 **5 Claims**

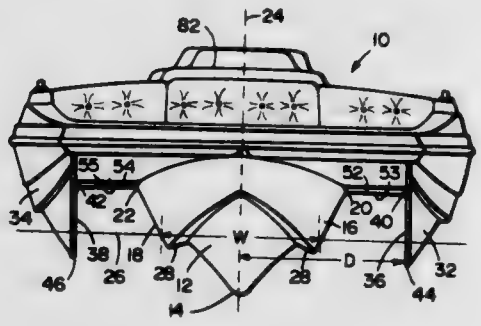


1. A multi-hull boat comprising a pair of inflatable hulls interconnected by a central structure, wherein the central structure comprises a central longitudinal tubular torsion beam to which are rigidly secured hull connecting beams extending outwards from the central torsion beam to at least three spaced attachment points on each hull, each hull comprising an upper inflatable tube, a lower inflatable tube and a pair of side walls respectively located on opposite sides of the hull and each interconnecting the upper and lower tubes, said side walls as seen in cross section defining a pair of generally upstanding straight lines laterally spaced by said tubes with each line extending substantially tangent to both tubes on its respective side of the hull, such that said side walls, the upper surface of the upper tube and the lower surface of the lower tube enclose the hull and form a continuous smooth oval hull outer cross section, the heights of the free portion of the side walls extending between the tubes being small enough to partly vertically compress the tubes one against the other when inflated, thereby to hold the side walls in tension, wherein the bow end of each tube tapers off towards the bow substantially to a point to form a tapered nose portion, said tapered nose portions being spaced apart from each other by a vertical spacer wherein a said spacer is inserted between the tapered nose portions of the tubes, said nose portions of said tubes and said spacer being covered by the side walls wherein said side walls continue forward to cover said spacer and produce a substantially conventional sharp yet upstanding bow on the inflatable hull.

4,348,972
MULTIPURPOSE TRIMARAN

Vaughan V. Parsons, 25640 Via Crotalo, Carmel, Calif. 93921

Filed May 23, 1980, Ser. No. 152,596
Int. Cl.³ B63B *1/12*
U.S. Cl. 114—61 16 Claims



1. A boat structure (10) comprising:

a central hull (12) having a lowermost portion (14), lateral sides (16, 18) having upper portions (20, 22) and being generally equally spaced from a central plane (24) of symmetry of the central hull (12), the central hull (12) being of a width (W) at the waterline (26) when floating at rest;

a pair of side hulls (32, 34) having infacing sides (36, 38) having top portions (40, 42) and bottom portions (44, 46), said infacing sides (36, 38) being generally equally spaced a distance (D), which is from about two-thirds to about four-thirds said width (W) from said plane (24) over generally the length of said side hulls (32, 34), the entire bottom portions (44, 46) of the side hulls (32, 34) being spaced above the lowermost portion (14) of the central hull (12) and being positioned below the waterline (26) when said hulls (12, 32, 34) are floating at rest; and

a pair of substantially horizontal port and starboard bridges (52, 54) having bottoms (53, 55) and extending substantially the length of said side hulls (32, 34), said bridges (52, 54) connecting the top portions (40, 42) of the side hulls (32, 34) to the upper portions (20, 22) of the lateral sides (16, 18) of the central hull (12), the entire bottoms (53, 55) of said bridges (52, 54) being spaced above the water line (26) when said hulls (12, 32, 34) are floating at rest.

4,348,973
MOTION TRANSFER APPARATUS FOR USE IN SELF STEERING APPARATUS FOR BOATS

Brian A. J. Ellis, 62 Hilton Rd., Mapperley, Nottingham, England

Continuation-in-part of Ser. No. 872,523, Jan. 26, 1978, abandoned. This application Dec. 3, 1979, Ser. No. 99,445
Claims priority, application United Kingdom, Feb. 2, 1977, 4275/77
Int. Cl.³ B63H *25/04*
U.S. Cl. 114—144 C 5 Claims

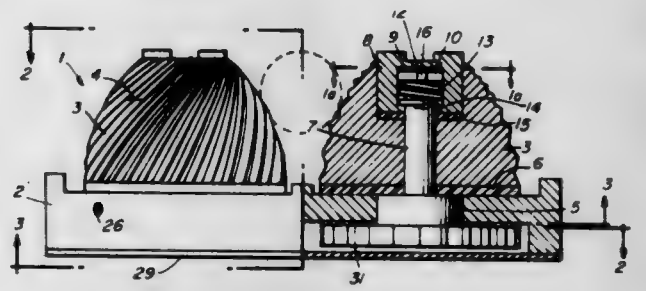


1. Motion transfer apparatus comprising a first movable member, a second member rotatable within a support about a first axis, and transmission means for converting movement of said first member to rotational movement of said second member about said first axis, said transmission means comprising a control arrangement having a first part which, on movement of said first member, is rotatable about a second axis intersecting said first axis, and a second part which is connected to the said second member to be pivotable relative thereto about a third axis, said first, second and third axes being orthogonal and intersecting with one another at the same point, said first part having means defining a bore extending on a fourth axis which is at an angle to said second axis and which passes through the intersection of the first, second and third axes, and said second part being at least partly located in said bore to be rotatable about the axis of the bore, the support being pivotable about said second axis, such that said second part rotates with said first part about said second axis on initial movement of said first member, and effects resultant movement of said second member about said first axis, and rotation of said first part about said second axis is effected on initial movement of said second member about said first axis, movement of said second member and the support together about said second axis having substantially no effect on said first part movement.

4,348,974
CLEAT

Michael Lerner, 7 Holyoke St., Boston, Mass. 02116

Filed Dec. 20, 1979, Ser. No. 105,554
Int. Cl.³ B63B *21/04*
U.S. Cl. 114—218 12 Claims



1. A cleat for securing a line, which cleat comprises:

(a) a base plate;

(b) a pair of first and second dome elements, each element characterized by a high friction line engaging surface, the first and second dome elements spaced apart and adapted to receive and hold a line placed between the dome elements;

(c) first and second shaft means to connect the first and second dome elements, respectively, to the base plate; and

(d) ratchet means connected to each of the shaft means to permit each of the shaft means to rotate in only one direction whereby a line which is secured between the dome elements can be drawn through the dome elements in a forward direction but will hold against tension applied in a reverse direction.

4,348,975
SUPPLY BOAT SPOOLING SYSTEM

Peter G. S. Dove, 13403 Sea Island Dr., Houston, Tex. 77069

Filed Nov. 21, 1979, Ser. No. 96,503
Int. Cl.³ B63B *21/16, 21/22*
U.S. Cl. 114—254 5 Claims

1. Apparatus on a boat for handling cable used in mooring systems in offshore operations comprising:

a boat for handling cables, said boat having a rearwardly located deck surface arranged for guiding cable between an underwater anchoring location and a spooling location at a forwardly located deck surface on the boat;

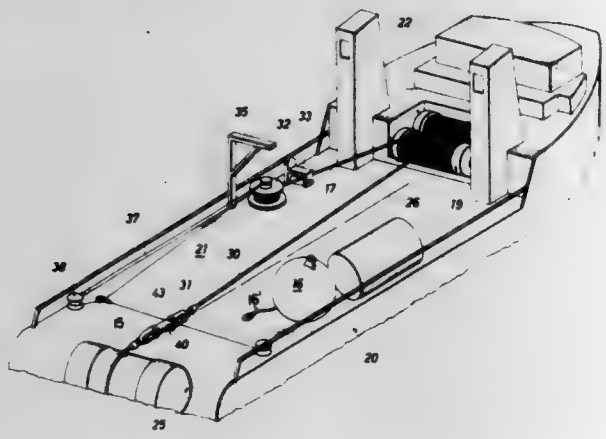
at least two independent spooling winches on said deck surface, said spooling winches being located generally

centrally of the width of the deck of said boat at said spooling location;

spool means on each of said spooling winches and means for driving said spooling winches rotatably about horizontal axis so that each spooling means may spool or unspool cables independently of one another;

one of said spool means on one of said winches carrying a towing cable and the other of said spool means on the other of said winches being normally empty of cable;

independent storage spool means located intermediate of



said rearward deck surface and said spooling location to one side of the length of said deck surface;

mounting means for rotatably driving said storage spool means about its central axis whereby cable on a winch spool means may be transferred to or from one spooling winch to said storage spool means independent of the other spooling winch in the same time frame;

means for releasably coupling said mounting means to said storage spool means; and

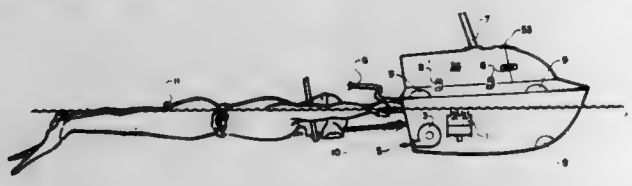
means proximate to said mounting means for moving a storage spool means onto or off of said mounting means.

4,348,976

DIVER TOW COMPRESSOR UNIT

Donald R. Gilbert, 58 McNeill St., Encinitas, Calif. 92024

Filed Mar. 11, 1980, Ser. No. 129,605
Int. Cl.[3] B63C *11/46*
U.S. Cl. 114—270 5 Claims



1. A floating vessel of lightweight construction, operable to tow divers, comprising:

a. a hull having a stern;

b. a power plant disposed within the hull;

c. a propulsion means mounted to be driven by said power plant through a first clutch;

d. an air compressor mounted to be driven by said power plant through a second clutch;

e. switching means connected to said clutches to activate operation of said propulsion means while deactivating said air compressor and to activate said air compressor while deactivating said propulsion means;

f. a steer bar disposed on the exterior of the stern and projecting outwardly away from the hull so as to enable a diver to grasp onto and steer the hull;

g. control means for the power plant being disposed on the exterior of the stern so that the diver has ready access thereto; and

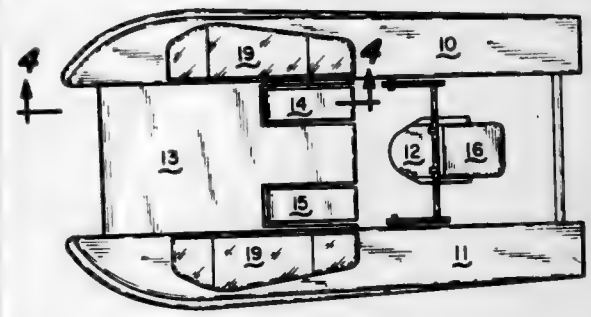
h. hand actuated control means for said switching means being disposed on said steer bar so as to enable the diver to operate said switching means.

4,348,977

WATER CONVEYANCE

Tadashi Okajima, 1-12-6 Taishibashi, Asahi-ku, Osaka, Japan

Filed Apr. 30, 1979, Ser. No. 34,343
Claims priority, application Japan, Mar. 3, 1979, 54-024960
Int. Cl.[3] B63B *1/00*
U.S. Cl. 114—273 12 Claims



1. A water conveyance which comprises:

first and second hull means spaced from each other;

airfoil means extending between said hull means toward the bow thereof, said airfoil means having pivotable flaps extending toward the stern thereof;

a pivotable lever attached to each of said hull means and an interconnecting support extending therebetween;

means for propelling said conveyance over the water, attached to said interconnecting support;

hydrofoil means attached to said interconnecting support;

means for pivoting both of said pivotable levers in unison, whereby said hydrofoil means and said means for propelling may be simultaneously raised and lowered; and

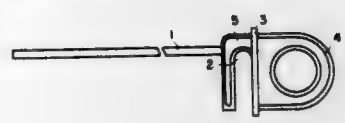
means for adjusting said airfoil pivotable flaps.

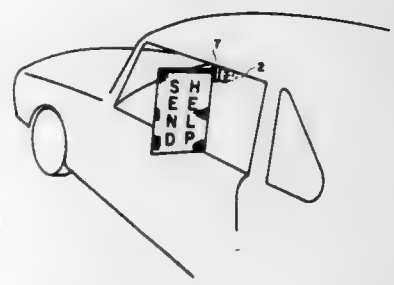
4,348,978

AUTA-HELP

George C. Brucato, 1 S. 102 Lawler, Lombard, Ill. 60148

Filed Jan. 13, 1981, Ser. No. 208,703
Int. Cl.[3] B60Q *1/00*; G09C *17/00*
U.S. Cl. 116—28 R 1 Claim





1. A signal device comprising a flag and a flap pole adapted to be stored inside a cylindrical container, said container adapted to be clipped to a sun visor of a vehicle for ready availability by an occupant of the vehicle;

one edge of said flag being attached to said pole;

said pole having a planar plastic handle on one end thereof, said handle having a grip portion, said grip portion having a circular finger hole therethrough;

said handle having a mounting portion formed therein to

embrace the top edge of a vertically movable window of the vehicle, said handle having an extension rising above said mounting portion to maintain the top edge of the window from a closed position when said device is in a mounted position;

and the periphery of said handle and said finger hole being provided with a flange extending perpendicularly to the planar handle for added strength.

4,348,979

DEVELOPER UNIT FOR DRY TONER ELECTROPHOTOGRAPHIC COPIER

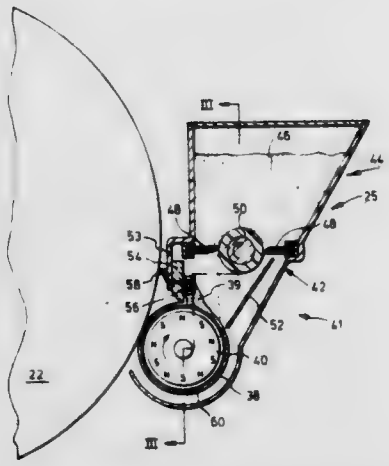
Joseph W. Daintrey, Walthamstow, England, assignor to Gestetner Manufacturing Limited, London, England

Filed Apr. 27, 1981, Ser. No. 258,029

Claims priority, application United Kingdom, May 2, 1980, 8014768

Int. Cl.³ G03G *15/00*

U.S. Cl. 118—688 7 Claims



1. A magnetic brush monocomponent developer unit comprising:

(a) magnetic roller means having an axis and several magnetic poles distributed around its said axis;

(b) cylindrical support means for a rotating layer of toner concentric with said roller;

(c) means applying toner to said cylindrical support means;

(d) doctor blade means positioned adjacent the cylindrical support means, for rendering the rotating layer uniform; said doctor blade means having first and second sides arranged so that in use of the developer unit a rotating layerof toner on said cylindrical support moves towards said first side; and

(e) toner-responsive means comprising (i) coil means mounted on said doctor blade means on said first side thereof so as to be intersected by the moving magnetic field of the said poles of the magnetic roller means when said magnetic roller means is rotating in use of the developer unit, said coil means being positioned such that the strength of the magnetic field induced in the coil means by the fields of the magnetic poles of the magnetic roller means will depend upon the amount of toner held back by the doctor blade means, and (ii) means responsive to the field intersecting said coil means, for controlling supply of toner to said cylindrical support means.

4,348,980

APPARATUS FOR THE BORONIZING OF PIECES MADE OF METAL OR CERMET AND SURFACE-BORNISHED PIECES

Francois H. J. Thevenot, Saint-Etienne; Patrice M. V. Goeuriot, Firminy; Julian H. Driver, Saint-Etienne, and Jean-Paul R. Lebrun, Bougival, all of France, assignors to Association pour la Recherche et le Development des Methodes et Processus Industriels (Armines), Paris, France

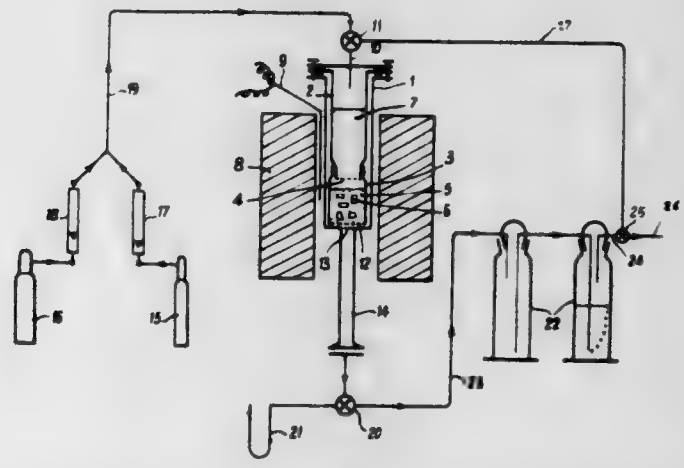
Division of Ser. No. 123,425, Feb. 21, 1980, Pat. No. 4,289,545.

This application May 8, 1981, Ser. No. 261,939

Claims priority, application France, Feb. 27, 1979, 79 04991

Int. Cl.³ C23C *11/00, 11/08*

U.S. Cl. 118—717 4 Claims



1. Apparatus for boriding a workpiece of an alloy of Fe, Ni, Co or a cermet with boron trifluoride comprising a reactor received in an enclosed heating means, the reactor having a closed fluid-tight lower portion and a sealable upper portion extending partially from said heating means said reactor having a perforated workpiece grid near its base for retaining a workpiece to be borided, a container suspended in the upper portion of the reactor and having therein a first perforated holding grid and a second perforated holding grid spaced apart from and below said first perforated holding grid, a cover means hermetically sealing the reactor and the container therein, gas inlet means for introducing boron trifluoride gas extending through said cover and terminating adjacent said first perforated grid, flue means for exhausting gases from said reactor positioned adjacent said grid for holding said workpiece and extending through said cover, the gas inlet and flue means adapted to direct a gas through said cover, over said first perforated grid and said second perforated grid, downwardly over said workpiece grid then out of said reactor.

4,348,981

VERTICAL TYPE VAPOR-PHASE GROWTH APPARATUS

Takatosi Nakanisi, Hachioji; Atsushi Tanaka, and Takashi Udagawa, both of Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Division of Ser. No. 54,949, Jul. 5, 1979, Pat. No. 4,290,385.

This application Jan. 26, 1981, Ser. No. 228,350

Claims priority, application Japan, Jun. 14, 1979, 54-75049

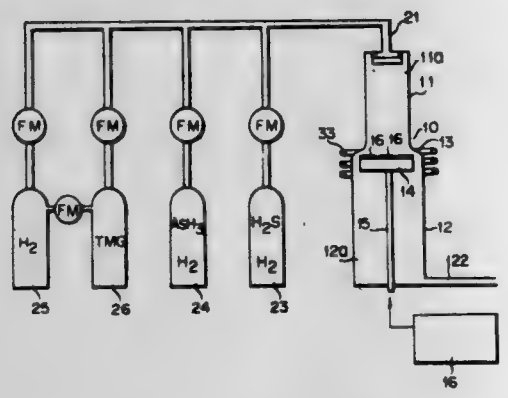
The portion of the term of this patent subsequent to Sep. 22, 1998, has been disclaimed.

Int. Cl.³ C23C *11/00*

U.S. Cl. 118—730 6 Claims

1. A vertical type vapor-phase growth apparatus comprising a vapor-phase growth reactor constituted of an upper section defining an upper chamber having a lateral cross-section of below 200 cm^2, a lower section defining a lower chamber having a lateral cross-sectional area greater than, but smaller than four-times the cross-sectional area of, the upper chamber, and a jointing section connecting together the upper and lower sections; a support disposed within the lower chamber and on

which a sample is placed, said upper chamber, jointing section and lower chamber lacking gas flow restrictions therebetween; and means for conducting a gas for vapor-phase growth into the upper chamber of the reactor, wherein said support is provided within the lower chamber and near the upper chamber such that an area of a gap as defined between the outer peripheral surface of the support and the inner surface of the reactor and taken in the minimal cross-sectional direction of the gap is made equal to, or smaller than, the lateral cross-sec-



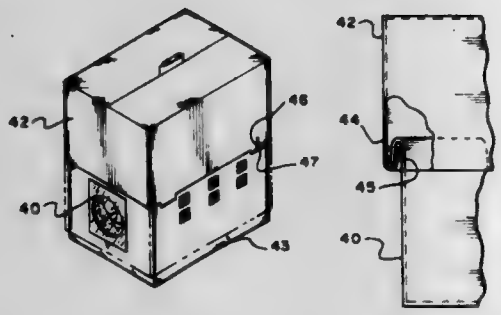
tion of the upper chamber, wherein said means for conducting a gas into the upper chamber of the reactor comprises gas supply means, a gas introducing duct for supplying the gas from said gas supply means into the upper chamber of the reactor, and gas diffusion means for diffusing the gas from said gas introducing duct, wherein the upper and lower chambers of the reactor are provided concentric with the support, and wherein said support has a silicon plate upon which a sample is directly placed.

4,348,982

DISPOSABLE CAT RELIEF CHAMBER

Jonathan W. Selby, P.O. Box 103, Telford, Pa. 18969

Filed May 5, 1980, Ser. No. 146,235
Int. Cl.[3] A01K *29/00*
U.S. Cl. 119—1 5 Claims



1. A totally enclosed cat relief chamber comprising:

a lower box shaped portion including a bottom and upstanding side, front and back walls, the top of said lower portion being open;

an upper box shaped portion including a top and downwardly extending side, front and back walls, the bottom of said upper portion being open, the inner dimensions of said upper portion being slightly greater than the outer dimensions of said bottom portion so that said upper portion can be telescoped over said bottom portion;

said upper portion being movable between a lower position wherein the side, front and back walls of said lower portion are substantially covered by said upper portion and a raised position wherein said side, front and back walls of said lower portion are exposed;

means for preventing said upper portion from moving upward past said raised position;

means for locking said upper portion in said raised position, and

a door located in one of said walls, said door being comprised of a material which will open to allow an animal to pass there through and which will then return to its closed position.

4,348,983

METHOD FOR INDUCING SET IN PLANKTONIC BIVALVES

Kenneth L. Cooper, P.O. Box 940, Arcata, Calif. 95521

Filed Sep. 8, 1981, Ser. No. 299,765
Int. Cl.[3] A01K *61/00*
U.S. Cl. 119—4 5 Claims

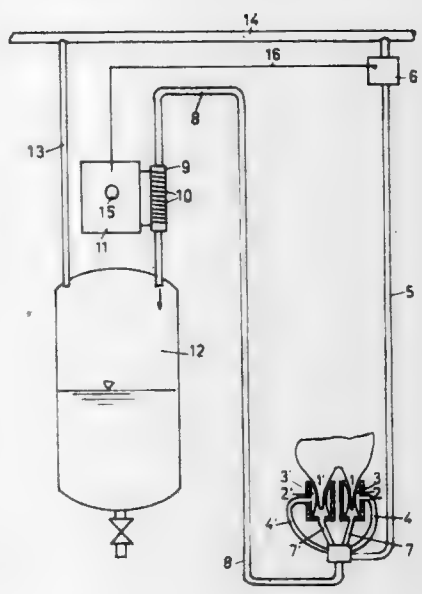
1. A method for inducing planktonic bivalves to set on a substrate in seawater, said method comprising adding a sufficient amount of a 1-substituted-3,4-dihydroxybenzene to said seawater to induce such setting.

4,348,984

CONTROL APPARATUS FOR MILKING MACHINES

Eyal Brayer, Kfar Monash, Israel, assignor to S.C.R. Engineers Ltd., Nathania, Israel

Filed Sep. 4, 1980, Ser. No. 183,988
Int. Cl.[3] A01J *7/00, 5/00*
U.S. Cl. 119—14.08 7 Claims



1. A control apparatus for a milking machine which latter is provided with teat cups operated by an electric pulsator, a milk collecting vessel kept at sub-pressure, a pipeline therebetween through which all of the milk from said teat cups flows to said vessel, comprising in combination

a tube of a non-conductive material inserted into the pipe line connecting said teat cups to said milk collecting vessel, said pipe line and said tube being of sufficiently wide dimensions to carry the milk as pulses of milk flowing in separated portions passing through said line and said tube at the rate of the pulsator pulses,

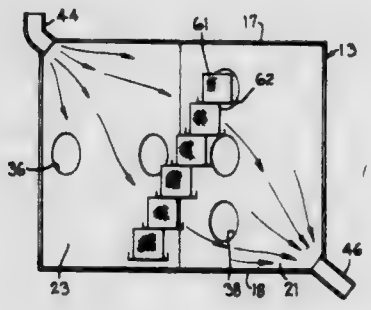
a coil of wire windings surrounding said tube on its outside,

an electronic system including means for applying a high-frequency voltage to said coil, means for detecting the varying amplitude high frequency output signal from said coil indicative of the varying conductivity of the coil interior space due to the milk passing therethrough in pulses, and means for comparing said output signal with a predetermined voltage corresponding to a permissible minimum flow of milk, the system being adapted to interrupt the operation of said electric pulsator, as soon as the output signal reaches the value of said predetermined voltage.

4,348,985
ANIMAL INHALATION EXPOSURE SYSTEM

Basil K. J. Leong, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Oct. 22, 1980, Ser. No. 199,420
Int. Cl.³ A01K *1/03*
U.S. Cl. 119—15 16 Claims



1. An animal inhalation exposure apparatus for exposing test animals to a test atmosphere, comprising:

a substantially rectilinear boxlike exposure chamber having top, bottom, front and back walls and two opposed side walls, said exposure chamber having funnel-like first and second corner portions converging away from each other, said first funnel-like corner portion being defined by meeting of three of said walls, said second funnel-like corner portion being defined by meeting of the other three of said walls;

inlet means communicating with the interior of said chamber substantially at the apex of said first funnel-like corner portion;

a source of said test atmosphere connected to said inlet means;

outlet means communicating with the interior of said chamber substantially at the apex of said second funnel-like corner portion for the removal of said test atmosphere from said chamber, such that said inlet means and outlet means are about on a maximum length diagonal line across said rectilinear boxlike chamber between said apices, said inlet means and outlet means being remote from the central area and central edge portion of said walls; and

means for effecting a flow of the test atmosphere through the interior of said chamber in a uniform and nonturbulent flow substantially along said diagonal line divergently from said first corner portion apex and convergently toward said second corner portion apex;

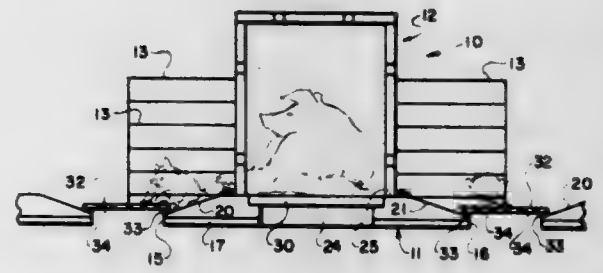
a generally planar array of animal cages several cages high and wide through which the mid portion of said diagonal line passes, said array extending transverse to said diagonal line in the widest portion of said enclosure where said oppositely converging first and second corner portions meet, said array of animal cages having a thickness, as measured along said diagonal line, which is small compared to the width and height of said array and which is small compared to the length of said diagonal line, such that the interior of said chamber along the major length of said diagonal line as measured inward from both ends thereof is free of obstructions to said flow, so as to enhance the uniform and nonturbulent nature of said flow through said interior of said chamber.

4,348,986
FARROWING PENS

James H. Marrs, P.O. Box 508, Fort Mill, S.C. 29715

Filed Mar. 5, 1981, Ser. No. 240,905
Int. Cl.³ A01K *1/02*
U.S. Cl. 119—20 7 Claims

5. A method of protecting newborn piglets which comprises the steps of confining the mother sow at a first elevation, providing heating means at a second elevation beneath said first elevation and spaced laterally from the confined sow to attract the piglets and warm them, and providing sloping means extending between said first elevation and the second

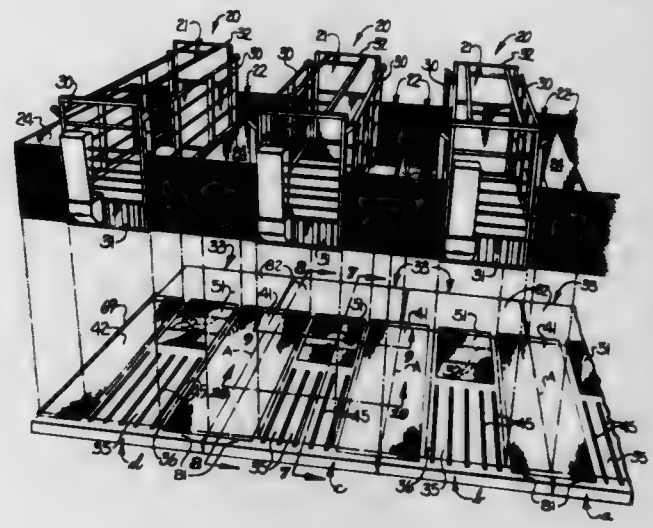


elevation to provide free access for the piglets between the two elevations.

4,348,987
GANG SLAT ANIMAL SHELTER FLOORING WITH FORAMINOUS INSERTS, AND METHOD OF CONSTRUCTING SAME

William T. Herring, P.O. Box 181, Newton Grove, N.C. 28366

Continuation-in-part of Ser. No. 79,484, Sep. 27, 1979, Pat. No. 4,256,057. This application Mar. 13, 1981, Ser. No. 243,510
Int. Cl.³ A01K *1/015, 1/02*
U.S. Cl. 119—20 22 Claims



16. A gang slat for use as a floor section in an animal shelter for newborn pigs and adapted to underlie and support thereon a farrowing crate having an elongate central pen for confining therein a sow and elongate side pens extending along opposite sides of the central pen for confining a litter of pigs in close proximity to the sow, said gang slat being formed of reinforced concrete and being of an overall width about equal to the width of a respective farrowing crate and comprising

an elongate concrete central section adapted to support a sow in the central pen of the respective farrowing crate and having openings therein for the passage of animal waste therethrough,

opposing concrete side sections extending along opposite sides of said central section and having elongate side openings therein adapted to accommodate thereover the opposing side pens of the farrowing crate, and

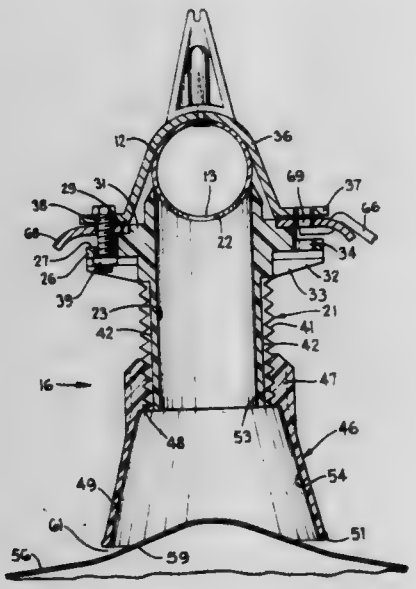
shoulder means at least partially defining the perimeters of the respective elongate side openings and being recessed relative to the upper surface of the gang slat,

said gang slat being adapted to receive foraminous inserts in said side openings with edge portions of the inserts engagingly supported upon said recessed shoulder means of the respective side openings for forming foraminous flooring to support a litter of pigs thereon in the side pens of a respective farrowing crate.

4,348,988
POULTRY FEEDER WITH INFINITE ADJUSTMENT

John D. Lawson, Leesburg, Ind., assignor to Cyclone International, Inc., Holland, Mich.

Filed Jan. 5, 1981, Ser. No. 222,237
Int. Cl.[3] A01K *39/01*; B67D *3/00*
U.S. Cl. 119—53 14 Claims



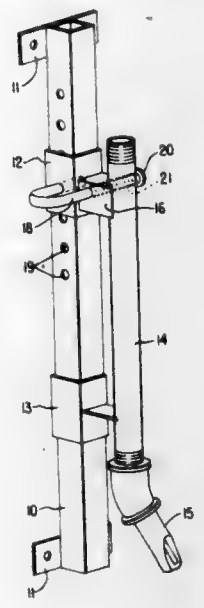
1. In a poultry feeding apparatus for mounting on a conveyor tube of a poultry feeding system, said feeding apparatus including a tubular feed-drop member adapted to be secured to and depend downwardly from the conveyor tube for discharging feed downwardly therethrough, a feed pan positioned below and spaced downwardly from the lower end of the feed-drop member for receiving feed therein, and a hollow feed-flow control member adjustably mounted on the feed-drop member in telescopic relationship therewith and projecting downwardly therefrom so that the lower end of the hollow control member is adjustably positionable above the bottom wall of the pan for controlling the flow of feed into the pan, the improvement wherein the feed-drop and control members have cooperating opposed threads disposed in meshing engagement for selectively adjusting the elevation of the control member in response to rotation thereof so as to vary the feed-discharge gap between the lower end of the control member and the bottom wall of the pan, the cooperating threads on the feed-drop and control members creating an interference fit therebetween for securely stationarily holding the control member in its selected adjusted position while permitting selected manual rotation of the control member for adjusting its elevation and hence adjusting said feed-discharge gap, the control member being stationarily maintained in its selected adjusted position solely due to the interference fit created between the threads so that no additional locking or detent structures or devices are required.

4,348,989
ADJUSTABLE WATERER

Darrell D. Vik, 203 N. 8th St., Beresford, S. Dak. 57004

Filed Feb. 25, 1980, Ser. No. 124,453
Int. Cl.[3] A01K *7/06*
U.S. Cl. 119—72 2 Claims

1. An animal watering device comprising:
a. a wall-mounted stanchion formed with a plurality of holes,
b. brackets slidably mounted on said stanchion, at least one of said brackets formed to provide a hole,
c. holding means engageable between said one bracket and said stanchion including a "U" shaped pin slidable through said hole in said bracket and into any one of said holes in said stanchion,
d. spring means engaged between said pin and said bracket to bias said pin to the position in which it extends into the hole in the stanchion,
e. water transmitting pipe means vertically mounted on said brackets, and

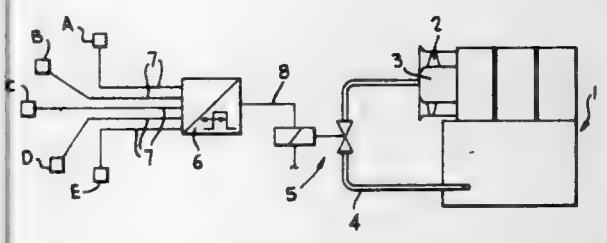


f. a nipple on said pipe means whereby said nipple may be adjusted vertically relative to said stanchion.

4,348,990
APPARATUS FOR REGULATING THE ROTATION OF A HYDRAULICALLY-OPERATED COOLING FAN

Albert Nolte, Cologne; Herbert Schleiermacher, Brühl, and Erich Arbeiter, Plochingen, all of Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz Aktiengesellschaft, Cologne, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 190,654, Sep. 25, 1980. This application Nov. 28, 1980, Ser. No. 211,451
Int. Cl.[3] F01D *1/00*
U.S. Cl. 123—41.12 5 Claims



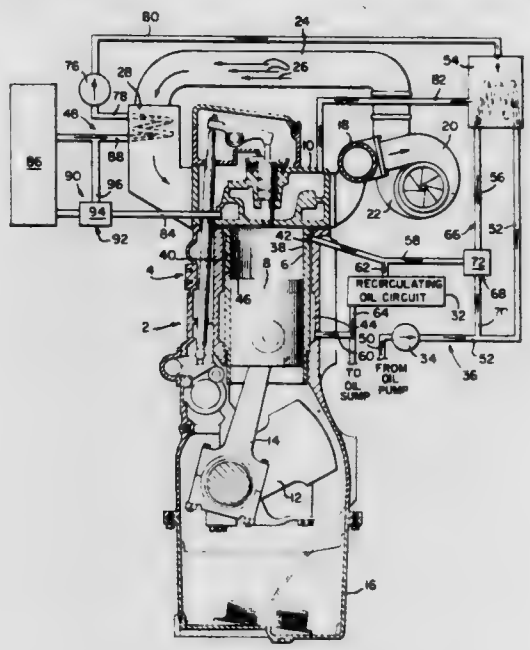
1. In an air-cooled internal combustion engine which includes a hydraulically-operated cooling fan and a hydraulic line circulating fluid to said hydraulically-operated cooling fan to operate said cooling fan, the improvement wherein a regulation apparatus is utilized to control the flow of fluid through said hydraulic line, said regulation apparatus including
an electromagnetic valve connected to said hydraulic line to control the flow of fluid therethrough,
a control unit electrically connected to said electromagnetic valve so as to send an electrical control signal thereto which has a voltage which oscillates from a maximum value to a minimum value, and said control unit being capable of controlling the characteristics of said electrical control signal such that the ratio of time periods during which the voltage thereof is at its maximum value and at its minimum value is changeable,
a multiplicity of sensor elements electrically connected to said control unit, said sensor elements being positioned to detect various operational parameters which affect the operation of said engine, the electrical signals from said sensor elements being sent to said control unit to enable said control unit to control the electromagnetic valve to operate such that the amount of fluid passing therethrough will be continuously controlled, the speed of rotation of said cooling fan thus always being maintained at the optimum rate for cooling the engine.

4,348,991

DUAL COOLANT ENGINE COOLING SYSTEM

John H. Stang; David A. Ruthmansdorfer, and Dean H. Reichenbach, all of Columbus, Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.

Filed Oct. 16, 1980, Ser. No. 197,518
Int. Cl.³ F01P 7/14; F02B 29/04
U.S. Cl. 123—41.29 12 Claims



12. A temperature control apparatus for an air breathing internal combustion engine having a cylinder block, a compressor for pressurizing engine intake air, and an aftercooler for modifying the temperature of the pressurized intake air as it passes into the engine, said temperature control apparatus comprising:

(a) first fluid circuit means for passing first coolant in heat exchange relationship with one or more engine cylinders to provide the primary coolant for the engine cylinders, said first circuit means including first control means for maintaining the temperature of the first coolant at a first level which is relatively constant for substantially all engine operating conditions; and

(b) second fluid circuit means for passing secondary coolant distinct from the first coolant through the aftercooler in heat exchange relationship with the pressurized intake air, said second circuit means including second control means responsive to a control signal for controlling the temperature of the pressurized intake air supplied to the engine by modulating the temperature of the secondary coolant supplied to the aftercooler in proportion to engine output torque, said second control means including signal generating means for producing said control signal in response to an operating condition of the engine indicative of engine output torque to cause the intake air to be cooled by the aftercooler to its lowest temperature at maximum engine output torque and to be heated by the aftercooler to its highest temperature at minimum engine output torque.

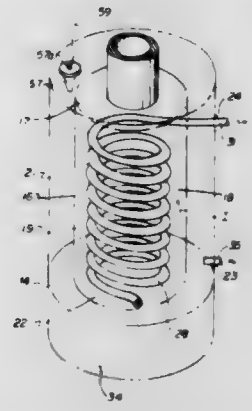
4,348,992

ENGINE BLOCK HEATER

Edward S. Southard, 1101 W. Pine St., Lodi, Calif. 95240

Filed Jan. 9, 1980, Ser. No. 110,692
Int. Cl.³ F02M 17/02
U.S. Cl. 123—142.5 R 10 Claims

1. A heater for the coolant in a liquid-cooled internal combustion engine having a block comprising, in combination, an outer casing having a top wall, a bottom wall and a side wall, an inner casing having a top wall, and a side wall defining an interior disposed within said outer casing and provided with an open bottom end, said inner and outer casing defining an annular chamber therebetween, a fluid inlet and a fluid outlet in said outer casing side wall, means connected to said fluid inlet for communicating said annular chamber with the coolant in said engine block, a fluid conduit disposed within said inner casing interior, said fluid conduit having oppositely disposed ends, one of said fluid conduit ends communicating through said inner casing side wall with said annular chamber and the other of said fluid conduit ends communicating directly through said fluid outlet with the coolant in said engine block, whereby



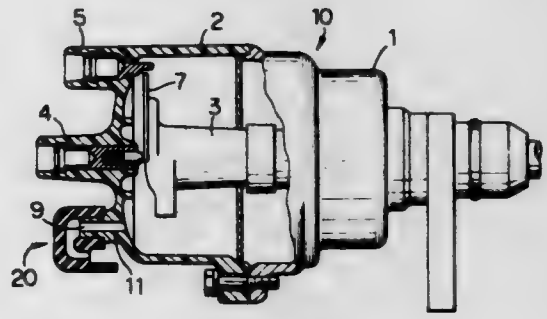
cooling fluid fills said block, said annular chamber and said fluid conduit, heating means disposed adjacent said inner casing open bottom end and means for controlling said heating means for heating the fluid within said fluid conduit whereby heated fluid is circulated from said annular chamber throughout said fluid conduit, to said block and back to said annular chamber.

4,348,993

WATER PROTECTING CAP FOR VENTILATION OPENING OF DISTRIBUTOR

Kazunori Ueno; Masahiro Isobe, both of Toyota, and Setsuo Hoshi, Hino, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Jun. 4, 1980, Ser. No. 156,487
Claims priority, application Japan, Jun. 27, 1979, 54-87863[U]
Int. Cl.³ H05B 1/00; H01H 19/00
U.S. Cl. 123—146.5 A 10 Claims



1. In a distributor for an internal combustion engine comprising a casing formed with a ventilation tower formed with a ventilation opening, a water protecting cap for said ventilation opening to prevent entry of water into said casing through said ventilation opening, said cap comprising a crown portion adapted to be fitted onto said ventilation tower to thereby mount said cap on said ventilation tower, the improvement comprising a ventilation passage formed in said cap having an opening communicating with said ventilation opening at said crown portion at one end of said passage and another air entrance opening at the opposite end of said passage, said cap ventilation passage being formed with at least one substantially right angle turn along its length said cap comprising a tongue portion located in spaced relation to said air entrance opening of said passage, said tongue portion and a juxtapositioned portion of said cap defining a space sheltered from water entry into said space, said air entrance opening being located at substantially the innermost portion of said sheltered space, and said tongue being substantially horizontally disposed below

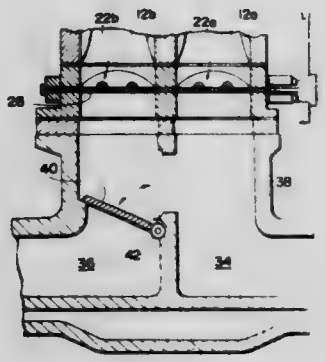
said air entrance opening, whereby water splashed upwardly by a vehicle in which said distributor is mounted is deflected away from said sheltered space by said tongue.

4,348,994

INTERNAL COMBUSTION ENGINE

Toshiaki Tanaka, and Yukihiro Etoh, both of Kanagawa, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jun. 20, 1980, Ser. No. 161,370
Claims priority, application Japan, Jun. 22, 1979, 54-78696
Int. Cl.³ F02D *17/02*
U.S. Cl. 123—198 F 5 Claims



1. An internal combustion engine comprising:
(a) first and second cylinder units each including at least one cylinder;
(b) a carburetor with first and second induction passages each having therein a throttle valve rotatable in phase with the other;
(c) an intake manifold having an inlet passage and first and second intake passages respectively leading to said first and second cylinder units, said inlet passage being divided, by a partition, into first and second inlet passages respectively connected at their upstream ends to said first and second induction passages and respectively connected at their downstream ends to said first and second intake passages, said partition being formed with a through-hole communicating with said first and second inlet passages;
(d) a swing valve normally placed in a first position closing said through-hole to interrupt communication between said first and second inlet passages, said swing valve being rotatable to a second position opening said through-hole to provide communication between said first and second inlet passages and interrupting communication between said second inlet passage and said second intake passage; and
(e) means responsive to low engine load conditions for disabling said second cylinder unit and rotating said swing valve to said second position.

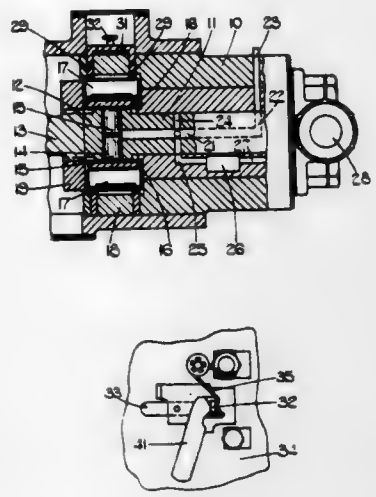
4,348,995

FUEL PUMPING APPARATUS

John R. Jefferson, Rainham, and Alexander G. M. Brown, Maidstone, both of England, assignors to Lucas Industries Limited, Birmingham, England

Filed Oct. 17, 1980, Ser. No. 197,907
Claims priority, application United Kingdom, Nov. 3, 1979, 7938149
Int. Cl.³ F02D *31/00*
U.S. Cl. 123—366 5 Claims

1. A fuel injection pumping apparatus for supplying fuel to an internal combustion engine and of the kind comprising an injection pump operable in use in timed relationship with the associated engine, means for controlling the quantity of fuel delivered by the pump, a two speed governor for determining the setting of said means, said governor including an operator adjustable control which is movable between an engine idling position and a maximum speed position, the governor acting to control the idling speed and the maximum speed of the associated engine, the intermediate speed being determined by the setting of the control, and stop means for determining the maximum amount of fuel which can be supplied by the pump, said stop means being temporarily adjustable to enable an extra or excess amount of fuel to be delivered to the engine for starting purposes, characterised by linkage means connecting said operator adjustable control to said stop means whereby



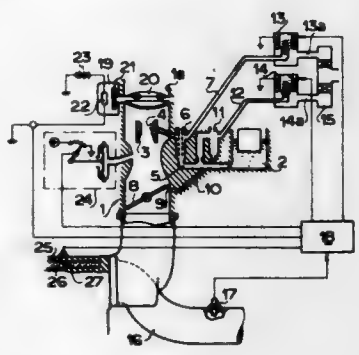
said stop means is moved to a first position in which an excess of fuel can be delivered when the operator adjustable control is moved to the aforementioned idling position, and is moved away from said first position to a second position in which only the normal maximum amount of fuel can be delivered, as the operator adjustable control is moved away from the engine idling position.

4,348,996

SYSTEM FOR CONTROLLING AIR-FUEL RATIO

Takuro Morozumi, Fuchu, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo and Nissan Motor Co., Ltd., Kanagawa, both of, Japan

Filed Aug. 1, 1980, Ser. No. 174,376
Claims priority, application Japan, Aug. 2, 1979, 54-98923
Int. Cl.³ G06G *7/70*; F02M *7/00, 1/12*; F02B *3/00*
U.S. Cl. 123—440 6 Claims



1. In a system for controlling air-fuel ratio for an internal combustion engine having an intake passage thereto and a throttle valve disposed in the latter, an exhaust passage therefrom, an automatic choke device including a choke valve in the intake passage, a positive temperature coefficient (PTC) heater, and a bimetal element operatively connected to said choke valve, detecting means for detecting the concentration of a constituent of gases passing through said exhaust passage, air-fuel mixture supply means for supplying an air-fuel mixture to the intake passage, an electronic control circuit, and electromagnetic valve means actuated by an output signal from said electronic control circuit for correcting the air-fuel ratio of the air-fuel mixture supplied by said air-fuel mixture supply means, the improvement comprising

a venturi provided in said intake passage upstream of the throttle valve,

a vacuum sensor means for detecting actual flow rate of induced air in said venturi and for providing an electric quantity output signal corresponding to the actual flow rate of induced air in the intake passage,

engine temperature detecting means for providing an electric quantity output signal corresponding to the temperature of the engine,

means for producing an output signal dependent on the current passing through said PTC heater,

calculating means for calculating the output signals from said engine temperature detecting means, said vacuum sensor means and said calculating means for producing a correcting signal and for operatively applying said correcting signal to the electromagnetic valve means to correct the air-fuel ratio to a proper air-fuel ratio.

4,348,997

FUEL INJECTION TYPE CARBURETOR

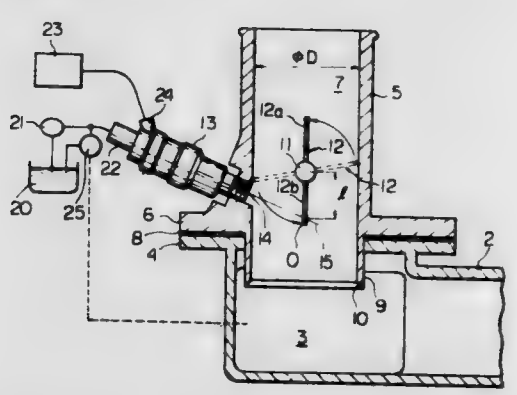
Keiso Takeda; Shozo Inouye, and Toshimi Kashiwakura, all of Susono, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Jul. 31, 1980, Ser. No. 174,142

Claims priority, application Japan, Aug. 1, 1979, 54-97211

Int. Cl.³ F02M *61/14*

U.S. Cl. 123—445 **3 Claims**



1. A fuel injection type carburetor of a multicylinder internal combustion engine comprising:

an intake manifold comprising a plurality of horizontal intake passages;

a throttle body connected to a converging portion of said intake manifold;

a throttle valve having a pivot axis installed within said throttle body; and

a fuel injector having a nozzle for injecting fuel in a direction defined by a center axis of said nozzle arranged downstream from the pivot axis of said throttle valve in a manner such that injected fuel can impinge against at least a part of said throttle valve,

in which an opening direction of a valve portion of said throttle valve which can be intersected by said center axis and against which portion the injected fuel impinges is substantially the same as the direction of the fuel injection from said fuel injector, and in which said fuel injector is disposed so that the direction of its nozzle is substantially the same as the direction of air flow through said horizontal intake passages of said intake manifold.

4,348,998

FUEL INJECTION PUMP

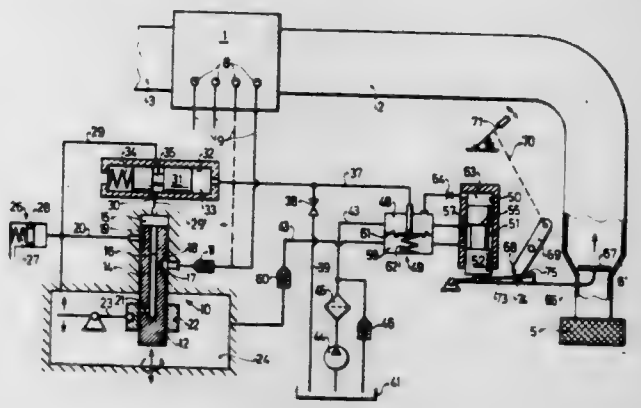
Gerhard Stumpp, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jan. 27, 1978, Ser. No. 872,862

Claims priority, application Fed. Rep. of Germany, Jan. 29, 1977, 2703685

Int. Cl.³ F02M *59/34*

U.S. Cl. 123—447 **17 Claims**



1. A fuel injection pump for an internal combustion engine which comprises:

a fuel sump;

a pump cylinder;

a steplessly variable throttle means connecting said pump cylinder to said fuel sump, for controlling the flow of fuel from said pump cylinder to said fuel sump;

pump intake means for admitting fuel into said pump cylinder from said fuel sump;

pump outlet means for admitting fuel into said internal combustion engine from said pump cylinder;

a piston movably disposed in said pump cylinder for drawing fuel from said sump into said cylinder through said pump intake means and for expelling the fuel from said cylinder under pressure through said pump outlet means and said variable throttle means, wherein said variable throttle means connects said pump cylinder to said fuel sump in a manner that cannot be disturbed by operation of said piston; and

a relief valve for pressure-relieving said cylinder at a variable point of the stroke of said piston, said relief valve determining the length of the piston stroke during which fuel may be supplied to the engine, and thereby determining a maximum fuel quantity supplied to the engine when said variable throttle means is completely closed; and

adjustment means connected to said variable throttle means for continuous, uninterrupted adjustment of said variable throttle means during operation of the engine, said adjustment means determining the fuel quantity supplied to the engine independently of the relief valve, up to said maximum fuel quantity.

4,348,999

APPARATUS FOR MIXTURE FORMATION FOR INTERNAL COMBUSTION ENGINES, IN PARTICULAR MIXTURE-COMPRESSING ENGINES HAVING EXTERNALLY SUPPLIED IGNITION

Siegfried Holzbaur, Stuttgart; Horst Barth, Asperg, and Josef Osmera, Schwieberdingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 12, 1980, Ser. No. 177,339

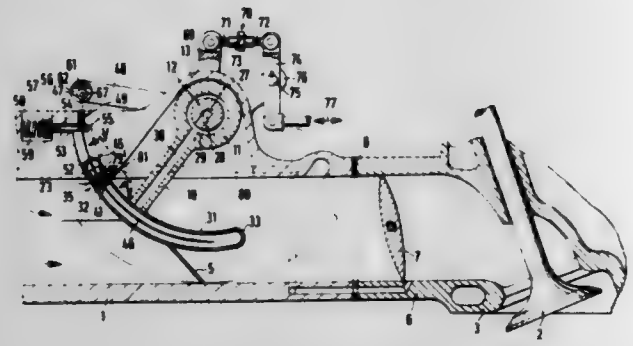
Claims priority, application Fed. Rep. of Germany, Aug. 24, 1979, 2934216

Int. Cl.³ F02M *39/00*

U.S. Cl. 123—452 **19 Claims**

1. In an apparatus for mixture formation for internal combustion engines, including at least one air intake tube, a fuel metering valve and an air flow rate meter having at least one control

body which includes front and rear end portions and which is arranged to block an intake tube cross section in its outset position and to deflect counter to a restoring force in accordance with the air flow to the cylinders of the engine, thereby opening said intake tube cross section to a greater or lesser extent, said control body deflection arranged to directly control said fuel metering valve, the improvement wherein:



said fuel metering valve is disposed on said front end portion of said control body whereby the position of said fuel metering valve in the intake tube cross section varies in accordance with the position of said control body; and

said apparatus further comprises fuel ejection means, which is disposed on the control body adjacent to, and directly downstream of said fuel metering valve for ejecting fuel metered by said fuel metering valve.

4,349,000

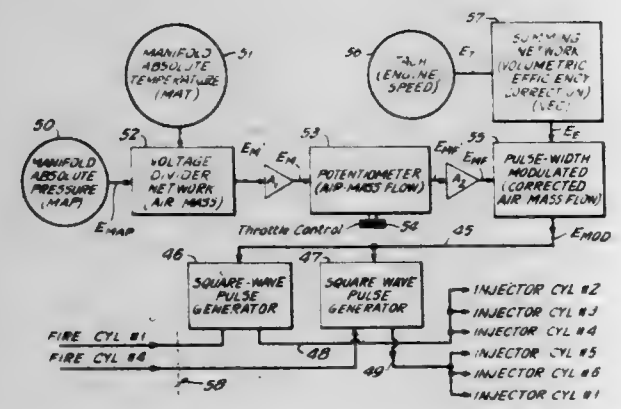
CONTROL MEANS FOR FUEL INJECTION IN AN INTERNAL COMBUSTION ENGINE

Richard E. Staerzl, Fond du Lac, Wis., assignor to Brunswick Corporation, Skokie, Ill.

Continuation-in-part of Ser. No. 120,467, Feb. 11, 1980. This application May 20, 1980, Ser. No. 151,623

Int. Cl.³ F02B *3/00*

U.S. Cl. 123—491 **8 Claims**



1. Electronic pulse-generating means for timing the solenoid-excitation of a fuel-injection solenoid valve in an internal-combustion engine, said pulse-generating means including an input connection for pulse-initiating response to a predetermined angle event in a cycle of the engine, said pulse-generating means including a pulse-width modulating means and control circuit means having a control-signal connection to said modulating means for varying the pulse width generated by said pulse-generating means in accordance with a continuously evaluated plurality of electrically sensed parameters; said parameters specifically including inlet-air absolute temperature, inlet-air absolute pressure, throttle setting, and engine speed, and said parameters being normally evaluated for a predetermined fuel-air relation for normal running of the engine; said control-circuit means including a leaky storage device having a charging connection responsive only to engine-starting and in transient fuel-enriching relation with said pulse-generating means for transiently increasing pulse-width output of said pulse-generating means only upon engine-starting, said storage device including means for charging the same in inverse relation to sensed inlet-air absolute temperature the degree of fuel-enrichment decreasing to zero with charge leakage from said storage device at a rate dependent upon said sensed inlet-air absolute temperature, said decreasing rate being independent of engine starting versus engine running conditions, whereby upon cranking to start engine, the storage device is charged to an extent appropriate for the fuel-enriched starting requirement at the sensed inlet-air temperature, and, once started, the engine runs at progressively reducing enrichment until normal lean-mixture running condition is achieved upon full discharge of said storage device.

4,349,001

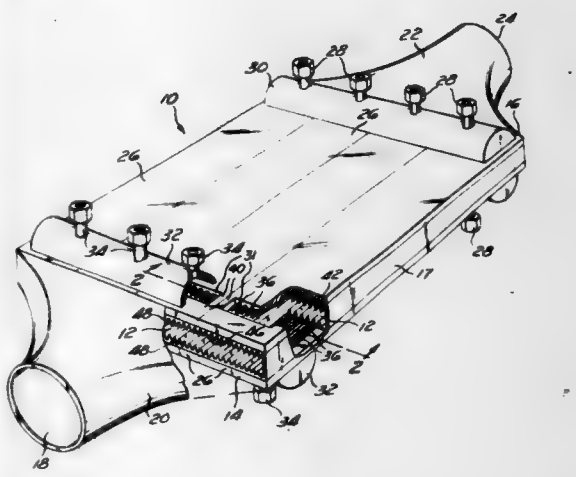
COMPACT DIESEL FUEL PREHEATER ELEMENT

William R. Wagner, Los Angeles, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed May 5, 1980, Ser. No. 144,820

Int. Cl.³ F02M *31/02*

U.S. Cl. 123—557 **6 Claims**



1. A diesel engine wherein the improvement comprises a single pass diesel fuel preheater interposed between the fuel pump and combustion chamber for heating diesel fuel prior to its being introduced into the combustion chamber, and wherein said diesel fuel preheater comprises:

a hot fluid chamber having first and second open ends and closed perimeter;

a hot fluid inlet manifold having an inlet port and means for connecting said inlet manifold to said first open end of said hot fluid chamber;

a hot fluid outlet manifold having an outlet port and means for connecting said hot fluid outlet port to said second open end of said hot fluid chamber;

a heat exchanger plate having:

one panel for each cylinder of said diesel engine and wherein each panel comprises at least x number of channels and $x-1$ number of lands where x is an integer $\geqq 1$, and a fuel panel inlet and outlet port located at opposite ends of and passing transversely through said panel;

a fuel inlet manifold having at least one fuel inlet and means for connecting said fuel inlet manifold to each fuel panel inlet port; and

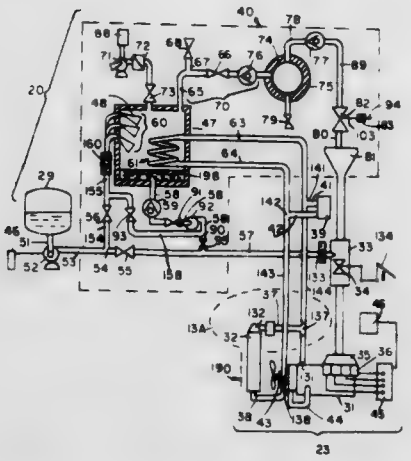
a fuel outlet manifold having at least one fuel outlet and means for connecting said fuel outlet manifold to each fuel panel outlet port.

4,349,002

INTERNAL COMBUSTION ENGINE FUEL TREATMENT APPARATUSES AND PROCESS

Wesley H. Allen, Rte. 5, Box 84, Amarillo, Tex. 79118

Filed Jan. 21, 1981, Ser. No. 226,934
Int. Cl.[3] F02M *31/00*
U.S. Cl. 123—557 11 Claims



1. In a vehicle comprising a liquid cooled gasoline fuel internal combustion engine with a cooling system and fuel system, and a frame, said engine and a passenger compartment mounted on said frame, and a radiator operatively attached to an engine block of said engine by coolant conduits connected to and extending between said radiator and said engine block, the improvement which comprises a fuel treatment apparatus incorporated into the cooling system and fuel system of said internal combustion engine, said fuel system comprising a fuel tank, a fuel pump and a carburetor, said fuel tank connected to said fuel pump, said fuel pump connected by a first conduit to said carburetor, said carburetor connected to said engine block;

said fuel treatment apparatus comprising, in operative combination, an evaporator chamber, four conduits and four valves,

said evaporator chamber comprising rigid chamber walls and an evaporator chamber therein, a plurality of spray heads and coolant conduit coils within said evaporator chamber, said spray heads connected to a second, spray head, conduit line, said second spray head conduit line connected to a first conduit at a first conduit connection connected to said first conduit, a first valve in said second conduit between said first conduit connection and said evaporator chamber, a filter between said first valve and said evaporator chamber,

a third, liquid discharge, conduit connected to the bottom of said evaporator chamber and a fourth, vapor discharge, conduit connected to said evaporate chamber near to the top of said chamber,

said third, liquid discharge, conduit connected to the inlet of a second pump, said second pump operatively connected to said engine block, a discharge conduit of said second pump connected at a second conduit connection attached to said first conduit through a second valve and to said second, spray head, conduit at a third conduit connection located between said first valve and said filter,

a third valve in said first conduit, said third valve located between said first conduit connection and said second conduit connection,

a fourth valve in said fourth conduit, said fourth, vapor discharge, conduit connected to an intake of said carburetor, said fourth valve located between said carburetor and said evaporator chamber,

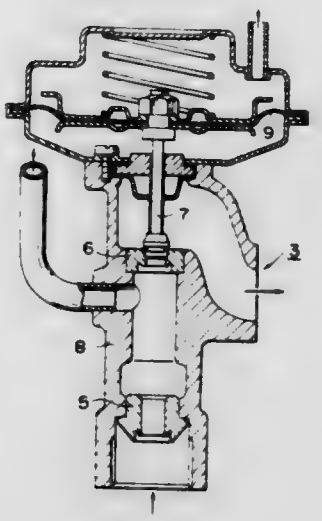
liquid conduits for coolant connected to and extending between said engine block and said coolant conduit coils in said evaporator chamber and also connected to and extending between said engine block and said radiator, and control means for each of said valves in said passeger compartment.

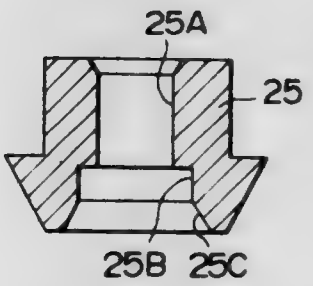
4,349,003

EXHAUST GAS RECIRCULATION CONTROL VALVE

Yoshihiko Masuda, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Jun. 17, 1980, Ser. No. 160,324
Claims priority, application Japan, Jun. 29, 1979, 54-89923[U]
Int. Cl.[3] F02M *25/06*
U.S. Cl. 123—568 3 Claims





1. An exhaust gas recirculation control valve provided in a passageway through which an exhaust gas of an engine is recirculated into an intake air-fuel mixture, said exhaust gas recirculation control valve comprising:

a valve orifice member with a through hole defining a pass; and

a valve body to open or close said pass;

said pass comprising in the following order from downstream to upstream:

a tapered seat tapering toward upstream for receiving said valve body to contact sealingly with said valve body;

a cylindrical minimum diameter portion with a same diameter of an upstream end of said tapered seat;

a stepped portion perpendicular to the minimum diameter portion facing upstream for collecting deposits;

a cylindrical pass with a diameter greater than the diameter of said cylindrical minimum diameter portion; and

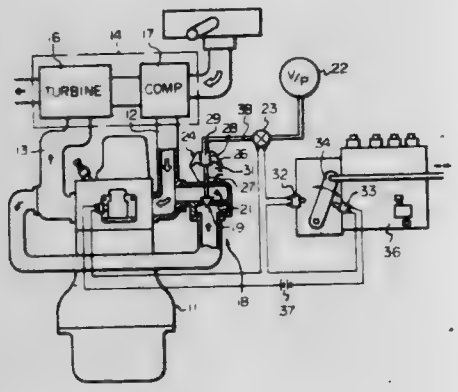
a frusto-conical pass tapering toward downstream, the downstream end of said frusto-conical pass having a same diameter as said cylindrical pass,

whereby deposits from said exhaust gas are concentratingly attached to the stepped portion so that the deposits on the inner surface of said cylindrical minimum diameter portion, on said stepped portion, on the inner surface of said cylindrical pass and on the inner surface of the frusto-conical pass define a pass with a gradually increasing inner diameter in an upstream direction.

4,349,004
EXHAUST GAS RECIRCULATION APPARATUS FOR DIESEL ENGINE

Hiroshi Matsuda, Sakado, Japan, assignor to Nissan Diesel Kogyo Kabushiki Kaisha, Ageo, Japan

Filed Oct. 22, 1980, Ser. No. 199,413
Int. Cl.[3] F02M 25/06
U.S. Cl. 123—569 1 Claim



1. An exhaust gas recirculation apparatus for an engine having an intake manifold and an exhaust manifold, characterized by comprising:

a first exhaust gas recirculation passageway connected between the intake manifold and the exhaust manifold for constant exhaust gas recirculation;

a second exhaust gas recirculation passageway connected between the intake manifold and the exhaust manifold;

valve means disposed in the second exhaust gas recirculation passageway;

sensor means for sensing an idling condition and a heavy load condition of the engine; and

control means responsive to the sensor means for closing the valve means when the sensor means senses one of the idling condition and the heavy load condition and opening the valve means when the sensor means does not sense either the idling condition or the heavy load condition;

the valve means comprising a vacuum operated valve, the first exhaust gas recirculation passageway being constituted by an orifice formed through the valve;

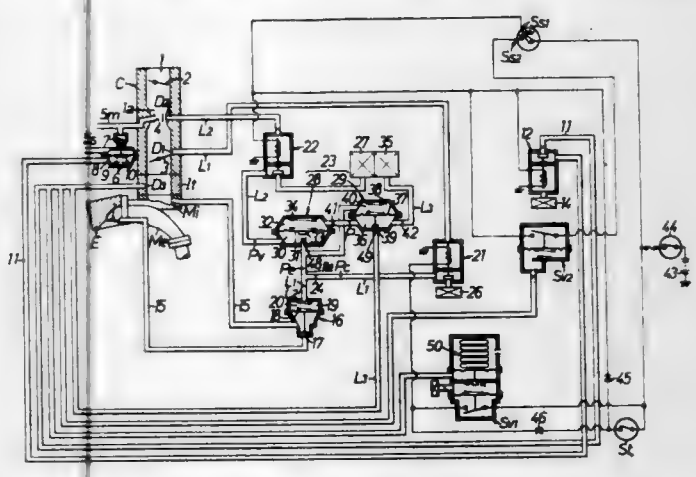
the engine comprising a fuel control member, the sensor means comprising switch means actuated by the fuel control member, the valve being entirely controlled by electrical signals from the switch means.

4,349,005
SUCTION MIXTURE CONTROL SYSTEM FOR VEHICLE ENGINES

Osamu Gotoh, Kurume; Yutaka Otobe, Niiza; Michio Kawamoto, Tokyo, and Akira Fujimura, Niiza, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 26, 1981, Ser. No. 228,222
Claims priority, application Japan, Feb. 2, 1980, 55-11761
Int. Cl.[3] F02M 25/06
U.S. Cl. 123—571 7 Claims

1. A mixture control system for an internal combustion engine for a vehicle, the engine having an intake passage with a pressure responsive auxiliary fuel supply means, and having an exhaust gas recirculation passage, the improvement comprising, in combination: a flow regulating valve in the exhaust gas recirculation passage, said regulating valve being responsive to suction pressure in the engine intake passage, a first control valve for limiting suction pressure applied from said intake passage to said regulating valve, a second control valve for operating the pressure responsive auxiliary fuel supply means, first and second vehicle speed sensors connected to said first and second control valves, respectively, the first vehicle speed sensor being responsive to a relatively high vehicle speed, the second vehicle speed sensor being responsive to a relatively low vehicle speed, whereby said regulating valve and said auxiliary fuel supply means are controlled in a manner such that the flow rate of exhaust gas being recirculated and

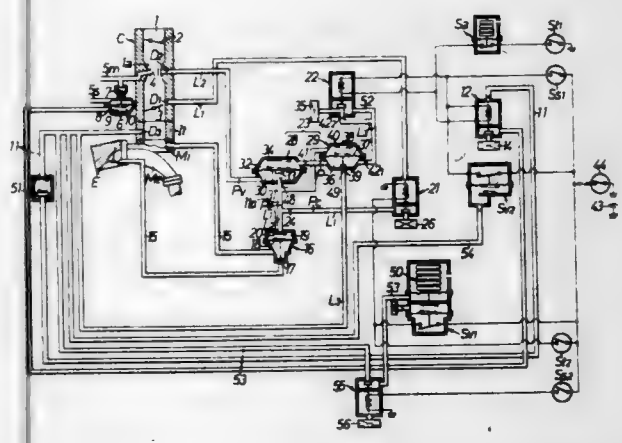


the quantity of auxiliary fuel being supplied to the engine are increased in a lower vehicle speed range, and decreased in a higher vehicle speed range.

4,349,006
SUCTION MIXTURE CONTROL SYSTEM FOR VEHICLE ENGINES

Osamu Gotoh, Kurume; Yutaka Otobe, Niiza; Michio Kawamoto, Tokyo, and Akira Fujimura, Niiza, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 26, 1981, Ser. No. 228,223
Claims priority, application Japan, Feb. 2, 1980, 55-11762
Int. Cl.[3] F02M 25/06
U.S. Cl. 123—571 5 Claims



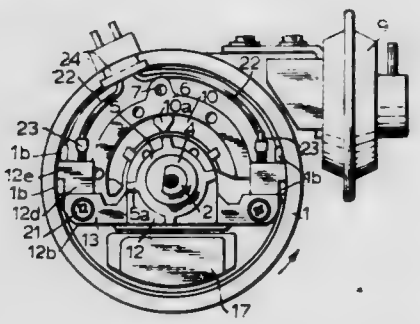
1. A suction mixture control system for an internal combustion engine for a vehicle, the engine having an intake passage with a pressure responsive auxiliary fuel supply means, and having an exhaust gas recirculation passage, the improvement comprising, in combination: a flow regulating valve in the exhaust gas recirculation passage, said regulating valve being responsive to suction pressure in the engine intake passage, a first control valve for limiting suction pressure applied from said intake passage to said regulating valve, a second control valve for operating the pressure responsive auxiliary fuel supply means, vehicle speed and engine operation sensors connected to said control valves, a switch operated by an atmospheric pressure sensor and operatively connected to said control valves, whereby said regulating valve and said auxiliary fuel supply means are controlled in a manner such that the flow rate of exhaust gas being recirculated and the quantity of auxiliary fuel being supplied to the engine are decreased when the atmospheric pressure is below a predetermined magnitude.

4,349,007

INTERNAL COMBUSTION ENGINE IGNITION DEVICE

Masayoshi Onishi; Shinichi Nobuto; Takashi Kawakami, and Shigemi Yamamoto, all of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 90,310, Nov. 1, 1979, abandoned. This application Jun. 2, 1981, Ser. No. 269,660
Claims priority, application Japan, Jun. 29, 1979, 54/83671
Int. Cl.³ F02P 1/00
U.S. Cl. 123—617 2 Claims



1. An ignition device for an internal combustion engine comprising:

a housing of a heat dissipating material;

a magnetically permeable rotary shaft journalled in said housing;

a magnetically permeable signal rotor mounted on said rotary shaft and having a plurality of protrusions thereon corresponding to the number of cylinders in the engine;

a magnetically permeable stator mounted on said housing and having a cross-sectional shape of part of an annulus and extending circumferentially around a part of said plurality of protrusions, the number of said protuberances being at least one less than the number of said protrusions, a signal unit around said shaft and including a signal coil extending around said shaft, said stator extending axially of said shaft along the radially outer portion of said signal coil and then radially inwardly toward said shaft and including a magnet means therein, said stator and magnet means and said shaft and said signal rotor forming a flux path around said coil, the cross-sectional shape of said housing being that of a full circle corresponding to the peripheral shape of said stator and being only slightly larger than the peripheral shape of said stator, the portion of said interior of said housing not occupied by said stator having a cross-section substantially segment-shaped and constituting an ignition unit receiving space; and

a substantially segment-shaped ignition unit fixed within said housing in said ignition unit receiving space and connected to said signal unit for applying ignition voltages in response to said ignition signals.

4,349,008

APPARATUS FOR PRODUCING SPARK IGNITION OF AN INTERNAL COMBUSTION ENGINE

Basil E. Wainwright, 80 Greenaleigh Rd., Yardley Wood, Birmingham B14 4JE, England

Filed Nov. 9, 1979, Ser. No. 93,135
Int. Cl.³ F02P 1/00
U.S. Cl. 123—620 21 Claims

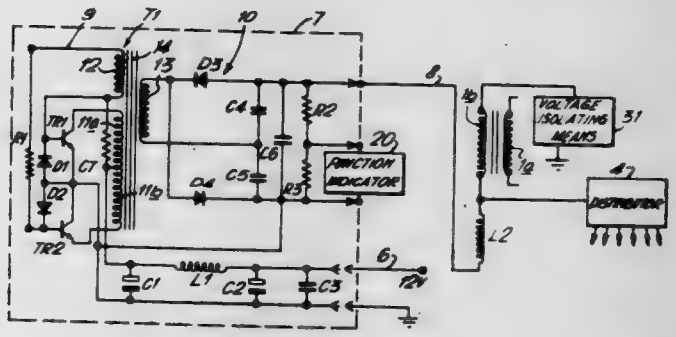
1. Apparatus for producing spark ignition of an internal combustion engine wherein combustion is effected by means of a spark plug in a combustion chamber of the engine, comprising:

(a) spark pulse generating means for applying repetitively to the spark plug an electrical pulse capable of initiating a spark across the spark plug; and

(b) d.c. to d.c. converter means for producing a continuous constant output voltage for application to the spark plug to sustain the spark, said converter means comprising:

(1) a step up transformer having primary, secondary and feedback windings, and a saturable core;

(2) oscillator means including a pair of semiconductor switching means coupled to said primary winding and to said feedback winding and operable to produce an oscillatory current flow in said primary winding, thereby to induce an oscillatory stepped up voltage in said secondary winding, said oscillator means including a resistor (R1) connecting one end of said feeback winding with the base electrode of one of said semiconductor switching means, the other end of said feedback winding being directly connected with the base electrode of the other of said semiconductor switching means, said resistor being operable to adjust the point at which the



bases of the semiconductor switching means no longer saturate, thereby to define the maximum value of current (22) beyond which operation of the oscillator means is automatically terminated; and

(3) rectifying means coupled to said secondary winding for producing a rectified output voltage for application to the spark plug;

(4) said converter means being operable upon short circuit of said output voltage to ground to damp said oscillator means and thereby cease operation of said converter means.

4,349,009

COMBUSTION AIR SYSTEM

Eddy L. Patterson, and George D. Patterson, both of McKinney, Tex., assignors to Overhead Door Corporation, Dallas, Tex.

Filed Mar. 3, 1980, Ser. No. 126,740
Int. Cl.³ F24B 7/00
U.S. Cl. 126—121 20 Claims

15. A fireplace assembly, comprising:

(a) firebox means defining a combustion chamber;

(b) a hood section disposed over said firebox means;

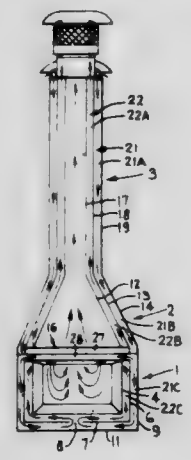
(c) a flue section disposed over said hood section and including an elongated flue pipe open at its top end for conducting combustion gases from said combustion chamber for discharge to the atmosphere through said top end; and

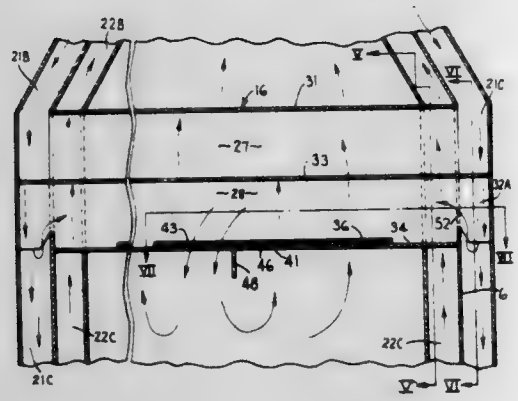
(d) thermal siphoning flow means for circulating air around the periphery of said firebox means and flue section to provide a barrier to heat flow from the firebox means and flue section to materials disposed adjacent said fireplace assembly, and for enabling only a portion of said circulating air to be introduced into said combustion chamber,

said thermal siphoning means comprising shell means surrounding the firebox means, the hood section, and the elongated flue pipe and defining outer and and inner adjacent elongated air passageways open to the atmosphere only at their upper ends; and

(e) conduit means between said shell means and said combus-

tion chamber through which only a portion of said circulating air flows into said combustion chamber at the top





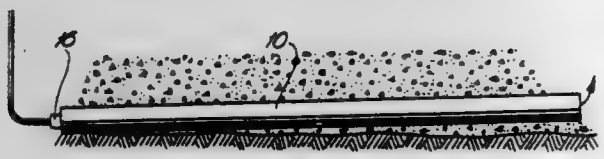
thereof with the major portion of said circulating air flowing through said elongated passageways.

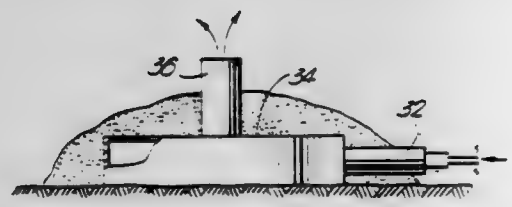
4,349,010

FROST REMOVAL SYSTEM

Thomas J. Bentham, c/o AgWest Industries, Ltd., P.O. Box 56, Headingly, Manitoba, Canada

Filed Feb. 11, 1980, Ser. No. 120,322
Claims priority, application Canada, Nov. 14, 1979, 339862
Int. Cl.[3] F23C *5/00*; E02D *3/00*
U.S. Cl. 126—271.1 10 Claims





1. A method for removing frost from a selected area of ground comprising:

(a) positioning a plurality of hollow pipes over the area to be thawed, each pipe having an inlet and an exhaust end;

(b) covering said pipes and the immediately adjacent ground areas to substantially surround said pipes, save for the inlet and exhaust ends of the pipes, with a bed of sand, gravel or equivalent fill materials to a selected depth to provide a heat insulating and heat sink effect, and

(c) directing, for a selected period of time, burning gases along the lenth of each pipe from a plurality of burners each being disposed at the inlet end of a respective one of the pipes, and allowing the heated gases to travel along the lengths of the pipes and to escape from their exhaust ends whereby to effect heating of and thawing of said selected area of ground.

10. A method of removing frost from a relatively confined area of ground as where a post hole is to be formed comprising:

(a) positioning a generally circular chamber over said area, which chamber has a tangential inlet, and a generally centrally located top outlet;

(b) covering said camber and the immediately adjacent ground area, save for the chamber inlet and outlet, with a bed of sand, gravel or like fill material to a selected depth to provide an insulating and heat sink effect, and

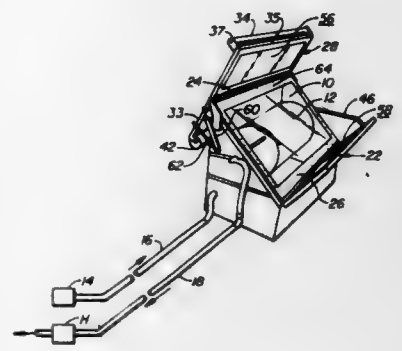
(c) directing, for a selected period of time, buring gases into said tangential inlet whereby the burning gases swirl around the interior of the chamber and escape from the outlet whereby to effect heating and thawing of said confined area of the ground.

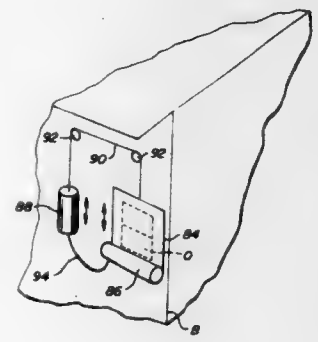
4,349,011

SOLAR OPERATED SHUTTER

Clarence E. Hartsog, 570 S. 9th St., Modesto, Calif. 95351

Filed May 22, 1981, Ser. No. 266,250
Int. Cl.[3] F24J *3/02*; E05F *15/20*; F02L *5/00*
U.S. Cl. 126—419 11 Claims





1. A solar collector system comprising:

an insulated enclosure having a light transmissive surface and housing a fluid container having a highly absorptive surface for collection of radiant energy from sunlight passing through said light transmissive surface;

a first tank substantially thermally uninsulated and adapted to be exposed to sunlight;

a second tank including a layer of thermal insulation covering a substantial portion thereof, said second tank movable between an upper level and a lower level;

tube means fluidly connecting said first and second tanks;

a partially vaporized fluid contained within said first and second tanks and said tube means;

a first insulating panel movably mounted adjacent said light transmissive surface between first and second positions, said first position at least partially covering said light

transmissive surface and said second position substantially removed from said light transmissive surface; and

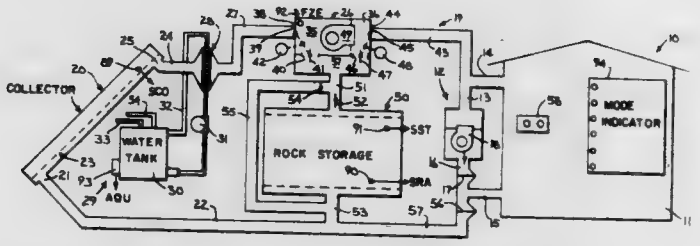
means for operably coupling said second tank and said first panel so that movement of a portion of said partially vaporized fluid between said first and second tanks through said tube means due to differential pressures within said tanks caused by temperature differences between the interiors of said first and second tanks causes said second tank to move between said upper and lower levels thereby moving said first panel between said first and second positions.

4,349,012

SOLAR HEATING CONTROL

Richard J. Schildknecht, Madison, Wis., assignor to Research Products Corporation, Madison, Wis.

Filed Jan. 11, 1980, Ser. No. 111,340
Int. Cl.³ F24J 3/02
U.S. Cl. 126—422 **3 Claims**



1. A control to operate a solar heating system and an auxiliary heating system to selectively supply heat to an enclosure in response to the operation of a thermostat having a first output circuit selectively providing a first stage heat signal and a second output circuit selectively providing a fan signal, said control comprising means sensing the temperature of the solar heating system to provide a temperature indicative signal, a first gatable semiconductor having a first circuit connected to said first output circuit through first switch means including a first manually operable switch and a second circuit connected to the auxiliary heat system through a first current limiting resistor and a first fuse, a second gatable semiconductor having a first circuit connected to said second output circuit through second switch means including a second manually operable switch and a second circuit connected to the auxiliary heat system through a second current limiting resistor and a second fuse, and transfer means operatively connected to said temperature sensing means and to first and second gate inputs of said first and second semiconductors, respectively, to selectively render said first and second semiconductors conductive in response to said temperature signal of a predetermined magnitude to conduct the first stage heat signal and the fan signal from the thermostat to the auxiliary heat system to operate the auxiliary heat system.

4,349,013

SOLAR ENERGY RECEIVERS

Miroslav Uroshevich, Cincinnati, Ohio, assignor to Alpha Solarco Inc., Cincinnati, Ohio

Continuation-in-part of Ser. No. 52,085, Jun. 25, 1979, abandoned. This application Jun. 22, 1981, Ser. No. 275,841
Int. Cl.³ F24J 3/02
U.S. Cl. 126—442 **7 Claims**

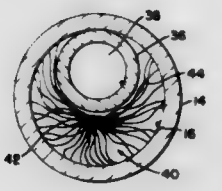
1. A solar energy receiver comprising:

an elongated tubular heat conductive element having a portion of its exterior adapted to be exposed to solar radiation, said tubular element having a through passage for flowing fluid which is heated by heat transfer from said element;

an elongated flow directing element positioned within said passage and against the passage wall that is away from the portion of the tubular element struck by solar radiation thereby directing fluid flow only adjacent the portion receiving heat from reflected solar radiation; and

an elongated element comprising an elongated core extending through said passage in a direction generally parallel





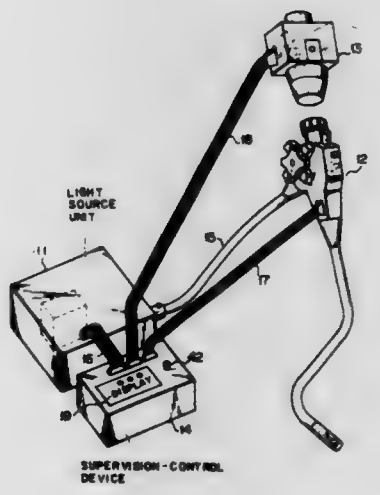
to fluid flow and a plurality of tines extending outward from said core that they generally extend across the flow path of fluid thereby promoting turbulence; whereby heat transfer to said fluid is maximized.

4,349,014

ENDOSCOPE SYSTEM

Takeshi Takamatsu, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Sep. 25, 1980, Ser. No. 190,609
Claims priority, application Japan, Oct. 2, 1979, 54-127004
Int. Cl.³ A61B 1/06
U.S. Cl. 128—6 **7 Claims**



1. An endoscope system comprising:

an endoscope including a light guide; an image guide; an eyepiece section; and an endoscope connection signal generator for generating an endoscope connection signal;

a light source unit including a light source for conducting light to the light guide of the endoscope; and a light source unit connection signal generator for generating a light source unit connection signal;

a photographic attachment including means for connection to the eyepiece section of the endoscope to photograph a coeliac cavity; and a photographic attachment connection signal generator for generating a photographic attachment connection signal;

a centralized supervision-control unit for supervising and

controlling the operation and interaction of the endoscope, light source unit and photographic attachment with respect to each other; and

signal transmission lines for electrically connecting the centralized supervision-control unit to the endoscope, to the light source and to the photographic attachment to thereby transmit the respective connection signals to the centralized supervision-control unit and to perform data-transmission between the centralized supervision-control unit and the endoscope, light source unit and photographic attachment, said centralized supervision-control unit supervising and controlling in response to the connection signals the operation and interaction of the endoscope, light source and photographic attachment.

4,349,015

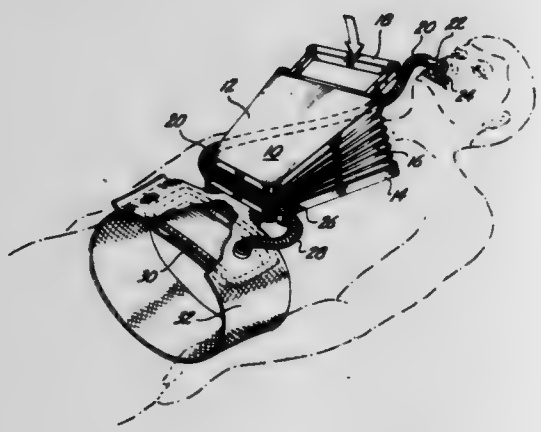
MANUALLY-ACTUABLE CPR APPARATUS

Clifton A. Alferness, Woodinville, Wash., assignor to Physio-Control Corporation, Redmond, Wash.

Filed Nov. 14, 1980, Ser. No. 206,576

Int. Cl.³ A61H *31/00*

U.S. Cl. 128—28 **16 Claims**



1. A manually-actuable apparatus for performing cardiopulmonary resuscitation on a patient by alternately increasing and decreasing the patient's intrathoracic pressure, said apparatus comprising:

a manually-actuable bellows including means adapted to be placed during use on the patient's chest, said bellows including a port means and being capable of being alternately compressed and decompressed so as to alternately pressurize and depressurize said port means and so as to alternately apply force to and remove force from the patient's chest;

an airway apparatus including means adapted to be placed during use in proximity to the patient's airway so as to couple gas to and from the patient's lungs; and,

first means for providing a fluid flow path between said port means of said bellows, said airway apparatus, and a source of gas at atmospheric pressure, said first means including a first valve apparatus which is operative to limit the pressure in the patient's lungs to a desired pressure value as said port means of said bellows is pressurized during bellows compression and which is further operative to couple gas from the patient's lungs and from the source of gas at atmospheric pressure to said bellows as said port means of said bellows is depressurized during bellows decompression.

4,349,016

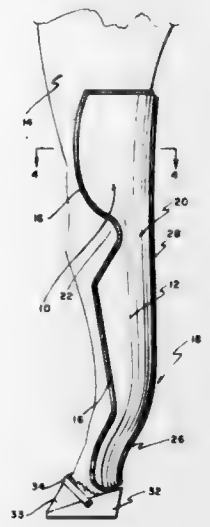
LIVESTOCK SPLINT

Stephen M. Glassman; James D. Kia, and Paul A. Ryding, all of Wichita, Kans., assignors to KRG, Inc., Wichita, Kans.

Continuation-in-part of Ser. No. 149,269, May 12, 1980, Pat. No. 4,320,722. This application Jun. 1, 1981, Ser. No. 269,314

Int. Cl.³ A61F *5/04*

U.S. Cl. 128—87 R **10 Claims**



1. An animal leg brace or splint which is comprised of a shell member with sides for partially encasing the leg of the animal, and which fits behind the leg of the animal; a foam padding means connected to the inside of said shell member to protect the leg of the animal from pressure sores and insure a proper therapeutic fit; a reinforced back means connected to and traversing the back of said shell member to prevent the animal from fatiguing the brace or splint prematurely; said shell member having a carpal section on each of said sides for contiguously resting in proximity to the carpal area of the leg of the animal, said carpal section of each of said sides having a structure generally defined by the residual structure after an essentially U-shaped section is removed from a section of said sides of said shell member to accomodate the joint in the carpal area of the leg of the animal such that further injury to the forelimb of the animal is not incurred.

4,349,017

ORTHOPAEDIC APPARATUS

Antoine Y. Sayegh, Wexham Park Hospital, Wexham Road, Slough, Berkshire, England

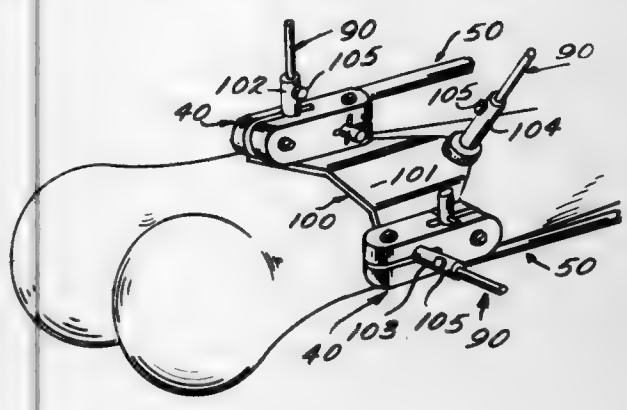
PCT No. PCT/GB79/00055, § 371 Date Nov. 30, 1979, § 102(e) Date Nov. 26, 1979, PCT Pub. No. WO79/00866, PCT Pub. Date Nov. 1, 1979

PCT Filed Apr. 2, 1979, Ser. No. 189,840

Claims priority, application United Kingdom, Mar. 31, 1978, 12608/78; Apr. 28, 1978, 17051/78

Int. Cl.³ A61F *5/04*; A61B *17/18*

U.S. Cl. 128—92 A **3 Claims**



1. Orthopaedic fracture fixation apparatus comprising:

two similar bone pin clamp assemblies respectively to be

located proximally and distally with respect to a fracture site in a long bone of a limb;

each said clamp assembly including a plate formed to approximate a curved surface generally conforming to the profile of said limb, and said plate having two spaced tubular projections from its generally convex face to guide individual bone pins clamped therein in predetermined mutually perpendicular directions;

two longitudinally adjustable rod mechanisms, each to extend across said fracture site between a separate pair of said projections, a pair being constituted by one projection from each said clamp assembly;

and four coupling mechanisms, each including a pair of clamps, which clamps are independently operable, are rigidly interconnected, and include two guides respectively to secure elongate members in predetermined mutually perpendicular directions;

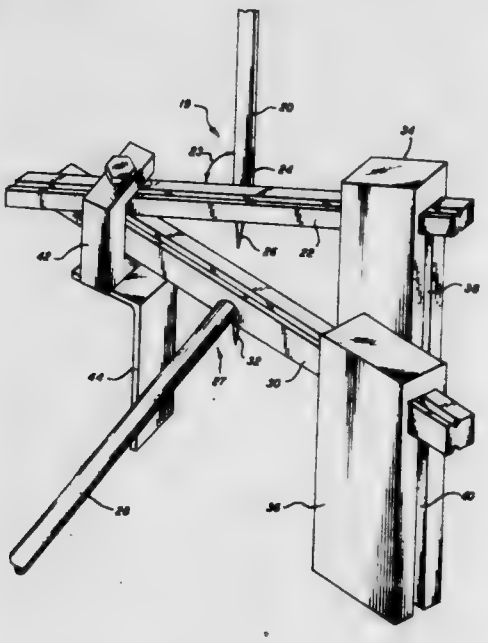
each said coupling mechanism being located at a respective one of said projections to secure in said two guides adjacent portions of said one projection and the associated one of said rod mechanisms.

4,349,018

OSTEOTOMY APPARATUS

Gary R. Chambers, 705 McFarland St., Morristown, Tenn. 37814

Filed Dec. 29, 1980, Ser. No. 221,015
Int. Cl.[3] A61B *17/18*
U.S. Cl. 128—92 E 11 Claims



1. Surgical apparatus useful for both a tibia-femur osteotomy and a proximal tibia osteotomy comprising:

a femur "T" unit including an elongated femur rod having a first and further end and an elongated femur bar having a mid portion and a medial and lateral end, said first end of said rod being securely joined to said mid-portion of said bar to form a substantially "T" shaped unit such that said "T" unit has an angle between said bar and said rod of between 80 degrees and 100 degrees, and said femur "T" unit further includes a femur pin secured to said femur "T" unit for securing said femur "T" unit to a selected bone of a patient such that said elongated rod is parallel to the selected bone and said elongated bar is substantially perpendicular to the selected bone;

a tibia "T" unit including an elongated tibia rod having a first and further end and an elongated tibia bar having a mid-portion, and a medial and a lateral end, said first end of said tibia rod being joined to said mid-portion of said tibia bar to form a "T" shaped unit, said rod and said bar having substantially a right angle there between, and also including a tibia pin secured to said tibia "T" unit for securing said tibia "T" unit to a selected bone of a patient such that said elongated rod is parallel to the selected bone and said bar is substantially perpendicular to the selected bone;

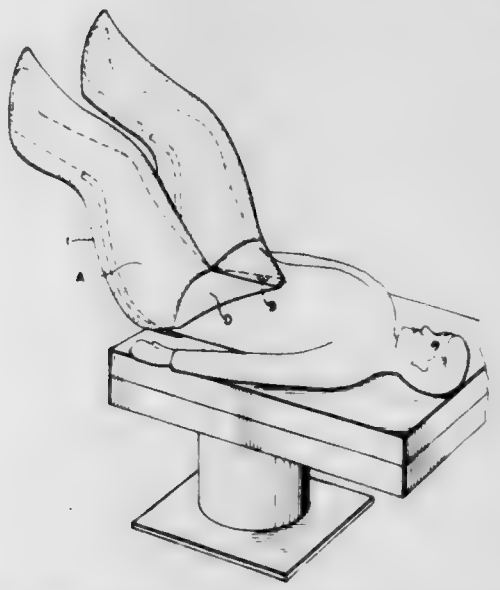
a femur and tibia guide unit, said femur guide unit suitable for guiding an osteotome blade along a first selected plane, and said tibia guide unit suitable for guiding said ostetome blade along a second selected plane, said guide units suitable for being detachably mounted to said femur and tibia bars respectively such that said first and second selected planes intersect the length of a patient's leg at first and second locations respectively, said femur and tibia guide units suitable for mounting to the mid part of said femur and tibia bars for performing an osteotomy for total knee replacement, and suitable for mounting to said medial and lateral ends of said femur and tibia bars for preforming a proximal tibia osteotomy.

4,349,019

SURGICAL LEGGINGS

Wayne J. Singer, Woodstock, Ga., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Jul. 14, 1981, Ser. No. 283,199
Int. Cl.[3] A61F *13/00*
U.S. Cl. 128—132 D 7 Claims



1. A surgical cover or drape in the form of a loose fitting legging comprising

(a) a generally rectangular main body portion having first and second panels of like size, said panels being longer than they are wide and secured to each other along their longitudinal edges and at one end, forming a sleeve with an open end and a closed end;

(b) a cuff comprising a flap secured to said first panel near said open end of said sleeve and overlying said first panel adjacent to and opening away from said open end of said sleeve;

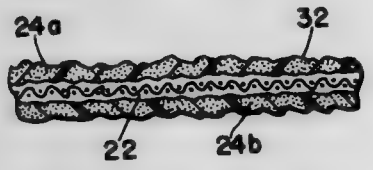
(c) an abdominal cover comprising a flap secured along one edge to said second panel at said open end of said sleeve, said flap having two opposing edges of unequal length adjacent the edge secured to said second panel, said opposing edges generally parallel to each other and to the longitudinal edges of said main body portion, said flap so constructed and arranged as to provide substantial coverage for the abdominal area of a patient with reduced material at the side of the patient and in the perineal area; and

(d) means for securing said abdominal cover to a patient's abdomen or to the corresponding abdominal cover of a second legging.

4,349,020
SHIRRED LAMINATE

William G. Krikorian, Lot #12, Old Dunstable Rd., Groton, Mass. 01450

Filed Sep. 14, 1979, Ser. No. 75,398
Int. Cl.[3] A61F *13/00*
U.S. Cl. 128—155 12 Claims



1. A self-adhesive bandage for wrapping and maintaining support for animal or human limbs comprising

first and second strips of stretchable elastic polymer,

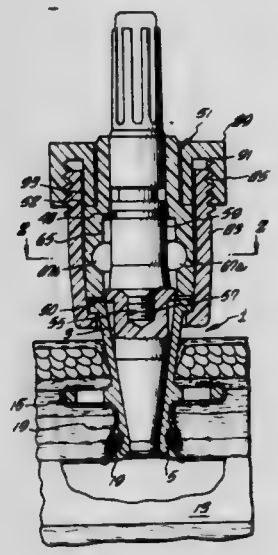
a third strip of puckered non-elastic scrim formed of a first set of substantially parallel yarns and a second set of substantially parallel yarns extending at an angle to the yarns of said first set, and

elastic adhesive material binding said strips in face-to-face relationship with said first and second strips on opposite sides of said third strip forming a bandage structure capable of being stretched to a predetermined length limited by said non-elastic scrim.

4,349,021
ATRAUMATIC BLOOD ACCESS DEVICE VALVE

Donald A. Raible, Santa Ana, Calif., assignor to Bentley Laboratories, Irvine, Calif.

Filed Jun. 9, 1980, Ser. No. 158,063
Int. Cl.[3] A61M *5/00*
U.S. Cl. 128—214 R 10 Claims



1. An atraumatic valving mechanism for operation within a blood passageway of a blood access device having an external rim, said blood passageway adapted to connect a blood vessel within a body to the body exterior, said valving mechanism comprising:

a plugging means for sealing said blood passageway;

a reciprocable stem member means for connection to said plugging means;

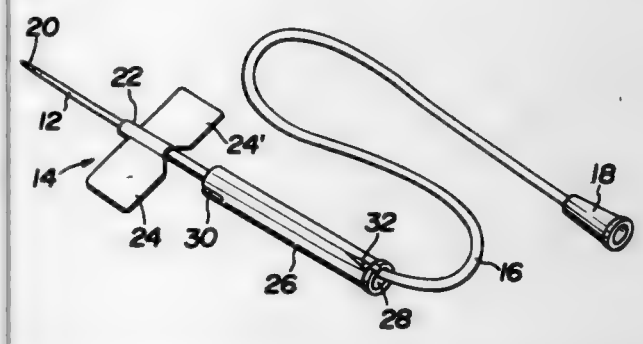
a valve chamber means adapted to be secured to the portion of said blood access device blood passageway at said body exterior, said valve chamber including an aperature through which said reciprocable stem member means for connection to said plugging means may be passed and;

a retaining element and a retaining element ring for engaging therewith for securing said valve chamber means to said blood access device, said retaining element having an aperature for slidably engaging said valve chamber and a restraining shoulder for engaging said blood access device external rim and forcing, from opposed directions, said valve chamber and blood access device together upon engaging said retaining element and retaining element ring.

4,349,022
MEDICAL NEEDLE ASSEMBLY

Soji Ishikawa, No. 6-22, 6-chome, Miyazaki, Takatsu-ku, Kawasaki City, Kanagawa Prefecture, Japan

Filed Jul. 14, 1980, Ser. No. 168,673
Claims priority, application Japan, Aug. 10, 1979, 54-109412[U]; Aug. 20, 1979, 54-114219[U]
Int. Cl.[3] A61M *5/00*
U.S. Cl. 128—214 R 15 Claims



1. A needle assembly to form a part of a medical administering device such as a syringe including a syringe barrel having a front tip portion or a drip chamber liquid administering system including a liquid conducting tube leading from a drip chamber vessel, comprising in combination

a needle which is hollow throughout the axial length of the needle and which has a pointed front end portion and a rear end portion axially opposite to the front end portion,

a needle holder element secured to the rear end portion of the needle,

an adapter element adapted to engage the front tip portion of said syringe barrel or a leading end portion of said liquid conducting tube,

a flexible tube detachably fitted at one end thereof to the rear end portion of said needle and at the other end thereof to said adapter element and formed with a longitudinal passageway extending throughout the length of the tube and providing communication between said needle and said adapter element, and

an elongated member which is formed with an axial passageway extending throughout the length of the elongated member and having said flexible tube loosely passed therethrough and which is engageable with said needle holder element through a front end portion of the axial bore in the elongated member,

said needle holder element having a generally tubular portion having the rear end portion of the needle securely passed therethrough in the axial direction of the tubular portion and said elongated member being engageable with said tubular portion of the needle holder element in the vicinity of the rear end portion of said needle,

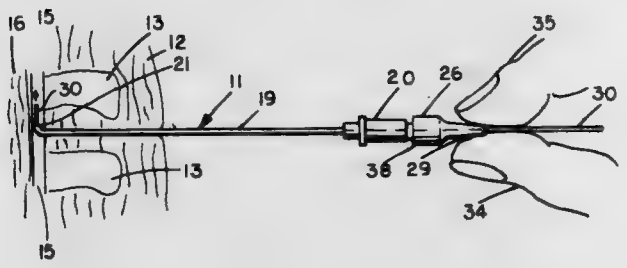
said needle holder element further having a pair of flexible side strip portions laterally projecting in opposite directions from said tubular portion of the needle holder element and said elongated member being engageable with said side strip portions as well as said tubular portion of the needle holder element,

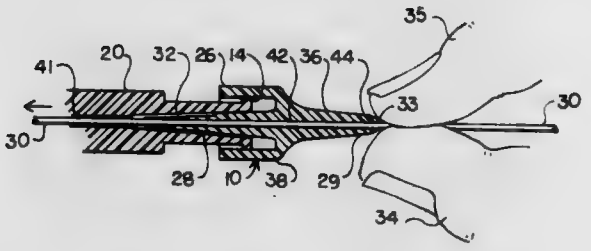
wherein said elongated member has a front end portion formed with a pair of axial grooves which are substantially diametrically opposite to each other across the axial bore in the elongated member and which axially terminate at the foremost end of the elongated member, the elongated member being engageable with said side strip portions of the needle holder element through said grooves, respectively.

4,349,023
EPIDURAL NEEDLE CATHETER AND ADAPTER

James R. Gross, Bartlett, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Oct. 9, 1980, Ser. No. 195,448
Int. Cl.³ A61M 25/00
U.S. Cl. 128—214.4 11 Claims





1. For use with an epidural needle having a needle and hub portion with a cavity in the hub portion and a passageway extending between said cavity and said needle, a device for feeding catheter tubing through said epidural needle into the epidural space while substantially reducing the risk of kinking of the tubing, said device comprising:

an intermediate body portion;

a first protruding section extending from said intermediate body portion in a first direction;

a second protruding section extending from said intermediate body portion in a second direction opposite said first direction;

a continuous, coaxial passageway extending through said intermediate body portion and said first and second protruding sections, said passageway having a diameter approximately the same as the outside diameter of said tubing;

said second protruding section defining an entrance portion adjacent said passageway, said passageway adapted to receive said catheter tubing through said entrance portion in said second protruding section;

said first protruding section constructed and arranged to be received within said hub portion cavity and to provide coaxial alignment between said hub passageway and said first protruding section passageway;

said second protruding section defining a finger engaging orifice surface surrounding said entrance portion and defined by a substantially conical configuration with the smallest diameter portion located adjacent said entrance portion to said passageway;

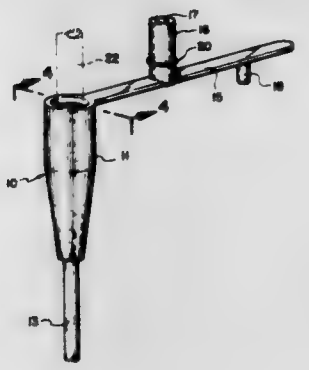
so that when said first protruding section is inserted into said hub cavity a length of catheter tubing can be easily fed through said epidural needle and into the epidural space.

4,349,024
MULTIPLE ADAPTER DEVICE FOR INTERCONNECTING TUBING OF DIFFERENT SIZES

Philip G. Ralston, Jr., 364 N. 835 East, Lindon, Utah 84062

Filed Apr. 1, 1981, Ser. No. 249,818
Int. Cl.³ A61M 3/00
U.S. Cl. 128—247 8 Claims

1. An adapter device for use with at least two different sizes of connectors, comprising a body member having a passage therethrough for accepting a particular size of connector therein; flexible linking means, one end of which is secured to said body member; an adapter member capable of being received by the body member passage, said adapter member having a passage therethrough for accepting a connector of a size different than that accepted by the body passage, said adapter member being secured to the linking means intermediate its length in a manner such that bending of said linking means permits insertion of the adapter member into the body member passage; and plug means capable of being received by the adapter member passage, said plug means being secured to the linking means near that end thereof which is not secured to the body member in a manner such that bending of the linking means permits insertion of the plug means into the adapter member passage.



4,349,025
GLASS COMPOSITION

Cyril F. Drake, Harlow, England, assignor to International Standard Electric Corporation, New York, N.Y.

Division of Ser. No. 75,617, Sep. 14, 1979, Pat. No. 4,283,227.
This application Mar. 12, 1981, Ser. No. 243,222
Claims priority, application United Kingdom, Sep. 26, 1978, 38222/78
Int. Cl.³ A61M 7/00
U.S. Cl. 128—260 10 Claims

1. A subcutaneous implant comprising a watersoluble glass composition containing an element releasable in trace amounts into the body fluids of the carrier as the implant dissolves.

4,349,026
REGENERATED FIBER COLLAGEN CONDOM AND METHOD OF PREPARATION

Teruo Miyata, Tokyo, Japan, assignor to Collagen Development Corp., New York, N.Y.

Filed Feb. 28, 1980, Ser. No. 125,538
Int. Cl.³ A61F 5/42
U.S. Cl. 128—294 4 Claims

1. As an article of manufacture a condom consisting of an isotropically-strong membrane of crosslinked regenerated, fiber collagen.

4,349,027
NEEDLE GUIDE FOR IMPLANTING INTRA-OCULAR LENS

John G. DiFrancesco, Lake Drive South, New Fairfield, Conn. 06810

Filed Jun. 23, 1980, Ser. No. 162,013
Int. Cl.³ A61B 17/06
U.S. Cl. 128—303 R 6 Claims

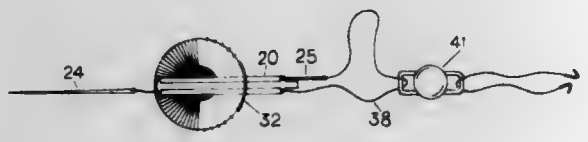
1. A needle guide for intra-ocular surgery to fixate an intra-ocular lens following cataract removal, designed for insertion through a corneal-rim incision into a temporary position spanning the anterior chamber and being thereby positioned to conduct straight surgical needles safely across the anterior chamber and past the corneal endothelium, comprising

an elongated thin narrow substantially flat and rectangular unitary guide plate having

an elongated needle flange inturned and downturned along each elongated edge of the guide plate to form a cylindrical needle guide chamber of substantially uniform cross section dimensioned to embrace a straight surgical needle during its endwise telescoping passage into, through and beyond the guide chamber,

each flange having an elongated rim spaced away from the guide plate to provide an elongated inwardly-opening suture-release slot of substantially uniform width therebetween,

each slot being too narrow to permit lateral removal of a surgical needle from the guide chamber,



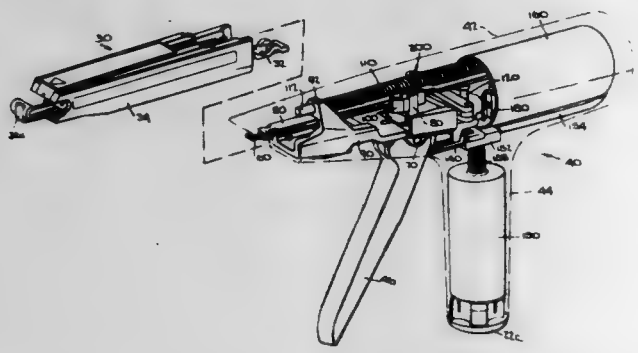
whereby the elongated narrow guide may be inserted spanning the anterior chamber, guided by trans-illumination, a pair of surgical needles secured to opposite ends of a first suture loop and forming a double armed suture interlinked with a retention loop of an intra-ocular lens may be inserted into and moved through the respective guide chambers safely passing the endothelium to exit through the sclera opposite the corneal rim incision, leaving the bight of the first suture loop protruding from the incision, and tension maintained on the first suture loop permits the needle guide to be withdrawn through the incision and detached from the first suture loop by lateral withdrawal of the first suture loop through the suture-release slots, after which the intra-ocular lens may be inserted adjacent to the iris and secured by suturing in position spanning the pupil.

4,349,028

SURGICAL STAPLING APPARATUS HAVING SELF-CONTAINED PNEUMATIC SYSTEM FOR COMPLETING MANUALLY INITIATED MOTION SEQUENCE

David T. Green, Norwalk, Conn., assignor to United States Surgical Corporation, Norwalk, Conn.

Filed Oct. 3, 1980, Ser. No. 190,146
Int. Cl.[3] A61B *17/12, 17/32*
U.S. Cl. 128—305 17 Claims



1. In apparatus for ligating and dividing body tissue including first means for clamping the tissue in the apparatus and then advancing two spaced staple-like metal ligatures toward the clamped tissue and crimping the ligatures around the tissue, and second means for cutting the tissue between the crimped ligatures, an actuator comprising:

a first movably mounted actuator member for actuating the first means;

a second movably mounted actuator member for actuating the second means;

a pneumatic system including a supply of pressurized gas pneumatically connected to a pneumatic actuator;

a first mechanical linkage for connecting the pneumatic actuator to the first actuator member for moving the first actuator member to actuate the first means during an initial first part of the power stroke of the pneumatic actuator and for holding the first actuator member stationary during a subsequent second part of the power stroke of the pneumatic actuator;

a second mechanical linkage for connecting the pneumatic actuator to the second actuator member for moving the second actuator member relative to the first actuator member to actuate the second means during the second part of the power stroke of the pneumatic actuator;

manually operable means mechanically connected to the first actuator member for initiating motion of the first actuator member to at least initiate clamping of the tissue by the first means; and

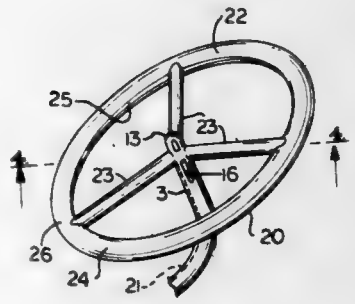
means responsive to a predetermined manually produced motion of the first actuator member beyond the motion which at least initiates clamping of the tissue by the first means for releasing pressurized gas from the gas supply to initiate the power stroke of the pneumatic actuator.

4,349,029

DRAINAGE BALLOON CATHETER SYSTEM

Patricia A. Mott, 103 N. Central, Armstrong, Mo. 65230

Filed Jun. 16, 1980, Ser. No. 160,134
Int. Cl.[3] A61M *25/00*
U.S. Cl. 128—349 B 16 Claims



1. In an intraurethral retention catheter having a longitudinal axis and being adapted for use in a bladder and having an expansion balloon for selectively maintaining the catheter after insertion within the bladder and at least one drainage aperture providing flow communication between an interior bore of the catheter and the bladder after insertion within the bladder; the improvement comprising:

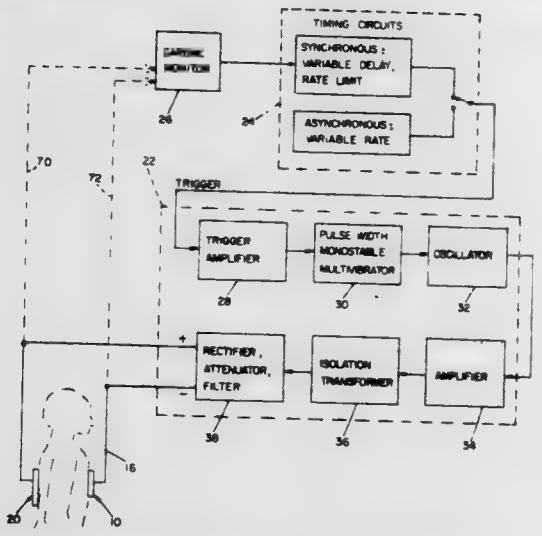
(a) expandable balloon biasing means including at least a first portion thereof radially extending and spaced outwardly and circumferentially from said catheter; and

(b) said aperture being positioned on said catheter such that a plane normal to said catheter longitudinal axis and passing through said aperture also passes generally through said balloon biasing means; said balloon biasing means first portion being spaced radially outward from said aperture; whereby said aperture is adapted to freely communicate with urine within said bladder when said balloon biasing means is expanded and whereby said balloon biasing means is adapted to positively urge walls of the bladder away from the aperture when expanded within the bladder such that the walls do not occlude flow of urine from the bladder through the aperture.

4,349,030
EXTERNAL NONINVASIVE ELECTRIC CARDIAC STIMULATION

Alan H. Belgard, Sharon; Paul M. Zoll, Newton Centre, both of Mass., and Ross H. Zoll, 261 Brookline St., Newton Centre, Mass. 02159, assignors to Ross H. Zoll, Newton Centre, Mass.

Filed Jul. 10, 1980, Ser. No. 168,381
Int. Cl.[3] A61N *1/36*
U.S. Cl. 128—419 PG 22 Claims



1. An external noninvasive electric cardiac stimulation system comprising

a pair of electrodes having nonmetallic skin-contacting members that provide low current density to reduce stimulation of local sensory nerves and resulting pain,

a pulse generator electrically connected to said electrodes,

said generator including means to provide constant current pulses without high current spikes that cause skeletal muscle contraction,

said pulses being greater than 5 milliseconds in duration to reduce the threshold current required for cardiac stimulation, to permit the use of lower current pulses to provide effective stimulation at the same time that skeletal muscle contraction is reduced by the lower current, and

means to activate said pulse generator to provide said current pulses.

4,349,031
ESOPHAGEAL PROBE WITH DISPOSABLE COVER

Alfred R. Perlin, Highland Park, Ill., assignor to The Kendall Company, Boston, Mass.

Filed Mar. 7, 1980, Ser. No. 128,323
Int. Cl.[3] A61B *5/02*
U.S. Cl. 128—642 13 Claims

1. An esophageal probe, comprising:

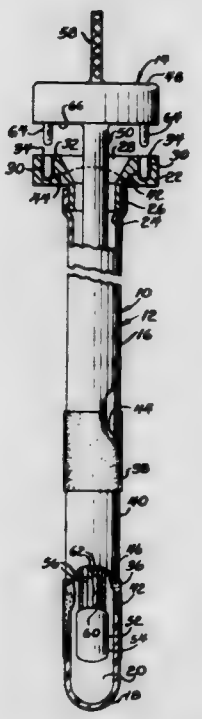
a disposable housing comprising an elongated sleeve defining a cavity having a proximal end, a distal end, and a proximal opening communicating with the cavity, said housing having a sufficient length to extend from the outside of a patient's body into the esophagus of the patient;

a permanent monitoring device having an elongated stem removably receivable through said opening into said sleeve cavity, said stem having a proximal end, a distal end, and means for monitoring a body function of a patient from within the sleeve;

means for releasably attaching said monitoring device to said housing with said stem received in the sleeve cavity, said attaching means comprising a first connector adjacent the proximal end of the monitoring device and a second connector adjacent the proximal end of the housing;

means establishing electrical connection between the first and second connectors when the first and second connectors are attached together;

a pair of spaced electrodes on an outer surface of the sleeve; and

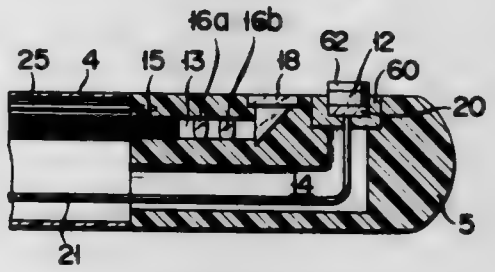


means for electrically connecting the electrodes to the electrical establishing means of the connectors.

4,349,032
ENDOSCOPE WITH AN ULTRASONIC PROBE

Kenzi Koyata, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Dec. 7, 1979, Ser. No. 101,244
Claims priority, application Japan, Dec. 15, 1978, 53-154657
Int. Cl.[3] A61B *10/00*
U.S. Cl. 128—660 6 Claims



1. An endoscope comprising a control section having an eyepiece section for observation and an operating section, a flexible tube connected at one end to the operating section, a bendable section connected at one end to the other end of the flexible tube, a distal end section provided at the other end of the bendable section, and bending means for bending said bendable section by the operating section, the bending means comprising at least one string member connected at one end to the operating section and fixed at the other end to the distal end section, said distal end section having a viewing window, in which at least one ultrasonic probe is provided at the distal end section, said probe having a vibration absorbing body attached thereto and a directionality in a direction substantially the same as that of an optical axis of the viewing window provided in the distal end section, said ultrasonic probe having an ultrasonic wave radiating and receiving surface which is projected from the surface of the distal end section and an ultrasonic wave conducting element formed of a soft, porous, water absorbing elastic body which is bonded to the surface of

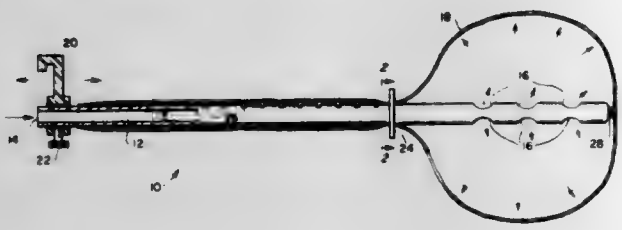
said ultrasonic probe, and said ultrasonic probe is provided in juxtaposition with the viewing window.

4,349,033

INTRAUTERINE CATHETER

Robert D. Eden, 4265 Marina City Dr., Apt. 909WTN, Marina Del Ray, Calif. 90291

Filed Nov. 6, 1980, Ser. No. 204,591
Int. Cl.³ A61B *10/00*
U.S. Cl. 128—660 **4 Claims**



1. An intrauterine catheter for utilization with an exterior ultrasonic transducer comprising:

(a) an elongated portion having at least one fill hole at a first end and at least one exit orifice at the second end, said elongated portion including a plurality of longitudinally spaced grooves;

(b) a balloon substantially surrounding the entire length of said elongated portion including said second end and sealingly attached to said elongated portion adjacent said first end;

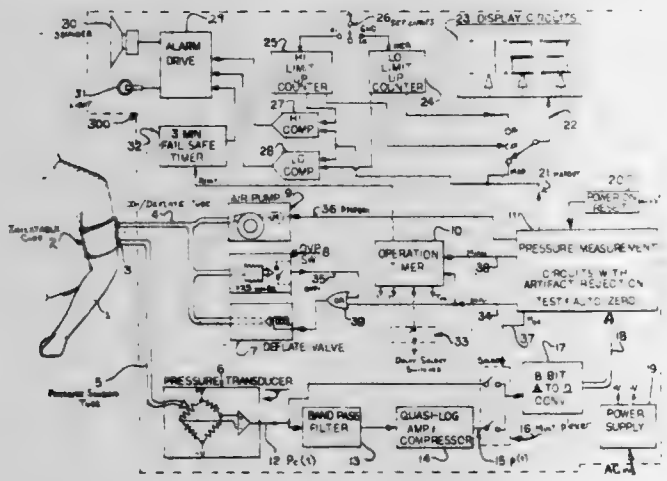
(c) a cervical sound stop slidably positioned over said balloon and said elongated portion.

4,349,034

AUTOMATIC MEAN BLOOD PRESSURE READING DEVICE

Maynard Ramsey, III, Tampa, Fla., assignor to Johnson & Johnson, New Brunswick, N.J.

Division of Ser. No. 895,061, Apr. 10, 1978, which is a continuation-in-part of Ser. No. 670,902, Mar. 26, 1976, abandoned. This application Mar. 31, 1980, Ser. No. 136,129
Int. Cl.³ A61B *5/02*
U.S. Cl. 128—681 **8 Claims**



1. A method for automatically taking indirect mean blood pressure readings comprising the steps of:

a. placing a cuff around a portion of a person's body;

b. inflating the cuff to a predetermined pressure;

c. taking a measurement of the peak to peak oscillation values of the cuff pressure with each heartbeat and a substantially simultaneous measurement of the cuff pressure;

d. incrementally deflating the cuff at a predetermined increment of pressure, and maintaining said cuff pressure at a constant value for a predetermined period of time while taking a measurement of the peak-to-peak oscillation values of the cuff pressure with each heartbeat and a simultaneous measurement of the cuff pressure;

e. continuously comparing the measurement of the peak to peak oscillation values at each cuff pressure to determine the maximum peak to peak value and storing said cuff pressure measurement obtaining when said maximum peak to peak value measurement was determined;

f. repeating the steps (d) and (e) at least two more times after the maximum peak-to-peak value has been determined;

g. determining and storing the lowest cuff pressure at which the maximum peak to peak value measurement is obtained;

h. deflating the cuff if a measure of the peak-to-peak oscillation value is not obtained which is greater than or equal to the measurement value obtained at least two measurements before; and

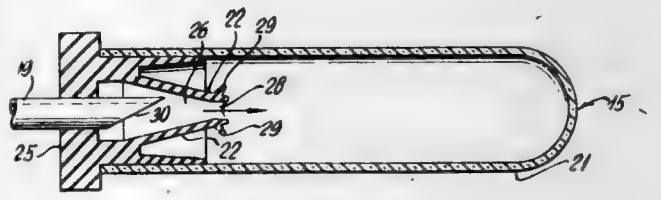
i. indicating the values of pressures obtained in said method steps.

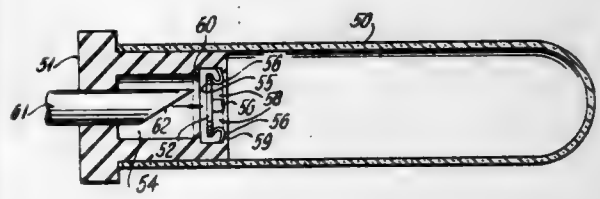
4,349,035

BLOOD COLLECTION ASSEMBLY WITH UNIDIRECTIONAL FLOW VALVE

Joseph J. Thomas, Bridgewater; Vincent L. Vaillancourt, Livingston, both of N.J.; Marcus J. Millet, New York, N.Y., and William F. Smith, Branchburg, N.J., assignors to Johnson & Johnson, New Brunswick, N.J.

Division of Ser. No. 886,497, Mar. 14, 1978, abandoned. This application Jun. 19, 1980, Ser. No. 161,466
Int. Cl.³ A61M *1/00*
U.S. Cl. 128—766 **1 Claim**





1. A blood collection assembly for receiving a blood sample from a patient, but for preventing the blood from flowing out once it has been received comprising:

a receptacle for the reception and retention of a sample of blood having a longitudinal axis;

said receptacle having an inside pressure less than normal atmospheric pressure outside said receptacle thereby establishing a pressure gradient across said receptacle,

said receptacle including an opening therein;

a penetrable stopper sealably positioned in said opening to maintain said pressure gradient across said receptacle; and,

a unidirecitonal flow-valve means disposed on said stopper inside said receptacle through which blood entering said receptacle must pass,

said valve means spaced apart from the penetrable surface of said stopper and defining between said valve means and said penetrable surface, a chamber for receiving a tip of a sharp cannula instrument, and defining between said valve means and the interior of said receptacle a downstream portion;

said valve means adapted to open for blood flow in response to the introduction of the tip of said cannula instrument into said chamber through said penetrable stopper, the pressure of said upstream portion being greater than said downstream portion following said penetration, and said

valve means adapted to close if the pressure of said downstream portion equals or exceeds the pressure of said upstream portion;

wherein said flow valve means includes an annular flange disposed on said stopper in said chamber defining a valve seat;

a resiliently operable valve member disposed in said chamber downstream of said valve seat, said valve member remaining sealably closed against said valve seat when the pressure in said receptacle equals or exceeds the pressure in said chamber, said valve member being resiliently flexible to move away from said valve seat when the pressure in said chamber is greater than the pressure in the remainder of said receptacle thereby allowing blood to flow into said receptacle;

wherein said valve member includes a substantially flat sealing surface substantially perpendicular to the longitudinal axis for contact with said valve seat and a plurality of spaced apart concave spring legs deformable toward the stream axis projecting substantially downstream from said sealing surface to serve as resilient supports for the same, the free ends of said legs being secured to said stopper so that the sealing surface engages said valve seat when said legs are under spring compression, whereby when the pressure in the space is greater than the pressure inside the receptacle said spring legs are urged under further compression to move said sealing surface away from said valve seat so that blood flows in the gaps between the spaced apart legs into the receptacle, and when the pressure inside the receptacle equals or exceeds the pressure inside the chamber, said legs are released from said further compression thereby urging said sealing surface back into contact with said valve seat to prevent blood from backflowing into said chamber.

4,349,036

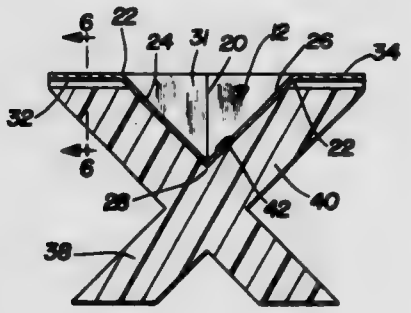
DISPOSABLE ASHTRAY

Francis K. Harvey, 413 Trippe Ave., Easton, Md. 21601; Larrabee Franks, 515 Druid Hill Ave., Salisbury, Md. 21801, and David L. Ingraham, E. Walnut St., Delmar, Del. 19940

Filed Oct. 21, 1980, Ser. No. 199,372

Int. Cl.³ A24F *19/02*

U.S. Cl. 131—240 R **7 Claims**



1. A disposable ash tray, comprising:

an elongated liner formed of a nonflammable material, said liner having a trough shaped portion for storing ash;

a base member having a trough shaped supporting surface for receiving the trough shaped portion of said liner,

said liner having a pair of substantially horizontal flanges extending outwardly from opposite sides of said trough shaped portion, respectively, at least part of each of said flanges being supported on said base member,

at least one cigarette receiving recessed portion formed on at least one of said flanges adjacent the trough shaped portion.

4,349,037

TOBACCO MOISTENING AND OPENING APPARATUS

Warren A. Brackmann, Cooksville, and Stanislav M. Snaidr, Mississauga, both of Canada, assignors to Rothmans of Pall Mall Canada Limited, Don Mills, Canada

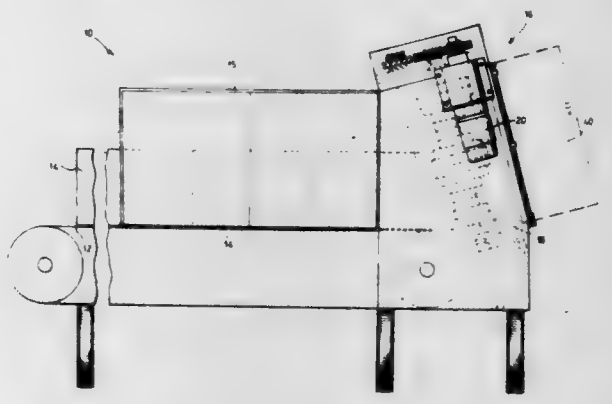
Division of Ser. No. 126,547, Mar. 3, 1980, Pat. No. 4,307,736.

This application Jun. 11, 1981, Ser. No. 272,515

Claims priority, application United Kingdom, Mar. 5, 1979, 7907714

Int. Cl.³ A24B *3/12*

U.S. Cl. 131—306 **1 Claim**



1. In a continuous method for the conditioning of tobacco in bales, which comprises continuously feeding a succession of tobacco bales horizontally with the grain in each bale oriented substantially vertically and with the grain extending from a forward face to a rear face of the bale, continuously subjecting the forward face of the succession of bales of the impingement of a plurality of steam jets to cause penetration of steam into the forward face and moistening of tobacco therein, and continuously removing the moistened tobacco from said forward face by the application of tobacco removal forces generally transverse to the leading face and generally perpendicular to the bale grain substantially simultaneously with said steam jet impingement, said steam penetration into said forward face exceeding the depth of tobacco removed therefrom by said transverse forces, the improvement wherein said plurality of steam jets are arranged in groups of two generally-helically directed sets with reference to and on opposite sides of a vertical axis, the vertical axes of the groups being parallel to each other and spaced from each other across the forward face of the bale, the steam jets in each helical set are arranged in individual pluralities, the members of each individual plurality extending perpendicularly from a second vertical axis parallel to the first-mentioned vertical axis but out of vertical alignment with the second vertical axis of the adjacent individual pluralities.

4,349,038

HAIR TREATMENT DEVICE

Joe Morefield, 400 Reynolds St., Springhill, La. 71075

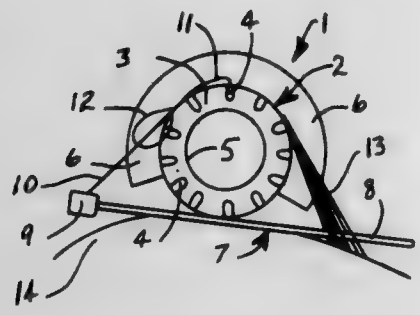
Filed Mar. 23, 1981, Ser. No. 246,603

Int. Cl.³ A45D *2/00*

U.S. Cl. 132—40 **10 Claims**

1. A hair treatment device for treating hair rolled thereon, comprising

(a) A tension roller having a plurality of longitudinally-shaped slots in the outer surface thereof; and



(b) Tension means engaging one of said slots and positioned beneath said hair.

4,349,039

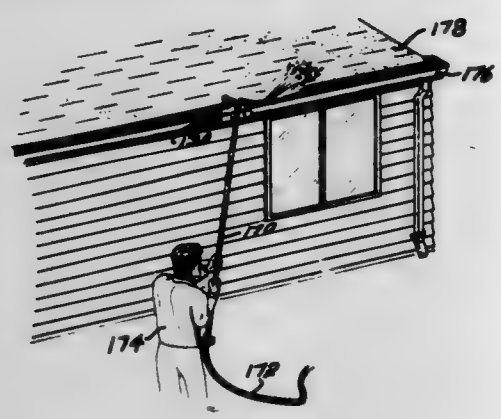
HOME ROOF GUTTER SWEEP

Robert S. Egger, 4012 - 91st Ave. SE., Mercer Island, Wash. 98040

Continuation-in-part of Ser. No. 910,658, May 30, 1978, abandoned. This application Mar. 31, 1980, Ser. No. 135,250

Int. Cl.[3] B08B *3/02, 9/00*

U.S. Cl. 134—167 C 15 Claims



1. A rain gutter cleaning mechanism comprising a frame member movable along a rain gutter; a fixed tubular part of a rotary valve mechanism by said frame member; nozzle means carried by said valve part for directing fluid under pressure into a rain gutter; a rotary valve part of said rotary valve mechanism operatively disposed in said fixed tubular part; and a conduit connected to a source of fluid under pressure connected with said rotary valve part for delivering fluid under pressure to said rotary valve mechanism, selectively through said valve mechanism, out said nozzle means, and into the rain gutter.

4,349,040

FOLDING POOL CANOPY

Richard L. Miller, 3612 Woolworth Bldg., 233 Broadway, New York, N.Y. 10007

Filed Aug. 25, 1980, Ser. No. 181,117

Int. Cl.[3] E04F *10/10*

U.S. Cl. 135—5 R 4 Claims

1. A folding pool canopy apparatus, in combination, comprising:

a central support means including a pair of center plates rotatably connected and a pair of center plate locking means each rotatably connected to one of said center plates,

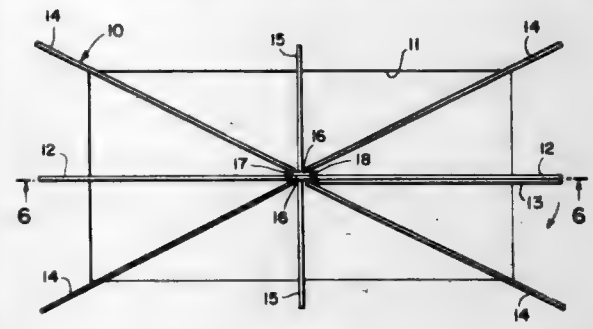
a first pair of support struts connected to each of said center plates,

a second pair of support struts connected to each of said center plate locking means,

a plurality of support struts rotatably connected to said pair of center plates,

a flexible covering connected to said support struts, and means for supporting the ends of said support struts,

said apparatus being movable between mounted and folded positions, wherein in said mounted position said center plates are positioned face to face, said center plate locking means are positioned at opposite ends of said center plates, said center plate locking means being for removably locking said center plates in said face to face position, said first



and second pairs of support struts extend radially outwards from said central support means approximately perpendicular to one another, and said support struts radiate outwardly from said central support means; and

in said folded position said center plates are positioned in-line, said center plate locks are positioned at opposite ends of said in-line center plates, and said support struts are parallel to one another and perpendicular to said in-line center plates.

4,349,041

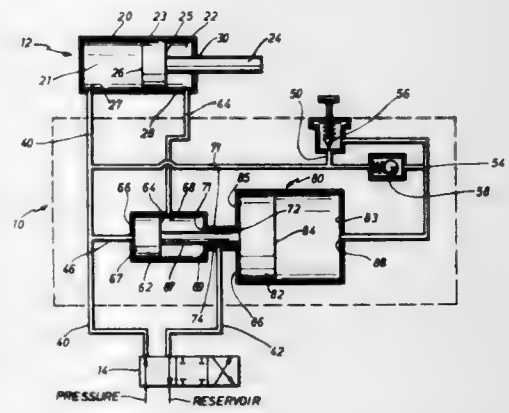
CONTROL VALVE SYSTEM FOR BLOWOUT PREVENTERS

H. John Bates, Santa Ana, Calif., assignor to NL Industries, Inc., New York, N.Y.

Filed Aug. 20, 1979, Ser. No. 67,609

Int. Cl.[3] F16K *31/12*

U.S. Cl. 137—1 7 Claims



1. In a method of reducing fluid capacity requirements and installed horsepower requirements of blowout preventers having an actuating piston for actuating the closing of the blowout preventer, the piston having a closing side and an opening side of smaller effective area than the closing side, the steps of:

(a) injecting fluid on the opening side of the actuating piston in order to move the actuating piston to an open position;

(b) selectively injecting fluid under pressure on the closing side of the actuating piston in order to initiate the movement of the actuating piston to close the blowout preventer;

(c) selectively directing the fluid forced from the opening side of the actuating piston by the movement of the actuating piston in step (b) to the closing side of actuating piston until a predetermined pressure is obtained in the system; and

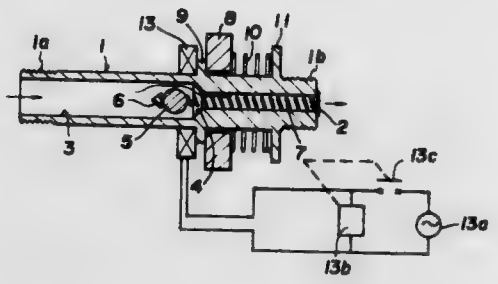
(d) after a predetermined pressure is developed in the system, redirecting the fluid forced from the opening side of the actuating piston to discharge to a reservoir.

4,349,042

FLUID SHUT-OFF DEVICE

Kunio Shimizu, 33-2, Asagaya-Minami 1-chome, Suginami-ku, Tokyo, Japan

Filed Jul. 28, 1980, Ser. No. 172,850
Int. Cl.³ F16K *17/36*
U.S. Cl. 137—39 6 Claims



1. A fluid shut-off device for use in a gas supply pipe to, during an emergency such as an earthquake, shut off the supply of gas through the pipe, said device comprising:

a horizontally positioned elongated casing formed of a non-magnetic material, said casing having therein a passage adapted to be connected to a horizontal section of a gas supply pipe, a valve chamber in communication with said passage, and a valve seat between said valve chamber and said passage;

a valve body formed of a magnetic material and positioned within said valve chamber for substantially horizontal movement between a first position spaced from said valve seat, to allow substantially unrestricted flow of gas from said valve chamber to said passage, and a second position contacting said valve seat, to shut off the flow of gas from said valve chamber to said passage;

first spring means positioned in said passage for urging said valve body to said first position thereof, said first spring means having a sufficiently weak spring force to enable said valve body, upon the occurrence of an earthquake, to vibrate and move toward said second position thereof;

an annular permanent magnet member surrounding the exterior of said casing and slidable thereon;

a stop member on the exterior of said casing at a location such that when said magnet member is adjacent said stop member, said magnet member is located at a position surrounding said passage and adjacent to said valve seat;

second spring means positioned normally for urging said magnet member toward said stop member to said position adjacent said valve seat; and

said magnet member having a magnetic strength insufficient to move said valve body, when in said first position thereof, against said spring force of said first spring means to said second position thereof, but sufficient to move said valve body against said spring force of said first spring means to said second position thereof upon movement of said valve body, due to an earthquake, a predetermined distance against said spring force of said first spring means from said first position thereof toward said second position thereof.

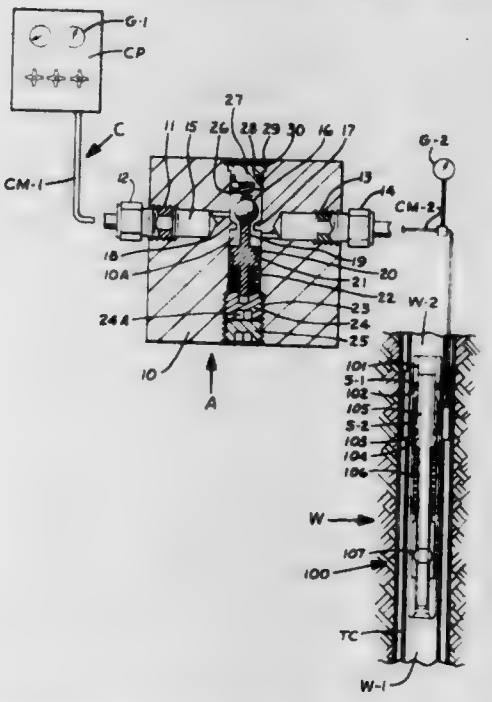
4,349,043

METHOD AND APPARATUS FOR PREVENTION OF OVER-PRESSURIZATION OF A PRESSURE RESPONSIVE DEVICE

Bruce D. Christensen, New Orleans, La., assignor to Baker CAC, Inc., Belle Chasse, La.

Filed Jun. 6, 1980, Ser. No. 156,980
Int. Cl.³ F16K *17/04*
U.S. Cl. 137—505.42 1 Claim

1. A subterranean well flow control device having a valve head selectively movable into sealing engagement on a valve seat for prevention of transmission of well fluids therethrough from at least one production zone within the well to the top of the well, said valve head being shiftable to one position by control fluid pressure in excess of a first predetermined value, said valve head and seat including elastomeric seal elements exposed to the control fluid pressure, a control line transmission conduit for said control fluid pressure extending from said well flow control device to the top surface of the well and thence to a source of fluid pressure, a pressure isolation device connected in series in said control line transmission conduit, said pressure isolation device comprising a housing, a fluid passageway through said housing, means on opposite ends of said fluid passageway for connecting said fluid passageway in series with said control line transmission conduit, an annular substantially friction free valve seat disposed in transverse relationship to said fluid passageway, a ball co-operable with said annular valve seat for selectively interrupting fluid flow



through said fluid passageway, resilient means urging said ball onto said annular valve seat, plunger means normally holding said ball off of said annular valve seat, piston means carried by said plunger means and responsive to fluid pressure in the inlet side of said fluid passageway for urging said plunger in a direction to permit said ball to move into engagement with said annular valve seat upon increase of pressure in said fluid passageway above a second predetermined value higher than said first predetermined value but not harmful to said elastomeric seal elements, and biasing means for shifting said ball away from said annular valve seat when fluid pressure within said fluid passageway does not exceed said second predetermined value, thereby preventing the application of excessive control fluid pressure to said subterranean well flow control device.

4,349,044

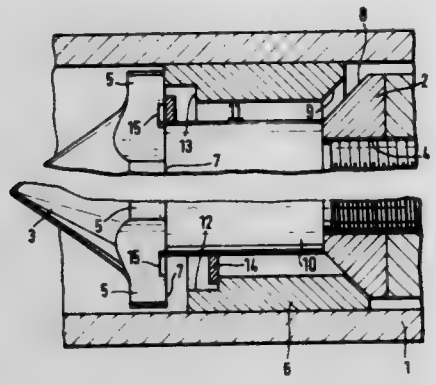
NON-RETURN DEVICE AT THE SCREWHEAD OF SCREW INJECTION MOLDING MACHINES

Karl Schirmer, Nuremberg, Fed. Rep. of Germany, assignor to Mannesmann Demag Kunststofftechnik Zweigniederlassung der Mannesmann Demag Aktiengesellschaft, Nuremberg, Fed. Rep. of Germany

Filed Oct. 17, 1980, Ser. No. 197,804
Claims priority, application Fed. Rep. of Germany, Oct. 19, 1979, 2942317; Aug. 21, 1980, 3031502
Int. Cl.³ B29F *1/04*
U.S. Cl. 137—512.3 10 Claims

1. In a screw injection moulding machine having an injection cylinder and a screw rotatable and reciprocable within said cylinder and provided with a screwhead, a non-return device at the screwhead comprising a pressure ring freely displaceable between front and a rear abutments and which is slidably guided by its outer periphery on the interior surface of the injection cylinder and leaves a flow gap at its inner periphery for material to be fed therethrough by the screw, the pressure

ring further having a rear sealing face co-operating with said rear abutment, the improvement comprising a front sealing face on the pressure ring cooperating with said front abutment and an annular check valve substantially coaxial with the



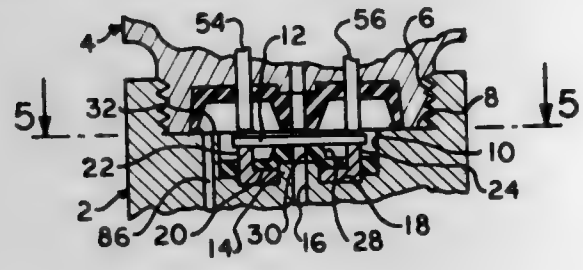
pressure ring so disposed in the space between said front abutment and the front sealing face of the pressure ring as to close said flow gap when said check valve is applied to said front sealing face.

4,349,045

MAGNETICALLY ACTUATED PILOT VALVE

Carl L. C. Kah, Jr., 778 Lakeside Dr., North Palm Beach, Fla. 33408

Division of Ser. No. 973,299, Dec. 26, 1978, Pat. No. 4,310,023.
This application Aug. 20, 1981, Ser. No. 294,683
Int. Cl.³ F16K *31/08*
U.S. Cl. 137—625.5 **8 Claims**



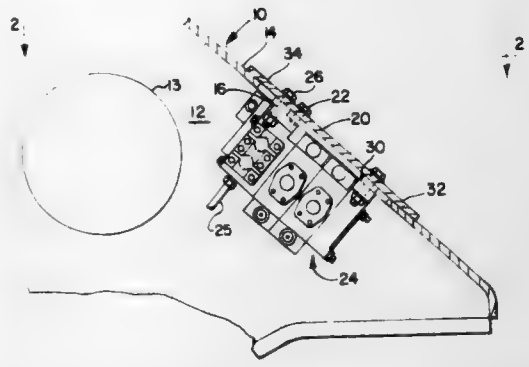
1. A magnetically actuated pilot valve having a housing, said housing having an enclosed chamber, a first passage in said housing having a first opening to said chamber, an armature plate positioned in said chamber for movement between a first position against said first opening and a second position away from said first opening, said armature plate being permanently magnetized with a north pole at one location and a south pole at another location, pole piece means including two pole pieces extending into said chamber toward said armature plate, each pole piece having a free end extending toward said armature plate, at least one pole piece having its free end spaced from said armature plate when said armature plate is in its first position, means aligning said armature plate with said north pole location in line with one pole piece and said south pole location in line with said other pole piece, a second passage in said housing having a second opening to said chamber, means for magnetically energizing said pole pieces to move said armature plate away from its first position to its second position to open said first opening or to move said armature plate away from its second position to its first position to close said first opening, first and second metal members positioned on opposite sides of said first passage with their ends being on a plane substantially with said first opening, said metal members being aligned with said armature plate, when said armature plate is in its first position it is attracted to the two metal members for maintaining it in its first position and when said armature plate is in its second position it is attracted to the two pole pieces for maintaining it in its second position.

4,349,046

HYDRAULIC VALVE BLOCK MOUNTING

John E. Klem, Waukegan, Ill., assignor to International Harvester Co., Chicago, Ill.

Filed Sep. 15, 1980, Ser. No. 187,237
Int. Cl.³ F16L *3/00*
U.S. Cl. 137—899 **8 Claims**



1. In an articulated vehicle having a hydraulic system including a hydraulic valve bank with a plurality of hydraulic valves, the improvement comprising:

a front frame structure of said articulated vehicle defining an enclosure having a man access opening and having a top plate having an outer surface, said top plate having a valve bank access port, and a plurality of small apertures arranged at the periphery of said valve bank access port;

a valve bank mounting plate having a first surface and having a plurality of apertures positioned on said top plate to cover said valve bank access port;

a valve bank carried on said first surface of said valve bank mounting plate, said valve bank having overall outside dimensions restricted to the height and width dimensions of said valve bank access port, said valve bank being hydraulically connected within said front frame structure to said vehicle hydraulic system;

a plurality of fasteners passing through said plurality of apertures in said valve bank mounting plate and said plurality of small apertures of said top plate whereby said valve bank mounting plate and said valve bank are fixed to said outer surface of said top plate with said first surface of said valve bank mounting plate adjacent said outer surface of said top plate.

4,349,047

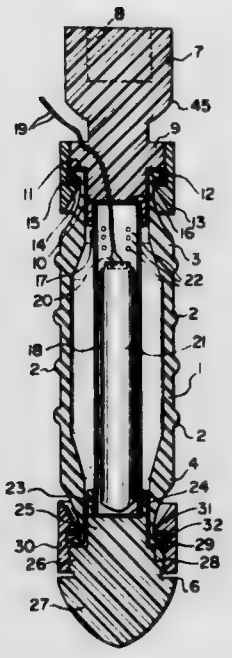
FLOW PLUG

Fred S. Ditto, deceased, late of Calgary, Canada, and by Teresa M. Ditto, executrix, 135 Whitewood Pl. NE., Calgary, Alberta, Canada T1Y 3S8

Filed Nov. 17, 1980, Ser. No. 207,557
Claims priority, application Canada, Nov. 15, 1979, 339886
Int. Cl.³ F16L *55/12*
U.S. Cl. 138—93 **5 Claims**

1. An expansible plug for a cylindrical passage comprising a flexible sleeve open at each end thereof, said sleeve being expansible under the influence of internal gas pressure; substantially rigid end caps closing the ends of said sleeve; pipe means extending between said end caps for maintaining the sleeve in elongated condition during insertion of the deflated plug into a passage; a compressed gas container in said pipe means; first electrically operated valve means normally closing said container; electrical leads extending from said valve means through one end cap for connection to a source of electrical power for opening said valve means; permitting the escape of

gas under pressure into said pipe means; and discharge openings in said pipe means permitting the flow of such gas under pressure into said sleeve to expand the plug, thereby sealing the passage.



4,349,048

PIPE THREAD PROTECTOR

Jim W. Clark, Houma, La., assignor to Superior Casing Crews, Inc., Metairie, La.

Filed Dec. 17, 1980, Ser. No. 217,415
Int. Cl.³ B65D *59/00*; F16L *57/00*
U.S. Cl. 138—96 T 8 Claims



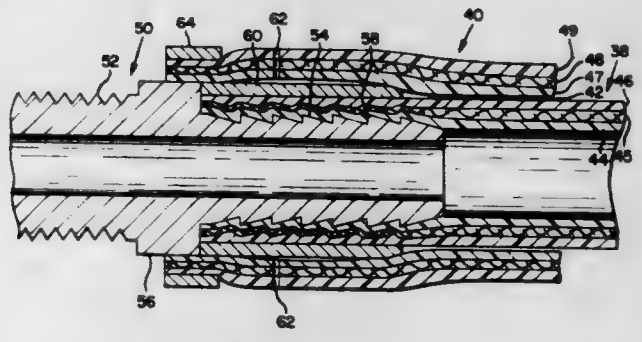
1. A thread protector comprising an annular member having an axial line of separation to enable it to be installed on the threaded end of a pipe or the like, said annular member comprising an internal tension belt constructed of resilient material and shaped to bias the ends of the protector away from each other to open the protector when the ends of the belt are disconnected, means moving the ends of the belt towards each other for clamping the protector onto the threads and permitting the ends of the belt to move away from each other, said belt including a resilient body encapsulating the belt with said means being exposed for access, said means including a handle structure pivotally supported from the belt, a yoke bolt bridging the juncture between the ends of the belt and being connected to the end of the belt opposite from the handle, a link interconnecting the bolt and handle whereby pivotal movement of the handle will cam the ends of the belt towards each other for clamping engagement and movement of the pivotal connection between the bolt, link and handle past to center of the pivotal connection between the handle and belt will retain the handle in said protector clamping position and enable the opening bias of the belt to open the thread protector after the handle is moved outwardly over the pivot center of the pivotal connection between the handle and belt, said yoke bolt including means adjustably connecting the bolt to the belt, and adjustable means including a swivel connection between the yoke bolt and belt, said bolt extending through the swivel connection with a threaded nut adjusting the bolt in relation to the wivel connection, said belt including a sheet of metallic material having a pair of plates connected to the remote ends thereof with the plates being arcuate and the sheet of material being preformed to a radius greater than the radius of the pipe for spring biasing the protector to open position, said handle and link being disposed in a radially extending open box defined by spaced parallel side walls and end walls with the handle and link being completely received therein when in said protector clamping position.

4,349,049

HYDRAULIC SAFETY HOSE

E. Ray Silvey, 1231 Dutton Rd., Eagle Point, Oreg. 97524

Filed Nov. 28, 1980, Ser. No. 211,313
Int. Cl.³ F16L *55/00*
U.S. Cl. 138—103 10 Claims



1. A hydraulic safety hose comprising:
an inner primary fluid pressure hose for transmitting fluids under high pressure;
an outer secondary fluid pressure hose surrounding and substantially coextensive in length with said inner primary hose,
said outer and inner hoses being sized to provide an annular fluid passageway therebetween;
said secondary hose including a bleed orifice means which in the event of rupture of said inner primary hose enables pressurized fluid passing into and through said annular passageway to pass safely through said bleed orifice means outwardly of the secondary hose under low pressure.

4,349,050

BLAST JOINT FOR SUBTERRANEAN WELLS

Arthur E. Bergstrom, Montgomery; Richard H. Nelson, Houston, both of Tex., and George P. Maly, Fullerton, Calif., assignors to Carbide Blast Joints, Inc., Houston, Tex.

Filed Sep. 23, 1980, Ser. No. 190,089
Int. Cl.³ F16L *55/00*
U.S. Cl. 138—147 11 Claims

1. In a blast joint for a tubing wherein a plurality of heat abrasive resistant wear rings, each having substantially planar end faces, are coaxially mounted in end face-to-face array on said tubing and are resiliently compressed thereon by axial spring means, the improvement comprising:
a pair of spaced annular clamping collars distally and coaxially carried on said tubing and retaining said wear rings and spring means therebetween, each of said collars including a collet joint formed by an internally threaded clamp ring having a tapered inside wall, an expandible clamping sleeve having a tapered outside wall received within said clamping ring and having a plurality of longitudinal slots extending from at least one end partially along the length thereof, and an externally threaded clamp

bushing having an inside shoulder bearing against the end of said expanding clamping sleeve and threaded into said



clamp ring to advance said expanding clamping sleeve in said ring and compress said expanding clamping sleeve against said tubing.

4,349,051

THERMAL INSULATION OF VESSELS AND METHOD OF FABRICATION

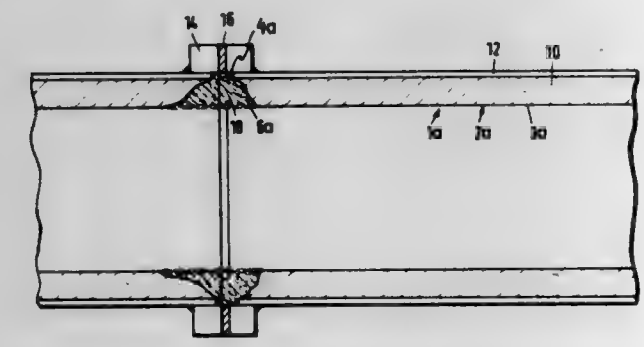
Lothar Schilf, Am Freibad 9, 2807 Achim, Fed. Rep. of Germany

Filed Mar. 24, 1980, Ser. No. 133,408

Claims priority, application Fed. Rep. of Germany, Mar. 23, 1979, 2911416

Int. Cl.³ F16L *9/18*; B65D *90/06*

U.S. Cl. 138—149 **3 Claims**



1. A thermally insulated high pressure vessel comprising,
a thick outer wall,
an inner wall radially spaced from and within the outer wall,
said inner wall being thinner than said outer wall and defining a space between the inner wall and the outer wall,
a powder insulating material completely filling said space, and
a high vacuum within said space, said inner wall comprising a flexible wall irreversibly compressed toward said outer wall and deformed against said insulating material after the high vacuum is created in said space.

4,349,052

HEALD FRAME FOR LOOMS

Saichi Yaji, Izumisano; Kazuya Kitawaki, Osaka, and Takafumi Furuya, Izumisano, all of Japan, assignors to Nankai Kogyo Kabushiki Kaisha, Osaka, Japan

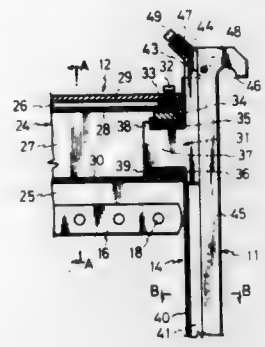
Filed May 30, 1980, Ser. No. 154,756

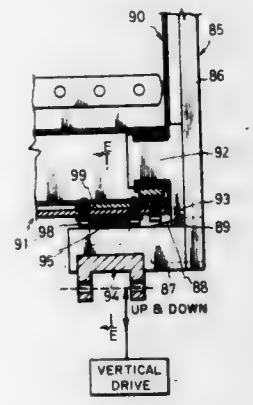
Claims priority, application Japan, Aug. 27, 1979, 54-117627; Feb. 6, 1980, 55-14337; Apr. 4, 1980, 55-45666

Int. Cl.³ D03C *9/06*

U.S. Cl. 139—92 **6 Claims**

1. A heald frame for looms, comprising;
a heald frame structure comprising upper and lower frame staves and opposed lateral side stays connecting members interconnecting said upper and lower frame staves and said side stays, carrier rods attached to said upper and lower frame staves respectively, and a plurality of healds extending between said carrier rods,
a pair of support members separate from said heald frame structure which support said side stays respectively and which are disposed on opposite sides of said heald frame,
said heald frame structure including elastic members each disposed between the respective connecting members between said frame staves and said side stays, and one or more intermediate stays disposed at suitable positions and





extending between said upper and lower frame staves, each of said side stays being formed at its upper and lower ends with connecting means for connecting said intermediate stays to said upper and lower frame staves, respectively, and
said support members comprising means for supporting said upper and lower projections in said heald frame structure and means for interconnecting said support members to vertically reciprocating drive units.

4,349,053

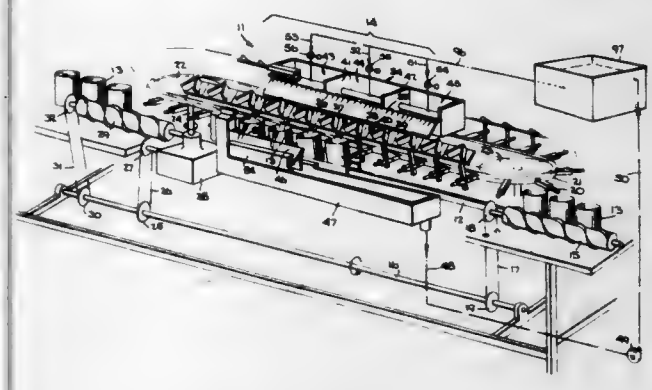
METHOD AND APPARATUS FOR FILLING CONTAINERS WITH LIQUID

Bernard C. Eisenberg, Rockaway, N.J., assignor to Solbern Corp., Fairfield, N.J.

Filed Mar. 5, 1980, Ser. No. 127,530

Int. Cl.³ B65B *3/06, 43/54*

U.S. Cl. 141—1 **12 Claims**



1. A method for filling open top containers with a liquid material, the method including advancing a line of tilted open

top containers along a predetermined substantially straight path through a filling region and discharging a liquid material in a substantially uniform continuous sheet of unsupported flowing liquid from an elongated substantially straight discharge edge extending through the filling region in the direction of said predetermined path at a level spaced above the open tops of the containers, the method being characterized by

dividing said substantially continuous sheet of unsupported flowing liquid in the space between the discharge edge and the open tops of the containers into a plurality of separate equally spaced downwardly converging streams aligned with the open tops of corresponding containers in the line of containers advancing through the filling region by providing a plurality of spaced deflectors, disposed in a line under the elongated discharge edge and above the open tops of the containers, each of the deflectors having surfaces facing opposite one another, diverging downwardly, and intersecting the sheet of liquid with the highest point of each deflector being aligned approximately with the region between respective adjacent containers in the line of containers, each downwardly converging stream engaging oppositely disposed diverging surfaces of adjacent deflectors,

moving said divided streams continuously in the direction of the predetermined path in synchronism with the advance of the corresponding containers through the filling region by moving said deflectors along said predetermined path in synchronism with the advance of the containers through the filling region, thereby preventing the liquid material from contacting the outside surfaces of the containers during the filling thereof, and

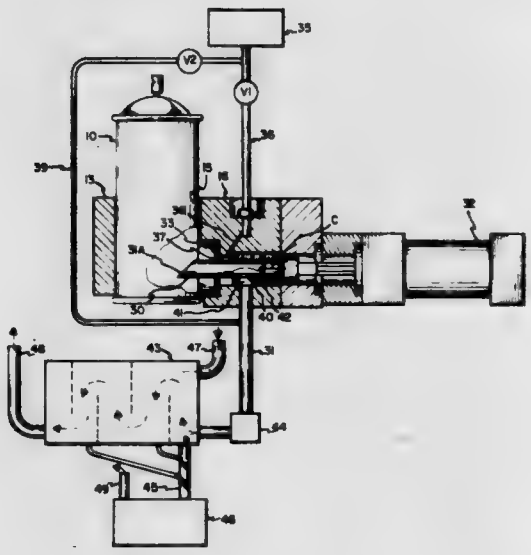
adjusting the discharging of liquid material in the sheet in relation to the rate of advance of the containers and the length of the discharge edge to assure overfilling of each tilted container.

4,349,054

METHOD AND APPARATUS FOR SAFELY DESTROYING AEROSOL CONTAINERS

Donald M. Chipman, Memphis, and Ray D. Bales, Millington, both of Tenn., assignors to Plough, Inc., Memphis, Tenn.

Filed Dec. 15, 1980, Ser. No. 216,094
Int. Cl.³ B65B *3/04*; B67B *7/24*
U.S. Cl. 141—1 **19 Claims**



8. Apparatus for safely destroying an aerosol container containing flammable propellent comprising:

a. means for restraining movement of said aerosol container,

b. puncturing means adapted to penetrate said aerosol container at a point of puncture while the movement of said aerosol container relative to said restraining means is restrained,

c. means for providing inert media that will prevent ignition of the aerosol containers flammable propellant to said point of puncture during penetration, and

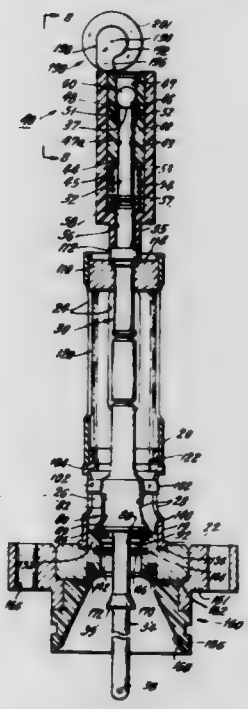
(d) wherein the element c inert media means comprises an inert media holder adapted to hold inert media around said point of puncture during penetration.

4,349,055

FILLING VALVE FOR BEVERAGE CONTAINER FILLING MACHINE

Anthony J. DiChiara, 10 St. Paul's Crescent, Garden City, N.Y. 11530

Continuation-in-part of Ser. No. 972,282, Dec. 22, 1978, abandoned. This application Jan. 13, 1981, Ser. No. 224,744
Int. Cl.³ B65B *31/00*
U.S. Cl. 141—39 **58 Claims**



1. A filling valve for filling a container with liquid from a pressurized bowl, said valve comprising:

a housing;

a filling orifice through said housing, through which liquid can be fed;

a valve seat in said housing and around said filling orifice;

a liquid flow valve element in said housing and shiftable onto and off said valve seat for selectively closing and opening said filling orifice, respectively;

a gas flow conduit comprising:

a gas flow tube extending from above said liquid flow valve element, through said liquid flow valve element and extending below said liquid flow valve element to be below said valve seat;

a first gas flow opening in said gas flow tube above said valve seat; a second gas flow opening in said gas flow tube below said valve seat; said gas flow tube joining said first and said second gas flow openings;

said gas flow conduit being shiftable axially together with said liquid flow valve element, with respect to said housing;

a cover for closing said first gas flow opening;

said cover comprising:

a closure element shaped for blocking said first gas flow opening and being movable between a first position away from said first gas flow opening and a second position at and blocking said first gas flow opening;

a support for said closure element; first biasing means connecting said closure element support and said closure element for normally biasing said closure element against moving to its said second position; said first biasing means has the characteristic that upon a predetermined gas pressure differential developing between the interior of said bowl at said first gas flow opening, on the one hand, and at said second gas flow opening, on the other hand, said closure element is urged to

its said second position by the gas flow through said first gas flow opening to said second gas flow opening, and the bias of said first biasing means is overcome;

second biasing means connecting said closure element support and said gas flow tube for biasing said support in a direction to normally move said closure element away from its said second position.

4,349,056

CONTAINER FOR LIQUID WITH NON-DRIP MEASURING CAP CLOSURE

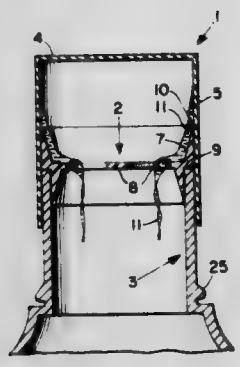
Jorgen Heino, Bruxelles, Belgium, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Dec. 22, 1980, Ser. No. 219,419

Claims priority, application United Kingdom, Dec. 29, 1979, 7944581

Int. Cl.[3] B65B *3/00*

U.S. Cl. 141—381 1 Claim



1. A container for liquid with a non-drip measuring cap closure, said container comprising a neck integral with the container body, a measuring cap closure with a closed end portion and a non-perforated skirt portion, an insert received in said neck having a peripheral resilient flange in the form of an end lip so dimensioned as to scrape residual liquid from the inner wall of the skirt portion as the cap is applied to the container after it has been used for measuring so that residual liquid is caused to run back into the container and does not drip down the outside of the container, said insert including downwardly protruding means to engage the container neck and cross-bar means to assist in dispensing liquid and between which scraped residual liquid flows back into the container.

4,349,057

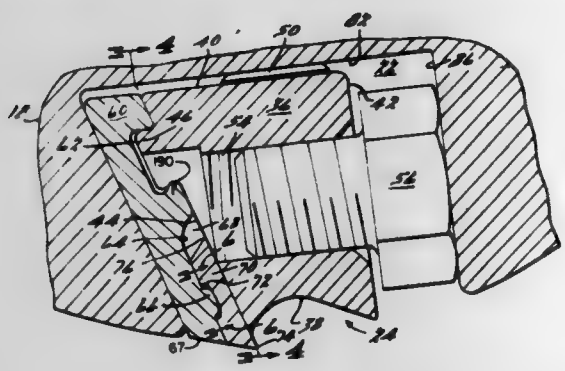
CUTTING BLADE ASSEMBLY FOR A POWER PLANER

Rainer Bachmann, Hohenstein, and Helmut Ulm, Limburg, both of Fed. Rep. of Germany, assignors to Black & Decker Inc., Newark, Del.

Filed Jun. 18, 1980, Ser. No. 160,584

Int. Cl.[3] B27G *13/00*

U.S. Cl. 144—230 9 Claims



1. In a power planer having a motor drivingly coupled to a rotary cutter head for supporting at least one cutting blade assembly comprising an elongated pressure piece, and elongated carrier piece engaged with said pressure piece, and a blade; the improvement wherein:

said pressure piece and said carrier piece have substantially complementary contoured mating surfaces formed thereon which permit said pieces to be jointed only by longitudinally inserting one into the other in the direction of elongation thereof, said pieces when joined being frictionally engaged and rigidly held together by said complementary contoured mating surfaces, and said pieces defining therebetween an elongated slot in which said blade is received and retained.

4,349,058

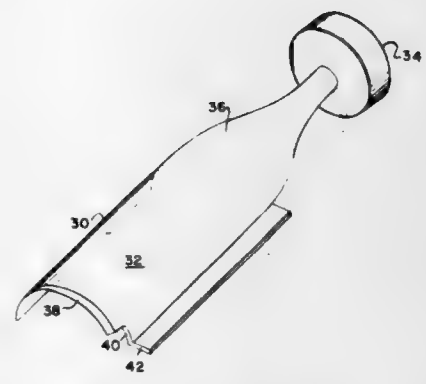
CUTTING TOOL AND A METHOD OF USING SAME

John E. Comparetto, 108 Cropper St., Chincoteague, Va. 23336

Continuation-in-part of Ser. No. 763,632, Jan. 28, 1977, Pat. No. 4,150,675. This application Apr. 23, 1979, Ser. No. 32,309

Int. Cl.[3] A61B *17/16*

U.S. Cl. 145—24 14 Claims



1. An elongated cutting tool capable of severing sections from a workpiece of wood, plastic, bone or similar material, said tool comprising:

a head portion at one end of said tool;

cutting blade means at the opposed end of said tool said cutting blade means including:

(a) means for forming an initial distinct cut in one surface of said workpiece;

(b) means for enabling the tool to be rotated along said surface to a distinct second position of said workpiece, said enabling means further including means for maintaining an axially elongated arcuate portion of said cutting blade means within said initial cut while the remainder of said cutting blade means performs a second distinct cut at said distinct second position; and

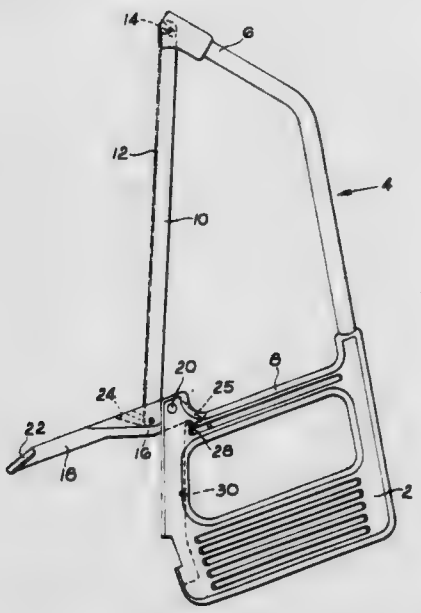
(c) at least one cutting portion extending outwardly from said arcuate portion; and

an intermediate shaft portion connecting said head and said cutting blade means, wherein said elongated arcuate portion is a primary cutting blade arcuate portion which extends to said one end of said tool and which is integrally connected to an arcuate auxiliary cutting blade portion of similar arc axially recessed from said one end, and said at least one outwardly extending portion includes at least one third cutting blade portion integrally connected with said auxiliary portion, said third portion extending outwardly directly from said auxiliary portion and being axially recessed from said one end whereby, when said tool is partially withdrawn, turned and moved from said first distinct position to said second distinct position and is reinserted into the workpiece to form said second of said two distinct cuts, a desired wedge-shaped section will be severed from said workpiece.

4,349,059
BLADE HOLDERS

Paul S. Hepworth, and Martin G. Whitehouse, both of Leicester, England, assignors to Plas Plugs Limited, Derby, England

Filed May 15, 1981, Ser. No. 264,412
Claims priority, application United Kingdom, May 27, 1980, 8017329
Int. Cl.³ B27B *21/02*
U.S. Cl. 145—33 A 3 Claims



1. A blade-holder having a C-shaped portion with two ends parts, and adapted for use with a strip blade having an opposed pair of mounting projections provided at each of first and second end portions thereof and being arranged to span said C-shaped portion, said C-shaped portion comprises:

a first arm member with a T-slot provided therein to receive the opposed projections of the first end portion of the blade,

a second arm member with a pivot mounting thereon, and

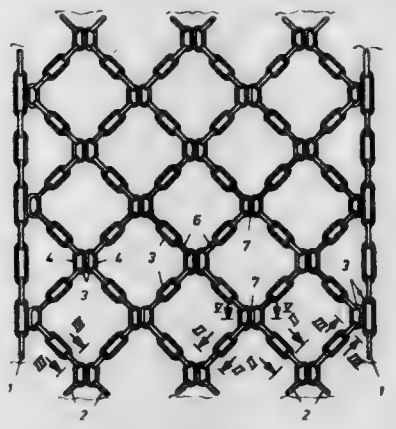
a pivotal lever having an end portion mounted on said pivot mounting, a T-slot being provided on said lever so as to be inwardly spaced from its mounting and being adapted to receive the opposed projections of the second end portion of the blade when the lever is in a first, loading position, said lever further including an abutment surface projecting outwardly from its end portion adjacent said pivotal mounting, said abutment surface being arranged to contact the second arm member when the lever is in its first, loading, position and thereby to act as an end stop to ensure correct location of the T-slot of the lever when receiving the projections of the second end portions of the blade, movement of the lever from its first position into a second, operating, position causes the distance between the T-slot of the first arm member of the T-slot of the lever to increase, thereby enabling tension to be imparted to the blade.

4,349,060
MEANS FOR IMPROVING THE SURFACE GRIP OF A TIRE OF A VEHICLE AND A METHOD FOR MANUFACTURING SUCH MEANS

Kare Espedalen, Stavern, Norway, assignor to Elkem A/S, Oslo, Norway

Filed Mar. 9, 1981, Ser. No. 241,595
Claims priority, application Norway, Mar. 19, 1980, 800788
Int. Cl.³ B60C *27/00*
U.S. Cl. 152—172 7 Claims

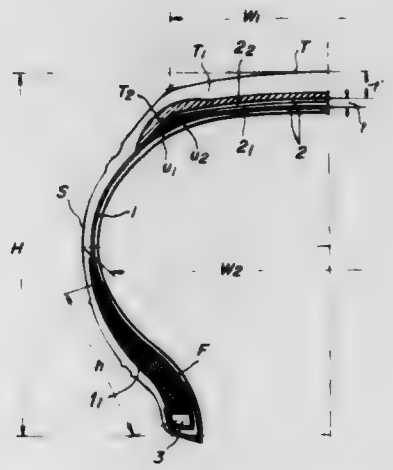
1. An anti-skid device intended to be fitted on vehicle wheels for improving the traction of the wheel on the ground, comprising at least two chains which are intended to surround the tread face of the wheel and being arranged in an approximately zig-zag shaped formation along the circumference of the wheel, the at least two chains being interconnected and connected to support means intended to extend along the inner and outer walls of the tire for supporting the zig-zag shaped formation, the interconnection being provided by welding a certain number of neighbouring links of adjacent chains together.



4,349,061
PNEUMATIC RADIAL TIRES FOR PASSENGER CARS HAVING A LOW ROLLING RESISTANCE

Hiroshi Hirakawa, Musashino; Akio Sato, Higashimurayama; Takashi Takusagawa, Ohme, and Nobumasa Ikeda, Kodaira, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Aug. 18, 1980, Ser. No. 179,197
Claims priority, application Japan, Sep. 1, 1979, 54/111038
Int. Cl.³ B60C *13/00, 15/06, 1/00*
U.S. Cl. 152—209 R 10 Claims



1. A pneumatic radial tire for passenger cars having a low rolling resistance, comprising; a toroidal carcass composed of one ply of radially arranged polyester cords, each end portion of said ply being turned around a bead core to form a turnup portion; a belt superimposed about said carcass and comprising plural rubberized plies each containing cords arranged at an inclination angle of 60°–80° with respect to a radial plane of the tire, the cords of said plies being crossed with each other; a bead filler rubber having a dynamic modulus of 700 kg/cm^2–1500 kg/cm^2 and a Shore A hardness 80°–95° arranged between said carcass and said turnup portion at a region extending from said beaad core to a substantially middle part of a side portion; a tread rubber composed of major parts of styrene-butadiene copolymer rubber and minor parts of polybutadiene rubber and containing a predetermined amount of carbon black ISAF and a base rubber composed of major parts of natural rubber and minor parts of polybutadiene rubber and containing a predetermined amount of carbon black HAF and having a loss modulus of 2 kg/cm^2–12 kg/cm^2 and a resilience of 60%–85%; said base rubber arranged between said belt and said tread rubber on a volume ratio in said tread rubber of 0.1–0.5 so that said base rubber wraps said belt from one end to the other end over an upper portion thereof.

4,349,062

HIGHLY DURABLE PNEUMATIC TIRE COMPRISING BIAS LAID CARCASS CONSTRUCTION FORMED OF SUPERIMPOSED STACKED PLIES

Yasuaki Tsurunaga, Kodaira; Masaru Abe, Sayama; Hideaki Hashimoto, Musashino, and Junichi Tsuzura, Urawa, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Continuation of Ser. No. 938,145, Aug. 30, 1978, abandoned.
This application May 16, 1980, Ser. No. 150,498
Claims priority, application Japan, Sep. 6, 1977, 52-106285
Int. Cl.[3] B60C *9/06, 15/00*
U.S. Cl. 152—356 R 6 Claims



1. A pneumatic tire comprising a bias laid construction carcass body having a plurality of superimposed stacked plies, each of said plies including rubberized textile cords, the cords of approximately one-half of said plies and the cords of the remaining plies being angularly disposed with respect to the peripheral center line and oppositely inclined with respect to each other, wherein said carcass body comprises outer and inner ply groups having a number of outer and inner plies, respectively, such that the total number of plies is at least 8, said outer and inner plies comprised of outer and inner cords made of the same materials, respectively, said outer cords having a diameter smaller than the diameter of said inner cords such that the ratio of said cord diameter of said inner cords to said outer cords is approximately 1:0.89 to 0.62, said cords in a region of said carcass located between a sidewall portion and a bead portion of said tire periodically experiencing both tensile and compressive forces as said tire is rotated in a loaded condition, the ratio of said number of said outer plies to the total number of inner and outer plies, excluding turned-up portions, at a region intermediate the maximum width portion of said tire and the bead portion thereof, is approximately from 0.13 to 0.67, said bead portion having at least two bead cores and one of the plies of one of the inner and outer ply groups at a boundary surface between the inner and outer ply groups is wound around a first bead core having at least one ply of the other of said inner and outer ply groups wound therearound and the remaining plies of said one of the inner and outer ply groups are wound around a second bead core, wherein all of the plies of one of the inner and outer ply groups are not wound around the first bead core.

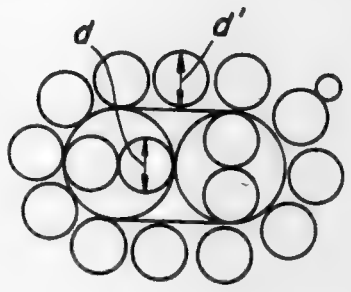
4,349,063

PNEUMATIC RADIAL TIRES

Michitsugu Kikuchi, Mitaka, and Yoshio Suzuki, Higashimurayama, both of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Dec. 12, 1980, Ser. No. 215,776
Claims priority, application Japan, Dec. 18, 1979, 54/163452
Int. Cl.[3] B60C *9/00*
U.S. Cl. 152—359 6 Claims

1. In a pneumatic radial tire containing steel cords as a reinforcement for at least one of the carcass and belt thereof, the improvement comprising; said steel cords having such a flat section inclusive of an elliptic section that two to three strands, each strand being produced by twisting plural filaments of 0.1–0.4 mm diameter, are arranged in parallel with each other to form a core and plural filaments are twisted around said core



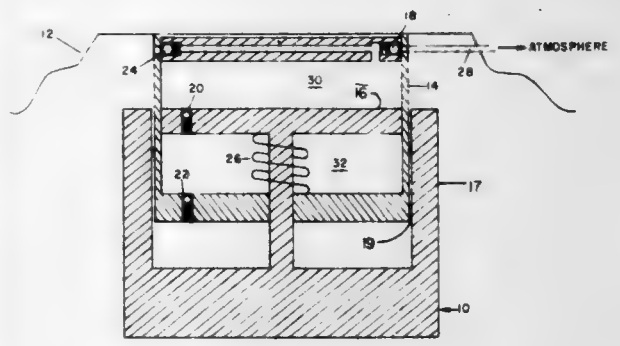
and wrapped with a spiral filament, the filaments in one strand constituting said core twisted in the "S" direction and the filaments in the adjacent strand twisted in the "Z" direction and, a ratio of a diameter of filaments twisted around said core corresponding to the bending direction of said core to a diameter of filaments constituting said core is 0.3–2.0.

4,349,064

INERTIAL TIRE PRESSURE REGULATORS

George R. Booth, 6815 Landor La., Springfield, Va. 22152

Continuation of Ser. No. 961,448, Nov. 17, 1978, abandoned.
This application May 1, 1980, Ser. No. 145,562
Int. Cl.[3] B60C *23/10*
U.S. Cl. 152—418 7 Claims



1. A pump for use within a pneumatic tire mounted on a rim to keep said tire from getting dangerously soft due to a slow leak, comprising: a cylinder attached to said rim; a piston within said cylinder, the axes of said cylinder and said piston being disposed radially outward from said rim; a first passage to allow unpressurized outside air to enter said pump; and a second passage to allow pressurized air to enter said pneumatic tire from said pump, said pump being operated by centrifugal force which causes said piston to move radially outward and spring means which forces said piston to move radially inward.

4,349,065

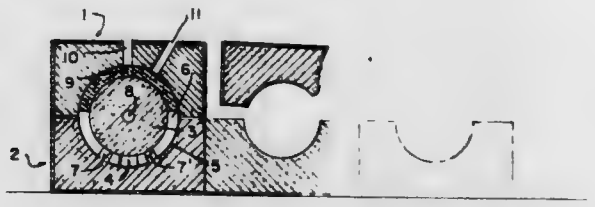
MOLD PRODUCING GLOBE-SHAPED BELLS WITH SINGLE-PIECE SHELLS

William R. Schall, Star Rte., Box 137, Apollo, Pa. 15618

Filed Sep. 15, 1980, Ser. No. 187,395
Int. Cl.[3] B22C *9/10, 9/22*
U.S. Cl. 164—368 6 Claims

1. A bell mold comprising an upper block filled with a sand-based commercial molding composition, into which a dome-like depression has been made; a lower block filled with a sand-based commercial molding composition, into which a dome-like depression has been made; an inner core; formed of a sand-based molding composition, which is smaller than the globe-like cavity formed when the upper and lower blocks are

joined; at least two feet extending from the surface of the dome-like depression in the lower block to the inner core which they lift and hold in place; a tunnel, extending from the outer surface of the upper block to the inner surface of its



dome-like depression, through which molten metal can be poured; at least one tunnel extending from the upper block's outer surface to the inner surface of its dome-like depression through which air can escape during a casting process; and a jinglet, embedded in the inner core.

4,349,066

METHOD AND APPARATUS FOR CONTINUOUS CASTING OF A NUMBER OF STRANDS

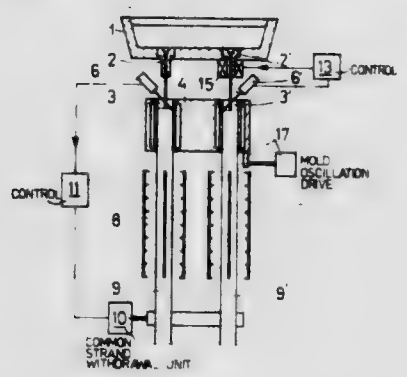
Markus Schmid, Zürich, and Hans Gloor, Umiken, both of Switzerland, assignors to Concast AG, Zürich, Switzerland

Filed Apr. 7, 1980, Ser. No. 138,178

Claims priority, application Switzerland, Apr. 27, 1979, 3975/79

Int. Cl.³ B22D *11/16*

U.S. Cl. 164—453 **14 Claims**



1. In a method for the continuous casting of a number of strands, wherein steel from at least one tundish is cast into continuous casting molds, the thus formed strands are withdrawn from the continuous casting molds at the same speed, cooled and the levels of molten steel in the continuous casting molds are maintained at desired heights, the improvement which comprises the steps of:

controlling the withdrawal speed in a first of said continuous casting molds as a function of the level of molten steel in said first continuous casting mold;

measuring the level of molten steel in each of the other molds; and

regulating the quantity of infed steel flowing into each of said other molds as a function of the level of molten steel in each respective other mold.

4,349,067

MACHINE AND METHOD FOR CONTINUOUSLY CASTING BATTERY GRIDS

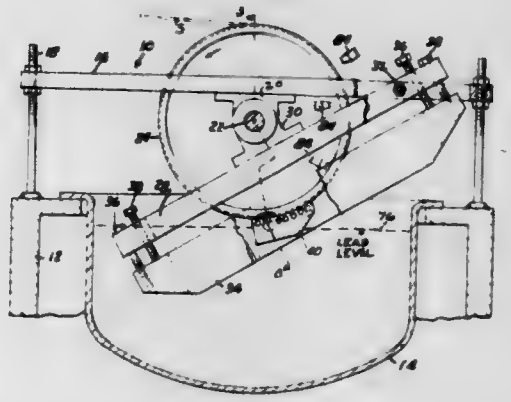
John W. Wirtz, and Raymond L. Scheak, both of Port Huron, Mich., assignors to Wirtz Manufacturing Company, Inc., Port Huron, Mich.

Continuation-in-part of Ser. No. 65,365, Aug. 9, 1979, abandoned. This application Aug. 8, 1980, Ser. No. 176,479

Int. Cl.³ B22D *11/10*

U.S. Cl. 164—479 **34 Claims**

1. A machine for continuously casting battery grids comprising a rotary drum having a cylindrical outer surface, said outer surface having a cavity therein conforming to the desired battery grid pattern, a fixedly supported shoe having an arcuate surface thereon extending around an arcuate segment of the outer cylindrical surface of the drum in close fitting, sliding relation, said shoe overlying said cavity and having an inlet and an outlet therein for molten lead, a passageway in said shoe extending between said inlet and said outlet, a portion of said passageway comprising an orifice slot extending to said arcuate surface and communicating with a circumferential segment of the outer peripheral surface of the drum in which said cavity is formed, a pot for molten lead, means for directing molten lead under superatmospheric pressure from said lead pot to said inlet in an amount substantially in excess of that required to progressively fill said cavity as the drum rotates past said orifice slot, means for directing the excess molten lead from said outlet back to said lead pot so that a substantial quantity of molten lead is continuously recirculated between said lead pot and the orifice slot to maintain the lead throughout the orifice



slot at a relatively high casting temperature and flow restricting means for preventing free flow of molten lead from said orifice slot back to said lead pot to thereby maintain the molten lead in said orifice slot at said superatmospheric pressure.

16. The method of continuously casting battery grids around a rotating cylindrical drum having a battery grid cavity formed in the outer peripheral surface thereof by directing molten lead from a lead pot to successive segments of the peripheral surface of the rotating drum through an orifice slot in a fixed shoe having a curved surface conforming to and positioned against the periphery of the drum in close sliding engagement which includes the steps of continuously directing molten lead to said orifice slot in an amount substantially in excess of that required to fill the portion of the cavity rotating past the orifice slot, causing the excess molten lead to flow back to the lead pot and maintaining the molten lead in the orifice slot and said cavity at a pressure substantially above atmospheric.

4,349,068

METHOD FOR IMPROVED HEAT TRANSFER

Glenn E. Coury, 6600 W. 13th Ave., Ste. 2, Lakewood, Colo. 80214

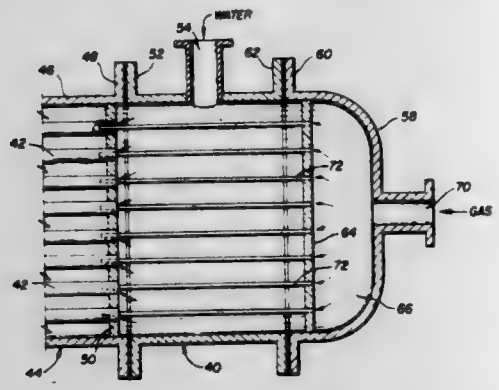
Filed Oct. 9, 1979, Ser. No. 82,561

Int. Cl.³ F28D *13/00, 15/00*

U.S. Cl. 165—1 **7 Claims**

1. The method of improved heat transfer as practiced in a heat exchanger module of the type having a tube side including a plurality of tubes and a shell side defining a volume surrounding said plurality of tubes, wherein a liquid is circulated on the tube side of the heat exchanger module for heat transfer through the tube walls, the improvement comprising: introducing into each of said plurality of tubes on the tube side of the heat exchanger module a substantially equal quantity of non-condensable gas for simultaneous flow in the same direction of flow through the tubes as the liquid, the gas being under sufficient pressure and in sufficient quantity to create, in combination with the liquid, a two phase flow regime throughout substantially the full length of the tubes on the tube side of the heat exchanger module to achieve a relative increase in heat transfer coefficient and overall velocity and turbulence within

the tubes to permit overall shorter tube length or reduced heat exchanger surface area, with respect to tube length or heat



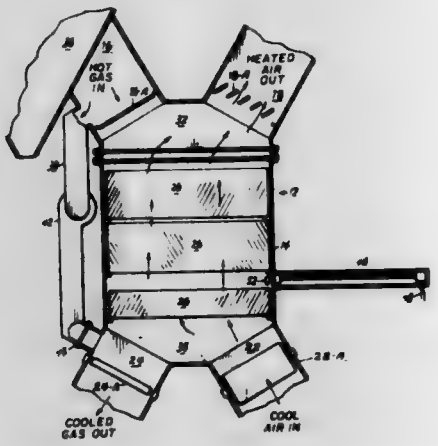
exchanger surface area of a heat exchanger employing one-phase liquid flow in the tubes.

4,349,069

REGENERATIVE AIR HEATER

Harold F. V. von Beck, Bullhead City, Ariz., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed May 22, 1981, Ser. No. 266,245
Int. Cl.³ F28D *17/00*
U.S. Cl. 165—4 **5 Claims**



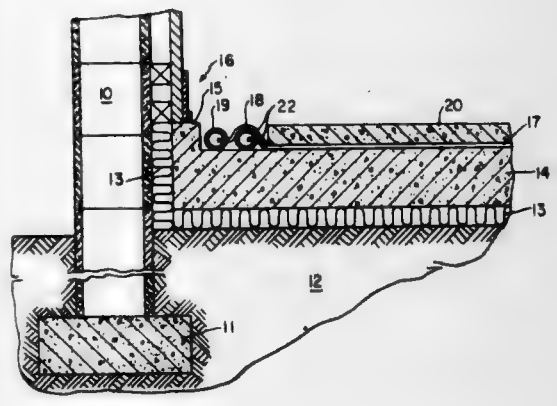
1. Regenerative heat exchange apparatus including a housing, an inlet duct for a heating fluid and an outlet duct for heated air connected to one end of the housing to define a hot end of the heat exchanger, an outlet duct for cooled fluid and an inlet duct for cool air connected to the remote end of the heat exchanger to define a cold end therefor, a mass of heat absorbent material in said housing spaced from the ends thereof to define a hot end plenum chamber adjacent the inlet for the heating fluid and cold end plenum chamber adjacent the inlet for cool air, a source of heating fluid, a passageway connecting the source of heating fluid to the inlet duct for heating fluid, valve means in the inlet and outlet ducts for the heating fluid and air adapted to control the flow of fluid therethrough, a bypass duct connecting said passageway to the cold end plenum chamber, valve means in the bypass duct controlling the flow of heating fluid therethrough, and a blower in said bypass duct having an inlet connected to the source of heating fluid and an outlet exhausting heating fluid into the cold end plenum chamber at a pressure that exceeds the pressure of the air in said housing.

4,349,070

TUBE MAT HEAT EXCHANGER

Michael F. Zinn; Steven E. Krulick, and Ronald W. Leonard, all of P.O. Box 87, 221 Canal St., Ellenville, N.Y. 12428

Division of Ser. No. 17,728, Mar. 5, 1979, Pat. No. 4,270,596. This application Aug. 18, 1980, Ser. No. 178,885
Int. Cl.³ F28F *9/02*
U.S. Cl. 165—173 **4 Claims**



3. A method of connecting a tube of elastomeric material having a certain inside and outside diameter with the interior of a manifold through a cylindrical hole in the wall thereof comprising:

(a) pre-fitting within an end portion of the tube a cylindrical insert having an outside diameter at least as great as the inside diameter of the tube and an axial length greater than the axial length of the cylindrical hole, said hole having a diameter greater than the insert outside diameter and less than the tube diameter around the insert; and

(b) forcing the tube end portion within the hole entirely from the exterior of the hollow manifold with the respective ends of the insert extending inwardly and outwardly of the manifold wall so that the wall of the tube end portion is compressed within and seals the hole.

4,349,071

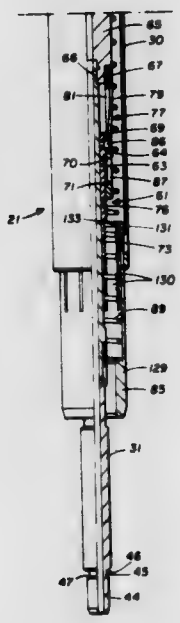
CEMENT RETAINER AND SETTING TOOL ASSEMBLY

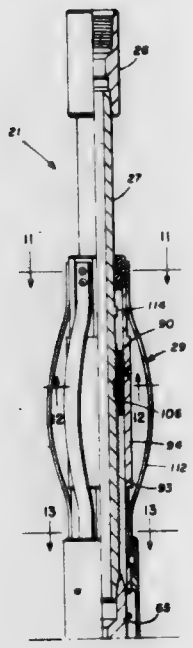
David W. Fish, Carrollton, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

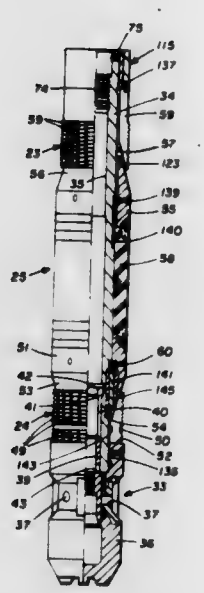
Filed Nov. 7, 1980, Ser. No. 204,750
Int. Cl.³ E21B *23/06, 33/129, 34/12*
U.S. Cl. 166—124 **49 Claims**

1. In a well tool assembly comprising a drillable cement retainer having upper and lower slip sets with a packing element therebetween and a cement valve connected to a mandrel, a setting tool with a tubular member having a valve actuator with one end connected thereto and the other end connected to said valve, a retaining sleeve supported on said tubular member and telescoped over a portion of said upper slip set to hold said latter set against being deployed, means for sliding said sleeve into a release position for said upper set to deploy, and a connection between said retainer mandrel and said tubular member of said setting tool for transmitting lifting force for setting said slip sets and for shifting said actuator to open and close said valve, wherein the improvement comprises said connection having a tubular connector with a lower end threadably coupled with said retainer mandrel to be rotated loose from said mandrel subsequent to setting said slip sets and pressure testing said packing element for leakage, an upper end slidably and non-rotatably connected to said tubular member for limited sliding movement relative thereto in an axial direction, and a releasable locking mechanism normally securing

said upper end of said connector to said tubular member against said limited sliding movement and movable only after deployment of said upper slip set to release said upper end for such movement.







4,349,072

METHOD AND APPARATUS FOR CONDUCTING LOGGING OR PERFORATING OPERATIONS IN A BOREHOLE

Pierre C. Escaron, Houston, and Joachim A. Hoppe, Spring, both of Tex., assignors to Schlumberger Technology Corporation, Houston, Tex.

Filed Oct. 6, 1980, Ser. No. 194,016
Int. Cl.³ E21B *23/08, 43/11, 47/00*
U.S. Cl. 166—250 **34 Claims**

1. A method for logging earth formations surrounding a borehole, utilizing a well-logging tool releasably mounted to the end of a length of drill pipe, comprising:

lowering the length of drill pipe, having the well-logging tool releasably mounted thereon, into the borehole;

lowering an extension member through said drill pipe into engagement with said well-logging tool;

securing said extension member to said well-logging tool;

releasing said well-logging tool, with said extension member secured thereto, from said drill pipe; and

moving said well-logging tool, with said extension member secured thereto, through the borehole and beyond the drill pipe to log at least a portion of the earth formations surrounding said borehole.

17. Apparatus for use in logging earth formations surrounding a borehole, comprising:

a latching sub having upper and lower ends and a central bore, including means for mounting said latching sub to



the end of a length of drill pipe, said means for mounting disposed at the upper end of said latching sub; and

a latching head, having upper and lower ends, releasably mounted within the bore of said latching sub, said latching head having:

means for attaching a well-logging tool to the lower end of said latching head;

a first electrical connection means disposed at the upper end of said latching head;

releasable latching means for engagement with said latching sub to releasably secure said latching head to said latching sub; and

means for selectively actuating said releasable latching means, said actuating means including a second electrical connection means, whereby the well-logging tool may be selectively released from the latching sub to enter the borehole.

4,349,073

HYDRAULIC JET WELL CLEANING

Casper W. Zublin, 801 Hewlett, Bakersfield, Calif. 93309, assignor to Casper M. Zublin, Bakersfield, Calif.

Filed Oct. 7, 1980, Ser. No. 195,303
Int. Cl.³ E21B *37/00, 37/06*
U.S. Cl. 166—312 **3 Claims**

1. A device for washing well liners comprising:

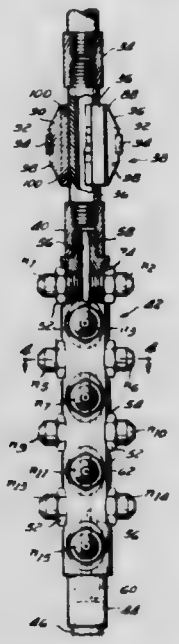
an elongate member having jet nozzles spaced along its length;

tubing connected to each end of said member;

a centralizer located proximate to one end of said member, said centralizer being rigid and having a central bore for slidably engaging said tubing to permit substantial axial movement along said tubing; and

means to confine said axial movement of said centralizer,

said axial movement being sufficient to permit reciprocation of said tubing with respect to said centralizer, said



reciprocation providing a jarring action to help free said centralizer when jammed within said liner.

4,349,074

CONVERTIBLE ROTARY IMPACT HAMMER DRILL

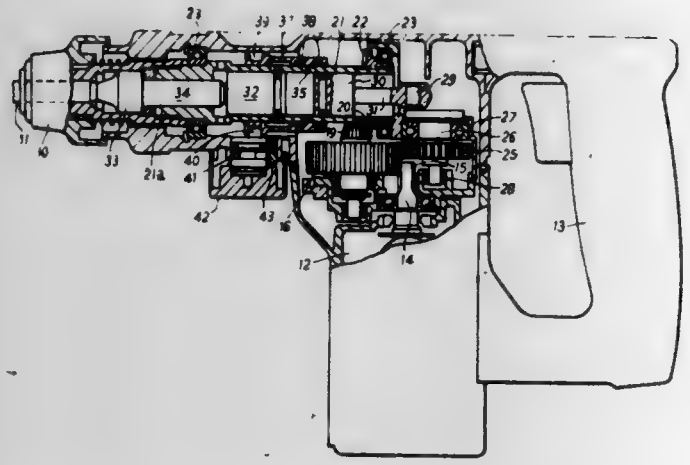
Norman J. Ince, Hampton, England, assignor to Kango Electric Hammers Limited, London, England

Filed Jun. 11, 1980, Ser. No. 158,382

Claims priority, application United Kingdom, Jun. 18, 1979, 7921151

Int. Cl.³ B25D *11/12*

U.S. Cl. 173—48 **3 Claims**



1. A rotary hammer drill comprising a rotary holder for a drill bit, a cylinder which is rotatably mounted in the casing of the drill and which is coaxial with and drivingly connected to the holder, a driver piston and a striker piston in the cylinder, a motor connected to said cylinder for driving said cylinder in rotation, a crank and connecting rod mechanism connected to said motor and said driver piston to reciprocate the driver piston in the cylinder, the striker piston being free for reciprocatory movement in the cylinder under the influence of the pressure of air trapped between the two pistons and being arranged to strike an anvil axially slidably disposed between the striker piston and the holder whereby hammer blows are transmitted to the holder, an aperture being formed in the cylinder wall at a location between the two pistons and beyond the position at which the aperture can be closed off by the driver piston, a sleeve mounted on the outside of the cylinder which sleeve is axially slidable between a first position in which the sleeve covers the aperture and prevents the passage of air into and from the cylinder through the aperture whereby both rotary and axial movement is imparted to the drill bit and a second position in which the aperture is uncovered and places the space between the pistons in communication with the ambient atmosphere whereby only rotary movement is imparted to said bit, and manually operable means for selectively moving the sleeve into said first and second positions.

4,349,075

HYDRAULICALLY OPERATED IMPACT MOTOR

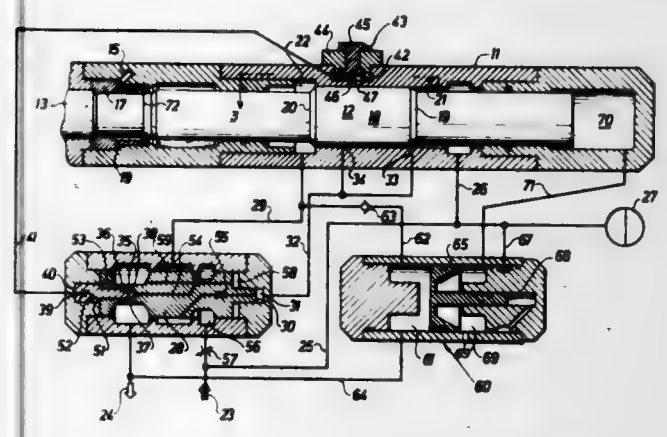
Stig R. Henriksson, Nacka, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden

Filed Oct. 17, 1979, Ser. No. 85,409

Claims priority, application Sweden, Oct. 19, 1978, 7810882

Int. Cl.³ B25D *9/04, 9/12;* F01L *25/04*

U.S. Cl. 173—134 **22 Claims**



1. Hydraulically operated impact motor comprising:

a source **(23)** of high-pressure hydraulic motive fluids;

a cylinder **(11)**;

a hammer piston **(12)** reciprocably mounted in said cylinder **(11)** and arranged to impact upon an anvil means **(13)**, said hammer piston **(12)** defining with said cylinder **(11)** first and second pressure chambers **(21, 22,** respectively);

said hammer piston **(12)** having a first piston surface **(19)** located in said first pressure chamber **(21)** to effect the working stroke of said hammer piston, and a second piston surface **(20)** located in said second pressure chamber **(22)** to effect the return stroke of said hammer piston;

a valve **(28)** coupled to connect at least said second pressure chamber **(22)** alternatively to said source **(23)** of high-pressure hydraulic motive fluid and to a motive fluid outlet **(24)**;

a source **(60)** of low pressure hydraulic fluid; and

a one-way valve **(63)** coupling said low pressure source **(60)** to said second pressure chamber **(22)** at least when the hammer piston **(12)** is close to its impact position for permitting flow of low pressure hydraulic fluid only in the direction towards said second pressure chamber **(22)**.

4,349,076

CHANGE-OVER SWITCH WITH DE-CHATTERING DEVICE FOR ELECTRONIC WEIGHING SCALES

Christian Oldendorf, Göttingen, and Franz-Josef Melcher, Hardegsen, both of Fed. Rep. of Germany, assignors to Sartorius GmbH, Fed. Rep. of Germany

Filed Feb. 2, 1981, Ser. No. 230,810

Claims priority, application Fed. Rep. of Germany, Feb. 2, 1980, 3003900

Int. Cl.³ G01G *23/00*

U.S. Cl. 177—164 **9 Claims**

1. A circuit for electronic weighing scales, for switching between two states under the control of mechanical contacts and at the same time obtaining de-chattering of said mechanical contacts, comprising:

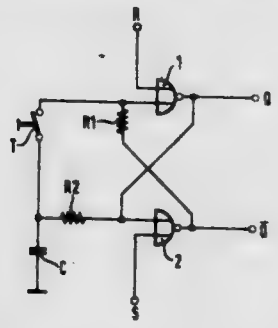
a flip-flop constituted by a first and a second inverting gate with crossed feedback, wherein:

a first feedback circuit of said flip-flop comprises a first

resistor connected between the output of said second inverting gate and the input of said first inverting gate;

a second feedback circuit of said flip-flop comprises means for directly coupling the output of said first inverting gate to the input of said second inverting gate;

means for switching the state of said flip-flop comprising a condenser having one electrode connected to a source of constant potential, and a second electrode connected to the output of the first inverting gate by a circuit which comprises a second resistor of high resistance connected



between the second electrode of the condenser and the output of the first gate; and

a key switch, having a make contact, connected between the second electrode of the condenser and the input of the first inverting gate;

whereby each closing of said make contact causes the state of said flip-flop to switch; and

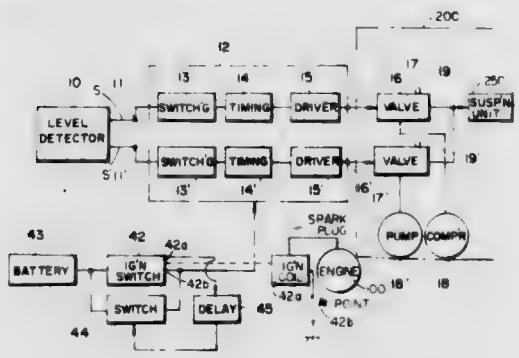
whereby contact-bounce of said make contact, immediately after initial closing of said make contact, does not cause the state of said flip-flop to again switch.

4,349,077

ELECTRIC CONTROL DEVICE FOR VEHICLE SUSPENSION SYSTEM

Tomoyoshi Sekiguchi, Atsugi, and Hiroya Ishikawa, Zama, both of Japan, assignors to Atsugi Motor Parts Co., Ltd., Kanagawa, Japan

Continuation-in-part of Ser. No. 78,820, Sep. 25, 1979, abandoned. This application Jan. 26, 1981, Ser. No. 228,297
Claims priority, application Japan, Oct. 2, 1978, 53-121860
Int. Cl.³ B60G *21/006*
U.S. Cl. 180—41 **8 Claims**



1. In a vehicle comprising an engine, a battery, an ignition switch and a vehicle suspension system including a fluid-operated self-levelling suspension unit, an electrically controlled fluid pressure control valve for the suspension unit, and an electric vehicle-level control device for producing an output for actuating the fluid pressure control valve, said electric vehicle-level control device comprising:

(a) level detecting means responsive to variation in the level of a vehicle body over a road surface for producing a signal in response to a vehicle level higher or lower than a predetermined level,

(b) control circuit means responsive to the signal from said detecting means and controlling said valve on the basis of said signal, said control circuit means including a timing means for generating an output signal at a predetermined time after the signal from the detecting means is fed to the control circuit, and

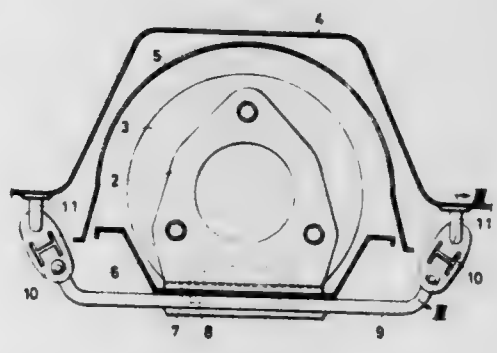
(c) a battery energy feeding circuit responsive to said ignition switch to supply energy stored in said battery to said control circuit means, said battery energy feeding circuit comprising switching means for selectively supplying battery energy to the control circuit means, and an off-delay circuit responsive to said ignition switch to produce a command for maintaining said switching means closed for a predetermined time period following an opening of said ignition switch.

4,349,078

MOUNTING FOR A HEAT PRODUCING ELEMENT OF AN AUTOMOBILE

Junichi Shimada, Ooi, and Kazutake Ogawa, Wako, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha (Honda Motor Co., Ltd.), Tokyo, Japan

Filed Jul. 10, 1980, Ser. No. 168,469
Claims priority, application Japan, Jul. 16, 1979, 54/96773[U]
Int. Cl.³ B60K *13/04*
U.S. Cl. 180—69.1 **7 Claims**



1. A mounting for a heat-producing element of an automobile exhaust system which includes an upper heat shield fixedly mounted above the heat-producing element to the underside of the automobile in spaced relationship therewith, said upper shield having downwardly extending flanges paralleling a longitudinal axis of the heat-producing element and covering an upper surface and a substantial portion of the side surfaces of said heat-producing element,

said mounting comprising

a lower heat shield rigidly attached to said heat-producing element in spaced relationship therewith covering a lower surface thereof and having a bottom portion and upwardly extending flanges at its longitudinal edges extending upwardly into said flanges of said upper heat shield defining therebetween ventilation openings,

a mounting bracket positioned adjacent the side of said lower heat shield remote from said heat-producing element and having lateral extensions perpendicular to said longitudinal axis, and

elastic members connected to said lateral extensions and attached to a body member of the automobile,

said upwardly extending flanges having portions which extend laterally for shielding said elastic members from heat radiated from said heat-producing element, said ventilation openings extending longitudinally and opening downwardly, said bottom portion and said flanges of said lower heat shield dissipating heat conducted from said heat producing element, said mounting bracket and said elastic members being positioned completely exteriorly of said heat shields and exposed to air flow beneath the automobile.

4,349,079

POWER STEERING FOR MOTOR VEHICLES

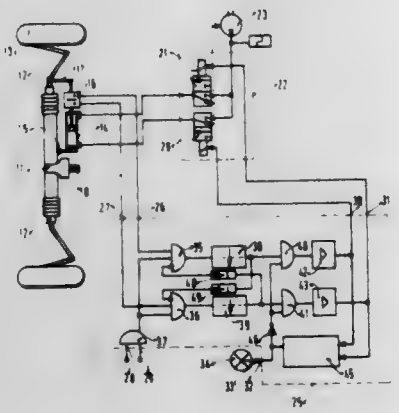
Heinz Leiber, Leimen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Nov. 20, 1979, Ser. No. 95,877

Claims priority, application Fed. Rep. of Germany, Aug. 1, 1979, 2900510

Int. Cl.³ B62D 5/06

U.S. Cl. 180—143 12 Claims



1. Power steering system for motor vehicles comprising

a steering column,

a steering gear coupled to said steering column,

a tie rod coupled to said steering gear for transmitting transverse motion introduced by said steering column and said steering gear to direct the running direction of at least one of said motor vehicle wheels,

a hydraulic steering damper means including a two-chamber piston-cylinder unit rigidly connected to a vehicle axle and including a piston therein for providing power assist to said steering system and a measurement transducer,

said measurement transducer being coupled to one end of said piston for relative movement and rigidly connected to said steering rod of said steering system for determining relative movement of said piston,

a final control element for controlling movement of said piston in said two-chamber piston-cylinder,

said two-chamber piston-cylinder unit being connected via hydraulic lines to said final control element of said system for controlled movement of said piston, and

a control device electrically connected to said measurement transducer and triggered by an output of said measurement transducer to supply control pulses to said final control element.

4,349,080

DRIVE UNIT FOR LAND VEHICLES

Heinz Brockmann, Bad Homburg, Fed. Rep. of Germany, assignor to Klöckner-Humboldt-Deutz Aktiengesellschaft, Cologne, Fed. Rep. of Germany

Filed Nov. 29, 1979, Ser. No. 98,389

Claims priority, application Fed. Rep. of Germany, Dec. 4, 1978, 2852411

Int. Cl.³ B62D 11/02

U.S. Cl. 180—301 2 Claims

1. A drive unit for a tracked armored land vehicle, wherein the vehicle is defined by a body having front and rear ends extending generally across a longitudinal axis and sides extending generally parallel but in spaced relation to the longitudinal axis;

a gas turbine including a gas generator section and a vehicle drive section aligned with and positioned aft of the gas generator section, the gas turbine having a longitudinal axis and being mounted within the vehicle body with the gas generator section positioned in front of the vehicle drive section and with the longitudinal axis of the gas generator displaced laterally but extending parallel to the longitudinal axis of the vehicle body;

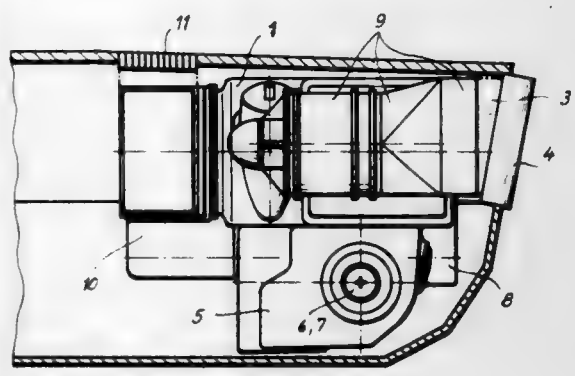
an air inlet in front of the gas generator section of the gas turbine;

an exhaust aft of the vehicle drive section of the gas turbine;

drive axle means for driving the vehicle mounted in the vehicle body and extending perpendicular to the longitudinal axis of the vehicle body;

a transmission having a longitudinal axis coextensive with the drive axle means, the transmission and drive axle means being mounted in the vehicle body beneath the gas turbine and extending perpendicular to the gas turbine;

means for connecting the vehicle drive section of the gas turbine to the transmission, said connecting means extending vertically down from the vehicle drive section to the transmission aft of the transmission;



auxillary connection means for connecting the gas turbine to drive auxiliary drive devices within the transmission by connecting the gas generator thereto, said auxillary connecting means extending down from the gas generator in front of the transmission, and

an oil cooler for the gas turbine and vehicle, the oil cooler having a longitudinal axis extending parallel with the axis of the gas turbine and being mounted beside the gas turbine on top of the transmission whereby a compact power supply and drive unit is provided for the vehicle.

4,349,081

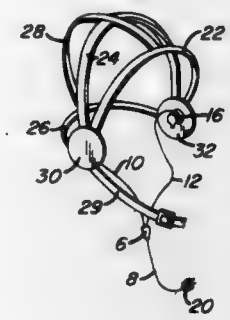
METHOD FOR RETAINING A HEARING AID IN PLACE AND HEARING AID HARNESS

Audrey Pepple, R.D. 1, Box 472, East Freedom, Pa. 16637

Filed Dec. 8, 1980, Ser. No. 214,110

Int. Cl.³ H04R 25/00

U.S. Cl. 181—130 13 Claims



6. A hearing aid retainer harness for a child comprising

a plurality of transverse strap members,

a longitudinal step member secured to at least some of said transverse strap members,

at least one ear cover secured to said transverse strap members,

said transverse straps, longitudinal strap and ear cover made of natural or synthetic fiber material,

said ear cover being composed of a flexible material which is generally porous to air and is electrically and magnetically generally nonconductive,

said harness being of such size as to fit a child, and

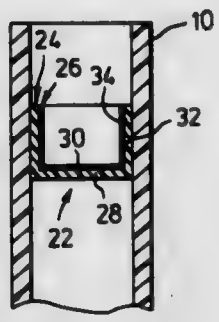
chin strap means for securing said harness to a child's head with said ear cover in intimate hearing aid retaining positioning.

4,349,082

ACOUSTICAL DAMPING ELEMENT AND METHOD OF FORMING SAME

William J. Gastmeier, Waterloo, Canada, assignor to Unitron Industries Limited, Kitchener, Canada

Filed Dec. 22, 1980, Ser. No. 219,394
Int. Cl.[3] H04R 25/00; G10K 11/02
U.S. Cl. 181—130 6 Claims



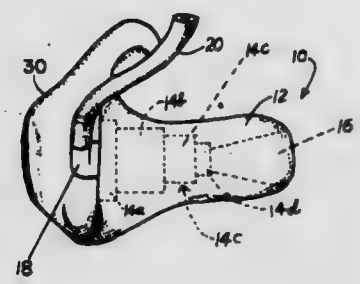
1. In a sound conducting member having an interior passage defined by a cylindrical interior wall, an acoustical damping element comprising: a flexible fabric member of selected acoustic resistance, a wire screen overlying said fabric member and being separate from and unattached to said fabric member, said wire screen and fabric member each having a central circular portion positioned across said interior passage, and each having a periphery bent into a cylindrical sidewall, the cylindrical sidewall of said screen overlying the cylindrical sidewall of said fabric member and pressing the cylindrical sidewall of said fabric member against each interior wall, said fabric member being held in said passage substantially solely by the pressure of said cylindrical sidewall of said screen against said cylindrical sidewall of said fabric member.

4,349,083

ACOUSTIC EAR MOLD

Harry Bennett, 1358 N. Fresno St., Fresno, Calif. 93703

Filed Apr. 13, 1981, Ser. No. 253,710
Int. Cl.[3] A61B 7/02
U.S. Cl. 181—135 6 Claims



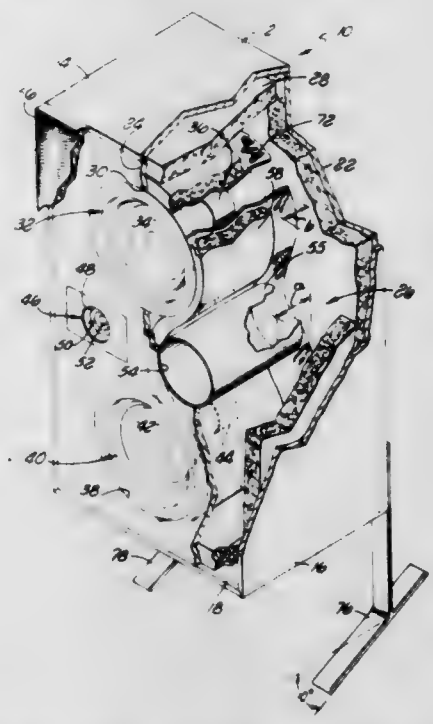
1. An acoustic ear mold for amplifying sound energy, the ear mold comprising a body having a component dimensioned to be received in the ear canal of a wearer, said component having a vent chamber therein communicating with the exterior of the component through a sound-discharge opening and a resonating cavity communicating with the vent chamber at one end and the exterior of the body at an opposite end remote from said vent chamber so as to form a passage composed of the resonating cavity and vent chamber extending through the body and said resonating cavity having a plurality of chambers aligned in series relation and being of progressively smaller transverse dimension in the direction of said vent chamber for amplifying sound energy received in said resonating cavity.

4,349,084

CONTROLLED AMBIENCE SPEAKER SYSTEM

Marco Karpodines, 9826 Pico Blvd., Los Angeles, Calif. 90035

Filed Dec. 24, 1980, Ser. No. 220,222
Int. Cl.[3] H04R 1/28; H05K 5/00
U.S. Cl. 181—146 21 Claims

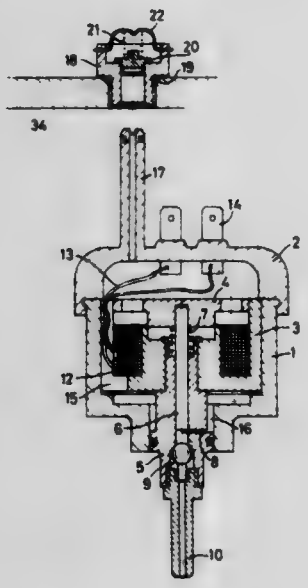


1. A controlled ambience speaker system comprising:
a housing having a back panel, side panels and a speaker mounting panel for defining an acoustic chamber, the front speaker mounting panel having at least one ducted port opening, at least one first driver opening, at least one second driver opening and at least one tweeter opening;
a first driver mounted to the panel for projecting sound through the first driver opening;
a second driver mounted to the panel for projecting sound through the second driver opening;
a tweeter mounted to the panel for projecting sound through the tweeter opening, the first and second drivers and tweeter being interconnected in parallel;
an open-ended duct member mounted to the panel about the periphery of the ducted port opening and having a length extending into the ducted port portion of the speaker chamber and terminating a first distance from the back panel;
an acoustic covering comprising a layer of packed fibrous material disposed to cover the back and side panels in the speaker chamber;
a sound absorbing acoustic curtain positioned in the acoustic chamber to bifurcate the acoustic chamber into a speaker portion and a ducted port portion, the curtain comprising a first layer of packed fibrous material having a length extending from the front panel and terminating at a terminating edge a second distance from the back panel, and at least one second layer of loose fibrous material extending substantially between the front panel and back panel, the acoustic curtain being loosely mounted between two opposing side panels for moving in response to the sound generated by the first and second drivers and tweeters whereby the distance between the back of the first driver and the ducted port opening and the second driver and the ducted port opening around the terminating edge of the acoustic curtain is sufficiently short to enable the back-wave sound in the midrange frequencies from the first and second drivers to be projected outwardly from the ducted port without being substantially absorbed in the speaker portion; and
a quantity of chamber filler comprising loosely packed fibrous material substantially filling the speaker portion of the speaker chamber.

4,349,085
OIL LUBRICATION SYSTEM

Erich Roser, Dorfstrasse 17, Salem-Grasbeuren, Fed. Rep. of Germany D-7777

Filed Aug. 25, 1980, Ser. No. 180,988
Claims priority, application Fed. Rep. of Germany, Sep. 8, 1979, 2936374
Int. Cl.³ F01M 1/02
U.S. Cl. 184—6.15 5 Claims



1. An oil lubricating system particularly for use in delivering lubricating oil to a plurality of lubricating points in a knitting machine, comprising: an oil reservoir containing a bulk quantity of lubricating oil, a plurality of individually operable lubricating pumps at least equal in number to the number of lubricating points for applying lubricating oil to the individual points in the knitting machine, each of said pumps including oil inlet means communicating with said oil reservoir to permit a quantity of lubricating oil to be conveyed to the interior of said pump, oil outlet means through which lubricating oil is conveyed for application to the lubricating point associated with the pump, an electromagnetically-operable plunger means operatively coupled to said oil outlet means, said plunger means being activated periodically to permit a quantity of lubricating oil to be conveyed through said oil outlet means, and means independent of the operation of said knitting machine for controlling the number of activations of said plunger means so that the quantity of lubricating oil delivered to a lubricating point within a preselected time period can be precisely determined and controlled.

4,349,086
CIRCULATING FOOD DISPLAY SYSTEM

Hideo Yamada, 4-4-17, Ichikawa, Ichikawa-shi, Chiba-ken, Japan

Filed Jul. 22, 1980, Ser. No. 171,200
Claims priority, application Japan, Jul. 27, 1979, 54-103708[U]
Int. Cl.³ E04H 3/04
U.S. Cl. 186—49 4 Claims

1. A circulating food display system used for circulating food for exhibition in a restaurant, comprising:

a food display case, disposed on the boundary between the interior and exterior of the restaurant and having a window facing said exterior;

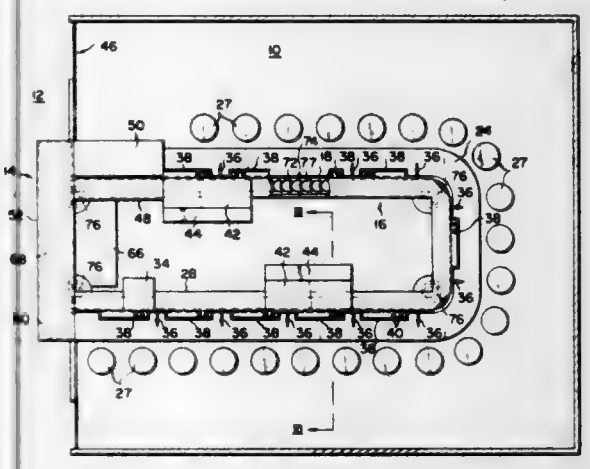
a covering means covering said window for preventing dust from entering into said food display case through said window but through which the interior of said food display case is viewed from said exterior;

a guide means defining an endless circulating path extending in said interior of said restaurant and in the interior of said food display case;

a counter disposed along a part of the outside peripheral edge of said guide means which is located in said interior of said restaurant;

a transparent shelter means sheltering a part of said guide means which is located in said interior of said restaurant, and having openings opened toward said counter;

liquid supply means disposed along said part of the outside



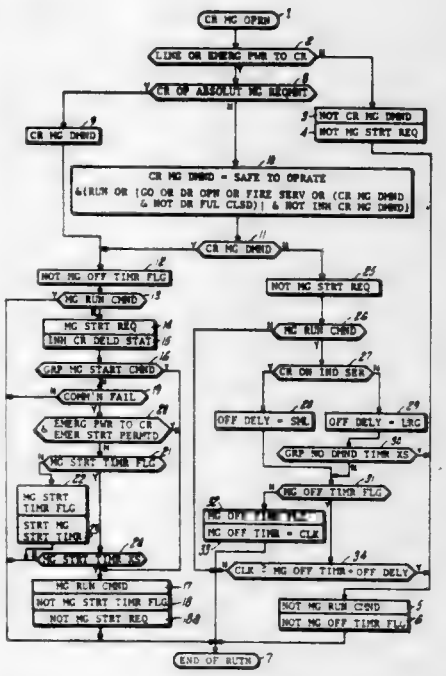
peripheral edge of said guide means and supplying liquid to a customer or customers sitting or standing at said counter;

endless conveyor means disposed in said endless circulating path and having a crescent chain and driving means for driving said crescent chain and having a circulating locus continuously extending within a horizontal plane.

4,349,087
ELEVATOR MOTOR/GENERATOR RUN PROTOCOL

Joseph Bittar, Simsbury, and Frederick H. Nowak, Southington, both of Conn., assignors to Otis Elevator Company, Farmington, Conn.

Filed Feb. 13, 1981, Ser. No. 234,079
Int. Cl.³ B66B 1/18
U.S. Cl. 187—29 R 10 Claims



1. An elevator system including a plurality of elevators movable in related shaftways having access to floor landings of a building for servicing the landings, each of said elevators comprising:

a car;

motion means, including a DC motor and a motor generator (MG) set for providing power to said motor, for moving said car to selected landings in response to demands for service; and

signal processing means for providing an MG run command

signal to said motion means for causing said motion means to run in response to demands for service;

characterized by:

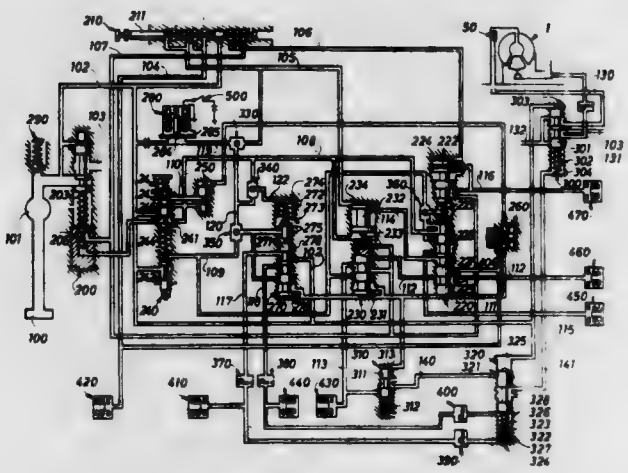
said signal processing means comprising means responsive to demands for service for providing a car MG demand signal, for providing said MG run command signal to said motion means in response to said car MG demand signal, for providing, in response to the presence of said car MG demand signal concurrently with the absence of said MG run command signal, an MG start interval timer initiation signal, for providing an MG start timer excess signal after a predetermined time interval following the provision of said MG start interval timer initiation signal, and for providing said MG run command signal in response to said MG start timer excess signal, the predetermined time interval of the signal processing means of one of said elevators differing from that of another one of said elevators by a time increment related to the time required to accelerate said MG set from rest to approximately rated speed.

4,349,088

DEVICE FOR CONTROLLING A LOCK-UP CLUTCH IN AN AUTOMATIC TRANSMISSION WITH A LOCK-UP CLUTCH EQUIPPED FLUID TORQUE CONVERTER

Takayoshi Ito, Anjo; Seitoku Kubo, and Yukio Terakura, both of Toyota, all of Japan, assignors to Aisin-Warner Kabushiki Kaisha, Anjo, Japan

Filed Nov. 2, 1979, Ser. No. 90,579
Claims priority, application Japan, Nov. 7, 1978, 53-137069
Int. Cl.³ F16H *47/04, 47/06*
U.S. Cl. 192—3.3 14 Claims



1. A device for controlling a lock-up clutch in a automatic transmission having a torque converter equipped with a lock-up clutch, comprising

oil pressure passage means for supplying input oil pressure to hydraulic servo means;

a transient release valve responsive to a balance between said input oil pressure and line pressure, said transient release valve delivering an output oil pressure when said input oil pressure is above a first predetermined value;

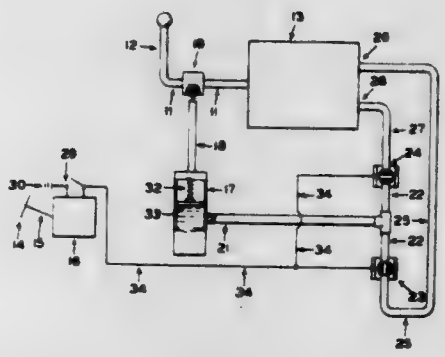
and a lock-up shift valve responsive to a balance between said output oil pressure and line pressure, said lock-up shift valve adapted to engage said lock-up clutch when said output oil pressure is above a second predetermined value and to disengage said lock-up clutch when said output oil pressure is below said second predetermined value.

4,349,089

AUTOMATIC TRANSMISSION SHIFT LOCKING DEVICE

Cecil H. Finney, Pensacola, Fla., assignor to Armstrong Cork Company, Lancaster, Pa.

Filed Jan. 15, 1980, Ser. No. 112,373
Int. Cl.³ B60K *41/26*
U.S. Cl. 192—4 A 7 Claims



1. Apparatus for preventing shifting of a vehicle transmission while the vehicle is in motion, comprising:

(a) vehicle gear shifting means;

(b) fluid pressure operated vehicle braking means movable between a non-braking position and a braking position;

(c) a hydraulically operated movable locking means adapted, when transmission fluid pressure is applied to said locking means, to immovably lock said gear shifting means when said braking means is in a non-braking position and, when the transmission fluid pressure is removed, release said gear shifting means when said braking means is in a braking position, said transmission fluid pressure being provided by the vehicle's transmission fluid, which is adapted to flow from the vehicle's automatic transmission to the locking means and back to the automatic transmission via a fluid circuit means; and

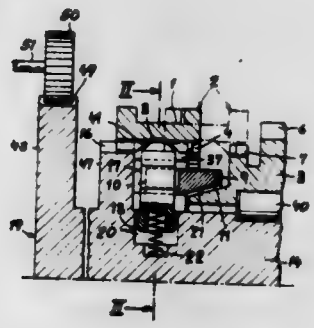
(d) transmission fluid pressure regulator means which controls the flow of transmission fluid between the locking means and the vehicle's automatic transmission, said regulator means actuated by said braking means via an electrical circuit means.

4,349,090

CLUTCH ASSEMBLY FOR GEAR TRANSMISSION

Walter Griesser, Friedrichshafen, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen AG, Friedrichshafen, Fed. Rep. of Germany

Filed Apr. 17, 1980, Ser. No. 141,150
Claims priority, application Fed. Rep. of Germany, Apr. 20, 1979, 2915965
Int. Cl.³ F16D *23/06*
U.S. Cl. 192—53 G 6 Claims



1. In a gear transmission having a first gear, a second gear coaxial with said first gear, said gears being provided with respective sets of teeth of like pitch and diameter, and an internally toothed sleeve meshing only with the teeth of said first gear in a decoupling position, said sleeve being axially slidable into a coupling position in which it meshes with the

teeth of said first and second gears for positively connecting same to each other,

the combination therewith of a synchro ring coaxially interposed between said gears with freedom of limited rotation relative to said first gear, said synchro ring and said second gear being provided with confronting clutch surfaces separated by a small clearance from each other in the decoupling position of said sleeve, a spring-loaded rocker member with a foot pivotally received in said first ger and with a head extending substantially radially into an inner peripheral recess of said sleeve in said decoupling position, said head and said recess having camming formations for urging said member radially inward against the spring force acting thereon upon an axial shift of said sleeve, a part of said member between said head and said foot bearing upon said synchro ring for urging same toward said second ger by tilting in an axial plane in response to an incipient shift of said sleeve toward said coupling position, said synchro ring enabling disengagement of said head from said sleeve in a position of relative rotational alignment of said gears to permit said shift to be completed, and a pair of webs on said synchro ring laterally bracketing said member and cammingly coacting therewith in a position of rotational disalignment of said synchro ring relative to said first gear to resist disengagement of said head from said sleeve and thereby to prevent a complete shift of said sleeve into said coupling position, such disalignment resulting from a speed difference between said first and second gears upon the establishment of frictional contact between said clutch surfaces by an axial thrust exerted upon said synchro ring by said member, said webs being repressible by said sleeve through the intermediary of said member for establishing said relative rotational alignment upon the substantial elimination of said speed difference.

4,349,091

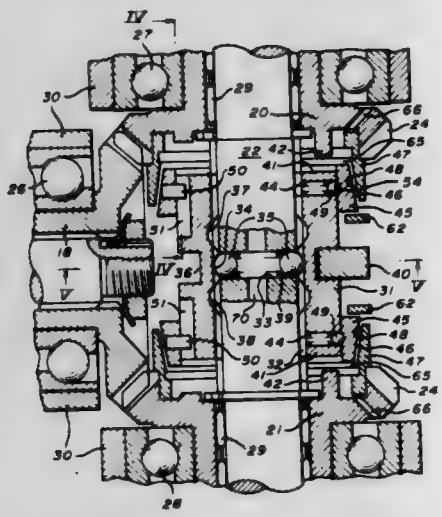
SYNCHRONIZED DOG CLUTCH

Hajime Miyake, Nagaokakyo; Osamu Matsumoto, and Fumio Dohi, both of Kyoto, all of Japan, assignors to Yanmar Diesel Engine Co., Ltd., Japan

Filed Nov. 12, 1980, Ser. No. 206,075

Int. Cl.³ F16D *23/04, 21/04*

U.S. Cl. 192—53 F **4 Claims**



1. A synchronized dog clutch comprising:

a clutch shaft;

a coupling sleeve slidably arranged on the clutch shaft and having claws at one end;

a synchronizer ring arranged on the clutch shaft having a conical face for frictional engagement at an outer periphery, said coupling sleeve and said synchronizer ring being individually slidable with respect to the clutch shaft and rotatable together with the clutch shaft;

a gear wheel coaxially and rotatably arranged with respect to the clutch shaft and having teeth at an outer periphery, said gear wheel being provided with claws and a conical face respectively engagable with said claws and said conical face;

said coupling sleeve being arranged for said sliding movement on the clutch shaft together with the synchronizer ring, with the conical face of the synchronizer ring being first engaged with the conical face of the gear wheel before said engagement of the claws;

said coupling sleeve being splined to the outer periphery of the clutch shaft and said synchronizer ring being fitted to the outer periphery of the coupling sleeve and with the conical face of the gear wheel disposed closely and radially inside the outer teeth, and with the claws of the gear wheel disposed radially inside the conical face, wherein a groove extending lengthwisely of the clutch shaft is formed at one of the faced peripheral surfaces of the coupling sleeve and the synchronizer ring, and wherein a pin entering said groove projects from the other one of said surfaces, said groove having a hollow portion on the side edge thereof with a round chamfer therebetween, and wherein the coupling sleeve is fitted to the synchronizer ring so that the pin may travel within the groove along the circumference of said surfaces; the pin being pressed to the edge of the hollow portion, when the rotation of the synchronizer ring is not synchronized with that of the gear wheels, so that the coupling sleeve is prevented from sliding axially relatively with respect to the synchronizer ring until synchronization is achieved.

4,349,092

DEVICE FOR COUPLING AND UNCOUPLING A UNIVERSAL JOINT SHAFT

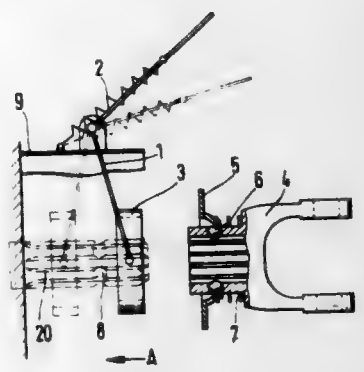
Hubert Geisthoff, Lohmar, Fed. Rep. of Germany, assignor to Jean Walterscheid GmbH, Lohmar, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 948,218, Oct. 3, 1978, abandoned. This application Sep. 22, 1980, Ser. No. 189,360

Claims priority, application Fed. Rep. of Germany, Oct. 17, 1977, 2745628

Int. Cl.³ F16B *21/07*; F16D *11/10*

U.S. Cl. 192—67 R **7 Claims**



1. A device for coupling and uncoupling a universal joint shaft and power take-off shaft means, particularly between an agricultural implement and a tractor, comprising: a coupling sleeve adapted to be coaxially coupled in driving engagement with said power take-off shaft means; locking means for axially locking and unlocking said sleeve and said power take-off shaft means; lock spring means biasing said locking means to the locked position; a control ring movable in generally parallel relationship with said power take-off shaft means between a first and a second position, said control ring when moved to said second position operating to engage said locking means to unlock said sleeve from said power take-off shaft means; pivotally mounted stripping means having said control ring mounted thereon; lever means adapted to engage said stripping means for actuating said control ring from said first to said second position; overcenter snap spring means operatively associated with said stripping means for enabling said control ring to be selectively snapped to said first and second position and for retaining said control ring at said positions under a spring-biasing force; said control ring, when in said first posi-

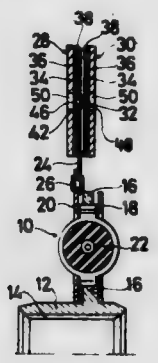
tion, being out of engagement with said locking means to enable said locking means to maintain the locked engagement between said coupling sleeve and said power take-off shaft means; guide means extending parallel to said power take-off shaft means engaging said control ring to maintain movement of said control ring between said first and second positions generally parallel to said power take-off shaft means, said guide means comprising means mounted on opposite sides of said control ring defining guide slots; and guide members extending parallel to the power take-off shaft means slidably engaging said guide slots.

4,349,093

CLUTCH FACING

Hisami Tsujio, Okazaki, Japan, assignor to Aisin Seiki Company, Limited, Kariya, Japan

Filed Jan. 17, 1979, Ser. No. 4,196
Claims priority, application Japan, Jan. 20, 1978, 53-6118[U]
Int. Cl.³ F16D *13/64, 69/04*
U.S. Cl. 192—107 R **6 Claims**



1. A clutch facing secured to a clutch driven assembly comprising:

a first and second annular reinforcing plate;

a plurality of rivets including head portions for securing each of said annular reinforcing plates to said clutch driven assembly, each of said annular reinforcing plates having a plurality of pocket portions extended towards an inner side thereof, aligned with said rivets and entirely receiving said head portions of said rivets within said pocket portions;

a deformable spring member position on said inner side of each of said annular reinforcing plates, normally biasing said annular reinforcing plates apart, interconnecting adjacent rivets of said first and second annular reinforcing plates and operatively associated with said clutch drive assembly;

a friction lining bonded on an outer side of each said annular reinforcing plates; and

a second lining bonded on said inner side of each of said annular reinforcing plates and wherein said second lining has substantially the same amount of thickness as the height of said pocket portions of each of said reinforcing plates; wherein

said head portions of said rivets do not project beyond said outer side of each of said annular reinforcing plates.

4,349,094

HYDRAULIC DEVICE FOR MODULATED ACTUATION OF FRICTION CLUTCHES

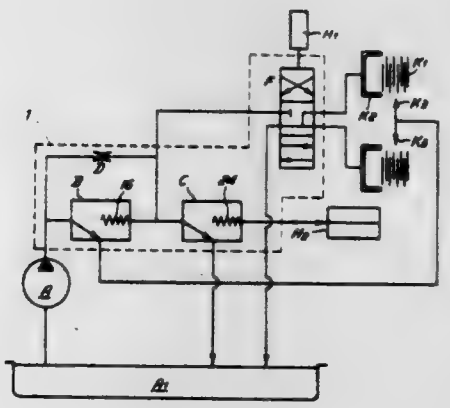
Franco Pavesi, Milan, Italy, assignor to Transfluid s.r.l., Milan, Italy

Filed Aug. 2, 1978, Ser. No. 930,212
Claims priority, application Italy, Aug. 16, 1977, 26734 A/77
Int. Cl.³ F16D *13/58*
U.S. Cl. 192—109 F **15 Claims**

1. A device for modulated operation of a pressure fluid actuator for a clutch, and a supply duct for supplying actuating pressure fluid to said clutch from a fluid pressure source, said device being fitted in the supply duct from the pressure source to the clutch, the device comprising:

a cylinder-piston assembly having first and second chambers connected respectively with the pressure source end of said duct and to the actuator end of said duct and having a movable part urged in one direction by force accumulating means, and at least one calibrated orifice in parallel to said cylinder-piston assembly, said cylinder-piston assembly including a cylinder, said movable part of said cylinder-piston assembly comprising a piston reciprocable in said cylinder and dividing said cylinder into said chambers, said calibrated orifice extending axially through said piston and maintaining communication between said chambers, the first one of said chambers being open to said supply duct from the pressure source and the second said chamber being open to the part of the duct connected to said clutch, a passage for supplying fluid to lubrication nozzles of said clutch, said passage opening to said first chamber in one position of said piston and being blocked in another position of said piston, said force accumulating means comprising spring means urging said piston toward said first chamber and into said blocking relation with said passage;

means for sensing the pressure in the second chamber of said



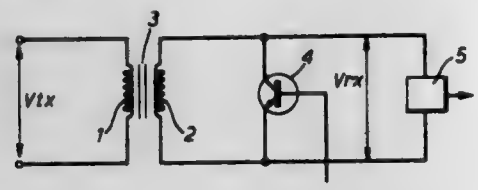
cylinder-piston assembly, said sensing means including means for controlling communication between said second chamber and a discharge port and combined with means for controlling and counteracting the pressure in said second chamber so that the filling of said actuator is effected in a fixed period of time during which the pressure of the fluid within said second chamber increases gradually and once limit pressure is attained within the second chamber of the cylinder-piston assembly a connection is established with said discharge port, said limit pressure being maintained practically constant, said controlling and counteracting means including a further cylinder containing a further piston dividing said further cylinder into third and fourth chambers, said third chamber communicating with said second chamber and defining part of said sensing means, further spring means urging said further piston toward said third chamber, said further piston being shiftable toward said fourth chamber against said further spring means, a further passage connected to said discharge port and thence connectable to the return side of said pressure source and opening to said third chamber with said further piston urged against said further spring means into said fourth chamber and closable by said further piston with the latter advanced into said third chamber by said further spring means.

4,349,095

COIN DISCRIMINATING APPARATUS

Christopher M. Lewis, Newmarket, England, assignor to P A Management Consultants Limited, London, England

Continuation-in-part of Ser. No. 12,699, Feb. 16, 1979, abandoned. This application Sep. 12, 1979, Ser. No. 74,646
Claims priority, application Japan, Feb. 19, 1977, 52-18272; United Kingdom, Feb. 18, 1978, 6539/78; Aug. 30, 1978, 34977/78; Fed. Rep. of Germany, Feb. 15, 1979, 2905828; Feb. 15, 1979, 7904191[U]; United Kingdom, May 9, 1979, 7916065
Int. Cl.³ G07F 3/02
U.S. Cl. 194—100 A 16 Claims



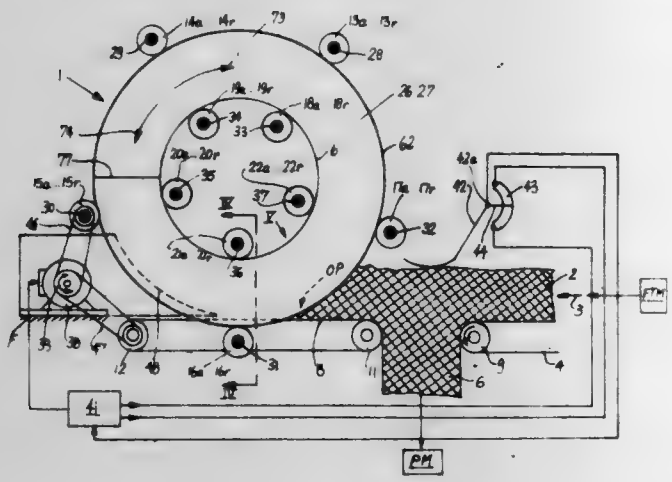
1. A coin discriminating apparatus, comprising a transmitting coil connected to a signal generator so as to give an abrupt flux change, a receiving coil, the transmitting and receiving coils being disposed on opposite sides of a path for the passage of coins, means for short circuiting the receiving coil but effective to remove the short circuit a predetermined time delay after said flux change, and means responsive to the amplitude of a voltage pulse which is produced across the receiving coil in response to removal of said short circuit.

4,349,096

APPARATUS FOR TEMPORARY STORAGE OF STACKED CIGARETTES OR THE LIKE

Theobald Thamerus, Hamburg, Fed. Rep. of Germany, assignor to Hauni-Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany

Filed Jul. 24, 1980, Ser. No. 172,061
Claims priority, application Fed. Rep. of Germany, Jul. 25, 1979, 2930096
Int. Cl.³ B65G 37/00, 1/16
U.S. Cl. 198—347 17 Claims



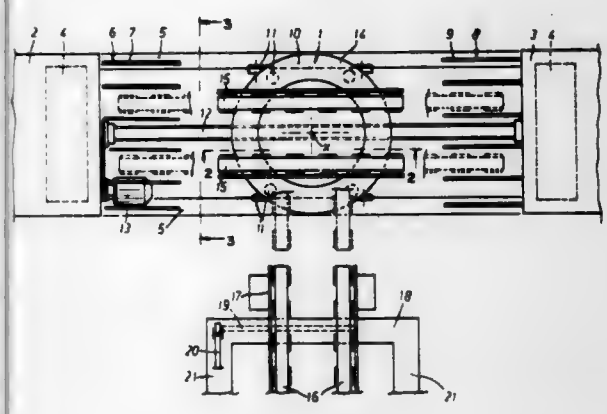
1. Apparatus for temporary storage of stacks consisting of rod-shaped articles of predetermined length, particularly for temporary storage of multi-layer streams consisting of cigarettes, filter rod sections or analogous articles which constitute or form part of rod-shaped smokers' products, comprising a reservoir including two coaxial helically convoluted walls rotatable about a common axis and defining a helical chamber arranged to store a stack of articles and having a width which at least equals said predetermined length, said walls having surfaces which flank said chamber and face each other and said chamber further having an opening for admission of a stack of articles into its interior in response to rotation of said walls about said common axis; guide means defining a path along which said walls can move about said common axis at a predetermined pitch; and retaining means provided on at least one of said surfaces of said walls and arranged to normally hold the articles of the stack in said chamber against movement relative to said walls.

4,349,097

LOADING AND UNLOADING DEVICE TO BE INSTALLED BETWEEN TWO CONSECUTIVE MACHINES

Ezio Curti, Via le Regina Giovanna 38, Milano, Italy

Continuation of Ser. No. 44,188, May 31, 1979, abandoned. This application May 11, 1981, Ser. No. 262,642
Claims priority, application Italy, Jun. 2, 1978, 24148 A/78
Int. Cl.³ B65G 37/00
U.S. Cl. 198—369 8 Claims



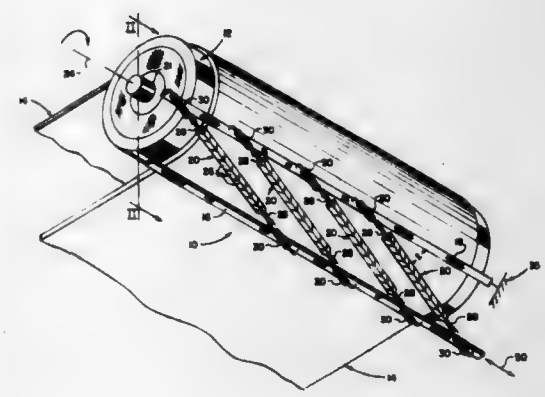
1. A first loading and unloading device arranged between two consecutive machines, in which a known unloading device, adjustable in height and interlinked with the outlet of the first working machine and a second known loading device, adjustable in height and interlinked with the inlet of the second working machine, are selectively interconnected by said device which comprises a movable trolley running longitudinally on rails between the two machines with the said trolley rotatingly supporting a horizontal platform carrying in turn a pair of parallel driven conveyor belts which can be interlinked with the unloading device of the first machine and with the loading device of the second machine, and selectively with a vertically adjustable second loading and unloading means positioned between the two machines and spaced laterally from one side of the path of movement of said trolley.

4,349,098

CONVEYOR BELT CLEANING OR SCRAPING DEVICES

Willem D. Veenhof, R.R. 4, Hillview No. 1, Heath, Tex. 75087

Filed Sep. 4, 1980, Ser. No. 184,044
Claims priority, application South Africa, Sep. 7, 1979, 79/4738
Int. Cl.³ B65G 45/00
U.S. Cl. 198—497 10 Claims



1. A conveyor belt cleaning assembly for cleaning a conveyor belt in a region where the conveyor belt is in contact

with the curved surface of a pulley drum comprising, in combination:

first and second support bars adapted to be mounted in an operative position in the contact region, said first and second support bars extending generally in alignment with the axis of rotation of the pulley drum and being spaced apart in the operative position;

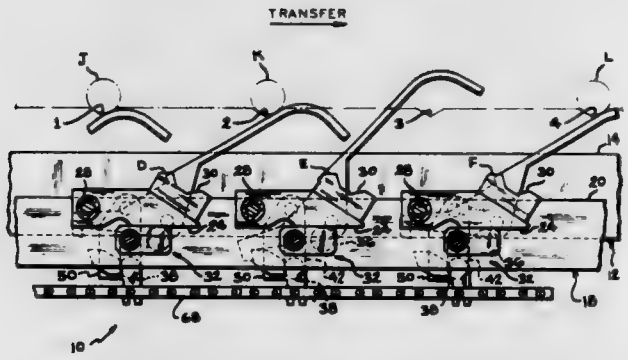
at least one elongated, flexible scraping member supported between the first and second support bars for engagement with the curved surface of the conveyor belt in the operative position, said elongated scraping member extending in a generally helical direction relative to the pulley drum when engaged with the conveyor belt in the operative position; and,

bias means coupled to said scraping member for maintaining said scraping member in yieldable, thrusting engagement with the curved surface of the conveyor belt in the operative position.

4,349,099
ACCUMULATING CONVEYOR

Douglas D. Wiknich, Holly, and Michael J. Peabody, Troy, both of Mich., assignors to LaSalle Machine Tool, Inc., Troy, Mich.

Filed Apr. 28, 1980, Ser. No. 144,631
Int. Cl.³ B65G *25/00, 43/08*
U.S. Cl. 198—751 19 Claims

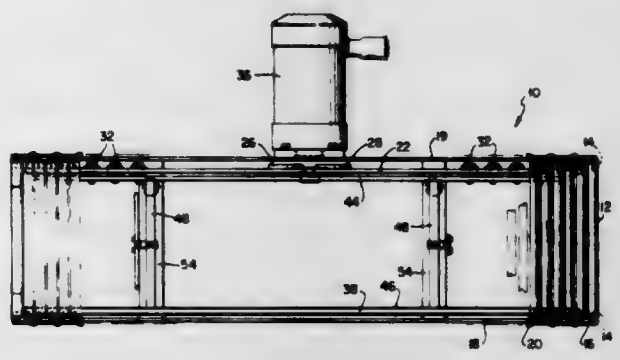


12. An accumulating conveyor comprising an elongated support along which a plurality of articles are movable forwardly through a series of longitudinally spaced-apart stations, a transfer bar mounted for movement back and forth longitudinally of said elongated support, a plurality of feed units supported solely on said transfer bar and spaced apart longitudinally of said elongated support, shaft means corresponding to each of said feed units, said shaft means extending through said transfer bar and constituting the support for said feed units, said feed units being pivotally movable about said shaft means between idle and feed positions, drive means for moving said transfer bar through a cycle commencing with an initial rearward movement of said transfer bar from a start position for moving each of said feed units from one station to the next adjacent station to advance the articles forwardly through the stations, means pivotally mounted on said transfer bar adjacent each of said feed units for pivotally moving said feed units about said shaft means from idle to feed positions, and sensing means at each station operable to sense the absence of an article, said sensing means being operatively associated with said moving means to cause all feed units behind an empty station to move to feed positions during rearward movement of said transfer bar from said start position.

4,349,100
CONVEYOR

John R. McLean, Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.

Filed Sep. 29, 1980, Ser. No. 192,010
Int. Cl.³ B65G *13/06*
U.S. Cl. 198—783 6 Claims

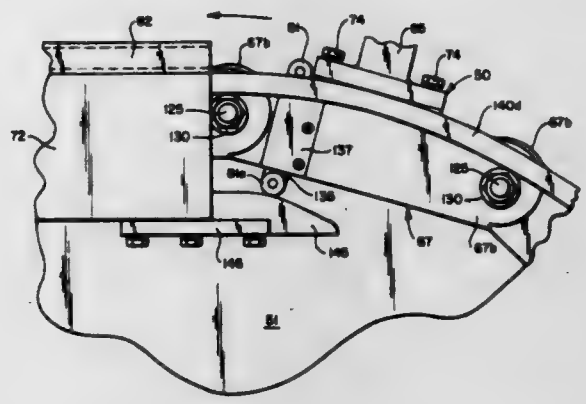


1. In a conveyor comprising a conveying surface, said conveying surface being formed of a plurality of free-wheeling rollers, and means for driving and braking said rollers, the improvement wherein said means for driving and braking said rollers comprises a bar positioned beneath said rollers and extending for a major portion of the length of said rollers, a pivot upon which said bar is mounted, a driving belt connected to one end of said bar for driving said rollers along one end thereof when said bar is pivoted to a first position, means for driving said driving belt, a braking belt connected to the other end of said bar for braking said rollers along the other end thereof when said bar is pivoted to a second position, means connected at one end of said bar to pivot said bar between said first position and said second position and adjustment means connected to the other end of said bar to regulate contact pressure between said belts and said rollers.

4,349,101
CONVEYOR OF ENDLESS CHAIN TYPE WITH ECCENTRIC ARRANGEMENT TO OVERCOME CHORDAL ACTION

John W. Eldred; James B. Legg, both of Columbus, and James A. Earley, Lancaster, all of Ohio, assignors to The Eldred Company, Columbus, Ohio

Division of Ser. No. 10,529, Feb. 9, 1979, Pat. No. 4,263,846.
This application Dec. 24, 1980, Ser. No. 219,887
Int. Cl.³ B65G *17/06*
U.S. Cl. 198—851 6 Claims



1. A conveyor comprising a chain mounted by means including a plurality of sprockets for movement therearound, said chain being composed of interfitting links pivoted together at pivot axes, eccentrics at said pivot axes having sprocket-engaging surfaces, and means for rocking said eccentrics relative to said axes of the chain as it passes onto and off each sprocket; said rocking means including an oscillatable lever connected to each eccentric, said oscillatable lever being fixed to the eccen-

tric on one link and extending to a transversely mounted slide on the adjacent link to which the lever is connected, said slide extending outwardly from its mounting link at both sides and carrying a cam follower at each side, a cam guide extending along the conveyor for engaging with one of the cam followers and cams adjacent the sprockets for engaging with the other cam follower.

4,349,102

PACKAGING DEVICE

Murray Strongwater, 326 Hewlett Neck Rd., Woodmere, N.Y. 11598

Filed Feb. 11, 1981, Ser. No. 233,580
Int. Cl.[3] B65D *75/56, 25/54*
U.S. Cl. 206—45.34 3 Claims



1. A packaging device comprising,

(a) a pair of shells adapted to be assembled into closing engagement to define an enclosure for an article of merchandise, each of said shells comprising a main body portion and a peripheral skirt, and the uppermost portions of said peripheral skirts being in overlapping relation when said shells are in said closing engagement,

(b) means defining a slot in the upper part of said enclosure, said means comprising a cutout in the upper central part of the peripheral skirt in each shell, and

(c) a hanger element extending through said slot and releasably securable to said enclosure at said upper part thereof for suspending said enclosure from said hanger element.

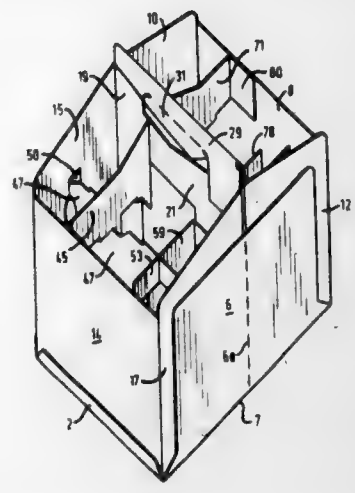
4,349,103

ARTICLE CARRIER AND BLANK THEREFOR

Prentice J. Wood, Hapeville, Ga., assignor to The Mead Corporation, Dayton, Ohio

Filed Nov. 21, 1980, Ser. No. 208,917
Int. Cl.[3] B65D *75/00*
U.S. Cl. 206—188 8 Claims

1. A cellular article carrier comprising a bottom wall, spaced side walls hinged respectively to opposite side edges of the bottom wall, end wall panels hinged respectively to the end edges of said side walls and extending inwardly therefrom, a medial partition structure at one end of the carrier hinged to said end wall panels at said one end of the carrier and extending medially inward of the carrier, a medial partition structure at the other end of the carrier hinged to said end wall panels at said other end of the carrier and extending medially inward of the carrier, partitioning means providing a plurality of individual article cells on each side of said medial partition structures, a handle structure comprising an inner handle structure provided by the medial partition structure at said one end of the carrier and an outer handle structure secured in overlapping relationship with respect to said inner handle structure and extending between the opposite end wall panels of the carrier, said outer handle structure including reinforcing straps hinged



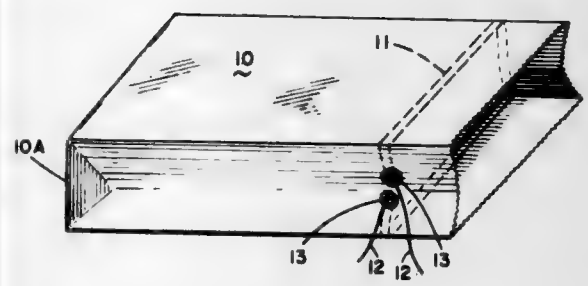
thereto and secured to the end wall panels at said one end of the carrier.

4,349,104

SCENTED DISPOSAL BAG

Paul R. Hayes, 806 S. Westvale Dr., Anaheim, Calif. 92804

Filed Feb. 9, 1981, Ser. No. 232,811
Int. Cl.[3] B65D *47/10, 81/00*
U.S. Cl. 206—205 5 Claims



1. A disposable bag unit comprising,

a bag member comprising a generally tubular configuration with one open end and one closed end,

said tubular member comprised of a flexible, disposable material,

a drawstring arragement disposed on said bag adjacent to the open end thereof and adapted to close said open end when activated, and

means containing an odor-related material associated with said drawstring arrangement to selectively disperse said odor-related material within the confines of the bag when the drawstring is activated.

4,349,105

GUN CARTON

Michael F. Bradley, Feeding Hills, and Jack C. Viecelli, Agawam, both of Mass., assignors to Longview Fibre Company, West Springfield, Mass.

Filed Apr. 27, 1981, Ser. No. 257,813
Int. Cl.[3] B65D *5/48, 5/50*
U.S. Cl. 206—317 9 Claims

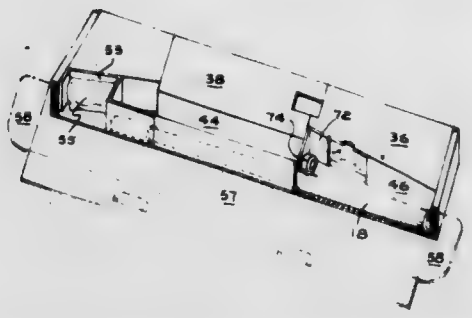
1. A carton for housing the stock portion and barrel portion of a disassembled firearm in separate compartments, the carton comprising:

(a) a bottom panel with hinged end walls and a front and rear wall extending therefrom;

(b) stock cover panels for overlying the stock, said cover panels each having a first edge attached to the rear wall and an opposed second edge;

(c) a vertically foldable panel attached to the second edge of

each stock cover panel for longitudinally dividing the carton into front and rear compartments, one compartment for housing the stock and the other for housing the barrel; and



(d) means for holding a barrel in said carton, said means including a substantially V-shaped portion extending from the lower edge of one of said vertical panels and adapted to retain the barrel in stationary relation within said carton.

4,349,106

PLASTIC RIBBON FOR SUPPLY OF BOLT-LIKE FASTENER ELEMENTS

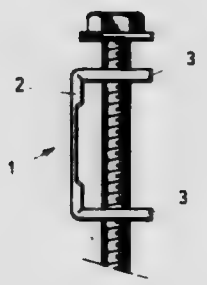
Gerhard Bögel, Heerbrugg, Switzerland, assignor to SFS Stadler AG, Heerbrugg, Switzerland

Filed Feb. 22, 1980, Ser. No. 123,782

Claims priority, application Fed. Rep. of Germany, Feb. 26, 1979, 2907486

Int. Cl.³ B65D *85/24*

U.S. Cl. 206—347 **6 Claims**



1. An elongate supply ribbon of plastic material for supporting bolt-like fastener elements comprising: a back wall portion extending longitudinally of said ribbon; a plurality of tongues extending from opposite sides of said back wall portion transversely to the longitudinal direction thereof; receiving slots formed in each of said tongues adapted to receive in supporting engagement therein said fastener elements, said receiving slots being provided with an inlet opening and an adjoining widened opening for engaging a fastener element; bending regions extending the entire length of said ribbon on both sides of said back wall portion interposed between said back wall portion and said tongues operative to permit said tongues to be bent relative to said back wall portion into a position to lie within planes extending generally perpendicularly to the plane of said back wall portion, said bending regions being formed from contiguous integral parts of said back wall portion and of said tongues and having a thickness dimension which is greater than the thickness dimension of at least other parts of said back wall portion; and a pair of essentially contiguous notches formed, respectively, in each of said bending regions, each of said notches extending longitudinally of said back wall portion essentially along the entire length thereof and being defined by generally opposed bearing surfaces which are brought into abutting engagement with each other when said tongues are in said bent position relative to said back wall portion; said bearing surfaces of each of said notches being structured to be in abutting engagement with each other when said tongues extend at 90° to said back wall portion in order to support said tongues at said 90° angle when said fastener elements are engaged within said receiving slots and to prevent further bending of said tongues beyond said 90° angle.

4,349,107

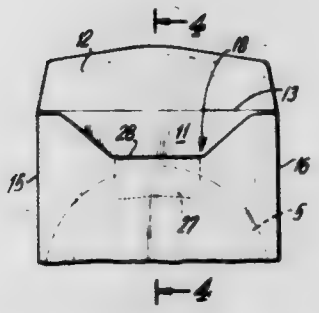
METER CHART ENVELOPE

Sheldon S. Pritchard, Houston, Tex., assignor to Champion International Corporation, Stamford, Conn.

Continuation of Ser. No. 89,921, Oct. 21, 1979, abandoned, which is a continuation of Ser. No. 974,029, Dec. 28, 1978, abandoned. This application Jan. 23, 1981, Ser. No. 227,692

Int. Cl.³ B65D *85/00, 85/57*

U.S. Cl. 206—449 **1 Claim**



1. An elongated rectangular envelope for containing and locking therein a circular sheet member, said envelope comprising a front panel; a back panel, said back panel including a top edge portion and a pair of spaced apart, generally triangular cut portions extending downwardly from said top edge portion, said cut portions being disposed in mirror image relationship to one another; a pair of spaced apart, opposed side edges, said side edges defining the length of the envelope; a closed bottom edge portion, said bottom edge portion defining the width of said envelope; a top cover flap hingedly connected to said front panel along a first fold line; and a generally rectangular locking flap hingedly connected to said back panel along a second fold line defining its bottom edge, opposed side edges of said locking flap being disposed between said cut portions and substantially centered between said side edges, said locking flap including a terminal top edge substantially parallel to and colinear with the top edge portion of said back panel, the width of said envelope and the distance between said second fold line and said bottom edge substantially defining a square area such that when a circular sheet member is contained within the envelope, said locking flap may be folded into the envelope such that the sheet member is sandwiched between said back panel and said locking flap so as to minimize slippage of the sheet member within the envelope.

4,349,108

CONTAINERS

Derrick Sharpe, Chesterfield, England, assignor to W. H. D. Development Limited, Langwith Junction, England

Filed Apr. 17, 1980, Ser. No. 141,122

Claims priority, application United Kingdom, Apr. 19, 1979, 7913659

Int. Cl.³ B65D *21/04*

U.S. Cl. 206—506 **11 Claims**



1. A container comprising a load receiving body having a length of at least 3 meters and comprising an open topped box having a base wall and downwardly and inwardly inclined sidewalls whereby the body of a similar container can be nested therein, the body having retractable leg means comprising a plurality of fixed leg parts provided externally of the body at the upper end of the body, a movable leg pivotally connected at the upper end thereof to each fixed leg part

adjacent the upper end of the body for movement between an operative position, in which the movable legs extend downwardly and the lower ends thereof project below the base wall of the body and are adapted to support the weight of the body and to engage said fixed leg parts of a similar container there below upon which said one container is thereby stacked, to transmit said weight thereto, and an inoperative position in which said movable legs extend generally parallel to the top of the container and in which the bodies can be nested, leg locking means being provided rigidly to hold each movable leg in said operative position, first locking means to permit the container to be locked to a similar container when in nested relationship therewith and second locking means to permit the container to be locked to a similar container when in stacked relation therewith.

4,349,109

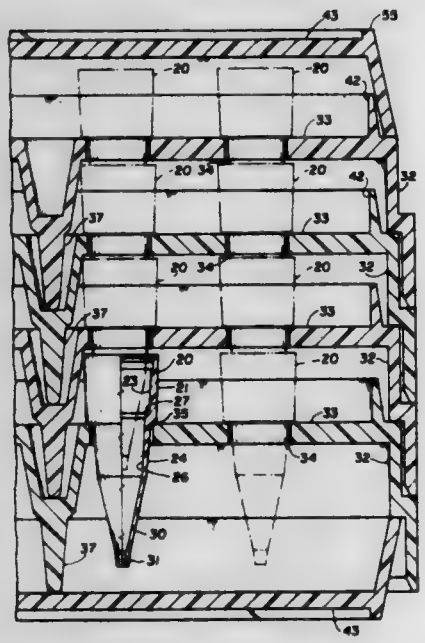
DISPOSABLE PIPETTE TIPS AND TRAYS THEREFOR

Emil A. Scordato, Eastchester, and Hugh W. Pratt, Pelham Manor, both of N.Y., assignors to Medical Laboratory Automation, Inc., Mount Vernon, N.Y.

Filed Oct. 20, 1980, Ser. No. 199,045

Int. Cl.³ B65D *85/30, 21/00*

U.S. Cl. 206—562 **4 Claims**



1. A pipette tip comprising a first segment having a tapered internal surface adapted to accommodate the tapered end of a pipette; a second segment having a tapered internal surface adapted to accommodate the tapered end of a pipette, said surface having a diameter less than that of said first segment and a taper substantially the same as that of said first segment, the internal surfaces of said first and second segments being joined by a shoulder-like bevel; a third segment having a tapered internal surface the taper of which is substantially greater than that of the internal surface of said second segment, the internal surface of said second segment being joined to that of said third segment by the intersection of their tapers; and a tip segment having an internal surface that is tapered at an angle substantially less than that of said third segment and joined to the internal surface of said third segment by the intersection of their tapers, said tip segment serving as a nozzle to form and direct a liquid stream being discharged from the tip, and wherein said third segment serves as a reservoir when a liquid is aspirated by a pipette placed in said second segment, and said second and third segments serve as a reservoir when a liquid is aspirated by a pipette placed in said first segment.

4,349,110

SIZE-REDUCIBLE CONTAINER

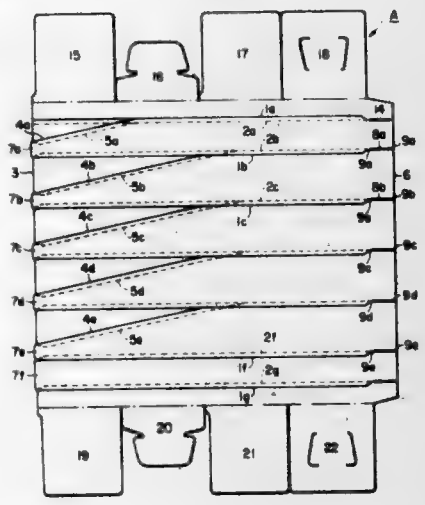
Masaho Hayashi, Tokyo, Japan, assignor to Dainippon Printing Co., Ltd. and Kanebo Foods, Ltd., both of Tokyo, Japan

Filed Jul. 28, 1980, Ser. No. 173,892

Claims priority, application Japan, Jul. 26, 1979, 54-103403[U]

Int. Cl.³ B65D *5/54*

U.S. Cl. 206—606 **3 Claims**



1. A size-reducible rectangular box-like columnar container made from a pre-patterned blank of a carton board exposing its outer side and having a mating cap member, comprising:

a plurality of spaced first horizontal tear-strip scored straight lines formed on the outer surface of said carton board to extend from one edge of said blank horizontally along the entire circumference of said container and to a depth of about one half of the thickness of said carton board;

a plurality of spaced second horizontal tear-strip scored straight lines formed on the inner surface of said carton board to extend from said one edge of said blank horizontally along the entire circumference of said container parallel to said first scored lines but in spaced relation thereto and to a depth of about one-half of the thickness of said carton board,

said scored lines being arranged in pairs of one outer line and one inner line located close to each other to provide an easy tear-strip means for each section of said container defined by adjacent of said pairs;

a plurality of separate gripping end portions, for being nipped by a user, formed along said one edge of blank between adjacent of said pairs and all protruding beyond a longitudinal corner line of the outer side of said container; and

a flap portion formed along the edge of said blank opposite said one edge and secured adhesively to the inner surface of the marginal portion of said one edge at said corner line, said flap portion having slits therein aligned with but spaced from the lines of each of said pairs and terminating short of said opposite edge to thereby provide connecting portions at the opposite ends of said slits that maintain integrity of said flap portion while facilitating sections thereof to be torn off with said tear-strip means.

4,349,111

PAPER CURRENCY DEVICE

Hasmukh R. Shah, Hot Springs, Ark.; Thaddeus M. Jones, and Bruce R. Hemingway, both of South Bend, Ind., assignors to UMC Industries, Inc., Stamford, Conn.

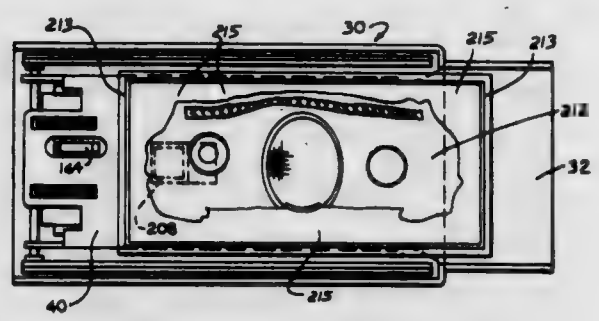
Filed Apr. 4, 1980, Ser. No. 137,425

Int. Cl.³ B07C *5/344*

U.S. Cl. 209—534 **46 Claims**

1. A bill-handling device that comprises a sensor which can respond to relative movement between itself and a line or area on an object to provide a first signal and subsequently provide

a second and oppositely-directed signal, motion-providing means to provide relative movement between said sensor and said object, said sensor responding to relative movement between itself and a line or area on said object, which moves said line or area on said object into register with it, to provide said first signal and thereafter responding to relative movement



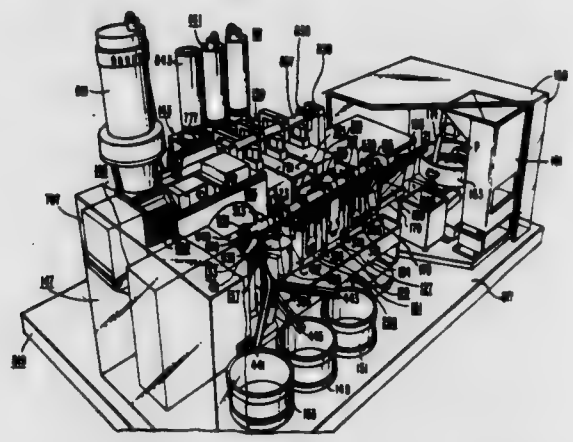
between itself and said line or area on said object, which moves said line or area on said object out of register with it, to provide said second and oppositely-directed signal, and means to indicate the detection of said line or area on said object if said first signal and said second and oppositely-directed signal are produced in a predetermined sequence and are produced within a predetermined short period of time.

4,349,112

PELLET INSPECTION APPARATUS

Robert S. Wilks, Plum Borough; Alexander Taleff, Churchill Borough, and Robert H. Sturges, Jr., Plum Borough, all of Pa., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 31, 1980, Ser. No. 136,122
Int. Cl.[3] B07C *5/02*
U.S. Cl. 209—538 39 Claims



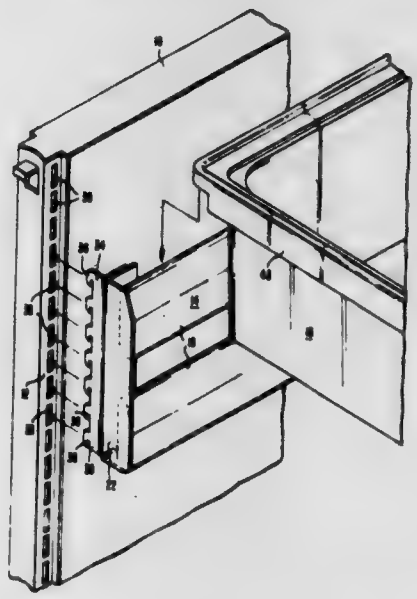
1. Apparatus for inspecting fuel pellets for a nuclear reactor including a plurality of inspection stations and means, cooperative with each of said stations, to inspect each of said pellets for a different property of said pellet, means mounting said stations in an array to receive and inspect each said pellet in succession, each said station inspecting said pellet in its turn for its associated property, means, connected to said stations, for feeding said pellets into the first station of said array, said pellet-feeding means having a pellet pick-up location where a pellet is moved to said first station; sorting means, connected to said stations, for receiving a pellet from the last station of said array and sorting said pellet in accordance with its properties, gripper means cooperative with said feeding means, said stations, and said sorting means, for gripping each said pellet in its turn and advancing said pellet from respective pick-up positions to respective deposit positions, namely from said pellet pick-up location, in a pick-up position to, said first station of said array, in a deposit position, from each station of said array, in pick-up positions, to a just succeeding station of said array, in deposit positions, and from the last station of said array, in a pick-up position, to said sorting means in a deposit position; the said gripper means including a separate gripper for advancing each said pellet from said pellet pick-up location to said first station of said array, a plurality of separate grippers each for advancing each said pellet from a station of said array to the succeeding station of said array, and a separate gripper for advancing each said pellet from the last station of said array to said sorting means, means connected to said gripper means, for actuating said separate grippers to move back and forth together between respective pick-up position and said respective deposit positions with which each said separate gripper is associated, and means for actuating each said separate gripper to engage a pellet at its pick-up position and to deposit said pellet at its deposit position.

4,349,113

WALL-HUNG SUPPORT RAIL

Charles P. Schreiner, Saugatuck, Mich., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 4, 1980, Ser. No. 212,944
Int. Cl.[3] A47F *5/00*
U.S. Cl. 211—103 8 Claims



1. A support rail for use in connection with a panel or similar vertical support member having spaced vertical slotted standards thereon, said support rail comprising:

a pair of vertically spaced rail means,

a first L-shaped bracket secured to each end of said pair of rail means, and

a second L-shaped bracket secured to each of said first L-shaped brackets, said second L-shaped brackets including a plurality of hook-shaped connectors on one edge thereof constructed and arranged to co-act with a slotted standard to connect said support rail to a vertical surface.

4,349,114

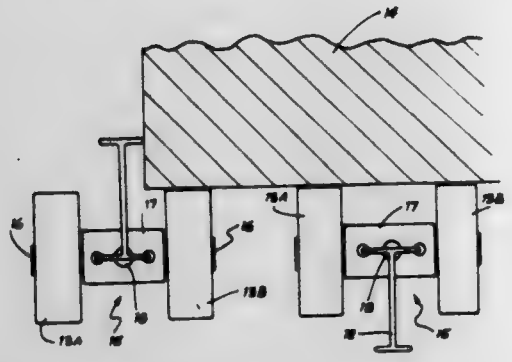
STORAGE RACK

Derek Vickers, Carlingford, and John C. Waterhouse, Allambie Heights, both of Australia, assignors to Fenamec (Australia) Pty. Ltd., Australia

Filed May 30, 1980, Ser. No. 155,151
Claims priority, application Australia, Jun. 11, 1979, PD9135
Int. Cl.[3] B65G *13/00*
U.S. Cl. 211—151 4 Claims

1. A storage rack having at least one generally horizontally load supporting beam, said beam having at least one longitudinally extending web from which projects in a transverse direction a longitudinally extending flange, a plurality of wheel assemblies attached to the beam at longitudinally spaced locations, each wheel assembly including an axle body with a slot within which a portion of said flange and web are located thereby fixing the axle body to the beam, at least one wheel rotatably supported by the axle body, and wherein each axle

body is frictionally restrained from longitudinal movement by the axle body being resiliently biased to engage said flange and



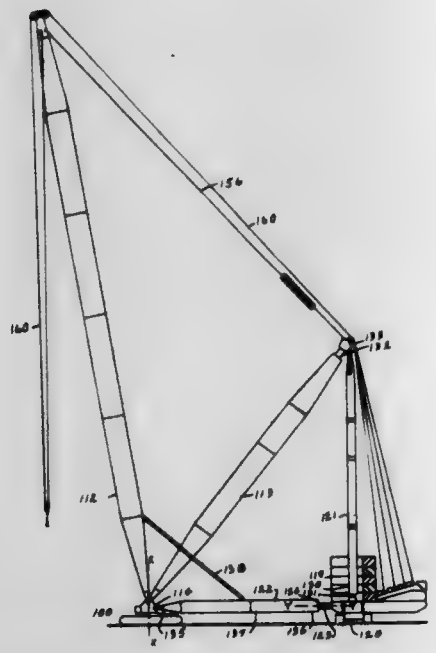
said axler body is fixed against transverse movement by the web.

4,349,115

CRANE

Neil F. Lampson, Kennewick, Wash., assignor to Riggers Manufacturing Co., Kennewick, Wash.

Filed Apr. 14, 1980, Ser. No. 139,798
Int. Cl.[3] B66C *23/08*
U.S. Cl. 212—178 8 Claims



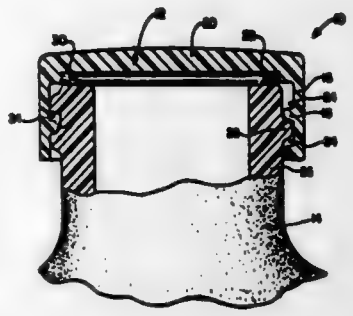
1. A counterbalanced crane structure, comprising:
a ground supported crane base;
a main boom;
a platform mounting the main boom to the crane base;
a mobile counterweight unit remote from the platform;
rigging means operably connected between the counterweight unit and the main boom for positioning the main boom in an upright orientation;
an elongated stinger frame; and means at opposed ends of the stinger frame adapted to mount the stinger frame to the crane base and counterweight unit, respectively;
telescoping connector means along the stinger frame for permitting the counterweight unit to freely move a limited distance toward and away from the crane base parallel to the stinger frame and for permitting relative pivotal movement of the counterweight unit relative to the crane base about a longitudinal axis parallel to the stinger frame.

4,349,116

THERMOPLASTIC SCREW-THREADED CLOSURE CAP

Werner R. Luenser, Blue Island, Ill., assignor to Ethyl Products Company, Richmond, Va.

Continuation of Ser. No. 967,493, Dec. 7, 1978, abandoned. This application Jul. 25, 1979, Ser. No. 60,743
Int. Cl.[3] B65D *41/04*
U.S. Cl. 215—330 13 Claims



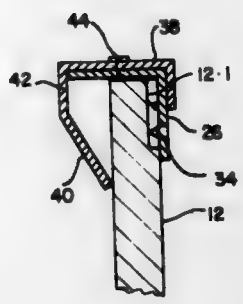
1. A thermoplastic cap having an elastic modulus in flexure within the range of from about 0.2×10^5 to about 10^6 pounds per square inch and comprising:
a. a top wall;
b. an annular sidewall integrally formed with and downwardly depending from the top wall;
c. an inwardly extending primary helical thread about the inside surface of said sidewall for cooperation with a container helical thread; and
d. an inwardly extending secondary helical thread
i. about the inside surface of said sidewall,
ii. coaxial with said primary thread,
iii. displaced upwardly within the range of from about 0.010 to about 0.030 inches above said primary thread,
iv. having a vertical width within the range of from about 0.010 to about 0.030 inches, and
v. having a horizontal width within the range of from about 0.015 to about 0.035 inches.

4,349,117

TRANSPORT AND STORAGE BINS

Kenneth J. D. Bain, Rondebosch; Dennis E. King, Goodwood; Lesley A. Worship, Stellenbosch, and Achmat T. Burton, Athlone, all of South Africa, assignors to Marsden (Proprietary) Limited, Cape Town, South Africa

Filed Sep. 25, 1980, Ser. No. 190,878
Int. Cl.[3] B65D *6/24, 6/26*
U.S. Cl. 220—4 F 7 Claims



1. An upwardly open, four sided transport and storage bin which comprises an upper metal structure in the form of a four sided frame, a lower metal structure in the form of a four sided frame corner posts joining the upper and lower metal structures, a plurality of slats, each slat having a first face which is directed inwardly of the bin and a second face which is directed outwardly of the bin, each side of the upper metal structure comprising a first part and a second part which together form a downwardly open channel for receiving the upper ends of the slats, said parts being separable to release the upper ends of the slats, the first part including a flange which extends downwardly adjacent said second faces of the slats and

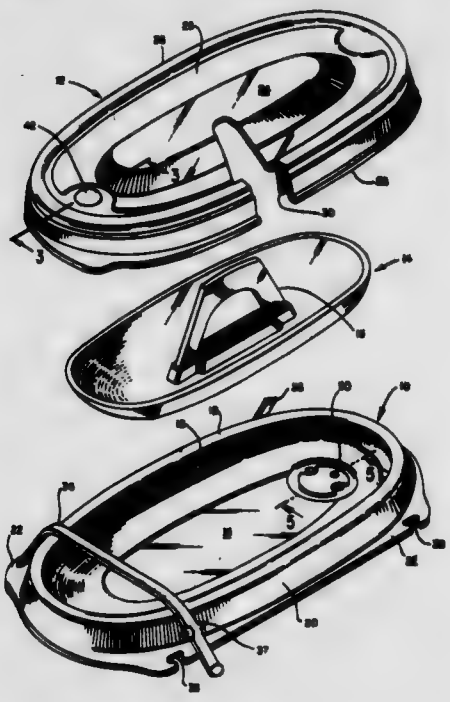
a second part including a flange which extends downwardly adjacent the first faces of the slats, the last mentioned flange sloping outwardly of the bin in the downward direction whereby its upper edge is spaced from said slats and its lower edge abuts said first faces of the slats.

4,349,118

STERILIZING AND STORING MEDICAL ITEMS

Roger S. Sanderson, 24772 Santa Clara, Dana Point, Calif. 92629, and Robert C. Whelchel, Newport Beach, Calif., assignors to Roger S. Sanderson, Dana Point, Calif.

Continuation of Ser. No. 923,359, Jul. 10, 1978, abandoned, which is a continuation of Ser. No. 734,228, Oct. 20, 1976, abandoned, which is a continuation-in-part of Ser. No. 703,044, Jul. 6, 1976, Pat. No. 4,196,166, which is a continuation-in-part of Ser. No. 640,824, Dec. 15, 1975, abandoned. This application Apr. 28, 1980, Ser. No. 144,068
Int. Cl.³ A61L *2/06*; B65D *81/20*
U.S. Cl. 220—201 3 Claims



1. Apparatus for containing items while being sterilized or stored comprising:

means forming a container including a plurality of walls with an opening in one of the container walls;

a resilient, flexible valve member for controlling fluid flow through said opening, said member having a surface shaped to conform to the container wall around said opening, and having means for mounting said member on the container in a manner to cause said surface to engage the container thereby covering said opening;

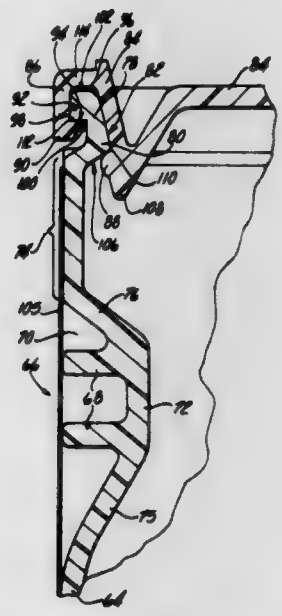
temperature responsive means holding said valve member in an open position unnatural to the resilient tendency of the valve member wherein said opening is not covered by the valve member, said temperature responsive means including an element having first means attached to said valve member at one point on the exterior of said valve member and second means connected to the valve member at a second point on the exterior of the valve member spaced from said one point, the distance between said points as measured along the surface of the valve member being greater than the distance between said first and second means on said element as measured by a straight line connecting said first and second means so that said element is held in tension between said points due to the resiliency of said member and said resilient valve member is distorted into and held by said element in a configuration wherein an edge of said valve member is held in said open position, said temperature responsive means being responsive to a predetermined temperature to release said edge and allow the resilience of the valve member to move said edge to a closed position.

4,349,119

CONTAINER CONSTRUCTION

Ilija Letica, Oxford, Mich., assignor to Letica Corporation, Rochester, Mich.

Continuation-in-part of Ser. No. 169,330, Jul. 16, 1980, Pat. No. 4,293,080. This application Feb. 17, 1981, Ser. No. 235,245
Int. Cl.³ B65D *41/16, 41/18*
U.S. Cl. 220—306 13 Claims



1. An injection molded thermoplastic container, comprising:

a body including a generally cylindrical sidewall, a bottom wall formed integral with said sidewall, and an open top spaced from said bottom wall, said sidewall including upper and lower axially spaced apart portions;

a reinforcement section radially inset relative to said sidewall, said reinforcement section being formed integral with said body between said upper and lower portions of said sidewall and defining a discontinuity in said sidewall adjacent said top thereof; and,

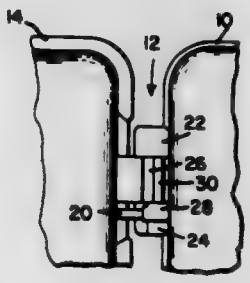
a label secured to said body and overlying at least parts of said upper and lower sidewall portions and said reinforcement section, said label conformingly engaging said parts of said upper and lower sidewall portions.

4,349,120

PLASTIC BOX HINGE

Richard DiNardo, Leominster, Mass., assignor to Bay State Plastics Corp., Leominster, Mass.

Filed Jun. 10, 1981, Ser. No. 272,301
Int. Cl.³ B65D *43/14, 51/04*
U.S. Cl. 220—337 3 Claims



1. A plastic box having an open rim, and a plastic cover therefor, integral hinge-forming means adjacent the rim of the box and corresponding and complementary hinge-forming means on the rim of the cover,

the hinge means on the box comprising a generally cylindrical member having a downwardly opening slot therein,

and the hinge means on the cover comprising a pin adapted to be snapped into the slot so as to hold the pin in a rotary manner in the hinge means on the box,

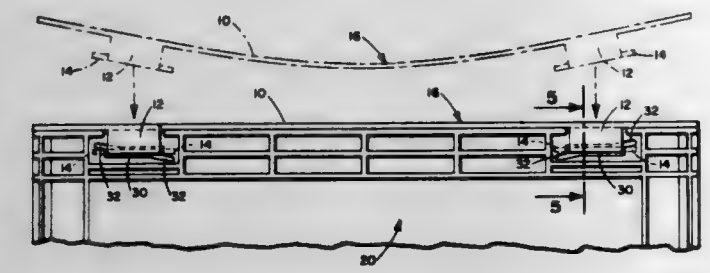
a tab associated with the pin on the cover and a tab associated with the cylinder member on the box, tabs being substantially coplanar in a plane transverse to the axes of the pin, said tabs being arranged to contact each other and act as stops when the cover is open to a 180° relationship with respect to the box.

4,349,121

CASE WITH HINGED LID ASSEMBLY

James Lafferty, Erie, Pa., assignor to Rehrig Pacific Corporation, Los Angeles, Calif.

Filed Feb. 9, 1981, Ser. No. 232,629
Int. Cl.³ B65D *43/14, 51/04*
U.S. Cl. 220—341 **7 Claims**



1. A case comprising in combination:

at least one upstanding wall having at least one hinge receiving slot;

at least one separate unitary flexible cover including a hinge member comprising a tab projecting from said cover, said tab having a first portion of a first width and a second outer portion of second larger width;

said slot comprising a first slot portion of sufficient width to admit only the first portion of said tabs and a second wider slot portion forming slot extensions of sufficient width to admit the second portion of said tab;

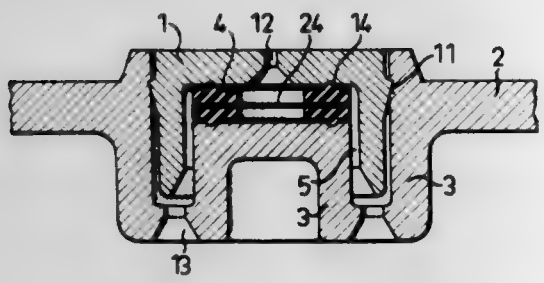
said second tab portion adapted to be retained in said slot when said cover is unflexed to allow pivotal movement of said cover with respect to said wall, said cover attachable to said wall upon flexing of said cover to cause said second tab portion to enter said second slot portion, wherein said cover is retained in said slot in a pivotal state upon release of said cover to an unflexed condition.

4,349,122

SEALING ELEMENT

Rudolf Klar, and Ulrich Beier, both of Northeim, Fed. Rep. of Germany, assignors to Continental Gummi-Werke Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed Apr. 23, 1981, Ser. No. 256,815
Claims priority, application Fed. Rep. of Germany, Apr. 24, 1980, 3015775
Int. Cl.³ B65D *51/16*
U.S. Cl. 220—373 **9 Claims**



1. An annular sealing element for placement between rigid surfaces adapted to rest upon one another, said sealing element comprising:

at least one insert of textile fibers which extend essentially transverse to the sealing direction, said insert having outer peripheral edges, inner peripheral edges, and opposing surfaces extending between and connected by said peripheral edges; and

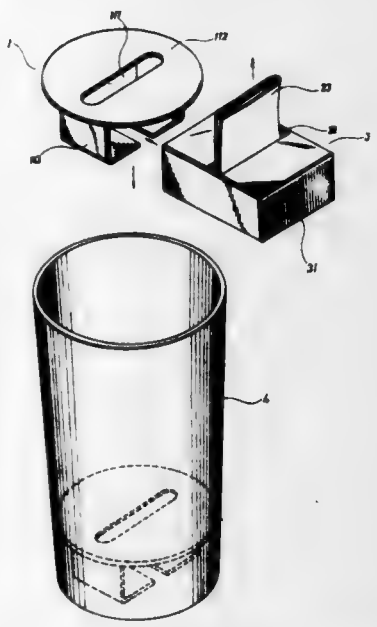
on each of said opposing surfaces, an uninterrupted layer of elastomeric material selected from the group consisting of rubber and rubber-like synthetic material, said insert being covered by said respective elastomeric layers in such a way that said outer and inner peripheral edges of said insert are exposed.

4,349,123

GARBAGE CAN WITH A PACKAGED AND FOLDED PLASTIC BAGS SUPPLIER

Yih-Chen Yang, Taipei, Taiwan, assignor to Chiang Keh-Yeu, Taipei, Taiwan

Filed Mar. 12, 1980, Ser. No. 129,576
Int. Cl.³ B65D *25/10, 25/16;* B65F *1/06, 1/08*
U.S. Cl. 220—407 **1 Claim**



1. A garbage can with a packaged and folded plastic bags supplier, comprising:

a series of packaged and folded plastic bags stored in a package box, the said package box having a slot through which the said series of packaged and folded plastic bags can be pulled up;

a base composed of an upper plate and a base frame, said upper plate having a slot which is the same as the slot on said package box in length, said base frame comprising two L-shaped legs, each having an upright portion with a top end and a flat base portion, each top end being affixed to said upper plate and each flat base portion facing each other defining a space and support for holding said package box and assuring that said packaged and folded plastic bags can be pulled out smoothly through said slots on said upper plate and said package box;

a can body having suitable height and providing a space on its lower portion to hold said base, said base frame being completely isolated from the upper space of said can body by said upper plate.

4,349,124

COMPOSITE PAPERBOARD TRAY

Rudolph A. Faller, Edina, Minn., assignor to Champion International Corporation, Stamford, Conn.

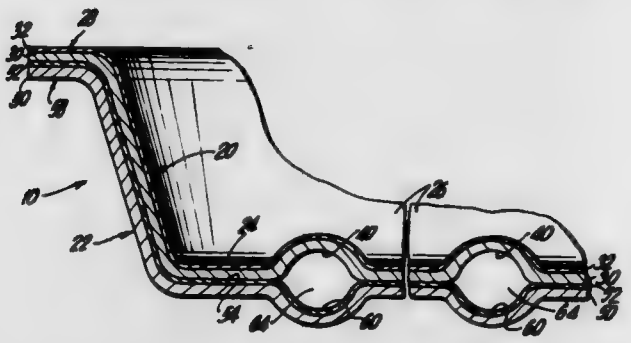
Filed Sep. 22, 1980, Ser. No. 189,099
Int. Cl.³ B65D *1/42, 5/56, 6/38, 8/12*
U.S. Cl. 220—453 **7 Claims**

1. A composite tray comprising:

a top tray member press formed from paperboard material having a polymer coating on one side, said top tray mem-

ber including a base surface, a continuous upstanding outwardly tapering side wall extending from said base surface, and a continuous peripheral flange extending outwardly from said side wall substantially parallel to said base surface, said top tray further including a plurality of elongated embossments formed on the base surface thereof and projecting toward the plane of said peripheral flange, said paperboard material being oriented such that said polymer coating is disposed on the convex side of said embossments; and

a bottom tray member press formed from paperboard material having a polymer coating on one side, said bottom



tray member having a configuration substantially identical to the configuration of said top tray member but having slightly larger dimensions than said top tray member and having a plurality of elongated debossments formed on the base surface thereof and projecting away from the plane of the peripheral flange, said top tray member being disposed within said bottom tray member and fixedly connected thereto along the peripheral flanges, the side walls and the portions of the base surfaces between the bossments such that said bossments cooperate with the opposing base surface to define elongated enclosed portions that increase the structural rigidity of the composite tray.

4,349,125

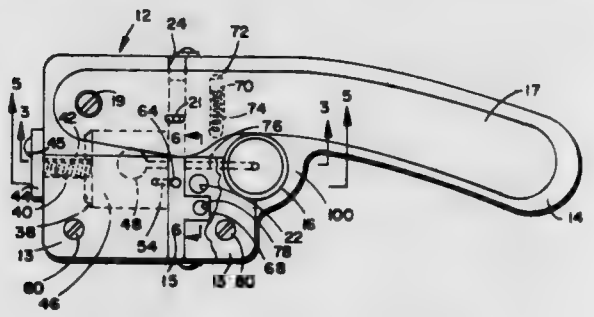
SLIDING DENTAL AMALGAM DISPENSER

Maurice M. Weikel, Las Vegas, Nev.

Continuation-in-part of Ser. No. 190,627, Sep. 25, 1980, which is a continuation-in-part of Ser. No. 951,079, Oct. 13, 1978, abandoned. This application Dec. 31, 1980, Ser. No. 221,807

Int. Cl.³ G01F *11/22, 11/24;* A47F *1/035;* B65D *83/04*

U.S. Cl. 221—96 **19 Claims**



1. A dental amalgam dispenser comprising:

a mercury reservoir;

a material distribution shell receiving said mercury reservoir and defining a dispensing well extending therethrough, a linear track laterally displaced from said dispensing well, a transfer inlet in said linear track, a channel for conducting mercury from said mercury reservoir to a transfer inlet in said linear track, a transfer outlet located in said linear track and longitudinally displaced from and vertically no higher than the level of said transfer inlet, and a channel for conducting mercury from said transfer outlet to said dispensing well;

a transport carriage coupled to said shell for reciprocal movement along said track and including a tablet tray for carrying silver tablets to said dispensing well for discharge therein and wherein there is defined in said carriage a measuring chamber, and said carriage is reciprocal in sliding sealed engagement with said track to a position in which said measuring chamber is in communication with said transfer inlet and alternatively to a position in which said measuring chamber is in communication with said transfer outlet; and

a handle connected to one of said shell and said carriage, and a trigger connected to the other thereof at a sliding connection and to said one thereof at a fulcrum, and spring means biasing said handle and trigger apart, whereby squeezing said handle and said trigger together brings said measuring chamber from communication with said transfer inlet to communication with said transfer outlet.

4,349,126

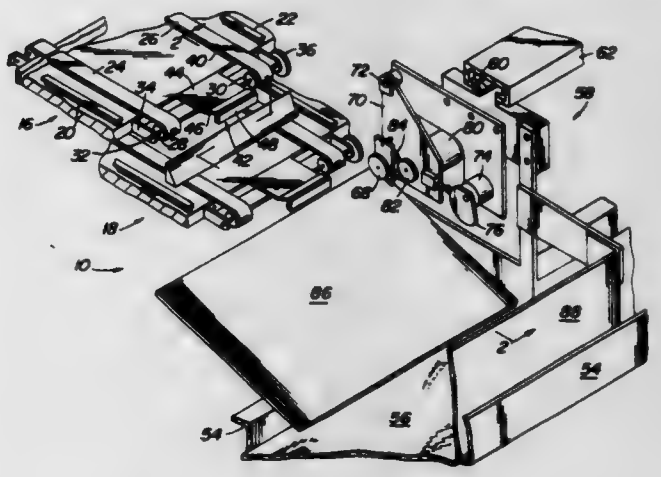
SUBSTRATE DISPENSING APPARATUS

William L. Brown, Easton, Pa., assignor to SI Handling Systems, Inc., Easton, Pa.

Filed Nov. 21, 1980, Ser. No. 209,244

Int. Cl.³ B65G *59/00*

U.S. Cl. 221—112 **9 Claims**



1. Apparatus for dispensing substrates comprising at least one horizontally disposed shelf, means supporting said shelf, means dividing the shelf into a plurality of lanes, each such lane having means including at least one endless belt for moving a stack of upright substrates thereabove and in contact therewith toward a front edge of the shelf, a shaft adjacent the front edge of the shelf, a roller on the shaft and around which the belt extends, drive means connected to the shaft for rotatably driving the shaft which in turn moves said belt to cause substrates in contact therewith to move toward the front edge of the shelf, a motor means for selectively driving said drive means, a transfer member for each lane, each transfer member being supported by the front end portion of the shelf, each transfer member projecting beyond the effective reach of its associated belt so that the leading substrate to be dispensed is supported by said transfer member prior to dropping downwardly off a free end of said transfer member when pushed by the next succeeding substrate.

4,349,127

DEVICE FOR AFFIXING GARMENTS ONTO HANGERS

Hassel J. Savard, Jr., Neshanic, N.J., assignor to Atron, Inc., Rahway, N.J.

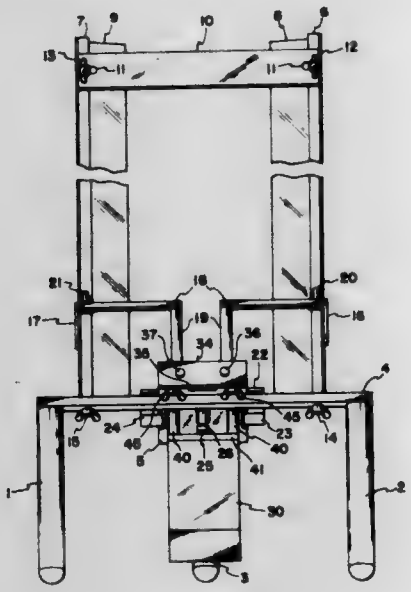
Filed Sep. 11, 1979, Ser. No. 74,324

Int. Cl.³ B65H *3/00;* B65G *59/00*

U.S. Cl. 221—196 **13 Claims**

1. A device for holding a stack of hangers and for advancing one hanger at a time from said stack to a forward delivery position and for affixing a garment onto the hanger when in the forward hanger delivery position, which comprises a frame for holding said hangers, a main plate essentially perpendicular to said frame intersecting said frame in an essentially cross config-

uration, a slide for said hanger resting on said main plate, said slide being slidable from said forward hanger delivery position to a rearward hanger receiving position and vice versa and the device further comprises means for holding said stack of hangers on said frame and for releasing one hanger at a time from said stack and causing said hanger to be seated in said slide, said



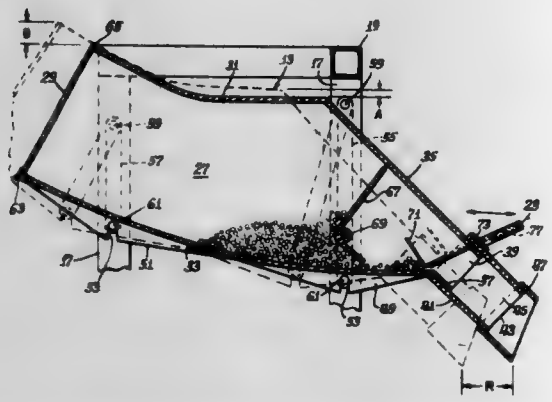
hanger being movable from said rearward hanger receiving position to the forward delivery position along a support guide means which supports the hanger at the delivery position to allow the affixing of a garment onto the hanger, and means for holding the hanger at the forward delivery position during the operation of affixing the garment.

4,349,128

MOVABLY MOUNTED DISPENSER FOR BULK MATERIAL

Jasper B. Sanfilippo, Plum Tree Rd., Barrington Hills, Ill. 60010

Filed Jun. 9, 1980, Ser. No. 157,792
Int. Cl.³ B67D *5/64*
U.S. Cl. 222—166 **7 Claims**



7. A movably mounted dispenser for a bulk product, comprising:

a container having front and rear ends;

a rack having spaced vertical supports mounting said container;

an outlet opening adjacent the lower edge of the front end of said container;

a spout adjacent said outlet formed by lower portions of said container creating a narrowing of the container adjacent the opening; and

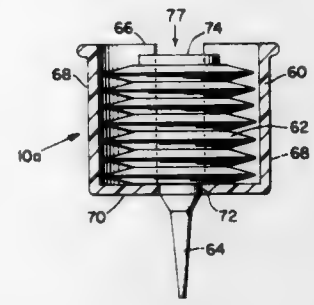
two pairs of elongated members pivotally mounted at one of their ends to said spaced vertical supports and at the other of their ends to opposing sides of said container adjacent the respective members, all members being parallel when said container is at rest, one pair of said elongated members being located adjacent the front end of said container and the other of said pairs being located adjacent the rear end of said container, the pair of said elongated members at the rear end of said container being shorter than the pair at the front end.

4,349,129

PORTABLE, MEASURED VOLUME DISPENSER

John S. Amneus, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Dec. 3, 1979, Ser. No. 99,243
Int. Cl.³ B67D *5/06*
U.S. Cl. 222—41 **1 Claim**



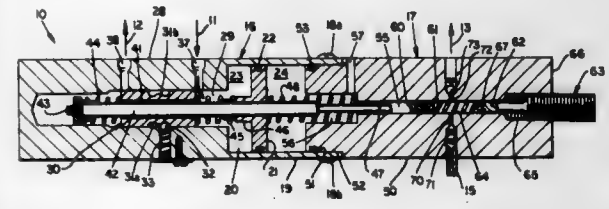
1. A portable liquid dispenser for dispensing a measured volume of liquid, said dispenser comprising: a reciprocatable pump tube affixed to a bottle containing the liquid and adapted to pump the liquid through the tube interior and its upper end when reciprocated; a liquid applicator, said applicator being mountable on said pump tube but being freely removable therefrom, said applicator having a squeezable bellows for holding said measured volume of liquid to be dispensed, said bellows having a common inlet/outlet tube shaped to conform to the end of said pump tube, said inlet/outlet tube being capable of free sliding telescopic connection and disconnection with said pump tube; said bellows being surrounded by a cup-like frame having an open top, a cylindrical lateral periphery, and a flat base, said inlet/outlet tube passing through an opening in said base, said frame being transparent and having indicia marked on the exterior of said lateral periphery to measure the expansion of said bellows, said frame having a thumb-sized slot extending from said open top to said base of the frame.

4,349,130

LIQUID METERING PUMP

Scott S. Bair, Atlanta, Ga., assignor to Woolfolk Chemical Works, Inc., Fort Valley, Ga.

Filed Mar. 3, 1980, Ser. No. 126,541
Int. Cl.³ B67D *5/56*
U.S. Cl. 222—129.2 **14 Claims**



1. Positive displacement metering pump apparatus, comprising in combination:

a housing defining a hollow operating chamber for receiving a fluid motor piston, and a hollow discharge region;

means defining a fluid motor piston reciprocably disposed within said operating chamber;

a fluid inlet port receiving operating fluid for admission to said operating chamber to exert force on said fluid motor piston;

a fluid outlet port receiving operating fluid exhausted from said discharge region;

valve means disposed in said housing and movable indepen-

dently of movement of said fluid motor piston to occupy either a first position or a second position;

said valve means defining a fluid channel connecting said operating chamber and said discharge region;

said valve means in said first position operative to admit said operating fluid to said operating chamber from said fluid inlet port;

said valve means in said second position operative to admit said operating fluid from said discharge region to said fluid outlet port so that the operating fluid previously admitted to the operating chamber can exit the fluid outlet port through said fluid channel and said discharge region; said fluid channel connecting said operating chamber and said discharge region in fluid communication at all times;

actuating means operative to move said valve means from said first position to said second position when said fluid motor piston has moved a first extent in response to said operating fluid entering said operating chamber, and operative to return said valve means to said first position from said second position when said fluid motor piston has moved a second extent in response to said exiting operating fluid, whereby said fluid motor piston undergoes an operating cycle; and

pump means operatively associated with said fluid motor piston to pump a certain amount of working fluid in response to each operating cycle of said fluid motor piston.

4,349,131

APPARATUS FOR DOSING AND FORMING SOAP FOAM

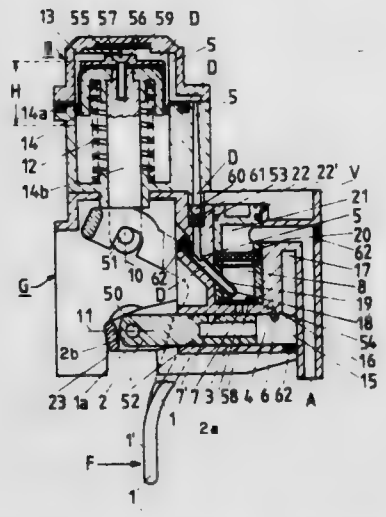
Sandro Arabian, Vaduz, Liechtenstein, assignor to Europtool Trust, Vaduz, Liechtenstein

Filed Apr. 21, 1980, Ser. No. 142,003

Claims priority, application Switzerland, May 10, 1979, 4367/79

Int. Cl.³ B67D *5/42, 5/62*

U.S. Cl. 222—135 **25 Claims**



1. An apparatus for forming lather comprising:

a liquid soap-dosing means;

an actuation lever for actuating said liquid soap-dosing means;

means provided for said liquid soap-dosing means for providing a source of pressurized fluid medium;

means defining a mixing chamber;

means communicating said source of pressurized fluid medium with said mixing chamber;

at least one supply container for liquid soap;

said liquid soap-dosing means comprising a liquid soap-dosing pump;

said liquid soap-dosing pump containing a cylinder compartment and a piston arranged within said cylinder compartment;

said actuation lever simultaneously serving for driving the piston arranged in said cylinder compartment of said liquid soap-dosing pump and for the compression and infeed of the pressurized fluid medium;

infeed means for the infeed of the liquid soap to the cylinder compartment;

means defining a connection opening between the cylinder compartment and the mixing chamber; and

said piston being structured as a slide element for closing and opening said infeed means and for closing and opening said connection opening between said cylinder compartment and said mixing chamber.

4,349,132

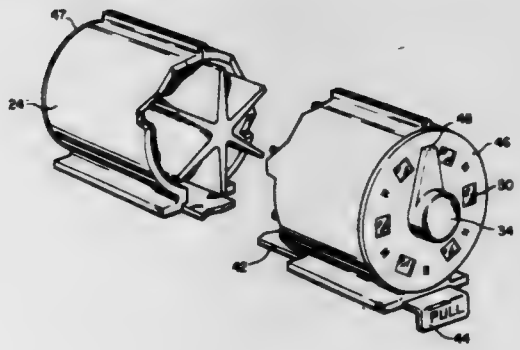
DEVELOPER DISPENSING APPARATUS

Paul J. Macaluso, Norwalk, and James E. Genthe, Newtown, both of Conn., assignors to Pitney Bowes, Inc., Stamford, Conn.

Continuation of Ser. No. 101,332, Dec. 6, 1979, abandoned. This application Jun. 17, 1981, Ser. No. 276,308

Int. Cl.³ B67D *5/38*

U.S. Cl. 222—156 **4 Claims**



1. A development powder dispensing apparatus for supplying powder to the sump of a magnetic brush unit comprising: a generally longitudinal, cylindrical housing having an opening therein, a spider received within said housing, spider having arms that separate the housing into individual chambers in cooperation with the walls of said housing, each of said chambers being of substantially equal volume, means for rotating said spider, means for attaching said dispensing apparatus to the sump of the magnetic brush unit with said opening forming a confluent relationship with said sump when so attached, said housing forming a closed structure after being attached to said sump and means for determining the presence of development powder in said chambers.

4,349,133

DISPENSER AND REFILL PACKAGE

William C. Christine, 341 St. John St., Catasauqua, Pa. 18032

Filed Sep. 12, 1979, Ser. No. 74,736

Int. Cl.³ G01F *11/02*

U.S. Cl. 222—183 **7 Claims**

1. A dispenser for dispensing a predetermined metered quantity of fluidic material, said dispenser comprising:

housing means;

means, removably mounted in said housing means, for holding said fluidic material;

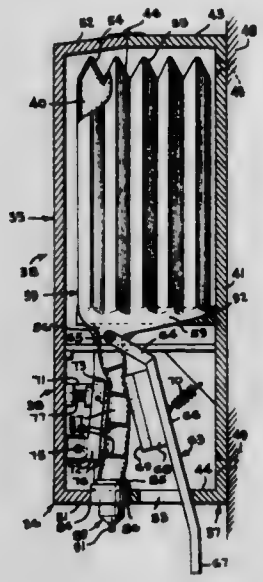
cover means attached to said housing means for covering said holding means when the latter is in said housing means;

peristaltic-acting tube means depending from said holding means including valve means operatively connected thereto;

first lever means pivoted to said housing means for compressing said tube means;

second lever means biased away from said cover means for engaging said tube means when said first lever means compresses said tube means;

said first and second lever means moving in the same direction when said tube means is compressed, so that said tube



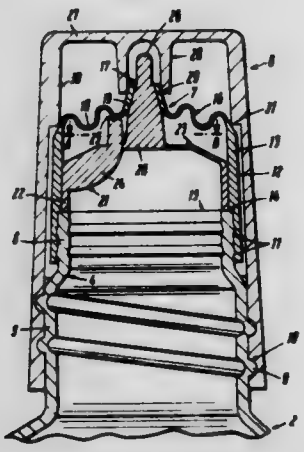
is initially pinched therebetween thereby trapping said predetermined quantity of material.

4,349,134

VALVED, RESILIENT-WALLED CONTAINER FOR SAFELY DISPENSING FLAMMABLE LIQUIDS

Wilhelm Schuster; Jürgen Stahl, and Wilhelm Wegner, all of Frankfurt, Fed. Rep. of Germany, assignors to AHK Alkohol Handelskontor GmbH, Fed. Rep. of Germany

Filed Sep. 9, 1980, Ser. No. 185,487
Int. Cl.³ B65D *1/32, 47/06*
U.S. Cl. 222—212 **7 Claims**



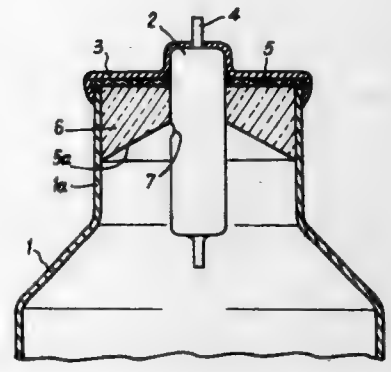
1. A container particularly for dispensing a highly flammable liquid, comprising flexible compressible container walls, a safety closure means and a removably attached cap, whereby the safety closure is a membrane controlled cone valve operable by reduction of the interior space of the container, the membrane having a central hole bounded by a sealing edge, through which a valve cone, against which the sealing edge abuts, is engaged, and being constructed with undulations extending concentrically around the central hole, the valve cone is arranged as a hub of an annular plate resiliently yielding in the axial direction and provided with holes formed by radial stays connected to an upper marginal edge of cylindrical moulding, which is inserted as a press fit into a membrane support beneath the membrane, wherein the central hole of the membrane is bounded by an upwardly projecting sleeve conically abutting the valve cone and constituting the sealing edge.

4,349,135

AEROSOL CONTAINER VALVE MOUNTING

Jean-Claude G. Busselet, Le Neubourg, France, assignor to Etablissements Valois, Le Neubourg, France

Filed Mar. 3, 1980, Ser. No. 126,757
Claims priority, application France, Mar. 8, 1979, 79 05937
Int. Cl.³ B65D *83/14*
U.S. Cl. 222—394 **2 Claims**



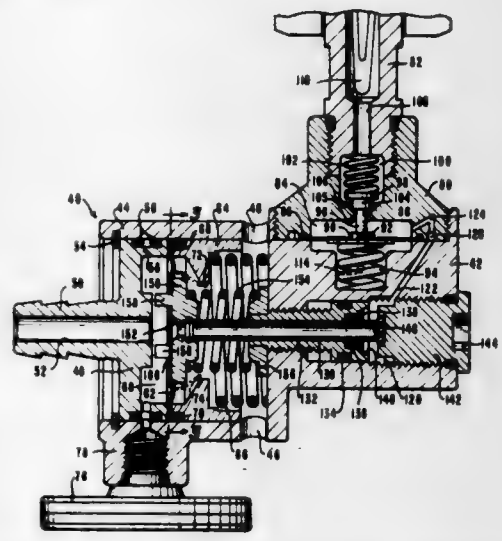
1. A hand actuated aerosol spraying device comprising; a container with a neck at one end and an aperture at the same end, a valve disposed in the neck with an outlet tube projecting outside the container, a cap closing the container and holding the valve in position inside the neck, said cap being provided with an orifice for the outlet tube, a sealing gasket being disposed between the cap and the container for preventing fluid leakage, wherein there is provided in the container neck between the valve and the inner wall of the container neck a ring made of a material insensitive to the product stored in the container, said ring forming an impervious bar between the valve and the container inner wall so as to prevent the stored product from reaching the gasket, wherein said gasket is a flat washer, and said ring bears against said cap through said gasket, and wherein the axial surface of the ring, opposite to the cap, is of a generally conical form, the axial length of the ring being shorter toward the container axis, and the inner circumferential edge of said ring being adjacent a filling orifice in the valve, whereby, when said container is inverted, said product may be completely exhausted therefrom, via said conical surface and said orifice.

4,349,136

SAFETY PRESSURE REDUCING REGULATOR

Merton R. Fallon, Thousand Oaks, Calif., and Thomas W. Clements, Ambler, Pa., assignors to Draft Systems, Inc., Northridge, Calif.

Filed Feb. 7, 1980, Ser. No. 119,561
Int. Cl.³ B67D *1/12*
U.S. Cl. 222—396 **35 Claims**



26. A pressure regulator for disposition between a gas pressure source and a pressure vessel, comprising:

a housing provided with a pressure chamber therein and one or more vents to release excess pressure from said pressure chamber;

inlet means for supplying pressurized gas from said gas pressure source to said pressure chamber;

outlet means in communication with said pressure chamber for supplying the pressurized gas to said pressure vessel;

a flexible diaphragm disposed within said housing for normally sealing said pressure chamber from communication with said vents; and

clamping means disposed within said housing and adapted to normally clamp said diaphragm across said pressure chamber to block communication with said vents, said clamping means being actuatable in response to excess pressure in said pressure chamber to unclamp said diaphragm and allow said diaphragm to collapse and permit gas to escape from said pressure chamber through said vents, said clamping means including a piston slidably mounted within said housing and adapted to engage the periphery of said flexible diaphragm, said piston including a central passage to provide communication between said pressure chamber and said vents, and said flexible diaphragm being normally disposed across said central passage to block communication between said pressure chamber and said vents with the periphery thereof being collapsible into said central passage when unclamped by said piston.

4,349,137

GARMENT PRESSING MACHINES

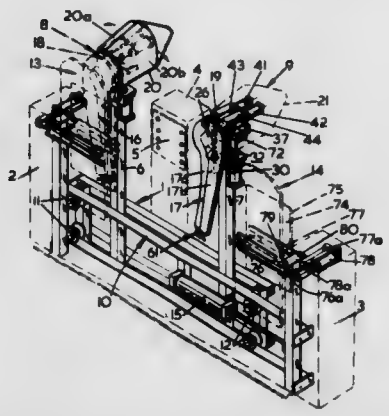
Nicholas W. Everett, Close House, Hardraw near Hawes, Yorkshire, England, assignor to Richard Sussman and Wynne Everett, both of, Englewood Cliffs, N.J.

Filed Aug. 14, 1980, Ser. No. 178,152

Claims priority, application United Kingdom, Jan. 25, 1980, 8002524

Int. Cl.[3] D06C *15/00*; D06F *71/34*

U.S. Cl. 223—73 39 Claims



1. A garment pressing machine comprising a sleeve form for insertion into the sleeve of a garment to be pressed and a nipping member for pressing the associated arm hole region of said sleeve upon relative movement of the sleeve form and the nipping member into pressing relationship, said form and said member each comprising two sections flanking a wedge element which is position adjustable to move the half sections relative to each other and hence vary the overall size of said form or member.

4,349,138

CARRYING RACK FOR MOTORCYCLES

Andrew C. Bruhn, P.O. Box 594, Springfield, Oreg. 97477

Filed Oct. 19, 1981, Ser. No. 312,693

Int. Cl.[3] B62J *7/04*

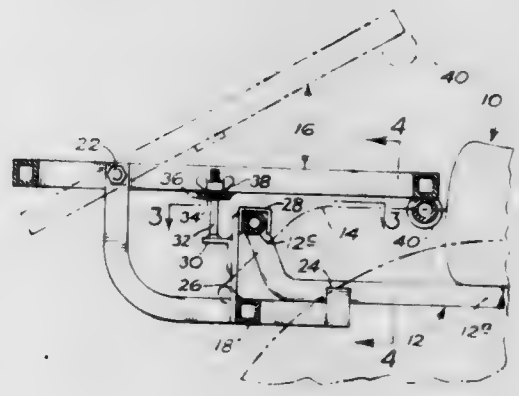
U.S. Cl. 224—30 R 5 Claims

1. A carrying rack for motorcycles of the type having a rear frame including spaced longitudinal portions and a horizontal connecting portion between the longitudinal portions, said rack comprising

(a) a mounting bracket,

(b) a top platform supported horizontally on said mounting bracket for holding a load,

(c) extension means on said mounting bracket arranged to abut up against each of the longitudinal portions of a rear frame of a motorcycle and including pairs of upwardly



extending fingers arranged to receive the respective longitudinal portions of the motorcycle frame therebetween for lateral stabilization,

(d) and an inverted channel member on said mounting bracket arranged to fit on the horizontal connecting portion of the rear frame of a motorcycle for vertical support, thus combining with said extension means of the bracket and its upwardly extending fingers to hold said rack on the frame of a motorcycle.

4,349,139

HANG STRAP FOR PORTABLE INSTRUMENT

Akira Oishi, 16-18 Isoyama 2-Chome, Suzuka-Shi, Mie-Ken, Japan

Filed Mar. 25, 1981, Ser. No. 247,255

Claims priority, application Japan, Aug. 7, 1980, 55/112158[U]

Int. Cl.[3] A45F *5/00*

U.S. Cl. 224—257 6 Claims



1. A hang strap for a portable instrument comprising: a neck ha[illegible] band with first and second hang rings; first and second stopping means connected to the portable instrument; and a string; one end of said string being fixed relative to said first stopping means and the other end of said string being movably passed through said first hang ring and back through a string-passing hole of said first stopping means and thence through a string-passing hole of said second stopping means and said second hang ring, and after that being fixed relative to said second stopping means; and said string having a torso portion, which extends between said string-passing hole of said first stopping means and said string-passing hole of said second

stopping means, and being circled around the user's torso in use.

4,349,140

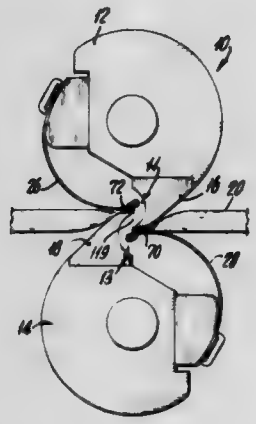
APPARATUS FOR PARTITIONING AND SHAPING A FIBROUS BATT

Anthony Passafiume, Burbank, Ill., assignor to Johnson & Johnson Baby Products Company, New Brunswick, N.J.

Continuation-in-part of Ser. No. 51,562, Jun. 25, 1979, Pat. No. 4,279,369. This application Sep. 26, 1980, Ser. No. 191,638

Int. Cl.³ B26F *3/02*

U.S. Cl. 225—97 **13 Claims**



1. Apparatus for partitioning a batt of loosely compacted short fibers comprising: a pair of rolls disposed adjacent each other with their axes parallel, said rolls each having at least one jaw member affixed to the roll and extending along the surface of the roll parallel to the roll axis a distance at least equal to the width of the batt being partitioned; each jaw member comprising a non-resilient means and a resilient means disposed adjacent each other, said non-resilient means being constructed with the furthest tip of said means projecting outwardly from the surface of the roll at least about 0.1 inch; the non-resilient means having a first face forming said furthest tip, said first face disposed substantially perpendicular to a plane in which the axis of the roll lies, a second curved face forming an initial angle of 90° or less with said first face at one end thereof and curving inwardly under said first face and extending at least to the surface of the roll, and a third face extending from the opposite end of said first face to the surface of the roll; the resilient means comprising an arcuate projection, extending from and about the surface of the roll to a first face disposed adjacent said one end of said first face of said non-resilient means and perpendicular to a plane in which the axis of the roll lies, said first face of said resilient means projecting outwardly from the surface of the roll at least about as far as said non-resilient means and extending along the surface of the roll parallel to the roll axis at least as far as said non-resilient means, and means for rotating the rolls in opposite directions so that jaw members on the oppositely rotating rolls engage each other in a manner that the non-resilient means of one roll engages the oppositely rotating resilient means of the other roll with the second face of the non-resilient means of one roll passing the second face of the non-resilient means of the other roll with a clearance between the faces of at least 0.03 inch.

4,349,141

PISTON RETURN FOR POWDER ACTUATED PISTON TOOL

Jean Ollivier, and Yves Bosch, both of Valence, France, assignors to Olin Corporation, New Haven, Conn.

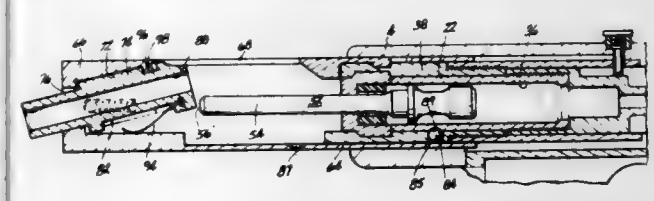
Filed Jun. 12, 1980, Ser. No. 158,952

Int. Cl.³ B25C *1/14, 1/18*

U.S. Cl. 227—10 **7 Claims**

6. In a powder-actuated fastener driving tool of the type having a barrel with a bore, and a piston reciprocally slidably disposed in said barrel bore for movement between a breechward driving position and a muzzleward driven position, a piston return mechanism comprising:

(a) a muzzle bushing having a bore, said muzzle bushing being mounted on a slide movably mounted on said tool for movement between a first breechward position wherein said piston, when in said driven position, extends into said muzzle bushing bore, and a second muzzleward position wherein said muzzle bushing bore is open for receipt of a fastener and clear of said piston when the latter is in said driven position;



(b) piston return means on said slide for engaging a fastener driving face on said piston when said slide is in said second position and said piston is in said driven position whereby return of said slide to said first position causes return of said piston to said driving position; and

(c) means for disengaging said piston return means from said fastener driving face of said piston when slide approaches said first position.

4,349,142

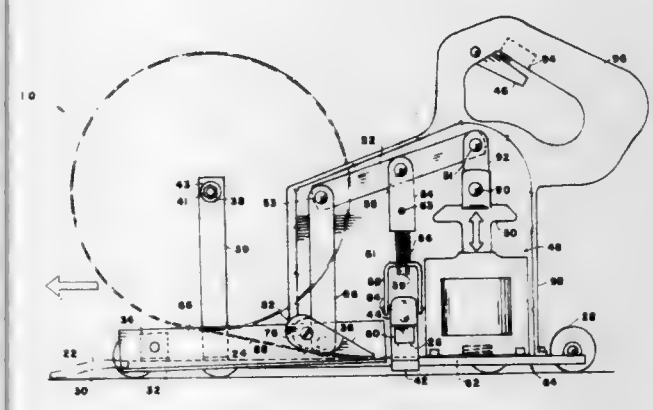
ELECTRIC RUG BINDING SYSTEM

Richard A. Soter, III, 3421 Glen Ave., Baltimore, Md. 21215

Filed Nov. 10, 1980, Ser. No. 205,309

Int. Cl.³ B25C *5/02, 5/15*

U.S. Cl. 227—13 **12 Claims**



1. A portable system for rug binding by fastening a tape at spaced intervals along a top margin of an edge of a rug disposed on a horizontal surface, comprising: a frame, means for manually directing the frame along a said rug edge including means for laterally biasing the system against the rug edge and means for lifting a portion of the rug marginally along the rug edge; means for dispensing the tape along the top margin of the rug edge, means for pressing and stretching the tape downward along said top margin prior to said fastening, a trigger, and means for power driving and affixing a staple through the tape and the top margin upon each actuation of the trigger.

4,349,143

ELECTRIC STAPLER AND DRIVER ASSEMBLY THEREFOR

John F. Ewig, Worcester, Mass., assignor to Parker Manufacturing Co., Worcester, Mass.

Filed May 12, 1980, Ser. No. 148,721

Int. Cl.³ B25C *5/15*

U.S. Cl. 227—131 **7 Claims**

1. An electric stapler comprising:

(a) a housing having a main body, a magazine portion, and a handle, said magazine portion having a flat bottom surface

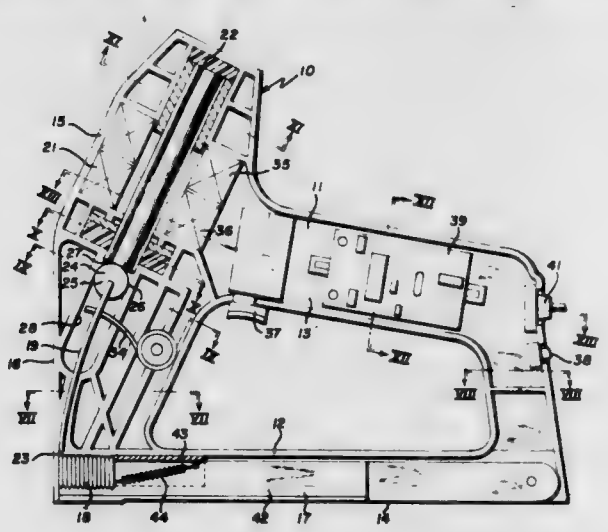
which is the bottom surface of said stapler and is adapted to lie along the surface of an article to be stapled, said main body extending from one end of said magazine portion and having an end surface lying substantially at a right angle to said bottom surface, said end surface being the forward most surface of said stapler,

(b) a staple magazine located in said magazine portion to present staples seriatim to said one end,

(c) a staple driver mounted in said main body for sliding motion toward and away from said one end of said magazine portion, and

(d) a solenoid mounted in said main body and having a plunger whose line of reciprocation lies at an acute angle to said end surface, said plunger being in contact with said staple driver,

wherein the staple driver is an elongated metal band, and wherein the main body is formed with a first passage to



guide the staple driver, the first passage being curved, so that a portion adjacent the said one end of the magazine portion would have an imaginary tangent that is parallel to the said end surface of the main body and so that the remainder curves away from the said end surface, said contact between said plunger and said stapler driver is such as to permit angular misalignment therebetween, said staple driver flexing as it is driven along said first passage by the reciprocation of said plunger, wherein said staple driver is provided with a nylon head having a cylindrical surface whose axis extends transversely of the length of said driver, and wherein said plunger is formed of nylon and provided with a transverse flat surface for contact with said cylindrical surface of said head, wherein said main body is provided with a second passage of rectangular cross section sized to receive said head in sliding relationship, said second passage being non-coextensive with said first passage.

4,349,144

FRICTION WELDING MACHINE WITH DUAL POSITION END STOP

Christopher T. S. Stevenson, New Britain, and Elio F. D'Aloisio, East Hartford, both of Conn., assignors to Litton Industrial Products, Inc., New Britain, Conn.

Filed Feb. 5, 1981, Ser. No. 231,669
Int. Cl.³ B23K *19/02*
U.S. Cl. 228—2 **1 Claim**

1. A friction welding machine comprising

a base including horizontal way surface means, and a plurality of horizontally spaced keyway means,

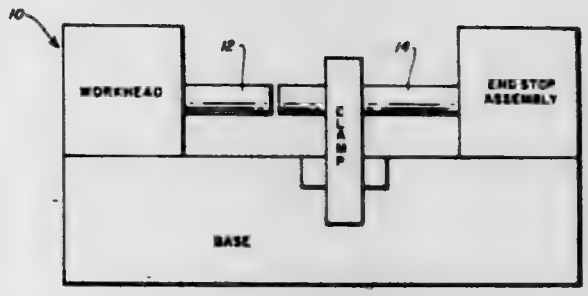
an end stop assembly including

housing means having roller support means for permitting horizontal displacement of said end stop assembly along said way surface means, and

slide means having key means for matingly engaging with said base keyway means and a pair of vertically spaced, horizontally extending, axially spaced end stops,

first means for locating said slide means at a lowermost position for locating the upper end stop at a predetermined machining location,

second means for locating said slide means at an intermediate position for locating the lower end stop at a predetermined machining location, and



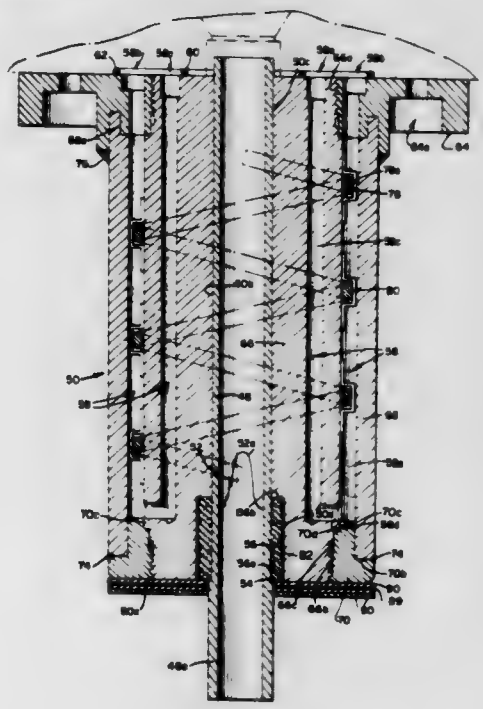
third means for locating said slide means at an uppermost position whereat said slide key means becomes disengaged from said base keyway means whereby said end stop assembly can be horizontally displaced relative to said base.

4,349,145

METHOD FOR BRAZING A SURFACE OF AN AGE HARDENED CHROME COPPER MEMBER

George Shinopulos; M. Ronald Randlett, both of Burlington, and Terry F. Bower, Needham, all of Mass., assignors to Kennecott Corporation, Stamford, Conn.

Division of Ser. No. 57,411, Jul. 13, 1979, Pat. No. 4,307,770, which is a division of Ser. No. 928,881, Jul. 28, 1978, Pat. No. 4,211,270. This application Dec. 3, 1980, Ser. No. 212,595
Int. Cl.³ B23K *1/04, 1/20*
U.S. Cl. 228—208 **4 Claims**



1. A method for brazing a surface of an age hardened chrome copper member to a surface of a stainless steel member comprising the steps of

plating said surfaces with copper,

applying a braze material of a copper/gold alloy between said surfaces,

applying a brazing paste of said copper/gold alloy between said surfaces,

urging said surfaces toward one another, said brazing material and said braze paste,

heating said alloys to a temperature below the fusing point of said braze material in a protected atmosphere,

rapidly heating said materials to fuse said braze material in a protected atmosphere, and

cooling said materials in a protected atmosphere after said rapid heating.

4,349,146

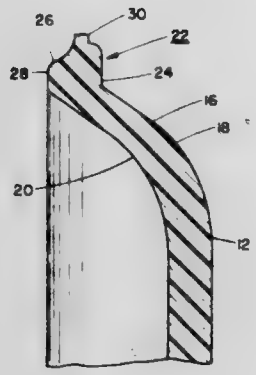
PACKAGING TRAY

M. James Holden, Canandaigua, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 28, 1980, Ser. No. 211,005

Int. Cl.³ B65D *1/34, 65/16*

U.S. Cl. 229—2.5 R **7 Claims**



1. In a molded tray for the packaging of meat, fish, poultry, comestibles or the like in conjunction with a transparent overwrap film extending thereabout, said tray comprising upwardly and outwardly inclined side walls forming the sides of said tray; bottom wall means including a substantially flat bottom wall for supporting said meat, fish, poultry, comestibles or the like; and a large-radius curved wall portion extending between said bottom wall and the lower ends of said side walls so as to provide a smoothly contoured transitional surface, the improvement wherein:

said inclined side walls have a radially outwardly extending lip portion extending about said side walls proximate the upper ends thereof, said lip portion having a concavely downwardly and outwardly curving upper surface extending from a rounded edge on said side walls, a generally rectangular protuberance in cross-section smaller than said lip portion projecting radially outwardly of and about said lip portion so as to constitute a narrow trim lip, said trim lip having the upper surface extending from the lower outer end of said concavely curved surface and having sharp-cornered upper and lower edges, and said lip portion having a generally horizontal planar bottom surface extending outwardly of said sidewalls below the bottom plane of said trim lip and having a convexly rounded outer edge joining the bottom plane of said trim lip radially inwardly of the outer face of said trim lip whereby transparent overwrap film extending about said tray lip portion will primarily contact and engage the rounded edge on said side walls, the sharp-cornered upper and lower edges on said trim lip and the rounded outer edge on the bottom surface of said lip portion so as to maintain a minimum surface contact between said overwrap film and said tray.

4,349,147

TRAY WITH INTEGRAL LOCKING TAB

James R. Jensen, Fremont, Calif., assignor to Container Corporation of America, Chicago, Ill.

Filed Mar. 19, 1981, Ser. No. 245,055

Int. Cl.³ B65D *5/22*

U.S. Cl. 229—34 R **2 Claims**

1. A tray formed of a unitary blank of foldable paperboard for storing food articles such as mushrooms and the like, said tray comprising:

a bottom wall;

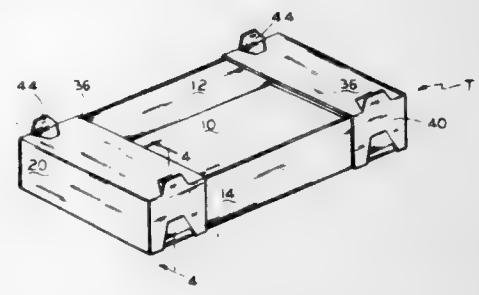
a pair of opposed side walls foldably joined to and upstanding from opposed side edges of said bottom wall;

a pair of opposed end walls foldably joined to and upstanding from opposed end edges of said bottom wall;

a pair of corner flaps foldably joined to opposed ends of said pair of opposed side walls and being turned inwardly to lie adjacent to the inside surfaces of respective end walls;

top cover panels foldably joined to upper edges of respective end walls and folded inwardly and downwardly to close at least a portion of the tray;

side flaps connected to opposed ends of said top cover panels and folded downwardly in face-to-face relation with the outer surfaces of said side walls;



interlocking means formed on said side flaps and said side walls for maintaining said cover panels in a closed position; and

said interlocking means including a locking tab disposed on each of said side flaps and a pair of gating flaps disposed on respective ends of said side walls, said locking tabs being adapted to be pushed inwardly so as to be deflected past said gating flap and said locking tab being retained inside of the tray and in contact with the inside surface of said gating flap when said gating flap returns to its original position.

4,349,148

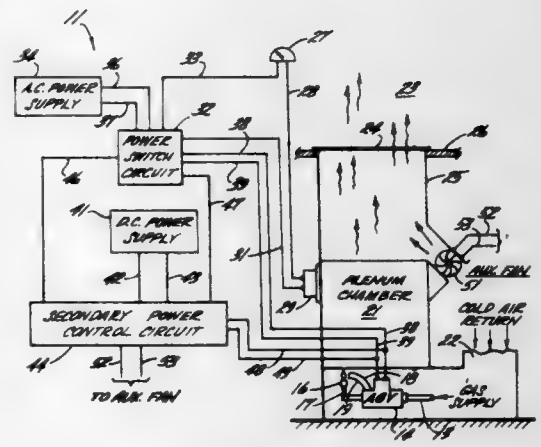
EMERGENCY HEATING SYSTEM CONTROL CIRCUIT

Samuel J. Liberto, 429 Parker St., and James Meli, 6981 Verona St., both of Verona, Pa. 15147

Filed Feb. 23, 1981, Ser. No. 236,797

Int. Cl.³ H02J *7/00;* **F24D** *5/10*

U.S. Cl. 236—11 **7 Claims**



1. A DC power emergency heating system control circuit for use in combination with a gas furnace that includes an AC power supply for a thermostat to control a normally operated AC powered automatic gas valve, which gas valve provides gas for burning in a plenum chamber, said control circuit including an auxiliary fan and means responsive to the interruption of AC power to provide in a repetitive sequence DC power of one polarity to said automatic gas valve, followed by energization of said auxiliary fan, followed by DC power of opposite polarity to said automatic gas valve, said repetitive sequence thereby ensuring alternate periods of convection and

auxiliary fan induced forced air heating while simultaneously protecting said AC powered automatic gas valve from the deleterious effect of emergency DC powered operation of said normally operated AC powered gas valve.

4,349,149

MIXING VALVE

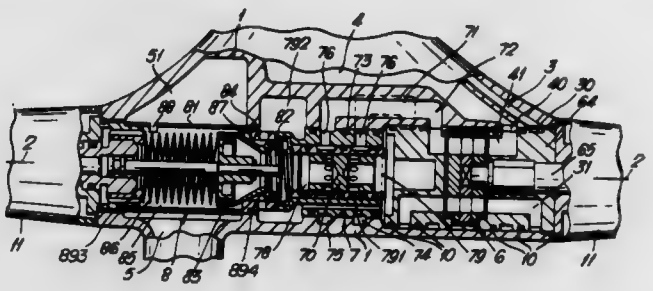
Jürgen Humpert, Hemer, Fed. Rep. of Germany, assignor to Friedrich Grohe Armaturenfabrik GmbH & Co., Hemer, Fed. Rep. of Germany

Filed Jul. 9, 1980, Ser. No. 167,381

Claims priority, application Fed. Rep. of Germany, Jul. 13, 1979, 2928330

Int. Cl.³ G05D *23/13*

U.S. Cl. 236—12 R **6 Claims**



1. A mixing valve for mixing hot and cold water comprising:

a valve body having a first passage in communication with a hot water sources, a second passage in communication with a cold water source, a central core positioned transverse to at least one of said first and second passages;

a synchronously acting volume control device positioned in said bore; and

at least one mixture control device for controlling the mixture of said hot and cold water positioned downstream of said volume control device,

said volume control device comprising a cylindrical cartridge adapted to be inserted into said bore, said cartridge containing:

an inlet disc having a pair of diametrically opposing holes,

an outlet disc having a pair of diametrically opposing holes each of which is in alignment with a corresponding one of said holes of said inlet disc,

said inlet and outlet discs being mounted in said cartridge transverse to the axis of said cartridge and so as to prevent rotational movement,

third and fourth flow passages each in respective communication between one of said first and second passages and one of said inlet disc pair of holes,

and a control disc rotatably mounted intermediate said inlet and outlet discs and having a pair of diagonally disposed control ports;

said control disc being rotatable to place said pair of control ports in fluid communication between said inlet and outlet disc pairs of holes;

said valve comprising a spindle coaxial to said axis and coupled to said control disc for rotational movement thereof.

4,349,150

CONCRETE SLEEPER WITH THE FASTENING HOUSING

Marius H. Lubbers, Wassenaar, Netherlands, assignor to Everts & Van der Weyden Exploitatiemaatschappij, The Hague, Netherlands

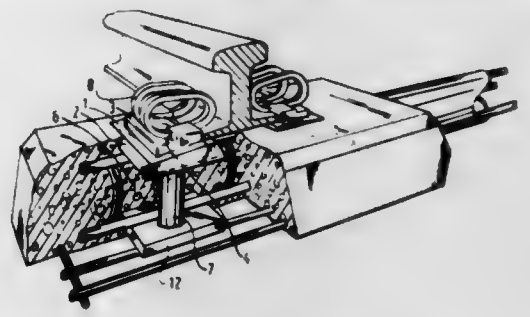
Filed Apr. 23, 1980, Ser. No. 142,980

Claims priority, application Netherlands, May 7, 1979, 7903569

Int. Cl.³ E01B *2/00, 9/00, 9/40*

U.S. Cl. 238—265 **8 Claims**

1. In a railway sleeper assembly which comprises a concrete sleeper having longitudinally extending metallic reinforcing rods and a pair of fastening housings adjacent the opposite ends of the sleepers for supporting rails in spaced apart, anchored conditions, the improvement wherein each fastening housing comprises a carrier plate portion partially embedded in the concrete and presenting an exposed upper surface supporting a respective rail and having recesses receiving rail clamps to secure the respective rail in place, said fastening housing being formed of synthetic resinous material whereby said rails are electrically insulated from each other, the synthetic resinous



material of the fastening housing reacting under stress not only to support the rail and any load thereon but also to anchor the rail clamp, vertically extending anchoring means integral with and depending from carrier plate portion within the concrete for maintaining said fastening housing in fixed relation to said sleeper, and means cooperating with said anchoring means and with said reinforcing rods to enhance the fixation of said fastening housings to the sleeper and to tie the opposite ends of said sleeper to each other.

4,349,151

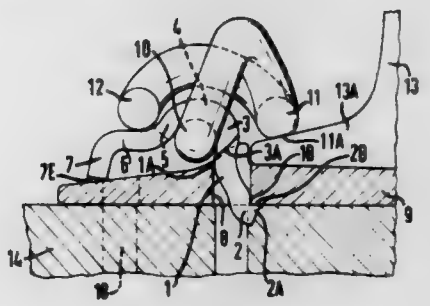
HOLDING A RAILWAY RAIL DOWN ON A SUPPORT MEMBER

Jon S. Schumaker, Mantua, N.J., assignor to Pandrol Limited, London, England

Filed May 21, 1980, Ser. No. 152,100

Int. Cl.³ E01B *9/34*

U.S. Cl. 238—349 **10 Claims**



1. A device for use in holding a railway rail down on a support member, said device comprising a first part for lying in a vertical hole through the support member and a second part at the bottom of the first part, the second part comprising a projection which extends sideways and a part of which is to lie vertically below a part of the support member which is beside the bottom of said hole, said device further comprising a third part at the top of the first part and extending upwardly therefrom, a fourth part extending sideways from the top of the third part, and then a fifth part extending downwardly, the first part comprising a convex portion so that when the first part is driven downwardly into said hole the convex portion makes contact with the wall of said hole and forms therewith a pivot about which said device turns to cause said part of said projection to come vertically below said part of the support member, the third, fourth and fifth parts forming an arch under which a first portion of a rail-fastening clip can be driven, which portion will press upwardly on the fourth path of said device, said device further comprising a sixth part extending sideways from the lowest extremity of the fifth part, the sixth part being for receiving a downwardly pressing portion of the clip, and a

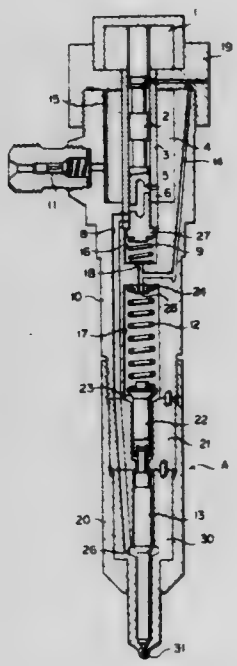
seventh part extending downwardly, on the same side of the arch as the fifth part, for holding the sixth part above and spaced from the support member, the lowest portion of the seventh part being higher than the lowest portion of the second part.

4,349,152

ACCUMULATOR TYPE FUEL INJECTION APPARATUS

Jiro Akagi, Oyama, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Oct. 2, 1980, Ser. No. 193,384
Int. Cl.³ F02M *4/16*
U.S. Cl. 239—96 **2 Claims**



1. A fuel injection apparatus including a fuel injection pump operatively connected therewith, comprising:

a holder body having an accumulator chamber and a spring chamber formed therein at an upper end portion and a lower end portion thereof, respectively;

a nozzle body detachably connected to said holder body, said nozzle body having formed therein a stepped longitudinal bore, a pressure chamber intermediate said stepped longitudinal bore and an injection orifice communicating with said longitudinal bore;

a check valve disposed in a passage communicating said fuel injection pump with said accumulator chamber for allowing the fuel passage from said injection pump to said accumulator chamber but blocking the opposite way;

a solenoid-operated spool valve means mounted in said accumulator chamber, said spool valve means comprising a cylindrical member having an inlet port and an outlet port formed therein and a spool movable in said cylindrical member;

a communication passage formed in said holder and valve bodies, said communication passage having an upper end selectively connectible with said accumulator chamber through said spool valve means and a lower end in constant communication with said pressure chamber;

a needle valve fitted in said stepped longitudinal bore and movable therein in response to fluid pressure developed in said pressure chamber;

a first spring means accommodated in said spring chamber for biasing said needle valve toward closing said injection orifice;

a second spring means for biasing said spool toward a first spool position where communication between said accumulator chamber and said communication passage is blocked; and

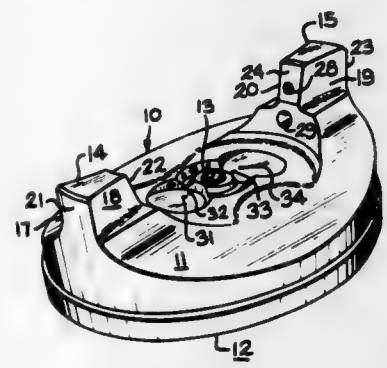
means formed in said spool for normally blocking communication between said accumulator chamber and said communication passage when said spool is upwardly displaced to the first spool position by said second spring means but allowing communication therebetween when said spool is downwardly displaced to a second spool position by the actuation of said solenoid-operated spool valve means.

4,349,153

SPRAY NOZZLE

Michael F. Johnson, Toledo, Ohio, assignor to Champion Spark Plug Company, Toledo, Ohio

Filed Jul. 29, 1980, Ser. No. 173,412
Int. Cl.³ B05B *1/26, 1/28*
U.S. Cl. 239—105 **5 Claims**



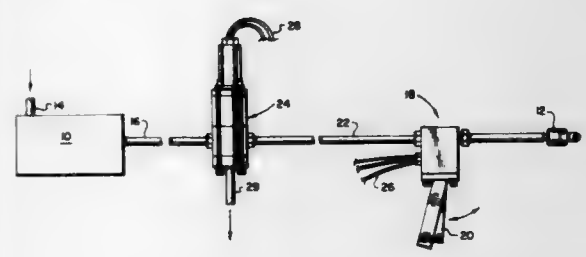
1. A spray nozzle for spraying apparatus using air for atomization, said nozzle having a center orifice for the discharge of a stream of material and air, a pair of horns on opposed sides of such center orifice and extending outwardly therefrom, a plurality of atomizing openings adjacent said center orifice for aiding in the atomization of such material, a plurality of openings aligned with said horns for discharging air to engage and shape said material and air mixture into a desired spray pattern, at least one of said openings being located in each of said horns, each of said horns defining a pair of air ramps extending from the outer surface of each of said horns to the inner surface of said horn, the bottom surface of each of said air ramps extending from said outer surface of said horn to said inner surface of said horn, said bottom surface of each of said air ramps being generally parallel to the main surface of said nozzle, said air ramps on the opposite sides of each of said horns converging toward one another as they approach such inner surface, whereby during operation an air flow is induced towards the center orifice to deflect material particles away from the horns.

4,349,154

POWER ASSISTED DUMP VALVE

Amos Pacht, Houston, Tex., assignor to Butterworth, Inc., Houston, Tex.

Filed Nov. 1, 1979, Ser. No. 90,401
Int. Cl.³ B05B *9/00*
U.S. Cl. 239—124 **19 Claims**



1. In a fluid system for supplying a high pressure stream of fluid, including a pump having a low pressure fluid inlet and a high pressure outlet, a valve coupled to said high pressure fluid outlet to control fluid flow, and a nozzle assembly coupled to said valve, an improved dump valve comprising:

a housing having a stepped cylindrical valve chamber having first, second, and third sections, said second section positioned between said first and third sections and having

a diameter smaller than said first section and larger than said third section,

a piston slideably carried within said chamber having first and second portions having diameters corresponding to and carried within said first and second chamber sections respectively, and a third portion, opposite said first portion, having a diameter smaller than said second portion for sealingly engaging said chamber third section,

at least one high pressure fluid port in communication with said chamber second section, and a pressure relief port in communication with said chamber third section,

first and second peripheral seals carried on said piston first and second portions respectively, said second seal positioned above said at least one high pressure fluid port,

control valve means for selectively closing and venting to ambient pressure said chamber first section above said piston first peripheral seal, and

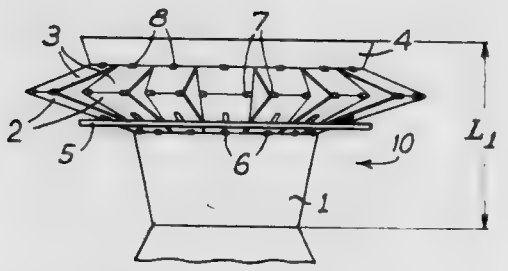
conduit means for conducting fluid from said valve chamber second section below said piston second seal to said valve chamber first section above said piston first seal.

4,349,155

UNFOLDABLE DIVERGENT NOZZLE FOR A ROCKET ENGINE

Paul Donguy, Bruges, France, assignor to Societe Europeene de Propulsion, Paris, France

Filed May 19, 1980, Ser. No. 150,912
Claims priority, application France, May 23, 1979, 79 13208
Int. Cl.³ F02K *1/24*
U.S. Cl. 239—265.33 **3 Claims**



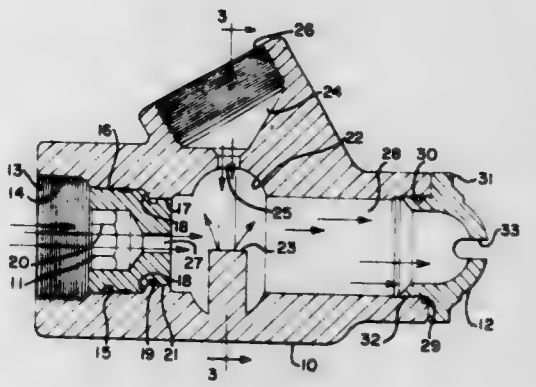
1. An unfoldable divergent nozzle for a rocket engine, having an inner wall and an outer wall and comprising a neck, a fixed upstream portion and a set of elementary individual panels of refractory material articulated to one another and with respect to said fixed upstream portion of said divergent nozzle in the vicinity of said neck of said nozzle, said articulated panels being distributed so as to define at least two successive adjacent rings or frustums and positionable in a first folded position then in a second unfolded position, each said panels having an inner surface for forming a portion of said inner wall of said divergent nozzle, and an outer surface for forming a portion of said outer wall of said divergent nozzle, wherein articulations are provided between two adjacent panels arranged to be folded on one another with their inner surfaces facing one another, each said articulation comprising at least one hinge with two axles inserted in the walls of said two panels articulated to one another, a link being set back with respect to the thickness of said panels and holding said two axles at a constant distance from one another, and wherein two cylindrical surfaces centered respectively on each of said axles and capable of rolling without sliding on one another are arranged on two adjacent panels in the vicinity of said hinge, said two cylindrical surfaces of one articulation centered respectively on each of the axles and rollable without sliding on one another being made of a refractory material and being provided with teeth which are built up on the panels bearing the cylindrical surfaces and are formed of a fusible material.

4,349,156

EFFICIENCY NOZZLE

James Haruch, Clarendon Hills, and Robert Williams, Naperville, both of Ill., assignors to Spraying Systems Company, Wheaton, Ill.

Filed Aug. 11, 1980, Ser. No. 177,087
Int. Cl.³ B05B *7/04*
U.S. Cl. 239—432 **7 Claims**



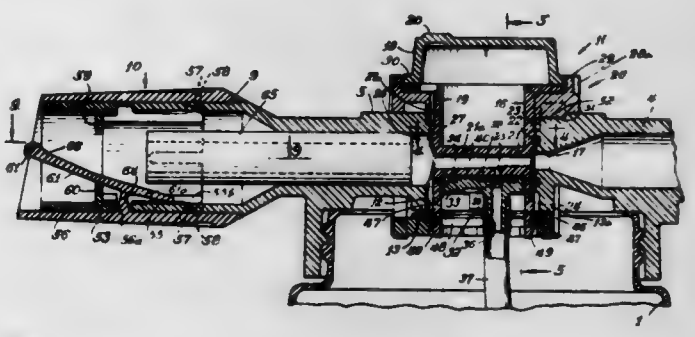
1. A high efficiency nozzle including a nozzle body having a high velocity air inlet opening and a high velocity liquid inlet opening, said air inlet opening directing incoming air axially of the nozzle substantially in a direction straight through the nozzle and said liquid inlet opening directing incoming liquid in a direction substantially at a right angle to the straight through direction of the incoming air, an expansion chamber in the nozzle body, an impingement table defining a flat surface in the expansion chamber, said flat surface disposed in a plane perpendicular to the axis of the liquid inlet opening, said liquid inlet opening including an orifice in alignment with said impingement table, said air inlet opening including an orifice disposed at substantially a right angle to said liquid inlet orifice and generally parallel to the impingement surface of said table, said air inlet opening being disposed at one side of said expansion chamber and a nozzle barrel at the opposite side of said chamber whereby high velocity air is directed across said impingement table to finely atomize liquid particles and the finely atomized liquid particles are carried straight through said nozzle barrel by said high velocity air.

4,349,157

HOSE-END SPRAYER

John L. Beiswenger, Salem, Wis., and Frank A. Smiesko, McHenry, Ill., assignors to Acme Burgess, Inc., Grayslake, Ill.

Filed Jan. 30, 1981, Ser. No. 215,834
Int. Cl.³ B05B *1/26*
U.S. Cl. 239—509 **8 Claims**



1. In a hose-end sprayer comprising a chemical concentrate jar and a top closure having flow control means and a horizontal outlet snout therein and a spray nozzle supported thereby and connected through said snout with said flow control means for the flow of spray solution to said nozzle, the improvements comprising an open ended nozzle tube extending forwardly into said spray nozzle from said snout as an extension thereof, a hollow cylindrical hub extending forwardly

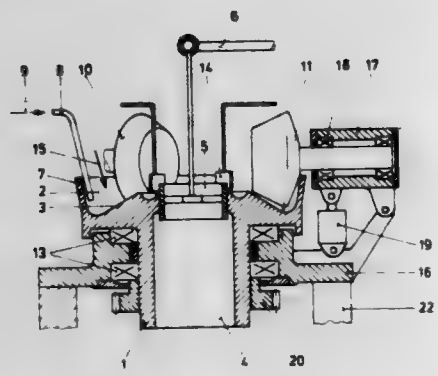
from said snout, the inside diameter of said hub being greater than the outside diameter of said tube, a barrel mounted for rotation upon said hub, an elongated baffle longitudinally arranged within said barrel sidewise of said tube extended and hingedly secured to said barrel at a point intermediate the ends of said baffle, spring means for continuously urging said baffle out of line with said tube, upper and lower transverse cams secured within said barrel forwardly of the location at which said baffle is hingedly secured, said cams having substantially horizontal working faces defining chords of said barrel out of line with said tube, the arrangement being such that at one rotational position of said barrel said upper cam holds the forward portion of said baffle downwardly across the axis of said nozzle tube and at the opposite rotational position of said barrel said lower cam holds said forward portion of said baffle upwardly across the axis of said tube.

4,349,158

PROCESS AND DEVICE FOR WET MILLING OF ROCKS AND THE LIKE

John S. Broman, Bergslagsvägen 12, S-777 00 Smedjebacken, Sweden

Continuation of Ser. No. 33,079, Apr. 25, 1979, abandoned. This application Sep. 4, 1980, Ser. No. 183,795
Claims priority, application Sweden, May 2, 1978, 7805001
Int. Cl.³ B02C *15/00*
U.S. Cl. 241—21 **8 Claims**



1. Process for grading-separating wet milling of rocks and pieces of ore in a mill having a vertical rotatable shaft and a central outlet through said shaft, a milling chamber annularly surrounding said shaft and having a bottom comprising a milling surface inclined radially outwards and downwards from an upper edge of said outlet, at least one milling roller interacting with said milling chamber, comprising the steps of

(a) feeding material to be milled into said milling chamber;

(b) grinding said milling material into a pulp between said at least one milling roller and said milling chamber;

(c) causing insufficiently ground material to slide downwardly along said milling surface to prolong its engagement between said at least one milling roller and said milling chamber;

(d) regulating the volume of said pulp by displacing vertically the position of the upper edge of said central outlet in relation to both the rest of said shaft and said milling surface; and

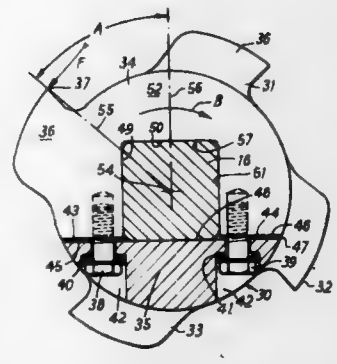
(e) adjusting the duration of milling to the milling resistance and structure of said material, thereby effecting continued milling of insufficiently milled particles and discharge from said milling chamber through said central outlet of sufficiently milled particles and mineral grains.

4,349,159

SHREDDING MACHINES

John P. Hardwick, 50 Adelaide St., Crewe, Cheshire CW1 3DT; Michael J. Pezet, 17 Woodside Grange, Quorn, Leicestershire, both of England; Asadollah A. Sarvestany, S. Danshgah Ave., Mestah Alley No. '28, Tehran, Iran, and Dayananda Satharasinghe, 204J Block B, Clementi Rd., Singapore, Singapore (5)

PCT No. PCT/GB79/00111, § 371 Date Mar. 5, 1980, § 102(e) Date Mar. 4, 1980, PCT Pub. No. WO80/00130, PCT Pub. Date Feb. 7, 1980
PCT Filed Jul. 4, 1979, Ser. No. 190,316
Claims priority, application United Kingdom, Jul. 5, 1978, 28953/78
Int. Cl.³ B02C *4/08*
U.S. Cl. 241—236 **4 Claims**



1. A rotary shredding machine of the kind having a comminuting chamber, a pair of parallel cutter shafts arranged for simultaneous contra-rotation in the comminuting chamber, and a plurality of cutters secured to each shaft, the cutters of one shaft being interleaved with those of the other shaft, each cutter being a generally disc-like body having at least one radially projecting peripheral tooth provided with a cutting edge along a leading edge thereof, each body defining a coaxial shaft aperture therethrough to accommodate an associated shaft and defining a cutter axis, each cutter shaft being of a substantially square cross-section having straight sides, each shaft aperture of each cutter also being substantially square, the cutting edge of each tooth being intersected by a radial plane inclined at an angle in the range 0° to 60° with respect to a diametral plane bisecting one side of the corresponding square shaft aperture, said angle being defined forward of the cutting edge in a direction of intended rotation of the cutter, each cutter body including a plurality of cutter body members and releasable fastening means for holding the cutter body members together, at least one of said cutter body members having said tooth, each cutter body member having two first surface portions extending chordally from the periphery of the body member and joined by a second surface portion of the body member for engaging an associated shaft, the said second surface portions of the respective body member together defining the square shaft aperture, and each said first surface portion being juxtaposed with a parallel corresponding first surface portion of the next adjacent body member.

4,349,160

APPARATUS AND METHOD FOR WINDING YARN TO FORM A PACKAGE

Kurt W. Niederer, Charlotte, N.C., assignor to The Terrell Machine Company, Charlotte, N.C.

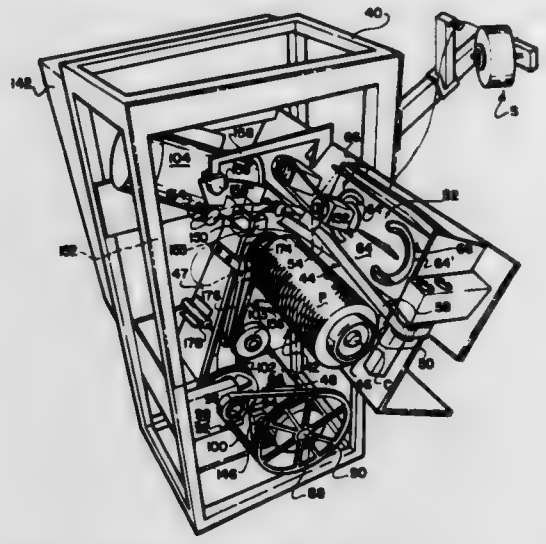
Continuation of Ser. No. 78,699, Sep. 25, 1979, abandoned. This application Jul. 30, 1980, Ser. No. 173,482
Int. Cl.³ B65H *54/02, 54/30, 54/38*
U.S. Cl. 242—18 R **49 Claims**

1. An apparatus for winding yarn from a supply into a yarn package comprising:

(a) spindle means for rotatably supporting a package core for winding thereon yarn delivered thereto from said supply along a yarn feed path to form said yarn package,

(b) yarn traversing means for effecting traversing movement of said yarn along said yarn package, said traversing means including yarn guides movable oppositely along two traversal spans extending longitudinally of said yarn package from respectively opposite yarn engaging locations adjacent the periphery of said package at opposite ends thereof toward respectively opposite yarn disengaging locations adjacent the periphery of said package at the respective other ends thereof, said yarn guides being engagable with said yarn to guide it alternately along said traversal spans from said yarn engaging locations to said yarn disengaging locations, and

(c) movable reversing means adjacent each end of said yarn



package for transferring said yarn from a yarn guide at the yarn disengaging location of one traversal span to a yarn guide at the yarn engaging location of the other traversal span, each said reversing means having yarn engaging means arranged for movement including movement generally transverse to said traversal spans and intersecting said yarn feed path for positively engaging said yarn as a yarn guide guiding said yarn passes through the yarn disengaging location of one traversal span and positively moving said yarn away and out of engagement with said yarn guide and into position for engagement at the yarn engaging location of the other traversal span by a yarn guide moving therethrough for movement along the other traversal span.

4,349,161

THREAD DELIVERY DEVICE WITH IMPROVED THREAD-STORAGE DRUM, PARTICULARLY FOR STICKY YARNS

Eric Carlsson, and Lars Wide, both of Ulricehamn, Sweden, assignors to Aktiebolaget IRO, Ulricehamn, Sweden

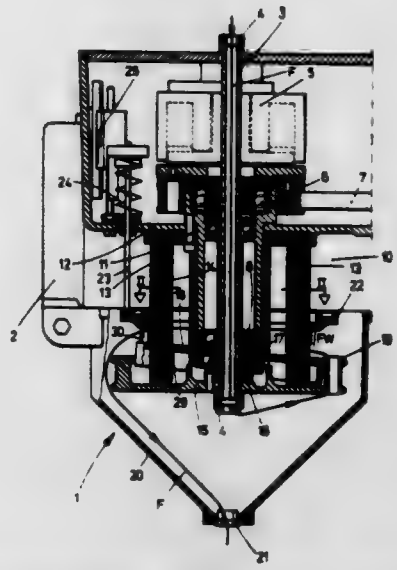
Filed Sep. 27, 1979, Ser. No. 79,615

Claims priority, application Fed. Rep. of Germany, Sep. 27, 1978, 2842115

Int. Cl.³ B65H *51/22*

U.S. Cl. 242—47.01 **2 Claims**

1. A thread-storage and delivery device for a textile machine, which device includes a storage drum on which a thread is wound tangentially to form a thread storage which consists of a plurality of thread windings wrapped around the drum and from which the thread is withdrawn for supply to the textile machine, the thread drum being of a cagelike structure and formed from a plurality of elongated cylindrical rods which are angularly spaced from one another in a substantially cylindrical pattern about the longitudinal axis of the drum, said plurality of rods defining an outer peripheral surface for said drum on which the thread windings are engaged, the rods being angularly spaced apart so as to define longitudinal peripheral slots therebetween, and a thread-advancing device having portions thereof projecting radially outwardly through said slots for engaging the thread windings to cause the latter to slide axially along said peripheral surface as defined by said rods, comprising the improvement wherein each rod on at least that portion of its exterior surface which defines a part of the drum peripheral surface is provided with a plurality of parallel narrow grooves formed therein and extending axially thereof, which said narrow grooves are separated by narrow axially-extending ribs, the outer free edge of each said rib defining a



narrow axially-elongated surface section which defines a part of the peripheral drum surface and is engaged by the thread windings, said surface section having a width in the circumferential direction of the drum of at least approximately 0.7 mm, and said groove having a width in said circumferential direction which does not significantly exceed the width of said surface section.

4,349,162

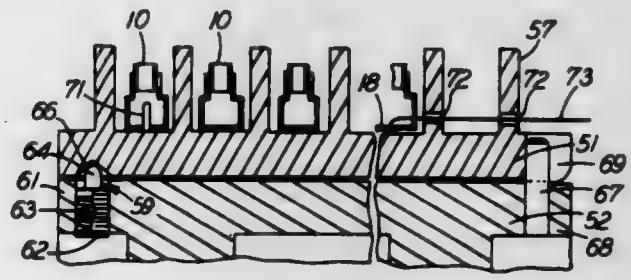
DEVICE FOR RECEIVING AND PACKAGING A STRIP OF ELECTRICAL COMPONENTS

William J. Fanning, Glen Ellyn, Ill., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Jan. 5, 1981, Ser. No. 222,420

Int. Cl.³ B65H *75/00*

U.S. Cl. 242—54 R **2 Claims**



1. An apparatus for receiving and storing a strip with spaced, projecting pairs of terminals, each pair of which is secured to an electrical device, which comprises:

a drum having a series of bores formed in the peripheral surface in the vicinity of a first end of the drum;

a cylinder slidably mounted on the drum with a series of indentations formed on the inner surface and spaced apart to align with the bores in the drum;

a series of resilient biased pin checks mounted in said bores and having sections projecting into said indentations for releaseably holding said cylinder on said drum;

said cylinder having a series of slots formed to extend inwardly from an edge of the second end of said cylinder;

drive pins mounted in the vicinity of the second end of said drum and extending into said slots formed in said cylinder;

a fin projecting from the outer surface of said cylinder and forming a continuous helix about the axis of said cylinder to form a helical channel for receiving the strip of terminals and electrical devices, said fin being of a height

greater than the height of the strip and the projecting terminals and electrical devices; and

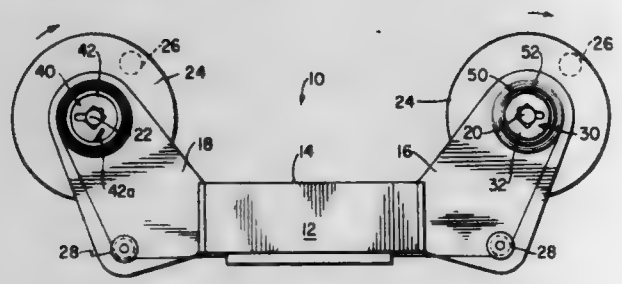
means projecting from said cylinder into the helical channel for anchoring a forward end of said strip to said cylinder.

4,349,163

CORELESS ROLL FILM STRUCTURE AND APPARATUS FOR WINDING THEREOF

David S. Wise, Solon, Ohio, assignor to McGraw-Hill, Inc., New York, N.Y.

Filed Oct. 31, 1980, Ser. No. 202,867
Int. Cl.³ B65H *17/02, 75/28*
U.S. Cl. 242—68.3 **12 Claims**



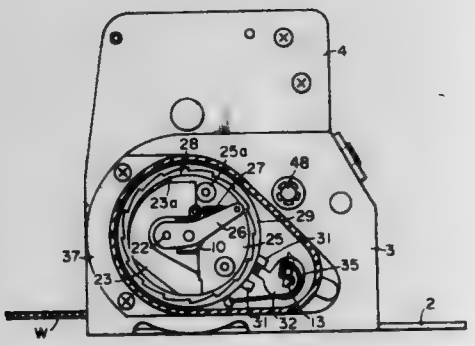
1. A coreless roll film structure composed of a strip of film having an innermost and outermost end and comprising a fixed, closed loop of predetermined diameter formed at said innermost end.

4,349,164

RETRACTOR PROVIDED WITH TWO TYPES OF EMERGENCY LOCKING MECHANISM AND TAKE-UP FORCE LOCKING MEANS

Katsumi Naitoh, Fujisawa, Japan, assignor to NSK-Warner K. K., Tokyo, Japan

Filed Sep. 25, 1980, Ser. No. 190,495
Claims priority, application Japan, Oct. 2, 1979, 54-135843
Int. Cl.³ A62B *35/02;* **B65H** *75/48*
U.S. Cl. 242—107.4 A **3 Claims**



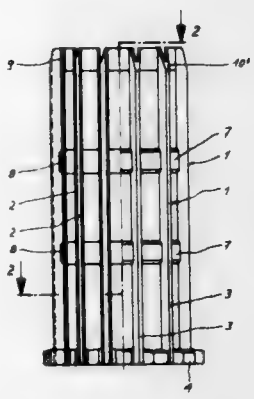
1. A retractor comprising a base member having two opposed side plate portions, reel shaft means rotatably supported between said two opposed side plate portions of said base member, a first gear member fixed to one end of said reel shaft means, a second gear member rotatably supported about a shaft on said side plate portion which is adjacent to said one end of said reel shaft means, said second gear member being meshed with said first gear member and given a webbing take-up force, take-up force locking means for relieving the webbing take-up force applied to webbing during the wearing of a belt, said take-up force locking means being mounted on said side plate portion which is adjacent to said one end of said reel shaft means, sensing means for sensing the wearing of the belt by a user, said sensing means being mounted on the same side plate portion as the take-up force locking means, an arm member rotatably supported about said shaft of said second gear member and having a first arm portion with a free end connected to said sensing means and a second arm portion with a free end connected to said take-up force locking means, said sensing means being adapted to operate said take-up force locking means through said arm member, a webbing-sensitive emergency locking mechanism for locking the rotation of said reel shaft means in webbing draw-out direction when the webbing is drawn out at a rate exceeding a predetermined rate, said webbing-sensitive emergency locking mechanism being mounted on said side plate portion which is adjacent to the other end of said reel shaft means, and a vehicle-sensitive emergency locking mechanism for locking the rotation of said reel shaft means in webbing draw-out direction when a deceleration over a predetermined value occurs to the vehicle, said vehicle-sensitive emergency locking mechanism being mounted on the inner surface of said side plate portion which is adjacent to said the other end of said reel shaft means.

4,349,165

COIL CARRIER WITH CARRIER ELEMENTS EXTENDING PARALLEL TO ITS AXIS

Walter Henning, Alsdorf, and Heinz-Peter Illig, Ubach-Palenberg, both of Fed. Rep. of Germany, assignors to Jos. Zimmerman, Aachen, Fed. Rep. of Germany

PCT No. PCT/DE79/00059, § 371 Date Feb. 27, 1980, § 102(e) Date Feb. 25, 1980, PCT Pub. No. WO80/00147, PCT Pub. Date Feb. 7, 1980
PCT Filed Jun. 22, 1979, Ser. No. 193,943
Claims priority, application Fed. Rep. of Germany, Jun. 27, 1978, 2828121
Int. Cl.³ B65H *75/20*
U.S. Cl. 242—118.11 **13 Claims**



1. A coil carrier comprising interconnected circumferentially compressible carrier elements extending parallel to the carrier axis, said carrier elements projecting radially outwardly and forming a common cylindrical surface, and axially spaced shape-retaining coupling members (4, 7; 10; 15; 29, 30 to 33; 48 to 51) disposed between and interconnecting respective pairs of circumferentially adjacent carrier elements (1; 25; 40), said coupling members securing said carrier elements in spaced relationship while permitting uniform circumferential compression of said coil carrier throughout its axial length, and wherein the gap between each two adjacent carrier elements is larger than the dimensions of a carrier element in the circumferential direction, said carrier being axially partly insertable into a coil carrier of like construction.

4,349,166

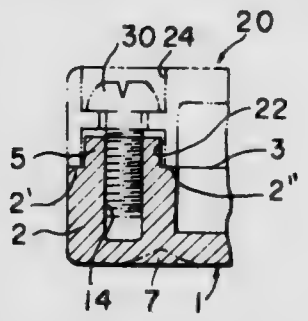
MAGNETIC TAPE CASSETTE

Kimio Tanaka, and Toshihiko Ishida, both of Tokyo, Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Jun. 30, 1980, Ser. No. 164,007
Claims priority, application Japan, Jul. 17, 1979, 54/97968[U]
Int. Cl.³ G03B *1/04;* **G11B** *15/32, 23/04*
U.S. Cl. 242—197 **2 Claims**

1. In a magnetic tape cassette for tape wound on a hub, comprising an upper half casing and a lower half casing, said lower half casing being provided with at least one screw receiver having a threaded hole near at least one corner of the lower half casing, said upper half casing being provided with

an opening corresponding to each of said screw receivers for carrying a screw, the improvement comprising a first wall portion for a screw receiver being integrally connected to two walls of the lower half casing and a second wall portion being



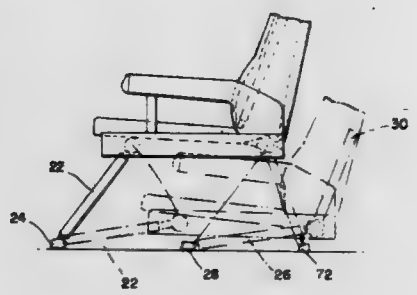
unconnected to said casing walls, at least one rib radially extending from said second wall portion, wherein said second wall portion is lessened in thickness and said rib has a top surface which is equal in height to the top surface of the walls of the lower half casing.

4,349,167

CRASH LOAD ATTENUATING PASSENGER SEAT

Mason J. Reilly, Media, Pa., assignor to The Boeing Company, Seattle, Wash.

Filed Oct. 30, 1979, Ser. No. 89,695
Int. Cl.³ B64D *25/04, 11/06*
U.S. Cl. 244—122 R **7 Claims**



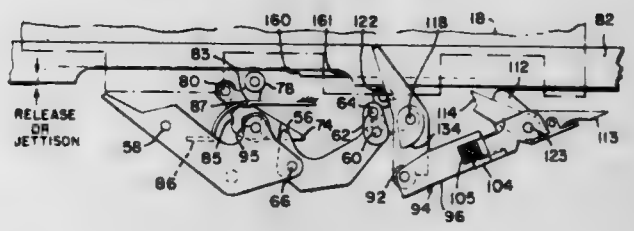
1. A collapsible safety seat for a vehicle, comprising:
a generally horizontally extending seat pan assembly having a front transverse axis and a rear transverse axis parallel to, and spaced from, said front transverse axis;
a generally vertically extending seat back assembly; and
at least one seat support assembly, which includes
a front leg having an upper end pivotally connected to said seat pan assembly for rotation about said front transverse axis of said seat pan assembly, and a lower end which includes a first axis parallel to said front transverse axis of said seat pan assembly, said front leg being pivotally connected to a floor of the vehicle for rotation about said first axis, said front leg extending upward at an angle to said floor in the direction of travel of the vehicle,
a rear leg having an upper end pivotally connected to said seat pan assembly for rotation about said rear transverse axis of said seat pan assembly, and a lower end which includes a second axis parallel to said first axis and said front and rear transverse axes of said seat pan assembly, said rear leg being pivotally connected to the vehicle floor for rotation about said second axis, said rear leg extending upward at approximately the same angle to said floor in the direction of vehicle travel as said front leg, and
an energy attenuator having a first end, an opposite second end, a trolley which is movable along a predetermined path between said first and second ends of said energy attenuator, and energy absorbing means, which when said trolley is moved in one direction along its path of travel by a first force, exerts a second force on said trolley opposing said first force, said trolley being pivotally connected to said seat pan assembly for rotation about said rear transverse axis of said seat pan assembly, said trolley being positioned adjacent said first end of said energy attenuator, said second end of said energy attenuator including a third axis parallel to said first and second axes, said energy attenuator being pivotally connected to the vehicle floor for rotation about said third axis, said energy attenuator extending upward at a second angle to said vehicle floor in a direction opposite to the direction of vehicle travel;
whereby upon the occurrence of a vehicle crash, said trolley is moved downward and in the direction of travel of the vehicle toward said second end of said energy attenuator by a crash deceleration force against the opposite force exerted on said trolley by said energy absorbing means, to move said seat downward and in the direction of vehicle travel at a rate of deceleration which is less than the rate of deceleration of the surrounding vehicle structure, said energy attenuator being disposed so that as said trolley is moved toward said second end of said energy attenuator, said first end of said energy attenuator is moved into said seat back assembly.

4,349,168

CARGO DELIVERY SYSTEM FOR AIRCRAFT

Franklin K. Barnes, Redmond, Wash., and Eddie D. Banks, Higashai, Japan, assignors to The Boeing Company, Seattle, Wash.

Filed Feb. 19, 1980, Ser. No. 122,382
Int. Cl.³ B64D *1/10, 1/12*
U.S. Cl. 244—137 R **31 Claims**



1. A cargo delivery system for aircraft, comprising: two spaced apart parallel rails adapted to support a cargo carrier for movement forward and aft parallel to the longitudinal axis of an aircraft, and at least two combination airdrop/logistics locks mounted by one of the rails to respectively engage the cargo carrier at two spaced apart locations for securing the carrier at a predetermined position along the rails, and for releasing the cargo carrier in unison upon attainment of a predetermined aft force applied to the cargo carrier by parachute means deployed behind the aircraft; each of said airdrop/logistics locks including a movable detent engageable with a cargo carrier and force responsive release means including;
(a) an axially crushable force threshold element having a substantially constant resistance to deformation over a predetermined deformation range; and
(b) movable deforming means acting between said element and said detent for deforming said element and for releasing said detent upon attainment of said predetermined aft force, said predetermined deformation range being sufficient to allow said element to be partially deformed without releasing said detent so as to permit aft shifting of the cargo carrier until the detent associated with a second such airdrop/logistics lock is engaged with the cargo carrier, with additional deformation of said element occuring upon attainment of said predetermined aft force.

31. A cargo delivery system for aircraft, comprising: two spaced apart parallel rails each made up of at least two rail sections independently movable between an upright position adapted to support a cargo carrier and a stowed position adjacent a floor surface; and a plurality of lock means respectively

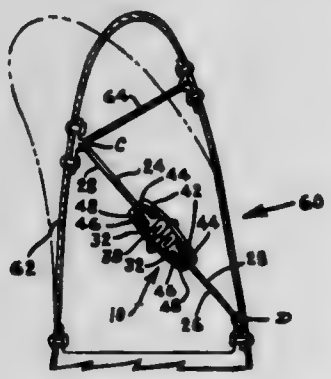
associated with the rail sections which make up one of said rails for restraining a cargo carrier supported thereby when their associated rail sections are in their upright positions, and means for remotely operating the lock means associated with only those rail sections which are located in their upright position; whereby one set of parallel rail sections may be in their upright positions for acceptance of cargo carrier borne cargo while another set of sections may be in their stowed positions for acceptance of another type of cargo.

4,349,169

CONTINUOUS FORCE ACTUATOR

Robert W. McAnally, Fort Worth, Tex., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 14, 1980, Ser. No. 178,042
Int. Cl.³ B64C *3/48*; F01B *19/04*
U.S. Cl. 244—219 **2 Claims**



1. A continuous force actuator comprising:

a housing, said housing being formed by a pair of C-shaped members, means for securing said C-shaped members together at substantially the midpoint thereof to form first and second substantially identical chambers, and a first and second space formed between respective ends of said pair of C-shaped members;

a first piston located within said first chamber and a second piston located in said second chamber, each of said pistons having an elongated arm terminating in a T-shaped protrusion extending from one end thereof, said T-shaped protrusions being slidable within said first and said second chambers, respectively, and said elongated arms being slidable within said first and second spaces, respectively, said pistons providing said continuous force;

means provided within each of said chambers for altering the position of said pistons located therein, each of said position altering means including a hollow resilient tube between one side of said T-shaped protrusion and said securing means, and a pair of hollow resilient tubes adjacent each side of said elongated arm on the other side of said T-shaped protrusion, said plurality of hollow resilient tubes also acting as a guide for said elongated arm situated within each of said chambers; and

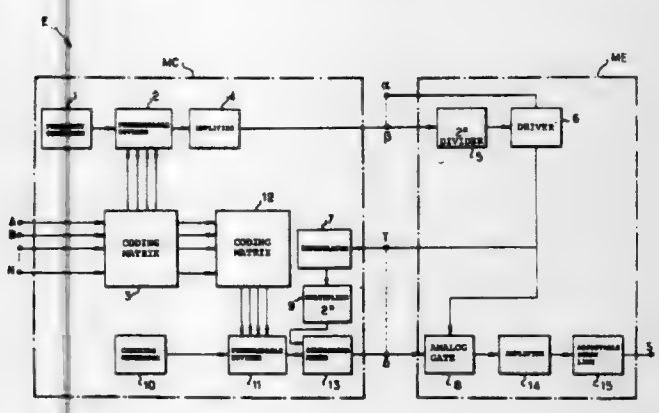
means operably connected to said position altering means for providing a motive force thereto, whereby said motive force providing means determines the amount of said continuous force.

4,349,170

SAFETY CODING PROCESS FOR TRACK CIRCUITS

Claude D. Bilet, Boulogne Billancourt; Michel G. Guillard, Villejuif, and Dominque A. Hedoin, Sceaux, all of France, assignors to Compagnie de Signaux et d'Entreprises Electriques, Paris, France

Filed Dec. 11, 1979, Ser. No. 102,431
Claims priority, application France, Dec. 22, 1978, 78 36270
Int. Cl.³ B61L *3/20*
U.S. Cl. 246—63 **10 Claims**



1. A system for producing a frequency modulated signal comprising:

input means for introducing information to be transmitted;

a generator producing a frequency generated signal;

programmable divider means for selectively dividing said frequency generated signal and producing an intermediate signal;

means responsive to said input means for selecting the division ratio of said divider means;

programmable frequency generating means responsive to said input means for generating a frequency check signal;

driver means for modulating a said intermediate signal produced by said programmable divider means to thereby produce an output signal;

operating means responsive to said frequency check signal and said output signal for producing an enabling signal when the difference between said frequency check signal and said output signal is equal to a single predetermined fixed frequency; and

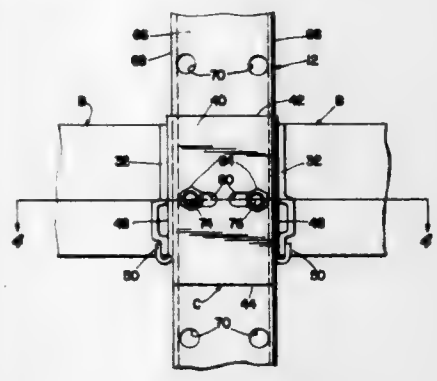
analog gate means responsive to said enabling signal produced by said operating means for delivering said output signal at the output of said analog gate means as the frequency modulated signal when said enabling signal is present.

4,349,171

SHELF MOUNTING BRACKET FOR STORAGE RACK

Mark H. Baldwin, Cincinnati, Ohio, assignor to Nestier Corporation, Cincinnati, Ohio

Filed Sep. 22, 1980, Ser. No. 189,189
Int. Cl.³ A47G *29/02*
U.S. Cl. 248—243 **5 Claims**



1. A shelf mounting bracket comprising: a generally flat

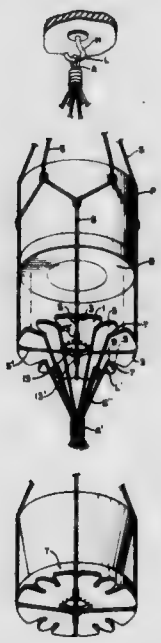
rectangular plate having top and bottom edges and opposite side edges, flanges extending from said side edges substantially perpendicular to said plate, said flanges having shelf support hooks adjacent said plate bottom edge, said hooks having hook saddles with saddle axes extending generally perpendicular to said plate, said plate having a pair of elongated spaced-apart slots therein, said slots being spaced-apart and being elongated in a direction extending across said plate side edges, and said slots being located intermediate said plate top and bottom edges.

4,349,172

PLANT POT SUSPENSION APPARATUS AND THE LIKE

John J. Banks, Jr., 501 W. Roxbury Pky., West Roxbury, Mass. 02132

Filed Apr. 28, 1980, Ser. No. 144,378
Int. Cl.[3] A47G *7/04*
U.S. Cl. 248—318 14 Claims



9. A device for use in suspending plant pots and the like provided with a plurality of suspension strands spaced circumferentially about the pots and adapted to be secured thereto by carrying the strands from a common apex down over the sides of the pots and passing the same under the pots; the device comprising a pot-suspension disc having, in combination, a plurality of peripherally spaced guide means that are adapted for receiving and holding the strands in peripherally spaced positions when the disc is inserted between the bottom of the pot and the strand portions passed thereunder; the disc being further provided with a plurality of pairs of radial slots peripherally disposed between successive guide means and defining tongues over which may be looped the top portions of the suspension strands of a further pot to be hung directly vertically below and from the disc.

4,349,173

TILT DEVICE FOR USE WITH CATHODE RAY TUBE DISPLAY UNITS

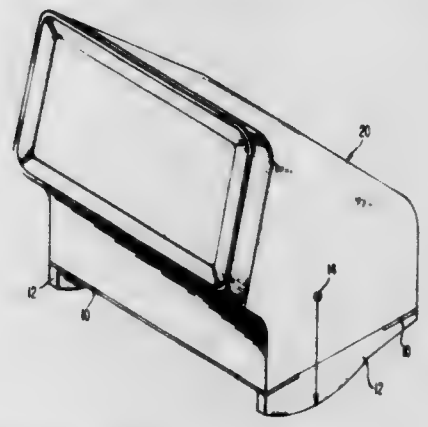
Lubomir J. Volka, Holbrook, and Robert J. Wentzel, New Hyde Park, both of N.Y., assignors to Burroughs Corporation, Detroit, Mich.

Filed Jun. 24, 1980, Ser. No. 162,419
Int. Cl.[3] A47B *91/00*
U.S. Cl. 248—346 6 Claims

1. An infinitely variable support mechanism for movably mounting a display unit comprising:

supporting platform means mountble on the underside of said display unit;

at least one rocker member connected along its top to the bottom of said platform means, said rocker member having first and second sides extending downward from the front and back ends of the top of said rocker member, respectively, the bottom of said rocker member starting at the bottom of the first side of said rocker member and continuing in a circular profile toward the second side of said rocker member, the center of said circular profile coincident with the location of the center of gravity of the supported display unit, said circular profile terminating at a point between a vertical line corresponding to the center of gravity of said display unit and the second side of said



rocker member and thence continuing therefrom in a line to the bottom of the second side of said rocker member; and

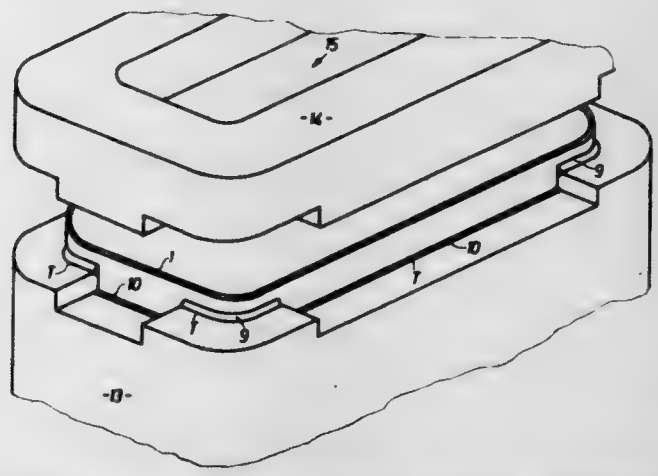
a supporting base having at least one recess therein, each of said recesses for movably receiving the circular profile of at least one of said rocker elements, whereby said display unit may pivotably tilt about its center of gravity in quasi-static equilibrium.

4,349,174

INJECTION MOLD APPARATUS FOR CONTAINERS OF PLASTICS MATERIAL

Albert Obrist, Reinach, and Hans-Werner Breuer, Baisthal, both of Switzerland, assignors to Albert Obrist AG, Reinach, Switzerland

Division of Ser. No. 60,342, Jul. 25, 1979, Pat. No. 4,252,248.
This application Nov. 13, 1980, Ser. No. 206,435
Claims priority, application Switzerland, Jul. 25, 1978, 7984/78
Int. Cl.[3] B29C *1/00*; B29F *1/022*
U.S. Cl. 249—58 2 Claims



1. Apparatus for use in injection molding a container of plastics material, the container being of the type usable with a cover which has a side wall which engages externally over the edge of the container, with a tear-off guarantee strip which engages under a holding bead on the outside wall of the container, in the region of a design tearing line, and which, at its lower boundary surface, adjoins a protective bead which is disposed on the outside wall of the container and which is parallel to the holding bead and whose outside diameter approximately aligns with the outside wall of the guarantee strip and protects the guarantee strip from below from damage by a

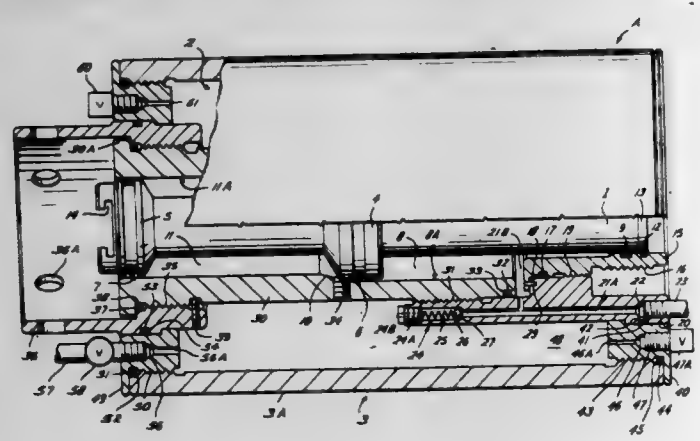
force acting thereon, the protective bead being interrupted at at least two positions on its periphery and being subdivided into at least two segments, the holding bead being also divided into at least two segments, and the holding bead segments being arranged at an offset position in the spaces between adjacent protective bead segments, said injection molding apparatus comprising two axially engageable and disengageable, radially nonexpandable female tool portions with inner surfaces shaped to form the outer surface of the container sidewalls when the tool portions are engaged, said tool portions being engageable along a circumferential separating edge below the upper edge of the container formed during the injection molding process, each tool portion having substantially rectangular axially depressed portions and axially projecting portions alternating along its separating edge for mating with corresponding projecting and depressed portions along the separating edge of the other tool portion, means formed along the axially spaced separating edges of alternating pairs of mating depressed and projecting portions for forming respectively holding bead segments and protecting bead segments during injection molding, such that adjacent holding and protecting beads are axially offset, and holding beads alternate circumferentially with protecting beads, such that the bead formed by one mating pair does not interfere with axial disengagement of adjacent mating pairs.

4,349,175

VALVE ACTUATOR HAVING A CONTINUOUSLY CHARGED ACCUMULATOR

Neil H. Akkerman, and Stephen R. Foster, both of New Orleans, La., assignors to Baker CAC, Inc., Belle Chasse, La.

Continuation of Ser. No. 777,373, Mar. 14, 1973, abandoned.
This application Dec. 10, 1980, Ser. No. 215,204
Int. Cl.³ F16K *31/12*; F15B *21/00*
U.S. Cl. 251—31 **3 Claims**



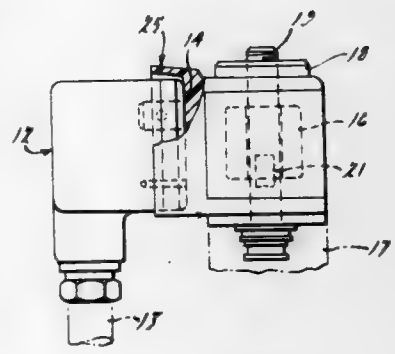
1. In an actuator respondable to a control fluid pressure for moving an operative means of a valve between an open and a closed position: a housing defining a cylindrical bore; a shaft sealingly slidable in said housing coaxial within said cylindrical bore; means defining first and second effective piston areas carried by one of said shaft and said housing and sealingly slidable along the other of said shaft and said housing and longitudinally movable within said cylindrical bore, said first piston area being greater than said second piston area; first and second fluid chambers in said housing companionly associated with said means defining said first and second effective piston areas within said bore; means in said housing defining an annular accumulator chamber surrounding said cylindrical bore; a direct, continuous first fluid passage in said housing between said second fluid chamber and said accumulator chamber; a direct, continuous second fluid passage in said housing to supply pressurized, compressible control fluid to said first fluid chamber, a third direct fluid passage in said housing between said second fluid passage and said accumulator chamber; and a check valve disposed in said third fluid passage permitting free flow of pressurized control fluid into said annular accumulator chamber concurrently with the flow into said first fluid chamber, but preventing reverse fluid flow therethrough; one of said housing and said shaft being engageable with said operative means, said one of said housing and said shaft being selectively shiftable longitudinally in a first direction to move said operative means to one of said open and closed positions by application of control fluid pressure to said first chamber, one of said housing and said shaft means being selectively shiftable longitudinally in a second direction to immediately move said operative means to the other of said open and closed positions upon a subsequent decrease in applied fluid control pressure proportionately greater than the area difference of said first and second effective piston areas by release of compressed control fluid energy stored within said accumulator chamber to said second fluid chamber.

4,349,176

ELECTRICAL TERMINAL CONSTRUCTION

Douglas M. Thornton, Rochester, Mich., assignor to Ross Operating Valve Company, Detroit, Mich.

Filed Feb. 19, 1980, Ser. No. 122,755
Int. Cl.³ F16K *31/02*; H01R *33/06*
U.S. Cl. 251—129 **5 Claims**



1. A safety arrangement for preventing an open electrical connection from being formed with a socket of the type consisting of a socket housing having a generally rectangular peripheral surface terminating in a face surface in which female socket openings are formed, a male terminal housing having a male terminal having a surface adapted to abuttingly engage said socket housing face surface when connected thereto, a pair of flat male power terminals extending from said male terminal housing surface, a male ground terminal extending from said male terminal housing surface with a different orientation than said power terminals, and a shroud at least partially surrounding and extending from said male terminal housing surface, said shroud being formed from a pair of generally parallel legs and a single intersecting leg generally perpendicular to said generally parallel legs and integrally connected thereto, for conforming to the shape of said socket housing peripheral surface to which said male terminal housing surface is to be mated, whereby mismatching of said terminals will result in interference between said shroud and said socket housing face surface to prevent terminal insertion.

4,349,177

PUSH-BUTTON TYPE VALVE

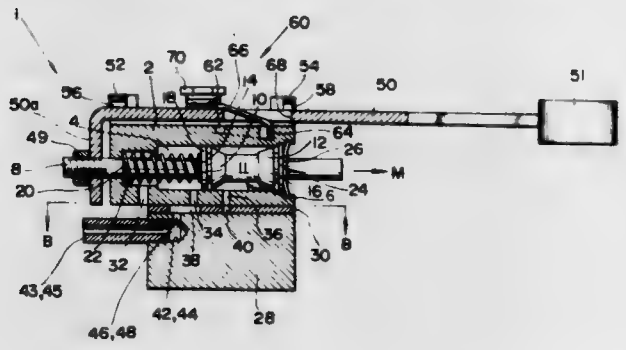
Yukio Shimada; Naoyoshi Suzuki; Toshio Ohashi, all of Yokohama, and Yasushi Inoshita, Tokyo, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Sep. 9, 1980, Ser. No. 185,642
Claims priority, application Japan, Sep. 11, 1979, 54-125300[U]
Int. Cl.³ F16K *31/44*
U.S. Cl. 251—230 **6 Claims**

1. A valve comprising:
a valve body component;
a valve member movably retained in said valve body component and having first and second operative positions;
a first spring for biasing said valve member towards one of said operative positions;

an arm component operatively connected to said valve member;

a groove formed in one of said components, which groove has first and second seat portions and a substantially arrow head shape which defines said first seat portion at the sharp end thereof and said second seat portion at an apex defined by an indent at the blunt end thereof; and



a second spring carried by the other of said components and having a pin formed integrally at one end thereof, which pin is adapted to trace in said groove and to seat in said first and second seat portions to hold said valve member in said first and second operative positions respectively, said second spring being adapted to bias said pin into and across the face of said groove so that said pin traces in said groove in one direction.

4,349,178

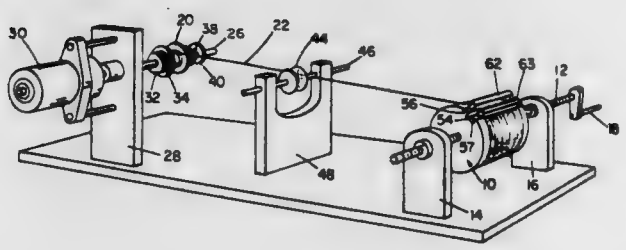
WIRE BLADES

Frederick Schmid, Marblehead, Mass., assignor to Crystal Systems Inc., Salem, Mass.

Division of Ser. No. 32,251, Apr. 23, 1979, Pat. No. 4,256,079, which is a division of Ser. No. 917,918, Jun. 22, 1978, Pat. No. 4,178,670. This application Aug. 1, 1980, Ser. No. 174,452

Int. Cl.³ B65H *54/02, 59/02*

U.S. Cl. 254—216 **12 Claims**



1. A system for forming a wire pack including plurality of wires of equal predetermined length extending between spaced wire supports, said system comprising:

a cylindrical roll mounted for rotation about an axis;

means spaced from said roll for supporting a source of wire to be wrapped around the exterior of said roll and exerting thereon a force in a direction away from said roll;

a guide intermediate said source and said roll for locating wire from said source relative to said roll;

a pair of said wire supports arranged to be mounted on said roll in respective positions adjacent but circumferentially spaced from each other and extending axially of said roll in position for engaging wire wrapped around said roll; and

means for engaging wire wrapped around said roll and positioning adjacent turns at regular intervals relative to each other,

said roll including an axially-extending recess in the periphery thereof, and said supports being adapted to be mounted in said recess.

4,349,179

CONTROL MEANS FOR MOTION COMPENSATION DEVICES

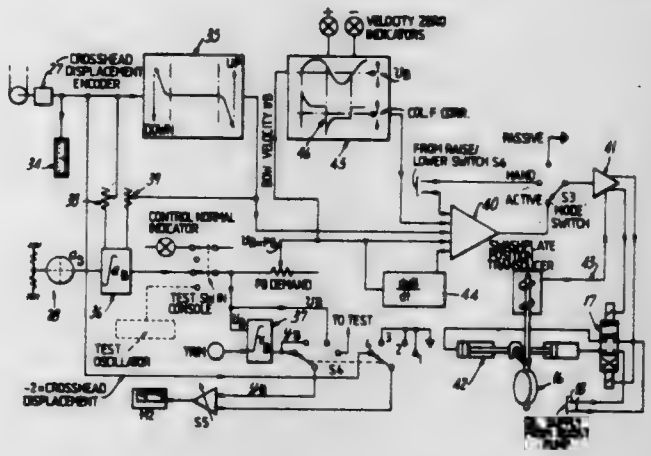
Norman R. Barber, Kent, England, assignor to GEC Mechanical Handling Limited, Kent, England

Filed May 9, 1980, Ser. No. 148,253

Claims priority, application United Kingdom, Jun. 19, 1979, 7921366

Int. Cl.³ B66D *1/50*

U.S. Cl. 254—270 **4 Claims**



1. A control system for a motion compensating arrangement for providing stabilization of a body suspended by means of a flexible line from a support structure subject to uncontrolled oscillating movements, said control system incorporating on said structure:

(A) a winch to which the line is attached,

(B) a pulley over which the line passes and from which the body is suspended, and

(C) a loop formed in the line between the winch and the pulley,

(D) the loop having a length which is resiliently displaceable from an equilibrium value,

(E) the system incorporating also an accelerometer mounted adjacent said pulley for generating a signal representative of vertical acceleration of the pulley,

(F) an integrator for deriving therefrom a signal representative of vertical velocity of the pulley,

(G) means for generating a signal representative of the amplitude of oscillations in the length of the loop,

(H) means for combining said signals to form a stabilizing signal,

(I) signal responsive means operable to alter the length of the loop in controlled response to the stabilizing signal, and

(J) means for deriving from the velocity signal a compensating signal which modifies the stabilizing signal in a manner which compensates for the effect of friction in the system.

4,349,180

DEVICE FOR HANDLING FROM A BOAT A SUBMERGED LOAD HOOKED ONTO THE END OF A CABLE

Joël M. Charles, Toulon, and Robert J. Toscano, La Seyne-sur-Mer, both of France, assignors to Etat Francais as represented by the Delegue General pour l'Armement, Paris Armees, France

Filed Aug. 13, 1980, Ser. No. 177,605

Claims priority, application France, Aug. 27, 1979, 79 21425

Int. Cl.³ B66D *1/26*

U.S. Cl. 254—277 **4 Claims**

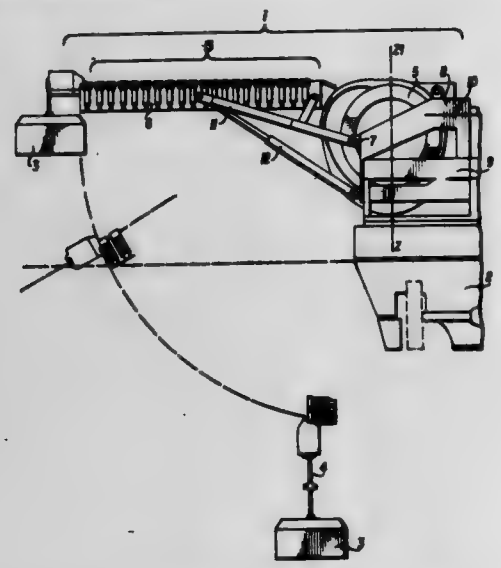
1. A device for handling, from a ship, a submerged load hooked to one end of a cable, comprising:

a cable recovery drum;

an appliance for straightline haulage upon the cable;

a straight beam with a top end and a bottom end, the appliance being disposed along and carried by said beam be-

tween said top and bottom ends, the top end hinged about a first axis transversally disposed with respect to the ship;
a hydraulic jack for controlling pivoting of the beam about said first axis;
an arm hinged to the bottom end about a second axis parallel with the first axis;
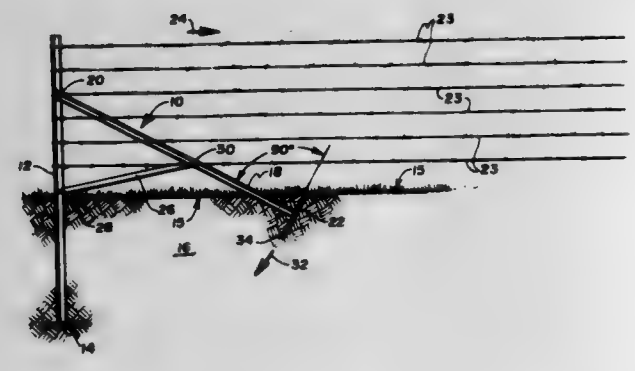


a means of guidance through which the cable passes, said means of guidance being borne by the arm; and
a pick-up of angular displacement of the arm, said pick-up automatically controlling the hydraulic jack to keep said angular displacement substantially zero.

4,349,181

END OR CORNER FENCE POST CONSTRUCTION

Lynn E. Asher, 121 Winona St., and Antony J. Conway, R.R. 1, both of Chatfield, Minn. 55923

Filed Jun. 20, 1979, Ser. No. 50,498
Int. Cl.[3] E04H *17/02*
U.S. Cl. 256—35 10 Claims



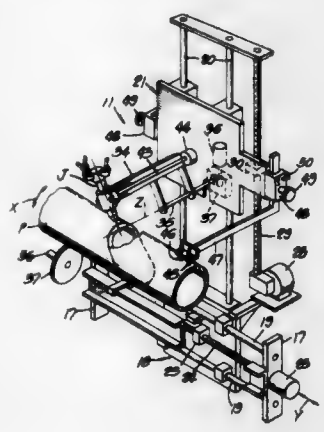
1. An end fence post construction comprising:
main upright post means with an upper and a lower end;
inclined main brace means with an upper and a lower end, said upper end of the main brace means being fixedly attached to the upper end of the main post means;
bearing plate means rigidly attached to the lower end of said main brace means and extending laterally beyond said brace means in all directions, said bearing plate means having a plate means area measured perpendicular to the main brace means substantially greater than the cross sectional area of the main brace means and having a lower narrow edge facing downwardly and lying along a plane generally perpendicular to the main brace means, said edge including a downwardly facing lower portion and widening substantially continuously upwardly from the lower portion to a region of maximum width of the bearing plate means to facilitate penetration of the bearing plate means into the ground and to resist movement of the main brace means in a direction parallel to the main brace means;
rigid cross brace means with first and second ends, said first end of the cross brace means being fixedly attached to the main post means adjacent the ground and the second end of the cross brace means extending upwardly and being fixedly attached to the main brace means; and
deadman means rigidly attached adjacent to the lower end of said post means and positioned below ground when the post means is installed.

4,349,182

TAPE-CONTROLLED METAL CUTTING APPARATUS

Marvin J. Blackburn, Laguna Niguel, Calif., assignor to Vernon Tool Company Ltd., Oceanside, Calif.

Continuation-in-part of Ser. No. 631,733, Nov. 13, 1975, abandoned. This application Jan. 9, 1978, Ser. No. 868,207
Int. Cl.[3] B23K *7/04, 37/04*
U.S. Cl. 266—57 42 Claims



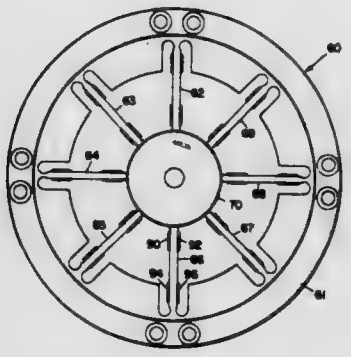
1. Automatic apparatus for cutting a workpiece by a hot jet directed against one face thereof comprising:
(a) means for supporting a workpiece horizontally;
(b) hot jet means and support means therefor supported on said apparatus essentially and substantially independently of a workpiece to be cut and positioned to direct a cutting jet against one face of a workpiece supported by said workpiece support means, said hot jet means including power driven means for moving said hot jet means bodily toward and away from said workpiece;
(c) first and second power-operated means for moving both of said support means relative to each other to enable said hot jet means to cut said workpiece along X and Y axes lying in a common plane at right angles to one another;
(d) third power-operated means for pivoting said hot jet means in an arc lying in a plane generally normal to said common plane containing said X and Y axes thereby to cut the workpiece at different bevel angles relative to said one face;
(e) preprogrammed numerical control means providing a series of control signals to said first, second and third power-operated means whereby said hot jet means is effective to cut the workpiece along a preselected contour including non-linear portions and along preselected different bevel angles during a cutting cycle; and
(f) sensing means for automatically monitoring the position of the pivot axis of said jet means relative to the surface of said workpiece and for continuously sensing the proximity of the pivot axis of said jet means to said workpiece and including power means for shifting said jet means as necessary to maintain the pivot axis of said jet means at an optimum cutting position relative to the workpiece.

4,349,183

SPRING FOR A RING LASER GYRO DITHER MECHANISM

Thomas M. Wirt, Malibu, and Robert A. Chechile, Thousand Oaks, both of Calif., assignors to Litton Systems Inc., Beverly Hills, Calif.

Filed Aug. 4, 1980, Ser. No. 175,106
Int. Cl.³ F16F 1/18, 1/34
U.S. Cl. 267—160 2 Claims



1. In the combination of a hub, a rim substantially coaxial with said hub, a plurality of radially directed springs connecting said hub and rim, each said spring being capable of flexing in a circumferential direction to allow limited relative motion between said hub and rim about the common axis of said hub and rim, the flexing of each of said springs having a radially positioned axis of inflection, the improvement comprising:

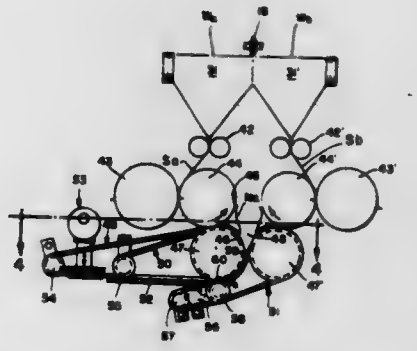
each of said springs having a reduced moment of inertia about an axis parallel to said common axis and an increased circumferential bending in the region of attachment to said rim.

4,349,185

FOLDING APPARATUS

Rudolph E. Small, and Michael H. Spalding, both of Green Bay, Wis., assignors to Paper Converting Machine Company, Green Bay, Wis.

Filed Jul. 21, 1980, Ser. No. 170,700
Int. Cl.³ B41L 43/00
U.S. Cl. 270—32 7 Claims



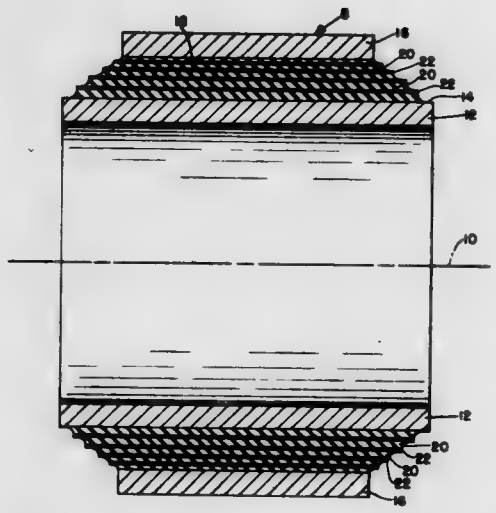
1. Apparatus for producing stacked products such as paper napkins from a primary web comprising a frame, means on said frame for slitting said primary web into a pair of webs, advancing said pair of webs along side-by-side paths while longitudinally folding each web, and thereafter transversely severing each web to develop a first and a second series of discrete web products, a pair of folding rolls journalled in said frame, one for each of said series, vacuum means operably associated with said rolls for transversely folding each product, and endless belt means for stripping products from the roll of said first series and thereafter urging said product against a product carried by the roll of said second series for delivering both products in superposed relation along a horizontal path.

4,349,184

LAMINATED BEARINGS HAVING ELASTOMER LAYERS OF VARYING DIMENSIONS

Robert R. Peterson, Hudson, and Daniel S. Ventura, Malden, both of Mass., assignors to Barry Wright Corporation, Newton Lower Falls, Mass.

Filed Apr. 3, 1978, Ser. No. 892,478
Int. Cl.³ F16F 1/36; F16C 27/00, 33/00
U.S. Cl. 267—153 13 Claims



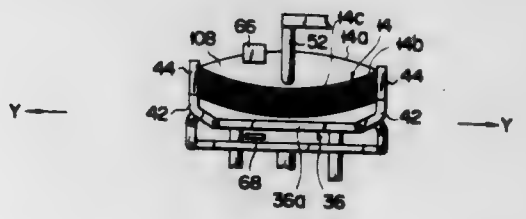
1. A compressive load carrying bearing comprising alternating layers of a resilient material and a non-extensible material generally concentrically disposed about a common axis, wherein said layers of resilient material have substantially the same modulus of elasticity and the length and thickness of successive layers of resilient material progressively decrease with increasing radii.

4,349,186

THIN SHEET FEEDING APPARATUS

Kunihiko Nakamura, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 6, 1980, Ser. No. 127,746
Claims priority, application Japan, Mar. 9, 1979, 54-27358; Dec. 13, 1979, 54-162027
Int. Cl.³ B65H 3/46, 1/18
U.S. Cl. 271—18 9 Claims



1. A thin sheet feeding apparatus comprising:

means for supporting a pile of thin sheets bundled by a belt member;

means for moving said pile in a predetermined direction;

means for bending said pile of thin sheets, said means for bending including means for applying forces to the edges of said pile which are in contact with said belt member, said means for applying forces being adapted to apply forces only in the direction of the plane of said sheets and in said predetermined direction, so that the upper surface of said pile is bent into a concave form and the portion of said band corresponding to said upper surface separates from said upper surface while remaining in contact with said edges of said pile; and

means for sequentially feeding at least the uppermost thin sheet of said pile in a second predetermined direction, said uppermost thin sheet being on the concave side of the pile.

9. A thin sheet feeding method comprising the steps of:

(a) moving a pile of thin sheets bundled by a belt member and maintaining the uppermost thin sheet of the sheet pile at a predetermined level;

(b) applying forces on both parallel side faces of the sheet pile so bundled, bending said pile to cause the uppermost thin sheet to be spaced apart from the belt to permit a space to be created therebetween, and maintaining the pile at its bent configuration; and

(c) feeding one sheet at a time from the uppermost thin sheet side of the sheet pile in a predetermined direction.

4,349,187

SHEET FEEDER WITH NONSTOP DEVICE

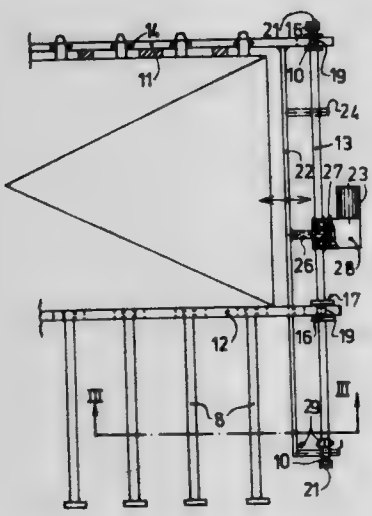
Klaus Weyrich, Augsburg, Fed. Rep. of Germany, assignor to Georg Spiess, Gersthofen, Fed. Rep. of Germany

Filed Mar. 14, 1980, Ser. No. 130,248

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1979, 2911735

Int. Cl.³ B65H *1/26*

U.S. Cl. 271—159 **21 Claims**



1. In a sheet pile feeder with a nonstop device for supporting and lifting a partial remaining pile while the feeder receives a fresh new pile for feeding, a combination comprising: guideways elongated in the direction of pile lifting; stringers movable in said guideways; cross bars carried by said stringers and adapted to support a partial pile to be lifted; means mounting said cross bars for sliding movement transversely to the direction of withdrawal of sheets from the partial pile; a direction-reversible motor operatively connected with said cross bars to move the same transversely in one or in an opposite direction; and means for sensing at least one upper side edge of the partial pile and connected with said motor to make the same operate in one or in another direction depending upon sensed conditions, said partial remaining pile being laterally adjustable for adjusting sheets laterally in nonstop operation; said sensing means comprising further at least one sensing device for effecting automatic straightening of the side positions of the new pile and the partial pile; a receiver for the new pile and being laterally slidable by means of an associated motor, said sensing device being coordinated with both of said motors; and a selector switch for selecting operation of said nonstop device and serving to couple said sensing device alternatively to one or the other of said motors.

4,349,188

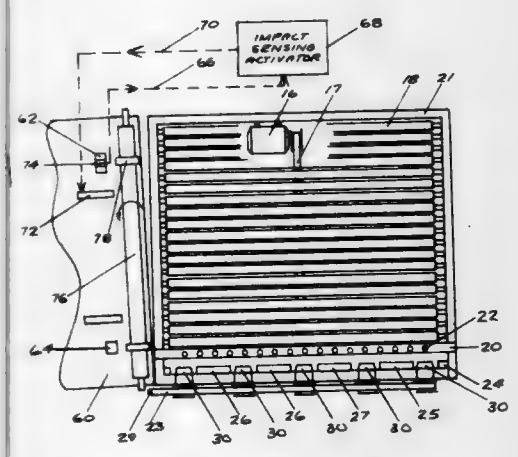
RE-REGISTERING FEEDER AND METHOD OF REGISTERING

William G. Young, 79 Atterbury Blvd., Ste. 201C, Hudson, Ohio 44236

Continuation-in-part of Ser. No. 30,722, Apr. 18, 1979, abandoned. This application Jun. 22, 1981, Ser. No. 275,885

Int. Cl.³ B65H *5/00*

U.S. Cl. 271—225 **2 Claims**



1. In an apparatus comprising a pre-registering feeder for a substantially rectangular sheet which includes in combination:

a base;

a plurality of parallel conveyor rolls rotatably mounted on said base;

a drive means for said parallel conveyor rolls for a movement of a sheet in a first direction;

a frame member mounted on said base parallel to and above the last conveyor roll in the first direction of travel;

means carried by said frame member in rotational contact with said last conveyor roll for holding down said sheet;

a side register guide;

a plurality of complementary pairs of drive rolls mounted in conjunction with said side register guide to grip said sheet along the margin of said sheet after a respective edge of the sheet has been registered adjacent thereto and to move said sheet in a second direction at right angles to the first direction, while the sheet is continuously actuated in said first direction to hold the respective edge flush along its full length to the register guide;

a drive means for said pairs of drive rolls;

a pair of alignment stop means arranged in angled cooperative relation to the side register guide whereby one of the stop means is contacted first after some movement of the sheet in the second direction, whereby the sheet pivots about said one stop means toward the other stop means while the respective gripper edge corner of the sheet remains in contact with the register guide; and

means to sense when the sheet contacts the other stop means.

4,349,189

MODULE FOR PICKING, TRANSPORTATION AND DEPOSITING OF SHEETED OR FOLDED MATERIAL

Lars G. Edström, Stockholm, Sweden, assignor to Malmöhus Invest AB, Malmö, Sweden

Filed Feb. 6, 1979, Ser. No. 9,953

Claims priority, application Sweden, Feb. 7, 1978, 7801396; Feb. 7, 1978, 7801397; Feb. 7, 1978, 7801398; Feb. 7, 1978, 7801399; Jun. 15, 1978, 7806910

Int. Cl.³ B65H *9/16, 5/16*

U.S. Cl. 271—251 **5 Claims**

1. Conveyor module for interconnection with identical modules for transport and registration of non-rigid sheet-like material, which sheet-like material during transport is placed on top of one another, comprising:

means defining a conveyor;

a control device arranged to control movement of and to

register the sheet-like material which is to be transported by the conveyor in a desired direction of transport;

at least one elongated belt-like driving means (3) for driving said non-rigid sheet-like material along said conveyor;

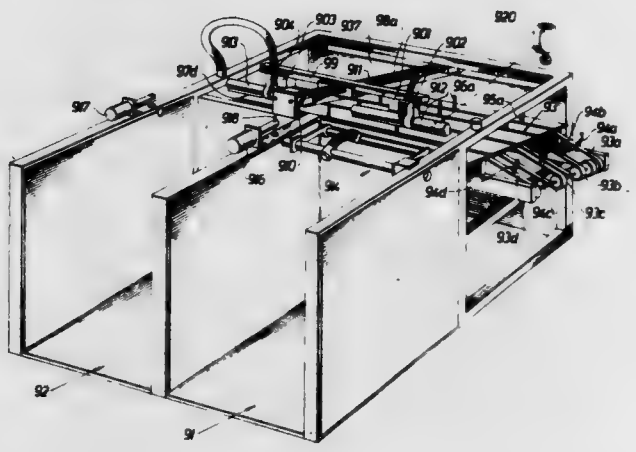
said conveyor including a substantially flat surface (36) below which said belt-like driving means (3) runs;

a motor (10) coupled to said at least one belt-like driving means for driving same;

the direction of travel of said belt-like driving means being placed at a sharp angle in relation to said control device (37);

said control device including a side wall (37) extending upwardly from the vertical level of said belt-like driving means, said side wall (37) forming a second sharp angle to said substantially flat surface (36);

said at least one belt-like driving means comprising a plurality of separated upstanding drivers (94*a*, 95*a*, 96*a*) moved by said belt-like driving means in the same direction of travel as said belt-like driving means, said drivers protruding above said substantially flat surface (36) to abut and move said sheet-like material along the conveyor with force components directed parallel to said side wall (37) and directed toward said side wall (37), said parallel force being substantially greater than said perpendicular force; and



said conveyor modules each including engagement means at respective opposite ends thereof for engagement and cooperation with another identical conveyor module located adjacent thereto and to align the conveying paths of adjacent identical conveyor modules;

said belt-like driving means protruding at one end of the conveyor module beyond the end of said substantially flat surface (36) so as to be received by an adjacent conveyor module, the direction of travel of the protruding part of said belt-like driving means deviating in a vertical direction from the direction in which it travels when running along said substantially flat surface (37) so as to provide clearance for a driving means of the adjacent conveyor module.

4,349,190

SHEET CLASSIFYING SYSTEM HAVING DEFLECTING DEVICE

Tamaki Kaneko, Fujisawa; Kunio Hibi; Sunao Ikeda, both of Yokohama; Tugio Okuzawa, Tokyo; Yohtaro Kakitani, and Hideo Kikuchi, both of Yokohama, all of Japan, assignors to Ricoh Co., Ltd., Japan

Filed Sep. 23, 1980, Ser. No. 190,063

Claims priority, application Japan, Sep. 29, 1979, 54-126004; Jan. 17, 1980, 55-3066; Feb. 29, 1980, 55-27007[U]; Feb. 29, 1980, 55-27008[U]

Int. Cl.³ B65H *29/54*

U.S. Cl. 271—297 **5 Claims**

1. A sheet classifying system comprising:

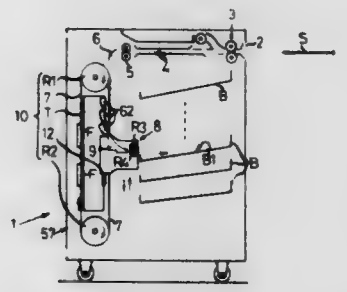
a plurality of sheet receiving bins superposed one above another in predetermined spacing relationship;

a sheet guide device including sheet conveyor belts arranged vertically along an inlet end of said sheet receiving bins;

a plurality of sets of sheet separating claws located in a plurality of layers along said sheet conveyor belts and each set being disposed in a position corresponding to one of said sheet receiving bins; and

a guiding device moved vertically by said sheet guide device along said sheet conveyor belts, vertical movement of said guiding device successively bringing said plurality of sets of sheet separating claws to an operative position for deflecting sheets conveyed by said conveyor belts toward the respective sheet receiving bins, to be received therein; wherein the improvement comprises:

a plurality of cams operating as a unit with the sheet separating claws for displacing the sheet separating claws, at least one of said cams being associated with one set of said sheet separating claws;



engaging means mounted in said guiding device and operative to come into and out of engagement with said cams for moving said sheet separating claws between an operative position and an inoperative position;

sheet separating claw returning means urging said sheet separating claws to move toward said inoperative position at all times;

a mechanism for upwardly moving said guiding device;

a solenoid for actuating said mechanism for moving said guiding device upwardly;

said engaging means being in engagement with one of said cams for displacing said sheet separating claws; and said solenoid being operative to actuate said mechanism for upwardly moving said guiding device and keep said engaging means in a position away from the position in which it is in engagement with said sheet separating claw displacing cam.

4,349,191

ABDOMINAL SIDEBEND MACHINE-UPPER

Lloyd J. Lambert, Jr., and Lloyd J. Lambert, Sr., both of 1538 College Ave., South Houston, Tex. 77587

Filed Dec. 5, 1979, Ser. No. 100,573

Int. Cl.³ A63B *23/02, 21/06, 21/16*

U.S. Cl. 272—118 **11 Claims**

1. An upper abdominal sidebend machine comprising in combination:

a base frame which carries a weight supporting cage thereon,

a seat means supported by said base frame,

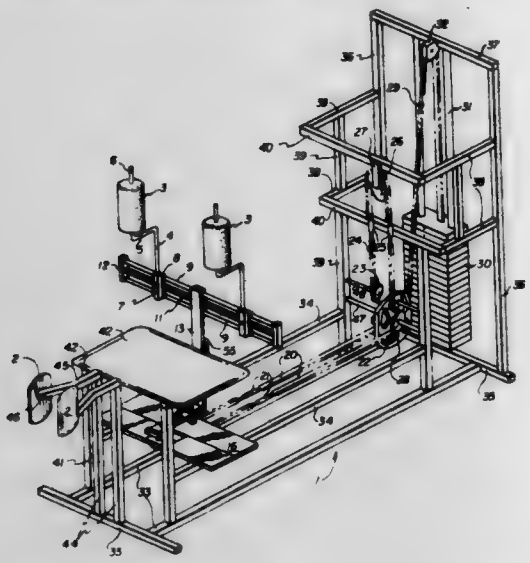
roller means deployable about said seat and having at least one pad disposed thereon,

wherein said pad engages substantially an upper portion of an exercisor's body above the waist,

and weight means are connected to said roller means

whereby when said roller means are deployed about said seat, work is done by rotating the upper torso against the weights at the waist and wherein said roller means further comprises an "L" shaped framework pivoted at an ex-

tremity of a horizontal leg of the "L", and supported by an underlying roller attached to an other extremity of said horizontal leg substantially below a vertical leg of said "L".

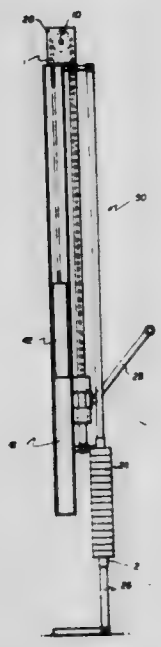


4,349,192

COUNTERBALANCED WEIGHT SYSTEM

Lloyd J. Lambert, Jr., and Lloyd J. Lambert, Sr., both of 1538 College Ave., South Houston, Tex. 77587

Filed Dec. 17, 1979, Ser. No. 103,895
Int. Cl.[3] A63B *21/06*
U.S. Cl. 272—118 6 Claims



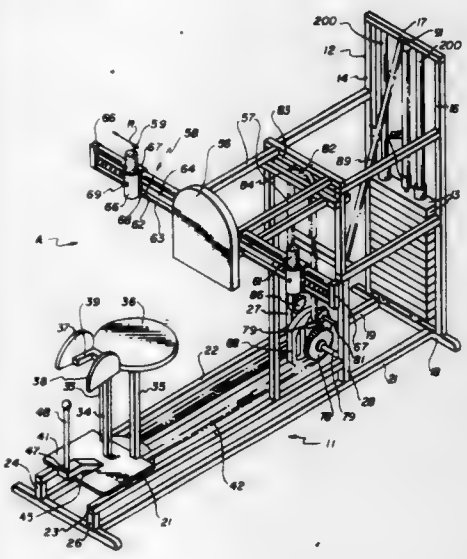
1. An exercise machine comprising in combination:
a framework including a base,
a pair of vertically upstanding support members emanating from said base,
a cross bar support connecting vertical termini of said upstanding support members remote from said base,
a plurality of weights supported on said framework, the magnitude of said weights being adjustable,
upper and lower U-shaped support braces connected to said support members,
two pairs of guide rods disposed between said support braces,
I guides slidably disposed on said guide rods,
means connecting said I guides to said weights,
means to move said weights in performing an exercise and fastened to said I guides,
counterbalance means for negating the intrinsic weight associated with said moving means and said I guides,
and chain means extending between said counterbalance means and said I guides to operatively connect said counterbalance with said moving means.

4,349,193

LOWER ABDOMINAL TWIST MACHINE

Lloyd J. Lambert, Jr., and Lloyd J. Lambert, Sr., both of 1538 College Ave., South Houston, Tex. 77587

Filed Jun. 30, 1980, Ser. No. 164,168
Int. Cl.[3] A63B *21/06*
U.S. Cl. 272—118 10 Claims



1. Apparatus for exercising the lower portion of an individual's body comprising, in combination, a seat means for supporting user of the apparatus, a frame, a weight cage attached to said frame, weight means slidably mounted for vertical movement from a rest position in said weight cage, means on said frame for mounting the seat means for rotary movement throughout an arcuate path, hand gripping means on said frame accessible to an individual seated on said seat means to assist rotation of said seat means by an individual seated thereon by providing a pressure bearing surface, drive means for drivably connecting said weight means to said seat means, said drive means being adapted to rotate said seat means from a predetermined rotary position corresponding to said rest position of said weight means and to move said weight means vertically upward during the rotary movement of said seat means by an individual along said arcuate path from said predetermined rotary position.

4,349,194

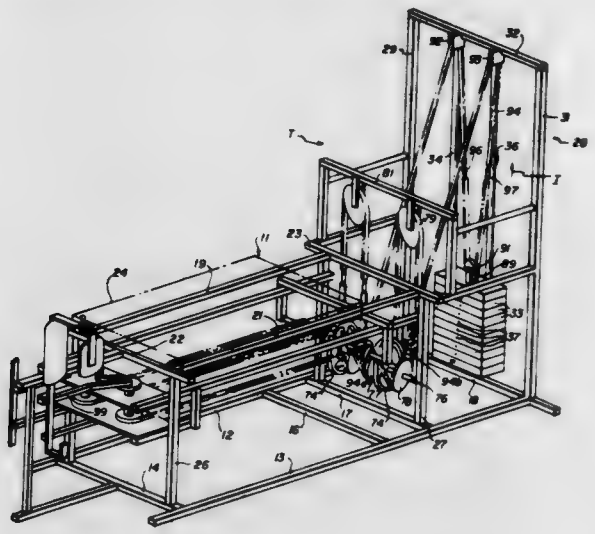
APPARATUS FOR EXERCISING THE INNER AND OUTER THIGH MUSCLES

Lloyd J. Lambert, Jr., and Lloyd J. Lambert, Sr., both of 1538 College Ave., South Houston, Tex. 77587

Filed Aug. 20, 1980, Ser. No. 179,726
Int. Cl.[3] A63B *21/06*
U.S. Cl. 272—118 16 Claims

1. Apparatus for exercising the inner and outer muscles of the thigh comprising, in combination, a frame, a seat on said frame, a weight cage on said frame, weight means guideably disposed in said weight cage for vertical movement between a rest position and an elevated position, leg receiving means on said frame for each of the leg's of a user, means for pivotally mounting each of said leg receiving means for independent rotary movement in an arcuate path from a predetermined rotary position and drive means for drivably connecting each of said mounting means to said weight means, said drive means being adapted to move said weight means from said rest position corresponding to said predetermined rotary position of said leg receiving means on said arcuate path into said elevated position by a lateral movement of the user's legs for exercising the inner and outer thigh muscles of the user wherein, said mounting means includes means for adjusting said predeter-

mined rotary position of said mounting means defined by plate members fixed to said drive means having plural apertures thereon and engagable to said leg receiving means by operating lever means pivoted to said leg receiving means, said operating lever means having a pin element adapted to reside within one of said apertures for locking engagement thereby reorienting said leg receiving means relative to each said plate member.

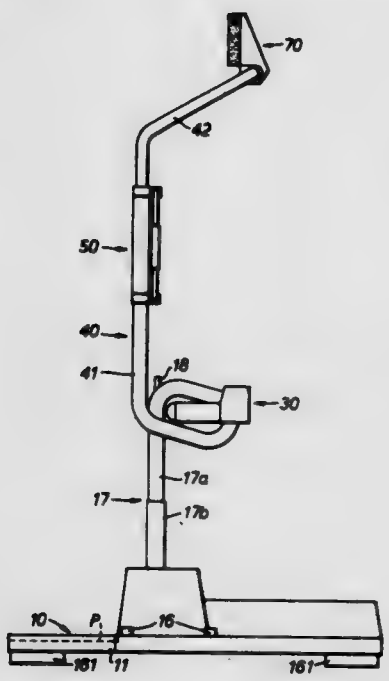


4,349,195

STANDING SUPPORT FOR HANDICAPPED PERSONS

Malcolm Johnston, 46 Ladbroke Sq., London, England (W11 3ND)

Filed May 14, 1980, Ser. No. 149,612
Claims priority, application United Kingdom, May 15, 1979, 7916851
Int. Cl.[3] A63B *21/00*; A61F *3/00*
U.S. Cl. 272—134
11 Claims



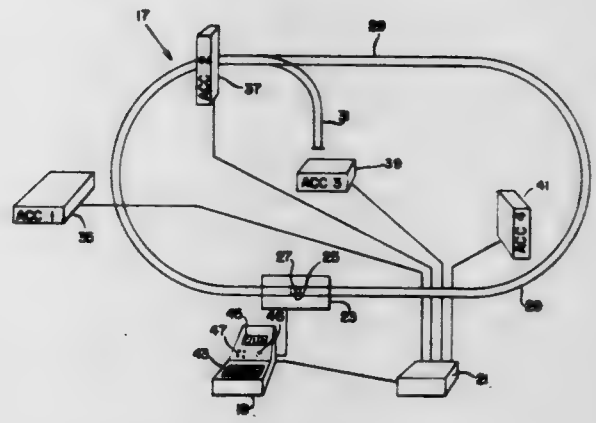
1. A standing support frame for handicapped persons comprising a platform, a column mounted upright on the platform so as to be pivotable to a limited degree in all directions from a mean position, means for resiliently urging the column to said mean position, a pair of upright horizontally spaced support arms, a knee support including a cross-piece mounted to the column, said arms being joined at their lower ends to said cross-piece and at their upper ends to a chest support, and a buttock support extending between said arms at an appropriate position, wherein said arms extend rearwardly from said knee support, upwardly at a rearward spacing from the column and forwardly above said buttock support to said chest support.

4,349,196

COMPUTER CONTROL TOY TRACK SYSTEM

Jay Smith, III, Pacific Palisades; Thomas G. Schneider, Mar Vista, and Thomas H. Grimm, Manhattan Beach, all of Calif., assignors to Smith Engineering, Santa Monica, Calif.

Filed Feb. 8, 1980, Ser. No. 119,645
Int. Cl.[3] A63B *71/00*; A63F *9/14*
U.S. Cl. 273—1 GC
4 Claims



1. In a toy track system wherein a plurality of cars move under the control of an operator, improved operator involvement apparatus, comprising:

means attached to each of a plurality of cars on the track for uniquely identifying each car;

means for sensing the passage and identity of each car having an identifying means;

a keyboard means for providing keyboard signals;

microprocessor means having input and output channels, said microprocessor means being responsive to said sensing means and said keyboard signals through said input channels;

a plurality of light emitting diode means receiving signals from said microprocessor means through the output channels for indicating information to the operator;

a speaker means receiving signals from said microprocessor means through the output channels for indicating information to the operator;

a plurality of seven segment display elements receiving signals from said microprocessor means through the output channels for indicating information to the operator; and

wherein said microprocessor means is programmed to scramble the order of the car identities stored in memory and display the new order sequentially upon a request from the keyboard.

4,349,197

MATCHING GAME

Lester R. Livick, 15106 Beatty St., San Leandro, Calif. 94579

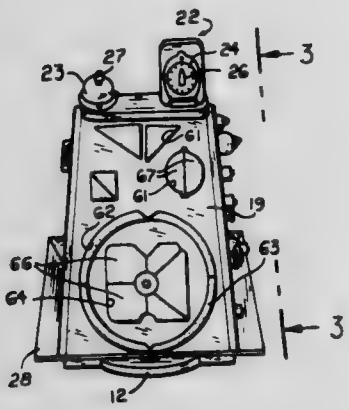
Filed Dec. 11, 1980, Ser. No. 215,271
Int. Cl.[3] A63F *9/00*; G09B *19/00*
U.S. Cl. 273—1 GF
7 Claims

1. A matching game comprising

an upright housing having slanting sides and a trough about the bottom thereof,

the sides of said housing having indentations of different configurations,

a base mounting said housing for rotation about a vertical axis, and



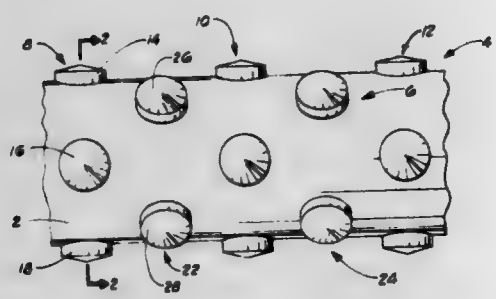
a plurality of objects having the size and configuration of the indentations in said housing saides for placement therein by matching size and shape.

4,349,198

STRING FOR SPORTING GOODS

Larry W. Stelck, 116 Easy Street Ct., Edmond, Okla. 73034

Filed Dec. 8, 1980, Ser. No. 214,188
Int. Cl.[3] A63B *51/02*
U.S. Cl. 273—73 D
9 Claims



1. A string, comprising:
an elongated member; and
a plurality of protuberances extending outwardly from said elongated member, said plurality of protuberances including:
a first set of protuberances disposed along a first perimeter of said elongated member, each protuberance of said first set being associated with a respective radius which extends to said first perimeter of said elongated member; and
a second set of protuberances disposed along a second perimeter of said elongated member, each protuberance of said second set being associated with a respective radius which extends to said second perimeter of said elongated member and which extends substantially parallel to a radius extending to said first perimeter and lying between consecutive ones of said respective radii associated with respective protuberances of said first set of protuberances, said radius which extends to said first perimeter and which lies between consecutive ones of said respective radii associated with respective protuberances of said first set of protuberances bisecting an angle formed by said respective radii associated with respective protuberances of said first set of protuberances.

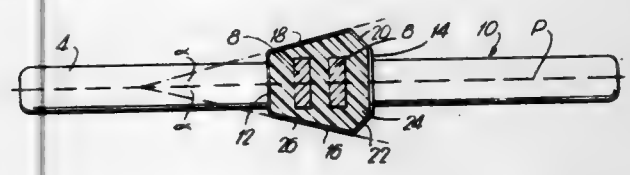
2. In an article for imparting spin to a ball of the type including a framework having a handle and a hoop extending from one end of said handle, the improvement comprising:
a line, connected in a network to said hoop, having a plurality of protuberances extending therefrom for engaging the ball, said plurality of protuberances including:
a first set of protuberances disposed along a first circumference of said line; and
a second set of protuberances disposed along a second circumference of said line, each protuberance of said second set being offset from each protuberance of said first set.

4,349,199

RACQUET HANDLE

Richard Vulcano, 235 Keith Rd., West Vancouver, British Columbia, Canada

Filed Apr. 1, 1981, Ser. No. 249,966
Claims priority, application Canada, Oct. 6, 1980, 361627
Int. Cl.[3] A63B *49/08*
U.S. Cl. 273—75
5 Claims



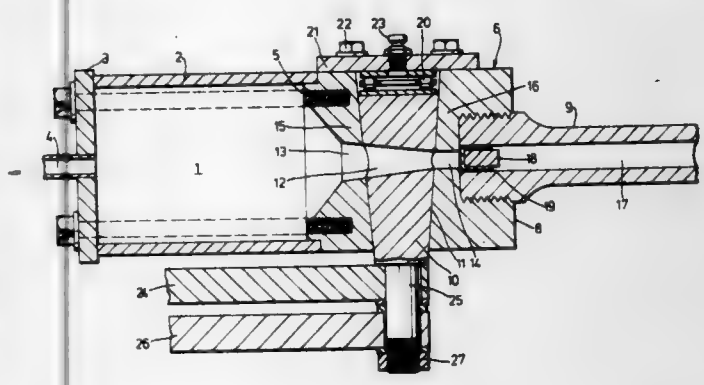
1. In a racquet or bat for tennis, badminton, squash, racquetball, table tennis and like games having a planar striking face extending from a handle, the improvement wherein said handle comprises: first and second parallel longitudinally extending minor surfaces positioned, in transverse cross-section, normal to the plane of the striking face; and
a pair of longitudinally extending relatively angled major surfaces which, in transverse cross-section, are inclined with respect to said first normally positioned minor surface at equal angles in the range of about 95° to 100°.

4,349,200

GAS GUN FOR BALLISTIC TESTING

Felix R. Wakefield, Didcot, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Jul. 28, 1980, Ser. No. 172,886
Int. Cl.[3] A63B *65/12*; F41F *1/04*
U.S. Cl. 273—371
13 Claims



1. A gas gun suitable for ballistic testing and operable to propel a projectile at a velocity between 100 and 1000 meters per second solely by the action of a noncombustible compressed gas, said gun having a charge chamber, an inlet valve to admit a charge of compressed noncombustible gas to the charge chamber, a barrel to receive a projectile, and an outlet valve located between said charge chamber and said barrel and adapted to be moved rapidly from a closed to an open position relative to said charge chamber and barrel to effect communication between the charge chamber and the breech end of the barrel for releasing the compressed noncombustible gas from said charge chamber to the breech end of said barrel to propel said projectile through and out of said barrel, said outlet valve being a rotary valve consisting of a frustoconical valve member, rotatable within a complementary seat, and having a radial bore extending therethrough in a direction transverse to the axis of rotation of said valve member for connecting together two parts in the wall of said seat respectively connected to said

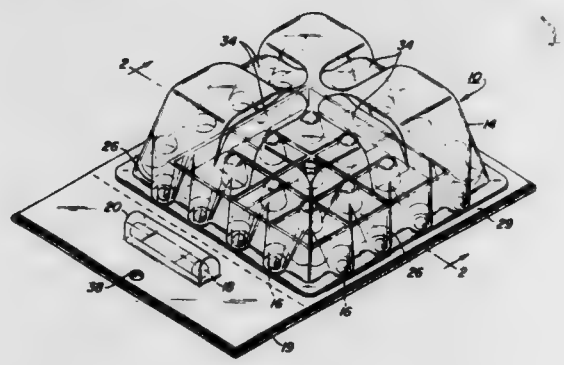
charge chamber and said breech end of the barrel, said radial bore being of tapered configuration and having its larger end disposed toward said charge chamber and its smaller end disposed adjacent the breech end of said barrel when said valve member is in its open position with the charge chamber in communication with the barrel via said bore, the larger end of said radial bore being the inlet end of said bore and complementing a first port in a part in the wall of the seat adjacent the charge chamber when said valve is in its said open position, and the smaller end of said radial bore being the outlet end of said bore and complementing a second port, smaller than said first port, in a part in the wall of the seat adjacent said breech end of the barrel when said valve is in its said open position.

4,349,201

MAGNETIC DROP GAME

Melford D. Clark, 741 Piper La., Prospect Heights, Ill. 60070

Filed Sep. 8, 1981, Ser. No. 300,166
Int. Cl.[3] A63B *71/02*; A63F *7/02*
U.S. Cl. 273—400 10 Claims



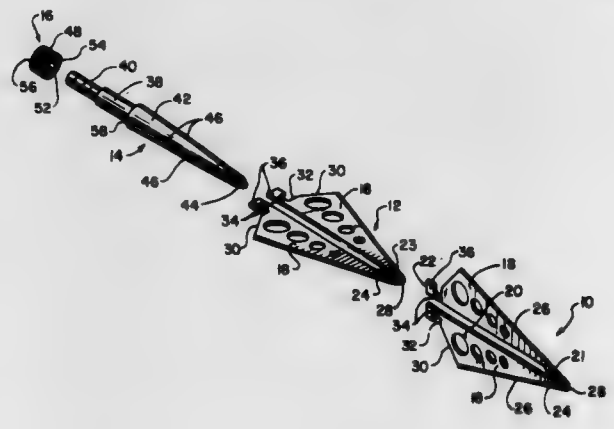
1. A game device comprising in combination
a base member having at least one ball receiving target pocket,
a plurality of magnetic balls,
a dome-like, transparent cover secured over said base member and said target pocket, and
a plurality of ball receiving receptacles partially defined by said cover and located below said target pocket.

4,349,202

ARROWHEAD WITH READILY REPLACEABLE BLADES

David F. Scott, Harwinton, Conn., assignor to FAD Company, Inc., Bristol, Conn.

Filed Jul. 10, 1981, Ser. No. 281,958
Int. Cl.[3] F41B *5/02*
U.S. Cl. 273—422 11 Claims



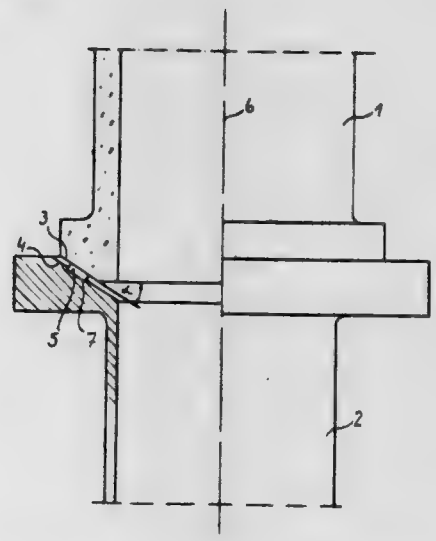
1. An arrowhead assembly comprising: first and second generally delta-shaped blades, each blade having a longitudinal slot extending forwardly from the rear end thereof and defining a pair of symmetrically disposed blade members having first outer edge elements that converge forwardly from a first point to a tip portion of said blade and are sharpened along at least a part of their length, and having second outer edge elements that converge rearwardly therefrom to an engagement portion adjacent said slot therein, said second blade being seated within said slot of said first blade with said tip portion thereof fixedly engaged behind said tip portion of said first blade and with said slots thereof substantially coextensive, said engagement portion of at least said first blade including a narrow prong extending rearwardly from each blade member thereof and having an outwardly projecting lug thereon; a core member inserted axially into said coextensive slots of said blades and providing support therefor, said core member having an element providing a rearwardly disposed abutment surface, and having a shank portion extending rearwardly therefrom beyond said blades with said lugs of said first blade spaced from said abutment surface, said shank portion having means thereon for attachment to an arrow shaft; and a locking member mounted on said shank portion of said core member adjacent said abutment surface thereof, said locking member having a passageway therethrough and a plurality of peripherally spaced engagement elements adjacent one end thereof and extending inwardly into the passageway therethrough to define a coaxial aperture of reduced relative dimensions, said engagement elements of said locking member lying within the spaces between said lugs of said one blade and said abutment surface of said core member, and locking said lugs therebehind, said locking member being rotatable on said shank portion to an unlocked position in which said lugs can pass through the peripheral gaps between said engagement elements thereof, thereby permitting said blades to be dismounted forwardly from said core member.

4,349,203

FLANGE CONNECTION TO CONNECT A METALLIC AND A GLASS OR CERAMIC STRUCTURAL ELEMENT

Karl A. Schülke, Neuberg, Fed. Rep. of Germany, assignor to Heraeus Quarzschmelze GmbH, Hanau, Fed. Rep. of Germany

Filed Aug. 7, 1981, Ser. No. 290,885
Claims priority, application Fed. Rep. of Germany, Sep. 10, 1980, 3033989
Int. Cl.[3] F16J *15/10*
U.S. Cl. 277—26 10 Claims



1. Flange connection between two coaxial tubular elements (1, 2) having substantially different thermal coefficients of expansion, and particularly for use in connections wherein one the elements is brittle and has low tensile strength in comparison to that of the other,
wherein each of said elements is formed with mutually matching seating surfaces (3, 4), and an elastic sealing ring (5) is provided, interposed between said seating surfaces, and wherein, in accordance with the invention,
the seating surfaces extend at an inclination with respect to the common axis (6) of the tubular elements and form a

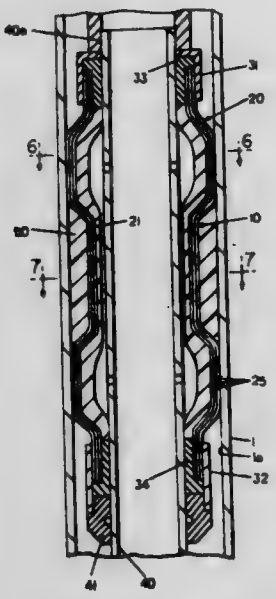
shallow truncated cone having its theoretical apex in the center of said axis (6) of one of the elements;
and the seating surfaces form a cone angle (α) with respect to a plane perpendicular to said axis, which angle (α) is at least arc tan μ_0, and up to 45°,
wherein μ_0 is defined by the coefficient of friction between the sealing material and that one of the elements which includes the cone as a theoretical core.

4,349,204

NON-EXTRUDING INFLATABLE PACKER ASSEMBLY

Billy C. Malone, Pearland, Tex., assignor to Lynes, Inc., Houston, Tex.

Filed Apr. 29, 1981, Ser. No. 258,706
Int. Cl.[3] E16J *15/46*; E21B *33/127*
U.S. Cl. 277—34 6 Claims



1. An extrusion resistant inflatable packing device for a subterranean well bore to provide a seal between a conduit carrying the device and an interior surface within the well bore, comprising: an axially elongated, annular inflatable body; an annular means collar rigidly secured to each end of said inflatable body; means for mounting said collar means in a well bore permitting axial movement of said collars toward each other; said inflatable body comprising an annular array of elongated slats disposed in laterally overlapping relation, said slats being formed from a relatively rigid, deformable material; an inner sleeve of elastomeric material abutting the inner wall defined by said slats; and an outer sleeve of elastomeric material surrounding only a portion of the length of the external wall of said annular array of slats, whereby the application of fluid pressure to the interior of said inner sleeve produces a radially outward displacement of said slats to force said outer elastomeric sleeve into sealing relation with the well bore and the outer surfaces of the uncovered portions of said slats into frictional relation with the well bore to thereby resist extrusion of said outer sleeve from sealing relation with said well bore.

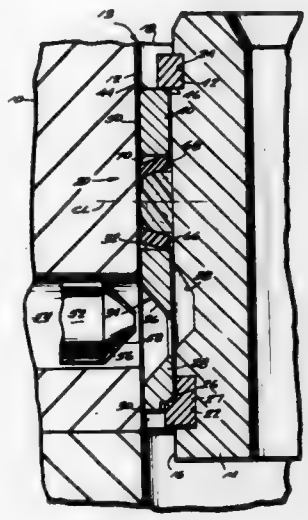
4,349,205

ANNULUS SEALING DEVICE WITH ANTI-EXTRUSION RINGS

John K. McGee, and Charles D. Bridges, both of Houston, Tex., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed May 19, 1981, Ser. No. 265,223
Int. Cl.[3] F16J *15/18, 15/32*
U.S. Cl. 277—188 A 18 Claims

1. For sealing an annulus defined between a pair of coaxially-related radially inner, radially outwardly facing and radially outer, radially inwardly facing circumferentially extending at least generally cylindrical surfaces at a level intermediate the common axial extent of these surfaces;
a sealing device comprising:
a ring of elastomeric material sandwiched coaxially between two anti-extrusion rings made of elastic hard metal or the like;
this sandwich of rings being capable of providing, in a free state, a circumferential clearance radially between itself and at least one of said surfaces when received in said annulus at said level, at least before having ever been used to seal said annulus at said level;
each anti-extrusion ring comprising an annular ring integrally provided at one radial extreme thereof with a circumferentially extending lip;
the ring of elastomeric material having two axially opposite ends, a radially inner circumferential sidewall surface and a radially outer circumferential sidewall surface;
the bodies of said anti-extrusion rings, when said sealing device is in said free state, being at least generally frustoconically beveled, and being then so related to the ring of elastomeric material that is sandwiched between them that the anti-extrusion rings axially confront the axially opposite ends of



the ring of elastomeric material to a greater degree toward the radial extent thereof which corresponds to that from which the respective lips extend, said lips also then extending axially generally towards one another at obtuse angles to the respective said bodies;
the sealing device being so constructed and arranged that when received in said annulus at said level and axially compressed, the bodies of the two anti-extrusion rings tend to de-bevel toward greater flatness in a sense which forces the respective lips to contact and progressively deflect against the correspondingly adjacent said cylindrical surface and in resilient sealing engagement therewith while the body of each anti-extrusion ring at the opposite radial extreme thereof from said one radial extreme adjacently confronts the other of said cylindrical surfaces, whereupon continuing axial compression of the sealing device forces the ring of elastomeric material to expand radially both inwards and outwards, into resilient sealing engagement with both of said cylindrical surfaces.

4,349,206

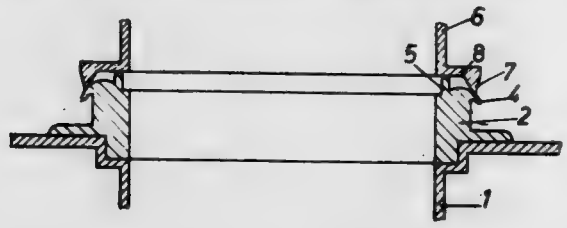
SEALING ARRANGEMENT FOR TUBULAR ELEMENTS OF FLOOR CARE DEVICE

Hans-Peter Simm, Wuppertal; Wieland Gühne, Remscheid, and Klaus Hoffmann, Haan, all of Fed. Rep. of Germany, assignors to Vorwerk & Co. Interholding GmbH, Wuppertal, Fed. Rep. of Germany

Filed Jun. 11, 1981, Ser. No. 272,555
Claims priority, application Fed. Rep. of Germany, Jun. 13, 1980, 8015672[U]
Int. Cl.[3] F16J *15/10, 15/32*
U.S. Cl. 277—207 R 8 Claims

1. A sealing arrangement for sealing two tubular members of a floor care device, the tubular members being axially movable toward and away from one another and arranged to pass a gaseous medium, the sealing arrangement comprising an elastic

ring arranged to be provided on one of said tubular members and having two lips, said lips including radially inner and outer lips located V-shaped and having an end face; and a V-shaped



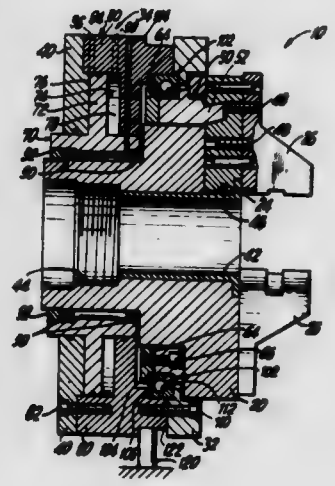
edge arranged to be provided on an end face of the other of said tubular members and cooperating with said radially outer lip of said elastic ring upon movement of the tubular members toward one another.

4,349,207

FLUID ACTUATED CHUCK

Anton Fink, Searingtown, N.Y., assignor to Metrology Systems Corp., Plainview, N.Y.

Filed Nov. 14, 1980, Ser. No. 207,013
Int. Cl.[3] B23B *31/30, 5/34*
U.S. Cl. 279—4 2 Claims



1. A rotatable chuck capable of holding a workpiece and adapted to be rotatably driven by a drive means comprising:

a generally cylindrical body having opposed workpiece holding and driving ends, said body being adapted to be rotated about its longitudinal axis by said drive means connected to its driving end, said body including a plurality of master jaws slidably mounted in radially extending grooves on said workpiece holding end such that said master jaws are radially movable relative to the longitudinal axis of said body, each said master jaw having a keyway opening on the end thereof most distant from the driving end of said body, each said keyway having opposed side walls parallel to the moving direction of said master jaws, each said keyway further including opposed inner and outer bearing walls disposed perpendicular to said side walls and at an acute angle to the longitudinal axis of said body;

an actuator ring concentrically and slidably disposed around the periphery of said body, said actuator ring having a key for each said master jaw, said keys projecting from one side of said actuator ring toward the workpiece holding end of said body and respectively slidably engaged with said master jaw keyways such that axial movement of said actuator ring relative to said body is operative to effect the radial movement of said master jaws, the opposite side of said actuator ring having an annular slot;

a reciprocating piston-cylinder drive assembly rotatably mounted about said body, said drive assembly including a fluid transfer means having first and second channels arranged such that alternate ejection and evacuation of fluids into said cylinder, about said piston, causes the axial movement of said cylinder relative to said chuck body, said drive assembly further including an integrated array of lubrication channels to facilitate the introduction of lubricants to reduce friction between said body and said drive assembly, said drive assembly further including an annular lip; and

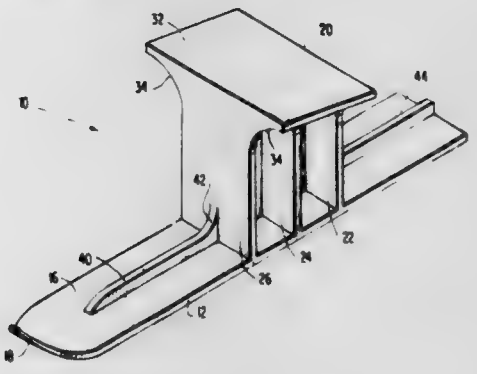
radial thrust bearing means coupled between said reciprocating means and said actuator means, said radial thrust bearing means including a radially outer circular race secured to the annular lip of said drive assembly, and a radially inner circular race secured to the annular slot of said actuator ring, whereby when said body is rotated independently, relative to said piston-cylinder drive assembly, said radial thrust bearing means is operative to transfer the axially directed forces generated by said drive assembly to said actuator ring thereby effecting the radial movement of said master jaws.

4,349,208

UNITARY SKI-SLED

Max H. Merrill, R.F.D. #1, Rutland, Vt. 05701

Filed Jul. 23, 1980, Ser. No. 171,487
Int. Cl.[3] B62B *13/16*
U.S. Cl. 280—12 K 5 Claims



1. A ski-sled, composed of a unitary piece of material molded in a two-piece, mirror-image mold whose halves mate along the longitudinal centerline of the ski-sled, and having:

(a) a runner portion having a substantially planar, lower snow-contacting surface, a substantially planar top surface, and an upwardly curved front tip;

(b) a substantially rectangular and planar seat portion inclined downwardly from its front edge to its rear portion at an angle to the horizontal;

(c) a first planar, transverse, upright support wall portion extending integrally and substantially perpendicularly from the top surface of the runner to the front edge of the seat;

(d) a second, planar, transverse, upright support wal portion extending integrally and substantially perpendicular from the top surface of the runner to the rear edge of the seat;

(e) a third, planar, transverse, upright support wall portion extending integrally from the top surface of the runner to the seat intermediate said first and second support walls; and

(f) a lower guide ridge extending integrally from and along the lower, snow-contacting surface of the runner.

4,349,209

SNOW SHUTTLE

Edward L. Chilzer, 796 E. Main St., Monongahela, Pa. 15063

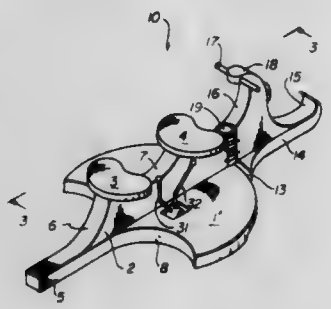
Filed Aug. 11, 1980, Ser. No. 176,762
Int. Cl.[3] B62B *13/04*
U.S. Cl. 280—16 5 Claims

1. A snow-shuttle comprising, in combination:

a frame means for placement on terrain, having seating means on a top portion thereof, a terrain contacting bottom surface, a leading edge of which has an upwardly

turned contour, and a top surface which provides a foot support area, depending ribs on said bottom surface, said seating means includes an upstanding wall member carrying seats thereon, a front face of said wall member having a second portion of pivot area defined by spaced, stacked apertures leaves oriented for interdigitation with a one other portion, and a pintle extending therethrough,

a steering means disposed forwardly of said frame means and articulated thereto, having a terrain contacting runner, handgrips extending from said runner, said one portion pivot area between said frame means and said runner, a



depending rib on said runner having an upwardly curved leading edge, said hand grips connected to said runner through a medial support having at said one portion of said pivot area thereon spaced stacked apertured leaves,

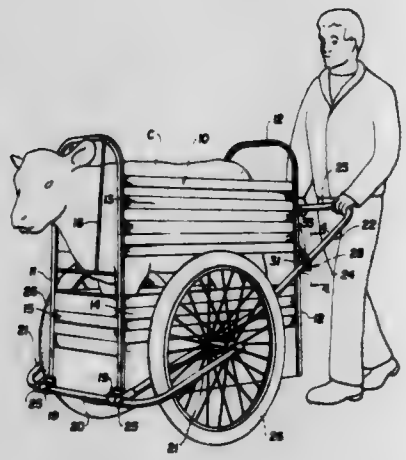
and brake means on said frame means adapted for frictional engagement with the terrain whereby said snow-shuttle is controlled by both said steering means and said brake means, wherein said brake means comprises a reinforcing rod disposed in said frame means, cleat means extending through said rod and frame means, and handle means for orienting said cleat means from a terrain engaging to a non-engaging position.

4,349,210

ANIMAL CART

Kenneth M. Rutt, 2146 Stonecrest Dr., Lancaster, Pa. 17601

Filed Feb. 23, 1981, Ser. No. 237,523
Int. Cl.³ B62B *1/14*
U.S. Cl. 280—47.21 **4 Claims**



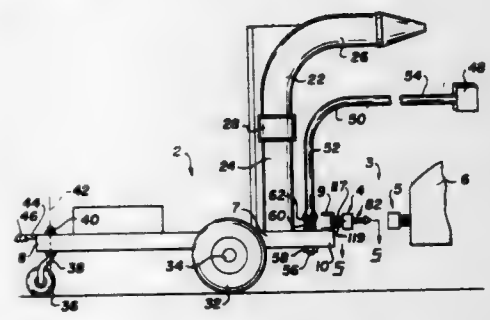
1. An animal cart comprising a box-like body portion of sufficient size to transport a calf and having a gate at one end thereof, a U-shaped supporting yoke pivotally connected to the front of said body portion near the floor thereof, a U-shaped steering and manipulating handle for the cart extending rearwardly thereof for grasping by a walking attendant and including a pair of side arms disposed near and outwardly of the opposite side walls of the body portion and having forward ends connected to said yoke, a pair of ground wheels for the cart journaled between said handle arms and side members of said yoke, and a pair of latches on the rear of said body portion including upwardly opening latching recesses for said handle arms and pivoted keepers which are biased by gravity to active latching positions above said arms when said arms are moved by the walking attendant downwardly into said latching recesses wherein said supporting yoke and said handle are rockable in unison on the axis of said ground wheels to effect raising and lowering of the body portion.

4,349,211

BUMPER HITCH

George N. Cooper, R.R. #1, Site 7, Chase, British Columbia, Canada (V0E 1M0)

Filed Jan. 22, 1979, Ser. No. 5,250
Int. Cl.³ B60D *1/00*
U.S. Cl. 280—481 **11 Claims**



1. A trailer hitch for connecting a trailer to a tractor comprising:

two elongate bumper members, a trailer bumper member connectable to the trailer near one end thereof and a tractor bumper member connectable to the tractor near one end thereof so the trailer bumper member contacts the tractor bumper member when the trailer is connected to the tractor;

a male hitch member pivotally connected to a first said bumper member and extending outwardly therefrom;

a recess in a second said bumper member for receiving the male hitch member;

each bumper member having two ends, the male hitch member and the recess being midway between the ends of the bumper members;

latch means connected to the second bumper member for releasably securing the male hitch member, and

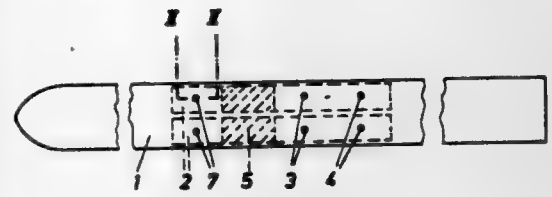
fluid cylinders operatively connected to the latch means for securing or releasing the male hitch member.

4,349,212

HOLDING PLATE, IN PARTICULAR FOR SKI BINDINGS

Josef Svoboda, Schwechat, Austria, assignor to TMC Corporation, Baar, Switzerland

Filed Aug. 28, 1979, Ser. No. 70,290
Claims priority, application Austria, Aug. 28, 1978, 6255/78
Int. Cl.³ A63C *5/00*
U.S. Cl. 280—610 **6 Claims**



1. In a ski construction having an electrically conductive base plate, an electrically operable load on a ski binding which is mounted on said base plate, a battery operatively connected to said load to provide the electrical power necessary to effect an operation of said load, the improvement comprising an electrically conductive anchor plate means embedded in said ski and being vertically spaced from and insulated from said base plate, an electrically conductive fastening means for fastening said ski binding to at least one of said base plate and said anchor plate means, said battery having a positive terminal electrically connected to one of said base plate and said anchor

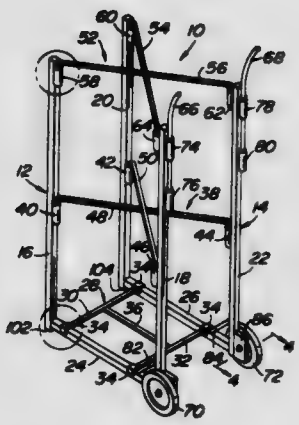
plate means and a negative terminal electrically connected to the other of said base plate and said anchor plate means, said load having at least first and second electrical conductors thereon, said first electrical conductor being electrically coupled to said fastening means, said second electrical conductor being electrically coupled to said other of said base plate and said anchor plate means.

4,349,213

FIREWOOD RACK AND CARRIER

Ronald W. Hirsch, 208 Ellis St., Haddonfield, N.J. 08033

Filed May 19, 1980, Ser. No. 151,086
Int. Cl.³ B62B *1/00*
U.S. Cl. 280—638 **10 Claims**



1. A rigid rack for stacking and supporting firewood comprising:

a pair of upright side frame members for holding firewood therebetween, each frame member having a pair of legs extending upwardly from opposite ends of a bight portion;

a first bracket means having open spaces, said first bracket means attached to the bight portions of said frame members for holding said bight portions in fixed spaced relation and providing a horizontal support for a first stack of firewood;

a second bracket means having open spaces and comprised of at least two elements, said second bracket means being attached to said frame members between the ends of said frame members for holding each leg of each frame member in fixed spaced relation to each other thereby defining an upper limit for a lower compartment for said first stack of firewood therebelow and providing a horizontal support for a second stack of firewood thereabove; and

a third bracket means having open spaces and comprised of at least two elements, said third bracket means being attached to said frame members adjacent the upper ends of said frame members for interconnecting and holding each leg of each frame member in fixed spaced relation to each other thereby defining an upper limit for an upper compartment for the second stack of firewood therebelow.

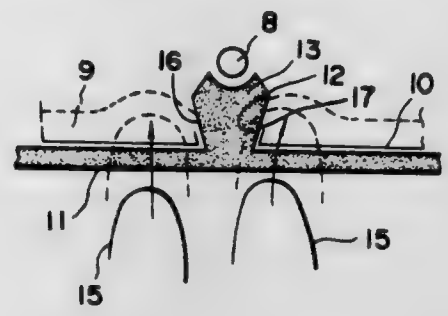
4,349,214

KNEE PROTECTOR

Hideho Inasawa, and Hideoki Matsuoka, both of Yokohama, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Feb. 5, 1980, Ser. No. 118,824
Claims priority, application Japan, Feb. 21, 1979, 54-22207[U]
Int. Cl.³ B60R *21/04*
U.S. Cl. 280—752 **6 Claims**

1. A knee protector for use in a passenger car equipped with an instrument panel and a steering colum installed near the instrument panel, comprising first and second curved panels made of material easily crushed as compared with the steering column, the first and second panels being independent and separate to each other, the steering column being aligned with a space between the first and second panels, the first and second panels being mounted under the instrument panel, and a pad made of material that absorbs shock by deformation of the pad, the pad having a pair of side portions covering the upper portion of the first and second panels, the pad having a center portion protruding through said space and extending downwardly along the underside of the portion of the steering column behind the first and second panels in a manner that, in the event of collision, the center portion of the pad first abuts



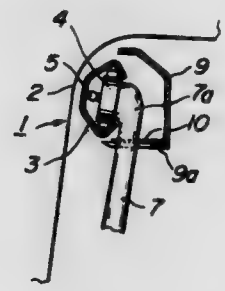
against the steering column and both the first and second panels are deformed while remaining separate from the steering column so that the knees of a driver are guided by the pad and move toward the first and second panels and away from the steering column, said center portion of the pad having diverging side walls and converging upper and lower walls, the upper wall being positioned closely adjacent the steering column when the pad is arranged in position.

4,349,215

COVERING STRUCTURE OF A GUIDE RAIL FOR A SEAT BELT

Hideoki Matsuoka, Yokohama, and Yoshinobu Kondo, Kosai, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama and Fuji Kiko Co., Ltd., Tokyo, both of, Japan

Filed Feb. 1, 1980, Ser. No. 117,442
Claims priority, application Japan, Feb. 5, 1979, 54-13972[U]
Int. Cl.³ B60R *21/10*
U.S. Cl. 280—804 **1 Claim**



1. A covering structure for a guide rail provided on an inner wall of a vehicle body and having an opening for slideably receiving therein a slide member connected to a seat belt, comprising: a cover and covering means normally closing said opening of said guide rail but opening the same when said slide member moves therein, said covering means being formed by yarn-like bodies extending horizontally from a lower edge of said cover.

4,349,216

FLOATING LOCK MOUNT FOR A SEAT BELT RETRACTOR

Regis V. Pilarski, Utica, Mich., assignor to The Firestone Tire & Rubber Company, Akron, Ohio

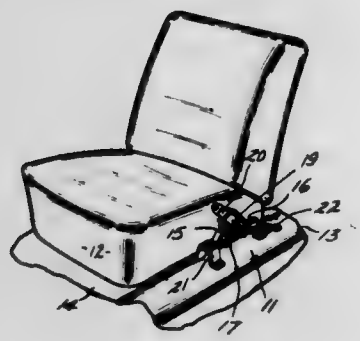
Filed Sep. 22, 1980, Ser. No. 189,949
Int. Cl.³ B60R *21/10*
U.S. Cl. 280—807 **6 Claims**

1. A floating mount for a seat belt retractor serving an adjustable seat:

an elongate track for securing to a vehicle floor adjacent an

adjustable seat and having lock means thereon for substantially its entire length;

a retractor frame supporting said retractor and including a track mount portion slidably mounted on said track and including a lock engaging element normally spaced apart from said lock means on said track;



a resilient coupling secured to said retractor frame and having a seat securing portion for connection to an adjustable automotive seat; and

a fulcrum between said track and retractor frame and upon which said retractor frame tilts upon sudden lifting force whereby said lock engaging element is lifted into lock engagement with said lock means on said track.

4,349,217

DEFLECTION FITTING FOR A SAFETY BELT

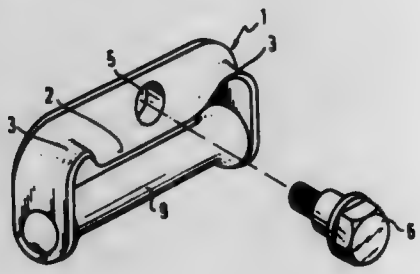
Artur Föhl, Schorndorf-Haubersbronn, Fed. Rep. of Germany, assignor to REPA Feinstanzwerk GmbH, Alfdorf, Fed. Rep. of Germany

Filed Feb. 14, 1980, Ser. No. 121,474

Claims priority, application Fed. Rep. of Germany, Feb. 15, 1979, 2905862

Int. Cl.³ B60R *21/10*

U.S. Cl. 280—808 9 Claims



1. Deflection fitting for a safety belt, comprising a U-shaped deflection fitting bracket formed of a sheet metal strip having edges formed along the length thereof, said U-shaped bracket defining two end portions, a middle portion and corners between said middle portion and end portions, said edges being rounded at least at said corners, a rounded belt deflection bar extending from one end portion of said bracket to the other, and means for fastening said middle portion of said bracket to a vehicle frame, said middle portion having a bend formed therein from one of said edges to the other across the width of said bracket for accommodating said fastening means.

4,349,218

COPYING MATERIAL EMPLOYING FLUORAN COLOR FORMERS

Robert Garner, 20 Tor Avenue, Greenmount, Bury, Lancashire BL8 4HG, England, and Jean C. Petitpierre, Aeussere Reben 322, 4303 Kaiseraugst, Switzerland

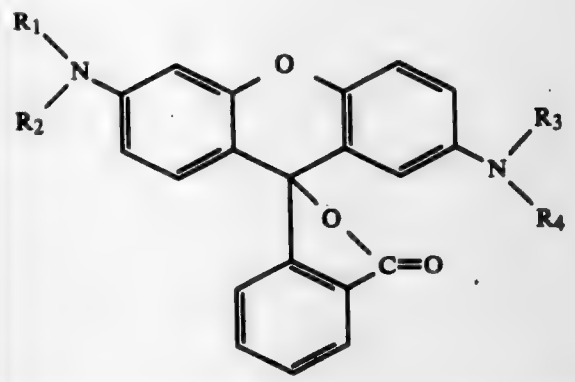
Division of Ser. No. 944,219, Sep. 20, 1978, abandoned, which is a continuation-in-part of Ser. No. 822,477, Aug. 8, 1977, abandoned, which is a continuation of Ser. No. 670,780, Mar. 26, 1976, abandoned, which is a continuation of Ser. No. 471,269, May 20, 1974, abandoned. This application Oct. 3, 1979, Ser. No. 81,407

Claims priority, application United Kingdom, May 21, 1973, 24079/73

Int. Cl.³ B41M *5/16, 5/18, 5/22*

U.S. Cl. 282—27.5 8 Claims

1. A pressure-sensitive copying material containing a support coated with a color forming fluoran compound of the formula



wherein R_1 and R_2 represent alkyl of 1 to 4 carbon atoms, R_3 represents n-alkyl of 8 to 12 carbon atoms and R_4 represents hydrogen, n-alkyl of 6 to 12 carbon atoms or benzyl.

4,349,219

WELDING MUFF OF THERMOPLASTIC MATERIAL

Werner Sturm, Hägendorf, Switzerland, assignor to Von Roll A.G., Switzerland

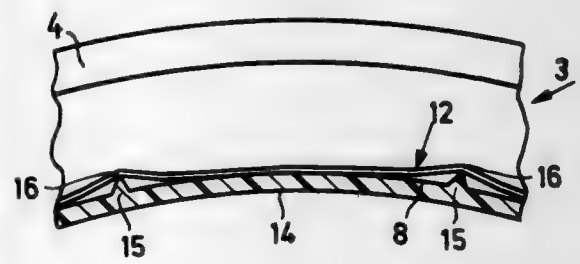
PCT No. PCT/CH79/00054, § 371 Date Dec. 21, 1979, § 102(e) Date Nov. 28, 1979, PCT Pub. No. WO79/00961, PCT Pub. Date Nov. 15, 1979

PCT Filed Apr. 19, 1979, Ser. No. 177,762

Claims priority, application Switzerland, Apr. 21, 1978, 4344/78

Int. Cl.³ F16L *47/02*

U.S. Cl. 285—21 10 Claims



1. An electric welding muff for joining thermoplastic line elements, comprising

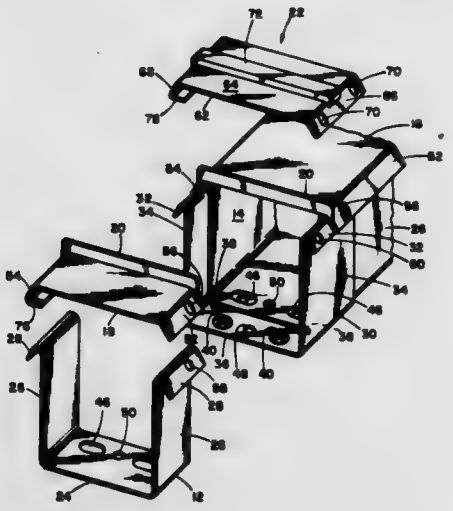
a cylindrical welding sleeve formed of thermoplastic material; and

an electrical resistance heating wire wound in a plurality of turns following a generally circular course and forming a helix coaxial with said sleeve, said turns being embedded in said sleeve adjacent a lateral surface thereof and having peripherally spaced deformation points diverging from said circular course of said turns.

4,349,220
RAINTIGHT WIREWAY

James C. Carroll, Hamilton, Ohio, and Donald L. Chapman, Liberty, Ind., assignors to Square D Company, Palatine, Ill.

Filed Aug. 28, 1980, Ser. No. 182,304
Int. Cl.[3] F16L *45/00*
U.S. Cl. 285—121 19 Claims

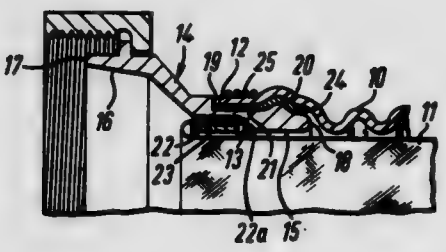


1. A gangable raintight wireway assembly comprising:
a plurality of U-shaped troughs each having a bottom wall for end to end engagement and side walls for end to end engagement with a respective wall of the other trough, said side walls forming side legs which terminate in upper edges,
a trough cover for each trough having a top wall and longitudinal edges, said top wall extending between said side legs and a drip hood flange along each longitudinal edge of said top wall extending outwardly and downwardly from said top wall to a position below the upper edge of said side walls,
an end flange for each cover transverse to said drip hood flanges and extending upwardly from said top wall and outwardly beyond the edges of said top wall to a position below the upper edge of said side walls for facing a flange on an adjacent cover and for preventing the entrance of water into a respective trough between ends of said cover,
a connector cover having a top wall overlappingly engaging adjacent cover end portions with said top wall having drip hood flanges each overlapping engaging end portions of adjacent drip hood flanges of adjacent covers and an upwardly extending boss in said cover top wall having a recess for receiving the upwardly extending facing flanges of adjacent covers,
and means for securing said connector cover to said trough covers and said troughs.

4,349,221
END FITTING ASSEMBLY FOR A CONDUIT

Roy J. Kirby, Slough, England, assignor to Superflexit Limited, Slough, England

Filed Jan. 9, 1980, Ser. No. 110,611
Int. Cl.[3] F16L *39/02*
U.S. Cl. 285—149 4 Claims

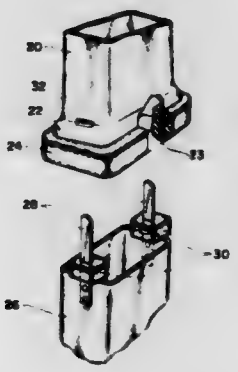


1. A conduit and end fitting assembly, comprising a plastic tube, a coaxial tubular screen spaced radially inwardly of the said plastic tube and substantially concentric therewith, said end fitting having a first end portion comprising means for removably connecting the said assembly to a mating fitting and having a tubular portion of smaller diameter than said first end portion disposed between end portions of said screen and of said plastic tube, said tubular portion of the end fitting being integral with said first end portion of the fitting through an annular shoulder and terminating in an opposite end, a radially outwardly projecting annular bead on said tubular portion between said shoulder and said opposite end, said plastic tube being disposed about said tubular portion and abutting against said shoulder, a gasket disposed between said tubular portion and said plastic tube, means compressing said gasket between the plastic tube and said tubular protion to form a fluid tight seal, said tubular portion having an annular recess in its surface opposite said shoulder, and a sleeve disposed in said recess with its inner surface disposed on the screen and one of said ends of the screen folded over the external surface of the sleeve forming an interference fit in said recess.

4,349,222
PNEUMATIC DUCT CONNECTION

Masaru Takasaki, Yokohama, and Keiichiro Imatomi, Fuji, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Oct. 23, 1980, Ser. No. 199,885
Claims priority, application Japan, Oct. 25, 1979, 54-148026[U]
Int. Cl.[3] F16L *21/02*
U.S. Cl. 285—363 3 Claims



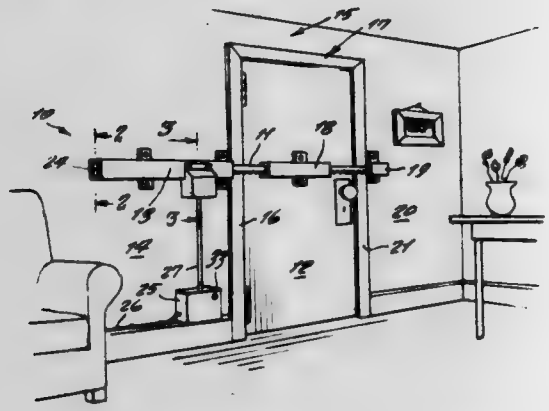
1. A pneumatic duct comprising:
a first conduit having an enlarged diameter receiving portion formed at one end thereof and an aperture formed in said receiving portion;
a second conduit having an external diameter smaller than the internal diameter of said receiving portion, said second conduit being telescopically inserted into said receiving portion;
a bendable strip fixed to said second conduit to project beyond the end thereof, said strip and aperture being adapted so that upon insertion of said second conduit into said receiving portion said strip projects through said aperture and thereafter is bent to connect said first and second conduits;
a soft resilient sealing block disposed on said strip which abuts the inner surface of said receiving portion to seal said aperture and limit the axial movement of said first and second conduits relative to each other; and
a soft resilient sealing member disposed about the mouth of said receiving portion for sealing the gap therebetween and limiting the radial movement of said second conduit with respect to said first conduit.

4,349,223

BURGLAR PROOF BOLT

Nancy R. Spector, 75-11 188th St., Flushing, N.Y. 11366

Filed Jul. 25, 1980, Ser. No. 172,285
Int. Cl.[3] E05C *19/00*
U.S. Cl. 292—259 R 1 Claim



1. A burglar-proof bolt assembly, comprising in combination, a first bracket affixed on a wall inside a home at one side of an entry door, a second bracket affixed on a wall at an opposite side of said door, and a third bracket secured to an inner side of said door, said brackets being aligned, and a bolt stored in said first bracket being slidable through said second and third brackets so as to secure said door from an intruder outside; an electric motor mounted on said wall to which said first bracket is affixed said motor being connected to an electric power of said home, a gear driven by said motor engaging a toothed rack along said bar; and a remote control unit carried by a resident when outside of said home, said remote control unit including means to activate said motor for sliding said bolt and lock or unlock said door.

4,349,224

ANIMAL WASTE COLLECTING AND DISPOSING APPARATUS

Ted M. Shiozaki, 5349 N. Meade Ave., Chicago, Ill. 60630

Filed Jun. 18, 1980, Ser. No. 160,665
Int. Cl.[3] A01K *29/00*
U.S. Cl. 294—1 BA 23 Claims



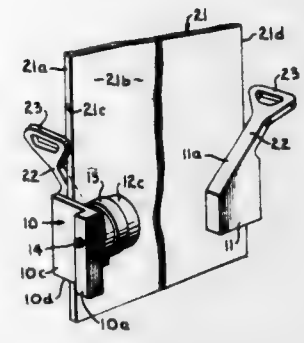
1. Apparatus for collecting and disposing of animal waste comprising elongated handle means having a handle portion and a working end portion, said working end portion having a socket, frame means carried at said working end portion and having a stem insertable into said socket, said frame means being adapted to receive and retain a bag for collecting animal waste, means coacting with said stem for releasably retaining the latter engaged with the socket in said working end portion of said handle means, and ejecting means in said working end portion for ejecting the stem of said frame means from said socket when said releasable retaining means releases said stem, whereby said frame means, said collecting bag and its contents can be simultaneously disengaged and ejected from said working end portion so that a user of said apparatus does not have to touch said frame means or said collecting bag in order to dispose of the same after use.

4,349,225

SHEET GRIPPING AND HANDLING DEVICE

Darryl L. Collins; Donna L. Collins, both of 4631 S. Norfolk Way, Aurora, Colo. 80015; Merton C. Knapp, and Evalyn L. Knapp, both of 108 S. Grant, Mt. Ayr, Iowa 50854

Filed Aug. 26, 1980, Ser. No. 181,732
Int. Cl.[3] B66C *1/48*
U.S. Cl. 294—16 18 Claims



1. A device for gripping and lifting the straight, vertically positioned edge of a rigid, substantially rectangular sheet or panel which is being held in substantially vertical orientation, with two substantially parallel side edges thereof in substantially horizontal position and two substantially parallel end edges thereof in substantially vertical position, comprising, in combination:

a first, normally vertical wall operative to abut against and frictionally engage a first zone of one side face of the panel adjacent one end edge thereof,

a normally substantially vertical end wall operative to abut against said one of the said sheet end edges,

the first and end walls connected at right angles to one another to form an L shaped structures in plan view with the inboard faces of said walls being next to one another and said walls having upper and lower ends thereto,

an off-center, cylindrical cam pivotally mounted on a shaft carried by the said end wall at substantial right angles thereto and spaced away from said first wall adapted to substantially non-penetratingly, frictionally engage a second zone of the other side face of said panel also adjacent said end edge in opposition to said first wall engagement,

said cam pivotable around its axis from a position upwardly spaced away from said first wall downwardly to a position spaced closer thereto to engage, in cooperation therewith, the first and second zones of said side faces of the panel therebetween,

stop means on the end wall below the cam limiting its pivot downwardly over top dead center relative to said first wall in a position where the cam is substantially in its closest possible approach to said first wall,

resilient means on said device normally biasing the cam downwardly around its pivot against the said stop means, and

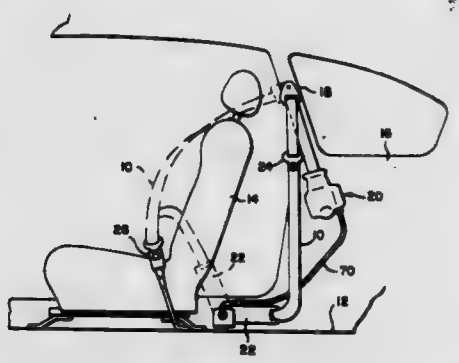
a rigid loop handle rigidly and closely connected at its lower end to one of the upper inboard end of the first wall and an upper portion of the end wall, the top portion of said handle normally horizontal in operating position and spaced backwardly of the plane of the end wall outer face, whereby to clear the hand of the user gripping the handle from the end edge of the panel gripped, yet provide a horizontal, positive grip closely adjacent the engagement and the end edge of the panel or sheet.

4,349,226

SEATBELT SYSTEM

Eiichi Kinaga, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed May 13, 1980, Ser. No. 149,473
Int. Cl.[3] A47C *15/00*; B65N *75/48*
U.S. Cl. 297—475 10 Claims



1. A seatbelt system for securing the safety of an occupant of a vehicle by restraining the occupant in an emergency of the vehicle, which comprises:

a frame;

a take-up shaft which is axially supported by said frame fastened to the vehicle body, and winds up one end of an occupant restraining seatbelt;

a first spring coupled at one end to said take-up shaft which generates a force on the take-up shaft to wind-up the belt;

a gear wheel supported axially by the frame, and to which the other end of the said first spring is anchored;

a second spring having a force larger than the said first spring with one end anchored to the gear wheel and the other end anchored to the frame, whereby said second spring generates a larger winding-up force than the first spring for the take-up shaft to wind-up the belt;

an anchor plate to which a part of the occupant restraining belt is anchored, said anchor plate being in a first position when the belt is not applied to the occupant and being in a second position during the application of the belt to the occupant; and

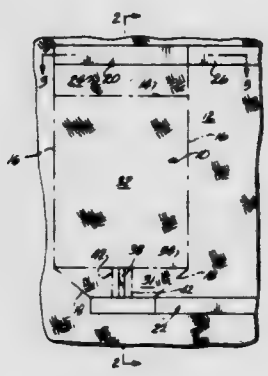
a locking device which prevents rotation of said gear wheel when said anchor plate is in said second position, whereby during the application of the seatbelt to the occupant, only the weak acceleration of the first spring is transmitted to the take-up shaft thereby to reduce the feeling of pressure on the occupant.

4,349,227

MINING SYSTEM FOR IN SITU OIL SHALE RETORTS

William D. Langford, Clifton, Colo., assignor to Occidental Oil Shale, Grand Junction, Colo.

Continuation of Ser. No. 67,921, Aug. 20, 1979, abandoned. This application Feb. 12, 1981, Ser. No. 234,014
Int. Cl.[3] E21C *41/10*
U.S. Cl. 299—2 24 Claims



1. A method for recovering liquid and gaseous products from an in situ oil shale retort formed in a retort site in a subterranean formation containing oil shale, such an in situ oil shale retort containing a fragmented permeable mass of formation particles containing oil shale, the method comprising the steps of:

excavating an upper level void in such formation adjacent an upper portion of the retort site, the upper level void providing access to substantially the entire horizontal cross section of the fragmented mass being formed;

excavating a lower level drift in such formation adjacent a lower portion of the retort site;

excavating an undercut in a lower portion of the retort site including at least a portion at elevations above the lower level drift, the undercut opening into the lower level drift and being larger in vertical cross section than the lower level drift, and leaving a zone of unfragmented formation within the retort site above the undercut;

providing one or more vertical blasting holes in the zone of unfragmented formation;

explosively expanding the zone of unfragmented formation in lifts for forming a fragmented permeable mass of formation particles containing oil shale within the retort site, such explosive expansion being carried out by repeating the steps of:

placing explosive in the vertical blasting holes from access provided by the upper level void;

detonating such explosive for explosively expanding such a lift to form at least a portion of the fragmented mass below a portion of the zone of unfragmented formation remaining within the retort site; and

withdrawing formation particles from the fragmented mass through the lower level drift to provide a void space of selected void volume below such a remaining zone of unfragmented formation prior to explosively expanding the next lift, the void volume of said void space being determined by access provided from the upper level void by such a vertical blasting hole extending through such a remaining portion of the zone of unfragmented formation;

establishing a retorting zone within the fragmented mass and advancing the retorting zone downwardly through the fragmented mass for producing liquid and gaseous products of retorting; and

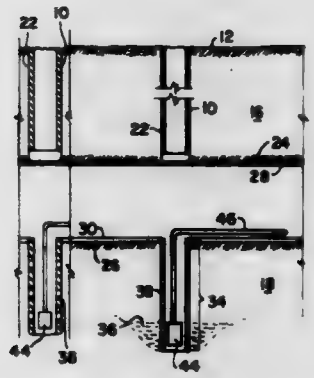
withdrawing the liquid and gaseous products of retorting from a lower portion of the fragmented mass.

4,349,228

METHOD FOR DEWATERING A SUBTERRANEAN FORMATION VIA A BOREHOLE

Edward C. Rohde, Fairmont, W. Va., assignor to Consolidation Coal Company, Pittsburgh, Pa.

Filed Dec. 7, 1979, Ser. No. 101,354
Int. Cl.[3] E21C *41/00*
U.S. Cl. 299—10 3 Claims



1. A method of installing a perforated casing beneath a subterranean seam of a carbonaceous deposit and mining through the deposit in the area of the casing comprising,

providing a borehole said borehole comprising a seam portion extending through said seam

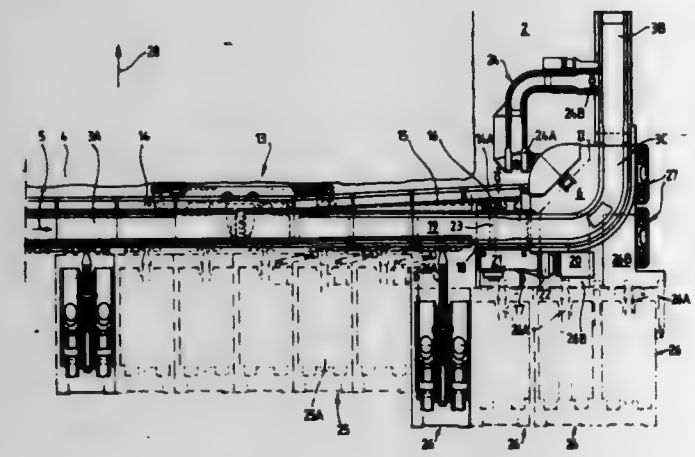
and a lower portion below said seam portion,
providing a perforated casing in said lower portion of said borehole, said casing having a top portion;
providing a packer in said top portion of said perforated casing,
mining said seam, and then removing said packer from said top portion of said perforated casing, providing a pumping means in said perforated casing in said lower portion of said borehole, thereafter pumping water from said lower portion of said borehole.

4,349,229

LONGWALL MINERAL MINING INSTALLATION

Kunibert Becker, Werl, and Herbert Beyer, Wern, both of Fed. Rep. of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Lunen, Fed. Rep. of Germany

Filed Jan. 27, 1981, Ser. No. 229,026
Int. Cl.³ E21C *27/34*
U.S. Cl. 299—32 **14 Claims**



1. A longwall mineral mining installation comprising a scraper-chain conveyor having a scraper assembly, a first straight conveyor portion extending along the longwall working, a second straight conveyor portion extending along a roadway positioned at one end of the longwall working, and a curved conveyor section connecting the two straight conveyor portions, a guide assembly for guiding the scraper assembly around the curved conveyor section, a guide fixed to the face side of the first straight conveyor portion, a winning machine reciprocable along the guide, a drive station mounted on the goaf side of the first straight conveyor portion in the region of the curved conveyor section, a drive sprocket rotatably mounted on the face side of the first straight conveyor portion in said region, the drive sprocket driving the winning machine via a drive chain, and a drive shaft drivably connecting the drive station and the drive sprocket, wherein the drive station includes a drive motor whose axis of rotation is substantially parallel to the longitudinal axis of the first straight conveyor portion, and the guide is angled away from the first straight conveyor portion in said region.

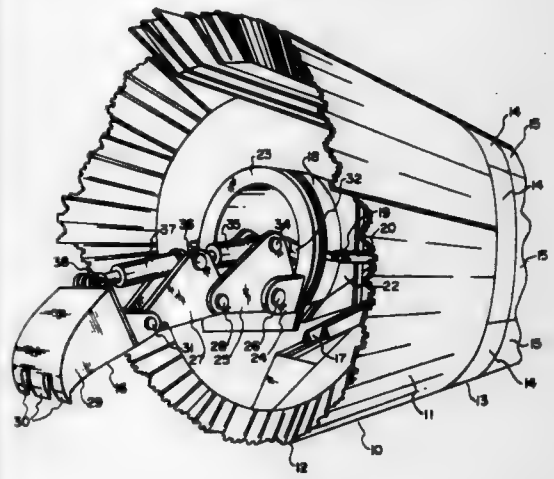
4,349,230

TUNNEL BORING MACHINE

Herman Hamburger, Geneva, and Robert G. Dillingham, Bolingbrook, both of Ill., assignors to Zokor Corporation, Aurora, Ill.

Filed Aug. 10, 1979, Ser. No. 64,162
Int. Cl.³ E21D *9/08*
U.S. Cl. 299—33 **8 Claims**

1. In a tunnelling machine of the type including a hollow shield having a cross section substantially the same as that of the tunnel in which an articulated excavator is mounted, the improvement comprising; a non-rotatable outer housing means mounted to said shield for longitudinal movement therein,
bearing means supported by said outer housing means and having an open center aligned with said outer housing means,
an inner housing means mounted on said bearing means for rotation about a longitudinal axis of said shield,
said inner housing means having excavator mounting means on its forward portion and a rearward portion extending through said bearing means and into said outer housing means, boom cylinder mounting means located at the rearward portion of said inner housing means,



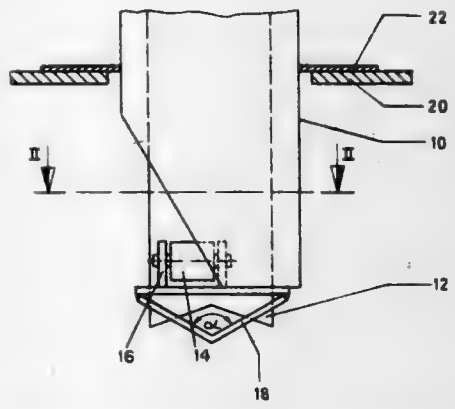
excavator means including a boom means and bucket means pivotally mounted on said excavator mounting means for pivotal movement about an axis transverse to the longitudinal axis of said shield,
boom cylinder means for articulating said excavator means having its forward portion pivotally mounted on said boom means and extending rearwardly through the open center of said bearing means and having its rearward portion pivotally connected to said boom cylinder mounting means at the rearward portion of said inner housing means.

4,349,231

CHISEL ALIGNMENT UNIT FOR A CRUST BREAKING FACILITY

Edwin Gut, Steg; Erwin Arnold, Venthone; Gottfried Maugweiler, and Hans Friedli, both of Steg, all of Switzerland, assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Sep. 5, 1980, Ser. No. 184,481
Claims priority, application Switzerland, Sep. 10, 1979, 8149/79
Int. Cl.³ C25C *3/00*
U.S. Cl. 299—69 **11 Claims**



1. Chisel alignment unit for a facility to break open the crust of solidified electrolyte on an electrolytic cell which comprises:
(a) a chisel having at least one flat, vertical alignment surface and an underside;
(b) a mechanically stable alignment box extending from the underside of the chisel in its non-working position wherein said chisel passes through said alignment box;

(c) at least one alignment roll having a horizontal longitudinal axis secured to the alignment box and engaging the alignment surface; and

(d) an electrolyte wiper mounted on the alignment box below the alignment rolls and extending across the whole width of said alignment surface and operative to prevent the crust from coming between the chisel and alignment roll,

wherein said unit is operative to align and guide said chisel and prevent rotation thereof.

4,349,232

TRENCH HEWING TOOL ASSEMBLY WITH CUTTER GUARD ATTACHMENT

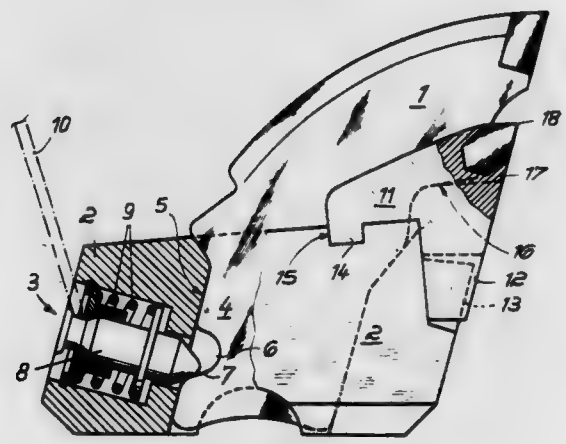
Ernst Braun; Gert Braun, both of Essen-Heisingen, and Karlheinz Wetzchewald, Essen-Kettwig, all of Fed. Rep. of Germany, assignors to Halbach & Braun, Fed. Rep. of Germany

Filed Dec. 11, 1980, Ser. No. 215,438

Claims priority, application Fed. Rep. of Germany, Dec. 13, 1979, 2950108

Int. Cl.³ E21C *35/18*

U.S. Cl. 299—92 **6 Claims**



1. A trench hewing tool assembly comprising:

a cutting blade holder having a shank receiving opening and at least one retaining recess;

a cutting blade having a shank disposed in said shank receiving opening, said shank having an inclined wall recess with an inclined wall on one side of said shank;

said cutting blade having a cutting edge member connected thereto facing in a hewing direction;

a tapered clamping bolt connected to said cutting blade holder extending into said inclined wall recess and bearing against said inclined wall of said cutting blade shank for retaining said cutting blade in said shank receiving opening;

said cutting blade holder having a projection extending therefrom spaced from said cutting blade; and

a guard member having a lateral legs straddling said projection and at least one claw engaging said retaining recess of said cutting blade holder, said guard member having a locking groove receiving said cutting blade.

4,349,233

METHOD AND APPARATUS FOR CONTROLLING WHEEL SLIP ON DIFFERENTIALLY MOUNTED WHEELS

David E. Bullard, Washington, and Allen D. Myers, Decatur, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/00538, § 371 Date May 7, 1980, § 102(e) Date May 7, 1980, PCT Pub. No. WO81/03151, PCT Pub. Date Nov. 12, 1981

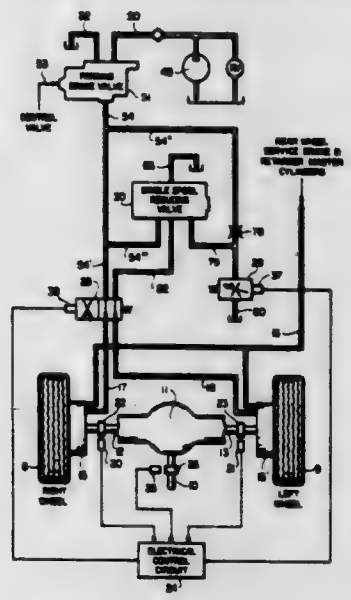
PCT Filed May 7, 1980, Ser. No. 245,231

Int. Cl.³ B60T *8/02*

U.S. Cl. 303—96 **12 Claims**

1. In an anti-slip apparatus for balancing the power transfer between a pair of driven wheels (8), (9) when one of the wheels loses traction and rotates faster than the other, said apparatus having braking means (15) for braking the wheels (8), (9) and generating means (20), (21), (24) for generating a slip signal corresponding to any difference in the rotational speeds between the wheels (8), (9), wherein the improvement comprises:

hydraulic actuating valve means (28), (30) for individually actuating said braking means (15) to minimize any rotational speed difference between the wheels (8), (9), said



actuating valve means (28), (30) being connected to a source of hydraulic pressure (49) and to said braking means (15); and,

hydraulic modulating valve means (29) for modulating said actuating valve means (28), (30) in response to the slip signal to proportionally vary the braking force individually applied to the wheels (8), (9) by the actuating valve means (28), (30).

4,349,234

WEAR RESISTANT WHEEL FOR ENDLESS TRACK

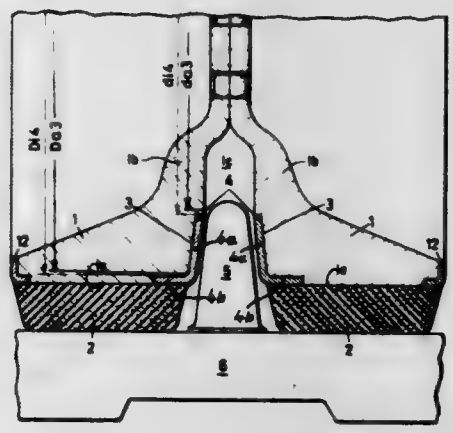
Ewald Hartmann, Cologne, Fed. Rep. of Germany, assignor to Clouth Gummiwerke Aktiengesellschaft, Cologne, Fed. Rep. of Germany

Continuation of Ser. No. 914,188, Jun. 12, 1978, abandoned, which is a continuation of Ser. No. 724,973, Sep. 20, 1976, abandoned. This application Dec. 20, 1979, Ser. No. 105,499

Claims priority, application Fed. Rep. of Germany, Sep. 19, 1975, 2541776

Int. Cl.³ B62D *55/12*

U.S. Cl. 305—56 **3 Claims**



1. A wheel specifically for use with an endless track vehicle which wheel operates with a toothed track having a plurality of teeth, said wheel comprising:

first and second spaced rims each having a cylindrical tire supporting surface and a depending inwardly extending flange, wherein the flanges have opposed spaced apart portions which form a radially opening slot into which the

teeth of the toothed track are received, each of the flanges having a radially positioned recess extending partially into said spaced apart portions and opening into the slot, the recesses joining the cylindrical tire supporting surface to form a circular shoulder.

a unitary, wear resistant ring heat shrunk onto each of said rims; each ring including a cylindrical portion connected at a juncture to an annular flange portion, the cylindrical portion of each ring being heat shrunk over the cylindrical surface of the rim upon which the ring is mounted and extending slightly past the edge of the cylindrical surface before termination; the annular flange portion of each ring nesting within the respective recess in the spaced apart portion of the rim flange and being heat shrunk into engagement therewith, and the junctures between the cylindrical portions and flange portions of the rings being heat shrunk over the shoulders of the rims, said flange portion extending substantially parallel to the extent of said teeth of the toothed track.

4,349,235

CATHODE-RAY TUBE SOCKET SUBSTRATE

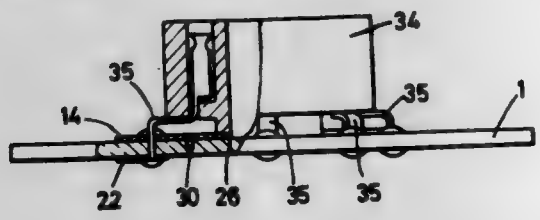
Satoshi Makara, Fukui, Japan, assignor to Murata Manufacturing Co., Ltd., Japan

Filed Aug. 15, 1980, Ser. No. 178,684

Claims priority, application Japan, Aug. 23, 1979, 54-116479[U]; Sep. 3, 1979, 54-122346[U]

Int. Cl.³ H01R *13/652*

U.S. Cl. 339—14 T **5 Claims**



1. A cathode-ray tube socket substrate comprising an insulation substrate, a plurality of through holes provided in predetermined locations on the insulation substrate, a plurality of terminal electrodes provided at least on one face of the insulation substrate so as to encircle the through holes, a cathode-ray tube socket mounted on the insulation substrate with its terminals extending beyond the reverse side of the socket body being inserted into the respective through holes and securely connected to the respective electrodes around said through holes, cathode-ray tube peripheral circuits composed on the insulation substrate and connected to the required pin terminals of the cathode-ray tube socket respectively, earth electrode mounted on the surface of the insulation substrate where the terminal electrodes are provided, a plurality of discharge electrodes provided so as to oppose the earth electrode and required terminal electrodes among those encircling the through holes, a plurality of recesses provided between the opposed discharge electrodes on the substrate, and a sheathing member mounted on the insulation substrate so as to cover the recesses.

4,349,236

WEATHERPROOF ELECTRICAL JACK ASSEMBLY

Ronald H. Guelden, Shreveport, La., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 6, 1980, Ser. No. 194,424

Int. Cl.³ H01R *13/52*

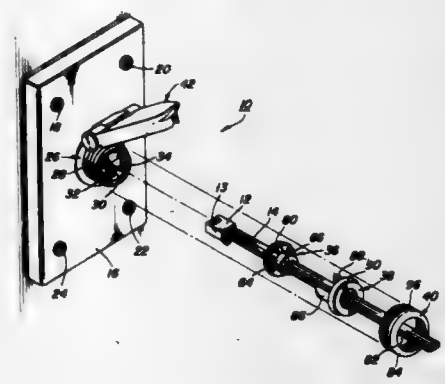
U.S. Cl. 339—44 M **5 Claims**

1. An electrical jack assembly (10) adapted to receive a modular telephone plug (12) and cord (14) characterized in

a jack frame (26) having an externally threaded cylindrical sleeve (28) internally defining a substantially rectangular jack opening (30), said sleeve (28) also having at least one slot (32) positioned on one side of said opening (30);

a grommet means (36) for sealing said jack opening (30) when said modular plug (12) and cord (14) is inserted, said grommet means (36) seating on the end of said sleeve (28) and having a slot (64) corresponding to said slot (32) within said jack frame (26);

a washer (38) adapted to encircle said cord (14), and washer (38) including a projection (86) arranged and dimensioned



to permit entry through said slot (64) of said grommet means (36) and said slot (32) of said jack frame (26); and

a cap (40) adapted to encircle said cord (14) and internally threaded to fit said externally threaded sleeve (28), said cap (40) fitting over said washer (38) and grommet means (36) when said cap (40) is screwed on said sleeve (28).

4,349,237

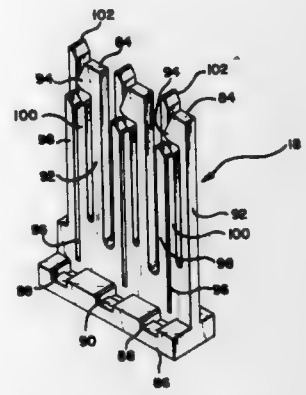
GUIDE SYSTEM FOR CARD EDGE CONNECTORS

Robert F. Cobaugh, Elizabethtown, and Norwood C. Graeff, Harrisburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Jul. 25, 1980, Ser. No. 172,334

Int. Cl.³ H01R *13/20*; H05K *7/14*

U.S. Cl. 339—65 **1 Claim**



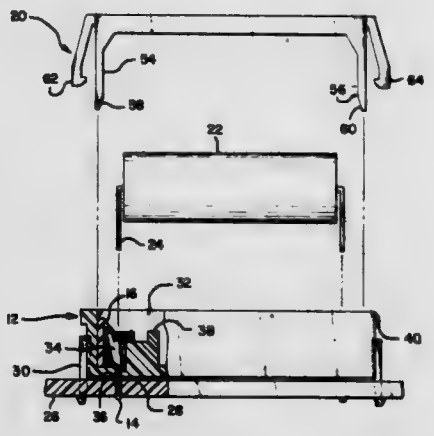
1. A guide system for guiding cards into a card edge connector and for removably retaining them therein, said device comprising, a pair of card guides positioned on each end of a card edge connector, said guides including of a base extending upwardly therefrom a unit consisting of first and second, spaced apart posts defining therebetween a slot for receiving a side of a circuit card, a flexible latch member extending upwardly from the base along side the second post on the side opposite the slot and having a nose extending across the top of the second post and the slot, and further, a third post connected to and horizontally offset from the first post and extending upwardly therefrom, said third post being adapted, in cooperation with the nose on the latch member, to channel the card into the slot and the latch member being adapted to be resiliently cammed away from the slot to admit the card therein into and to removably latch the card therein by the nose being received in an opening which may be in the card.

4,349,238

INTEGRATED CIRCUIT PACKAGE CONNECTOR

Robert L. Showman, Hershey, and Patrick F. Yeager, Middletown, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Nov. 5, 1980, Ser. No. 204,122
Int. Cl.³ H01R *13/629*
U.S. Cl. 339—75 M 10 Claims



1. An electrical connector for integrated circuit packages having a plurality of parallel, spaced leads depending from at least one side thereof, said connector comprising:

a housing defining a cavity with a channel formed in each of two opposite sides of said cavity, a plurality of terminal passages in spaced relation in the bottom of each said channel;

a plurality of terminals each mounted in a respective one of said passages in parallel spaced relationship, each said terminal having a contact arm lying against one wall of said channel and a resilient spring arm normally aligned with and spaced from said contact arm;

an insert member received in each said channel, each said insert member having a plurality of cavities each receiving a respective terminal therein, each said cavity having a lead opening providing an access to said terminal;

hold down means for holding said insert members in said housing while allowing limited relative movement of the insert members within the housing; and

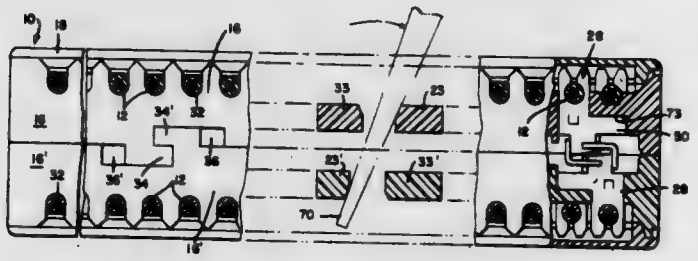
an actuating cover member having a pair of spaced depending sidewalls each having a cam surface on a free end thereof, said cam surfaces engaging said insert members to cause relative sliding movement of said insert members with respect to said housing whereby said movement of said insert members causes said insert members to drive said spring arms of said terminals into engagement with leads of a package received in said connector.

4,349,239

LOW MATING FORCE CONNECTOR FOR CONNECTING GROUPS OF WIRES

Lincoln E. Roberts, Dunedin, and Henry G. Wasserlein, Jr., Seminole, both of Fla., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Jul. 3, 1980, Ser. No. 165,528
Int. Cl.³ H01R *4/24*
U.S. Cl. 339—97 R 4 Claims



1. A multi-contact electrical connector of the type comprising a generally rectangular dielectric housing having a wire receiving face and an opposed mating face and laterally opposed sidewalls and endwalls bounding said faces, a plurality of stamped and formed contact terminals mounted in and extending through said housing, each of said terminals having a wire receiving portion on said wire receiving face and a mating portion on said mating face, said connector being mateable with a complementary connector comprising a complementary housing by mating said mating face of said housing against a complementary mating face of said complementary housing, characterized in that the housing of said connector is identical to the housing of said complementary connector, each said housing having aligning means comprising an L-shaped latch arm integral with each said side wall and extending normally of said mating face, each said latch arm extending partially over an adjacent recess in said sidewall, said latch arms being positioned to fit into a recess in the complementary housing when said mating faces are guided toward each other substantially normally of the planes of said mating faces to a partially mated position in which said housing and said complementary housing are against, but offset from, each other, said latch arms being thereafter interlocked by guiding said housing and complementary housing by movement of said housings parallel to said mating faces into aligned relationship,

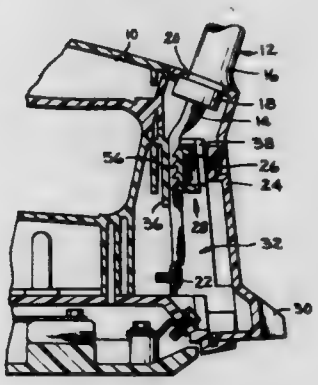
said mating portions of said terminals lie adjacent to but offset from mating portions of terminals in said complementary housing when said housings are in said partially mated position, said mating portions of said terminals being engageable with complementary mating portions of terminals in said complementary housing upon relative movement of said housings from said partially mating position to said fully mated position.

4,349,240

APPLIANCE STRAIN RELIEF

Benjamin H. Bain, Jr., Monroe, Conn., assignor to General Electric Company, New York, N.Y.

Filed Nov. 10, 1980, Ser. No. 205,726
Int. Cl.³ H01R *13/585*
U.S. Cl. 339—103 R 7 Claims



1. In a portable electric appliance cord connected to internal electric terminals by multiple conductors, an improved strain relief assembly between the cord and appliance comprising,

a housing chamber in the appliance at the cord entrance,

a cover over said chamber enclosing the conductors,

a formed pocket in said chamber having a straight rear wall as part of said housing,

a non-parallel sloped wall as part of said housing spaced from the rear wall,

a boss in said pocket formed on the rear wall extending toward the sloped wall defining a pair of spaced conductor channels and an anchor to secure said cover,

a separate barbed wedge-shaped member fitting between said pocket walls straddling the boss and slidable in said channels,

means adjustably securing and aligning said wedge between the cover and rear wall to said boss

whereby the barps clamp the conductors in the channels with a tightening force by said wedge member between

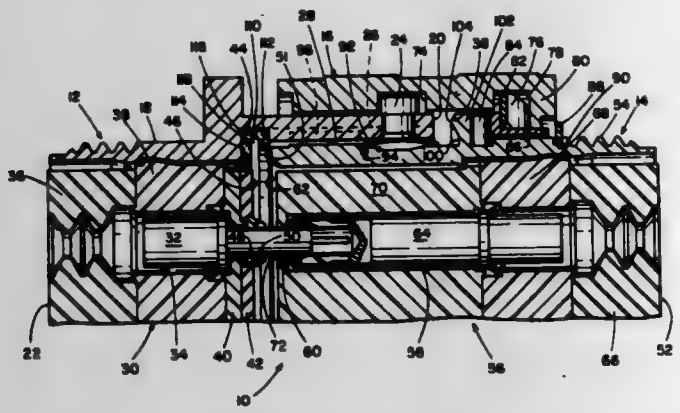
the walls providing strain relief between the cord and terminals.

4,349,241

ELECTRICAL CONNECTOR ASSEMBLY HAVING ENHANCED EMI SHIELDING

Mitchell A. Juris, and Vladimir Tomsa, both of Chicago, Ill., assignors to Bunker Ramo Corporation, Oak Brook, Ill.

Filed May 9, 1980, Ser. No. 148,422
Int. Cl.³ H01R *13/658*
U.S. Cl. 339—143 R **14 Claims**



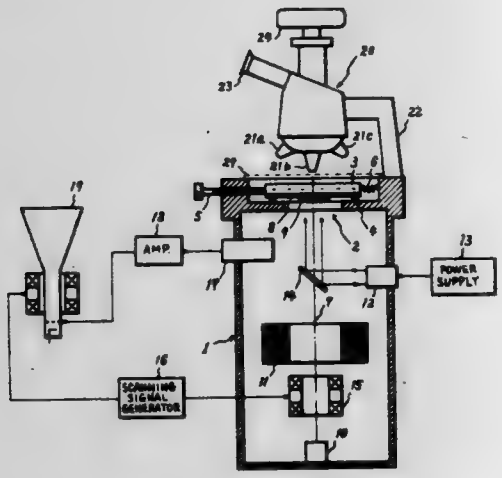
1. An electrical connector assembly comprising:
a separable pair of connector members, each of said connector members having an electrically conductive shell;
means for coupling said connector members in mating engagement, said coupling means having means for resiliently urging said connector shells together; and
means for providing a continuous electrically conductive seal between said connector shells to shield against electromagnetic interference, including a sharp circumferential sealing edge on one of said connector shells, said circumferential sealing edge facing the other one of said connector shells and engaging an annular surface of said other shell to provide continuous circumferential abutment and electrical contact between said connector shells.

4,349,242

SPECIMEN OBSERVATION APPARATUS INCLUDING AN OPTICAL MICROSCOPE AND A SCANNING ELECTRON MICROSCOPE

Kazumichi Ogura, Akishimashi, Japan, assignor to Nihon Denshi Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 13, 1981, Ser. No. 234,175
Claims priority, application Japan, Feb. 15, 1982, 55-17967[U]
Int. Cl.³ G02B *21/00*
U.S. Cl. 350—81 **5 Claims**



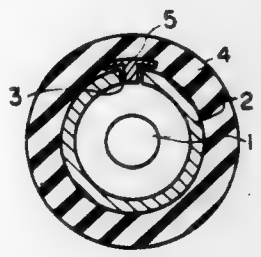
1. In a specimen observation apparatus comprising a vacuum column, an optical microscope, a transparent glass plate having a transparent and electrically conductive layer on a surface thereof for supporting a specimen at a specimen position, means for illuminating the specimen position with light and an electron beam along the same optical axis in said vacuum column to create an optical microscope image with the light passing through the specimen and a scanning electron microscope image based on information obtained by scanning the electron beam over the specimen, the improvement comprising said glass plate being movably disposed near the optical axis at one end of the vacuum column and with a vacuum seal member sealing the column from the atmosphere, said optical microscope being located near said glass plate external to said column.

4,349,243

OPTICAL FIBER SUBMARINE CABLE

Kitsutaro Amano, Yokohama; Taiichiro Nakai, Fujisawa; Masanori Sato, Machida, and Makoto Nunokawa, Kawasaki, all of Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Japan

Filed Aug. 20, 1979, Ser. No. 67,893
Claims priority, application Japan, Aug. 23, 1978, 53-101732
Int. Cl.³ G02B *5/16*
U.S. Cl. 350—96.23 **6 Claims**



6. An optical fiber submarine cable comprising: an optical fiber; a tubular external pressure resisting layer disposed around said optical fiber, said tubular external pressure resisting layer having a seam extending along the length of said optical fiber and defined by a pair of unconnected confronting edges of said tubular external pressure resisting layer, and said pair of confronting edges of said tubular external pressure resisting layer abutting under external pressure applied to the optical fiber submarine cable; an outer waterproof layer covering and contacting said tubular external pressure resisting layer for holding said pair of confronting edges in their confronting positions and for preventing fluid from entering the optical fiber submarine cable through the seam of said tubular external pressure resisting layer; and a tape-like element disposed on said tubular external pressure resisting layer and extending along and covering the seam of the external pressure resisting layer, wherein a respective one of said tape-like element and said tubular external pressure resisting layer having a cross section effective for preventing said tape-like element from being displaced on the surface of said tubular external pressure resisting layer.

4,349,244

HIGH QUALITY OBJECTIVE USING AIR BEARING

Walter Hellriegel, Jena-Neulobeda, German Democratic Rep., assignor to Jenoptik Jena GmbH, Jena, German Democratic Rep.

Filed Apr. 23, 1980, Ser. No. 142,922
Int. Cl.³ G02B *7/04, 7/08*
U.S. Cl. 350—255 **5 Claims**

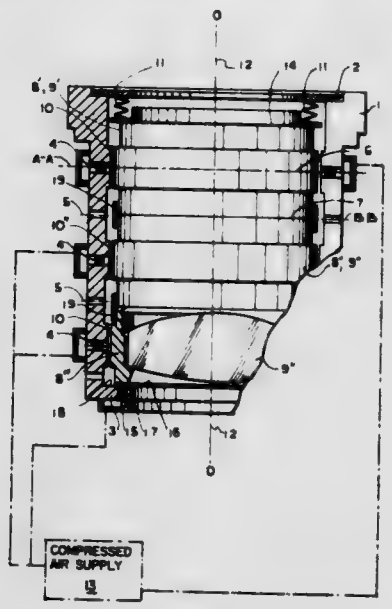
1. A high quality objective, comprising
(A) a cylinder,
(B) two retainers, each retainer situated at an opposite end of said cylinder,
(C) at least one casing situated in said cylinder between said two retainers,
(D) an imaging optical component within said casing,
(E) a ring-shaped air chamber between said cylinder and said casing, of minimum width at a center circumferential line

of said casing and of maximum width at an end of said casing,

(F) a plurality of radial air inlets in said cylinder arranged equidistantly from one another, each air inlet directed to the center circumferential line of said casing,

(G) a plurality of radial air outlets in said cylinder, arranged equidistantly from one another and axially spaced from said air inlets (F),

(H) a compressed air supply engaged with said air inlets (F) and air outlets (G) to balance the optical component (D) with respect to an optical axis of said objective,



(I) elastic means disposed between one of said retainers (B) and an end of a casing (C) within said cylinder (A),

(J) an intermediate air chamber disposed within said cylinder between said other retainer and an end of a casing opposite the end contacting said elastic means and engaged with said ring-shaped air chamber (E), and

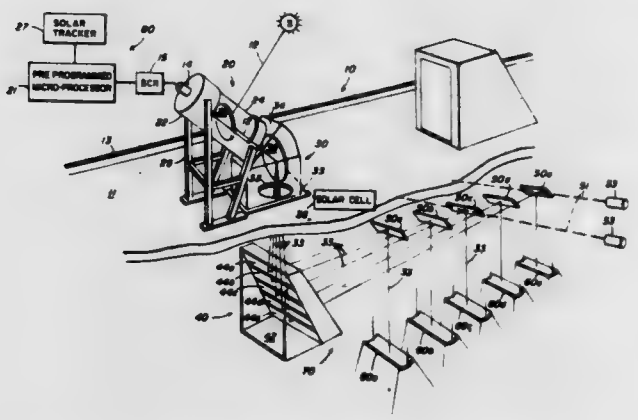
(K) a plurality of air inlets disposed within said latter retainer (J) concentrically around a body axis of said cylinder (A) equidistantly from one another, and engaged with said compressed air supply on one side of said latter retainer (J) and with said intermediate air chamber (J) on the other side of said latter retainer (J).

4,349,245

MODULAR NATURAL LIGHTING SYSTEM

Arthur W. Kliman, Beverly, Mass., assignor to Baird Corporation, Bedford, Mass.

Filed Jan. 29, 1981, Ser. No. 229,633
Int. Cl.³ G02B *17/00*
U.S. Cl. 350—264 **10 Claims**



1. A modular natural lighting system comprising:

(a) a microprocessor-controlled heliostat tracker structure equatorially mounted on the roof of a building to track the sun;

(b) a cold dielectric mirror structure mounted on said roof in operative association with said heliostat tracker structure to receive the sun's rays reflected therefrom in a manner so as to reflect only the visible solar radiation thereof;

(c) an aperture provided in both said cold dielectric mirror structure and said roof;

(d) a distributor structure, including at least one glass plate mirror configured to be planarly adjustable, said structure operatively mounted below said aperture so as to receive said reflected visible solar radiation from said cold dielectric mirror structure and reflect and focus selective portions thereof;

(e) a plurality of reflectors mounted throughout said building, each of which is designed to receive a selective portion of said visible solar radiation reflected by said distributor structure; and

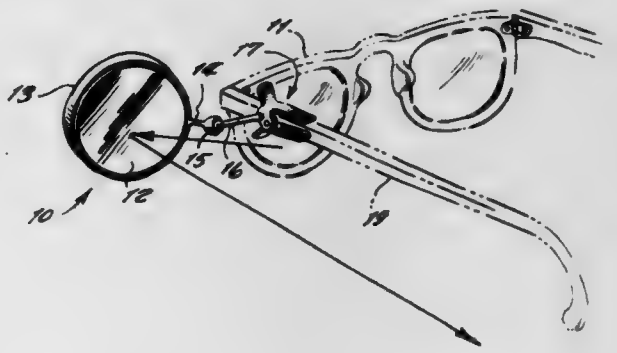
(f) a plurality of output stations mounted throughout said building in operative association with said plurality of reflectors and designed to receive portions of said visible solar radiation reflected by said plurality of reflectors and to provide natural illumination in selected areas of said building.

4,349,246

REAR VIEW MIRROR WITH SLIT CLIP ATTACHMENT

Tihamer S. Binner, 304 West Point Ave., Somerset, N.J. 08873

Filed Nov. 17, 1980, Ser. No. 207,752
Int. Cl.³ G02B *7/18*; G02C *7/14, 9/04*
U.S. Cl. 350—298 **1 Claim**



1. A rear view mirror for personal use, comprising in combination, a mirror in a frame, an arm affixed to said frame, a pivotable stem on an end of said arm and a support means on an end of said stem for support from a garment or other object such as eyeglasses or the like being worn by a person; a ball and socket joint between said arm and said stem for adjustment of said mirror; said mirror being of wide view type; and said support means on an end of said stem comprising a clip having a pair of spring-loaded tongues for being clasped around upper and lower sides of an eyeglasses temple bar or the like; each said tongue being slit on its end with slits so as to form fingers for grasp around cylindrically rounded surfaces.

4,349,247

MIRROR APPARATUS FOR AUTOMOBILE

Yukio Koyama; Tsutomu Kondo, both of Yokohama; Mikio Matsuzaki, Hadano, and Kunio Akizuki, Saitama, all of Japan, assignors to Mitsubishi Motors Corp. and Ichikoh Industries Ltd., both of Tokyo, Japan

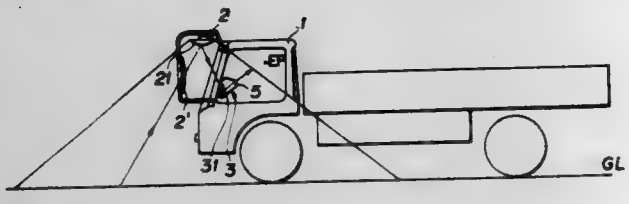
Filed Jul. 30, 1980, Ser. No. 173,907
Claims priority, application Japan, Jul. 31, 1979, 54-104883[U]; Jul. 31, 1979, 54-104884[U]; Jul. 31, 1979, 54-104885[U]
Int. Cl.³ B60R *1/08*
U.S. Cl. 350—302 **10 Claims**

1. A mirror apparatus for automobile, comprising an objective mirror region having a convexed curved objective mirror and a planar ocular mirror region having a planar ocular mirror, wherein:

said objective mirror is provided to face an area of ground

surface centering around the vicinity of that corner within a driver's chamber located opposite to the driver's seat,

said ocular mirror is provided within a space of the ocular mirror region having a first aperture for receiving therethrough an image reflected by said objective mirror and a



second aperture for transmitting therethrough to the driver an image reflected by said ocular mirror, and

said first aperture has such a limited size as is required for receiving the image from said objective mirror region that is reflected by said objective mirror.

4,349,248

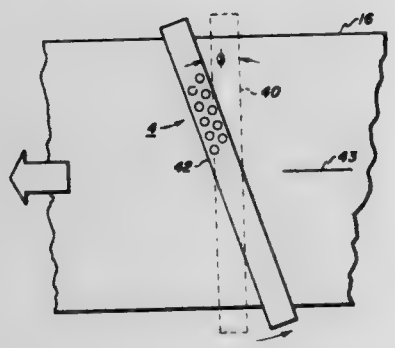
GRADIENT INDEX LENS ARRAY WITH IMPROVED EXPOSURE UNIFORMITY

James D. Rees, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 23, 1980, Ser. No. 142,921

Int. Cl.³ G02B *3/00*; G03B *27/10, 27/72*

U.S. Cl. 350—413 **5 Claims**



1. In an optical imaging system, a plurality of gradient index fibers arranged in a lens array, said lens array positioned between an object and image plane,

means for illuminating said object plane,

means for providing relative motion between said lens array and said object and image planes whereby light reflected from at least a portion of an object is transmitted by said lens array so as to imagewise expose a portion of said imaging plane,

said lens array lying in a vertical plane which is transverse, by an angle ϕ greater than zero, to a plane perpendicular to the direction of relative motion of a point on said image plane, passing through said exposure zone.

4,349,249

COMPOUND LENS

Berlyn B. Brixner; Morris M. Klein, and Max A. Winkler, all of Los Alamos, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 21, 1980, Ser. No. 151,995

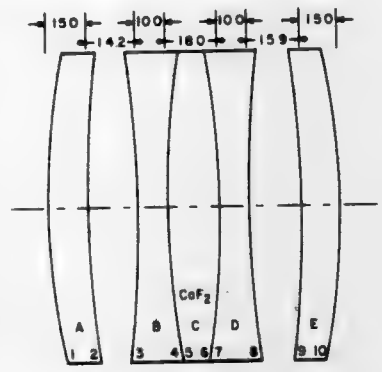
Int. Cl.³ G02B *1/02, 9/22*

U.S. Cl. 350—483 **9 Claims**

1. A compound lens comprising:

at least one optical element comprising calcium fluoride;

at least two optical elements comprising ordinary crown glass having an index of refraction with sodium light between about 1.500 and about 1.540 and an Abbe number of between about 56.5 and about 61.0; and



wherein the secondary spectrum is less than about 1 part in 50,000 in the C-F range.

4,349,250

PROCESS AND APPARATUS FOR THE DYNAMIC OR STATIC PERIMETRY OF THE HUMAN EYE

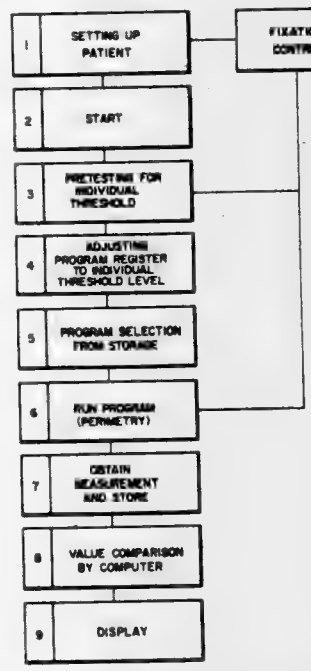
Siegfried Gelius, Munich, Fed. Rep. of Germany, assignor to Optische Werke G. Rodenstock, Munich, Fed. Rep. of Germany

Filed Apr. 10, 1979, Ser. No. 28,691

Claims priority, application Fed. Rep. of Germany, Apr. 11, 1978, 2815657

Int. Cl.³ A61B *3/06*

U.S. Cl. 351—32 **18 Claims**



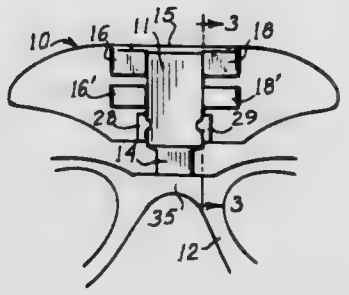
1. A process for dynamic or static perimetry of a human eye comprising testing the eye, topographically measuring threshold values of eye sensitivity for the eye being tested, electronically comparing the measured values with stored standard values of eye sensitivity corresponding to the testing conditions, and indicating deviations between the measured values and the stored standard values.

15. Apparatus for dynamic or static perimetry of a human eye comprising perimeter testing means for testing the eye and providing topographically measured threshold values of eye sensitivity for the eye being tested, comparing means for electronically comparing the measured values with stored standard values of eye sensitivity corresponding to the testing conditions, and means for indicating deviations between the measured values and the stored standard values.

4,349,251
ADJUSTABLE EYEGLASS MOUNTING

Sidney Shedrow, 202 E. Gaston St., Savannah, Ga. 31401

Filed Aug. 11, 1980, Ser. No. 177,098
Int. Cl.³ G02C 5/04, 1/00, 9/00
U.S. Cl. 351—128 9 Claims

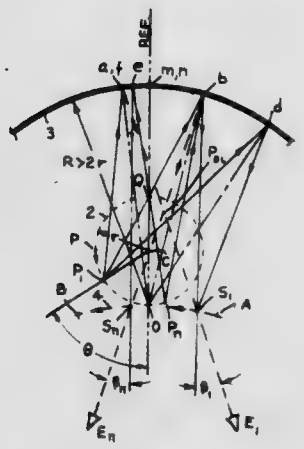


1. Eyeglasses mounting means, wherein attaching means is fixed in a mask and eyeglasses are selectively fixable to said attaching means, said mounting means including a plurality of notch means vertically spaced on said attaching means, a carrier, said carrier having said eyeglasses hinged thereto, at least one tab extending from said carrier for being received by a selected one of said plurality of notch means, said at least one tab including a first tab extending from one side of said carrier and a second tab extending from the opposite side of said carrier, said plurality of notch means including a first plurality of notch means adapted selectively to receive said first tab and a second plurality of notch means adapted selectively to receive said second tab.

4,349,252
STEREOSCOPIC MOTION PICTURE-CIRCULAR TO LINEAR SCAN TRANSLATOR (ALTERNATE SCREEN)-METHOD AND APPARATUS

Robert B. Collender, 709 Patterson Ave., Glendale, Calif. 91203

Filed Jan. 5, 1981, Ser. No. 222,375
The portion of the term of this patent subsequent to Nov. 4, 1997, has been disclaimed.
Int. Cl.³ G03B 35/00
U.S. Cl. 352—58 2 Claims



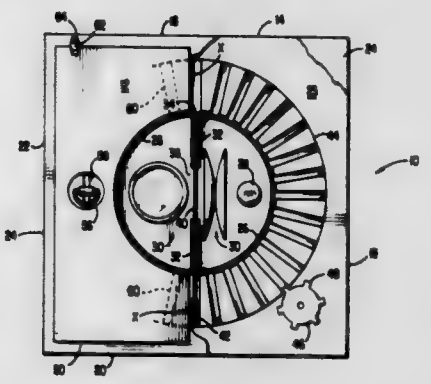
1. A method of recording and reproducing stereoscopic views for observation by plural observers without visual aids at the eyes of said observers, comprising:

photographing multiple sequential views of a scene from a motion picture camera in a manner such that between each sequential view relative motion takes place between the camera and scene and the optical axis of the camera for the various views is essentially coincident or parallel with each other; reproducing said views sequentially by projecting the views from a scanning projector onto a screen; said scanning projector being positioned, during the projection of successive views, at successive positions about the arc of a projection circle so as to project the images to said screen on the opposite side of said projection circle; said screen being stationary and of larger radius compared with said projection circle and comprised of elementary horizontal corrugated ridges to vertically scatter and horizontally reflect incident light from said projector, said screen having its arc center at a single reference point, said reference point being located on the opposite side of said projection circle center from said screen and on a line bisecting said screen, said line passing through said projection circle center; said scanning projector constrained to project said sequential views toward a common point located on said bisecting line between said projection circle center and said screen; and the scanning of said projector being at a rate sufficient to be within the period of persistence of vision of an observer.

4,349,253
CASSETTE ROTARY TRAY SLIDE PROJECTOR AND SLIDE CASSETTE USABLE THEREWITH

Fernando Alvarez-Sabater, P.O. Box 3628, and Ilio J. Ulivi C., Apartado de Correos 1146, both of C-1010A, Caracas, Venezuela

Filed Dec. 19, 1980, Ser. No. 218,026
Int. Cl.³ G09F 11/30; G03B 23/02
U.S. Cl. 353—112 9 Claims



1. A cassette rotary tray slide projector for projecting slides comprising:

a casing;

a central hub within said casing;

illuminating and projecting means within said central hub for illuminating and projecting slides located in a viewing position defined within said central hub;

slide passage defining means located in said central hub for defining a slide passage having an inlet and an outlet positioned so that slides, under the force of gravity, enter the inlet, pass the viewing position, and leave the slide passage through the outlet;

slide receiving means movable with respect to said central hub for receiving slides from the slide passage outlet and for temporarily storing received slides;

a slide cassette separate from said slide receiving means and removably held in a predetermined position in said casing, said slide cassette having a housing and a slide storage tray movable with respect to said housing, said slide storage tray having a plurality of compartments arranged in an arc for receiving and storing slides to be projected;

means having a component carried by one of said slide cassette and said casing for releasably holding said slide cassette housing in a predetermined position in said casing; and

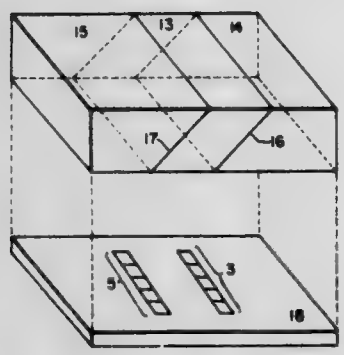
means for moving said slide tray with respect to said housing so that said compartments are moved out of said housing into said casing and sequentially aligned with the inlet of said slide passage whereby slides fall under the force of gravity out of said compartments into the slide passage, pass through the slide passage, and are received in said slide receiving means.

4,349,254

CAMERA FOCUS DETECTING DEVICE

Masao Jyojiki, Tsurugashima, and Harumi Aoki, Kiyose, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 4, 1980, Ser. No. 118,057
Claims priority, application Japan, Feb. 13, 1979, 54-15256; Feb. 13, 1979, 54-15257
Int. Cl.³ G03B 7/08
U.S. Cl. 354—25 8 Claims



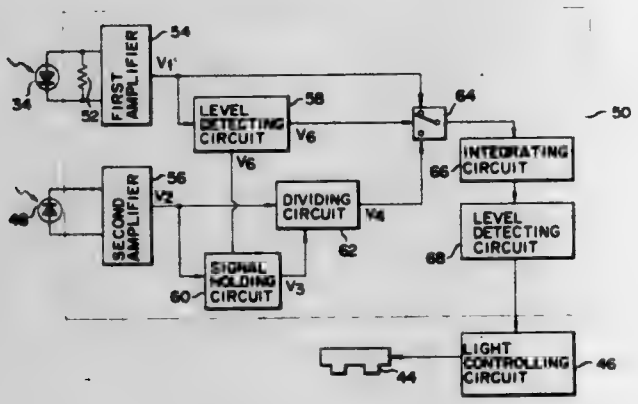
1. A focus detecting device for a camera comprising: two groups of light receiving elements disposed on the optical axis of a photographing lens in two planes which are parallel to each other with one of said planes lying on each side of a plane optically equivalent to a film surface; means for dividing a light flux of an image on an object to be photographed into a plurality of light fluxes directed continuously onto a light receiving surface formed by said respective groups of light receiving elements on a substrate; circuit means for analyzing outputs of said two groups of light receiving elements for detecting the amount of high frequency components in the spatial frequency spectrum of the image of an object to be photographed on each of said groups of light receiving elements; and a processing circuit for producing a signal representative of correct focalization when the amounts of high frequency components thus detected are higher than a predetermined level and are equal to each other.

4,349,255

PHOTOGRAPHING APPARATUS FOR AN ENDOSCOPE

Syuichi Takayama, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Mar. 11, 1981, Ser. No. 242,635
Claims priority, application Japan, Mar. 14, 1980, 55-32361
Int. Cl.³ G03B 7/08
U.S. Cl. 354—31 5 Claims



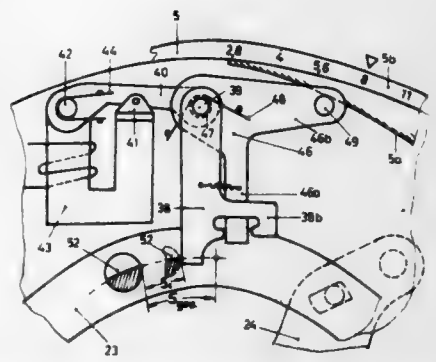
1. A photographing apparatus for an endoscope comprising:
an endoscope having a light guide for transmitting light to a region to be photographed, and an image guide for transmitting light reflected from the region to be photographed;
a flash light source for emitting light for photographing into the light guide of said endoscope;
a camera unit for housing a film to which is projected a light beam transmitted through the image guide of said endoscope, said camera unit having shutter means disposed in the optical path of the light beam for opening and closing the optical path of the light beam, and further having means for generating a synchronous signal for opening the shutter means;
a first photoelectric converter for detecting part of the light beam transmitted through said light guide;
a resistor connected in parallel with said first photoelectric converter;
a first amplifier coupled to said resistor for amplifying a voltage generated across said resistor;
means coupled to said first amplifier for generating a switching signal when a first voltage signal amplified by said first amplifier has reached a predetermined level;
a second photoelectric converter for detecting part of the flash of light generated by said flash light source, and across which no resistor is coupled;
a second amplifier coupled to said second photoelectric converter for amplifying a voltage generated by said second photoelectric converter;
correction signal generating means coupled to said second amplifier for holding the level of a second voltage signal amplified by said second amplifier in response to said switching signal and for generating a correction signal obtained by amplifying the second voltage signal of said level by a constant factor;
means coupled to said second amplifier and to said correction signal generating means for generating a divided signal obtained by dividing said second voltage signal generated by said second amplifier by said correction signal;
integrating means for integrating a supplied signal;
switching means for switching the signal supplied to said integrating means from said first voltage signal to said divided signal in response to said switching signal;
means coupled to said integrating means for generating a flash-terminating signal when the output from said integrating means reaches a predetermined level; and
means for energizing said flash light source in response to a synchronous signal and for deenergizing said flash light source in response to said flash-terminating signal.

4,349,256

PHOTOGRAPHIC CAMERA SUCH AS A REFLEX CAMERA

Franz Starp, Mittlere Steige 36, 7547 Wildbad 5, Fed. Rep. of Germany

Filed Dec. 18, 1980, Ser. No. 217,900
Claims priority, application Fed. Rep. of Germany, Dec. 19, 1979, 2951006
Int. Cl.³ G03B 7/085, 9/06, 9/07
U.S. Cl. 354—43 10 Claims



1. Photographic camera apparatus, such as a reflex camera, comprising
objective means incorporating an electrodynamically drivable diaphragm aperture blade system,
circuit means for controlling the operation of the diaphragm

blade system and adapted to operate in dependence upon sensed ambient light, and

selector means associated with the circuit means and adjustable to a manual mode MAN and at least one automatic mode AUTO, which when adjusted to the manual mode MAN operatively permits the diaphragm blade system to be adjusted to a manually preselected aperture width and which when adjusted to the at least one automatic mode AUTO operatively permits the diaphragm blade system to be automatically adjusted to an aperture width adjusted in dependence upon sensed ambient light,

said diaphragm blade system including a driving member operatively arranged for adjustment movement and which is controlled by the circuit means and adapted for actuating the diaphragm blades in accordance with such adjustment movement, and which has operatively associated therewith an electromagnetically actuatable path limiting stop,

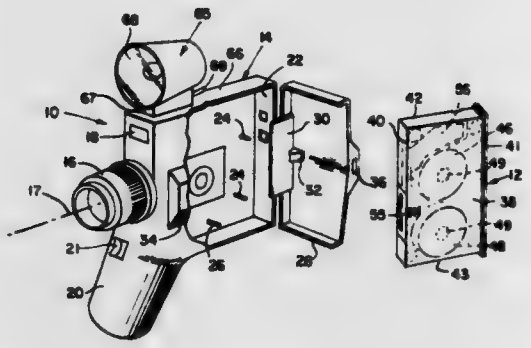
said stop being operatively positioned at a basic inactive location stop position which is variable relative to the driving member by means of a manually actuated diaphragm aperture width preselector for adjusting the stop to a stop position corresponding to the manually preselected diaphragm aperture width, and which stop, when the selector means are adjusted to the manual mode MAN, becomes operative and is controlled by the circuit means for actuation to an active location stop position for terminating operatively the adjustment movement of the driving member at said stop position in accordance with the manually preselected diaphragm aperture width, but which, when the selector means are adjusted to the at least one automatic mode AUTO, becomes inoperative.

4,349,257

CAMERA HAVING A SELECTED PATTERN OF PRE-EXPOSURE FOR FINAL EXPOSURE CORRECTION

Melvin Friedman, Sudbury, and William A. Holmes, Marblehead, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Feb. 3, 1981, Ser. No. 231,124
Int. Cl.³ G03B *15/03, 17/00*
U.S. Cl. 354—126 **11 Claims**



1. Camera apparatus comprising:

means for locating photographic film at a given focal plane;

means for transmitting image-forming light rays along an exposure path from a photographic scene to said focal plane for exposing film thereat, said transmitting means defining a given camera acceptance angle and having an optical axis;

means for providing artificial illumination of the photographic scene, said illumination providing means producing a predetermined non-uniform illumination pattern over the scene area defined by said acceptance angle such that there is a difference in illumination between at least a first and a second portion of said scene area; and

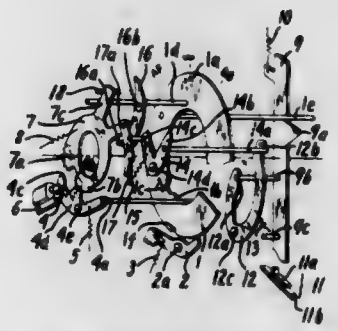
supplemental illumination means for directing filtered non-uniform supplemental illumination along a path other than the exposure path to only one section of said focal plane corresponding to the one of said scene portions having the lower predetermined illumination to reduce the difference in level of exposure of said first and second portions anticipated as a result of said non-uniform illumination.

4,349,258

MANUAL FOCAL POINT ADJUSTING AND CHANGE-OVER DEVICE FOR USE IN AUTOMATIC FOCAL POINT ADJUSTER CAMERA

Kiyoshi Kitai; Masaru Kobayashi; Tadashi Nakagawa; Hiroaki Ishida; Masanori Watanabe, and Yuzuru Takazawa, all of Shikawatashi, Japan, assignors to Seiko Koki Kabushiki Kaisha, Japan

Continuation of Ser. No. 961,871, Nov. 17, 1980, abandoned. This application Aug. 11, 1980, Ser. No. 177,186
Claims priority, application Japan, Nov. 18, 1977, 52-138730; Nov. 18, 1977, 52-138731; Nov. 18, 1977, 52-154879
Int. Cl.³ G03B *3/00, 15/03, 17/18*
U.S. Cl. 354—127 **14 Claims**



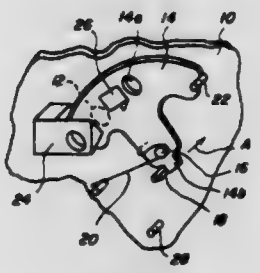
1. A lens focal point adjusting and mode change-over device for a camera having automatic lens focal point adjustment, comprising: change-over means manually operable for changing a camera operating mode between automatic focusing and manual focusing, said change-over means including a manually positionable member manually positionable at a position for operating a camera in an automatic focusing mode and manually positionable over a range of positions for operating a camera in a manual focusing mode and at a camera lens focal point setting determined by the position of said manually positionable member; and means for restricting a position of a positionable camera lens in response to a signal representative of a distance between an object and the camera lens, said restricting means cooperating with said change-over means for operating to allow automatic focusing of the camera lens when said change-over means is set for automatic focusing, and said restricting means being rendered inoperative by said change over means when said change-over means is set for manual focusing, thereby to allow focusing by positioning of said manually positionable member of said change-over means.

4,349,259

EXPOSURE CONTROL MECHANISM FOR USE WITH CHEMICAL FLASH

James W. Meyer, Fairport, and John E. Mooney, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 8, 1981, Ser. No. 300,362
Int. Cl.³ G03B *15/03, 9/26*
U.S. Cl. 354—135 **4 Claims**



2. In a photographic camera of the type using chemical

flashlamps, an exposure control mechanism for covering and uncovering an exposure aperture in synchronism with the peak output of a flashlamp, comprising:

a primary shutter blade mounted for pivotal movement back and forth from a rest position wherein said primary shutter blade covers the exposure aperture, through an intermediate position, wherein said primary shutter blade uncovers the exposure aperture, to a rebound position;

spring means for urging said primary shutter blade toward said rest position;

drive means for causing said primary shutter blade to move from said rest position to said rebound position;

flash firing means for igniting a chemical flashlamp substantially simultaneously with the start of movement of said primary shutter blade; and

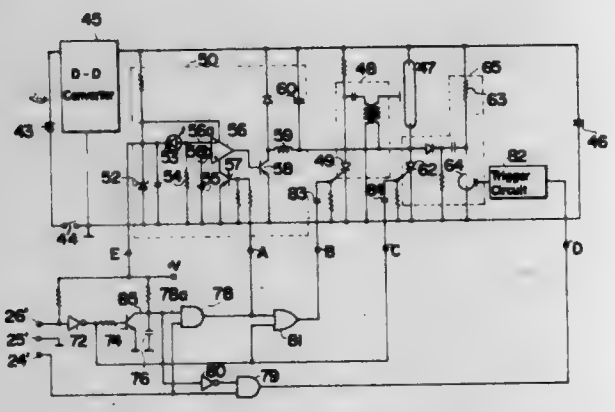
auxiliary shutter blade means for covering the exposure aperture during movement of said primary shutter blade through said intermediate position from said rest position to said rebound position, and for uncovering said exposure aperture during movement of said primary shutter blade through said intermediate position from said rebound position to said rest position.

4,349,260

AUTOMATIC ELECTRONIC FLASH DEVICE PRODUCING PRELIMINARY FLASH LIGHT AND PRIMARY FLASH LIGHT

Tokuji Ishida, Daito, and Masayoshi Sahara, Sennan, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Dec. 29, 1980, Ser. No. 220,290
Claims priority, application Japan, Dec. 31, 1979, 54-171489
Int. Cl.³ G03B *15/05*; H05B *41/26*
U.S. Cl. 354—145 **12 Claims**



1. An automatic electronic flash device for use with a camera which performs T.T.L light measurement while stopping down a diaphragm and which includes means for arresting said diaphragm when the value of the light measurement represents a given relationship with respect to a reference signal, said flash device comprising:

a pair of synchronizing contacts receiving a synchronizing signal from corresponding synchronizing contacts on said camera when a camera shutter is fully opened;

a first signal contact receiving a preliminary flash control signal, which at least controls by its trailing edge the timing of termination of the production of the preliminary flash light, from a corresponding signal contact on said camera before receipt of said synchronizing signal at said synchronizing contacts, said first signal contact also receiving a primary flash stop signal, which terminates the production of the primary flash light, from said corresponding first signal contact on said camera after receipt of said synchronizing signal at said synchronizing contacts;

a control circuit connected to said synchronizing contacts and said first signal contact for passing said preliminary flash control signal without said synchronizing signal having been received at said synchronizing contacts and for passing said primary flash stop signal with said synchronizing signal having been received at said synchronizing contacts;

means for producing a primary flash light in response to said synchronizing signal received at said synchronizing contacts;

means for terminating the production of said primary flash light by said primary flash light producing means in response to said primary flash stop signal having passed through said control circuit; and

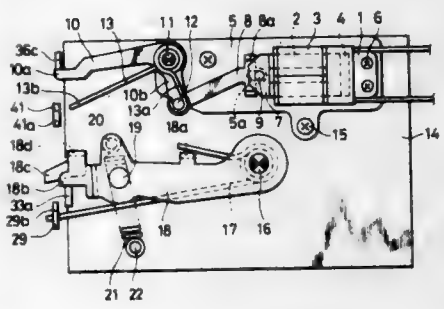
means for producing a preliminary flash light whose intensity is relatively low and substantially constant, said preliminary flash light producing means being responsive to the trailing edge of said preliminary flash control signal having passed through said control circuit for the termination of the production of said preliminary flash light.

4,349,261

ELECTROMAGNETIC RELEASE DEVICE FOR SINGLE LENS REFLEX CAMERA

Hiroshi Kurei, Kasagoe, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 22, 1981, Ser. No. 227,561
Int. Cl.³ G03B *9/08, 19/12*
U.S. Cl. 354—152 **7 Claims**



1. An electromagnetic release device for a single lens reflex camera comprising: an armature; an electromagnet assembly including a permanent magnet, a yoke magnetically coupled to said permanent magnet and a coil would on said yoke, said armature being adapted to be attracted and retained by said electromagnet; a release lever coupled to be rotated by said armature, said release lever confronting a locking lever for locking upward movement of a mirror of said camera; a release spring elastically coupled to said release lever; a charge lever which is charged by a winding operation and locked upon completion of a winding operation, said charge lever abutting said release spring upon completion of said winding operation; said armature being released from said electromagnet assembly by exciting said coil of said electromagnet assembly with a electrical pulse, said release lever upon release of said armature abutting and kicking said locking lever, and said charge lever being restored by running of a bottom curtain of said camera which is effected when a photographing operation is ended whereupon the force of said release spring is eliminated.

4,349,262

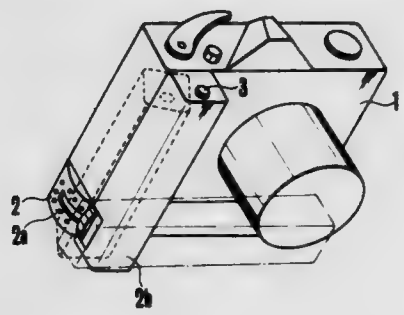
AUTOMATIC FILM WINDING DEVICE HAVING A MOVABLE GRIP MEMBER

Yoshitaka Watanabe, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 1, 1980, Ser. No. 211,723
Claims priority, application Japan, Nov. 29, 1979, 54-154731
Int. Cl.³ G03B *19/04, 1/18*
U.S. Cl. 354—173 **10 Claims**

10. An automatic winding device for a camera adapted to be operatively mounted on a camera body to perform a winding operation comprising a main body part adapted to be connected to said camera body and a grip member including release means operably connected with said main body part and mounted to be movable relative thereto to a plurality of differ-

ent positions, said automatic winding device further comprising fixing means provided between said main body part and



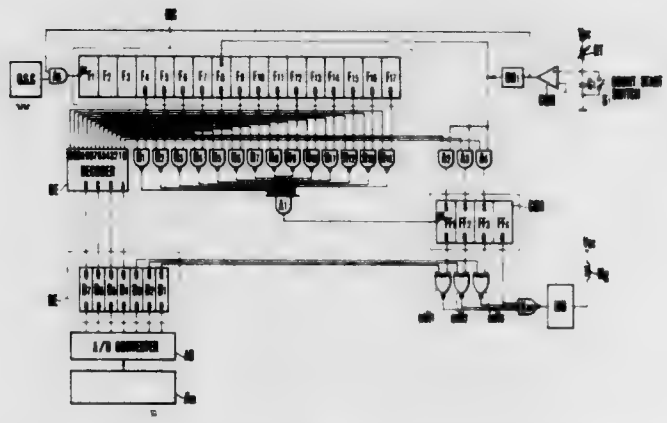
said grip member for fixing said grip member at a desired angle relative to said camera.

4,349,263

EXPOSURE TIME CONTROL DEVICE FOR CAMERA

Masanori Uchidoi, Yokohama, and Kazunobu Urushihara, Inagi, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 30, 1980, Ser. No. 144,981
Claims priority, application Japan, May 8, 1979, 54-56538
Int. Cl.³ G03B *9/62*
U.S. Cl. 354—234 **1 Claim**



1. An electrical exposure time control device for a camera having a shutter, comprising:

(a) first timing means for forming a given time interval;

(b) second timing means for forming a compensation time interval;

(c) means for maintaining the opening of said shutter for a total time interval of the given time interval and the compensation time interval so that the shutter is opened for a desired exposure time; and

(d) control means for shortening the given time interval formed by the first timing means by a predetermined time interval so as to be shorter than the desired exposure time;

said first timing means including:

(a) a main counter for dividing the frequency of an input pulse signal;

(b) a presettable counter for counting the frequency divided pulse signal from the main counter and for storing data related to the desired exposure time;

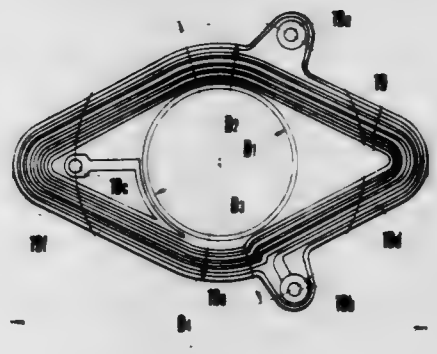
(c) detecting means for applying a shutter closing signal to the maintaining means when the presettable counter has counted pulses corresponding to the data stored in the presettable counter.

4,349,264

ELECTROMAGNETICALLY DRIVEN SHUTTER

Nobuo Tezuka, Tokyo, and Michio Hirohata, Inagi, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 4, 1981, Ser. No. 231,040
Claims priority, application Japan, Feb. 8, 1980, 55-15414
Int. Cl.³ G03B *9/22*
U.S. Cl. 354—234 **3 Claims**



1. An electromagnetically driven shutter, comprising:

shutter blades;

a shutter driving rotor for operating said shutter blades, said shutter driving rotor having a circular opening centered at the optical axis of a photograph-taking lens and having circumferential parts concentric with said circular opening and straight parts extending in tangential directions of said circumferential parts, said driving rotor being formed in an approximately rhombic shape in such a manner than angles formed by said straight parts will not be angles of ninety degrees;

a conductor coil provided along a periphery of said shutter driving rotor; and

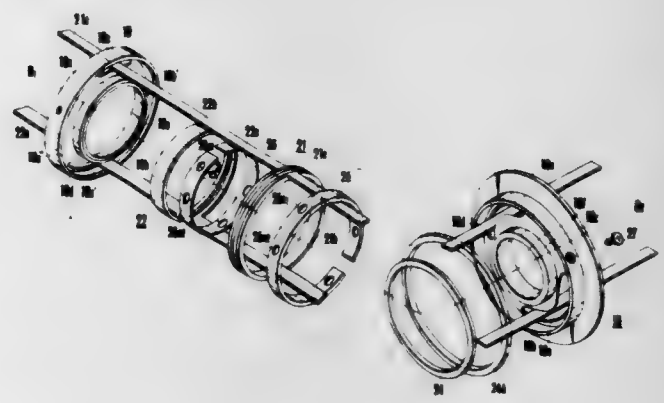
magnets for generating magnetic fluxes which cross orthogonally the conductor coil and are parallel with the optical axis of the photograph-taking lens, said magnetic fluxes operating on the straight parts of said conductor coil.

4,349,265

SUPPORT STRUCTURE FOR THE APERTURE SIGNAL TRANSMITTING MEANS IN A CAMERA LENS ASSEMBLY

Kazufumi Kobayashi, Tokyo, and Shigeru Hashimoto, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 12, 1980, Ser. No. 215,646
Claims priority, application Japan, Dec. 17, 1979, 54-174487[U]; Dec. 17, 1979, 54-174488[U]
Int. Cl.³ G03B *17/00, 9/02;* G02B *7/02*
U.S. Cl. 354—286 **11 Claims**



6. A support structure for signal transmitting means in a lens assembly comprising:

a signal transmitting member having an axially elongate portion and an annular portion, said annular portion forming a groove for holding bearing balls;

barrel means constituting a part of said lens assembly, said barrel means having holes formed therein in a circular pattern about the optical axis of said lens assembly; and

retainer members which are inserted in said holes of the barrel means for retaining said bearing balls at a predetermined positions about the optical axix, said retainer members being fixed at said barrel means by being inserted into said holes, with contact portions of said retainer members contacting said bearing balls being so made as to cooperate with said groove portion of the signal transmitting member to retain said bearing balls in a rotatable manner at a predetermined position of the barrel means, thereby retaining said signal transmitting member by the bearing balls in a rotatable manner about the optical axis and at a predetermined position in the optical axis direction at the barrel means.

4,349,266

LENS CAP FOR A CAMERA

Keisuke Maeda; Keiji Takechi, both of Sakai, and Tetsuro Oya, Osaka, all of Japan, assignors to Minolta Camera KK, Osaka, Japan

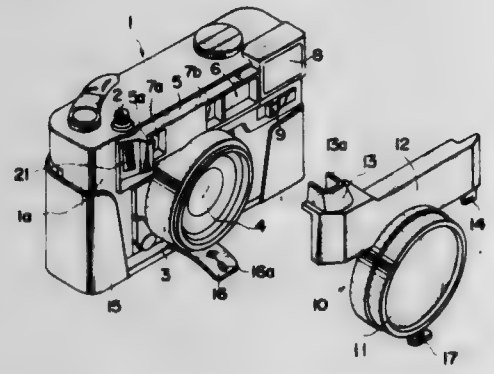
PCT No. PCT/JP80/00197, § 371 Date Nov. 19, 1980, § 102(e) Date Nov. 19, 1980, PCT Pub. No. WO81/00624, PCT Pub. Date Mar. 5, 1981

PCT Filed Aug. 26, 1980, Ser. No. 224,568

Claims priority, application Japan, Aug. 30, 1979, 54-119956[U]

Int. Cl.³ G03B *11/04, 17/02*

U.S. Cl. 354—295 **22 Claims**



1. A lens cap for use with a camera which includes a camera body having a viewfinder window, a manually-operable member extending outwardly of the camera body and a lens barrel extending outwardly of the camera body, the lens barrel containing a photographic objective lens, the lens cap comprising

a first covering portion formed of a ring-shaped part and a disc-shaped part which encloses the front end of the ring-shaped part, the ring-shaped part being engageable around the camera lens barrel such that the disc-shaped part covers the front end of the camera lens barrel and the photographic objective lens therein,

a second covering portion integrally connected to the first covering portion and extending laterally thereof, the second covering portion covering the viewfinder window of the camera body when the first covering portion is engaged around the camera lens barrel, and

a protective means integrally connected to the second covering portion, the protective means surrounding at least three sides of the manually-operable member to prevent manual operation thereof when the first covering portion is engaged around the camera lens barrel,

the first and second covering portions and the protective means being integrally molded of a plastic material.

4,349,267

PROCESSING SOLUTION CIRCULATING DEVICE FOR FILM PROCESSOR

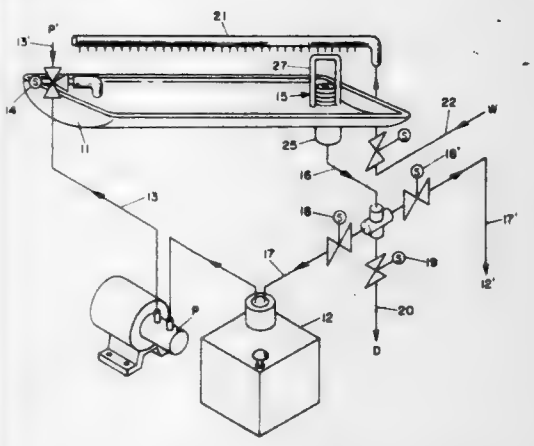
Masami Ohtani, Kyoto, Japan, assignor to Dainippon Screen Mfg. Co., Ltd., Kyoto, Japan

Filed Mar. 3, 1981, Ser. No. 240,109

Claims priority, application Japan, Mar. 26, 1980, 55-40836[U]

Int. Cl.³ G03D *3/06*

U.S. Cl. 354—323 **7 Claims**



1. A device for circulating at least two processing solutions through a tray comprising:

reservoir means for separately containing said processing solutions;

overflow means mounted on an opening on the bottom of said tray and including means for variably positioning said overflow means to control the level of said processing solutions in said tray at a desired level;

at least two circulation means circularly connected between said overflow means and said tray through said reservoir means, each of said circulation means connected to one of said processing solutions; and

switching means for selectively connecting each of said circulation means to said tray to supply said processing solutions to said tray.

4,349,268

ELECTROSTATIC IMAGE-FORMING PROCESS AND AN APPARATUS THEREFOR

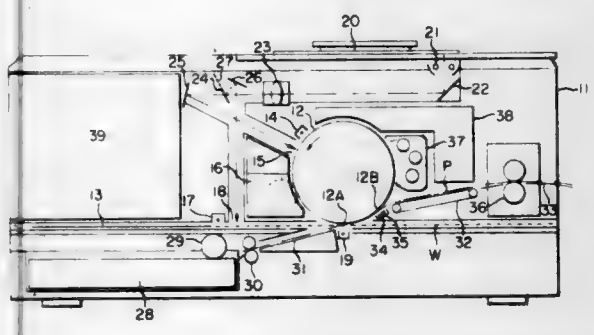
Masao Hirata, Hino, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Japan

Filed Jun. 26, 1980, Ser. No. 163,268

Claims priority, application Japan, Jun. 28, 1979, 54-80780; Jul. 16, 1979, 54-89284; Jul. 16, 1979, 54-89285; Jul. 16, 1979, 54-89286; Jul. 19, 1979, 54-90927

Int. Cl.³ G03G *15/01*

U.S. Cl. 355—4 **22 Claims**



18. An electrophotographic apparatus for forming an electrostatic image of an original having a color portion and a black portion, comprising:

a rotary photoconductive drum member as a first recording material and comprising a peripheral photoconductive layer on a conductive drum surface;

a photoconductive member as a second recording material and disposed for operative movement to a position in which at least a portion of said photoconductive member oppositely faces said first recording material;

a plurality of developing units for developing an electrostatic image formed on the first recording material;

a mechanism for transporting a transfer sheet for receiving thereon a visible toner image developed on said first recording material; and

a mechanism for imagewise projecting the image light from an original on both said first and said second recording materials through a dichroic filter interchangeably disposed with a second filter to separate the image light into a first image light in a color corresponding to one of the colors of the original and a second image light of complementary color to the fist image light;

said first image light being projected on said second recording material along a first light path and said second image light being projected on said first recording material along a second light path.

4,349,269

MANUAL PAPER FEED INHIBITING DEVICE IN ELECTROGRAPHIC COPYING MACHINE

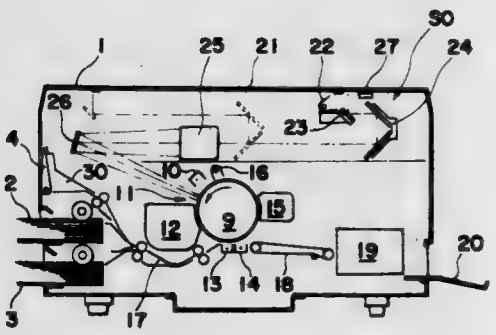
Osamu Okada, Toyokawa, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Feb. 3, 1981, Ser. No. 231,573

Claims priority, application Japan, Feb. 15, 1980, 55-18646[U]; Dec. 18, 1980, 55-182698[U]

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—14 SH **11 Claims**



1. In an electrophotographic copying machine having manual and normal paper feed capabilities, which machine comprises at least one paper supply unit from which a copying paper is automatically supplied towards a processing station, a manual feed means through which a copying paper is manually inserted into the machine, means for forming a thermally fusible powder image on the copying paper, and a heat-fixing device for fusing and fixing the powder image on the copying paper, the improvement which comprises a manual paper feed inhibiting device comprising switching means for causing the temperature of the heat fixing device to be adjusted to one of a plurality of predetermined temperatures in dependence on the thickness of the copying paper; means for inhibiting the manual feed of the copying paper through the manual feed means; and a control means for actuating said inhibiting means during the time the temperature adjustment is being performed in the heat fixing device in response to the switching means, whereby the manual feed of the copying paper by the manual feed means is permitted only when and after the heat fixing device has attained the predetermined temperature in dependence on the thickness of the copying paper.

4,349,270

DEVELOPER REMOVING DEVICE FOR COPYING APPARATUS

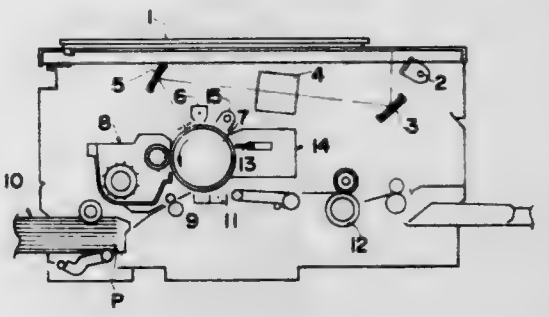
Kenichi Wada; Susumu Tanaka, and Kenji Tabuchi, all of Sakai, Japan, assignors to Minolta Camera Co., Ltd., Osaka, Japan

Filed Sep. 19, 1980, Ser. No. 188,912

Claims priority, application Japan, Oct. 11, 1979, 54-131360

Int. Cl.³ G03G *15/09*

U.S. Cl. 355—15 **12 Claims**



1. In a copying apparatus which includes a photosensitive member on which an electrostatic latent image is to be formed; the combination of a magnetic brush developing means for developing the electrostatic latent image by the use of a developer mix of triboelectrically charged magnetic carrier particles of 5 to 30 microns in average diameter and having resistivity of greater than $10^{12}\Omega$ cm and non-magnetic toner particles of 5 to 25 microns in average diameter and having resistivity of greater than $10^{14}\Omega$ cm; means for applying a biasing voltage to said magnetic brush developing means for giving thereto a potential greater than the potential of the background portion of the latent image but less than the potential of the image portion of the latent image for causing said magnetic carrier particles to transfer onto the background portion of the latent image formed on the photosensitive member; and a developer removing device for removing said magnetic carrier particles adhered on the background portion of said latent image at least either by magnetic force or electrostatic force.

4,349,271

IMAGE PROJECTING SYSTEM

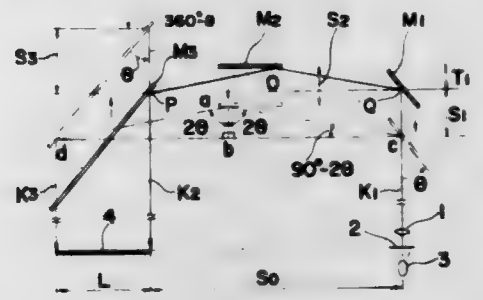
Shiro Toriumi, Zama, and Yutaka Watanabe, Tokyo, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Dec. 1, 1980, Ser. No. 211,722

Claims priority, application Japan, Dec. 8, 1979, 54-159648

Int. Cl.³ G03B *27/70*; G02B *27/17*

U.S. Cl. 355—60 **6 Claims**



1. An image projecting system which comprises, in combination:

means for stationary supporting an original on a supporting plane;

an image receiving member on which consecutive portions of an image of the original are successively projected through a slit;

means for illuminating the original and carrying the image of the original along an optical path extending from the original to the image receiving member; and

first, second and third plane reflective members disposed on said optical path for guiding the rays of light carrying the

image of the original towards the image receiving member,

said first plane reflective member being supported for movement substantially at a predetermined velocity of $V/2 \sin 2\theta$ in a direction perpendicular to the supporting plane while the reflective surface of said first plane reflective member lies at a first predetermined angle θ relative to the above direction,

said second plane reflective member being supported for movement substantially at a predetermined velocity of $V \tan \theta/2$ in the above direction while the reflective surface of said second plane reflective member lies at right angles to the above direction, and

said third plane reflective member being supported for movement substantially at a predetermined velocity of $-V(4 \cos^2 \theta - 1)/2 \sin 2\theta$ in the above direction while the reflective surface of said third plane reflective member lies at a second predetermined angle of $(360° - \theta)$ relative to the above direction, wherein the first predetermined angle θ has the following relationship;

$0° < \theta < 90°$, wherein $\theta \neq 45°$.

4,349,272

CIRCUIT ARRANGEMENT FOR CONTROLLING THE EXPOSURE TIME OF REPRODUCTION CAMERAS

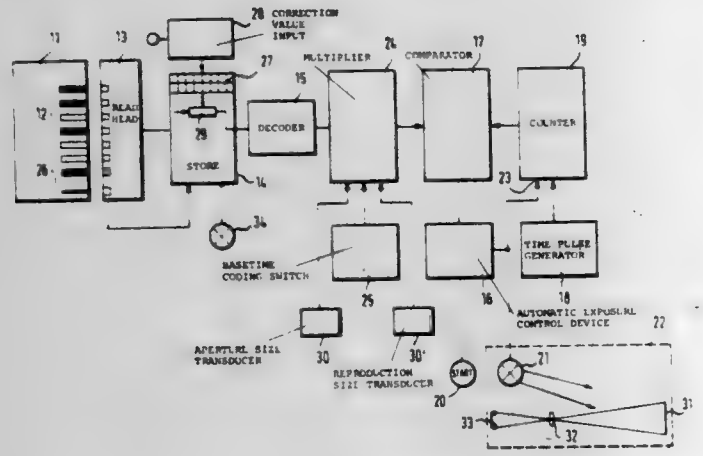
Bernd Holthusen, Hamburg, Fed. Rep. of Germany, assignor to Dr. Böger Duplomat Apparate KG (GmbH & Co.), Fed. Rep. of Germany

Filed Nov. 7, 1980, Ser. No. 204,989

Claims priority, application Fed. Rep. of Germany, Nov. 8, 1979, 2945166

Int. Cl.³ G03B *7/00, 27/72*

U.S. Cl. 355—69 **7 Claims**



1. A circuit arrangement for controlling the exposure time of a reproduction camera in dependence on the package of photographic material that is used, said package bearing markings characteristic of the sensitivity of the photographic material, the circuit arrangement comprising a store, a reading head for reading said markings to generate electrical signals representative thereof and for passing said electrical signals to said store, a decoder for decoding information stored in said store to produce a decoded signal related to the sensitivity of the photographic material, light source means for the reproduction camera, a switching control device connected to said light source means for switching said light source means on and off, a basic time coding switch for supplying a basic exposure time signal related to the exposure characteristics of the particular reproduction camera, a multiplier for forming an exposure time signal equal to the product of the basic exposure time signal and the decoded signal, a start key connected to said switching control device for initiating the exposure and comparator means connected to terminate the exposure via said switching control device when the time elapse since initiation of the exposure equals said exposure time signal.

4,349,273

ELECTROPHOTOGRAPHIC PRINTER EXPOSURE STATION

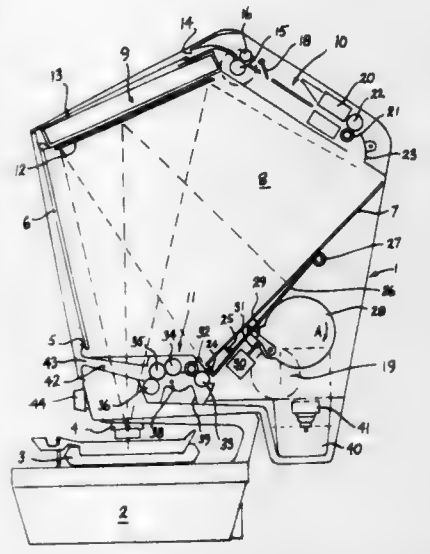
Paul M. James, London, England, assignor to Imaging Technology Limited, London, England

Filed Feb. 26, 1981, Ser. No. 238,583

Claims priority, application United Kingdom, Mar. 5, 1980, 8007497

Int. Cl.³ G03B *27/58*; B65H *9/00*

U.S. Cl. 355—72 **7 Claims**



1. An exposure station in an electrophotographic printer comprising means defining a downwardly inclined support for a copy sheet and stop means for the sheet adjacent to the lower extremity of the support, which stop means is movable between operative and inoperative positions only in the former of which it supports a sheet against sliding down the support, characterised in that the stop means comprises a lower stop means and an upper stop means, the lower stop means being effective in a transverse central region of the support and the upper stop means being in two parts, one lying on each side of said central region.

4,349,274

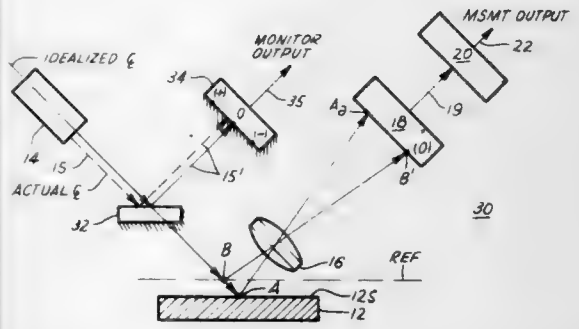
OPTICAL TRIANGULATION APPARATUS AND METHOD

Douglas S. Steele, Mechanicville, N.Y., assignor to General Electric Company, Cincinnati, Ohio

Filed Jul. 23, 1980, Ser. No. 171,513

Int. Cl.³ G01C *3/10*

U.S. Cl. 356—1 **8 Claims**



1. In combination with optical triangulation measurement apparatus of the type having a light source positioned to provide a measuring beam directed to a workpiece, the light source having an idealized centerline and an actual centerline with the deviation therebetween introducing a measurement error, a photo detector positioned to receive a portion of the measuring beam reflected from the workpiece with a portion of the reflected measuring beam characterized by being representative of the point of impact of the measuring beam on the

workpiece and wherein the photo detector develops a photo detector output signal representative of the point of impact of the measuring beam on the photo detector, and measurement intelligence means for receiving said photo detector output signal and developing a measurement output signal representative of the point of impact of the measuring beam on the workpiece, wherein the improvement comprises:

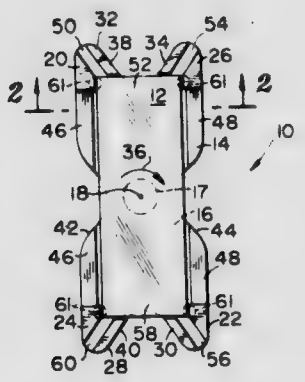
means for monitoring the relationship between the idealized centerline and the actual centerline and developing a monitor output signal representative of the deviation therebetween.

4,349,275

SLIDE HOLDER FOR SPINNER

Gary A. Ayotte, Newtonville; Jules J. Boh, Framingham, and Thomas G. Breen, Fitchburg, all of Mass., assignors to Coulter Electronics, Inc., Hialeah, Fla.

Filed Jun. 19, 1980, Ser. No. 160,963
Int. Cl.³ G01N *1/28, 21/34*
U.S. Cl. 356—36 **10 Claims**



1. A method of securing a substrate for spun blood smears in a substrate holder of a spinning apparatus comprising the steps of:

loosely placing the substrate in the substrate holder;

spinning of the substrate holder about its geometric axis by accelerating the substrate holder to a constant rotational speed of spinning and thereafter spinning the substrate at the constant rotational speed;

during acceleration of the substrate holder, employing the inertia of the substrate to slide at least one edge of the substrate under an inwardly-facing overhang portion of one of a pair of locking members to secure the substrate during the acceleration and the constant rotational speed spinning of the substrate holder;

decelerating the substrate holder from its constant rotational speed to a stationary disposition;

during deceleration of the substrate holder, employing the inertia of the substrate to slide the substrate away from said first engaged locking member so that at least one other edge of the substrate slides under an inwardly-facing overhang portion of the other said locking member of said first pair to secure the substrate during the deceleration of the substrate holder.

4,349,276

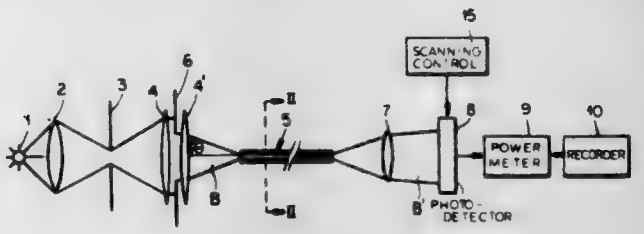
METHOD OF AND SYSTEM FOR DETERMINING REFRACTIVE-INDEX PROFILES OF OPTICAL FIBERS

Pietro Di Vita, Turin, Italy, assignor to Cselt-Centro Studi e Laboratori Telecomunicazioni S.p.A., Turin, Italy

Filed Nov. 14, 1980, Ser. No. 208,705
Claims priority, application Italy, Nov. 15, 1979, 69212 A/79
Int. Cl.³ G01N *21/84, 21/41*
U.S. Cl. 356—73.1 **7 Claims**

1. A method of determining the refractive-index profile of an optical fiber having a core with a refractive index within a predetermined range sheathed by cladding with a refractive index near the lower limit of said range, comprising the steps of:

(a) inserting the fiber to be examined into an axially coextensive capillary tube of transparent material with a refractive index less than the lower limit of said range while leaving an annular clearance between said tube and the fiber;



(b) filling said annular clearance with a transparent liquid having a refractive index higher than the upper limit of said range;

(c) illuminating an end of the resulting unit;

(d) photoelectrically scanning the opposite end of said unit to measure the luminous energy emitted along a radius thereof; and

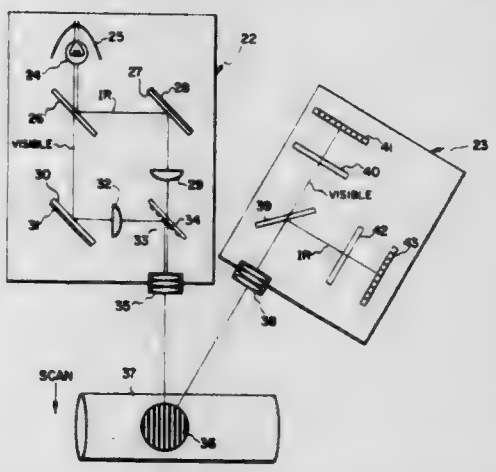
(e) registering the values measured in step (d).

4,349,277

NON-CONTACT MEASUREMENT OF SURFACE PROFILE

Joseph L. Mundy; Gilbert B. Porter, III, both of Schenectady, and Thomas M. Cipolla, Ballston Lake, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 11, 1980, Ser. No. 158,372
Int. Cl.³ G01B *11/00*; G01C *3/20*
U.S. Cl. 356—376 **28 Claims**



20. A system for acquiring surface profile measurements comprising:

an optical sensor for scanning the surface of an object;

said sensor comprising an optical transmitter having a multispectral source of light, a first subsystem for extracting two approximately equal power wavelength bands from the emitted wavelengths of said light source, and a second subsystem for recombining said wavelength bands and for projecting onto the surface a periodic complementary color pattern;

said sensor further comprising an optical receiver for sensing reflected light at a predetermined parallax angle and having a third subsystem for separating said wavelength bands and a pair of detector arrays on which said wavelength bands shift position depending upon the depth from the object surface to a reference, said detector arrays generating a pair of electrical sensor signals corresponding to the detected light intensities of the two wavelength bands; and

a signal processor comprising color pattern decoupling

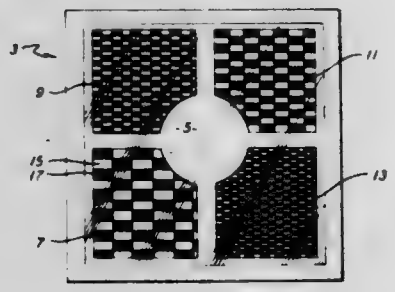
circuitry for processing said sensor signals and extracting a normalized signal that is substantially independent of surface reflectivity and roughness variations, and means for processing said normalized signal to yield the phase shift between said normalized signal and a reference and hence depth data from which the surface profile can be mapped.

4,349,278

COMPARATOR MASK FOR APERTURE MEASURING APPARATUS

Kenneth French, Merrimack, N.H., and Alfred Piorkow, Lancaster, S.C., assignors to GTE Products Corporation, Stamford, Conn.

Filed Jun. 9, 1980, Ser. No. 158,024
Int. Cl.³ G01B *11/02, 3/34*
U.S. Cl. 356—394 **3 Claims**



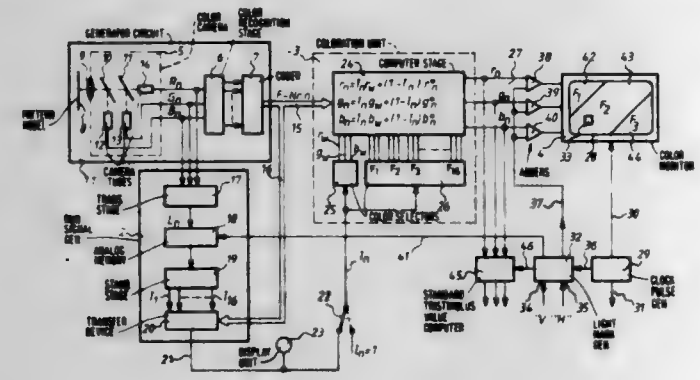
1. In apparatus for determining aperture size of slotted apertured material for a color cathode ray tube wherein a comparator mask is employed in conjunction with the apertured material intermediate a light source and light detector to provide optical transmission data, the improvement comprising a comparator mask having a light transparent section and multiple sections of alternate transparent and opaque sectors with each of said sectors having a length less than the length measured along the longitudinal axis of a slot of said slotted apertured material, wherein each of said multiple sections has alternate transparent and opaque sectors of a size different from the alternate transparent and opaque sectors of another section.

4,349,279

METHOD FOR THE COLOR EVALUATION OF PATTERN MODELS OF FABRIC, DECORATION OR PACKAGING PRINTING, AND A COLOR EVALUATION DEVICE

Eggert Jung, Schoenberg, Fed. Rep. of Germany, assignor to Dr. Ing. Rudolf Hell GmbH, Fed. Rep. of Germany

Filed Dec. 10, 1979, Ser. No. 101,696
Claims priority, application Fed. Rep. of Germany, Dec. 12, 1978, 2853509
Int. Cl.³ G01J *3/50*
U.S. Cl. 356—402 **22 Claims**



13. A color evaluation device for evaluating color pattern models for fabric, decoration or packaging printing and the like, in which a signal source generates primary color measuring signals of a pattern model having a plurality of pattern colors and in which a color monitor operates line-by-line to display the pattern model prior to printing the pattern on a printing medium, comprising:

a first circuit connected to the signal source for recognizing the pattern colors and for generating respective color output signals;

a second circuit connected to said signal source for generating a run signal for each pattern color dependent on the color saturation of the respective pattern colors from at least one primary color measuring signal; and

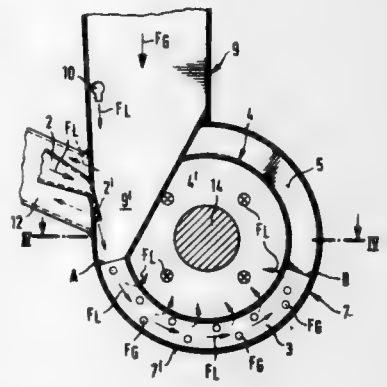
a coloration unit having inputs connected to the first and second circuits and an output connected to the color monitor, said coloration unit being adjustable to selectively assign video color signals to the pattern colors for controlling the color monitor.

4,349,280

CONTINUOUSLY OPERATING MIXER FOR LOOSE OR AND FLOWABLE MATERIAL

Wilhelm Lödige, Paderborn, Fed. Rep. of Germany, assignor to Fritz Lödige, Paderborn and Josef Lücke, Lichtenau, both of, Fed. Rep. of Germany, part interest to each

Filed Feb. 19, 1981, Ser. No. 236,125
Claims priority, application Fed. Rep. of Germany, Feb. 21, 1980, 3006438
Int. Cl.³ B01F *15/02*
U.S. Cl. 366—183 **14 Claims**



1. A continuously operating mixer for loose or flowable material, said mixer comprising:

a cylindrical mixing drum, which at a first end region thereof is provided with an inlet opening for material to be mixed, and at a second end region thereof is provided with an outlet for mixed material;

a mixer shaft which rotates in said drum and is provided with mixing instruments;

a feed device located in the vicinity of said first end region of said drum and having an inlet chute, with a lower end segment, for delivering said material to be mixed;

a nozzle-like air inlet channel for guiding a flow of compressed air, said air inlet channel opening into said lower end segment of said inlet chute;

an injection channel, which is directed toward said inlet opening of said mixing drum, said injection channel communicating with said lower end segment of said inlet chute, and with said air inlet channel, for receiving material to be mixed, and compressed air;

means arranged in said injection channel for deflecting incoming material to be mixed toward the axis of said mixing drum;

an air-suction channel which faces away from said inlet opening of said mixing drum, said air-suction channel being flow-connected with said injection channel; and

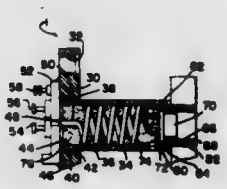
at least one blower associated with said mixing drum for producing an air flow, said air inlet channel, said injection channel, and said air-suction channel being consecutively subjected to the air flow of said at least one blower.

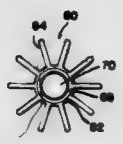
4,349,281

TEMPERATURE SENSOR ASSEMBLY APPARATUS

Peter J. Onksen, Merrimack, N.H., and Leonard Spadafora, North Tewksbury, Mass., assignors to Pacer Systems, Inc., Burlington, Mass.

Filed May 15, 1980, Ser. No. 150,117
Int. Cl.³ G01K 1/14, 1/16
U.S. Cl. 374—136 10 Claims





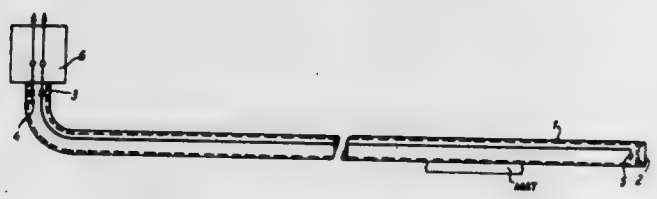
1. Temperature sensor apparatus comprising a base, a heat insulating tube mounted on the base and extending outwardly therefrom, a temperature sensor mounted on the heat insulating tube at a location remote from the base, electrical conductor means extending axially through the heat insulating tube from the temperature sensor to the base in a series of helical loops and terminating at one or more electrical terminals mounted on the base, wherein the heat insulating tube comprises a tubular body having an end mounted on the base and heat insulating material positioned in the tubular body between the base and the temperature sensor.

4,349,282

TRANSDUCERS

Raymond W. Norfolk, Castleford, England, assignor to Spill-Fire Alarm Systems Ltd., London, England

Continuation-in-part of Ser. No. 936,358, Aug. 24, 1978, abandoned. This application Dec. 9, 1980, Ser. No. 214,727
Claims priority, application United Kingdom, Feb. 8, 1977, 5035/77; Apr. 12, 1977, 15004/77
Int. Cl.³ G01K 7/00
U.S. Cl. 374—183 10 Claims



5. A temperature monitoring device of the type comprising an elongated, hollow tube having opposite sealed ends defining a chamber therebetween; a pair of electrodes, each at an opposite end of said tube within said chamber, said electrodes forming part of an electrical monitoring circuit and a medium filling said chamber which changes its electric conductivity in response to a change in temperature, characterized by:

said electrodes having non-corrosive tips of platinum;

said tube being formed of flexible black, thin walled, plastic tubing of small bore;

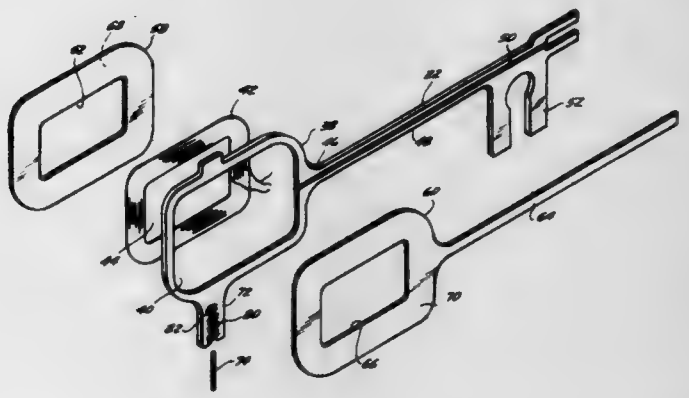
and said medium being an aqueous ionic salt solution saturated with potassium nitrate, normally in liquid state, at −20° C., but subject to abrupt, sudden crystallisation of salts out of said solution in response to a reduction of temperature to thereby trigger said monitoring circuit.

4,349,283

HAMMER FOR DOT MATRIX PRINTER

Thomas P. Sapitowicz, Bel Air, and Robert A. Meloni, Baltimore, both of Md., assignors to General Instrument Corporation

Filed Sep. 5, 1980, Ser. No. 184,311
Int. Cl.³ B41J 3/12
U.S. Cl. 400—124 14 Claims



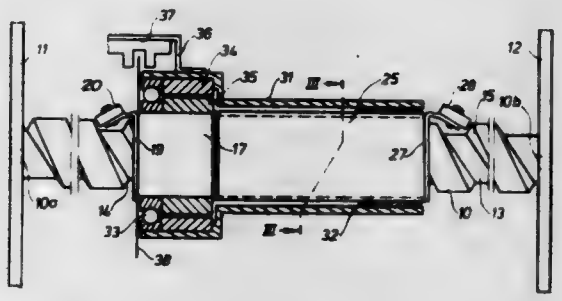
1. A hammer for use in a dot matrix print head, the hammer carrying an electrically energizable coil, adapted to be situated in the magnetic field, and being displaceable relative to the field between a rest position and a print position when the coil is energized, said hammer comprising a coil carrying portion, means for resiliently mounting said coil carrying portion to the head, and a print wire, said coil carrying portion comprising means for mounting said print wire, said print wire mounting means comprising first and second spaced, substantially coplanar sections, partially defining a print wire receiving recess elongated substantially along the direction of displacement, and first and second clamping means defined by a plurality of spaced slots formed in said coil carrying portion, said clamping means extending between said sections and across the recess, said clamping means being situated to engage opposite sides of said print wire and adapted to retain said print wire substantially within the plane of said sections.

4,349,284

ASSEMBLY FOR MOVING PRINTING MEANS OF A PRINTING MACHINE

Leif H. Andersson, Atvidaberg, Sweden, assignor to Facit Aktiebolag, Atvidaberg, Sweden

Filed May 5, 1980, Ser. No. 146,597
Claims priority, application Sweden, May 4, 1979, 7903898
Int. Cl.³ B41J 25/28
U.S. Cl. 400—320 10 Claims



1. In an office machine having a printing means movable linearly along a recording medium, said printing means being supported by a carrier, a nut member rotatably mounted on said carrier being in driving connection with a fixed lead screw in a manner whereby a rotatable means causes displacement of said carrier along said screw, said rotatable means being drivingly connected to a drive motor mounted on said carrier, and means being rigidly connected to said carrier, said means coacting with a shaft for the guidance of said carrier, said shaft being located substantially parallel to said lead screw, the

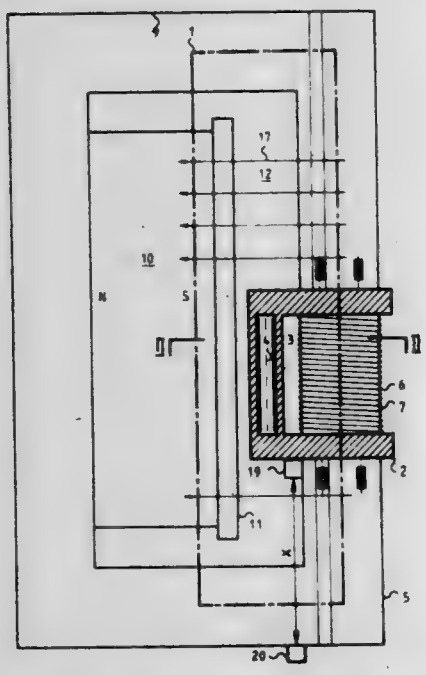
improvement comprising: two tubular parts constituting said nut member and being mounted in interfitting coaxial relation to each other and to said lead screw, said tubular parts having two ends in overlapping relation and two free ends, one of said parts having a radial flange, the other part having the overlapping end bearing on said flange, spring means interconnecting said tubular parts for rotation relative to each other, each of said tubular parts at its free end supporting for rotation a rotatable contact means which bears against the flank of the groove of said lead screw which faces the respective tubular part, and the rotatable contact means is so located and arranged on each of said tubular parts that the axis of rotation of said rotatable contact means is essentially parallel to the plane of the flank of the groove of said lead screw.

4,349,285

PRINTER HAVING ACOUSTIC HEAD LOCATING SYSTEM

Francois Gernelle, Le Chesnay, France, assignor to Compagnie Internationale pour l'Informatique CII Honeywell Bull, Paris, France

Filed Jun. 19, 1980, Ser. No. 161,148
Claims priority, application France, Jun. 19, 1979, 79 15626
Int. Cl.³ B41J *25/28, 19/30*
U.S. Cl. 400—320 **9 Claims**



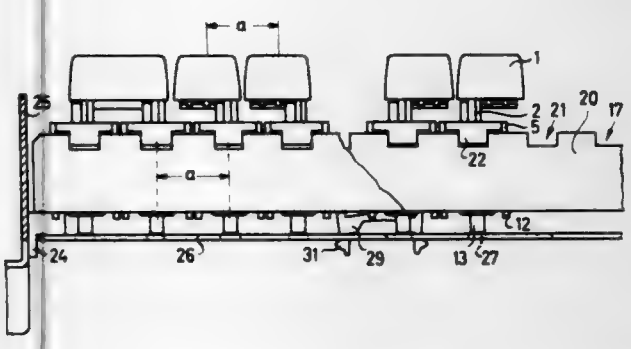
1. A dot type printer comprising a print head, a drive system for translating the head along a rectilinear path, said drive system comprising means for detecting the head location and means for servocontrolling the print head on its path, said head location detecting means including an ultrasonic acoustic transmitter/receiver system, a transmitter of the acoustic system being carried by the print head, the receiver of the acoustic system being fixed to a frame of the printer, the ultrasonic system comprising means for controlling the frequency of a wave derived from the transmitter, said frequency control means including memory means for first and second signals for deriving a difference signal, a digital/analogue converter responsive to the difference signal for deriving a frequency control signal and a voltage controlled oscillator responsive to the frequency control signal for deriving an excitation wave for the transmitter.

4,349,286

KEYBOARD ASSEMBLED FROM INDIVIDUAL KEYS

Paul Blaser; Helmut Schmidt, both of VS-Villingen, and Walter Strobel, Unterkirnach, all of Fed. Rep. of Germany, assignors to Kienzle Apparate GmbH, Villingen, Fed. Rep. of Germany

Filed Feb. 21, 1979, Ser. No. 13,293
Claims priority, application Fed. Rep. of Germany, Feb. 18, 1978, 2807061
Int. Cl.³ B41J *5/08*
U.S. Cl. 400—492 **1 Claim**



1. A keyboard assembled from individual keys, comprising:
(a) keys, including
(i) a key button,
(ii) a key shaft having said key button affixed thereto at one end,
(iii) a stationary key body for receiving the other end of said key shaft, and
(iv) a spring for influencing the relative movement between key shaft and key body;
(b) a base structure for receiving said keys, said base structure being provided with cutouts which are arranged with uniform spacing in two dimensions;
(c) a circuit board carrying electrical control elements being disposed on said base structure, said control elements adapted to being switched by operation of said key shafts;
(d) said key buttons having three receiving openings for said key shafts, one of said openings being arranged in the middle and the other two openings being arranged to the left and right thereof, said openings being arranged with respect to each other at a distance of a quarter of the lateral key-to-key spacing; and
(e) said cutouts in said base structure and the arrangement of said control elements on said circuit board being arranged staggered relative to each other by a half spacing from row to row for selective use as alphabetic key sections or as key sections for numerical and function keys wherein said keys may be arranged to be staggered relative to each other from row to row from zero to at least a half spacing at discrete quarter-spaced intervals.

4,349,287

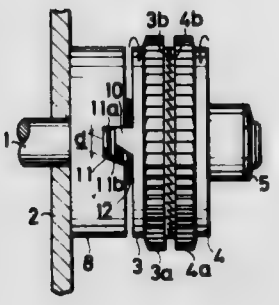
INTERMITTENT PAPER FEED MECHANISM

Yoshinori Chida, and Satoru Tada, both of Tokyo, Japan, assignors to Seikosha Co., Ltd., Japan

Filed Dec. 19, 1980, Ser. No. 218,185
Int. Cl.³ B41J *19/78;* F16H *27/02*
U.S. Cl. 400—569 **8 Claims**

1. An intermittent feed mechanism comprising: an output shaft rotatably supported by a support plate to undergo rotation about a rotary axis; a driven wheel carried with said shaft so as to rotate together therewith; a driving wheel rotatably and slidably received on said shaft so as to be positioned opposite to and facing said driven wheel, said driving and driven wheels having on their respective facing surfaces thereof a plurality of axially extending ratchet teeth releasably engageable to effect one-way coupling of the driving and driven wheels in a forward direction of rotation, and said driving wheel having a plurality of projections integrally extending from a lateral surface thereof, each projection having a trapezoid shape having one edge extending at a right angle and

another edge inclined with respect to a line normal to the rotary axis; a cylindrical stopper body fixed on said support plate opposite to said driving wheel and having a cylindrical wall portion having spaced therearound a plurality of notches corresponding in number and similar in shape to said projections, said projections being movably inserted in respective ones of said notches and coacting therewith to ensure incremental rotation of the driving wheel through increments corresponding to one pitch of said ratchet teeth of said driving wheel; a coiled return spring disposed between said driving wheel and said stopper body for pressing said driving wheel toward said driven wheel, the opposite ends of said return spring being respectively connected to said stopper body and



said driving wheel for imparting a return force of rotation to said driving wheel in the reverse direction of rotation; and a rotatable detent lever cooperative with a plurality of pawls disposed on the outer peripheral surface of said driven wheel so as to prevent reverse rotation of said driven wheel in the reverse direction; whereby during operation the driving wheel is intermittently advanced in the forward direction through increments corresponding to one pitch of said ratchet teeth thereof through the coaction between said projections and said notches, and said driving wheel is axially urged toward said driven wheel so as to enable said ratchet teeth of said both wheels to engage each other during forward advance of the driving wheel.

4,349,288

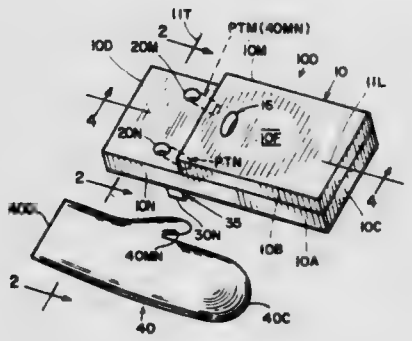
PERSONAL CLEANSING ARTICLE FOR RECTO-GENITAL REGION

Helen I. Bond, 709 Olson Rd., Longview, Wash. 98632

Filed Nov. 10, 1980, Ser. No. 205,740

Int. Cl.³ A47L *13/19;* A61M *35/00*

U.S. Cl. 401—7 **21 Claims**



1. Personal cleansing article for the recto-genital region and comprising:

A. a flexible laminar washcloth member extending longitudinally along a central-axis and peripherally defined by a transverse lead-end, a transverse trail-end, and two longitudinally extending cloth-edges, said washcloth member having two opposed broad surfaces including uppersurface and lowersurface, said uppersurface having a finite surface-area and being hydrophilic substantially throughout for aptly contacting the recto-genital anatomy, the washcloth member being adapted to be supported by the palm of the user's outstretched hand, said washcloth member below the uppersurface including a longitudinally extending laminar-pouch, said laminar-pouch having a single pouch-throat relegated to the washcloth member uppersurface whereby hydrophilic cleansing liquid is chargeable into and is expelled from said laminar-pouch through said single pouch-throat, said cleansing liquid being gently controllably expelled from the laminar-pouch through the single pouch-throat to flood the uppersurface whenever the user's outstretched hand palm presses toward the washcloth member lowersurface;

B. a pair of substantially transversely aligned thumbopenings surrounded by the washcloth member periphery and extending vertically through the washcloth member on opposite sides of the central-axis thereby accommodating for said outstretched hand the dextrously preferred of the user's two hands, said thumbopenings being located trailwardly the washcloth member single pouch-throat;

C. a transversely extending hand-engaging means attached to the washcloth member and located below the lowersurface thereof so as to maintain the user's hand palm toward the washcloth member lowersurface and the fingertips positioned within the washcloth periphery; and

D. hydrophobic barrier means to retard cleansing liquid seepage from the laminar-pouch to the hand-engaging means.

4,349,289

LOOSE LEAF BINDER

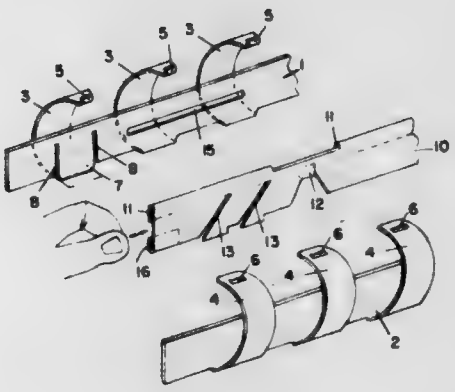
Vincenzo E. Cardellini, Rua Manuel Maria Tourinho, 673, 01236 Sao Paulo, SP, Brazil

Continuation-in-part of Ser. No. 35,080, May 1, 1979, abandoned, which is a continuation-in-part of Ser. No. 21,682, Mar. 19, 1979, abandoned, which is a continuation of Ser. No. 895,440, Apr. 11, 1978, abandoned. This application Jun. 3, 1980, Ser. No. 156,099

Claims priority, application Brazil, Apr. 19, 1977, 7702458[U]; May 2, 1978, 7802756[U]

Int. Cl.³ B42F *3/04, 13/18*

U.S. Cl. 402—30 **6 Claims**



1. A loose leaf binder comprising:

first and second elongated strips each having a plurality of half loops joined to an edge thereof at corresponding spaced locations along said edge;

means provided at the ends of said half loops to permit a half loop associated with one strip to interlock with a half loop associated with the other strip to form a full loop when the strips are positioned in juxtaposition;

a plurality of clip means hingedly interconnecting said strips, each of said clip means being located proximate said edges of the strips;

means provided on one of said strips for permitting movement of said clip means transversely of said strip;

an actuator slidably joined to one of said strips, said actuator having a plurality of parallel inclined slots adapted to receive said clip means whereby when said actuator is moved in a direction longitudinally of said elongated strips, movement of the clip means within said slots displaces the clip means transversely of said one strip to

engage an edge of the other strip thereby moving said other strip to release its half loops from interlocking relationship with the half loops of said one strip.

4,349,290

LOOSE LEAF BINDER

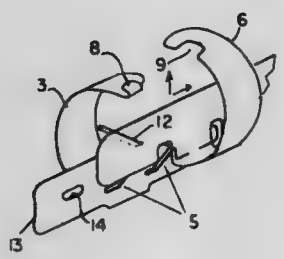
Claudio B. Cardellini, Rua Manuel Maria Tourinho, 673, 01236 Sao Paulo SP, Brazil

Filed Mar. 19, 1980, Ser. No. 131,766

Claims priority, application Brazil, Mar. 21, 1979, 7901760[U]

Int. Cl.³ B42F *3/02, 13/22*

U.S. Cl. 402—55 **4 Claims**



1. A loose leaf binder comprising:

a pair of elongated strips each having a plurality of half-rings at corresponding spaced locations along an edge thereof;

means provided at the ends of said half-rings to permit a half-ring associated with one strip to interlock with a half-ring associated with the other strip to form a full ring when the rings are positioned in juxtaposition;

a plurality of linking rings hingedly interconnecting said strips, each of said linking rings extending through a separate pair of parallel slots provided in one of said strips, said slots being inclined with respect to the longitudinal axes of said strips whereby during relative longitudinal movement between the strips, movement of the linking rings within said slots also displaces said strips transversely with respect to one another to release by longitudinal and elevational displacement the half-rings of one strip from interlocking relationship with the half loops of the other strip.

4,349,291

APPARATUS FOR SECURING A WHEEL TO A ROTATABLE SHAFT OF A TURBOMACHINE

Carl H. Geary, Jr., Greensburg, Pa., assignor to Carrier Corporation, Syracuse, N.Y.

Division of Ser. No. 955,428, Oct. 27, 1978, Pat. No. 4,293,996.

This application Apr. 24, 1981, Ser. No. 257,295

Int. Cl.³ B63H *1/20*

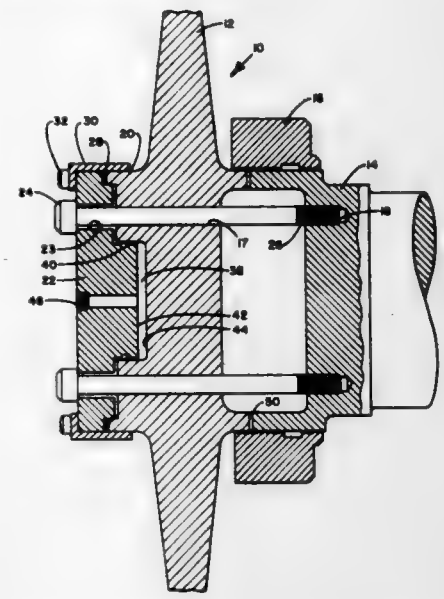
U.S. Cl. 403—15 **7 Claims**

1. Apparatus for securing a wheel to a rotatable shaft of a turbomachine comprising:

an outside member disposed axially outside the wheel, wherein surfaces of the wheel and the outside member define an expansible chamber;

a plurality of connecting means axially extending through aligned apertures defined by the shaft, the wheel, and the outside member, with a first end of the connecting means secured to the shaft and a second end of the connecting means engaging the outside member;

means for generating a force within the expansible chamber to move the outside member relative to the wheel to apply a stretching force to the connecting means and a compressive force to the wheel, axially compressing the wheel against the shaft; and



means for maintaining the stretching force on the connecting means and the compressive force on the wheel to allow removal of the force generating means.

4,349,292

IN-FLIGHT HYDROPHONE DEPLOYMENT SYSTEM FOR UNDERWATER VEHICLES

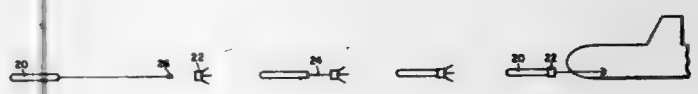
Orrin W. Albert, Jr., Escondido, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

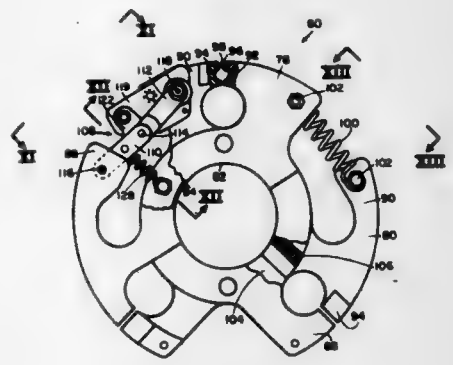
Division of Ser. No. 113,917, Jan. 21, 1980, Pat. No. 4,283,731.

This application Mar. 5, 1981, Ser. No. 240,729

Int. Cl.³ B25G *3/18;* F16B *21/00;* F16D *1/00*

U.S. Cl. 403—322 **2 Claims**





1. A retention and releasing apparatus comprising:

a link having a knob mounted on one end thereof;

a pair of plates, each plate having a central aperture for rotatable mounting on a shaft with the plates in a spaced relationship with respect to one another;

each plate having a plurality of arms in the plane of the plate, and each arm having a transverse flange which extends into the spacing between the plates so that pairs of flanges, made up of a flange from each respective arm, are capable of opening and closing with respect to one another as the plates are rotated in opposite directions on the shaft;

each flange having a recess so that each pair of flanges provides a socket for retaining or releasing the knob on a respective link;

spring means interconnecting the plates for biasing the pairs of flanges to an open releasing position;

means mounted to the plates for stopping the pairs of flanges at a predetermined open position and

means for locking and unlocking the pairs of flanges from the closed positions to the open positions.

4,349,293

COMPOUND BLOCK KIT

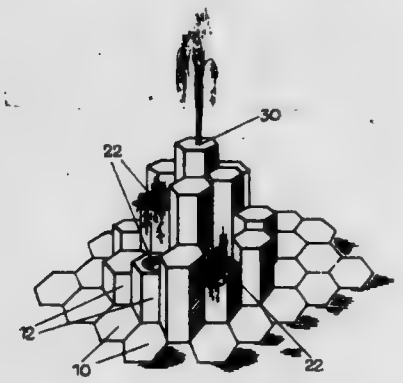
Hugo Rosenberger, Alzenauer Strasse 31, D 8756 Kahl, Fed. Rep. of Germany

Filed Jan. 8, 1980, Ser. No. 110,554

Claims priority, application Fed. Rep. of Germany, Jan. 11, 1979, 2900852

Int. Cl.³ A01G *9/02*; B05B *17/08*; E01C *5/06*

U.S. Cl. 404—41 **21 Claims**



1. Compound block kit comprising compound blocks; said compound blocks having similar cross-sectional form and size and having a height variable from the height of cobblestones to a height substantially above the surface of cobblestones corresponding to palisade height; said compound blocks having edge-teeth extending about the entire block circumference and being meshingly engageable with one another, neighboring compound blocks being meshed by engagement of corresponding edge-teeth on the block circumferences for holding the blocks firmly in place and for mutually supporting each other, meshing of neighboring compound blocks forming interlocking of the blocks to result in a homogeneous combination so that blocks at the height of cobblestones can firmly support blocks with heights substantially above heights of cobblestones.

4,349,294

CONCRETE TOPPING SPREADER SYSTEM

J. Dewayne Allen, Paragould, Ark., assignor to Allen Engineering Corporation, Paragould, Ark.

Filed Jul. 18, 1980, Ser. No. 170,126

Int. Cl.³ E01C *19/18*

U.S. Cl. 404—110 **11 Claims**

11. Apparatus for uniformly spreading a topping material over a wet concrete surface area having a length, width and opposing sides, said apparatus comprising:

a. a spreader including a hopper for storing a supply of loose particulate topping material and for dispensing a uniformly wide layer of the topping material from an elongated slot in said hopper as said spreader is translated along a path, said hopper further including

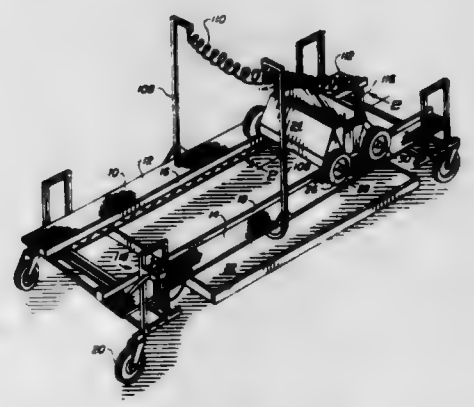
i. a first end member inclined at an angle to the vertical and including top and bottom surfaces; and

ii. a second end member positioned opposite said first end member and including top and bottom surfaces, the bottom surfaces of said first and second members converging together to form said elongated slot;

b. means coupled to said first end member of said hopper for vibrating said first end member;

c. bridge means supported above and spanning the width of the concrete surface area without contacting the concrete surface and translatable along the length of the concrete surface area for providing an elevated path to translate said spreader across a widthwise segment of the concrete surface area and for maintaining said spreader vertically spaced above and separated from the concrete surface;

d. means coupled to said spreader for metering the discharge of topping material from said elongated slot onto the widthwise segment of the concrete surface area at a rate proportional to the translation velocity of said spreader across said elevated bridge means and independent of the vertical spacing between said slot and the concrete surface, said metering means including



i. gate means coupled to said hopper and engaging said elongated slot for controlling the width of said slot; and

ii. means positioned within said hopper and above said elongated slot for agitating the topping material within said hopper;

e. control means coupled to said spreader and to said bridge means for permitting an operator located outside of the wet concrete surface area to remotely control the back and forth translations of said spreader across said elevated bridge means; and

f. drive means coupled to said spreader for translating said spreader across the elevated path formed by said bridge means over the wet concrete surface area to thereby dispense a uniform layer of topping material over the widthwise segment of the concrete surface area,

whereby sequential translations of said spreader across said bridge means followed by sequential translations of said bridge means along the length of the concrete surface area in displacements equal to the width of the layer of topping material dispensed by said spreader covers the entire concrete surface area with a uniform layer of topping material.

4,349,295

STRUCTURAL RIDGE MEMBER FOR VIBRATING CONCRETE SCREEDS

Donald R. Morrison, 6228 Eagle Peak Dr., Charlotte, N.C. 28214

Division of Ser. No. 132,623, Mar. 21, 1980, Pat. No. 4,261,694. This application Apr. 6, 1981, Ser. No. 251,115

The portion of the term of this patent subsequent to Apr. 14, 1998, has been disclaimed.

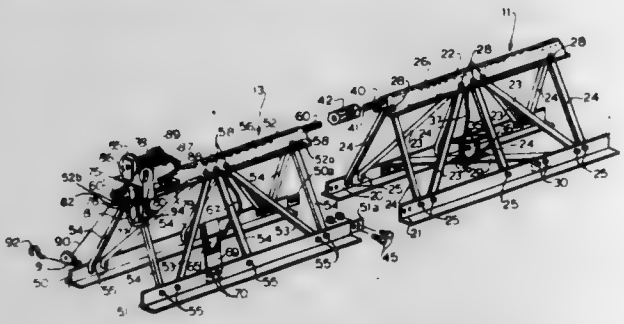
Int. Cl.³ E01C *19/40*

U.S. Cl. 404—114 **1 Claim**

1. A structural ridge member for use in air-vibrated concrete screeds of the isosceles triangle shaped, separable frame unit

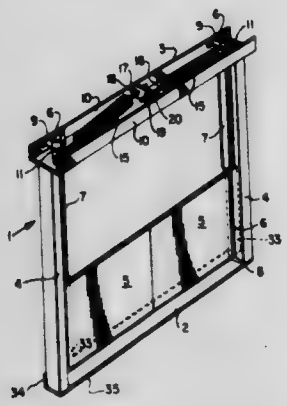
type, said ridge member being molded as an integral replaceable one piece member comprising:

(a) a hollow strengthening ridge tube portion adapted for being horizontally positioned at the apex of an isosceles triangle shaped screed frame unit so as to extend with its bore for the length of such frame unit and being internally threaded adjacent each of its bore ends; and



(b) integral with said ridge tube portion on opposite sides thereof downwardly and outwardly extending integral solid flange portions extending for the length of said ridge tube portion and having holes formed therein enabling other structural members of said frame unit to be detachably attached thereto.

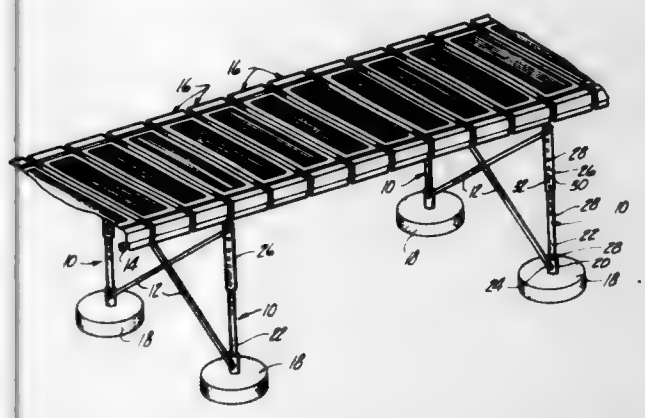
4,349,296
IRRIGATION DITCH GATE
Peter J. Langeman, Box 765, Coaldale, Alberta, Canada
Filed Jan. 28, 1980, Ser. No. 116,085
Int. Cl.³ E02B *7/40*
U.S. Cl. 405—99 9 Claims



1. A gate for automatically maintaining predetermined water levels in an irrigation ditch comprising a frame for mounting in the ditch; gates means pivotally mounted in said frame for rotation between open and closed positions to permit or prevent water flow therethrough; spring means connected to said frame means and to said gate means for continuously biasing said gate means to the closed position; and readily actuatable means for adjusting the spring bias, so that the pressure and hence the water level required to open said gate means against the spring bias can be adjusted.

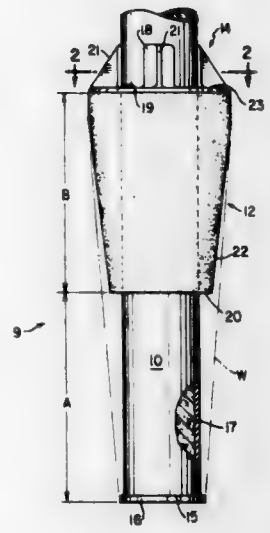
4,349,297
BOAT DOCK
Terrance J. Misener, 5685 N. River Rd., Freeland, Mich. 48623
Filed Nov. 19, 1980, Ser. No. 208,238
Int. Cl.³ E02B *3/20*
U.S. Cl. 405—221 16 Claims

1. A boat dock comprising a plurality of pairs of laterally spaced, upright tubular stanchions which are adjustable in height, an enlarged base at the lower end of each stanchion adapted to rest on the underwater ground surface to support the stanchion in an upright position, a tee fitting having a depending upright stem telescopically engaged within the upper end of each stanchion, each of said fittings having a cross bar at its upper end extending lengthwise of the dock, a tubular stringer extending lengthwise of the dock between the successive tee fittings, the opposite ends of the cross bars being received in the ends of the successive tubular stringers and rigidly and removably secured thereto, and a plurality of succes-



sive plastic resin planks supported at their opposite ends by said stringers, each of said planks having a generally flat top tread surface and a bore adjacent each end thereof extending transversely of the plank, said bores being telescopically and slideably received over said stringers.

4,349,298
WEDGE-FORMING PILE
William E. Kruse, 1009 Hillside Ave., Plainfield, N.J. 07060
Filed Jan. 24, 1980, Ser. No. 115,052
Int. Cl.³ E02D *5/30, 5/48*
U.S. Cl. 405—256 16 Claims



1. A wedge forming pile which comprises:

(a) an elongated pile shaft having a bottom tip and an upper end and

(b) wedge forming means of castable material spaced upward of the tip of the pile shaft and proximate to said tip,

(c) said pile shaft extending above and below said wedge-forming means,

(d) the minimum combined width of said pile shaft and accompanying wedge-forming means from side wall to side wall being greater than the width of said pile shaft immediately above said wedge-forming means and greater than the width of said pile shaft immediately below said wedge-forming means,

(e) the ratio of the height of said wedge-forming means to the width of said pile shaft immediately below said wedge-forming means being approximately 2.7:1,

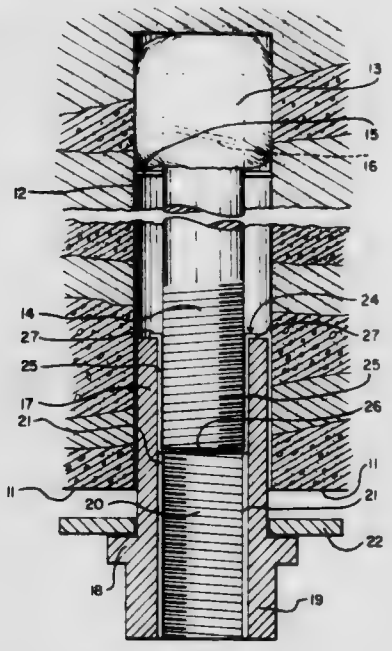
(f) whereby the outer portions of said tip, said wedge-forming means and the portions of the pile shaft therebetween accommodate the formation of a soil wedge during driving of said pile.

4,349,299

ROOF BOLT TENSION HEAD AND METHOD OF USE

Nicholas R. Eny, Cheverly, Md., assignor to Stephen F. Koval, Portage, Pa.

Continuation-in-part of Ser. No. 124,754, Feb. 26, 1980, abandoned. This application Jul. 21, 1980, Ser. No. 170,829
Int. Cl.[3] E21D *20/02*
U.S. Cl. 405—261 11 Claims



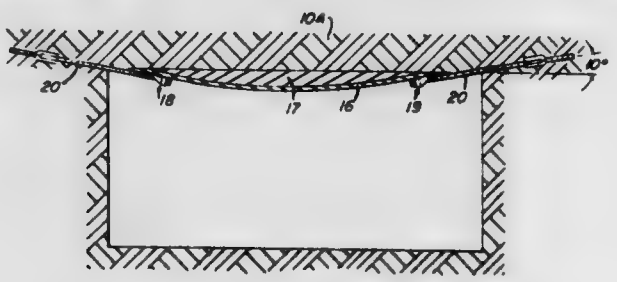
1. A tension head for a bolt inserted in a drill hole in a rock formation comprising a sleeve with a threaded bore extending therethrough, wrench flats at one end of the sleeve, a pair of oppositely disposed keyways extending through the bore, and stop means fitted in the keyways and supported by the sleeve for forced engagement with the bolt end when the sleeve is screwed thereon, whereby rotation of the sleeve rotates the bolt, but which are deformed by further rotational advance of the sleeve on the bolt so as to be pushed toward the wrench flat end of the sleeve by the bolt end.

4,349,300

SYSTEMIC ROOF SUPPORT

Jay H. Kelley, 104-1/2 Watson Ave., Fairmont, W. Va. 26554

Continuation-in-part of Ser. No. 45,501, Jun. 4, 1979, abandoned. This application Aug. 25, 1980, Ser. No. 180,598
Int. Cl.[3] E21D *11/00;* E04C *5/12*
U.S. Cl. 405—288 17 Claims



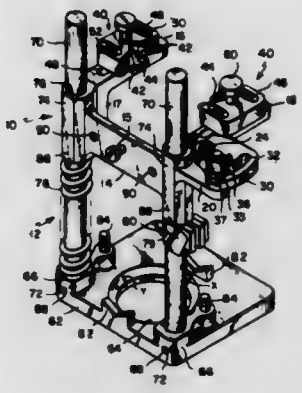
1. A method for systemic roof control of native roof strata in a mine opening including the steps of horizontally arranging an elongated tensile member immediately below the lowest stratum layer of native roof strata which is, securing anchors within general strata horizontally remote to the native roof strata to impose reactive anchoring forces compressively upon the upper general strata at sites distally isolated from the native roof strata, coupling the tensile member to the anchor members under a prestressed elongation, and using the tensile member to resolve the prestressing forces into compressive forces applied uniformly in only directions normal to the roof strata for increasing friction between layers of native roof strata to impart vertical shear resistance without significant horizontal compression of the native roof strata.

4,349,301

CARRIAGE SUPPORT FOR POWER-DRIVEN HAND TOOL

Alfred Z. Boyajian, P.O. Box 811, Manhattan Beach, Calif. 90266

Filed Apr. 28, 1980, Ser. No. 144,318
Int. Cl.[3] B23B *45/14*
U.S. Cl. 408—112 23 Claims



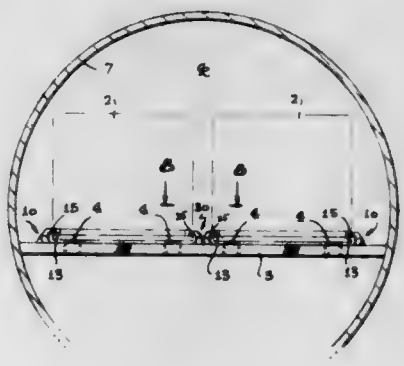
1. A support for supporting an electric power-driven tool comprising a tool housing containing vent holes, an electric motor in the housing and a chuck coupled to the motor for rotation, comprising first means defining a carriage member adapted to support the tool housing in a position such that the axis of rotation of the chuck is perpendicular or horizontal second means mounted to the carriage member to clamp the tool housing thereto, said second means being transversely-spaced and dimensioned to be engaged with the vent holes of the tool housing at diametrically opposite sides thereof, third means mounting one of said second means for movement relative to the other and fourth means for fixing said third means in a position of engagement of said second means with the vent holes after being positioned therein.

4,349,302

PALLET LATCHING MECHANISM

Jesse T. Ferguson, Jr., La Canada, Calif., assignor to Lockheed Corporation, Burbank, Calif.

Filed Jul. 7, 1980, Ser. No. 166,577
Int. Cl.[3] B60P *1/64, 7/08;* B61D *45/00;* B63B *25/22*
U.S. Cl. 410—69 16 Claims



1. A cargo restraint mechanism for securing a cargo unit load device in a vehicle having a floor structure, comprising:
means for restraining said unit load device;
means associated with said floor structure and said restraining means for alternatively transferring said retaining means to an erected position above the top surface plane of said floor structure and a retracted position below said top surface plane;
means interacting with said transferring means for receiving

a first unidirectional force such that upon application of said force said restraining means is movable from said retracted position to said erected position;

said transferring means being further adapted to transfer said restraining means from said erected position to said retracted position upon application of a second unidirectional force to said restraining means.

10. A self-locking cargo restraint module for securing a cargo unit load device to a vehicle floor structure, comprising:

frame means adapted to be mounted to said floor means;

means for restraining said unit load device; and

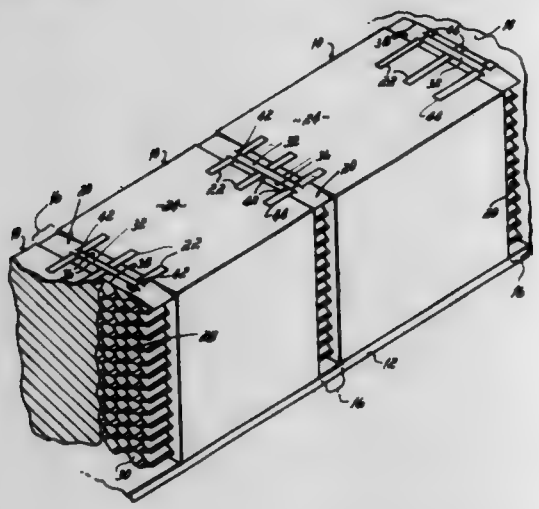
a linkage mechanism, said linkage mechanism including a plurality of links rotatably secured to said frame means and associated with said restraining means for alternatively transferring said restraining means to an erected position above the top-surface plane of said frame means and a retracted position below said top-surface plane, said plurality of links having an over-center stop arrangement when said restraining means is in said erected position.

4,349,303

LOAD SPACER

Henry L. Liebel, and Martin Krier, both of Cincinnati, Ohio, assignors to Angleboard Inc., Cincinnati, Ohio

Filed Sep. 13, 1979, Ser. No. 75,085
Int. Cl.[3] B61D *45/00*
U.S. Cl. 410—154 11 Claims



1. A load spacer adapted to be suspended from the top of adjacent laterally spaced loads comprising

a cellular structure having a top and generally planar sides, said top having a pair of spaced slots therein, and

an elongated, relatively rigid suspension member inserted into and through said slots across said top in a weave pattern such that portions of said top lie on either side of said suspension member with at least one end of said member projecting laterally beyond a side of said structure,

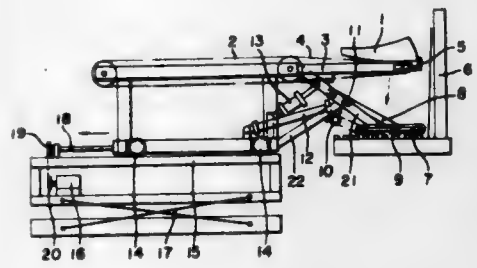
said portions lying on either side of said suspension member being offset by the thickness of said suspension member such that said suspension member is held in place by the frictional force between the mating surfaces of said suspension member and said portions of said top and the binding force of said offset.

4,349,304

AUTOMATIC GLASS PLATE PILING APPARATUS

Hiroyuki Ogawa, and Haruhiko Kaki, both of Kanagawa, Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 939,736, Sep. 5, 1978, abandoned. This application Sep. 26, 1979, Ser. No. 79,199
Claims priority, application Japan, Apr. 8, 1976, 51-38706
Int. Cl.[3] B65G *57/00*
U.S. Cl. 414—106 5 Claims



1. An automatic glass plate piling apparatus comprising:

a feeding conveyor for conveying a glass plate in the horizontal direction;

a turning frame pivoted at an end of said conveyor so as to receive said glass plate transferred from said conveyor and to turn it downwardly at a predetermined angle;

a transfer frame disposed below said turning frame so as to receive and support the rear of said glass plate from said turning frame at about the time of the end of the turning operation;

a horizontal transfer conveyor comprising

a plurality of horizontal endless conveyors provided on the lower end of the transfer frame so as to support the lower edge of the glass plate transferred to the transfer frame; and

means for simultaneously turning said transfer frame about a horizontal axis to cause said transfer frame to stand up and to move said horizontal transfer conveyor forward and the cooperative action of the turning of the transfer frame and the movement of the horizontal transfer conveyor acts to drive said glass plate against a pallet,

whereby said lower edge of said glass plate is maintained forward of the center of gravity of said glass plate by the movement of said horizontal transfer conveyor during said turning of said transfer frame.

4,349,305

LIFTING AND DUMPING APPARATUS

Charles C. Wynn, Maryville, and Donald J. Hopkins, Knoxville, both of Tenn., assignors to Dempster Systems Inc., Knoxville, Tenn.

Continuation of Ser. No. 848,832, Nov. 1, 1977, abandoned. This application Dec. 29, 1980, Ser. No. 220,768
Int. Cl.[3] B65B *21/02*
U.S. Cl. 414—408 3 Claims

1. A lifting and dumping apparatus for dumping the contents of a container into the body of a vehicle including:

a pair of lift arms pivotally secured to the vehicle for movement between a lower position in which the front portions of the lift arms extend forward of the vehicle and an upper position in which the front portions of the lift arms extend above the vehicle;

lift arm power means to move the lift arms between their lower and upper positions;

a front cross member extending between and rotatably supported by the front portions of the lift arms;

a pair of fork arms for engaging the container;

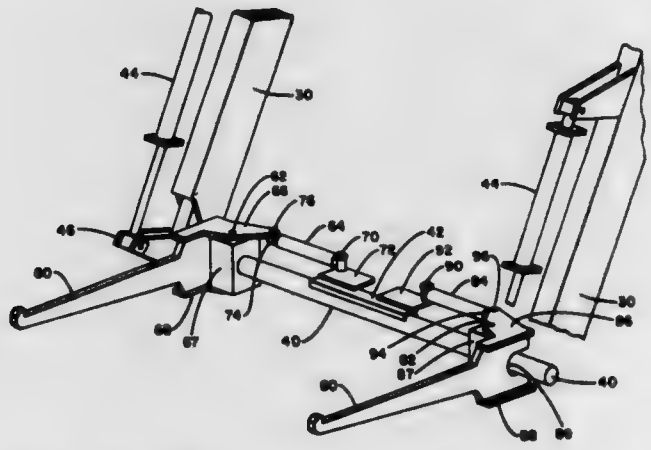
attaching means to secure the fork arms to the front cross member, and including

two pins extending from the front cross member wherein the pins are generally vertical when the fork arms engage the container,

two bracket plates wherein each bracket plate is pivotally supported by a pin and each fork arm is secured to a bracket plate for pivotal movement therewith between an open position and a closed position, wherein the fork arms extend forward of the lift arms for engagement with the container, and a closed position, wherein the fork arms are generally parallel to the front cross member, and

spacing members mounted on the front cross member and extending between the front cross member and the bracket plates to prevent the bracket plates from sliding along the axes of the pins and to support the bracket plates for pivotal movement thereabout, and wherein

back ends of the fork arms define notches for receiving the front cross member as the fork arms move into the open



position wherein the front cross member supports the fork arms when the fork arms are in the open position;

dumping means connected to the lift arms and the front cross member for rotating the front cross member, and pivoting the fork arms about the axis of the front cross member; and

fork arm power means to pivot the fork arms between their open and closed positions, and including

a pair of hydraulic cylinders, each having a movable piston rod connected to one of the bracket plates to pivot the fork arms between their open and closed positions, and

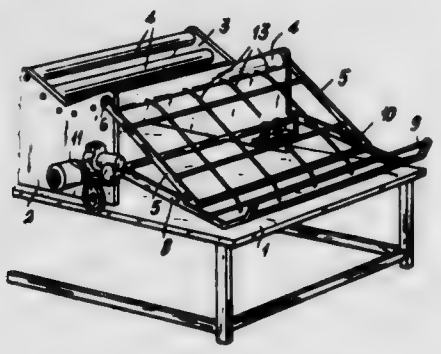
a hydraulic fluid circuit connected to the hydraulic cylinders to move the piston rods thereof, and including sequencing means to alternately pivot the fork arms from their open position to their closed position.

4,349,306

APPARATUS FOR LOADING WEB SUPPLY ROLLS INTO FOLDING MACHINES

Carlo Fonio, Galliate, Italy, assignor to Rockwell-Rimoldi, S.p.A., Milan, Italy

Filed Aug. 6, 1980, Ser. No. 175,628
Claims priority, application Italy, Sep. 25, 1979, 25967 A/79
Int. Cl.[3] B65G 65/02
U.S. Cl. 414—684 6 Claims



1. An apparatus for loading supply rolls of web material onto a folding machine of the type having a roll supporting cradle formed between spaced side plates of a movable carriage mounted for reciprocating movement on a folding table, said apparatus comprising:

(a) a roll guide frame (5) pivotably attached to and extending from one end of the spaced side plates;

(b) an elevator frame (8) pivotably connected to and extending from the spaced side plates in spaced relation below and in general alignment with said roll guide frame (5);

(c) means forming one end of said elevator frame (8) for supporting a web supply roll;

(d) drive means operatively connected to said elevator frame (8) for pivoting the latter upwardly and downwardly between preselected positions; and

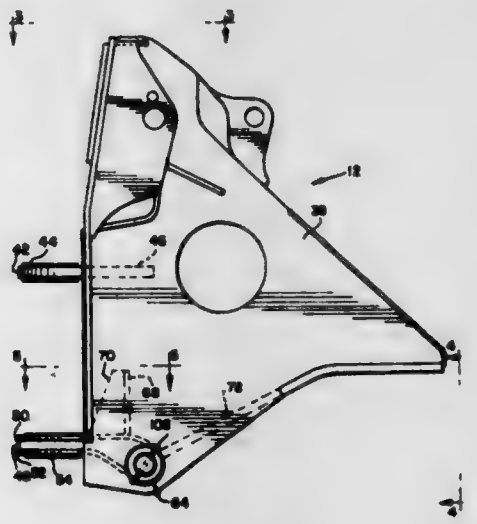
(e) means attached to said elevator frame (8) for raising said roll guide frame (5) simultaneously therewith to a position for receiving the supply roll from said elevator frame and guiding the same into the machine's cradle.

4,349,307

STRUCTURE FOR CENTER HINGE AND BOOM CYLINDER PIVOT

John E. Klem, Waukegan, Ill., assignor to International Harvester Co., Chicago, Ill.

Filed Mar. 31, 1981, Ser. No. 249,573
Int. Cl.[3] B66F 9/075
U.S. Cl. 414—686 7 Claims



1. In a loader having a frame with a pair of boom arms pivotally mounted thereon, a pair of boom cylinders pivotally connected to the boom arms for raising and lowering thereof, an improved mounting for pivotal connection of the boom cylinders to the frame comprising:

a tube spanning the width of the frame and secured thereto;

a pair of stub shafts;

a stub shaft positioned in each end of the tube and protruding therefrom;

a bolt passing through the tube and the inner end of each stub shaft to secure the stub shaft in the tube; and

the bolt being substantially in alignment with the boom cylinder when fully extended.

3. In an articulated loader having front and rear frames pivotally interconnected by upper and lower hinges, a pair of boom arms pivotally mounted on the front frame, and a pair of boom cylinders connected between the front frame and the boom arms; and improved support for the lower hinge on the front frame comprising:

a tube extending across and secured to the front frame;

upper and lower plates secured to the tube;

a bearing hub positioned between and secured to said plates; and

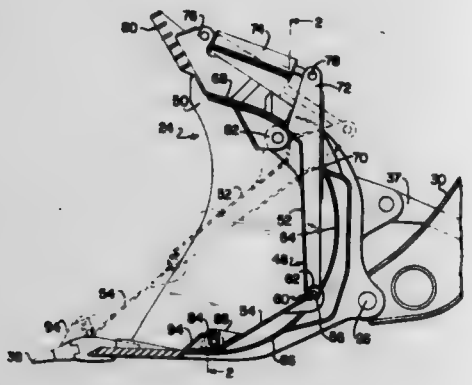
vertical members extending from said hub to the front frame and positioned between and secured to said plates to form a box section.

4,349,308

FRONT END LOADER WITH BUCKET EJECTOR ASSEMBLY

John W. Buckstead, Overland Park; Frederick J. Hoppe, Shawnee Mission, both of Kans., and Dennis W. Williams, Kansas City, Mo., assignors to Paccar, Inc., Bellevue, Wash.

Filed May 27, 1980, Ser. No. 153,711
Int. Cl.³ E02F 3/81
U.S. Cl. 414—725 6 Claims
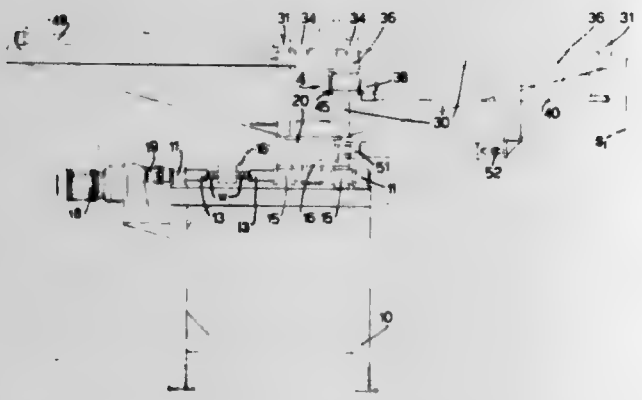


1. In a front end loader,
a tractor having a pair of front tires and a pair of rear tires;
a boom assembly having one end thereof swingably connected to the tractor;
a bucket pivotally mounted on the other end of the boom assembly;
means for swinging said boom assembly and therefore said bucket, between a raised and a lowered position, the center of gravity of the bucket, when in a lowered position, being proximal to said front tires; and
an ejector assembly for said bucket for ejecting the contents of the bucket when in a raised position,
said ejector assembly including a pair of swingable panels within said bucket; a hinge joining said panels and means for sealing said hinge against the ingress of material within the bucket, said sealing means being in the form of a half tube on one of said panels and continuously overlying said hinge during operation of said ejector assembly.

4,349,309

DEVICE FOR THE TRANSFER OF YARN HANKS

Federico Minnetti, Pieve a Nievole, Italy, assignor to Officine Minnetti di Ornella Raveggi & C.S.a.s., Pieve a Nievole, Italy

Filed Mar. 13, 1980, Ser. No. 129,881
Claims priority, application Italy, Sep. 28, 1979, 26128 A/79
Int. Cl.³ B65H 54/56
U.S. Cl. 414—744 A 5 Claims



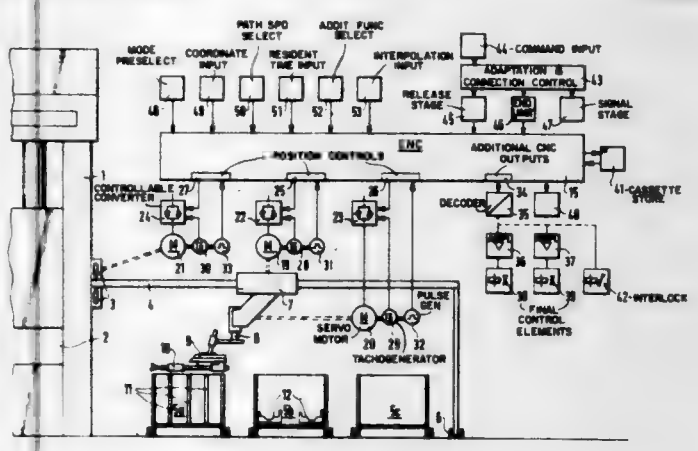
1. A device for transferring yarn hanks from a first support or carrier to a second support or carrier, one of said first and second supports being a moving support, said device comprising: a vertical structure (10) having slide guides (12, 13) integral therewith and extending parallel to the direction of movement of said one support; a carriage (16) movable on said guides; means for moving said carriage; a rotatable head (20) carried by said carriage; means for rotating said head; a frame (30) integral with said rotating head; slide bars (32, 33) carried by said rotatable head; a slider (36) movable on said slide bars; means for moving said slider; spreadable skein-holder rods (40, 41) carried by said slider; and means for moving said rods between a closed position in which the rods are parallel and closely spaced from each other and a spaced apart position; said rods in the closed position being insertable into a yarn hank to be transferred from the first support and being moved to the spaced apart position to thereby transfer the yarn hank to said rods, movement of said slider and said rotatable head moving said rods into a position for transferring the yarn hank to the second support.

4,349,310

UNLOADING DEVICE FOR A PRESS

Franz Schneider, Göppingen; Burkhard Schumann, Ottenbach; Karl Maier, Kuchen, and Herbert Höhn, Göppingen, all of Fed. Rep. of Germany, assignors to L. Schuler GmbH, Göppingen, Fed. Rep. of Germany

Filed Dec. 22, 1978, Ser. No. 972,214
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1977, 2757629
Int. Cl.³ B25J 9/00
U.S. Cl. 414—749 9 Claims

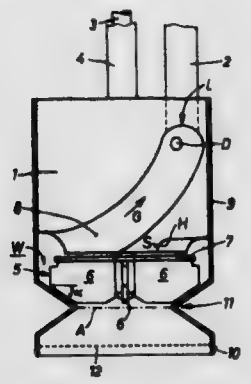


1. An unloading device for moving workpieces from a press into containers located alongside the press, comprising:
a carrier frame extending over the containers;
a guide rail mounted on the side of the press, wherein one end of the carrier frame is inserted in said guide rail for movement in a first direction along the side of the press;
extraction grippers mounted on said carrier frame wherein said extraction grippers can be moved laterally outside of an area under said carrier frame into a working area of the press to lift workpieces out of the press and deliver them to the containers; and
a plurality of servo drives coupled to the carrier frame and the extraction grippers to move said extraction grippers in three directions which are at right angles to each other, said servo drives being controlled by a continuous-path numerical control unit in accordance with a predetermined program to control the movement of said carrier frame and said extraction grippers to direct the extraction grippers into the working area of the press to lift the workpieces out of the press and move them into the area under the carrier frame to stack the workpieces in order in the containers alongside the press according to control signals from the numerical control unit.

4,349,311
ROTARY PUMP

Arthur Milz, Bodenmühle, Wald, Switzerland

Filed Mar. 28, 1980, Ser. No. 135,089
Claims priority, application Switzerland, Apr. 9, 1979, 3327/79
Int. Cl.³ F04D 29/44
U.S. Cl. 415—112 5 Claims

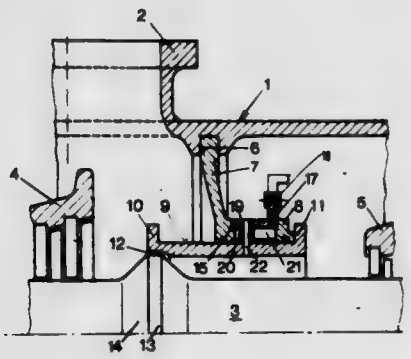


1. A rotary pump for liquids having a working chamber and an impeller rotating within said working chamber, said chamber having a spirally wound duct leading from one frontal surface of the chamber to the outlet pipe of the pump, the upstream mouth of the duct obliquely entering the chamber and thereby having an end portion which is laterally open towards the chamber and forms a channel in its wall; the path of the duct winding helically around the axis of rotation of the impeller, with a progressively decreasing radial distance from said axis to the inside wall of such duct and a progressively increasing pitch, when viewed in the direction of the flow; including a solid stator and said duct being formed as an open groove on the exterior surface thereof and a casing surrounding said stator and closing said groove.

4,349,312
APPARATUS FOR THE CONTROLLED EXTRACTION OF STEAM FROM EXTRACTION TURBINES

Karl Stieger, Turgi, Switzerland, assignor to BBC Brown, Boveri & Company, Ltd., Baden, Switzerland

Filed Apr. 1, 1980, Ser. No. 136,348
Claims priority, application Switzerland, Jul. 12, 1979, 6496/79
Int. Cl.³ F01D 17/00
U.S. Cl. 415—145 2 Claims



1. In a turbine comprising a housing, a turbine shaft, a turbine blade channel, and apparatus for controlled extraction of steam from one stage of the blade channel, the improvement wherein said apparatus comprises:

a wall mounted within said turbine housing and including first and second axially spaced stops,

a regulating drum surrounding said turbine shaft concentrically and spaced therefrom to define therewith a steam passage, said drum including first and second flanges and being axially movable to shift said flanges with said stops which define first and second positions of said drum,

said drum including sealing means at a steam entry end of said passage cooperating with a cylindrical portion of said shaft to form therewith a throttle gap,

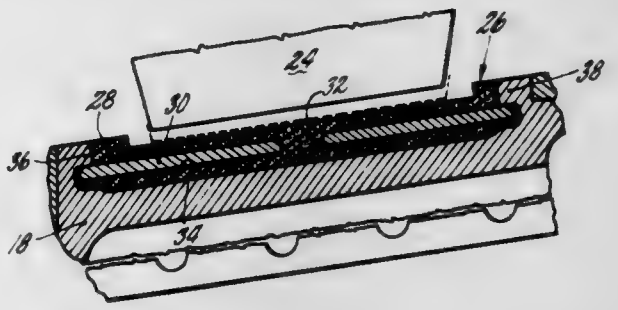
the size of said gap varying from a minimum to a maximum in response to axial movement of said drum from said first position, and

actuating means for moving said regulating drum to vary the size of said gap and thereby control the amount of steam passing therethrough.

4,349,313
ABRADABLE RUB STRIP

Alan D. Munroe, Glastonbury, and Peter E. Voyer, Tolland, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 26, 1979, Ser. No. 106,582
Int. Cl.³ F01D 11/08
U.S. Cl. 415—174 10 Claims



1. In a gas turbine engine of the type having an engine case spaced from and circumscribing an array of rotor blades, the improvement which comprises:

an abradable rub strip which is attached to the engine case and which circumscribes the array of rotor blades, the rub strip being formed of a viscoelastic material and having embedded therein a ring formed of metallic material;

wherein the ring limits the depth of penetration of the rub strip by the rotor blade upon contact between the rotor blade and the rub strip and

wherein the ring is spaced from the rotor blades during normal operation of the rotor blades to prevent contact between the rotor blades and the rub strip.

4,349,314
COMPRESSOR DIFFUSER AND METHOD

John R. Erwin, Paradise Valley, Ariz., assignor to The Garrett Corporation, Los Angeles, Calif.

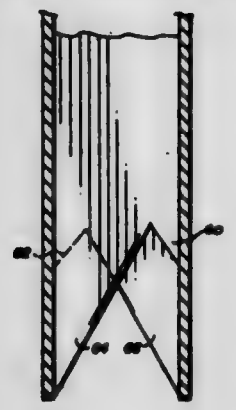
Filed May 19, 1980, Ser. No. 151,070
Int. Cl.³ F04D 29/44
U.S. Cl. 415—181 19 Claims

1. A method of diffusing pressurized exhaust flow exiting a compressor at transonic conditions, comprising:

delivering the exhaust flow into a diffuser space bounded by inner and outer sidewalls at transonic conditions at the inlet end of the diffuser space and in a generally logarithmic sprial direction;

intercepting boundary layer flow at both of said inner and outer sidewalls in the region of said diffusing space subject to said transonic conditions; and

maintaining the cross-sectional area of said diffusing space approximately constant or gradually increasing at increasing distances from said inlet end in the region of said diffuser space subject to said transonic conditions.



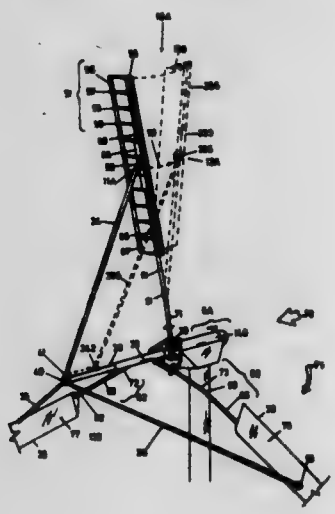


4,349,315

ADJUSTABLE VANE WINDMILLS

William L. Ducker, Lubbock, Tex., assignor to Wind Engineering Corporation, Lubbock, Tex.

Continuation of Ser. No. 874,222, Feb. 1, 1978, Pat. No. 4,183,715. This application Jan. 11, 1980, Ser. No. 111,352
Int. Cl.³ F03D 7/04
U.S. Cl. 416—1 4 Claims



1. A method for adjusting the pitch of a plurality of like windmill airfoil blades behind a tower support therefor comprising the steps of:

bending each of a plurality of rigid spars into at least two sections,

mounting the section of each of said spars nearest one end for rotation relative to a surface transverse to the direction of motion of the wind and at an angle to said surface forming a fixed dihedral angle,

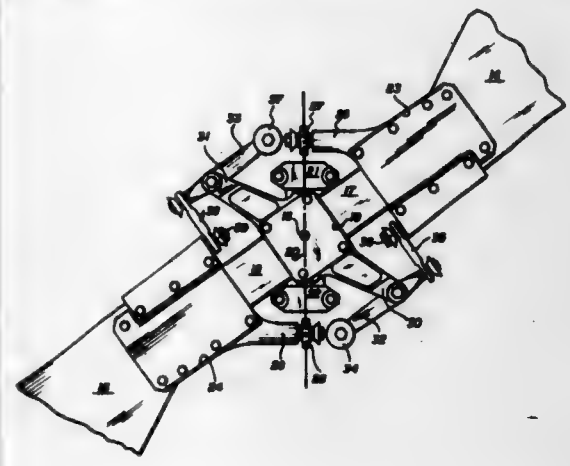
securing the airfoil blade in a longitudinal direction to the section nearest the other end thereof of the spar and then concurrently and equally and continuously firmly supporting and moving each of said blades in an arcuate direction substantially parallel with the direction of motion of the wind for adjusting a variable dihedral angle in response to the force of the wind and torque developed by said blades to change the pitch of the airfoil relative to the wind wherein the total dihedral angle of the each of said blades is a composite angle comprising the fixed dihedral angle and the blades move with an angle to the direction of the motion of the wind that decreases as the speed of the wind increases and with a forward motion of the peripheral portion of each blade as the speed of such blade increases and a rearward motion of the peripheral portion of each blade as the speed of such blade decreases and the variable dihedral angle.

4,349,316

TWIST CONTROL FOR HELICOPTER TAIL ROTOR PITCH CHANGE

Charles W. Hughes, Hurst; Keith W. Harvey, and Walter G. O. Sonneborn, both of Fort Worth, all of Tex., assignors to Textron, Inc., Providence, R.I.

Filed Apr. 24, 1979, Ser. No. 32,785
Int. Cl.³ B64C 27/38
U.S. Cl. 416—104 7 Claims



1. A bearingless helicopter tail rotor characterized by inboard twist sections on opposite sides of a central hub section and extending to outboard margins at which a blade grip is attached and which may twist to accommodate pitch inputs to the blade grips, the improvement comprising:

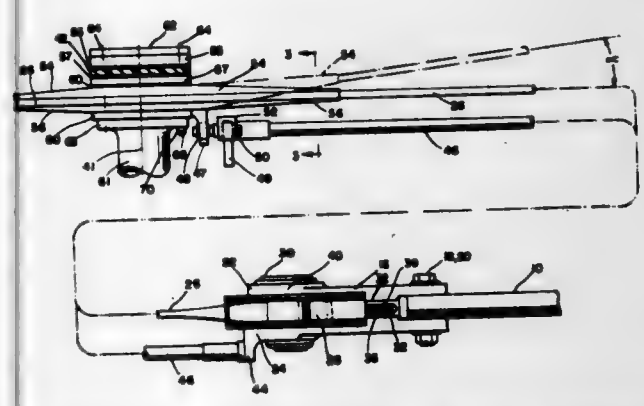
pitch horns mounted adjacent said outboard margins of said twist sections extending to a negative delta$_3$ connection point.

4,349,317

BEARINGLESS ROTOR FOR SINGLE AND TANDEM HELICOPTERS

Rene A. Desjardins, Media, Pa., assignor to The Boeing Company, Seattle, Wash.

Filed Nov. 2, 1979, Ser. No. 90,717
Int. Cl.³ B64C 27/40
U.S. Cl. 416—134 A 9 Claims



1. In a bearingless rotor system of a helicopter, including:

a rotor hub defining a rotor center;

at least one unitary strap member mounted on the rotor hub, each strap member having at least two arms which extend radially outwardly from the rotor center and define a continuous upper and lower surface and opposite outboard ends; and

a rotor blade attached to each outboard end of each arm, the improvement comprising:

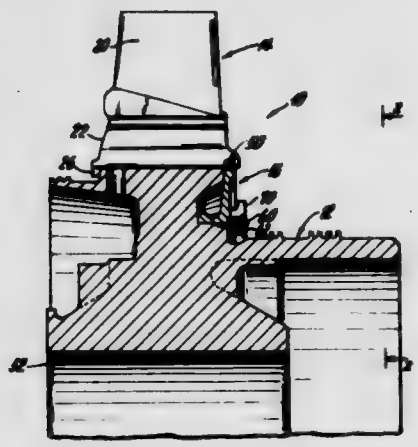
at least one unitary contoured upper shoe member having a planar surface and an opposed contoured surface defining a constant thickness portion and radially opposed varying thickness portions extending from the constant thickness portion, said shoe member being mounted on the rotor hub and engageable with its planar surface with the upper surface of each arm of a respective strap member, and at least one unitary contoured lower shoe member having a planar surface and an opposed contoured surface defining a constant thickness portion and radially opposed varying thickness portions extending from the constant thickness portion, said shoe member being mounted on the rotor hub and engageable with its planar surface with the lower surface of each arm of a respective strap member, said shoe members serving to resist flapwise flexural displacement of the arms of their respective strap members and exert a force due to flapwise flexural displacement of the varying thickness portions of said shoe members with the arms of their respective strap members, tending to restore the arms of their respective strap members to their non-deflected position and to define a virtual hinge, the radial offset of which is within ten percent of the rotor radius.

4,349,318

BOLTLESS BLADE RETAINER FOR A TURBINE WHEEL

Zoltan L. Libertini, Stamford, and Theodore Ivanko, Fairfield, both of Conn., assignors to Avco Corporation, Stratford, Conn.

Filed Jan. 4, 1980, Ser. No. 109,719
Int. Cl.³ F01D 5/32
U.S. Cl. 416—220 R 10 Claims



1. A rotor assembly comprising a disc having a plurality of elongated channels provided therein and spaced along its periphery, and a plurality of blades, said blades each having a root portion corresponding in configuration to said channel portion, one end of each blade root portion being provided with a tang which bears against one end of the disc adjacent a channel to prevent longitudinal movement of the blade root in the channel in one axial direction, the opposite end of said blade root and the disc including cooperating peripheral cut-outs which define a continuous locking groove, blade retention means disposed at said opposite end of the blade root for preventing longitudinal movement of the blade in the channel in the opposed axial direction, said blade retention means including:

a continuous retainer element disposed in said locking groove;

a generally cylindrical plate member concentrically mounted on said disc and including a radially outwardly extending peripheral portion which cooperates with the locking groove for maintaining said continuous retainer element in place, said cylindrical plate member and the disc including opposed, peripheral continuous slots, and

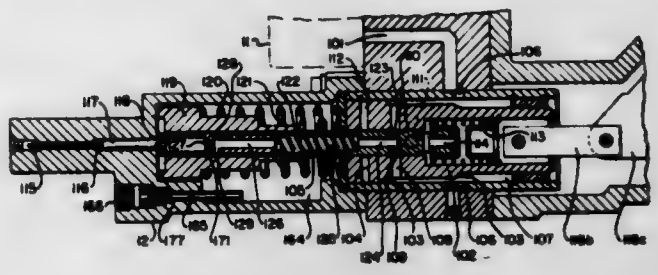
a split retainer ring disposed in said opposed continuous slots.

4,349,319

PRESSURE AND FLOW COMPENSATED CONTROL SYSTEM WITH CONSTANT TORQUE AND VISCOSITY SENSING OVER-RIDE

J. Otto Byers, Jr., Canfield, and Donald A. Locher, Hubbard, both of Ohio, assignors to Commercial Shearing, Inc., Youngstown, Ohio

Continuation-in-part of Ser. No. 771,672, Feb. 24, 1977, abandoned. This application Jul. 24, 1980, Ser. No. 171,896
Int. Cl.³ F04B 1/28
U.S. Cl. 417—222 11 Claims



1. A variable displacement fluid pump system comprising a variable displacement pump, displacement control means varying the displacement of said pump, viscosity sensing means receiving fluid from said pump acting on said control means to over-ride said control means and reduce the pump displacement when the viscosity of the fluid in the pump exceeds a predetermined value, pressure sensing means receiving fluid from said pump acting on said control means to over-ride said control means and reduce the pump displacement when the pressure in the system exceeds a predetermined value, at least one pressure compensated work port valve receiving pressure fluid from said pump to deliver said pressure fluid selectively to a hydraulic work element and a variable by-pass valve receiving pressure fluid from the pump not required by the pressure compensated work port valve to variably by-pass excess fluid from said pressure compensated valve and acting on said control means to vary the displacement of said variable displacement pump to satisfy the fluid requirements of said pressure compensated valve above a minimum established flow rate.

4,349,320

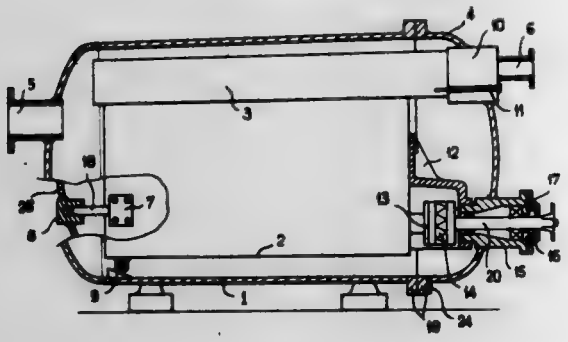
PISTON COMPRESSOR DERIVED FROM A RECIPROCATING THERMAL ENGINE

Francois J. Leorat, Versailles, France, assignor to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

PCT No. PCT/FR78/00029, § 371 Date Jun. 12, 1979, § 102(e) Date Jun. 12, 1979, PCT Pub. No. WO79/00199, PCT Pub. Date Apr. 19, 1979
PCT Filed Oct. 6, 1978, Ser. No. 140,197
Claims priority, application France, Oct. 12, 1977, 77 30663
Int. Cl.³ F04B 41/04
U.S. Cl. 417—237 5 Claims

1. A piston compressor of the sealed housing type, comprising a specific compressor cylinder-head completed by an assembly of parts for a mass-production internal combustion engine including a cylinder-block and driven through the sealed housing by an external motor by drive means passing through a support member, said compressor being adapted to fit with a cover of said sealed housing through its cylinder-head, wherein the compressor is secured to said cover by

means of a first coupling member fixed on said cylinder-head and by a second coupling member fixed on said cylinder-block



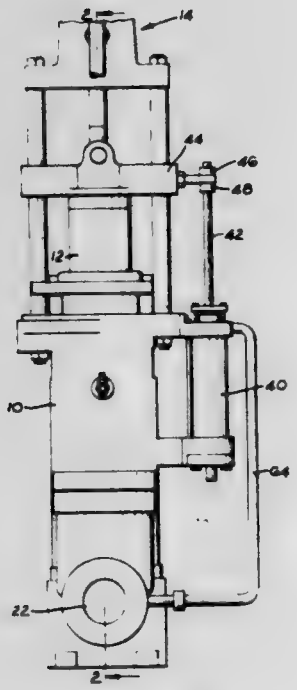
and bearing on said support of said drive means of the compressor through said cover of said sealed housing.

4,349,321

LIQUID DISPENSING SYSTEMS

Peter N. Bentley, "Sandown", Stoke-on-Trent, England

Continuation-in-part of Ser. No. 904,563, May 10, 1978, abandoned. This application Nov. 13, 1979, Ser. No. 93,875
Claims priority, application United Kingdom, Jul. 22, 1977, 30813/77
Int. Cl.[3] F04B *25/00, 23/06*
U.S. Cl. 417—250 4 Claims



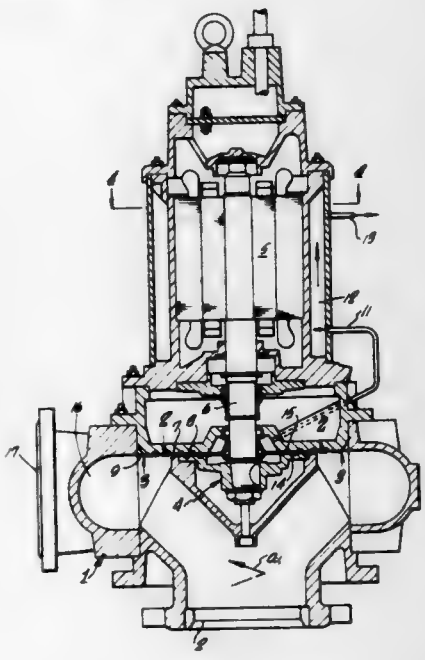
1. Apparatus for feeding to a filter press sludge intimately admixed with an accurately metered proportion of an additive, comprising a source of sludge, a filter press, a ram pump having an outlet connected through a check valve to the filter press and having an inlet, and a reciprocating metering pump for supplying an additive, having an outlet, wherein the improvement comprises apparatus for intimately admixing sludge with an accurately metered proportion of an additive, comprising a valve chamber which is connected between the inlet of the ram pump and a pipe connected to the source of sludge, said valve chamber having a substantially smaller inlet connected to the outlet of the metering pump, a valve seat in the valve chamber having a ball resting freely thereon, and an operative connection between the ram pump and the metering pump which synchronizes the suction stroke of the ram pump with the discharge stroke of the metering pump to cause the incoming sludge to lift and spin the ball and thereby mix the sludge with the incoming additive.

4,349,322

COOLING A MOTOR OF A CENTRIFUGAL PUMP FOR CONVEYING LIQUIDS WITH DEPOSITED SOLIDS

Martin Stahle, Postfach 12, CH-8213 Neunkirch, Switzerland

Filed Feb. 14, 1979, Ser. No. 12,075
Claims priority, application Switzerland, Feb. 14, 1978, 1596/78
Int. Cl.[3] F04B *39/06*
U.S. Cl. 417—370 2 Claims



1. A centrifugal pump for conveying liquids with solids including a pump housing, a suction inlet, an outlet, a sealing cover for the housing and an annular surface for the sealing cover, an impeller having an annular surface, a pump shaft, the impeller being adapted for rotation by the shaft such that the respective annular surfaces are in closely spaced relationship, at least one groove formed in the annular surface of the sealing cover spiraling outwardly around the impeller axis, the annular surface of the impeller being formed with at least one groove, said groove spiraling outwardly around the impeller axis and opening at its outer end into an elevated pressure side of the housing, a liquid collecting chamber centrally located about the shaft between the impeller and the sealing cover, the outer end of the sealing cover groove opening into the pressure side of the housing, the chamber having an outlet for connection to a cooling jacket of a motor for the pump, and the chamber being formed partly by a cavity in the annular surface of the impeller and partly by a cavity in the sealing cover.

4,349,323

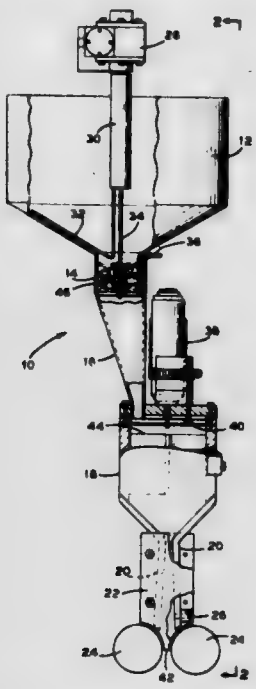
APPARATUS FOR CONTINUOUSLY FEEDING POWDERS

William B. Furbish, Black Earth, and Roscoe E. Baker, Verona, both of Wis., assignors to Ray-O-Vac Corporation, Madison, Wis.

Filed Jan. 30, 1981, Ser. No. 229,967
Int. Cl.[3] B29B *5/04*
U.S. Cl. 425—147 5 Claims

1. An apparatus for continuously feeding powders, the apparatus comprising a first hopper having a base, a second hopper disposed below the first hopper, a passageway connecting the base to the second hopper, a feed guide disposed below the second hopper and registered thereto, a wiper disposed within the first hopper, a bottle brush auger disposed within the base, means for rotating the wiper and the auger, a plurality of thin blades disposed within the second hopper and in close proxim-

ity with the passageway, means for rotating the blades, a distribution baffle disposed within the second hopper, and sensing



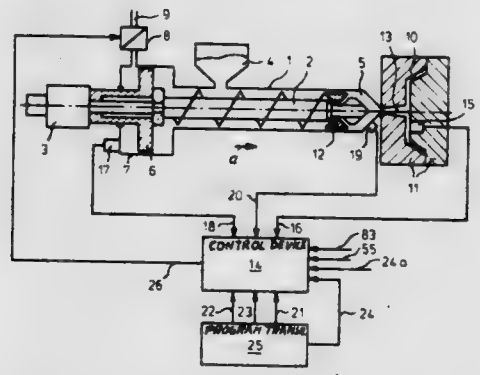
means for regulating the quantity of powder in the second hopper.

4,349,324

INJECTION MOLDING MACHINE

Engelbert Neff, Zollikon, and Friedrich Laimer, Reichenburg, both of Switzerland, assignors to Netstal-Maschinen AG, Switzerland

Filed Jul. 11, 1980, Ser. No. 168,664
Int. Cl.[3] B29F *1/06*
U.S. Cl. 425—149 13 Claims



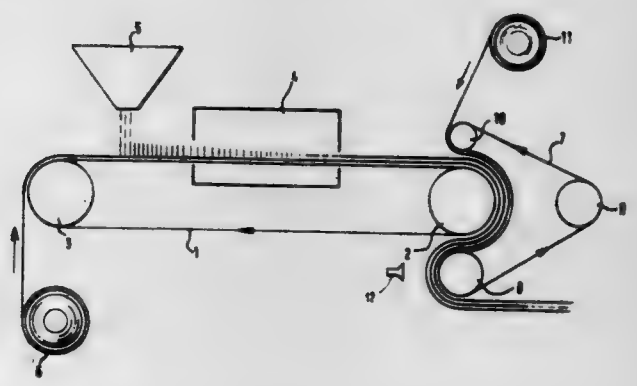
1. An injection molding machine, comprising:
a mold tool defining a mold cavity (10);
a material cylinder (1) defining a vestibule (5) communicating with said cavity;
an injection piston (2) movable in said material cylinder for injecting material from said vestibule into said cavity;
material supply means (4) connected to said cylinder for supplying material to said vestibule;
hydraulic actuator means (8) operatively connected to said injection piston and to said cylinder for moving said injection piston;
control means (14) connected to said actuator means for actuating and controlling the pressure supplied by said actuator means during an injection phase (1) to move said injection piston to inject material into said cavity, during a means at the end of the dwell pressure phase used as an initial desired value for the solidification phase;
said control means further including holding means (39) for receiving and holding the measured actual pressure value of said second pressure monitoring means during the injection phase, and said pressure control means having a tool pressure controller (33) for switching the actuator means to a dwell pressure phase when an initial desired cavity pressure (21) is reached and for maintaining pressure value (69) of said second pressure monitoring means during said injection phase as an initial desired value for said dwell phase, said holding means holding at least one of an actual cylinder and vestibule pressure when at least a part of the material in the cavity solidifies, said actual value being used to control the actuator means for the solidification phase.

4,349,325

APPARATUS FOR MANUFACTURING PLASTIC PRODUCTS

William J. Mair, Merrow, Nr. Guildford, England, assignor to Plastic Recycling Limited, England

Division of Ser. No. 73,615, Sep. 10, 1979, Pat. No. 4,293,515.
This application Oct. 7, 1980, Ser. No. 194,873
Claims priority, application United Kingdom, May 11, 1979, 7916510
Int. Cl.[3] A01J *21/00*
U.S. Cl. 425—363 5 Claims



1. Apparatus for manufacturing a plastics product from raw material containing at least 50% by weight of reclaimed synthetic thermoplastics material, comprising:
a first conveyor belt having an upstream and a downstream portion;
means for feeding a mat of the raw material in particulate form onto the first conveyor belt at the upstream portion thereof;
oven means arranged downstream of the raw material feeding means for heating the mat to cause the thermoplastics material in the mat to soften as the mat is passed through the oven means on the first conveyor belt;
three rollers arranged downstream of the oven means;
a second conveyor belt arranged to pass around the three rollers and to cooperate therewith for compressing the softened mat, the three rollers being arranged generally one above the other to define a first passage between the upper and middle rollers and a second passage between the middle and lower rollers, the middle and lower rollers being of substantially greater diameter than the upper roller; and
means for cooling the mat of material as it passes around at least one of said rollers.

4,349,326

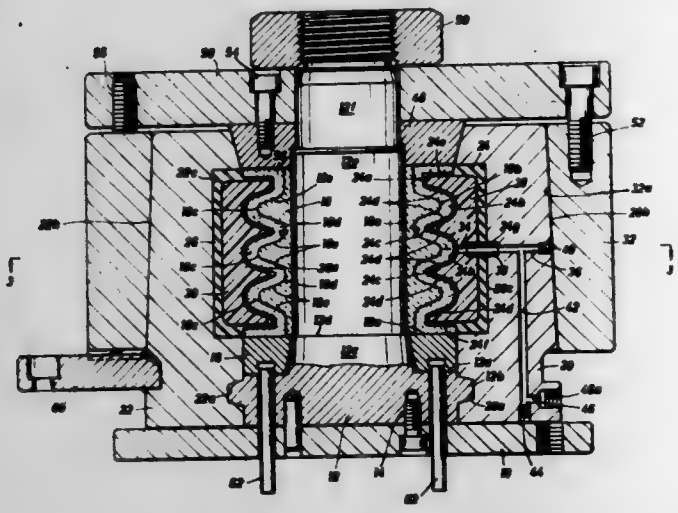
APPARATUS FOR MANUFACTURING ARTICLES BY PRESSING AND SINTERING

Robert D. Foster, 1116 Waugh Dr. #4, Houston, Tex. 77019, and Frank G. Weeden, P.O. Box 55156, Houston, Tex. 77055

Division of Ser. No. 951,717, Oct. 16, 1978, Pat. No. 4,252,760.
This application Oct. 27, 1980, Ser. No. 201,015
Int. Cl.[3] B29C *6/02*
U.S. Cl. 425—405 R 7 Claims

1. A press apparatus for forming a solid article from a particulate material comprising:
a supporting assembly;
a frangible backing member removably mounted on said supporting assembly and having a backing surface;

a pressing means mounted on said supporting assembly and having a pressing surface opposed to said backing surface, said supporting assembly being cooperative with said backing member and said pressing means to define a first chamber between said backing surface and said pressing surface for receipt of said particulate material, and said



pressing means being advanceable and retractable toward and away from said backing surface to contract and expand said first chamber;

closure means for selectively opening and closing said first chamber; and

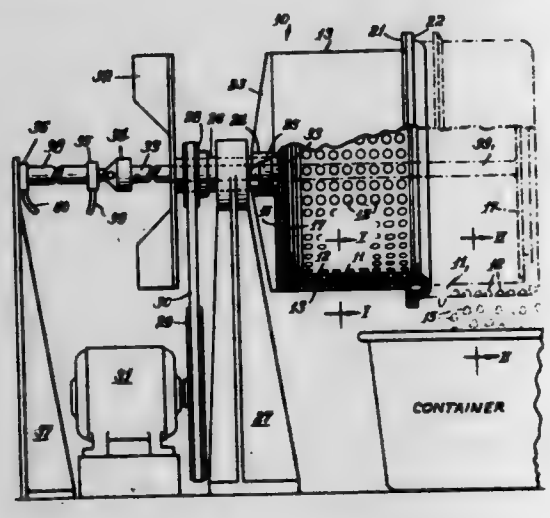
means for selectively advancing and retracting said pressing means.

4,349,327

AUTOMATIC FINISHING CHIP MAKER

Günther W. Balz, Kalamazoo, Mich., assignor to Roto-Finish Company, Inc., Kalamazoo, Mich.

Filed Dec. 4, 1980, Ser. No. 212,754
Int. Cl.³ B28B *1/08, 7/10, 13/00*
U.S. Cl. 425—436 R 27 Claims



1. Apparatus suitable for the production of loose, particulate finishing chips for use in effecting vibratory, centrifugal, gyratory, or tumbling type finishing or the like, comprising:

a generally-cylindrical wall mounted for rotation about a central axis,

means for rotating said wall about said axis,

a generally-cylindrical sheetform flexible mold, having a plurality of cavities therein conforming to the desired configuration of the finishing chips desired to be produced, affixed to said wall at the outer periphery thereof and adapted to be located in one of two locations, the first of which locations is inside of said wall and adjacent the inside surface of said wall, in which location said wall is in mold-supportive position and said mold is in chip-molding position, and the second of which locations is an inside-out location generally outside of said wall and extending outwardly from the periphery thereof, in which location said mold is in chip-ejecting position, and

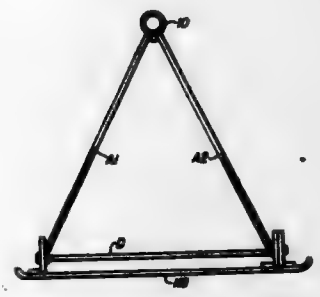
means for moving said flexible mold from said first location to said second location and vice-versa.

4,349,328

TRIANGULAR TRUSS CONCRETE SCREED HAVING A PAN FLOAT FINISHER ATTACHMENT

J. Dewayne Allen, Paragould, Ark., assignor to Allen Engineering Corporation, Paragould, Ark.

Division of Ser. No. 34,171, Apr. 26, 1979, Pat. No. 4,316,715.
This application May 15, 1981, Ser. No. 264,050
Int. Cl.³ E01C *19/38*
U.S. Cl. 425—456 6 Claims



6. A screed for finishing freshly poured concrete lying in an area between opposing side forms, said screen comprising:

a. a triangular truss frame having first and second ends and a top support member forming the apex of said triangular truss;

b. front and rear screed blades extending between the first and second ends of said frame and coupled in a spaced apart relationship to the lower portion of the front and rear of said frame, said front and rear blades each including a flat surface and forming the front and rear edges of said triangular truss frame;

c. means coupled to said screed for vibrating said front and rear blades;

d. first and second vertically oriented end brackets coupled to said top support member and to said front and rear screed blades at the first and second ends of said screed frame; and

e. a pan float finisher coupled to the flat lower surface of said front and rear blades and having a length substantially equal to the length of said frame and a width greater than the spacing between said front and rear blades, said pan float finisher forming a smooth surface parallel to the horizontal plane defined by the lower surfaces of said front and rear screed blades and including front and rear edges extending outward beyond said front and rear blades and curving upwardly.

4,349,329

EXTRUSION DEVICE FOR PRODUCING HONEYCOMB STRUCTURES

Junichiro Naito, Toyokawa; Shinichi Yamamoto, Takahama; Jitsuo Suzuki, Aichi, and Mitsuru Asano, Okazaki, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Jan. 2, 1981, Ser. No. 222,068
Claims priority, application Japan, Jan. 22, 1980, 55-6489
Int. Cl.³ B29F *3/04;* B29D *7/04*
U.S. Cl. 425—461 8 Claims

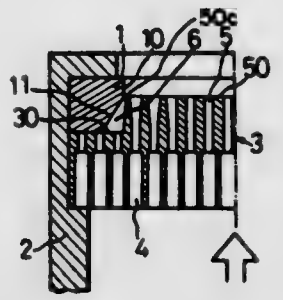
1. An extrusion device for producing honeycomb structure provided with walls of which thickness is larger in the outer peripheral portion thereof than in the central portion thereof, comprising:

a die provided with a large number of disconnected feed passageways which are formed on an extrudable material inlet side of said die in the axial direction thereof, and having

a large number of interconnected grid-shaped extrusion slots which are formed on an extrudable material outlet side of said die in said axial direction and communicated with said feed passageways;

said die being further provided with a stepped portion in the outer peripheral portion thereof;

the cross sectional area of each outlet opening of said extrusion slots positioned along the outer surface of an unstepped portion of said die being larger than that of the communicating portion thereof with each feed passageway;



an annular die mask having one end surface covering said extrusion slots of said stepped portion of said die on said extrudable material outlet side thereof; and

an annular pooling zone which is formed between said one end surface of said die mask and the opposed surface of said stepped portion of said die so as to surround said outer surface of said unstepped portion of said die;

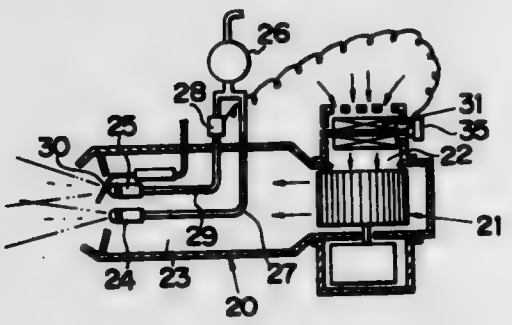
said pooling zone being communicated with said extrusion slots.

4,349,330

COMBUSTION CONTROL DEVICE FOR NOZZLE SPRAY TYPE BURNER

Akio Obinata, and Satoshi Ohsawa, both of Suzaka, Japan, assignors to Orion Machinery Co., Ltd., Nagano, Japan

Filed Jan. 3, 1980, Ser. No. 109,268
Claims priority, application Japan, May 2, 1979, 54-54424
Int. Cl.³ F23Q *9/08*; F23N *3/00*
U.S. Cl. 431—60 5 Claims



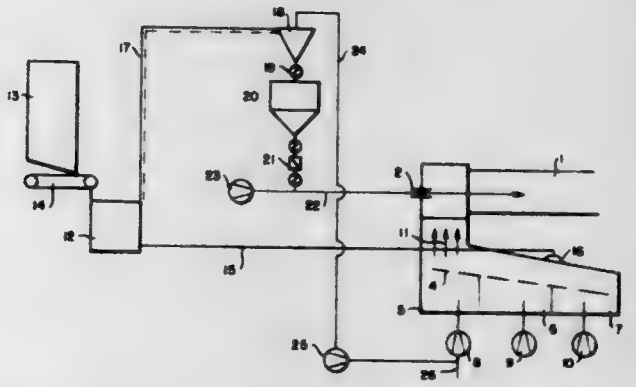
1. In a nozzle spray type of burner including a fuel source, a combustion chamber, a housing having an air passage therein coupled to said combustion chamber, a fan mounted in said housing for directing air through said air passage to said combustion chamber, fuel spray nozzle means in said air passage for spraying fuel provided by said fuel source into the flow of air in said air passage and including two fuel passageways for conducting the fuel between said fuel source and said fuel spray nozzle means, the improvement comprising a first mechanism associated with said fan for controlling the flow rate of the air in said air passage, said first mechanism comprising a butterfly valve mounted within said housing for movement over a certain path for regulating the flow of air into said air passage from outside said housing, a cam mounted for movement with said butterfly valve and a control switch arranged to be actuated by said cam when said butterfly valve is moved over a portion of the path of movement of said butterfly valve; and a second mechanism associated with said fuel spray nozzle means for controlling the amount of fuel sprayed into the flow of air in said air passage, said second mechanism including a switch valve arranged in at least one of said two fuel passageways and coupled to said control switch for controlling the flow of fuel in said fuel passageway in response to actuation of said control switch wherein the state of said first mechanism is detected by said second mechanism to control the degree of combustion of the fuel with the air in said combustion chamber.

4,349,331

FURNACE INSTALLATION INCLUDING FUEL MILLING AND BURNT PRODUCT COOLING AND METHOD OF OPERATING SAME

Hans-Joachim Flöter, Hamburg, Fed. Rep. of Germany, assignor to Claudius Peters AG, Fed. Rep. of Germany

Filed Sep. 11, 1980, Ser. No. 186,263
Claims priority, application Fed. Rep. of Germany, Sep. 21, 1979, 2938144
Int. Cl.³ F27B *15/00*
U.S. Cl. 432—14 8 Claims



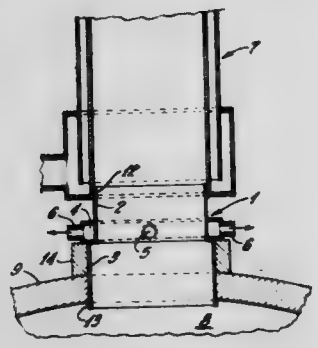
1. In a method of operating a kiln system including a firing kiln heated with pulverized fuel, an air cooled cooling device for the fired material and a crusher for the fuel, wherein at least a portion of the cooling air is led to the firing kiln as secondary air after passing through the cooling device and wherein the pulverized fuel is pneumatically taken via conveying air from the exhaust air of the cooling device from the crusher to a separator from where the greatest portion of the pulverized fuel is led to a burner before entering the kiln and, also the conveying air is drawn off together with a small portion of the pulverized fuel, the improvement comprising the step of supplying the conveying air containing the pulverized fuel to the cooling device as cooling air.

3. In a kiln system including a firing kiln heated by pulverized fuel burner, an air cooled cooling device for the fired material, conveying means for conveying cooling air to the cooling device, conveying means for conveying exhaust air from the cooling device to the firing kiln as secondary air, a fuel crusher, a conveying means for conveying exhaust air from the cooling device to the crusher, means for pneumatically conveying the pulverized fuel from the crusher to a separator, and means for conveying most of the pulverized fuel from the separator to a burner before entering the kiln, the improvement comprising means for supplying the conveying air together with a small portion of the pulverized fuel from the separator to the cooling device as cooling air.

4,349,332
CROWN VENTS

Edward C. Heubach, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Mar. 11, 1981, Ser. No. 242,812
Int. Cl.[3] F27D *17/00*; C03B *5/16*; F27F *19/00*; F27B *7/00*
U.S. Cl. 432—179 6 Claims

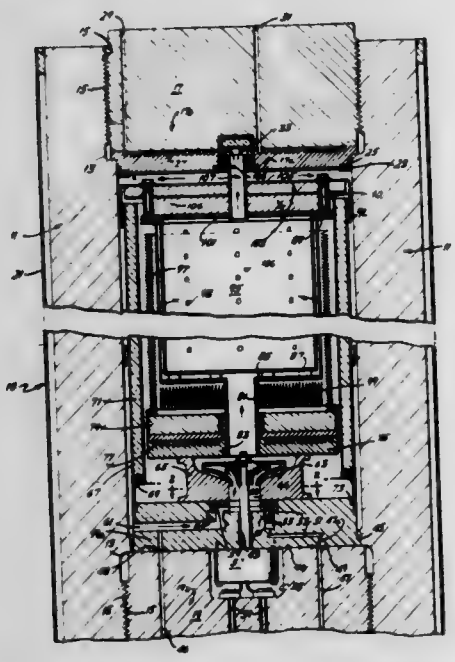


1. Apparatus comprising:
(a) a recuperator;
(b) a furnace having a crown opening in its upper wall; and,
(c) a crown vent positioned therebetween comprising a conduit having a lower walled section of a first diameter and an upper contiguous walled section of a second diameter less than said first diameter and a conduit having a lowered wall positioned circumferentially of said upper section proximate the intersection of said upper and lower sections, the wall of said upper section forming the inner wall of said conduit and the wall of said lower section centrally and vertically intersecting the lower wall of said conduit.

4,349,333
HOT ISOSTATIC PRESS WITH RAPID COOLING

Arnold G. Bowles, Jenkintown, Pa., assignor to Pressure Technology, Inc., Huntingdon Valley, Pa.

Filed Feb. 9, 1981, Ser. No. 232,822
Int. Cl.[3] F27B *5/04*
U.S. Cl. 432—205 17 Claims

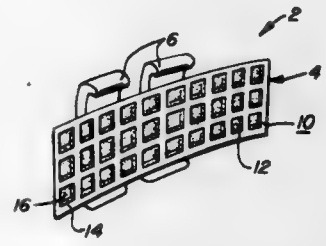


1. An apparatus for the pressure heat treating and annealing of objects including the controlled uniform and rapid cooling thereof, comprising:
means for containing at least one object for treatment, said containing means including a cylindrical wall surrounding said object having a plurality of holes therein;
means for surrounding said containing means for heating said object contained therewithin;
means surrounding said heating means for holding a gas pressure established therewithin;
means within said pressure holding means and spaced therefrom for insulating said pressure holding means from said heating means;
means for evacuating said gas from said containing means, said evacuating means being at the center and top of said containing means; and
means for circulating said gas adjacent said pressure holding means surfaces for cooling said circulated gas thereby and for passing said cooled gas into said containing means through said cylindrical wall plurality of holes thereby causing a forced circulation uniformly about the inside of said cylinder.

4,349,334
ORTHODONTIC BRACKET ASSEMBLY

David E. Webb, Jamul, and Lawrence F. Andrews, San Diego, both of Calif.

Filed Nov. 3, 1980, Ser. No. 203,826
Int. Cl.[3] A61C *3/00*
U.S. Cl. 433—9 8 Claims



1. A cast orthodontic bracket for bonding to the surface of a tooth comprising:
an archwire bracket portion adapted to receive an archwire;
a pad portion attached to said archwire portion and having a tooth abutting surface opposite said archwire portion;
said tooth abutting surface having a plurality of cavities formed therein, said cavities having a top opening, a circumferential sidewall, and a bottom, said sidewall extending downwardly and outwardly toward said bottom and away from a central portion of said cavity so said cavity is smaller in all directions at said top than at said bottom; and
said cavities having irregular surfaces, a substantial portion of the remainder of said tooth abutting surface and of the surface of said bracket being relatively smooth surfaces produced when said bracket is tumbled in an abrasive medium adapted so as not to smooth said irregular surfaces of said cavities.

4,349,335
OVAL DENTAL ANCHOR

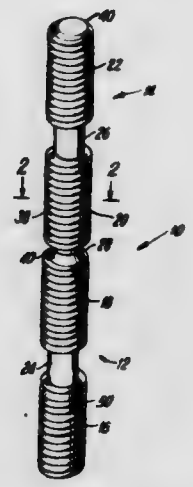
Bernard Weissman, New York, N.Y., assignor to Ipco Hospital Supply Corporation, White Plains, N.Y.

Continuation-in-part of Ser. No. 845,628, Oct. 26, 1977. This application Sep. 20, 1979, Ser. No. 77,400
The portion of the term of this patent subsequent to Jun. 29, 1997, has been disclaimed.
Int. Cl.[3] A61C *5/04*
U.S. Cl. 433—225 4 Claims

1. A dental anchor for insertion into channels in a tooth, said dental anchor comprising:
a first elongated body member, said first body member having at least one section with a substantially oval cross-sectional configuration having a major and minor axis to provide two angular side portions joined by two angular end portions, said at least one section being provided with thread means for self-tapping said one section into a first

channel when said body member is rotated about its longitudinal axis, said thread means having a root diameter less than the minor axis dimension and a crest diameter at least equal to the major axis dimension, whereby said side portions of said one section are spaced from walls of the first channel when said one section is seated in the first channel to reduce self-tapping stresses;

a second elongated body member along said longitudinal axis, said second body member having at least another section with a substantially oval cross-sectional configuration having a major and minor axis to provide another two angular side portions joined by another two angular end portions, said another section being provided with second thread means for self-tapping said another section into a second channel when said second body member is rotated about said longitudinal axis, said second thread means having a root diameter less than the minor axis dimension of the oval configuration of said another section and a



crest diameter at least equal to the major axis dimension of the oval configuration of said another section, whereby said another four side portions of said another section are spaced from walls of the second channel when said another section is seated in the second channel to reduce self-tapping stresses, and a frangible reduced thickness member connecting said body members together; and

each of said body members including a second section along said longitudinal axis and a reduced thickness portion disposed intermediate said sections of each said body members to permit said second sections to be bent relative to said one section and said another section respectively after said one section and said another section are seated in their channels respectively to provide anchoring portions for a superstructure, said reduced thickness portion of each of said body members having a thickness greater than any thickness of said frangible reduced thickness member.

4,349,336

SQUARE DENTAL ANCHOR

Bernard Weissman, New York, N.Y., assignor to Ipco Hospital Supply Corporation, White Plains, N.Y.

Continuation-in-part of Ser. No. 845,628, Oct. 26, 1977. This application Sep. 20, 1979, Ser. No. 77,401

The portion of the term of this patent subsequent to Jun. 29, 1997, has been disclaimed.

Int. Cl.³ A61C *5/04*

U.S. Cl. 433—225 4 Claims

1. A dental anchor for insertion into channels in a tooth, said dental anchor comprising:

a first elongated body member, said first body member having at least one section with a substantially square cross-sectional configuration to provide four longitudinal substantially flat side surfaces joined by four longitudinal rounded corner portions, said one section being provided with thread means for self tapping said one section into a first channel when said body member is rotated about its longitudinal axis, said thread means having a root diameter approximately equal to the width dimension of the square configuration and a crest diameter less than the initial diagonal dimension of the square configuration, whereby said longitudinal side surfaces of said one section are spaced from walls of the first channel when said one section is seated in the first channel to reduce self tapping stresses;

a second elongated body member along said longitudinal axis, said second body member having at least another section with a substantially square cross-sectional configuration to provide another four longitudinally flat side surfaces joined by another four longitudinal rounded corner portions, said another section being provided with second thread means for self tapping said another section into a second channel when said second body member is rotated about said longitudinal axis, said second thread means having a root dimension approximately equal to the



width dimension of its square configuration and a crest diameter less than the initial diagonal dimension of its square configuration, whereby said another four longitudinal side surfaces of said another section are spaced from walls of the second channel when said another section is seated in the second channel to reduce self tapping stresses;

a frangible reduced thickness member connecting said body members together; and

each of said body members including a second section along said longitudinal axis and a reduced thickness portion disposed intermediate said sections of each of said body members to permit said second sections to be bent relative to said one section and said another section respectively after one section and said another section are seated in their channels respectively to provide anchoring portions for a superstructure, said reduced thickness portion of each said body members having a thickness greater than any thickness of said frangible reduced thickness member.

4,349,337

MARKSMANSHIP TRAINING SYSTEM

Herman I. Pardes, 45 Wickapecko Dr., Ocean, N.J. 07712

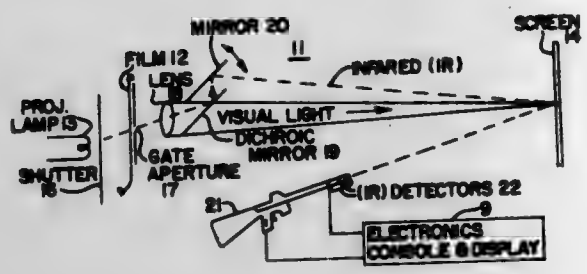
Filed Jul. 16, 1981, Ser. No. 283,776

Int. Cl.³ F41G *3/26*

U.S. Cl. 434—20 5 Claims

1. A system for enabling marksmanship practice, comprising, in combination, a film frame projector providing visible and infrared light, a viewing screen, at least one apparatus simulating a weapon such as a rifle, a first infrared detector mounted on said weapon to receive infrared light beamed along the axis of said weapon, optical means for directing the images of a film to provide a composite visible scene and infrared target area on said screen at which said weapon may be aimed, and said screen reflecting said visible and infrared

light whereby said first infrared detector on said weapon responds to said infrared light when said weapon is accurately aimed and simultaneously fired at said target, and a second



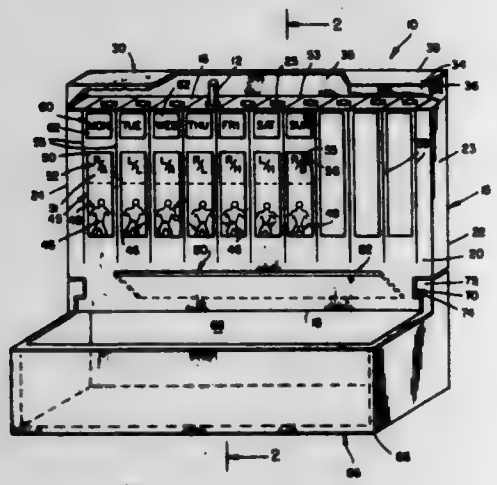
infrared detector mounted off said axis and sensing infrared light from the scene adjacent said target whereby said second infrared detector provides an optical reference level for balancing background illumination.

4,349,338

DAILY INJECTION SITE GUIDE ASSEMBLY

Fred A. Heppler, 3117 Falcon Ave., Medford, N.Y. 11763

Filed Jan. 16, 1981, Ser. No. 225,614
Int. Cl.³ G09B *23/28*; G09F *7/12*; A47B *81/00*; A61B *19/02*
U.S. Cl. 434—262 32 Claims



1. An injection site guide assembly for storing and dispensing of disposable syringes comprising in combination:

A. housing means having an upper end and spaced apart lower end,

B. holding means extending into said housing means at said upper end so as to permit the storing of a plurality of the syringes therein and the syringes are adapted to be individually removed as required for use thereof,

C. cover means adapted to be removably secured to said housing means at said upper end for enclosing said holding means,

D. indicating means on said housing means for illustrating various injection sites on the human body for use of the syringes,

E. retaining means associated with said housing means to accept disposable wipes or the like for use in conjunction with the syringes, and

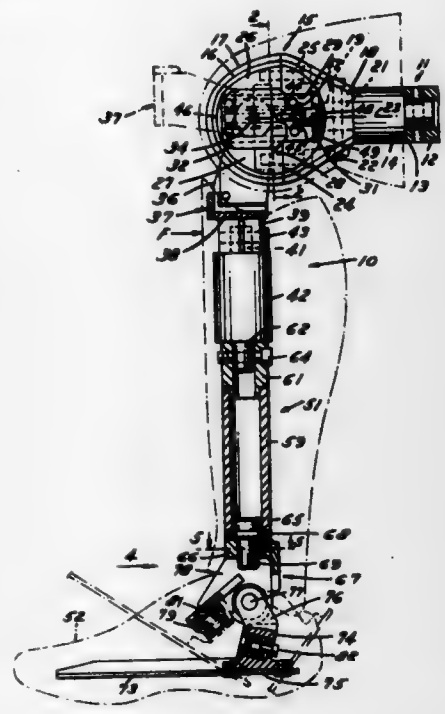
F. container means removably secured to said housing means at said lower end thereof.

4,349,339

FORCE-INDICATING DUMMY LEGS

Roger P. Daniel, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jul. 31, 1981, Ser. No. 288,873
Int. Cl.³ G09B *23/32*
U.S. Cl. 434—274 7 Claims



1. An anthropomorphic dummy leg for measuring essentially all of the forces that might be applied to a vehicle passenger's leg upon impact with a vehicle instrument panel, knee bolster or other vehicle structural member during a vehicle crash, comprising:

a dummy leg having a knee joint connecting femur and tibia bone simulations and an ankle joint connecting the tibia bone simulation and a simulated foot;

a plurality of load cells integrated with the femur and tibia bone simulations, the knee joint and ankle joint;

the tibia and femur load cells being capable of measuring a plurality of forces and moments acting on the femur and tibia bone simulations and the knee and ankle load cells being capable of measuring at least the axial loads resulting in knee shear load and upward ankle bending load.

4,349,340

MAN-PROPELLED HYDROFOIL BOAT

Benjamin Hoffmann, 4733 - 36th Ave. South, Minneapolis, Minn. 55406

Filed Mar. 6, 1980, Ser. No. 127,835
Int. Cl.³ B63H *16/14*
U.S. Cl. 440—30 5 Claims

1. An occupant powered hydrofoil vehicle comprising, in combination:

a lightweight frame constructed from a plurality of interconnected tubular members, said frame including a forward end, a rearward end, and a seat disposed between the ends for supporting an occupant in a generally sitting position immediately above the surface of a body of water;

hydrofoil means depending from said frame for generating lift during vehicle movement, said hydrofoil means including a low-speed hydrofoil extending transversely generally beneath the seat on said frame, and constructed and arranged for primary use at low rates of vehicle movement, a first high-speed hydrofoil of generally V-shape configuration positioned at the forward end of said frame, and second and third high-speed hydrofoils positioned in laterally spaced apart relationship at the rearward end of said frame, said high speed hydrofoils being constructed and arranged for primary use at relatively higher rates of vehicle movement;

steering means including a rudder mounted on said frame for controlling directional movement of the vehicle, said steering means being adapted for manual actuation by the occupant;

means including a plurality of spaced apart hulls for supporting said frame at the surface of the body of water when said vehicle is stationary, said hydrofoil means being at least partially submerged in the body of water when said vehicle is stationary; and



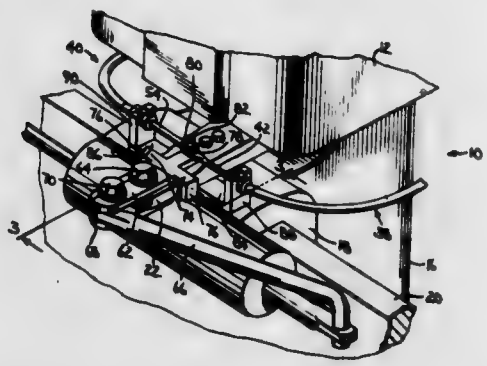
drive means powered by the occupant for propelling said frame forward with respect to the body of water, said drive means including an air screw mounted behind the seat on the rearward end of said frame, and a transmission adapted for manual operation by the seated occupant for effecting rotation of said air screw, so that said frame and said hull means are lifted above the surface of the body of water by said hydrofoil means as the rate of vehicle movement increases.

4,349,341

VANE STEERING SYSTEM FOR MARINE DRIVES

Edward J. Morgan, Fond du Lac, and Neil A. Rohan, Menasha, both of Wis., assignors to Brunswick Corporation, Skokie, Ill.

Filed Dec. 26, 1979, Ser. No. 106,833
Int. Cl.³ B63H 21/26
U.S. Cl. 440—51 13 Claims



1. In a steering apparatus for a steerable marine drive, including a drive unit pivotally mounted on the transom of a boat for moving and steering the boat through the water, a steering arm means operatively associated with the drive unit for pivoting the drive unit, and a movable steering control means for the boat, wherein an improved steering system comprises:

a steering vane rotatably mounted on the drive unit for generating a hydrodynamic torque on the drive unit upon rotation of said vane with respect to the drive unit;

a vane rotating member coupled to said vane for rotating said vane responsive to tensile forces exerted thereon;

a pair of vane control cable means, each having a movable element with a first end and a second end, said first end being attached to said vane rotating member for exerting vane rotating tensile forces on said member by the movement of said element; and

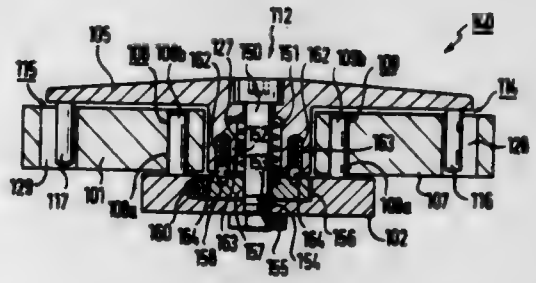
a lever pivotally mounted on said steering arm means at a pivot point on said lever intermediate the ends of the lever, said lever having a forward lever arm extending in one direction from said pivot point toward one end of said lever, said forward lever arm receiving the steering control means, said lever having at least one rear lever arm extending from said pivot point in the opposite direction from said forward lever arm toward the other end of said lever, said rear lever arm being attached to the second ends of said control cable means elements for coordinately moving said elements to generate a tensile force in one of said control cable means elements and a release in the other control cable means element responsive to the movement of said lever by the steering control means, said lever pivot point being positioned intermediate the ends of the lever closer to the forward end than the rear end so as to provide a magnification of about 2:1 between the movement of the steering control means and the resulting magnified movement of the elements of said cable control means, said lever having means for limiting its pivotal movement with respect to the steering arm means to a predetermined amount and for coupling the steering control means to the steering arm means to move the steering arm means directed from the steering control means when the lever has reached the limit of pivotal movement.

4,349,342

CHAIN SHIFTING DEVICE

Hans-Joachim Schwerdhöfer, Schweinfurt, Fed. Rep. of Germany, assignor to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany

Filed Mar. 10, 1980, Ser. No. 128,401
Claims priority, application Fed. Rep. of Germany, Mar. 27, 1979, 2911970
Int. Cl.³ F16H 7/22
U.S. Cl. 474—80 16 Claims



2. A chain shifting device for bicycles or the like having a remote-controlled chain guiding and tensioning mechanism having a number of positions so that in each position the chain can be shifted to a different chain wheel of a chain wheel set comprising a system including a movable joint block arranged to be connected to the chain guiding and tensioning mechanism, a fixed joint block arranged to be fixed to the bicycle frame, an articulated lever and a guide member guiding said movable joint block on said fixed joint block, a first joint connecting said articulated lever to said fixed joint block, a second joint connecting said articulated lever to said movable joint block, a third joint connecting said guide member to said fixed joint block, a fourth joint connecting said guide member to said movable joint block, a fifth joint connecting said articulated lever and guide member together between said fixed joint block and movable joint block, each of said first, second, third, fourth and fifth joints being rotatable and two of said joints each being slidable in a direction extending transversely of the axis of rotation of said joint, wherein the improvement comprises locking means for interlocking two parts of said system which are movable relative to one another for securing at least one position of the chain guiding and tensioning mechanism, said locking means comprises a spring-operated locking mech-

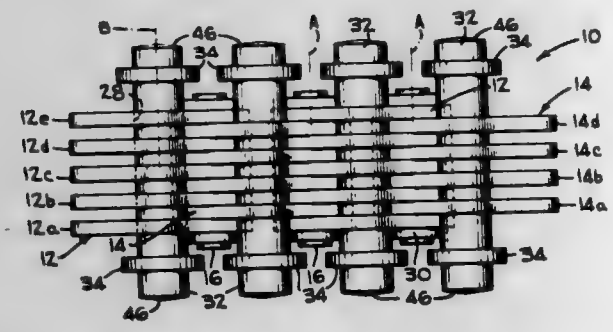
anism which releases the guiding movement of the chain guiding and tensioning mechanism when a predetermined actuating force is exceeded, said locking mechanism comprises a first part and a second locking part with said locking parts being movable relative to one another, and at least one said locking part arranged to be movable and adjustable relative to one of said articulated lever and guide member, one of said locking parts of said locking mechanism comprises locking recesses and said other locking part comprises at least one directionally biased locking projection for resilient engagement in said locking recesses, said articulated lever having a recess therein, said locking part containing said locking recesses being located in the recess in said articulated lever, and said locking part being adjustable relative to said articulated lever.

4,349,343

CHAIN FOR VARIABLE SPEED TRANSMISSION

Louis J. Stephanoff, Indianapolis, and Stellios A. Avramidis, Mooresville, both of Ind., assignors to PT Components, Inc., Indianapolis, Ind.

Filed Dec. 27, 1979, Ser. No. 107,757
Int. Cl.³ F16H *9/12, 9/24*
U.S. Cl. 474—245 **6 Claims**



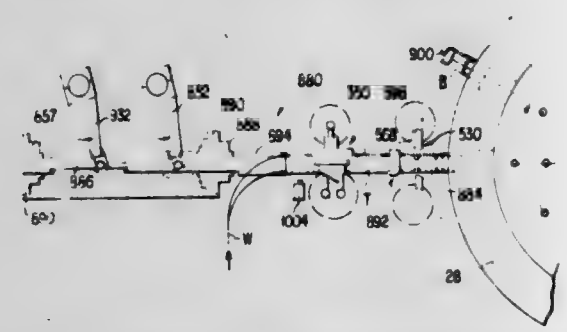
1. In a drive chain for a variable speed transmission having two spaced apart pulleys with conical faces to receive the drive chain, said chain having a plurality of links pivotally connected in end to end relation at pivot joints lying on a pitch line that extends longitudinally of the chain, the improvement comprising a drive pin mounted in at least some of said links and extending transversely of the chain with said drive pin having end faces for engagement with the walls of the pulleys, said drive pin extending laterally through said links and movable on its axis spaced vertically from said pitch line to provide a lateral force moment resisting twisting of the links about the pitch line at the pivot joints when either end face of the drive pin is in contact with an adjacent conical face of a pulley.

4,349,344

TUBE AND POUCH FORMING MANDREL ASSEMBLY

Jack R. Evers, Torrance, Calif., assignor to Developak Corporation, Redondo Beach, Calif.

Filed May 23, 1980, Ser. No. 152,756
Int. Cl.³ B31B *33/02*
U.S. Cl. 493—11 **12 Claims**



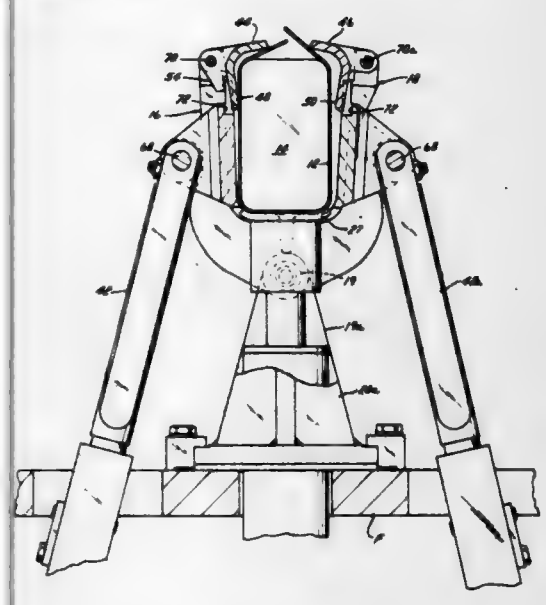
1. In a pouch forming apparatus for forming pouches from a printed web, a tube forming mandrel assembly, said mandrel assembly comprising a reciprocating mandrel, clamp means associated with said mandrel for periodically clamping a tube portion to said mandrel for movement therewith to advance an associated tube, drive means for repeatedly advancing and retracting said mandrel, and means for varying the advance stroke of said mandrel in response to actuation of said drive means to maintain registration of printing on said web with formed pouches.

4,349,345

BLANK WRAPPING MECHANISM FOR NON-CYLINDRICAL CONTAINER-MAKING MACHINES

Raymond E. Bodendoerfer, Brookfield, Wis., assignor to Paper Machinery Corporation, Milwaukee, Wis.

Filed Sep. 15, 1980, Ser. No. 186,911
Int. Cl.³ B31B *1/28*
U.S. Cl. 493—295 **8 Claims**



1. A machine for making generally rectangular in shape paper containers of the type having a successively indexable turret for presenting a workpiece to different stations, said turret having a rectangular in cross-section mandrel extending therefrom, said machine having a station for wrapping a preformed blank about said mandrel, swingable wing mechanism at said station for urging a blank against said mandrel and progressively pushing said blank tightly against and around each side of said mandrel to cause said blank to form an overlapped portion along one side of said mandrel, said mechanism comprising a pair of wings pivotably mounted together and on said machine and at a point adjacent one side of said mandrel at said station, said wings being shaped complementary to the shape of said mandrel, means for inserting a blank between said wings and said mandrel, power operated means for swinging said wings together with said blank around a portion of said mandrel in tight engagement therewith; said wings each having a supplement wing portion pivotably attached thereto for pivoting between (1) an open position away from one another to permit them to move unobstructively past said mandrel as said wings wrap said blank against said mandrel and (2) a position tightly pressing said blank against said mandrel and to form said overlapped portion of said container, said supplement wing portions being generally right angular in shape and each having an initial mandrel-contacting portion and a free end, said wing portion being pivotally attached to said wing at a point between said mandrel-contacting portion and said free end, whereby said mandrel-contacting part initially abuts against said mandrel to thereby force said supplement portions to pivot about said point to said position where they tightly press said blank against said mandrel to complete the forming of said blank therearound.

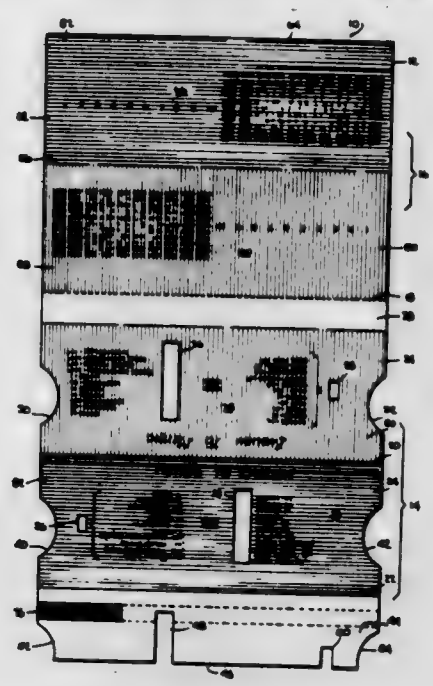
4,349,346

METHOD OF MAKING SLIDE CALCULATOR

Howard M. Bromberg, New York, N.Y., assignor to The Flexi-Group Inc., New York, N.Y.

Division of Ser. No. 944,281, Sep. 21, 1978, Pat. No. 4,220,075, which is a division of Ser. No. 701,082, Jun. 30, 1976, Pat. No. 4,132,348. This application Apr. 11, 1980, Ser. No. 139,260
The portion of the term of this patent subsequent to Jan. 2, 1996, has been disclaimed.
Int. Cl.[3] B65D *27/04*
U.S. Cl. 493—325
8 Claims

1. A method of making slide calculator blanks comprising unwinding a web of predetermined lateral extent from a roll of foldable sheet material, continuously forming a separation line in the longitudinal direction of the web to divide the web longitudinally into elongated first and second leaf portions, continuously forming at least one longitudinal fold line in one of the leaf portions to define at least two longitudinal sleeve segment portions of substantially equal width, the fold line being formed substantially parallel to the longitudinal separation line, the other leaf portion representing the slide portion, and repetitively applying informational data portions on at least one surface of the web at the slide portion and at the two



sleeve segment portions to provide a plurality of connected slide calculator blanks on said web of foldable sheet material.

4,349,347

WOOL SCOURING

Merle S. Masri, Emeryville, Calif.; Brian Robinson, and James D. M. Gibson, all of Ilkley, England, assignors to Wool Development International Limited, London, England

Filed Sep. 5, 1980, Ser. No. 184,368

Claims priority, application United Kingdom, Sep. 7, 1979, 7931026

Int. Cl.³ D01C *3/00*

U.S. Cl. 8—139 10 Claims

1. In a method of scouring raw wool wherein scouring liquor is withdrawn from the scouring zone and passed through a circulatory system where it is treated to remove solid contaminants therefrom and subsequently recycled to the scouring zone, the improvement consisting essentially of adding a soluble alkali metal silicate to the scouring liquor prior to the separation of solid contaminants.

4,349,348

PROCESS FOR PRINTING SYNTHETIC, HYDROPHOBIC FIBER MATERIAL

Horst Tappe, Dietzenbach; Horst Kindler, Frankfurt am Main; Kurt Roth, Hofheim, and Hans-Jürgen Weyer, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Cassella Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

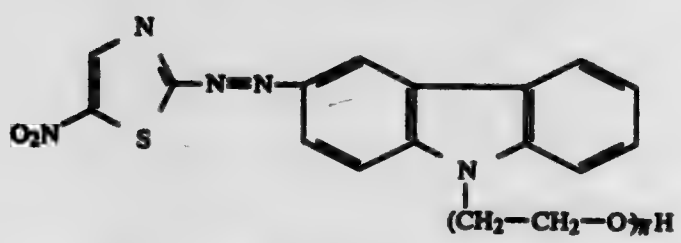
Filed May 18, 1981, Ser. No. 264,715

Claims priority, application Fed. Rep. of Germany, May 23, 1980, 3019739

Int. Cl.³ D06P *5/15*

U.S. Cl. 8—464 8 Claims

1. In the process for the production of white or variously colored designs on a colored substrate on textile materials containing hydrophobic, synthetic fibers by impregnating the materials with dye liquors containing dyeing and padding auxiliaries as well as dyestuffs dischargeable to white, drying or incipiently drying the impregnated materials and then printing a desired pattern onto the materials with a discharge reserve paste containing a discharging agent, and subsequently subjecting the materials to a heat treatment at temperatures from 100° to 230° C., the improvement comprises the dyestuffs dischargeable to white being dyestuffs of the formula



wherein n is a number from 1 to 9; and said discharging agent being a base which produces a pH value of at least 8 in a 5% strength aqueous solution.

4,349,349

AQUEOUS LIQUID COMPOSITION OF REACTIVE DYE

Kiyoharu Nakatsuka, and Sadaharu Abeta, both of Toyonaka, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Mar. 23, 1981, Ser. No. 246,858

Claims priority, application Japan, Mar. 31, 1980, 55/42411

The portion of the term of this patent subsequent to Aug. 11, 1998, has been disclaimed.

Int. Cl.³ D06P *67/00*

U.S. Cl. 8—527 8 Claims

1. An aqueous liquid dye composition containing 10 to 50 parts by weight of C.I. Reactive Blue 19, 1 to 40 parts by weight of a condensation product of formaldehyde with naphthalenesulfonic acid which may be alkylated, 0.1 to 10 parts by weight of a nonionic surfactant having an HLB of 9 to 20, and 20 to 80 parts by weight of water.

4,349,350

PROCESS FOR THE DETERMINATION OF URANIUM (VI) OR DIALKYL DITHIOPHOSPHORIC ACID PRESENT IN AN ORGANIC SOLVENT

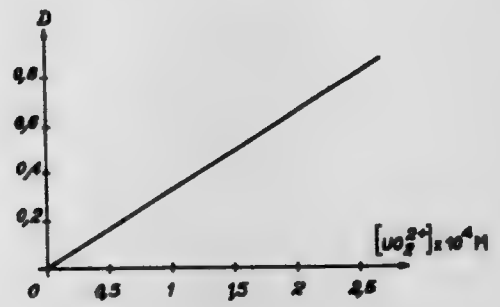
Richard Fitoussi, Paris; Sylvie Lours, Chatenay Malabry, and Claude Musikas, Villebon, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Mar. 11, 1981, Ser. No. 242,655

Claims priority, application France, Mar. 17, 1980, 80 05908

Int. Cl.³ G01N *21/00*

U.S. Cl. 23—230 R 13 Claims



1. A process for the determination of the uranium (VI) or dialkyl dithiophosphoric acid present in an organic solvent comprising a neutral organophosphorus compound with an electron donor oxygen atom, wherein a dialkyl dithiophosphoric acid or a uranium (VI) salt is added to the organic solvent so as to convert all the uranium (VI) or dialkyl dithiophosphoric acid present in the solvent into a mixed uranium (VI)-dialkyl dithiophosphoric acid-organophosphorus compound complex and wherein the optical density of the solvent containing this complex in solution is measured so as to determine the concentration of the complex in the solvent, as well as its uranium or dialkyl dithiophosphoric acid content.

4,349,351

REAGENT FOR THE DETERMINATION OF HAEMOGLOBIN

Georg Frank, and Klaus Wehling, both of Wuppertal, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 8, 1981, Ser. No. 271,073

Claims priority, application Fed. Rep. of Germany, Jul. 1, 1980, 3024835

Int. Cl.³ G01N *33/72*

U.S. Cl. 23—230 B 4 Claims

1. In a reagent for the determination of haemoglobin consisting essentially of a solution in distilled or deionized water of potassium cyanide, potassium hexacyanoferrate-III, a buffer substance and a detergent, the improvement wherein the pH value is in the range of from 7.1 to 7.3 and the potassium cyanide concentration is in the range of from 90 to 120 mg/liter.

4,349,352

TEST FOR GLUCOSYLATED HEMOGLOBIN AND OTHER GLUCOSYLATED PROTEINS

James M. Manning, Tenafly, and Seetharama A. Acharya, Cresskill, both of N.J., assignors to Rockefeller University, New York, N.Y.

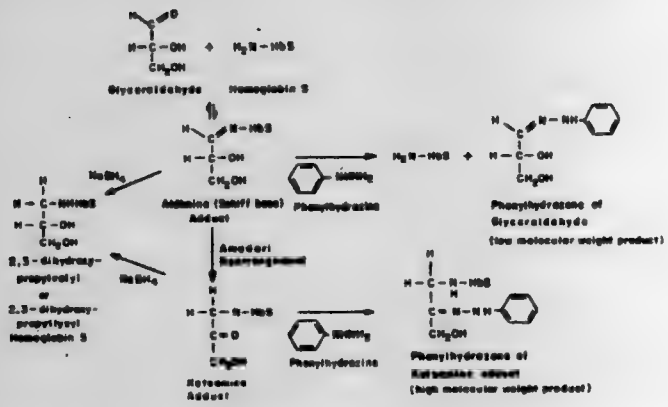
Filed Aug. 14, 1980, Ser. No. 178,068

Int. Cl.³ G01N *33/68, 33/72*

U.S. Cl. 23—230 B 8 Claims

1. A method for identification and assay of glucosylated blood proteins which comprises the steps of isolating purified

glucosylated blood protein, treating said isolated protein with a phenylhydrazine adapted to react therewith, and thereafter



measuring the absorption coefficient of the resulting phenylhydrazone.

4,349,353

FRYING OIL EVALUATOR METHOD AND COMPOSITION

Michael M. Blumenthal, Metuchen, N.J., and Jerry R. Stockler, Wantagh, N.Y., assignors to Oil Process Systems, Inc., Allentown, Pa.

Filed Sep. 25, 1981, Ser. No. 305,841
Int. Cl.³ G01N *33/02, 33/28*
U.S. Cl. 23—230 R **15 Claims**

1. A process for the determination of the amount of alkaline substances in fat, said process comprising the steps of:

(1) mixing a predetermined amount of a test solution with a predetermined amount of the fat, said test solution comprising pH indicator dye and a solvent; wherein the dye has a visible color change in the pH range of from about 2.5 to about 7.0, the dye is soluble in the solvent and the fat is substantially immiscible with the solvent; wherein the dye and solvent are present in amounts effective to provide said visible color change which depends on the amount of alkaline substances in the fat; and wherein the pH of the test solution is such that the color of the test solution prior to said mixing corresponds to the color of the dye at the lower end of the color change range for the dye;

(2) allowing the fat and test solution to separate into a solvent phase and a fat phase; and

(3) determining the amount of alkaline substances in the fat from the color developed in the solvent phase by comparing said developed color to a known standard.

4,349,354

FURNACE FOR GASIFYING GRANULAR FUELS

Wilhelm Flesch, Heidelberg, Fed. Rep. of Germany, assignor to Davy International Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Continuation of Ser. No. 3,382, Jan. 15, 1979, abandoned. This application Jul. 16, 1980, Ser. No. 169,374
Claims priority, application Fed. Rep. of Germany, Jan. 14, 1978, 2801574
Int. Cl.³ C10J *3/56*
U.S. Cl. 48—77 **5 Claims**

1. A shaft furnace for gasifying fine-grained fuels such as coal or coke at normal or elevated pressure in a gasification zone comprising a fluidized bed and a diluted after-gasification zone above said bed with means for indirect cooling of the effluent gas in order to prevent gasification residues entrained with the gas from sintering to surfaces of the equipment in the subsequent path of the gas, said furnace comprising:

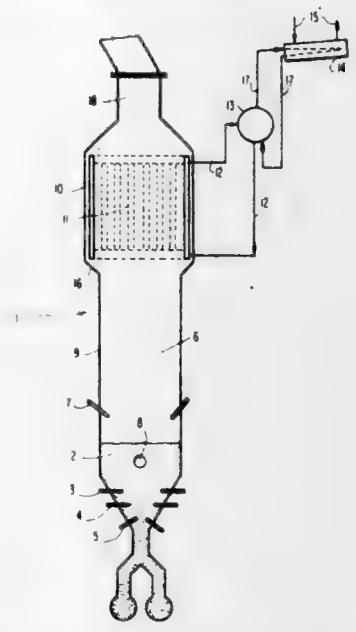
(a) a shaft section defining a fuel gasification zone, including

(1) an upper shaft section defining an after-gasification zone,

a lower shaft section below said after-gasification zone containing, a fluidized bed of granular fuel positioned and maintained in the lower portion of said fuel gasification zone and means for injecting a gasification agent into said fluidized bed;

(b) an upper enlarged cooling shaft section defining a gas cooling zone position above and in communication with said after-gasification zone, said gas cooling zone having a cross sectional area which is larger than that of said fuel gasification zone; and

(c) a radiation tube boiler for containing a small water content compared with the heat content of the fuel bed and forming part of a steam generation plant with the radiation



tube boiler surfaces being positioned completely within a recess formed by said enlargement of said gas cooling shaft section so that the boiler tube surfaces annularly surround effluent gases which pass through said upper shaft section, said boiler tube surfaces being positioned within said recess so that the reaction gas stream is not obstructed by said boiler tube surfaces as said gas stream moves through the cooling zone, said boiler tube surfaces further being dimensioned so that their cooling effect is only so great that gasification residues entrained with the effluent gas are not able to sinter to surfaces of the equipment in the subsequent path of the effluent gas.

4,349,355

METHANE GENERATOR

Banadakoppa T. Lingappa, and Yamuna Lingappa, both of 4 McGill St., Worcester, Mass. 01607

Filed Jul. 29, 1981, Ser. No. 287,767
Int. Cl.³ C02F *11/04*
U.S. Cl. 48—111 **10 Claims**

1. Methane generator, comprising:

(a) a tank having an open top,

(b) a gas collector vertically slidable in the tank,

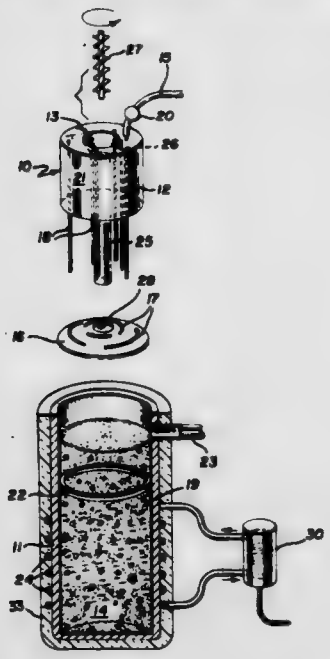
(c) feed means for introducing a slurry of liquid and raw solid organic material through the gas collector into the tank,

(d) conduit means for removing methane from the collector,

(e) a retainer located in the upper portion of the tank and extending horizontally across substantially the entire cross-section of the tank to maintain the solid organic material submerged in the slurry, the retainer having apertures, and

(f) rods extending downwardly from the collector and pass-

ing through the apertures in the retainer into the solids floating in the slurry beneath the retainer, wherein the gas



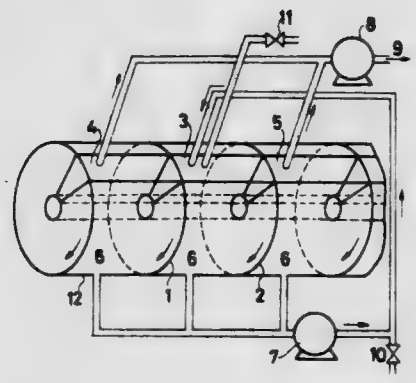
collector is free to rotate in the tank, and wherein the apertures in the retainer are concentric slots.

4,349,356

PROCESS AND APPARATUS FOR CONCENTRATING A COMPONENT OF A GASEOUS MIXTURE

Noriaki Wakao, Zushi, Japan, assignor to Toyo Engineering Corporation, Japan

Filed Feb. 14, 1980, Ser. No. 121,592
Claims priority, application Japan, Mar. 9, 1979, 54/26709
Int. Cl.³ B01D *53/22*
U.S. Cl. 55—16 3 Claims



1. A process for concentrating a component of a gaseous mixture by Knudsen diffusion which comprises feeding a gaseous mixture is fed to one surface of a renewable portion of a porous membrane intermittently in the form of a pulse and collecting the gas diffused out of the opposite surface of said membrane under Knudsen's conditions during a transient period having length of not less than $x=0.01$ but not more than $x=0.4$, where $x=DT_2/aL$ wherein D is the intramembranous Knudsen diffusion coefficient, T is time (in seconds), a is the porosity of said membrane and L is the thickness (in cm) of said membrane, the collected diffused gas being hence enriched with the lighter component of said gaseous mixture.

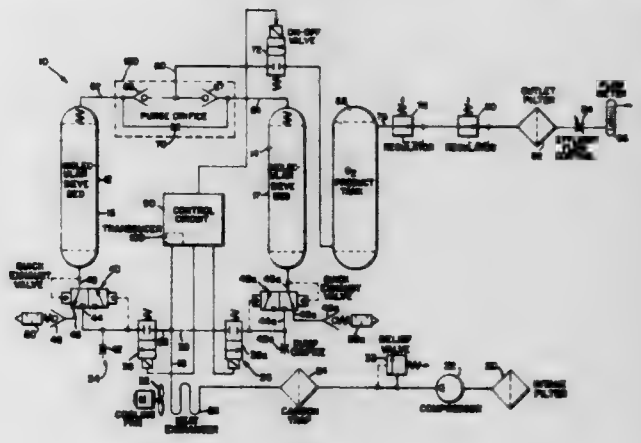
3. A continuous process for concentrating a component of a gaseous mixture by Knudsen diffusion which comprises feeding a gaseous mixture continuously to a gas-feeding zone having at least one boundary wall constituted of a porous membrane, moving said membrane so as to renew its portion to be contacted with said gaseous mixture at cyclic intervals of time of not less than $x=0.4$ but not more than $x=1$, where $x=DT_2/aL$ wherein D is the intramembranous Knudsen diffusion coefficient, T is time (in seconds), a is the porosity of said membrane and L is the thickness (in cm) of said membrane, whereby the lighter component of said gaseous mixture is preferentially diffused out of the opposite surface of said membrane under Knudsen's conditions and the heavier component thereby is largely left in said gas-feeding zone, and collecting the lighter component diffused out and the heavier component left in said gas feeding zone, respectively.

4,349,357

APPARATUS AND METHOD FOR FRACTIONATING AIR AND OTHER GASEOUS MIXTURES

George K. Russell, Castle Rock, Colo., assignor to Stanley Aviation Corporation, Denver, Colo.

Filed Jun. 23, 1980, Ser. No. 161,690
Int. Cl.³ B01D *53/04*
U.S. Cl. 55—21 35 Claims



1. A method of fractionating a gaseous mixture containing at least first and second components, comprising the steps of passing the gaseous mixture containing said components alternately through first and second bodies of adsorbent to adsorb at least said first component but not said second component such that the unadsorbed gas leaving each of said bodies contains said second components, for a pre-selected time period starting with the initiation of the passage of the gaseous mixture alternately through said bodies, (a) passing all of the unadsorbed gas leaving said first body through said second body during the time in which the gaseous mixture is passing through said first body to purge adsorbed components from said second body and (b) passing all of the unadsorbed gas leaving said second body through said first body during the time in which the gaseous mixture is being passed through said second body to purge adsorbed components from said first body, and after expiration of said pre-selected time period, delivering a fraction of the unadsorbed gas leaving each body to a user and utilizing the remainder of the unadsorbed gas to purge said bodies of the adsorbed components.

3. In a heatless fractionating apparatus for fractionating a gaseous mixture having at least first and second components, at least one vessel, first means for pressurizing the gaseous mixture containing said components, a first valve connected intermediate said pressurizing means and said vessel and having fluid flow an inlet port for receiving the pressurized gaseous mixture, second means connected intermediate said pressurizing means and said inlet port for delivering the pressurized gaseous mixture to said inlet port, said first valve having a further fluid flow port in fluid communication with the interior of said vessel, and said first valve being responsive to the pressure of the pressurized gaseous mixture delivered to said inlet port for delivering the pressurized gaseous mixture through said further port to said vessel for flow through said vessel, said vessel containing an adsorbent for adsorbing at least said first component but not said second component of said gaseous mixture as the gaseous mixture flows through said vessel, said second means comprising a second valve responsive to a rise in the pressure of the gaseous mixture undergoing fractionation to a predetermined value for blocking the deliv-

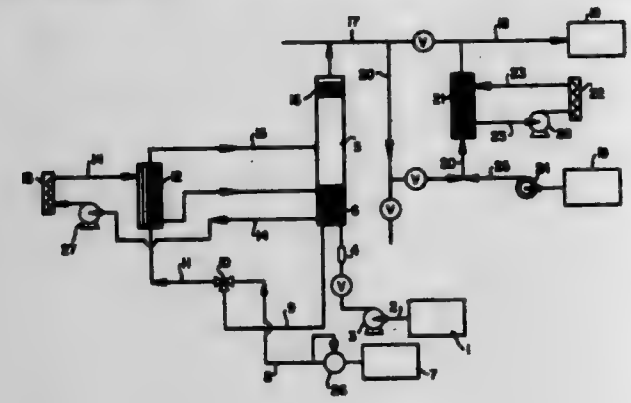
ery of the pressurized gaseous mixture to said inlet port, and third means rendering said second valve effective to vent gases from said vessel during the time when delivery of the pressurized gaseous mixture to said inlet port is blocked.

4,349,358

METHOD OF MIXING A GAS AND A VAPORIZABLE LIQUID

Gregorio Tarancon, Woodbridge, N.J., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Mar. 26, 1981, Ser. No. 247,947
Int. Cl.³ B01D *47/00*
U.S. Cl. 55—89 6 Claims



1. A method of mixing a gas and a vaporizable liquid to provide a gaseous mixture having a constant composition, regardless of change in rate of flow, except as hereinafter provided, comprising:

(a) admixing the gas and the vaporizable liquid in predetermined proportions;

(b) introducing the mixture of step (a) at a predetermined pressure into the tube side of a tube and a shell heat exchanger at a flow rate sufficient to cause turbulent flow;

(c) introducing a heating fluid into the shell side of the heat exchanger at a temperature sufficient to vaporize at least part of the vaporizable liquid, separating the vaporizable liquid into a vapor phase and a liquid phase; and

(d) delivering the mixture of gas and vapor phase to a use point and recycling the liquid phase to step (a).

4,349,359

ELECTROSTATIC PRECIPITATOR APPARATUS HAVING AN IMPROVED ION GENERATING MEANS

Richard A. Fitch, La Jolla; James E. Drummond, Coronado, and Alfred A. Mondelli, Del Mar, all of Calif., assignors to Maxwell Laboratories, Inc., San Diego, Calif.

Division of Ser. No. 891,826, Mar. 30, 1978, Pat. No. 4,236,900, Continuation-in-part of Ser. No. 877,123, Feb. 13, 1978, abandoned, which is a continuation of Ser. No. 754,236, Dec. 27, 1976, abandoned. This application Apr. 14, 1980, Ser. No. 139,831
Int. Cl.³ B03C *3/40*
U.S. Cl. 55—151 10 Claims

1. Apparatus for precipitating particles from a gaseous medium carrying the same, comprising:

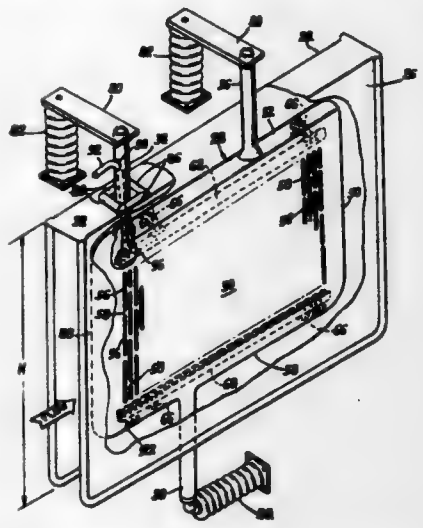
generally flat collecting plate means upon which particles are collected;

conductive shell means spaced from said collecting plate means, the space between said shell means and said collecting plate means defining a channel through which said medium passes, said shell means having at least one generally flat side wall, said side wall having a plurality of rows of openings therein, said rows being spaced from one another and oriented generally transversely of the flow of medium through said channel;

a plurality of corona discharge members located within said shell means aligned adjacent one another generally in a common plane and including interior corona discharge members and end discharge members;

said discharge members being charged to a sufficient potential to produce corona discharge and provide a supply of ions for passing through said openings into the channel, one of said members being located adjacent each of the rows of openings so that ions produced by each member pass through the openings of the adjacent rows;

said end discharge members being located on opposite ends of a plurality of said interior corona discharge members, said end discharge members being of increased cross-sectional size and free of sharp edges to reduce their proclivity to corona discharge relative to said interior corona discharge members to thereby compensate for the absence of mutual shielding produced by adjacent interior discharge members located on both sides thereof; and



said shell means being charged to a potential sufficient to maintain a strong generally uniform electric field between said shell means and said collecting plate means and said openings being sufficiently large to pass enough ions therethrough to charge the particles while not so large so as to significantly disrupt the generally uniform electric field, said electric field influencing said charged particles toward said plate means where they are collected thereon.

4,349,360

FLUID TREATING COLUMN AND APPARATUS FOR TREATING MIXTURES OF LIQUID AND GAS

Hubertus J. A. Schuurmans, and Andre T. M. Peer, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Jun. 4, 1981, Ser. No. 270,304
Claims priority, application United Kingdom, Sep. 18, 1980, 8030134
Int. Cl.³ B01D *47/12, 45/08*
U.S. Cl. 55—238 5 Claims

1. An apparatus for treating a mixture of gas and liquid comprising:

a housing which surrounds a tubular inner wall that defines a generally vertical tubular inner space and a surrounding outer space within the housing;

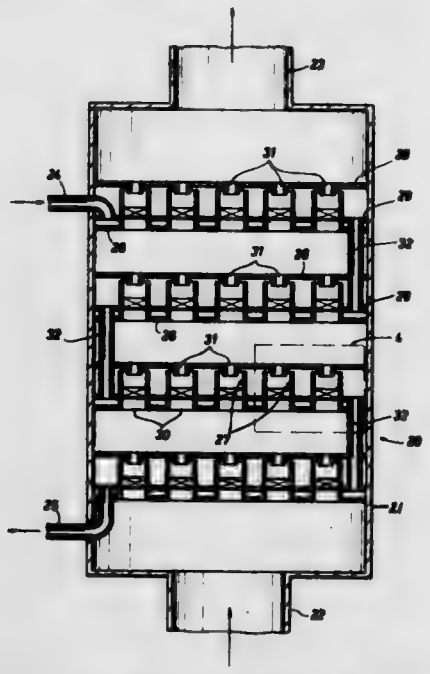
a top wall of the housing located above the top of the tubular inner wall so that fluid can flow between the surfaces of those walls;

inlet means for inflowing a mixture of gas and liquid into the bottom of the tubular inner space;

swirl-imparting means mounted within the tubular inner space for centrifugally separating said mixture into its gas and liquid components;

outlet means for discharging gas from the tubular inner space and said outer space including (a) a primary gas outlet tube which is coaxial with the tubular inner space, extends through the top wall of the housing and has a lower end which is smaller than the tubular inner space

and extends into a portion of that space below the top of the tubular inner wall, and (b) a secondary gas outlet tube which extends through the top wall of the housing and there communicates with the primary gas outlet tube and extends below the top of the housing and there opens over a portion of said outer space;



at least one opening through said tubular inner wall in a location above the swirl-imparting means, for discharging liquid from within the tubular inner space to within the said outer space; and,

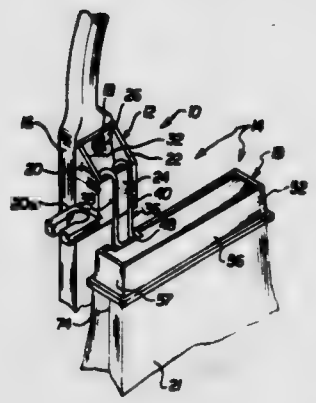
at least one opening through a lower portion of the housing for discharging liquid from within said outer space to a location outside the housing.

4,349,361

VACUUM CLEANER BAG HANGER ASSEMBLY

Ernest R. Scott, Mayfield Heights, and William D. Bowers, Avon, both of Ohio, assignors to The Scott & Fetzer Company, Lakewood, Ohio

Filed Oct. 5, 1981, Ser. No. 308,576
Int. Cl.³ B01D *46/02*
U.S. Cl. 55—357 10 Claims



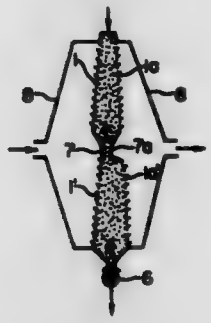
1. In an upright vacuum cleaner having a motor housing, a handle pivotally connected to said housing, and flexible dirt-receiving bag means extending between said housing and said handle, said bag means having rigid top casing means supporting said bag means, in combination therewith the improvement comprising a quick-connect-disconnect coupling between said handle and said housing, means to connect said bag means to said coupling and means to connect said bag means to said housing, said coupling including first and second coupling members, respectively, which are rigidly attached to said handle and said top casing means, respectively, with said second member rigidly supporting at least a major portion of said casing means as a cantilever, said first coupling member having means defining a pocket, said pocket-defining means including a fixed member and a member movable with respect to said fixed member, said movable member being biased toward said fixed member, said second member being releasably inserted between said fixed and movable members, means on said movable and fixed members cooperating with said second member to define a one-way ratchet which is releasable upon movement of said movable member away from said fixed member.

4,349,362

MULTI-STAGE MOVING BED TYPE ADSORPTION DEVICE

Itsuo Tanaka, Hiratsuka, and Hiromi Tanaka, Akiko, both of Japan, assignors to Sumitomo Heavy Industries, Ltd., Tokyo, Japan

Filed Sep. 11, 1980, Ser. No. 186,067
Claims priority, application Japan, Sep. 18, 1979, 54-118820
Int. Cl.³ B01D *53/06*
U.S. Cl. 55—390 3 Claims



1. A multi-stage, moving bed-type, adsorption apparatus, comprising:

a gas-circulating vessel having a gas inlet and a gas outlet for gas to be treated;

a plurality of adsorption chamber units, said adsorption chamber units being located inside said vessel between said gas inlet and said gas outlet, and filled with adsorbent particles and being arranged in vertical alignment one above the other so that adsorbent particles can flow downwardly through said units in series; each of said adsorption chamber units comprising opposed, upwardly extending, horizontally spaced-apart, front and rear, upper walls, said upper walls comprising louvers so that gas can be fed through the louvers in one of said upper walls and can be discharged through the louvers in the other of said upper walls, the upper ends of said upper walls being horizontally spaced from each other to define an inlet for said adsorbent particles, said upper walls diverging with respect to each other in the downward direction; opposed, horizontally spaced-apart, front and rear, lower walls extending downwardly from the lower ends of said front upper wall and said rear upper wall, respectively, said lower walls converging toward each other in the downward direction with the lower ends of said lower walls being horizontally spaced from each other to define an outlet for adsorbent particles; a pair of side walls extending between said front and rear, upper and lower walls at the opposite ends thereof, respectively, for closing the space therebetween so that said upper, lower and side walls define a chamber for containing said adsorbent particles; a horizontal rectifying body which is of inverted V-shape in cross section and a vertical rectifying plate extending downwardly from the apex of said rectifying body, said rectifying body and said rectifying plate being centrally located in the lower portion of said chamber between said front and rear lower walls and extending horizontally between said side walls; a coupling passage extending downwardly from the adsorbent outlet of each of said adsorption chamber units, except the lowermost one thereof; to the adsorbent inlet of the adjacent adsorption chamber unit located therebelow, each said coupling passage being located directly vertically below

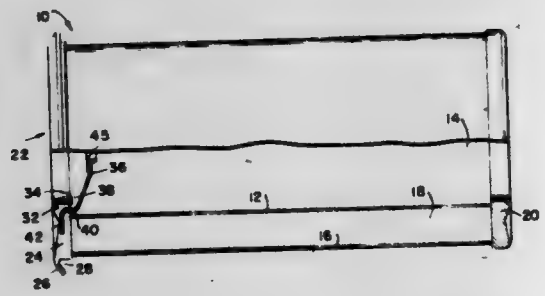
the rectifying body of the adsorption chamber unit disposed thereabove, each said coupling passage being defined by opposed, horizontally spaced-apart, front and rear, vertical walls which extend downwardly from the lower ends of the front and rear lower walls of the upper adsorption chamber unit to the upper ends of the front and rear upper walls of the adjacent lower adsorption chamber unit so that adsorbent particles leaving the adsorbent outlet of the upper adsorption chamber unit flow through said coupling passage into the adsorbent inlet of the adjacent lower adsorption chamber unit; the horizontal distance between said upper walls of each of said adsorption chamber units, except the uppermost adsorption chamber unit, being larger than the horizontal distance between said upper walls of the adjacent upper adsorption chamber unit at corresponding vertical locations in said units, so that the space velocity of the gas that flows through a lower adsorption chamber unit is lower than the space velocity of the gas that flows through the adjacent upper adsorption chamber unit; and an adsorbent particle discharging means provided at the adsorbent outlet of the lowermost adsorption chamber unit.

4,349,363

FILTER ELEMENT LEDGE GASKET

Jhina Patel, Eastlake, and Terry L. Zahuranec, Hudson, both of Ohio, assignors to Incom International Inc., Pittsburgh, Pa.

Filed Oct. 27, 1980, Ser. No. 200,794
Int. Cl.[3] B01D *27/04, 46/02*
U.S. Cl. 55—498 12 Claims



1. In a filter element having an end retainer plate, an inner wall defining an axial cavity, an outer wall concentrically spaced about the inner wall, and a filter medium positioned between the inner and outer walls, the improvement comprising a gasket, said gasket comprising

an annular seal portion configured to extend across the space between the inner and outer walls and sealingly engage ends of the walls and retainer plate,

an annular lip extending outwardly from the seal portion and having an axially inward surface configurated to sealingly engage an edge of a housing receiving the filter element, and

an annular gripper portion extending inwardly from the seal portion and being spaced axially from the outer surface of the retainer plate to form a space between said gripper portion and the retainer plate sufficient to accommodate a fingertip.

8. In a filter element having an end retainer plate, an inner wall defining an axial cavity, an outer wall concentrically spaced about the inner wall, and a filter medium positioned between the inner and outer walls, the improvement comprising a gasket, said gasket comprising

an annular seal portion configured to extend across the space between the inner and outer walls and sealingly engage ends of the walls and retainer plate,

an annular lip extending outwardly from the seal portion, and

an annular gripper portion extending inwardly from the seal portion and being spaced axially from the outer surface of the retainer plate,

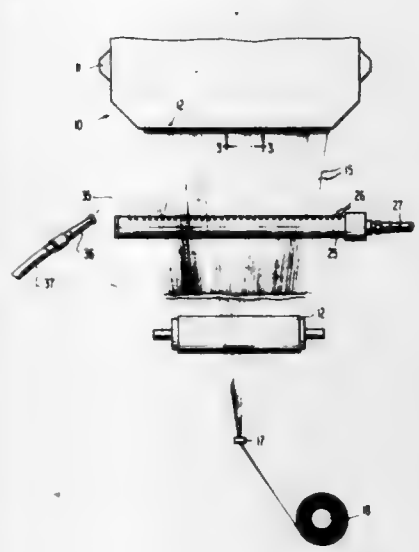
wherein the end of the retainer plate has a radial portion which is embedded in the seal portion and which extends at least partially across the space between the inner and outer walls.

4,349,364

MULTIPLE ORIFICE BUSHING

Michael W. Morrison, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Oct. 29, 1981, Ser. No. 316,244
Int. Cl.[3] C03B *37/025*
U.S. Cl. 65—2 10 Claims



1. A method of establishing filament flow from a bushing plate having tips having a plurality of orifices therein which comprises:

(a) flowing glass from a plurality of orifices in a bushing tip as a single fiber;

(b) directing a gaseous fluid into contact with said bushing plate;

(c) simultaneously directing a cooling liquid into contact with the tips of said bushing plate to cause said single filament to separate into individual filaments issuing from each of said orifices; and,

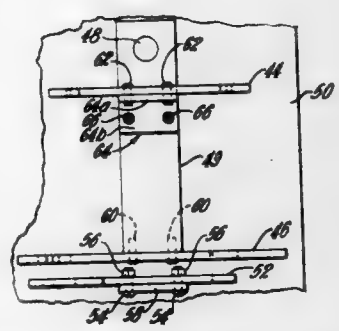
(d) discontinuing directing said cooling fluid into contact with the tips of said bushing while continuing to direct said gaseous fluid into contact with said bushing plate.

4,349,365

DUAL STRAND PACKAGING APPARATUS

Thomas O. Matteson, Columbus, Ohio, and David C. Wingate, Amarillo, Tex., assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Nov. 6, 1981, Ser. No. 318,886
Int. Cl.[3] C03B *37/025*
U.S. Cl. 65—10.1 6 Claims



1. Dual strand packaging apparatus comprising a rotatably indexible turret, a pair of spaced, parallel elongated winding collets each rotatably mounted on the turret and movable alternatively into operating and standby positions oppositely to the other upon indexing of the turret, each collet being adapted to receive front and rear strand winding sleeves for the buildup of front and rear strand packages respectively thereon while the collet is in the operating position and each collet having a

front annular groove for temporarily receiving scrap strand windings, an elongated bushing disposed above the turret and collets for supplying molten glass streams for attenuation respectively into glass filaments by the winding action of a collet in the operating position, a longer dimension of the bushing extending transversely of the collets, front and rear gathering shoes disposed between the bushing and the collets in a manner enabling the filaments at the bushing to be divided equally into front and rear groups disposed respectively to the front and rear of an imaginary vertical plane extending longitudinally of the bushing and the filaments of the front and rear groups to be drawn respectively through the front and rear gathering shoes to form front and rear strands, the front and rear strands being adapted to be wound respectively into front and rear strand packages respectively on front and rear strand winding sleeves on a collet in the operating position, a strand push-off blade advanceable and retractable along a collet in the operating position, and a stationary strand release blade adjacent the strand push-off blade in a retracted position thereof, the strand push-off blade and the strand release blade being so constructed and arranged that (a) when the strand push-off blade is advanced upon completion of front and rear packages on a collet in the operating position, the front and rear strands are moved from the packages for temporary winding in the front annular groove of the collet, (b) when the turret is indexed with the strand push-off blade in advanced position, both the front and rear strands are trapped in the strand push-off blade, and (c) when the strand push-off blade is retracted, both the front and rear strands are pulled out of the front annular groove of the collet indexed to the operating position when the turret is indexed to trap the strands in the strand push-off blade, moved to the rear of the collet, and released from the strand push-off blade upon contact with the strand release blade.

4,349,366

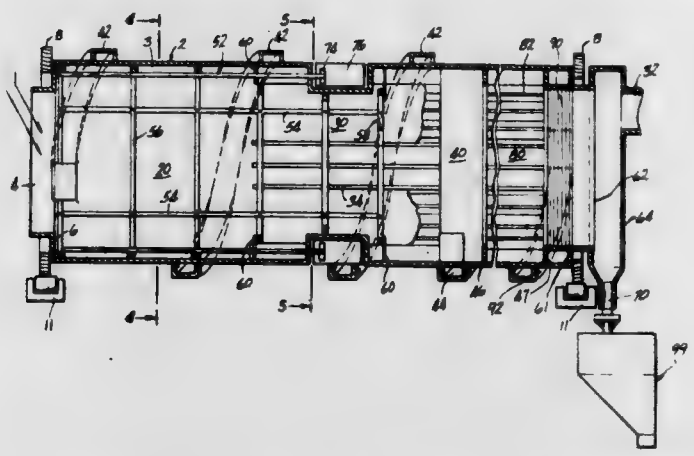
GLASS BATCH PELLET PRODUCTION AND DRYING PROCESS

Walter C. Saeman, Cleveland, Tenn., assignor to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 123,153, Feb. 21, 1980, Pat. No. 4,293,324. This application Mar. 16, 1981, Ser. No. 244,457

Int. Cl.³ C03B *1/00, 3/00*

U.S. Cl. 65—27 **10 Claims**



1. A continuous process for the production of layered pellets for glass production, which comprises the following steps:

(a) maintaining a moving bed of recycle pellets in the pelletizing zone of a rotary apparatus;

(b) feeding sand and particles of a calcium carbonate source into said pelletizing zone;

(c) feeding a Na_2O source comprised of a solution of sodium hydroxide into said pelletizing zone, said recycle pellets being coated with a layer comprised of said solution of sodium hydroxide, said sand and said calcium carbonate source to thereby form layered pellets;

(d) passing said layered pellets into a heated drying zone to form dried layered pellets, said dried layered pellets having a residual moisture content of from about 4 to about 12 percent by weight;

(e) passing said dried layered pellets from the drying zone to a recycle zone;

(f) recycling a portion of said dried layered pellets to said pelletizing zone as said recycle pellets;

(g) recovering a portion of said dried layered pellets from said recycle zone; and

(h) feeding said recovered portion of layered pellets into a static bed dryer for preheating said pellets through a temperature range of approximately 100° F. to 1400° F. prior to feeding them to a glass furnace while maintaining the temperature differential between the surface of said pellets and the static bed drying gases in the range of 5° F. to 120° F. throughout said dryer.

4,349,367

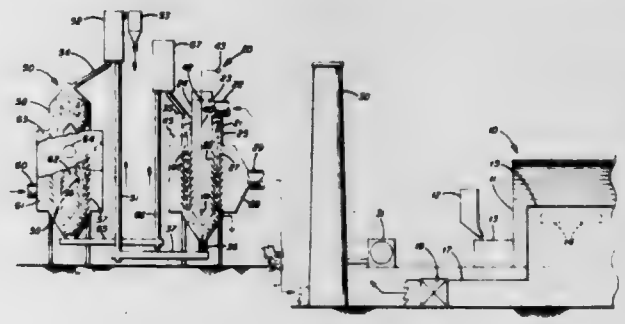
METHOD OF RECOVERING WASTE HEAT FROM FURNACE FLUE GASES USING A GRANULAR HEAT EXCHANGE MEANS

John F. Krumwiede, Blawnox, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Mar. 31, 1981, Ser. No. 249,311

Int. Cl.³ C03B *3/00*

U.S. Cl. 65—27 **25 Claims**



2. In a method of melting glass wherein glassmaking ingredients are fed into a melting furnace, air and fuel are directed into the furnace for combustion therein so as to heat and melt the glassmaking ingredients, and an exhaust gas stream is passed from the furnace, the improvement comprising:

passing at least a portion of the exhaust gas stream through a bed of granules in a first heat exchange vessel so as to heat the granules and extract heat from the exhaust gas, removing the heated granules from the bed and passing heated granules to a second heat exchange vessel, passing a stream of air into the second heat exchange vessel and into contact with the heated granules so as to heat the air by extracting heat from the granules, and passing the heated air from the second heat exchange vessel to the melting furnace for combustion.

4,349,368

GLASSWARE-MAKING APPARATUS WITH REJECT-CATCHING CHUTE AND METHOD OF OPERATING THE APPARATUS

Helmut Hüllen, and Werner-Dieter Knoth, both of Essen, Fed. Rep. of Germany, assignors to Veba Glas A.G., Essen, Fed. Rep. of Germany

Filed May 22, 1981, Ser. No. 266,301

Claims priority, application Fed. Rep. of Germany, May 24, 1980, 3020042

Int. Cl.³ C03B *9/195*

U.S. Cl. 65—28 **10 Claims**

1. An apparatus for making hollow glassware, said apparatus comprising:

a premold adapted to make a parison;

a final mold spaced from said premold and adapted to receive and blow-mold said parison;

means including an arm for removing a parison from said

premold and displacing the removed parison along a path through the air to said final mold; and

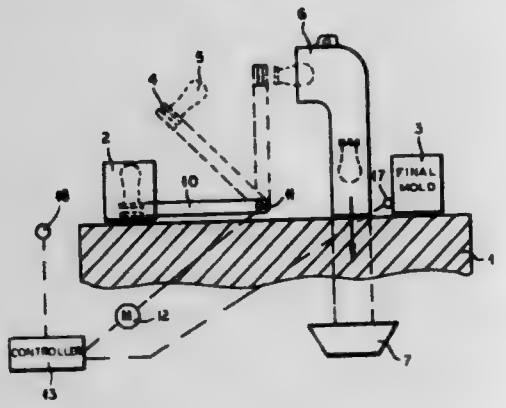
means including a scrap chute displaceable into a position along said path for intercepting said parison and receiving same from said arm.

7. A method of operating a glassware-making apparatus having:

a premold adapted to make a parison,

a final mold spaced from said premold and adapted to receive and blow-mold the parison,

an arm for removing the parison from the premold in a



pick-up position and displacing the parison along a path through an intermediate position to an end position at the final mold, and

a scrap chute,

said method comprising the steps of:

displacing said scrap chute into a position in the path between said premold and said final mold;

arresting said arm and substantially simultaneously releasing said parison from said arm shortly before same arrives at said chute to project said parison into said chute, whereby when said final mold is not ready to receive said parison same can be intercepted by said chute.

4,349,369

PROCESS FOR COATING GLASS

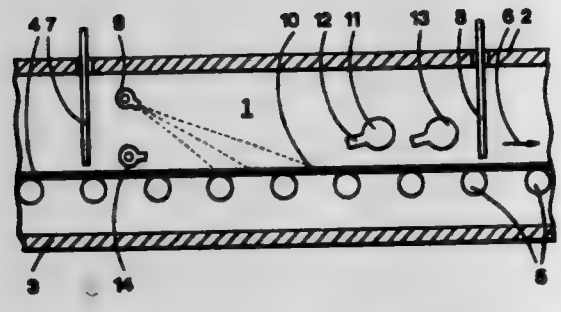
Robert Van Laethem, Loverval; Albert Van Canter, Charleroi, and Robert Ternoy, Thimeon, all of Belgium, assignors to BFG Glassgroup, Paris, France

Filed Jan. 26, 1981, Ser. No. 228,232

Claims priority, application United Kingdom, Jan. 31, 1980, 8003382

Int. Cl.³ C03C 17/00, 17/10, 17/25

U.S. Cl. 65—60.4 20 Claims



1. In a process of forming a metal or metal compound coating on a face of a heated glass substrate during its displacement in a given direction, constituting the forward direction of displacement, by contacting such face, at a coating station through which the substrate passes, with at least one stream of droplets composed of at least one substance from which the coating metal or metal compound is formed on the face, the improvement comprising repeatedly displacing said stream of droplets along a transverse path across the substrate, and propelling gas unidirectionally forwardly or rearwardly across said transverse path, out of line with said droplet stream.

4,349,370

PROCESS FOR COATING GLASS

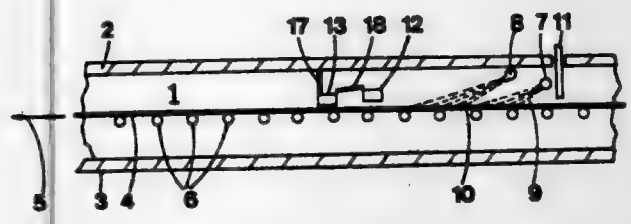
Robert Ternoy, Thimeon, Belgium, assignor to BFG Glassgroup, Paris, France

Filed Jan. 26, 1981, Ser. No. 228,234

Claims priority, application United Kingdom, Jan. 31, 1980, 8003358

Int. Cl.³ C03C 17/00, 17/10, 17/25

U.S. Cl. 65—60.4 20 Claims



1. In a process of forming a metal or metal compound coating on a face of a heated glass substrate during its displacement in a given direction, constituting the forward direction of displacement, along a tunnel by contacting the substrate at a coating station in said tunnel with at least one stream of droplets composed of at least one substance from which said coating metal or metal compound is formed on said face, and simultaneously exerting suction forces in exhaust ducting to draw environmental gases away from that station, the improvement wherein said step of exerting suction forces is carried out by means of exhaust ducting composed of at least one exhaust duct whose entrance is located in said tunnel and is spaced parallel to the given direction from said coating station, and a barrier wall located so as to prevent gases from passing over said duct, towards and into contact with the droplet stream.

4,349,371

PROCESS FOR COATING GLASS

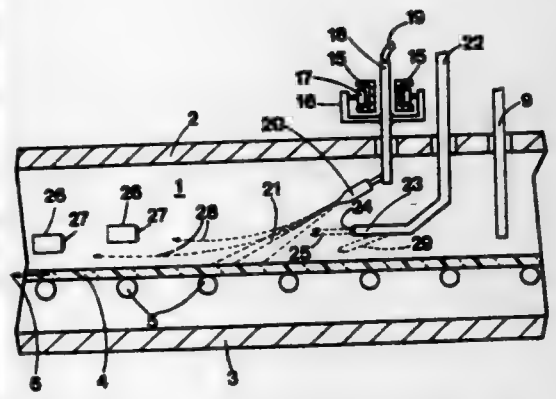
Robert Van Laethem, Loverval; Albert Van Canter, Charleroi, and Robert Ternoy, Thimeon, all of Belgium, assignors to BFG Glassgroup, Paris, France

Filed Jan. 26, 1981, Ser. No. 228,235

Claims priority, application United Kingdom, Jan. 31, 1980, 8003357

Int. Cl.³ C03C 17/00, 17/10, 17/25

U.S. Cl. 65—60.4 25 Claims



1. In a process of forming a metal or metal compound coating on a face of a heated glass substrate during its displacement in a given direction, constituting a forward direction of displacement, by contacting such face, at a coating station through which the substrate passes, with at least one stream of droplets composed of at least one substance from which said coating metal or metal compound is formed on said face, the improvement comprising causing said stream of droplets to travel downwardly at an inclination to a direction parallel to the forward direction, discharging at least one current of preheated gas into the environment above the substrate so that such gas flows in said direction parallel to the forward direc-

tion above the substrate and into contact with said stream, and regulating the temperature of such gas current such that said current influences the temperature of droplets of said stream on their way to the substrate.

4,349,372

PROCESS FOR COATING GLASS

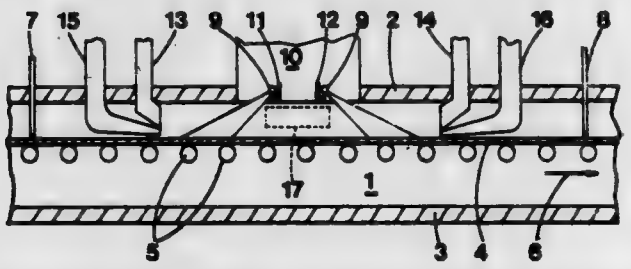
Robert Van Laethem, Loverval; Albert Van Cauter, Charleroi, and Robert Ternes, Thimeon, all of Belgium, assignors to BFG Glassgroup, Paris, France

Filed Jan. 26, 1981, Ser. No. 228,236

Claims priority, application United Kingdom, Jan. 31, 1980, 8003354

Int. Cl.³ C03C *17/00, 17/10, 17/25*

U.S. Cl. 65—60.4 33 Claims



1. In a process of forming a metal or metal compound coating on a face of a heated glass substrate during its displacement in a given direction through a coating station at which the said face is contacted with at least one stream of droplets composed of at least one substance from which said coating metal or metal compound is formed on said face, such at least one stream being directed at a downward inclination to such face, the improvement comprising directing the stream downwardly towards said face at an inclination to a direction parallel to the given direction, causing at least one current of gas, constituting a counter-current, to flow adjacent the substrate path and towards the portion of the droplet stream where the droplets have the longest trajectories, and exerting suction force on the gases in exhaust ducting whose entrance is located for drawing gases away from said portion of said stream at a higher level.

4,349,373

PLASMA DEPOSITION OF GLASS OR ITS PRECURSOR

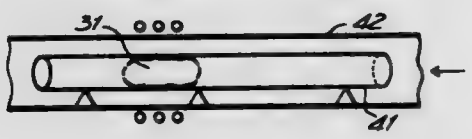
Henley F. Sterling, Great Dunmow, and Miles P. Drake, Harlow, both of England, assignors to International Standard Electric Corporation, New York, N.Y.

Continuation of Ser. No. 37,790, May 10, 1979, abandoned. This application Oct. 29, 1980, Ser. No. 201,948

Claims priority, application United Kingdom, May 30, 1978, 24187/78

Int. Cl.³ C03C *17/02, 17/245*

U.S. Cl. 65—60.8 8 Claims



1. A method of depositing a glass or its precursor on a substrate surface by a radio frequency induced chemical vapor reaction using an inductively maintained plasma fed with gas at a pressure within the range 0.1 to 50 Torr, wherein stray capacitive discharges are eliminated from unreacted gases and wherein the plasma discharge is such that its largest dimension is significantly less than the free space wavelength of the radio frequency employed to maintain the plasma, the plasma pressure and energy density being such that the deposit is non-porous.

3. The method as claimed in claim 1 and in which the plasma is localized by means of an RF step down transformer or concentrator.

4,349,374

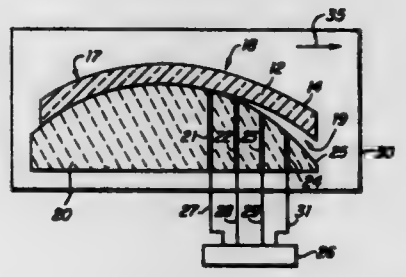
METHOD AND APPARATUS FOR MANUFACTURING GLASS PROGRESSIVE LENSES

Wiktor J. Rupp, Hollywood, Fla., assignor to Camelot Industries Corporation, Burlington, Mass.

Filed Jan. 21, 1981, Ser. No. 226,965

Int. Cl.³ C03B *23/00*

U.S. Cl. 65—107 13 Claims



1. A method for manufacturing a glass lens having a spherical distance portion and a nonspherical progressive portion comprising:

a. providing a forming block having a lens forming surface shaped for forming said spherical and nonspherical surfaces on a lens;

b. supporting a glass lens blank on said forming surface, said lens blank and said forming surface defining a spacing therebetween adjacent the non-spherical portion;

c. heating said glass lens blank to its softening point;

d. simultaneously establishing a pressure differential between the opposite sides of said lens blank for causing said lens blank to sag against said forming surface by locating openings through the forming block progressing from the vicinity of where said spacing between said lens blank and said forming surface is initially relatively narrow and ending in the vicinity of where said spacing is initially relatively wide; and

e. coupling said apertures to a pump.

6. Apparatus for manufacturing a glass lens having a spherical distance portion and a nonspherical progressive portion comprising:

a. a lens forming block having a lens forming surface shaped to form said spherical and nonspherical lens portions;

b. a lens blank adapted to be situated above said lens forming block and supported on said lens forming surface, said lens blank and said lens forming surface defining a spacing therebetween adjacent the nonspherical portion;

c. means for heating said lens blank to its softening point; and

d. means for establishing a pressure differential between the opposite sides of said blank for causing said lens blank to sag against said lens forming surface, said pressure differential establishing means comprising progressive apertures extending through said lens forming block for maintaining a relatively large pressure differential in the vicinity of where said spacing is relatively narrow so that said blank will sag progressing from where said spacing is relatively narrow and ending in the vicinity of where said spacing is relatively wide.

4,349,375

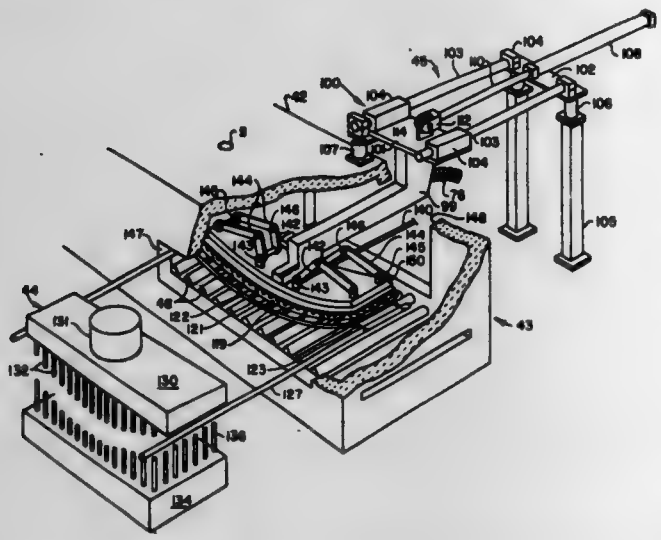
DEFORMABLE VACUUM MOLD FOR SHAPING GLASS SHEETS

John D. Kellar, Pontypool, and Gordon F. Pereman, Columbus, both of Canada, assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 131,337, Mar. 18, 1980, Pat. No. 4,297,118. This application Oct. 23, 1981, Ser. No. 314,291

Int. Cl.³ C03B *25/035*

U.S. Cl. 65—291 14 Claims



1. A deformable box for use in shaping sheets composed of glass or other deformable material comprising means adapted to connect said box to a source of vacuum, an upper flexible sheet of fluid-impervious material, an apertured lower flexible sheet of fluid-impervious material, and means to distort said box from a flat configuration to a desired curved configuration when vacuum is applied thereto and a hot sheet of deformable material is held against said apertured, lower flexible sheet, characterized by a plurality of openwork plates of thin flexible material interposed between said upper flexible sheet and said lower flexible sheet, said plates composed of a material capable of sliding relative to said other plates and said upper and lower flexible sheets over a wide range of temperatures ranging from room temperature to the softening point of said deformable material, attachment means extending through said upper flexible sheet, said lower flexible sheet and said openwork plates constructed and arranged to permit said openwork plates to slide relative to one another and to said upper and lower flexible sheets when said deformable box is distorted, thereby avoiding distortion of said lower flexible sheet from a desired shape when said box is distorted, whereby when a flat hot sheet of deformable material engages said apertured, lower flexible sheet by vacuum while said deformable box is flat, said hot sheet of deformable material deforms with the deformation of said deformable box to said desired shape and is released from said deformable box when said application of vacuum is discontinued.

4,349,376

LIQUID COOLED SKIMMER

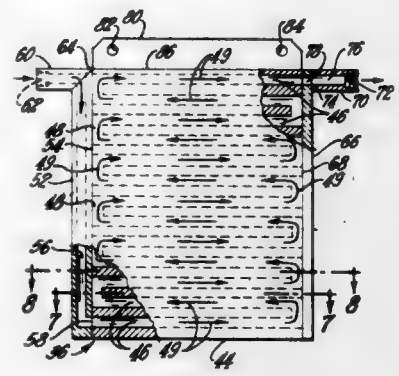
Charles S. Dunn, Pataskala, and Charles M. Hohman, Granville, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Jun. 8, 1981, Ser. No. 271,459

Int. Cl.³ C03B *5/20*

U.S. Cl. 65—345 10 Claims

1. A skimmer for use in a throat of a melting furnace, said skimmer comprising: a plate having a plurality of passages therein, said passages being through said plate from a first side to a second side with adjacent passages being in communication with each other, thereby forming a continuous passage through said plate; a first means attached to said plate for blocking the ends of said passages on said first side of said plate; a second means attached to said plate for blocking the ends of said passages on said second side of said plate; a first port means in communication with a first end of said continuous passage for connecting with a coolant inlet outside of said



furnace; and a second port means in communication with a second end of said continuous passage for connecting with a coolant outlet outside of said furnace.

4,349,377

PHENOXYPHENYLTHIOALKANECARBOXYLIC ACID AMIDES AND THEIR USE AS HERBICIDES AND PLANT GROWTH REGULANTS

Dieter Dürr, Bottmingen; Otto Rohr, Therwil, both of Switzerland; Georg Pissiotas, Lörrach, Fed. Rep. of Germany, and Beat Böhner, Binningen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 55,675, Jul. 9, 1979, abandoned, which is a continuation-in-part of Ser. No. 921,931, Jul. 3, 1978, abandoned. This application Sep. 5, 1980, Ser. No. 184,608

Claims priority, application Switzerland, Jul. 7, 1977, 8426/77; Jan. 27, 1978, 9261/78

Int. Cl.³ A01N *31/08*; C07C *103/22*

U.S. Cl. 71—98 6 Claims

1. The compound α-[3-(2′,4′-dichlorophenoxy)-6-chlorophenylthio]-propionic acid 2″-methoxyethylamide.

4,349,378

COMPOUNDS USEFUL AS PESTICIDES

Geoffrey R. Cliff, Whittlesford; Russell G. Hunt, Burwell, and Albert Percival, Hauxton, all of England, assignors to FBC Limited, Hauxton, England

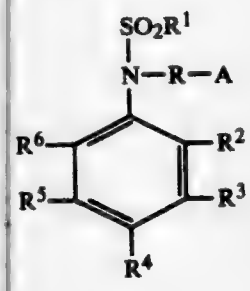
Filed Dec. 14, 1978, Ser. No. 969,492

Claims priority, application United Kingdom, Jul. 25, 1978, 31015/78

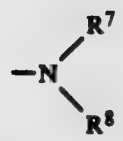
Int. Cl.³ A01N *41/00, 41/06*; C07C *143/74*

U.S. Cl. 11—103 20 Claims

1. A compound which is a sulphonanilide of formula



or salt thereof, wherein R^1 represents alkyl of 1–15 carbon atoms; alkyl of 1–15 carbon atoms substituted by one or more of halogen, alkoxy of 1–6 carbon atoms, hydroxy, amino and amino mono- or di-substituted by roups selected from alkyl of 1–15 carbon atoms; cycloalkyl of 3–7 carbon atoms; phenyl; phenyl substituted by one or more of halogen, alkyl of 1–6 carbon atoms and nitro; or a group of formula



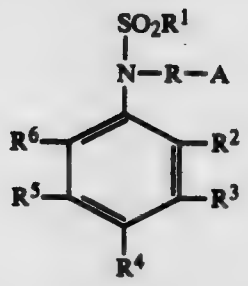
where R^7 and R^8 are the same or different and each represents a hydrogen atom, alkyl of 1–15 carbon atoms, phenyl, or phenyl substituted by one or more of halogen, alkyl of 1–6 carbon atoms, nitro and trifluoromethyl;

R represents alkylene of 1–6 carbon atoms;

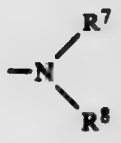
A represents —COR^{12} where R^{12} represents lower alkyl or lower alkyl substituted by one or more of halogen, hydroxy alkoxy of 1–6 carbon atoms; and

R^2, R^3, R^4, R^5 and R^6 are the same or different and each represents a hydrogen atom; alkyl of 1–15 carbon atoms; alkyl of 1–15 carbon atoms substituted by one or more of halogen and alkoxy of 1–6 carbon atoms; hydroxy; alkoxy of 1–6 carbon atoms; nitro; a halogen atom; amino; a group of formula —SR^{16} or —SO_2R^{16} where R^{16} represents alkyl of 1–6 carbon atoms or phenyl; or —$SO_2NR^7R^8$ where R^7 and R^8 are as defined above.

12. A method of combatting pests at a locus infested or liable to be infested with them or of regulating the growth of a plant at a locus at which the plant is growing or is to grow, which method comprises the step of applying to the locus a pest-combatting or plant growth regulant amount of a compound which is a sulphonanilide of formula:



or salt thereof, wherein R^1 represents alkyl of 1–15 carbon atoms; alkyl of 1–15 carbon atoms substituted by one or more of halogen, alkoxy of 1–6 carbon atoms, hydroxy, amino and amino mono- or di-substituted by groups selected from alkyl of 1–15 carbon atoms; cycloalkyl of 3–7 carbon atoms; phenyl; phenyl substituted by one or more of halogen, alkyl of 1–6 carbon atoms and nitro; or a group of formula



wherein R^7 and R^8 are the same or different and each represents a hydrogen atom, alkyl of 1–15 carbon atoms, phenyl, or phenyl substituted by one or more of halogen, alkyl of 1–6 carbon atoms, nitro and trifluoromethyl;

R represents alkylene of 1–6 carbon atoms;

A represents —COR^{12} where R^{12} represents lower alkyl or lower alkyl substituted by one or more of halogen, hydroxy alkoxy of 1–6 carbon atoms; and

R^2, R^3, R^4, R^5 and R^6 are the same or different and each represents a hydrogen atom; alkyl of 1–15 carbon atoms; alkyl of 1–15 carbon atoms substituted by one or more of halogen and alkoxy of 1–6 carbon atoms; hydroxy; alkoxy of 1–6 carbon atoms; nitro; a halogen atom; amino; a group of formula —SR^{16} or —SO_2R^{16} where R^{16} represents alkyl of 1–6 carbon atoms or phenyl; or —$SO_2NR^7R^8$ where R^7 and R^8 are as defined above.

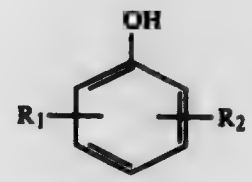
4,349,379

EMULSIFIABLE CONCENTRATE FOR WEED CONTROL

Fumio Horide; Kozo Tsuji, both of Osaka, and Ryo Yoshida, Kawanishi, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Nov. 26, 1980, Ser. No. 210,791
Claims priority, application Japan, Nov. 26, 1979, 54-153224
Int. Cl.³ A01N *25/02*
U.S. Cl. 71—120 3 Claims

1. An emulsifiable concentrate for weed control, which comprises 10 to 40 parts by weight of N'-[4-(4-methylphenethyloxy)phenyl]-N-methoxy-N-methylurea, 5 to 20 parts by weight of an emulsifier, 5 to 35 parts by weight of at least one phenolic solvent of the formula:



wherein R_1 and R_2 are each hydrogen or methyl, and 5 to 80 parts by weight of at least one aromatic hydrocarbon solvent having 6 to 11 carbon atoms.

4,349,380

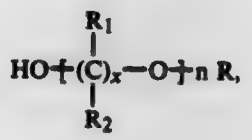
METHOD OF RECOVERING METALS FROM METAL CONTAINING MATERIALS

Louis L. Pytlewski, and Kenneth Krevitz, both of Philadelphia, Pa., assignors to The Franklin Institute, Philadelphia, Pa.

Filed Apr. 1, 1981, Ser. No. 250,009
Int. Cl.³ C22B *11/04, 15/12, 23/04*
U.S. Cl. 75—0.5 A 7 Claims

1. A method for recovering a metal that is lower than the alkali metals in the electromotive force series from a material containing said metal in chemically combined form, said method comprising:

a. providing a reagent comprising the product of the reaction of an alkali metal or alkali metal hydroxide, a reactant having the general formula



wherein R is hydrogen or lower alkyl, R_1 and R_2 are the same or different and are selected from the group consisting of hydrogen, unsubstituted or substituted lower alkyl, unsubstituted or substituted cycloalkyl having from 5 to 8 carbon atoms, and unsubstituted or substituted aryl, n has a value from about 2 to about 400 and x has a value of at least 2, and oxygen;

b. contacting said decomposition reagent with said metal-containing material; and

c. recovering the free metal.

4,349,381

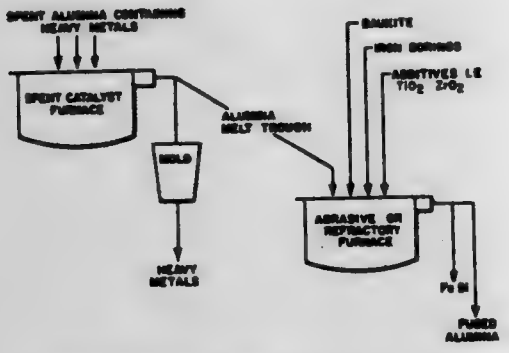
RECOVERY OF HEAVY METALS FROM SPENT ALUMINA

Paul Cichy, Buffalo, N.Y., assignor to Kennecott Corporation, Stamford, Conn.

Filed Sep. 30, 1980, Ser. No. 192,390
Int. Cl.³ C22B *4/00*
U.S. Cl. 75—10 R 7 Claims

1. A method of recovery of heavy metal and alumina from spent alumina comprising melting spent alumina comprising alumina and heavy metal in a first electrode arc furnace, separating molten alumina by pouring from the upper portion of the melt into a transport means, passing said molten alumina

from said transport means into a second electrode arc furnace, adjusting the composition of said molten alumina in said second arc furnace such that the refined alumina is suitable for abrasives or refractories, withdrawing refined alumina from



DIRECT MELT TRANSFER METHOD BY MEANS OF A TROUGH

said second furnace to form refractory or abrasive materials by casting from said second furnace and withdrawing heavy metal remaining in said first furnace after removal of said molten alumina.

4,349,382

PROCESS FOR REFINING OF A BATH OF METAL CONTAINING COLD SOLID SUBSTANCES

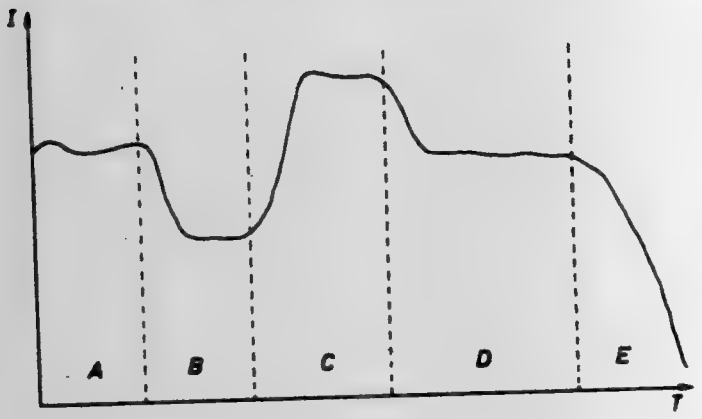
Francois Schleimer, Dudelange; Romain Henrion, Esch; Ferdinand Goedert, Dudelange, and Lucien Lorang, Differdange, all of Luxembourg, assignors to Arbed S.A., Luxembourg, Luxembourg

Filed Apr. 28, 1980, Ser. No. 144,228

Claims priority, application Luxembourg, Apr. 30, 1979, 81207

Int. Cl.³ C21C 5/32, 5/34

U.S. Cl. 75—60 11 Claims



1. A process for refining iron melts by blowing oxygen on top of a melted bath in a converter containing cooling matter and by distributing sufficient amounts of oxygen over the bath surface, which process comprises promoting postcombustion of CO above the bath level by actively regulating the thickness and consistency of the slag formed over the disequilibrium level between said slag and the bath by injecting an unreactive gas into the melt through the bottom of the bath, so as to prevent the formation of a thick layer of slag with a foamy consistency.

4,349,383

METHOD FOR THE PYROMETALLURGICAL PRODUCTION OF COPPER

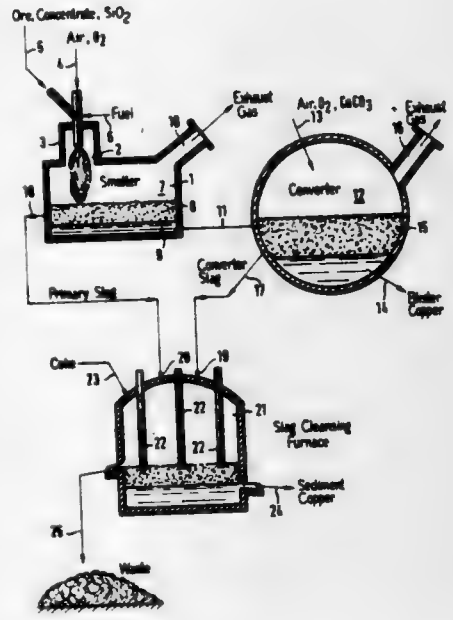
Kiranendu B. Chaudhuri, Troisdorf, Fed. Rep. of Germany, assignor to Klöckner-Humboldt-Deutz AG, Fed. Rep. of Germany

Filed Oct. 2, 1980, Ser. No. 193,021

Claims priority, application Fed. Rep. of Germany, Oct. 11, 1979, 2941225

Int. Cl.³ C22B 15/04

U.S. Cl. 75—73 1 Claim



1. In a method for the pyrometallurgical production of copper from a copper bearing source in which said source is smelted into matte and primary slag in a smelting process and the matte is converted into blister copper and converter slag in a converter, the improvement which comprises:

carrying out the smelting under conditions of high oxygen potential to produce a matte having a copper content of from 60 to 80% and a primary slag having a copper content of from 3 to 7%,

combining said primary slag and said converter slag,

reducing the combined slags in a reduction zone by blowing reducing gases substantially perpendicular to the molten slags under sufficient gas velocity to generate a rotating, substantially toroidal layer, and continuing the reducing treatment until the reduced slags have a copper content of less than 0.5%.

4,349,384

METHOD FOR THE MANUFACTURE OF SEGMENTS FOR COMMUTATORS

Hans Weinert, W.-Niederbachem, Fed. Rep. of Germany, assignor to Ringsdorff-Werke GmbH, Bonn, Fed. Rep. of Germany

Filed Jun. 27, 1980, Ser. No. 163,731

Claims priority, application Fed. Rep. of Germany, Jul. 23, 1979, 2929731

Int. Cl.³ B22F 7/02

U.S. Cl. 75—208 R 10 Claims

1. Method for the manufacture of segments having a base part of copper and an upper layer of carbon joined to the base part, for a commutator, which comprises:

(a) placing a first layer of copper powder and on top thereof a second layer of a mixture consisting entirely of carbon powder and a pyrolyzable, carbonaceous binder into a die with a cavity shaped like the segment,

(b) densifying the powder layers to produce a blank having the form of the segment,

(c) sintering the blank at an elevated temperature to cause

the powder particles to cohere and the layers to firmly join together, and



(d) providing the base part with recesses for receiving insulating material.

4,349,385

METHOD OF PREPARING A FEOOH PIGMENT

Hendrikus F. Huisman, and Harm Jan Groen, both of Oosterhout, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 4, 1980, Ser. No. 118,259
Claims priority, application Netherlands, Feb. 23, 1979, 7901438
Int. Cl.³ B32B *15/04*; C09K *3/00*
U.S. Cl. 106—37 9 Claims

1. A method of processing FeOOH particles comprising the steps of:

preparing an aqueous dispersion of FeOOH particles;

separating the FeOOH particles from the aqueous dispersion;

washing the separated FeOOH particles with water; and

drying the washed FeOOH particles;

CHARACTERIZED IN THAT prior to separating the FeOOH particles from the aqueous dispersion, a water-soluble ammonium salt, which is derived from a low molecular weight, weakly acidic organic acid and which volatilizes or decomposes and then volatilizes at a temperature up to 450° C., is added to the aqueous dispersion.

4,349,386

MINERAL POLYMERS AND METHODS OF MAKING THEM

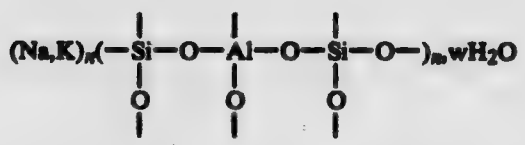
Joseph Davidovits, 16, rue Galilee, F-02100 Saint Quentin, France

Filed Aug. 29, 1980, Ser. No. 182,571
Claims priority, application France, Sep. 4, 1979, 79 22041
Int. Cl.³ C01B *33/26*; C04B *35/16*
U.S. Cl. 106—85 10 Claims

1. A polymer having a composition expressed in terms of oxides as follows:

$$1.0\pm0.2(yNa_2O,zK_2O):Al_2O_3:xSiO_2:wH_2O$$

where, in the fully hydrated form, w is in the range of up to about 7, x is in the range of about 3.5 to about 4.5, and y and z have values such that the sum of y and z equals 1, said polymer having the following formula



wherein n is the degree of polymerization, and said polymer having an x-ray powder diffraction pattern essentially that shown below:

Interplanar Spacing (in Angstroms)	Relative Intensity of the Lines
11.20	Broad and blurred
4.30	Middle strong
3.43	Strong
3.29	Strong
3.08	Middle strong
2.97	Middle strong
2.71	Weak
2.46	Weak
2.30	Middle strong
2.11	Weak
1.92	Very strong
1.81	Middle strong

4,349,387

METHOD FOR CALCINING FINE-GRAINED MATERIAL, PARTICULARLY FOR THE MANUFACTURE OF CEMENT CLINKER

Andris Abelitis, Rösrath, Fed. Rep. of Germany, assignor to Klöckner-Humboldt-Deutz AG, Fed. Rep. of Germany

Filed Apr. 16, 1981, Ser. No. 254,858
Claims priority, application Fed. Rep. of Germany, Apr. 16, 1980, 3014599
Int. Cl.³ C04B *7/02*
U.S. Cl. 106—100 7 Claims

1. In a method for burning fine-grained material, particularly for the manufacture of cement clinker from cement raw meal containing a limestone component and a clay component in which a stream of said cement raw meal is sequentially treated in a preheating stage, a pre-calcining stage, a calcining stage and a sintering stage at progressively increasing temperatures, and thereafter in a cooling stage, the improvement which comprises:

introducing a deacidified raw meal fraction into a stream of air from said cooling stage at a temperature of at least about 350° C. to heat the fraction to a decarbonation temperature and then passing the fraction into said pre-calcining stage.

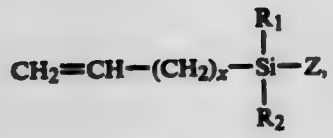
4,349,388

ASPHALT COMPOSITIONS MODIFIED WITH ORGANO SILANE COMPOUNDS

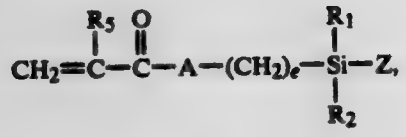
Alfred Marzocchi; Michael G. Roberts, and Charles E. Boles, all of Newark, Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation of Ser. No. 133,170, Mar. 24, 1980, Pat. No. 4,292,371, which is a division of Ser. No. 66,207, Aug. 13, 1979, Pat. No. 4,243,426, which is a continuation-in-part of Ser. No. 852,772, Nov. 18, 1977, abandoned. This application Dec. 22, 1980, Ser. No. 218,901
The portion of the term of this patent subsequent to Sep. 29, 1998, has been disclaimed.
Int. Cl.³ C08L *95/00*
U.S. Cl. 106—281 N 3 Claims

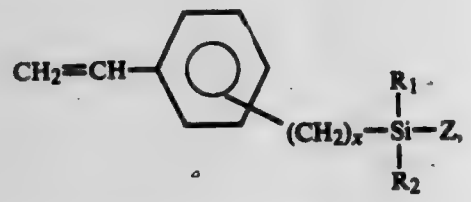
1. Glass fibers coated with a silicon-modified bitumen composition prepared by reaction of (1) a bitumen chemically modified with a modifying agent selected from the group consisting of, ammonia and an amine, said amine having the formula R_3-NH-R_4 or H_2N-$(CH_2)y$ $NH_a(CH_2)_z$-NH_bH wherein R_3 is a C_1–C_{10} alkyl, R_4 is hydrogen or a C_1–C_{10} alkyl, y is an integer from 2 to 6, z is an integer from 2 to 6 and a is 0 or an integer from 1 to 6 and (2) an organo silicon compound selected from the group consisting of a compound having the formula:



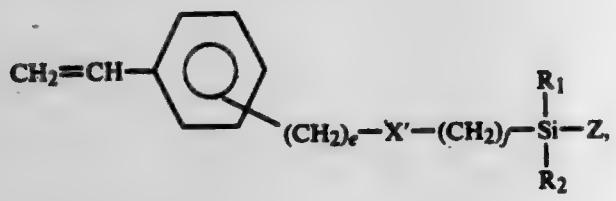
a compound having the formula:



a compound having the formula:



and a compound having the formula:



wherein x is 0 or an integer from 1–3, Z is a readily hydrolyzable group; R_1 and R_2 are selected from the group consisting of Z and a non-hydrolyzable organic group; R_5 is hydrogen or methyl; A is 0 or —NH—; e is an integer from 2–6, X′ is —NH— or —NH—$(CH_2)_e$—NH— and f is an integer from 2 to 6 and the hydrolysis products of said organo silicon compound, in the presence of a catalyst to promote the reaction between the ethylenic unsaturation of said organo silicon compound with ethylenic unsaturation in the bitumen.

4,349,389

DISPERSIBLE INORGANIC PIGMENT

John D. Schofield, Bury, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Dec. 29, 1980, Ser. No. 220,717

Claims priority, application United Kingdom, Jul. 26, 1979, 7926102; Feb. 14, 1980, 8005066

Int. Cl.³ C04B *31/44;* C09C *1/28*

U.S. Cl. 106—308 Q 7 Claims

1. A dispersible pigment composition comprising a finely divided inorganic pigment the particles of which carry a first layer of a hydrophobing agent consisting of a hydrophobic chain containing from 12 to 250 carbon atoms attached to a hydrophilic group which anchors the hydrophobic chain to the pigment surface, and a second layer of a thermoplastic polymer or a mixture thereof with an emulsifying agent, having a softening point at or below 100° C., the second layer evenly covering and adhering to the hydrophobic first layer.

5. A process for preparing a dispersible inorganic pigment composition which comprises

(a) treating a slurry of a finely divided inorganic pigment in an inert liquid with a hydrophobing agent consisting of a hydrophobic chain containing from 12 to 250 carbon atoms attached to a hydrophilic group, capable of anchoring the hydrophobic chain to render the surface of the pigment hydrophobic followed by

(b) treating the hydrophobic pigment with a thermoplastic polymer, or a mixture thereof with an emulsifying agent having a softening point at or below 100° C., at the temperature of or above said softening point.

4,349,390

METHOD FOR THE ELECTROLYTICAL METAL COATING OF MAGNESIUM ARTICLES

Asbjorn L. Olsen, Porsgrunn, and Sigbjorn T. Halvorsen, Skien, both of Norway, assignors to Norsk Hydro a.s., Oslo, Norway

Filed Nov. 19, 1980, Ser. No. 208,482

Claims priority, application Norway, Dec. 7, 1979, 793986

Int. Cl.³ C23C *3/00;* C23F *7/16;* C23C *3/02*

U.S. Cl. 148—6.15 R 8 Claims

1. A method of chemically precipitating a zinc deposit onto an article of magnesium or a magnesium-base alloy, which comprises treating the article in a solution of oxalic acid; rinsing the thus treated article; treating the rinsed article in a bath comprising from 10 to 200 g/l of alkali metal pyrophosphate and, as the balance, mainly water, to provide an activated article; rinsing the activated article; and coating the rinsed, activated article with zinc.

4,349,391

PROCESS FOR PRESERVING PLANOGRAPHIC PRINTING FORMS

Loni Schell, Hofheim, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 18, 1981, Ser. No. 235,541

Claims priority, application Fed. Rep. of Germany, Feb. 19, 1980, 3006094

Int. Cl.³ B41M *5/00*

U.S. Cl. 148—6.15 R 3 Claims

1. A process for preserving a planographic printing form which is ready for printing and which is produced from a printing plate comprising mechanically, chemically or electrochemically roughened aluminum as a support material having a photosensitive layer or a photoconductive layer thereon, by treating said planographic printing form with an aqueous solution comprising (a) about 4 to 40 percent by weight of a water-soluble, film-forming, high-molecular weight organic compound selected from the group consisting of gum arabic, dextrin and polyvinyl alcohol and about 0.05 to 10 percent by weight of an organic phosphonic acid, as a hydrophilizing acid, and drying it.

4,349,392

TRIVALENT CHROMIUM PASSIVATE SOLUTION AND PROCESS

Robert J. Huvar, Ann Arbor, Mich., assignor to Occidental Chemical Corporation, Warren, Mich.

Filed May 20, 1981, Ser. No. 265,487

Int. Cl.³ C23F *7/26*

U.S. Cl. 148—6.2 42 Claims

1. An aqueous acidic solution for treating receptive metal substrates to impart a chromate passivate film thereon comprising chromium ions substantially all of which are in the trivalent state, hydrogen ions to provide an acidic pH, a bath soluble and compatible organic carboxylic acid present in an amount effective to impart initial hardness and clarity to the passivate film of the structural formula:

$$(OH)_aR(COOH)_b$$

wherein:

a is an integer from 0 to 6;

b is an integer from 1 to 3; and

R is an alkyl, alkenyl, or aryl containing from C_1 to C_6 carbon atoms;

as well as the bath soluble and compatible salts thereof;

at least one additional metal ion selected from the group consisting of iron, cobalt, nickel, molybdenum, manganese, lanthanum, cerium, lanthanide mixture and mixtures thereof present

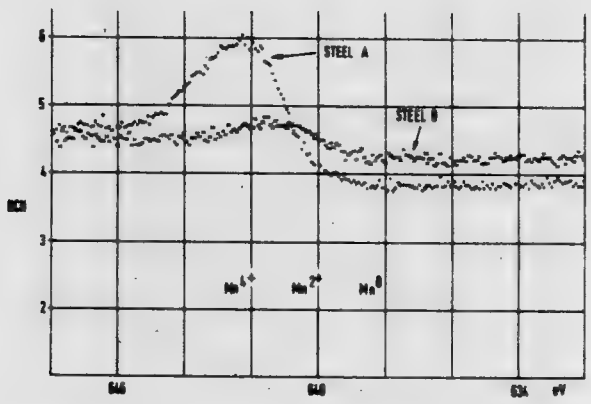
in an effective amount to impart increased corrosion resistance to the treated substrate.

4,349,393

CONTINUOUS HEAT TREATMENT FOR METAL SHEET

Philippe Paulus, and Marios Economopoulos, both of Liege, Belgium, assignors to Centre de Recherches Metallurgiques-Centrum Voor Research in de Metallurgie, Brussels, Belgium

Filed Sep. 16, 1980, Ser. No. 187,728
Claims priority, application Belgium, Sep. 21, 1979, 878944
Int. Cl.[3] C21D *9/48*
U.S. Cl. 148—142 11 Claims



1. A method of continuous annealing of metal sheet contaminated with rolling oil, comprising the sequential steps of:

(a) heating the contaminated sheet at a temperature higher than the recrystallization temperature of the metal, at least the initial period of heating being in a naked flame furnace;

(b) rapidly cooling the heated sheet, the rapid cooling comprising contacting the sheet with an aqueous medium; and

(c) subjecting the cooled sheet to treatment in acid medium.

3. The method of claim 1, further comprising, after the rapid cooling step, subjecting the sheet to a carbon precipitation step at a temperature between 200° and 500° C.

4,349,394

METHOD OF MAKING A ZENER DIODE UTILIZING GAS-PHASE EPITAXIAL DEPOSITION

Lawrence S. Wei, Scottsdale, Ariz., assignor to Siemens Corporation, Iselin, N.J.

Continuation-in-part of Ser. No. 100,970, Dec. 6, 1979, abandoned. This application Nov. 13, 1980, Ser. No. 206,385
Int. Cl.[3] H01L *21/205*
U.S. Cl. 148—175 40 Claims

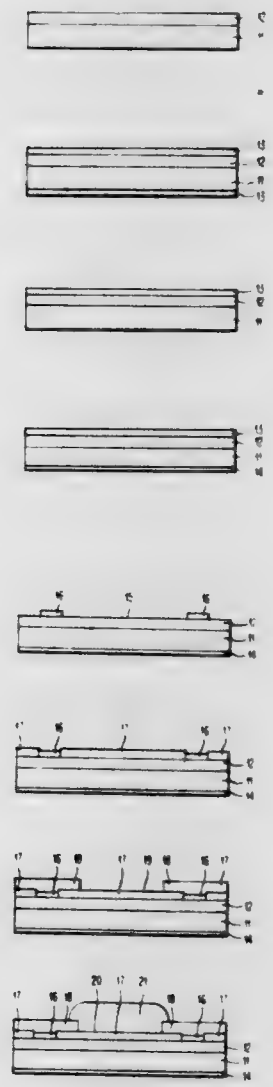
1. A method of making a Zener diode having a Zener voltage in a range of 2.4 to 3.3 volts, said method comprising the steps of:

(a) providing a silicon wafer of one conductivity type having an exposed surface, said wafer having a resistivity at its surface in the range of 0.003 to 0.006 Ω-cm; and

(b) growing a heavily-doped silicon layer of opposite conductivity type on said exposed surface by epitaxial deposition, said growing step comprising the steps of:

(1) etching said exposed surface at a first temperature above 1100° C. to clean said surface; and

(2) depositing heavily doped silicon on said exposed surface by epitaxial growth in a gas phase epitaxial reactor using silane (SiH_4) as a silicon source in the presence of a gaseous dopant, said epitaxial growth being effected at a second temperature in the range of 975°–1025° C. depending upon the Zener voltage desired, the heavily doped silicon layer so formed having a resistivity in the range of 0.001–0.003 Ω-cm.



4,349,395

METHOD FOR PRODUCING MOS SEMICONDUCTOR DEVICE

Nobuo Toyokura, Kawasaki; Hiroshi Tokunaga, Yokohama; Shinichi Inoue, Kawasaki; Hajime Ishikawa, Yokohama, and Masaichi Shinoda, Sagamihara, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 23,460, Mar. 23, 1979, Pat. No. 4,270,136. This application Dec. 18, 1980, Ser. No. 217,689
Claims priority, application Japan, Mar. 25, 1978, 53-34529; Jun. 7, 1978, 53-68513
Int. Cl.[3] H01L *21/225, 21/26*
U.S. Cl. 148—187 9 Claims

1. A method for producing a surface passivation layer on a metal-insulator-semiconductor device for trapping contaminant cations, said device comprising doped regions in a semiconductor substrate, said method comprising the steps of

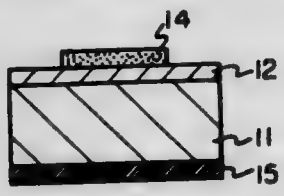
forming said insulating layer selectively on said semiconductor substrate to have a thickness in the range from 100 to 500 angstroms,

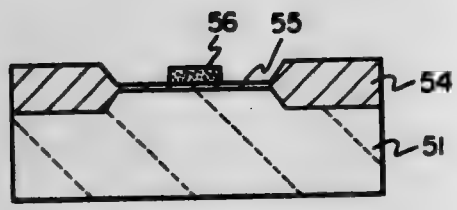
forming a metal layer on said insulating layer by a sputtering method to comprise at least one metal element selected from the group consisting of tungsten, molybdenum and titanium, and a cation-trapping element selected from the group consisting of boron, germanium, phosphorus and antimony, and

heating said substrate to diffuse some of said cation-trapping element out of said metal layer and effectively into the upper 60 angstroms of said insulating layer,

wherein said heating of said substrate is at a selected temper-

ature in the range from 700° to 1100° C. that yields an effective surface density of said contaminant cations that is up to two orders of magnitude less than that which results





from heating said substrate with said insulating and metal layers without said cation-trapping element at the same selected temperature.

4,349,396

METAL-CUTTING PYROTECHNIC COMPOSITION

Kurt F. Mueller; Marguerite S. Chang, both of Oxon Hill; Robert F. Farncomb, Accokeek, and Lyle O. Malotky, Oxon Hill, all of Md., assignors to The United Stated of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 22, 1980, Ser. No. 189,410

Int. Cl.³ C06B 45/10

U.S. Cl. 149—19.3 14 Claims

1. A pyrotechnic composition suitable for metal cutting which, based on total composition weight, comprises:

an oxidizer selected from the class consisting of calcium sulfate hemihydrate, anhydrous calcium sulfate, magnesium monohydrate, anhydrous magnesium sulfate, anhydrous strontium sulfate, and mixtures thereof in an amount from about 20 to 80 weight percent;

a metal fuel selected from the class consisting aluminum, magnesium, alloys of aluminum and magnesium, and mixtures thereof in an amount from about 15 to 70 weight percent;

a binder comprising a halopolymer in an amount from about 2 to 15 weight percent; and

a combustion promoter comprising sulfur in an amount from about 0 to 10 weight percent.

4,349,397

METHOD AND DEVICE FOR CONNECTING PIPE COMPONENTS MADE OF WELDABLE PLASTIC

Werner Sturm, Allerheiligenstr., 624, Hägendorf, Switzerland

PCT No. PCT/CH79/00055, § 371 Date Dec. 24, 1978, § 102(e) Date Nov. 28, 1979, PCT Pub. No. WO79/00973, PCT Pub. Date Nov. 29, 1979

PCT Filed Apr. 23, 1979, Ser. No. 177,746

Claims priority, application Switzerland, Apr. 24, 1978, 4406788/78

Int. Cl.³ B29C 27/02

U.S. Cl. 156—64 11 Claims

1. A method for welding adjacent ends of piping comonents of weldable plastic by electrical resistance heating, comprising the steps of

supplying a welding voltage to resistance heating wire of a welding sleeve;

forming a multiple product of said welding voltage;

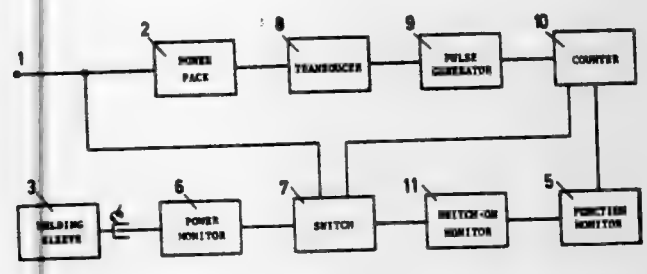
converting said multiple product into a corresponding pulse frequency;

counting pulses of said pulse frequency; and

terminating said welding voltage to said heating wire once a predetermined pulse count is reached.

6. A device for controlling welding cycles for welding adjacent ends of piping components of weldable plastic by electrical resistance heating, comprising

means for coupling a resistance heating wire of a welding sleeve to a power supply through a switching means;



multiplier means for forming a multiple product of voltage from the power supply;

converter means for converting said multiple product into a corresponding pulse frequency;

means for counting pulses of the pulse frequency; and

means for opening said switch means to terminate voltage to the heating wire when a predetermined pulse count is reached.

4,349,398

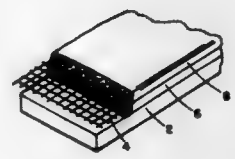
PROTECTIVE COATING SYSTEM

Richard F. Kearns, Broken Arrow; Thomas R. Kearns, and Timothy P. Kearns, both of Norman, all of Okla., assignors to Edward C. Kearns, St. Petersberg, Fla.

Filed Dec. 8, 1980, Ser. No. 214,122

Int. Cl.³ E04B 7/00

U.S. Cl. 156—71 8 Claims





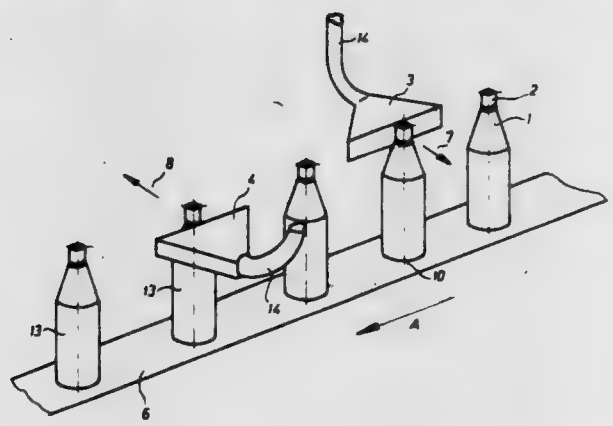
1. A method for applying an outer protective waterproof coating of latex cement to a continuous surface comprising first laying down a layer of screen over said surface, said screen having typically from about 5 to 15 holes per linear inch, next overlaying said screen with a readily flowable coating composition of said latex cement effective to cause said screen to float to the top of said coating, thereafter permitting said coating to form a set surface, thus bonding said screen and said set surface to said continuous surface, then applying a second layer of said coating material to said set surface and allowing said second layer to set whereby said layers are reinforced by means of said screen situated essentially between said layers, both of said layers in a set condition being from about 1/16 to about ¼ inch in thickness.

4,349,399

METHOD AND APPARATUS FOR SHRINKING A CONTAINER CLOSURE

Albert Obrist, Kaiseraugst; Max Blaesi, Reinach, both of Switzerland, and Serge Auer, Riedisheim, France, assignors to Albert Obrist AG, Reinach, Switzerland

Filed Mar. 26, 1981, Ser. No. 247,778
Claims priority, application Switzerland, Mar. 28, 1980, 2452/80
Int. Cl.³ B29C *27/12*; B32B *31/26*
U.S. Cl. 156—86 10 Claims



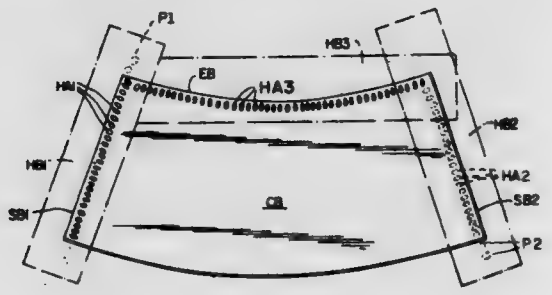
1. A method of generally symmetrically shrinking a generally cylindrical portion of a closure cap of plastic material on to the generally cylindrical mouth of a container, characterised in that the mouth (1) of the container is first closed by the closure cap (2), and that the closure cap is then acted upon by means of hot jets of gas (5) from at least two nozzles (3, 4) alternately in such a way that the gas jets impinge on the closure cap in a temporally and/or spatially displaced mode and do not impinge on each other, wherein the direction of flow of at least two of the gas jets which occur in succession in respect of time or space is different so as to impinge on different portions of the same periphery of said closure cap.

4,349,400

METHOD FOR MANUFACTURING TWO-PIECE CONTAINERS FROM FILLED THERMOPLASTIC SHEET MATERIAL

Morton Gilden, Baltimore, Md., assignor to Maryland Cup Corporation, Owings Mills, Md.

Division of Ser. No. 795,618, May 10, 1977, Pat. No. 4,299,349. This application Jan. 11, 1979, Ser. No. 2,606
Int. Cl.³ B29D *23/10*
U.S. Cl. 156—217 14 Claims



1. The method of forming a liquid tight and substantially undistorted seam in a thermoplastic sheet material including dispersed inorganic filler on the order of 30% to 50% by weight of the sheet material, comprising the steps of:

heating opposing faces of the opposed areas to be joined at a seam in substantially similar patterns of discrete heat softened and fusible areas, thereby creating interspersed areas softened to a lesser degree; and

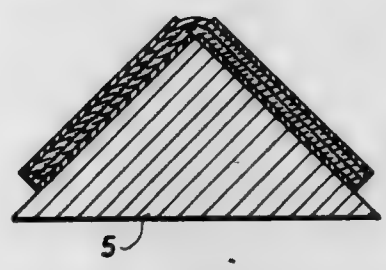
clamping said opposed areas together over substantially the entire area of the seam.

4,349,401

METHOD TO MANUFACTURE STRUCTURAL MEMBERS OF EPOXY PLASTIC

Anders Dahlberg, Täby, Sweden, assignor to Tatis Plasttäntaingar AB, Täby, Sweden

Filed Jun. 23, 1980, Ser. No. 162,248
Int. Cl.³ B29C *27/00*
U.S. Cl. 156—221 5 Claims



1. A method of producing laminated structural members of plastic material comprising the following steps:

(a) saturating with an epoxy resin and corresponding hardner a first reinforcement fabric on a supporting surface and causing the same to harden in the form of a first thin, flexible fabric-reinforced layer;

(b) applying to said first layer a thicker layer comprising epoxy resin, a hardener and a thickening agent therefor to form a relatively thick intermediate layer;

(c) applying to said intermediate layer a fluid epoxy resin, a hardner therefor and a second reinforcement fabric; and

(d) before hardening of the layer applied in step c, placing the resulting laminate on a support and causing the same to harden to form a substantially rigid structural member.

4,349,402

METHOD FOR PRODUCING A BRIGHT METALIZED FOIL OR BOARD

Harry A. Parker, Murray Hill, N.J., assignor to Transfer Print Foils, Inc., East Brunswick, N.J.

Continuation-in-part of Ser. No. 119,782, Feb. 8, 1980, abandoned. This application Mar. 11, 1981, Ser. No. 242,424
Int. Cl.³ B44C *1/14*
U.S. Cl. 156—233 9 Claims



1. A method for preparing a metalized paper or board product having improved surface brightness consisting essentially of:

A. feeding a carrier film;

B. applying a lacquer coating to said carrier film capable of adherently bonding to a deposited metal layer and receiving display material;

C. vapor depositing a metal layer on said lacquer coating;

D. applying a polyurethane tie coating to said metal layer;

E. applying a wet adhesive emulsion coating having an acidic pH to the tie coating;

F. feeding the carrier of Step E and a base selected from paper and board, into the nip of a pair of pressure rollers, so that said adhesive emulsion coating remains wet as it contacts said base, and penetrates said base after said base and said carrier are brought together between said pressure rollers; and

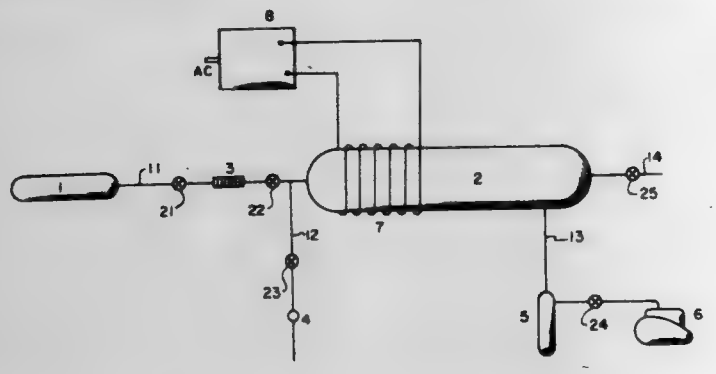
G. separating said carrier from said base.

4,349,403

METHOD FOR BONDING ELASTOMERS TO STEEL

Donald R. Blenner, and Herman V. Boenig, both of Erie, Pa., assignors to Lord Corporation, Erie, Pa.

Filed Jan. 16, 1981, Ser. No. 225,488
Int. Cl.[3] B05D *3/00, 3/04*
U.S. Cl. 156—272.6 10 Claims



1. A method for improving environmental resistance of rubber-metal composite structures comprising:

(a) treating in a plasma of at least one non-reactive gas at least one nitrided metal element;

(b) applying to at least one plasma-treated surface of said nitrided metal element an adhesive composition suitable for bonding natural and synthetic rubbers to metal;

(c) contacting such adhesively-coated surface of such elements with a vulcanizable natural or synthetic rubber;

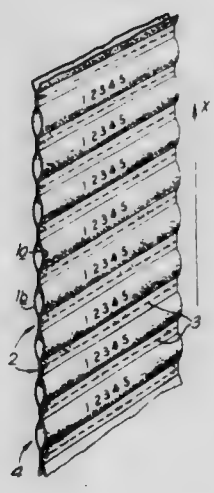
(d) subjecting the resultant assembly to conditions sufficient to vulcanize said rubber and cure said adhesive.

4,349,404

POLYMERIC ARTICLES

Pushpkumar D. Changani, Swindon; Donald G. Peacock, Kempsford, and David Roberts, Broome Manor Swindon, all of England, assignors to Raychem Corporation, Menlo Park, Calif.

Filed Jul. 28, 1980, Ser. No. 172,889
Int. Cl.[3] B29C *27/00, 17/04*
U.S. Cl. 156—308.4 10 Claims



1. A process for the production of a marker sleeve assembly, the steps comprising:

deforming a substantially non-cross-linked web of polymeric material at a temperature below the crystalline melting point or softening point of the material to render the web heat-recoverable primarily in one direction;

fusing together parts of the web to one other substantially non-cross-linked polymeric web said fusing being done along lines substantially perpendicular to the direction of web heat recoverability to define a plurality of radially inwardly heat-recoverable marker sleeves disposed in side by side relationship; and

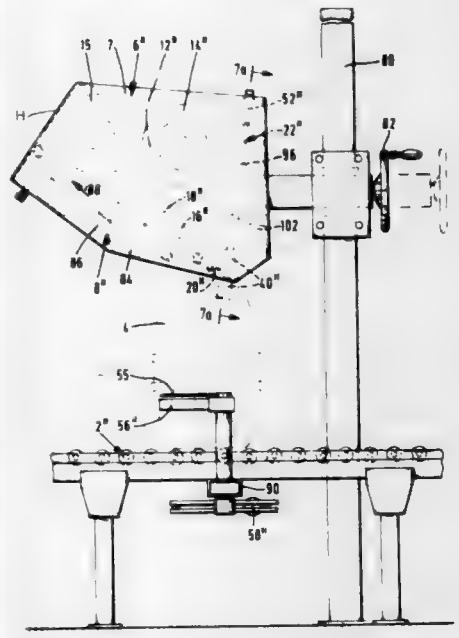
cross-linking the fused portions of the polymeric material.

4,349,405

AUTOMATIC LABELING APPARATUS

Winfried Dudzik, Im Haegleakies, 7441 Neckartailfingen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 920,406, Jun. 29, 1978, abandoned. This application Sep. 3, 1980, Ser. No. 183,859
Int. Cl.[3] B32B *31/00*
U.S. Cl. 156—358 34 Claims



1. Apparatus for sequentially labeling container-shaped objects, such as beer barrels, similar to each other in shape but differing from each other in size and with each object having a labeling surface located in the same general location thereon and comprising:

(a) conveying means defining a path of movement for said objects along a generally planar horizontal surface;

(b) pneumatically operated arresting means movable into the path of movement of said objects along said horizontal surface for arresting each object in a predetermined support position in said path with the object being supported at a location on its exterior surface spaced from the labeling surface and with the labeling surfaces of the objects of a different size being at different distances from the support position;

(c) a pneumatically controlled axially elongated plunger located upwardly from the labeling surface in the predetermined position and having a face portion at one end thereof with said face portion extending transversely of the axial direction of said plunger and being directed toward an object arrested in said support position, said face portion being deformable under pneumatic pressure for transferring a label to the labelling surface;

(d) supply means for supplying a label to said face portion at a spaced distance from the labeling surface, said supply means including a pneumatically operated sensing mechanism for indicating the position of labels as they are moved toward said face portion of said plunger;

(e) pneumatically operated and controlled means for moving said plunger along a rectilinear path between a first position where said face portion is supplied with a label to a second position at a variable distance from the first position based on the size of said object being labeled where the label is applied to the labeling surface of said arrested object in the predetermined position and with the rectilinear path of said plunger being disposed at an acute angle substantially different from a right angle to the planar horizontal surface of the path of movement and to the labeling surface of said objects; and

(f) pneumatically operated reversing means responsive to a

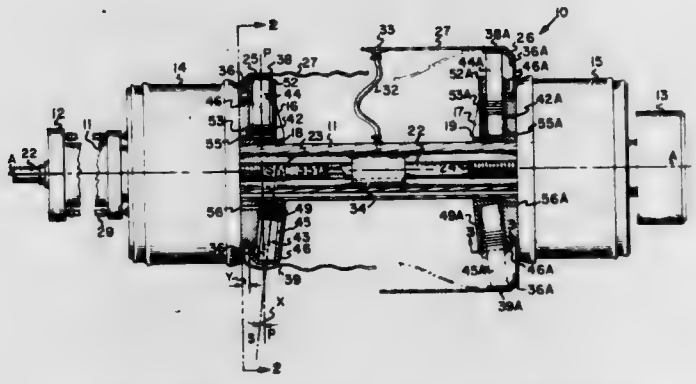
predetermined force exerted by said plunger on the labeling surface of said object being labeled for retracting said plunger from said object back to the first position.

4,349,406

TIRE BUILDING MACHINE DRUM

Joseph F. Stalter, Mogadore, Ohio, and Gilbert A. Felten, Kehlen, Luxembourg, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Nov. 5, 1980, Ser. No. 204,322
Int. Cl.[3] B29H *17/16*
U.S. Cl. 156—416 14 Claims



1. A contractible tire building drum rotatable about a drum axis and having a pair of shoulder rings connected by an inflatable bladder with each of said shoulder rings comprising a segmental generally cylindrical ring member having a radially inwardly extending flanged portion at one edge, said ring member having a primary set of primary segments, a secondary set of secondary segments, said primary segments being positioned circumferentially between said secondary segments, first means for retracting and extending said primary segments between an expanded generally cylindrical condition and a contracted nested condition of said ring member, second means for retracting and extending said secondary segments between said cylindrical condition and said nested condition of said ring member, and guide means for displacing said secondary segments in an axial direction during contraction of said ring member so that said secondary segments are axially offset from said primary segments in the contracted condition of said ring member and the flanged portions of said primary segments overlap the flanged portions of said secondary segments in said contracted nested condition of said ring member.

4,349,407

METHOD OF FORMING SINGLE CRYSTALS OF BETA SILICON CARBIDE USING LIQUID LITHIUM AS A SOLVENT

Lynn B. Lundberg, Los Alamos, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 9, 1979, Ser. No. 37,247
Int. Cl.[3] C30B *9/10*
U.S. Cl. 156—624 4 Claims

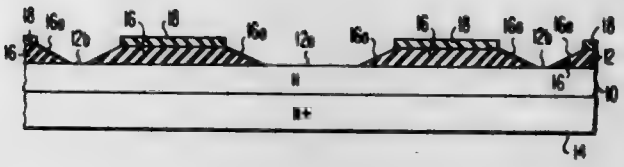
1. In a method of forming SiC single crystals by growth from solution, the improvement comprising using molten lithium as the solvent.

4,349,408

METHOD OF DEPOSITING A REFRACTORY METAL ON A SEMICONDUCTOR SUBSTRATE

Ming L. Tarng, Mercerville, N.J., and Walter A. Hicinbothem, Jr., Levittown, Pa., assignors to RCA Corporation, New York, N.Y.

Filed Mar. 26, 1981, Ser. No. 248,038
Int. Cl.[3] H01L *21/285, 21/308, 21/314, 21/32*
U.S. Cl. 156—628 8 Claims



1. A method of depositing a refractory metal on a silicon substrate, said method comprising:

depositing an oxygen doped polycrystalline silicon layer on one surface of said substrate;

depositing a phosphorus doped polycrystalline silicon layer on the outer surface of said oxygen doped polycrystalline silicon layer, said phosphorous doped polycrystalline silicon layer having a phosphorous concentration of at least about 10^{19} atoms/cm^3;

etching windows in said layers to expose said surface of said substrate in the areas where said refractory metal is to be deposited; and,

heating said substrate to a temperature in a range of between about 500° C. to about 800° C. and then exposing said substrate to a gaseous refractory metal hexafluoride wherein the refractory metal of said hexafluoride is selected from the group consisting of tungsten and molybdenum.

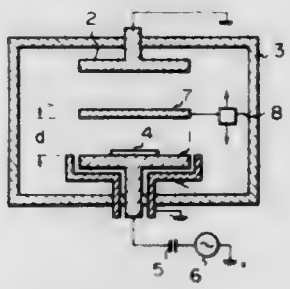
8. A method in accordance with claim 1 wherein a phosphosilicate glass layer is grown over said phosphorus doped polycrystalline silicon layer before said refractory metal is deposited, said refractory metal being deposited by a chemical vapor deposition technique whereby the refractory metal does not form on said phosphosilicate glass and wherein a corrosion resistant metal layer is deposited over said refractory metal and an adjacent portion of said phosphosilicate glass layer.

4,349,409

METHOD AND APPARATUS FOR PLASMA ETCHING

Hikou Shibayama; Tetsuya Ogawa, both of Machida; Makoto Kosugi, Yokohama; Tokushige Hisatsugu, Chofu, and Koichi Kobayashi, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed May 11, 1981, Ser. No. 262,793
Claims priority, application Japan, May 12, 1980, 55-62427; May 13, 1980, 55-62992
Int. Cl.[3] H01L *21/302;* B44C *1/22;* C03C *15/00, 25/06*
U.S. Cl. 156—643 18 Claims



1. A method for effecting plasma etching of a semiconductor material comprising the steps of: providing a first and a second electrode and an electrically floating intermediate electrode, placing a semiconductor material on said first electrode and said electrically floated intermediate electrode, applying a high

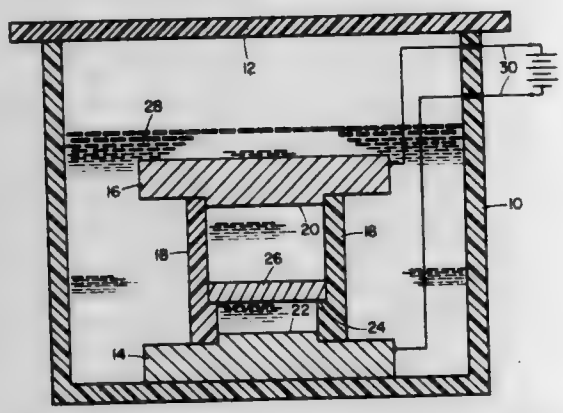
frequency power between said first and second electrode to produce a plasma between said first and second electrode, and etching the semiconductor material under the condition that the distance between said first and said intermediate electrode is changed during said etching.

4,349,410

METHOD OF MANUFACTURING A PYROELECTRIC VIDICON TARGET, APPARATUS FOR PRACTICING THE METHOD, AND A PYROELECTRIC TARGET MANUFACTURED BY THE METHOD

Edward H. Stupp, Spring Valley, and Joseph Lalak, Briarcliff Manor, both of N.Y., assignors to North American Philips Corporation, New York, N.Y.

Filed Oct. 27, 1980, Ser. No. 200,714
Int. Cl.³ C23F *1/04*
U.S. Cl. 156—654 **7 Claims**



1. A method of manufacturing a target from a pyroelectric material exhibiting ferroelectric domains comprising the steps of:

providing a wafer of a pyroelectric material exhibiting a ferroelectrid domain structure; and

etching a central region of the wafer, thereby producing a thinned target with a thick support rim around an outer edge;

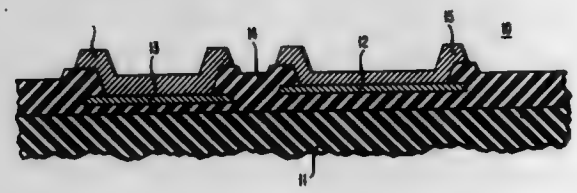
characterized in that the wafer is poled in a substantially uniform direction at least prior to etching.

4,349,411

ETCH PROCEDURE FOR ALUMINUM ALLOY

Yutaka Okinaka, Madison, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 5, 1981, Ser. No. 308,270
Int. Cl.³ C23F *1/00, 1/02*
U.S. Cl. 156—659.1 **17 Claims**



1. A process for making a device comprising aluminum-copper alloy comprising the step of etching the aluminum-copper alloy with an etching solution characterized in that the etching solution has pH greater than 10 and comprises oxidizing agent for metallic copper, complexing agent for copper ions and surfactant.

4,349,412

METHOD OF CONCENTRATING AND DRYING WATER-CONTAINING FLUENT MEDIA

Karl Knotik, Eisenstadt; Peter Leichter, Vienna, and Johann Glock, Ebreichsdorf, all of Austria, assignors to Österreichische Studiengesellschaft fur Atomenergie Ges.m.b.H., Vienna, Austria

Continuation of Ser. No. 779,627, Mar. 21, 1977, abandoned. This application Dec. 18, 1978, Ser. No. 970,624
Claims priority, application Austria, Mar. 26, 1976, 2237/76
Int. Cl.³ C23F *11/08*
U.S. Cl. 159—47 WL **10 Claims**

1. A method of concentrating and drying, using a heat exchange surface, a waste water flowable medium concentrate containing borates which have a tendency to scale said heat exchange surface, comprising the steps:

adding an additive to the flowable medium containing said borates for the separation of solids contained therein;

said additive comprising a precipitate formed with at least one member selected from the group consisting of hydroxides, phosphates and arsenates;

evaporating to dryness the liquid contained in the thus treated flowable medium but without forming scale on the heat exchange surface; and

recovering the dry solids contained in the flowable medium.

4,349,413

CELLULOSIC FIBER INSULATION AND PROCESS OF PREPARATION

Henrik J. Eklund, Middletown, Ohio, assignor to The Black Clawson Company, Middletown, Ohio

Continuation of Ser. No. 60,242, Jul. 25, 1979, abandoned. This application Dec. 4, 1980, Ser. No. 212,917
Int. Cl.³ D21B *1/16*
U.S. Cl. 162—23 **9 Claims**

1. A process of preparing a fire resistant, cellulosic thermal insulation suitable for blowing into place consisting essentially of the steps of:

(a) feeding cellulosic material selected from the group consisting of hard wood chips, soft wood chips, straw, bagasse, and mixtures thereof, into a pressurized chamber,

(b) pretreating said cellulosic material with steam under pressure and at an elevated temperature for a period of time sufficient to soften said cellulosic material and moisturize it by steam impregnation;

(c) passing the pretreated material to a fiberizing stage utilizing a refiner and injecting a fire retardant chemical selected from the group consisting of borax, boric acid, a borate, and mixtures thereof into said softened material at the eye of the refiner immediately before the grinding segments,

(d) fiberizing under pressure for a sufficient period of time to produce an insulation grade cellulosic pulp,

(e) discharging the fiberized material from the fiberizing stage and drying it.

4,349,414

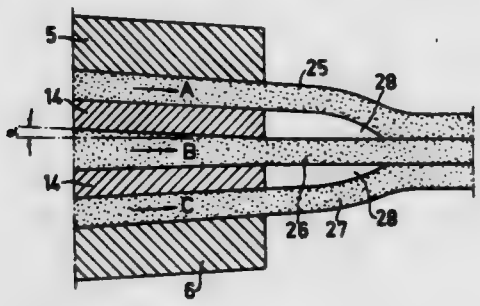
METHOD FOR FORMING A MULTILAYER JET OF PAPER MAKING STOCK

Erik G. Stenberg, Karlstad, Sweden, assignor to AB Karlstads Mekaniska Werkstad, Karlstad, Sweden

Continuation of Ser. No. 210,781, Nov. 26, 1980, abandoned, which is a continuation of Ser. No. 31,409, Apr. 19, 1979, abandoned. This application Sep. 23, 1981, Ser. No. 304,879
Claims priority, application Sweden, Apr. 25, 1978, 7804729
Int. Cl.³ D21F *11/00*
U.S. Cl. 162—123 **12 Claims**

1. In a method of forming a stratified jet of paper making stock for delivery to a forming zone, the steps of discharging towards the forming zone from a given location spaced therefrom at least two laterally coextensive, sheet-like jets of paper making stock in superimposed, spaced apart relation with a gap therebetween, and maintaining in the gap between said jets at

the discharge location a wedge-shaped body of gaseous fluid at a pressure such that the adjacent faces of the jets gradually



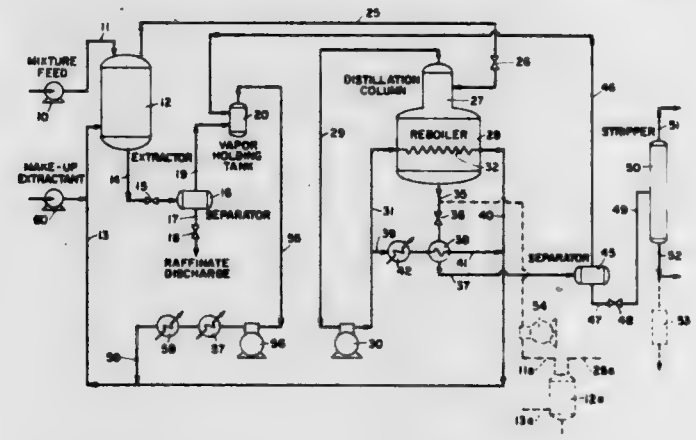
approach one another and meet to form a stratified jet at a distance from said discharge location not greater than the distance to said forming zone.

4,349,415

PROCESS FOR SEPARATING ORGANIC LIQUID SOLUTES FROM THEIR SOLVENT MIXTURES

Richard P. DeFilippi, Cambridge, and J. Edward Vivian, Arlington, both of Mass., assignors to Critical Fluid Systems, Inc., Cambridge, Mass.

Filed Sep. 28, 1979, Ser. No. 79,935
Int. Cl.³ B01D *3/34, 11/04*
U.S. Cl. 203—14 32 Claims



1. A process for separating an organic liquid from an organic liquid/solvent mixture, comprising the steps of

(a) contacting a mixture of an organic liquid solute and a solvent for said solute with an extractant fluid under conditions of temperature and pressure to render said extractant fluid a solvent for said organic liquid solute but substantially less for said solvent, thereby forming a fluid extract of said organic liquid solute in said extractant fluid and a raffinate comprising said solvent with minor amounts of said extractant fluid and organic liquid solute, said extractant fluid being a gas at ordinary ambient conditions of temperature and pressure;

(b) separating said fluid extract and said raffinate;

(c) providing said fluid extract as a still feed separable into two phases by distillation;

(d) distilling said still feed to produce a still overhead vapor and liquid still bottoms;

(e) compressing said still overhead vapor to provide compressed vapor at an elevated temperature;

(f) effecting indirect heat exchange between said compressed vapor and said still bottoms to provide the thermal energy required in said distilling step, and to form a liquid condensate of said vapor;

(g) recovering a liquid bottoms product comprising said liquid solute;

(h) recycling said liquid condensate as extractant fluid in said contacting step;

(i) flashing off said extractant fluid from said raffinate to provide a raffinate vapor flash;

(j) flashing off residual vapor from said still bottoms to form decompressed still bottoms; and

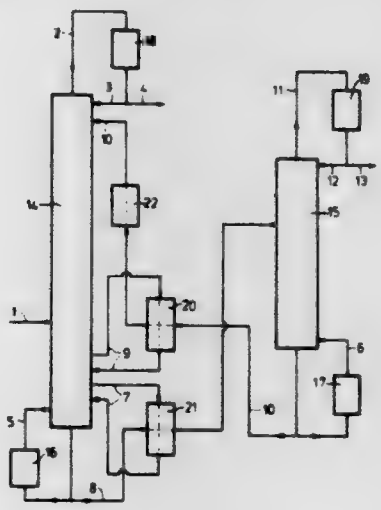
(k) separating liquid organic product from said decompressed still bottoms, thereby recovering said liquid bottoms product and producing a vapor flash.

4,349,416

PROCESS AND DEVICE FOR THE SEPARATION OF MIXTURES WHICH FORM AN AZEOTROPE

Hans-Walter Brandt, Odenthal, Fed. Rep. of Germany; Heinrich Steude, Pittsburgh, Pa.; Ludwig Bruns, and Hans-Dieter Köhler, both of Dormagen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen and EC Erdölchemie GmbH, Cologne-Worringen, both of, Fed. Rep. of Germany

Filed Sep. 30, 1981, Ser. No. 307,252
Claims priority, application Fed. Rep. of Germany, Oct. 11, 1980, 3038497
Int. Cl.³ B01D *3/40; C07C 29/80*
U.S. Cl. 203—19 14 Claims



1. A process for the separation of components from a mixture which forms an azeotrope which comprises:

(A) subjecting said mixture to an extractive distillation in an extractive distillation column by adding an extracting agent to said column and distilling over one of said components to leave behind another component and said extracting agent;

(B) withdrawing said other component and said extracting agent as bottom, introducing the same into a regeneration column, distilling over said other component and withdrawing a bottoms comprising a major amount of said extracting agent;

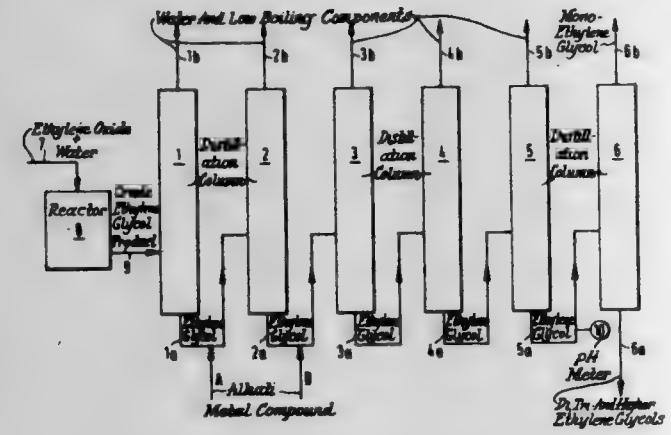
(C) withdrawing a first side stream from said extractive distillation column at a point between the bottom of the column and the feed point of said mixture, passing the same in heat exchange with the bottoms from said distillation column and returning the so-heat exchanged first side stream to said extractive distillation column at a point below the point at which it was withdrawn; and

(D) withdrawing a second side stream from said extractive distillation column at a point between the bottom of the column and the feed point of said mixture, passing the same in heat exchange with the bottoms of said regeneration zone and returning the so-heat exchanged second side stream to said extractive distillation column at a point below the point at which it was withdrawn.

4,349,417
PROCESS FOR THE MANUFACTURE OF EXTREMELY PURE MONOETHYLENE GLYCOL

Siegfried Rebsdat, Burg; Sigmund Mayer, Burgkirchen; Josef Alfranseder, Hofschallern, and Iwo Schaffelhofer, Burghausen, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Jan. 9, 1981, Ser. No. 223,590
Claims priority, application Fed. Rep. of Germany, Jan. 18, 1980, 3001727
Int. Cl.³ B01D *3/34*; C07C *29/80, 31/20*
U.S. Cl. 203—33 8 Claims



1. In a process for the manufacture of extremely pure monoethylene glycol by reacting ethylene oxide and water in a reactor and transferring the reaction product stream to a distillation zone comprising a plurality of distillation columns interconnected by tubes, at least two distillation columns being used for distilling off water and those components of said reaction product stream having a boiling point below that of monoethylene glycol and at least one distillation column downstream of these first two columns being a glycol distillation column used to distill at its head a reaction product component consisting essentially of monoethylene glycol, the improvement which comprises: adding to the reaction product stream downstream from the reactor and upstream from said glycol distillation column a compound of an alkali metal selected from the group consisting of an alcoholate, a hydroxide, an oxide, a salt of a weak acid, and mixtures thereof, in an amount such that on entering the glycol distillation column the reaction product stream has a pH of 7 to 10.

4,349,418
PRODUCTION OF METHYLNAPHTHALENES AND TAR BASES INCLUDING INDOLE

Stephen E. Belsky, Parsippany, and Chempolil T. Mathew, Randolph, both of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Jul. 28, 1981, Ser. No. 287,668
Int. Cl.³ G01D *3/14, 11/04*
U.S. Cl. 203—45 18 Claims

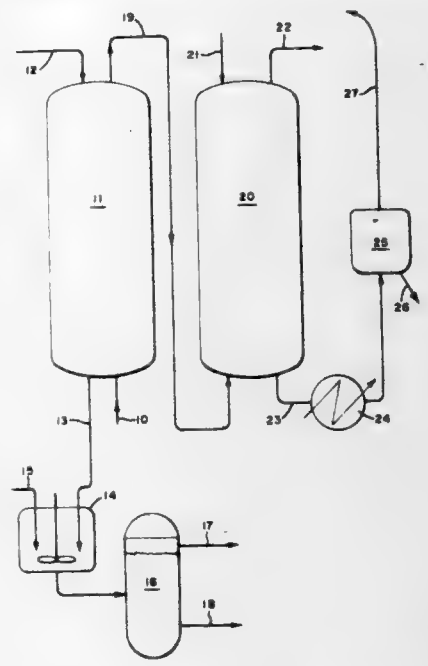
1. A process for the recovery of tar bases from a base-extracted tar distillation fraction which comprises the steps:

(a) extracting a base-extracted tar distillation fraction having a boiling point range not exceeding about 300° C.; containing methylphthalenes, indole and a member selected from the group consisting quinoline, isoquinoline and mixtures thereof with a buffered aqueous salt solution having a pH between about 0.5 and about 3.0 to produce an aqueous extract containing quinoline, isoquinoline or both and raffinate containing methylnaphthalenes and indole and substantially free of quinoline and isoquinoline,

(b) recovering indole from said raffinate, and

(c) recovering quinoline, isoquinoline or mixtures thereof from said aqueous extract.

15. A method of separating a mixture comprising methylnaphthalenes and indole which comprises extracting said mixture having a boiling point range not exceeding about 300° C.; with ethylene glycol and recovering a raffinate comprising



methylnaphthalenes and an extract comprising indole and ethylene glycol, and recovering indole from said extract.

4,349,419
PROCESS FOR SEPARATION OF ALKYL PHENOLS BY AZEOTROPIC DISTILLATION

Kazunori Takahata, Ohtake; Katsuo Taniguchi, Iwakuni, and Tadaaki Fujimoto, Yamaguchi, all of Japan, assignors to Mitsui Petrochemical Industries Ltd., Tokyo, Japan

Continuation of Ser. No. 105,245, Dec. 19, 1979, abandoned.
This application Feb. 3, 1981, Ser. No. 231,022
Claims priority, application Japan, Dec. 25, 1978, 53-158690
Int. Cl.³ B01D *3/40*
U.S. Cl. 203—70 2 Claims

1. In a process for separating 2,6-xylenol and o-cresol by azeotropic distillation of a mixture of crude 2,6-xylenol containing o-cresol, the mixture being a methylated product of phenol or cresol, with a hydrocarbon azeotroping agent, the improvment comprising using as the hydrocarbon azeotroping agent one member of the group consisting of n-decane; dodecane isomers; 2,6-dimethyloctane; and 2,2,4,6,6-pentamethylheptane and removing the o-cresol as a top fraction, the 2,6-xylenol as a bottom fraction.

4,349,420
FRACTIONAL DISTILLATION PROCESS FOR THE PRODUCTION OF ALUMINUM CHLORIDE

Donald L. Stewart, Jr., Greensburg, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Jan. 12, 1981, Ser. No. 224,280
Int. Cl.³ B01D *3/14*
U.S. Cl. 203—75 11 Claims

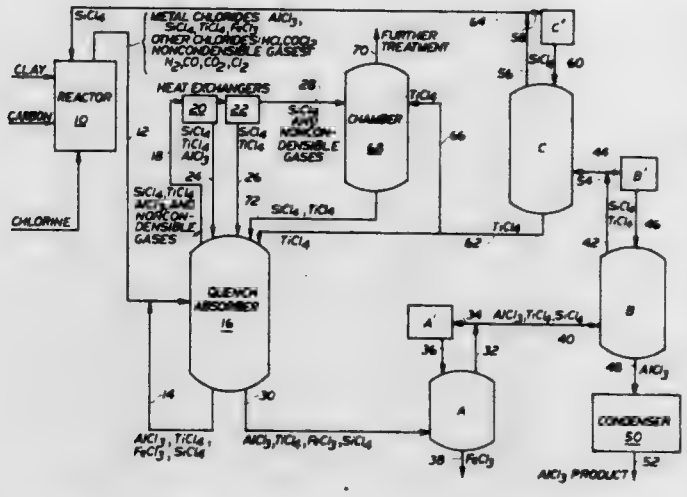
8. A process for the separation of $AlCl_3$ and $SiCl_4$ from a mixture containing $AlCl_3$, $FeCl_3$, $SiCl_4$, $TiCl_4$ and no substantial amounts of other metal chlorides by fractional distillation utilizing an array of distillation columns, said process comprising:

(a) introducing the mixture into a first distillation column operated at temperatures and pressures sufficient to separate from the mixture within the column $FeCL_3$ as a liquid and $ALCL_3$, $SiCL_4$ and $TiCL_4$ as gas, while avoiding the formation of a solid solution of $FeCl_3$ and $AlCl_3$ which would otherwise clog the column;

(b) introducing the remaining mixture from the first distillation column, containing $AlCl_3$, $SiCl_4$ and $TiCl_4$, into a second distillation column operated at temperatures and

pressures sufficient to separate liquid $AlCl_3$ from the mixture from the first distillation column; and

(c) introducing the remaining mixture from the second distillation column, containing $SiCl_4$ and $TiCl_4$, into a third distillation column operated at temperatures and pressures sufficient to separate $SiCl_4$ from the mixture from the second distillation column.



4,349,421

PREPARATION OF METAL PLATED POLYAMIDE THERMOPLASTIC ARTICLES HAVING MIRROR-LIKE METAL FINISH

Ghazi M. A. Khattab, Succasunna, N.J., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Division of Ser. No. 75,855, Sep. 17, 1979, which is a continuation-in-part of Ser. No. 935,044, Aug. 18, 1978, abandoned, which is a continuation-in-part of Ser. No. 849,146, Nov. 7, 1977, abandoned. This application Dec. 3, 1980, Ser. No. 212,479

Int. Cl.³ C23C *3/02*

U.S. Cl. 204—38 B **10 Claims**

1. In a method for electroplating the surface of a shaped article, wherein the shaped article is comprised of a polyamide resin and about 5 to 60 wt. %, based on the total weight of the resin and filler, of a filler component which will not degrade the thermoplastic resin and which is susceptible to attack by dilute acid solutions, which is treated with a coupling agent, which method includes:

(a) treating the surface of the shaped article with a dilute acid solution of sufficient concentration, at a temperature of about 30° to 50° C. and for a sufficient length of time for said acid solution to attack and remove the filler at or near the surface of the article, but not attack the polyamide resin;

(b) sensitizing and activating the surface of the article obtained in step (a);

(c) depositing a layer of copper or nickel onto the surface of the shaped article by electroless deposition following step (b); and

(d) electrolytically plating the surface of said article with copper, nickel, chromium, or cimbination thereof, following step (c);

the improvement which comprises employing the filler in an average particle size below about 3.5 microns, wherein 95 numerical percent of the particles are less than about 10 microns in their longest dimension, thereby resulting in an electroplated shaped polyamide article having a mirror-like metal finish and possessing a metal-polymer peel strength of at least about 3 lbs. per linear inch.

4,349,422

ELECTROLYSIS PROCESS

Daniel E. Maloney, Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 16, 1981, Ser. No. 225,639

Int. Cl.³ C25B *1/34, 13/02, 13/08*

U.S. Cl. 204—98 **10 Claims**

1. A method for improving the current efficiency in the process for electrolysis of an alkali metal chloride in an electrolytic cell divided by a cation-exchange membrane into an anode compartment and a cathode compartment in which an alkali metal hydroxide is produced, said membrane comprising at least a first layer, said first layer being of a first fluorinated polymer having carboxylic functional groups in ion-exchange form and having an equivalent weight in the range of 1000 to 1100, said first layer having a first exposed surface which has a roughness in the range of 0.4 to 1.3 microns, said membrane having a second exposed surface which has a roughness in the range of 1.3 to 13 microns, provided that said first exposed surface is smoother than said second exposed surface, wherein said membrane is disposed so that said first exposed surface faces toward said cathode compartment.

4,349,423

PROCESS FOR DECOMPOSING HARD METAL SCRAP

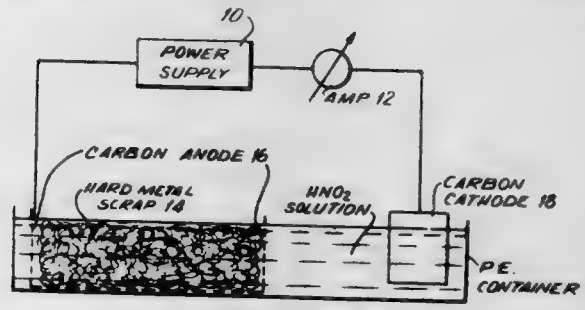
Hans G. Nützel, Bilthoven, and Rudolf Kühl, Vianen, both of Netherlands, assignors to SKF Industrial Trading & Development Co. B.V., Nieuwegein, Netherlands

Filed May 14, 1979, Ser. No. 38,936

Claims priority, application Netherlands, May 25, 1978, 7805669

Int. Cl.³ C25F *5/00*; C01G *41/00*

U.S. Cl. 204—146 **12 Claims**



1. A process for the decomposition of hard metal scrap containing tungsten carbides and binding metal which includes cobalt, comprising the steps of electrolyzing a dilute nitric acid solution initially containing 5 to 15 percent of HNO_3 by weight with the scrap serving as the anode, and using an inert cathode, using an anodic current density of 2 to 10 amperes per Kg of scrap, removing tungsten compounds from the undissolved part of the scrap after the electrolysis and separating said cobalt from the resulting solution.

4,349,424

ION SPUTTER TEXTURED GRAPHITE

James S. Sovey, Strongsville; Ralph Forman, Rocky River; Arthur N. Curren, North Ridgeville, and Edwin G. Wintucky, Lakewood, all of Ohio, assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

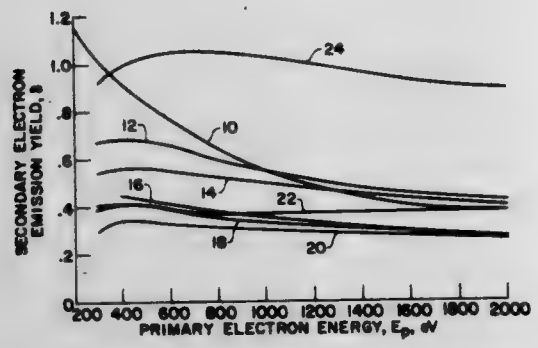
Filed May 15, 1981, Ser. No. 264,378

Int. Cl.³ C23C *15/00*

U.S. Cl. 204—192 E **5 Claims**

1. A method of treating the surface of a pyrolytic graphite electrode plate for use in a multistage depressed collector to attain low secondary emission yields and reduced numbers of reflected primary electrons from the collector comprising the steps of

placing said plate in a vacuum environment of about 4×10^{-5} torr, and



exposing at least one surface of said plate to ions having an energy between about 500 eV and 1000 eV and an ion beam current density between about 1.0 mA/cm^2 and 6.0 mA/cm^2 for about 4 to 6 hours.

4,349,425

TRANSPARENT CONDUCTIVE FILMS AND METHODS OF PRODUCING SAME

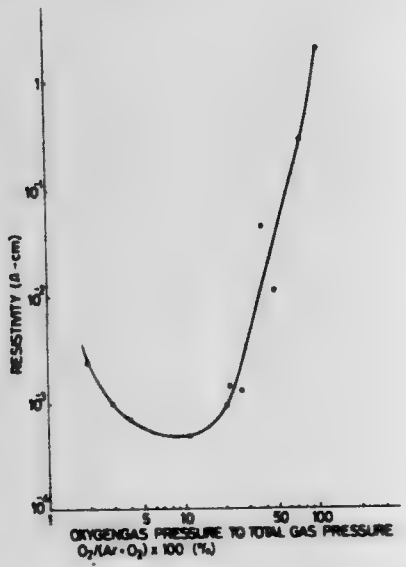
Kiyoshi Miyake, 2658, Oki-ube, Ube-shi, Yamaguchi, and Naoyuki Miyata, Ube, both of Japan, assignors to Hitachi, Ltd. and Kiyoshi Miyake, both of Tokyo, Japan

Filed Aug. 23, 1978, Ser. No. 936,124

Claims priority, application Japan, Sep. 9, 1977, 52/107984; Jul. 7, 1978, 53/81881

Int. Cl.^{3} C23C *15/00*

U.S. Cl. 204—192 P **11 Claims**



1. A method of producing thin films by sputtering comprising using an alloy consisting essentially of cadmium and tin as a target, and causing an electrical discharge to take place under the application of a d-c electric field in a gas mixture consisting essentially of an inert gas for sputtering metal atoms from the target and oxygen gas for oxidizing the sputtered metal atoms thereby forming a film of oxides of cadmium and tin.

4,349,426

ANION SENSING ELECTRODE

Kenshi Sugahara, Katsuta, and Junji Mori, Hitachi, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 24, 1980, Ser. No. 200,458

Claims priority, application Japan, Oct. 26, 1979, 54-139026

Int. Cl.^{3} G01N *27/46*

U.S. Cl. 204—195 M **11 Claims**

1. An anion sensing electrode which comprises a vessel means containing an inner filling solution; an internal electrode in contact with the inner filling solution; a sensing membrane fixed to the vessel means, said sensing membrane containing a polymeric substance as a support substance, a quaternary ammonium salt as a sensing substance and normal tetradecyl alcohol as a plasticizer.



4,349,427

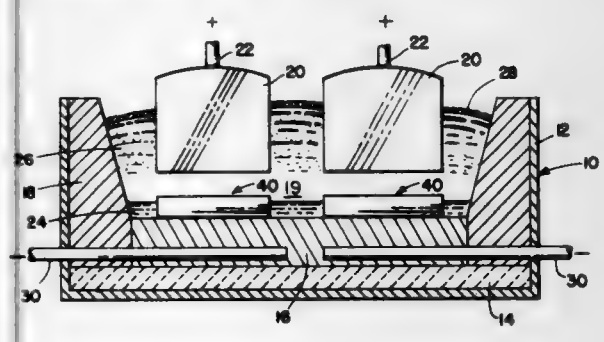
ALUMINUM REDUCTION CELL ELECTRODE

Warren H. Goodnow, Palo Alto, and John R. Payne, Pleasanton, both of Calif., assignors to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Jun. 23, 1980, Ser. No. 161,703

Int. Cl.^{3} C25C *3/08*; C25B *11/12*

U.S. Cl. 204—243 R **7 Claims**



1. In an electrolytic cell for the reduction of alumina having a cavity lined with refractory material and adapted to contain a molten aluminum body and a body of molten electrolyte containing dissolved alumina, at least one prebake anode depending into said cavity and a cathode of a refractory hard metal at the bottom of said cavity beneath said anode, said anode and cathode being in electric circuit relationship, the improvement comprising a replaceable modular cathode assembly having an electrically conducting surface comprised of a plurality of refractory hard metal members, which surface is positioned beneath the anode and within the projection of the bottom surface of the anode, said assembly having a structure that is free standing and resting upon the bottom of the cavity and adapted to extend into said electrolyte and wherein the refractory hard metal members are free from externally applied forces or rigid constraints.

4,349,428

CARBON CLOTH SUPPORTED ELECTRODE

Wen-Tong P. Lu, Upper St. Clair, and Robert L. Ammon, Baldwin both of Pa., assignors to The United States of America as represented by the U.S. Dept. of Energy, Washington, D.C.

Filed Jun. 1, 1981, Ser. No. 269,135

Int. Cl.^{3} C25B *11/08, 11/12*

U.S. Cl. 204—294 **15 Claims**

1. A method of making an electrode comprising:

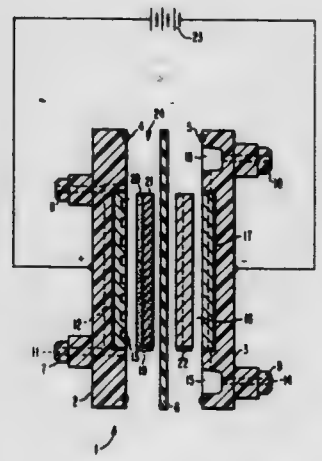
(A) preparing a liquid suspension of about 8 to about 18% by weight solids, said solids comprising

(1) about 0.5 to about 1.5% by weight of supported catalyst particles selected from the group consisting of platinum, palladium, palladium oxide, and mixtures thereof;

(2) about 6.5 to about 14% carbon powder (support) having a particle size of less than about 20 mμm, and

(3) about 1 to about 2.5% by weight of an inert binder having a particle size less than about 550 mμm;

(B) pouring a sufficient amount of said suspension over a carbon cloth to form a layer of solids about 0.02 to about 0.1 cm thick on said carbon cloth when said electrode is completed;



(C) applying a vacuum to the opposite side of said carbon cloth to remove said liquid;

(D) drying said carbon cloth to form said layer of solids;

(E) compressing said carbon cloth and layer of solids at about 10 to about 50 MPa; and

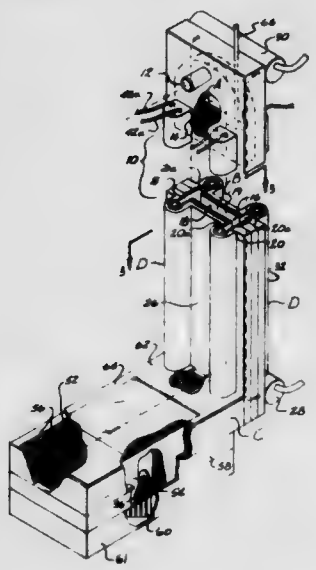
(F) sintering said binder in an inert atmosphere.

4,349,429

ELECTROPHORESIS DEVICE

Percy H. Rhodes, and Robert S. Snyder, both of Huntsville, Ala., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Apr. 16, 1981, Ser. No. 254,575
Int. Cl.³ B01D *13/02*
U.S. Cl. 204—299 R **17 Claims**



1. An electrophoresis device for separating colloidal and macromolecular cellular particles comprising:

a distribution chamber being an inlet for the introduction of an electrolytic buffer solution;

sample insertion means for inserting a narrow sample stream containing said particles into said buffer solution;

a separation chamber in fluid communication with said distribution chamber in which said particles are separated into fraction streams of different cellular species;

enclosure wall means defining said separation chamber having high thermal conductivity to reduce horizontal thermal gradients and control the axial thermal gradient in said separation chamber by external cooling;

cooling means carried adjacent said enclosure wall means for conveying a flow of coolant in an axial direction relative to said separation chamber;

a plurality of spaced electrode assemblies carried adjacent said separation chamber, each of which includes an electrode chamber having a dialysis membrane through which the electrolytic current flows to impress an electrical field across said separation chamber;

passage means through which said current flows into said separation chamber;

a collection chamber in fluid communication with said separation chamber in which said stream of particles are fractionated and collected, and

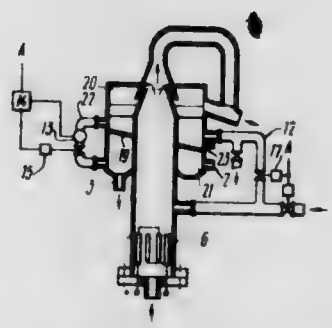
outlet means in fluid communication with said collection chamber through which said fractonated matter flows.

4,349,430

APPARATUS FOR ELECTROCHEMICAL PURIFICATION OF CONTAMINATED LIQUIDS

Vyacheslav T. Efimov, ulitsa Sumskaya, 59, kv. 2; Miron M. Nazarian, ulitsa Bijukhera, 13, kv. 138; Vladimir A. Kolyada, ulitsa Petrozavodskaya, 91 "A", kv. 20; Arkady R. Matsev, ulitsa Timurovtsev, 19, kv. 130; Ljudmila F. Shamsha, ulitsa Dinamovskaya, 3, kv. 23., and Alexandr A. Axenko, ulitsa Bairona, 152, kv. 25, all of Kharkov, U.S.S.R.

Filed Jan. 25, 1980, Ser. No. 162,748
Int. Cl.³ C02F *1/46*
U.S. Cl. 204—302 **2 Claims**



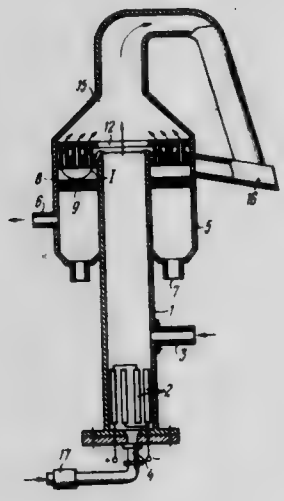
1. Apparatus for continuous electrochemical purification of contaminated liquids comprising, an electrocoagulation chamber for containing an electrolyte and having soluble electrodes therein, means to introduce said electrolyte into said electrocoagulation chamber, means to introduce contamination liquid into said electrocoagulation chamber while it contains said electrolyte, said electrocoagulation chamber being open at the top, a settling chamber disposed circumferentially about said electrocoagulation chamber for receiving liquid from the electrocoagulation chamber after treatment of the contaminated liquid to coagulate impurities therein, a discharge conduit above the level of the bottom of the settling chamber to discharge purified liquid from the settling chamber, a liquid purification degree analyzer, actuating means under control of said analyzer to interrupt the discharge of the purified liquid and introduction of contaminated liquid when the degree of purification of the purified liquid discharged from the settling tank is below a given level, means under control of said analyzer to recirculate the purified liquid from the settling chamber to said means to introduce the contaminated liquid into said electrocoagulation chamber for repurification when said purification is below said given level, a partition in said settling chamber dividing it into a top space and a bottom space, a conduit connecting said top space and said bottom space, and said liquid purification degree analyzer being disposed to analyze liquid in said conduit.

4,349,431

APPARATUS FOR ELECTROCHEMICAL PURIFICATION OF CONTAMINATED LIQUIDS

Alexandr A. Axenko, ulitsa Bairona, 152, kv. 25; Miron M. Nazarian, ulitsa Bljukhera, 13, kv. 138; Vladimir A. Kolyada, Petrozavodskaya ulitsa, 91-a, kv. 30, and Arkady R. Mataev, ulitsa Timurovtsev, 19, kv. 130, all of Kharkov, U.S.S.R.

Filed Sep. 5, 1980, Ser. No. 184,424
Int. Cl.³ C02F 1/46
U.S. Cl. 204—302 7 Claims



1. An apparatus for electrochemical purification of contaminated liquid comprising: an electrocoagulation chamber having an inlet pipe for feeding contaminated liquid into the chamber and another inlet pipe for feeding electrolyte into the chamber, a system of energizable soluble electrodes within a lower portion of the electrocoagulation chamber, said electrocoagulation chamber having an upper end opening through which the contaminated liquid is discharged, a settling chamber circumferentially of said electrocoagulation chamber and said opening thereof for receiving the liquid from the electrocoagulation chamber, an outlet pipe for removing purified liquid from the settling chamber, a system of energizable insoluble electrodes internally of the settling chamber, a distributor at an upper end of the settling chamber above the level of the system of insoluble electrodes circumferentially of said opening in communication therewith for receiving liquid from the electrocoagulation chamber and having orifices evenly distributed about said opening for uniformly distributing of the liquid from the electrocoagulation chamber into the settling chamber and conduits to allow foam to pass therethrough.

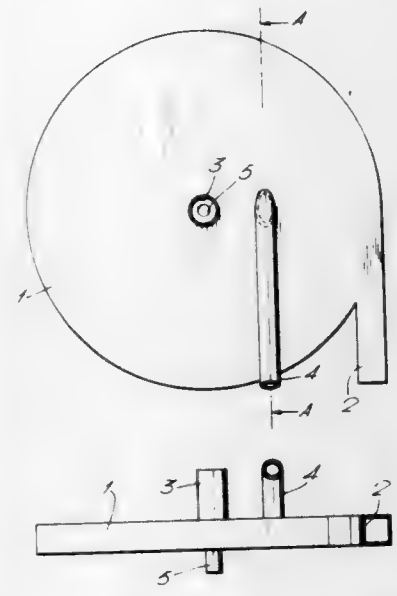
4,349,432

PYROLYSIS OF HYDROCARBONS

Frederick Rowe, Middlesbrough, and David Brown, Northallerton, both of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Oct. 14, 1980, Ser. No. 196,562
Claims priority, application United Kingdom, Oct. 18, 1979, 7936152
Int. Cl.³ C10G 9/36, 9/38
U.S. Cl. 208—130 7 Claims

1. A process for the pyrolysis of a hydrocarbon feedstock which comprises introducing the feedstock into a reactor and therein flowing the feedstock countercurrently to a stream of hot hydrogenating gas, the hydrogenating gas being obtained,



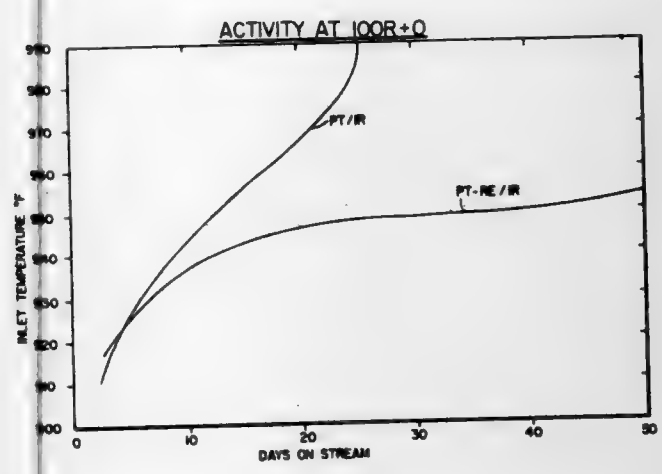
at least in part, by partial combustion of carbonaceous by-products from the pyrolysis process.

4,349,433

SEPARATELY SUPPORTED POLYMETALLIC REFORMING CATALYST

Hans J. Schoennagel, Lawrenceville, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 120,956, Feb. 13, 1980, Pat. No. 4,288,348, which is a continuation-in-part of Ser. No. 76,047, Sep. 17, 1979, Pat. No. 4,264,475, and Ser. No. 112,756, Jan. 17, 1980, Pat. No. 4,263,134, said Ser. No. 76,047, is a continuation-in-part of Ser. No. 934,143, Aug. 16, 1978, abandoned, said Ser. No. 112,756, is a continuation of Ser. No. 934,143, Aug. 16, 1978, abandoned.
This application Mar. 25, 1981, Ser. No. 247,483
Int. Cl.³ C10G 35/06
U.S. Cl. 208—139 11 Claims



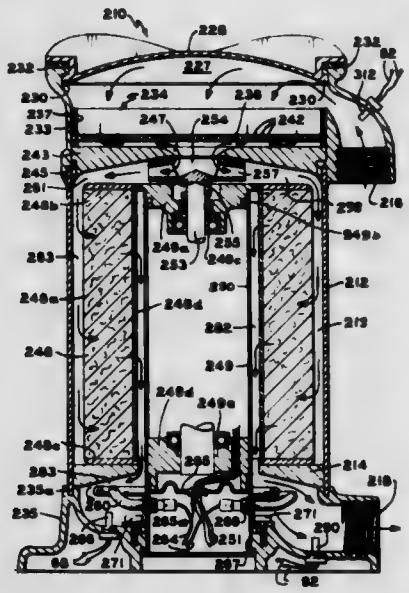
1. A reforming process which comprises contacting a reforming charge stock under reforming conditions with a catalyst composition made up of a mixture of two components, one component comprising a minor proportion of platinum and rhenium on a support and the second component comprising a minor proportion of iridium on a separate support.

4,349,434

FILTRATION SYSTEM FOR SPAS, HOT TUBS, SWIMMING POOLS AND THE LIKE

William R. Jaworski, 26075 Birch Bluff Rd., Excelsior, Minn. 55331

Continuation-in-part of Ser. No. 110,332, Jan. 7, 1980, abandoned. This application May 4, 1981, Ser. No. 259,710
Int. Cl.³ B01D *35/02*
U.S. Cl. 210—94 13 Claims



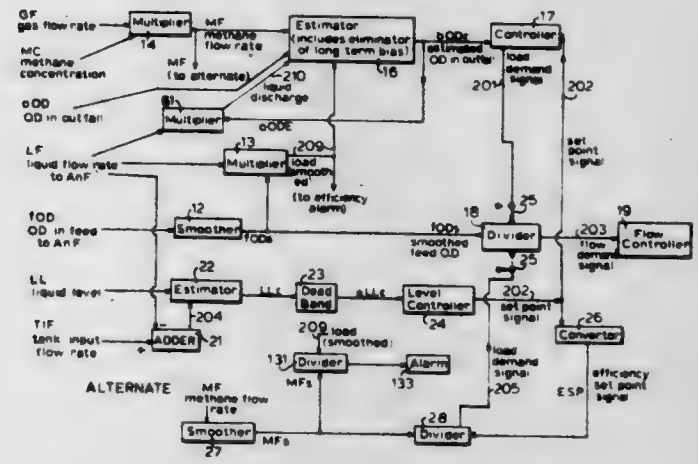
1. A water heater and filtering apparatus for a hot tub, spa, pool, or the like comprising
(a) a housing having a chamber therein,
(b) a filter element removably mounted in the chamber, the filter element having relatively small water flow openings therethrough,
(c) means to open said housing to provide access to the inside of the chamber for removing the filter,
(d) a basket-shaped strainer removably mounted within the housing and having a bottom wall upon which debris collects during operation for later removal and an upwardly extending side wall at the periphery of the bottom wall, the strainer being characterized by having relatively large visible openings therein and being adapted to remove relatively large debris before it can reach the filter element,
(e) a water inlet duct in the housing communicating through the housing to the inside thereof and including means for passing the incoming water into the space above the strainer between the strainer and a portion of the housing so that the water entering the housing through the inlet flows first through the basket-shaped strainer and then through the filter,
(f) a water outlet duct in the housing communicating with the opposite side of the filter from the side communicating with the strainer to exhaust water from the housing and,
(g) a first heating means comprising an electric heating element mounted within the housing and connected in fluid communication with the filter and strainer between the filter and the water outlet duct for heating the water passing therethrough, the filter thereby removing particles from the water before it reaches the heater to thereby prevent damage to the heater from suspended solids,
(h) pump means within the housing including an electric pump motor comprising a second heating means and pump impeller connected thereto to force water first through the strainer next through the filter, and then over the heater, waste heat from said second heating means supplementing that from the said first heating means to provide an overall thermal efficiency approximateing 100%,
(i) the apparatus is adapted to be connected in a water circuit with the tub, spa, or pool to heat and filter the water therein and
(j) temperature sensor means in heat conductive relationship with water in said water circuit and being wired to the heating element to divide heating between the first and second heating means to thereby maintain a selected temperature.

4,349,435

CONTROL OF ANAEROBIC FILTER

Shinya Ochiai, Corpus Christi, Tex., assignor to Celanese Corporation, New York, N.Y.

Filed Nov. 24, 1980, Ser. No. 209,813
Int. Cl.³ C02C *1/02*
U.S. Cl. 210—96.1 10 Claims



1. In a control circuit for a system:
(1) an estimating filter means that
(a) receives input signals from sensors,
(b) generates from said received signals, from an integrator in said estimating filter, an estimate of the present value of a variable of the system,
(c) compares that estimate with a signal from the sensor of that variable and
(d) generates from said comparison a difference error signal that is combined with said received signals and fed back to said integrator, and
(2) means for eliminating long term bias that may be present in at least one of said received signals, said eliminating means comprising a high pass filter means through which said received input signals are transmitted to said integrator, said high pass filter means rejecting bias which persists for a period substantially longer than the time constant of the system.

4,349,436

GRATE AND WATER RECOVERY SYSTEM

Roland F. Kaump, 1714 W. 23rd St., Loveland, Colo. 80537

Filed Nov. 12, 1980, Ser. No. 206,111
Int. Cl.³ B01D *39/20*
U.S. Cl. 210—104 12 Claims

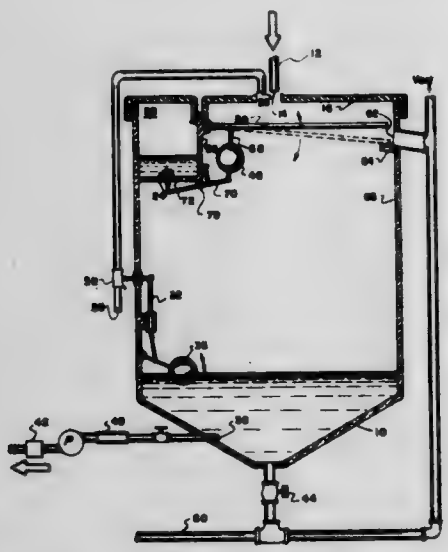
1. A grate for use as a self-cleaning filter, comprising
a grate assembly adaptable for mounting in an installed position along a diagonal plane to a horizontal axis with said grate formed with a leading edge opposed to a trailing edge, such that in the installed position the trailing edge is vertically lower than the leading edge, said grate assembly formed with a plurality of spaced upraised rib sections

that each extend in the direction from the said leading edge of the said trailing edge, with at least

one flange section located between a pair of said rib sections, the upper surface of which flange section extends in the said diagonal plane, with said rib sections extending above the said flange section and with said flange section forming an upper exposed surface of said grate assembly, and with at least

one opening located between a pair of said rib sections and extending in the direction from the trailing edge to the leading edge, such that

the flow of a liquid freely falling upon an upper section of the grate will be distributed between some flow of liquid on said flange or flanges flowing towards the trailing edge and some flow of liquid through said opening, and such that debris in the liquid that falls on the said flange or flanges, where said debris is of a larger size than the opening will accommodate, the said debris will be splashed or pushed by the flow of water on the flanges towards the trailing edge of the grate while most or all of the said water will fall through the opening before reaching the trailing edge, with said rib sections serving to channel the flow of water on said flange sections and said rib sections serving to support wide portions of debris above the surface of the flange section so as to prevent such debris from blocking the flow of water on the surface of said flange sections, with the flow of water channelled by said



rib sections serving to wash debris resting on the flange surface of the trailing edge of the grate.

10. A grate for use as a self-cleaning filter, comprising

a grate assembly adaptable for mounting in an installed position along a diagonal plane to a horizontal axis with said grate formed with a leading edge opposed to a trailing edge, such that in the installed position the trailing edge is vertically lower than the leading edge, such grate assembly formed with a plurality of spaced upraised rib sections that each extend in the direction from the said leading edge to the said trailing edge, with at least

one flange section located between a pair of said rib sections, the upper surface of which flange section extends in the said diagonal plane, and with at least

one opening located between a pair of said rib sections and extending in the direction from the trailing edge to the leading edge, such that

the flow of a liquid freely falling upon an upper section of the grate will be distributed between some flow of liquid on said flange or flanges flowing towards the trailing edge and some flow of liquid through said opening, and such that where debris in the liquid that falls on the said flange or flanges, and where said debris is of a larger size than the opening will accomodate, the said debris will be splashed or pushed by the flow of water on the flanges towards the trailing edge of the grate while most or all of the said water will fall through the opening before reaching the trailing edge,

together with first receiver means located to receive liquid that is filtered through the opening of said grate, where said first receiver means is located below the grate opening, in which

the said first receiver means is a storage tank for recovery and reuse of drain water, together with

a receptacle for containment of chemicals useful in treatment of drain water, with said receptacle linked to the storage tank by a valve, together with means responsive to flow of water into said storage tank which means is linked to said valve so as to open said valve when water is flowing into said storage tank, and to close said valve upon cessation of such water flow, in which

the said means to control said valve comprises

pivotal means of mounting of said grate in a first generally diagonal plane,

spring means to bias the trailing edge of said grate in an upwards direction to said first diagonal plane,

said pivotal means located so that weight of water on the flanges of said grate biases the trailing edge of the grate in the downwards direction from said first diagonal plane, to a second diagonal plane of said grate,

linkage means for said grate to said valve such that when said grate is pivoted by the flow of water to the second diagonal plane, the said valve is opened, with said linkage means closing said valve when the grate is in the first diagonal plane.

4,349,437

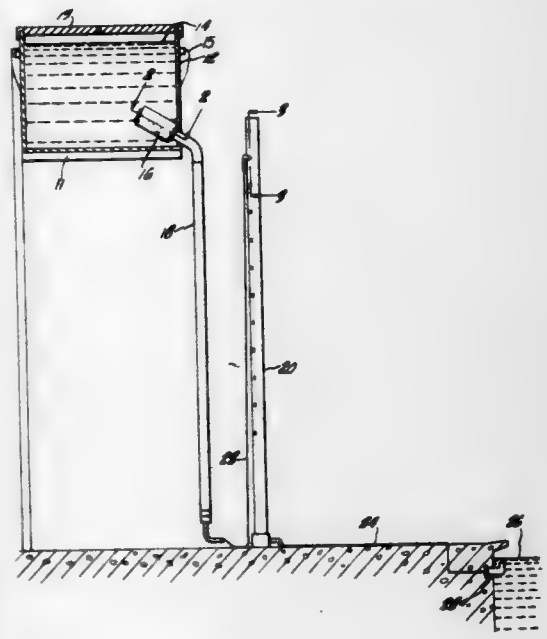
AUTOMATIC AND CONTINUOUS CHEMICAL FEED SYSTEM

David A. Rickett, 15600 Del Prado Dr., Hacienda Heights, Calif. 91745

Filed Jul. 24, 1980, Ser. No. 171,983

Int. Cl.[3] B01D *33/38*

U.S. Cl. 210—169 12 Claims



1. An automatic and continuous chemical feed system for the introduction of a chemical solution into a liquid body comprising:

a vessel vented to maintain atmospheric pressure for containing the chemical solution to be introduced into the liquid body, said vessel being fixably positioned above the ground and having an opening near the base thereof;

a means for filtering said chemical solution as the solution flows out of the vessel;

a downcomer means connected to said filter means and extending towards the ground, said downcomer means having an inner diameter sufficiently large to spontaneously vent any gases which are formed in the chemical

solution back through said filter means and into said vessel;

an adjustable standpipe means to regulate changes in the flow of the chemical solution;

a tubular connecting means to connect said downcomer means and said standpipe means, thereby enabling the chemical solution to flow therebetween, said tubular connecting means determining the initial flow rate of the chemical solution;

a tubular conveyance means attached to said standpipe means to convey the chemical solution to a selected location in or above the liquid body.

10. An automatic and continuous chemical feed system for the introduction of a chemical solution into a swimming pool comprising:

a vessel for containing the chemical solution to be introduced into the swimming pool, said vessel being fixably positioned above the ground and having an opening near the base thereof;

a filter cartridge means for filtering said chemical solution as the solution flows out of the vessel, said filter cartridge means being positioned at an angle of about 30° from the horizontal to aid in venting gases formed in the chemical solution back through the vessel;

a downcomer means which is connected to said filter cartridge means and which extends towards the ground, said downcomer means having an inner diameter sufficiently greater than ¼" such that gases formed in the chemical solution spontaneously vent back through said filter cartridge means and into said vessel;

an adjustable standpipe means having a series of holes drilled vertically therein at an angle of about 10° from the horizontal to permit changes in the rate of flow of the chemical solution to be regulated;

a tubular connecting means to connect said downcomer means and said standpipe means, the end of the tubular connecting means which is connected to the standpipe means being positioned in one of the holes drilled therein, said tubular connecting means determining the initial flow rate of the chemical solution;

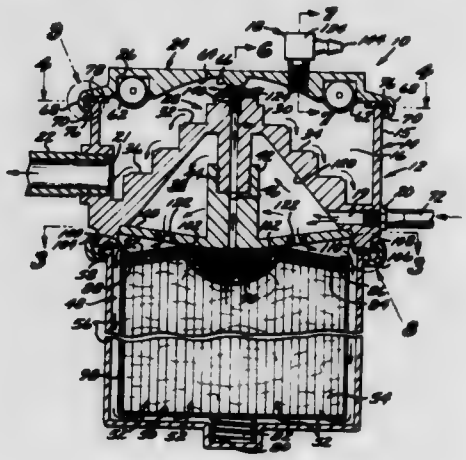
a tubular conveyance means attached to said standpipe means to convey the chemical solution to a selected location in the swimming pool.

4,349,438

OIL REFINER

Loyie Sims, Santa Ana, Calif., assignor to Sims Oil, Inc., Newport Beach, Calif.

Filed Jul. 8, 1981, Ser. No. 281,338
Int. Cl.³ B01D *35/18, 3/28*
U.S. Cl. 210—180 18 Claims



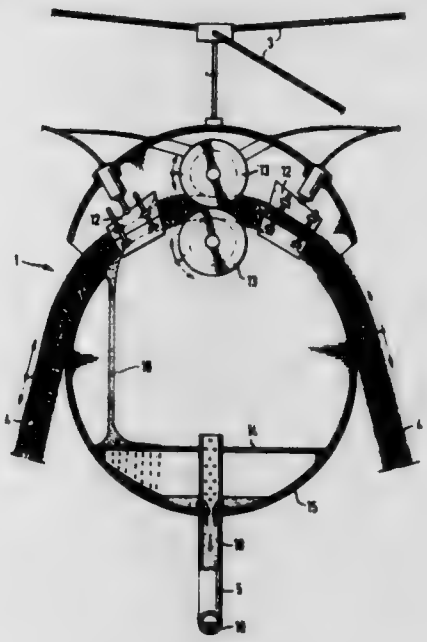
14. A device for removing solid and vaporizable contaminants from engine oil comprising: a casing having a removable concave lower portion having an upwardly opening mouth with radially outwardly directed flange means thereon, a stationary upper portion including a cylindrical collar with an oil inlet thereto and an oil outlet therefrom and fastening means defined on its upper and lower extremities, a lid having a vapor vent thereon and an electric heating element therein with fasteners defined at the periphery thereof for direct fluid-tight engagement with said fastening means defined at the upper extremity of said cylindrical collar, a vaporization plate extending across the entire breadth of the interior of said cylindrical collar to form a barrier to isolate said oil inlet and said oil outlet from each other on opposite sides of said barrier, and said vaporization plate has a raised center with a plurality of descending tiers defined in concentric fashion about said center, a baseplate located beneath said vaporization plate and cooperatively arranged with said vaporization plate to define an upright duct leading to said center of said vaporization plate, at least one outlet in said baseplate to define at least one oil passageway to said lower removable protion of said casing from said oil inlet, a retaining ring encircling said removable lower portion of said casing and engageable with said fastening means at the lower extremity of said cylindrical collar to entrap said flange means of said lower casing portion and to releasably seal said upper and lower casing portions together, a disposable filter cartridge containing porous filtering material therein, located within said lower portion of said casing and means for maintaining said disposable filter cartridge in sealed communication with the lower extremity of said upright duct and in open communication with said oil inlet to said casing to direct the flow of oil from said casing inlet through said filter cartridge to said upright duct.

4,349,439

APPARATUS FOR COLLECTING OIL OR SIMILAR SUBSTANCES FROM THE SURFACE OF WATER

Lars I. Lundin, Kauppiaankatu 4, SF-06150, Porvoo 15, Finland

Filed Apr. 27, 1981, Ser. No. 257,871
Int. Cl.³ E02B *15/04*
U.S. Cl. 210—242.3 9 Claims



1. An apparatus for collecting oil and similar substances from the surface of water, the apparatus comprising an elongated member in the form of a rope having a specific weight less than that of water and being adopted to collect the substance to be collected:

a pair of booms engaging the rope at two positions apart from each other so as to hold the rope in a loop on the water surface;

a cleaning device for removing substance collected by the rope;

means for pulling the rope through the cleaning device; and

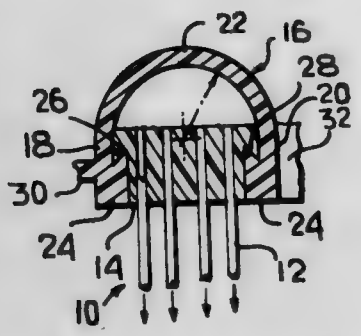
rotation means connected to at least one given end of the rope for rotating the rope about its longitudinal axis.

4,349,440

CAPILLARY TUBE EXCHANGE DEVICE

William G. Esmond, 800 Country Club Rd., Havre de Grace, Md. 21078

Filed Nov. 21, 1977, Ser. No. 853,504
Int. Cl.³ B01D *13/00*
U.S. Cl. 210—321.1 10 Claims



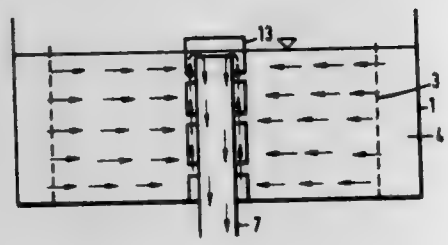
1. In an exchange device, a group of tubes arranged generally in spaced parallel relation in at least one row, sealing means bonding opposite end portions of said tubes together with external surfaces of said tube end portions being sealed relative to each other, said sealing means at each end of said tubes being in the form of an elongated rib with ends of said tubes opening through said ribs, and a tubular header sealed to each of said ribs and in combination with an associated rib defining a fluid passage in communication with interiors of said tubes, said headers each being generally U-shaped in cross-section and having spaced legs each sealed with a side surface of a respective rib, and said legs having thickened free end portions terminating centrally of said rib sides in tapered shoulders having a direct mechanical interlock with said rib sides.

4,349,441

FLUID TREATMENT METHOD AND APPARATUS

Hans-Georg Moll, Görzallee 49a; Andreas Grohmann, Drakestrasse 52a, both of D-1000 Berlin 45; Ulrich Hässelbarth, Adolfstrasse 3, D-1000 Berlin 37, and Helmuth Marks, Maulbeerallee 54, D-1000 Berlin 20, all of Fed. Rep. of Germany

Filed Jul. 3, 1980, Ser. No. 165,521
Claims priority, application Fed. Rep. of Germany, Jul. 6, 1979, 2927802
Int. Cl.³ B01D *21/26*
U.S. Cl. 210—512.1 6 Claims



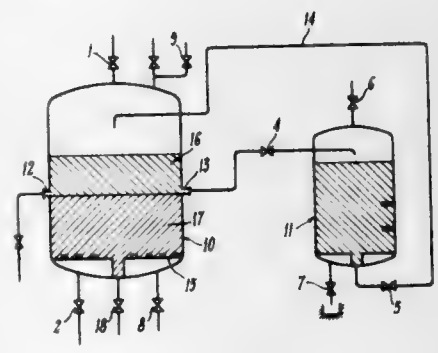
1. Apparatus for treating water comprising:
a cylindrical container having a central axis and adapted to contain a fluid;
baffle means spaced radially inward from the cylindrical container wall and defining an annular volume between the baffle means and cylindrical container wall;
means for introducing a fluid into the annular volume defined in the cylindrical container and tangential thereto;
a conduit communicating through the bottom of the cylindrical container and extending axially upward from the bottom of the container; and
a pipe coaxially positioned around and spaced from the conduit to define an annulus therebetween, the pipe having a plurality of axially spaced, circumferentially defined slots defined therein;
whereby fluid introduced at the wall of the cylindrical container will flow with a substantial radial component inward through the pipe slots with minimal flow in the axial direction of the container to facilitate settling of sediment in fluid and permit flow of clear fluid through the slots and out through the conduit.

4,349,442

METHOD AND APPARATUS FOR TREATING WATER BY ION EXCHANGE

Christian Barraque, Sannois, France, and Jayantilal D. Darji, Richmond, Va., assignors to Degremont, Rueil-Malmaison, France

Filed Apr. 7, 1981, Ser. No. 251,944
Claims priority, application France, Apr. 17, 1980, 80 08579
Int. Cl.³ B01D *15/04*
U.S. Cl. 210—675 20 Claims



1. A method for treating water by ion exchange, said method comprising:
providing within a receptacle a lower bed of mixed anionic and cationic ion exchange resins and an upper bed of cationic ion exchange resins, with said upper bed resting directly on said lower bed without any mechanical separation therebetween;
conducting a water treatment operation by passing water to be treated downwardly through first said upper bed and then said lower bed to thus form treated water, and the discharging said treated water from said receptacle; and
periodically interrupting said water treatment operation and conducting a regeneration operation comprising:
removing said upper bed from said receptacle without removal of said lower bed by exerting pressure on the upper surface of said upper bed, while simultaneously directing a thin substantially horizontal spray of water along a horizontal plane which is adjacent the boundary between said upper and lower beds and which covers substantially the entire horizontal cross-section of said upper bed, and thereby directing said water spray and said cationic resins of said upper bed to an outlet which is located adjacent said boundary;
passing said cationic resins of said upper bed from said outlet to a regeneration vessel and therein regenerating said cationic resins;
introducing regenerated cationic resins into said receptacle to reform said upper bed; and
prior to introducing said regenerated cationic resins into said receptacle, drying said lower bed, to thereby prevent the returning cationic resins from mixing with the resins of said lower bed.

4,349,443

VISCOSIFIER AND FLUID LOSS CONTROL SYSTEM

Jacob Block, Rockville, Md., assignor to W. R. Grace & Co., New York, N.Y.

Continuation-in-part of Ser. No. 169,884, Jul. 17, 1980, abandoned, which is a continuation-in-part of Ser. No. 141,852, Apr. 21, 1980, abandoned, which is a continuation-in-part of Ser. No. 121,226, Feb. 13, 1980, abandoned. This application Feb. 27, 1981, Ser. No. 239,079

Int. Cl.³ C09K *7/02*

U.S. Cl. 252—8.5 A 11 Claims

1. A composition capable of imparting to clay-free aqueous systems a combination of pseudoplasticity and fluid loss control comprising a mixture of:

(a) a hydroxy containing aluminum component formed by mixing in an aqueous medium and under a high degree of agitation of water-soluble basic agent selected from the group consisting of an alkali metal aluminate, alkali metal hydroxide, ammonium hydroxide and mixtures thereof with a water-soluble acidic agent selected from an inorganic acid, aluminum chloride, aluminum sulfate, aluminum nitrate, their hydrates and mixtures thereof; at least one of said basic and acidic agents being an aluminum containing compound: said acidic and basic agents being reacted in a ratio such that the resultant product imparts to said aqueous medium pH of from at least about 8 to about 10.3; in combination with

(b) a reaction product formed in an aqueous acidic medium having a pH of less than about 5.5 between polyvinyl alcohol having a weight average molecular weight of at least 20,000 with at least 1 percent of stoichiometry of a compound containing at least one aldehyde group therein or capable of generating in situ at least one aldehyde group; wherein the amount of component (a) to component (b) is in the weight ratio of at least about 0.75:1.

4,349,444

HYBRID PTFE LUBRICANT INCLUDING MOLYBDENUM COMPOUND

Franklin G. Reick, Westwood, N.J., assignor to Michael Ebert, Mamaroneck, N.Y., a part interest

Continuation-in-part of Ser. No. 158,329, Jun. 10, 1980, Pat. No. 4,284,518. This application Dec. 18, 1980, Ser. No. 218,008

Int. Cl.³ C10M *1/30*

U.S. Cl. 252—16 5 Claims

1. A hybrid lubricant additive dilutable in a conventional fluid oil lubricant to provide a working lubricant applicable to metallic working surfaces, such as those found in internal combustion engines and industrial machinery, said hybrid lubricant additive comprising:

A. a dispersion of polytetrafluoroethylene solid lubricant particles;

B. a neutralizing agent added to said dispersion in an amount stabilizing the dispersion to prevent agglomeration of the particles;

C. a fluid oil lubricant carrier intermingled with the stabilized dispersion to provide a predetermined amount of hybrid lubricant additive; and

D. a small but effective amount of an oil-soluble organic molybdenum compound included in said additive to render it effective in forming a solid lubricant layer on said metallic working surfaces.

4,349,445

DITHIOPHOSPHATES AS LUBRICANT ANTIOXIDENTS AND ANTI-CORROSION AGENTS

Siegfried Rosenberger, Riehen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

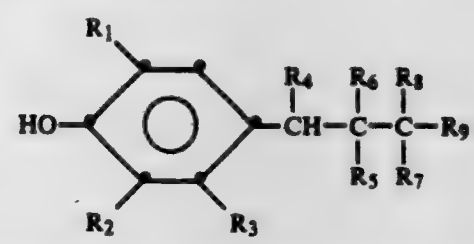
Filed Sep. 15, 1980, Ser. No. 187,641

Claims priority, application Switzerland, Sep. 18, 1979, 8418/79

Int. Cl.³ C10M *1/48;* C07C *9/18*

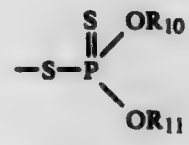
U.S. Cl. 252—46.6 9 Claims

1. A compound of formula I



(I)

wherein R_1 and R_2 independently of one another are each C_1–C_8-alkyl, and R_2 in addition is hydrogen, R_3 is hydrogen or methyl, R_4, R_6 and R_8 independently of one another are each hydrogen or C_1–C_6-alkyl, with the proviso that R_4, R_6 and R_8 as alkyl groups have all together 1 to 6 C atoms, R_9 is hydrogen and one of the radicals R_5 and R_7 is a group of the formula II



(II)

and the other is hydrogen, wherein R_{10} and R_{11} independently of one another are each C_1–C_{22}-alkyl,
or R_{10} and R_{11} together are a group of the formula III

$$-(R_{12})C(R_{13})-[R_{14})C(R_{15})]_m-(R_{16})C(R_{17})- \quad \text{(III)}$$

wherein m is nought or 1, and R_{12}, R_{13}, R_{14}, R_{15}, R_{16} and R_{17} independently of one another are each hydrogen or methyl.

2. A lubricant composition comprising a mineral or synthetic lubricating oil or mixture of said oils, and from 0.001 to 5% by weight, relevant to the oil, of a compound of formula I according to claim 1.

4,349,446

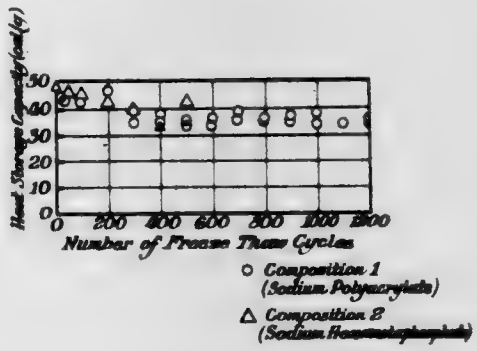
GLAUBER'S SALT HEAT STORAGE COMPOSITIONS, CRYSTAL HABIT MODIFIERS

Stephen B. Marks, Wilmington, Del., assignor to University of Delaware, Newark, Del.

Filed Mar. 5, 1981, Ser. No. 240,787

Int. Cl.³ C09K *3/18*

U.S. Cl. 252—70 17 Claims



10. A heat storage composition consisting essentially of:

	Parts by Weight
Attapulgite clay	7–10
Borax	2–6
Sodium sulfate	18–21
Water	23–33

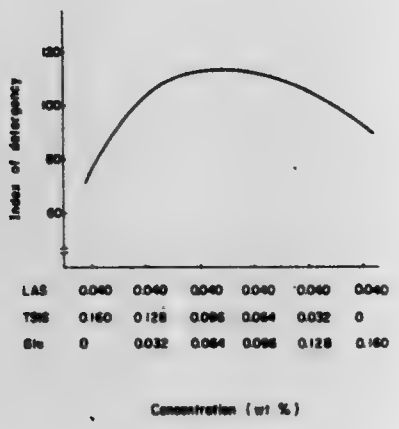
in admixture with one or more crystal habit modifiers selected from sodium hexametaphosphate, alkali metal or ammonium uncrosslinked polycarboxylates, and surface active agents.

4,349,447

PHOSPHATE-FREE DETERGENT COMPOSITION

Tatsuhiko Noguchi; Ryuichi Kurita; Ken Nemoto, and Kiichi Endo, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 2, 1980, Ser. No. 212,527
Claims priority, application Japan, Dec. 5, 1979, 54-157789
Int. Cl.[3] C11D *1/10, 9/10*
U.S. Cl. 252—117 3 Claims



1. A detergent composition comprising:

100 parts by weight of a synthetic surface active agent selected from the group consisting of anionic surface active agents, nonionic surface active agents and mixtures thereof; and

an effective amount of a mixture consisting essentially of

30 to 700 parts by weight of an imido-bis-sulfate of the formula $(M^1SO_3)_2NM^2$ wherein M^1 represents lithium, sodium, potassium or ammonium, and M^2 represents hydrogen, lithium, sodium, potassium or ammonium;

3 to 60 parts by weight of sodium palmitate or potassium palmitate; and

1 to 250 parts by weight of at least one compound selected from the group consisting of tetrasodium or tetrapotassium N,N-bis(carboxymethyl)glutamate, and trisodium or tripotassium of N,N-bis(carboxymethyl)phenylalanine.

4,349,448

LOW TEMPERATURE LOW FOAMING ALKALINE CLEANER AND METHOD

Duane C. Steele, Sterling Heights, Mich., assignor to Hooker Chemicals & Plastics Corp., Warren, Mich.

Filed Aug. 25, 1980, Ser. No. 180,999
Int. Cl.[3] C11D *1/70, 1/722, 3/075, 3/08*
U.S. Cl. 252—135 15 Claims

1. A low temperature low foaming alkaline cleaning composition comprising:

(a) an alkaline portion containing at least 75% by weight (PBW) of the composition selected from the group consisting of alkali or alkaline earth metal borate, silicate, carbonate, hydroxide, phosphate and mixtures thereof;

(b) an ethoxylated alkyl phenol in an amount from about 0.1 to about 15 PBW containing 4 to 14 ethoxy units and 6 to 12 carbon atoms in the alkyl group; and

(c) an ethoxylated and propoxylated alkyl phenol in an amount from about 1 to about 15 PBW containing 4 to 14 ethoxy units; 3 to 18 propoxy units and 6 to 12 atoms in the alkyl group; wherein the sum of (a), (b) and (c) equals 100 PBW.

4,349,449

PROCESS FOR ENHANCING OR AUGMENTING THE AROMA OF DETERGENTS USING NORBORNYL ESTERS

Mark A. Sprecker, Sea Bright, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 247,321, Mar. 25, 1981, Pat. No. 4,315,945, which is a continuation-in-part of Ser. No. 200,012, Oct. 23, 1980, Pat. No. 4,311,861. This application Oct. 13, 1981, Ser. No. 310,909
Int. Cl.[3] C11D *3/50*
U.S. Cl. 252—174.11 1 Claim

1. A process for augmenting or enhancing the aroma of a solid or liquid anionic, cationic, nonionic or zwitterionic detergent comprising the step of adding to a solid or liquid anionic, cationic, nonionic or zwitterionic detergent base, an aroma augmenting or enhancing quantity of a mixture of compounds represented by the structure:



wherein in one of the molecules of the mixture the "OR" moiety exists at the "5" position on the norbornyl ring structure and in the other of the molecules of the mixture the "OR" moiety exists at the "6" position on the norbornyl ring structure; and wherein R represents a moiety selected from the group consisting of acetyl and propionyl and wherein in the mixture the R moieties are identical.

4,349,450

CATALYTIC ELEMENTS

James B. Hunter, Newton Square, Pa., assignor to Johnson Matthey, Inc., Malvern, Pa.

Filed Apr. 1, 1981, Ser. No. 249,873
Int. Cl.[3] B01J *21/04, 23/40, 35/04*
U.S. Cl. 252—466 PT 3 Claims

1. A catalytic element for promoting catalyzed chemical reactions comprising a thin-walled metallic member having a plurality of hollow generally frusto-conical projections on a surface thereof, and a catalytically active material supported on the surface of said members, wherein the metallic member is a half-cylindrical shell, slightly tapered toward one end and wherein the outer ends of the projections are slightly jagged, the catalytically active material being present on the entire surface of the element including the outer ends of the projections.

4,349,451

FRYER OIL TREATMENT COMPOSITION AND METHOD

Bernard Friedman, 2914 Fairview St., Allentown, Pa. 18104

Division of Ser. No. 69,238, Aug. 23, 1979, Pat. No. 4,330,564. This application Jun. 9, 1980, Ser. No. 157,849
Int. Cl.[3] C11B *3/04, 5/00;* A23D *3/04*
U.S. Cl. 252—190 10 Claims

1. A composition comprising expanded rhyolitic material and water, said water comprising from about 33 to about 75% by weight of the composition and said rhyolitic material having an average size in the range of from about 8 to about 120 mesh.

4,349,452

CYCLOHEXYLCYCLOHEXANOATES

Maged A. Osman, Zurich, and Laszlo Revesz, Fislisbach, both of Switzerland, assignors to Merck Patent GmbH, Darmstadt, Fed. Rep. of Germany

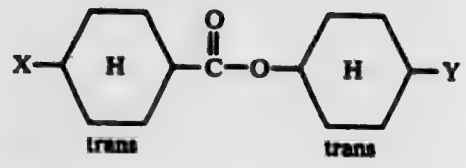
Filed Jul. 15, 1980, Ser. No. 169,135

Claims priority, application Switzerland, Jul. 18, 1979, 6672/79

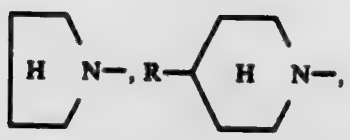
Int. Cl.[3] C07C *121/75*; C07D *295/14*; G02F *1/13*; C09K *3/34*

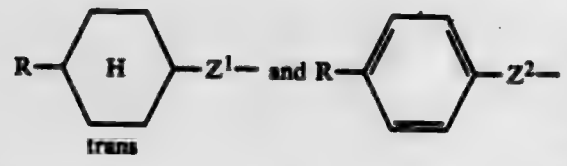
U.S. Cl. 252—299.61 6 Claims

1. An anisotropic compound having the formula



wherein X and Y are each selected from the group consisting of hydrogen, N-monoalkylamino having 1 to 12 carbon atoms in the alkyl portion, halo, cyano, nitro, and cyclic radicals selected from the group consisting of radicals having the following formulas:





wherein R is selected from the group consisting of halogen, cyano and nitro, Z^1 is a carboxyl radical selected from the group consisting of —COO— and —OOC—, and Z^2 is selected from the group consisting of Z^1 and a single covalent bond, with the proviso that:

(a) only one of the groups X and Y is a cyclic radical, and;

(b) neither of the groups X and Y is hydrogen, bromine, or piperidino when the other is hydrogen.

6. A liquid crystal mixture containing at least one anisotropic compound of claim 1.

4,349,453

METHOD FOR PROCESSING ALKALINE SOLUTIONS CONTAINING RADIOACTIVE IODINE DURING REPROCESSING OF NUCLEAR FUELS

Christiane Brugere, Paris; Jean-Pierre Goumondy, Vitry; Jean-Marie Morel, Massy, and Edmond Zellner, Gif-sur-Yvette, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

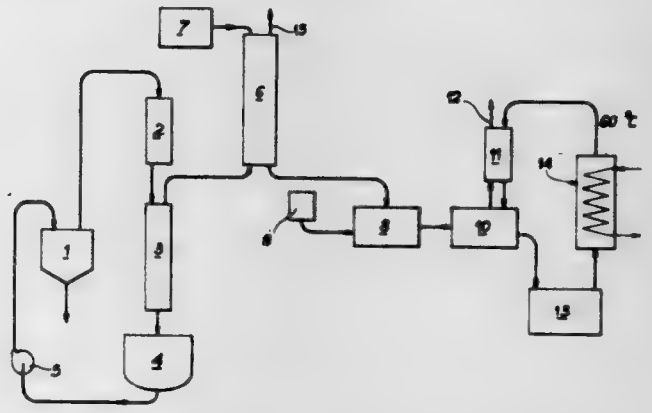
Filed Dec. 10, 1979, Ser. No. 101,546

Claims priority, application France, Dec. 20, 1978, 78 35829

Int. Cl.[3] G21C *19/46*; G21F *9/02*

U.S. Cl. 252—627 3 Claims

1. A method for processing alkaline solutions containing radioactive iodine released during reprocessing of nuclear fuels in which irradiated fuels are dissolved in a nitric acid solution, the vapors constituted essentially by nitrogen oxides, iodine and water formed during dissolution are passed into a condenser and then into a first absorption column in which recombined nitric acid is formed, wherein the recombined acid is returned to the dissolved whilst the gases discharged from said first absorption column are passed into a second absorption column in counterflow to an alkaline solution which picks up iodine and nitrous ions from such gases, and wherein the alkaline solution discharged from the second absorption column is passed into a reaction vessel containing a mixture of nitric acid



and sulphamic acid which destroys the nitrous products and releases the iodine.

4,349,454

PREPARATION OF AQUEOUS MEDIUM SUITABLE FOR PREPARING MICROCAPSULES

Hiroshi Iwasaki; Shinsuke Irii, and Mitsuru Kondo, all of Amagasaki, Japan, assignors to Kanzaki Paper Manufacturing Company Limited, Japan

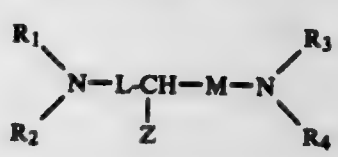
Filed Jan. 28, 1980, Ser. No. 115,915

Claims priority, application Japan, Feb. 14, 1979, 54/16535; Mar. 12, 1979, 54/29654; Oct. 17, 1979, 54/134369

Int. Cl.[3] B01J *13/00, 13/02*

U.S. Cl. 252—312 28 Claims

1. A process for preparing an aqueous medium suitable for preparing microcapsules which comprises dispersing and emulsifying a hydrophobic organic solvent containing a compound represented by the formula

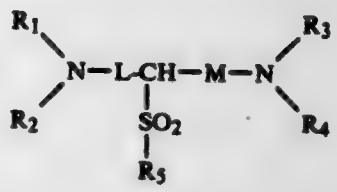


(II)

in an aqueous medium containing (1) sulfinic acid of the formula

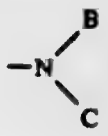


and (2) a hydrophilic protective colloid material to form a diarylmethane derivative represented by the formula



(III)

in the form of a solution of the derivative in droplets of the hydrophobic organic solvent; and wherein L and M are each a 1,4-arylene group with or without a substituent; R_1, R_2, R_3 and R_4 are each alkyl, cycloalkyl, aralkyl or aryl with or without a substituent, Z is a group represented by —O—A,



or —S—D in which A, B, C and D are each hydrogen or a hydrocarbon group with or without at least one hetero atom,

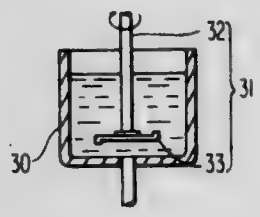
and R_5 is alkyl, cycloalkyl, aralkyl, aryl or heteroaryl with or without a substituent.

4,349,455

EMULSIFICATION PROCESS

Nobuo Yamamura, and Motoaki Takeda, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 27, 1980, Ser. No. 134,618
Claims priority, application Japan, Mar. 27, 1979, 54-36045
Int. Cl.³ B01J *13/00*
U.S. Cl. 252—312 **5 Claims**



1. A process for emulsification which comprises producing an oily phase solution of a hydrophobic material in a dissolving-emulsifying tank equipped with a high speed dispersing means by stirring the hydrophobic material directly or dissolving the hydrophobic material or a hydrophobic material and an emulsifying agent in an organic solvent with heating, forming a water-in-oil emulsion of said hydrophobic material by adding water or water and an emulsifying agent to said solution of the hydrophobic material with stirring, continuing the addition of water or water and the emulsifying agent to form an oil-in-water emulsion by phase inversion, adding a water-soluble binder to said oil-in-water emulsion and stirring the emulsion to form the desired oil-in-water emulsion, said hydrophobic material remaining in an emulsified form, whereby substantially all of said hydrophobic material is precluded from precipitating.

4,349,456

NON-VITREOUS CERAMIC METAL OXIDE MICROCAPSULES AND PROCESS FOR MAKING SAME

Harold G. Sowman, Maplewood, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 679,366, Apr. 22, 1976, abandoned. This application Aug. 27, 1979, Ser. No. 69,794
Int. Cl.³ B01J *13/02;* C09K *3/00;* C01G *49/06;* B32B *5/18*
U.S. Cl. 252—317 **29 Claims**

1. A process for making spherical microcapsules comprising the steps of adding percursor material comprising an aqueous solution, dispersion or sol of one or more metal oxides (or compounds calcinable to metal oxide) to a liquid body of a dehydrating agent comprising an organic dehydrating liquid, agitating said liquid body to maintain the resulting droplets of said precursor material in suspension and prevent settling thereof, to maintain relatively anhydrous dehydrating liquid in contact with the surface of said droplets as they are dehydrated, and to rapidly extract within 30 seconds at ambient temperatures of 20° to 40° C. the major amount of water from said droplets and form gelled microparticles therefrom, the predominant amount of said gelled microparticles being in the form of spherical, gelled, porous, liquid-filled microcapsules, recovering said liquid-filled microcapsules, drying the resulting recovered microcapsules at temperatures and pressures adjusted to minimize fracture and bursting the same and remove liquid from within the recovered microcapsules, and firing the resulting dried microcapsules to form spherical ceramic microcapsules the peripheral wall or shell of each which encloses the single hollow within the interior thereof being porous and heat-sealable, homogeneous, and made of non-vitreous ceramic comprising polycrystalline metal oxide or amorphous metal oxide convertible to polycrystalline metal oxide upon firing at higher temperature.

7. Spherical, free-flowing, discrete microcapsules, the peripheral wall or shell of each which encloses the single hollow within the interior thereof being uniformly thick, homogeneous, impermeable, filled with a liquid and made of non-vitreous ceramic consisting essentially of polycrystalline metal oxide or amorphous metal oxide convertible to polycrystalline metal oxide upon firing.

4,349,457

CORROSION PROTECTION FOR METAL SURFACES

Michael T. Orillion, Baton Rouge, La., assignor to The Dow Chemical Co., Midland, Mich.

Division of Ser. No. 128,767, Mar. 10, 1980, Pat. No. 4,298,657. This application Jun. 15, 1981, Ser. No. 273,817
Int. Cl.³ C23F *11/18, 15/00;* B32B *15/08*
U.S. Cl. 252—389 R **6 Claims**

1. A composition useful for the corrosion-protection of metal surfaces, comprising: a borate salt of an alkali metal, a nitrite salt of an alkali metal, and a molybdate salt of an alkali metal.

2. The composition of claim 1, which further includes an epoxy resin, an epoxy resin hardener, and a thinning agent.

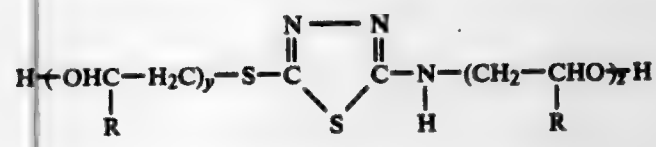
4,349,458

SELECTED POLY(OXYALKYLATED) 1,3,4-THIADIAZOLES IN ACID BATHS AND THEIR USE AS CORROSION INHIBITORS

Eugene F. Rothgery, North Branford, Conn., assignor to Olin Corporation, New Haven, Conn.

Division of Ser. No. 205,556, Nov. 10, 1980, Pat. No. 4,329,475. This application Feb. 12, 1982, Ser. No. 348,521
Int. Cl.³ C09K *3/00*
U.S. Cl. 252—391 **9 Claims**

1. An acid metal-treating bath comprising an acid and an effective corrosion-inhibiting amount of a poly(oxyalkylated) 1,3,4-thiadiazole having a formula:



wherein each R is individually selected from either H or CH_3; and the sum of y and z is from 2 to about 30.

4,349,459

LOWER PRESERVATION

Cesar Romero-Sierra, Bath, and John C. Webb, Kingston, both of Canada, assignors to Queen's University at Kingston, Kingston, Canada

Continuation-in-part of Ser. No. 45,126, Jun. 4, 1979, Pat. No. 4,272,571, which is a continuation-in-part of Ser. No. 914,172, Jun. 9, 1978, abandoned. This application Mar. 13, 1981, Ser. No. 243,465
Int. Cl.³ C09K *15/32*
U.S. Cl. 252—400 R **3 Claims**

1. A water-free composition, for the single step preservation of fresh, naturally coloured blooms consisting essentially of (in amounts per liter):

600–700 ml. tert-butyl alcohol
200–250 ml. 2-propanol
3–30 g. thiourea
3–30 g. citric acid
3–30 g. sodium citrate
50–150 ml. propionic acid
0–250 ml. phenol.

4,349,460

CATALYST FOR THE PREPARATION OF POLYLACTAMS

Werner Hartmann, Lindau, Fed. Rep. of Germany, assignor to Harwe AG, Schonenwerd, Switzerland

Continuation of Ser. No. 114,160, Jan. 22, 1980, abandoned, which is a continuation of Ser. No. 951,910, Oct. 16, 1978, abandoned. This application Mar. 24, 1981, Ser. No. 246,974
Claims priority, application Switzerland, Oct. 14, 1977, 12595/77
Int. Cl.³ C08F 4/08
U.S. Cl. 252—431 N 2 Claims

1. A catalyst for the polymerization of higher lactam monomers which consists essentially of a homogeneous binary mixture of lauric lactam and the sodium salt of lauric lactam in a ratio of 3.4 to 3.9 moles of said lactam per mole of said sodium salt.

4,349,461

GROUP VIIA METAL-MODIFIED ZEOLITE CATALYSTS

Chin-Chiun Chu, North Brunswick, and Warren W. Kaeding, Westfield, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 124,408, Feb. 25, 1980, Pat. No. 4,275,256. This application Nov. 14, 1980, Ser. No. 206,777
Int. Cl.³ B01J 29/36
U.S. Cl. 252—455 Z 11 Claims

1. A catalyst composition comprising:

a crystalline zeolite material characterized by a constraint index of within the approximate range of 1 to 12 and a silica to alumina mole ratio of at least 12;

said composition further comprising at least 0.25 weight percent of one or more Group VIIA metals deposited thereon in the form of the oxide of such metals.

6. The composition of claim 1 wherein said composition further comprises at least 0.25 weight percent phosphorus thereon in the form of phosphorus oxide.

4,349,462

CATALYTIC MATERIAL

Louis J. Velenyi, Lyndhurst, and Serge R. Dolhyj, Parma, both of Ohio, assignors to SOHIO, Ohio

Filed Dec. 24, 1980, Ser. No. 219,781
Int. Cl.³ B01J 23/70, 21/04, 21/12
U.S. Cl. 252—455 R 7 Claims

1. A catalytic material comprising a particulate fixed-bed support material, the pore surfaces of the support material being coated with a Group VIII metal, the outside surfaces of said support material being coated with a powdery carbon growth-preventing material capable of preventing growth on said outside surfaces of carbon fibers by the disproportionation of carbon monoxide under conditions in which carbon fibers grow on said Group VIII metal-coated pore surfaces.

2. The catalytic material of claim 1 wherein said growth preventing material is selected from the group consisting of copper oxide, copper metal, aluminum oxide and aluminum metal.

4,349,463

ACETYLENE STORAGE VESSEL

Edith M. Flanigen, White Plains, N.Y., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Jan. 19, 1981, Ser. No. 226,084
Int. Cl.³ B01J 20/10; F17C 11/00
U.S. Cl. 252—457 18 Claims

1. An acetylene storage vessel comprising:

a metal shell;

a hardened asbestos free monolithic calcium silicate filler comprising at least 35 percent by weight crystalline phase and having a porosity of at least about 85 percent disposed in and substantially filling said metal shell for receiving an acetylene gas solution with said porosity being provided by substantially uniformly distributed very fine pores having a size of about 0.05 to 25 microns and with said calcium silicate filler being substantially absent of voids;

said calcium silicate filler material having a fibrous reinforcing material constituting at least 0.5 percent by weight said calcium silicate filler being disposed substantially uniformly throughout said calcium silicate; and wherein

said fibrous reinforcing material is an alkali resistant glass fiber.

12. A method for forming an acetylene storage vessel having a hardened porous monolithic filler material for receiving a dissolved acetylene gas solution comprising:

(a) providing an asbestos free aqueous slurry comprising water, CaO and SiO_2 wherein the weight ratio of CaO to SiO_2 is 0.6 to 1.0;

(b) dispersing an asbestos free settling resistant and reinforcing fibrous material in said slurry said fibrous material being an alkali resistant glass fiber wherein said fiberous material is added in quantity sufficient to constitute at least 0.5 percent of the solids weight of the fiber containing slurry composition with said slurry composition having a water volume percent of at least about 85 percent;

(c) disposing said asbestos free slurry composition in said acetylene storage vessel so as to substantially fill said vessel;

(d) autoclaving said slurry in said acetylene storage vessel at saturated steam pressure and elevated temperature to form said calcium silicate product comprising at least 35 percent by weight crystalline phase with said fibers dispersed substantially uniformly throughout said calcium silicate product and wherein said calcium silicate product substantially fills said acetylene storage vessel;

(e) baking said acetylene storage vessel containing said calcium silicate product until said product has a porosity of at least about 85 percent said porosity being provided by uniformly distributed very fine pores having a size of about 0.05 to 25 microns and being substantially absent voids thereby providing said acetylene storage vessel with said filler product in monolithic form for receiving said dissolved acetylene gas solution.

4,349,464

CATALYSTS FOR METHANOL SYNTHESIS AND METHOD FOR THEIR PRODUCTION

Mark S. Wainwright, Randwick; Warwich L. Marsden, North Sydney, and Jan B. Friedrich, Asquith, all of Australia, assignors to Unisearch Limited, Kensington, Australia

Filed Dec. 5, 1980, Ser. No. 213,542
Claims priority, application Australia, Dec. 17, 1979, PE1743
Int. Cl.³ B01J 21/04, 23/06, 23/72, 25/00
U.S. Cl. 252—463 9 Claims

1. A method for the production of a low temperature methanol synthesis catalyst composition suitable to synthesise methanol, or a mixture of methanol and dimethyl ether, by the reaction of carbon monoxide or carbon dioxide, or mixtures thereof, with hydrogen, comprising forming an alloy containing from 35% to 60% by weight of aluminium, from 0.1% to 25% by weight of zinc, and the remainder being substantially all copper, and extracting a substantial proportion of the aluminium content of the alloy with an aqueous solution of an alkali metal hydroxide.

4,349,465

PROCESS FOR THE TREATMENT OF COMBUSTIBLE, SOLID RADIOACTIVE WASTES

Günter Krug, Bruchsal; Helfried Lahr, Karlsdorf; Peter Schween, Karlsruhe, and Herbert Wieczorek, Weingarten, all of Fed. Rep. of Germany, assignors to KEWA Kernbrennstoff-Wiederaufarbeitungs-Gesellschaft mbH, Hanover, Fed. Rep. of Germany

Filed Apr. 18, 1980, Ser. No. 141,700

Claims priority, application Fed. Rep. of Germany, Apr. 21, 1979, 2916203

Int. Cl.³ G21F *9/34*

U.S. Cl. 252—626 8 Claims

1. In a process for the treatment of solid, combustible radioactive wastes comprising plastic and/or rubber, wherein the wastes are contacted with sulfuric acid of a concentration greater than 16 moles per liter and are reacted with this sulfuric acid at an elevated temperature, and concentrated nitric acid or nitrogen oxides are added to the sulfuric acid, whereby oxidation of the wastes occurs below the surface of the sulfuric acid and gaseous by-products and a solid residue are formed, the improvement comprising:

(1) subjecting the solid wastes, prior to their reaction with sulfuric acid, to mechanical processing which comprises

(a) a preliminary comminution to waste pieces having a size less than or equal to 20 mm, and

(b) a primary comminution by finely grinding the waste pieces produced in step (a) to a size of less than ot equal to 1 mm at a temperature of less than about 123° K.;

(2) forming a suspension of the finely ground waste of step (1) with the sulfuric acid at a temperature of less 313° K.; and

(3) reacting the finely ground waste with the sulfuric acid in said suspension.

4,349,466

PEPTIDE, PROCESS FOR PREPARATION THEREOF AND USE THEREOF

Yoshihiko Kitaura, Sakurai; Osamu Nakaguchi, Toyonaka; Keiji Hemmi; Matsuhiko Aratani, both of Suita; Hidekazu Takeno, Tenri; Satoshi Okada, Takatsuki; Hirokazu Tanaka; Masashi Hashimoto, both of Takarazuka; Yoshio Kuroda, Takatsuki; Eiko Iguchi, Kanagawa; Masanobu Kohsaka, Sakai; Hatsuo Aoki, Ikeda, and Hiroshi Imanaka, Osaka, all of Japan, assignors to Fujisawa Pharmaceutical Company, Ltd., Osaka, Japan

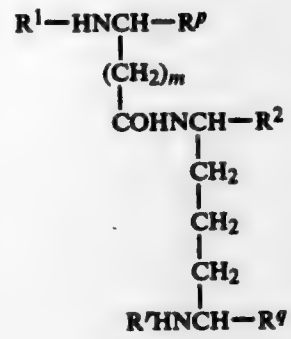
Continuation-in-part of Ser. No. 201,241, Oct. 27, 1980, which is a continuation-in-part of Ser. No. 171,024, Jul. 22, 1980, which is a continuation-in-part of Ser. No. 149,441, May 13, 1980, abandoned, which is a continuation-in-part of Ser. No. 147,710, May 8, 1980, abandoned, which is a continuation-in-part of Ser. No. 110,020, Jan. 7, 1980, abandoned, which is a continuation-in-part of Ser. No. 93,523, Nov. 13, 1979, Pat. No. 4,311,640. This application Jan. 28, 1981, Ser. No. 229,072

Claims priority, application United Kingdom, Nov. 14, 1978, 44346/78; Jul. 31, 1979, 7926705; Oct. 11, 1979, 7935401; Oct. 15, 1979, 793530; Oct. 29, 1979, 7937343; Denmark, Nov. 7, 1979, 4722/79; Australia, Nov. 13, 1979, 52759/79; Canada, Nov. 13, 1979, 339737; Hungary, Nov. 13, 1979, FU 379; European Pat. Off., Nov. 14, 1979, 79104479.5; Japan, Nov. 14, 1979, 54-147275; Rep. of Korea, Nov. 14, 1979, 79-3985; Spain, Nov. 14, 1979, 485.962; Canada, Jul. 22, 1980, 356887; Argentina, Jul. 29, 1980, 281972; Denmark, Jul. 29, 1980, 3272/80; Spain, Jul. 29, 1980, 493.817; Australia, Jul. 30, 1980, 60939/80; Greece, Jul. 30, 1980, 62571; Mexico, Jul. 30, 1980, 8946; European Pat. Off., Jul. 31, 1980, 7926705; Rep. of Korea, Jul. 31, 1980, 80-3063

Int. Cl.³ C07C *103/52;* A61K *37/02*

U.S. Cl. 260—112.5 R 14 Claims

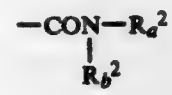
1. A compound of the formula:



wherein

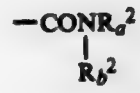
R^1 is hydrogen or acyl;

R^2 and R^q are each hydrogen, carboxy, protected carboxy, or a group of the formula:



wherein R_a^2 is mono- or di-carboxy or protected carboxy lower alkyl or ar(carboxy or protected carboxy) lower alkyl whose aryl moiety may be substituted by hydroxy, R_b^2 is hydrogen or lower alkyl;

R^p is hydrogen, carboxy, protected carboxy, with proviso that when one of R^2 and R^q is hydrogen, then the other is carboxy or protected carboxy or a group of the formula:



wherein R_a^2 and R_b^2 are each as defined above;

R^r is hydrogen or amino protective group; m is an integer 1 to 3;

or its pharmaceutically acceptable salt.

4,349,467

NONTHROMBOGENIC ARTICLES AND METHOD OF PREPARATION

Joel L. Williams, 1306 Walnut St., Cary, N.C. 27511; Betty J. Dudley, deceased, late of Durham, N.C., and by Kenneth H. Dudley, executor, 5311 Pelham Rd., Durham, N.C. 27713

Continuation-in-part of Ser. No. 888,951, Mar. 22, 1978, abandoned, which is a continuation of Ser. No. 764,474, Jan. 31, 1977, Pat. No. 4,116,898. This application Sep. 17, 1979, Ser. No. 76,200

The portion of the term of this patent subsequent to Sep. 26, 1995, has been disclaimed.

Int. Cl.³ A61K *31/75*

U.S. Cl. 525—54.2 13 Claims

1. In a method for reducing the thrombogenicity of a solid polymeric resin, which comprises absorbing a quaternary ammonium salt on the surface of the resin and then contacting the surface with the absorbed salt, with a solution of heparin, the improvement which comprises; employing as said solution one containing a concentration of heparin within the range of from about 5 percent by weight to saturation.

4,349,468

STABILIZER FOR POLYOLEFIN RESIN

Yutaka Nakahara, Iwatsuki, and Tohru Haruna, Okegawa, both of Japan, assignors to Adeka Argus Chemical Co., Ltd., Urawa, Japan

Continuation of Ser. No. 863,607, Dec. 23, 1977, abandoned. This application Nov. 28, 1980, Ser. No. 211,223

Int. Cl.³ C07C *149/20;* C08K *5/36*

U.S. Cl. 524—302 10 Claims

1. A pentaerythritol tetrakis (3-laurylthiopropionate) poly-

olefin stabilizer capable of enhancing the resistance to deterioration and minimizing the formation of undesirable color and odor of a polyolefin resin when heated at 150° C., produced by a process comprising the steps of heating an alpha-olefin having twelve carbon atoms with a beta-mercaptopropionic acid compound selected from the group consisting of beta-mercaptopropionic acid and a lower alkyl ester thereof in the presence of 0.05 to 5 percent by weight of the alpha-olefin and beta-mercaptopropionic acid compound combined of a reaction initiator selected from the group consisting of azonitriles and peroxides to produce a 3-laurylthiopropionic acid compound, esterifying the 3-laurylthiopropionic acid compound with pentaerythritol, and recoverying the pentaerythritol 3-laurylthiopropionate polyolefin resin stabilizer from the mixture.

8. A polyolefin resin composition having enhanced resistance to deterioration and minimized tendency to form undesirable color and odor when heated at 150° C., comprising a polyolefin resin and a stabilizer according to claim 1.

4,349,469

COPOLYESTERETHERS

Burns Davis; Theodore F. Gray, and Harry R. Musser, all of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 17, 1981, Ser. No. 235,385
Int. Cl.³ C08G *63/18*
U.S. Cl. 524—765 **25 Claims**

1. Copolyesterethers having an inherent viscosity of from about 0.8 to about 1.5 comprising

A. a dicarboxylic acid component consisting essentially of 1,4-cyclohexanedicarboxylic acid having a trans isomer content of at least 70%,

B. a glycol component consisting essentially of

(1) 1,4-cyclohexanedimethanol, and

(2) from about 15 to about 50 weight percent, based on the weight of the polyesterether, of polytetramethyleneether glycol having a molecular weight of about 500 to about 1100 and

C. from about 0.1 to about 1.5 mole %, based on the mole % of the acid or glycol component, of a branching agent having at least three COOH or OH functional groups and from 3 to 60 carbon atoms, said copolyesterether being characterized by having a die swell of between about −90% and about +100% and a minimum crystallization time of less than 2.5 minutes.

4,349,470

PROTEIN POLYMER HYDROGELS

Orlando A. Battista, 3725 Fox Hollow Rd., Fort Worth, Tex. 76109

Continuation-in-part of Ser. No. 74,014, Sep. 14, 1979, Pat. No. 4,264,493, which is a continuation-in-part of Ser. No. 952,303, Oct. 18, 1978, abandoned. This application Mar. 23, 1981, Ser. No. 246,660

The portion of the term of this patent subsequent to Apr. 28, 1998, has been disclaimed.

Int. Cl.³ C07G *7/00*; C08H *1/00, 1/06*; C09H *9/00*
U.S. Cl. 260—117 **25 Claims**

1. The method of preparing a three-dimensional structure comprising forming an aqueous acidic solution of a non-crystalline, natural animal or vegetable protein polymer or mixtures thereof, the polymers having a low molecular weight not exceeding 100,000, heating the solution to a temperature of about 60° C., adding to and incorporating in the solution at least two crosslinking agents while maintaining the solution at a temperature of about 60° C., drying the solution to a moisture content of not more than 10 percent at a maximum temperature of about 35° C. or equivalent under vacuum to form a crosslinked polymer structure, subjecting the structure to thorough washing with water, subjecting the washed structure to dehydration by immersion in a water-miscible organic solvent, subjecting the structure to thorough washing with water and redrying the dehydrated structure to a moisture content of not more than 10 percent.

4,349,471

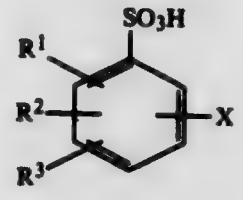
PROCESS FOR THE PREPARATION OF AROMATIC SULPHONIC ACID HALIDES

Heinz U. Blank, Odenthal; Erich Wolters, Niederzier, and Norbert Langenfeld, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 22, 1981, Ser. No. 227,445
Claims priority, application Fed. Rep. of Germany, Feb. 8, 1980, 3004693
Int. Cl.³ C07C *107/04, 143/70, 107/06, 51/58, 63/04, 63/10, 65/01, 51/16, 51/255, 147/107*
U.S. Cl. 260—208 **19 Claims**

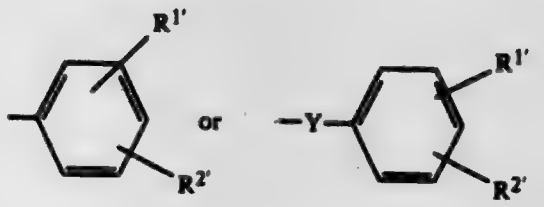
1. A process for the simultaneous preparation of an aromatic sulphonic acid halide and an aromatic carboxylic acid halide or the corresponding carboxylic acid which comprises contacting an aromatic sulphonic acid or an aromatic sulphonic acid anhydride with an aromatic trihalogenomethyl compound in the presence of at least 0.01 mol percent, relative to the aromatic sulphonic acid, of a Brönsted acid or Lewis acid at a temperature of 20° to 300° C., the reaction mixture containing at least half an equivalent of said aromatic trihalogenomethyl compound per equivalent of sulphonic acid.

17. A process according to claim 1, wherein said aromatic sulphonic acid or aromatic sulphonic acid anhydride has in its free acid form the formula



in which

X represents hydrogen,



wherein

Y represent —O—, —SO_2—; —N=N— or —CH_2 and

R^1, R^2, R^3, $R^{1'}$ and $R^{2'}$ independently of one another denote hydrogen, alkyl, cycloalkyl, aryl, aralkyl, hydroxy, alkoxy, acyloxy, halogen, acylamino, n-carbalkoxyamino, N-carbaryloxyamino, nitro, the sulphonic acid group, the carboxylic acid ester group or the urea group and furthermore

two of the radicals R^1 and R^2 and R^3 which are adjacent can be part of a fused-on cycloaliphatic or aromatic ring which is optionally substituted by a sulphonic acid group.

4,349,472

(S)-8(1-ADAMANTANECARBONYLOXY)-7-CHLORO-3-METHYL-1-PHENYL-2,3,4,5-TETRAHYDRO-1H-3-BENZAZEPINE

Elijah H. Gold, West Orange, and Wei K. Chang, Livingston, both of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Continuation of Ser. No. 34,048, Apr. 27, 1979, abandoned. This application Feb. 5, 1980, Ser. No. 118,389
Int. Cl.³ C07D *223/16*; A61K *31/55*
U.S. Cl. 260—239 BB **1 Claim**

1. (S)-8-(1-adamantanecarbonyloxy)-7-chloro-3-methyl-1-

phenyl-2,3,4,5-tetrahydro-1H-3-benzazepine and its pharmaceutically acceptable acid addition salts.

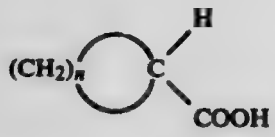
4,349,473

PROCESS FOR THE PREPARATION OF ω-LACTAMS, IN PARTICULAR CAPROLACTAM

Pier P. Rossi, Garlasco, and Mario Catoni, Colleferro, both of Italy, assignors to SNIA Viscosa Societa' Nazionale Industria Applicazioni Viscosa S.p.A, Milan, Italy

Filed Oct. 21, 1980, Ser. No. 199,218
Claims priority, application Italy, Nov. 2, 1979, 27018 A/79
Int. Cl.³ C07D *201/10*
U.S. Cl. 260—239.3 A **7 Claims**

1. A process for the preparation of a ω-lactam containing from 5 to 14 carbon atoms, which comprises reacting, in a plurality of stages, a cycloaliphatic acid of the formula:



wherein n=3−13, and/or the corresponding anhydride, with a nitrosating agent in the presence of a dehydrating agent at a temperature of from 30° to 100° C. which is maintained constant throughout the plurality of the reaction stages, and at a molar ratio of the dehydrating agent/the nitrosating agent between 0.7 and 1, substantially all of the dehydrating agent being mixed with the cycloaliphatic acid and/or the corresponding anhydride prior to the reaction with the nitrosating agent, said process being carried out in a manner which prevents substantial accumulation of stationary concentrations of the nitrosating agent in the reaction mass.

6. A process according to claim 1, wherein hexahydrobenzoic acid is reacted with a nitrosating agent in the presence of n-hexane and cyclohexane at a temperature of about 70°–72° C.

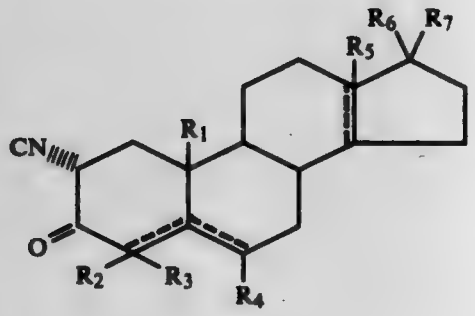
4,349,474

2-CYANOSTEROIDS

Leland J. Chinn, Morton Grove, Ill., assignor to G. D. Searle & Co., Skokie, Ill.

Filed Jul. 27, 1981, Ser. No. 287,341
Int. Cl.³ C07J *71/00*
U.S. Cl. 260—239.55 C **9 Claims**

1. A compound according to formula I:



wherein R_1 is:
(a) hydrogen; or
(b) methyl;
wherein R_2, R_3 and R_4 is:
(a) hydrogen; or
(b) methyl; with a double bond at either the 4,5 or 5,6-position; R_2, R_3 and R_4 each being the same or different.
wherein R_5 is:
(a) methyl; or
(b) the terminus of a double bond at C—13 and 14;
wherein R_6 is:
(a) hydrogen; or
(b) methyl;
wherein R_7 is:
(a) methyl; or

(b)

wherein R_8 is:
(a) $—OCH_2CH_2O—$;
(b) $—SCH_2CH_2S—$; or
(c) $=N—O—R_9$
wherein R_9 is:
(a) hydrogen; or
(b) alkyl of from one to six carbon atoms, inclusive.

9. 20,20-(1,2-ethylenebisoxy)4,4-dimethyl-3-oxopregn-5-ene-2α-carbonitrile.

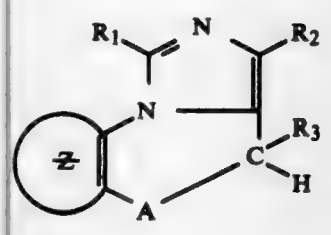
4,349,475

PROCESS FOR PRODUCING IMIDAZODIAZEPINES

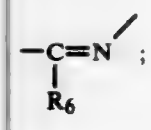
Armin Walser, West Caldwell, and Rodney I. Fryer, North Caldwell, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 905,820, May 15, 1978, Pat. No. 4,280,957, which is a continuation of Ser. No. 663,660, Mar. 4, 1978, abandoned, which is a continuation-in-part of Ser. No. 602,691, Aug. 7, 1975, abandoned, which is a continuation-in-part of Ser. No. 504,924, Sep. 11, 1974, abandoned. This application Mar. 12, 1981, Ser. No. 242,945
Int. Cl.³ C07D *487/04, 487/14*
U.S. Cl. 260—244.4 **2 Claims**

1. A process to produce a compound of the formula



wherein A is

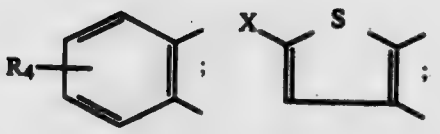


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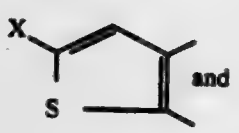
R_1 is selected from the group consisting of hydrogen, lower alkyl, phenyl, alkoxy lower alkyl, pyridyl, and tolyl; R_2 is selected from the group consisting of hydrogen or lower alkyl; R_3 is selected from the group consisting of hydrogen or lower alkyl; R_4 is selected from the group consisting of hydrogen, halogen, trifluoromethyl, lower alkyl, mono- or di- C_1 to C_7 alkyl or phenyl, chlorophenyl or tolyl substituted amino, amino, hydroxy lower alkyl and lower alkanoyl; R_6 is selected from the group consisting of phenyl, mono-halo substituted phenyl, di-halo substituted phenyl, pyridyl and mono-halo substituted pyridyl; and



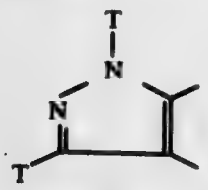
is selected from the group consisting of



wherein X is chlorine, bromine iodine or hydrogen



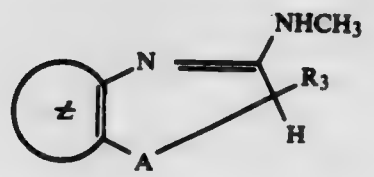
wherein X is chlorine bromine, iodine or hydrogen



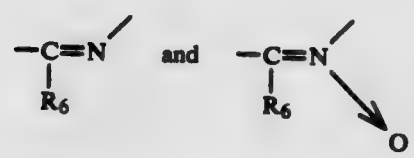
wherein T is hydrogen or lower alkyl

which comprises the following steps in combination

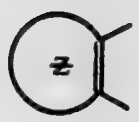
(a) reacting a compound of the formula



wherein A is selected from the group consisting of

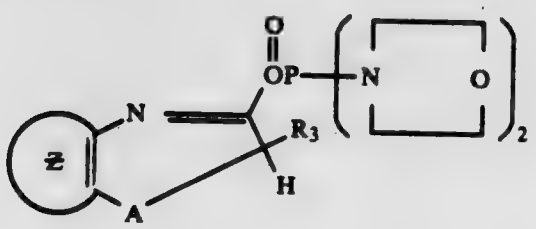


wherein R_3, R_4, R_6 and

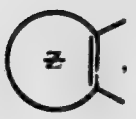


are as above; with a compound selected from the group consisting of alkali metal nitrites, alkyl nitrites or a nitrosyl chloride gaseous solution;

(b) condensing either the product from (a) or a compound of the formula



wherein A,



R_4, R_3, R_6 are as above with a nitroalkane anion of the formula R_2—CH—NO_2 wherein R_2 is selected from the group consisting of hydrogen or lower alkyl;

(c) catalytically hydrogenating the product from (b) with H_2/Raney nickel or lithium aluminum hydride with limitation that A is not N-oxide;

(d) acylating the product from (c) with an acid halide or an acid anhydride of the formulas R_1COX or $(R_1CO)_2$) respectively wherein R_1 is as above;

(e) cyclizing the product from (d) with a dehydrating agent selected from phosphorus pentoxide, polyphosphoric acid or an organic or inorganic acid;

(f) dehydrogenating with manganese dioxide, palladium on carbon or potassium permanganate the cyclized product of (e) to produce the final product.

4,349,476

PROCESS FOR PRODUCING IMIDAZODIAZEPINES

Armin Walser, West Caldwell, and Rodney I. Fryer, North Caldwell, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

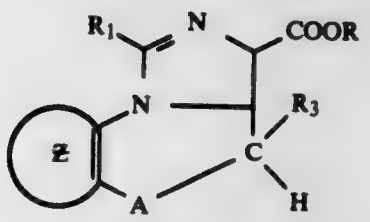
Division of Ser. No. 905,820, May 15, 1978, Pat. No. 4,280,957, which is a continuation of Ser. No. 663,660, Mar. 4, 1978, abandoned, which is a continuation-in-part of Ser. No. 602,691, Aug. 7, 1975, abandoned, which is a continuation-in-part of Ser. No. 504,924, Sep. 11, 1974, abandoned. This application Mar. 12, 1981, Ser. No. 242,946

Int. Cl.³ C07D *487/04, 487/14*

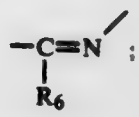
U.S. Cl. 260—244.4

1 Claim

1. A process to produce a compound of the formula



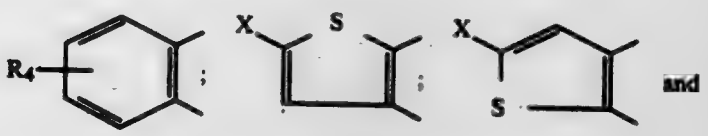
wherein A is



R_1 is selected from the group consisting of hydrogen, lower alkyl, alkoxy lower alkyl, halo lower alkyl; R is hydrogen or lower alkyl; R_3 is selected from the group consisting of hydrogen and lower akyl; R_4 is selected from the group consisting of hydrogen, halogen, cyano, trifluoromethyl, lower alkyl, mono- or di-C_1 to C_7 alkyl or phenyl, chlorophenyl or tolyl substituted amino, amino, hydroxy lower alkyl and lower alkanoyl; R_6 is selected from the group consisting of phenyl, mono-halo or mono-nitro substituted phenyl, di-halo or halo-nitro substituted phenyl, pyridyl and mono-halo or mono-nitro substituted pyridyl; and



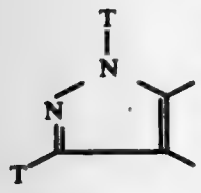
is selected from the group consisting of



wherein X is chlorine, bromine, iodine or hydrogen

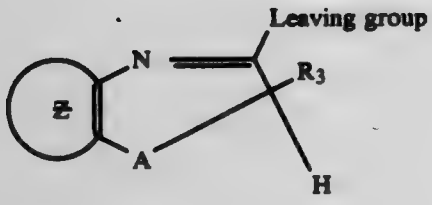
wherein X is chlorine, bromine, iodine or hydrogen

-continued

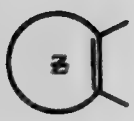


wherein T is hydrogen or lower alkyl

which comprises the stepwise reaction of a compound of the formula

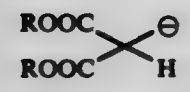


wherein R_3, R_4, R_6, A and



are as above and the leaving group is selected from the group consisting of alkoxides, alkylthio, halo, cyano, phosphate and nitrosoalkylamino

(a) with the anion generated from malonic ester, i.e., a compound of the formula



wherein R is lower alkyl;

(b) decarboxylating with an alkali metal hydroxide the product of (a);

(c) nitrosating with nitrous acid the product of (b);

(d) reducing with H_2/Raney nickel or zinc/acetic acid the product of (c);

(e) reacting the product of (d) with an alkanoic acid ortho ester of the formula

$R_1C(OR)_3$

wherein R is lower alkyl and R_1 is selected from the group consisting of hydrogen, lower alkyl, alkoxy lower alkyl, halo lower alkyl, to produce the final product as an ester, i.e., R=lower alkyl;

(f) if desired, hydrolysing with alkali metal hydroxides the product of (e) to the final product as as acid, i.e., R=hydrogen.

4,349,477

PROCESS FOR PRODUCING IMIDAZODIAZEPINES

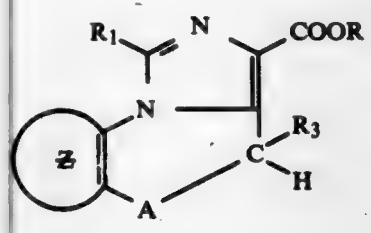
Armin Walser, West Caldwell, and Rodney I. Fryer, North Caldwell, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 905,820, May 15, 1978, Pat. No. 4,280,957, which is a continuation of Ser. No. 663,660, Mar. 4, 1978, abandoned, which is a continuation-in-part of Ser. No. 602,691, Aug. 7, 1975, abandoned, which is a continuation-in-part of Ser. No. 504,924, Sep. 11, 1974, abandoned. This application Mar. 12, 1981, Ser. No. 243,026

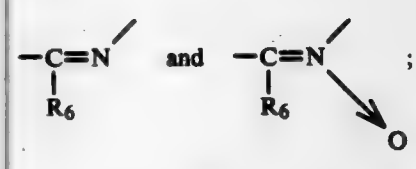
Int. Cl.[3] C07D *487/04, 487/14*

U.S. Cl. 260—244.4 2 Claims

1. A process to produce a compound of the formula



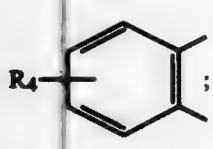
wherein A is

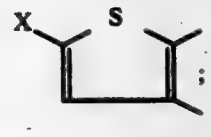


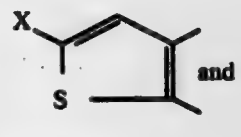
R_1 is selected from the group consisting of hydrogen, lower alkyl, phenyl, alkoxy lower alkyl, pyridyl, and tolyl; R is hydrogen or lower alkyl; R_3 is selected from the group consisting of hydrogen and lower alkyl; R_4 is selected from the group consisting of hydrogen, halogen, nitro, cyano, trifluoromethyl, lower alkyl, hydroxy lower alkyl and lower alkanoyl; R_6 is selected from the group consisting of phenyl, mono-halo or mono-nitro substituted phenyl, di-halo or halo-nitro substituted phenyl, pyridyl and mono-halo or mono-nitro substituted pyridyl; and



is selected from the group consisting of

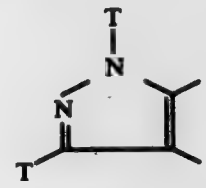






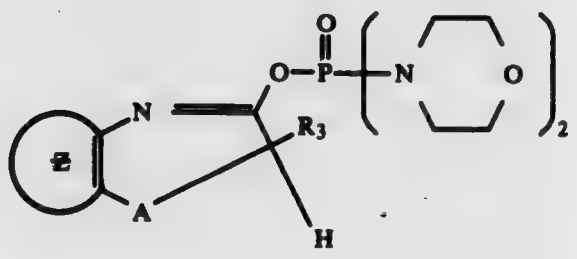
wherein X is chlorine, bromine, iodine or hydrogen

wherein X is chlorine, bromine, iodine or hydrogen



wherein T is hydrogen or lower alkyl

which comprises the stepwise reaction of a compound of the formula

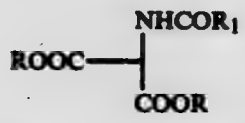


wherein A, R_3, R_4 and



are as above

(a) with the anion generated from acylamino malonic ester, i.e., a compound of the formula



wherein R is lower alkyl and R_1 is selected from the group consisting of hydrogen, lower alkyl, phenyl, alkoxy lower alkyl, pyridyl and tolyl;

(b) decarboxylating the product of (a) with an alkali metal alkoxide;

(c) dehydrating the product of (b) to produce the final product.

4,349,478

PROCESS FOR THE CARBAZOLATION OF ANTHRIMIDES

Zdenek Seha, Basel, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

Filed Oct. 9, 1981, Ser. No. 310,576

Claims priority, application Switzerland, Oct. 14, 1980, 7631/80

Int. Cl.³ C07D *209/86*

U.S. Cl. 260—316 10 Claims

1. A process for the carbazolation of anthrimides, which process comprises carrying out the carbazolation reaction by means of a titanium tetrahalide/sulfone complex in an excess of a sulfone of the formula

$R_1—SO_2—R_2$ or



wherein

R_1 and R_2 are each a straight-chain or branched-chain alkyl group having 1 to 4 C atoms, and

X is a straight-chain or branched-chain hydrocarbon chain which has 4 to 10 C atoms and which is unsubstituted or substituted by halogen as the reaction medium.

4,349,479

METHOD OF SALVAGING AROMATIC BISIMIDE VALUES

Tohru Takekoshi, Scotia, and Jimmy L. Webb, Ballston Lake, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

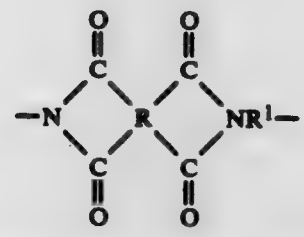
Filed Feb. 26, 1980, Ser. No. 124,914

Int. Cl.³ C07D *403/12*; C07B *29/00*; C07D *403/06, 487/04*

U.S. Cl. 260—326 N 7 Claims

1. A method which comprises:

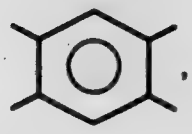
(1) heating at a temperature in the range of from 100° C. to 300° C., a mixture comprising aromatic polyimide consisting essentially of chemically combined units of the formula,



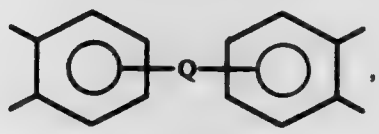
a $C_{(1-12)}$ alkyl amine and water, where sufficient alkyl amine as utilized in the mixture to substantially maintain stoichiometric equivalence between the alkyl amine and units of polyimide and

(2) recovering aromatic bis(N-alkylimide) from the mixture of (1),

where R is a $C_{(6-30)}$ tetravalent aromatic organic radical selected from



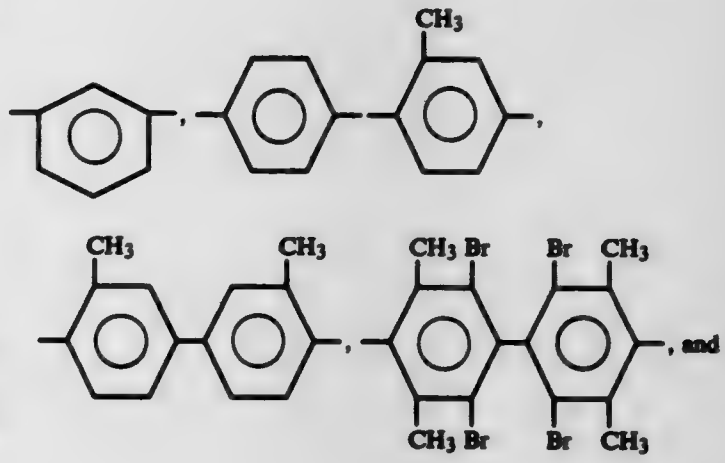
, and



where Q is selected from —O—, —S—,

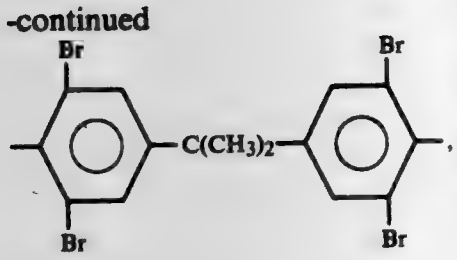


and —O—R^2—O— and R^2 is a divalent organic radical selected from

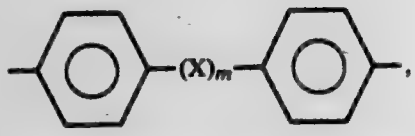


, and

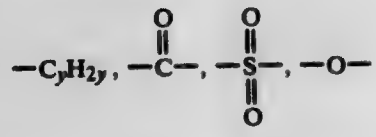
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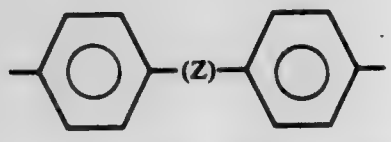
and organic radicals of the formula,



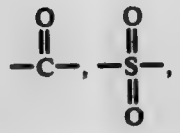
where X is a member selected from the class consisting of divalent radicals of the formulas:



and —S—, where m is 0 or 1 and y is a whole number from 1 to 5, and R^1 is a $C_{(2\text{-}20)}$ divalent organic radical selected from the class consisting of (a) aromatic hydrocarbon radicals having from 6–20 carbon atoms and halogenated derivatives thereof, (b) alkylene radicals having from 2–20 carbon atom, and (c) divalent radicals of the formula,



where Z is a member selected from the class consisting of. —O—,



—S—, $—C_xH_{2x}—$ and x is a whole number from 1 to 5 inclusive.

4,349,480

PROCESS FOR PREPARING 1-(3-BROMO-2-ALKYLPROPANOYL-L-PROLINE DERIVATIVES

Roger Crossley, Reading, England, assignor to John Wyeth & Brother Limited, Maidenhead, England

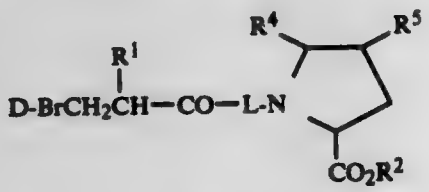
Filed Feb. 20, 1981, Ser. No. 236,350

Claims priority, application United Kingdom, Feb. 26, 1980, 8006414

Int. Cl.³ C07D *207/16, 209/18*

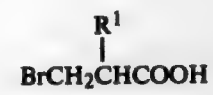
U.S. Cl. 260—326.2 **4 Claims**

1. A process for preparing a compound of formula (I)



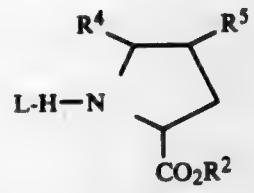
(I)

in excess of the corresponding L, L diastereoisomer in which the quantity of D,L-diasterioisomer exceeds the L,L-diasteroisomer at least by about 2:1 wherein R^1 is lower alkyl, R^2 is a carboxy protecting group, R^4 and R^5 either are both hydrogen or together with the carbon atoms to which they are attached represent a fused benzene ring optionally substituted by a group selected from hydroxy, lower alkyl, lower alkoxy and halogen, characterised in that a racemic mixture of an acid of formula (II)



(II)

is reacted with a carbodiimide or carbonyl diimidazole coupling agent and a compound of formula (III)



(III)

in which formulae R^1, R^2, R^4 and R^5 are as defined above.

4,349,481

TRITIATED GIBBERELLIN ALDEHYDES

Manfred Lischewski, Halle-Neustadt; Habil G. Adam, Halle, both of German Democratic Rep., and Edward P. Serebryakov, Moskav, U.S.S.R., assignors to Akademie der Wissenschaften der DDR, Berlin, German Democratic Rep.

Filed Oct. 15, 1979, Ser. No. 24,780

Claims priority, application German Democratic Rep., Apr. 13, 1978, 204770

Int. Cl.³ C07D *307/00*

U.S. Cl. 549—297 **13 Claims**

1. [15-^{2}H]-gibberellin-(7)-aldehydes.

4,349,482

PROCESS FOR MAKING VICINAL EPOXIDES AND DIHALIDES

James M. Renga, and Albert H. Emmons, both of Midland, Mich., assignors to The Dow Chemical Co., Midland, Mich.

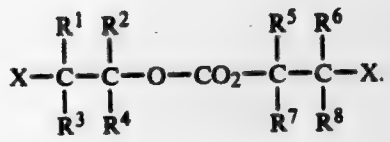
Continuation-in-part of Ser. No. 95,002, Nov. 16, 1979, Pat. No. 4,261,906. This application Feb. 25, 1981, Ser. No. 238,188

The portion of the term of this patent subsequent to Apr. 14, 1998, has been disclaimed.

Int. Cl.³ C07D *301/02*

U.S. Cl. 549—518 **10 Claims**

1. A process for making a vicinal epoxide and an alkylene dihalide which comprises contacting a carbonate ester of the formula



wherein the R groups are individually hydrogen, a hydrocarbon group, $—CH_2X$, $—CH_2Y$ and each of the pairs R^1, R^2 and R^5, R^6 may together form an alkylene group of 3–6 carbon atoms, each X is Cl or Br, and Y is an alkoxy or aroxy group, with a quaternary ammonium or phosphonium salt catalyst at about 25° C.–250° C. and separating said epoxide from the reaction mixture.

4,349,483

PROCESS FOR THE PREPARATION OF ALUMINUM TRIHYDROCARBYLS

David L. Beach, Gibsonia, Pa., and Adolfo Zambelli, Milan, Italy, assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Dec. 29, 1980, Ser. No. 221,063
Int. Cl.³ C07F 5/06
U.S. Cl. 260—448 A 22 Claims

1. A process for preparing aluminum trihydrocarbyls which comprises reacting an organo magnesium compound with a mixture of chlorinated and brominated aluminum compounds to obtain a magnesium halide containing both chlorine and bromine and aluminum trihydrocarbyls and then recovering said aluminum trihydrocarbyls.

4,349,484

PROCESS FOR THE MANUFACTURE OF MIXTURES OF DIPHENYLMETHANE DIISOCYANATES AND POLYPHENYL POLYMETHYLENE POLYISOCYANATES

Franz Merger, Frankenthal; Gerhard Nestler; Friedrich Towae, both of Ludwigshafen, and Wolfgang Harder, Weinheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Oct. 17, 1980, Ser. No. 197,890
Int. Cl.³ C07C 119/048
U.S. Cl. 260—453 P 11 Claims

1. A process for the preparation of mixtures of diphenylmethane diisocyanates and polyphenyl polymethylene polyisocyanates comprising the steps of

A. reacting aniline with an O-alkylcarbamate to form N-phenylurethane;

B. separating ammonia and other by-products from the N-phenylurethane;

C. condensing, in the presence of an acid, the resultant N-phenylurethane with formaldehyde or bifunctional compounds having the formula

$$X—CH_2—X$$

in which X stands for a RO—, RS— or ROCO radical and R denotes an alkyl radical to form mixtures of methylene bis(phenylurethanes) and polymethylene polyphenylurethanes;

D. cleaving the mixtures of methylene bis(phenylurethanes) and polymethylene polyphenylurethanes at temperatures of 175° C. to 600° C.; and

E. isolating the mixtures of diphenylmethane diisocyanate and polyphenyl polymethylene polyisocyanates resulting from step D.

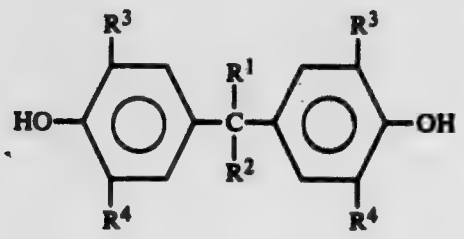
4,349,485

CATALYTIC AROMATIC CARBONATE PROCESS USING MANGANESE TETRADENTATE REDOX CO-CATALYSTS

John E. Hallgren, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

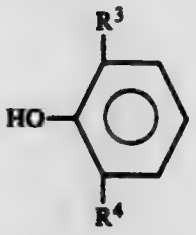
Filed Nov. 23, 1979, Ser. No. 97,431
Int. Cl.³ C07C 68/04
U.S. Cl. 260—463 22 Claims

1. An aromatic carbonate process wherein an aromatic phenol of the formulas



-continued

or



wherein independently each R^1 and R^2 is hydrogen, C_{1-4} alkyl or phenyl and independently each R^3 and R^4 is hydrogen or C_{1-4} alkyl, carbon monoxide, a base, a Group VIIB element selected from ruthenium, rhodium, palladium, osmium, iridium or platinum, and an oxidant having an oxidation potential greater than that of the said selected Group VIIIB element are contacted, the improvement comprising the use of a redox co-catalyst selected from manganese tetradentates of the formula $(L)_xMn$ wherein L is a $C_{14-20}H_{22-34}O_4$ bis(β-diketone), Mn is the transition metal manganese, and x is a positive integer at least equal to about 1.0.

4,349,486

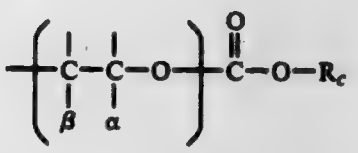
MONOCARBONATE TRANSESTERIFICATION PROCESS

Daniel J. Brunelle, Scotia, and William E. Smith, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

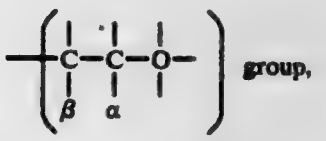
Continuation-in-part of Ser. No. 969,683, Dec. 13, 1978, abandoned. This application Oct. 31, 1980, Ser. No. 202,571
Int. Cl.³ C07C 68/06
U.S. Cl. 260—463 10 Claims

1. A monocarbonate transesterification process comprising reacting, in the presence of a base;

(A) a beta-fluoroaliphatic carbonate which is saturated, unsaturated, linear or branched compound of the formula,



where R_c is selected from the class of a group of the formula,



an alkyl radical, a cycloalkyl, aryl radical and combinations thereof which can be carbo-monocyclic, carbo-polycyclic or fused carbo-polycyclic and can have two or more cyclic systems which are connected to each other by a single or double valence bonds or bi- or multi-valent radicals, with

(B) a compound selected from the class consisting of

(1) monohydroxy aliphatic alcohols of the formula,

$$R^1OH$$

where R^1 represents an aliphatic radical or cycloaliphatic radical having a single —OH radical attached directly to the aliphatic or cycloaliphatic carbon atom where the alcohol can be a primary, secondary or tertiary alcohol including carbo-monocyclic, carbo-polycyclic or fused carbo-polycyclic alcohol systems which are connected to each other by single or double valence bonds or bi- or multi-valent radicals;

(2) monohydroxy phenol

R_bOH

wherein R_b represents an aryl radical having a single —OH radical attached directly to an aryl ring carbon atom wherein the aryl radical can be carbo-monocyclic, carbo-polycyclic, or fused carbo-polycyclic, and can have two or more cyclic systems which are connected to each other by single or double valence bonds or bi- or multi-valent radicals; and

(3) an ortho-positioned dihydroxy aromatic compound of the formula,

$R_c(OH)_n$

wherein R_c represents an aromatic radical having at least two —OH radicals ortho-positioned relative to each other, each hydroxy group being directly attached to adjacent aromatic ring carbon atoms, n being a number at least equal to 2 wherein the R_c radical can be carbo-monocyclic, carbo-polycyclic, and can have two or more cyclic systems connected to each other by single or double valence bonds, or bi- or multi-valent radicals.

4,349,487

PROCESS FOR FORMING ETHERS

James M. Renga, and Pen-Chung Wang, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Aug. 24, 1981, Ser. No. 295,428
Int. Cl.³ C07C 121/75, 41/01, 79/35
U.S. Cl. 260—465 F 10 Claims

1. A process for forming ethers of phenolic compounds comprising contacting a phenolic compound of the formula $Ar(OH)_x$ with methyl trichloroacetate and either a primary alkyl halide or an aromatic halide in the presence of a catalytic amount of an initiator at a temperature from about 100° C. to about 180° C. wherein:

Ar is any aromatic carbocyclic group of valence x;

x is an integer from one to about three;

the primary alkyl halide is a compound of up to about 20 carbons of the formula $(XCH_2)_nR$ where:

X is chloro, bromo or iodo;

n is one or two; and

when n is one, R is an alkoxy, aryloxy, cyano, nitro, ester, alkyl, aryl or aralkyl group, or an alkyl, aryl or aralkyl group further substituted with alkoxy, polyalkoxy, aryloxy, cyano, nitro or ester groups; and

when n is two, R is alkylene, arylene, aralkylene, or such groups further substituted with alkoxy, alkoxy(-poly)alkyleneoxy, aryloxy, cyano, nitro or ester groups; and

the aromatic halide is a compound of up to about 20 carbons of the formula $R'-(X)_m$ where:

R' is an aromatic group containing at least one benzene ring structure substituted with at least one strongly electron-withdrawing group located ortho or para to X;

X is previously defined; and

m is one or two.

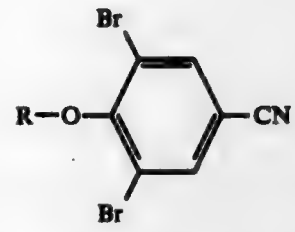
4,349,488

PROCESS FOR PRODUCING ESTERS OF 3,5-DIBROMO-4-HYDROXYBENZONITRILE

David A. Dentel, and David C. Sanders, both of West Lafayette, Ind., assignors to Great Lakes Chemical Corporation, West Lafayette, Ind.

Filed Nov. 3, 1981, Ser. No. 317,613
Int. Cl.³ C07C 121/75
U.S. Cl. 260—465 D 10 Claims

1. A process for producing 2,6-dibromo-4-cyanophenyl esters of the formula:



where R is a member selected from the group consisting of an acyl group derived from aliphatic and haloaliphatic carboxylic acids containing 3 to 12 carbon atoms and mononuclear aromatic and haloaromatic carboxylic acids, comprising the steps of:

reacting 4-hydroxybenzonitrile with bromine at elevated temperatures in the presence of an inert solvent and a catalytic amount of a basic heterocyclic aromatic compound or hydrohalide thereof;

thereafter removing unreacted bromine from the reaction mixture;

contacting the reaction mixture under anhydrous conditions while maintaining an elevated temperature with an acyl halide of the formula R-X, where X is a member selected from the group consisting of chlorine and bromine and where R is given above; and

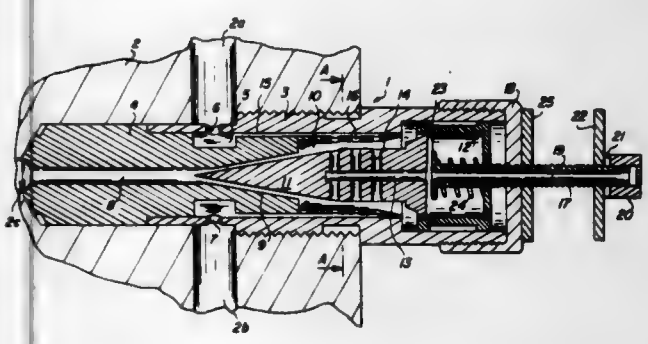
recovering the ester thereby produced from the reaction mixture.

4,349,489

JET FOR THE PRODUCTION OF A VAPORIZED IDLING MIXTURE IN AN INTERNAL COMBUSTION ENGINE

Alain Gaget, Bonnecoste-Cales, 46200 Souillac, France, and Guy Juillot, Malmort, France, assignors to Alain Gaget, Souillac, France

PCT No. PCT/FR80/00095, § 371 Date Mar. 26, 1981, § 102(e) Date Mar. 26, 1981, PCT Pub. No. WO81/00281, PCT Pub. Date Feb. 5, 1981
PCT Filed Jun. 16, 1980, Ser. No. 247,717
Claims priority, application France, Jul. 26, 1979, 79 19281
Int. Cl.³ F02M 3/08
U.S. Cl. 261—41 D 4 Claims



1. An idling jet for an auxiliary slow-running carburetor comprising a slow-running air inlet (A_r), a vaporized mixture outlet (M_c), a fuel inlet (C_r), a mixing chamber (5) in communication with said air inlet and said mixture outlet, a turbulence chamber (10) having a fixed seat (9) and a movable needle valve (11) positioned in said turbulence chamber (10), said needle and said seat forming a gap of variable cross-section for controlling the axial flow of fuel from said fuel inlet to said turbulence chamber, an auxiliary air inlet (19) for supplying auxiliary air to said turbulence chamber and comprising an axial passage in said needle valve and first radial passages extending radially from said axial passage to said turbulence chamber, second radial passages extending from said turbulence chamber to longitudinal channel means, said longitudinal channel means extending from said second radial passages to said mixing chamber.

4,349,490

PROCESS OF AND APPARATUS FOR CURVING A CASING OF STRETCHED PLASTIC MATERIAL

Arnold Bos, Zolder, Belgium, assignor to International Chemical Engineering Establishment, Vaduz, Liechtenstein

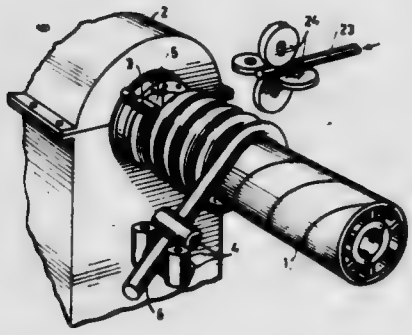
Filed Aug. 28, 1980, Ser. No. 182,298

Claims priority, application Netherlands, Aug. 30, 1979, 7906525

Int. Cl.³ B29C *25/00*

U.S. Cl. 264—25

12 Claims



1. A process for curving an elongated, dry, inflated casing of plastic material, comprising the steps of:

heating the surface of a cylindrical mandrel;

winding said casing helically on said cylindrical mandrel so that the adjacent windings contact one another;

heating the inner surface of the casing windings, due to their engagement with said cylindrical mandrel;

supplying heated air to the externally exposed surfaces of said casing as said casing is wound onto said cylindrical mandrel and for a first period of time thereafter;

maintaining said casing in contact with said heated cylindrical mandrel surface for at least a second period of time following said first period of time; and

removing said casing from said cylindrical mandrel following said second period of time, including coaxially tucking up said casing on an elongated stripping mandrel by rotationally driving a plurality of stripping rollers disposed around and adjacent said stripping mandrel.

7. An apparatus for curving an elongated, dry casing of plastic material, comprising:

a cylindrical mandrel supported for rotation about its central axis;

means for heating the surface of said cylindrical mandrel;

means for releasably fastening a leading end of said casing to said cylindrical mandrel;

means for supplying a fluid to the interior of said casing to inflate it;

means adjacent and supported for movement axially of said cylindrical mandrel for supplying said casing thereto under tension;

drive means for rotating said cylindrical mandrel and for moving said casing supply means axially along said cylindrical mandrel at a speed corresponding to the speed of rotation of said cylindrical mandrel so that said casing is wound helically on said cylindrical mandrel with adjacent windings contacting each other;

housing means encircling said cylindrical mandrel, having an axial length substantially less than that of said cylindrical mandrel, and movable axially of said cylindrical mandrel with and immediately following said casing supply means under control of said drive means for immediately and substantially enclosing the portion of said casing most recently wound on said cylindrical mandrel for a first period of time;

means for supplying heated air to said housing means; and

means for removing said casing from said cylindrical mandrel at least a second period of time after said housing means has axially passed said casing, including a stripping assembly having a stripping mandrel substantially perpendicular to the axis of said cylindrical mandrel and a plurality of rotationally driven stripping rollers provided around and adjacent the end of said stripping mandrel which is adjacent the axis of said cylindrical mandrel, said rotationally driven stripping rollers coaxially tucking up said casing onto said stripping mandrel;

whereby the externally exposed surfaces of said casing are heated by said heated air in said housing means only for said first period of time after said casing is wound on said cylindrical mandrel, and the surfaces of said casing adjacent said cylindrical mandrel are heated by said cylindrical mandrel for said first period of time after said casing is wound on said cylindrical mandrel and for at least said second period of time following said first period of time.

4,349,491

METHOD FOR FORMING A CONCRETE DECK

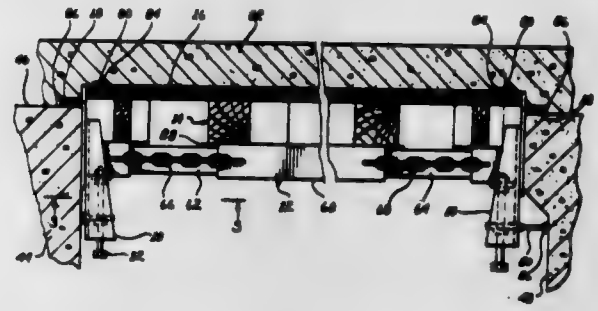
Everett A. Eyden, P.O. Box 1873, Sedona, Ariz. 86336

Filed Mar. 25, 1980, Ser. No. 133,904

Int. Cl.³ E04B *1/16*

U.S. Cl. 264—35

7 Claims



1. A method for forming a concrete slab-deck extending across a span intermediate two support members, the deck being supported during curing thereof by decking supported by deck joists and ledgers, said method comprising the steps of:

(a) detachably suspending a hanger from each of the support members in opposed relationship to one another, each of the hangers including a ledger support plate vertically adjustable from the top and bottom of the hanger;

(b) laying an extendable and contractable ledger between and supported by the ledger support plates of each opposed pair of the hangers;

(c) locking the length of each ledger;

(d) positioning the deck joists and decking upon the ledgers;

(e) adjusting the ledger support plates of each of the hangers from the top to raise the corresponding ends of the ledgers and locate the decking at a predetermined orientation across the span;

(f) pouring said concrete upon the decking and allowing the concrete to cure and to form the concrete slab deck;

(g) relocating the ledger support plates of each of the hangers from the bottom to lower the corresponding ends of the ledgers;

(h) removing the ledgers from engagement with the respective hangers;

(i) dismantling the deck joists and decking; and

(j) detaching the hangers from their respective support members.

4,349,492

METHOD OF PUTTING IN A PARTITION OF INSULATION MATERIAL INSIDE CONCRETE WALLS WHICH ARE CAST IN A VERTICAL POSITION IN AN INDUSTRIAL BUILDING SITE

Dan Shoham, 67/D Rothschild Blvd., Haifa, Israel

Filed Jan. 27, 1981, Ser. No. 228,758

Claims priority, application Israel, Feb. 7, 1980, 59332

Int. Cl.³ C04B *15/00*

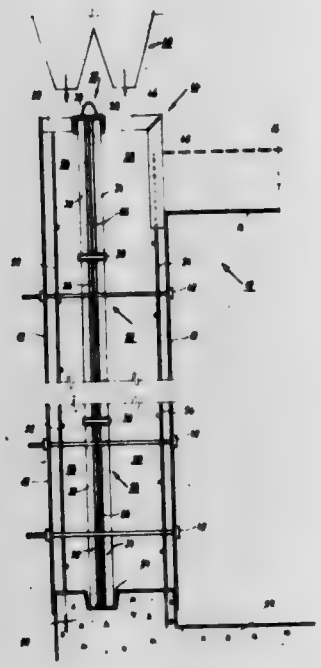
U.S. Cl. 264—35

10 Claims

1. A method of constructing in-situ cast concrete, internally insulated building walls, comprising the steps of:

(a) erecting a wall mold having a pair of vertical, spaced, mold plates;

(b) introducing between, distanced from, and extending from bottom to top of the mold plates, an assembly comprising a rigid back-up panel and at least one board of insulating material releasably attached to one side of said panel;



(c) filling with poured concrete the spaces formed between said mold plates and said assembly; and

(d) before the concrete hardens, extracting said panel from the cast wall so that said board remains and becomes embedded in the concrete.

4,349,493

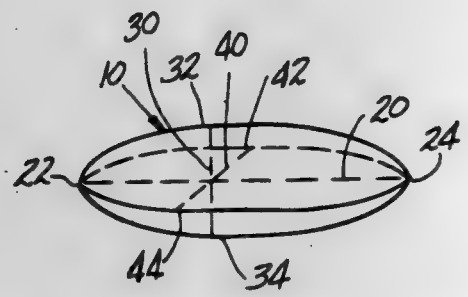
BRIQUETS OF HYDRATED CALCIUM HYPOCHLORITE

John M. Casberg, Cheshire, and Clair H. Putnam, Madison, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 956,543, Nov. 1, 1978, abandoned. This application Dec. 22, 1980, Ser. No. 219,089

Int. Cl.[3] B01J *2/00*

U.S. Cl. 264—37 6 Claims



1. A process for producing briquets of hydrated calcium hypochlorite having from about 55 to about 75 percent by weight of $Ca(OCl)_2$, a water content of from about 4 to about 10 percent by weight, which comprises:

(a) feeding particles of hydrated calcium hypochlorite to a briquetting means,

(b) applying roll pressures in the range of from about 35 to about 210 kilograms per square meter to form briquets of said hydrated calcium hypochlorite particles, and

(c) recovering said briquets from said briquetting means.

4,349,494

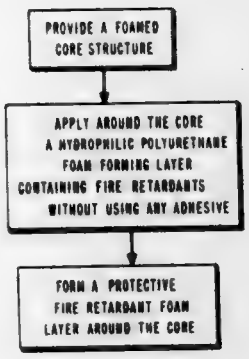
METHOD OF MAKING A FIRE-RETARDANT PRODUCT HAVING A FOAMED LORE AND A FIRE-RETARDANT PROTECTIVE LAYER

Glenn E. Fulmer, Clarksville, Md., assignor to W. R. Grace & Co., New York, N.Y.

Division of Ser. No. 36,955, May 7, 1979, Pat. No. 4,254,177. This application Mar. 17, 1980, Ser. No. 130,778

Int. Cl.[3] B29D *27/04;* C08G *18/14;* C08J *9/34;* C09K *3/28*

U.S. Cl. 264—45.3 19 Claims



1. A method of increasing the fire-retardant property of a foraminous, foamed core structure susceptible to burning comprising

providing a foamed core structure having an outer surface susceptible to burning, and

applying around the outer surface of the core structure, in the absence of any binder material on the core structure, a hydrophilic polyurethane foam forming layer containing a large amount of fire-retardant fillers,

whereby a protective foam layer surrounding the outer surface of the foraminous structure core is formed which adheres to the core due to the adhesive nature of the polyurethane as is foams around the foraminous core in combination with the mechanical interlock obtained as said polyurethane foam flows into the foraminous core upon foaming.

4,349,495

METHOD OF PRODUCING THERMALLY INSULATED COMPOSITE SECTIONS, AND A COMPOSITE SECTION PRODUCED BY THIS METHOD

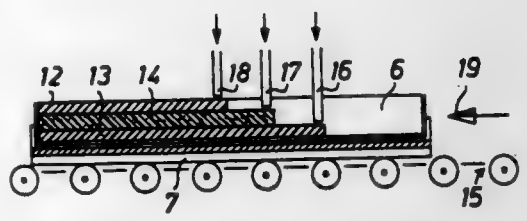
Manfred Mühle, Tulpenstrasse 11, D-4972 Löhne 2, Fed. Rep. of Germany

Filed Jul. 14, 1980, Ser. No. 168,407

Claims priority, application Fed. Rep. of Germany, Jul. 14, 1979, 2928574

Int. Cl.[3] B29D *27/04*

U.S. Cl. 264—45.8 5 Claims



1. A method of producing thermally insulated composite sections, comprising the steps of: holding at least two metal sections spaced apart to form a free space which is sealed at the bottom and which has an open side; filling said free space from its open side with first insulating material layers which are at first in liquid form and then harden to form a porous structure; introducing second solid insulating material layers for positively and frictionally joining together the metal sections and first insulating layers in alternating succession into said free space formed between the metal sections, each layer only partly filling said free space; the step of introducing the second solid insulating material layers and the first insulating layers

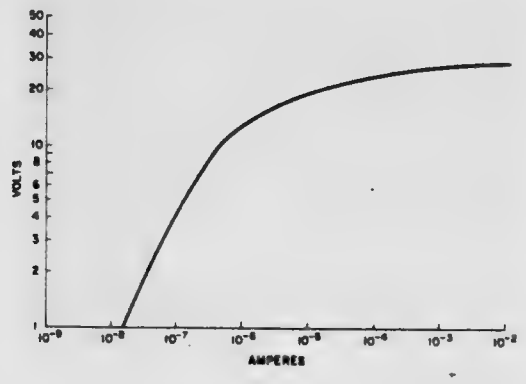
being carried out with a plurality of inlet nozzles whose actions are chronologically staggered, said inlet nozzles being disposed one behind the other in operating direction of the filling operation; and using for the first insulating layers the same material as for the second solid insulating material layers, a blowing agent which provides the first insulating layers with their porous structure being contained in the material for the first insulating layers; closing the free space at the top and also at the ends of the metal sections by a self-adhesive cover strip; placing a channel-shaped guide section over the metal sections to form a composite section; turning the guide section together with the metal sections through an angle of substantially 180°, so that the guide section lies at the bottom; and sealing said free space at the bottom.

4,349,496

METHOD FOR FABRICATING FREE-STANDING THICK-FILM VARISTORS

Lionel M. Levinson, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 26, 1981, Ser. No. 247,964
Int. Cl.³ H01C 7/10
U.S. Cl. 264—61 16 Claims



1. A method of fabricating a free-standing, thick-film varistor comprising the steps of:

mixing unsintered metal oxide varistor powder with a carrier material to form a paste;

applying a substantially uniform thin film of said paste onto a surface of an aluminum oxide substrate;

sintering said thin paste film on said aluminum oxide substrate to form a varistor material; and

separating said varistor material from said aluminum oxide substrate to form said free-standing, thick-film varistor.

4,349,497

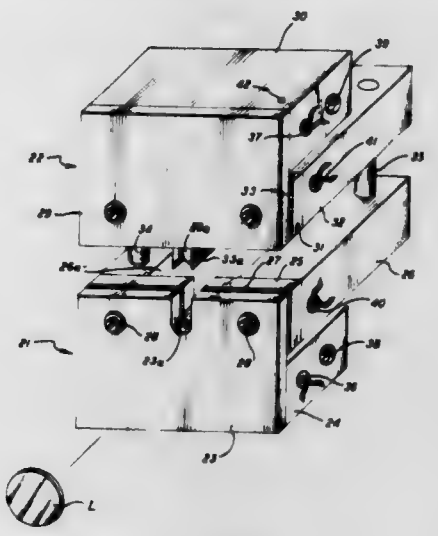
FIBER OPTIC TERMINATION METHOD AND APPARATUS

Paul A. Blackington, Vandling, Pa., assignor to Sheltered Workshop for the Disabled, Inc., Binghamton, N.Y.

Continuation-in-part of Ser. No. 128,934, Mar. 10, 1980, abandoned. This application Apr. 8, 1981, Ser. No. 252,087
Int. Cl.³ B29C 27/02; B29D 11/00
U.S. Cl. 264—1.5 16 Claims

1. The method of fusing together end portions of a bundle of plastic optic fibers to form a cable end, comprising the steps of: containing a first length portion of said bundle adjacent the ends of said fibers within a first cavity with the ends of said fibers exposed at an end of said first cavity; containing a second length portion of said bundle adjacent said first length portion within a second cavity; heating said second length portion of said bundle to a predetermined temperature slightly below the deformation temperature of said plastic fibers; and applying heat to said first length portion for a time sufficient to fuse said fibers within said first length portion while maintaining the temperature of said second length portion substantially constant at said predetermined temperature.

8. Apparatus for fusing together end portions of a bundle of plastic optic fibers to form a cable end having improved light transmission per unit area, comprising, in combination: first means defining a first cavity which is closed except at first and second ends and which has a uniform cross-section between said first and second ends; second means defining a second cavity having a first end registering with the second end of said first cavity, said first means and said second means each comprising first and second relatively movable members movable toward each other to contain a respective length portion of said bundle of fibers; means for heating said second means to a



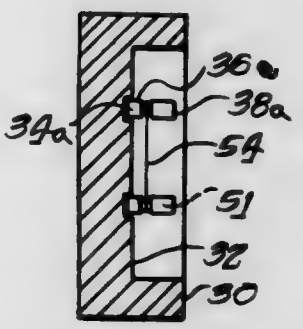
predetermined temperature slightly below the deformation temperature of said plastic fibers; and means for applying sufficient heat to said first cavity to fuse fibers within said first cavity without substantially varying the temperature of said means defining said second cavity, whereby end portions of fibers within said first cavity may decrease in length and increase in diameter to provide a fused cable end having said cross-section.

4,349,498

RADIO-OPAQUE MARKERS FOR PYROLYTIC CARBON PROSTHETIC MEMBERS

Willard H. Ellis, Leucadia, Calif.; Axel D. Haubold, Liberty Hill, Tex.; Victor Slivenko, San Diego, Calif., and Jack C. Bokros, Austin, Tex., assignors to Carbomedics, Inc., Austin, Tex.

Filed Jan. 16, 1981, Ser. No. 225,804
Int. Cl.³ A61F 1/22
U.S. Cl. 264—81 10 Claims



1. A method of forming a pyrolytic carbon prosthetic member having a marker fully encased in pyrolytic carbon comprising;

forming a mandrel having a surface on which the member is to be created,

providing an insert having a pyrolytic carbon portion and a marker joined thereto,

affixing said insert to said mandrel so that said marker extends above said surface, and

depositing pyrolytic carbon on said mandrel to a desired thickness sufficient to fully encase said marker therein,

removing undesired portions of said mandrel, and

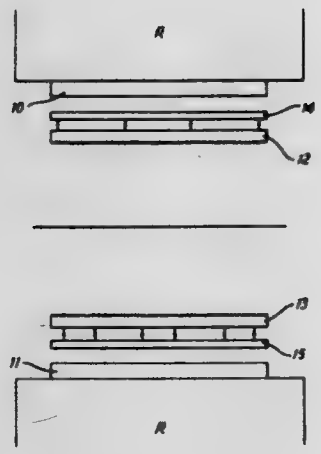
finishing the shaping of said deposited pyrolytic carbon to form a prosthetic member.

4,349,499

DISC RECORD PREPARATION

Samuel J. B. Johnston, Ashford, England, assignor to E M I Limited, Hayes, England

Filed Dec. 11, 1980, Ser. No. 215,258
Claims priority, application United Kingdom, Dec. 21, 1979, 7944236
Int. Cl.³ B29D *17/00*
U.S. Cl. 264—107 5 Claims



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1. A method of manufacturing a modulated disc record comprising the steps of, providing a stamper plate bearing modulations at one surface only representing information or data to be recorded,

securing the stamper plate between mould blocks mounted between the rams of a press and then moulding a recording medium comprised solely of a thermoplastics material to impart thereto a positive impression of the data or information, the method being characterised in that

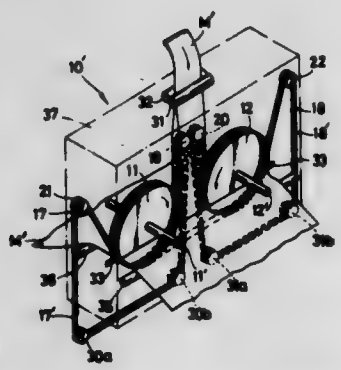
before the stamper plate is so secured a plastics material foil is bonded to the unmodulated surface of the stamper plate or to the surface of the mould block facing the stamper plate.

4,349,500

METHOD FOR STRETCHING A FIBROUS OR FILM-LIKE MATERIAL

Masahide Yazawa, Kunitachi; Haruhisa Tani; Kazuhiko Kurihara, both of Tokyo, and Hiroshi Yazawa, Kunitachi, all of Japan, assignors to Nippon Petrochemicals Co., Ltd. and Polymer Processing Research Institute, Ltd., both of, Japan

Filed Mar. 24, 1980, Ser. No. 133,146
Claims priority, application Japan, Mar. 22, 1979, 54-34027
Int. Cl.³ B29C *17/02*
U.S. Cl. 264—159 4 Claims



1. A method of transversely stretching a longitudinally running continuous strip of organic synthetic thermoplastic polymeric material, which comprises the steps of:

(a) gripping the strip at its opposite selvages respectively between (i) the periphery of each of a pair of symmetrically disposed pulleys of substantially the same dimensions rotating at substantially the same peripheral speed in the same plane but in opposite directions and (ii) each of a pair of endless belts respectively trained around and running with said pulleys, said pulleys and said belts forming two divergent arcuate paths therebetween;

(b) stretching the gripped strip, while being heated, transversely by moving the selvages along the respective arcuate paths over a predetermined circumferential distance of from approximately a quarter to approximately a half of the full circumference of said pulleys; and

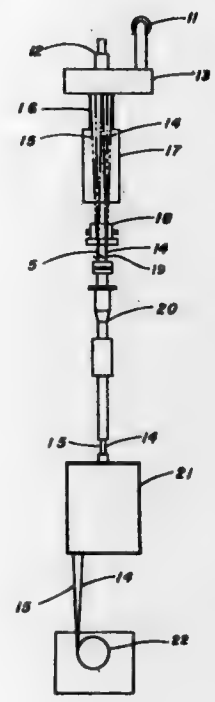
(c) releasing the stretched strip from between said pulleys and belts for cooling to set.

4,349,501

CONTINUOUS SPIN-DRAW POLYESTER PROCESS

Maxwell C. Hamlyn, Cary, N.C., assignor to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 42,188, May 24, 1979, Pat. No. 4,251,481. This application Feb. 6, 1981, Ser. No. 232,448
The portion of the term of this patent subsequent to Feb. 17, 1998, has been disclaimed.
Int. Cl.³ D01D *5/16*
U.S. Cl. 264—210.3 18 Claims



1. A process for the simultaneous spin-drawing of one or more ends of multifilament, continuous filament, synthetic polyester fiber, comprising the steps of:

(a) supplying a melt of polyester polymer to a spinning unit;

(b) extruding the melt through a spinnerette having a plurality of extrusion orifices to form filaments;

(c) advancing the extruded filaments through a substantially stationary column of air contained in a heated sleeve having a temperature of about 200° C. to 450° C.

(d) advancing the filaments through a quenching zone;

(e) lubricating the filaments;

(f) passing the lubricated filaments over a forwarding roll system maintained at a temperature of less than 50° C.;

(g) subsequently passing the filaments through a steam impinging draw point localizing jet at a steam temperature of about 482° C. to 580° C. to heat the filaments substantially immediately above their second order transition temperature;

(h) passing the filaments over a pair of draw rolls wherein at least one of the draw rolls is maintained at a temperature between about 170° C. and 237° C.;

(i) passing the filaments over a relax roll system maintained at a temperature between about 60° C. to 230° C., yarn

tension to the relax roll system being maintained at about 0.2 to 2.0 grams per denier; and

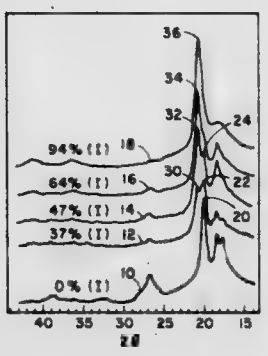
(j) winding up the filaments at a tension of from about 0.06 to 1.0 gram per denier; whereby a reduced shrinkage, dimensionally stable fiber is produced.

4,349,502

FABRICATION METHOD FOR UNORIENTED PHASE-I PVF_2

Kook D. Pae, East Brunswick; Brian A. Newman, Highland Park, and Jerry I. Scheinbeim, Somerset, all of N.J., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 24, 1980, Ser. No. 200,172
Int. Cl.³ B29C *25/00*
U.S. Cl. 264—320 7 Claims



1. A method for converting a predominantly phase II PVF_2 sample into PVF_2 phase I crystalline structure which includes the steps of:

placing said PVF_2 sample in a high pressure cell;

applying high pressure at least 2 kilobars to said sample in said high pressure cell;

heating said sample in said high pressure cell to bring the temperature thereof close to a melting point of said PVF_2 sample;

increasing rapidly the high pressure applied to said PVF_2 sample to a second predetermined value in a predetermined short time interval;

cooling said sample in said high pressure cell; and reducing pressure applied to said sample to atmospheric pressure.

4,349,503

POLYESTER COMPOSITIONS CONTAINING SODIUM NITRITE

Shaul M. Aharoni, Morris Plains, N.J., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed May 15, 1981, Ser. No. 263,662
Int. Cl.³ C08F *8/00*; C08L *67/02*
U.S. Cl. 264—328.16 28 Claims

24. A method of making a crystalline polyester composition comprising the steps of: melt blending polyester and sodium nitrite in a temperature range greater than the melting point of sodium nitrite, which is 271° C., and above the melting point of the polyester, and lower than about 325° C.; cooling the melt blend to below the temperature (Tcc) at which crystallization of the polyester in the blend begins; and nucleating the polyester crystals with the sodium nitrite.

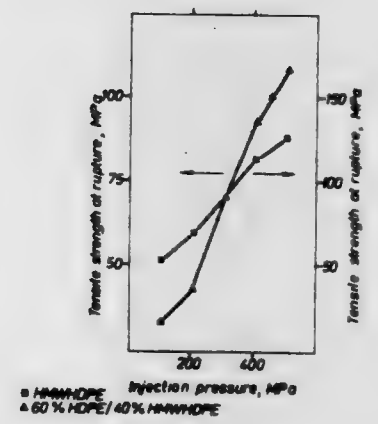
28. The method as recited in claim 24 further comprising the step of injection molding the melt blend in a mold water cooled to from 76.7° C. to 100° C., wherein the cooling and nucleating steps take place.

4,349,504

INJECTION MOULDING PROCESS USING POLYMER BLENDS CONTAINING HIGH MOLECULAR POLYETHYLENE OF HIGH DENSITY

Josef Kubat, Solparksvägen 3, S-171 35 Solna; Hans M. Rigdahl, Klostergangen 7, S-413 18 Gothenburg, and Jan K. Djurner, Viktoriagatan 8, S-411 25 Gothenburg, all of Sweden

PCT No. PCT/SE79/00210, § 371 Date Jun. 20, 1980, § 102(e) Date Jun. 12, 1980, PCT Pub. No. WO80/00813, PCT Pub. Date May 1, 1980
PCT Filed Oct. 19, 1979, Ser. No. 199,515
Claims priority, application Sweden, Oct. 20, 1978, 7810977
Int. Cl.³ B29F *1/00*; B29B *1/00*
U.S. Cl. 264—328.17 8 Claims



1. A process for producing a fiber-reinforced injection molded article having improved mechanical strength, said process comprising injection molding a blend of:

(a) high density high molecular weight polyethylene, blended with

(b) a polymeric matrix material with which the polyethylene of (a) has a limited solubility such that the high molecular weight high density polyethylene forms a fiber phase in the matrix material,

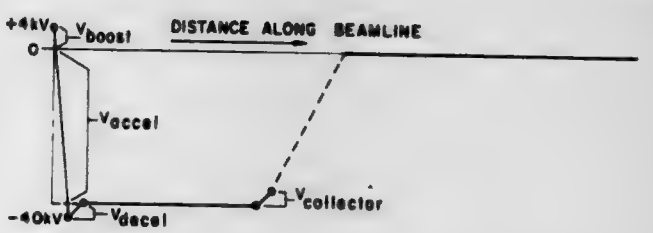
at a molding pressure of more than 250 MPa thereby producing a fiber-reinforced injection molded article having improved mechanical properties.

4,349,505

NEUTRAL BEAMLINE WITH ION ENERGY RECOVERY BASED ON MAGNETIC BLOCKING OF ELECTRONS

William L. Stirling, Oak Ridge, Tenn., assignor to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Jul. 1, 1980, Ser. No. 164,990
Int. Cl.³ G21B *1/00*
U.S. Cl. 376—130 9 Claims



1. In a neutral beam injector system for generating and directing an energetic neutral particle beam along a beamline wherein said energetic neutral particle beam is derived from a beam of ions of a selected light isotopic species generated in a ground potential operated ion source and accelerated along said beamline through a neutralizer means wherein a significant portion of said ions are converted into energetic neutral particles together with electrons and residual energetic ions directed along said beamline exiting said neutralizer means, the combination of a system for direct recovery of the kinetic energy of said residual energetic ions comprising:

power supply means for applying an accelerating electrical potential to said neutralizer means to accelerate said ions from said ground potential operated ion source to a selected kinetic energy level along said beamline through said neutralizer means;

magnetic field generating means coupled with the beam exit region of said neutralizer means for producing a magnetic field (B) in said exit region transverse to said beam path of sufficient strength to block said electrons from said neutral beam path at said exit region and deflect said residual ions from said beam path;

an ion collector means for collecting the charge of said deflected residual ions exiting said neutralizer, said collector means including at least one ground potential ion charge collecting surface disposed in the path of said deflected residual ions so that a retarding electric field (E) is generated in parallel opposition to said beam exiting said neutralizer in said exit region thereof by virtue of said accelerating potential applied to said neutralizer, said E field being transverse to said magnetic field B in said neutralizer exit region so that an E x B field is generated in said exit region of said neutralizer and said residual ions exiting said neutralizer are decelerated, thereby recovering their kinetic energy and their charge collected on said at least one ground potential ion collector surface;

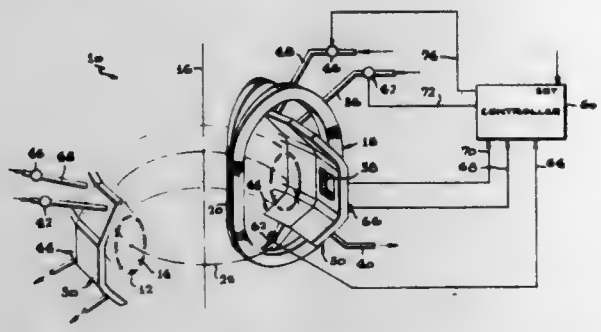
an electron collecting means including an electron collector surface disposed closely adjacent said exit region of said neutralizer and electrically biased slightly positive with respect to said neutralizer for collecting said electrons which drift in an E x B fashion in said exit region of said neutralizer into said electron collector surface upon exiting said neutralizer so that said electrons are terminated at a potential substantially removed from ground potential to prevent energy loss due to said electrons being accelerated into said ground potential ion collecting surface.

4,349,506

THERMOMAGNETIC BURN CONTROL FOR MAGNETIC FUSION REACTOR

John M. Rawls, Del Mar, and Unto A. Pesron, Solana Beach, both of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 1, 1980, Ser. No. 164,989
Int. Cl.[3] G21B *1/00*
U.S. Cl. 376—142 8 Claims



1. In a fusion reactor which includes a plurality of spaced field coils that each extend around a plasma region, to generate a magnetic field at the plasma region, the improvement of means for controlling magnetic field ripple comprising:

a magnetic shield structure formed of ferrormagnetic material which has a temperature-dependent saturation magnetization, said structure lying between the plasma region and field coils;

means for controlling the temperature of said shield structure, to thereby cause the magnetic field ripple and therefore the heat loss from said plasma; and

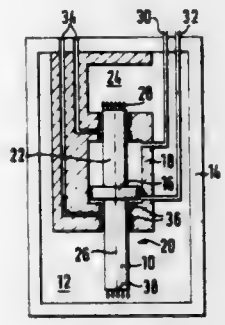
means responsive to the state of said plasma for operating said temperature controlling means.

4,349,507

DRIVE FOR AN ABSORBER ROD OF A NUCLEAR REACTOR

Josef Schoening, Hambruecken; Claus Elter, Bad Durkheim, and Hermann Schmitt, Langmeil, all of Fed. Rep. of Germany, assignors to Hochtemperatur-Reaktorbau GmbH., Cologne, Fed. Rep. of Germany

Filed Jun. 16, 1980, Ser. No. 159,862
Claims priority, application Fed. Rep. of Germany, Jun. 16, 1980, 2927628
Int. Cl.[3] G21C *7/16*
U.S. Cl. 376—230 12 Claims



6. A drive for an absorber rod of a nuclear reactor comprising:

a drive chamber mounted within the pressure vessel of a nuclear power plant,

a drive piston mounted within said drive chamber for movement along its longitudinal axis,

a hollow absorber rod fixedly attached at one end to said drive piston and extending outside said drive chamber to a terminating surface at its other end,

an equalizing surface fixedly attached to said drive piston, transverse to said longitudinal axis and facing the opposite direction of said terminating surface,

means for controlled movement of said drive piston within said drive chamber independent of the medium contained within the pressure vessel,

means for cooling said absorber rod with a cooling medium flowing within said hollow absorber rod,

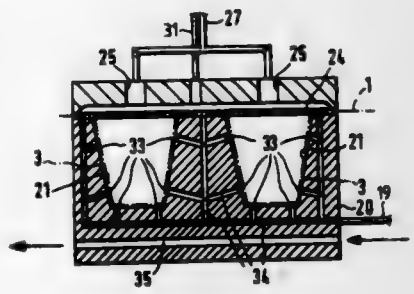
wherein said absorber rod terminating surface is exposed to the medium contained within the pressure vessel and said equalizing surface is exposed to said cooling medium.

4,349,508

METHOD FOR STERILIZING CONTAINERS

Dieter Liede, Möglingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Nov. 14, 1980, Ser. No. 207,052
Claims priority, application Fed. Rep. of Germany, Aug. 6, 1980, 3029685
Int. Cl.[3] A61L *2/04, 2/06*
U.S. Cl. 422—1 2 Claims



1. A method for sterilizing premolded packaging containers having interior and exterior walls, comprising subjecting the interior wall of the container to a heating medium while concurrently subjecting the exterior wall to a cooling medium by applying a force to the pre-molded containers to hold the exterior wall of the container in contact with a cooled body

having said cooling medium therein, said force being produced by subjecting the interior and exterior walls of the container to different pressures, the pressure exerted against the interior wall being greater than the pressure exerted against the exterior wall.

4,349,509

OXYGEN INDICATOR ADAPTED FOR PRINTING OR COATING AND OXYGEN-INDICATING DEVICE

Yoshio Yoshikawa; Takanari Nawata, both of Tokyo; Mikio Goto, Matsudo, and Yukio Kondo, Yono, all of Japan, assignors to Mitsubishi Gas Chemical Co., Inc., Tokyo, Japan

Filed Jun. 27, 1980, Ser. No. 163,870
Claims priority, application Japan, Jul. 3, 1979, 54-84122
Int. Cl.³ G01N *31/22*; C09K *3/00*
U.S. Cl. 422—57 21 Claims

1. An oxygen indicator adapted for printing which comprises

(a) at least one reducing agent selected from the group consisting of mixtures of at least one alkaline substance and dithionites, ferrous compounds, reducing saccharides or mixtures thereof; ascorbic acid; erysorbic acid or a salt thereof; stannous salts; hydroxyamine; hydrazine; ketocarboxylic acids; sulfoxylates; alkali metal sulfides and boron hydrides;

(b) a dyestuff which has a color in an atmosphere containing oxygen and a different color in a non-oxygen containing atmosphere when it is reduced with said reducing agent;

(c) at least one thickening agent selected from the group consisting of sodium carboxymethyl cellulose, hydroxyethyl cellulose, methyl-cellulose, sodium alginate, polyvinyl alcohol, gum arabic powder, gum tragacanth, dextrin and casein in an amount of 0.05–10% by weight on the basis of (a), (b), (c) and (d); and

(d) at least one solvent selected from the group consisting of water, alcohols, and mixtures thereof.

2. A sheet-like oxygen indicator comprising a sheet selected from the group consisting of cellulosic sheets and plastic sheets and a composition coated or printed thereon which comprises

(a) at least one reducing agent selected from the group consisting of mixtures of at least one alkaline substance and dithionites, ferrous compounds, reducing saccharides or mixtures thereof; ascorbic acid; erysorbic acid or a salt thereof; stannous salts; hydroxyamine, hydrazine; ketocarboxylic acids; sulfoxylates; alkali metal sulfides and boron hydrides;

(b) a dyestuff which has a color in an atmosphere containing oxygen and a different color in a non-oxygen containing atmosphere when it is reduced with said reducing agent;

(c) at least one water soluble polymeric compound in an amount of 0.05 to 10% by weight on the basis of weight of the total composition selected from the group consisting of sodium carboxymethyl cellulose, hydroxyethyl cellulose, methyl cellulose, sodium alginate, polyvinyl alcohol, gum arabic powder, gum tragacanth, dextrin and casein; and

(d) at least one solvent selected from the group consisting of water, alcohols, and mixtures thereof.

4,349,510

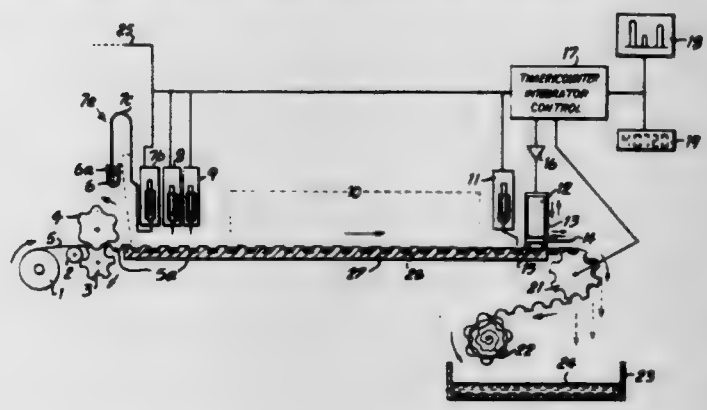
METHOD AND APPARATUS FOR MEASUREMENT OF SAMPLES BY LUMINESCENCE

Seppo Kolehmainen, P.O. Box 2805, Titusville, Fla. 32780, and Veikko Tarkkanen, Krijgersberglaan 25, 6371 CA Schaesberg, Netherlands

Filed Jul. 23, 1980, Ser. No. 171,323
Claims priority, application United Kingdom, Jul. 24, 1979, 7925713
Int. Cl.³ G01N *33/52, 35/02*
U.S. Cl. 422—66 21 Claims

1. An apparatus for automatically measuring the bio-and chemi-luminescence in a plurality of samples, comprising:

means for making successive sample wells in a non-transparent, light-reflecting tape, means for transporting the tape along a path, means for delivering a measured volume of a liquid sample into each well at a first location along said path, means for dispensing a measured volume of at least one reagent into said liquid sample in each well in said tape in at least one further location along said path to generate luminescence, light-detector means adjacent said tape along said path and spaced from said dispensing means along said path and adapted to detect light generated in situ from the mixture of the liquid and said at least one reagent in each respective well, said detector means



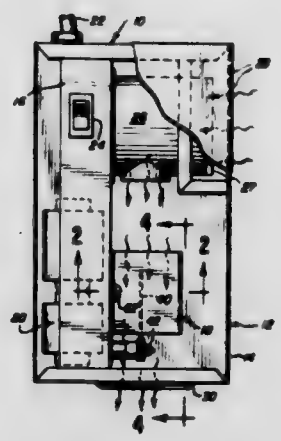
generating a corresponding electrical signal, said detector means engaging the outer periphery of successive wells and provided with resilient means for forming a light tight seal between said detector means and said wells thereby excluding ambient light from entering said detector means during measurement of a sample, shutter means synchronized to exclude ambient light from said detector means during movement of said tape from one of said wells to the next. Means for processing said signal, and control means for synchronizing the operation of said transporting means, said delivering means, dispensing means, said light detector means, and said processing means.

4,349,511

AIR PURIFICATION APPARATUS

Charles B. Owen, Mundelein, Ill., assignor to Environmental Electronics Corporation, Northbrook, Ill.

Filed Jul. 9, 1981, Ser. No. 281,703
Int. Cl.³ 361 *231*; C01B *13/12*
U.S. Cl. 422—186.07 2 Claims



1. An air purification apparatus comprising:

a plurality of electrode elements each comprising a flattened tubular spiral of metal wire mesh disposed in a side-by-side array,

dielectric means for effecting an insulating separation between adjacent electrode elements comprising a first set of dielectric plates separating adjacent ones of said electrode elements and a second set of dielectric plates perpendicular to said first set,

means for establishing an electric discharge between adjacent ones of said elements, and

unitary housing means for releasably retaining electrode elements in said side-by-side array and urging said electrode elements into contact with said first set of dielectric plates,

said housing means comprising a generally rectangular housing with open opposite ends within which said electrode elements are contained so that ends thereof face said open ends, said housing including first and second opposite sides, said second set of dielectric plates being respectively disposed between said electrode elements and said first and second sides, a third side integral with and extending between said first and second sides, a fourth side integral with said second side and extending generally toward said first side, and releasable locking means for releasably connecting said fourth side to said first side,

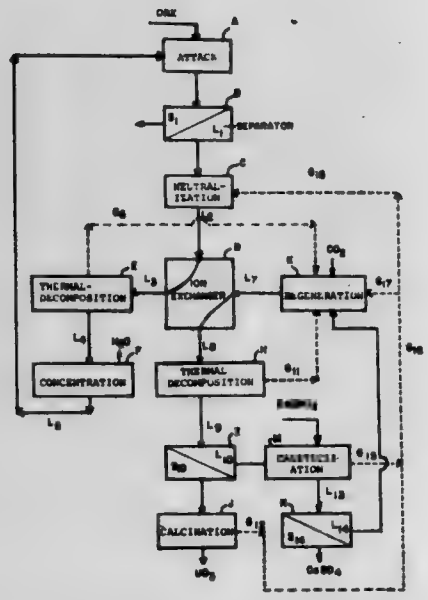
said releasable locking means comprising a reversely bent locking flange integral with an edge portion of said first side and an outwardly extending locking lip integral with an edge portion of said fourth side cooperating with said locking flange for releasably connecting said edge portion of said fourth side to said edge portion of said first side, said housing means being formed of a resilient material whereby said fourth side is biased to an open clearance position disposed at an acute angle with respect to said first side and away from said third side accommodating insertion of said electrode elements and said first and second sets of dielectric plates into said housing before said fourth side is releasably connected to said first side by insertion of said locking lip behind said locking flange and locating said fourth side in a closed position wherein said fourth side is disposed perpendicularly with respect to said first side, the resiliency of said housing means biasing said locking lip into engagement with said locking flange and said electrodes and dielectric means into engagement with one another and with said housing means.

4,349,512

NON-POLLUTING TREATMENT OF ALKALINE URANIFEROUS EFFLUENTS CONTAINING $SO_4^=$ IONS

Bernard Berger, Tassin La Demi Lune, France, assignor to Pechiney Ugine Kuhlmann, Paris, France

Filed Jan. 25, 1979, Ser. No. 6,332
Claims priority, application France, Feb. 8, 1978, 78 04192
The portion of the term of this patent subsequent to Dec. 15, 1998, has been disclaimed.
Int. Cl.³ C01G *43/01*
U.S. Cl. 423—7 16 Claims



1. A process for the recovery of uraniferous and sulphur values from liquor resulting from the attack of sulphur containing uraniferous ores by an alkaline solution of sodium carbonate and/or bicarbonate wherein the resulting liquor contains sodium carbonate and/or bicarbonate and sodium sulphate in addition to uranium values, the steps of

(1) introducing ammonia into the liquor whereby any HCO_3^- is converted to $CO_3^=$;

(2) contacting the neutralized liquor from step (1) with an anion exchange resin to fix the uranium and $SO_4^=$ ions, leaving a liquor containing ammonia, sodium carbonate and/or bicarbonate in solution;

(3) eluting the uranium and $SO_4^=$ ions fixed on the ion exchange resin with an ammonia carbonate and/or bicarbonate solution to yield a solution of ammonium uranyl carbonate complex and ammonium sulphate;

(4) subjecting the solution to thermal treatment until a suspension of precipitated ammonium uranate and/or diuranate is obtained in a solution of the ammonium sulphate while CO_2, NH_3 and H_2O are vaporized off;

(5) separating the precipitated ammonium uranate and/or diuranate from the solution of ammonium sulphate from step (4);

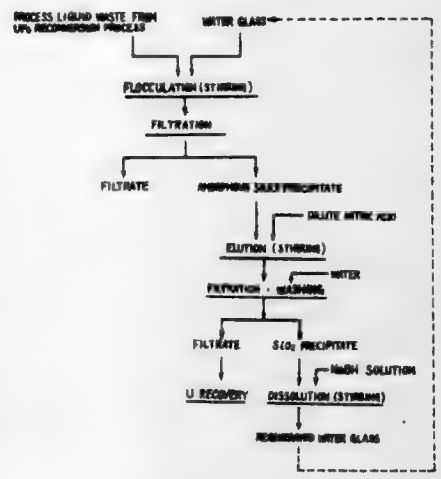
(6) calcining the separated ammonium uranate and/or diuranate to yield uranium oxide (UO_3) and NH_3 vapors.

4,349,513

PROCESS FOR RECOVERING URANIUM AND/OR THORIUM FROM A LIQUID CONTAINING URANIUM AND/OR THORIUM

Shoji Ishiwata; Yasuo Kuroda, both of Omiya; Shoichi Tanaka, Musashino; Tsuneo Watanabe, and Shinichi Hasegawa, both of Ibaragi, all of Japan, assignors to Mitsubishi Kinzoku Kabushiki Kaisha, Tokyo, Japan

Filed May 5, 1980, Ser. No. 146,214
Claims priority, application Japan, Dec. 25, 1979, 54/169075
Int. Cl.³ C01G *56/00*; C01F *15/00*
U.S. Cl. 423—12 1 Claim



1. A process for recovering a metal selected from the group consisting of uranium, thorium and mixtures thereof, from a liquid containing said metal comprising the steps of adding water glass to said liquid in the presence of aqueous fluorine and ammonia water to cause a precipitate composed of an amorphous silica to be formed, whereby said metal is absorbed, filtering said precipitate therefrom, treating said filtered precipitate with acid to cause said absorbed metal to be eluted therefrom, filtering said precipitate to recover said eluted metal as an acidic filtrate therefrom, washing away anions of said metal remaining in said filtered precipitate with water, and dissolving said washed precipitate in an alkai metal hydroxide solution to regenerate said amorphous silica constituting said precipitate, to water glass.

4,349,514
PROCESS FOR RECOVERY OF REUSABLE CHROMIC ACID FROM THE WASTE CHROMIC ACID SOLUTION CONTAINING IMPURITIES

Morio Watanabe, Amagasaki, and Sanji Nishimura, Kyoto, both of Japan, assignors to Solex Research Corporation, Osaka, Japan

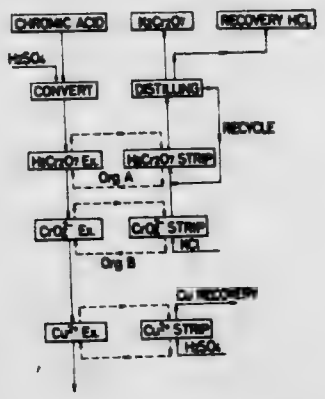
Continuation of Ser. No. 932,321, Aug. 9, 1978, abandoned, which is a continuation of Ser. No. 786,770, Apr. 12, 1977, Pat. No. 4,144,145. This application Aug. 13, 1979, Ser. No. 66,167

Claims priority, application Japan, Apr. 15, 1976, 51-41808; Jul. 29, 1976, 51-89674; Nov. 27, 1976, 51-142499; Dec. 6, 1976, 51-145688

The portion of the term of this patent subsequent to Mar. 13, 1996, has been disclaimed.

Int. Cl.³ B01D *11/00;* C01G *37/00, 37/14*

U.S. Cl. 423—54 10 Claims



1. A process for the recovery of hexavalent chromium values from an aqueous solution containing hexavalent chromium values and heavy metal ions comprising:

(a) adding H_2SO_4 to the solution in an amount at least stoichiometrically equivalent to the heavy metallic ions in the solution;

(b) extracting the hexavalent chromium values from the aqueous acidified solution by liquid-liquid extraction using an organic extractant (A) consisting essentially of one or more compounds selected from the group consisting of phosphoric acid esters together with a petroleum hydrocarbon as a diluent to produce an organic phase containing hexavalent chromium values and an aqueous raffinate;

(c) bringing the organic phase containing hexavalent chromium values into contact with water which is free from sodium, potassium, and ammonium to regenerate the organic extractant (A);

(d) extracting any remaining hexavalent chromium in said aqueous raffinate by liquid-liquid extraction with an organic extractant (B) consisting essentially of one or more compounds selected from the group consisting of primary, secondary, tertiary and quaternary amines together with a petroleum hydrocarbon as a diluent; and

(e) bringing the organic phase containing hexavalent chromium values into contact with a solution containing Na, K or NH_4 ion to regenerate the organic extractant (B) and recirculating the organic extractant (B) into step (a).

4,349,515
TUNGSTEN PRODUCTION FROM RAW MATERIALS CONTAINING PHOSPHORUS IMPURITIES

Wolfgang Müller, Bad Harzburg, Fed. Rep. of Germany, assignor to Hermann C. Starck Berlin, Berlin, Fed. Rep. of Germany

Filed May 28, 1981, Ser. No. 267,839

Claims priority, application Fed. Rep. of Germany, Jun. 24, 1980, 3023593

Int. Cl.³ C01G *41/00*

U.S. Cl. 423—58 10 Claims

1. A method for producing tungsten compounds low in phosphorus, which comprises:

precipitating calcium tungstate from a tungstate solution containing phosphate impurities;

converting the calcium tungstate by a pressure leaching with an alkali carbonate so as to produce an aqueous tungstate solution and a residue containing calcium phosphate and calcium carbonate; and recovering an alkali tungstate solution low in phosphorous.

4,349,516
PROCESS FOR TREATING THE GAS STREAM FROM AN ALUMINUM VALUE CHLORINATION PROCESS

Wendell E. Dunn, Jr., Box 534, Spearfish Canyon, S. Dak. 57783

Filed Apr. 20, 1981, Ser. No. 255,549

Int. Cl.³ C01F *7/48, 7/62*

U.S. Cl. 423—111 1 Claim

1. A method for producing aluminum chloride suitable for direct introduction into an aluminum chloride reduction cell by treatment of the gas stream emerging from an aluminum value source chlorination process comprising the steps of:

1. reducing and condensing iron chloride in one or more iron chloride condensation stages;
2. absorbing the aluminum chloride contained in the gas stream under high temperature conditions with an alkali chloride or alkali chloride mixture in an at least 1/1 ratio to form an ionic aluminum chloride-alkali chloride complex; and
3. selectively condensing the chlorides from the product by step (2) to produce a purified aluminum chloride-alkali chloride complex suitable for direct introduction into an aluminum chloride reduction cell.

4,349,517
METHOD OF PRODUCING CUBIC BORON NITRIDE

Vladislav S. Lysanov, ulitsa Vyvilovykh, 8/1, kv. 422; Viktor V. Digonsky, prospekt Dobroljubova, 5, kv. 31; Leon I. Feldgun, ulitsa S. Kovalevskoi, 14/3, kv. 91; Valery M. Davidenko, ulitsa Marshala Govorova, 14, kv. 19, all of Leningrad; Nikolai V. Novikov, ulitsa A. Barbjusa, 22/26, kv. 125, Kiev; Alexandr I. Borimsky, Vyshgorodskaya ulitsa, 68/2, kv. 55, Kiev; Alexandr A. Shulzhenko, Novokonstantinovskaya ulitsa, 7, kv. 48, Kiev; Valerian D. Yakimenko, Polyarnaya ulitsa, 5-a, kv. 193, Kiev; Eduard Y. Dovgal, Drezdenskaya ulitsa 12, kv. 48, Leningrad; Vitaly Y. Egorov, ulitsa Komissara Smirnova, 15, kv. 89, Leningrad; Vyacheslav S. Rovsha, prospekt Shvernika, 14, kv. 193, Leningrad; Alexei I. Prikhna, Vyshgorodskaya ulitsa 76-a, kv. 39, and Alexandr N. Sokolov, Radomyshlenskaya ulitsa, 25, kv. 67, both of Kiev, all of U.S.S.R.

Filed Oct. 21, 1980, Ser. No. 199,273

Int. Cl.³ C01B *35/14*

U.S. Cl. 423—290 8 Claims

1. A method of producing cubic boron nitride comprising:

subjecting to a pressure of 40 to 70 kilobars and a temperature of 1100° to 2000° C. a charge comprising hexagonal boron nitride and a conversion initiator selected from the group consisting of an alkali metal, an alkaline earth metal and borides of the aforesaid metals;

doping the aforesaid charge with a hydrated salt containing an element selected from the group consisting of sulfur, halogen and nitrogen, said hydrated salt incorporating at least 5 molecules of water of hydration.

4,349,518
METHOD OF MAKING HIGH PURITY CALCIUM HYDROGEN PHOSPHATE DIHYDRATE

Robert A. Long, and Albert K. Fan, both of Bradford, Pa., assignors to GTE Products Corporation, Stamford, Conn.

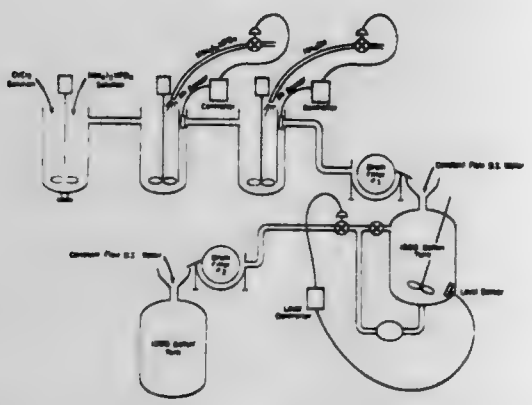
Filed Apr. 27, 1981, Ser. No. 257,821

Int. Cl.³ C01B *25/32*

U.S. Cl. 423—308 9 Claims

1. A method of making brushite by continuous process comprising: continuously introducing solutions containing calcium

ions and phosphate ions into a mixing container to form a slurry of brushite therein, the pH of the slurry in said mixing container being about 3.5–4.0; continuously introducing slurry from said mixing container into a second container to which metered amounts of ammonium phosphate are added tomaintain and control pH to a pH higher than that in said mixing container; continuously introducing slurry from said second container into a third container to which metered amounts of ammonium hydroxide are added to maintain and control pH at



a pH where brushite solubility is low; continuously introducing slurry from said third container to continuous filtering means where a filter cake is formed; continuously removing filter cake from said filtering means and reslurrying it in water for washing; continuously introducing the realurry to a second continuous filtering means where a second filter cake is formed; and continuously removing said second filter cake from said second filtering means and again reslurrying it in wash water.

4,349,519

PURIFICATION OF WET PROCESS PHOSPHORIC ACID

Yoichi Hiraga, Shin-nanyo; Osamu Watanabe, and Masaki Nakatani, both of Tokuyama, all of Japan, assignors to Toyo Soda Manufacturing Company, Ltd., Shin-nanyo, Japan

Filed Dec. 9, 1980, Ser. No. 214,671
Claims priority, application Japan, Jan. 14, 1980, 55-2135
Int. Cl.³ C01B *25/16*
U.S. Cl. 423—321 S 3 Claims

1. A process for purifying wet-process H_3PO_4, comprising:

(a) introducing butanol and wet process H_3PO_4 having a P_2O_5 concentration of more than 35 wt percent into a multistage extraction battery wherein H_2SO_4 is added to the fifth or higher stage from the discharge of the extracted solution and at second or higher stage from the raffinate discharge, the amount of said H_2SO_4 being in a gram equivalent ratio given by subtracting the amount of H_2SO_4 present in said wet process H_3PO_4 from 1.2 to 2.0 times the sum of total cation impurities present in said wet process H_3PO_4 and the total amount of alkali metal or magnesium cations added during purification step;

(b) introducing said extracted solution having H_3PO_4 concentration of about 130 to about 180 g/liter into a multistage purification battery wherein cation selected from the group consisting of Na^+, K^+, $Mg^{++}$and mixtures thereof is added at second or higher stage from the stage of discharging the solvent phase and second or higher stage from the discharge of aqueous phase, the concentration of said cation in said aqueous phase being more than about 0.4g equivalent per liter; and

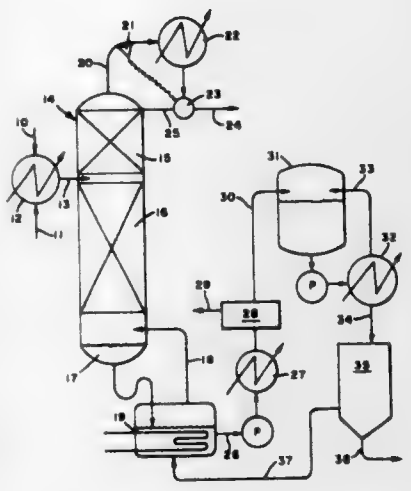
(c) introducing purified solvent extract obtained from step (b) into a stripping battery and recovering purified H_3PO_4.

4,349,520

CONTINUOUS HYDROLYSIS OF KETOXIME

John H. Bonfield, Basking Ridge; Stylianos Sifniades, Madison, and Harry E. Ulmer, Morris Township, Morris County, all of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Aug. 24, 1981, Ser. No. 295,347
Int. Cl.³ C01B *21/14*
U.S. Cl. 423—387 13 Claims



1. A process for the continuous hydrolysis of a ketoxime which comprises the steps:

(a) feeding to a fractional distillation column at an intermediate feed point a feed mixture comprising an aliphatic or cycloaliphatic ketoxime of 3–8 carbons and an inorganic acid which is not strongly oxidizing;

(b) feeding steam to the column adjacent the base of said column;

(c) operating said column with sufficient steam feed, sufficient effective plates between said feed point and the base of said column and sufficient reflux to hydrolyze said ketoxime in said column and form the ketone corresponding to said ketoxime and the hydroxylammonium salt of said inorganic acid;

(d) recovering an overhead comprising said ketone; and

(e) recovering as bottoms an aqueous solution comprising said hydroxylammonium salt.

4,349,521

RUTHENIUM CARBONYLATES, RUTHENIUM CARBONYL HYDRIDES, OSMIUM CARBONYLATES AND THEIR PREPARATION

Sheldon G. Shore, Columbus, Ohio, and Colleen C. Nagel, St. Paul, Minn., assignors to The Ohio State University Research Foundation, Ohio

Continuation-in-part of Ser. No. 127,214, Mar. 4, 1980, abandoned. This application Jun. 16, 1981, Ser. No. 274,152
Int. Cl.³ C01G *1/04, 55/00;* C07F *15/00*
U.S. Cl. 423—417 118 Claims

1. A ruthenium carbonylate anion of the formula $[H_xRu_4(CO)_{13}]^{(2-x)-}$ where x is 0 or 1.

4,349,522

IRON, NICKEL AND COBALT TRI-OSMIUM CARBONYL HYDRIDES AND THEIR PREPARATION

Sheldon G. Shore, Columbus, Ohio, and Jeffrey S. Plotkin, Heightstown, N.J., assignors to The Ohio State University Research Foundation, Ohio

Continuation-in-part of Ser. No. 150,228, May 15, 1980, abandoned. This application Jun. 22, 1981, Ser. No. 275,693
Int. Cl.³ C01G *49/16, 55/00;* C07F *15/00*
U.S. Cl. 423—417 63 Claims

1. A method for making a tri-osmium heteronuclear metal carbonyl compound, which comprises:

(a) establishing a reaction mixture comprising an electron

deficient cobalt, nickel or iron carbonyl or carbonyl anion, $H_2Os_3(CO)_{10}$, and a solvent which at least partially solubilizes at least one of said electron deficient carbonyl compound and said $H_2Os_3(CO)_{10}$, said $H_2Os_3(CO)_{10}$ reacting with said electron deficient carbonyl compound as a Lewis base; and

(b) recovering said tri-osmium heteronuclear metal carbonyl compound from said reaction mixture.

4,349,523

PROCESS FOR PRODUCING CARBON FIBER OF IMPROVED OXIDATION RESISTANCE

Toru Hiramatsu; Teruo Koseki, both of Ehime; Satoshi Hamada, Matsuyama, and Atsushi Sumida, Ehime, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Continuation of Ser. No. 83,801, Oct. 11, 1979, abandoned, which is a continuation-in-part of Ser. No. 893,683, Apr. 5, 1978, abandoned. This application Jan. 29, 1981, Ser. No. 229,747
Claims priority, application Japan, Apr. 5, 1977, 52-38142
Int. Cl.³ D01F 9/22
U.S. Cl. 423—447.4 2 Claims

1. An improvement in a process for producing a carbon fiber of enhanced oxidation resistance, having a specific volume resistance of at least about 1.2×10^{-3} ohm.cm, and containing, based on the weight of the carbon fiber, at least about 2% by weight of nitrogen and less than about 0.03% by weight of total impurities consisting of Na, K, Fe, Cu, Ni, Co, Cr, Mn and S, wherein a precursor acrylic polymer fiber is heated at a temperature of from about 200° to about 350° C. in an oxidizing atmosphere, thereby to be oxidized, and then, the oxidized fiber is heated to a temperature of from about 700° to about 1,600° C. in a non-oxidizing atmosphere, thereby to be carbonized;

said improvement comprising using as the precursor fiber an acrylonitrile copolymer fiber, which copolymer is comprised of at least 95% by mole of units derived from acrylonitrile and not more than 5% by mole of units derived from a carboxyl group-containing copolymerizable monoethylenically unsaturated monomer or monomers; the hydrogen atom of at least one carboxyl group contained in each of the units derived from the carboxyl group-containing monomer or monomers being replaced with a cation selected from the group consisting of:

$$R-N^{\oplus}-R \quad \text{and} \quad RNHN^{\oplus}H_3,$$

wherein R is selected from a hydrogen atom, alkyl groups having 1 to 3 carbon atoms and a phenyl group; said replacement being to such an extent that the units having the introduced cation occupy from 0.1% to 5% by mole, based on the copolymer, and, which copolymer contains less than about 0.05% by weight, based on the weight of the copolymer, of total impurities consisting of Na, K, Fe, Cu, Ni, Co, Cr, Mn and S; and said acrylonitrile copolymer fiber being produced by the steps of:

preparing a spinning dope of the acrylonitrile copolymer in an organic solvent, and;

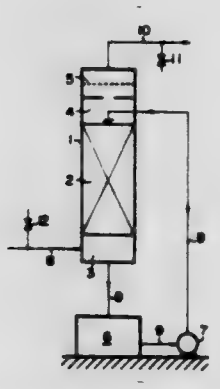
extruding the spinning dope into an aqueous coagulating bath to form a fiber, followed by treating the fiber by using an aqueous drawing bath, an aqueous washing bath and an aqueous oiling bath, all of the aqueous baths being prepared from water selected from deionized water and distilled water, and the aqueous oiling bath being prepared by using a cationic or nonionic oiling agent; each of the spinning dope, the aqueous coagulating bath, the aqueous drawing bath and the aqueous washing bath containing not more than 0.0005% by weight, based on the weight of the respective dope or bath, of total metal impurities consisting of Na, K, Fe, Cu, Ni, Co, Cr and Mn, and the aqueous oiling bath containing not more than 0.1% by weight, based on the weight of the aqueous oiling bath, of total impurities consisting of Na, K, Fe, Cu, Ni, Co, Cr, Mn and S.

4,349,524

PROCESS FOR PRODUCING PURIFIED HYDROCHLORIC ACID

Yoshisato Yamashita, and Yutaka Matsuo, both of Minamata-shi, Japan, assignors to Chisso Corporation, Osaka, Japan

Filed Apr. 21, 1981, Ser. No. 256,242
Claims priority, application Japan, Feb. 20, 1980, 55-19928
Int. Cl.³ C01B 7/07
U.S. Cl. 423—488 4 Claims



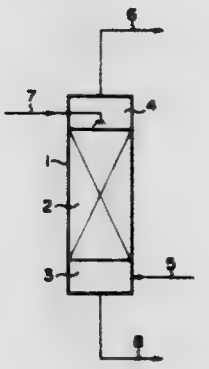
1. A process for producing purified hydrochloric acid which comprises washing hydrogen chloride gas which is generated by reacting an alkali chloride with sulfuric acid, with hydrochloric acid having a saturation concentration, to remove sulfuric acid, alkali sulfates and iron matter contained in the gas, and then having the resulting gas absorbed in water.

4,349,525

PROCESS FOR PURIFYING HYDROCHLORIC ACID PRODUCED FROM ALKALI CHLORIDE AND SULFURIC ACID

Yoshisato Yamashita, and Yutaka Matsuo, both of Minamata-shi, Japan, assignors to Chisso Corporation, Osaka, Japan

Filed Apr. 21, 1981, Ser. No. 256,241
Int. Cl.³ C01B 7/07
U.S. Cl. 423—488 5 Claims



1. A process for purifying a conversion process-hydrochloric acid which comprises treating hydrochloric acid having a concentration of 20 to 35% by weight and obtained by causing hydrogen chloride gas generated by reacting an alkali chloride with sulfuric acid to be absorbed in water with an inert gas or a mixed gas of inert gas with oxygen to remove SO_2 and Br_2 contained in the said hydrochloric acid.

4,349,526

PROCESS FOR THE PRODUCTION OF HYDROGEN PEROXIDE

Gustaaf Goor, Hanau, and Wolfgang Kunkel, Aschaffenburg, both of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Jul. 14, 1981, Ser. No. 283,194

Claims priority, application Fed. Rep. of Germany, Jul. 18, 1980, 3027253

Int. Cl.³ C01B *15/02*

U.S. Cl. 423—588 13 Claims

1. In a process for the production of hydrogen peroxide by the anthraquinone process including the reduction in a solvent of substituted anthraquinone as the reaction carrier, subsequent oxidation thereof, removal of the hydrogen peroxide formed and return of the rejuvenated reaction and wherein the solvent comprises a tetrasubstituted urea carrier to the reduction step the improvement comprising employing as at least a portion of the solvent for the reaction carrier a tetrasubstituted urea in which at least one of the substituents is an aryl group or a substituted aryl group in which an aryl ring carbon atom of the aryl group or substituted aryl group is directly attached to one of the nitrogen atoms of the urea.

4,349,527

IRON-TITANIUM-NIOBIUM ALLOY

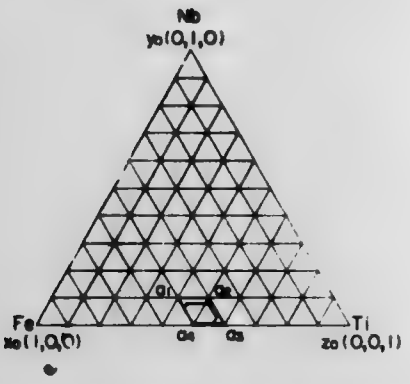
Muneyuki Amano, Chiba, and Yasuo Sasaki, Tokyo, both of Japan, assignors to National Research Institute for Metals, Tokyo, Japan

Filed Sep. 5, 1979, Ser. No. 72,643

Claims priority, application Japan, Jan. 29, 1979, 54/8195

Int. Cl.³ C22C *38/12;* C01B *6/24*

U.S. Cl. 423—644 6 Claims



1. An iron-titanium-niobium alloy of the following formula

$$Fe_xNb_yTi_z$$

wherein $x+y+z=1$, $0.50 \geqq x \geqq 0.40$, and $0.10 \geqq y \geqq 0.005$.

4. A hydride of an iron-titanium-niobium alloy having the formula following

$$Fe_xNb_yTi_z$$

wherein $x+y+z=1$, $0.50 \geqq x \geqq 0.40$, and $0.10 \geqq y \geqq 0.005$.

4,349,528

MONOCOLONAL HYBRIDOMA ANTIBODY SPECIFIC FOR HIGH MOLECULAR WEIGHT CARCINOEMBRYONIC ANTIGEN

Hilary Koprowski, Wynnewood; Kenneth F. Mitchell, Unionville, and Zenon Steplewski, Strafford, all of Pa., assignors to The Wistar Institute, Philadelphia, Pa.

Filed Nov. 21, 1979, Ser. No. 96,309

Int. Cl.³ G01N *56/00;* G01T *1/00*

U.S. Cl. 424—1 4 Claims

1. A diagnostic method for detecting the presence of colorectal carcinoma which comprises contracting blood serum with a monoclonal antibody having a specificity for 180,000 dalton molecular weight carcinoembryonic antigen and which corresponds to the antibody produced by hybrid cell ATCC #CRL-8019, and measuring materials bound by the antibody.

4,349,529

DIAGNOSTIC AND THERAPEUTIC CAPSULES AND METHOD OF PRODUCING

Nabil A. Morcos, South Brunswick; Thomas A. Haney, East Brunswick, and Paul W. Wedeking, Cranbury, all of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Apr. 14, 1980, Ser. No. 140,341

Int. Cl.³ A61K *43/00, 49/00;* G01T *1/00*

U.S. Cl. 424—1 10 Claims

1. An article of manufacture comprising, a pharmaceutical capsule formed essentially of a nontoxic, water soluble material adapted to being ingested and rapidly disintegrating on contact with fluids of the gastro-intestinal tract and a polyethylene glycol filler material having a pharmaceutically useful radioactive iodine and a reducing agent dispersed therein, said capsule having a central axis and an inner surface, said inner surface defining a volume within said capsule, said filler material being supported by said inner surface of said capsule,

a major portion of said volume within said capsule containing said filler material, said filler material having a shape which is coextensive with the inner surface of said capsule, said filler material extending radially across the central axis of said capsule, said filler material containing a major portion of said radioactive iodine within the interior of said filler material, whereby said major portion of said radioactive compound does not contact said inner surface of said capsule.

4,349,530

IMPLANTS, MICROBEADS, MICROCAPSULES, PREPARATION THEREOF AND METHOD OF ADMINISTERING A BIOLOGICALLY-ACTIVE SUBSTANCE TO AN ANIMAL

Garfield P. Royer, Worthington, Ohio, assignor to The Ohio State University, Columbus, Ohio

Filed Dec. 11, 1980, Ser. No. 215,426

Int. Cl.³ B01J *13/02;* A61K *9/50*

U.S. Cl. 424—19 77 Claims

1. A method of incorporating a non-albumin substance in a matrix of cross-linked but physically-native albumin, which method comprises:

forming a solution of a native albumin;

dispersing said substance and a bi-functional cross-linking agent in said albumin solution, said cross-linking agent having the property of cross-linking but not physically denaturing albumin when said solution is maintained at a temperature not in excess of about 37° C. and a pH in the range of about 4 to about 10, thereby forming a single phase containing both said albumin and said cross-linking agent; and

thereafter maintaining said solution at a temperature not in excess of about 37° C. and at a pH in the range of about 4 to about 10 until at least one body of cross-linked but physically native albumin containing said substance forms in said solution.

4,349,531

NOVEL DOSAGE FORM

Arthur R. Mlodozeniec, and Arthur H. Goldberg, both of Montclair, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation of Ser. No. 886,967, Mar. 15, 1978, abandoned, and a continuation-in-part of Ser. No. 784,006, Apr. 4, 1977, abandoned, which is a division of Ser. No. 640,612, Dec. 15, 1975, Pat. No. 4,029,758. This application Oct. 4, 1979, Ser. No. 81,759

Int. Cl.³ A61K *9/24, 9/70*

U.S. Cl. 424—27 3 Claims

1. A solid pharmaceutical unit dosage form comprising a laminate composed of a plurality of layers of an edible, therapeutically inert web, at lest two of said layers having a composition comprising one or more medicaments loaded to one or more surfaces in a finely particulate form, said layers of web being arranged in said laminate so that substantially no medicament is loaded to an outer surface thereof, said laminate being sealed only at the contiguous edges so as to completely internalize said medicament, and wherein at least two layers in said laminate consist of a heat sealable polymeric composition comprising an organic film-forming ingredient and a plasticizer therefor and at least one layer in said laminate consists of a paper composition comprising one or more fibrous materials and at least one non-fibrous modifier therefor, the top and bottom layers of said laminate being polymeric with the proviso that there be no more than six of said paper composition webs interspersed between each pair of said polymeric layers.

4,349,532

COSMETIC COMPOSITIONS BASED ON POLY-(QUATERNARY AMMONIUM) POLYMERS

Guy Vanlerberghe, 40 Rue du General de Gaulle, Villevaude 77410 Claye Souilly; Henri Sebag, 26 Rue Erlanger, 75016 Paris, and Alexandre Zyman, 6, Rue George Eastman, 75013 Paris, all of France

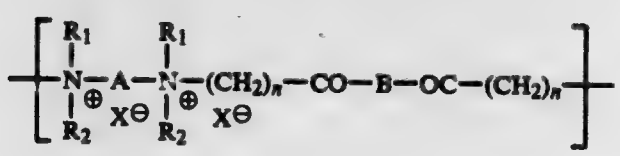
Filed Sep. 14, 1978, Ser. No. 942,319

Claims priority, application Luxembourg, Sep. 20, 1977, 78153

Int. Cl.³ A61K *7/06, 7/09, 7/11, 7/13*

U.S. Cl. 424—47 51 Claims

1. A cosmetic composition suitable for treating hair comprising from about 0.1 to 10% by weight of at least one poly-(quaternary ammonium) polymer having units of the formula:



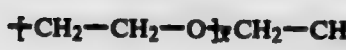
(I)

in which:

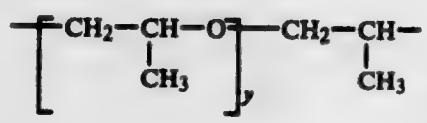
A denotes a linear or branched radical selected from the group consisting of alkylene, hydroxyalkylene, alkenylene and alkynylene having from 2 to 10 carbon atoms;

B denotes a radical selected from the group consisting of:

(a) a glycol radical of the formula —O—Z—O— in which Z denotes a linear or branched hydrocarbon radical having from 2 to 10 carbon atoms or a group of the formula:



or



in which each of x and y denote a number of from 1 to 4;

(b) a bis-secondary diamine radical having the formula



(c) a bis-primary diamine radical of the formula:

—NH—Y—NH—

in which Y denotes a linear or branched hydrocarbon radical having from 2 to 10 carbon atoms or —CH_2—CH_2—S—S—CH_2—CH_2—; and

(d) a ureylene radical of the formula —NH—CO—NH—;

R_1 denotes an alkyl radical containing from 1 to 4 carbon atoms;

R_2 denotes a linear or branched hydrocarbon radical containing from 1 to 12 carbon atoms;

X^{β} denotes a halide ion and n denotes 1 or an integer from 3 to 10; and which further comprises at least one cosmetically acceptable adjuvant and a cosmetically acceptable carrier.

4,349,533

TOOTHPASTE CONTAINING PH-ADJUSTED ZEOLITE

Anthony L. Dent, Bala Cynwyd, Pa.; Elliot P. Hertzenberg, Wilmington, Del., and Howard S. Sherry, Cherry Hill, N.J., assignors to PQ Corporation, Valley Forge, Pa.

Continuation-in-part of Ser. No. 68,129, Aug. 20, 1979, abandoned. This application Dec. 18, 1980, Ser. No. 217,602

Int. Cl.³ A61K *7/16, 7/18, 7/28*

U.S. Cl. 424—52 5 Claims

1. A dentifrice formulation having a pH range outside the 4.2 to 5.4 demineralization threshold and which is acceptable psychosensorily to persons who will use it; said dentifrice being a toothpaste containing 5–80% by weight pH-modified zeolite and being free from zeolites that are not pH-modified;

said pH-modified zeolite being the result of slurrying a zeolite and slowly adding acid solution until the pH of the solution is 5.5–6.0, and therefore personally acceptable, said non-pH-modified zeolites not having personal acceptance;

said pH-modified zeolite having a slurry pH of 5.5–6.0 without the significant reduction of the crystal structure that would be caused by more severe treatment at pH 4 or less;

said pH-modified zeolite having a particle size of 0.5 to 3.5 μm and about an order of magnitude smaller than commercially acceptable abrasive agents that exhibit the same or less abrasion;

said acid slurried pH-modified zeolite not being crushed or fragmented or use but still providing polishing and lustering and providing good pasting properties to said toothpaste, said toothpaste being free from other abrasives and lustering agents;

said acid slurried pH-modified zeolite imparting a pH of 6 or above but below the pH at which there is personal objection to the taste and sense of dehydration to the mouth.

4,349,534

DENTIFRICE COMPOSITION

Edward Eigen, East Brunswick, and Dina I. Brachman, Highland Park, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Nov. 16, 1981, Ser. No. 321,871

Int. Cl.³ A61K *7/16, 7/18, 7/26*

U.S. Cl. 424—52 10 Claims

1. A dentifrice comprising, as the essential dental abrasive, ground rice hull particles which pass a 200 mesh sieve size, the total amount of abrasive constituting less than 40% by weight of the composition.

4,349,535

LIQUID BASE MAKEUP COMPOSITION

Lawrence J. Liff, 6502 N. Central #A-101, Phoenix, Ariz. 85012

Continuation-in-part of Ser. No. 909,576, May 25, 1978, Pat. No. 4,183,898. This application Jan. 11, 1980, Ser. No. 111,354
The portion of the term of this patent subsequent to Jan. 15, 1997, has been disclaimed.
Int. Cl.[3] A61K *7/021*; A63J *3/00*
U.S. Cl. 424—63 1 Claim

1. A liquid base formulation for multiple makeup uses consisting of about 96.48% water; 2.0% cellulose; 1.34% chlorine dioxide; 0 to 0.15% ethylparaben and propylparaben; and 0 to 0.03% phosphoric acid to reduce and maintain the pH of the formulation in the range of about 5.0 to 6.0 in the event the pH is above the range of 5.0 to 6.0.

4,349,536

METHOD OF PROMOTING SUNTAN USING A CREAM CONTAINING ZINC AND COPPER SALTS

Kenneth J. Hausler, 401 Alderley St., Toowoomba, Queensland 4350, Australia

Continuation of Ser. No. 129,290, Mar. 11, 1980, abandoned, which is a continuation of Ser. No. 16,574, Mar. 1, 1979, abandoned, which is a continuation-in-part of Ser. No. 886,194, Apr. 18, 1978, abandoned. This application Apr. 20, 1981, Ser. No. 255,940
Int. Cl.[3] A61K *7/42, 33/30, 33/34*
U.S. Cl. 424—59 4 Claims

1. A method for promoting sun tan comprising topical administration to areas of skin exposed to ultraviolet radiation of an effective amount of a composition for selectivity transporting zinc (II) and copper (II) cations across the membranes of human epidermis and dermis, said composition consisting essentially of 0.1 to 1.0% by weight of each of zinc (II) sulfate and copper (II) sulfate in an oil-in-water cream base containing between about 0.5% and 2% by weight, based upon the total weight of said composition, of at least one topically acceptable anionic surfactant selected from the group consisting of alkali metal and magnesium salts of sulfuric acid esters of C_{10} to C_{14} fatty acid alcohols.

4,349,537

PERMANENT WAVE NEUTRALIZER

Arthur W. Forbriger, Jr., Cincinnati, Ohio, assignor to Tressa, Inc., Cincinnati, Ohio

Filed Mar. 20, 1981, Ser. No. 245,959
Int. Cl.[3] A61K *7/09, 7/11*
U.S. Cl. 424—71 5 Claims

1. A permanent waving neutralizer and oxidizing solution consisting essentially of an aqueous solution containing at least 0.2 molar citrate ion and having a sufficient amount of citric acid to provide a pH of about 1.9 to 4, and an oxidizing agent.

4,349,538

NUCLEASE-RESISTANT HYDROPHILIC COMPLEX OF POLYRIBOINOSINIC-POLYRIBOCYTIDYLIC ACID

Hilton B. Levy, Bethesda, Md., assignor to The United States of America as represented by the Secretary of the Department of Health and Human Services, Washington, D.C.

Continuation-in-part of Ser. No. 101,074, Dec. 7, 1979, abandoned. This application Nov. 18, 1980, Ser. No. 208,029
The portion of the term of this patent subsequent to Apr. 20, 1993, has been disclaimed.
Int. Cl.[3] A61K *45/02, 37/02*; C07C *103/52*
U.S. Cl. 424—85 19 Claims

1. A nuclease-resistant hydrophilic complex of: relatively high molecular weight polyriboinosinic-polyribocytidylic acid; relatively low molecular weight poly-1-lysine in a range of from about 13,000 daltons to about 35,000 daltons; and carboxymethylcellulose.

5. An injectable preparation in a pharmaceutically acceptable carrier of the complex of claim 1 whose unit dosage is sufficient to induce the synthesis of interferon in a mammal into which it is to be injected.

11. A method of inducing the synthesis of interferon in a primate which comprises administering to a primate host a nuclease-resistant hydrophilic complex of relatively high molecular weight polyriboinosinic-polyribocytidylic acid, relatively low molecular weight poly-1-lysine in a range of from about 13,000 daltons to about 35,000 daltons, and carboxymethylcellulose, in a dose sufficient to provide an interferon-inducing amount of said polyriboinosinic-polyribocytidylic acid.

4,349,539

SEPARATION OF HEPATITIS B SURFACE ANTIGEN

D. Eugene Wampler, Harleysville, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Aug. 15, 1980, Ser. No. 178,340
Int. Cl.[3] A61K *39/12, 39/29*
U.S. Cl. 424—89 7 Claims

1. In a method of separating HBsAg from a fluid containing HBsAg, the improvement which comprises centrifuging the fluid to collect a precipitate containing HBsAg, forming a suspension of the precipitate and concentrating the fluid by ultrafiltration to a volume not more than about 1/5 the initial volume.

4,349,540

PROCESS FOR PREPARING VACCINES BASED ON ANTIGENIC RIBOSOMAL FRACTIONS

Lucien D. D'Hinterland, Castres; Hubert Serre, Mazamet, and Gerard Normier, Castres, all of France, assignors to Pierre Fabre S.A., France

Continuation of Ser. No. 36,125, May 4, 1979, abandoned, which is a continuation-in-part of Ser. No. 776,035, Mar. 9, 1977, abandoned, which is a continuation-in-part of Ser. No. 531,011, Dec. 9, 1974, abandoned. This application Jan. 26, 1981, Ser. No. 228,823
Claims priority, application France, Dec. 10, 1973, 73 43957
Int. Cl.[3] A61K *39/102, 39/09, 39/02*
U.S. Cl. 424—92 5 Claims

1. A process for the preparation of an acellular vaccine comprising (1) at least one ribosome extracted from pathogenic bacteria against which protection is desired, said ribosome functioning as an antigenic material and (2) peptidoglycans extracted only from the cell membranes of at least one of the bacteria used in (1), said process comprising

(a) extracting ribosomes from said bacteria by

(I) cultivating the strain of bacteria corresponding to the desired ribosomal fraction on a growth medium;

(II) decanting the bacterial cells of (I);

(III) grinding said bacterial cells in a buffer solution and eliminating the undestroyed bacteria to form an homogeneous cell macerate;

(IV) ultracentrifuging the homogeneous macerate of said bacteria under an acceleration from about 2×10^4 to 6×10^4 g to form (i) a supernatant phase containing the ribosomes on which impurities of the protein-type are absorbed and (ii) a residue containing all other components;

(V) separating and supernatant phase from said residue;

(VI) ultracentrifuging the separated supernatant phase under an acceleration from about 10^5 to about 2×10^5 g to form a centrifuged residue;

(VII) treating said centrifuged residue with a solution of sodium dodecylsulfate;

(VIII) precipitating sodium dodecylsulfate at low temperature; and

(IX) ultracentrifuging the resulting supernatant solution under an acceleration from about 10^5 to about 2×10^5 g, thus forming a residue containing purified ribosomes;

(b) forming peptidoglycans from the cell membranes of said bacteria by

(I) treating the residue of step (a) (IV) (ii) with a saline solution

(II) centrifuging the resulting saline solution-residue mixture to extract the bacterial cell membranes;

(III) digesting the extracted membranes with a proteolytic enzyme to separate membranal glycopeptides, and (IV) centrifuging the membranal glycopeptides, and

(c) mixing the purified ribosomes of (a) (IX) and the membranal glycopeptides of (b) (IV).

4,349,541

ANTI-TUMOR PREPARATION AGAINST CERTAIN TUMORS AND PROCESS FOR PREPARING THE SAME

Yasuhisa Takeda, Yokohama; Takashi Matsuno, Omiya; Mihoko Ohtaka, Tokyo; Hiroki Mitsui, Iruma; Tsutomu Kawaguchi, both of Tsurugashimamachi; Hisako Masuda, Tokyo; Hiroshi Okazaki, Sayama; Mitsuaki Handa, Kamifukuoka; Yutaka Sugawara, Omiya, and Haruki Ogawa, Chofu, all of Japan, assignors to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

Filed May 25, 1979, Ser. No. 42,419

Claims priority, application Japan, May 29, 1978, 53-63418

Int. Cl.³ A61K *37/00, 35/74*

U.S. Cl. 424—95 **3 Claims**

1. A preparation effective against tumors such as MH 134, BAMC 1, Ehrilich tumor, and Meth A tumor, comprising a pharmaceutically acceptable carrier containing killed cells of *Streptococcus equisimilis* ATCC 21597 in an effective amount.

4,349,542

MIXTURE CONTAINING ACTIVE INGREDIENT AND DENDRITIC CRYSTALLINE SUGAR FOR TABLETING

John N. Staniforth, Birmingham, England, assignor to National Research Development Corporation, London, England

Filed May 5, 1980, Ser. No. 156,783

Claims priority, application United Kingdom, Jun. 8, 1979, 7920125

Int. Cl.³ C13K *5/00, 11/00, 13/00*

U.S. Cl. 424—153 **22 Claims**

1. A process for preparing a tablet comprising an active ingredient and an excipient, said process comprising mixing an active ingredient and an excipient comprising particles of a dendritic crystalline sugar, said particles being of average particle size in a range from 50–1000 μm in diameter and having surface pores of at least 10 μm in diameter, and subjecting said mixture to direct compression tableting.

4,349,543

HISTOLYTIC AGENTS AND THEIR USE

Haireddin Jacobi, Leichlingen; Wolfgang Opitz, and Eugen Etschenberg, both of Cologne, all of Fed. Rep. of Germany, assignors to Troponwerke GmbH & Co. KG, Cologne, Fed. Rep. of Germany

Filed Dec. 31, 1979, Ser. No. 108,315

Claims priority, application Fed. Rep. of Germany, Jan. 17, 1979, 2901667

Int. Cl.³ A61K *37/02, 37/00*

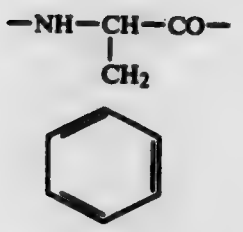
U.S. Cl. 424—177 **3 Claims**

1. A method of treating tissues in a warm-blooded animal which comprises administering to said animal a histolytically effective amount of a compound which is a dipeptide of the formula

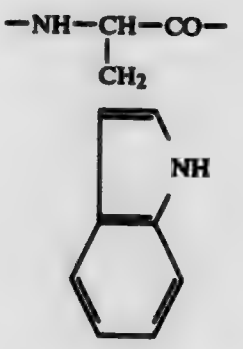
$$R—Phe—Trp—R_1 \qquad (I)$$

an acid addition salt or a base addition salt thereof or a stereoisomer thereof, in which

Phe denotes the radical



Trp denotes the radical



R denotes a hydrogen atom or a C_1 to C_6 alkanoyl group optionally substituted by a hydroxyl group or one or more halogen atoms and

R_1 denotes a hydroxyl, C_1 to C_4 alkoxy, amino, C_1 to C_4 alkylamino or di-C_1 to C_4 alkylamino group either alone or in admixture with a diluent or in the form of a medicament.

4,349,544

METHOD FOR INCREASING THE MILK LET DOWN IN MAMMALS

Joseph H. Cort, Prague; Tomislav Barth, Roztoky u Praha; Karel Jost, Prague, and Zdenek Veznik, Brno, all of Czechoslovakia, assignors to Ceskoslovenska akademie ved, Prague, Czechoslovakia

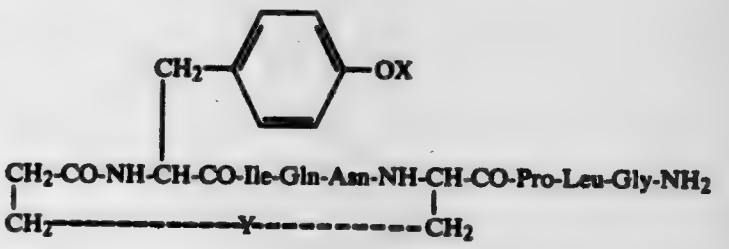
Continuation-in-part of Ser. No. 31,062, Apr. 18, 1979, Pat. No. 4,237,119, which is a continuation-in-part of Ser. No. 931,134, Aug. 4, 1978, abandoned, which is a continuation of Ser. No. 813,665, Jul. 7, 1977, abandoned. This application Nov. 12, 1980, Ser. No. 205,951

Claims priority, application Czechoslovakia, Jul. 16, 1976, 4690-76

Int. Cl.³ A61K *37/00*; C07C *103/52*

U.S. Cl. 424—177 **4 Claims**

1. A method for increasing the milk let down in mammals which comprises administering an effective amount of a compound of the formula



where X is H or CH_3 and Y is CH_2S or SCH_2.

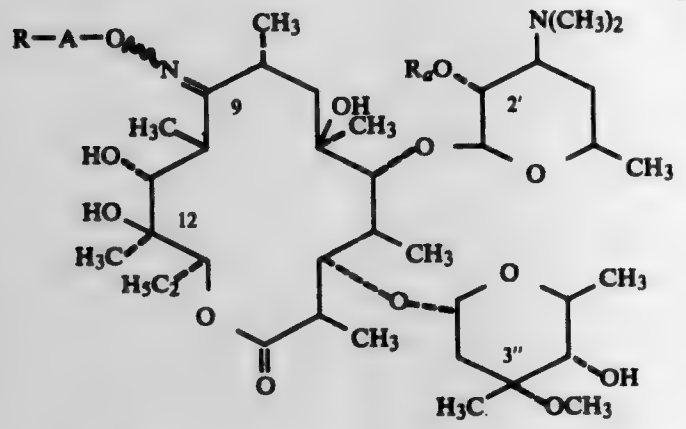
4,349,545
NOVEL ERYTHROMYCIN A DERIVATIVES

Solange Gouin d'Ambrieres, Paris; Andre Lutz, Strasbourg, and Jean-Claude Gasc, Bondy, all of France, assignors to Roussel Uclaf, Paris, France

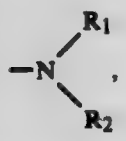
Filed Jan. 8, 1981, Ser. No. 223,368
Claims priority, application France, Jan. 11, 1980, 80 00566
Int. Cl.[3] A61K *31/70;* C07H *17/08*
U.S. Cl. 424—180 18 Claims

1. An erythromycin compound selected from the group consisting of a compound in the syn form or antiform or mixtures of the syn and anti forms of the formula

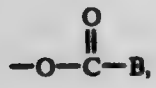
I



wherein A is a linear or branched alkylene of 1 to 6 carbon atoms, R is selected from the group consisting of optionally substituted alkoxy of 1 to 6 carbon atoms, optionally substituted alkenyloxy and alkynyloxy of 2 to 6 carbon atoms, optionally substituted alkylthio of 1 to 6 carbon atoms, optionally substituted alkenylthioand alkynyllthio of 2 to 6 carbon atoms with the thio groups optionally oxidized to the sulfoxide or sulfone form, optionally substituted aryloxy and arylthio, optionally substituted aralkyloxy and arylalkylthio of 1 to 6 alkyl carbon atoms the thio derivatives optionally oxidized to sulfoxide or sulfone



optionally substituted quaternary ammonium group, halogen, optionally substituted 1,2-epoxyethyl and the group resulting from opening of the epoxy with a nucleophilic reactant,



a free or protected formyl, —COOR′, thiocyanate, —CN, acyl and carbamoy, the said optional substitutents on the R groups being at least one member of the group consisting of halogen and alkoxy and alkylthio of 1 to 6 carbon atoms R_1 and R_2 are individually selected from the group consisting of hydrogen and optionally substituted alkyl of 1 to 6 carbon atoms or taken together with the nitrogen atom to which they are attached form an optionally substituted, optionally unsaturated heterocycle which can contain another heteroatom, B is selected from the group consisting of optionally substituted alkyl and alkoxy of 1 to 6 carbon atoms, optionally substituted aryl and aryloxy and optionally substituted aralkyl and aralkoxy of 1 to 6 alkyl carbon atoms, R′ is selected from the group consisting of hydrogen, a cation and an ester group, R_a is selected from the group consisting of hydrogen and acyl of an organic carboxylic acid of 1 to 18 carbon atoms and their non-toxic, pharmaceutically acceptable acid addition salts.

7. An antibiotic composition comprising an antibiotically effective amount of at least one compound of claim 1 and an inert pharmaceutical carrier.

13. A method of combatting bacterial infections in warm-blooded animals comprising administering to warm-blooded animals an antibacterically effective amount of at least one compound of claim 1.

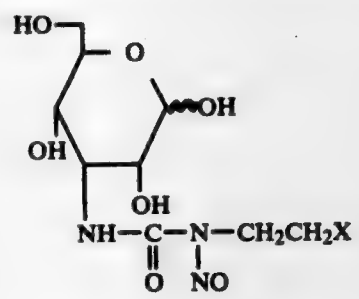
4,349,546
D-ALLOSE DERIVATIVE AND PREPARATION METHOD THEREFOR

Masahide Yamada, Yokohama; Kenichi Edanami, Kamakura, and Toshio Kuroda, Sagamihara, all of Japan, assignors to Wakamoto Pharmaceutical Co., Ltd., Nihonbashimuro, Japan

Filed Mar. 20, 1981, Ser. No. 245,920
Claims priority, application Japan, Mar. 24, 1980, 55-36200
Int. Cl.[3] A61K *31/70;* C08B *37/00*
U.S. Cl. 424—180 4 Claims

1. New D-allose derivatives of formula (I):

(I)



wherein X represents a halogen atom.

4,349,547
SUPPRESSING OBESITY AND OVER-SECRETION OF INSULIN WITH 2-(α-HYDROXY-M-TRIFLUOROMETHYLBENZYL-)AZETIDINE

Kanji Meguro, Hyogo; Hiroyuki Tawada, Osaka, and Takao Matsuo, Kyoto, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Aug. 18, 1980, Ser. No. 178,951
Claims priority, application Japan, Aug. 24, 1979, 54/108329
Int. Cl.[3] A61K *31/395;* C07D *205/04*
U.S. Cl. 424—244 4 Claims

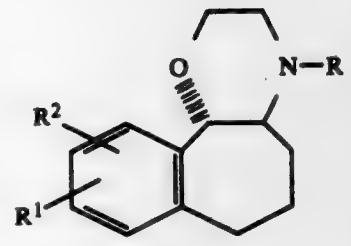
1. A method for producing antiobesity action in a mammal, which comprises administering to the mammal an effective amount of 2-(α-hydroxy-m-trifluoromethylbenzyl)azetidine or a physiologically acceptable acid addition salt thereof.

4,349,548
OCTAHYDROBENZO[6,7]CYCLOHEPT[1,2-b]-1,4-OXAZINES, COMPOSITIONS AND USE

James H. Jones, Blue Bell, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Nov. 20, 1981, Ser. No. 323,771
Int. Cl.[3] C07D *265/34;* A61K *31/535*
U.S. Cl. 424—248.4 9 Claims

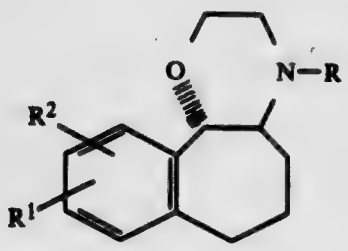
1. A compound of structural formula:



or a pharmaceutically acceptable salt thereof, wherein R is C_{1-4} alkyl, C_{2-5} alkenyl, or phenyl-C_{1-4} alkyl; and R^1 and R^2 are

independently hydrogen, C_{1-4} alkoxy, phenyl-C_{1-4} alkoxy or hydroxy.

7. A method of treating hypertension or depression which comprises the administration to a patient in need of treatment of an effective amount of a compound of structural formula:



wherein R is C_{1-4} alkyl, C_{2-5} alkenyl, or phenyl-C_{1-4} alkyl; and R^1 and R^2 are independently hydrogen, C_{1-4} alkoxy, phenyl-C_{1-4} alkoxy or hydroxy.

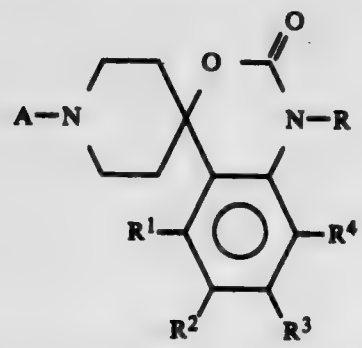
4,349,549

ANTI-HYPERTENSIVE 1-SUBSTITUTED SPIRO(PIPERIDINE-OXOBENZOXAZINE)S

Adolph P. Roszkowski, Saratoga; Robin D. Clark, Palo Alto, and Arthur F. Kluge, Los Altos, all of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed May 18, 1981, Ser. No. 264,779
Int. Cl.³ A61K *31/535*; C07D *498/10*
U.S. Cl. 424—248.55 32 Claims

1. A compound of the formula



(I)

and the pharmaceutically acceptable acid addition salts thereof, wherein

R^1, R^2, R^3 and R^4 are each independently hydrogen, hydroxy, lower alkyl, lower alkoxy or halo;

R is hydrogen or lower alkyl; and

A is selected from the group consisting of:

2-(benzodioxan-2-yl)-2-hydroxyethyl;

ω-(benzodioxan-2-yl)-alkyl (1–4);

3-(aryloxy)-2-hydroxypropyl, wherein aryloxy is phenyloxy optionally substituted by 1–3 moieties selected from the group consisting of lower alkyl, lower alkoxy, halo, alkylsulfamido, lower alkoxycarbonyl, cyano and trifluoromethyl;

ω-arylalkyl (1–4), wherein aryl is phenyl optionally substituted by 1–3 moieties selected from the group consisting of lower alkyl, lower alkoxy, halo, alkylsulfamido, lower alkoxycarbonyl, cyano and trifluoromethyl;

ω-aryl-ω-oxoalkyl (1–4), wherein aryl is as herein defined;

ω-aryl-ω-hydroxyalkyl (1–4), wherein aryl is as herein defined; and

ω-aryloxyalkyl (1–4), wherein aryloxy is as herein defined.

32. A method for lowering blood pressure in humans which method comprises administering to a subject in need of such treatment a therapeutically effective amount of, or a pharmaceutical composition containing a therapeutically effective amount of, the compound of claim 1 or a pharmaceutically acceptable acid addition salt thereof.

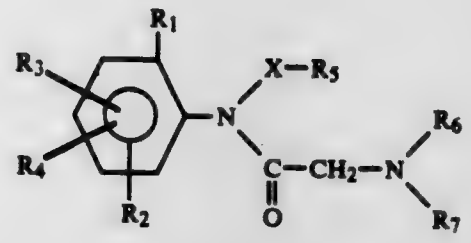
4,349,550

FUNGICIDAL N-(PYRIDAZINOACETYL)-ANILINES

Adolf Hubele, Magden; Walter Kunz, Oberwil, both of Switzerland, and Wolfgang Eckhardt, Lörrach, Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 39,012, May 14, 1979, Pat. No. 4,244,962, which is a division of Ser. No. 905,312, May 12, 1978, Pat. No. 4,165,381, which is a division of Ser. No. 726,320, Sep. 24, 1976, Pat. No. 4,098,895. This application Sep. 5, 1980, Ser. No. 184,505
Claims priority, application Switzerland, Sep. 30, 1975, 12650/75; Sep. 30, 1975, 12651/75
Int. Cl.³ A01N *43/60*; C07D *237/04*
U.S. Cl. 424—250 8 Claims

1. A compound of the formula



(I)

wherein

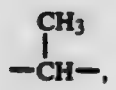
R_1 represents a C_1–C_4-alkyl group, a C_1–C_4-alkoxy group or a halogen atom,

R_2 represents a hydrogen atom, a C_1–C_3-alkyl group, a C_1–C_4-alkoxy group or a halogen atom,

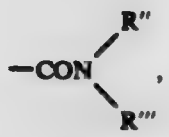
R_3 represents a hydrogen atom, a C_1–C_3-alkyl group or a halogen atom,

R_4 represents a hydrogen atom or a methyl group, with the proviso that the total number of carbon atoms contained by the substituents R_1, R_2, R_3 and R_4 does not exceed 8, and

X represents $-CH_2-$ or



R_5 represents —COOR′, —COSR′ or



wherein each of R′, R″ and R‴ independently represents a methyl or ethyl group,

R_6 and R_7 together with the nitrogen atom to which they are attached represents pyridazine which can be partially or completely hydrogenated and which is unsubstituted or mono- or poly-substituted by halogen or C_1–C_3-alkyl, or salts of the compounds of the formula I with an inorganic or organic acid.

5. A fungicidal composition which contains as active component a fungicidally effective amount of a compound of the formula I according to claim 1, together with a suitable carrier therefor.

4,349,551

PENICILLIN DERIVATIVES AND COMPOSITIONS CONTAINING THEM

Peter H. Bentley; Kenneth D. Hardy, and Peter H. Milner, all of Horsham, England, assignors to Beecham Group Limited, England

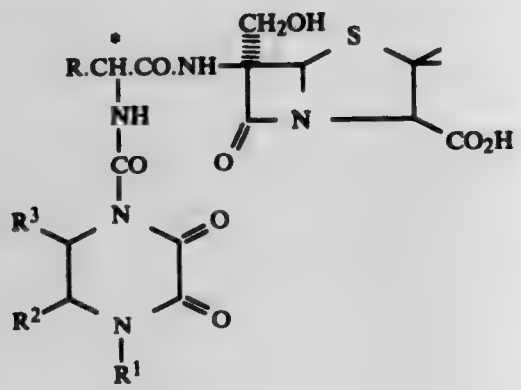
Filed Jun. 5, 1981, Ser. No. 271,007

Claims priority, application United Kingdom, Jun. 6, 1980, 8018577

Int. Cl.³ A61K *31/495;* C07D *499/70*

U.S. Cl. 424—250 11 Claims

1. A compound of formula (I) or a pharmaceutically acceptable salt or in-vivo hydrolysable ester thereof:



(I)

wherein

R is phenyl, 4-hydroxy phenyl, or a 5- or 6-membered heterocyclic ring containing up to three heteroatoms selected from oxygen, sulphur or nitrogen, optionally substituted with hydroxy, amino, halogen or C_{1-6} alkoxy;

R^1 represents hydrogen or C_{1-6} alkyl;

R^2 and R^3 are the same or different and represent hydrogen, C_{1-6} alkyl, halogen, amino, hydroxy, or C_{1-6} alkoxy.

8. A pharmaceutical composition having antibacterial activity comprising an antibacterially effective amount of a compound as claimed in claim 1 together with a pharmaceutical carrier or excipient.

4,349,552

5-FLUOROURACIL DERIVATIVES, AND THEIR PHARMACEUTICAL COMPOSITIONS

Takao Takaya, Kawanishi, and Zenzaburo Tozuka, Toyonaka, both of Japan, assignors to Fujisawa Pharmaceutical Company, Ltd., Osaka, Japan

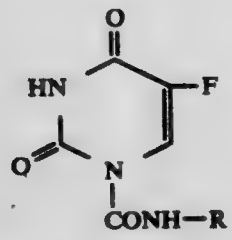
Continuation-in-part of Ser. No. 89,399, Oct. 30, 1979, abandoned. This application Jan. 14, 1980, Ser. No. 111,643

Claims priority, application United Kingdom, Oct. 30, 1978, 42426/78; Jan. 22, 1979, 7902195; Mar. 19, 1979, 7909522; Jun. 4, 1979, 7919439; Canada, Oct. 29, 1979, 338650; Japan, Oct. 30, 1979, 54-140983

Int. Cl.³ C07D *239/30*

U.S. Cl. 424—251 39 Claims

1. A compound of the formula:



wherein R is a bridged alicyclic group selected from the group consisting of norbornyl, norbornenyl, bicyclo[2,2,2]-octyl, bicyclo[2,2,2]-2-octenyl, bicyclo[3,1,1]-heptyl and adamantyl optionally substituted by at least one substituent selected from the group consisting of lower alkyl, carboxy, lower alkoxycarbonyl, alkylidenedioxy, N,N-di(lower)-alkylcarbamoyl, amino, lower alkoxycarbonylamino and halogen.

4,349,553

SPIRO-CYCLOPROPYL AMIDINOHYDRAZONES, AND USE AS INSECT AND FIRE ANT CONTROL AGENTS

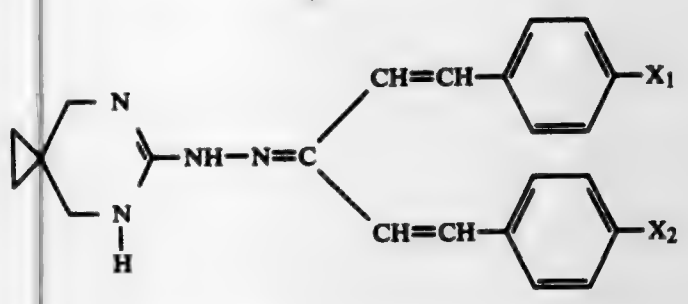
Dale G. Brown, Hopewell, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed May 13, 1980, Ser. No. 149,403

Int. Cl.³ A01N *43/54;* C07D *239/18*

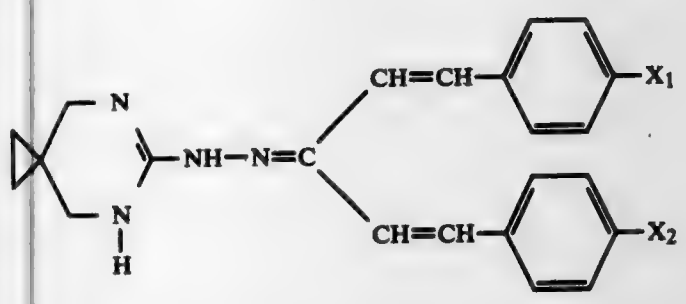
U.S. Cl. 424—251 23 Claims

1. A compound having the structure:



wherein X_1 and X_2 each are halogen, CF_3, CHF_2O, CF_3O, CHF_2CF_2O, CHF_2S, C_1–C_3 alkoxy or C_2–C_3 alkyl.

9. A method for controlling insects comprising: contacting the insects, their habitat, and/or their food supply, with an insecticidally effective amount of a compound having the structure:



wherein X_1 and X_2 each are halogen, CF_3, CHF_2O, CF_3O, CHF_2CF_2O, CHF_2S, C_1–C_3 alkoxy or C_2–C_4 alkyl.

4,349,554

METHOD OF USING CARBOSTYRIL DERIVATIVES AS PLANT FUNGICIDES

Tamon Uematsu, Toyonaka; Satoru Inoue, Nishinomiya, and Norihisa Yamashita, Takarazuka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Japan

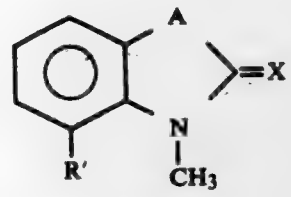
Continuation of Ser. No. 866,395, Dec. 30, 1977, abandoned. This application May 22, 1980, Ser. No. 152,430

Claims priority, application Japan, Jan. 18, 1977, 52-4769; Aug. 16, 1977, 52-98386; Aug. 17, 1977, 52-98965

Int. Cl.³ A61K *31/47;* C07D *215/22*

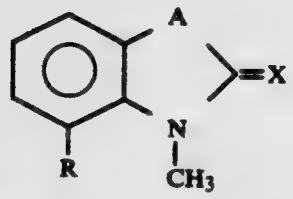
U.S. Cl. 424—258 12 Claims

1. A method of controlling the fungus *Pyricularia oryzae,* which comprises applying a fungicidally effective amount against *Pyricularia oryzae* of a compound of the formula



wherein X is an oxygen or sulfur atom, A is an ethylene or a vinylene group, R′ is a chlorine, bromine or fluorine atom or methyl group.

2. A composition for controlling the fungus *Pyricularia oryzae* which comprises an effective amount to combat said fungus of a compound of the formula:



wherein X is an oxygen or sulfur atom, A is an ethylene or a vinylene group, R′ is a chlorine, bromine or fluorine atom or methyl group; provided that R′ is a chlorine, bromine or fluorine atom when X is an oxygen atom and A is a vinylene group, and a carrier or inert diluent.

4,349,555

DITHIOCOMPOUNDS

Roger Crossley, Reading, and David G. Hill, Cookham, both of England, assignors to John Wyeth & Brother Limited, Maidenhead, England

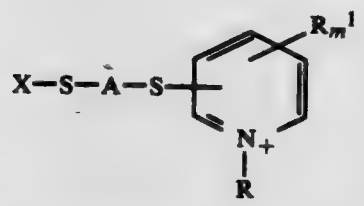
Filed Nov. 29, 1979, Ser. No. 98,419

Claims priority, application United Kingdom, Nov. 30, 1978, 46723/78

Int. Cl.³ A61K *31/415, 31/425, 31/44;* **C07D** *498/00*

U.S. Cl. 424—263 **18 Claims**

1. A compound of formula



I

wherein R is lower alkyl, phenyl or aralkyl of 7 to 12 carbon atoms, R^1 is hydrogen, lower alkyl, hydroxyloweralkyl, loweralkoxyloweralkyl, lower alkoxy, halogen, formyl, phenyl, phenylalkyl or acetal [$CH(OR^2)_2$ where R^2 is lower alkyl, or two R^4 radicals are joined to form a lower alkylene chain], m is 1 or 2, Z is an anion, A is an alkylene radical having from 1 to 3 carbon atoms, which may be substituted by lower alkyl of 1 to 6 carbon atoms, S is sulphur and X is a benzothiazole, benzimidazole, benzoxazole, or phenyl radical which may be substituted by one or more of the following radicals; halogen, nitro, lower alkoxy, aralkoxy of 7 to 12 carbon atoms, hydroxy, hydroxyloweralkyl, loweralkoxyloweralkyl, amino, lower alkylamino, diloweralkylamino, trifluoromethyl, lower alkyl, aryl or aralkyl of 7 to 12 carbon atoms or disubstituted by a loweralkylenedioxy radical and acid addition or quaternary ammonium salts of compounds wherein X is a benzimidazole radical.

11. A method for treating ulcers or hypersecretion in a mammal which comprises administering to said mammal an effective amount of a compound as claimed in claim 1.

4,349,556

PESTICIDALLY ACTIVE 1-ACYLOXY-1-PHENYL-2-AZOLYL-ETHANES

Helmut Timmler; Wolfgang Krämer; Karl H. Büchel, all of Wuppertal; Wilhelm Brandes, Cologne; Paul-Ernst Frohberger, and Bernhard Homeyer, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

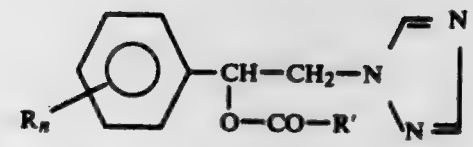
Filed Jun. 8, 1977, Ser. No. 804,832

Claims priority, application Fed. Rep. of Germany, Jun. 24, 1976, 2628419; Jun. 24, 1976, 2628420

Int. Cl.³ A01N *43/50, 43/64;* **C07D** *233/60, 249/08*

U.S. Cl. 424—269 **16 Claims**

1. A 1-acyloxy-1-phenyl-2-azolyl-ethane or salt thereof, the 1-acyloxy-1-phenyl-2-azolyl-ethane being of the formula



in which

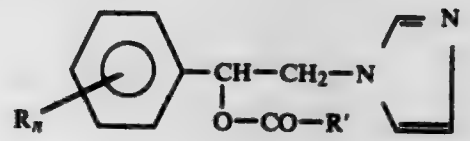
R is halogen; alkyl with 1 to 4 carbon atoms; alkoxy with 1 or 2 carbon atoms; alkylthio with 1 or 2 carbon atoms; alkylsulphonyl with 1 to 4 carbon atoms; haloalkyl with up to 4 carbon atoms; nitro; cyano; phenyl; phenoxy; or phenyl or phenoxy substituted by fluorine, chlorine, bromine, cyano, nitro or haloalkyl with 1 or 2 carbon atoms and up to 3 fluorine plus chlorine atoms;

R′ is alkyl with 1 to 6 carbon atoms; alkenyl with 2 to 4 carbon atoms; alkynyl with 2 to 4 carbon atoms; cycloalkyl with 5 to 7 carbon atoms; haloalkyl with 1 or 2 carbon atoms; phenyl; phenylalkyl or phenoxyalkyl each with 1 or 2 carbon atoms in the alkyl moiety; such phenyl, phenylalkyl or phenoxyalkyl substituted on the phenyl by halogen, amino, cyano, nitro or alkyl with 1 or 2 carbon atoms; amino; alkylamino, dialkylamino or alkylalkylcarbonylamino with 1 or 2 carbon atoms in each alkyl moiety; phenylamino; or phenylamino substituted by halogen, nitro or cyano; and

n represents 0, 1, 2, 3, 4 or 5.

11. A method of combating fungus, bacterium or nematode pests which comprises applying to the pests or a habitat thereof a fungicidally, bactericidally or nematicidally effective amount of a compound according to claim 1.

13. A 1-acyloxy-1-phenyl-2-azolyl-ethane or salt thereof, the 1-acyloxy-1-phenyl-2-azolyl-ethane being of the formula



in which

R is phenyl substituted by fluorine, chlorine or bromine, or phenoxy substituted by fluorine, chlorine or bromine;

R′ is alkyl with 1 to 6 carbon atoms; alkenyl with 2 to 4 carbon atoms; alkynyl with 2 to 4 carbon atoms; cycloalkyl with 5 to 7 carbon atoms; haloalkyl with 1 or 2 carbon atoms; phenyl; phenylalkyl or phenoxyalkyl each with 1 or 2 carbon atoms in the alkyl moiety; such phenyl, phenylalkyl or phenoxyalkyl substituted on the phenyl by halogen, amino, cyano, nitro or alkyl with 1 or 2 carbon atoms; amino; alkylamino, dialkylamino or alkylalkylcarbonylamino with 1 or 2 carbon atoms in each alkyl moiety; phenylamino; or phenylamino substituted by halogen, nitro or cyano; and

n represents 1, 2 or 3.

16. A method of combating fungus, bacterium or nematode pests which comprises applying to the pests or a habitat thereof a fungicidally, bactericidally or nematicidally effective amount of a compound according to claim 13.

4,349,557

THIAZOLE DERIVATIVES AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Dennis Bigg, Jouy en Josas, France, assignor to Synthelabo, Paris, France

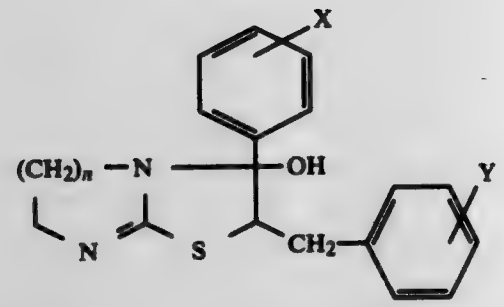
Filed Apr. 7, 1981, Ser. No. 251,744

Claims priority, application France, Apr. 8, 1980, 80 07845

Int. Cl.³ C07D *277/60*

U.S. Cl. 424—270 **9 Claims**

1. A thiazole derivative of the formula:



wherein n represents 1 or 2 and each of X and Y independently of one another represents one or more substituents selected from hydrogen and halogen atoms, the trifluoromethyl radical and straight- or branched-chain alkyl and alkoxy radicals of one to four carbon atoms, and pharmaceutically acceptable acid addition salts thereof.

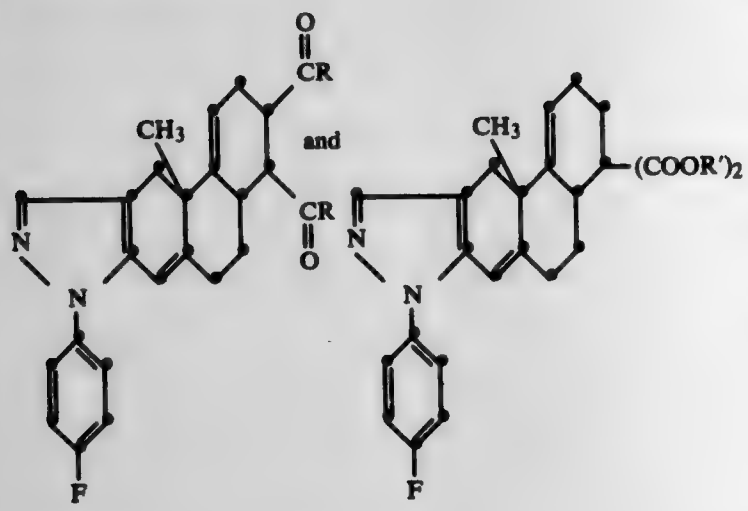
4,349,558

ANTI-INFLAMMATORY 8H-PHENANTHRO-[2,3-c]PYRAZOLE DERIVATIVES

Malcolm R. Bell, East Greenbush, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Filed Feb. 19, 1981, Ser. No. 235,440
Int. Cl.³ A61K *31/415;* C07D *231/54*
U.S. Cl. 424—273 P 5 Claims

1. A compound selected from the group consisting of those having the formulas



wherein R and R′ are lower-alkyl.

5. A method of reducing inflammation in a mammal which comprises administering to said mammal an anti-inflammatorily effective amount of a compound according to claim 1.

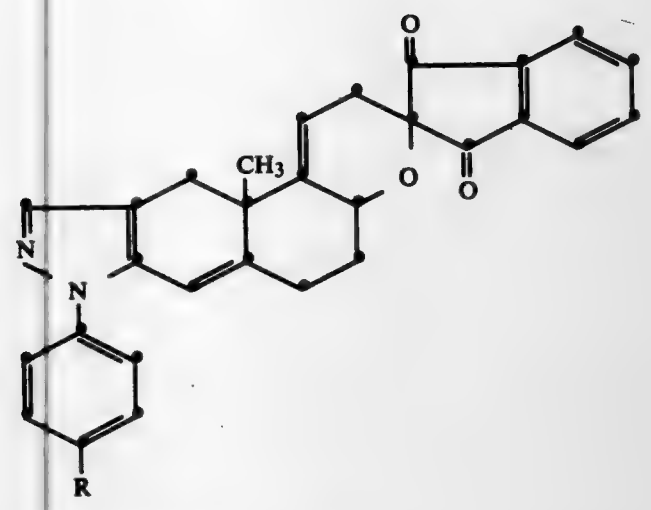
4,349,559

ANTI-INFLAMMATORY SPIRO-2H-INDENE-[2,3′]-3H-PYRAZOLO[4″,5″:7′,6′-]NAPHTHO[2,1-B]PYRAN-1,3-DIONE DERIVATIVES

Malcolm R. Bell, East Greenbush, and John L. Herrmann, Jr., Kinderhook, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Filed Feb. 19, 1981, Ser. No. 236,216
Int. Cl.³ A61K *31/415;* C07D *491/107*
U.S. Cl. 424—273 P 5 Claims

1. A compound of the formula



where R is hydrogen or fluorine.

5. A method of reducing inflammation in a mammal which comprises administering to said mammal an anti-inflammatorily effective amount of a compound according to claim 1.

4,349,560

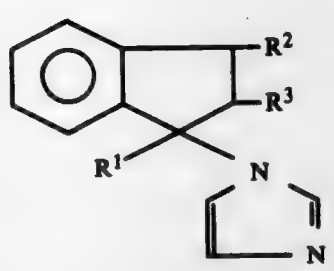
ANTIMYCOTIC IMIDAZOLYL-INDENO-THIOPHENE COMPOUNDS, COMPOSITION AND METHOD OF USE

Horst Böshagen, Haan; Karl H. Büchel, Burscheid; Wilfried Draber, Wuppertal; Ingo Haller, Wuppertal, and Manfred Plempel, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 17, 1982, Ser. No. 255,068
Claims priority, application Fed. Rep. of Germany, May 9, 1980, 3017881
Int. Cl.³ A61K *31/415;* C07D *409/04*
U.S. Cl. 424—273 R 11 Claims

1. A compound which is an imidazolyl-indeno-thiophene of the formula

(I)



or a physiologically acceptable acid addition salt thereof, in which

R^1 represents a phenyl radical which is optionally mono-substituted or polysubstituted by identical or different substituents selected from alkyl with 1 to 4 carbon atoms, alkoxy or alkylthio, in each case with 1 or 2 carbon atoms, halogen or halogenoalkyl with 1 or 2 carbon atoms and with 1 to 5 identical or different halogen atoms which are fluorine or chlorine atoms and

R^2 and R^3, together with the carbon atoms to which they are bonded complete a thiophene ring.

9. A method of combating mycoses in animals in need of said treatment which comprises administering to the animals an antimycotically effective amount of an active compound according to claim 1 either alone or in admixture with an inert pharmaceutical carrier.

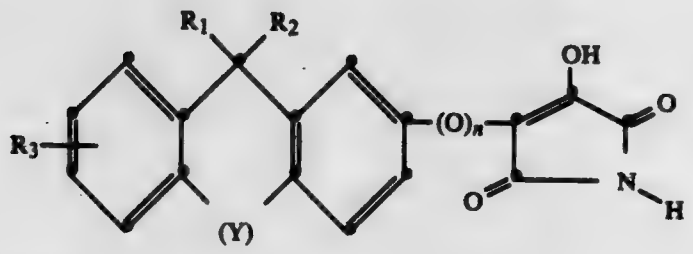
4,349,561

4-SUBSTITUTED-3-HYDROXY-3-PYRROLINE-2,5-DIONE INHIBITORS OF GLYCOLIC ACID OXIDASE

Edward J. Cragoe, Jr., Lansdale; Clarence S. Rooney, Worcester, both of Pa., and Haydn W. R. Williams, Dollard des Ormeaux, Canada, assignors to Merck & Co., Inc., Rahway, N.J.

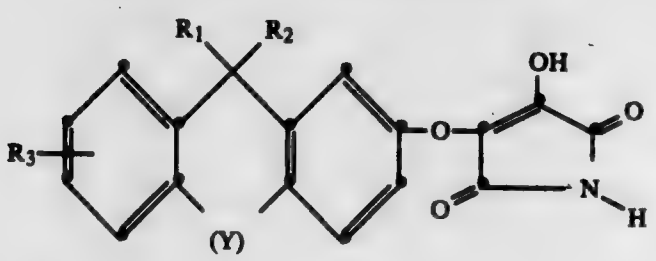
Filed Nov. 5, 1979, Ser. No. 91,293
Int. Cl.³ A61K *31/40*; C07D *207/26*
U.S. Cl. 424—274 9 Claims

1. A method of treating or preventing the formation of calcium oxalate kidney or bladder stones which comprises administering to a patient with or prone to renal lithiasis an effective amount of a compound having the structural formula:



wherein:
n is 0 or 1;
Y is CH_2—CH_2; CH=CH; CH_2—O; O—CH_2;
R_1 and R_2 are both hydrogen, hydrogen and hydroxyl or taken together are =O;
R_3 is hydrogen, halogen or a pharmaceutically acceptable salt thereof.

2. The compounds having the structural formula:



wherein
Y is CH_2—CH_2; CH=CH; CH_2—O; O—CH_2;
R_1 and R_2 are both hydrogen, hydrogen and hydroxyl or taken together are =O;
R_3 is hydrogen, halogen or a pharmaceutically acceptable salt thereof.

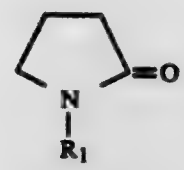
4,349,562

SUBSTITUTED 2-PYRROLIDINONES

Emilio Kyburz, Reinach, and Werner Aschwanden, Ettingen, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation of Ser. No. 8,674, Feb. 2, 1979, Pat. No. 4,239,770. This application Feb. 19, 1980, Ser. No. 122,646
Claims priority, application Switzerland, Feb. 10, 1978, 1404/78
The portion of the term of this patent subsequent to Dec. 16, 1997, has been disclaimed.
Int. Cl.³ A61K *31/40*
U.S. Cl. 424—274 4 Claims

1. A pharmaceutical composition for oral administration in solid unit dosage form comprising from 10 mg. to 2500 mg. of a compound of the formula



I

wherein R_1 is o-methoxybenzoyl, m-methoxybenzyl, p-methoxybenzyl or p-fluorobenzyl, and a pharmaceutically acceptable inert carrier material.

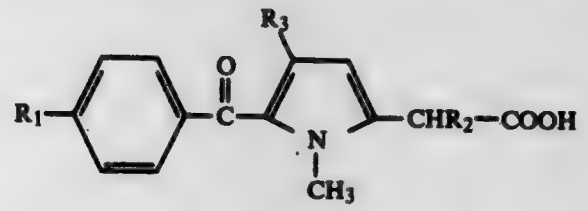
4,349,563

PHARMACEUTICAL COMPOSITIONS

David J. Gilbert, Bishops Stortford, and Derek A. Hollingsbee, Essex, both of England, assignors to Smith and Nephew Associated Companies Limited, England

Filed Apr. 13, 1981, Ser. No. 253,184
Claims priority, application United Kingdom, Apr. 18, 1980, 8012853
Int. Cl.³ A61K *31/40*
U.S. Cl. 424—274 80 Claims

1. A method of treating ocular inflammation which comprises topically administering to the eye an anti-inflammatory amount of a composition which comprises an anti-inflammatory effective amount of a compound of the formula (I):



or a pharmaceutically acceptable salt thereof wherein R_1 is chloro or methyl; R_2 is hydrogen or methyl; and R_3 is hydrogen or methyl, in combination with an ocularly acceptable carrier.

4,349,564

USE OF 1,2-DIMETHYL-3-FLUORO-, 1-METHYL-3,3-DIFLUORO-, AND 1,2-DIMETHYL-3,3-DIFLUORO-CYCLOBUTANE-1,2-DICARBONIC ACID 3,5-DICHLOROPHENYL IMIDES AS PLANT FUNGICIDES

Niklaus Bühler, Rheinfelden; Marcus Baumann, Basel; Daniel Bellus, Riehen, and Elmar Sturm, Aesch, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Apr. 18, 1980, Ser. No. 141,746
Claims priority, application Switzerland, Apr. 20, 1979, 3748/79; Mar. 31, 1980, 2539/80
Int. Cl.³ C07D *209/52*; A01N *43/38*
U.S. Cl. 424—274 3 Claims

1. A method for combatting plant pathogenic fungi which comprises applying to plants infested with such fungi, or to the locus of said plant, a fungicidally or fungistatically effective amont of 1,2-dimethyl-3-fluoro-cyclobutan-1,2-dicarbonic acid-(3,5-dichlorophenyl)-imide.

2. A method for combatting plant pathogenic fungi which comprises applying to plants infested with such fungi, or to the locus of said plants, a fungicidally or fungistatically effective amount of 1,2-dimethyl-3,3-difluoro-cyclobutane-1,2-dicarbonic acid-(3,5-dichlorophenyl)-imide.

3. A method for combating plant pathogenic fungi which comprises applying to plants infested with such fungi, or to the locus of said plants, a fungicidally or fungistatically effective amount of 1-methyl-3,3-difluoro-cyclobutane-1,2-dicarbonic acid-(3,5-dichlorophenyl)-imide.

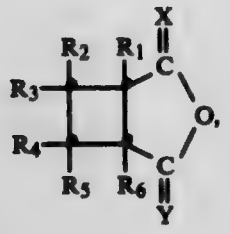
4,349,565

CYCLOBUTANEDICARBOXISOIMIDES AND USE THEREOF AS FUNGICIDES

Marcus Baumann, Basel; Niklaus Bühler, Rheinfelden, and Daniel Bellus, Riehen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

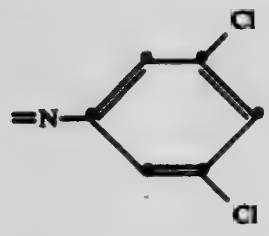
Filed Apr. 8, 1981, Ser. No. 251,835
Claims priority, application Switzerland, Apr. 14, 1980, 2858/80
Int. Cl.³ A61K *31/365*; C07D *307/93*
U.S. Cl. 424—279 9 Claims

1. A compound of the formula I



(I)

wherein one of X and Y is oxygen and the other is



and wherein each of R_1 and R_6 independently is methyl or ethyl, each of R_2 and R_3 independently is hydrogen, fluorine or methyl or R_2 is acetoxy or chlorine whilst R_3 is hydrogen, and wherein R_4 is hydrogen, methyl or chlorine and R_5 is hydrogen or methyl, whilst R_3 and R_4 together can also form an additional valency in the four-membered cycloaliphatic ring.

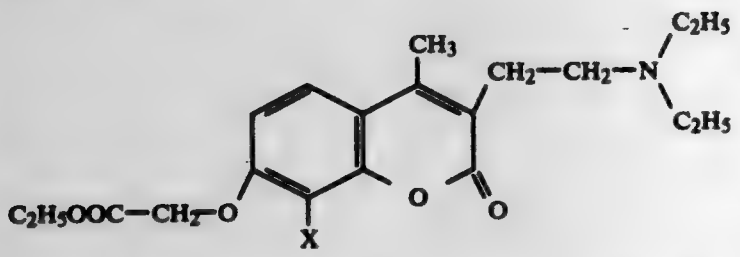
4,349,566

TREATMENT OF ARRHYTHMIA WITH 8-CHLORO- OR 8-BROMOCOUMARIN DERIVATIVES

Francesco della Valle, Padua, Italy, assignor to Fidia S.p.A., Abano Terme, Italy

Continuation-in-part of Ser. No. 101,001, Dec. 6, 1979, abandoned. This application Sep. 10, 1980, Ser. No. 185,893
Claims priority, application Italy, Dec. 19, 1978, 30991 A/78
Int. Cl.³ A61K *31/37*
U.S. Cl. 424—281 6 Claims

1. A method of treating arrhythmia in mammals which comprises administering thereto an effective antiarrhythmic amount of a compound having the formula:



wherein X is chlorine or bromine, or a pharmaceutically acceptable salt thereof.

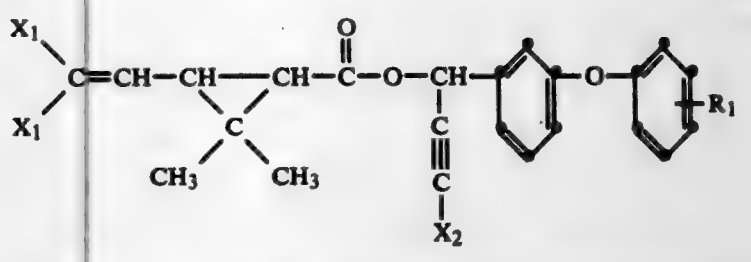
4,349,567

DIHALOVINYLCYCLOPROPANECARBOXYLIC ACID ESTERS AND THEIR USE IN PEST CONTROL

Peter Ackermann, Reinach; Jozef Drabek, Oberwil; Saleem Farooq, Ettingen; Laurenz Gsell, Basel; Odd Kristiansen, Möhlin, and Rudolf Wehrli, Rheinfelden, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Aug. 4, 1980, Ser. No. 174,984
Claims priority, application Switzerland, Aug. 16, 1979, 7513/79; Mar. 18, 1980, 2120/80; Jun. 20, 1980, 4750/80
Int. Cl.³ A01N *53/00*; C07C *69/743, 69/747*
U.S. Cl. 424—305 8 Claims

1. A cyclopropanecarboxylic acid ester of the formula



(I)

wherein R_1 is hydrogen, halogen, methyl, trifluoromethyl or methoxy, and X_1 and X_2 are each halogen.

7. An insecticidal or acaricidal composition containing as active ingredient an insecticidally or acaricidally effective amount of a compound according to claim 1, together with suitable carriers.

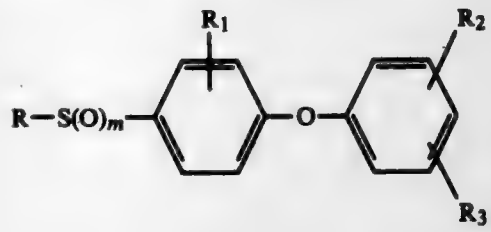
4,349,568

SULFUR-SUBSTITUTED DIPHENYL ETHERS HAVING ANTIVIRAL ACTIVITY

Lowell D. Markley, Midland, Mich.; Yulan C. Tong, Walnut Creek, Calif., and Steven G. Wood, Orem, Utah, assignors to The Dow Chemical Company, Midland, Mich.

Filed Jun. 12, 1980, Ser. No. 158,964
Int. Cl.³ A61K *31/135, 31/10*; C07C *43/263*
U.S. Cl. 424—330 39 Claims

1. A compound corresponding to the formula:



wherein m represents the integer 0, 1 or 2; R represents, (C_1–C_3) alkyl or phenyl; R_1 represents hydrogen, bromo, chloro, fluoro, nitro, amino, (C_1–C_3) alkyl, (C_1–C_3) alkoxy or trifluoromethyl; R_2 represents hydroxyl, bromo, chloro, fluoro, acetyl, benzoyl, a benzoyl radical in which the benzene ring is substituted with one to five substituents selected from bromo, chloro, fluoro, methyl or methoxy, (C_1–C_3) alkyl, (C_1–C_3) alkoxy, an alkoxy group substituted with one or more substituents selected from bromo, chloro or fluoro, benzyl, a benzyl radical in which the benzene ring is substituted with one to five substituents selected from bromo, chloro, fluoro, methyl or methoxy, (C_1–C_3) alkylthio, (C_1–C_3) alkylsulfinyl, (C_1–C_3) alkylsulfonyl, or the radical —$O(CH_2)_nR_4$ wherein n represents the integer 1, 2 or 3; and R_4 represents di(C_1–C_3)alkylamino; R_3 represents hydrogen, hydroxyl, bromo, chloro, fluoro, acetyl, benzoyl, a benzoyl radical in which the benzene ring is substituted with one to five substituents selected from bromo, chloro, fluoro, methyl or methoxy, (C_1–C_3) alkyl, (C_1–C_3) alkoxy, an alkoxy group substituted with one or more substituents selected from bromo, chloro or fluoro, benzyl, a benzyl radical in which the benzene ring is substituted with one to five substituents selected from bromo, chloro, fluoro,

methyl or methoxy, (C_1–C_3) alkylthio, (C_1–C_3) alkylsulfinyl, (C_1–C_3) alkylsulfonyl, or the radical —$O(CH_2)_nR_4$ wherein n represents the integer 1, 2 or 3; and R_4 represents di(C_1–C_3)alkylamino; provided that when R_2 is bromo, chloro, fluoro, (C_1–C_3) alkyl, (C_1–C_3) alkoxy, (C_1–C_3) alkylthio, (C_1–C_3) alkylsulfinyl or (C_1–C_3) alkylsulfonyl and R_3 is hydrogen, bromo, chloro, fluoro, (C_1–C_3) alkyl, (C_1–C_3) alkoxy, (C_1–C_3) alkylthio, (C_1–C_3) alkylsulfinyl or (C_1–C_3) alkylsulfonyl then R_1 is amino.

12. The compound of claim 2 which is 4-(4-((trifluoromethyl)sulfonyl)phenoxy)-1,2-dichlorobenzene.

4,349,569

METHOD OF CULTURING *LACTOBACILLUS ACIDOPHILUS*

Herbert R. Peer, Storm Lake, Iowa, assignor to TransAgra Corporation, Memphis, Tenn.

Continuation-in-part of Ser. No. 711,454, Aug. 4, 1976, abandoned. This application Jan. 27, 1978, Ser. No. 873,156

Int. Cl.³ A23C *9/123*; C12N *15/00, 1/36, 1/20*

U.S. Cl. 426—43 **2 Claims**

1. A process of eliminating the metal poisoning effect evidenced by the tendency to clump exhibited by *Lactobacillus acidophilus* when cultured in the presence of cobalt carbonate comprising the steps of,

(A) selecting a strain of *Lactobacillus acidophilus* of a size about three to five microns that clumps when exposed to the presence of cobalt carbonate in a milk nutrient base,

(B) culturing said *Lactobacillus acidophilus* in a milk nutrient base in the presence of cobalt carbonate to produce an initial mother culture,

(C) inoculating the mother culture in a nutrient culture medium consisting essentially of milk and cobalt carbonate with an added ammonium lactate,

(D) culturing the inoculated mother culture of step (C) through a sequence of a plurality of culture cycles to obtain an improved mother culture by inoculating the nutrient medium with the culture obtained from the next preceding culture cycle to produce after a plurality of cycles *Lactobacillus acidophilus* organisms which have a size of about 10 to 15 microns and which do not clump when cultured in the presence of cobalt carbonate and which exhibits an acidity in excess of 1.75%, and

(E) thereafter culturing the improved *Lactobacillus acidophilus* mother culture obtained from step (D) through a sequence of a plurality of culture cycles in the presence of cobalt carbonate wherein said 10 to 15 micron size and the freedom from clumping is maintained and the total organism protoplasm that may be produced in the culture process is increased.

4,349,570

PROCESS OF TREATING THE JUICE OF SQUEEZED VEGETABLE MATERIAL, SUCH AS LUCERNE, FOR PRODUCING ALIMENTARY PROTEINS AND SUPER-NITROGENATED PROTEIN FOODS, AND PRODUCTS OBTAINED BY SAID PROCESS

Emile-Pierre Segard, and Jean-Michel Lebeault, both of Villers/Coudon, France, assignors to Groupement d'Interet Economique Valpron, Compliegne, France

Filed Feb. 12, 1980, Ser. No. 120,925

Claims priority, application France, Feb. 16, 1979, 7903951

Int. Cl.³ A23K *1/00*

U.S. Cl. 426—52 **15 Claims**

1. A process of treating juice having a high protein and sugar content, obtained by squeezing vegetable matter to be used for foodstuff comprising:

(a) submitting said juice issuing from a squeezing press to a first inoculation with a mesophile homo-fermentative lactic acid producing bacteria in a proportion of at least 10^4 bacteria per milliliter, maintaining the inoculated juice at a temperature between 28 and 35 degrees C., during 15 to 20 hours under slow agitation and without aeration, obtaining a suspension of an insoluble fraction of vegetable and microbial proteins and a residual liquid phase, said suspension having a pH between 4.1 and 4.5;

(b) submitting said suspension to a second inoculation with an additional mixture of thermophile homo-fermentative lactic acid producing bacteria in a proportion of 10^4 bacteria per milliliter per 10 M^3 suspension maintaining the inoculated suspension at a temperature of 40 to 50 degrees C., during 18 to 20 hours, the final suspension having a pH of 3.3. to 3.6.

(c) separating said insoluble fraction from said liquid fraction and separately treating the residual liquid and said insoluble fraction,

said process being characterized by obtaining a mixture of mesophile homo-fermentative acid producting bacteria from at least two strains of the species, *Streptoccus lactis, Bacillus thurigiensis, Prediococccus acidilactis, Lactobacuillus Plantarum.*

4,349,571

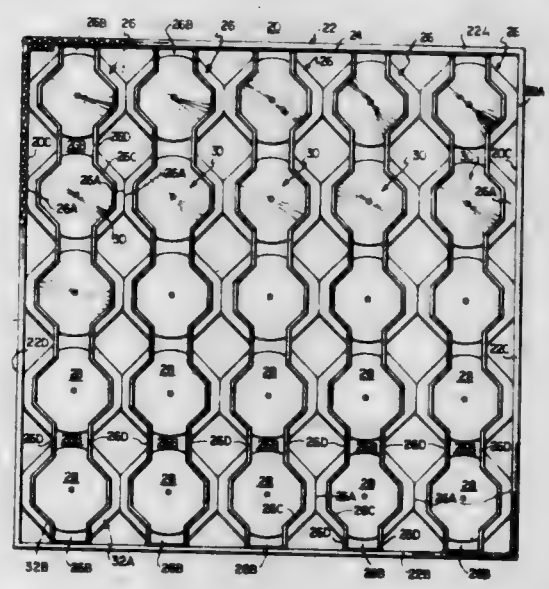
BULK CONE CONTAINER

Paul Davis, Swampscott, Mass.; David Weinstein, Baltimore, Md., and David Schneider, Lexington, Mass., assignors to Sweetheart Plastics, Inc., Wilmington, Mass.

Filed Dec. 7, 1978, Ser. No. 967,506

Int. Cl.³ B65D *81/16, 85/36*; B65B *23/00*

U.S. Cl. 426—124 **21 Claims**



1. Bulk container means for shipping and dispensing a plurality of stacked and nested substantially conical fragile articles, including a matrix of protective cells each holding a stack of said nested substantially conical fragile articles, comprising:

a plurality of foam sandwich means defining said matrix, each comprising a row of a like number of multisided resilient cells, each of said cells having opposed open sides and having at least two substantially opposed and coextensive lands engageable externally thereof to close down said open sides and having sidewalls configured to engage only the largest transverse dimension of said substantially conical articles for resiliently engaging therewith to preclude axial movement of said articles in said cells; and

an external container shell dimensioned to receive said plastic foam sandwich means in compressive juxtaposition with the outermost said lands on said sandwich means;

said lands on said plurality of plastic foam sandwich means being in registry and compressive juxtaposition throughout said matrix to substantially uniformly apply a closing force to all of said resilient cells.

9. Bulk container means for shipping and dispensing a plurality of stacked and nested substantially conical fragile articles, including a matrix of protective cells each holding a stack of said nested substantially conical fragile articles, comprising:

a plurality of plastic foam sandwich means defining said matrix each comprising a row of a like number of multisided resilient cells each cell having opposed open sides and having at least two substantially opposed and coexten-

sive lands engageable externally thereof to close down said open sides and having sidewalls configured to engage only the largest transverse dimension of said substantially conical articles for resiliently engaging therewith to preclude axial movement of said articles in said cells;

an external container shell dimensioned to receive said plastic foam sandwich means in compressive juxtaposition with the outermost said lands on said sandwich means;

said lands on said plurality of plastic foam sandwich means being in registry and compressive juxtaposition throughout said matrix to substantially uniformly apply a closing force to all of said resilient cells;

said external container shell including a bottom member supporting said sandwich means and a removable cover displaced from the uppermost ends of said sandwich means;

said cells being open ended to permit articles held therein to extend therefrom into proximity with said cover; and

spacer means mutually engageable with said cover and said uppermost ends of said sandwich means precluding engagement between said articles of said cover by fixing said sandwich means between said cover and said bottom member.

17. A resilient, plastic foam sandwich structure defining a row of multi-sided cells for receiving in each cell a plurality of stacked and nested substantially conical fragile aticles and maintaining the latter in a cushioned and motionless condition, comprising:

a substantially symmetrical elongated unitary formed foam sheet including a transversely disposed elongated central panel and first and second end panels of substantially identical formation foldable one toward the other along respective and parallel side edges of said central panel to form a U-shaped sandwich;

a like plurality of elongated and multisided open cavities formed in each said end panel, corresponding ones of said open cavities in respective end panels being in opposed registry to form a row of multi-sided cells in said U-shaped sandwich, said cells being open at two opposed sides and at the ends thereof remote from said central panel;

each of said open cavities having at least one wall portion proximate thereto configured as an engageable surface means for imparting a closing force to said cells in said U-shaped sandwich and at least two wall portions extending longitudinally thereof, defining the outer boundaries thereof and configured to resiliently engage only the largest transverse dimensions of said substantially conical articles to preclude axial movement of said fragile articles in said cells;

a combshaped clamping means including an upper body portion and at least two dependent teeth defining a convergent slot therebetween with the inboard edges thereof; and

said inboard edges slidably and telescopically engaging opposed ones of said engageable surface means to selectively impart and release said closing force to and from said cells.

4,349,572

PROCESS OF RECYCLING ANIMAL WASTE

Roger R. Larson, 2501 Bedford Dr., and Efton E. Hatfield, 1103 Westlawn St., both of Champaign, Ill. 61820

Continuation of Ser. No. 688,722, May 21, 1976, which is a division of Ser. No. 553,647, Feb. 27, 1975. This application Sep. 19, 1978, Ser. No. 943,633

Int. Cl.³ A23K *3/00*

U.S. Cl. 426—335 **10 Claims**

6. A method of feeding ruminant animals comprising feeding said animals a diet comprising a bulk-furnishing component and a carbohydrate-furnishing component and including a supplement therein, said supplement consisting essentially of the reaction product of excreta selected from livestock and poultry excreta and from 0.1 to 3.0% by weight of said excreta of a liquid aldehyde.

4,349,573

LOW DENSITY COFFEE PROCESS

Arthur Stefanucci, Clifton, and Michael G. Protomastro, Woodridge, both of N.J., assignors to General Foods Corporation, White Plains, N.Y.

Filed Nov. 28, 1980, Ser. No. 210,971

Int. Cl.³ A23F *5/04*

U.S. Cl. 426—388 **9 Claims**

1. A method of producing a low density roast and ground coffee product such that 13 ounces of the coffee product will produce a brew which is equal in flavor quality and flavor strength to a brew prepared from 16 ounces of conventional roast and ground coffee which comprises:

(a) preparing a roasted high quality coffee bean fraction under short roasting conditions effective to produce a roasted high quality coffee bean fraction having a roast color of no more than 50 and a bulk density less than 0.35 g/cc.;

(b) preparing a roasted intermediate quality coffee bean fraction under short roasting conditions effective to produce a roasted intermediate quality coffee bean fraction having a roast color of 60 and a bulk density less than 0.32 g/cc.;

(c) preparing a roasted low quality coffee bean fraction under short roasting conditions effective to produce a roasted low quality coffee bean fraction having a roast color of 85 and a bulk density less than 0.40 g/cc.;

(d) blending the roasted fractions of steps (a), (b) and (c) in a ratio effective to produce a ground blend having a maximum free flow density of 0.30 g/cc. and wherein the high quality coffee constitutes 25–40%, the intermediate quality coffee constitutes 50–60% and the low quality coffee constitutes 10–15% of the final blend;

(e) grinding the roasted blend of step (d), while bypassing the grinder normalizer, to an average particle size of 880–900μ for electric percolator grind; of 830–850μ for stove percolator grind; or of 740–760μ for automatic drip grind.

4,349,574

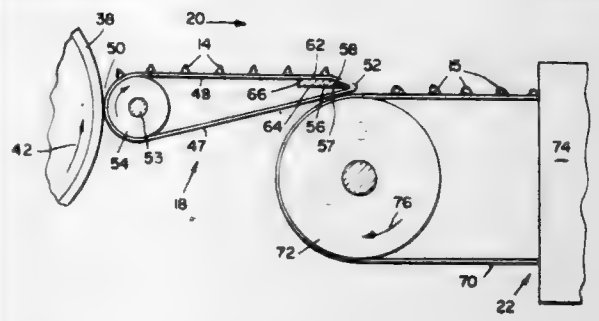
METHOD AND APPARATUS TO MAKE COOKIES

William G. Crothers, Princeton, N.J., assignor to Deer Park Baking Co., Hammonton, N.J.

Filed Sep. 28, 1981, Ser. No. 305,918

Int. Cl.³ A21D *6/00*

U.S. Cl. 426—496 **17 Claims**



1. A machine to make improved cookies, comprising:

(a) dough shaping means for forming dough into individual dough bits, each of said bits comprising a conical shape having a flat base;

(b) transfer conveyor means being dipsosed adjacent to said dough shaping means and having a transfer surface extending between a first location and a second location, said dough bits being removed from said shaping means at said first location by said transfer conveyor means with said base of said conical shape on said transfer surface, and said dough bits being transferred to said second location where said

transfer conveyor means further comprises means to orient said dough bits so that each of said dough bits lies on the side of the conical shape; and

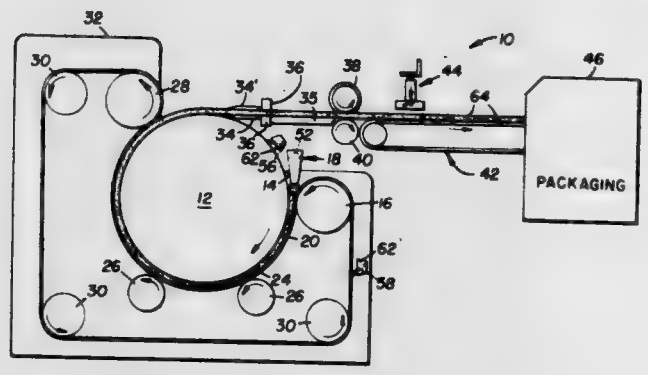
(c) oven conveyor means adjacent to said transfer surface for receiving said shaped dough on its side for baking thereof whereby said dough bits are baked to make cookies having a rounded base.

4,349,575

METHOD FOR FREEZING AND FORMING MEAT PATTIES

Eldon N. Roth, 99 Madera Ct., San Ramon, Calif. 94583

Filed Sep. 15, 1980, Ser. No. 187,370
Int. Cl.[3] A23B *4/06*; A23L *1/31*
U.S. Cl. 426—513 15 Claims



1. A method for freezing and forming individual patties of protein material, comprising the steps of

processing the protein material to form a viscous paste,

introducing the viscous paste into a nip formed between a rotating drum and an application roller for forming the viscous paste into a sheet having generally uniform thickness and density,

engaging the outer surface of the sheet of protein material opposite the rotating drum with an endless belt in order to condition the outer surface of the sheet of protein material, the endless belt being trained about the application roller and about additional rollers for maintaining the belt in engagement with said sheet upon the rotating drum,

refrigerating both the rotating drum and the application roller in order to similarly refrigerate and condition both surfaces of the sheet as it is formed between said drum and the endless belt trained about the application roller,

removing the sheet from the rotating drum after it is suitably refrigerated, and forming individual patties from the sheet of protein material.

4,349,576

SOY ISOLATE IN MELTABLE IMITATION CHEESE

William F. Lehnhardt; Charles E. Streaty, Jr., both of Decatur; Walter C. Yackel, Jr., Oreana; Ho S. Yang, and Daniel K. Tang, both of Decatur, all of Ill., assignors to A. E. Staley Manufacturing Company, Decatur, Ill.

Filed Dec. 29, 1980, Ser. No. 220,680
Int. Cl.[3] A23C *19/055, 20/00*
U.S. Cl. 426—582 9 Claims

1. In a meltable imitation cheese product comprised of milk protein, fatty triglycerides, water, coloring agents, flavoring agents and other conventional imitation cheese additives, the improvement which comprises replacing at least 20% by weight of the milk protein with a vegetable protein isolate characterized as: (a) having an NSI of at least 90, (b) forming an isolate gel when heated to 85° C. for 30 minutes at a 15% by weight concentration in water, (c) substantially free from vegetable hydrolyzates and (d) having a melt value of at least 15 cm^2.

4,349,577

STARCH-PROTEIN CLOUDS AND PRECLOUDS

Martin M. Tessler, Edison, N.J., assignor to National Starch and Chemical Corp., Bridgewater, N.J.

Filed Oct. 6, 1980, Ser. No. 194,494
Int. Cl.[3] A23L *2/00*
U.S. Cl. 426—590 16 Claims

1. A liquid starch-protein precloud, useful in acidic fluids having a pH of about 3.25–5.5, prepared by forming an aqueous dispersion comprising about 2.5–15 parts of a dispersed cooked starch base and about 1 part of a water-soluble protein salt at a pH above that at which said protein agglomerates; said protein being insoluble at a pH of about 3.25–5.5 and being a casein, a soy protein, a wheat protein, or mixtures thereof.

4,349,578

CONDENSED VEGETABLE SEED SOLUBLES ANIMAL FEED INGREDIENT

Kenneth N. Wright, and Gilbert W. Griffel, Jr., both of Decatur, Il., assignors to A. E. Staley Manufacturing Company, Decatur, Ill.

Filed Sep. 9, 1977, Ser. No. 831,835
Int. Cl.[3] A23K *1/00*; A23L *1/14*
U.S. Cl. 426—630 11 Claims

1. An improved animal feed block characterized by its superior resistance to "fissuring" and weathering consisting essentially of about 55–65% by weight dried steep liquor concentrate, 10–20% vegetable seed meal, 5–40% salt, and 7–12% condensed vegetable seed solubles, said condensed vegetable seed solubles functioning as a nutritive binder which also imparts weather resistance and physical stability to said animal feed block.

4,349,579

PROCESS FOR SOLUBILIZING COCOA

Pierre-Benoit Rabond, Monthey; Frantisek Kubicek, Bossonnens, and Jean-Pierre Bandi, La Tour-de-Peilz, all of Switzerland, assignors to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland

Filed Dec. 26, 1979, Ser. No. 106,529
Claims priority, application Switzerland, Jan. 5, 1979, 81/79
Int. Cl.[3] A23G *1/00*
U.S. Cl. 426—631 11 Claims

1. A process for solubilising cocoa which comprises:

(a) continuously injecting, under pressure, a mixture consisting of steam and a concentrated solution of an alkali carbonate into a tube containing a cocoa mass;

(b) allowing the carbonate to react with the cocoa mass under pressure in the tube at a temperature of at least 120° C. to form a reacted mass mixture within 30 to 80 seconds;

(c) subjecting the reacted mass mixture to sudden expansion; and then

(d) drying the expanded, reacted mass mixture while stirring until a dried, solubilised liquor is obtained.

4,349,580

PROCESS AND SOLUTION FOR PRESERVING GREEN PLANT TISSUES

Cesar Romero-Sierra, Bath, and John C. Webb, Kingston, both of Canada, assignors to Queen's University at Kingston, Kingston, Canada

Continuation-in-part of Ser. No. 61,688, Jul. 30, 1979, Pat. No. 4,278,715. This application May 21, 1981, Ser. No. 265,710
Int. Cl.[3] A01N *3/00*; C09K *15/06*
U.S. Cl. 427—4 4 Claims

1. A process for preserving naturally green coloured plant tissues comprising immersing said tissues in a solution comprising about

70–90% by volume water

5–20% by volume of a monohydric alcohol

5–15% by volume sulphurous acid

and containing

15–25 gms cupric chloride
20–30 gms cupric sulphate and
5–12 gms citric acid per liter of solution,
for a sufficient time to effect exchange of water naturally contained in said tissues with said solution, thereby biologically preserving and fixing the green colour in said tissue.

4,349,581

METHOD FOR FORMING AN ANTICORROSIVE COATING ON A METAL SUBSTRATE

Hiroshi Asano, Ichikawa; Takayuki Shimamune, Ichihara; Toshiki Goto, Ichihara; Hideo Nitta, Ichihara, and Masashi Hosonuma, Ichihara, all of Japan, assignors to Permelec Electrode Ltd., Tokyo, Japan

Filed Feb. 12, 1981, Ser. No. 233,704
Claims priority, application Japan, Feb. 13, 1980, 55/15502
Int. Cl.³ B05D *1/08*
U.S. Cl. 427—34 **7 Claims**



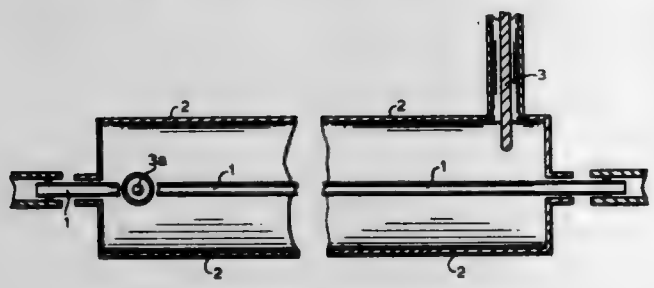
1. A method for forming an anticorrosive coating on the surface of a metal substrate, which comprises the steps of
(1) coating the surface of a metal substrate with an anticorrosive metal capable of forming an alloy with said substrate metal by a spraying procedure, and
(2) then heating the coated surface in a vacuum or in a substantially inert atmosphere by irradiating the surface with electron beams or a plasma arc to form an alloy layer only in the interface between said metal substrate and said metal coating.

4,349,582

GAS-DISCHARGE METHOD FOR COATING THE INTERIOR OF ELECTRICALLY NON-CONDUCTIVE PIPES

Hans Beerwald, Kalkgasse 2, 5370 Kall-Sistig; Günter Böhm, Haarholzer Strasse 21, and Günter Glomski, Scharnhorststrasse 2, both of 4630 Bochum, all of Fed. Rep. of Germany

Filed Mar. 4, 1981, Ser. No. 240,539
Claims priority, application Fed. Rep. of Germany, Mar. 18, 1980, 3010314
Int. Cl.³ B05D *3/02, 3/06, 7/22*
U.S. Cl. 427—38 **5 Claims**



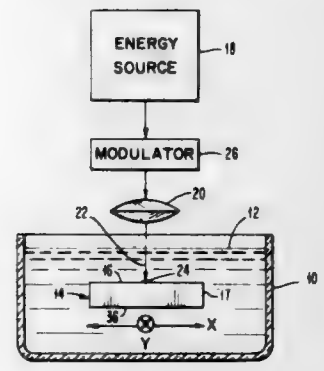
1. In a method for coating the interior of an electrically-non-conductive pipe by means of a reactive deposition of a gas flowing through the pipe, of the type wherein the gas is disassociated by an electric gas discharge and wherein the deposition occurs simultaneously throughout the total pipe length, the improvement comprising the steps of:
(a) generating a flow of an ionizable gas through said pipe; and
(b) generating gas discharge pulses in said pipe to effect a vapor deposition of said gas on the interior of said pipe, said pulses have a pulse duration and frequency adjusted to the transit time of the gas flowing through the pipe so that the time period between two successive pulses corresponds to the time which is required for filling the pipe with unused gas so that deposition occurs simultaneously over the total pipe length in a homogeneous manner.

4,349,583

LASER ENHANCED MASKLESS METHOD FOR PLATING AND SIMULTANEOUS PLATING AND ETCHING OF PATTERNS

Larysa H. Kulynych, Rochester; Lubomyr T. Romankiw, Briarcliff Manor, and Robert J. von Gutfeld, New York, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 28, 1981, Ser. No. 287,661
Int. Cl.³ B05D *3/06*
U.S. Cl. 427—53.1 **9 Claims**



1. A method for selectively plating onto a surface of a workpiece without application of an electrical potential source comprising the steps of:
contacting said surface with a plating solution in the absence of a reducing agent and without application of an electrical potential source, and
directing an energy beam onto the workpiece to locally heat the surface to promote plating.

4,349,584

PROCESS FOR TAPERING OPENINGS IN TERNARY GLASS COATINGS

Doris W. Flatley, Belle Mead, and Sheng T. Hsu, Lawrenceville, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Apr. 28, 1981, Ser. No. 258,431
Int. Cl.³ H01L *21/316*
U.S. Cl. 427—85 **8 Claims**

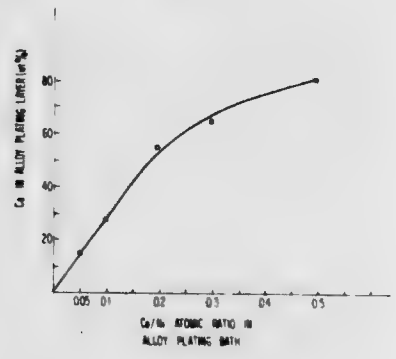
1. A process for forming a tapered opening in a glass passivating coating on the surface of a semiconductor body comprising the steps of:
forming a layer of dense, undoped silicon oxide on the semiconductor body;
forming a layer of ternary doped silicon oxide on the undoped layer, the doped layer characterized by having a given flow temperature;
forming a contact opening in both silicon oxide layers to expose a portion of the semiconductor body; and
heating both oxide layers to a temperature below the given flow temperature of the doped layer for a period of time sufficient to only soften and partially reflow the doped layer at the edges of the contact opening yet insufficient to form a significant oxide growth on the exposed portion of the semiconductor body.

4,349,585

GOLD-PLATED ELECTRONIC COMPONENTS AND PROCESS FOR PRODUCTION THEREOF

Teruyoshi Nagashima; Akio Takami, and Akiyo Kasugai, all of Aichi, Japan, assignors to NGK Spark Plug Co., Ltd., Aichi, Japan

Division of Ser. No. 72,750, Sep. 5, 1979. This application Mar. 27, 1981, Ser. No. 248,375
Claims priority, application Japan, Sep. 5, 1978, 53-108976
Int. Cl.³ B05D 5/12
U.S. Cl. 427—125 5 Claims



1. A process for producing an electronic component having a gold-plated layer applied to an undercoat layer, comprising the steps of:

forming said undercoat layer on a metal surface of said electronic component as an undercoat layer for said gold-plated layer, said undercoat layer being a plated layer comprised of an alloy of cobalt and nickel, said undercoat layer being formed from an alloy plating bath containing cobalt and nickel;

adding, simultaneously, to said bath, a supplemental solution comprising nickel and cobalt in a lower nickel/cobalt ratio than that in said bath; and

treating said formed undercoat layer in a non-oxidizing atmosphere at a temperature of about 700° C. or more and forming a gold layer on said undercoat layer.

4,349,586

ANTI-ADHESIVE COMPOSITION BASED ON WAX IN ORGANIC SOLVENT MEDIUM

Francine Sejournant, Vitry-sur-Seine, France, assignor to Antipol Commercial Systems (Jersey) Limited, St. Helier, Channel Islands

Filed Dec. 27, 1979, Ser. No. 107,607
Claims priority, application France, Dec. 28, 1978, 78 36768
Int. Cl.³ B05D 5/08, 1/36
U.S. Cl. 427—154 1 Claim

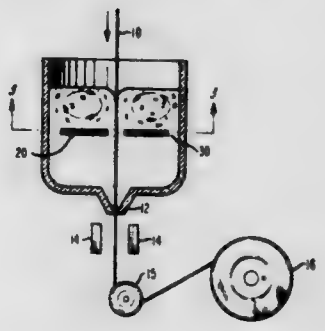
1. Surface treatment process for forming a protective coating against bill-posting, penetration and attachment of graffiti and/or paint, and against the adherence of dust and polluting agents in which the substrate is treated by means of an aqueous composition containing at least one synthetic wax of vegetable origin, one microcrystalline wax, or a mixture thereof having a melting point of between 45° and 110° C., followed by applying an anti-adhesive composition containing within an organic solvent without water at least one microcrystalline wax present in an amount of 10 to 30% by weight compared with the total weight of the composition and a silicone oil which is a methylpolysiloxane having a viscosity of 500 to 2,500,000 cs, a methylphenylpolysiloxane with a viscosity of between 10 and 100,000 cs or a mixture thereof present in an amount of 0.01 to 15% by weight compared with the total weight of the anti-adhesive composition.

4,349,587

METHOD FOR COATING FIBER WAVEGUIDES

Charles J. Aloisio, Jr., Chamblee, Ga.; Lee L. Blyler, Jr., Basking Ridge, N.J.; George S. Brockway, Lawrenceville, Ga.; Arthur C. Hart, Jr., Chester, N.J., and Carl R. Taylor, Lawrenceville, Ga., assignors to Bell Telephone Laboratories, Incorporated, Murry Hill, N.J.

Filed Mar. 12, 1981, Ser. No. 243,269
Int. Cl.³ B05D 1/18, 7/20; G02B 5/14
U.S. Cl. 427—163 11 Claims



1. Method for the manufacture of coated fiber comprising the steps of:

pulling the fiber from a fiber source,

passing the pulled fiber through a reservoir of liquid coating material and thereafter through an exit die in the reservoir,

the invention characterized in that the fiber is passed through the liquid coating material at a rate rapid enough to cause bubbles to become entrained in the reservoir, and

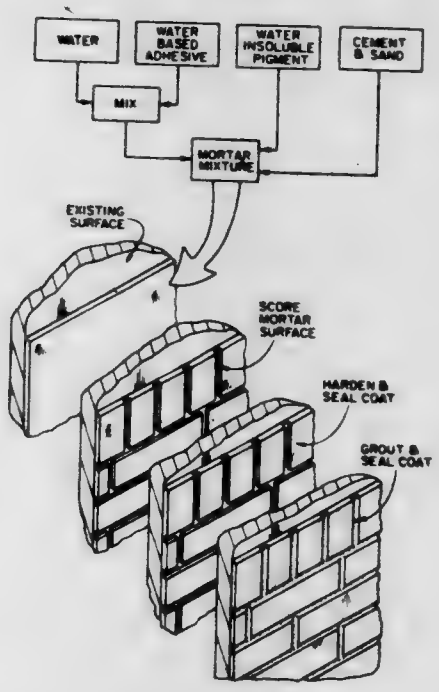
characterized further by the step of continuously removing bubbles from the liquid coating material.

4,349,588

SIMULATED BRICK OR TILE

Henry Schiffer, 21835 Elbosque Way, Boca Raton, Fla. 33433

Filed Sep. 8, 1981, Ser. No. 299,722
Int. Cl.³ B05D 1/00, 3/12, 1/38; B32B 13/12
U.S. Cl. 427—230 3 Claims



1. A method for making a simulated brick or tile wall or floor comprising:

(a) Providing a mixture of cement, water and water-based adhesive of the consistency of mortar;

(b) Applying the mixture to a wall or floor and permitting it to partially set;

(c) Scoring indentations in a selected design on the partially set applied mixture and removing the cement from the indentations.

(d) Permitting the applied mixture to completely set;

(e) Applying mortar into the indentations as a grout and allowing it to set; and

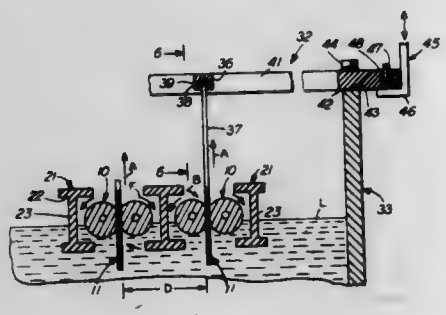
(f) Applying a further clear water-resistant coating to the entire surface of the applied mixture.

4,349,589

METHOD FOR DISTRIBUTING LIQUID OVER A SURFACE

Donald Dinella, Berkley Heights; Albert H. Haller, Clark, and Theodore D. Polakowski, Jr., Bergenfield, all of N.J., assignors to Western Electric Co., Inc., New York, N.Y.

Division of Ser. No. 32,616, Apr. 23, 1979, Pat. No. 4,269,138.
This application Jan. 27, 1981, Ser. No. 228,842
Int. Cl.[3] B05D *3/12*
U.S. Cl. 427—359 5 Claims



1. A method of applying a uniform coating of a liquid on both outer surfaces of a flat planar substrate, comprising the steps of:

(a) initially immersing the substrate in a bath of the coating liquid, thereby wetting both outer surfaces of the substrate with the liquid;

(b) contacting each of the wet surfaces of the substrate with a liquid-applicator roller including a solid cylindrical core, an intermediate annular layer of a resilient compliant material on the core, and an outer annular layer of a compressible liquid-absorbing material composed of chamois or synthetic chamois having inverse sponge characteristics on the intermediate layer, such rollers being mounted adjacent to and parallel to the upper surface of the liquid in the bath and on opposite sides of the substrate, whereby the rollers move into engagement with the respective surfaces thereof;

(c) applying a force between the rollers and the substrate to compress the intermediate and outer layers between the solid core and the surface of the substrate to thereby deform the outer layer into a flattened section along a region of contact with each surface of the substrate, said flattened sections intersecting the surface of the liquid of the bath; and

(d) withdrawing the wet substrate from the bath between the rollers so that movement of the substrate causes rotation of the rollers out of engagement of the substrate above the surface of the liquid of the bath, whereby the uniform liquid coating is applied to both surfaces of the substrate.

4,349,590

GLASS SUBSTRATES WITH AN INSOLUBILIZED ASPHALT COATING

Charles E. Bolen, Heath; Edward R. Harrington, Newark; Alfred Marzocchi, Newark, and Michael G. Roberts, Newark, all of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Mar. 30, 1981, Ser. No. 248,089
Int. Cl.[3] B05D *3/02*
U.S. Cl. 427—389.7 6 Claims

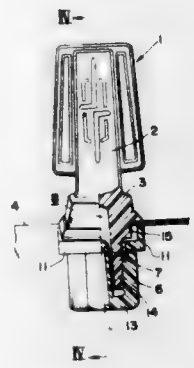
1. A process which comprises applying a rubber-free, non-chemically modified, asphalt to a glass substrate, heating said asphalt for a sufficient period of time to convert said asphalt to a substantially insolubilized form wherein said heating is done in the presence of a free oxygen containing gas at a temperature of at least about 140° C. for a period of time of at least about 50 hours.

4,349,591

YIELDABLE TYPE ORNAMENT ASSEMBLY

Hiroshi Kanamori, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed May 5, 1980, Ser. No. 146,871
Claims priority, application Japan, May 9, 1979, 54-56614
Int. Cl.[3] B60R *13/00*
U.S. Cl. 428—31 12 Claims



1. A yieldable type ornament assembly for mounting on a vehicle body comprising:

an ornament body member having a base section adapted to be fixed relative to a section of the vehicle body and an ornamented section projecting from said base section outwardly of the vehicle body; and

fastening means for fixing said base section relative to the vehicle body section, said fastening means including at least one element integrally associated with said base section and protruding downwardly through an opening in said vehicle body,

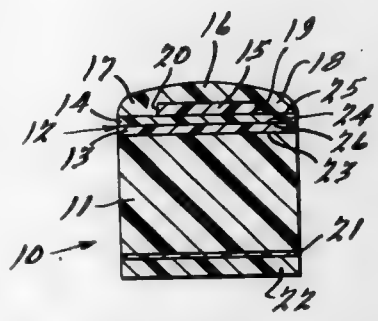
said ornamented section being formed with said base section as a single integral piece of elastic material and being elastically deformable when subjected to a force exceeding a predetermined value and restorable to its initial shape when said force disappears.

4,349,592

THERMOPLASTIC ELASTOMER MOLDING

Joel H. Nussbaum, Farmington Hills, Mich., assignor to The Standard Products Company, Cleveland, Ohio

Filed Jul. 17, 1980, Ser. No. 169,772
Int. Cl.[3] B32B *31/30*; B60R *13/04*
U.S. Cl. 428—31 8 Claims



1. A laminate construction having an extruded body comprising thermoplastic elastomer material; an extruded outer layer of dissimilar material; and a tie sheet sandwiched between and laminated to each of said body and said outer layer; said tie sheet comprising an adhesively secured laminate of a first layer and a second layer, said first layer being heat laminated to said body and comprising a material compatible therewith, and said second layer being heat laminated to said outer layer and comprising a material compatible therewith.

4,349,593

DOUBLE KNIT FABRIC PROCESSING INTO DECORATIVE GOODS

Amihud Blechstein, Philadelphia, Pa., assignor to Penn-Gil Fabrics, Inc., Spring House, Pa.

Filed Apr. 6, 1981, Ser. No. 251,209
Int. Cl.³ E04F *13/00*
U.S. Cl. 428—40
11 Claims



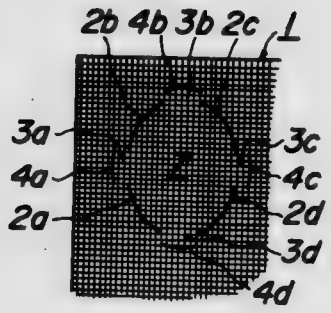
1. The method of structurally stabilizing double knit fabric which comprises the step of applying to the back thereof a coating layer of a resin latex composition comprising a copolymer and ethylene and vinyl chloride having a pH of 8.5±0.5 and a Brookfield viscosity of about 15,000 as determined by RVF employing #5 spindle @ 20 RPM, and drying the coated fabric at a temperature below 400° F.

4,349,594

WOVEN ARTICLE

Shinichi Murakami, Hatano, and Kuniaki Okumi, Mitaka, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Feb. 2, 1981, Ser. No. 230,235
Claims priority, application Japan, Feb. 7, 1980, 55-13400[U]
Int. Cl.³ B32B *3/10*
U.S. Cl. 428—43
7 Claims



1. A woven article comprising mutually woven warps and wefts, in which an opening having a closed contour can be formed optionally without cutting or tearing by the application of pressure only, said article being formed with a plurality of first slits extending along the contour and spaced from each other, wherein the article is further formed with at least one second slit which is offset outwardly or inwardly of the contour of the opening in an overlapping relationship with two neighboring first slits in the circumferential direction of the opening, the first and second slits being so arranged that any one of the warps and wefts extending across the opening to be formed intersects with at least one of the slits.

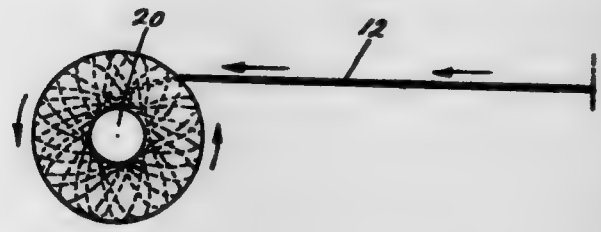
4,349,595

FRICTION MATERIAL FOR CLUTCH FACINGS AND THE LIKE

James T. Trainor, Huntington; Stanley F. Covaleski, Milford, and John C. Adelmann, Stratford, all of Conn., assignors to Raybestos-Manhattan, Inc., Trumbull, Conn.

Filed Jun. 21, 1979, Ser. No. 50,596
Int. Cl.³ D04H *3/02, 3/07*
U.S. Cl. 428—64
15 Claims

1. A friction element of improved resistance to wear comprising from about 5 to about 60 percent of aramid fibers having a decomposition temperature of at least about 850° F. bonded together with from about 40 to about 95 percent of heat-hardenable cement comprising a thermosetting resin and a heat-curable elastomer, said percentages being by weight based on the combined weight of fibers and cement, said element



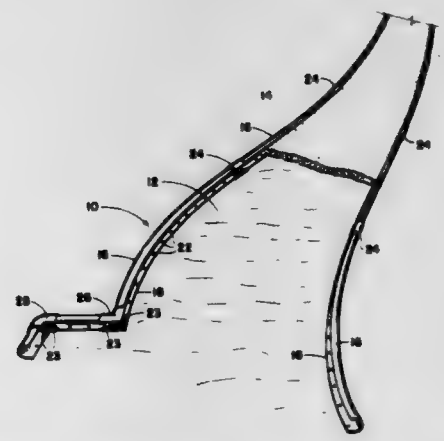
having been subjected to heat and pressure to consolidate said fibers and to cure said cement.

4,349,596

LOOSE MATERIAL RETAINER STRIP

Randle L. Hendrix, Rte. 3, Box 193, Claremore, Okla. 74017

Filed May 30, 1980, Ser. No. 154,909
Int. Cl.³ E01C *11/22*
U.S. Cl. 428—83
10 Claims



1. A loose material retainer strip comprising an elongated flexible strip having a substantially C-shaped cross-section, a base lip thereof being wider than a top lip thereof, a plurality of longitudinally spaced apertures in the base lip for securing the strip in place with appropriate stakes, the material of said strip being flexible and resilient to substantially retain its C-shaped cross-section, whereby upon installation the base lip is secured to the ground with stakes with the open side of the C-shaped strip facing the loose material to be retained, the loose material being filled or pulled over said base lip.

4,349,597

PRODUCTION OF SYNTHETIC LEATHER

Jerome Fine, and Gene N. Harrington, both of Cleveland, Tenn., assignors to Cleveland Plastics of Tennessee, Inc., Cleveland, Tenn.

Filed Jul. 7, 1980, Ser. No. 166,543
Int. Cl.³ B32B *5/14, 5/18, 5/20, 5/24, 5/32*
U.S. Cl. 428—95
29 Claims

1. A fabric-reinforced composite sheet material having opposite surfaces of leather-like appearance comprising:

(a) a textile fabric having a first polymeric layer disposed within and filling the interstices of the fabric to the extent that it is present adjacent opposite faces of the fabric;

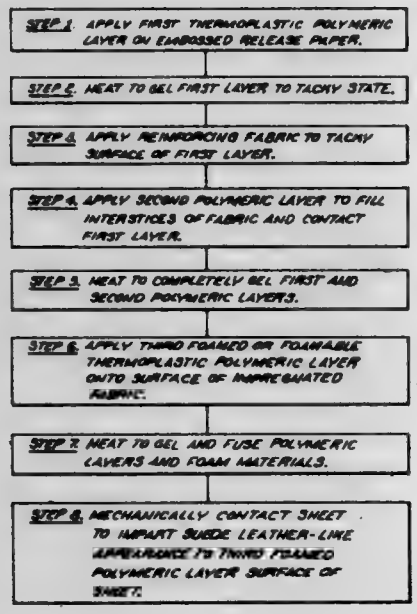
(b) a second thermoplastic polymeric layer on one face of the fabric bonded to said first polymeric layer and having an outer leather-like surface appearance;

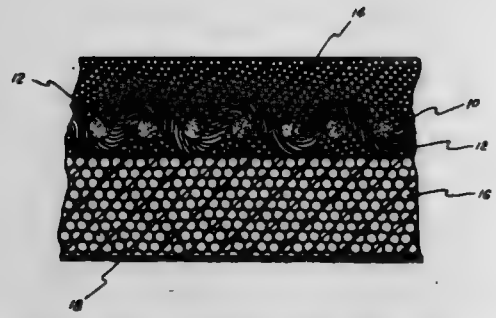
(c) a third thermoplastic essentially fiber-free polymeric foam layer on the opposite face of said fabric bonded to said first polymeric layer and having an outer suede leather-like surface appearance; and wherein

(d) said fabric faces are completely covered with the polymeric layers, and both leather-like outer surfaces of the composite sheet are heat-sealable, flow-moldable and

reversible for subsequent manufacture of products having a natural leather-like appearance.

21. A method of producing a composite, fabric-reinforced sheet material having a leather-like surface appearance on both faces thereof comprising the steps of providing a release paper, applying a first layer of thermoplastic polymeric material to the surface of the paper, heating the first polymeric layer to a tacky state, applying a porous textile reinforcing fabric to the exposed surface of the tacky polymeric layer on the release paper to adhere one surface thereof to the layer, applying a second layer of polymeric material to the exposed surface of the textile fabric to substantially fully impregnate the interstices thereof and contact said first layer of thermoplastic polymeric material on the release paper, heating said first and second layered textile fabric to substantially gel the first and second layers thereon, applying a third layer of fiber-free foamed or heat-foamable thermoplastic polymeric material to the surface of the reinforcing fabric to contact the second polymeric layer disposed within the interstices thereof, heating the resultant composite layered product to cure and solidify the polymeric material layers and bond the same into a composite structure, and to foam the third thermoplastic layer, if heat-foamable, and mechanically contacting the foamed third polymeric layer surface to impart a suede leather-like appearance thereto.





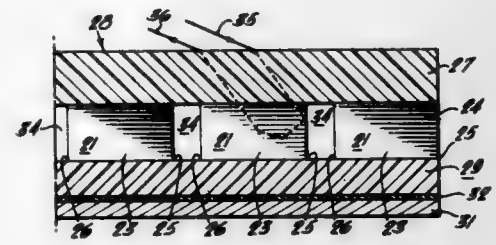
4,349,598

HIGH INCIDENCE ANGLE RETROREFLECTIVE MATERIAL

Michael L. White, Morrisville, Pa., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 1, 1976, Ser. No. 746,281
Int. Cl.³ B32B *3/30*
U.S. Cl. 428—161 **10 Claims**

1. In a retroreflective material, the combination of a transparent surface layer, a backing layer, and an array of reflecting elements between said layers, each of said reflecting elements having a rectangular base, two mutually perpendicular rectangular faces meeting said base at 45° angles, and two parallel triangular faces perpendicular to said rectangular faces, said triangular and rectangular faces defining a pair of cube corners therebetween, said reflecting elements being uniformly arranged with their bases adjacent said surface layer and their



cube corners adjacent said backing layer, and wherein opposing triangular faces of adjacent elements are spaced apart to provide internal reflection therefrom.

4,349,599

ADHESIVE TAPES

Alfred A. Adams, Bungay, England, assignor to Crystic Systems Limited, Northamptonshire, England

Filed May 21, 1979, Ser. No. 40,915
Claims priority, application United Kingdom, May 23, 1978, 21708/78
Int. Cl.³ B32B *5/02*
U.S. Cl. 428—233 **8 Claims**

1. In a reinforced plastics article comprising fiber reinforcement and a plastic impregnant, the improvement comprising providing a textile, selecting as an adhesive on at least one of the surfaces of said textile an adhesive compatible with the plastics material, the textile holding the reinforcement of the article in position during impregnation of the reinforcement by the plastics, and being incorporated with the reinforcement into the finished article.

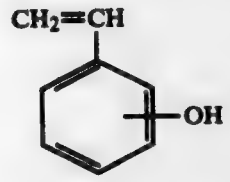
4,349,600

COLOR DEVELOPER FOR LEUCO PIGMENT AND RECORDING MATERIAL COMPRISING SAME

Nobuhiro Miyakawa, Suita, Japan, assignor to Mita Industrial Co., Ltd., Osaka, Japan

Filed Oct. 28, 1980, Ser. No. 201,591
Claims priority, application Japan, Nov. 19, 1979, 54-14899
Int. Cl.³ B32B *3/26*
U.S. Cl. 428—320.8 **4 Claims**

1. In a thermosensitive recording element which comprises a substrate and a recording layer formed on said substrate, the improvement wherein said recording layer comprises independent dispersed phases of an oligomer or polymer of a vinyl phenol represented by the following formula:



and a leuco pigment which is colorless or has a light color in the normal state and has the ability to form color images upon reacting with said oligomer or polymer in a water-soluble or water-dispersible inactive polymeric binder, said oligomer or polymer having a melting point of softening point of 95° to 220° C. and an average molecular weight of from 242 to 24000, the weight ratio of the leuco pigment to the oligomer or polymer being in the range of from 1/5 to 1/40.

4,349,601

PROTECTIVE SKIN ON INTRICATELY MOLDED PRODUCT

Walter H. Brueggemann, Chagrin Falls, and John A. Brenner, Independence, both of Ohio, assignors to Ferro Corporation, Cleveland, Ohio

Division of Ser. No. 2,658, Jan. 11, 1979, Pat. No. 4,205,028.
This application Dec. 21, 1979, Ser. No. 106,032
Int. Cl.[3] B29C *5/08*; B29D *9/00*
U.S. Cl. 428—323
8 Claims

1. A molded product comprising an inner body of an organic thermosetting resin and a substantially continuous resinous film or skin substantially covering said body and comprising a polyester resin that is cross-linked and chemically reacted with said organic resin, said product having intricate, curving surface contours and said film being smooth and free of surface tears and blemishes.

4,349,602

SUBSTRATES COATED WITH A THERMOSET ACRYLIC PRIMER AND AN ALKOXYSILYLBENZOTRIAZOLE UV STABILIZER

Ta-Yen Ching, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 154,625, May 30, 1980, Pat. No. 4,316,033.
This application Oct. 7, 1981, Ser. No. 309,352
Int. Cl.[3] B32B *27/30*, *27/08*
U.S. Cl. 428—331
2 Claims

1. An article comprising

(A) a substrate coated with a thermoset acrylic primer,

(B) a hard, protective coating thereon comprising an aqueous coating composition which comprises before curing,

(a) a dispersion of a colloidal silica in a solution of the partial condensate of a silanol having the formula,

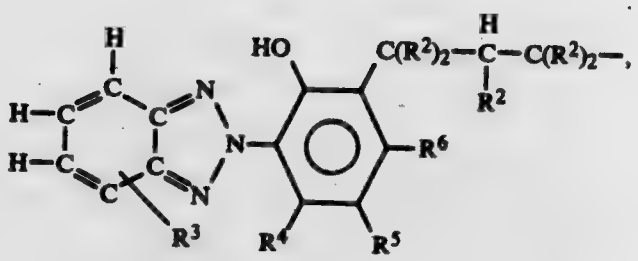
$$R^7Si(OH)_3,$$

where R^7 is selected from the group consisting of $C_{(1-8)}$ alkyl and $C_{(6-13)}$ aryl, at least 70 weight percent of which is $CH_3Si(OH)_3$, in a mixture of an aliphatic alcohol and water, said dispersion containing from 10 to 50 percent by weight of solids, said solids consisting essentially of 10 to 70% by weight of colloidal silica and 30 to 90% by weight of the partial condensate and

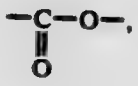
(b) an effective amount of an ultraviolet light absorbing agent comprising a compound having the formula,

$$(RO)_{4-a-b}Si(Z)_a \quad (1)$$
$$\qquad\qquad |$$
$$\qquad\qquad (R^1)_b$$

where Z is



R is a $C_{(1-8)}$ alkyl radical, R^1 is a $C_{(1-8)}$ alkyl or $C_{(6-12)}$ aryl radical, R^2 is selected from hydrogen and R, R^3 is selected from hydrogen, $C_{(1-8)}$ alkyl, $C_{(1-8)}$ alkoxyl, carbalkoxy, hydroxy, amino, halogen, and $Q\text{-}(CH_2)_3\text{-}Si(OR)_3$, where Q is selected from —O—, —NR^2-, and



R^4–R^6 are selected from hydrogen and the same or different $C_{(1-8)}$ alkyl, $C_{(1-8)}$ alkoxy and halogen radicals, a is an integer equal to 1 to 3 inclusive, b is a whole number equal to 0 to 2 inclusive and the sum of a+b is equal to 1 to 3 inclusive.

4,349,603

LAMINATED MULTILAYER STRUCTURE

Masao Kameyama, Iwakuni, and Teiichi Shiomi, Ohtake, both of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

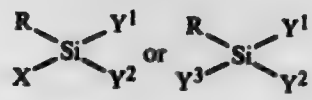
Filed May 22, 1981, Ser. No. 266,470
Claims priority, application Japan, May 26, 1980, 55-68874; Feb. 19, 1981, 56-22198
Int. Cl.[3] B32B *27/32*
U.S. Cl. 428—334
8 Claims

1. A laminated multilayer structure comprising

(1) a thermoplastic olefin resin layer (A) in the form of a shaped article,

(2) a primer layer (B) liquid-coated on and contacted with at least one surface of the layer (A) and composed of

(b_1) 20 to 100% by weight based on the weight of the layer (B) of a graft-modified synthetic olefinic rubber or graft-modified 4-methyl-1-pentene resin obtained by grafting an organic silane compound having the following formula



wherein R represents a monovalent olefinically unsaturated hydrocarbon radical having up to 20 carbon atoms or a monovalent olefinically unsaturated hydrocarbonoxy radical having up to 11 carbon atoms, X represents a monovalent hydrocarbon radical selected from the class consisting of alkyl groups having 1 to 20 carbon atoms and aryl groups having 6 to 8 carbon atoms, and Y^1, Y^2 and Y^3 are identical or different and each represents a functional member selected from the class consisting of alkoxy groups having 1 to 6 carbon atoms, alkylcarbonyl groups having 1 to 10 carbon atoms, oxime groups having 3 to 15 carbon atoms and substituted amino groups having a substituent selected from lower alkyl groups and a phenyl group,

and (b_2) 0 to 80% by weight based on the weight of the layer (B) of an ultraviolet stabilizer, and

(3) a cured layer (C) liquid-coated on and contacted with the layer (B) and derived from an uncured crosslinkable Si-containing compound selected from the group consisting of organo-alkoxysilanes, organo-acyloxysilanes and organo-polysiloxanes.

8. The laminated multilayer structure of claim 1 wherein the thickness of the layer (B) is from about 0.01 to about 1 micron and the thickness of the layer (C) is from about 0.1 to about 100 microns.

4,349,604
CONTINUOUS FILAMENT YARN WITH WOOL-LIKE HAND

Lawrence E. Blackmon, Foley, Ala.; John R. Dees, Pensacola, Fla.; Darrell A. Kelly, Milton, Fla.; Wayne T. Mowe, and Jing-peir Yu, both of Pensacola, Fla., assignors to Fiber Industries, Inc., Charlotte, N.C.

Continuation-in-part of Ser. No. 6,139, Jan. 24, 1979, which is a division of Ser. No. 947,687, Oct. 2, 1978, abandoned. This application Oct. 31, 1980, Ser. No. 202,551

Int. Cl.³ D02G 3/00

U.S. Cl. 428—370 7 Claims



1. A multifilament yarn comprising first and second classes of filaments;

a. each of said first class of filaments being melt spun polyester filaments of at least two polymer streams fused together at different extrusion rates to provide filaments of nonround cross sections having shrinkage profiles in the form of shrinkage peaks and valleys along their lengths, said shrinkages peaks and valleys being out of phase from filament to filament and having amplitudes and spacings along each of said filaments of said first class selected such that said yarn has a crimp above 2%;

b. each of said second class of filaments having lower shrinkage than the shrinkage of said filaments of said first class.

4,349,605
FLAME RETARDANT RADIATION CURABLE POLYMERIC COMPOSITIONS

James W. Biggs, Lebanon, and Melvin F. Maringer, Cincinnati, both of Ohio, assignors to National Distillers & Chemical Corp., New York, N.Y.

Filed Sep. 9, 1980, Ser. No. 185,460

Int. Cl.³ C08F 2/54; C08K 3/22, 5/09, 5/20

U.S. Cl. 428—389 15 Claims

1. A radiation crosslinkable polymeric composition comprising:

(a) a copolymer of ethylene and a vinyl ester of a C_2–C_6 aliphatic carboxylic acid, a C_1–C_6 alkyl acrylate or a C_1–C_6 alkyl methacrylate,

(b) from 80 to 400 parts of hydrated inorganic filler per 100 parts of copolymer,

(c) 2 to 8 parts of an alkoxy silane per 100 parts of hydrated inorganic filler, and

(d) a lubricating effective amount of a lubricant comprising lauric acid and ethylene-bis-stearamide.

4,349,606
CONDUCTIVE DEVICE USING CONDUCTIVE POLYMER COMPOSITIONS

Yoshio Kishimoto, Hirakata, and Wataru Shimotsuma, Ibaraki, both of Japan, assignors to Matsusuita Electric Industrial Company, Limited, Osaka, Japan

Filed Jan. 23, 1981, Ser. No. 227,923

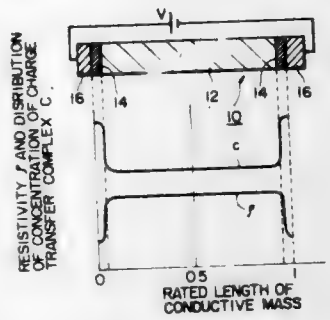
Claims priority, application Japan, Jan. 24, 1980, 55-7264

Int. Cl.³ B32B 7/06; H01C 7/10

U.S. Cl. 428—411 10 Claims

1. In a device which uses a conductive polymer composition which comprises a mass of a conductive polymer composition in which a conductive charge transfer complex is contained in a polymer matrix, the improved device comprising at least a pair of electrodes electrically connected to said mass at a distance from each other, and at least one layer of low resistivity interposed between said mass and one of the paired electrodes in a series relation with said mass, said layer having contained therein at least one component of said charge transfer complex in an amount larger than said mass.

7. In a device which uses a conductive polymer composition in which a conductive charge transfer complex is contained in



a polymer matrix, the improved device comprising at least a pair of electrodes electrically connected to said mass at a distance from each other, at least one of the paired electrodes having contained therein at least one component of said conductive charge transfer complex.

4,349,607
UV STABILIZERS, COATING COMPOSITIONS AND COMPOSITE STRUCTURES OBTAINED THEREFROM

Ta-Yen Ching, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 100,441, Sep. 5, 1979, Pat. No. 4,288,631. This application Mar. 30, 1981, Ser. No. 248,182

Int. Cl.³ C08K 5/13

U.S. Cl. 428—412 5 Claims

3. A composite structure comprising

(A) A thermoplastic organic polymer sheet and

(B) A cured coating of organic resin having a stabilizing amount of a UV stabilizer selected from the class consisting of 2,4-dihydroxy-4'-methoxy-3-methylbenzophenone and 3-methyl-2,4,4'-trihydroxybenzophenone.

4,349,608
MAGNETIC RECORDING MEDIUM

Jozo Shimizu, Nagaoka; Satoru Yamaguchi, Suita, and Shigeo Aoyama, Ibaraki, all of Japan, assignors to Hitachi Maxell, Ltd., Osaka, Japan

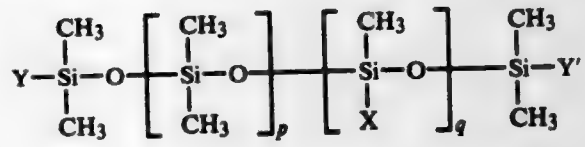
Filed Aug. 19, 1981, Ser. No. 294,220

Claims priority, application Japan, Aug. 20, 1980, 55-115038; Aug. 20, 1980, 55-115040; Aug. 20, 1980, 55-115041; Aug. 20, 1980, 55-115042

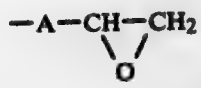
Int. Cl.³ B32B 27/38, 9/04; H01F 10/02

U.S. Cl. 428—413 3 Claims

1. A magnetic recording medium which comprises a base material and a magnetic layer provided thereon, said magnetic layer comprising magnetic particles and a binder, characterized in that said magnetic layer further comprises at least one silicone compound of the formula:



wherein X is the same or different and —A—COOH, —A—OH,



or $—A—NH_2$ in which A is a divalent hydrocarbon group having not more than 26 carbon atoms, Y and Y' are each —X

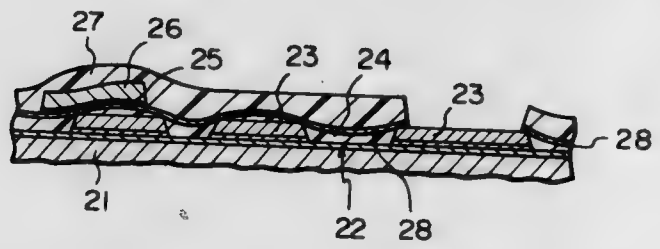
or —CH_3, p is an integer of 0 to 1,000 and q is an integer of 1 to 500 but p+q is not more than 1,000.

4,349,609

ELECTRONIC DEVICE HAVING MULTILAYER WIRING STRUCTURE

Shiro Takeda, Sagamihara, and Minoru Nakajima, Kawasaki, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 20, 1980, Ser. No. 161,561
Claims priority, application Japan, Jun. 21, 1979, 54/77557; Dec. 28, 1979, 54/171005; Jan. 16, 1980, 55/3288
Int. Cl.³ B32B *17/06*
U.S. Cl. 428—429
20 Claims



1. An electronic device having a multilayer wiring structure comprising:

a substrate having formed thereon a first metal wiring layer, and;

an interlayer insulation layer comprised of a cured coating of a ladder-type silsesquioxane polymer, formed on the substrate and on said first metal wiring layer and having formed thereon a second metal wiring layer.

4,349,610

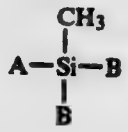
METHOD FOR WATERPROOFING PAPER

Daniel Parker, Los Angeles, Calif., assignor to Beloit Corporation, Beloit, Wis.

Continuation-in-part of Ser. No. 28,242, Apr. 9, 1979, abandoned. This application Oct. 15, 1980, Ser. No. 197,228
Int. Cl.³ B32B *9/04*; A21D *13/00*
U.S. Cl. 428—447
18 Claims

14. A paper web having improved water repellency on at least one surface thereof while retaining substantially all of its natural porosity toward gases,

said surface comprising a silicone polymer produced by reaction of water in said web with a hydroxysilane which itself is the hydrolysis product of an alkyl alkoxysiloxane having the formula:



where A is H, CH_3 or B and B is an OR group in which R is methyl or ethyl.

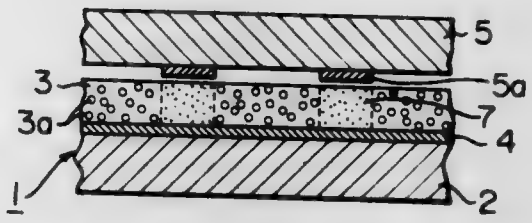
4,349,611

THERMOSENSITIVE RECORDING MATERIAL

Nobuhiro Miyakawa, Kobe, and Tatsuo Aizawa, Osaka, both of Japan, assignors to Mita Industrial Company, Ltd., Osaka, Japan

Continuation of Ser. No. 971,833, Dec. 19, 1978, abandoned. This application Mar. 28, 1980, Ser. No. 136,068
Claims priority, application Japan, Dec. 21, 1977, 52-154855
Int. Cl.³ B32B *27/00*
U.S. Cl. 428—500
8 Claims

8. A thermosensitive electrostatic recording material comprising a thermally stable substrate having at least one electrically conductive surface and applied to the conductive surface of the substrate, a thermosensitive recording layer, said thermosensitive recording layer comprising a matrix of an electrically insulating, film-forming thermoplastic resin and dispersed



as a fine powder in the matrix, a linear aliphatic dicarboxylic acid having at least 13 carbon atoms or its ammonium salt.

4,349,612

METAL WEB

Alfonso L. Baldi, Wynnewood, Pa., assignor to Alloy Surfaces Company, Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 963,313, Nov. 27, 1978, abandoned, Ser. No. 851,504, Nov. 14, 1977, Ser. No. 809,189, Jun. 23, 1977, and Ser. No. 752,855, Dec. 21, 1976, Pat. No. 4,208,453, each is a continuation-in-part of Ser. No. 614,834, Sep. 19, 1975, Pat. No. 4,141,760, said Ser. No. 851,504, Ser. No. 809,189, and Ser. No. 752,855, each is a continuation-in-part of Ser. No. 694,951, Jun. 11, 1976, abandoned, which is a continuation-in-part of Ser. No. 614,834, , which is a continuation-in-part of Ser. No. 466,908, May 3, 1974, Pat. No. 3,958,047, Ser. No. 404,665, Oct. 9, 1973, Pat. No. 3,948,689, and Ser. No. 357,616, May 7, 1973, Pat. No. 3,948,687, said Ser. No. 404,665, and Ser. No. 357,616, each is a continuation-in-part of Ser. No. 254,403, May 18, 1972, Pat. No. 3,785,854, Ser. No. 90,682, Nov. 18, 1970, Pat. No. 3,764,371, and Ser. No. 219,514, Jan. 20, 1972, Pat. No. 3,801,357, said Ser. No. 90,682, and Ser. No. 219,514, each is a continuation-in-part of Ser. No. 837,711, Jun. 30, 1969, abandoned. This application Mar. 30, 1979, Ser. No. 25,456
Int. Cl.³ B32B *15/01, 15/04, 15/18*
U.S. Cl. 428—607
8 Claims

1. A self-supporting metal web having a pyrophoric surface covered by a solid or liquid coating that does not block the pyrophoric property and undergoes a pyrophoricity-intensifying exothermic change when subjected to the pyrophoricity of that surface.

4,349,613

METHOD AND APPARATUS FOR ELECTROCHEMICAL ENERGY PRODUCTION

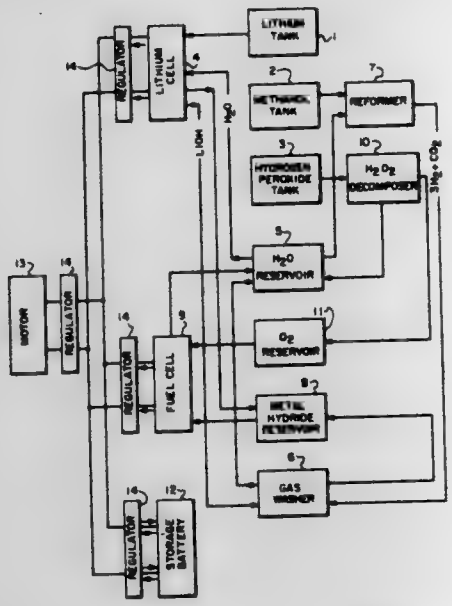
August Winsel, Kelkheim, Fed. Rep. of Germany, assignor to Varta Batterie Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed Dec. 5, 1980, Ser. No. 213,372
Claims priority, application Fed. Rep. of Germany, Dec. 6, 1979, 2949011
Int. Cl.³ H01M *8/06*
U.S. Cl. 429—17
7 Claims

1. Process for electrochemical energy supply from lithium high energy cells with aqueous electrolytes which operate in a combined system with hydrogen/oxygen fuel cells and which form lithium hydroxide by the cell reaction in the lithium cell, the process comprising

producing in a reformer carbon dioxide and hydrogen gas

from hydrocarbons or hydrocarbon compounds and water,



transforming the carbon dioxide and the lithium hydroxide into lithium carbonate, and

supplying the hydrogen gas to the fuel cell.

4,349,614

PLATINUM THIRD ELECTRODE TO IMPROVE FLOAT POLARIZATION OF STANDBY BATTERIES

John Werth, Princeton, N.J., assignor to Exide Corporation, Philadelphia, Pa.

Filed Mar. 6, 1981, Ser. No. 241,088

Int. Cl.³ H01M *10/44*

U.S. Cl. 429—50 3 Claims

1. The method of maintaining float polarization voltages at both positive and negative plates of a lead-acid cell used on standby service within the proper range, which comprises establishing a cell having at least one positive plate and at least one negative plate immersed in electrolyte, immersing completely an auxiliary depolarizing platinum electrode in the cell electrolyte, connecting said electrode in the cell electrolyte, connecting said electrode electrically to the negative plate in the cell whereby hydrogen evolves on said electrode due to the float current, the parasitic current commensurate with said hydrogen evolution increasing the float current to the positive plate in said cell, enabling said positive plate to reach full charge while on float service.

3. A lead-acid cell having a positive and a negative plate immersed in the cell electrolyte and having a platinum or palladium auxiliary depolarizing electrode immersed completely in the cell electrolyte and electrically connected to said negative plate, employing said cell in float service with hydrogen evolving from said electrode.

4,349,615

RECHARGEABLE ELECTROCHEMICAL CELL AND METHOD FOR CHARGING SAME

Ronald P. Reitz, P.O. Box 1543, Annapolis, Md. 21404

Filed Dec. 23, 1980, Ser. No. 219,491

The portion of the term of this patent subsequent to Apr. 27, 1999, has been disclaimed.

Int. Cl.³ H01M *6/38*

U.S. Cl. 429—110 5 Claims

1. An electrochemical storage cell comprising:

(a) a first electrode means which is a cathode means;

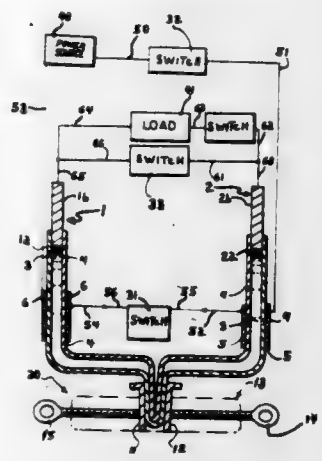
(b) a second electrode means which is an anode means;

(c) an electrolyte solution means in good physical contact with said first and said second electrode means;

(d) a flexible, non-porous, electrically insulative housing means whereby said first and said second electrode means and said electrolyte solution are housed;

(e) a means for bending said flexible housing such that said means for bending resticts or prevents altogether the free flow of electrolytic ions from said first electrode means to said second electrode means and from said second electrode means to said first electrode means;

(f) a third electrode means spaced proximate and spaced from the bending portion of said flexible, non-porous, electrically insulative housing means, said third electrode means also being positioned proximate to but electrically insulated from said electrolyte solution;



(g) and a fourth electrode means spaced proximate to the bending or crimping portion of said flexible, non-porous, electrically insulative housing means, said fourth electrode means being spaced proximate to but electrically insulated from said electrolyte solution, said fourth electrode means also being positioned opposite to said third electrode means with respect to the bending or crimping portion of said flexible housing.

4,349,616

DISAZO PIGMENT CONTAINING ELECTROPHOTOGRAPHIC ELEMENT

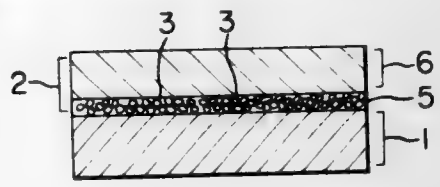
Masaomi Sasaki, Shizuoka, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed Dec. 19, 1980, Ser. No. 218,383

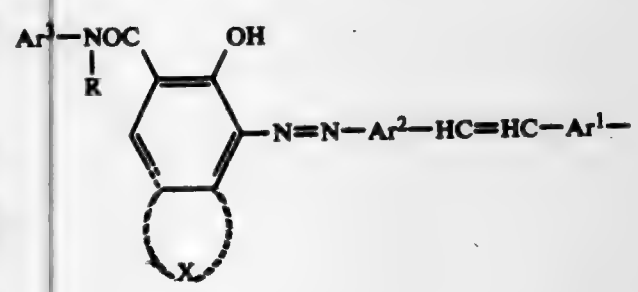
Claims priority, application Japan, Dec. 28, 1979, 54-170421; Dec. 28, 1979, 54-170422; Dec. 29, 1979, 54-172602; Apr. 23, 1980, 55-54632; Oct. 13, 1980, 55-141923; Nov. 26, 1980, 55-167015; Nov. 26, 1980, 55-167016

Int. Cl.³ G03G *5/06, 5/14*

U.S. Cl. 430—58 19 Claims

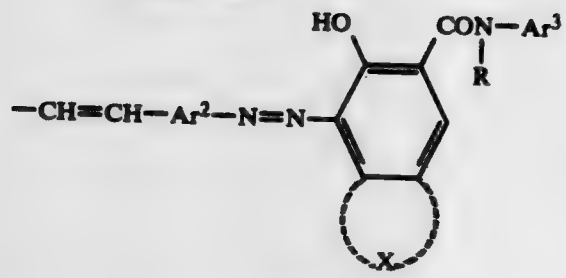


1. An electrophotographic element comprising an electrically conductive substrate; a charge carrier generating layer of a thickness in the range of 0.01 to 5 microns containing 30% or more by weight of at least one disazo pigment having the formula (I):



(I)

-continued



wherein Ar^1 and Ar^2 are phenylene, with the provisos that (1) when Ar^1 is 1,4-phenylene, Ar^2 is 1,2- or 1,3-phenylene, (2) when Ar^1 is 1,3-phenylene, Ar^2 is 1,2-, 1,3- or 1,4-phenylene, and (3) when Ar^1 is 1,2-phenylene, Ar^2 is 1,3-phenylene, X is selected from the group consisting of substituted or unsubstituted aromatic rings, indole, carbazole, or benzofuran, Ar^3 is selected from the group consisting of substituted or unsubstituted aromatic rings, carbazole, or dibenzofuran, and R is hydrogen, lower alkyl, or substituted or unsubstituted phenyl; and a charge transfer layer of a thickness in the range of 3 to 50 microns containing 10 to 95 percent by weight of a charge transfer material and a binder, said charge carrier generating layer and said charge transfer layer being superposed on said substrate.

4,349,617

FUNCTION SEPARATED TYPE ELECTROPHOTOGRAPHIC LIGHT-SENSITIVE MEMBERS AND PROCESS FOR PRODUCTION THEREOF

Kazuhiro Kawashiri; Yuzo Mizobuchi; Akio Higashi; Hiroshi Tamura; Keiji Takeda, and Masayoshi Nagata, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 23, 1980, Ser. No. 199,877
Claims priority, application Japan, Oct. 23, 1979, 54-136755; Nov. 9, 1979, 54-145200
Int. Cl.³ G03G 5/14, 5/082
U.S. Cl. 430—59
27 Claims





1. A function separated type electrophotographic light-sensitive member comprising an electrically conductive support having thereon a light-sensitive layer comprising a hydrogen-doped amorphous silicon semiconductor, and an organic electric charge transport layer containing at least one positive charge transport carrier selected from the group consisting of pyrazolines, arylalkanes, arylketones, arylamines and chalcones.

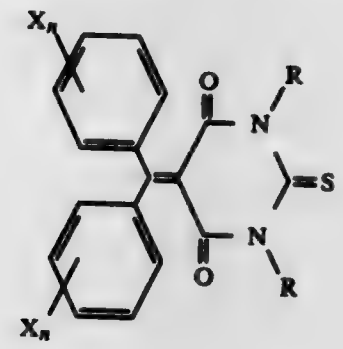
4,349,618

PHOTOCONDUCTIVE COMPOSITIONS AND ELECTROPHOTOGRAPHIC LIGHT-SENSITIVE MATERIALS USING SAID COMPOSITIONS

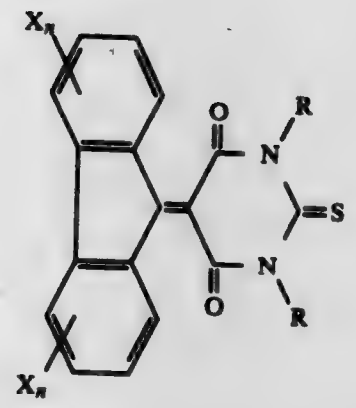
Syunichi Kondo; Hirotsugu Nomaguchi, and Hideo Sato, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 29, 1981, Ser. No. 287,849
Claims priority, application Japan, Jul. 29, 1980, 55/104209
Int. Cl.³ G03G 7/00
U.S. Cl. 430—83
14 Claims

1. A photoconductive composition comprising a mixture of a photoconductive substance and a thiobarbituric acid derivative represented by formula (1) or (2) below:



(1)



(2)

wherein X represents a hydrogen atom or a substituent having a Hammett's meta-position substituent constant (σm) value of at least +0.2, n represents 1 or 2, and R represents an alkyl group containing 1 to 12 carbon atoms or a phenyl group.

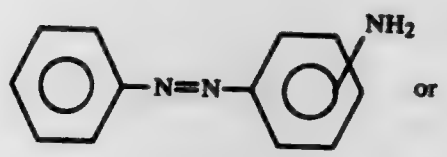
4,349,619

PHOTORESIST COMPOSITION

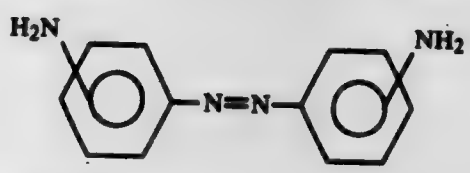
Yoichi Kamoshida; Toshiaki Yoshihara, both of Yokohama; Yoshiyuki Harita, Kawasaki, and Kunihiro Harada, Machida, all of Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

Filed Sep. 10, 1980, Ser. No. 185,771
Claims priority, application Japan, Sep. 19, 1979, 54-120406; Nov. 9, 1979, 54-145051; Apr. 28, 1980, 55-56682; Aug. 13, 1980, 55-111386
Int. Cl.³ G03C 1/70, 1/71
U.S. Cl. 430—196
17 Claims

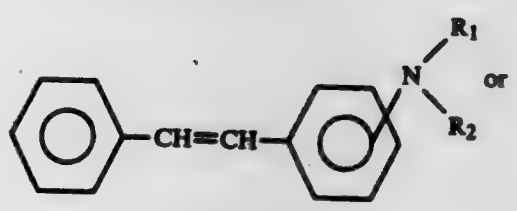
1. A photoresist composition comprising a cyclized product of a conjugated diene polymer or copolymer, a photo-cross-linking agent soluble in an organic solvent and at least one member selected from the group consisting of compounds represented by the formulas:



or

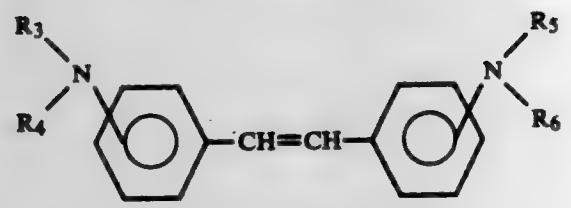


compounds represented by the formulas:



or

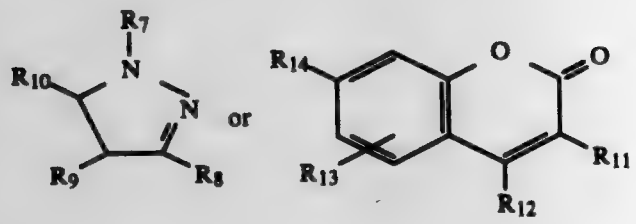
-continued



wherein R_1, R_2, R_3, R_4, R_5 and R_6, which may be identical or different, represent substituents selected from the group consisting of hydrogen atom and alkyl groups, compounds represented by the formula:

$$Ar—N=N—NH—Ar'$$

wherein Ar and Ar', which may be identical or different, represent aromatic groups, and compounds represented by the formulas:



wherein R_7, R_8, R_9, R_{10}, R_{12} and R_{13}, which may be identical or different, represent substituents selected from the group consisting of hydrogen atom, alkyl groups, alkenyl groups, aryl groups, and aralkyl groups; R_{11} represents a substituent selected from the group consisting of hydrogen atom and aryl groups; and R_{14} represents a substituent selected from the group consisting of hydrogen atom and amino group.

4,349,620

SOLVENT DEVELOPABLE PHOTORESIST FILM

Clifford R. Cyr, Athens, Pa., and Nancy C. Hagan, East Brunswick, N.J., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 49,210, Jun. 15, 1979, abandoned. This application Dec. 17, 1980, Ser. No. 217,505

Int. Cl.³ G03C *1/58*

U.S. Cl. 430—259 **18 Claims**

11. Dry photosensitive resist film consisting of a temporary support film, thermoplastic photosensitive layer, and cover film, characterized by the photosensitive layer consisting of at least two partial layers, said cover film being strippable from its respective partial layer without removal of said temporary support film from its respective partial layer and the resultant bared surface of said partial layer having greater adhesion to copper than the adhesion of said temporary support film to its respective partial layer, the above general adhesion relationships of the photosensitive compositions of the partial layers being unchanged by exposure to actinic radiation.

4,349,621

PROCESS FOR X-RAY MICROLITHOGRAPHY USING THIN FILM EUTECTIC MASKS

Harvey E. Cline, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 13, 1981, Ser. No. 253,985

Int. Cl.³ G03C *5/04*; B05D *3/06*; G21K *1/00*

U.S. Cl. 430—311 **17 Claims**

1. A process for forming a pattern in a layer of X-radiation sensitive material situate on at least a portion of a microelectronic device undergoing processing comprising the steps of:

(a) providing a mask, said mask having a pattern therein and being a composite of a substrate and a thin film of a eutectic, said substrate having top and bottom major opposed surfaces substantially parallel to each other and an outer peripheral edge area interconnecting said top and bottom surfaces, said thin film of a eutectic being situate on and contiguous with at least a portion of one of the major substrate surfaces and having upper and lower substantially parallel and generally planar major opposed surfaces, the perpendicular distance between said upper and lower surfaces being the thickness of said film, said eutectic having a pattern of a periodic geometric array of a first type lamella and at least a second type lamella located between lamella of said first type, said lamellae extending between and terminating in said upper and lower surfaces and being substantially perpendicular to the planes of said upper and lower surfaces, said lamellae having dissimilar X-ray absorption coefficients, the distance from the centerline of one lamella to the next closest lamella of the same type in said array being the interlamellar spacing, and the width of the narrowest of said types of lamellae being the minimum feature size;

(b) interposing said mask between a source of X-radiation and said X-radiation sensitive material;

(c) irradiating said mask with X-radiation, said X-radiation passing preferentially through the lamellae of said mask having the smallest X-radiation absorption coefficient thereby preferentially exposing said X-radiation sensitive material; and

(d) developing said X-radiation sensitive material replicating thereby the pattern of said mask in said X-radiation sensitive material.

4,349,622

PHOTOGRAPHIC SILVER HALIDE EMULSION COMPRISING EPITAXIAL COMPOSITE SILVER HALIDE CRYSTALS, SILVER IODOBROMIDE EMULSION AND PROCESS FOR PREPARING THE SAME

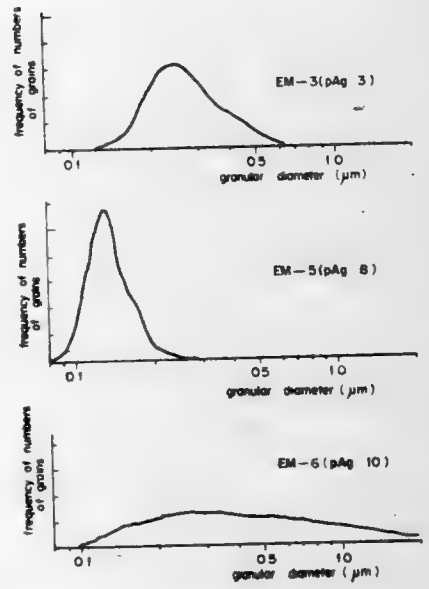
Takeo Koitabashi; Syozi Matsuzaka, and Tashifumi Iijima, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed May 29, 1980, Ser. No. 154,442

Claims priority, application Japan, Jun. 1, 1979, 54/69243; Jul. 19, 1979, 54/92328; Feb. 7, 1980, 55/14367

Int. Cl.³ G03C *1/02*

U.S. Cl. 430—567 **11 Claims**



1. A photographic silver halide emulsion which comprises composite silver halide crystals consisting essentially of multi-faceted silver iodobromide crystals containing 15–40 mole % of silver iodide and silver halide crystals containing not more than 10 mole % of silver iodide, said silver halide crystals being combined as epitaxial silver halide crystals with said multi-faceted silver iodobromide crystals through epitaxial junction, at least half of the facetes of said multi-faceted silver iodobromide crystals being substantially free of said epitaxial silver

halide crystals, and the amount of said epitaxial silver halide being limited to not more than 75 mole % based on the total silver halide forming said composite silver halide crystals.

4,349,623

SILVER HALIDE PHOTOGRAPHIC MATERIALS

Shinpei Ikenoue; Hiroyuki Mifune, and Yoshiharu Fuseya, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 16, 1980, Ser. No. 159,569
Claims priority, application Japan, Jun. 15, 1979, 54/76160
Int. Cl.³ G03C 1/28
U.S. Cl. 430—600 25 Claims

1. In a process for producing a silver halide photographic material comprising the steps of

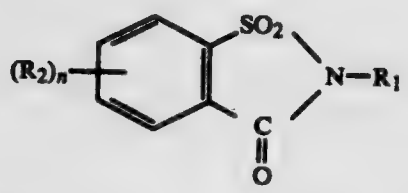
(1) a precipitating step of silver halide grains to obtain a silver halide emulsion;

(2) a physical ripening step of the silver halide grains of the silver halide emulsion;

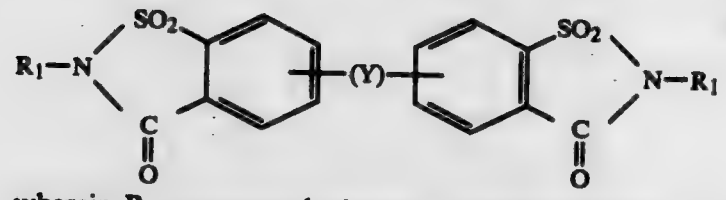
(3) a chemical ripening step of the physical-ripened silver halide grains of the silver halide emulsion;

(4) an adding step of additives to the chemical-ripened silver halide emulsion; and

(5) an coating step of the silver halide emulsion on a support, characterized in that step (3) is conducted in the presence of a noble metal sensitizer and for a compound represented by the formula (I) or (II)



(I)



(II)

wherein R_1 represents hydrogen, an alkali metal ion, or an ammonium ion; R_2 represents an alkyl group, an alkoxy group, an aryloxy group, an acyl group, an amino group, a substituted amino group, a halogen atom, an acyloxy group, an acylamino group, a carbamoyl group, a nitro group, an aryl group, an allyl group, a sulfo group or a carboxy group; Y represents a divalent linking group; and n is 0, 1, or 2.

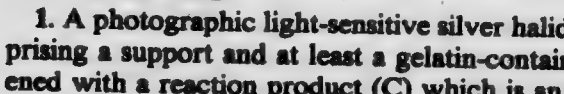
4,349,624

PHOTOGRAPHIC SILVER HALIDE MATERIAL

Johannes Sobel; Wolfgang Himmelmann, both of Leverkusen, and Peter Bergthaller, Cologne, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 27, 1980, Ser. No. 201,210
Claims priority, application Fed. Rep. of Germany, Oct. 30, 1979, 2943806
Int. Cl.³ G03C 1/30
U.S. Cl. 430—622 6 Claims

1. A photographic light-sensitive silver halide material comprising a support and at least a gelatin-containing layer hardened with a reaction product (C) which is an amine salt containing at least 2 vinyl sulfonyl groups and which is obtained by reacting in solution at a temperature ranging from room-temperature to the reflux-temperature of the solution of a compound containing at least 3 vinyl sulfonyl groups in the molecule with an amine or an amine salt, whereby said compound corresponds to the following general formulae:



(A)

in which:

R represents an n-functional aliphatic hydrocarbon radical which may be substituted, an n-functional aromatic hydrocarbon radical which may be substituted, an n-functional cycloalkyl radical which may be substituted or an n-functional heterocyclic radical which may be substituted and n is an integer of from 3 to 6, and said amine or amine salt corresponds to the following general formulae:



(B)

in the form of the free amine or the corresponding amine salt in which:

R_1 and R_2 may be the same or different and represent a hydrogen atom or an unsubstituted lower alkyl group,

R_3 represents an unsubstituted alkyl group, an unsubstituted aminoalkyl group, an unsubstituted cycloaliphatic radical, an unsubstituted aromatic radical or a 5-membered or 6-membered unsubstituted heterocyclic ring which may be attached to the nitrogen atom of compound (B) either directly or through a carbon-containing group,

or R_2 and R_3 together represent the atoms required to complete an unsubstituted heterocyclic ring system which, in addition to nitrogen atom, may contain an oxygen atom or another nitrogen atom.

4,349,625

METHOD FOR ASSAYING FATTY ACIDS

Tsutomu Okada, Yokohama; Tadashi Hishida, Tokyo, and Minoru Muramatsu, Yokohama, all of Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo, Japan

Filed Apr. 30, 1980, Ser. No. 145,035
Claims priority, application Japan, May 25, 1979, 54-64651; Sep. 25, 1979, 54-122961
Int. Cl.³ C12Q 1/28, 1/00, 1/48, 1/32
U.S. Cl. 435—4 9 Claims

1. In a method for assaying fatty acids in an aqueous system containing albumin free fatty acid in a sample by reacting, the free fatty acid with adenosine triphosphate in the presence of coenzyme A catalyzed by acyl-CoA synthetase thereby forming AMP and acyl-CoA and measuring the acyl-CoA or AMP formed, the improvement comprising: adding from 0.01 to 5 mole percent, based on said fatty acid, of a water soluble salt of a dibasic fatty acid having 10 to 18 carbon atoms or a salt selected from the group consisting of the sodium, potassium and ammonium salts of benzene sulfonic acid, p-toluene-sulfonic acid, p-ethylbenzenesulfonic acid, p-n-propylbenzenesulfonic acid, p-n-amylbenzenesulfonic acid, 2,4-dimethylbenzenesulfonic acid or 2,5-dimethylbenzenesulfonic acid to the aqueous assay medium.

4,349,626

METHOD OF DETECTING *PSEUDOMONAS AERUGINOSA* INFECTIONS UTILIZING SELECTED KETONE AND/OR SULFUR METABOLITES

John N. Labows, Horsham; James G. Kostelc, Glenside, and Kenneth J. McGinley, Philadelphia, all of Pa., assignors to The Monell Chemical Senses Center, Philadelphia, Pa.

Filed Oct. 28, 1980, Ser. No. 201,565
Int. Cl.³ C12Q 1/10; C12R 1/385
U.S. Cl. 435—38 30 Claims

1. A method of diagnosing the nature and extent of a suspected *Pseudomonas aerguinosa* infection, comprising:

(a) collecting from a patient suspected of having such infection, a sample of material associated with the site of such suspected infection;

(b) collecting volatile compounds released from said sample to provide a sample headspace;

(c) analyzing said sample headspace; and

(d) determining the concentration of least one methyl-ketone

contained in said headspace, said methyl ketone having the formula:



where X is 1, 2, 4, 6, 8 or 10 to thereby diagnose the nature and extent of such infection.

4,349,627

PROCESS FOR PRODUCING L-TRYPTOPHAN OR DERIVATIVES THEREOF USING A MICROORGANISM

Akio Mimura; Yasuyuki Takahashi; Katsumi Yuasa, all of Fuji, and Mitsuru Shibukawa, Yokohama, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jun. 17, 1981, Ser. No. 274,566
Claims priority, application Japan, Jun. 17, 1980, 55-80918
Int. Cl.³ C12P *13/22;* C12N *1/20*
U.S. Cl. 435—108 4 Claims

1. A process for producing L-tryptophan or a derivative thereof, wherein an indole compound is reacted with serine, or with pyruvic acid and/or its salt and ammonium ion, in the presence of a culture or treated culture of the genus Enterobacter microorganism Enterobacter SP. AST 49-4 having the FERM designation FERM-P 5543.

4,349,628

FERMENTATION PROCESS FOR THE MANUFACTURE OF AN ORGANIC COMPOUND

Martin English, Ashtead; David P. Pym, Tadworth, and Lindsay G. Dawson, Loughborough, all of England, assignors to Kins Developments Limited, London, England

Filed Jul. 15, 1980, Ser. No. 169,186
Claims priority, application United Kingdom, Jul. 18, 1979, 7924957; May 19, 1980, 8016470
Int. Cl.³ C12P *7/06;* B01D *3/42;* C12M *1/02*
U.S. Cl. 435—161 28 Claims

1. A process for the manufacture of ethanol or a like volatile organic compound which process comprises the steps of fermenting in a fermenter a carbohydrate with a micro-organism which will convert the carbohydrate into ethanol or a like volatile organic compound, continuously transferring a portion of the fermentation medium, through a heat exchanger where it receives a supply of heat which raises the temperature of the medium to a temperature which is below that at which the micro-organism is rapidly rendered inactive, but which is such that subsequent evaporation of ethanol or the like volatile organic compound at a reduced pressure will be facilitated, to a separator where ethanol or the like volatile organic compound is evaporated from the fermentation medium at a temperature which is not deleterious to the micro-organism by subjecting the fermentation medium to a reduced pressure and recycling part or all of the remaining fermentation medium to the fermenter, the rate of the circulation of fermentation medium from the fermenter to the separator and back being such that the amount of ethanol or like volatile organic compound in the fermentation medium in the fermenter is kept sufficiently low so as not to detrimentally affect the rate of fermentation, subjecting the vapour issuing from the separator to a fractional distillation column containing a low pressure drop contacting medium under reduced pressure thereby to separate the components of the vapour, compressing the vapour issuing from the top of the fractionation distillation column thereby raising its temperature, recondensing the compressed vapour in a heat transfer system to provide heat, and using said heat both for evaporating ethanol or the like volatile organic compound from the fermentation medium in the separator and for said frictional distillation of the vapour.

4,349,629

PLASMID VECTORS, PRODUCTION AND USE THEREOF

Norman H. Carey, Chinnor; John S. Emtage, Amersham Hill; William C. A. Tacon, High Wycombe, all of England, and Robert A. Hallewell, San Francisco, Calif., assignors to G.D. Searle & Co., Skokie, Ill.

Filed May 29, 1980, Ser. No. 154,489
Claims priority, application United Kingdom, Jun. 1, 1979, 7919245
Int. Cl.³ C12N *15/00*
U.S. Cl. 435—172 14 Claims

1. A plasmid having an insertion site for a eukaryotic DNA fragment adjacent to a trp bacterial promoter, trp E gene and trp D gene, said insertion site being downstream from a prokaryotic ribosome binding site and the trp initiator codon such that the trp bacterial promoter controls transcription and translation of an inserted DNA fragment; the plasmid having a molecular length of 9866 bp; a Hind III site; a Bam I site 346 bp from the Hind III; a Sal I site 275 bp from the Bam I; an Eco RI site 3709 bp from the Sal I; a second Hind III site 31 bp from the Eco RI; a Hpa I site 305 bp from the second Hind III; a second Hpa I site 3250 bp from the first Hpa I and 1950 bp from the first Hind III; the trp promoter, the E gene and part of the D gene in the portion of 1950 bp between the second Hpa I and the first Hind III sites; a gene for tetracycline resistance immediately following the first Hind III site; and a gene for ampicillin resistance in the portion of 3709 bp between the Sal I and the Eco RI sites, the plasmid being referred to as pEH_3; and the nic⁻ derivatives thereof.

14. A process for the production of plasmid pWT131 which comprises restricting plasmid pWT121 with restriction endonuclease Hind III to produce linear molecule, treating the linear molecule with DNA polymerase I, ligating the treated linear molecule with Hind III linker DNA, restricting the ligated molecule with restriction endonuclease Hind III to produce a second linear molecule, religating the second linear molecule to produce a combinant plasmid, transforming *E. coli* K12 HB101 with the combinant plasmid and selecting those *E. coli* colonies showing ampicillin resistance to obtain the plasmid pWT131.

4,349,630

HEAT-RESISTANT WATER SOLUBLE UROKINASE DERIVATIVE

Alexandr V. Maximenko, ulitsa Baltiiskaya, 10, korpus 3, kv. 144.; Vladimir P. Torchilin, Rostovskaya naberezhnaya, 1, kv. 90.; Vladimir N. Smirnov, Juzhinsky pereulok, 3, kv. 5., and Evgeny I. Chazov, Petroverigsky pereulok, 10., all of Moscow, U.S.S.R.

Filed Aug. 27, 1980, Ser. No. 183,093
Claims priority, application U.S.S.R., Sep. 28, 1979, 2821712
Int. Cl.³ C12N *9/72, 11/08, 9/96*
U.S. Cl. 435—180 4 Claims

1. A heat-resistant water soluble derivative of urokinase comprising urokinase covalently bonded to a copolymer of acrylamide and acrylic acid having a molecular weight of from 10,000 to 200,000 conventional units and a content of acrylic acid of from 1 to 20%, said derivative containing 15 to 35% of urokinase and having esterase and amidolytic activity of from 10 to 80%.

4,349,631

PROCESS FOR PRODUCING HEAT-RESISTANT ACETATE KINASE

Masao Kagayama, Uji, Japan, assignor to Unitika Ltd., Hyogo, Japan

Filed Nov. 21, 1980, Ser. No. 209,096
Claims priority, application Japan, Nov. 22, 1979, 54-151660
Int. Cl.³ C12N *9/12;* C12R *1/07*
U.S. Cl. 435—194 11 Claims

1. A process for producing a heat-resistant acetate kinase

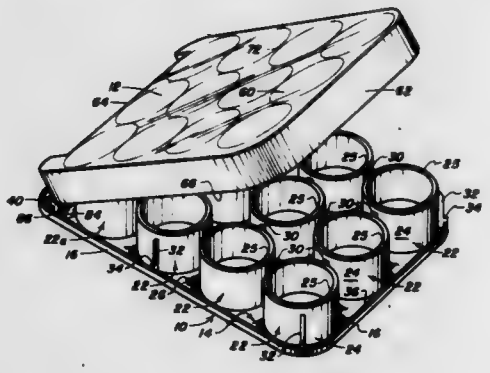
that comprises culturing cells of Strain FERM-P No. 5141, a new strain of thermophilic *Bacillus stearothermophilus* having an appreciably elongated cell, and collecting a heat-resistant acetate kinase from the culture obtained.

4,349,632

TISSUE CULTURE CLUSTER DISH

George F. Lyman, Rocky Point, Me., and Alan Lowry, Canton, Mass., assignors to Data Packaging Corporation, Cambridge, Mass.

Filed Mar. 17, 1981, Ser. No. 244,731
Int. Cl.³ C12M *3/00*
U.S. Cl. 435—284 10 Claims



1. A tissue culture cluster dish comprising

a base having a plurality of wells joined in a unitary structure for receiving materials, said wells having closed bottoms and upstanding side walls,

a rim structure forming the periphery of the base for supporting the base on a surface with the bottom of the wells raised above said surface,

a cover having a top closure wall and a peripheral skirt, said cover being adapted to be supported in a first position with the closure wall spaced just above the top edges of the side walls of the wells to permit the interior of the wells to be exposed to the ambient atmosphere,

and support means formed as part of the base for engaging the skirt of the cover for supporting the cover on the base in a second position wherein the cover is lifted at an angle with respect to the base to permit access to the wells by a pipette or other instrument while preventing contamination of the wells by airborne substances.

4,349,633

PROCESS OF MICROBIAL EXTRACTION OF HYDROCARBONS FROM OIL SANDS

Howard E. Worne, 205 Sunny Jim Dr., Medford, N.J. 08055, and Irving Rabinovitch, 5762 Leger St., Cote St. Luc, Quebec H4W 2E7, Canada

Filed Nov. 10, 1980, Ser. No. 205,153
Int. Cl.³ C10G *1/00*
U.S. Cl. 435—281 16 Claims

1. A process for the separation of hydrocarbon residues from oil and tar sands which comprises contacting the sands under aerobic conditions with an aqueous medium containing hydrocarbon-metabolizing microorganisms capable of producing oxidase enzymes or oxygenase enzymes or both, in the presence of an added surfactant in an amount sufficient to provide surface tension of at most about 40 dynes/cm and in the presence of oxygen in an amount sufficient to ensure activity of said enzymes, whereby hydrocarbon residues are released from the sands.

4,349,634

METHOD OF PREPARING PHOTOCHROMIC GLASS

Harry Owen, Parbold, and Edric Ellis, Ormskirk, both of England, assignors to Pilkington Brothers Limited, St. Helens, England

Filed Aug. 11, 1980, Ser. No. 176,838
Claims priority, application United Kingdom, Aug. 9, 1979, 7927751
Int. Cl.³ C03B *32/00*; C03C *3/26, 3/30*
U.S. Cl. 501—13 15 Claims

1. A process for producing a photochromic glass containing silver halide and which has a brown colouration in its darkened state, which process comprises (a) forming a batch comprising tin or a tin compound in an amount which will produce a glass which will exhibit a brown colouration in its darkened state, together with those glass forming components which, in the absence of tin or the said tin compound and when subjected to steps (b) to (f) below, will produce a photochromic glass having a grey colouration in its darkened state, (b) melting the batch to form a molten glass, (c) refining the molten glass, (d) conditioning the molten glass to bring it into a state suitable for forming into articles, (e) forming the molten glass into articles, and (f) subjecting the formed articles to a heat-treatment which will develop the photochromic properties of the glass, steps (b) to (f) being performed under conditions which, in the absence of tin or the said tin compound, will produce a glass having a grey colouration in its darkened state.

13. A photochromic glass having silver halide crystals and tin dispersed throughout the glass, the glass having in its darkened state a brown colouration which is described in accordance with the Hunter L,a,b Colour Scale System by the rectangular region having corners defined by the (a,b) co-ordinates: (5,1), (1,5), (12,16) and (16,12), the ½ OD FT of the glass being 120 seconds or less, the glass being an alumino-phosphate glass having silver halide crystals dispersed throughout the glass and comprising, as non-photochromic components in weight percentages:

SiO_2	8.5 to 25%
Al_2O_3	13 to 36.5%
P_2O_5	7.5 to 33.5%
B_2O_3	7 to 28%
R_2O	7 to 20.5%

where R_2O represents one or more of Na_2O, K_2O and Li_2O, the maximum content of Li_2O being 5%; the amount of SiO_2 being not less than 16% when the B_2O_3 content is less than 8%; and, as photochromic components, expressed as weight percentages over and above the 100% total of all the nonphotochromic components of the glass:

silver expressed as Ag_2O	not less than 0.05%
Cl + Br	0.20 to 2%,

the finished glass composition further including tin.

4,349,635

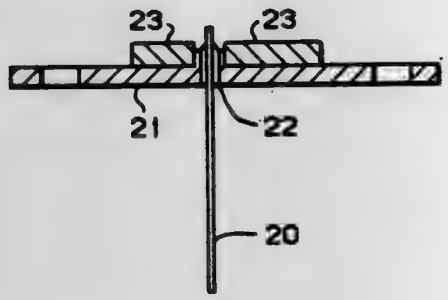
LOWER TEMPERATURE GLASS AND HERMETIC SEAL MEANS AND METHOD

Earl K. Davis, Tempe; Rafael Landroa, Phoenix, and Scot W. Taylor, Tempe, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 26, 1981, Ser. No. 315,102
Int. Cl.³ C03C *7/02, 3/08*
U.S. Cl. 501—15 4 Claims

1. A lead-free glass plus alumina ceramic sealing material

consisting essentially of a composition by weight percent in the range of:



Ingredients	Composition Range
SiO_2	34–50
Al_2O_3	2–25
K_2O	2–6
Na_2O	4–9
Li_2O	2–6
CaO	0–4
ZnO	4–12
BaO	1–5
TiO_2	2–6
B_2O_3	11–21

3. A lead-free sealing glass which is resistant to reduction when fired in reducing atmospheres, wherein said lead-free sealing glass has an average coefficient of thermal expansion between 25° C. and 300° C. in the range $83-91\times10^7$ per °C., consisting essentially of ingredients by weight percent in the range of:

Ingredients	Composition Range
SiO_2	43–47
Al_2O_3	7–11
K_2O	3–5
Na_2O	6–8
Li_2O	3–5
CaO	1–2
ZnO	7–10
BaO	1–3
TiO_2	3–5
B_2O_3	5–20

4,349,636

METHOD FOR INCREASING THE DUCTILITY AND CONDUCTIVITY OF REFRACTORY CRYSTALS

Fred W. Vahldiek, 5851 Barrett Dr., Dayton, Ohio 45431

Filed May 14, 1981, Ser. No. 263,665
Int. Cl.³ C04B *35/52, 35/58*
U.S. Cl. 501—87 4 Claims

1. A process for imparting ductility and increased electrical conductivity to a refractory single crystal which comprises (A) forming a stoichiometrically proportioned specimen of a refractory single crystal; (B) pre-pressing said specimen within an enclosed silver chloride environment at room temperature and a pressure of about 200 atmospheres; (C) placing said pre-pressed specimen enclosed in said silver chloride environment into a pressure cell; (D) compressing said specimen and silver chloride environment to a pressure ranging from about 5,000 to 25,000 atmospheres at a temperature of about 22° C.; and (E) recovering a compressed specimen with a compositional content of less than stoichiometry.

4,349,637

ALUMINA BINDER FOR FIBER CONTAINING ALUMINA

Patrick M. Miedaner, Blue Bell, Pa., and Chhattar S. Kucheria, Grand Island, N.Y., assignors to Kennecott Corporation, Stamford, Conn.

Filed Apr. 21, 1980, Ser. No. 142,271
Int. Cl.³ C04B *35/10*
U.S. Cl. 501—126 9 Claims

4. A thickened composition comprising from about 10 to about 35 weight percent fibers which comprise alumina, and the balance being the binder composition of claim 1.

6. A process for manufacturing a thickened ceramic binder composition which comprises:

(a) blending together ingredients comprising from about 3 to about 22 weight percent of colloidal alumina, from about 0.1 to about 0.5 weight percent of an inorganic acid selected from the group consisting of hydrochloric and nitric acids and from about 96.9 to about 77.5 weight percent of water to form a first blend component;

(b) blending together ingredients comprising from about 9 to about 60 weight percent of aluminum chlorhydrate and from about 40 to about 91 weight percent water to form a second blend component; and

(c) blending together the first and second blend components at a ratio between 7:1 and 12:1 of first to second component to form a thickened binder composition comprising: from about 3 to about 20 weight percent colloidal alumina, from about 1 to about 8 weight percent aluminum chlorhydrate, from about 0.1 to about 0.4 weight percent of an inorganic acid selected from the group consisting of hydrochloric and nitric acids and from about 75 to about 95 weight percent water, at least 95 weight percent of the solids in said composition being alumina or solids which convert to alumina upon calcining.

4,349,638

PROCESS FOR THE PREPARATION OF FOAMS CHARACTERIZED BY ISOCYANURATE, AND/OR URETHANE LINKAGES INVOLVING THE USE OF ALKALI METAL AMMONIUM CARBOXYLATE CATALYSTS

Thiramurti Narayan, Grosse Ile, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Nov. 2, 1981, Ser. No. 317,148
Int. Cl.³ C08J *9/14;* C08G *18/14, 18/22*
U.S. Cl. 521—125 12 Claims

1. A process for the preparation of a cellular foam characterized by isocyanurate linkages which comprises reacting an organic polyisocyanate in the presence of a blowing agent and a catalytically sufficient amount of an alkali metal ammonium carboxylate consisting of the reaction product of a tertiary amine with an alkali metal acid salt of a polycarboxylic acid.

4,349,639

METHOD OF MAKING AND THE COMPOSITION FOR AN INITIALLY ERASABLE INK FOR A BALL POINT WRITING INSTRUMENT

Frank A. Muller, West Los Angeles, Calif., assignor to Scripto, Inc., Doraville, Ga.

Filed Mar. 26, 1981, Ser. No. 247,982
Int. Cl.³ C09D *11/18, 11/10, 11/08*
U.S. Cl. 523—161 18 Claims

1. The method of making an ink composition which is characterized by initial erasability by ordinary pencil erasers of a trace thereof when applied by a ball-point writing instrument to an absorbent paper-like writing surface and which trace thereafter develops permanence, said method comprising the steps of:

(a) providing a pre-pigmented elastomer component in which pigment is substantially homogeneously distributed

throughout and aggregated onto molecular chains of elastomer component;

(b) dispersing the pre-pigmented elastomer component in a solvent system, the solvent system being present in amount sufficient to provide an ink composition having a viscosity in the range of $1\text{–}4\times10^6$ cps and comprising a volatile component having a boiling point less than about 180° C. and which contributes to initial erasability of an applied trace of the ink composition and an essentially non-volatile component which contributes to development of permanence of the applied trace; and

(c) controlling initial erasability of the ink composition and capability of subsequently developing permanence when applied as a trace to the absorbent writing surface with the ball-point writing instrument by selecting, for the elastomer component of step (a), elastomeric materials which exhibit predetermined molecular weight distribution over a wide molecular weight range and by milling the pigment into the elastomer component in the absence of the solvent system to provide the pre-pigmented elastomer component of step (a), and by selecting, for the essentially non-volatile component of step (b), a liquid having a boiling point in the range 180°–300° C. and a viscosity in the range 1–15 cps.

4,349,640

INHIBITION OF POLYURETHANE HARDENING

C. Neil Keeney, Chesterfield, Mo.; Paul W. May, Jr., Fairview Heights, and Albert W. Morgan, Collinsville, both of Ill., assignors to Monsanto Company, St. Louis, Mo.

Filed Sep. 14, 1978, Ser. No. 942,231
Int. Cl.³ C08K 5/12
U.S. Cl. 524—294 **20 Claims**

1. An elastomeric polyurethane composition prepared by subjecting to polyurethane-forming reaction conditions an elastomeric polyurethane-forming reactant mixture comprising (a) diisocyanate-capped, essentially linear polyester or polyether, (b) polyol suitable for cross-linking of said polyester or polyether to provide an elastomeric polyurethane, said polyol having more than two reactive hydroxyl groups, (c) polyurethane-plasticizing carboxylate having a molecular weight from about 200 to about 1,000 and at least two monocyclic aryl radicals per molecule and, based on the weight of said carboxylate, from about 0.1% to about 5% (d) glycol having a molecular weight from 62 to about 500.

4,349,641

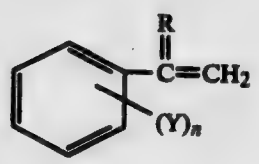
ORGANIC PIGMENTS

William W. Maslanka, London-Britain Township, Chester County, Pa., and Gavin G. Spence, New Castle County, Del., assignors to Hercules Incorporated, Wilmington, Del.

Division of Ser. No. 909,606, May 25, 1978, Pat. No. 4,235,982, which is a continuation-in-part of Ser. No. 803,330, Jun. 3, 1977, abandoned. This application Jun. 16, 1980, Ser. No. 159,744
Int. Cl.³ C08L 33/26, 39/08
U.S. Cl. 524—458 **6 Claims**

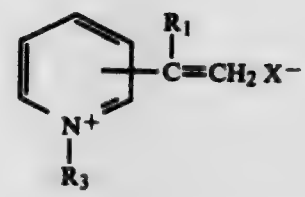
1. Water-insoluble graft copolymer particles consisting essentially of the free radical catalyzed graft copolymerization product of (1) at least one ethylenically unsaturated monomer and (2) a water-soluble cationic prepolymer having an RSV of about 0.1 to about 1.0 (1 M NaCl, 1%, 25° C.), the prepolymer moiety of the graft copolymer particles being present on the surface of the particles,

said monomer (1) being a monomer having the formula

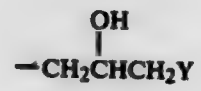


wherein R is hydrogen or methyl, Y is methyl or chlorine, and n is 0, 1, 2, or 3, and said prepolymer (2) being the addition polymerization product of

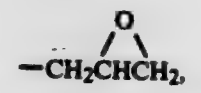
(i) about 5 mole percent to 100 mole percent of a cationic monomer having the formula



wherein R_1 is hydrogen or methyl, R_3 is hydrogen, a C_1–C_4 alkyl,



where Y is hydroxyl or halogen,



and $-(CH_2CH_2O)_nH$ where n is an integer 1 or more and X^- is an anion, and

(ii) from about 95 mole percent to 0 mole percent of at least one monoethylenically unsaturated amide monomer,

the amount of prepolymer (2) employed in preparing the gaft copolymer particles being from about 2 parts to about 10 parts by weight for each 100 parts by weight of monomer (1) employed.

4,349,642

ULTRAVIOLET RADIATION AND IMPACT RESISTANT THERMOPLASTIC BLENDS

Leroy J. Memering, and Ervin G. Pritchett, both of Cincinnati, Ohio, assignors to National Distillers & Chemical Corp., New York, N.Y.

Filed May 4, 1981, Ser. No. 259,887
Int. Cl.³ C08K 3/22
U.S. Cl. 524—524 **26 Claims**

1. Compatibilized polymer triblends which comprise:

a. from about 5 to about 40 pph of at least one resin selected from the group consisting of:

i. a copolymer of ethylene and vinyl acetate containing from about 25 percent to about 75 percent vinyl acetate, and

ii. a terpolymer of ethylene, vinyl acetate and the theoretical monomer vinyl alcohol containing from about 20 percent to about 80 percent ethylene, from about 18 percent to about 60 percent vinyl acetate and from about 2 percent to about 20 percent vinyl alcohol;

b. from about 50 pph to about 95 pph of a copolymer of styrene and acrylonitrile containing from about 15 percent to about 40 percent acrylonitrile;

c. from about 0.1 pph to about 40 pph of a chlorinated polyethylene; and,

d. from about 2 to about 40 pph titania particulate, said titania particulate imparting to said triblend resistance to degradation by solar ultraviolet radiation but without significant loss in impact resistance when compared with the impact resistance of said triblend to which no titania particulate has been added.

4,349,643

COATING COMPOSITION ADAPTED FOR TRANSFER COATING DURING REACTION INJECTION MOLDING CONTAINING A POLYURETHANE CATALYST

Gulam Mohiuddin, Brighton, Mich., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Division of Ser. No. 149,996, May 15, 1980, Pat. No. 4,282,285, which is a continuation-in-part of Ser. No. 87,768, Oct. 24, 1979, abandoned, which is a continuation-in-part of Ser. No. 38,505, May 14, 1979, abandoned. This application Mar. 30, 1981, Ser. No. 248,184

Int. Cl.³ C08L 75/04

U.S. Cl. 524—560 4 Claims

1. A paint composition comprising a polymeric resin selected from the group consisting of acrylic polymers and completely reacted polyurethane polymers, said paint composition adapted for the transfer coating of polyurethane parts during a reaction injection molding operation, said paint composition containing from 0.05 to 10% by weight of the coating of a polyurethane catalyst, said catalyst acting as a catalyst for said polyurethane part but not for said paint composition.

4,349,644

MELT-BLENDED RESIN COMPOSITION OF HYDROLYZED ETHYLENE/VINYL ACETATE COPOLYMERS

Teruo Iwanami, Ibaraki; Hiroshi Takida, Takatsuki, and Yukio Fujita, Otsu, all of Japan, assignors to Nippon Gohsei Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Apr. 2, 1981, Ser. No. 250,411

Int. Cl.³ C08L 23/26, 29/02

U.S. Cl. 525—57 1 Claim

1. A melt-blended resin composition comprising a mixture of at least two kinds of hydrolyzed ethylene-vinyl acetate copolymers having different ethylene contents, each of the hydrolyzed ethylene-vinyl acetate copolymers having an ethylene content of 20 to 55% by mole, a degree of hydrolysis in vinyl acetate component of at least 80% by mole and a melt tension of at least 0.1 g., the fusion curve of the mixture measured by a Differential Scanning Calorimeter indicating substantially single peak, and the hydrolyzed ethylene-vinyl acetate copolymer A_1 included in the largest amount and the hydrolyzed ethylene-vinyl acetate copolymer A_2 included in the second largest amount among the hydrolyzed copolymers constituting the composition having the correlation between them that the proportion of the hydrolyzed copolymer A_1 to the hydrolyzed copolymer A_2 falls within the range of 95:5 to 50:50 by weight and a difference in ethylene content between the hydrolyzed copolymer A_1 and the hydrolyzed copolymer A_2 is at least 3% by mole.

4,349,645

POWDERED BLEND OF EPOXY RESIN AND ANHYDRIDE CONTAINING HINDERED NITROGEN-CONTAINING COMPOUND

Allen L. Griggs, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 5, 1981, Ser. No. 290,382

Int. Cl.³ C08G 59/68

U.S. Cl. 525—120 21 Claims

1. Powder useful for applying protective coatings comprising a blend of (a) a major proportion by weight of polyglycidyl ether of bisphenol A having a Durrans' softening point between 60° and 130° C., (b) between 50% and 150% of a stoichiometric amount of trimellitic anhydride, and (c) a small amount of catalyst, wherein the improvement comprises:

the blend contains by weight of the polyglycidyl ether 0.1 to 5% of at least one hindered nitrogen-containing compound which

(1) has an aqueous pKa greater than 3.5,

(2) has a boiling point above 125° C., and

(3) is soluble in the polyglycidyl ether.

4,349,646

WATER INSOLUBLE DISINFECTANT COMPOSITION

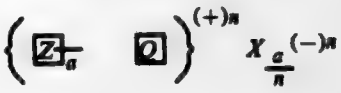
Ron Nudel, Brooklyn; Gilbert E. Janauer, Binghamton; Eugene E. Schrier, Vestal, and Ilona W. Figura, White Plains, all of N.Y., assignors to Research Foundation of State University of New York, Albany, N.Y.

Filed Jan. 31, 1980, Ser. No. 117,062

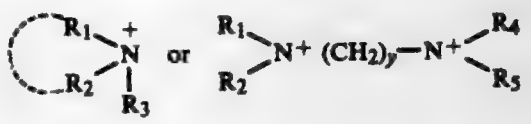
Int. Cl.³ C08F 8/24, 8/32

U.S. Cl. 525—256 8 Claims

1. A water insoluble disinfectant composition comprising a quaternary ammonium salt of the formula.



a is a positive integer, n is an integer of 1–6, Q is a water insoluble resin of microporous or macroporous structure selected from the group consisting of polystyrene crosslinked resins having methylene moieties attached to the backbone thereof, and methylated polymethylmethocrylate resins, X is the anion of any physiologically acceptable salts, and Z is



wherein: R_1 and R_2 are selected from the group consisting of straight or branch chain lower alkyl of one to eight carbon atoms, straight or branch chain lower alkenyl of two to eight carbon atoms, lower cycloalkyl of three to six carbon atoms and R_3, and R_1 and R_2 when taken together with the nitrogen to which they are attached, form a saturated or unsaturated heterocycle having five to seven carbon atoms in the ring, R_3 is straight or branch chain midalkyl of ten to sixteen carbon atoms, phenyl, halo or lower alkyl substituted phenyl, naphthyl lower alkyl and halo or lower alkyl substituted naphthyl lower alkyl wherein said lower alkyl moieties are of one to five carbon atoms and are substituted on from one to five positions on the phenyl nucleus and from one to seven positions on the naphthyl nucleus, R_4–R_7 are selected from the same group of values as R_1–R_3, y is a positive integer of 1–20, provided that where R_1, N, and R_5 are joined to form a fully unsaturated heterocycle, R_3 is absent, and Z is bonded to the methylene moieties.

4,349,647

RESIST MATERIAL FOR MICRO-FABRICATION

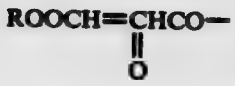
Kohtaro Nagasawa, Tokyo; Hideo Ochi, Kawasaki; Fujio Tanaka, Koshigaya, and Yumi Shibata, Tokyo, all of Japan, assignors to Somar Manufacturing Co., Ltd., Tokyo, Japan

Division of Ser. No. 926,067, Jul. 19, 1978, Pat. No. 4,273,858. This application Feb. 5, 1981, Ser. No. 232,064

Int. Cl.³ C08F 8/46

U.S. Cl. 525—285 9 Claims

1. A resist material for microfabrication consisting essentially of a polymer having a backbone formed of monomer units selected from the group consisting of vinyl acetate, vinyl propionate, vinyl chloride, methyl vinyl ketone, vinyl isocyanate, vinyl pyrrolidone acrylonitrile, ethyleneoxide, alkyl acrylate, alkyl methacrylate, butadiene, isoprene, acrylamide, styrene, itaconic acid and maleic anhydride wherein about 1 to 100 percent of said monomer unit contain functional group(s) selected from the group consisting of amino groups, hydroxyl groups, epoxy groups and ethylenically unsaturated bonds, bonded to an α,β-unsaturated dicarboxylic moiety of the formula (I)



(I)

wherein R represents a hydrogen atom an alkyl group, an alkenyl group, an aryl group or an arakyl group, the resist material being substantially non-light sensitive, but curable electromagnetic radiation with the wave length of less than about 3,000 A.

4,349,648

CATALYST COMPOSITION FOR COPOLYMERIZING ETHYLENE

Robert J. Jorgensen, Dunbar, W. Va.; George L. Goeke, and Frederick J. Karol, both of Belle Mead, N.J., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Jul. 31, 1981, Ser. No. 288,806
Int. Cl.³ C08F 2/34, 10/02
U.S. Cl. 526—125 **18 Claims**

1. A continuous process for producing ethylene copolymers containing at least 90 mol percent of ethylene and no more than 10 mol percent of one or more alpha olefins containing from 3 to 8 carbon atoms, said copolymers being produced in granular form and having a density of from 0.91 g/cm³ to 0.94 g/cm³,

which comprises contacting a mixture of ethylene and at least one alpha olefin containing from 3 to 8 carbon atoms, at a temperature of from 30° C. to 105° C. and a pressure no greater than 1000 psi, in a gas phase reaction zone, with particles of a catalyst system comprising a precursor composition having the formula:

$$Mg_mTi(OR)_nX_p[ED]_q$$

wherein R is an aliphatic or aromatic hydrocarbon radical containing from 1 to 14 carbon atoms, or COR′ wherein R′ is an aliphatic or aromatic hydrocarbon radical containing from 1 to 14 carbon atoms,

X is selected from the group consisting of Cl, Br, I, and mixtures thereof,

ED is an organic electron donor compound selected from the group consisting of alkyl esters of aliphatic and aromatic carboxylic acids, aliphatic ethers, cyclic ethers and aliphatic ketones,

m is 0.5 to 56,

n is 0, 1 or 2,

p is 2 to 116, and

q is 2 to 85,

said precursor composition being diluted with an inert carrier material, and being completely activated in the reaction zone with a mixture of a dihydrocarbyl aluminum halide compound and a trihydrocarbyl aluminum compounded wherein the molar ratio of dihydrocarbyl aluminum halide compound to trihydrocarbyl aluminum compound is maintained at from 4:1 to 20:1, said dihydrocarbyl aluminum halide compound and said trihydrocarbyl aluminum compound being employed in an amount such as to provide a total aluminum:titanium molar ratio in said reaction zone of from 10:1 to 400:1,

said dihydrocarbyl aluminum halide compound having the formula:

$$R''_2AlX$$

wherein R″ is a saturated hydrocarbon radical containing from 1 to 14 carbon atoms or OR‴, wherein R‴ is a saturated hydrocarbon radical containing from 1 to 14 carbon atoms,

and said trihydrocarbyl aluminum compound having the formula:

$$R'''_3Al$$

wherein R‴ is a saturated hydrocarbon radical containing from 1 to 14 carbon atoms, and

X is selected from the group consisting of Cl, Br, I, and mixtures thereof.

4,349,649

PROCESS OF PREPARING COPOLYMERS OF BUTYL ACRYLATE AND 1-(α-ALKYL ACRYLATE)-1-TERT-BUTYL PEROXY ETHANES

Valery N. Pavljuchenko, prospekt Energetikov, 34, kv. 53; Zinaida M. Pesina, ulitsa Pskovskaya, 6, kv. 17; Elena D. Vasilieva, prospekt Lunacharskogo, 110, kv. 324, and Sergei S. Ivanchev, ulitsa Nalichnaya, 36/3, kv. 97, all of Leningrad, U.S.S.R.

PCT No. PCT/SU79/00015, § 371 Date Nov. 13, 1980, § 102(e) Date Nov. 6, 1980, PCT Pub. No. WO80/01916, PCT Pub. Date Sep. 18, 1980
PCT Filed Mar. 13, 1979, Ser. No. 212,703
Int. Cl.³ C08F 2/00, 220/10
U.S. Cl. 526—234 **1 Claim**

1. A process of preparing copolymers of butyl acrylate and 1-(α-alkyl acrylate)-1-tert-butyl peroxy ethanes by means of emulsion copolymerization of butyl acrylate and 1-(α-alkyl acrylate)-1-tert-butyl peroxy ethanes in the presence of an initiating system wherein alkyl is 1–5 carbon atoms, characterized in that the initiating system consists of sodium metabisulfite in amount of from 0.008 to 1.640% of the total mass of monomers and a compound of the general formula $Na_xH_yS_zO_3$, where "x" is an integer of 1 or 2, "y" is zero or 1, "z" is an integer of 1 or 2, said compound being in amount of from 0.002 to 0.360% of the total mass of monomers.

4,349,650

POLYFLUOROALLYLOXY COMPOUNDS, THEIR PREPARATION AND COPOLYMERS THEREFROM

Carl G. Krespan, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

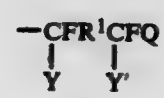
Continuation-in-part of Ser. No. 20,354, Mar. 14, 1979, abandoned, which is a continuation-in-part of Ser. No. 850,729, Nov. 11, 1977, abandoned, which is a continuation-in-part of Ser. No. 747,029, Dec. 2, 1976, abandoned. This application May 1, 1980, Ser. No. 145,760
Int. Cl.³ C08F 220/42, 228/00, 214/18, 220/22
U.S. Cl. 526—243 **9 Claims**

1. A copolymer of a polyfluoroallyloxy compound having the formula

$$CF_2{=}CFCF_2OR_F$$

wherein

R_F is

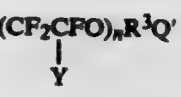


(i)

wherein R^1 is a carbon-carbon bond or a linear or branched perfluoroalkylene group of 1 to 12 carbon atoms; Q is $-SO_2F$, $-COF$, $-CN$ or $-CO_2R^4$ where R^4 is $-CH_3$ or $-C_2H_5$; Y and Y′, independently, are $-F$ or $-CF_3$ and only Y and Y′ can be $-CF_3$; or

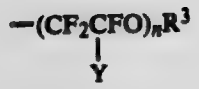
(ii) $-CF(R^2)_2$

wherein R^2 is $-CF_2COF$, $-CF_2CN$, or $-CF_2CO_2R^4$ where R^4 is defined as above; or



(iii)

wherein R^3 is a linear perfluoroalkylene group of carbon content such that the moiety



does not exceed 15 carbon atoms; Y is —F, or —CF_3; n is 1 to 4; and Q' is defined as for Q above; and at least one ethylenically unsaturated monomer; said copolymer having a molecular weight sufficient to be molded into a shaped article.

4,349,651

RESINOUS COPOLYMER INSULATING COMPOSITIONS

James D. B. Smith, Wilkins Township, Allegheny County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 1, 1980, Ser. No. 174,329

Int. Cl.³ C08F *222/30, 224/00, 226/06*

U.S. Cl. 526—263 **3 Claims**

1. A water soluble addition copolymer consisting of the uncatalyzed reaction product of: (1) a first component electron rich monomer selected from the group consisting of vinylimidazole, 2-methyl-1-vinylimidazole, vinyl carbazole, vinylindole, and their mixtures, said monomers having a high electron density at the pendant vinyl group, and (2) a second component monomer selected from the group consisting of maleic anhydride, fumaronitrile, tetracyanoethylene, maleimide, and their mixtures, where the average mol. ratio of first component monomer:second component monomer is about 1:1, said copolymer characterized as being spontaneously copolymerized, not containing any catalyst materials and having high mechanical and high voltage electrical insulating capability.

4,349,652

HIGH NITRILE RESINS CONTAINING MALEIC ANHYDRIDE

George S. Li, Aurora, and John F. Jones, Cuyahoga Falls, both of Ohio, assignors to Sohio, Ohio

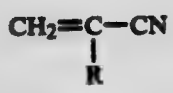
Continuation of Ser. No. 27,956, Apr. 9, 1979, abandoned, which is a continuation of Ser. No. 944,109, Sep. 20, 1978, Pat. No. 4,197,263, which is a continuation of Ser. No. 806,577, Jun. 15, 1977, abandoned. This application Feb. 6, 1981, Ser. No. 232,075

Int. Cl.³ C08F *34/02, 222/04*

U.S. Cl. 526—271 **13 Claims**

1. The polymeric composition resulting from the polymerization of 100 parts by weight of

(A) from 60 to 90% by weight of at least one nitrile having the structure

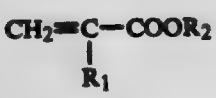


wherein R is hydrogen, a lower alkyl group having from 1 to 4 carbon atoms, or a halogen,

(B) from 1 to 30% by weight of maleic anhydride, and

(C) from 5 to 25% by weight of at least one member selected from the group consisting of

(1) an ester having the structure



wherein R_1 is hydrogen, an alkyl group having from 1 to 4 carbon atoms, or a halogen, and R_2 is an alkyl group having from 1 to 6 carbon atoms,

(2) a vinyl ether selected from the group consisting of methyl vinyl ether, ethyl vinyl ether, the propyl vinyl ethers, and the butyl vinyl ethers, and

(3) vinyl acetate,

wherein the weight percentages of (A), (B) and (C) are based on the combined weight of (A) plus (B) plus (C).

4,349,653

HIGH NITRILE RESINS CONTAINING MALEIC ANHYDRIDE

George S. Li, Aurora, and John F. Jones, Cuyahoga Falls, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

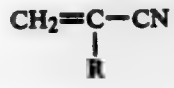
Continuation of Ser. No. 944,109, Sep. 20, 1978, Pat. No. 4,197,263, which is a continuation of Ser. No. 806,577, Jun. 15, 1977, abandoned. This application Apr. 9, 1979, Ser. No. 27,955

Int. Cl.³ C08F *222/04*

U.S. Cl. 526—272 **6 Claims**

1. The polymeric composition resulting from the polymerization of 100 parts by weight of

(A) from 60 to 90% by weight of at least one nitrile having the structure



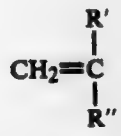
wherein R is hydrogen, a lower alkyl group having from 1 to 4 carbon atoms, or a halogen,

(B) from 1 to 30% by weight of maleic anhydride, and

(C) from 5 to 25% by weight of at least one member selected from the group consisting of

(1) styrene of alpha-methyl styrene, and

(2) an alpha-olefin having the structure



wherein R' and R'' are alkyl groups having from 1 to 7 carbon atoms,

wherein the weight percentages of (A), (B) and (C) are based on the combined weight of (A) plus (B) plus (C).

4,349,654

POWDER COATING COMPOSITION

Tadayuki Ohmae; Teruhiko Murakami, and Yoshinori Kanno, all of Niihama, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Sep. 3, 1980, Ser. No. 183,640

Claims priority, application Japan, Mar. 6, 1979, 54-26263

Int. Cl.³ C08F *24/00, 124/00;* C08L *37/00*

U.S. Cl. 526—273 **5 Claims**

1. A powder coating composition comprising (A) 100 parts by weight of a powdery hydration reaction product of a copolymer comprising 60 to 95% by weight of ethylene and 5 to 40% by weight of a glycidyl acrylate compound wherein 5 to 80% by mole of the epoxy groups of the copolymer are hydrated to produce 1, 2-dihydroxy groups, and (B) up to 100 parts by weight of powdery polyethylene.

4,349,655

WATER-DILUTABLE BINDERS CARRYING OXAZOLIDINE GROUPS

Wolfgang Leitner; Georg Pampouchidis, and Anton Bleikolm, all of Graz, Austria, assignors to Vianova Kunstharz, A.G., Werndorf, Austria

Filed Oct. 29, 1980, Ser. No. 201,983

Claims priority, application Austria, Nov. 5, 1979, 7081/79

Int. Cl.³ C08G *18/00*

U.S. Cl. 528—45 **24 Claims**

1. Binders water-dilutable upon neutralization with inorganic and/or organic acids, said binders being useful in cathod-

ically depositable coating compositions, comprising the reaction product of

(A) the monoadduct of (a) an N-hydroxyalkyloxazolidine, said N-hydroxyalkyloxazolidine being the reaction product of 1 mole of a dialkanolamine with from 0.8 to 1.3 moles of an organic compound containing a reactive carbonyl group and having up to 6 carbon atoms in an alkyl radical, said reaction occurring at a maximum temperature of 130° C., and (b) 1 mole of a diisocyanate, said adduct formation occurring by reaction at a maximum temperature of 30° C. until an NCO-value which corresponds to a monoadduct is obtained; and

(B) a hydroxyl group containing polymer; components (A) and (B) being adjusted to provide a final product having an amine value of from about 30–100 mg KOH/g.

4,349,656

THIODIETHANOL BASED POLYURETHANE ELASTOMERS HAVING IMPROVED DYNAMIC PROPERTIES AND METHOD FOR PRODUCTION THEREOF

Volker D. Arendt, Princeton, and Tsi T. Li, Milltown, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 171,615, Jul. 23, 1980, Pat. No. 4,284,761. This application Jan. 26, 1981, Ser. No. 228,509

Int. Cl.³ C08G *18/38*

U.S. Cl. 528—63 **8 Claims**

1. A polyurethane prepolymer comprising the reaction product of (A) a polyether-thioether copolymer glycol, represented by the formula:

$$H—OC_2H_4SC_2H_4]_x[OC_4H_8—_yOH$$

wherein the mole ratio of x/y ranges from about 45:55 to about 60:40 respectively, prepared by a process which comprises: (a) condensing, at a temperature of about 160°–205° C., in the presence of an acidic condensation catalyst, 1,4-butanediol with sufficient thiodiethanol to produce a trimer, represented by the formula:

$$HO—C_4H_8—O—C_2H_4SC_2H_4—O—C_4H_8—OH$$

(b) completing the condensation, under the same conditions, by the incremental addition to said trimer, of the remaining thiodiethanol at a rate corresponding essentially to the rate of removal of water of reaction therefrom, such that no significant excess of thiodiethanol is present in the reaction mixture at any given time; (c) extracting the product of (b) with water, at a ratio of polymeric diol to water between about 2/1 and 1/3; and (d) recovering the extracted copolymer glycol, with B) a diisocyanate at a mole ratio of about 1/1.5 to 1/2.5.

4,349,657

POLYURETHANE PROCESS

John A. Holloway, Sheffield Lake, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Sep. 28, 1981, Ser. No. 306,065

Int. Cl.³ C08G *18/42*

U.S. Cl. 528—66 **8 Claims**

1. An improved method for preparing polyesterurethanes by first reacting together greater than 2 and less than 4 mols of p-phenylene diisocyanate with 1 mol of a hydroxyl-terminated polyester, derived from aliphatic glycols containing 2 to 8 carbon atoms and aliphatic dicarboxylic acids containing 4 to 10 carbon atoms and having a molecular weight from about 800 to about 1500, in a molten state at a temperature to react with the p-phenylene diisocyanate to form an isocyanate terminated polyesterurethane and then continuously mixing molten hydroxyl-terminated polyesters having a molecular weight of about 800 to 1500 derived from aliphatic glycols containing 2 to 8 carbon atoms and aliphatic dicarboxylic acids containing 4 to 10 carbon atoms when said isocyanate terminated polyesterurethane in a molten state at a temperature to form a polyesterurethane in a molar ratio so that substantially all of the isocyanate and hydroxyl groups are reacted together and the resulting polyesterurethane contains less than 0.05 mol of free isocyanate groups.

4,349,658

FLAME RETARDANT AROMATIC POLYESTER-CARBONATE COPOLYMER COMPOSITIONS

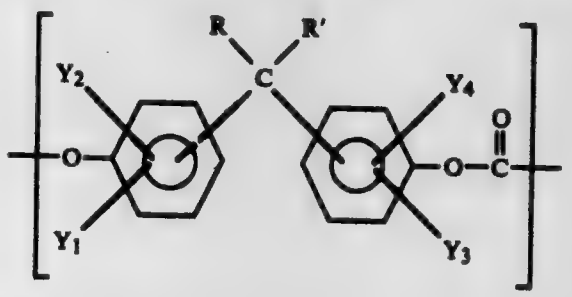
Victor Mark, Evansville, and Charles V. Hedges, Mount Vernon, both of Ind., assignors to General Electric Company, Mount Vernon, Ind.

Filed Dec. 31, 1980, Ser. No. 221,937

Int. Cl.³ C08G *63/64*

U.S. Cl. 528—176 **20 Claims**

1. A high molecular weight polyester-carbonate copolymer composition of matter having improved flame resistance comprising bisphenol ester units and bisphenol-carbonate units, said bisphenol-carbonate units having the general formula:



wherein R is selected from the group consisting of a fluorinated alkyl radical and a fluorinated aryl radical; R' is selected from the group consisting of fluorinated alkyl radical, fluorinated aryl radical, alkyl radical and hydrogen; and Y_1, Y_2, Y_3 and Y_4 are each independently selected from the group consisting of hydrogen, alkyl radical, chlorine and bromine.

4,349,659

PROCESS FOR PRODUCING AROMATIC POLYESTER

Yasuyuki Kato, Nihama; Hiroaki Sugimoto, Nara, and Makoto Hanabata, Takatsuki, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Oct. 2, 1980, Ser. No. 193,301

Claims priority, application Japan, Oct. 18, 1979, 54-134778

Int. Cl.³ C08G *63/02, 17/02*

U.S. Cl. 528—193 **7 Claims**

1. In a process for producing an aromatic polyester by reacting under application of heat (A) an aromatic dicarboxylic acid and/or an ester-forming derivative thereof, (B) an aromatic hydroxycarboxylic acid and/or an ester-forming derivative thereof, and (C) a dihydroxy aromatic compound produced by the method of alkali fusion and containing 4,4'-dihydroxydiphenyl as major constituent and/or an ester-forming derivative of said dihydroxy aromatic compound, the improvement which comprises employing, as said 4,4'-dihydroxydiphenyl, a 4,4'-dihydroxydiphenyl of such a quality that a solution of 1 part by weight of it dissolved in 100 parts by weight of a mixture comprising methanol and water in a weight ratio of 70:30 will show a pH of 6.6 to 7.4.

4,349,660

PROCESS FOR THE PRODUCTION OF AIR DRYING MODIFIED AMINO RESIN

Hanna J. Toivonnen, Espoo, Finland, assignor to Kemira Oy, Helsinki, Finland

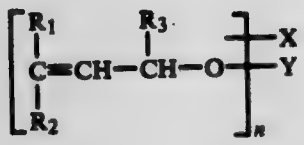
Continuation-in-part of Ser. No. 959,981, Nov. 13, 1978, abandoned. This application Dec. 8, 1980, Ser. No. 214,120

Int. Cl.³ C08G *12/30, 12/42*

U.S. Cl. 528—261 **8 Claims**

1. A process for the production of an air-drying, modified

amino-resin, which process consists of (a) co-polycondensing at least one dialkyl ether compound, which is a dialkyl ether of the dimethylol derivative of a compound containing two primary amino groups or two groups behaving as two disubstituted primary amino groups, with at least one compound containing an auto-oxidative group, or (b) polycondensing said dialkyl ether compound and reacting the compound containing an auto-oxidative group with the condensate; said compound containing said auto-oxidative group being a compound containing at least one allyl ether group, said compound having the general formula:



wherein n is 1 or an integer greater than 1; R_1, R_2 and R_3 are hydrogens or alkyls, the terminal group Y is an alkyl or heterocyclic radical and the group X is capable of becoming attached to the backbone of the polymer being formed, said group X being incapable of causing cross-linking, or said group X being —ZH in which Z is O, S or N and H is an active hydrogen atom, or said compound containing said auto-oxidative group contains two groups capable of reacting with active hydrogen atoms, and removing the released alcohol from the mixture.

4,349,661

PREPARATION OF POLYETHER ESTER AMIDES

Salih Mumcu, Marl, Fed. Rep. of Germany, assignor to Chemische Werke Hüls AG, Marl, Fed. Rep. of Germany

Filed Aug. 25, 1980, Ser. No. 180,618

Claims priority, application Fed. Rep. of Germany, Sep. 13, 1979, 2936976

Int. Cl.³ C08G *69/41, 63/42*

U.S. Cl. 528—288 10 Claims

1. In a method for preparing thermoplastic polyether amides or polyether ester amides from lactams, dicarboxylic acids and polyethers having hydroxyl end groups and amino end groups or polyethers having amino end groups, the improvement comprising:

(a) melting a mixture of said lactams having at least 8 C atoms and said dicarboxylic acids in a molar ratio of 100/7 to 100/120 at temperatures of about 230° to 300° C. while being mechanically mixed, in an inert gas atmosphere at atmospheric pressure in the absence of water for sufficient time to react said lactams to at least 99%;

(b) adding said polyethers to (a) in a molar ratio of 1/0.95 to 1/1.05 to said dicarboxylic acids of (a);

(c) homogenizing (b) with further mixing at about 230° to 290° C.; and

(d) carrying out a polycondensation of (c) at about 240° to 290° C.

4,349,662

POLYESTER RESINS FOR POLYURETHANE FOAMS PREPARED BY REACTING TWO DIACIDS, DIETHYLENE GLYCOL, A POLY(OXYETHYLENE) GLYCOL AND A CROSS-LINKING POLYOL

Carl Bernstein, Deerfield; James Stogis, Joliet; Travis Riddle, Justice, and Robert Kufris, Chicago, all of Ill., assignors to Witco Chemical Corporation, New York, N.Y.

Filed May 13, 1981, Ser. No. 263,224

Int. Cl.³ C08G *63/02*

U.S. Cl. 528—301 8 Claims

1. A polyester, liquid at 70° F., for the production of flexible polyurethane foams, comprising the reaction product of a diacid, diethylene glycol, a viscosity increasing diacid replacing some of said diacid, and a poly(oxyethylene) glycol, wherein the resin formulation of 100 parts by weight contains about 1–12 parts by weight of the viscosity increasing diacid, about 1–15 parts by weight of the poly(oxyethylene) glycol and about 0.2–5.5 parts of a cross-linking polyol.

4,349,663

BIS(CYCLIC UREAS) MONOMER COMPOSITIONS USEFUL IN MAKING POLYURETHANE POLYMERS

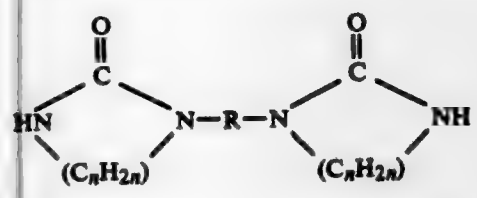
Edward A. Barsa, East Haven; Chung-Yuan Lin, Northford, and Fred A. Stuber, North Haven, all of Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Nov. 10, 1980, Ser. No. 205,632

Int. Cl.³ C08G *73/00;* B01J *31/04, 27/14, 27/24, 31/12;* C07D *401/06, 401/10, 403/06*

U.S. Cl. 528—367 15 Claims

1. A bis(cyclic urea) having the formula:

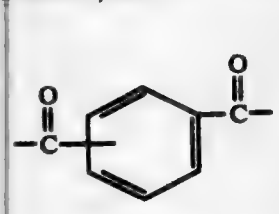


wherein: R is a divalent radical selected from the class consisting of



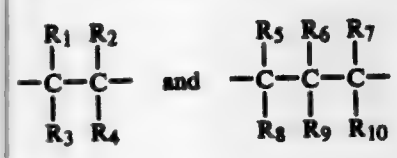
(a)

wherein alkylene contains from 1 to 11 carbon atoms, inclusive; and



(b)

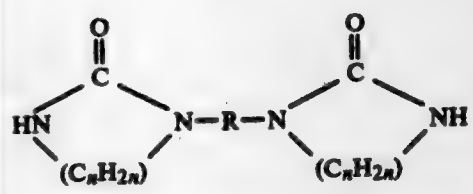
and C_nH_{2n} is alkylene selected from the class consisting of



wherein R_1, R_2, R_3, R_4, R_5, R_6, R_7, R_8 R_9 and R_{10} are each independently selected from the class consisting of hydrogen and an inert substituent.

8. A storage stable composition adapted to form a polyurethane resin upon heating to a temperature in the range of about 100° C. to about 250° C. which composition comprises a mixture of:

(a) a bis(cyclic urea) having the formula:

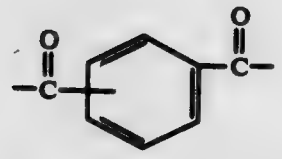


wherein R is a divalent radical selected from the class consisting of

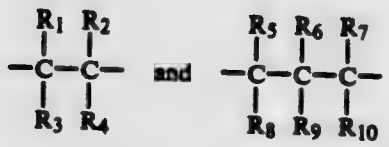


(a)

wherein alkylene contains from 1 to 11 carbon atoms, inclusive; and



and C_nH_{2n} is alkylene selected from the class consisting of



wherein R_1, R_2, R_3, R_4, R_5, R_6, R_7, R_8, R_9 and R_{10} are each independently selected from the class consisting of hydrogen and an inert substituent; and

(b) a polymeric polyol.

9. A composition according to claim 8 which also comprises a catalyst for the reaction of isocyanate groups with hydroxyl groups.

4,349,664

DOPED ACETYLENE POLYMER AND PROCESS FOR PRODUCTION THEREOF

Yoshio Matsumura, Yamato; Ikuo Nozue, and Takashi Ukachi, both of Yokohama, all of Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

Filed Jul. 9, 1980, Ser. No. 166,995
Int. Cl.³ C08F 6/00
U.S. Cl. 528—491 21 Claims

1. An acetylene polymer doped with a dopant selected from the group consisting of a platinum group metal complex, a carbonium salt, an oxonium salt and a parabenzoquinone derivative.

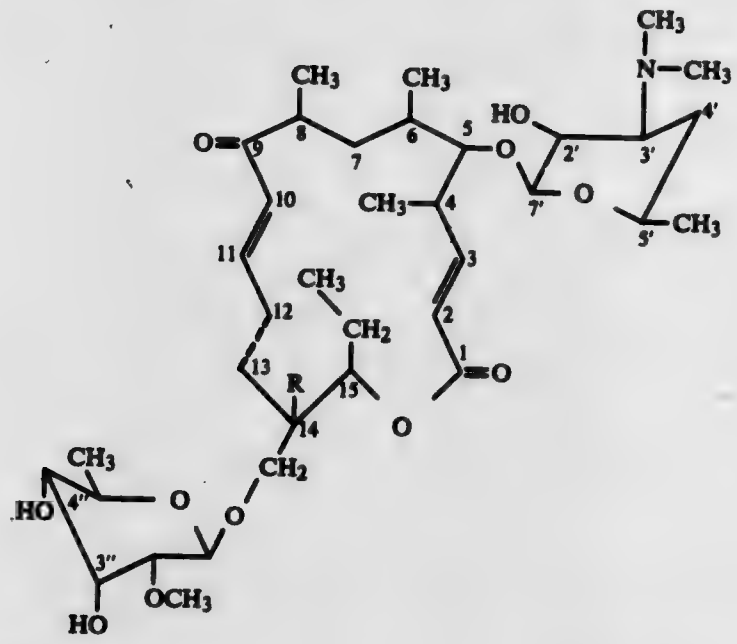
4,349,665

MACROLIDE ANTIBIOTIC COMPLEX

Bong K. Lee, East Brunswick; Joseph A. Marquez, Montclair, and J. Allan Waitz, Warren, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Filed Jun. 27, 1980, Ser. No. 163,461
Int. Cl.³ C07H 17/08
U.S. Cl. 536—7.1 9 Claims

1. AR-5-3 Complex consisting of compounds having the Planar structural formula:



wherein R is hydrogen or hydroxy and the dotted line represents a double bond between the carbon atoms of positions 12 and 13 or together with the carbon atoms at positions 12 and 13 an oxirane ring and the non-toxic pharmaceutically acceptable acid addition salts, and the non-toxic pharmaceutically acceptable 2'-monoesters, the 3'',4''-diesters, and the 2',3'',4'' triesters thereof, wherein the acyl moiety of said esters are derived from hydrocarbon carboxylic acids having 2 to 18 carbon atoms, and R is a member of the group consisting of hydrogen and hydroxy.

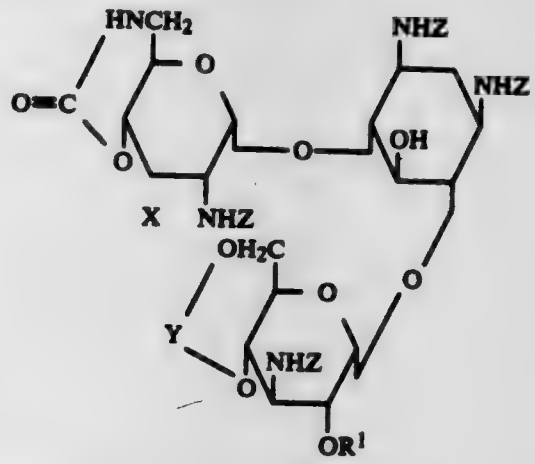
4,349,666

PROCESS FOR THE PRODUCTION OF KANOMYCIN B DERIVATIVES AND PRODUCTS OBTAINED THEREFROM

Hamao Umezawa; Sumio Umezawa, both of Tokyo; Tsutomu Tsuchiya, Yokohama, and Toshiaki Miyake, Kawasaki, all of Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Tokyo, Japan

Filed Oct. 14, 1980, Ser. No. 196,586
Claims priority, application Japan, Oct. 30, 1979, 54-139262
Int. Cl.³ C07H 15/22
U.S. Cl. 536—13.8 9 Claims

8. The 1,3,2',3''-N-sulfonylated, 4'',6''-O-protected, 6'-N:4'-O-carbonylated and 3'-halogenated kanamycin B derivative of the formula (V)



(V)

wherein X is a halo group, R^1 is hydrogen or benzylsulfonyl Y is an alkylidene group of 1~6 carbon atoms, a cycloalkylidene group of 3~6 carbon atoms, or tetrahydropyranylidene group as the divalent hydroxyl-protecting group, and each Z is tosyl as the amino-protecting group.

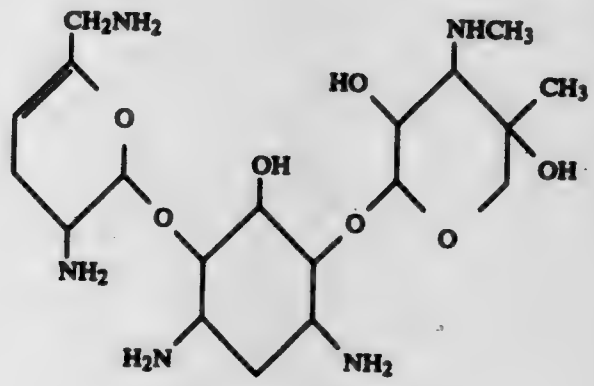
4,349,667

AMINOGLYCOSIDE ANTIBIOTIC G-367-2

Tadashiro Fujii, Mishima; Shuzo Satoi, Shizuoka; Naoki Muto, Shizuoka, and Mitsuo Hayashi, Shizuoka, Akira Kodama, Shizuoka; Masaru Otani; all of Japan, assignors to Toyo Jozo Kabushiki Kaisha, Shizuoka, Japan

Filed Jul. 9, 1980, Ser. No. 166,974
Claims priority, application Japan, Aug. 18, 1979, 54-105140
Int. Cl.³ A61K 31/71; C07H 15/22
U.S. Cl. 536—13.9 2 Claims

1. Aminoglycoside antibiotic of the formula



and the non-toxic acid addition salts thereof.

4,349,668

PROCESS FOR SEPARATING GLUCOSE FROM FRUCTOSE BY SELECTIVE ADSORPTION

Richard W. Neuzil, Downers Grove, and James W. Priegnitz, Elgin, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 690,769, May 27, 1976, abandoned. This application Oct. 17, 1980, Ser. No. 197,874

Int. Cl.³ C07H *1/06*

U.S. Cl. 536—127 8 Claims

1. A process for separating glucose from a mixture comprising glucose and fructose which process comprises the steps of:

(a) contacting said mixture at a temperature within the range of from 20° C. to 200° C. and a pressure from atmospheric pressure to 500 psig with an adsorbent comprising an X zeolite containing potassium cations at exchangeable cationic sites and selectively adsorbing said glucose in said adsorbent;

(b) removing from the adsorbent a raffinate stream comprising said fructose;

(c) contacting said adsorbent at a temperature within the range of from 20° C. to 200° C. and a pressure from atmospheric pressure to 500 psig with a desorbent material to effect the desorption of said glucose from said adsorbent; and,

(d) removing from said adsorbent an extract stream comprising said glucose.

4,349,669

PURIFICATION OF ALKYLGLYCOSIDES BY DISTILLATIVE REMOVAL OF UNCONVERTED ALCOHOLS

Erhard Klahr; Wolfgang Trieselt, both of Ludwigshafen; Horst Trapp, Plankstadt, and Rudi Widder, Leimen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jan. 5, 1981, Ser. No. 222,619

Claims priority, application Fed. Rep. of Germany, Jan. 12, 1980, 3001064

Int. Cl.³ C07H *1/06*

U.S. Cl. 536—127 4 Claims

1. In a process for purifying C_8–C_{16}-alkylglycosides which have been obtained by reacting lower alkylglycosides or hydroxyalkylglycosides with C_8–C_{16}-alcohols in the presence of an acid catalyst, by distillative removal of unconverted C_8–C_{16}-alcohols, the improvement that the distillative removal, at least of the last amounts of unconverted alcohols, is carried out in the presence of glycols which are added after substantial termination of the reaction whose boiling points are not more than 10° above, and not more than 30° below, those of the alcohols to be removed.

4,349,670

PROCESS FOR THE PREPARATION OF CATIONIC DYESTUFFS

Roderich Raue, and Heinz Giesecke, both of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

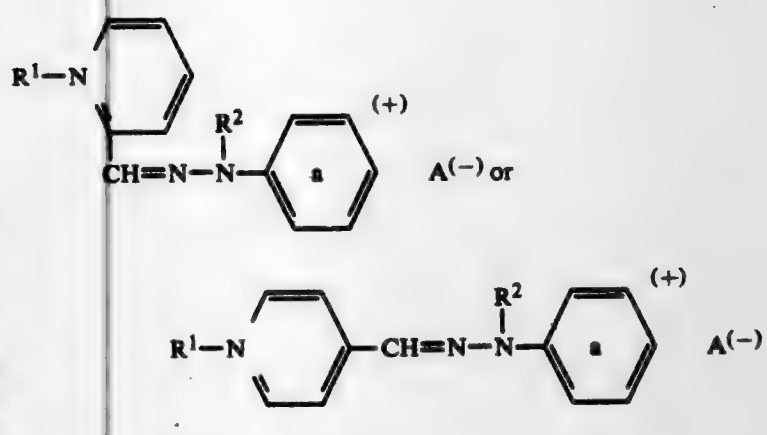
Filed Jul. 17, 1980, Ser. No. 169,580

Claims priority, application Fed. Rep. of Germany, Aug. 4, 1979, 2931772

Int. Cl.³ C07D *211/72, 215/06;* C09B *55/00*

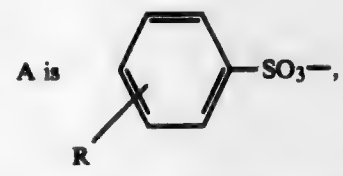
U.S. Cl. 542—417 1 Claim

1. A process for the preparation of a dyestuff of the formula



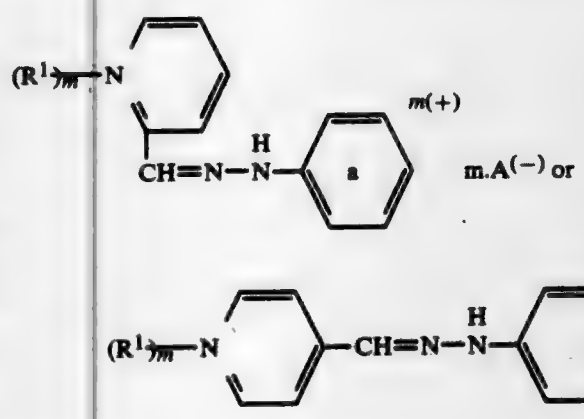
wherein

R^1 and R^2 are methyl or ethyl,



R is hydrogen, C_{1-4}-alkyl or halogen, and the benzene ring a can be substituted by C_{1-4}-alkyl, C_{1-4}-alkoxy or halogen,

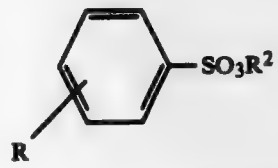
comprising reacting a compound of the formula



wherein

m is 0 or 1,

with an arylsulphonic acid ester of the formula



in the presence of water and an acid-binding agent at a temperature of 20°–70° C.

4,349,671

PROCESS FOR THE PRODUCTION OF METAL COMPLEXES OF ISOINDOLINE AZINES

Abul Iqbal, Ettingen, and Paul Lienhard, Frenkendorf, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

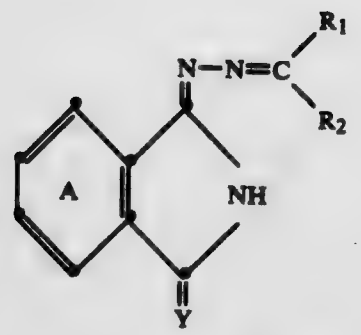
Filed Mar. 5, 1981, Ser. No. 241,141

Claims priority, application Switzerland, Mar. 13, 1980, 1975/80

Int. Cl.³ C07D *403/14*

U.S. Cl. 542—417 9 Claims

1. A process for the manufacture of a 1:1 metal complex of an azine of formula I

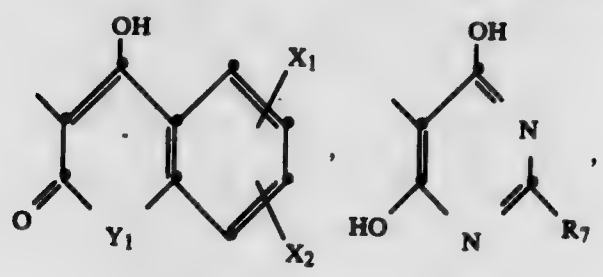


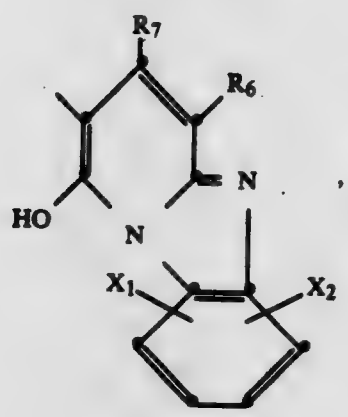
(I)

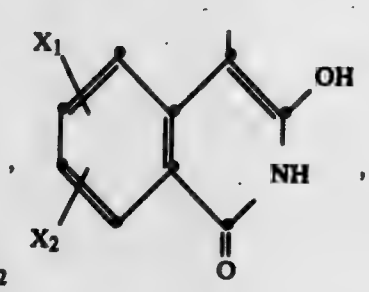
wherein the ring A is unsubstituted or is substituted by 2 to 4 chlorine atoms, by 1 to 2 alkyl or alkoxy groups having each 1 to 4 carbon atoms, by a phenoxy, by phenyl, by nitro, by benzoylamino or by a C_{2-6}-alkanoylamino group,

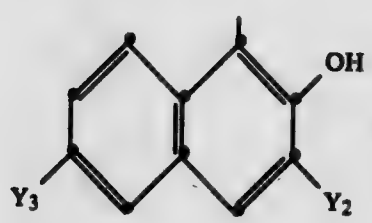
R_1 is a hydrogen atom or a methyl group,

R_2 is a radical selected from the group consisting of

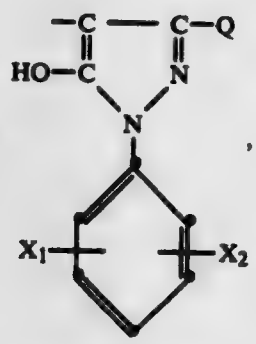








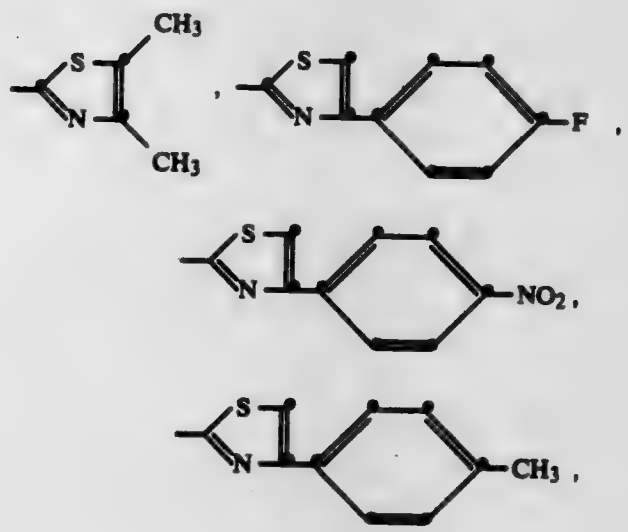
and

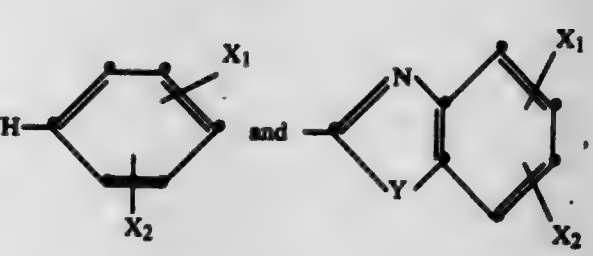


Y is the radical of a heteroaryl amine selected form the group consisting of 2-aminothiophene, 2-aminothiazole, 2-amino-5-nitrothiazole, 2-amino-5-methylsulfonyl-thiazole, 2-amino-5-cyanothiazole, 2-amino-4-methyl-5-nitrothiazole, 2-amino-4-methylthiazole, 2-amino-4-phenylthiazole, 2-amino-4-(4'-chloro)-phenylthiazole, 2-amino-4-(4'-nitro)-phenylthiazole, 2-aminopyrazole, 3-amino-1-phenylpyrazole, 3-aminoindazole, 5-methylsulfonyl-2-aminothiazole, 5-benzoyl-2-aminothiazole, 4-aminoimidazole, 4,5-dicyano-2-aminoimidazole, 4,5-diphenyl-2-aminothiazole, 2-amino-3,4-thiadiazole, 2-amino-3,5-thiadiazole, 3-amino-1,2,4-triazole, 2-amino-3,4-oxadiazole, 3-aminopyridine, 2-aminopyridine-N-oxide, 2-amino-benzthiazole, 2-amino-6-chlorobenzthiazole, 2-amino-6-methyl-benzthiazole, 2-amino-6-methoxybenzthiazole, 2-amino-6-chloro-4-nitrobenzthiazole, 2-amino-6-bromo-4-cyanobenzthiazole, 2-amino-6-cyano-4-methylbenzthiazole, 2-amino-6-methyl-4-nitrobenzthiazole, 2-amino-6-methoxy-4-nitrobenzthiazole, 2-amino-6-butoxy-4-chlorobenzthiazole, 2-amino-4-chloro-5-methoxybenzthiazole, 2-amino-4-bromo-6-methoxybenzthiazole, 2-amino-4,6-dichlorobenzthiazole, 2-amino-4,6-dibromobenzthiazole, 2-amino-4-methyl-6-(trifluoromethyl)-benzthiazole, 2-amino-4-methyl-6-propionylbenzthiazole, 2-amino-4-chloro-6-methylsulfonyl-benzthiazole, 3-aminobenzisothiazole, 3-amino-5-chlorobenzisothiazole, 2-amino-3-cyanotetrahydrobenzthiaphene, 2-amino-benzimidazole, 2-amino-6-chlorobenzimidazole, 2-amino-6-bromo-benzimidazole, 2-amino-6-methylbenzimidazole, 2-amino-6-methoxy-benzimidazole, 2-amino-6-ethoxybenzimidazole, 2-amino-6-methylsulfonyl-benzimidazole, 2-amino-6-acetylaminobenzimidazole, 2-aminopyridine, diaminophthalazine, 2-amino-4-hydroxyquinoline, 2,6-diaminopyridine and 2-amino-4,5-dimethylthiazole, or Y is a group of the formula



R' is —$CONH_2$, —$CSNH_2$ or a radical selected from the group consisting of





and

Y_1 is —O—, —S— or —NH—,

Y_2 is a hydrogen atom, a carboxyl or carbamoyl group, an alkoxycarbonyl or alkylcarbamoyl group containing 2 to 6 carbon atoms, a phenylcarbamoyl group which is unsubstituted or substituted in the phenyl moiety by halogen atoms, alkyl or alkoxy groups containing 1 to 4 carbon atoms,

Y_3 is a hydrogen or a halogen atom, a methoxy, nitro or cyano group,

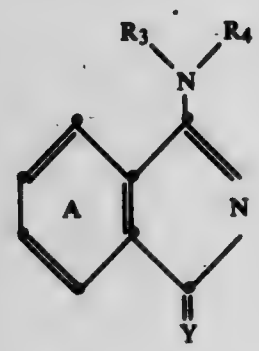
X_1 is a hydrogen, chlorine or bromine atom, a nitro, trifluoromethyl, carbamoyl or sulfamoyl group, an alkyl, alkoxy or alkylsulfamoyl group of 1 to 4 carbon atoms, an alkanoylamino, alkylcarbamoyl or alkoxycarbonyl group of 2 to 6 carbon atoms, a phenoxy, phenylcarbamoyl or phenylsulfamoyl group which is unsubstituted or substituted by chlorine or bromine atoms or methyl groups,

X_2 is a hydrogen, chlorine or bromine atom, an alkyl or alkoxy group of 1 to 4 carbon atoms,

R_6 is a cyano, carbamoyl or alkoxycarbonyl group of 2 to 6 carbon atoms,

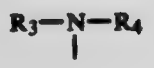
R_7 is a hydrogen atom, an alkyl group of 1 to 4 carbon atoms, a phenyl or hydroxy group,

Q is a methyl group or an alkoxycarbonyl group containing 2 to 5 carbon atoms or a carbamoyl group,
Z is —O— or —S— and
V is —O—, —S— or —NH—,
which process comprises reacting a compound of the formula II

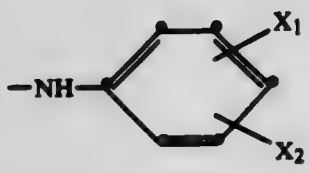


(II)

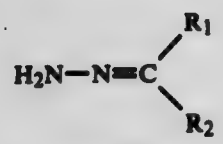
wherein
R_3 is a hydrogen atom or an alkyl group having 1 to 6 carbon atoms, and
R_4 is an alkyl group having 1 to 6 carbon atoms, or



is the radical of the formula



wherein X_1 and X_2 are as defined above, or R_3 and R_4 together with the N-atom to which they are attached form a pyrrolidino, piperidino or morpholino radical, with a hydrazone of the formula II



(III)

in the presence of a transition metal donor and in a polar organic solvent, at temperatures above 100° C., Y, R_1 and R_2 having the meanings given under formula I, and the ring A being as defined under formula I.

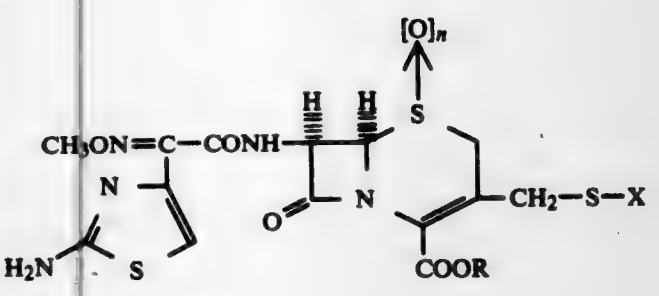
4,349,672

CEPHALOSPORIN DERIVATIVES

Marc Montavon, and Roland Reiner, both of Basel, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

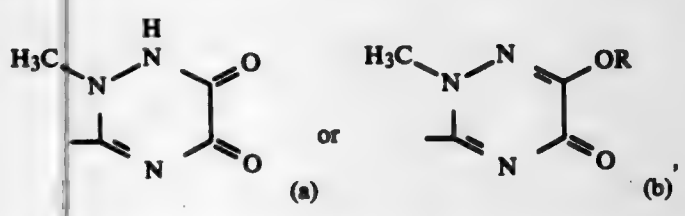
Filed Nov. 17, 1980, Ser. No. 207,163
Claims priority, application Switzerland, Nov. 29, 1979, 10601/79
The portion of the term of this patent subsequent to Apr. 27, 1999, has been disclaimed.
Int. Cl.³ C07D *501/36*; A61K *31/545*
U.S. Cl. 544—027 10 Claims

1. A compound of the formula



I

wherein X is the group



(a) (b)

R is hydrogen or a pharmaceutically acceptable readily hydrolysable ester or ether group and n stands for 1 or 2, the pharmaceutically acceptable salts of these compounds and the hydrates of these compounds and pharmaceutically acceptable salts.

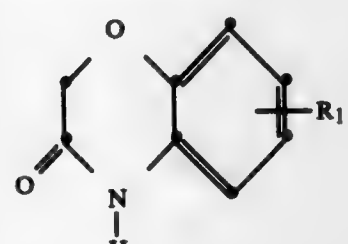
4,349,673

BENZOXAZINES

Joseph G. Atkinson, Montreal, Canada; John J. Baldwin, Gwynedd Valley, and David E. McClure, Lansdale, both of Pa., assignors to Merck & Co., Inc. and Merck Sharp & Dohme Corp., both of Rahway, N.J.

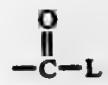
Filed Dec. 23, 1980, Ser. No. 219,726
Int. Cl.³ C07D *265/36*
U.S. Cl. 544—105 12 Claims

1. A compound of the formula:

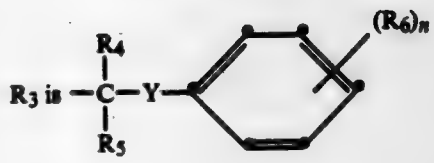


(a)

individual isomers and pharmaceutically acceptable salts thereof wherein
R_1 is $—OCH_2—CHOR_2—CH_2—NHR_3$ wherein R_2 is H or



wherein
L is phenyl or C_1-C_5 alkyl and



wherein
R_4 and R_5 are independently selected from H and C_1-C_3alkyl,
Y is CH_2, $(CH_2)_2$ or $—CH_2O—$
R_6 is H, OH, OCH_3, halogen,



and
n is 1 or 2.

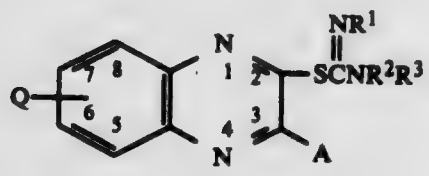
4,349,674

QUINOALINYL ESTERS OF CARBAMIMIDOTHIOIC ACIDS

Elisabeth H. Freed, deceased, late of Paoli, Pa. (by Meier E. Freed, executor); Peter H. L. Wei, Springfield, and Ronald J. McCaully, Malvern, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed Dec. 18, 1978, Ser. No. 970,295
Int. Cl.³ C07D *241/42, 401/12;* A61K *31/495*
U.S. Cl. 544—353 23 Claims

1. A compound of the formula:



in which
Q is hydrogen or nitro;
A is hydrogen, methyl, ethyl, propyl, isopropyl, n-butyl, carbomethoxy, carbethoxy, carbopropoxy, carbisopropoxy, carbobutoxy, carbisobutyoxy, or carbo-t-butoxy; and
R^1 and R^2 are, independently, hydrogen, methyl, ethyl, propyl, isopropyl, n-butyl, isobutyl, t-butyl, allyl, or R^1 and R^2 may be concatenated with a 1,4-hydrocarbylene or 1,4-hydrocarbenylene chain of 4 carbon atoms; except that, when A and Q are hydrogen, R^1 and R^2 may not both be hydrogen; and with the further exception that, where A is methyl and R^1 and Q are both hydrogen, R^2 may not be ethyl;
or a pharmaceutically acceptable salt thereof.

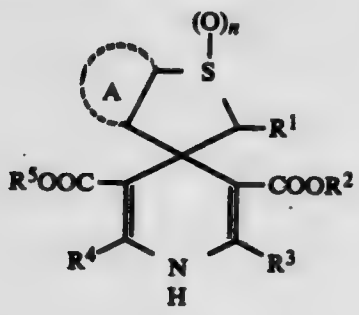
4,349,675

4,4-DISUBSTITUTED SPIRO-1,4-DIHYDROPYRIDINES AND A PROCESS FOR THEIR PRODUCTION

Siegfried Goldmann, Wuppertal, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 4, 1981, Ser. No. 270,455
Claims priority, application Fed. Rep. of Germany, Jun. 25, 1980, 3023820
Int. Cl.³ C07D *471/10, 471/20*
U.S. Cl. 546—17 12 Claims

1. A compound of the formula



(I)

in which
(A) represents a monocyclic or bicyclic carbocyclic aryl radical or a heterocyclic radical selected from furyl, pyrryl, pyrazolyl, imidazolyl, oxazolyl, isoxazolyl, pyridyl, pyridazinyl, pyrimidyl, pyrazinyl, quinolyl, isoquinolyl, indolyl, benzimidazolyl, quinazolyl or quinoxalyl, the said aryl radical or heterocyclic radical being unsubstituted or containing 1, 2 or 3 identical or different substituents selected from phenyl, C_1–C_8-alkyl, C_1–C_8-alkenyl, C_1–C_8-alkinyl, C_1–C_8-alkoxy, C_1–C_6-alkylene, C_1–C_4-dioxyalkylene, halogen, trifluoromethyl, trifluoromethoxy, C_1–C_4-alkylamino, nitro, cyano, azido and carboxamido,
R^3 and R^4 are identical or different and each represent a hydrogen atom or an achiral straight-chain or branched C_1–C_8-alkyl radical, a monocyclic or bicyclic carbocyclic aryl radical or a monocyclic or bicyclic carbocyclic aryl-C_1–C_4-alkyl radical, said aryl and aralkyl radicals being unsubstituted or substituted by 1, 2 or 3 identical or different substituents selected from phenyl, C_1–C_8-alkyl, C_1–C_8-alkenyl, C_1–C_8-alkinyl, C_1–C_8-alkoxy, C_1–C_6-alkylene, C_1–C_4-dioxyalkylene, halogen, trifluoromethyl, trifluoromethoxy, C_1–C_4-alkylamino, nitro, cyano, azido and carboxamido on the aryl nucleus and containing 1 to 2 carbon atoms in the alkyl portion,
R^2 and R^5 are identical or different and each represent a straight-chain or branched C_1–C_8-alkyl radical, which is optionally interrupted in the chain by oxygen and is optionally substituted by halogen, pyridyl, phenyl or phenoxy, the phenyl or phenoxy group optionally being substituted by halogen, cyano, di-C_1–C_4-alkylamino, C_1–C_4-alkoxy, C_1–C_4-alkyl, trifluoromethyl or nitro,
R^1 represents a straight-chain or branched C_1–C_8-alkyl radical which is optionally interrupted in the chain by one oxygen and is optionally substituted by phenyl, phenoxy, pyridyl or amino, the phenyl, phenoxy or pyridyl radicals optionally being substituted by halogen, cyano, di-C_1–C_4-alkylamino, C_1–C_4-alkoxy, C_1–C_4-alkyl, trifluoromethyl or nitro, and the amino group optionally being substituted by two identical or different substituents selected from C_1–C_4-alkyl, C_1–C_4-alkoxy-C_1–C_4-alkyl, a monocyclic or bicyclic carbocyclic aryl and a monocyclic or bicyclic carbocyclic aryl-C_1–C_4-alkyl radical and
n is 0, 1 or 2.

7. A compound according to claim 1 which is 4,4'-Spiro-[2,6-dimethyl-3,5-bismethoxycarbonyl-1,4-dihydropyridine]-2'-methyl-[2',3'-dihydro-1'-benzothiophene-1'-oxide].

4,349,676

INSECTICIDAL SYNERGIST

James E. Powell, Ripon, and James R. Sanborn, Modesto, both of Calif., assignors to Shell Oil Company, Houston, Tex.

Filed Oct. 26, 1981, Ser. No. 314,805
Int. Cl.³ C07D *217/24;* A01N *9/22*
U.S. Cl. 546—141 1 Claim

1. 3,4-dihydro-2-(2-propynyl)isocarbostyril.

4,349,677

3,4-DIHYDRO-3,4-ISOQUINOLINEDIONE 4-OXIME

Thomas J. Schwan; Homer A. Burch, and Joseph E. Gray, all of Norwich, N.Y., assignors to Morton-Norwich Products, Inc., Norwich, N.Y.

Filed Nov. 9, 1981, Ser. No. 319,443
Int. Cl.³ C07D *217/24;* A61K *31/47*
U.S. Cl. 546—142 1 Claim

1. The compound 3,4-dihydro-3,4-isoquinolinedione 4-oxime.

4,349,678

OCTAHYDRO-2-METHYL-ISOQUINOLINE-6,8-DIONE

Leo Berger, Montclair, and Gary L. Olson, Westfield, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

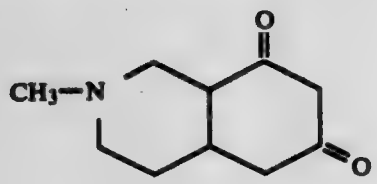
Division of Ser. No. 73,813, Sep. 10, 1979, abandoned, which is a continuation-in-part of Ser. No. 950,947, Oct. 13, 1978, abandoned. This application Dec. 12, 1980, Ser. No. 215,941

Int. Cl.³ C07D *217/24*

U.S. Cl. 546—150 1 Claim

1. A compound of the formula:

XII



4,349,679

PYRROLIDINO AND PIPERIDINO BENZ RING SUBSTITUTED PHTHALIDES

Robert Garner, Bury, and Michael J. Whitehead, Failsworth, both of England, assignors to Giba-Geigy Corporation, Ardsley, N.Y.

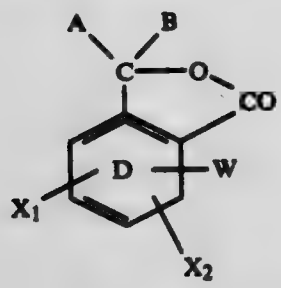
Filed May 10, 1979, Ser. No. 38,023

Claims priority, application United Kingdom, May 18, 1978, 20455/78

Int. Cl.³ C09B *57/00*; C07D *405/04*

U.S. Cl. 546—196 8 Claims

1. A phthalide compound of the formula

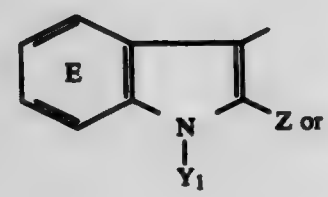


(I)

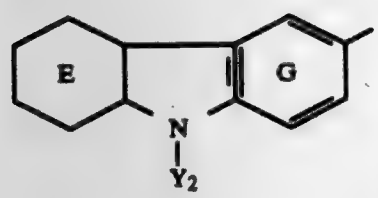
wherein A and B, independently of the other, represent a monovalent radical of the formula



(Ib)

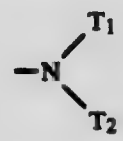


(Ic)

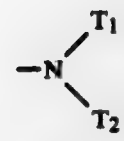


(Id)

wherein X_1 represents an amino group of the formula



X_2 represents halogen or an amino group of the formula



W is hydrogen or halogen, T_1 and T_2 together with the nitrogen atom to which they are attached represent a pyrrolidino or piperidino radical, Y, Y_1 and Y_2 each represent hydrogen, alkyl which has at most 12 carbon atoms and is unsubstituted or substituted by halogen, hydroxyl, lower alkoxy or cyano, or benzyl which is unsubstituted or substituted by halogen, nitro, lower alkyl or lower alkoxy, Z represents hydrogen, lower alkyl or phenyl, and wherein the benzene ring D is not further substituted or additionally contains halogen and the rings E and G independently of the other, are unsubstituted or substituted by halogen, nitro, lower alkyl or lower alkoxy, with the proviso that at least one of W and X_2 is halogen.

4,349,680

6-(CHLORO OR SUBSTITUTED PHENOXY)-2-DI-(SUBSTITUTED PHENOXY) METHYL PYRIDINES

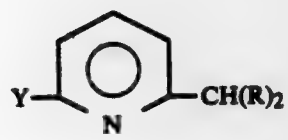
Sudarshan K. Malhotra, Walnut Creek, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 266,016, Sep. 18, 1980. This application Oct. 30, 1981, Ser. No. 316,609

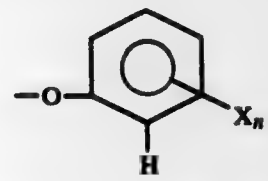
Int. Cl.³ C07D *213/30, 405/12*

U.S. Cl. 546—302 5 Claims

1. A compound corresponding to the formula



wherein Y represents chloro [or R']; R represents



wherein X independently represents alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, alkylthio of 1 to 4 carbon atoms, alkyl sulfonyl of 1 to 4 carbon atoms, trifluoromethyl, chloro, fluoro or bromo; n represents an integer of 0 to 2 or X_n represents 3,4-methylenedioxy.

4,349,681

2-AMINO-3-CHLORO-5-TRIFLUOROMETHYLPYRIDINE

Isao Yokomichi, Moriyama; Takahiro Haga, Kusatsu; Kuniaki Nagatani, Kusatsu, and Toshio Nakajima, Kusatsu, all of Shiga, Japan, assignors to Ishihara Sangyo Kaisha, Ltd., Osaka, Japan

Filed Dec. 22, 1980, Ser. No. 218,971

Claims priority, application Japan, Dec. 24, 1979, 54-167986

Int. Cl.³ C07D *213/72, 211/72*

U.S. Cl. 546—304 1 Claim

1. 2-Amino-3-chloro-5-trifluoromethylpyridine.

4,349,682

2-(3-TRIMETHYLSILYLPROPYL)BENZOTHIAZOLE

Shigeshi Toyoshima, Tokyo; Ryuichi Sato, Gunma; Koichi Ito, Higashi-Kurume; Toshio Shinohara, Annaka, and Yasushi Yamamoto, Takasaki, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Sep. 11, 1980, Ser. No. 186,211

Claims priority, application Japan, Sep. 17, 1979, 54-119030

Int. Cl.³ C07F *7/10*; A61K *31/425*

U.S. Cl. 548—110 1 Claim

1. 2-(3-trimethylsilylpropyl)benzothiazole.

4,349,683

THIAZOLIDINE-2,4-DIONE DERIVATIVES

Dennis C. Bigg, Marsillargues, France, assignor to Synthelabo, Paris, France

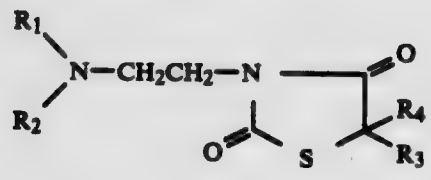
Continuation of Ser. No. 914, Dec. 29, 1978, abandoned. This application Aug. 26, 1980, Ser. No. 181,475

Claims priority, application France, Dec. 29, 1977, 77 39559; Nov. 24, 1978, 78 33244

Int. Cl.³ C07D *277/04*

U.S. Cl. 548—183 6 Claims

1. A compound of the formula



wherein

R_1 is H, CH_3, C_2H_5, benzyl, 4-chlorobenzyl, or CH_3CO;

R_2 is H; R_3 is phenyl, 4-chlorophenyl, 4-fluorophenyl, 4-bromophenyl, 1-naphthyl, 3—CF_3—C_6H_4, 3-methoxyphenyl, 3-chlorophenyl, 2,4-dichlorophenyl, 3,4-dichlorophenyl, 2-bromo-4,5-dimethoxyphenyl; and

R_4 is H or CH_3 with the proviso that if R_3 is phenyl, R_4 is CH_3

or a pharmaceutically addition acceptable salt thereof.

4,349,684

N-SUBSTITUTED ω-(2-OXO-4-IMIDAZOLIN-1-YL) ALCANOIC ACIDS AND SALTS AND ESTERS THEREOF

Hans-Heiner Lautenschläger, Pulheim-Stommeln; Hans Betzing, Kerpen-Horrem; Brigitte Stoll, Pulheim, and Manfred Probst, Frechen, all of Fed. Rep. of Germany, assignors to A. Nattermann & Cie GmbH, Cologne, Fed. Rep. of Germany

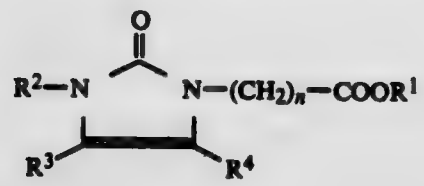
Filed Nov. 6, 1981, Ser. No. 318,962

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1980, 3042466

Int. Cl.³ C07D *233/70*

U.S. Cl. 548—320 18 Claims

1. N-substituted ω-(2-oxo-4-imidazolin-1-yl) alcanoic acids and their derivatives having the general formula I



I

wherein

n is an integer from 1 to 10,

R^1 is hydrogen, an alkali metal ion or a straight or branched hydrocarbon group having from 1 to 6 carbon atoms or the benzyl group,

R^2 is $—(CH_2)_m—R$ wherein m is 0, 1 or 2,

R, R^3 and R^4 which may be identical or different from each other, represent hydrogen (with the exception of R if m is zero), the unsubstituted phenyl group or the phenyl group substituted by one or several equal or differing substituents selected from the group of halogen, $CH_3—$, $CH_3O—$, $—CF_3$, at least one of R, R^3 and R^4 representing the unsubstituted phenyl or the phenyl group substituted by one or several identical or differing substituents selected from the group of halogen, $—CH_3$, $CH_3O—$, $—CF_3$.

4,349,685

5-SUBSTITUTED-BENZOXATHIOL-2-ONES

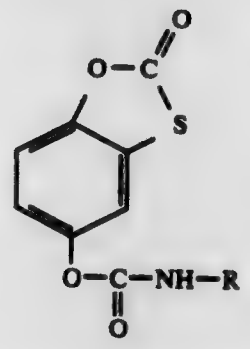
Joseph E. Dunbar, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Aug. 27, 1981, Ser. No. 296,761

Int. Cl.³ C07D *327/04*

U.S. Cl. 549—33 7 Claims

1. A compound corresponding to the formula:



wherein R represents a lower alkyl, substituted aryl, haloalkyl, carbalkoxyalkylene or an alkyl carbonyloxyalkylene group.

4,349,686

5-(N-ALKYL-N-ACYL-AMINO)-THIOPHEN-2-CARBOXYLIC ACID DERIVATIVES

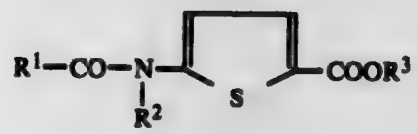
Hans-Heiner Lautenschläger, Pulheim-Stommeln; Hans Betzing, Kerpen-Horrem; Johannes Winkelmann, Cologne; Manfred Probst, Frechen, and Brigitte Stoll, Pulheim, all of Fed. Rep. of Germany, assignors to A. Nattermann & Cie GmbH, Cologne, Fed. Rep. of Germany

Filed Nov. 12, 1981, Ser. No. 320,608

Int. Cl.³ C07D *333/24*; A61K *31/38*

U.S. Cl. 549—69 6 Claims

1. 5-(N-Alkyl-N-acyl-amino)-thiophen-2-carboxylic acid derivatives having the general formula I



I

wherein

R^1 is an alkyl group having from 1 to 5 carbon atoms,

R^2 is an alkyl group having from 12 to 18 carbon atoms,

R^3 is hydrogen, alkali or an alkyl group having from 1 to 3 carbon atoms.

4,349,687

INTERMEDIATE FOR SYNTHESIS OF THIENAMYCIN VIA (3SR, 4RS)-3-[1 (SR)-HYDROXYETHYL]-2-OXO-4-AZETIDINEACETIC ACID

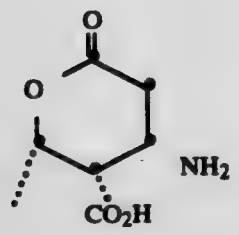
Thomas M. H. Liu, Westfield; David G. Melillo, Scotch Plains; Kenneth M. Ryan, Clark; Ichiro Shinkai, Westfield, and Meyer Sletzinger, North Plainfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 112,021, Jan. 14, 1980, abandoned. This application Apr. 8, 1981, Ser. No. 252,103

Int. Cl.³ C07C *309/30*

U.S. Cl. 549—291 1 Claim

1. The compound having the structural formula:



7

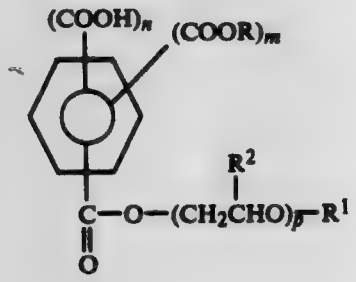
4,349,688

POLYOXYALKYLENE POLYCARBOXYLATE ESTERS

Stanley R. Sandler, Springfield, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

Division of Ser. No. 969,594, Dec. 14, 1978, Pat. No. 4,290,765.
This application Feb. 17, 1981, Ser. No. 234,293
Int. Cl.[3] C07C *69/76*
U.S. Cl. 560—91 6 Claims

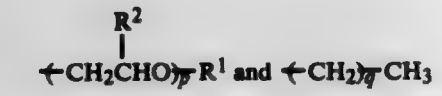
1. A compound having the formula



wherein

(a) the ring can have all positional isomer arrangements;

(b) R is selected from the group consisting of



(c) R^1 and R^2 are independently selected from the group consisting of hydrogen and $—CH_3$;

(d) n and m are independently selected from an integer of 0 to 3 wherein the sum of n and m is 1 to 3 with the proviso that when n is 0, m is 2 or 3;

(e) p is an integer of 6 to 23; and

(f) q is an integer of 3 to 11.

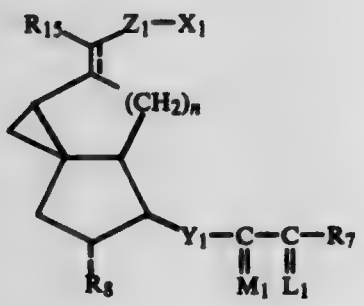
4,349,689

METHANO CARBACYCLIN ANALOGS

Paul A. Aristoff, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Dec. 22, 1980, Ser. No. 219,106
Int. Cl.[3] C07C *177/00*
U.S. Cl. 560—117 5 Claims

1. A carbacyclin analog of formula X:



X

wherein n is one or 2;

wherein L_1 is α-R_3:β-R_4, α-R_4:β-R_3, or a mixture of α-R_3:β-R_4 and α-R_4:β-R_3, wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;

wherein M_1 is α-OH:β-R_5 or α-R_5:β-OH, wherein R_5 is hydrogen or methyl;

wherein R_7 is

(1) $—C_mH_{2m}—CH_3$, wherein m is an integer from one to 5, inclusive,

(2) phenoxy optionally substituted by one, two or three chloro, fluoro, trifluoromethyl, $(C_1–C_3)$alkyl, or $(C_1–C_3)$alkoxy, with the proviso that not more than two substituents are other than alkyl, with the proviso that R_7 is phenoxy or substituted phenoxy, only when R_3 and R_4 are hydrogen or methyl, being the same or different,

(3) phenyl, benzyl, phenylethyl, or phenylpropyl optionally substituted on the aromatic ring by one, two or three chloro, fluoro, trifluoromethyl, $(C_1–C_3)$alkyl, or $(C_1–C_3)$alkoxy, with the proviso that not more than two substituents are other than alkyl,

(4) cis$—CH=CH—CH_2—CH_3$,

(5) $—(CH_2)_2—CH(OH)—CH_3$, or

(6) $—(CH_2)_3—CH=C(CH_3)_2$;

wherein $—C(L_1)—R_7$ taken together is

(1) $(C_4–C_7)$cycloalkyl optionally substituted by one to 3 $(C_1–C_5)$alkyl;

(2) 2-(2-furyl)ethyl,

(3) 2-(3-thienyl)ethoxy, or

(4) 3-thienyloxymethyl;

wherein R_8 is hydroxy, hydroxymethyl, or hydrogen;

wherein R_{15} is hydrogen or fluoro;

wherein X_1 is

(1) $—COOR_1$, wherein R_1 is

(a) hydrogen,

(b) $(C_1–C_{12})$alkyl,

(c) $(C_3–C_{10})$cycloalkyl,

(d) $(C_7–C_{12})$aralkyl,

(e) phenyl, optionally substituted with one, 2 or 3 chloro or $(C_1–C_3)$alkyl,

(f) phenyl substituted in the para position by

(i) $—NH—CO—R_{25}$,

(ii) $—CO—R_{26}$,

(iii) $—O—CO—R_{54}$, or

(iv) $—CH=N—NH—CO—NH_2$ wherein R_{25} is methyl, phenyl, acetamidophenyl, benzamidophenyl, or $—NH_2$; R_{26} is methyl, phenyl, $—NH_2$, or methoxy; and R_{54} is phenyl or acetamidophenyl; inclusive, or

(g) a pharmacologically acceptable cation;

(2) $—CH_2OH$,

(3) $—COL_4$, wherein L_4 is

(a) amino of the formula $—NR_{51}R_{52}$, wherein R_{51} and R_{52} are

(i) hydrogen,

(ii) $(C_1–C_{12})$alkyl,

(iii) $(C_3–C_{10})$cycloalkyl,

(iv) $(C_7–C_{12})$aralkyl,

(v) phenyl, optionally substituted with one, 2 or 3 chloro, $(C_1–C_3)$alkyl, hydroxy, carboxy, $(C_2–C_5$-)alkoxycarbonyl, or nitro,

(vi) $(C_2–C_5)$carboxyalkyl,

(vii) $(C_2–C_5)$carbamoylalkyl,

(viii) $(C_2–C_5)$cyanoalkyl,

(ix) $(C_3–C_6)$acetylalkyl,

(x) $(C_7–C_{11})$benzoylalkyl, optionally substituted by one, 2 or 3 chloro, $(C_1–C_3)$alkyl, hydroxy, $(C_1–C_3$-)alkoxy, carboxy, $(C_2–C_5)$alkoxycarbonyl, or nitro,

(xi) pyridyl, optionally substituted by one, 2 or 3 chloro, $(C_1–C_3)$alkyl, or $(C_1–C_3)$alkoxy,

(xii) $(C_6–C_9)$pyridylalkyl optionally substituted by one, 2 or 3 chloro, $(C_1–C_3)$alkyl, hydroxy, or $(C_1–C_3)$alkyl,

(xiii) $(C_1–C_4)$hydroxyalkyl,

(xiv) $(C_1–C_4)$dihydroxyalkyl,

(xv) $(C_1–C_4)$trihydroxyalkyl, with the further pro-

viso that not more than one of R_{51} and R_{52} is other than hydrogen or alkyl,

(b) cycloamino selected from the group consisting of pyrolidino, piperidino, morpholino, piperazino, hexamethyleneimino, pyrrolino, or 3,4-didehydropiperidinyl optionally substituted by one or 2 (C_1–C_{12})alkyl of one to 12 carbon atoms, inclusive,

(c) carbonylamino of the formula —$NR_{53}COR_{51}$, wherein R_{53} is hydrogen or (C_1–C_4)alkyl and R_{51} is other than hydrogen, but otherwise as defined above,

(d) sulfonylamino of the formula —$NR_{53}SO_2R_{51}$, wherein R_{51} and R_{53} are as defined in (c),

(4) —$CH_2NL_2L_3$, wherein L_2 and L_3 are hydrogen or (C_1–C_4)-alkyl, being the same or different, or the pharmacologically acceptable acid addition salts thereof when X_1 is —$CH_2NL_2L_3$,

wherein Y_1 is trans—CH=CH—, cis—CH=CH—, —CH_2CH_2—, or —C≡C—; and

wherein Z_1 is

(1) —CH_2—$(CH_2)_f$—$C(R_2)_2$, wherein R_2 is hydrogen or fluoro and f is zero, one, 2, or 3,

(2) trans—CH_2—CH=CH—,

(3) —(Ph)—$(CH_2)_g$—, wherein (Ph) is 1,2-, 1,3-, or 1,4-phenylene and g is zero, one, 2, or 3,

with the proviso that Z_1 is —(Ph)—$(CH_2)_g$— only when R_{15} is hydrogen.

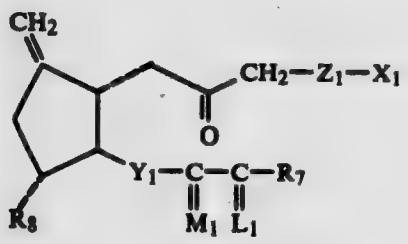
4,349,690

9-DEOXY-9-METHYLENE-6-KETO-PGE-TYPE COMPOUNDS

Gordon L. Bundy, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Apr. 23, 1981, Ser. No. 256,624
Int. Cl.³ C07C *177/00*
U.S. Cl. 560—121 5 Claims

1. A compound of the formula I,



wherein X_1 is:

(1) —$COOR_1$, wherein R_1 is

(a) hydrogen,

(b) (C_1–C_{12})alkyl,

(c) (C_3–C_{10})cycloalkyl,

(d) (C_7–C_{12})aralkyl,

(e) phenyl, optionally substituted with one, 2 or 3 chloro or (C_1–C_3)alkyl,

(f) phenyl substituted in the para position by

(i) —NH—CO—R_{25},

(ii) —CO—R_{26},

(iii) —O—CO—R_{24}, or

(iv) —CH=N—NH—CO—NH_2 wherein R_{25} is methyl, phenyl, acetamidophenyl, benzamidophenyl, or —NH_2; R_{26} is methyl, phenyl, —NH_2, or methoxy; and R_{24} is phenyl or acetamidophenyl; inclusive, or

(g) a pharmacologically acceptable cation;

(2) —CH_2OH,

(3) —COL_4, wherein L_4 is

(a) amino of the formula —$NR_{21}R_{22}$, wherein R_{21} and R_{22} are

(i) hydrogen,

(ii) (C_1–C_{12})alkyl,

(iii) (C_3–C_{10})cycloalkyl,

(iv) (C_7–C_{12})aralkyl,

(v) phenyl, optionally substituted with one, 2 or 3 chloro, (C_1–C_3)alkyl, hydroxy, carboxy, (C_2–C_5) alkoxycarbonyl, or nitro,

(vi) (C_2–C_5)carboxyalkyl,

(vii) (C_2–C_5)carbamoylalkyl,

(viii) (C_2–C_5)cyanoalkyl,

(ix) (C_3–C_6)acetylalkyl,

(x) (C_7–C_{11})benzoylalkyl, optionally substituted by one, 2 or 3 chloro, (C_1–C_3)alkyl, hydroxy, (C_1–C_3)alkoxy, carboxy, (C_2–C_5)alkoxycarbonyl, or nitro,

(xi) pyridyl, optionally substituted by one, 2, or 3 chloro, (C_1–C_3)alkyl, or (C_1–C_3)alkoxy,

(xii) (C_6–C_9)pyridylalkyl optionally substituted by one, 2 or 3 chloro, (C_1–C_3)alkyl, hydroxy, or (C_1–C_3)-alkyl,

(xiii) (C_1–C_4)hydroxyalkyl,

(xiv) (C_1–C_4)dihydroxyalkyl,

(xv) (C_1–C_4)trihydroxyalkyl,

with the further proviso that not more than one of R_{21} and R_{22} is other than hydrogen or alkyl,

(b) cycloamino selected from the group consisting of pyrolidino, piperidino, morpholino, piperazino, hexamethyleneimino, pyrrolino, or 3,4-didehydro piperidinyl optionally substituted by one or 2 (C_2–C_{12})alkyl of one to 12 carbon atoms, inclusive;

(c) carbonylamino of the formula —$NR_{23}COR_{21}$, wherein R_{23} is hydrogen or (C_1–C_4)alkyl and R_{21} is other than hydrogen, but otherwise as defined above,

(d) sulfonylamino of the formula —$NR_{23}SO_2R_{21}$, wherein R_{21} and R_{23} are as defined in (c),

(4) —$CH_2NL_2L_3$, wherein L_2 and L_3 are hydrogen or (C_1–C_4)alkyl, being the same or different, or the pharmacologically acceptable acid addition salts thereof when X_1 is —$CH_2NL_2L_3$;

wherein Z_1 is:

(1) —CH_2—$(CH_2)_f$—$C(R_2)_2$, wherein R_2 is hydrogen or fluoro and f is zero, one, 2 or 3,

(2) trans—CH_2—CH=CH—,

(3) —(Ph)—$(CH_2)_g$—, wherein (Ph) is 1,2-, 1,3-, or 1,4-phenylene and g is zero, one, 2, or 3;

wherein R_8 is: hydrogen, hydroxy, hydroxymethyl, —OR_{10} or —CH_2OR_{10}, wherein R_{10} is tetrahydropyranyl, tetrahydrofuranyl, or —$C(OR_{11})(R_{12})$—$CH(R_{13})(R_{14})$ wherein R_{11} is alkyl of one to 18 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl or phenyl substituted with one to 3 alkyl of one to 4 carbon atoms, inclusive, wherein R_{12} and R_{13} are alkyl of one to 4 carbon atoms, inclusive, phenyl, phenyl substituted with one, 2, or 3 alkyl of one to 4 carbon atoms, inclusive, or when R_{12} and R_{13} are taken together —$(CH_2)_a$— or when R_{12} and R_{13} are taken together —$(CH_2)_b$—O—$(CH_2)_c$, wherein a is 3, 4, or 5 and b is one, 2 or 3, and c is one, 2, or 3 with the proviso that b plus c is 2, 3, or 4, with the further proviso that R_{12} and R_{13} may be the same or different, and wherein R_{14} is hydrogen or phenyl;

wherein Y_1 is: trans—CH=CH—, cis—CH=CH—, —CH_2CH_2— or —C≡C—;

wherein M_1 is α-OR_{12}:β-R_5 or α-R_5:β-OR_{12}, wherein R_5 is hydrogen or methyl and R_{12} is hydrogen or methyl, with the proviso that R_{12} is methyl only when R_5 is hydrogen;

wherein L_1 is α-R_3:β-R_4, α-R_4:β-R_3, or a mixture of α-R_3:β-R_4 and α-R_4:β-R_3, wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;

wherein R_7 is:

(1) —$(CH_2)_m$—CH_3, wherein m is an integer from one to 5, inclusive;

(2) phenoxy optionally substituted by one, two or three chloro, fluoro, trifluoromethyl, (C_1–C_3)alkyl, or (C_1–C_3-)alkoxy, with the proviso that not more than two substitutents are other than alkyl;

(3) phenyl, benzyl, phenylethyl, or phenylpropyl optionally substituted on the aromatic ring by one, two or three chloro, fluoro, trifluoromethyl, (C_1–C_3)alkyl, or (C_1–C_3-

)alkoxy, with the proviso that not more than two substituents are other than alkyl;
(4) cis—CH=CH—CH_2—CH_3;
(5) —$(CH_2)_2$—CH(OH)—CH_3, or
(6) —$(CH_2)_3$—CH=$C(CH_3)_2$;
(7) cyclopentyl, optionally substituted in the 3 position by (C_1-C_4)alkyl;
(8) cyclohexyl optionally substituted by (C_1-C_4)alkyl,
(9) —$C(R_3R_4)$—$(CH_2)_n$—CH_2R_{14} wherein R_3 and R_4 are as defined above (in L_1), n is an integer from 1 to 4 and R_{14} is hydrogen or 1-4C alkyl;

wherein —$C(L_1)$—R_7 taken together is
(1) cyclopentyl optionally substituted in the 3 position by (C_1-C_4)alkyl,
(2) cyclohexyl optionally substituted by (C_1-C_4)alkyl,
(3) 2-(2-furyl)ethyl,
(4) 2-(3-thienyl)ethoxy, or
(5) 3-thienyloxymethyl.

4,349,691

METHOD OF MAKING CONSTANT VOLTAGE SOLAR CELL AND PRODUCT FORMED THEREBY UTILIZING LOW-TEMPERATURE ALUMINUM DIFFUSION

Joseph Lindmayer, Rockville, Md., assignor to Solarex Corporation, Rockville, Md.

Continuation of Ser. No. 784,909, Apr. 5, 1977, abandoned. This application Apr. 25, 1980, Ser. No. 143,780

Int. Cl.³ H01L *21/225, 21/24*

U.S. Cl. 136—261 8 Claims

1. A method of forming a back junction in an n-p solar energy cell having a front surface adapted to receive light impinging thereon and an opposed back surface, comprising applying a coating of aluminum to the back surface of the wafer, and heating the wafer at a temperature at about 520° to 600° C. for a period of time sufficient to cause the aluminum to penetrate the back surface and form a back junction in the wafer, so that when light impinges on the front surface of the wafer, the cell will generate electricity at a generally constant voltage over a substantial range of light intensities.

4,349,692

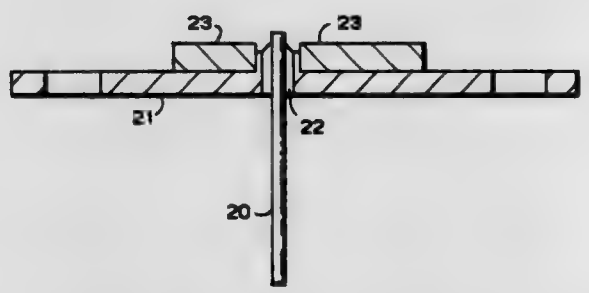
GLASS HERMETIC SEAL

Earl K. Davis, Tempe, and Robert W. Hey, Mesa, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 237,001, Feb. 23, 1981, Pat. No. 4,309,507. This application Jun. 30, 1981, Ser. No. 279,131

Int. Cl.³ H01L *23/08*

U.S. Cl. 174—52 H 4 Claims



1. In a method for making an electrical device having one electrically conductive member hermetically sealed to another member by a glass, the improvement comprising:

utilizing a glass characterized by tensile stress in said glass as measured with a fusion couple comprising said glass and the material of which said conductive member is made, and wherein said glass consists essentially of the following ingredients by weight percent,

SiO_2:63–68
Al_2O_3:3–6
K_2O:8–9
Na_2O:5–6
Li_2O:0.5–1.5
BaO:2–4
SrO:5–7
CaO:2–4
MgO:0.5–1.5
TiO_2:0.5–1.5
B_2O_3:0.5–1.5.

3. An enclosure for an electrical device comprising:

a portion of said enclosure defining at least one aperture;

at least one electrically conductive lead positioned within said aperture;

a semiconductor chip mounted within said enclosure and electrically connected to said at least one electrically conductive lead;

means within said aperture and surrounding said at least one lead for sealing said aperture, said means comprising a glass characterized by tensile stress in said glass as measured in a fusion couple comprising said glass and the material of which said at least one lead is made; and

wherein said means for sealing said aperture comprises an insulating sealing glass of composition consisting essentially of the following ingredients by weight percent,

SiO_2:63–68
Al_2O_3:3–6
K_2O:8–9
Na_2O:5–6
Li_2O:0.5–1.5
BaO:2–4
SrO:5–7
CaO:2–4
MgO:0.5–1.5
TiO_2:0.5–1.5
B_2O_3:0.5–1.5.

4,349,693

APPARATUS FOR SEALING AN ELECTRICAL COMPONENT

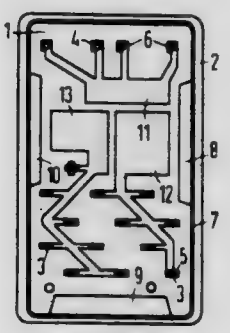
Fritz Hinrichs, Wolfratshausen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jun. 22, 1981, Ser. No. 275,697

Claims priority, application Fed. Rep. of Germany, Jul. 11, 1980, 3026371

Int. Cl.³ H05K *5/06*

U.S. Cl. 174—52 PE 7 Claims



1. An apparatus for sealing an electrical component comprising:

a housing having a housing wall for sealing a hollow inner chamber of said housing;

a plurality of capillary gaps in said housing wall disposed in regions of terminal pins which extend through said housing wall or at a boundary on said housing wall;

at least two dispensing points in said housing wall respectively connected to different ones of said plurality of capillary gaps for reception and distribution of sealing compound introduced to said dispensing points to said capillary gaps via a plurality of interconnecting capillary channels,

said dispensing points being respectively connected to capillary gaps and capillary channels of substantially equal capillary characteristics for uniform distribution of said sealing compound to all capillary gaps connected to a dispensing point.

4,349,694

SUB-MARINE TELEPHONE CABLE

Jean-Patrick Vives, Calais, France, assignor to Les Cables de Lyon, Lyons, France

Continuation-in-part of Ser. No. 796,813, May 13, 1977, abandoned. This application Aug. 4, 1978, Ser. No. 931,392

Claims priority, application France, May 25, 1976, 76 15788

Int. Cl.³ H01B *5/10*

U.S. Cl. 174—128 R 4 Claims

1. A central conductor for a coaxial telephone cable comprising a compound twisted core of high-tensile steel wires and of aluminium-based wires encased in a longitudinally welded copper tube which is applied tightly around the twisted core, said twisted core comprising, from its axis to its periphery,

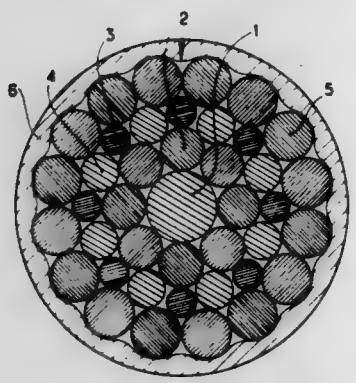
(a) an axial wire of aluminium-based metal of a relatively large diameter, said aluminium-based wire having a high tensile

strength, a high breaking elongation and a good electrical conductivity,

(b) an inner layer of high-tensile steel wires of the same diameter, lesser than that of said axial wire,

(c) an intermediate layer of alternated high-tensile steel and aluminium-based wires,

(d) an outer layer of high-tensile steel wires of the same diameter, said steel wires being so interrelated that any steel wire of said intermediate layer is in contact with a steel wire of said inner layer and with two steel wires of said outer layer and forms therewith a Y configuration, any group of two adjacent Y configurations leaving between them a void in



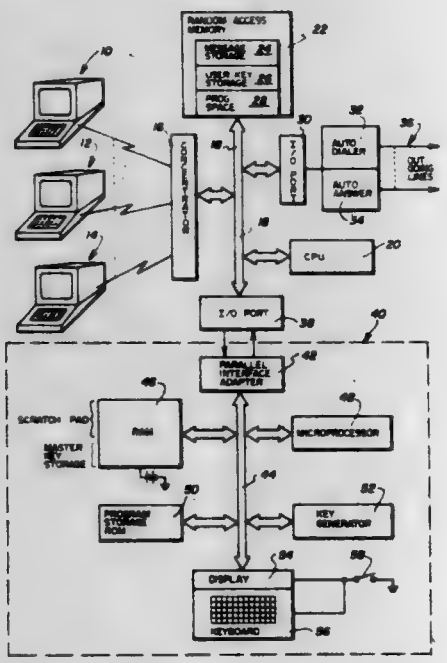
the intermediate layer in which is located an aluminium-based wire, and the respective diameters of said aluminium-based wires of said intermediate layer and of said steel wires of said intermediate and said outer layers being such that under the effect of the radial pressure exerted on the core by a sizing die during its manufacture any group of two steel wires of said outer layer in contact with an aluminium-based wire of said intermediate layer come into mutual contact, while any group of two steel wires of said outer layer in contact with a steel wire of said intermediate layer do not come into mutual contact, thereby lessening the crushing of the aluminium-based wires under the effect of said radial pressure.

4,349,695

RECIPIENT AND MESSAGE AUTHENTICATION METHOD AND SYSTEM

Barrie O. Morgan, Dallas, and David W. Abmayr, Carrollton, both of Tex., assignors to Datotek, Inc., Dallas, Tex.

Filed Jun. 25, 1979, Ser. No. 51,903
Int. Cl.[3] H04L *9/00*
U.S. Cl. 178—22.08 7 Claims



1. A system for authenticating a message recipient prior to transmission of a message between an authenticator station and the message recipient comprising:

means for transmitting a user identification signal from said message recipient to said authenticator station,

means for producing an enciphered user key and a message key in response to said user identification signal,

means for deciphering the enciphered user key using a predetermined master key,

means for generating a random character,

means for enciphering said random character in response to said deciphered user key,

means for storing said message key and said enciphered random character,

means for transmitting said message key and said enciphered random character to said message recipient,

means for receiving said enciphered random character and said message key at said message recipient location,

means for deciphering said enciphered random character in response to said user key,

means for varying said random character in a predetermined manner,

means for enciphering said varied random character,

means for transmitting said enciphered varied random character to said authenticator station,

means for deciphering said enciphered varied random character in response to said user key,

means for varying said deciphered varied random character in the inverse as said predetermined manner, to provide a first random number,

means for deciphering said stored enciphered random character to provide a second random number,

means for comparing said first and second random numbers, and

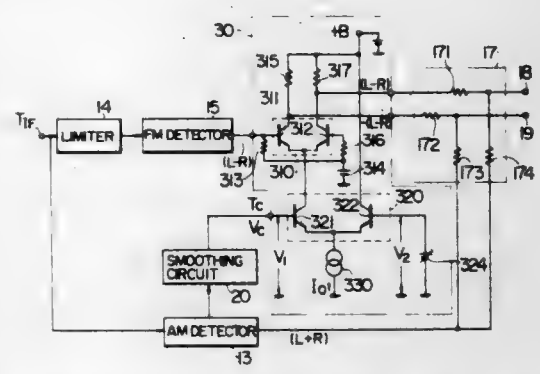
means for generating an authenticate indication if said first and second random numbers favorably compare.

4,349,696

AM STEREOPHONIC DEMODULATOR CIRCUIT FOR AMPLITUDE/ANGLE MODULATION SYSTEM

Isao Akitake; Tsutomu Noda, both of Yokohama, and Kazuhiko Yamazaki, Iwaki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 1, 1980, Ser. No. 117,457
Claims priority, application Japan, Feb. 5, 1979, 54-11459; Aug. 22, 1979, 54-106082; Aug. 22, 1979, 54-106084
Int. Cl.[3] H04H *5/00*; H03D *3/00*
U.S. Cl. 179—1 GS 6 Claims



1. An AM stereophonic demodulator circuit for use in an amplitude/angle modulation system, comprising first detector means for producing a stereophonic sum signal (L+R) from a received stereophonic signal; a second detector means for producing a stereophonic difference signal (L−R) from the received stereophonic signal, said second detector means including a separation compensating circuit; a demodulating matrix circuit connected to said first and second detector means for separating L and R channel signals from the stereophonic sum and difference signals; and control means connected to said first and second detector means for extracting a DC signal proportional to an antenna input signal level from

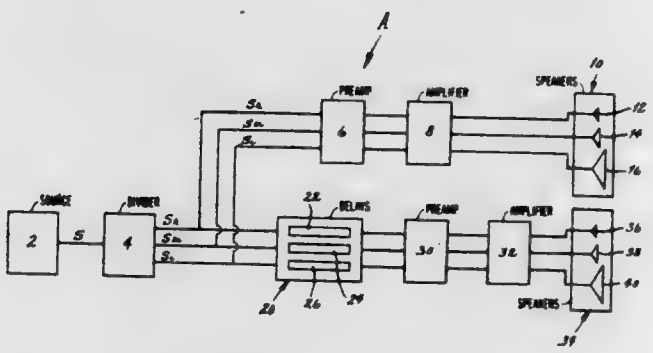
said first detector means and supplying the DC signal to said separation compensating circuit of said second detector means, said control means being adapted to control the gain and amplitude of said separation compensating circuit of said second detector means in accordance with the DC signal, whereby the stereophonic sum and difference signals are controlled to have the same amplitude for the antenna input signal level, wherein said control means includes a smoothing circuit connected to said first detector means for extracting a DC signal from said first detector means, an inverter connected to said smoothing circuit for producing a signal of the opposite phase to that of the DC signal in response to a low-frequency modulating signal appearing at an output of said smoothing circuit, and an adder connected to said smoothing circuit, said inverter and said second detector means for adding the output signal of said inverter to the output signal of said smoothing circuit so as to cancel the low-frequency modulating signal contained in the output signal of said smoothing circuit and thereafter supplying the DC signal from said smoothing circuit to said second detector means.

4,349,697

SOUND REPRODUCTION SYSTEM

Joseph Skabla, 2601 S. Kingshighway, St. Louis, Mo. 63139

Filed Mar. 26, 1980, Ser. No. 134,338
Int. Cl.³ H04R *3/14*
U.S. Cl. 179—1 D **16 Claims**



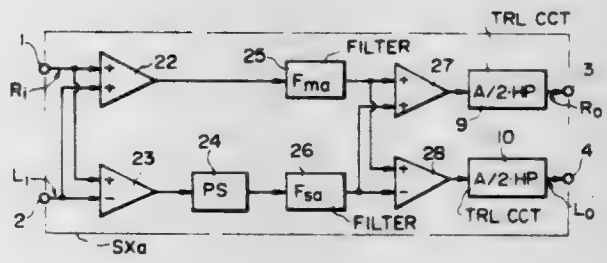
1. An apparatus for producing audible sound from an electrical audio signal containing various frequencies, said apparatus comprising: means for dividing the signal into low frequency, high frequency, and intermediate frequency components, with the low frequency component containing frequencies primarily below the intermediate frequency component, the high frequency component containing frequencies primarily above the intermediate frequency component, and the intermediate frequency component containing frequencies primarily above the low frequency component and primarily below the high frequency component; first speaker means for converting the components of the signal into primary audible sounds; delay means for delaying the individual components of the signal, with the high and intermediate frequency components being delayed longer than the low frequency component; and second speaker means for converting the delayed components into secondary audible sounds, the delay causing the secondary sounds emerging from the second speaker means to be out of phase with respect to the primary sounds emerging from the first speaker means, the delay being such that the out of phase secondary sounds imperceptibly prolong the primary sound such that the combined primary and secondary sounds simulate the acoustics of a fine music hall.

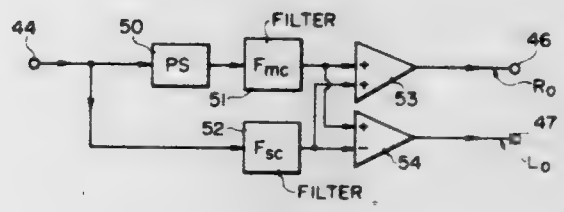
4,349,698

AUDIO SIGNAL TRANSLATION WITH NO DELAY ELEMENTS

Makoto Iwahara, Yokohama, Japan, assignor to Victor Company of Japan, Limited, Yokohama, Japan

Filed Jun. 18, 1980, Ser. No. 160,543
Claims priority, application Japan, Jun. 19, 1979, 54-77275
Int. Cl.³ H04S *1/00, 5/00*
U.S. Cl. 179—1 G **12 Claims**





3. An audio translator having a pair of first and second input terminals to which spatially correlated audio signals are respectively applied and a pair of first and second output terminals connected respectively to said first and second input terminals through first and second channels, comprising:

first and second adders each having a first input terminal and an output terminal connected in series in said first channel and each having a second input terminal connected to said second channel;

first and second subtracters each having a first input terminal and an output terminal connected in series in said second channel and each having a second input terminal connected to said first channel; and

filter circuit means connected in one of said first and second channels and having a transfer function which is the division of a first transfer function by a second transfer function, said first transfer function describing the relationship between the output of said first adder and a summation of signals delivered to said first and second output terminals and said second transfer function describing the relationship between the output of said first subtractor and a difference between signals delivered to said first and second output terminals.

11. A sonic localization network having an input terminal to which an audio signal is applied and a pair of first and second output terminals, comprising:

a first filter having a first transfer function providing a phase shift to the audio signal applied to said input terminal;

a second filter having a second transfer function providing a phase shift to the audio signal applied to said input terminal;

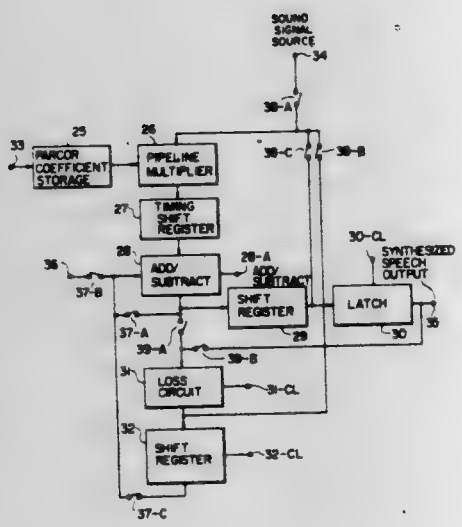
an adder for providing an output signal representing a summation of the output signals of said first and second filters to said first output terminal; and

a subtractor for providing an output signal representing a difference between said output signals of said first and second filters to said second output terminal.

4,349,699
SPEECH SYNTHESIZER

Akihiro Asada, Yokohama; Kazuo Nakata, Kodaira; Kazuhiro Umemura, Yokohama; Hirokazu Sato, Yokosuka; Kenya Murakami, Yokosuka, and Kiyoshi Into, Yokosuka, all of Japan, assignors to Nippon Telegraph & Telephone Public Corporation and Hitachi, Ltd., both of Tokyo, Japan

Filed Sep. 30, 1980, Ser. No. 192,539
Claims priority, application Japan, Oct. 1, 1979, 54-125384
Int. Cl.[3] G10L *1/00*
U.S. Cl. 179—1 SM 2 Claims



1. A speech synthesizer comprising:

a first memory for storing partial autocorrelation coefficient and amplitude information derived from a frequency spectrum of a speech signal;

a multiplier having a pair of input terminals and an output terminal, an output signal of said first memory being applied to a first one of said pair of input terminals of said multiplier,

an adder/subtractor having a pair of input terminals and an output terminal, an output signal of said multiplier being applied to a first one of said pair of input terminals of said adder/subtractor,

a shift register adapted to receive an output signal of said adder/subtractor,

a latch circuit adapted to receive an output signal of said shift register and having a control terminal for controlling read-in of an input signal thereto,

a first switch for selecting either the output signal of said adder/subtractor or the output signal of said latch circuit,

a loss circuit for multiplying a constant to the output signal selected by said first switch,

a second memory for storing an output signal of said loss circuit,

a second switch for selecting either one of an input signal, the output signal of said shift register or the output signal of said loss circuit for supplying the selected signal to a second one of said pair of input terminals of said multiplier,

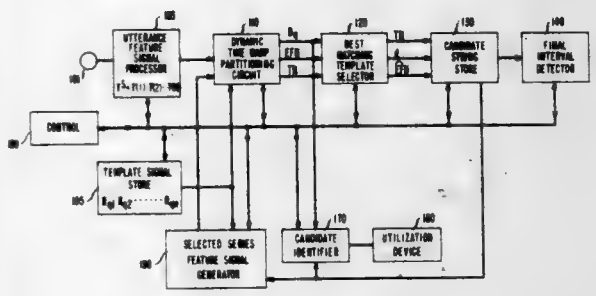
means for supplying the output signal of said adder/subtractor and an output signal of said second memory to a second one of said pair of input terminals of said adder/subtractor, and

means for supplying the output signal of said latch circuit to an output terminal.

4,349,700
CONTINUOUS SPEECH RECOGNITION SYSTEM

Frank C. Pirz, Madison, and Lawrence R. Rabiner, Berkeley Heights, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 8, 1980, Ser. No. 138,647
Int. Cl.[3] G10L *1/00*
U.S. Cl. 179—1 SD 25 Claims



1. Apparatus for recognizing continuous speech comprising:

means (105) for storing signals representative of the acoustic features of a set of reference words;

means (103) responsive to an unknown utterance for producing a sequence of signals representative of the acoustic features of the utterance;

means (110,120,130,140,160) responsive to the reference word acoustic feature signals and the utterance acoustic feature signals for generating at least one reference word series as a candidate for said utterance;

and means (170) responsive to said at least one reference word series candidate and said utterance acoustic feature signals for identifying said utterance as one of said reference word series candidates;

characterized in that

said reference word series candidate generating means (110,120,130,140,160) comprises;

means (401,340) for generating a signal for identifying successive word position intervals;

means (307,309,311) operative in each successive word position interval for forming reference word series partial candidates including means (307,309,311,320,345) responsive to each reference word series partial candidate of the preceding word position for determining for each reference word a plurality of utterance segments beginning within a predetermined range of the utterance segment endpoint of said preceding word position reference word series partial candidate and corresponding to the reference word feature signals, said range overlapping the preceding word position partial candidate utterance segment endpoint;

means (307,320) responsive to each reference word feature signals and the feature signals of the corresponding determined utterance segments for forming a signal representative of the similarity between said reference word and said utterance segments;

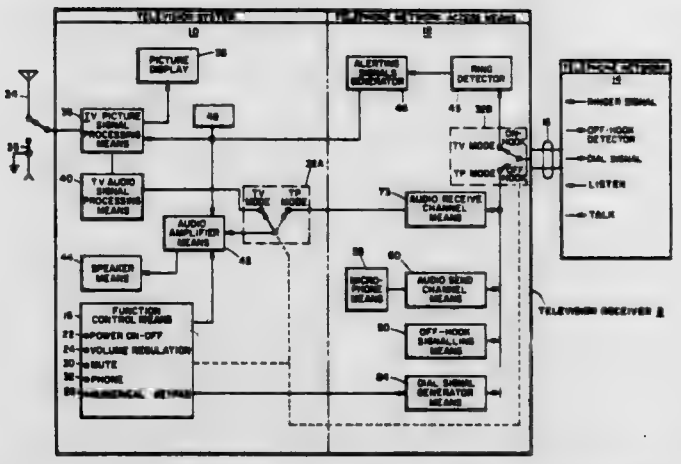
means (309,325) responsive to said similarity signals for selecting reference words having a prescribed similarity to their corresponding utterance segments;

and means (311) for combining said selected reference words with the reference word series partial candidates of the preceding word position to form at least one reference word series partial candidate for said word position interval.

4,349,701
TELEVISION RECEIVER WITH TWO-WAY TELEPHONE CONVERSATION AND DIAL-OUT CAPABILITIES

Paul A. Snopko, Chicago, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Division of Ser. No. 109,424, Jan. 2, 1980. This application Aug. 5, 1980, Ser. No. 175,456
Int. Cl.³ H04M *11/08*
U.S. Cl. 179—2 TV 1 Claim



1. A television receiver comprising a cabinet which houses a television system having telephone network access means, said receiver providing both for presentation of television programs and for dialing out and conversing through the talk channel and listen channel of an embodied telephone network while viewing a television picture, said television receiver having function control means including operational mode selection means for providing a television program mode, and alternately, a two-way-telephone-conversation-with-television-picture mode with dial out;

A. said television system of said television receiver comprising:

(1) means for receiving broadcast or cable-carried television program signals;

(2) means for processing said signals effective to provide separate video and audio signals;

(3) cathode ray tube picture display means for receiving said video signal for displaying a television picture; and

(4) television audio signal processing means for receiving said audio-signal including dual-function audio amplifier-speaker means connectible to said telephone network during to said two-way-conversation-with-television-picture mode with dial out;

B. said telephone network access means of said television receiver comprising:

(1) a ring detector means and an alerting signals generator means for detecting a ringer signal received from said telephone network and generating a visible and/or audible alerting signal;

(2) off-hook signaling means for providing an off-hook signal to the telephone network;

(3) microphone means for sensing user voice signals during a telephone conversation;

(4) audio send channel means for receiving and amplifying the output of said microphone means for routing to said talk channel of the telephone network; and

(5) audio receive channel means for accepting the listen signal from said telephone network for routing to audio amplifier-speaker means in said television system;

(6) dial signal generator means for providing direct access loop-disconnect dialing through said telephone network;

C. said function control means of said television receiver comprising:

(1) first means for routing, when said receiver is in said television program mode, and when said receiver is in an ON-hook condition, said TV audio signal processing means to said audio amplifier-speaker means for reproducing the audio portion of the television program signal;

(2) second means for muting said television program when said function control means is operated to place the receiver in said two-way-telephone conversation-with-television-picture mode with said dial out, and when said telephone network is in an off-hook condition, said second means also providing for

(a) connecting said audio receive channel means to said listen channel for accepting caller voice audio signals;

(b) connecting said audio receive channel means to said audio amplifier-speaker means for rendering audible the voice of said caller;

(c) connecting said audio send channel means to said talk channel for conducting the voice audio signals of said television receiver user to said caller; and,

(d) connecting said off-hook signalling means to the telephone network for indicating the line is in use;

(e) connecting said dial signal generator means to said telephone network for dialing out through said telephone network;

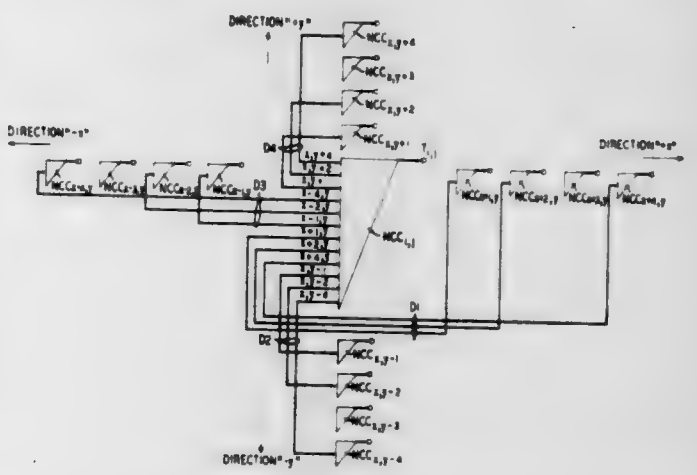
(3) volume regulating means for regulating volume of said audio amplifier-speaker means;

such that the television receiver user can initiate a telephone call by dialing out through said telephone network access means of said television receiver, and can conduct a two-way telephone conversation with the person called while viewing the picture portion of a broadcast or cable-carried television picture with muted audio, and upon termination of said conversation, restore said television program.

4,349,702
NODAL SWITCHING NETWORK WITH BINARY ORDER LINKS

Amos E. Joel, Jr., South Orange, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 12, 1978, Ser. No. 905,214
Int. Cl.² H04Q *3/42*
U.S. Cl. 179—18 GE 11 Claims



1. A nodal switching system having a plurality of switching nodes interconnectable by a network of link groups having lengths ordered according to increasing powers of a finite integer base, comprising:

means for registering the coordinate distances in said network between calling and called ones of said nodes;

means controlled by said registering means for identifying a link spanning the most of the distance in each of a pair of coordinate directions between said calling and called ones of said nodes;

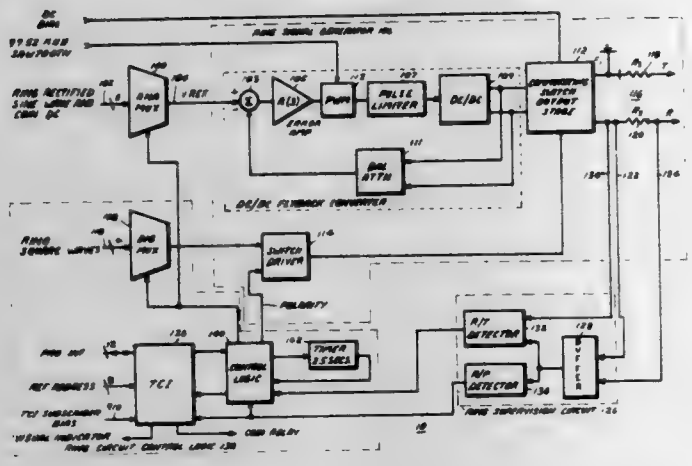
means for testing and seizing an idle one of the said identified links in one of said coordinate directions; and

means operative when there is no said idle one of said links for testing and seizing an idle link spanning the next longest distance in said one of said coordinate directions.

4,349,703
PROGRAMMABLE RING SIGNAL GENERATOR

Ramon C. W. Chea, Jr., Monroe, Conn., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Mar. 31, 1980, Ser. No. 135,755
Int. Cl.³ H04M *3/02, 19/02*
U.S. Cl. 179—18 HB 12 Claims



1. A digitally controlled ring signal generator comprising:

ring signal generation circuit means for selectively amplifying at least a plurality of multi-frequency ringing signals for providing immediate ringing to one or more subscriber lines;

loop current sensing means for sensing loop current;

ring supervision circuit means responsive to said loop current sensing means for generating ringing supervisory signals;

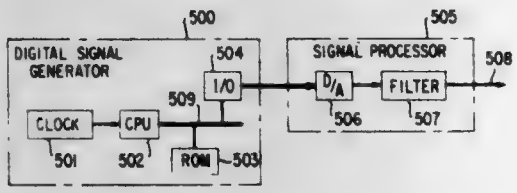
ring circuit control logic means responsive to said ringing supervisory signals and to an external data input, for generating an output control signal; and

a ring signal reference source for coupling multi-frequency ringing signals to said ring signal generation circuit means in response to said output control signal, such that the characteristics of said ringing signals are selectable in accordance with said external data input and the presence or absence of the generated ringing signals is determined by said ringing supervisory signals.

4,349,704
DIGITAL MULTIFREQUENCY SIGNAL GENERATOR

Philip W. Gillis, Brooklyn, N.Y., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 31, 1979, Ser. No. 108,849
Int. Cl.³ H04M *1/50*
U.S. Cl. 179—84 VF 7 Claims



1. Apparatus for generating a multifrequency signal having a plurality of tones comprising

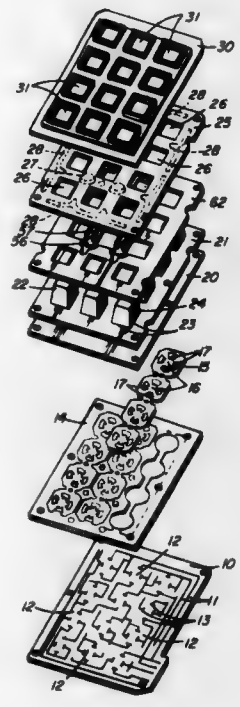
means for outputting digital signal representations of the amplitude values of at least one of said tones at a predetermined rate; and being characterized by

means for controlling said predetermined rate to be less than the Nyquist rate of the tone having the highest frequency in said multifrequency signal.

4,349,705
LIGHTED TELEPHONE DIAL

Gerd Kuhfus, London, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed May 6, 1981, Ser. No. 260,889
Int. Cl.³ H04M *1/22*
U.S. Cl. 179—90 L 6 Claims



1. A light telephone dial of the pushbutton type, comprising;

a printed circuit board having a conductor pattern on a top surface of the board, the conductor pattern defining a plurality of switch positions, each position having a plurality of contact areas;

a switch member on said printed circuit board and having a plurality of switches, a switch aligned with each of said switch positions, each switch having a plurality of cantilever contacts members, a member aligned with each contact area;

a pushbutton member on said switch member and having a plurality of translucent cantilevered pushbuttons, a button aligned with each switch, the switch positions, switches and buttons arranged in four rows and three columns;

a translucent light guide plate positioned over said pushbutton member and having a plurality of apertures, an aperture for each pushbutton, the pushbuttons extending up through the apertures;

four recesses in a lower surface of the light guide plate, a recess at each intersection between a top row and the columns and between a bottom row and the columns, each recess positioned between four adjacent apertures;

grooves in the lower surface of the light guide plate, one along each of the top and bottom edges and at least one along each of the side edges, projections in the grooves extending in towards the spaces between rows and columns and having rearwardly inclined inner surfaces to present pointed ends towards said recesses, outwardly and rearwardly inclined surfaces behind said projections, an inclined surface on each side of a center line through a said pointed end, and further portions extending from said inclined surfaces parallel to said edges;

a light emitting diode positioned in each of said recesses, and means for supplying electrical power to the diodes;

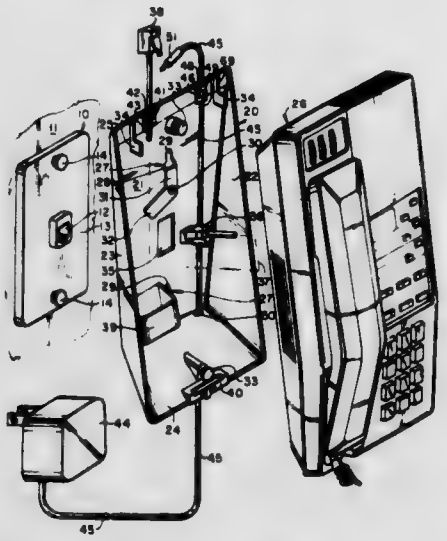
the arrangement such that light from the diodes travels through the light-guide plate, part of the light transferred directly from the plate to the pushbuttons, that part of the light passing between apertures entering said grooves in said light-guide plate and being deflected sideways along the grooves and re-entering the light-guide plate to transfer to the pushbuttons, the pushbuttons illuminated on all sides.

4,349,706

WALL MOUNTING ADAPTOR FOR TELEPHONE SET

Joseph Thompson, London, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Apr. 25, 1980, Ser. No. 143,617
Int. Cl.³ H04M 1/04
U.S. Cl. 179—100 C 12 Claims



1. A wall mounting adaptor for a telephone set, comprising:
an open shallow box-like housing having a back, two sides, top and bottom;
means in said back for attaching the housing to a telephone wall outlet;
a first latch pivotally mounted on said housing for releasably retaining the housing attached to the telephone wall outlet;
first retaining means on said housing for retention of a telephone line cord;
attachment means on said housing for attaching a telephone set to said housing, said attachment means interengaging with a base of a telephone set and comprising headed studs projecting forward from said back of said housing, each stud including a head portion and a stem for entrance through and positioning in a key-hole shaped aperture in the base of the telephone set;
a second latch on said housing for releasable engagement with said telephone set for releasably retaining said telephone set attached to said housing, said second latch including at least one forward extending projection for engagement with an aperture in said base; and
an aperture in said back for passage of said line cord plug therethrough for insertion in a jack in said telephone wall outlet.

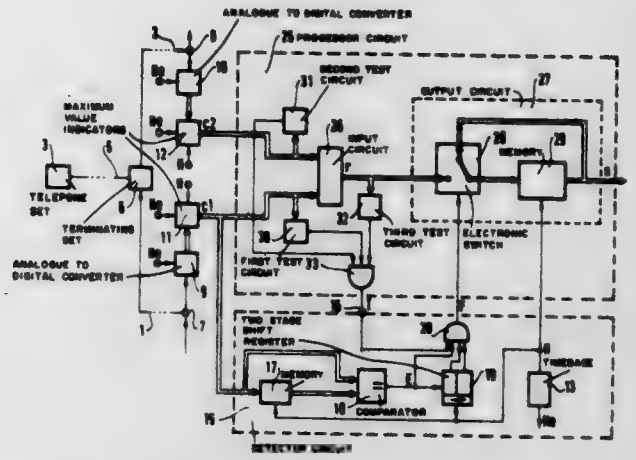
4,349,707

SYSTEM FOR MEASURING THE ATTENUATION ON A TRANSMISSION PATH

Claude Perrigault, Grenoble, and Jean-Claude Spiteri, Palaiseau, both of France, assignors to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France

Filed Oct. 29, 1980, Ser. No. 201,690
Claims priority, application France, Oct. 31, 1979, 79 27010
Int. Cl.³ H04B 3/46
U.S. Cl. 179—175.31 R 11 Claims

1. A system for measuring the attenuation on a transmission path for a random signal in which the propagation time of said signal is between a lower limit T1 and an upper limit T2, the system comprising:
a first maximum value indicator circuit with immediate response and a holding time not less than T2, to which the signal at the input end of said path is applied;
a second maximum value indicator circuit with immediate response and a holding time not less than T2—T1, to which the signal at the output end of said path is applied;
a detector which detects that the output of said first indicator has been maintained constant during a time interval not less than T2, connected to receive the output signal from said first indicator and determining times at which the indicator output signals are recognized; and



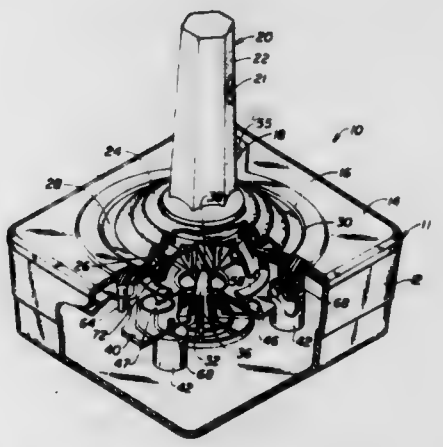
a processor connected to receive the indicator output signals, controlled by said detector and generating a measurement signal which is a function of the instantaneous value of the ratio of the indicator output signals at the times at which said signals are recognized.

4,349,708

JOYSTICK CONTROL

James C. Asher, San Jose, Calif., assignor to Atari, Inc., Sunnyvale, Calif.

Filed Aug. 22, 1979, Ser. No. 69,015
Int. Cl.³ H01H 25/04
U.S. Cl. 200—6 A 18 Claims

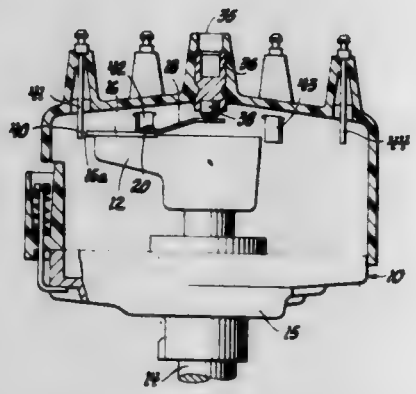


1. A joystick controller for selectively generating switch closures comprising;
an elongate handle moveable radially with respect to its axis about an axial pivot location from a nominal rest position;
a plurality of pressure-actuated switches disposed in a common plane normal to the axis of the handle in its rest position and circumscribing the axis of the handle in its rest position; and
a deformable resilient annular member superimposed over the switches, said annular member being attached to the handle at spaced locations intermediate the respective locations of the switches so that displacement of the handle from its rest position causes an arcuate portion of the annular member to be pressed against and actuate at least one of the switches.

4,349,709
RADIO FREQUENCY INTERFERENCE SUPPRESSING IGNITION DISTRIBUTOR

Adolph L. Micheli, Mt. Clemens, and Wey-Chaung Kuo, Bloomfield Hills, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 12, 1980, Ser. No. 206,021
Int. Cl.³ H01H *19/00, 1/00*
U.S. Cl. 200—19 R 5 Claims

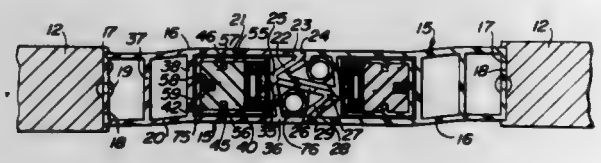


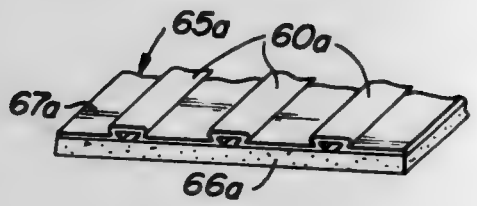
2. In an ignition distributor of the type wherein a movable electrode electrically connected to the secondary winding of an ignition coil is passed in ignition spark gap relationship with at least one stationary electrode electrically connected to a corresponding spark plug, the improvement wherein either the movable electrode or each stationary electrode is formed of a ceramic composition selected from the group consisting of (a) Fe_2O_3 doped with TiO_2 and (b) TiO_2 doped with any one or more of Nb_2O_5, Sb_2O_5 or Ta_2O_5, said composition having a resistivity suitable for suppressing radio frequency interference energy generated by an ignition spark.

4,349,710
DOOR EDGE FOR ATTACHMENT TO A TRAIN DOOR AND THE LIKE

Norman K. Miller, 2B Governor Markham Dr., Glen Mills, Pa. 19342

Continuation-in-part of Ser. No. 19,428, Mar. 12, 1979, Pat. No. 4,273,974. This application Dec. 15, 1980, Ser. No. 216,775
Int. Cl.³ H01H *3/16*
U.S. Cl. 200—61.43 13 Claims



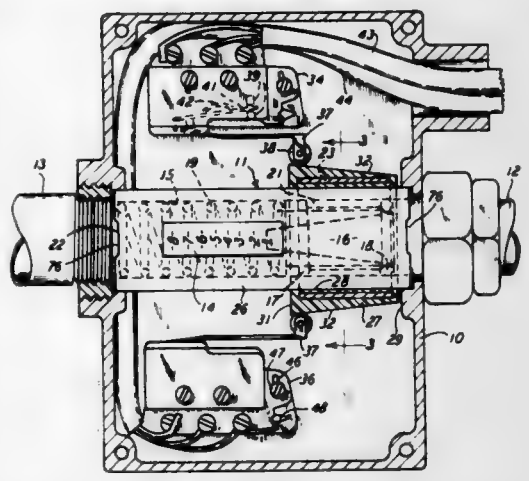


11. A pressure sensitive switch construction comprising a resiliently compressible intermediate member having through openings, flexible conductive sheets on opposite sides of said intermediate member in facing relation through said openings, and outer cushions externally of said conductive sheets and deflectible to flex said conductive sheets into engagement with each other through said openings, at least one of said conductive sheets comprising a flexible backing, and a flexible facing having a multitude of folds and secured in facing relation to said backing throughout its facing surface excepting said folds being unsecured, said one conductive sheet being flexible with flexure of said facing being taken up by said folds for minimum internal strain and enhanced life.

4,349,711
FLUID FLOW DEVICE

Jack E. Lake, Racine, Wis., assignor to Racine Federated, Inc., Racine, Wis.

Filed Oct. 14, 1980, Ser. No. 196,857
Int. Cl.³ G01F *1/00*
U.S. Cl. 200—153 LA 7 Claims



1. In a fluid flow device, a housing having a fluid inlet and a fluid outlet and a fluid chamber intermediate said inlet and said outlet, a piston movably disposed in said chamber in accordance with fluid flow in said chamber, a spring in said chamber and in abutment with said piston for urging said piston in one direction, a magnet attached to said piston for movement with said piston, a magnetic follower piloted on the exterior of said housing for movement with the movement of said magnet, an electric switch mounted on said housing and including an actuating arm and a spring urging upon said arm and with the extending end of said arm being in the path of movement of said follower and spring-urged into the path of movement of said follower for actuation of said switch in response to movement of said follower, an electric element electrically connected with said switch for actuation by said switch, the improvement comprising said switch arm extending end being in contact with said magentic follower when said piston is in said one direction, said magnetic follower having a uniformily inclined ramp surface aligned with said switch arm and in constant contact with said switch arm extending end for movement of said switch arm upon movement of said magnetic follower and swinging said switch arm in proportion to the movement of said magnetic follower to to thereby actuate said switch only when said magnetic follower moves to a selected location relative to said housing.

4,349,712
PUSH-BUTTON SWITCH

Dieter Michalski, Berlin, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Jan. 21, 1980, Ser. No. 113,792
Claims priority, application Fed. Rep. of Germany, Jan. 25, 1979, 2902769
Int. Cl.³ H01H *13/04*
U.S. Cl. 200—159 B 1 Claim

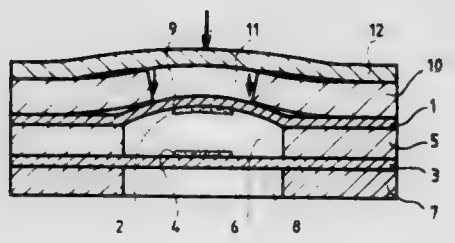
1. A push-button switch comprising:
a bottom layer of rigid insulating material, said bottom layer having a plurality of openings therethrough extending from the top to the bottom surface thereof,
a first base layer of resilient and flexible plastic arranged on the bottom layer;
a plurality of electrically conductive contacts supported on the side of said base layer which faces away from said

bottom layer, each contact in register with at least one different opening in said bottom layer;

an intermediate layer of rigid insulating material having a plurality of openings therethrough extending from the top to the bottom surface thereof and said intermediate layer being arranged on the contact side of said base layer with each opening in said intermediate layer in register with at least one different contact on said base layer;

a second base layer of resilient and flexible plastic arranged on said intermediate layer;

a plurality of electrically conductive contacts supported on the side of said second base layer which faces said contacts on said first base layer with each contact on said second



base layer in register with a corresponding contact on said first base layer; and,

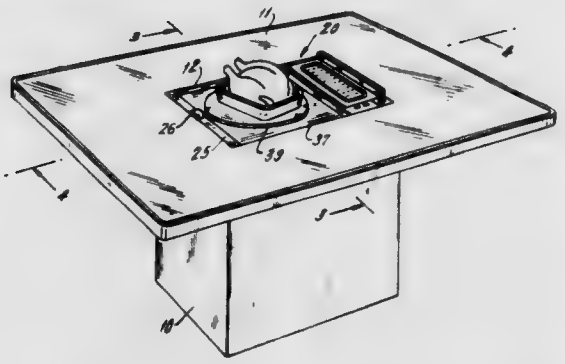
wherein the portions of said second base layer overlying said openings thereunder are domed with a convex curved surface to provide snappable surfaces, wherein inwardly deflection of said domed surfaces provides electrical engagement of the corresponding contacts in register therewith and a corresponding inward deflection of the portions of said first base layer which overlie said openings in said bottom layer, and wherein all adjacent ones of said openings are separated by respective portions of rigid bottom and intermediate layers whereby the portions of said base layers between adjacent openings are firmly clamped in position.

4,349,713

COMBINED COOKING AND SERVING MICROWAVE APPARATUS

Herman Marsen, 201 W. 86 St., New York, N.Y. 10024

Filed Feb. 19, 1980, Ser. No. 122,114
Int. Cl.³ H05B *6/80*
U.S. Cl. 219—10.55 A **4 Claims**



1. A combined cooking and serving microwave apparatus comprising:

a tabletop having a central opening therein and hollow support means extending downwardly from the central opening,

means within said hollow support for retaining a microwave oven thereon with the top portion of the microwave oven below the level of the tabletop,

said microwave oven having a control panel in the top portion thereof which is accessible through the opening of said tabletop,

door means on the microwave oven at the top portion thereof, said door means being operable to open and close the oven by a horizontal sliding motion,

said tabletop being constructed and arranged to accommodate the sliding door,

tray means within said oven for holding an article of food being cooked,

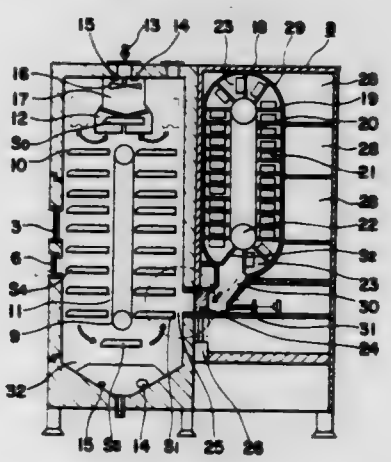
means for lifting and lowering said tray means from a position deep within the oven where it is adapted to be surrounded by microwaves when the sliding door is closed to a position outside of the oven and above the tabletop when the door is in open position.

4,349,714

APPARATUS FOR DEFROSTING FROZEN FOODS AND CONTINUOUSLY SUPPLYING SAME DEFROSTED

Tokuo Tamano, 148, Ikomadai, Ikoma-City, Naraken, Japan (630-02)

Filed Aug. 14, 1980, Ser. No. 177,967
Claims priority, application Japan, Aug. 11, 1979, 54-102613
Int. Cl.³ H05B *6/80*
U.S. Cl. 219—10.55 A **4 Claims**



1. An apparatus for storing and then defrosting frozen items comprising:

a first cabinet having a plurality of trays on an endless conveyor for individually supporting frozen food items and maintained at a food freezing temperature,

a second cabinet adjacent the first cabinet in which frozen foods items are individually defrosted and supporting therein a plurality of trays on an endless conveyor,

means for transferring food items from a tray in the first cabinet directly to a tray in the second cabinet,

means for moving the conveyor in the second cabinet to position the tray with the transferred items at a predetermined location in the second cabinet,

means in said second cabinet comprising a pair of removable members for forming an enclosure about a tray at said predetermined location,

means for irradiating with microwaves the food items on a tray within said enclosure,

means for moving the tray with the defrosted food item to a dispensing opening in said second cabinet.

4,349,715

CASSETTE TAPE CONTROLLED MICROWAVE COOKING APPARATUS

Ryoiti Mariyama, Habikino, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Sep. 18, 1980, Ser. No. 188,496
Claims priority, application Japan, Sep. 21, 1979, 54-122429
Int. Cl.³ H05B *6/68*
U.S. Cl. 219—10.55 B **10 Claims**

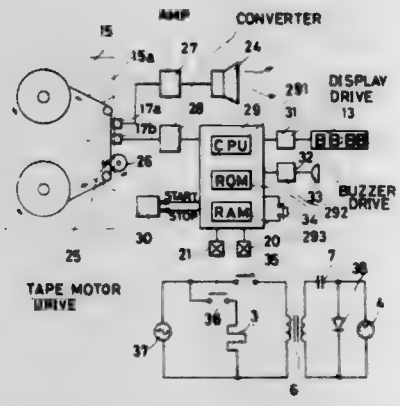
1. An automatic and manual microwave oven for conducting a cooking operation and providing audible cooking instructions comprising:

a housing including an oven cavity and a cavity closure door;

microwave generating means for supplying microwave energy to said oven cavity for performing a cooking operation;

a cassette tape player system for reproducing information recorded on a cassette tape, said cassette tape carrying audio information for providing an audible cooking explanation and digital data for controlling the operation of said microwave generating means;

an audio system for generating the audible cooking explanation in accordance with the audio information reproduced by said cassette tape player system;



a digital control system for controlling the operation of said microwave generating means in accordance with the digital data reproduced by said cassette tape player system to be operable for predetermined time intervals; and

tape drive means for intermittently imparting correlated rotation to said cassette tape for initially explaining a cooking operation by actuating said audio system for generating an audible cooking explanation and subsequently imparting correlated rotation to said cassette tape for controlling a cooking operation by actuating said digital control system for controlling the operation of the microwave generating means.

4,349,716

MECHANICAL CONTROL HEAD FOR GUIDING THE MOVEMENT OF A TOOL, PARTICULARLY OF AN ELECTRODE ADAPTED TO MAKE A CAVITY IN A METAL PIECE, BY ELECTROEROSION

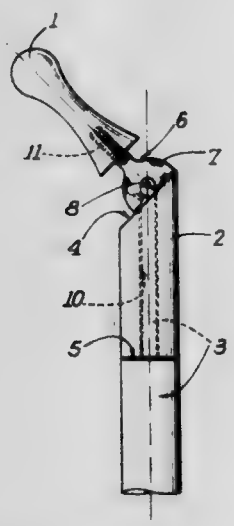
Learco Di Piazza, Ispra, Italy, assignor to European Atomic Energy Community (EURATOM), Luxemburg, Luxembourg

Filed Dec. 9, 1980, Ser. No. 214,768

Claims priority, application Luxembourg, Dec. 14, 1979, 81995

Int. Cl.³ B23P *1/12*

U.S. Cl. 219—69 E 4 Claims



1. A mechanical control head comprising:

a guided tool for the removal of material from a workpiece by electroerosion;

said tool being mounted on a spatula shaped foot having a tapered edge, said foot being pivotally mounted to one end of a control rod having an annular shoulder spaced from said one end;

a guide prism coaxially disposed about said control rod between said annular shoulder and said one end; the guide prism having a guide face adjacent said tapered edge;

said guide prism and said central rod being mounted for rotational movement in relation to each other so that either one may be rotated while the other is held stationary to cause said foot to follow a preselected course by constant movement over the guide face, thus correspondly moving the guided tool.

4,349,717

FLUX DAM ASSEMBLY AND METHOD

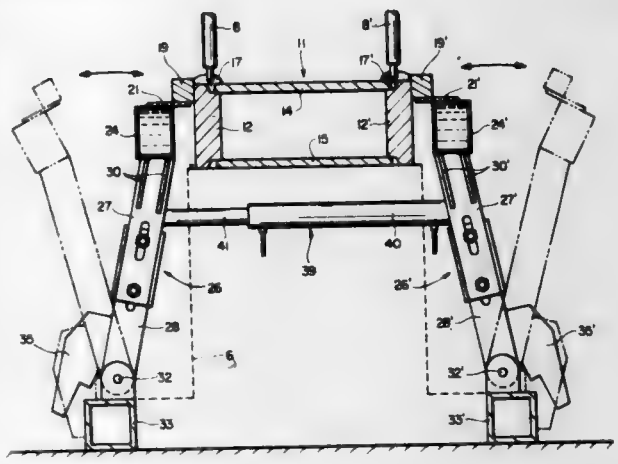
Edwin L. Lindow, Plano, and Bradley T. Richards, Oswego, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/00667, § 371 Date May 30, 1980, § 102(e) Date May 30, 1980, PCT Pub. No. WO81/03454, PCT Pub. Date Dec. 10, 1981

PCT Filed May 30, 1980, Ser. No. 245,248

Int. Cl.³ B23K *9/18*

U.S. Cl. 219—73.2 10 Claims



1. In a submerged arc welding apparatus having a platform (6) for supporting a workpiece (11), a traveling welding head (8) mounted for movement with respect to the platform (6), and a flux dam (19) positionable adjacent to the workpiece (11) for retaining granular flux (17), the improvement comprising:

(a) an elongate and generally vertical flux dam (19) stationary during welding and extending for the length of a weld;

(b) a supporting pivot pin (32) mounted on one vertically disposed side of the platform (6) and below the flux dam (19); and

(c) a generally vertically disposed support arm (26) pivotally mounted on the apparatus by the pin (32) and attached to the flux dam (19) to place the flux dam (19) against a side of the workpiece (11) and vertically thereabove.

4,349,718

INSTALLATION FOR THE RESISTANCE-WELDING OF STRUCTURAL PARTS

Martin Carota, Neugermering; Josef Slootz, Eching; Klaus Weiser, Kottgeisering; Peter Gulich, Puchheim, and Milenko Jovanovic, Augsburg, all of Fed. Rep. of Germany, assignors to Bayerische Motoren Werke A.G., Munich, Fed. Rep. of Germany

Filed Apr. 18, 1978, Ser. No. 897,391

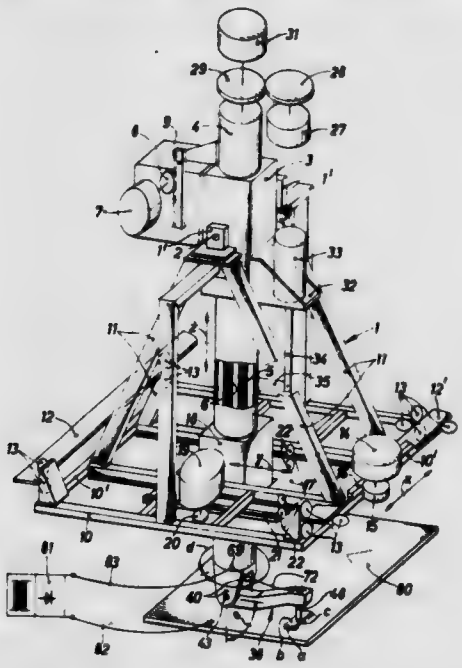
Claims priority, application Fed. Rep. of Germany, Apr. 20, 1977, 2717453

Int. Cl.³ B23K *11/10*

U.S. Cl. 219—78.01 28 Claims

1. An installation for the resistance welding of structural

parts, comprising a half-tong means and a welding electrode secured at the half-tong means, characterized in that the half-tong means is arranged for pivotal movement, and characterized by a pivotal mounting means, a tubular support member rotatably supported on the mounting means, the half-tong means being pivotally supported at the end of the tubular



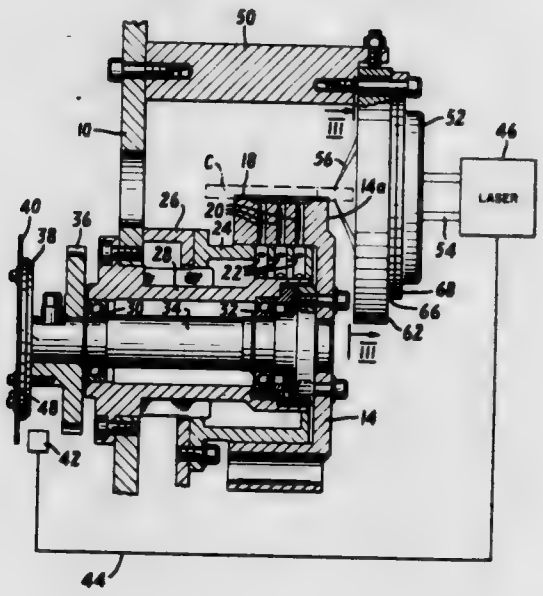
support member, a drive shaft having an axis and being rotatably supported in the tubular support member, said drive shaft and said tubular support member each including rotary drive means, and said drive shaft being operable to pivot the half-tong means supported at the end of the tubular support member about an axis extending transversely to the axis of said drive shaft.

4,349,719

APPARATUS FOR LASER PERFORATION OF TRANSPORTED ARTICLES

Ernest Cashwell, Richmond; Everett C. Grollimund, Midlothian, both of Va.; Walter W. Duley, King City, Canada; A. Clifton Lilly, Jr., Richmond, Va.; Warren E. Claflin, Bon Air, Va.; Edward B. Stultz, and Peter Martin, both of Richmond, Va., assignors to Philip Morris Incorporated, New York, N.Y.

Continuation of Ser. No. 908,523, May 22, 1978. This application Jun. 16, 1980, Ser. No. 159,593
Int. Cl.³ B23K 27/00
U.S. Cl. 219—121 LK
11 Claims



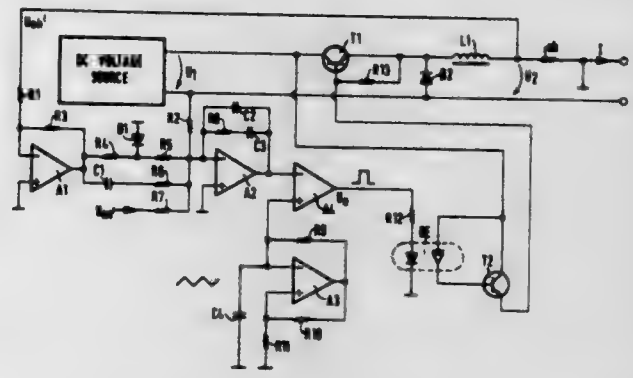
1. Apparatus for providing perforations extending through and spaced about the other peripheral surface of a cigarette, said apparatus comprising light energy generator means for generating a light beam, rotative transport means for transporting the cigarette, said rotative transport means contacting the cigarette only at a portion of the cigarette distinct from the portion thereof to be perforated, and optical means for receiving a light beam generated by said light energy generator means, for splitting said light beam reflectively and non-transmissively into a plurality of spatially separated parts, and for conducting said separated parts thereof in respective different light paths intersecting respective different predetermined locations spaced about the outer peripheral surface of the cigarette to perforate the cigarette as said rotative transport means moves the cigarette through a predetermined position.

4,349,720

COUPLING ARRANGEMENT FOR A WELDING APPARATUS

Toivo T. Mäkimaa, Lahti, Finland, assignor to Kemppi Oy, Lahti, Finland

Filed Dec. 5, 1979, Ser. No. 100,645
Claims priority, application Finland, Dec. 8, 1978, 783784
Int. Cl.³ B23K 9/10
U.S. Cl. 219—130.33
6 Claims



1. In a power supply coupling arrangement for a welding apparatus of a type suitable for MIG-welding, and which operates under conditions whereby at certain times a short-circuit occurs at the load and at other times an open-circuit occurs at the load, which arrangement includes a controllable electrical power source capable of supplying the current taken by the load over a given load voltage range, a first electrical circuit means that detects the current taken by the load and establishes an electrical signal corresponding to such load current, and a second electrical circuit means that detects the voltage applied to the load and establishes an electrical signal corresponding to such load voltage, the improvement which comprises in combination a third electrical circuit means coupled to said first and second electrical circuit means to receive therefrom said load current signal and said load voltage signal, and coupled to said electrical power source to control the current and voltage delivered to the load thereby in accordance with said load current and load voltage signals and predetermined response characteristics established by circuit elements of said third electrical circuit means, said response characteristics being such as to provide a given incremental step in the current delivered to the load and a prescribed rate of increase of said current in response to the occurence of a short-circuit at the load, said third electrical circuit means including a transistor connected in series with the load to regulate the current flow thereto, and a pulse-width modulator responsive to said load voltage and current signals and responsive to a command input signal to establish a pulse sequence output signal in which the pulse-width is determined by the instantaneous values of said load voltage and current signals and by said command input signal, said pulse sequence output signal being utilized to control the effective conductivity through said transistor.

4,349,721

COATED WELDING ELECTRODE OF BASIC TYPE SUITABLE FOR VERTICAL DOWN WELDING OF PIPES

Hearicus Mentink, and Hendrikus van Rooijen, both of Utrecht, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 9, 1980, Ser. No. 195,534

Claims priority, application Netherlands, Nov. 9, 1979, 7908212

Int. Cl.[3] B23K *35/36*

U.S. Cl. 219—145.23 3 Claims

1. A welding rod comprising a core wire having a coating; said coating containing by weight on a dry basis 22 to 28% of calcium carbonate, 1.5 to 3% calcium fluoride, 7 to 14% of titanium dioxide, 35 to 55% of iron, and 5 to 25% of at least one element selected from the group consisting of chromium, manganese, silicon, nickel and molybdenum; the ratio of the diameter of the coated welding rod to the diameter of the core wire being between 1.45:1 and 1.70:1.

4,349,722

MOISTURE PROTECTION AND DRAINAGE ARRANGEMENT FOR MOTOR VEHICLE CLOSURE LOCKS

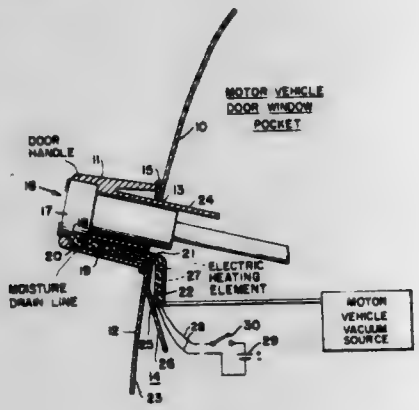
Hermann W. Kurth, and Rolf Krügener, both of Sindelfingen, Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Sep. 4, 1979, Ser. No. 72,461

Claims priority, application Fed. Rep. of Germany, Sep. 16, 1978, 2840410

Int. Cl.[3] E05B *17/00;* B60J *5/00;* H05B *3/00*

U.S. Cl. 219—202 21 Claims



1. In combination with a hollow closure of a motor vehicle, a lock, the lock including a lock cylinder operatively mounted on the closure, and a drain opening means at a lower portion of the lock cylinder, means in communication with an interior of the lock cylinder for draining moisture from the interior, characterized in that a drain line means is connected to the drain opening means, means are provided for guiding the drain line means from the drain opening means to an interior portion of the hollow closure, and in that the drain line means terminates in a drain section disposed in an essentially vertical plane within the closure.

4,349,723

ELECTRICALLY HEATED NON-TOXIC SMOKE GENERATOR

Edmund Swiatosz, Maitland, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 4, 1980, Ser. No. 137,227

Int. Cl.[3] H05B *1/00;* F22B *27/00;* B01F *13/00*

U.S. Cl. 219—271 13 Claims

1. An apparatus for producing nontoxic smoke comprising in combination:

an open-ended cylindrical housing vertically orientated so as to have an upper end and a lower end;

said cylindrical housing having a pair of air inlet ports located near the upper end thereof, an air exhaust pipe located near the lower end thereof, and a smoke discharge pipe located near the lower end thereof;

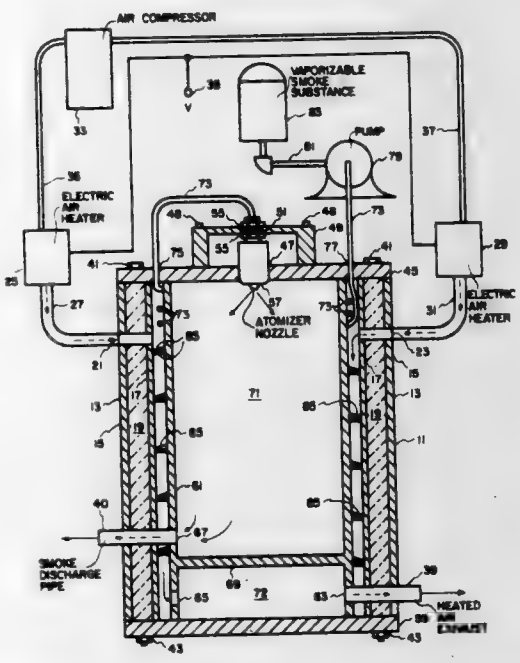
means defining a vaporization chamber mounted within and spaced from said cylindrical housing, said vaporization chamber having an inner surface, an open top and closed bottom, and an aperture in alignment with the smoke discharge pipe of said cylindrical housing and connected thereto;

a first end plate secured to the lower end of said cylindrical housing so as to close the lower end of said cylindrical housing;

a second end plate secured to the upper end of said cylindrical housing so as to close the open top of said vaporization chamber, and close the upper end of said cylindrical housing, said second end plate having a first aperture located in the center thereof, and second and third apertures located near the periphery thereof;

nozzle means mounted within the first aperture of said second end plate for spraying a liquid in a hollow cone spray pattern against the inner surface of said vaporization chamber so as to vaporize said liquid and thereby produce nontoxic smoke;

coil means having one end thereof connected to said nozzle means and passing through the second aperture of said



second end plate, the opposite end thereof connected to a source of vaporizable smoke producing substance and passing through the third aperture of said second end plate, and the remainder thereof wound around the outer periphery of said vaporization chamber for preheating said liquid so as to reduce the viscosity thereof and thereby allow for the spraying of said liquid in said hollow cone spray pattern by said nozzle means;

helical fin means wound around the outer periphery of said vaporization chamber below said coil means and said air inlet ports so as to bridge the space between said vaporization chamber and said cylindrical housing;

said helical fin means being positioned between the air inlet ports and the air exhaust pipe of said cylindrical housing and forming a helical airflow path therebetween;

electric air heater means having a first outlet port connected to the first inlet port of said cylindrical housing and a second outlet port connected to the second inlet port of said cylindrical housing for supplying heated air under pressure through the first and second inlet ports of said cylindrical housing to said helical airflow path between said cylindrical housing and said vaporization chamber;

said air heater means being adapted for supplying the heated air at a temperature sufficient to heat said vaporization

chamber to a temperature above the vaporization temperature of the liquid being vaporized;

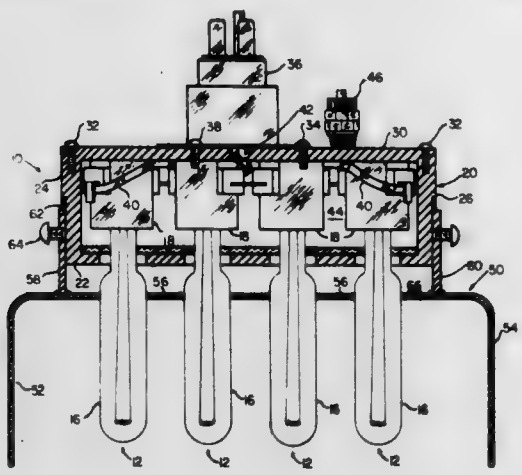
said helical fin means being adapted for circulating the heated air supplied thereto by said air heater means around the periphery of said vaporization chamber so as to provide for a maximum heat transfer rate to said vaporization chamber, and then passing the heated air to the air exhaust pipe of said cylindrical housing so as to allow for the discharge of the heated air from said nontoxic smoke producing apparatus by the air exhaust pipe of said cylindrical housing.

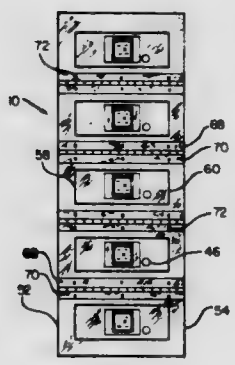
4,349,724

ARTICULATE RADIANT HEATER MODULE

Russell Ellersick, 7925 Twin Oaks Dr., Citrus Heights, Calif. 95610

Filed Nov. 7, 1980, Ser. No. 204,760
Int. Cl.³ H05B 1/00
U.S. Cl. 219—347 **6 Claims**





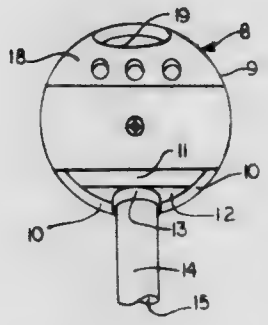
1. A radiant heating module comprising a box-shaped housing having a bottom wall, a pair of opposed parallel end walls, a front wall, a back wall and a removable top cover plate, one of said walls having a plurality of openings, a plurality of lamp sockets attached to the bottom side of the top cover wall, each socket being disposed within said housing, each of said sockets being aligned with one of said openings to permit lamp placement in said sockets, a lamp in each of said sockets, said lamp extending axially from said socket through its respective aperture to a position outside of said housing means connecting the lamp sockets to a source of electrical current: a reflector removably secured to the housing having a first wall parallel to and spaced from the wall of said housing having the plurality of openings: said reflectors first wall also having a plurality of openings therein, each of which openings is axially aligned with the corresponding opening of the housings, said reflector also having parallel side walls and articulated connection means on said module for attaching one end of said module to one end of a similar module.

4,349,725

AIR DISPERSING HEAD FOR AIR HEATERS

John J. Sheridan, 2751 Virginia St., Shreveport, La. 71103

Filed Jun. 16, 1980, Ser. No. 159,614
Int. Cl.³ H05B 1/00
U.S. Cl. 219—373 **4 Claims**



1. An air dispersing head for an air heater comprising:

(a) a generally cylindrically-shaped cap means shaped for cooperation with the air discharge of said air heater and having an internal cavity and a primary air duct for introduction of ambient air into said cavity;

(b) hose means extending through said cap means on a side of said cap means opposite said primary air duct and into said cavity for directing heated air from said heater to a work area; and

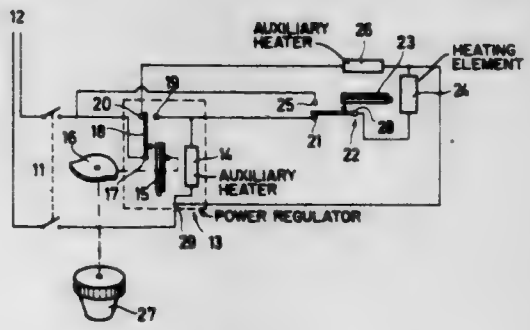
(c) a plurality of secondary air ducts in said cap means and located on the same side of said cap means as said primary air duct for controlling a secondary flow of ambient air into said cavity and adjusting the temperature of said heated air discharged from said hose means.

4,349,726

CONTROL DEVICE FOR ELECTRIC HEATING APPARATUS

Gerhard Gössler, Oberderdingen, Fed. Rep. of Germany, assignor to E.G.O. Electro-Geräte Blanc und Fischer, Fed. Rep. of Germany

Filed Dec. 11, 1980, Ser. No. 215,429
Claims priority, application Fed. Rep. of Germany, Dec. 20, 1979, 2951334
Int. Cl.³ H05B 1/02
U.S. Cl. 219—511 **10 Claims**



1. A control device for the heating system of an electric heating apparatus comprising:

a power regulator having a first temperature sensitive switch for periodically supplying electric power to the heating system;

a second temperature sensitive switch connected for supplying unregulated power directly to the heating system in a first mode of operation until a given desired temperature is reached, and for supplying regulated power to the heating system from a first output of the regulator in a second mode of operation on reaching the desired temperature, reducing the power supplied to the heating system; and,

an auxiliary heating system connected to a second output of the regulator and in thermal engagement with the second temperature sensitive switch, for hastening the onset of the second mode of operation.

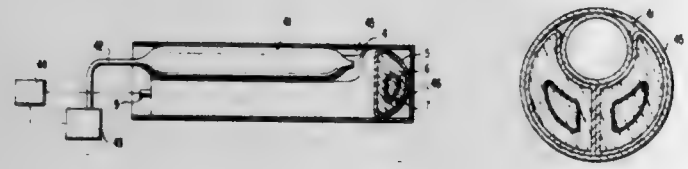
4,349,727
HEATER UNIT

John W. Churchill, Beverly, Mass., assignor to Southport Enterprises, Inc., Beverly, Mass.

Continuation-in-part of Ser. No. 382,295, Jul. 25, 1973, Pat. No. 3,982,099. This application Oct. 8, 1974, Ser. No. 513,140

Int. Cl.[3] H05B *3/44*

U.S. Cl. 219—544 24 Claims



1. A heater unit comprising resistor means, terminal means connected to the ends of said resistor means, first surrounding elongated metallic sheath means, compacted powder insulation material disposed within said first sheath means and spacing said resistor means from said first sheath means, said first sheath means being provided with indentation means extending along at least a portion of the length of said first sheath means, said first surrounding elongated metallic sheath means including at least one sheath in the form of two substantially parallel adjacent leg portions interconnected by a return bend portion formed of said one sheath bent back upon itself and being integral with the adjacent parallel extending leg portions, said terminal means being provided at the adjacent ends of said one sheath and having said resistor means connected therebetween, said resistor means extending in the direction of said one sheath and being spaced therefrom by said powder insulation material, each of said leg portions of said one sheath having in cross section, at least a first flat surface portion and arcuate surface portions forming a closed loop, said at least first flat surface portions of each leg portion being adjacent and facing one another, said indentation means extending along at least a portion of at least one of said leg portions, said resistor means being a resistor helix having a cross-sectional configuration generally corresponding to the cross-sectional configuration of said one sheath, said indentation means being formed as a groove bounded at least in part by generally facing surface portions of said first sheath means, temperature sensing means being disposed in said groove for sensing the temperature of the heater unit, and second sheath means encasing and in thermal conductive contact with at least a portion of both said leg portions and said temperature sensing means disposed in said groove.

4,349,728
TARGET APPARATUS

Robert B. Phillips, Hants; William H. Bowyer, Farnham, and Bruce Moxley, Reading, all of England, assignors to Australasian Training Aids Pty. Ltd., Albury, Australia

Filed Dec. 7, 1979, Ser. No. 101,191

Claims priority, application United Kingdom, Dec. 7, 1978, 47598/78

Int. Cl.[3] G06F *15/20;* F41J *5/12*

U.S. Cl. 235—400 24 Claims

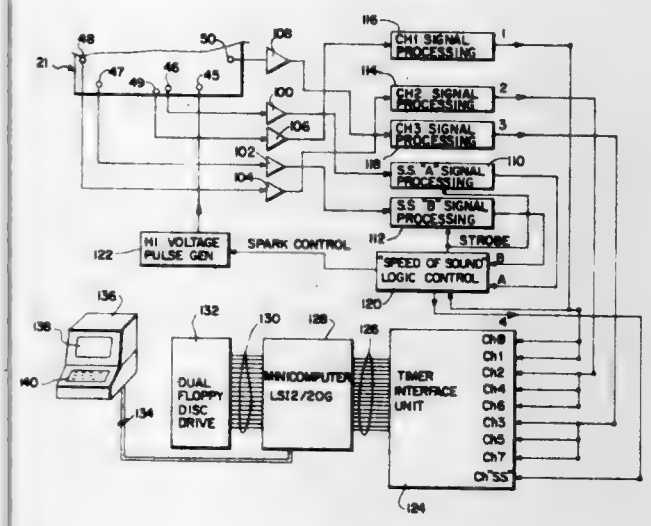
1. Target apparatus, comprising:

a framework;

at least one sheet of material, capable of being penetrated by a projectile, covering said framework to form a chamber;

a plurality of transducers for detecting shock or pressure waves in said chamber caused upon penetration of said at least one sheet of material by said projectile, said transducers being positioned at respective spaced-apart locations within said chamber and lying on only a portion of an arc of a circle lying in a region where said transducers are protected from being hit by said projectile;

means responsive to said transducers for measuring time differences between instants of detection of a shock or pressure wave by said transducers; and



means responsive to said time difference measuring means for determining and indicating a location at which said projectile penetrated said at least one sheet of material.

4,349,729
DISCRIMINATORY HIT DETECTION IN TARGET APPARATUS

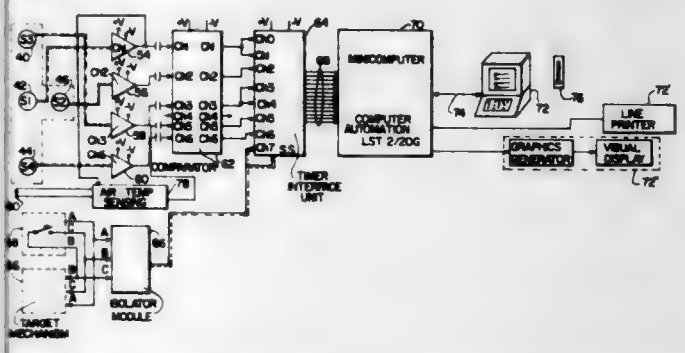
Lindsay C. Knight, Albury, Australia, assignor to Australasian Training Aids, Pty., Ltd., Albury, Australia

Filed Jan. 8, 1980, Ser. No. 110,356

Claims priority, application United Kingdom, Jan. 8, 1979, 7900626; Mar. 8, 1979, 7908261; Apr. 4, 1979, 7911721; Australia, May 14, 1979, PD8800; United Kingdom, Jul. 24, 1979, 7925668

Int. Cl.[3] G06F *15/20;* F41J *5/12*

U.S. Cl. 235—400 19 Claims



1. Discriminatory hit detection apparatus for indicating when a target member has been hit by a projectile fired at said target member, comprising:

a target member;

transducer means spaced apart from and not physically connected to said target member for detecting and selectively providing a hit indication only in response to disturbance of said target member caused by said projectile hitting or passing through said target member and

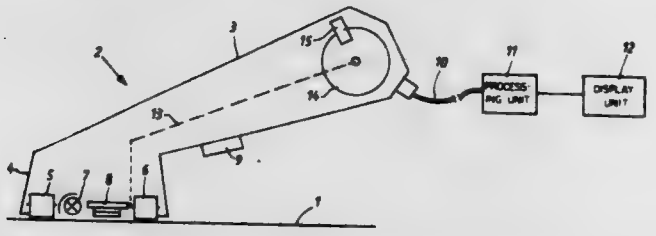
means responsive to said transducer means output for providing said hit indication only in response to disturbance of said target member caused by said projectile hitting or passing through said target member.

4,349,730

DATA PROCESSING DEVICE FOR READING AND PROCESSING VISUALLY OBSERVABLE INFORMATION PRESENT ON A DATA CARRIER

Josef Pfeifer, Unterhaching; Rudolf Paulus, Munich, and Eberhard Zieran, Grünwald, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 18, 1980, Ser. No. 131,359
Claims priority, application Fed. Rep. of Germany, Mar. 20, 1979, 2910854
Int. Cl.³ G06K 9/04
U.S. Cl. 235—472 4 Claims



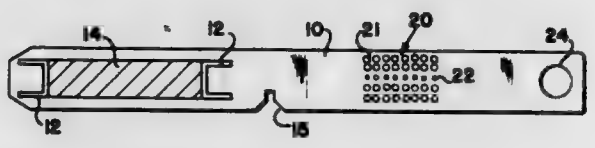
1. A data processing device for picking up and processing visually observable data present on a data carrier, comprising a hand operated reading unit guidable in a first direction over the data on said carrier; scanning means provided in said reading unit for scanning point-by-point the data on said carrier in a second direction which is perpendicular to said first direction; timing means arranged for controlling the time of successive scanning operation in said second direction in dependence on the speed of said reading unit relative to said data carrier in said first direction; said scanning means including a matrix of photoelectric elements extending in said second direction and cooperating with said timing means; said timing means including a displacement detector for measuring the displacement of said reading means relative to said data carrier; and said displacement detector includes a sectional roller supported for rotation in said reading unit and being engageable with said data carrier and means for generating a control signal proportional to the instant speed of said sectional roller.

4,349,731

COMMODITY KEY WITH ON SITE ENCODING FEATURE

George J. Berner, Xenia, Ohio, assignor to Hobart Corporation, Troy, Ohio

Filed Jan. 16, 1980, Ser. No. 112,664
Int. Cl.³ G06K 21/00, 7/14
U.S. Cl. 235—489 4 Claims



1. A commodity key for use in connection with radiation sensitive encoding devices to provide a unique pattern of radiation identifying the type and/or unit price of a commodity in a calculating device, said key comprising

an elongated body having an area for mounting a marking stamp and a code area formed of a plastic material which is locally frangible in response to localized pressure,

said code area having first and second flat opposite sides and being relatively thin in comparison to its width and length,

said code area having a first set of blind holes on the first side thereof and a second set of blind holes on the second side thereof aligned as pairs with said first set of holes whereby said material between pairs of holes provides a selectively removable radiation block,

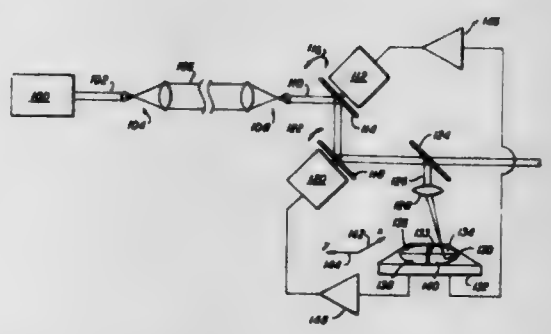
such material being removable in response to pressure applied through one hole of a pair to permit on-site encoding of the commodity key with an appropriate tool.

4,349,732

LASER SPATIAL STABILIZATION TRANSMISSION SYSTEM

Clyde M. Whitby, Duncanville, Tex., and Douglas L. White, deceased, late of Granada Hills, Calif. (by Elizabeth A. White, administrator), assignors to The Singer Company, Binghamton, N.Y.

Filed Jan. 7, 1980, Ser. No. 110,070
Int. Cl.³ G01J 1/20
U.S. Cl. 250—201 3 Claims



1. In a light beam transmission system, an improvement for reducing translational and angular beam deviation errors, comprising:

(a) expansion means disposed near the beginning of the path of light beam transmission, for increasing the cross sectional area of the light beam to produce an expanded beam;

(b) said expansion means including a first lens having at least one convex surface and a first predetermined focal length, f_1, disposed in the path of the light beam and coaxial therewith, a second lens having at least one convex surface and a second predetermined focal length, f_2, disposed in the path of the light beam, downstream of said first lens, coaxial therewith, and at a distance therefrom substantially equal to the sum of f_1 and f_2, wherein the amount by which the light beam is expanded is substantially equal to the ratio f_2/f_1, a third lens having at least one convex surface and a third predetermined focal length, f_3, disposed in the path of said expanded light beam and coaxial therewith, and a fourth lens having at least one convex surface and a fourth predetermined focal length, f_4, disposed in the path of the light beam, downstream of said third lens, coaxial therewith, and at a distance therefrom substantially equal to the sum of f_3 and f_4, wherein the amount by which the light beam is reduced is substantially equal to the ratio f_3/f_4;

(c) reduction means disposed near the end of the path of light beam transmission for decreasing the cross sectional area of the beam to produce a reduced beam;

(d) correction means, disposed in the path of said reduced beam, for reducing angular deflection of said reduced beam from a desired reduced beam transmission axis;

(e) said correction means including detection means for detecting the deviation of said reduced beam from said desired transmission axis and producing an output signal representative thereof, and deflection means responsive to said detection means for deflecting said reduced beam in accordance with said output signal by an amount which substantially aligns it with said desired transmission axis;

(f) said detection including beam splitting means for splitting said reduced beam into two parts, a first and a second, and for directing said two parts in two different directions having a substantially fixed space relation;

(g) a lateral effect quadrant photodetector in the path of said second part of said reduced beam for detecting its position relative to a predetermined desired position and providing said output signal representative of said detected position;

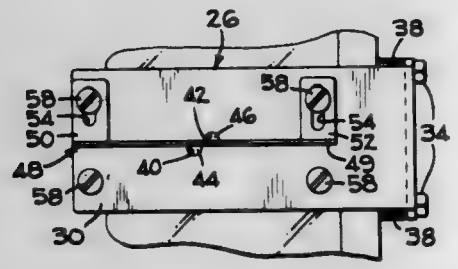
(h) focus means for focusing said second part of said reduced beam onto said lateral effect quadrant photodetector; and
(i) amplifier means for amplifying said output signal to thereby improve said deflection correction.

4,349,733

SUN TRACKER

Benjamin H. Beam, Sunnyvale, and Richard M. Beam, Los Altos, both of Calif., assignors to Beam Engineering, Inc., Sunnyvale, Calif.

Filed Jul. 3, 1980, Ser. No. 165,564
Int. Cl.³ G01J *1/20*
U.S. Cl. 250—203 R **9 Claims**



1. A sun tracker comprising a base, first and second photoelectric sensors mounted on said base in spaced apart relation, a substantially opaque plate mounted on said base between said sensors, said plate having first and second faces and a thickness between said faces sufficient to obscure partially said sensors and expose a portion of said first sensor outward of said first face and a portion of said second sensor outward of said second face, said plate extending outward of said base so that when said base is oriented such that said plate points toward the sun said sensors are substantially uniformly illuminated, said first face being a reflective face that confronts said first sensor so as to effect illumination of said first sensor when said base is oriented so that illumination from the sun impinges on the tracker from a direction between said reflective face and said base, and means responsive to a magnitude of illumination of said first sensor that is greater than the magnitude of illumination of said second sensor for moving said base toward a position at which said plate points toward the sun, said base moving means being deactivated when said sensors are substantially equally illuminated.

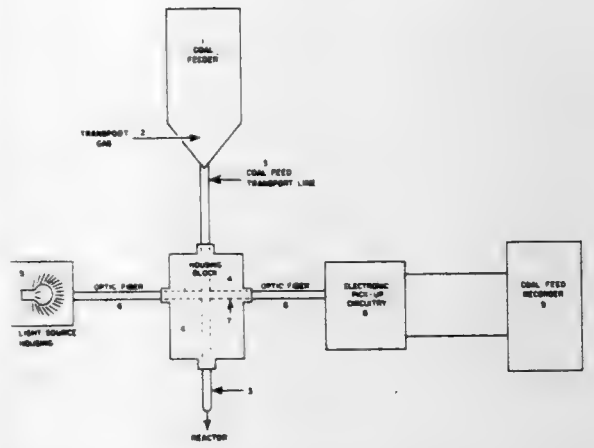
4,349,734

FLOW DETECTOR FOR SOLIDS

Frank T. DiGuiseppi, Trenton, N.J., assignor to Cities Service Company, Tulsa, Okla.

Filed Sep. 11, 1980, Ser. No. 186,107
Int. Cl.³ H01J *39/12*
U.S. Cl. 250—222 R **14 Claims**

1. An apparatus for detecting and measuring flow rates of solids material under high pressure, comprising:
(a) a first continuous conduit for the passage of said solids material therethrough, said first conduit (solids conduit) connected in an airtight manner to a solids inlet line and a solids outlet line respectively, at opposite ends of said solids conduit, in order to maintain high pressure therein;
(b) a second continuous conduit for the passage of light therethrough, said second conduit (light conduit) intersecting and communicating with said solids conduit in an airtight manner, said light conduit sealed from the outside atmosphere by a light conductive means located within said light conduit at opposite sides of said solids conduit in order to maintain a high pressure therein;
(c) a light source for transmitting light through the light conducting means, with a portion of the light being interrupted by the solids material passing through said solids conduit; and
(d) means for measuring and registering the difference in light intensity within said light conduit before and after the light is interrupted by the solids material, the difference in light intensity representative of the difference in



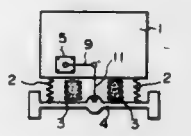
amount of solids material present in the path of the light, and thereby a measure of the flow rates of solids material through the solids conduit.

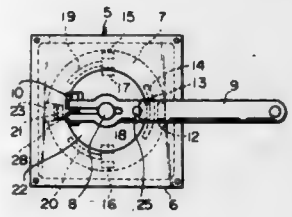
4,349,735

VEHICLE HEIGHT DETECTING DEVICE

Koichi Maeda, Kawasaki, Japan, assignor to Tokico Ltd., Kawasaki, Japan

Filed Jun. 11, 1980, Ser. No. 158,385
Claims priority, application Japan, Jun. 20, 1979, 54/84672[U]
Int. Cl.³ B60G *17/00*
U.S. Cl. 260—229 **2 Claims**



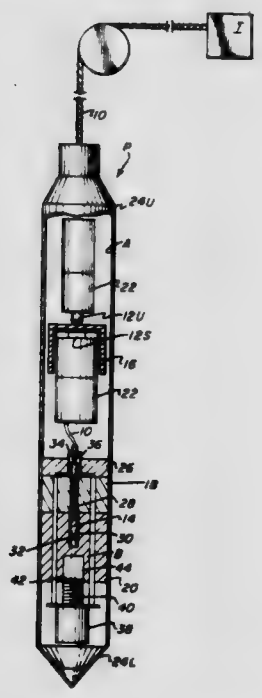


2. A relative motion detecting device, comprising: a casing, a rotatable member rotatable disposed in the casing member; a shaft secured to the rotatable member and projecting out of the casing member; a link arm provided outside of the casing member and connected to the shaft and adapted to be connected to a further element movable relative to the casing member; a detector means provided in the casing member for detecting the angular position of the rotatable member with respect to the casing member; retaining means consisting of a recess formed in one of said members and a projection formed on the other member and engagable in said recess, for blocking the rotation of the rotatable member when the rotatable member is displaced in one direction along the axis of the shaft; a spring biasing the rotatable member in said one direction; and a spacer plate removably interposed between the casing member and the link arm for preventing the rotatable member from the axial displacement in said one direction.

4,349,736
METHOD FOR LOCATING AND EVALUATING SUBSURFACE URANIUM DEPOSITS HAVING AN APPARENT GRADE OF UP TO APPROXIMATELY 5% CONTAINED U_3O_8

Bob R. Miller, 435 W. Fremont Dr., Littleton, Colo. 80123

Continuation-in-part of Ser. No. 842,596, Oct. 17, 1977, abandoned. This application Oct. 3, 1979, Ser. No. 81,453
Int. Cl.[3] G01D *18/00*; G01V *5/00*
U.S. Cl. 378—83 4 Claims



1. The method of locating and evaluating subsurface uranium-bearing ore bodies which comprises the steps of: independently determining the natural gamma radiation above approximately 60 Kev and above approximately 400 Kev emanating from an unknown radioactive formation to establish a ratio thereof, comparing said ratio and the apparent grade of uranium represented thereby with a similarly derived ratio and actual grade determined from a known uranium-bearing ore body in radiometric equilibrium to ascertain if a condition of apparent disequilibrium exists in the unknown formation, irradiating the unknown formation with a gamma ray source of an energy level effective to induce X-ray fluorescence in uranium and determining the total of the natural radiation and the induced radiation resulting therefrom above a level of approximately 60 Kev, comparing said total with similar data derived from a known uranium-bearing ore body to ascertain if any substantial attentuation of the induced radiation has taken place or if measurable X-ray fluorescence is observed, and determining the approximate actual concentration of U_3O_8 present in said unknown formation based upon the observed attenuation of the induced radiation or, alternatively, the resultant X-ray fluorescence caused thereby.

4,349,737
DETERMINATION OF MOVABLE OIL SATURATIONS

Roger L. Smith, Tulsa, and Robert P. Murphy, Bixby, both of Okla., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Jul. 14, 1980, Ser. No. 167,878
Int. Cl.[3] G01V *5/00*
U.S. Cl. 250—259 6 Claims

1. A method of logging a subsurface formation containing formation oil and water penetrated by a wellbore which comprises:

a. producing said oil and water from said formation into said wellbore at a sufficiently low rate that the pressure in the formation adjacent to the wellbore approaches the pressure in the formation remote from the wellbore,

b. running a pulsed neutron log,

c. injecting crude oil into said formation until the response of a pulsed neutron log is essentially unchanged with continued injection of said crude oil,

d. injecting chlorinated hydrocarbon into said formation until response of a pulsed neutron log is essentially unchanged with continued injection of said chlorinated hydrocarbon,

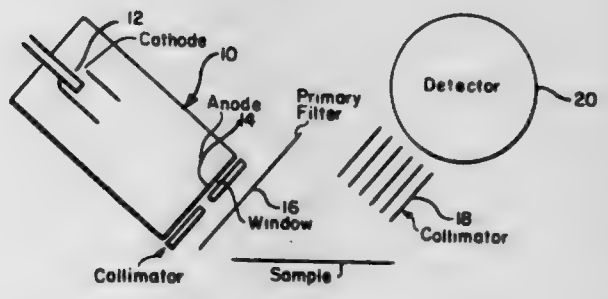
e. injecting an aqueous solution of known salinity and known neutron capture cross section into said formation until response of a pulsed neutron log is essentially unchanged with continued injection of said aqueous solution, and

f. injecting fresh water into said formation until response of a pulsed neutron log is essentially unchanged with continued injection of said fresh water, said fresh water having a known capture cross section which is sufficiently lower than the neutron capture cross section of said aqueous solution.

4,349,738
METHOD OF MEASURING THE CONTENT OF GIVEN ELEMENT IN A SAMPLE BY MEANS OF X-RAY RADIATION

Nils J. Baecklund, Sunnevik, S-572 00 Oskarshamn, Sweden

Filed Jul. 22, 1980, Ser. No. 171,147
Int. Cl.[3] G01N *23/20*; G21K *1/00*
U.S. Cl. 378—49 1 Claim



1. A method of determining the content of a given element in a sample by means of X-ray radiation, by determining the intensity of the X-ray fluorescence radiation of said element, comprising the steps of irradiating the sample with primary radiation containing wavelengths which are shorter than the absorption edges or discontinuities of those elements in the sample which may have a disturbing influence but longer than the absorption edge of the element to be determined, thereby to excite from the sample a first composite fluorescence radiation; measuring said first composite radiation; thereafter irradiating said sample with primary radiation which includes at least wavelengths which are shorter than said absorption edge or discontinuity of the element whose quantity is to be measured, thereby to excite from said sample a second composite fluorescence radiation; the primary radiation of said longer wavelength being of a wavelength λ, and the primary radiation of said shorter wavelength being a combined radiation of wavelength λ and $\lambda - d$, in which d is the difference in wavelength between said shorter and said longer wavelengths, measuring the intensity of said second composite radiation; subtracting the intensity of the first composite radiation from the intensity of the second composite radiation, and calculating the difference in intensity therebetween.

4,349,739
MICRO-CALCIFICATION DETECTION

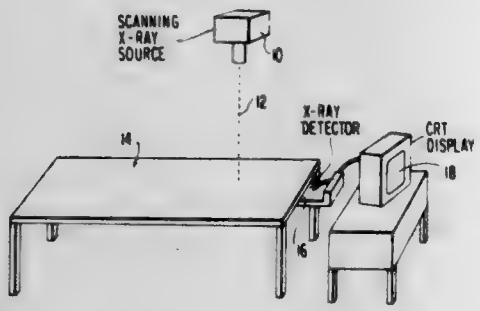
Martin Annis, Cambridge, Mass., assignor to American Science and Engineering, Inc., Cambridge, Mass.

Filed Jul. 28, 1980, Ser. No. 172,885
Int. Cl.[3] A61B *6/00*; H04N *7/18*
U.S. Cl. 378—99 14 Claims

1. A micro-calcification detection method for use with an X-ray scanning system of the type comprising an X-ray beam

source or X-ray fan source, detector means for detecting changes in the intensity of said X-ray beam or X-ray fan during the X-ray scanning of a subject, and a visual display created by the resolution of detected changes in X-ray intensity into picture elements on said visual display,

the method being operative to indicate the presence of ob-



jects in the subject too small for satisfactory resolution into picture elements on said visual display and comprising the steps of:

analyzing said detected changes for X-ray intensity changes attributable to said objects, and

generating a bright dot on said visual display when such a change is found.

4,349,740

APPARATUS FOR DISPLAYING FLUOROSCOPIC TOMOGRAPHIC IMAGES OF THE BODY

Peter Grassmann; Kurt Dietz, and Friedrich Meinel, all of Erlangen, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

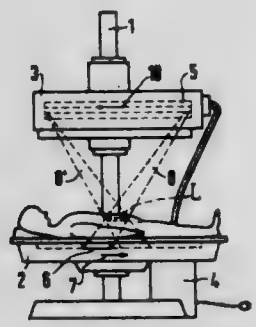
Continuation of Ser. No. 861,277, Dec. 16, 1977, abandoned.

This application Jan. 11, 1980, Ser. No. 111,399

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1976, 2658533

Int. Cl.³ A61B *6/00*

U.S. Cl. 378—25 **13 Claims**



1. An apparatus for obtaining body layer images with x-ray or similarly penetrating rays, said apparatus comprising radiation source means and a recording unit operable to produce a scanning operation in which a beam coming from the source means penetrates the subject to be examined and the beam emerging from the body is caused to act on the recording unit, the source means comprising a row of x-ray tubes lying in a common plane and each being switched on for a time period required to operate the recording unit, the x-ray tubes being separated from one another and being disposed for scanning a longitudinal body layer parallel to said common plane by sequential activation thereof, the cathode of each tube having a switching grid for controlling emission therefrom, and means for sequentially actuating said grids in synchronism with a shifting of the recording unit to effect emission of an x-ray beam from the x-ray tubes in said row in such a sequence that the longitudinal body layer parallel to the plane of said sources is scanned while all other layers are blurred.

4,349,741

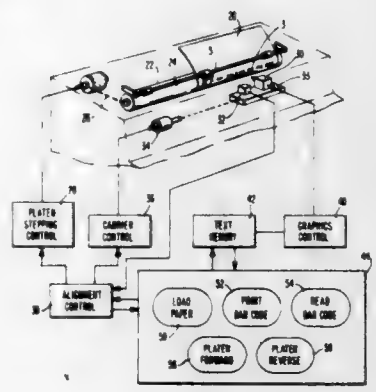
EAR CODE WITH ALIGNMENT MARK

Kevin L. Bobart, Lexington, Ky., and Gregory A. Flurry, Pleasantville, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 20, 1980, Ser. No. 198,311

Int. Cl.³ G06K *7/10*

U.S. Cl. 250—568 **11 Claims**



1. The method of recording information using a printer capable of printing both bar code information having separated bars and a closed alignment symbol extending in length at least the width of several of said bars comprising the steps of printing said closed symbol with said printer, spacing said printer relative to said closed symbol printed, and printing bar code information with said printer wherein the improvement comprises scanning for the closed symbol printed after it is printed with a scanner which is mounted for movement with the printer to determine the location of an edge of said symbol, then determining a correction factor defining the difference between the location of printing by said printer and the location of scanning by said scanner, then printing bar code information with said printer, then positioning the scanner generally near the center of said printed bar code by use of said correction factor and reading said bar code with said scanner.

4,349,742

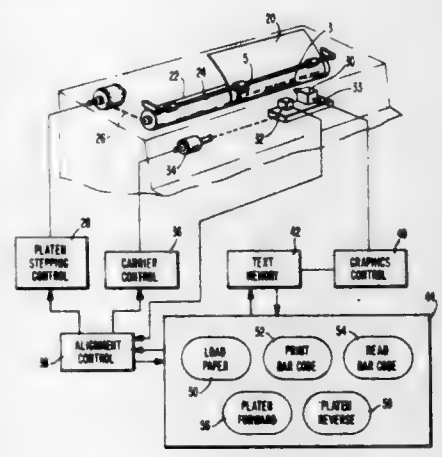
BAR CODE WITH ALIGNMENT MARK

Gregory A. Flurry, Pleasantville, N.Y.; Michael L. Krieg, and David W. Phillips, both of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 20, 1980, Ser. No. 198,337

Int. Cl.³ G06K *7/10*

U.S. Cl. 250—568 **3 Claims**



1. A method of recording and subsequently sensing information using a printer capable of printing both bar code information having separate bars and a closed alignment symbol extending in length at least the width of several of said bars comprising the steps of

(1) printing said closed symbol with said printer,

(2) spacing said printer relative to said closed symbol printed,
(3) printing bar code information with said printer,
(4) subsequently scanning the area of said printing with a mechanical sensor until said closed symbol is sensed, and then
(5) spacing a mechanical sensor a predetermined distance from the position at which said closed symbol is sensed to align the sensor for sensing said bar code printed.

4,349,743

SOLID-STATE IMAGING DEVICE

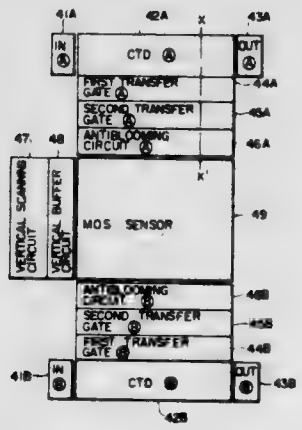
Shinya Ohba; Shoji Hanamura, both of Kokubunji; Toshifumi Ozaki, Tokyo; Masaharu Kubo, Hachioji; Masaaki Nakai, Kodaira; Kenji Takahashi, Kodaira; Masakazu Aoki, Kodaira; Iwao Takemoto, Tokyo; Haruhisa Ando, Hachioji, and Ryuichi Izawa, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 14, 1980, Ser. No. 206,865

Claims priority, application Japan, Nov. 14, 1979, 54-157030[U]

Int. Cl.³ H01L *27/14*

U.S. Cl. 250—578 **10 Claims**



1. In a solid-state imaging device wherein a photosensor part is constructed of a MOS-type sensor in which picture elements each consisting of a photodiode and a switching insulated-gate field effect transistor are arrayed in the form of a matrix, signal outputs of the respective picture elements of said MOS-sensor are transferred to a CTD (Charge Transfer Device) through signal output lines, and the signal outputs are read out by said CTD; a solid-state imaging device characterized by comprising means for supplying bias charges to said CTD, and signal-transfer means for causing the bias charges to get into said signal output lines so as to mix them with signal charges and for causing the mixed signal charges to get back into said CTD.

4,349,744

SYSTEM FOR OPERATING MULTIPLE GAS TURBINES FOR COORDINATED DEAD LOAD PICKUP

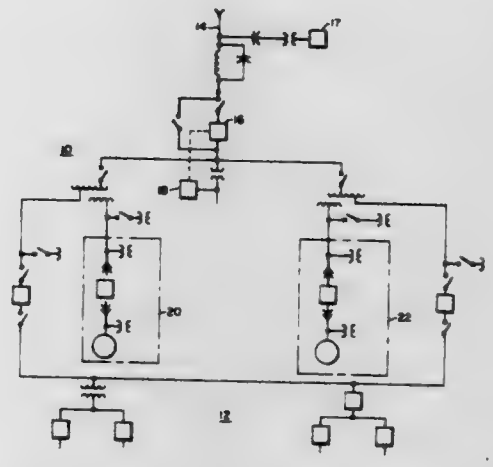
John F. Reuther, Penn Hills Township, Allegheny County; Stephen J. Jennings, Radnor Township, Delaware County, and Robert A. Yannone, Aldan, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 703,737, Jul. 9, 1976. This application Apr. 21, 1980, Ser. No. 142,520

Int. Cl.³ H02J *3/08*; H02P *9/04*

U.S. Cl. 290—40 C **12 Claims**

1. A system for supplying power to a dead load bus comprising a first gas turbine-generator unit and at least a second gas turbine generator unit, a first generator breaker connected between said first unit and a plant auxiliary bus and a second generator breaker connected between said second unit and the auxiliary bus, first fuel control means for controlling the speed of said first unit and second fuel control means for controlling the speed of said second unit, first and second means for closing said first and second generator breakers, means for generating a dead load mode select signal, means for operating said first and second fuel control means and said first and second breaker control means in response to a dead load mode select signal to accelerate said units simultaneously to a higher than normal speed condition and to close one of the breakers to the auxiliary bus and then sequentially operate the other unit to synchronize the other breaker to the auxiliary bus, said operating means including logic means for selecting one of said units as the lead unit and for shifting the lead between said units



under predetermined conditions, and the first generator breaker closed being the breaker associated with the lead unit, means for connecting the auxiliary bus to the dead load bus after the generator units have been synchronized with each other, and means for operating said fuel control means to control the frequency of power generation and to provide for load sharing between said units during and after the dead load transient.

4,349,745

TESTING CIRCUIT FOR FUEL BURNER CONTROLS

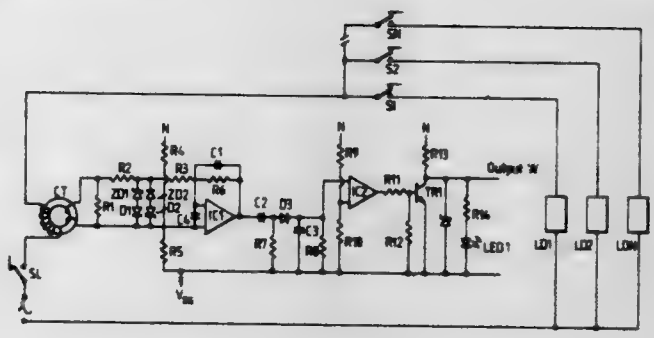
Keith J. G. Adams, Solihull; Alan Brightwell, Stourbridge; Barry L. Price, Solihull; Stuart M. Pegler, Solihull, and Paul Weall, Solihull, all of England, assignors to British Gas Corporation, London, England

Filed Mar. 3, 1981, Ser. No. 240,006

Claims priority, application United Kingdom, Nov. 6, 1980, 8035732

Int. Cl.³ H02J *1/08*

U.S. Cl. 307—12 **8 Claims**



1. A control system comprising a plurality of switching devices connected in parallel with one another across a power supply, each switching device being arranged to connect or disconnect said power supply to one of a corresponding plurality of load devices, a further switching device connected between said plurality of switching devices and said power supply to isolate said switching devices and their respective load from said power supply and testing means connected between said further switching device and said plurality of switching devices wherein said testing means includes discriminating means for sensing whether the circuit between said plurality of loads and said power supply is complete or open and indicating

means for indicating whether the circuit between said plurality of loads and said power supply is complete or open.

4,349,746

FREQUENCY GENERATOR

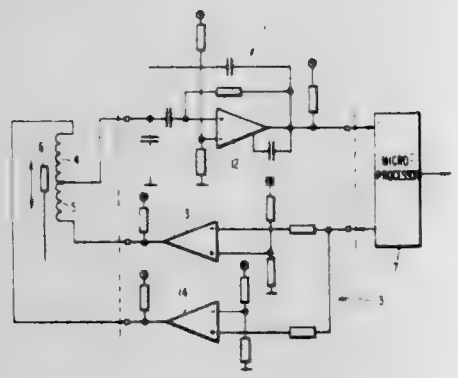
Horst Grossner, Berglen; Günter Weiger, Esslingen, and Günter Schwegler, Weinstadt, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Oct. 1, 1980, Ser. No. 192,722

Claims priority, application Fed. Rep. of Germany, Oct. 3, 1979, 2940083

Int. Cl.³ G01R *23/14*

U.S. Cl. 307—106 **12 Claims**



1. A frequency generator comprising a first generator circuit and a second generator circuit, the frequencies of these circuits being variable by a parameter, with two coils arranged coaxially on one of linear and curved tubular coil holders, the inductances of these coils being variable by a core displaceable in the coil holder, a combined generator module connected by a control circuit and a changeover switch alternatingly with one of the two coils between which coils a short-circuit ring is arranged in an axially normal plane, for the duration of a specific number of pulses of the generator circuit formed from the coil and the generator module; and control regulating means for calculating from certain pulses of successive pulse sequences of the two generator circuits the frequencies (f1; f2) and their difference (f1—f2) and a corrected value thereof to indicate the corrected frequency difference and for transmitting a signal proportional thereto.

4,349,747

SOUND RESPONSE TIME SWITCH FOR FLOWING CURRENT FOR A PREDETERMINED PERIOD OF TIME

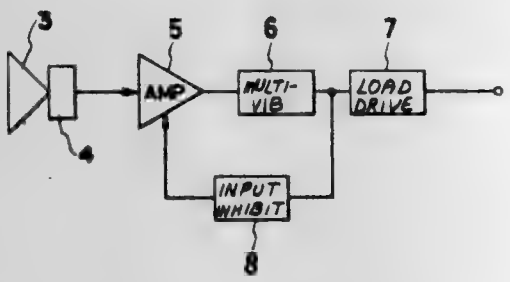
Bungo Hasegawa, Machida, Japan, assignor to Ozen Corp., Machida, Japan

Filed Jan. 21, 1981, Ser. No. 226,937

Claims priority, application Japan, Jan. 30, 1980, 55/9736

Int. Cl.³ H01H *35/00*; H04R *17/00*

U.S. Cl. 307—117 **10 Claims**



1. A sound actuated switching apparatus to allow an electrical current to flow for a predetermined period of time comprising:

a vibratory element adapted to be vibrated by sound;

means connected to said vibratory element for converting vibrations of said vibratory element into electrical signals;

means, electrically connected to said converting means, for amplifying said electrical signals from said converting means;

load driving means for operating an electrical load;

means, connected to said amplifying means, for allowing an electrical current to flow to said load driving means for a predetermined period of time after the initiation of said electrical signals from the converting means; and

input inhibit means, responsive to said current flow allowing means, for inhibiting an output from said amplifying means for a predetermined period of time after the flow of electrical current to said load driving means has terminated.

4,349,748

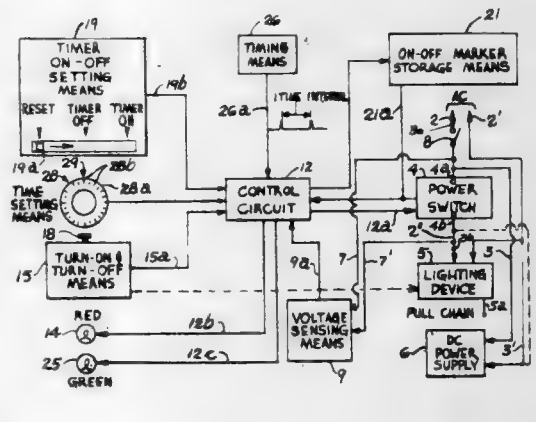
TIMER AND POWER CONTROL SYSTEM

Richard Goldstein, Northbrook, and Louis W. Schornack, Niles, both of Ill., assignors to Dynascan Corporation, Chicago, Ill.

Filed Mar. 21, 1979, Ser. No. 22,453

Int. Cl.³ H01H *43/04*

U.S. Cl. 307—132 E **38 Claims**



1. A twenty-four hour repeat cycle home lighting timer system comprising: a lighting device; a timer power input terminal; a load device-connecting terminal; power switch means coupled between said timer power input and load device-connecting terminals; means connecting said load device-connecting terminal to said lighting device; said power switch being operable to circuit closing and opening conditions which respectively effect coupling and de-coupling of said load device-connecting terminal to and from said lighting device; manually operable light turn-on and turn-off means operable successively to light turn-on and turn-off conditions which respectively normally operate said power switch means to said circuit closing and circuit opening conditions; manually responsive timer condition setting means settable to at least timer-off and timer-on and reset conditions; storage means having respective storage locations assigned to various successive time intervals over a twenty-four hour programming period and in which light turn-on and turn-off markers can be respectively placed or retained; synchronous timing and storage location accessing means for continuously synchronously accessing the storage locations containing the markers for the various time intervals involved; and control means responsive first to the setting of said setting means from said reset to either said turn-on or turn-off condition and then to the operation of said manually operable light turn-on and turn-off means only during the first twenty-four hour programming period for storing or retaining said turn-on and turn-off markers under control of said accessing means in appropriate storage locations of said storage means only during the first twenty-four hour programming period so that the timer system is programmed to effect automatic control of said lighting device in accordance with the actual normal pattern of operation of said manually operable turn-on and turn-off means only during such period, and means for operating said power switch means in accordance with the synchronously accessed markers in said storage locations of said storage means when said setting means is in said timer-on condition and for preventing control

of said power switch means by said marker when said setting means is in said timer-off condition.

4,349,749

INTEGRATED CIRCUIT FOR TRANSFERRING COMPLEMENTARY CHARGE PACKETS BETWEEN TWO CHARGE TRANSFER DEVICES

Hans-Joerg Pfleiderer, Zorneding, and Heiner Klar, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

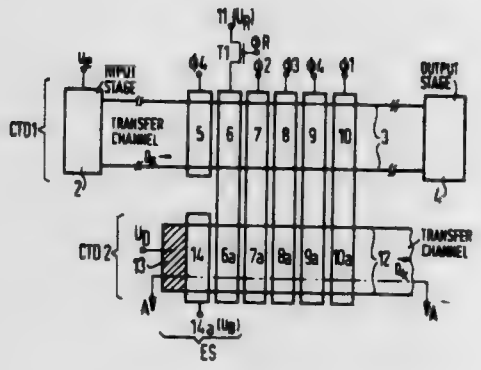
Filed Jul. 11, 1980, Ser. No. 168,650

Claims priority, application Fed. Rep. of Germany, Sep. 11, 1979, 2936731

Int. Cl.³ G11C *19/28*; H01L *29/78*

U.S. Cl. 307—221 D

3 Claims



1. In a circuit integrated on a doped semiconductor body having first and second charge transfer devices each having a transfer channel in which charge packets are transferred by clock pulse voltages respectively applied to successive electrodes disposed above said transfer channels, an improvement for generating a charge packet in said second charge transfer device which is complementary to a charge packet in said first charge transfer device comprising:

a switching transistor connected to a reference voltage source and having a control input connected to a pulsed reset voltage;

at least one resettable gate electrode disposed above each said transfer channel and separated from said semiconductor body by an electrically insulating layer, each said resettable gate being connected to said reference voltage source through said switching transistor with pairs of said resettable gates respectively disposed above each said transfer channel being electrically connected, and said resettable gate electrode disposed above the transfer channel of said second charge transfer device forming a final electrode in an input stage for said second charge transfer device, said input stage generating a plurality of charge packets of constant size,

whereby the appearance of a charge packet beneath said resettable gate electrode in said first charge transfer device decreases the potential beneath the resettable gate electrode above said second charge transfer device such that a potential well is formed which is filled with charge carriers forming a complementary charge packet in said second charge transfer device.

4,349,750

SWITCHING CIRCUIT COMPRISING A PLURALITY OF INPUT CHANNELS AND AN OUTPUT CHANNEL

Martinus F. A. M. Geurts, Nijmegen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 14, 1980, Ser. No. 111,579

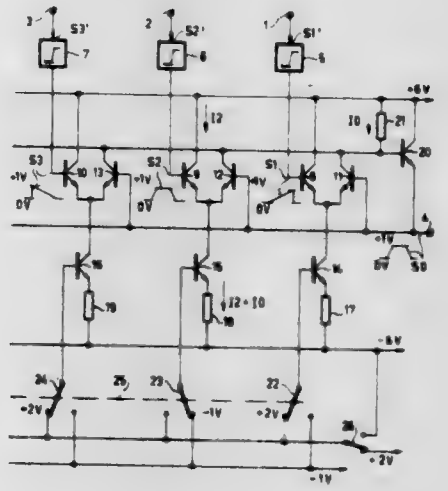
Claims priority, application Netherlands, Feb. 16, 1979, 7901270

Int. Cl.³ H03K *17/30, 17/60*

U.S. Cl. 307—243

2 Claims

1. A switching circuit comprising a plurality of input channels and an output channel, an associated switching device having been provided between the output channel and each input channel, each switching device comprising an emitter-coupled pair of transistors having a switchable transistorized current source in the emitter lead, the emitter of said transistorized current source being connected to a supply voltage through a resistance and the collector thereof connected to the emitter of said switching device, the first and the second transistor, respectively, of each pair having its base connected to the associated input channel and to the output channel, respectively, the collectors of said second transistors of each pair being interconnected, the output channel comprising a transistor the emitter of which is connected to the output of the output channel and the base to the interconnected collectors of the said second transistors in the switching devices, the junction point of said output transistor and said collectors of said second transistor of each pair being connected via a resistor to a voltage-carrying terminal which is further connected to the interconnected collectors of said first transistors in the switching devices, the switching circuit furthermore comprising a selection switch by means of which at all times only one of said transistorized current sources can be switched to the current-carrying state, said bases of said transistors which are arranged as switchable transistorized current sources are connectable via the selection switch to a terminal, for carrying a d.c. voltage having a value at which the transistorized current source can be driven to the saturated state but can, however, not carry current because the signal voltages present at the base of said first and second transistors in the switching devices always cut-off these two transistors.



4,349,751

CONTROL CIRCUITRY USING A PULL-DOWN TRANSISTOR FOR HIGH VOLTAGE SOLID-STATE SWITCHES

Adrian R. Hartman, New Providence, and Peter W. Shackle, Bridgewater, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 11, 1980, Ser. No. 120,282

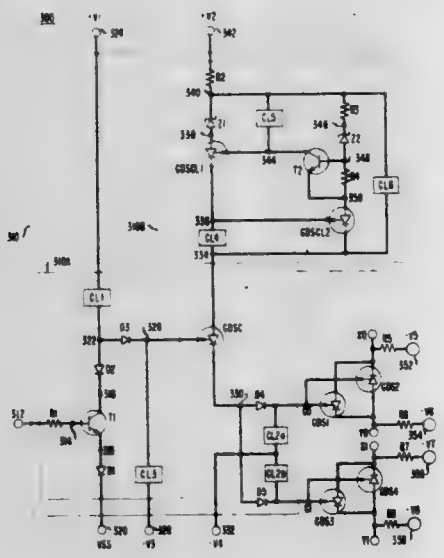
Int. Cl.³ H03K *17/60*

U.S. Cl. 307—252 A

3 Claims

1. Circuitry for use with a first switching device (GDS1) of the type comprising a semiconductor body (16) a bulk portion of which is of a relatively high resistivity, a first region (18) of a first conductivity type and of a relatively low resistivity, a second region (24) of a second conductivity type opposite that of the first conductivity type, the first (18) and second (24) regions being connected to output terminals of the switching device, a gate region (20) of the second conductivity type, the gate region (20) being coupled to a control terminal of the switching device (GDS1), the first (18), second (24) and gate (20) regions being mutually separated by portions of the bulk of semiconductor body (16), the parameters of the device (GDS1) being such that, with a first voltage applied to the control terminal of the first switching device (GDS1), a potential is

established within a cross-sectional portion of the bulk of the semiconductor body (16) which is substantially different from that of the potential of the first (18) and second (24) regions and which prevents current flow between the first (18) and second (24) regions, and that, with a second voltage applied to the control terminal of the first switching device (GDS1) and with appropriate voltages applied to the output terminals (X0, Y0) of the first switching device (GDS1), a relatively low resistance current path is established between the first (18) and second (24) regions by dual carrier injection, a second switching device (GDSC) of the same type as said first switching device, a second output terminal (330) of the second switching device (GDSC) being coupled to the control terminal of the first switching device (GDS1), a first branch circuit (310A)



coupled to the second switching device (GDSC) for controlling conduction between the first (18) and second (24) regions thereof, Characterized by

a second branch circuit (310B) coupled to the second switching device (GDSC) and being adapted to be coupled to a second potential source (+V2);

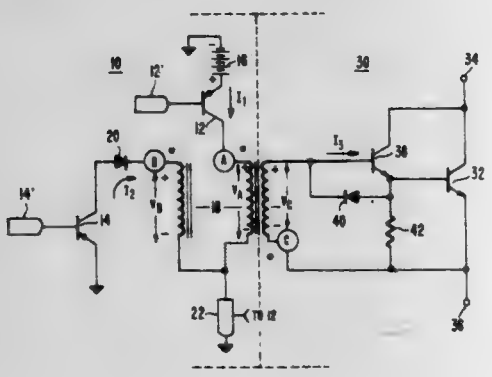
the second branch circuit (310B) being adapted to supply up to a preselected maximum current level to the second switching device (GDSC) to facilitate the switching of the first switching device (GDS1) from an ON state to an OFF state and then thereafter to reduce the current level to a lower level and then to repeatedly and automatically increase and decrease the current flowing therethrough until the first switching device is set to the OFF state.

4,349,752

MAGNETIC COUPLE DRIVE CIRCUIT FOR POWER SWITCHING DEVICE

Luciano Forte, Spring Valley, N.Y., assignor to Reliance Electric Company, Cleveland, Ohio

Filed Jul. 28, 1980, Ser. No. 172,669
Int. Cl.³ H03K *17/60, 3/26*
U.S. Cl. 307—254 **7 Claims**



1. A magnetically coupled drive circuit for low power control of high current carrying switching devices, said drive circuit comprising:

a magnetic transformer having a primary winding and first and second secondary windings;

a first and second control transistor, said first control transistor being coupled between a source of voltage and an input to the primary winding of the magnetic transformer, said second control transistor being coupled between an input to the first secondary of the magnetic transformer and ground, each said transistor being independently responsive to individual control signals;

diode means interposed between the second control transistor and the input to the first secondary of the magnetic transformer;

current sensing means connected between commonly coupled terminals of the primary and first secondary of the magnetic transformer and ground, said sensing means providing a control signal to said first control transistor rendering same non-conductive when sensing a predetermined current maximum in the magnetic transformer's primary, and rendering same conductive when sensing a predetermined current minimum;

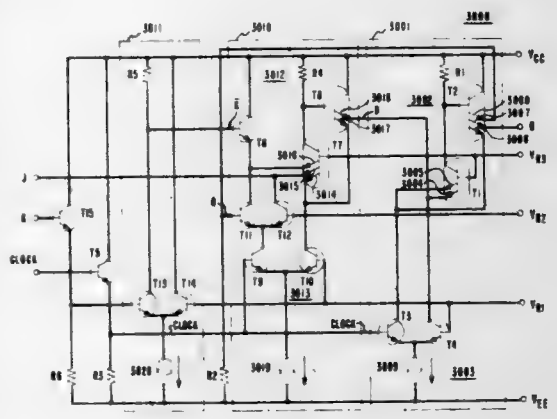
high current switching means including at least one switching transistor having a base and emitter electrode coupled to the second secondary of the magnetic transformer whereupon said first and second control transistors concurrently receive a turn-off non-conductive control signal, a drive signal is provided to said switching means of sufficient magnitude to render same substantially conductive.

4,349,753

EMITTER FUNCTION LOGIC FLIP-FLOP CIRCUIT

Robert J. Scavuzzo, Springfield Township, Bucks County, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 29, 1980, Ser. No. 191,395
Int. Cl.³ H03K *3/289, 19/086*
U.S. Cl. 307—272 A **7 Claims**



1. A flip-flop circuit for performing the J-K logic function comprising:

a slave section including a D-latch having an output terminal for providing an output signal, a D input terminal, a clock input terminal for receiving a clock signal, and means coupling the clock signal to the clock input terminal, the D-latch being disabled when the clock signal is at a level representative of a first logic state.

a master section comprising: first and second voltage supply terminals; a latch circuit including a first transistor having first, second and third emitter electrodes, a base electrode and a collector electrode, and a second transistor having a first emitter electrode coupled in common with the first emitter electrode of the first transistor, a second emitter electrode coupled to the D input terminal of the D-latch of the slave section, a base electrode coupled to the collector electrode of the first transistor, and a collector electrode, first resistance means coupled between the collec-

tor electrode of the first transistor and the first voltage supply terminal, and means coupling the collector electrode of the second transistor to the first voltage supply terminal; a first current switch including a third transistor having emitter, base, and collector electrodes, and a fourth transistor having an emitter electrode coupled in common with the emitter electrode of the third transistor, a base electrode and a collector electrode; first current source means coupled between the commonly coupled emitter electrodes of the third and fourth transistors and the second voltage supply terminal; means coupling the collector electrode of the third transistor to the second and/or third emitter electrodes of the first transistor; means coupling the collector electrode of the fourth transistor to the commonly coupled emitter electrodes of the first and second transistors; means coupling a first reference voltage to the base electrode of first transistor; means coupling a clock signal to the base electrode of one of the third and fourth transistors and coupling a second reference voltage to the base electrode of the other of the third or fourth transistors for driving the third transistor to the OFF state and the fourth transistor to the ON state when the clock signal is at a level representative of a second logic state;

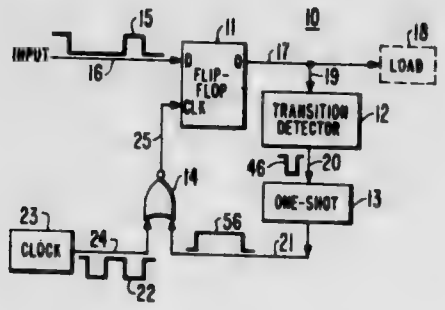
characterized in that the means coupling the collector electrode of the third transistor to the second and/or third emitter electrodes of the first transistor comprise a second current switch including a fifth transistor having emitter, base, and collector electrodes, and a sixth transistor having an emitter electrode coupled in common with the emitter electrode of the fifth transistor and coupled to the collector electrode of the third transistor, a base electrode, and a collector electrode, means coupling the collector electrode of the fifth transistor to the third emitter electrode of the first transistor; means coupling the collector electrode of the sixth transistor to the second emitter electrode of the first transistor and there are included means coupling the output signal from the D-latch of the slave section to the base electrode of one of the fifth and sixth transistors; means coupling a third reference voltage to the base electrode of the other of the fifth and sixth transistors; means coupling a J input signal to the second emitter electrode of the first transistor; and means coupling a K input signal to the third emitter electrode of the first transistor.

4,349,754

ACTUATION RATE LIMITER

Jeffrey F. Bull, Voorhees, N.J., assignor to RCA Corporation, New York, N.Y.

Filed May 27, 1980, Ser. No. 153,631
Int. Cl.³ H03K *17/16, 17/26*
U.S. Cl. 307—443 **9 Claims**



1. An apparatus for limiting the rate at which transitions on an input signal are applied to the output thereof, said apparatus comprising:

means responsive to said input signal for providing upon the occurrence of clock signals said input signal to said output,

generating means coupled to said output of said first-mentioned means for generating a signal pulse of a first predetermined duration in response to particular changes of said input signal at said output,

coupling means for providing said clock signals having a period less than said first predetermined duration to said first-mentioned means, and

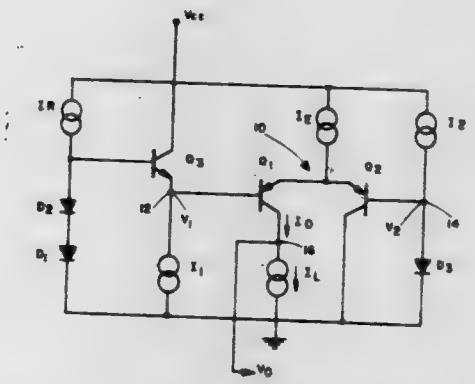
means coupled to said coupling means and responsive to said signal pulse for inhibiting the application of said clock signals to said first-mentioned means for the duration of said signal pulse and thereby inhibiting said input signal out of said first-mentioned means for said duration.

4,349,755

CURRENT PRODUCT LIMIT DETECTOR

Edward C. Bee, Sunnyvale, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Feb. 11, 1980, Ser. No. 120,509
Int. Cl.³ G06G *7/12, 7/16*
U.S. Cl. 307—492 **5 Claims**



1. A circuit for detecting when the product of two independent currents equals or exceeds a predetermined upper limit, comprising:

a load current source for providing a load current for defining said predetermined upper limit;

a differential amplifier including first and second transistors having their emitters connected in common to an emitter current source, wherein the collector of the first transistor is connected to the load current source for providing an output signal at said collector that changes state when the collector current is not less than said load current;

first means for providing a voltage signal at the base of the first transistor that is representative of the natural logarithm of the reciprocal of a first independent current; and

second means for providing a voltage signal at the base of the second transistor that is representative of the natural logarithm of a second independent current;

whereby said collector current of the first transistor is proportional to the natural logarithm of the product of said first and second independent currents;

wherein the first means comprises:

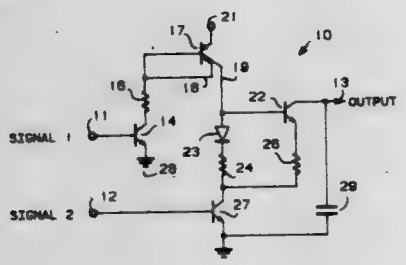
a third transistor connected as an emitter follower transistor with its emitter connected in common with the source of said first independent current and the base of the first transistor; a reference current source connected to the base of the third transistor; and

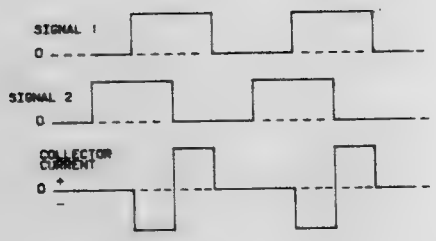
a first semiconductor junction device connected to the base of the third transistor for biasing the third transistor to provide a voltage at the base of the first transistor that is representative of the logarithm of the reciprocal of said first independent current.

4,349,756
PHASE DETECTOR WITH LOW OFFSETS

Anthony D. Newton, Geneva, Switzerland, assignor to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 17, 1981, Ser. No. 235,346
Int. Cl.³ H03K *5/26*; G01R *25/00*
U.S. Cl. 307—514 **10 Claims**



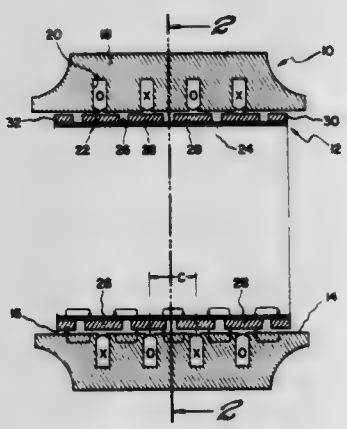


1. A phase detector circuit with low offsets and having a first signal input, a second signal input and an output, the phase detector comprising: a first transistor having a control electrode coupled to the first input, having a first electrode coupled to a reference voltage terminal, and having a second electrode; current source means for providing a current and being controlled by the first transistor and being coupled to the second electrode of the first transistor; a current mirror coupled to the current source means for receiving the current from the current source means, the current mirror being coupled to the output; and a second transistor having a base electrode coupled to the second input, having an emitter electrode coupled to the reference voltage terminal, and having a collector electrode coupled to the current mirror whereby an in-phase condition at said phase detector inputs causes the current from said current source to be mirrored by said current mirror.

4,349,757
LINEAR OSCILLATING ELECTRIC MACHINE WITH PERMANENT MAGNET EXCITATION

Suresh K. Bhate, Schenectady, N.Y., assignor to Mechanical Technology Incorporated, Latham, N.Y.

Filed May 8, 1980, Ser. No. 148,040
Int. Cl.³ H02K *33/00*
U.S. Cl. 310—15 **11 Claims**

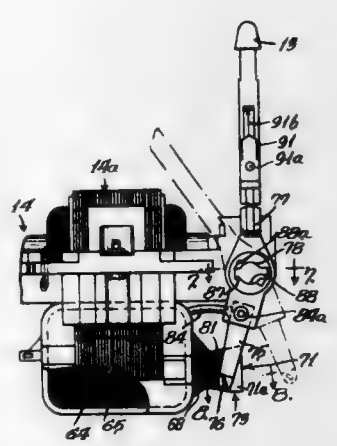


1. A permanent magnet linear power convertor, comprising:
a body formed of magnetically permeable material and having a longitudinal axis;
a stator having a longitudinal axis and mounted concentrically with respect to said body, said stator having a plurality of annular spaces formed therein;
a plurality of coils, one disposed in each of said annular spaces and having leads for connection to an AC source or an electrical load;
means for mounting said stator and said body for relative axial reciprocating movement;
said stator having a surface facing said body;
each of said annular spaces opening in said surface in a narrow circumferential slot of a predetermined axial width;
said body having a surface facing said stator surface; a plurality of permanent magnets mounted on said body surface, said magnets having alternately oriented radial polarities, said magnets being spaced apart on centers equal to the corresponding spacing between said coils and with an axial gap about equal to the axial width of said circumferential slots;
whereby relative axial reciprocation of said body and said stator will cause a reversal of the flux linking said coils, while the flux in said body remains substantially constant.

4,349,758
MODULAR HAND MIXER

Edward J. Grant, Jr., Chicago; William H. Scott, Lombard, and John M. Stipanuk, Glen Ellyn, all of Ill., assignors to Sunbeam Corporation, Chicago, Ill.

Filed Jan. 11, 1980, Ser. No. 111,412
Int. Cl.³ H02K *11/00*
U.S. Cl. 310—68 A **9 Claims**



1. In combination, a modular universal motor and drive unit comprising a one-piece frame having spaced rails defining a space therebetween, a shaft having a motor armature and commutator means provided thereon, bearing means on said frame supporting the shaft at spaced locations longitudinally of said frame with said armature and said commutator means disposed in said space, a field coil wound on a bobbin mounted on said frame and having a speed control associated therewith including an upwardly projecting control lever pivotally mounted on said frame, output drive means suppported by said frame, means operably connecting the shaft to power said output drive means, commutator brushes of depletable material movably supported in guide means defined by the frame to cooperate with said commutator means, and four laterally disposed modular-unit support means provided on said frame at four spaced corners thereof; and a housing enclosing and supporting said modular unit with said output drive means exposed and said control lever projecting therefrom, said housing being formed by two vertically disposed housing halves having peripheral edges that abut along a parting line, four complementary support means formed on said housing halves, two on each housing half and cooperating with said four modular-unit support means to provide sole support of

said modular unit therewithin, and means holding said housing halves together with said peripheral edges abutted.

4,349,759

COMMUTATOR FOR ELECTRICAL MACHINES

Niklaus Arnold; Josef Schmidli, both of Baden, and Peter Spiess, Zug, all of Switzerland, assignors to BBC Brown, Boveri & Company, Ltd., Baden, Switzerland

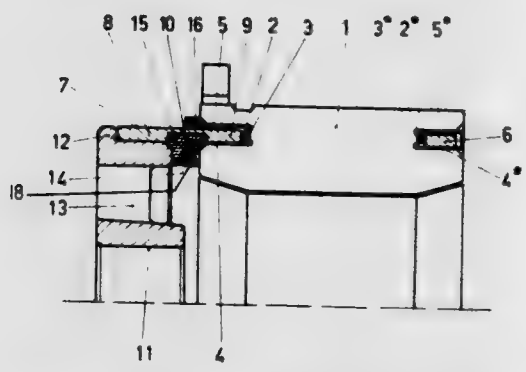
Filed Dec. 9, 1977, Ser. No. 859,214

Claims priority, application Switzerland, Dec. 10, 1976, 15550/76

Int. Cl.³ H02K *13/04*

U.S. Cl. 310—233

10 Claims



1. A commutator for electrical machines comprising:
a lamination assembly having a first surface;
a commutator hub having a second surface;
a shrink ring having first and second portions joined together by a decoupling portion,
the first ring portion having an inner surface with a diameter corresponding to the diameter of the first surface of the lamination assembly whereby the diameter of the first ring portion may be increased by heating and subsequently decreased by cooling,
the second ring portion having an inner surface with a diameter corresponding to the diameter of the second surface of the commutator hub whereby the diameter of the second ring portion may be increased by heating and subsequently decreased by cooling, and
the first and the second ring portions being simultaneously shrunk onto the first surface of the lamination assembly to hold together the lamination assembly and onto the second surface of the commutator hub to be joined to the commutator hub respectively.

4,349,760

CURRENT TRANSFER BRUSH WITH GRAPHITE FOILS

Heinrich Diepers, Höchstadt, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

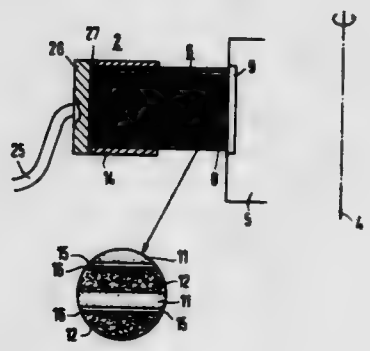
Filed Oct. 9, 1980, Ser. No. 195,315

Claims priority, application Fed. Rep. of Germany, Oct. 31, 1979, 2944065

Int. Cl.³ H02K *13/00*

U.S. Cl. 310—248

7 Claims



1. A current transfer brush having a sliding element containing a plurality of highly graphitized graphite foils, the graphite foils each having foil surfaces and being disposed in a stacked arrangement wherein the foil surfaces of each graphite foil are substantially parallel to the foil surfaces of an adjacent graphite foil, the current transfer brush having a contact surface substantially perpendicular to the foil surfaces of the graphite foils, at least one such graphite foil being at least partially coated with an electrically conductive material, the current transfer brush being characterized in that there is further provided at least one sheet of highly graphitized graphite fibers interposed between adjacent ones of the graphite foils, said graphite fibers being coated with an electrically conductive material.

4,349,761

FLAT TYPE CORELESS ROTARY ELECTRIC MACHINE

Kanemasa Aoki, Yokohama, Japan, assignor to Canon Kabushiki Kaisha and Canon Seiki Kabushiki Kaisha, both of Tokyo, Japan

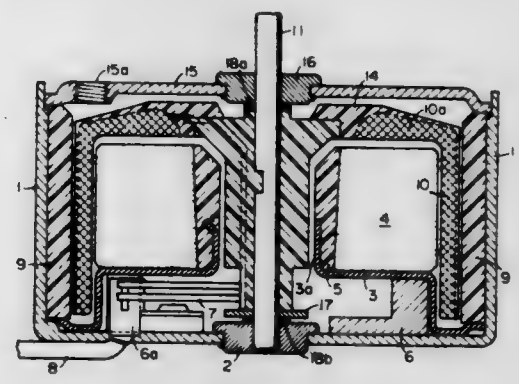
Filed Mar. 18, 1980, Ser. No. 131,498

Claims priority, application Japan, Mar. 20, 1979, 54-32630

Int. Cl.³ H02K *1/22*

U.S. Cl. 310—266

4 Claims



1. A coreless motor structure suitable for contributing to improve a motor of flat type using a cup-shaped rotary coil having one open end and another closed end in accordance with an arrangement of a commutator, a brush and said rotary coil, and an electric connection between said commutator and coil, comprising:
(a) a coreless rotary coil including
a first inclined coil part formed by winding a wire conductor for a rotary coil of said coreless motor in such manner that, to form a coil body in a shape of cup with one open end and another closed end constituted of an end connection part being a portion of said rotary coil, a winding extends obliquely from one point on one edge of a cylindrical circumferential surface of said coil body to another edge thereof at a predetermined inclination relative to a generatrix of said coil body,
a second inclined coil part formed by winding said wire conductor in such manner that said winding is turned back at a position in the vicinity of said open end and extends obliquely toward an edge nearly opposed to said one edge of said cylindrical circumferential surface of said coil body, and
an end connection part for making a connection of said inclined coil parts across the area of the end surface of said cup-shaped body, and formed by winding said inclined coil parts and an end connection part a plural number of times at the same position in layer with the same number of turns so as to form said cup-shaped rotary coil, said end connection part being connected to a rotary shaft;
(b) magnet means constituting a stator of said coreless motor, said magnet means disposed within said rotary coil on the side of the closed end thereof in such manner that the length of said rotary coil in the axial direction of said rotary shaft is long enough relative to that of said magnet means to define an open space between said magnet means and the open end of said rotary coil;

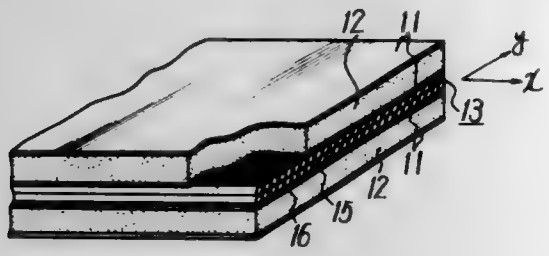
(c) said commutator being fixed integrally with said rotary shaft and disposed within said rotary coil; and
(d) said commutator and said brush being disposed within said open space in such manner that said brush extends in parallel with said commutator in the direction normal to said rotary shaft.

4,349,762

FIBER REINFORCED PIEZOELECTRIC BENDER TRANSDUCER

Tomosaburo Kitamura; Kosuke Miyahara, and Yoichi Kodera, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 24, 1980, Ser. No. 143,339
Claims priority, application Japan, May 2, 1979, 54-54266
Int. Cl.[3] H01L *41/08*
U.S. Cl. 310—332 7 Claims



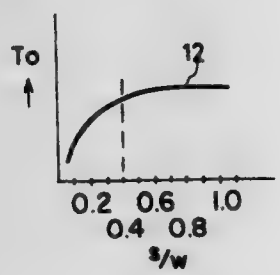
1. An electro-mechanical transducer comprising:
(a) a first layer made of piezoelectric material having opposing major surfaces;
(b) a pair of electrodes formed on said major surfaces, respectively; and
(c) a second layer comprising a plurality of fibers whose surface is clamped to one of said surfaces of said first layer; said first layer having a Young's modulus of E, said second layer having a Young's modulus Ex in one direction x, and a Young's modulus Ey in a direction y perpendicular to said one direction in said major surface, said Young's moduli E, Ex, Ey satisfying the relation $E>Ey$, $Ex>Ey$, and one end of said layers being clamped along one edge so that its opposite edge is free to move and said x and y directions lying in the plane of said second layer.

4,349,763

TUNING FORK TYPE QUARTZ RESONATOR

Hideo Hoshi; Shiro Mitsugi; Hiroichi Teruyama, and Hideo Tabata, all of Tokyo, Japan, assignors to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed Jun. 19, 1979, Ser. No. 50,128
Claims priority, application Japan, Jun. 27, 1978, 53-77614
Int. Cl.[3] H01L *41/08*
U.S. Cl. 310—370 7 Claims



1. A tuning fork type quartz crystal resonator formed by etching and having vibratable arms, a whole length $L \leqq 5$ mm, a whole width $W \leqq 1$ mm and a thickness $t > 50\mu$ and being vibratable in the flexural mode by driving electrodes arranged at both major surfaces and side surfaces thereof; the improvement wherein the vibratable arms are dimensioned to satisfy the relationships $s/t \leqq 1$ and $s/w \geqq 0.4$ where w is the width of the vibrating arms and s is the space between the vibrating arms.

4,349,764

LOW-PRESSURE METAL VAPOR DISCHARGE LAMP

Peter K. R. M. Steeman, and Karel R. Vervecken, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 22, 1980, Ser. No. 189,969
Claims priority, application Netherlands, Sep. 28, 1979, 7907220
Int. Cl.[3] H01J *19/70, 61/24*
U.S. Cl. 313—176 2 Claims



1. A low-pressure metal vapor discharge lamp having a discharge tube arranged in an evacuated outer bulb, current conductors extending in a vacuum-tight manner through the wall of the outer bulb and the wall of the discharge tube into the discharge tube where they are each connected to a respective electrode, a barium-containing getter and an electric getter auxiliary means in the form of an electric resistor being present in the evacuated space between the discharge tube and the outer bulb, the resistor receiving in the operating condition of the lamp an electric current by way of the current conductors, the resistor having an operating temperature in the range from 500°–2000° C., characterized in that the resistor is enveloped for the greater part by a hollow insulating element.

4,349,765

ULTRAVIOLET GENERATING DEVICE COMPRISING DISCHARGE TUBE JOINED TO TWO TUBULAR ENVELOPES

Gerold Brändli, Aarau, Switzerland, assignor to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

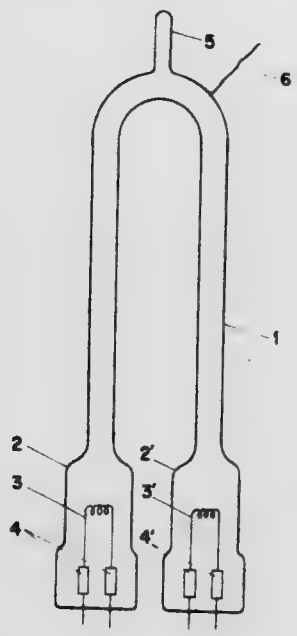
Filed Oct. 30, 1978, Ser. No. 955,711
Claims priority, application Switzerland, Oct. 31, 1977, 13198; Fed. Rep. of Germany, Apr. 5, 1978, 2814683
Int. Cl.[3] H01J *61/067, 61/30*
U.S. Cl. 313—220 7 Claims

1. In a device for generating ultraviolet radiation of high radiation intensity, in which the radiation can be generated thermoemissively, in a discharge tube filled with mercury and at least one rare gas and having an internal diameter of between 4 and 20 mm, said discharge tube transmitting UV radiation by means of a gas discharge which is wall-stabilized and takes place between two electrodes under a pressure of mercury between 5×10^{-3} and 5×10^{-1} Torr and a pressure of rare gas between 0.01 and 10 Torr and at a current density of the discharge current of the gas discharge between 1 and 25 A/cm^2, the two ends of the discharge tube being joined to two

tubular envelopes for receiving the electrodes, the improvement comprising:

said at least one rare gas comprising a gas from the group consisting of argon, krypton and xenon under a gas pressure (p) which, in the operating state of the device, is between 0.01 and 0.5 Torr;

the discharge tube and the envelopes comprising doped quartz glass, the doping of which is such that radiation lines at 185 and 195 nm are almost completely absorbed and a radiation line at 254 nm is transmitted almost without loss; and,



an appendix-like piece of tube, which is to receive condensed mercury and the temperature of which is adjustable between 48° and 65° C., provided on the discharge tube

wherein the internal diameter of the discharge tube is between 8 and 15 mm; the diameter of the appendix-like piece of tube is 0.3–1 times the diameter of the discharge tube; the diameters of the envelopes are 1–4 times the diameter of the discharge tube; the length of the discharge tube is between 0.8 and 2 m; the length of the appendix-like piece of tube is 0.005–0.1 times the length of the discharge tube; and the volume of the envelopes is 0.5–4 times the volume of the discharge tube.

4,349,766

DIRECTLY HEATED CATHODE FOR ELECTRON TUBE

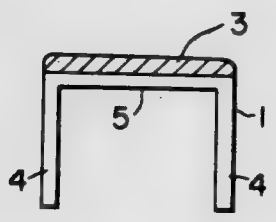
Hisashi Ando; Ko Soeno; Hiroshi Sakamoto, all of Hitachi; Akira Misumi, Mobara, and Hiroshi Fukushima, Chiba, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 25, 1980, Ser. No. 143,898

Claims priority, application Japan, Apr. 28, 1979, 54/52770

Int. Cl.³ H01J *1/14, 19/06;* H01K *1/04*

U.S. Cl. 313—346 R **12 Claims**



1. A directly heated cathode for an electron tube, which comprises a base metal of Ni-W alloy consisting essentially of 20–30% by weight of tungsten, and the balance being nickel and incidental impurities, said alloy being free from a reducing agent, and a layer consisting essentially of thermoelectron emission oxides laid directly and baked onto a flat part at a front side of the base metal, the layer of thermoelectron emission oxides being in direct contact with the flat part of the base metal and Ba_3WO_6 being predominant at a boundary surface between the metal base and the layer of thermoelectron emission oxides.

2. A directly heated cathode for an electron tube, which comprises a base metal of Ni-W alloy consisting essentially of 20–30% by weight of tungsten, and the balance being nickel and incidental impurities, said alloy being free from a reducing agent, a flat part of the base metal being coated with platinum, and a layer consisting essentially of thermoelectron emission oxides laid directly and baked onto the platinum coated flat part of the base metal, the layer of thermoelectron emission oxides being in direct contact with the flat part of the base metal and Ba_3WO_6 being predominant at a boundary surface between the metal base and the layer of thermoelectron emission oxides.

4,349,767

CATHODE RAY TUBE RESISTANCE OF RUTHENIUM OXIDE AND GLASS CONTAINING ALUMINA POWDER

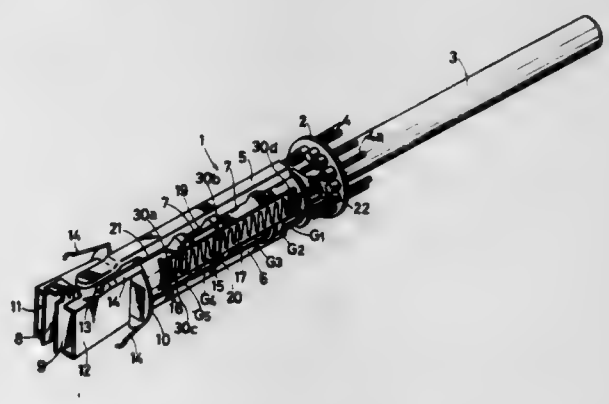
Shoichi Muramoto, Tokyo; Yoshihiro Tsukamura, Kawasaki; Masayuki Tozawa, and Fusao Ishii, both of Yokohama, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 868,694, Jan. 11, 1978. This application Jul. 16, 1979, Ser. No. 58,104

Claims priority, application Japan, Jan. 17, 1977, 52-4577; Jul. 15, 1978, 53-86507

Int. Cl.³ H01J *29/96, 29/82*

U.S. Cl. 313—449 **12 Claims**

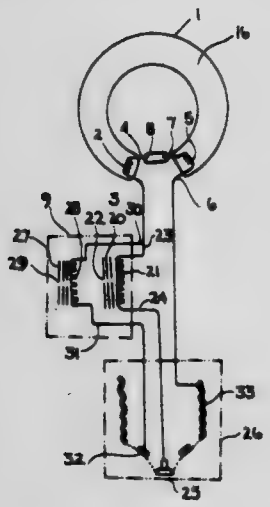


1. An electron gun which is used for television picture tube having an evacuated bulb including a funnel portion, a neck portion and screen portion including a plurality of electrodes for focusing and accelerating an electron beam generated by a cathode, aligned along the axis of said neck portion, comprising a resistor formed of an insulating substrate on which a resistive path is formed, said substrate being mounted along said plurality of electrodes and sealed in said neck portion, said resistive path having one end tap, another end tap and at least one intermediate tap between said end taps, said one end tap being supplied with the same voltage as the voltage supplied to said screen portion, said another end tap being connected to a terminal pin provided at one end tap of said neck portion for connection to a voltage low enough to avoid an electric discharge between electrodes and said terminal pin, an operating voltage for the electrodes being obtained from said intermediate tap by dividing the voltage between both of said end taps, said resistive path comprising a mixture of ruthenium oxide and glass, and said substrate and said resistive path being overcoated with at least one layer of glass, said layer of glass contained alumina powder.

4,349,768
METHOD FOR STARTING AND OPERATING A PREHEAT TYPE FLUORESCENT LAMP

Jack V. Miller, Sierra Madre, Calif., assignor to Creators, Inc., Chicago, Ill.

Filed Jun. 26, 1980, Ser. No. 163,067
Int. Cl.³ H05B 41/18, 41/40
U.S. Cl. 315—105 7 Claims



1. A method for starting and operating a preheat type fluorescent lamp in which the lamp has a first lower impedance starting mode providing current flow through at least one lamp filament operated in series with a starting switch means from an electrical power source, a second higher impedance operating mode providing current flow through the lamp with said starting switch open, and a series saturable magnetically permeable core-and coil inductor for limiting current flow through the lamp in which the improvement comprises:

passing current from the starting switch means through said coil-core inductor at a level to provide

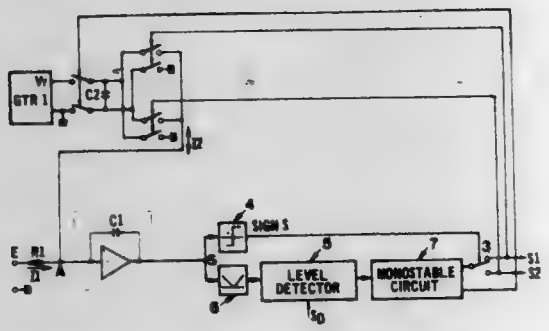
(a) operation of the magnetically permeable core of the core-and-coil inductor in a substantially saturated condition when the lamp is in the lower impedance starting mode; and

(b) operation of the magnetically permeable core of the core-and-coil inductor in a non-saturated condition when the lamp is in the higher impedance operating mode.

4,349,769
INCREMENTAL INTEGRATOR AND THE RESULTING SERVOSENSORS

Guy Willoteaux, St. Germain en Laye, France, assignor to Societe Francaise d'Equipements pour la Navigation Aerienne, Villacoublay, France

PCT No. PCT/FR79/00053, § 371 Date Feb. 26, 1980, § 102(e) Date Feb. 20, 1980, PCT Pub. No. WO80/00206, PCT Pub. Date Feb. 7, 1980
PCT Filed Jun. 21, 1979, Ser. No. 193,269
Claims priority, application France, Jun. 26, 1978, 78 18959; Jul. 20, 1978, 78 21466
Int. Cl.³ G05F 1/00
U.S. Cl. 318—677 10 Claims



1. Incremental output integrator comprising:

an analog summing integrator amplifier comprising an input intended to be connected to a generator delivering a current I_1 representing a magnitude to be measured:

a capacitance connected to the second input of the summing amplifier by a controllable inverter having two control terminals;

a voltage generator connected to the terminals of said capacitance by a double load switch;

a control circuit of said inverter comprising at least a high and low level detector of the output voltage of the summing integrator and means to transmit a control signal to one or other of the control terminals of the inverter depending on whether the level detected is a high level or a low level;

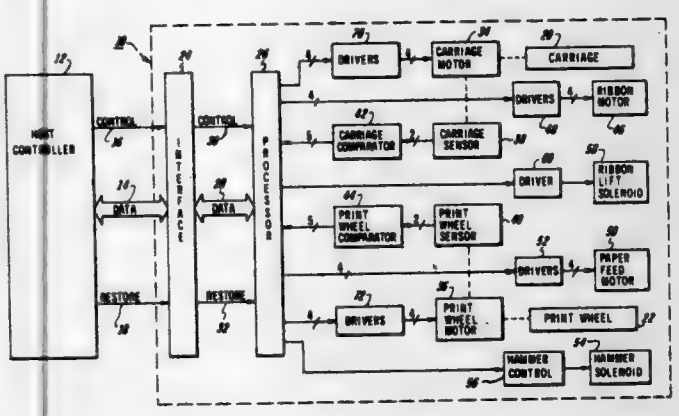
two output terminals connected to the control terminals of the inverter, and

a circuit controlling one or the other side of the double load switch when the output voltage of the summing integrator reaches one or other of the two levels, and then to turn the double load switch off at the end of a time equal at least to the capacitor discharge time.

4,349,770
ELECTRONIC DAMPING APPARATUS

Robert A. Ragen, Hayward, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Jul. 22, 1980, Ser. No. 171,205
Int. Cl.³ G05B 19/40
U.S. Cl. 318—685 13 Claims



1. Apparatus for controlling the movement of a movable element to bring said movable element to rest at a desired stopping position, said apparatus comprising:

a multi-phase drive motor having a drive shaft coupled to said movable element for driving same, four electrically conductive coils mounted in position-displaced relationship about said shaft, and means coupled to said drive shaft and responsive to the selective energization of said coils by respective motor drive signals for causing the corresponding rotation of said drive shaft and movement of said movable element;

a sensor coupled to said drive shaft and responsive to the rotation thereof for generating an electrical signal containing information indicative of the direction, speed and distance of movement of said movable element;

means for detecting from the distance information indicated by said electrical signal whether said movable element is within a predetermined distance of said desired stopping position; and

control means for controlling the levels of said motor drive signals in dependence upon the direction information indicated by said electrical signal following detection of said movable element being within said predetermined distance of said desired stopping position, said motor and thus said movable element being brought to a final stop with only a single one of said motor drive signals and thus corresponding single motor coil on, said control means including means for selectively turning on and off or reversing either the two coils displaced counterclockwise

of said single motor coil about said shaft or the two coils displaced clockwise of said single motor coil about said shaft in dependence upon the direction information indicated by said electrical signal.

4,349,771

STEPPER MOTOR CONTROL CIRCUIT

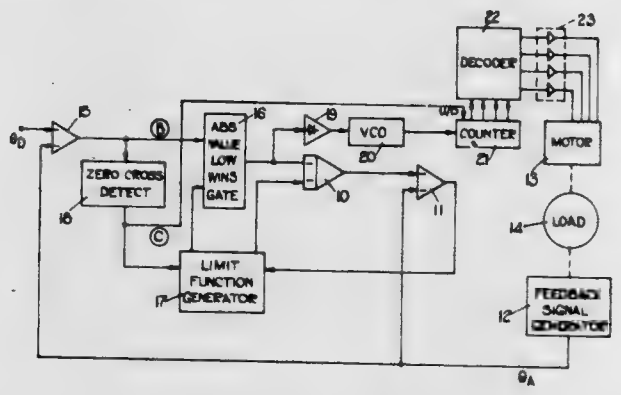
Keith Buxton, Mansfield, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Sep. 17, 1980, Ser. No. 188,212

Claims priority, application United Kingdom, Sep. 26, 1979, 7933441

Int. Cl.³ G05B *19/40*

U.S. Cl. 318—685 **1 Claim**



1. A stepper motor control circuit comprising an electrical integrator generating an output signal dependent on the time integral of its input signal, a first error signal generating means connected to said integrator output and to the output of a transducer means sensitive to the value of a parameter variable by movement of the stepper motor shaft and producing a first error signal dependent on the difference between the integrator and transducer means outputs, a second error signal generating means for comparing the actual value of said parameter (as represented by the transducer means output) with a desired value thereof and producing a second error signal dependent on the difference between the desired and actual values of said parameter, selector means connected to said first and second error signal generating means and to said integrator and selecting the one of said first and second error signals having the lesser absolute value for application to the integrator input, integrator reset means connected to the output of the first error signal generating means and to the input of the integrator and applying to the integrator an additional signal varying non-linearly with the output of the first error signal generating means whereby the rate of change of the output of the integrator is limited in accordance with the value of the first error signal, pulse generator means connected to the output of said selector means and producing an output of frequency determined by the output of said selector means and a stepper motor drive circuit connected to the pulse generator means and providing driving pulses to the stepper motor.

4,349,772

METHOD AND APPARATUS FOR CONTROLLING AN ALTERNATING CURRENT MOTOR LOAD USING PLURAL CONTROLLED-CURRENT INVERTER CIRCUITS

Herbert W. Weiss, Salem, Va., assignor to General Electric Company, Salem, Va.

Filed Dec. 23, 1980, Ser. No. 219,734

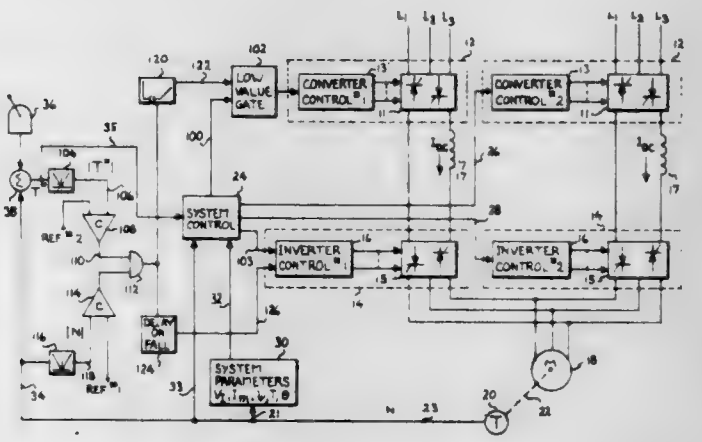
Int. Cl.³ H02P *5/40*

U.S. Cl. 318—799 **8 Claims**

1. A controlled-current motor drive of the type having a plurality inverter circuits connected in parallel for supplying, to a single electric motor load, electric power of controllable frequency and magnitude comprising:

(a) means for individually controlling said inverter circuits in response to respective input signals representing a desired level of motor operation;

(b) means for sensing when the motor power requirements are below a predetermined load and above a predetermined speed and to provide a mode shift signal in response to the simultaneous occurrence thereof; and,



(c) control means responsive to said mode shift signal for rendering less than the total number of said inverter circuits effective during the presence of said mode shift signal whereby the total of the motor power requirements are supplied by less than the total number of said inverter circuits.

4,349,773

CIRCUIT FOR PROTECTING STORAGE CELLS

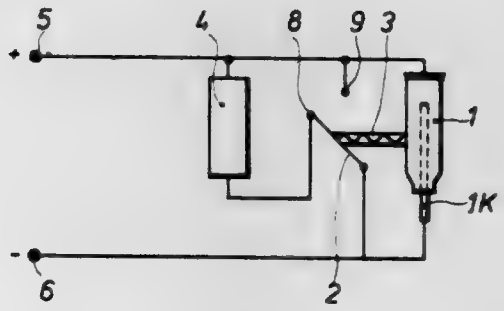
Bernd Hartmann, and Henner Meinhold, both of Sandhausen, Fed. Rep. of Germany, assignors to Brown, Boveri & Cie Aktiengesellschaft, Mannheim, Fed. Rep. of Germany

Filed Dec. 3, 1980, Ser. No. 212,460

Claims priority, application Fed. Rep. of Germany, Dec. 4, 1979, 2948700

Int. Cl.³ H01M *10/44*; H02J *7/00*

U.S. Cl. 320—5 **12 Claims**



1. Circuit for uniform charging and discharging of electrochemical storage cells of the alkali metal and chalcogen type, connected together to form a battery in which series-connected cells having positive and negative electrodes as individual cells or groups of several parallel-connected storage cells are series-connected to form a battery having a positive terminal and a negative terminal, with the cell having an anode chamber for containing alkali metal anolyte and a cathode chamber for containing chalcogen catholyte, with the anode chamber separated from the cathode chamber by an alkali ion-conducting solid electrolyte, a protective element shunted across each said series-connected cell which bridges the circuit through said series-connected cell upon said series-connected cell reaching a given maximum charge or discharge, a switch conductively connectible to the negative and positive electrodes of said series-connected cell and to the terminals of the battery, said protective element directly connected to said terminals of the battery, said series-connected cell having one of its electrodes connected to one of said terminals through said switch, the improvement comprising said protective ele-

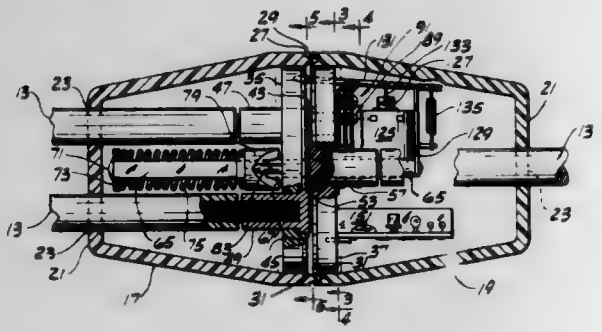
ment is a container whose outer surface forms an anode, and which container is filled with a chemical compound which easily dissociates and easily recombines, and an electrically conducting rod extending into and outside said container, and is electrically insulated in its mounting, forms a cathode.

4,349,774

POLARITY MATCHING APPARATUS FOR JUMPER CABLES

C. Anthony Farque, Fayetteville, Ark., assignor to DFH, Inc., Rogers, Ark.

Filed Dec. 1, 1980, Ser. No. 212,078
Int. Cl.³ H02J 7/00
U.S. Cl. 320—25 **30 Claims**



1. Polarity matching apparatus for use with jumper cables in connecting a supply of direct current to a battery to jump start an engine or the like, comprising:

two adjacent terminal blocks, each terminal block having at least two spaced primary contacts and first and second terminals connected to its primary contacts, in use of the apparatus the terminals of one block being connected to the battery terminals by a jumper cable and the terminals of the other block being connected to the supply terminals by the jumper cable;

the two terminal blocks being movable relative to one another between two alternative mating positions of the contacts, the contacts interconnecting the first terminals of the two blocks together and the second terminals of the two blocks together when in one mating position and interconnecting the first terminal of each block to the second terminal of the other block when in the other mating position, the blocks having a third position relative to one another in which the terminal blocks' terminals are not interconnected; and

control circuit means for determining, while the terminal blocks are in their third relative position, which of the two alternative contact mating positions would interconnect the positive terminals of the battery and supply together and the negative terminals of the battery and supply together and thereby match the polarity of the supply to the battery.

4,349,775

TEMPERATURE COMPENSATED VOLTAGE REGULATOR FOR PHOTOVOLTAIC CHARGING SYSTEMS

Yiduk Kwon, Bedford, and Paul Lawson, Hopedale, both of Mass., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jan. 2, 1981, Ser. No. 222,053
Int. Cl.³ G05F 1/46; H02J 7/04
U.S. Cl. 320—35 **6 Claims**

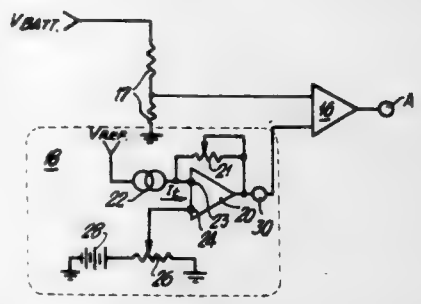
1. A regulator system for controlling photovoltaic charging of primary batteries, said system comprising:

storage batteries having a room temperature full charge voltage V_{normal}, said voltage being temperature dependent;

a photovoltaic array having an output voltage capable of exceeding V_{normal}, said array being coupled to provide charging power to said batteries;

regulator means interposed between said array and said batteries, said regulator means including comparator means for comparing battery voltage to a reference voltage;

reference voltage means capable of providing a reference voltage about equal to the temperature dependent charge



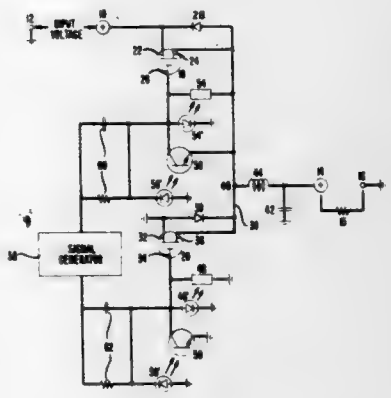
voltage V_{normal}, said reference means including an operational amplifier, arranged to provide biased current to voltage conversion, having a temperature dependent current source coupled to one input of said amplifier and a second voltage source having a predetermined voltage level coupled to a second input to said operational amplifier whereby said reference means provides a linearly temperature dependent reference voltage to said comparator means.

4,349,776

DC-TO-DC CONVERTERS UTILIZING FET DEVICES

Joseph Federico, Berkeley Heights, and Sigurd G. Waaben, Princeton, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 20, 1980, Ser. No. 198,286
Int. Cl.³ G05F 1/60
U.S. Cl. 323—222 **8 Claims**



1. A DC-to-DC converter comprising:

a series-connected combination of an inductor, a switching arrangement and an output element to be charged to a relatively small DC output voltage, said switching arrangement comprising a first FET device having a diode connected between the drain and source electrodes thereof, said diode being poled for forward conduction in the direction in which current is to flow to said element via said device,

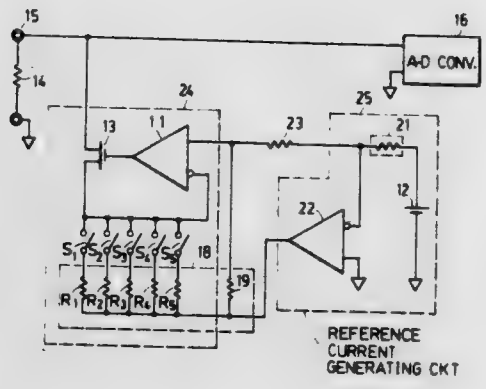
means including a second FET device for connecting a relatively large DC input voltage to said inductor to establish a current flow therethrough,

and means connected to said first and second FET devices for controlling said second device to be ON when said first device is OFF thereby to establish current flow through said inductor and for controlling said first device to be ON when said second device is OFF thereby to establish current flow from said inductor to said element via the drain-to-source path of said first device.

4,349,777
VARIABLE CURRENT SOURCE

Masakazu Mitamura, Gyoda, Japan, assignor to Takeda Riken Kogyo Kabushikikaisha, Tokyo, Japan

Filed Nov. 7, 1980, Ser. No. 204,929
Claims priority, application Japan, Nov. 19, 1979, 54-149655
Int. Cl.³ G01R *27/14;* G05F *1/58, 1/613*
U.S. Cl. 323—226 6 Claims



1. A variable current source for providing a selected output current that is highly temperature stabilized to a current output terminal to which a selected load is connected, said variable current source comprising:

a reference current generator for generating a reference current of a constant value that is substantially insusceptible to the influence of temperature;

a plurality of reference resistance elements and a further resistance element for compensation use which are simultaneously formed on a common substrate so as to experience a common temperature;

an auxiliary reference voltage generator wherein the output of the reference current generator is connected with a first terminal of said further metal resistance element to generate an auxiliary reference voltage across said further resistance element;

a plurality of switches respectively connected in series with the plurality of reference resistance elements to form a respective plurality of series circuits;

and

a voltage-to-current converter which is connected to the series circuits and which, when one or more of said switches are turned ON, converts the auxiliary reference voltage to a current corresponding to the resistance value of the respective reference resistance element(s) connected to each of the switches turned ON,

wherein said selected output current that is output from said current output terminal of said variable current source has said highly tremperature stabilized output current for any combination of said switches being ON.

4,349,778
BAND-GAP VOLTAGE REFERENCE HAVING AN IMPROVED CURRENT MIRROR CIRCUIT

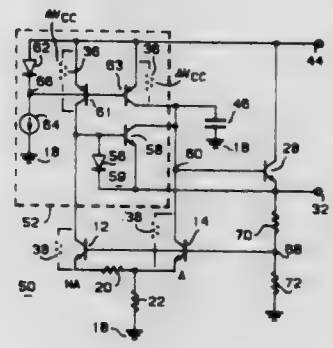
William F. Davis, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed May 11, 1981, Ser. No. 262,273
Int. Cl.³ G05F *3/20*
U.S. Cl. 323—314 12 Claims

1. A voltage reference circuit for providing a reference voltage having a substantially constant magnitude at an output terminal thereof, including in combination:

first and second voltage reference transistors of a particular conductivity type and each having emitter, base, and collector electrodes;

a negative feedback loop interconnecting said first and second voltage reference transistors and the output terminal of the voltage reference circuit, said negative feedback loop enabling the currents through said first and second transistors to have a predetermined non-unity ratio of current densities, said negative feedback loop further including a current mirror circuit having a diode means with first and second electrodes, said first electrode of said diode means being coupled to said first reference transistor, said diode means having a junction, and said current mirror circuit having further transistor means of said particular conductivity type with emitter, base, and collector electrodes, said further transistor means having a base-to-emitter junction coupled in parallel with said junction of said diode means, said collector electrode of said further transistor means being coupled to said second voltage reference transistor; and

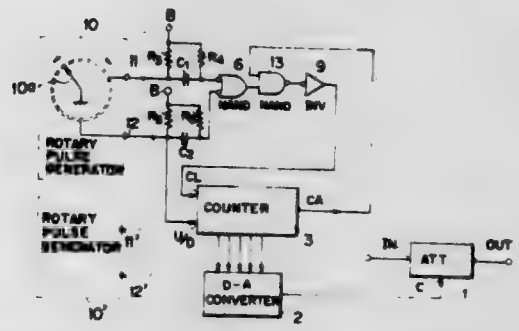


means coupled to said emitter electrodes of said first and second voltage reference transistors for developing a voltage having a positive temperature coefficient in response to said non-unity ratio of current densities, circuit meeans combining said voltage having said positive temperature coefficient with the emitter-to-base voltage of one of said first and second voltage reference transistors to produce a combined voltage in said negative feedback loop.

4,349,779
VOLUME CONTROL APPARATUS

Sadao Ono, Toda, Japan, assignor to Clarion Co., Ltd., Tokyo, Japan

Filed Jan. 26, 1981, Ser. No. 228,645
Claims priority, application Japan, Jan. 25, 1980, 55-8275[U]
Int. Cl.³ H03K *5/19;* H03G *5/02*
U.S. Cl. 323—318 5 Claims



1. A volume control apparatus which comprises:

an up/down counter having a clock input terminal, an up/-down control terminal and a digital count output;

D/A converter means for converting said digital count output from said counter into an analog signal;

attenuator means responsive to said analog signal for controlling the degree of attenuation of an input signal;

rotary pulse generator means having a first output terminal, a second output terminal and a rotary operating knob for producing pulses on said first output terminal in response to rotation of said knob in one direction and for producing pulses on said second output terminal in response to rotation of said knob in a second direction opposite to said one direction, a said pulse being generated each time said knob is rotated through a given rotation angle and the frequency of said pulses depending on the rotational speed of said knob; and

logic circuit means coupled to said first and second output terminals of said pulse generator means for supplying said

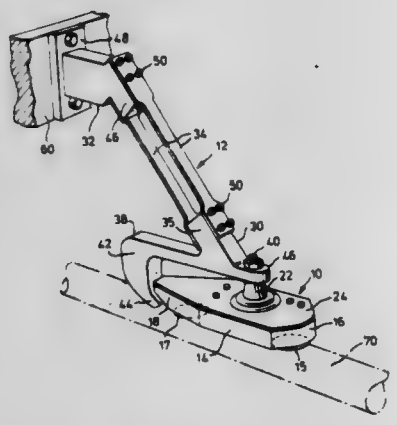
pulses from either of said output terminals to said clock input terminal of said counter, said up/down control terminal of said counter being coupled to one said output terminal of said generator to effect up/down count control of said counter.

4,349,780

SENSOR DEVICE FOR CONTINUOUS MEASUREMENT OF JACKET THICKNESS ON A CABLE

Bretislav Zuber, and Jaroslav J. Kral, both of Montreal, Canada, assignors to Northern Telecom Limited, Canada

Filed Nov. 13, 1979, Ser. No. 93,397
Int. Cl.³ G01R *33/00*; G01B *7/10*
U.S. Cl. 324—262 **4 Claims**



1. A device for the continuous measurement of the jacket thickness on a cable, comprising:

a head having at least two sensors providing a lower bearing surface of the head, the head carrying a flexible diaphragm assembly, the sensors being spaced apart one in advance of the other; and

a mounting arm lying in a plane normal to said bearing surface the arm comprising a parallelogram linkage of two parallel leaf springs, one end portion of the arm having an end member secured to the leaf springs, the end member being fixable to a base and the other end portion of the arm being fixed to the head through the diaphragm assembly whereby higher frequency vibrations in the head are prevented from being transferred to the arm, the arm extending obliquely from the head with respect to the lower bearing surface thereof and being laterally resilient by means of the leaf springs whereby the head is movable in an arc while maintaining the lower bearing surface of the head substantially parallel to a predetermined plane normal to said mounting arm plane when the arm is fixed to the base.

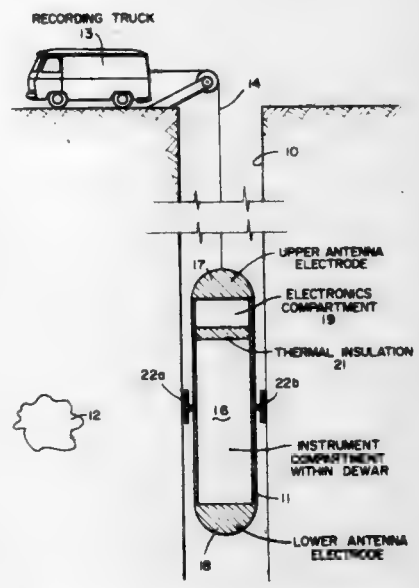
4,349,781

SUPERCONDUCTING GRADIOMETER-MAGNETOMETER ARRAY FOR MAGNETOTELLURIC LOGGING

Keeva Vozoff, Roseville, Australia, assignor to The Regents of the University of California, Berkeley, Calif.

Filed Jan. 7, 1980, Ser. No. 109,780
Int. Cl.³ G01V *3/26*; G01R *33/035*
U.S. Cl. 324—346 **7 Claims**

1. A subsurface electromagnetic field sensing device where the electrical conductivity of a portion of said subsurface is known comprising: supercooled vessel means for subsurface use containing magnetic gradiometer means for measuring at least one horizontal component of vector current density in the adjacent subsurface and containing magnetometer means for measuring a horizontal magnetic field component in at least one perpendicular direction relative to said vector current density; and means for utilizing said measured and determined quantities, as a function of frequency of the electromagnetic field, including said electrical conductivity in the immediate



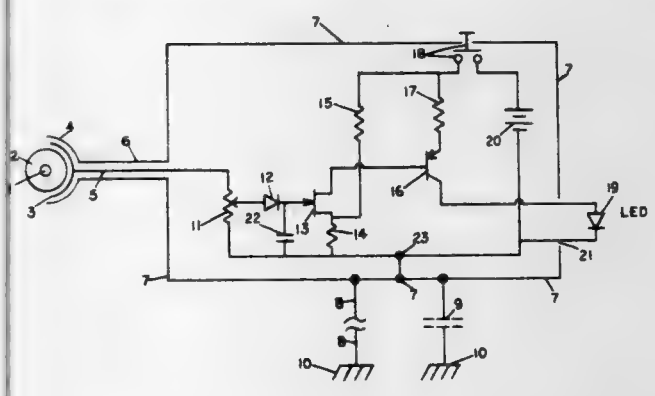
vicinity of said vessel, for determining the impedance of said underlying and surrounding subsurface region.

4,349,782

SHIELDED DIFFERENTIATOR FOR AUTOMOTIVE IGNITION APPLICATIONS

James D. Doss, 905 Tewa Loop, Los Alamos, N. Mex. 87544

Filed Nov. 21, 1980, Ser. No. 209,158
Int. Cl.³ F02P *17/00*
U.S. Cl. 324—390 **7 Claims**



1. A device which may be utilized to determine whether an arc is occurring in the high voltage section of an electric ignition system used on an internal combustion engine, comprising:

an electric probe assembly which consists of two electrodes; the first electrode being the probe inner electrode which may be capacitively coupled to an ignition system component such as a spark plug or spark plug cable wherein resultant capacitance is probe capacitance; the second electrode of said electric probe assembly is the shield electrode wherein said shield electrode is arranged to substantially shield said probe inner electrode from electric fields other than electric fields resulting from voltage on said ignition system component which is monitored by said electric probe assembly, and

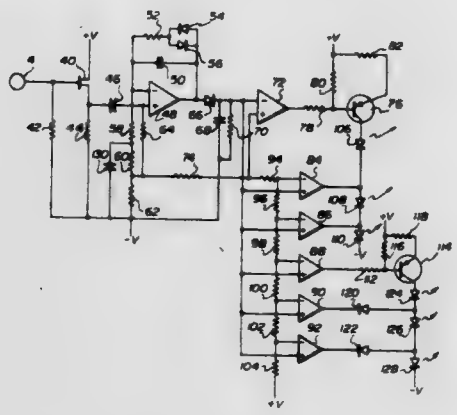
combination of said probe capacitance with appropriate means to develop a voltage signal which is substantially proportional to the rate of change of the voltage being monitored by said electric probe assembly on said ignition system component, and

further means to provide a visual indication whenever said rate of change of voltage exceeds a preset value.

4,349,783
GROUND ISOLATED ELECTROSTATIC FIELD DETECTOR

William F. Robson, St. Andrews West, Ontario, and Raymond A. Laperle, Boisvenue Dr., R.R. #1, Cornwall, Ontario, both of Canada

Filed May 17, 1978, Ser. No. 906,774
Claims priority, application Canada, Feb. 16, 1978, 297050
Int. Cl.³ G01R *5/28, 31/08*
U.S. Cl. 324—457 9 Claims

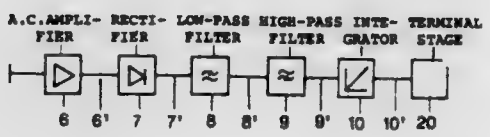


1. An electrostatic field indicator instrument circuit comprising:
(a) an amplifier having a high impedance input;
(b) an antenna connected via a conductor, which is unshielded with respect to ground, to said input;
(c) a low pass filter for blocking electrostatic field frequencies higher than the highest frequency of the field to be detected connected in a circuit path to the output of the amplifier;
(d) a lamp operation enabling circuit connected in a circuit path to the output of the low pass filter; and
(e) lamp indication means, connected between the poles of a battery and to said enabling circuit, for indicating particular levels of electrostatic field strength received by the antenna by comparing the output of said low pass filter with respectively-different potential levels representative of said particular levels of electrostatic field strength and generating respective indication signals in accordance therewith; and
in which the entire circuit is isolated from connection to ground.

4,349,784
DEVICE FOR MONITORING YARN MOTION ON A TEXTILE MACHINE

Erich Loepfe, Pfaffhausen, Switzerland, assignor to Gebrueder Loepfe AG, Zurich, Switzerland

Division of Ser. No. 943,526, Sep. 18, 1978, Pat. No. 4,256,247. This application Jun. 23, 1980, Ser. No. 161,738
Claims priority, application Switzerland, Oct. 5, 1977, 12160/77
Int. Cl.³ H03K *9/06*
U.S. Cl. 328—138 1 Claim

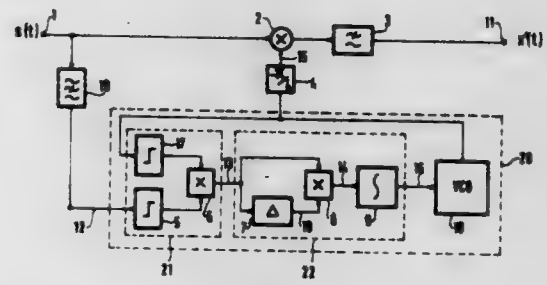


1. An electronic circuitry for evaluating electrical sensing signals furnished by a sensing device responsive to ballooning motion of a yarn in a textile machine and delivering a series of high frequency pulses having a repetition rate corresponding to the low frequency of the ballooning motion, the electric circuitry comprising a series arrangement of A.C.-amplifying means, rectifying means, low-pass filtering means having an upper cut-off frequency smaller than said high frequency but greater than the low frequency of the ballooning motion, high-pass filtering means having a cut-off frequency lower than the frequency of the ballooning motion, and means for detecting whether or not the output of the low-pass filtering means is a pulse series indicative of the frequency of the ballooning motion.

4,349,785
PHASE-CONTROLLING FEEDBACK CIRCUIT FOR SINGLE SIDEBAND DEMODULATION

Michel Lemoussu, Saint Michel sur Orge, and Claude Cardot, Gif sur Yvette, both of France, assignors to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France

Filed Sep. 16, 1980, Ser. No. 187,643
Claims priority, application France, Sep. 19, 1979, 79 23306
Int. Cl.³ H03D *1/00;* H03L *7/08*
U.S. Cl. 329—50 6 Claims



1. A feedback circuit for controlling the phase of a local oscillator, the local oscillator providing an output local carrier wave for demodulating a data signal transmitted by single sideband amplitude modulation and having a control input for varying the phase of the output local carrier wave, the feedback circuit comprising:
a first input for receiving a first signal representative of the sign of the local carrier wave shifted by a phase of $\pi/4$;
a second input for a second signal representative of the sign of the data signal to be demodulated by the local carrier wave;
a sign multiplier connected to receive said first and second signals and to produce a product signal representative of the first signal multiplied by the second signal; and
sign coincidence auto-correlator means including a delay circuit connected to delay the product signal by an odd multiple of one fourth of the period of the carrier used for the amplitude modulation on transmission, to thereby provide two versions of the product signal, one version being delayed relative to the other by said odd multiple period, and means for providing an output signal representative of the correlation of said two versions, said output signal being applied to said control input of the local oscillator.

4,349,786
COMPLEMENTARY DIFFERENTIAL AMPLIFIER CIRCUIT HAVING SOURCE-FOLLOWER DRIVING CIRCUITS

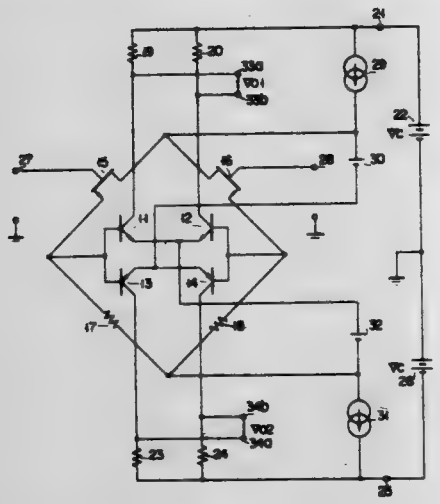
Kenji Yokoyama, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Nov. 3, 1980, Ser. No. 203,512
Claims priority, application Japan, Nov. 15, 1979, 54-158629
Int. Cl.³ H03F *3/45*
U.S. Cl. 330—253 3 Claims

1. An amplifier circuit comprising:
first and second field effect transistors having their drains coupled together and their gates coupled respectively to first and second input terminals to which an input signal to be amplified is applied;
first and second resistors having their first ends connected to sources of said first and second field effect transistors, respectively, and their second ends coupled together;
a first differential pair of first and second bipolar transistors of a first conductivity type having their emitters coupled

together and their bases connected to a first connection point of said first field effect transistor and said first resistor and a second connection point of said second field effect transistor and said second resistor, respectively;

a second differential pair of third and fourth bipolar transistors of a second conductivity type having their emitters coupled together and their bases connected to said bases of said first and second bipolar transistors, respectively;



a first constant voltage circuit connected between said drains of said first and second field effect transistors and said emitters of said third and fourth bipolar transistors; and

a second constant voltage circuit connected between said emitters of said first and second transistors and said second ends of said first and second resistors.

4,349,787

COMPRESSOR

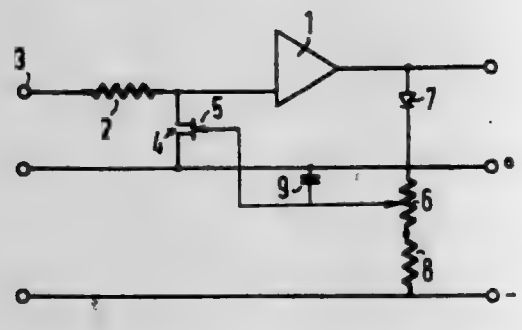
Robert R. Laupman, Wychen, Netherlands, assignor to Novanex Automation N.V., Wychen, Netherlands

Filed Feb. 6, 1980, Ser. No. 119,010

Claims priority, application Netherlands, Feb. 9, 1979, 7902045; Mar. 2, 1979, 7902683

Int. Cl.³ H03G *3/20*

U.S. Cl. 330—284 **9 Claims**



1. A compressor for use in an audio amplifier, comprising an amplifying means with an input and an output, and a compression circuit connected between the output and input, said compression circuit comprising a controllable semi-conductor device in the form of a FET connected between said input and a reference voltage lead of the compressor, the control electrode of which semiconductor device is connected through a control voltage control means to said output and also through a capacitor to the reference voltage lead, said control means being a transistor having a collector electrode, an emitter electrode and a base electrode, one of said emitter and base electrodes being connected to said output, the collector electrode to the control electrode and through a resistor to a negative voltage lead of the compressor and the other one of said base and emitter electrodes to the reference voltage lead, the control electrode being further connected through a resistor to one of said reference voltage lead and the input of the amplifying means, a circuit being provided between the output and input of the amplifying means, said last mentioned circuit comprising three parallel branches, the first of which comprises a resistor, the second at least one series-connected diode poled in one direction, and the third at least one series-connected diode poled in the opposite direction, there being provided a diode between the output of the amplifying means and one of said emitter and base electrodes of the transistor.

4,349,788

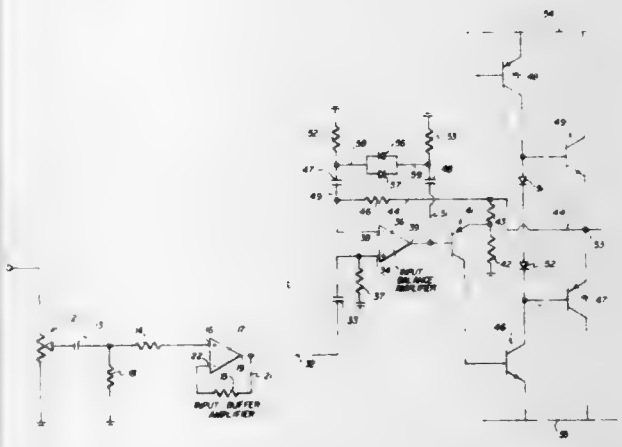
TRANSIENT INTERMODULATION DISTORTION LIMITING CIRCUIT FOR AN AMPLIFIER SYSTEM

Jack C. Sondermeyer, Meridian, Miss., assignor to Peavey Electronics Corp., Meridian, Miss.

Filed Feb. 25, 1980, Ser. No. 124,469

Int. Cl.³ H03F *1/34*

U.S. Cl. 330—293 **4 Claims**



1. A distortion limiting circuit for an amplifier system having supply rails comprising, in combination, an operational amplifier having an input port, a feedback port and an output port for providing an output signal, means for feeding an input signal to said amplifier input port, a gain stage connected to said amplifier output port for amplifying the output signal from said amplifier output port, a feedback network connected between said gain stage and said feedback port, and circuit means connected between said output port and said feedback port of said amplifier for reducing the slew rate recovery time of said amplifier to thereby reduce the amount of transient intermodulation distortion, said circuit means including a pair of diodes connected in oppositely poled, parallel relationship, and a pair of decoupling capacitors respectively coupling opposite sides of said pair of diodes to said feedback port and said output port of said amplifier.

4,349,789

STABILIZED SWEEP FREQUENCY GENERATOR WITH ADJUSTABLE START AND STOP FREQUENCIES

Takenori Kurihara, Gyoda, Japan, assignor to Takeda Riken Kogyo Kabushikikaisha, Tokyo, Japan

Filed Oct. 1, 1980, Ser. No. 192,814

Claims priority, application Japan, Oct. 15, 1979, 54-131892

Int. Cl.³ H03B *23/00*; H03L *7/12*

U.S. Cl. 331—4 **27 Claims**

5. A sweep signal generating device comprising:

a variable frequency oscillator the oscillation frequency of which is controlled by a control signal;

a sweep signal generator for supplying the control signal to the variable frequency oscillator;

sweep start frequency setting means;

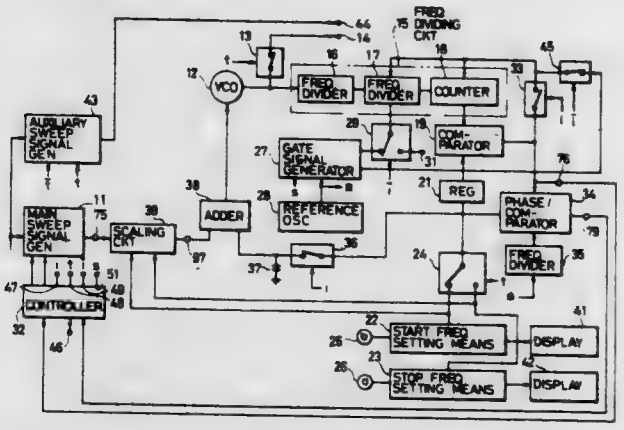
sweep stop frequency setting means;

a reference signal generator for generating a reference frequency signal;

sweep start frequency coincidence detecting means for detecting coincidence between the oscillation frequency of

the variable frequency oscillator and a sweep start frequency set in the start frequency setting means;

sweep stop frequency coincidence detecting means for detecting coincidence between the oscillation frequency of the variable frequency oscillator and a sweep stop frequency set in the stop frequency setting means; and



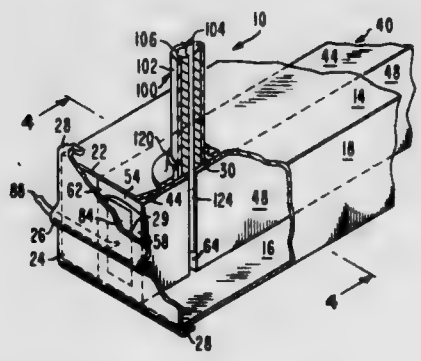
means for taking out the output from the variable frequency oscillator from the moment of detection of its coincidence with the sweep start frequency to the moment of detection of its coincidence with the sweep stop frequency.

4,349,790

COAX TO RECTANGULAR WAVEGUIDE COUPLER

Norman R. Landry, Mount Laurel, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 17, 1981, Ser. No. 255,282
Int. Cl.³ H01P *1/195, 5/103*
U.S. Cl. 333—24.1 **7 Claims**



1. A coax to waveguide coupler comprising:

a rectangular waveguide having first and second broad walls spaced apart by first and second narrower walls, said waveguide being dimensioned for operation over a selected frequency range;

a body of dielectric material disposed between said broad walls for loading said waveguide, said body positioned between the narrower walls of said waveguide, having a cross-sectional dimension substantially less than the width of said waveguide, and having first and second lateral walls generally parallel to said narrower walls of said waveguide;

a coaxial transmission line terminated at said first broad wall of said waveguide, said first broad wall of said waveguide having an aperture at said termination, said termination being adjacent said first lateral wall of said body;

a short circuit termination at one end of said rectangular waveguide;

a probe coupled to the center conductor of said coaxial transmission line;

said body having a slot along said first lateral wall adapted to receive said probe, and

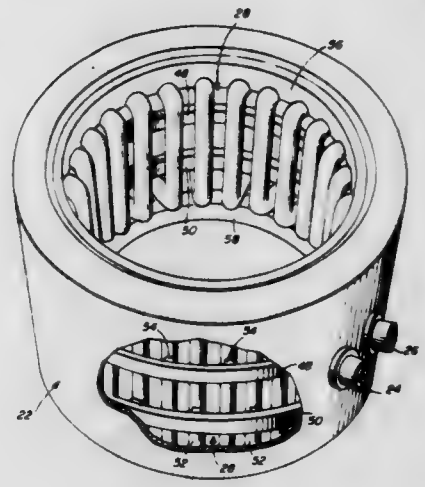
said probe extending through said aperture and being disposed in said slot.

4,349,791

SLOW WAVE COUPLING CIRCUIT

Lawrence J. Nichols, Burlington, and George H. MacMaster, Lexington, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 967,811, Dec. 8, 1978, abandoned. This application Aug. 21, 1980, Ser. No. 180,221
Int. Cl.³ H01P *1/18, 5/04, 9/02, 9/04*
U.S. Cl. 333—27 **22 Claims**



1. A coupling circuit comprising:

an outer slow wave structure;

an inner slow wave structure;

said outer slow wave structure having a generally cylindrical form, and said inner slow wave structure having a generally cylindrical form;

said outer slow wave structure enclosing at least a portion of said inner slow wave structure and being disposed adjacent the inner slow wave structure for directly coupling radiant energy from one of said structures to the other one of said structures, a cylindrical axis of said outer slow wave structure being parallel to a cylindrical axis of said inner slow wave structure;

said inner slow wave structure being configured to support a slow wave having a phase velocity of a first magnitude, and said outer slow wave structure being configured to support a slow wave having a phase velocity of a second magnitude, said first and second magnitudes being proportional respectively to the circumference of said inner slow wave structure and the circumference of said outer slow wave structure to provide synchronization of a wavefront on said inner slow wave structure with a wavefront on said outer slow wave structure; and

means for applying radiant energy to one of said slow wave structures and means for extracting radiant energy from a second one of the slow wave structures.

4,349,792

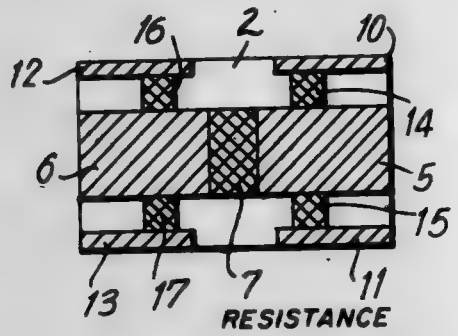
PI PAD ATTENUATOR

Harry Scheiner, New City, N.Y., assignor to Kings Electronics Co., Inc., Tuckahoe, N.Y.

Filed Jul. 14, 1978, Ser. No. 924,682
Int. Cl.³ H01P *1/22*
U.S. Cl. 333—81 A **2 Claims**

1. A pi pad attenuator comprising an insulating substrate, a pair of transversely spaced, longitudinally extending input conductors printed on said substrate, of which one input conductor is centrally positioned and extends from one end of the substrate in a substantially straight line only partially the length of the substrate, a pair of transversely spaced, longitudinally extending output conductors printed on said substrate, of which one output conductor is centrally positioned and extends from the other end of said substrate in a substantially straight line only partially the length of said substrate and in alignment with said one input conductor, a first discrete area of

resistive material on said substrate interconnecting the opposed ends of said one input and output conductors, and second and third individual discrete areas of resistive material in said sub-



strate respectively interconnecting each pair of input and output conductors, and in which said other input and output conductors extend along one longitudinal edge of said substrate and are longitudinally spaced from one another.

4,349,793

ADJUSTABLE DIRECTIONAL COUPLER HAVING TILTABLE COUPLING CONDUCTOR

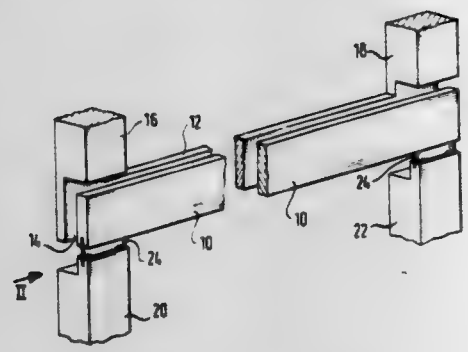
Georg Spinner, Am Eichberg 12, D-8152 Feldkirchen-Westerham 1, Fed. Rep. of Germany

Filed Nov. 19, 1980, Ser. No. 208,276

Claims priority, application Fed. Rep. of Germany, Nov. 21, 1979, 2946989

Int. Cl.³ H01P *5/04, 5/18*

U.S. Cl. 333—111 **14 Claims**



1. A coaxial directional coupler, comprising:

a first and a second elongate coupling conductor guided in air, and each coupling conductor having a respective facing side facing toward the facing side of the other coupling conductor; an adjustable coupling air gap being defined between the facing sides of the coupling conductors;

for each of the coupling conductors, two respective inner conductor terminals are defined at separated locations along the respective coupling conductor; the inner conductor terminals are rigid and non-deformable and non-shiftable under mechanical force applied to the respective coupling conductors;

for at least one of the coupling conductors, resiliently deformable means are defined between both of the respective rigid inner conductor terminals and the coupling conductor, and the deformable means form tilting joints, and the tilting joints have axes which extend parallel to the axes of the coupling conductors and the axis of the air gap, whereby application of a mechanical force to the one coupling conductor will tilt it at the tilting joints for adjusting the air gap and the mutual separation of the coupling conductors.

4,349,794

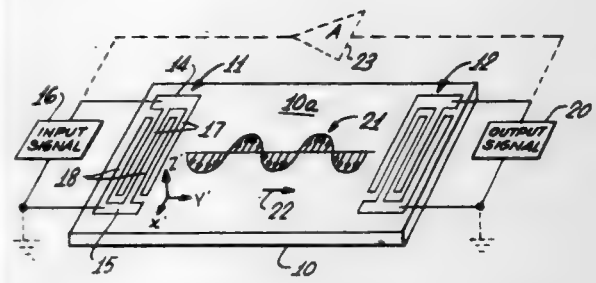
SHALLOW BULK ACOUSTIC WAVE DEVICES

Reynold S. Kagiwada, Los Angeles; Kuo-Hsiung Yen, Manhattan Beach; Ke-Li Wang; Kei F. Lau, both of Harbor City; Donald L. Lochhead, Rancho Palos Verdes, and James A. Leaverton, Huntington Beach, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Continuation-in-part of Ser. No. 861,133, Dec. 16, 1977, abandoned. This application Oct. 24, 1978, Ser. No. 954,149

Int. Cl.³ H03H *9/15, 9/36;* H03B *5/32*

U.S. Cl. 333—141 **24 Claims**



1. A shallow bulk acoustic wave device comprising:

a block of anisotropic piezoelectric material having a surface, having physical properties which may be defined by reference to a set of orthogonal crystallographic axes, and being capable of propagating surface acoustic waves and shallow bulk acoustic waves; and

a pair of electroacoustic transducers disposed on said surface and so oriented with respect to said crystallographic axes that the electromechanical coupling coefficient for surface acoustic waves is substantially zero while the electromechanical coupling coefficient for shallow bulk acoustic waves is relatively large, whereby when an electric signal is applied to one of said transducers, a shallow bulk acoustic wave is launched in said block and propagated toward the other of said transducers, said other transducer serving to transform the shallow bulk acoustic wave into an output electric signal.

4,349,795

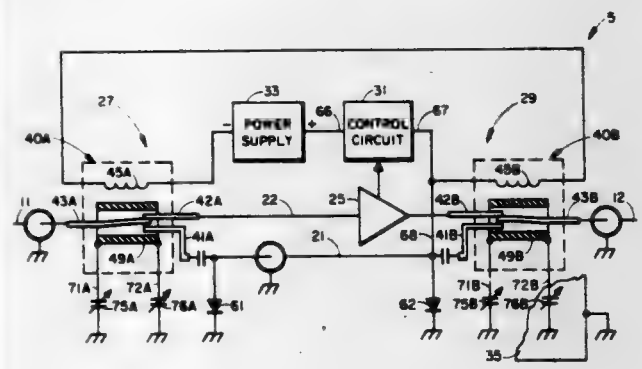
RF TRAP FOR A CABLE TELEVISION TRUNK AMPLIFIER STATION

Sai W. Kwok, El Paso, Tex., assignor to GTE Automatic Electric Laboratories, Inc., Northlake, Ill.

Filed Oct. 1, 1980, Ser. No. 193,311

Int. Cl.³ H03H *7/46, 7/01;* H04N *7/10*

U.S. Cl. 333—176 **18 Claims**



1. Apparatus responsive to the absence and presence of a control signal for selectively passing first RF signals with first frequencies in a first prescribed frequency band on a main transmission line to first and second lines, respectively, and for passing second RF signals with second frequencies that are in a second prescribed frequency band that is greater than frequencies in the first frequency band, away from the lines, comprising:

first switch means having a first, second and third elongated terminal contacts with one ends electrically connected to

the first, second and main lines, respectively; the other ends of the first and third contacts making an electrical connection therebetween in the absence of a control signal for passing the first signal along the main and first lines;

first means responsive to the presence of the control signal for causing the second and third contacts to make an electrical connection therebetween for passing the first signals along the main and second lines;

a tubular conductive member electrically spaced from, extending over at least a major portion of the lengths of, and extending around the contacts of said first switch means so as to provide capacitive coupling between it and the said contacts;

a first capacitor having one side thereof connected to a ground reference potential; and

a first length of electrically conductive wire electrically connecting the other side of said first capacitor to said tubular member;

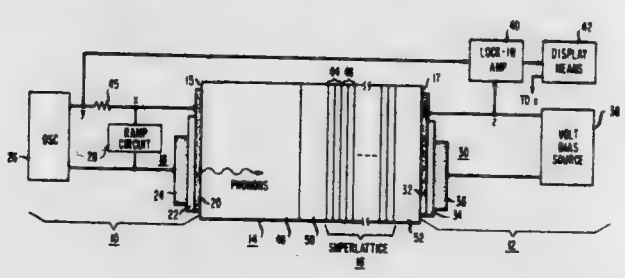
the reactances and/or coupling provided by said capacitor, said tubular member, said contacts, and said wire being selected to cooperate so the apparatus operates as a trap for passing the second signals on said lines to ground.

4,349,796

DEVICES INCORPORATING PHONON FILTERS

Maurice A. Chin, South Plainfield; Venkatesh Narayanamurti, and Horst L. Störmer, both of Summit, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 15, 1980, Ser. No. 216,172
Int. Cl.³ H03H *9/24, 9/46, 9/12*
U.S. Cl. 333—186 **19 Claims**



1. A phonon device comprising

a semiconductor body in which phonons over a range of wavelengths can be made to propagate simultaneously,

source means coupled to said body for exciting said phonons to propagate therein, and

filter means coupled to said body so as to intercept said phonons and to transmit phonons in a particular sub-range of said wavelengths and to reflect phonons outside said sub-range, said filter means comprising an acoustic superlattice of essentially lattice-matched semiconductor layers of alternating acoustic impedance.

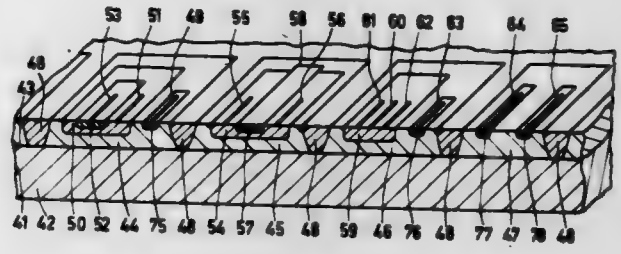
4,349,797

PHASE-COMPENSATED INTEGRATED CIRCUIT

Roger S. Thompson, Reigate, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 5, 1980, Ser. No. 146,972
Claims priority, application United Kingdom, May 10, 1979, 7916196; Apr. 3, 1980, 8011440
Int. Cl.³ H01L *27/04*
U.S. Cl. 333—215 **8 Claims**

1. An integrated circuit comprising a transisitor, a phase-shifting arrangement which produces a phase shift which is controllable by applying a control signal to a control input thereof, which arrangement is included in a signal path which extends through said transistor, and a control signal generator circuit the output of which is coupled to said control input, said control signal generator circuit including a circuit element comprising doped zones which correspond to the collector, base and emitter zones of the transistor, respectively, said element being included in the control signal generator circuit in such manner that the value of the output signal of said generator circuit will be a function of the value of an electrical property of said element, characterized in that said circuit element is a resistor and said electrical property is the resistance of said resistor, said transistor comprising a first region of one conductivity type provided with an electrical contact, a first region of the opposite conductivity type formed in the first region of the one conductivity type and provided with an electrical contact, and a second region of said one conductivity type formed in the first region of the opposite conductivity type and provided with an electrical contact, said resistor comprising a third region of the one conductivity type, a second region of the opposite conductivity type formed in said third region and provided with a pair of electrical contacts



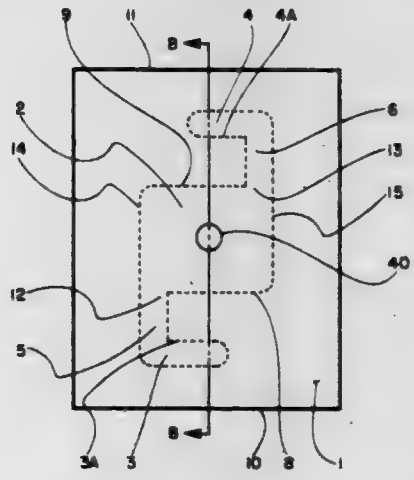
which constitute the terminals of said resistor, and a fourth region of the one conductivity type formed in the second region of the opposite conductivity type, the first and third regions of the one conductivity type being formed during the same doping step, the first and second regions of the opposite conductivity type being formed during the same doping step, and the second and fourth regions of the one conductivity type being formed during the same doping step, so that the resistance between the pair of contacts will become larger as the base width of said transistor becomes smaller, the coupling from the output of said control signal generator circuit to said control input having such a sense that signals transmitted through said signal path will be subjected to a phase shift in said arrangement which is larger in the phase lead sense or smaller in the phase lag sense as the value of said width increases and hence as the value of said resistor decreases.

4,349,798

COMPACT MICROWAVE RESONANT CAVITY FOR USE IN ATOMIC FREQUENCY STANDARDS

Allen F. Podell, and Louis F. Mueller, both of Palo Alto, Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jul. 31, 1980, Ser. No. 174,085
Int. Cl.³ H01P *7/06;* H01S *1/06;* H03L *7/26*
U.S. Cl. 333—230 **10 Claims**



1. A resonant cavity comprising a block of electrically conductive material having:

a primary cavity extending through the block along a primary axis;

first and second secondary cavities located on opposite sides of the primary cavity, each extending through the material along secondary axes which are substantially parallel to the primary axis;

first and second access channels interconnecting the first and second secondary cavities with the primary cavity, respectively, each of the channels extending through the material along tertiary axes which are substantially parallel to the primary axis; and

top and bottom cover means in contact mainly at their peripheries with the top and bottom of the block, respectively, for covering the cavities and for providing extended top and bottom access channels between cavities,

wherein said top and bottom cover means have an aperture for an optical axis.

4,349,799

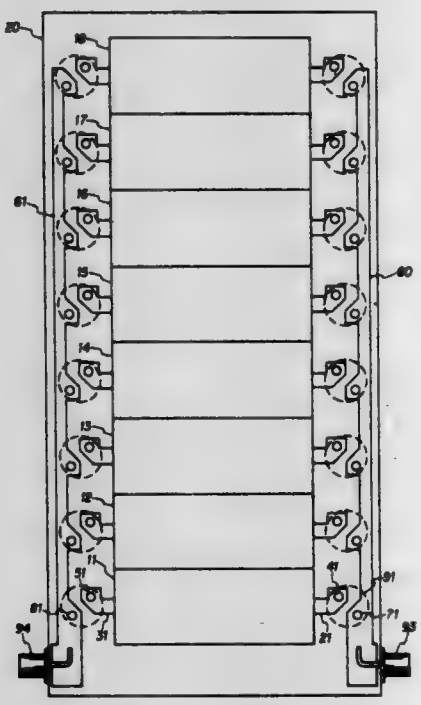
SWITCHING BETWEEN RADIO FREQUENCY CIRCUITS

Roderick K. Blocksome, Robins; Sherman J. Hornbeck, Cedar Rapids, and Donald R. Fee, Marion, all of Iowa, assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Mar. 12, 1981, Ser. No. 243,014

Int. Cl.³ H01P *1/10*

U.S. Cl. 333—246 **2 Claims**



1. Apparatus for selecting between a plurality of radio frequency circuits, comprising:

a printed circuit board having said circuits mounted thereon, each of said circuits having first and second printed conductor terminals on said board, with the first terminals on one side of the circuits and the second terminals on the other side, each of said terminals having a raised electrical contact thereon;

first and second transmission lines, each of said transmission lines including a pair of conductor layers, each on one of the two surfaces of the circuit board, each transmission line having a plurality of raised electrical contacts spaced therealong, each of the electrical contacts along said first transmission line being spaced near a different one of the contacts of the first terminals of the circuits, and each of the contacts of the second transmission line being near a different one of the contacts of the second terminal of the circuits, with external connection to the apparatus being made at one end of each transmission line; and

a plurality of interconnecting means, each associated with a different pair of the raised contacts formed by a raised contact of one the circuit terminals and the nearby transmission line raised contact, including a resilient conducting member and means for pressing the member against the associated pair of raised contacts to interconnect the contacts and for pulling the member away from the raised contacts to disconnect the contacts.

4,349,800

MAGNETIC PROXIMITY SWITCH

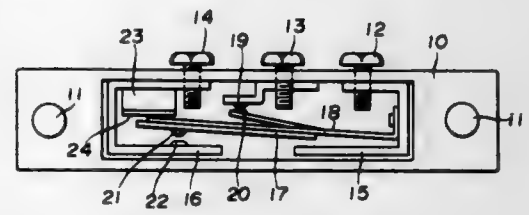
Shigeo Shimoya, Tokyo, Japan, assignor to Kobishi Electric Co., Ltd., Japan

Filed Nov. 29, 1979, Ser. No. 98,637

Claims priority, application Japan, Jul. 6, 1979, 54-85778

Int. Cl.³ H01H *9/00*

U.S. Cl. 335—207 **2 Claims**



1. A magnetic proximity switch which comprises:

a. a casing of non-magnetic material;

b. a pair of first and second yokes of magnetic material having a channel-shaped cross-section and open toward each other and secured to said casing in spaced apart relation to each other;

c. an armature of resilient material with an armature yoke adhered thereto along the length thereof and secured to said first yoke at one end thereof, said armature being movable between open and closed positions of the switch and extending into said second yoke;

d. a first permanent magnet secured to one arm of said channel-shaped second yoke and disposed on one side of said armature so that magnetic flux lines of said magnet pass through said second yoke and said armature yoke to normally magnetically bias said armature yoke into the closed position; and

e. a second permanent magnet disposed exteriorly of said casing and one the other side of said armature, said second magnet being movable toward said yokes so that magnetic flux lines of said second magnet pass through said second yoke, said armature yoke and said first yoke to magnetically bias said armature yoke into the open position, the magnetic flux lines of said first and second magnets being in the same direction in said armature yoke to enhance the magnetic biasing of said armature yoke into the open position.

4,349,801

SINGLE-PHASE TRANSFORMER WITH WINDINGS CAST IN CASTING RESIN

Garhard Altmann, Kirchheim, and Richard Pfeiffer, Stein-Deutenbach, both of Fed. Rep. of Germany, assignors to Transformatoren Union AG, Stuttgart, Fed. Rep. of Germany

Filed Sep. 18, 1980, Ser. No. 188,454

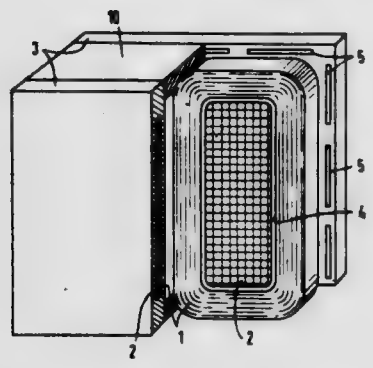
Claims priority, application Fed. Rep. of Germany, Sep. 25, 1979, 2938792

Int. Cl.³ H01F *15/04, 27/02*

U.S. Cl. 336—84 C **6 Claims**

1. Single-phase transformer, comprising windings being wound around an axis and cast in resin forming a cast resin body, said cast resin winding body having an outer surface and a rectangular window formed therein with sides disposed in given planes, a wound core formed of tape material extended through said window, two flanges being cast with and integral with said cast resin winding body on opposite sides thereof and parallel to said winding axis and to said window, said flanges having outer edges, mutually parallel inner surfaces substantially disposed in the plane of the narrow sides of said window and grooves formed in said inner surfaces in the vicinity of and

parallel to said outer edges, an encapsulation for said wound core being anchored in said grooves, and a grounded metallization layer formed on said surface of said cast resin winding body at least immediately adjacent to said wound core.

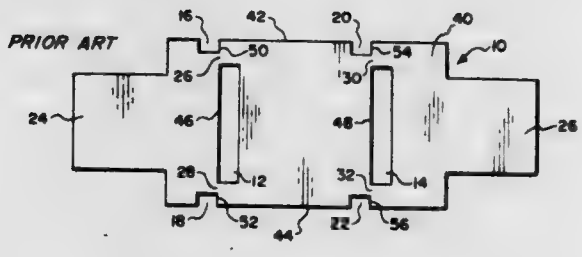


4,349,802

CURRENT LIMITING FUSE HAVING TRANSVERSE PARALLEL WEAK SPOTS

Aldino J. Gaia, St. Louis, Mo., assignor to McGraw-Edison Company, Rolling Meadows, Ill.

Filed Jan. 8, 1981, Ser. No. 223,391
Int. Cl.³ H01H *85/04*
U.S. Cl. 337—159 6 Claims



1. A fuse comprising an elongated electrically conductive, fusible strip, said strip having first and second opposite end portions, a main body portion joining said end portions and longitudinal edges defining the width of said main body portion, said main body portion defining first and second generally semi-circular apertures arranged in longitudinally spaced relation, between said longitudinal edges, the diametric edges of said semi-circular apertures extending transverse to said longitudinal edges of said strip, said main body portion including areas which are predeterminedly less conductive than the remaining areas of said fusible strip, the electrically less conductive areas being disposed between said longitudinal edges and said semi-circular apertures.

4,349,803

FUSE TUBE

Thomas J. Tobin, Northbrook, Ill., assignor to S&C Electric Company, Chicago, Ill.

Filed May 4, 1981, Ser. No. 260,451
Int. Cl.³ H01H *85/20*
U.S. Cl. 337—186 7 Claims



1. An improved fuse tube for a fuse, the fuse tube having a bore in which a fusible element is locatable, the bore walls including an arc-extinguishing medium, wherein the improvement comprises:

an inner, bore-defining fuse tube portion molded from a thermosetting material having an effective amount of an arc-extinguishing material therein;

an outer, weather-resistant fuse tube portion molded simultaneously with and from the same materials as the inner portion, the inner and outer portions being merged together and forming an integral continuum of the thermosetting material; and

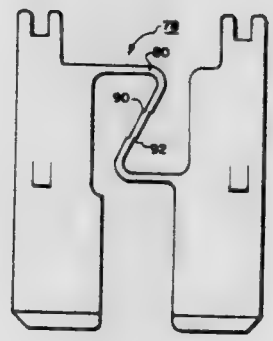
a layer of porous reinforcement material incorporated between the portions during the simultaneous molding of both portions, the reinforcement material being sufficently porous to permit both (a) passage therethrough of the thermosetting material of both portions during molding and (b) thorough impregnation thereof from both sides with the thermosetting material to lock both portions thereto and to each other and to form a mechanically strong fuse tube, the porous reinforcement material layer being sufficiently remote from the bore so that errosion of the bore due to usage of the fuse tube does not expose the reinforcement material at the interior surface of the bore.

4,349,804

FUSE ASSEMBLY FOR A MINIATURE PLUG-IN FUSE

Aldino J. Gaia, St. Louis, Mo., assignor to McGraw-Edison, Rolling Meadows, Ill.

Filed May 29, 1981, Ser. No. 268,233
Int. Cl.³ H01H *85/02*
U.S. Cl. 337—198 15 Claims



1. In a miniature fuse, an integrally-formed plug-in fuse assembly comprising:

at least two generally parallel elongated spaced-apart conductive legs having first and second ends and lying in a common plane and including at least two plug-in members in said first ends of said conductive legs;

a fusible portion extending between said conductive legs adjacent said second ends, said fusible portion including an elongated strip having a longitudinal axis;

at least one weak spot formed in said strip, said weak spot including first and second portions of said strip, said first and said second portions having predetermined widths and being offset from each other in a direction generally transverse to said longitudinal axis of said strip, such that said weak spot has essentially zero length.

4,349,805

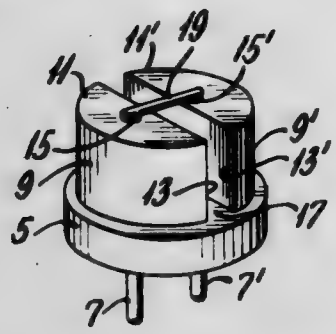
QUICK-ACTING MICRO-FUSE

Hiroo Arikawa, Tokyo, Japan, assignor to San-O Industrial Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 93,378, Nov. 13, 1979, Pat. No. 4,267,543. This application May 12, 1980, Ser. No. 149,590
The portion of the term of this patent subsequent to May 12, 1998, has been disclaimed.
Int. Cl.³ H01H *85/48*
U.S. Cl. 337—255 5 Claims

1. A quick-acting micro-fuse comprising a fuse base and body, a fuse cover, a pair of electrically conductive lead wires, the lower ends of which protrude from said base and the upper ends of which are embedded into said fuse base and body, a

pair of opposed, spaced apart and generally crescent-shaped members, each of said members being defined by an outwardly curved surface, generally flat top and bottom surfaces and a generally perpendicular inner wall, wherein said inner walls are spaced apart and in facing relation to one another and



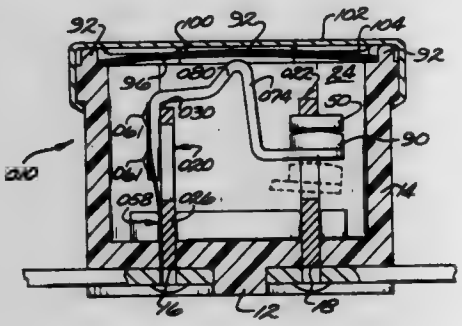
wherein the upper ends of said electrically conductive lead wires terminate at about the same level as said top surfaces of said crescent-shaped members, and a fusible element stretched between said upper ends of the electrically conductive lead wires and secured thereto at each end.

4,349,806

SNAP-ACTING THERMOSTATIC SWITCH USING INFLEXIBLE, SPRING BIASED CONTACT ARM

Henry J. Boulanger, Cumberland, R.I., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 3, 1980, Ser. No. 203,790
Int. Cl.³ H01H *37/54*
U.S. Cl. 337—343 **26 Claims**



12. A condition responsive switch comprises an open-ended, cup-shaped housing formed of electrically insulative material, the housing having a bottom wall and a side wall extending from the bottom wall and terminating at a free distal end, the bottom and side wall defining a switch cavity therein, the bottom wall formed with first and second apertures extending therethrough,

a first member formed of electrically conductive material having a first and second ends disposed in the first aperture and extending into the switch cavity and terminating at the first end, the member having a spring seating surface disposed intermediate its first and second ends,

a movable contact member formed of electrically conductive material comprising a spring engaging portion, a contact portion and a pivot portion and motion transfer portion intermediate the spring engaging portion and the contact portion, the pivot portion disposed on the first end of the first member,

a second member formed of electrically conductive material disposed in the second apertures and extending into the switch cavity, the second member mounting thereon a stationary contact,

a spring member having first and second end portions, the first end portion engaged with the spring seating surface of the first member on a side of the first member facing the second member and the second end portion engaged with the spring engaging portion of the movable contact member disposed on the side of first member remote from the second member, the spring member biasing the contact portion of movable contact member toward the stationary contact with a relatively low contact force and biasing the movable contact member with a high force relative to the contact force, and

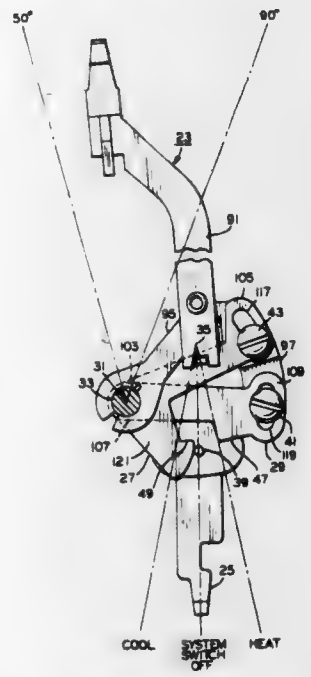
condition responsive means operatively connected to the motion transfer portion of the movable contact member adapted upon occurrence of the condition to pivotably move the contact portion of the movable contact member away from the stationary contact.

4,349,807

HEATING AND COOLING THERMOSTAT WITH ADJUSTABLE LIMITS AND METHODS OF MANUFACTURING AND OPERATING THE THERMOSTAT

Ralph W. Gustafson, Morrison, Ill., assignor to General Electric Company, Fort Wayne, Ind.

Continuation-in-part of Ser. No. 845,383, Oct. 25, 1977, Pat. No. 4,274,072. This application Sep. 15, 1980, Ser. No. 187,088
Int. Cl.³ H01H *37/22*
U.S. Cl. 337—360 **33 Claims**



2. A thermostat adapted to regulate the temperature of a given space comprising:

means for selecting an operating mode of the thermostat and movable at least between a heating mode position and a cooling mode position;

means selectively movable for setting a selected operating temperature of the thermostat and having a preselected maximum heating set point temperature and a preselected minimum cooling set point temperature; and

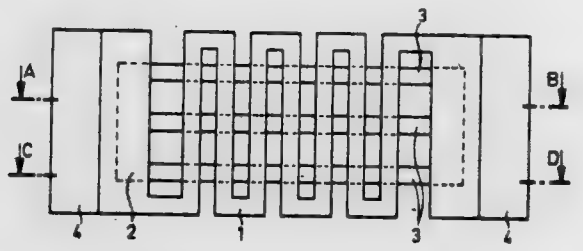
a pair of means separately adjustably movable with respect to at least one of said temperature setting means and said mode selecting means into adjusted positions when the temperature setting means is selectively moved into its preselected maximum heating set point temperature and its preselected minimum cooling set point temperature and operable generally in the adjusted positions thereof for abutting in engagement with the other of said temperature setting means and said mode selecting means when said mode selecting means is in its heating mode position and its cooling mode position so as to define the preselected maximum heating set point temperature and the preselected minimum cooling set point temperature of said temperature setting means, respectively.

4,349,808

BOLOMETER

Heinz Kraus, Traunreut, Fed. Rep. of Germany, assignor to Dr. Johannes Heidenhain GmbH, Traunreut, Fed. Rep. of Germany

Filed May 8, 1980, Ser. No. 147,842
Claims priority, application Fed. Rep. of Germany, May 23, 1979, 2920901
Int. Cl.³ H01L *31/08*
U.S. Cl. 338—18
8 Claims



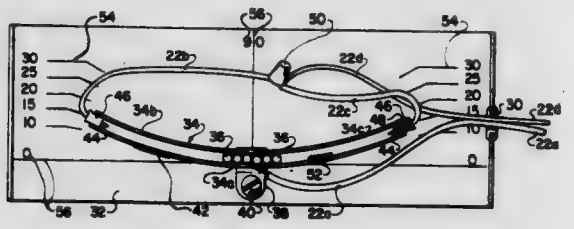
1. A bolometer arrangement comprising: a meander-shaped electrically conductive layer having a resistance dependent on the intensity of absorbed radiation; a supporting layer for supporting said meander-shaped conductive layer and having cutouts for receiving portions of said meander-shaped conductive layer, said supporting layer being comprised of photoresist.

4,349,809

OFFROAD VEHICLE INCLINOMETER AND ALARM

Marcus B. Tomes, 625 - 2nd Ave., Chula Vista, Calif. 92010

Filed Mar. 30, 1981, Ser. No. 248,854
Int. Cl.³ B60Q *5/00*
U.S. Cl. 340—52 H
7 Claims



1. An inclinometer and alarm apparatus for a vehicle comprising:

an elongate, pliant tubular member made of an electrically conductive material and having an intermediate segment and a pair of upwardly inclined end segments;

a vertical panel;

means for mounting the intermediate segment of the tubular member to the panel with the end segments of the tubular member inclined upwardly;

indicia on the panel for providing an indication of the degree of inclination of the end segments of the tubular member with respect to the intermediate segment of the tubular member;

a pair of contact points made of an electrically conductive material inserted into the opposite ends of the tubular member;

means for electrically insulating the contact points from the tubular member;

a plurality of spherically shaped contact elements made of an electrically conductive material positioned within the tubular member and adapted to move longitudinally therein into contact with the contact points upon a predetermined degree of rotation of the vertical panel about an axis perpendicular to the panel;

a quantity of a lubricant within the tubular member;

electrical indicator means for providing a human perceivable warning signal upon energization; and

electrical circuit means for connecting the tubular member, the contact points and the electrical indicator means to a source of electric current so that the electrical indicator means will be energized when the contact elements move into contact with the contact points;

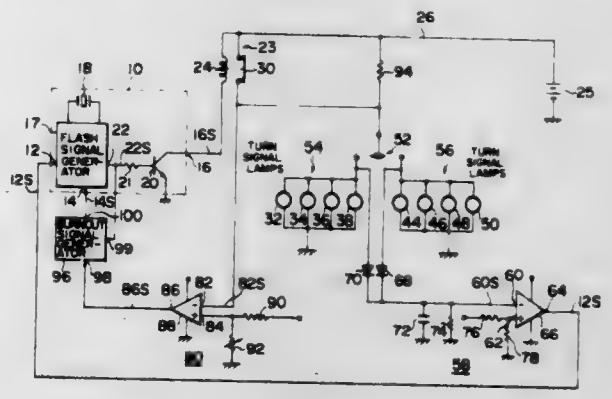
whereby when the vehicle exceeds a predetermined safe limit of inclination set by bending the end segments of the tubular member a predetermined amount upwardly with respect to the intermediate segment, the electrical indicator means will provide a warning signal, while jolting of the vehicle as it is driven over rough terrain will not cause a false alarm.

4,349,810

SIGNAL LAMP APPARATUS WITH A LAMP BURNOUT DETECTING CIRCUIT

Masaru Kugo, Ibaraki, and Osamu Igarashi, Katsuta, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 14, 1980, Ser. No. 139,670
Claims priority, application Japan, Apr. 16, 1979, 54-45414
Int. Cl.³ B60Q *1/38*; G08B *21/00*
U.S. Cl. 340—79
7 Claims



3. A signal lamp apparatus with a lamp burnout detecting circuit comprising:

a power source;

a plurality of signal lamps connected in parallel with each other and connected to one side of said power source in series;

a relay having a pair of contacts connected between the other side of said power source and said signal lamps;

flash signal generator means for alternately opening and closing the contacts of said relay at a predetermined frequency;

a resistor for detecting the burnout of the lamp which is connected to one of the contacts of said relay and to said signal lamps;

a comparator with a first input terminal connected to a connecting point between the other contact of said relay and said signal lamps, a second input terminal supplied with a predetermined reference voltage, and an output terminal, which comparator produces an output signal when the voltage at the first input terminal is higher than that at the second input terminal;

means connected to the output terminal of said comparator for producing a burnout signal when said comparator produces an output signal after a predetermined period of time following the time said relay contacts open.

4,349,811

DIGITAL-TO-ANALOG CONVERTER WITH IMPROVED COMPENSATION ARRANGEMENT FOR OFFSET VOLTAGE VARIATIONS

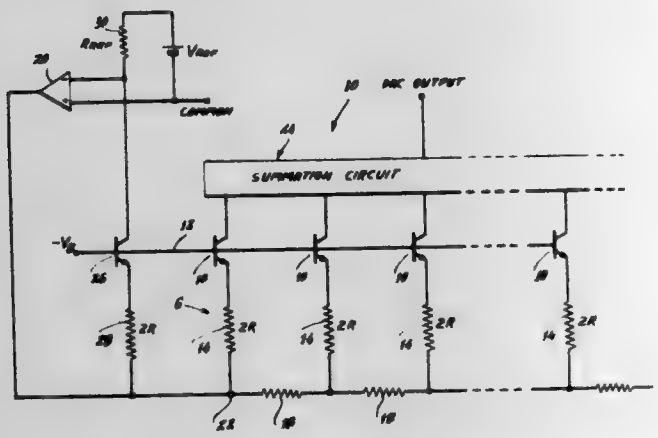
Adrian P. Brokaw, Burlington, Mass., assignor to Analog Devices, Incorporated, Norwood, Mass.

Filed Jul. 30, 1980, Ser. No. 173,450
Int. Cl.³ H03K *13/02*
U.S. Cl. 340—347 DA
9 Claims

1. In a digital-to-analog converter of the type including a

plurality of transistors serving as current sources and having equal emitter areas, means connecting the bases of said transistors together, an R-2R ladder network with the shunt resistors thereof connected to respective current-source emitters to provide for binary weighting of the transistor currents, and a source of excitation voltage connected to said ladder network to develop said binary-weighted currents through said transistors;

that improvement for minimizing errors due to offset voltages in the transistors, comprising:



compensating means connected to said ladder network to develop a flow of compensating current through the series resistors thereof;

said compensating current having a magnitude to produce across each of said series resistors a compensating voltage component at least substantially equal to the difference between the offset voltages of successive transistor current sources.

4,349,812

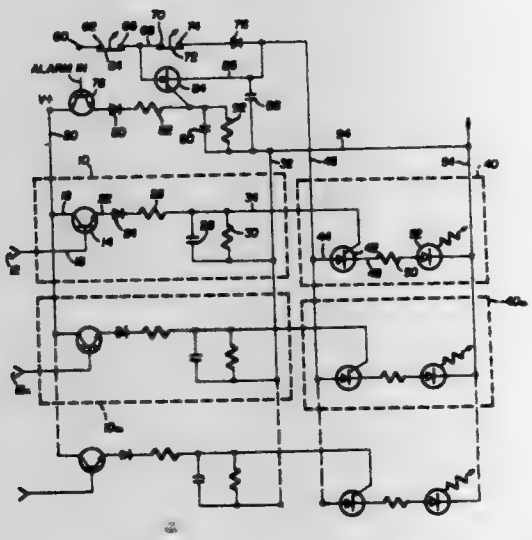
MULTIPLE DETECTOR ALARM LATCH AND RELEASE SYSTEM

William E. Healey, Bloomfield Hills, Mich., and Morse R. Heineman, White Rock, N. Mex., assignors to W. E. Healey and Associates, Inc., Bloomfield Hills, Mich.

Continuation-in-part of Ser. No. 187,355, Sep. 15, 1980, abandoned. This application Feb. 11, 1981, Ser. No. 233,684

Int. Cl.³ G08B *19/00*

U.S. Cl. 340—522 **11 Claims**



10. A method of monitoring a plurality of detectors, each of which detectors has an untriggered state and a triggered state comprising the steps of:

illuminating a visible display when a detector changes from an untriggered state into a triggered state;

latching said visible display in an illuminated condition so that said illuminated display remains illuminated when the detector switches back to an untriggered state;

providing a first release for releasing said latched illuminated display to remove the illumination therefrom; and

providing a second release to by-pass said first release, said second release for both removing the illumination from said latched illuminated display and for preventing inadvertent turning off of the illuminated display caused by actuation of said first release.

4,349,813

BLOWN FUSE SENSOR

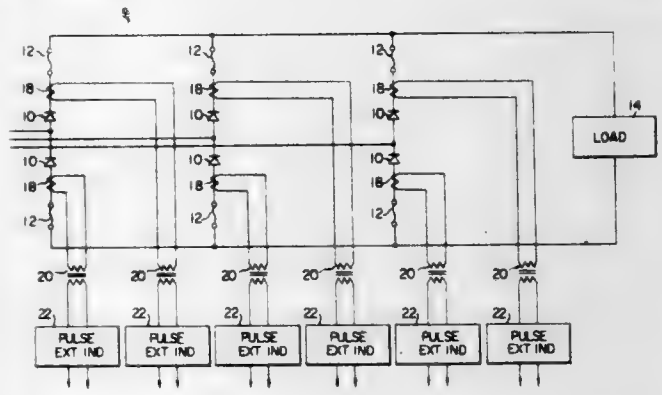
Naoto Ishibashi; Ryosuke Taniguti; Junichi Miyaji, and Yosaburo Ichinose, all of Nagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 14, 1980, Ser. No. 112,142

Claims priority, application Japan, Aug. 17, 1977, 52/98902

Int. Cl.³ G08B *21/00*; H02H *7/125*

U.S. Cl. 340—638 **2 Claims**



1. A rotary electric machine comprising: a rotor; an AC source disposed on said rotor; a DC load disposed on said rotor; and a rotating rectifier device disposed on said rotor connecting said AC source to said DC load and including a series connection rectifier and a fuse; and

a blown fuse sensor device disposed on said rotor for sensing occurrence of a failure of said rotating rectifier device, said blown fuse sensor device having a current transformer with a primary winding connected in series with said series connection, a secondary winding magnetically coupled to said primary winding for generating a pulse signal in response to a pulsating current flowing through said series connection, circuit means electrically coupled to said secondary winding for producing a signal indicative of the occurrence of a blowing of a fuse in response to an absence of said pulse signal for a predetermined period of time, an electrically insulating transformer connected between said secondary winding and said circuit means.

4,349,814

ELECTRIC SWITCHES

Douglas J. Akehurst, Hythe, England, assignor to Duraplug Electricals Limited, Broadstairs, England

Filed Oct. 3, 1980, Ser. No. 193,639

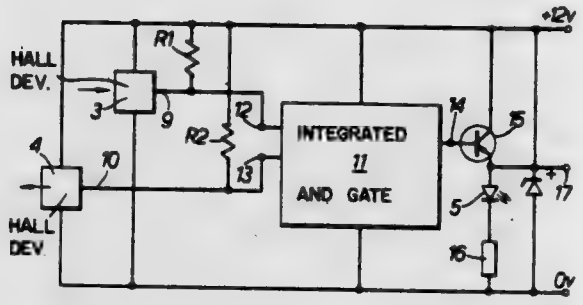
Claims priority, application United Kingdom, Oct. 8, 1979, 7934846

Int. Cl.³ G08B *19/00*; H01L *29/82*

U.S. Cl. 340—679 **9 Claims**

1. An electric switching device comprising two separate relatively movable parts, a first one of said parts including a housing having operative face means, at least two Hall effect devices fixed in the housing adjacent said operative face means and reversed in physical relationship to each other so as to be actuated by magnetic poles of opposite polarity presented against said face means, an electrical circuit including said Hall effect devices and electronic switching means having a normally conducting or non-conducting state and connected electrically to said Hall effect devices to change from said normal state to the opposite state only when all the Hall effect devices are actuated simultaneously, the other part of the device including operative face means adapted to cooperate with the

face means of the first part, and a plurality of magnetic pole means fixed in position with respect to said face means for actuating respective Hall effect devices in said one part when



said two parts are placed together in close proximity and with said face means cooperating with each other in predetermined spatial relationship.

4,349,815

HEAD-MOVABLE FRAME-SCANNER FOR HEAD-COUPLED DISPLAY

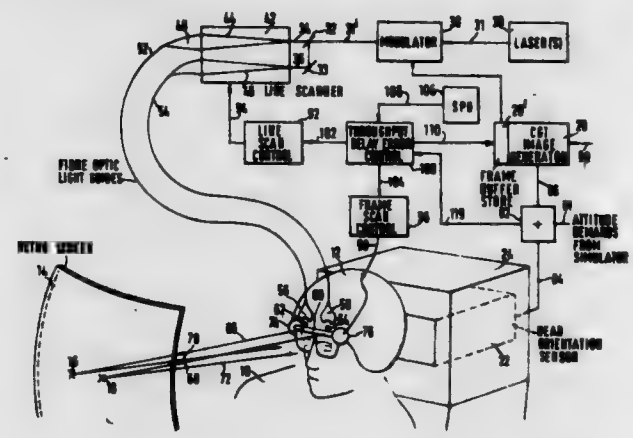
Archer M. Spooner, Orlando, Fla., assignor to Redifon Simulation Limited, Sussex, England

Filed Jan. 11, 1980, Ser. No. 111,284

Claims priority, application United Kingdom, Jan. 11, 1979, 7901007

Int. Cl.³ G09G *3/02*

U.S. Cl. 340—705 **11 Claims**



1. For apparatus providing a viewer with a wide-angle, television-type raster scanned image projected upon a concave screen by deflecting a light spot of modulated intensity to form a scanned line and deflecting successive scanned lines to form the changing raster scanned image, fixed line scanning means, frame scanning means movable with the viewer and intermediate flexible light guide means comprising a fibre optic light guide having groups of fibres thereof fanned at the input and output ends of the light guide into concave arcuate shape, the fibre groups corresponding in number to individual image spot elements of a single instantaneous scan line and being arranged in the same relative sequence at both input and output ends, said line scanning means comprising rotatable mirror means positioned to reflect an incident modulated light beam over the arcuate configuration of fibres at the input end of the light guide means, thereby to scan one line of the raster scanned image, said frame scanning means comprising angularly movable mirror means positioned at the output end of the light guide for frame scanning successive lines of the raster scanned image and said apparatus further comprising projection lens means positioned between the output end of the light guide means and the frame scanning mirror means for focussing the output ends of the fibres onto the said screen.

4,349,816

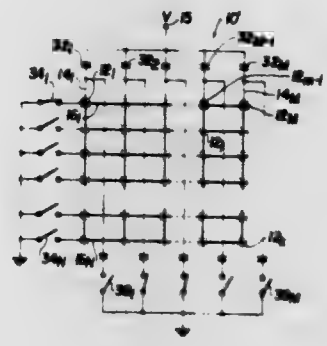
DRIVE CIRCUIT FOR MATRIX DISPLAYS

M. Robert Miller, Neptune, and Richard P. Tuttle, Wall, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 27, 1981, Ser. No. 248,666

Int. Cl.³ G09G *3/30*

U.S. Cl. 340—781 **14 Claims**



1. A drive circuit for light emissive elements electrically energizable from an electrical source of power, comprising in combination:

at least one light emissive element having an electrical capacitance of a predetermined value;

first electrical capacitive means having a capacitive value relatively greater than the capacitance value of said light emissive element;

first electrical switch means being operable in one of two operating states to couple said at least one light emissive element in series circuit relationship with said first electrical capacitance means across said source of power whereby a capacitive voltage divider action occurs to apply a voltage of sufficient magnitude across said light emissive element to energize said element;

second electrical capacitance means also having a capacitance value relatively greater than the capacitance value of said light emissive element; and

second electrical switch means being operable in one of two operating states to couple said second electrical capacitance means in parallel circuit relationship with said light emissive element whereby a capacitive voltage divider action occurs to apply a voltage of insufficient magnitude across said light emissive element to energize said element when said first switch means is also in its said one operating state.

4,349,817

LIQUID CRYSTAL DISPLAY SYSTEM USING FIBER OPTIC FACEPLATES

William C. Hoffman, 23217 Wade Ave., Torrance, Calif. 90505; John E. Gunther, 21217 S. Harvard, Torrance, Calif. 90501, and William R. Lichty, 6001 Canterbury Dr., Culver City, Calif. 90230

Filed Jan. 28, 1980, Ser. No. 116,364

Int. Cl.³ G09G *3/36*

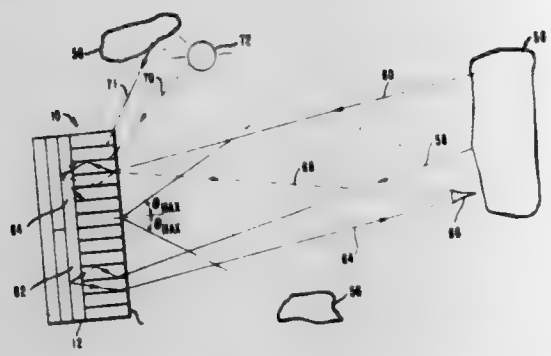
U.S. Cl. 340—784 **13 Claims**

1. In an image projection system wherein a light source illuminates the display surface of a reflective liquid crystal light valve operating in the dynamic scattering mode, and a projection lens images said display surface onto a projection screen, the improvement comprising:

(a) a fiber optic faceplate adjacent said liquid-crystal display surface, said faceplate having a multiplicity of straight and rigid optical fibers whose longitudinal axes are parallel to each other and perpendicular to the faces of said faceplate whereat they all terminate and to said liquid-crystal display surface so as to provide a direct and undistorted light path to and from said display surface, each of said fibers having an acceptance cone which defines exclusively the angle of incident light transmitted in either direction by

said fibers, said acceptance cone being substantially smaller than the one-state scattering cone of said liquid-crystal display surface; and

(b) means for directing light from said light source onto said



faceplate within said acceptance cone, whereby light is transmitted through said faceplate to said liquid crystal display surface where at least a portion of said light is directed back through said faceplace so as to be imaged by said lens onto said projection screen.

4,349,818

ELECTROCHROMIC DISPLAY DEVICE

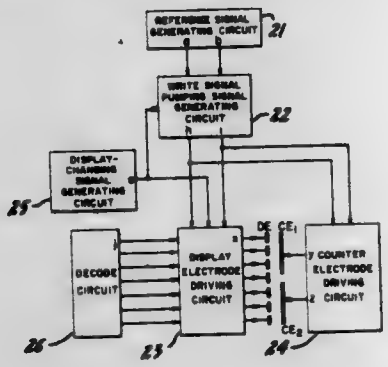
Noboru Kaneko, and Junichi Tabata, both of Tokyo, Japan, assignors to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed Jul. 3, 1980, Ser. No. 165,502

Claims priority, application Japan, Jul. 4, 1979, 54-084860

Int. Cl.³ G09G *3/34*

U.S. Cl. 340—785 **11 Claims**



1. An electrochromic display device comprising: an electrolyte held between two substrates at least one of which is transparent; a display electrode formed on a surface of one of said substrates and including an electrochromic substance film, said surface being in contact with said electrolyte; a first counter electrode formed on a counter surface of the other of said substrates, said counter surface being spaced from and facing said display electrode; a second counter electrode formed on a face of one of said two substrates, said face being in contact with said electrolyte; means for selectively applying a voltage between said display electrode and said first counter electrode to effect the coloration of said display electrode; means for selectively intermittently applying a voltage between said first counter electrode and said second counter electrode to effect removal of a minus ion layer which forms in the vicinity near said first counter electrode; and means for alternately changing the application of the voltage from between said display electrode and said first counter electrode to the application of the voltage between said first counter electrode and said second counter electrode.

4,349,819

SYSTEM FOR DRIVING A PLASMA DISPLAY PANEL DEVICE

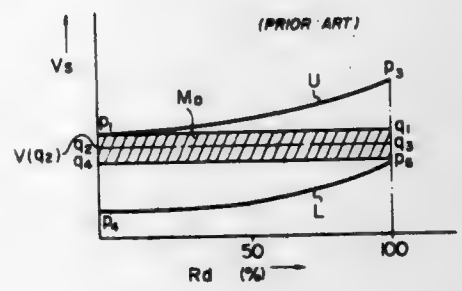
Toshiaki Terakawa, Machida, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 28, 1980, Ser. No. 135,181

Claims priority, application Japan, Mar. 29, 1979, 54-37398

Int. Cl.³ G09G *3/28*

U.S. Cl. 340—812 **6 Claims**



1. A system for driving a plasma display panel device, said device having dischargeable spots formed by cross points between X-directional electrodes and Y-directional electrodes, a drive circuit supplying discharge sustaining voltages and information writing-in voltages to said X-directional and Y-directional electrodes and a power source supplying power to said drive circuit, for increasing said discharge sustaining voltage with increasing the value of the discharge current through the discharging spots, said discharge current through the discharging spots corresponding to the current supplied to said drive circuit by said power source, said system comprising;

means for dropping in at least one step the voltage that is applied to said drive circuit from said power source, said dropping means comprising a respective stage for each said step,

means for detecting the current supplied to said drive circuit,

switching means for controllably shunting each said stage of said dropping means, responsive to the value of said detected current, so that said voltage that is applied to said drive circuit increases in stepwise fashion in correspondence to at least two predetermined different ranges of the ratio of the number of said discharging spots to the number of said dischargeable spots of said plasma display panel.

4,349,820

TONE SIGNAL DECODER

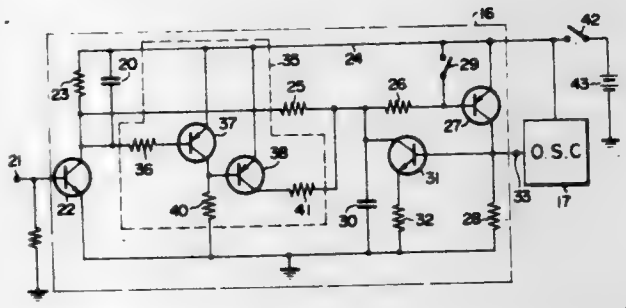
Keisuke Iwata, Tokyo, Japan, assignor to Iwata Electric Co., Ltd., Tokyo, Japan

Filed Aug. 25, 1980, Ser. No. 180,938

Claims priority, application Japan, Aug. 25, 1979, 54-108396

Int. Cl.³ H04Q *1/44*; G08B *13/22*

U.S. Cl. 340—825.71 **5 Claims**



1. A tone signal decoder responsive to a predetermined tone signal, comprising: a power source, an input terminal to which a tone signal is applied, means comprising a charge and discharge circuit having a capacitor and connected to said input terminal for controlling charging and discharging of said ca-

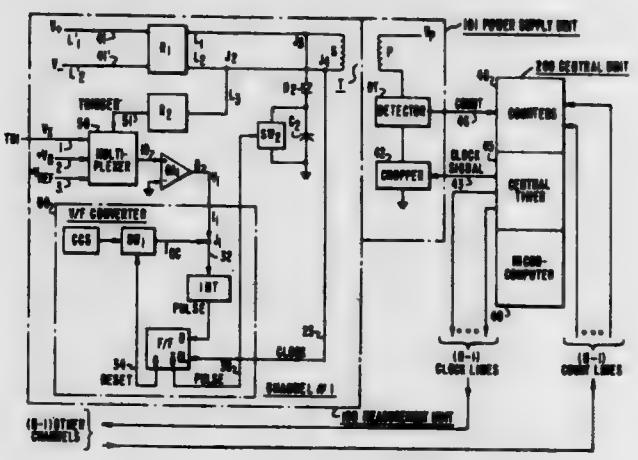
pacitor in response to said tone signal, means comprising a bypass circuit connected to said charge and discharge circuit for operating so that when said tone signal is not applied, said capacitor is placed in a respective one of the charge and discharge states corresponding to the absence of the tone signal within a time shorter than that required by said charge and discharge circuit, and a threshold circuit actuated when the capacitor terminal voltage reaches a threshold level because of said respective one of said charge and discharge states of said capacitor.

4,349,821

DATA ACQUISITION SYSTEM AND ANALOG TO DIGITAL CONVERTER THEREFOR

Gyorgy I. Vancsa, Pittsburgh, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 28, 1980, Ser. No. 116,053
Int. Cl.³ H04Q *5/00*
U.S. Cl. 340—870.21 **5 Claims**



1. In a multiplexed data acquisition system for deriving digital data with the assist of a digital computer in relation to a plurality of remote analog data measuring points with at least two analog input signals available at each of said measuring points, the combination of:

a like plurality of voltage-to-frequency (V/F) converters and respective multiplexers, each associated locally with a corresponding measuring point;

a central clock associated with said computer for providing a clock signal;

a like plurality of isolation transformers for providing communication and power, each between said computer and a corresponding one of said converters and associated multiplexer;

each of said V/F converters having a conversion cycle synchronized by said clock signal through said transformers;

said computer interrupting said clock signal to select with said multiplexers one of said two input signals at said measuring points to be passed to the associated V/F converter; and

said associated V/F converter outputting a train of pulses characterizing said passed one analog input signal, and said train of pulses being passed to said computer through the associated one of said transformers; and

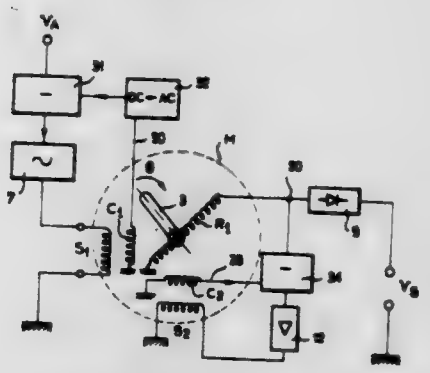
counter means associated with said computer for counting said pulses during a predetermined measurement time interval.

4,349,822

INDUCTIVE POTENTIOMETER

Jacques Decalonne, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Mar. 26, 1980, Ser. No. 134,337
Claims priority, application France, Mar. 28, 1979, 79 07802
Int. Cl.³ G08C *19/48*
U.S. Cl. 340—870.34 **9 Claims**



1. An inductive potentiometer to provide, from a d.c. supply voltage a d.c. output voltage following substantially a linear variation as a function of the rotation angle of a rotating spindle, comprising:

a rotating machine of the synchro-resolver type, having a rotary variable coupling between first and second windings respectively mounted on a stator and a winding on a rotor, the rotor being fixed to said rotating spindle; and

associated circuits including modulating means for converting said d.c. supply voltage into an a.c. voltage to supply the first stator winding, demodulating means for converting an a.c. voltage induced in said rotor winding into said d.c. output voltage; and

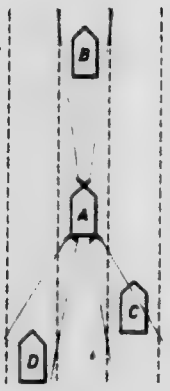
means for providing said linear variation including an amplifier circuit of determined gain G for applying said a.c. rotor induced voltage to the second stator winding to multiply the output voltage by a reducing factor which varies in inverse relation to the gain and rotation angle, to ensure said linear variation.

4,349,823

AUTOMOTIVE RADAR MONITOR SYSTEM

Katsutoshi Tagami, Asaka; Takaya Senzaki, Iruma; Nobuhiko Suzuki, Tokyo, and Eiji Murao, Asaka, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 22, 1980, Ser. No. 171,165
Claims priority, application Japan, Jul. 24, 1979, 54-94106
Int. Cl.³ G01S *13/00*; G08B *23/00*; G08G *1/00*
U.S. Cl. 343—7 VM **4 Claims**



1. An automotive radar monitor system which comprises, in combination:

front monitor radar means for detecting a vehicle interval and relative velocity with an object in the front at any given moment;

rear-left and rear-right monitor radar means for detecting a

vehicle interval or intervals at any given moment with an object in the front, or an object or objects in the rear, left and/or right with respect to a vehicle in question provided with said system, respectively;

channel switching means for processing detection signals from said front and rear radar means in a time-division manner;

signal processing circuit means for obtaining an appropriate vehicle interval at a given moment in terms of the travelling speed of said vehicle and relative velocity with said front object at that moment so as to compare said appropriate vehicle interval with an actual vehicle interval with said object at that moment, thereby to output a warning signal relating to said vehicle interval, and for providing signals indicating an attitude of approach of an object or objects in the rear left and/or right at any given moment; and

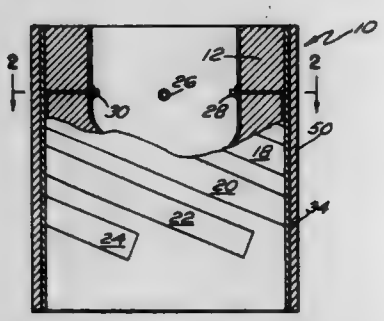
display means for indicating a warning in an integrally simulated fashion as to a vehicle interval with said front object at any given moment and as to the state of approach of a rear object or objects with respect to said vehicle in question at any given moment.

4,349,824

AROUND-A-MAST QUADRIFILAR MICROSTRIP ANTENNA

Eleanor S. Harris, Guilford, Conn., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 1, 1980, Ser. No. 192,742
Int. Cl.³ H01Q *1/34, 1/36*
U.S. Cl. 343—700 MS **11 Claims**



1. An Around-A-Mast quadrifilar microstrip antenna for the periscope of a submarine which comprises:

a cylinder of a non-conductive material having metal plated at the top, bottom and inner surfaces thereof and forming a common ground plane from the top, bottom and inner surfaces;

a plurality of generally parallel conductive bands electrically isolated from said common ground plane on the outer surface of said cylinder;

connecting means for each member of said plurality of conductive bands on the outer surface of said cylinder; and

matching networks for delaying appropriately the outputs from each member of said plurality of conductive bands on the outer surface of said cylinder.

4,349,825

ANTENNA ASSEMBLY FOR HIGH FREQUENCY RANGES

Clarence F. Shmitka, 8554 Lurline Ave., Canoga Park, Calif. 91306

Filed Jun. 16, 1980, Ser. No. 160,086
Int. Cl.³ H01Q *9/00*
U.S. Cl. 343—750 **15 Claims**

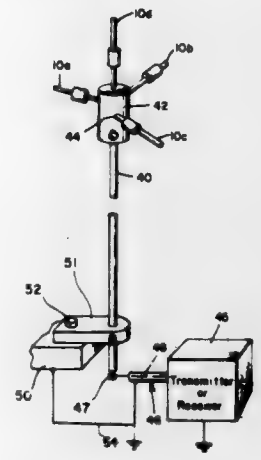
1. A multi-band antenna assembly being capable of being tuned separately for each of a plurality of different predetermined frequency ranges and comprising in combination:

a. a conventional single band tunable antenna including a mast, a conventional resonator fixedly mounted on said mast and a rod capable of telescoping into and out of said conventional resonator;

b. a multi-band adaptor including:

c. a collar capable of being slidable over said mast and being fixed to said mast;

d. a plurality of dielectric rods, each having a length corresponding to a predetermined frequency range;



e. an insulated wire wound helically about each of said rods to form a coil;

f. a tuning sleeve capable of sliding over each of said helically wound wires; and

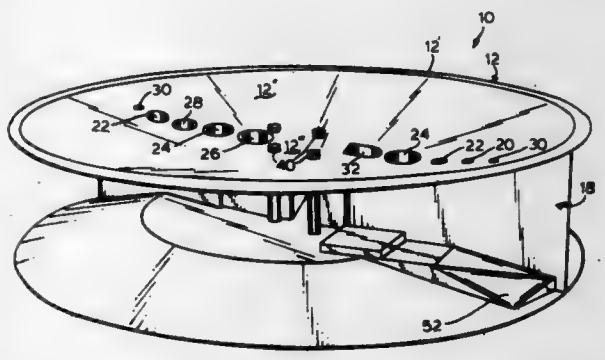
g. a plurality of openings in said collar for receiving each one of said rods to form an acute angle between each of said rods and said mast.

4,349,826

SIMPLE HORIZONTALLY POLARIZED OMNIDIRECTIONAL ANTENNA

Constantino Lucanera, Spring Valley, N.Y., assignor to International Standard Electric Corporation, New York, N.Y.

Filed Aug. 27, 1980, Ser. No. 181,576
Int. Cl.³ H01Q *13/00*
U.S. Cl. 343—773 **8 Claims**



1. An antenna capable of producing a horizontally polarized omnidirectional radiation pattern, comprising:

first and second substantially disc-shaped elements positioned co-axially and in opposing relation to one another;

an elongated connecting structure mounted between and attached to each of said substantially disc-shaped elements at their common axis,

a waveguide section within said connecting structure terminating in a pair of slots on opposite sides of said connecting structure;

a probe positioned symmetrically within said waveguide section, said probe and waveguide section arranged such that, in operation, an equal phase and amplitude distribution are produced at said slots; and

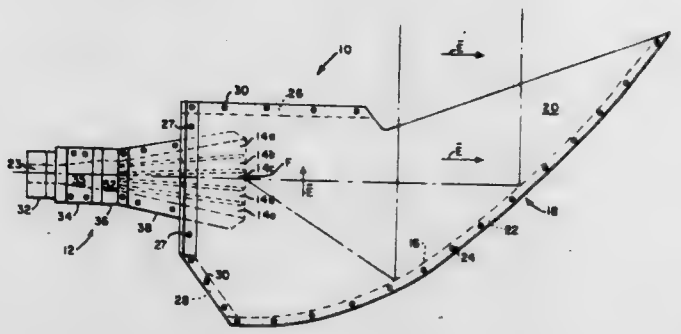
a co-axial supply means connected to said probe.

4,349,827

PARABOLIC ANTENNA WITH HORN FEED ARRAY

Stephen D. Bixler, Goleta; David T. Thomas, and Donald H. Archer, both of Santa Barbara, all of Calif., assignors to Raytheon Company, Lexington, Mass.

Filed Nov. 24, 1980, Ser. No. 209,934
Int. Cl.³ H01Q *13/02*
U.S. Cl. 343—786 2 Claims



1. A feed structure having a plurality of feed ports comprising:

(a) an input waveguide section means for supporting radio frequency energy having an electric field normal to opposing parallel sidewall portions of the input waveguide section means;

(b) a flared waveguide section means having diverging sidewalls and a narrow opening disposed adjacent the input waveguide section means for supporting radio frequency energy fed thereto by the input waveguide section means, such supported energy having an arcuately shaped electric field extending across the diverging sidewalls;

(c) a second waveguide section means disposed adjacent a wide opening of the flared waveguide section means for converting the arcuately shaped electric field of energy passing from the wide opening to the second waveguide section means into a linear electric field disposed normal to parallel opposing sidewalls of the second waveguide section means; and,

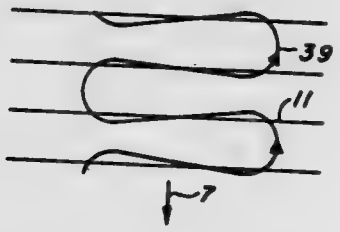
(d) a third waveguide section means disposed contiguous to the second waveguide section means and fed by energy passing thereto from such second waveguide section means with the linear electric field, such third waveguide section having a pair of opposing sidewalls and a plurality of spaced conductive members disposed between the pair of opposing walls to provide a plurality of channels between the second waveguide section means and the plurality of feed ports.

4,349,828

METHOD AND APPARATUS FOR OSCILLATING AN ARRAY OF MARKING ELEMENTS

Kenneth H. Fischbeck, Dallas; Marcus M. Schnarr, Lewisville, both of Tex., and Demetris F. Paraskevopoulos, Pittsford, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Feb. 4, 1980, Ser. No. 118,023
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—1.1 2 Claims



2. A method of moving an array of marking elements relative to a continuously moving mark-receiving surface, which comprises:

(a) moving a mark-receiving surface continuously in a first direction;

(b) oscillating an array of marking elements in a direction perpendicular to said first direction, such that the relative motion of said array over said mark-receiving surface forms a sine wave trace;

(c) modifying said sine wave trace to more closely define a rectangular grid trace by

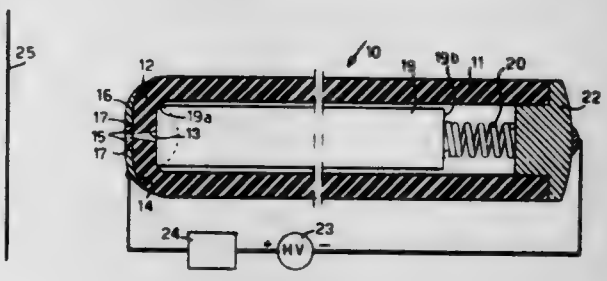
(d) oscillating said array in a direction parallel to said first direction in such manner that, when said array is at either extreme of its perpendicular direction oscillation, said array is moving in a direction parallel to but in the opposite direction as the direction of movement of said mark-receiving surface.

4,349,829

NON-IMPACT PRINTING METHOD

Michele Bovio, Brosso; Aquilino Barbero, Pavone; Walter Gillone, Ivrea, and Pierangelo Berruti, Chivasso, all of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Continuation of Ser. No. 972,267, Dec. 22, 1978. This application Jul. 30, 1980, Ser. No. 173,822
Claims priority, application Italy, Dec. 28, 1977, 69927 A/77
The portion of the term of this patent subsequent to Dec. 9, 1997, has been disclaimed.
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—140 R 20 Claims



1. Non impact process for printing on a paper sheet comprising the steps of:

locating at least one electrically conductive solid block of ink in an insulating container having a nozzle;

locating said container with the nozzle directed toward and close to said paper; and

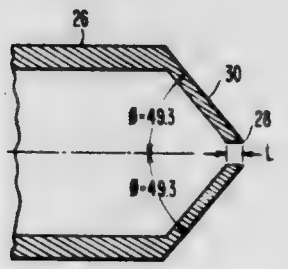
generating a potential difference between said block and the paper sufficient to break down the air dielectric along said nozzle and produce a corresponding electrical discharge onto said block to erode ink particles from said block and cause their transfer through said nozzle onto said paper.

4,349,830

CONICAL NOZZLE FOR AN ELECTROSTATIC INK JET PRINTER

Robert E. Rudd, III, Danbury, Conn., assignor to Burroughs Corporation, Detroit, Mich.

Filed Nov. 12, 1980, Ser. No. 206,012
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—140 R 17 Claims



1. An electrostatic ink jet system comprising:

ink supply means for containing a supply of ink;

an ink jet nozzle mounted on said ink supply means, said ink jet nozzle including a fine pipe having a longitudinal channel for feeding said ink therethrough into a separately positioned piece of paper under control of an electric field, the end of said pipe nearest the paper having a conical configuration, the portion of said pipe adjacent to said conical configuration having a tubular configuration, an oriface passing through the tip of the conical configuration, the wall of said oriface being parallel with the axis of said longitudinal channel, the diameter of the longitudinal channel increasing between the tip of said conical configuration and the end of said tubular configuration adjacent to said conical configuration, the inner surface of said conical configuration forming an angle of approximately 49.3° with the axis of said longitudinal channel;

said piece of paper mounted on a conductive platen; and

wherein said electric field is applied between said platen and said ink jet nozzle.

4,349,831

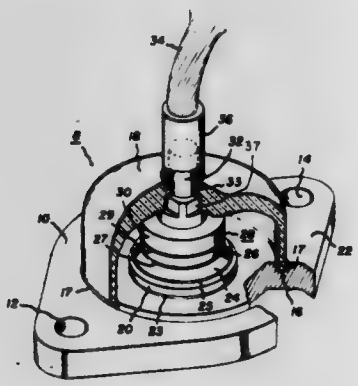
SEMICONDUCTOR DEVICE HAVING GLASS AND METAL PACKAGE

Jean P. Theroux, Marcellus, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Filed Sep. 4, 1979, Ser. No. 71,834

Int. Cl.³ H01L *23/02, 23/12, 23/30*

U.S. Cl. 357—74 **12 Claims**



1. A semiconductor device comprising:

a base member having a first surface;

a semiconductor subassembly attached to said first surface, said subassembly including a semiconductor element and first and second stress relief members bonded to first and second surfaces of said element respectively;

an electrode attached to said semiconductor subassembly, said electrode including a locking portion;

bell shaped glass cover means surrounding said semiconductor subassembly and having an opening for passing said electrode therethrough, said glass cover means including means for engaging said locking portion of said electrode; and

adhesive sealing means joining said glass cover means to said base member and to said electrode including said locking portion to form a hermetic enclosure containing said semiconductor subassembly.

4,349,832

DIGITAL DATA RATE CORRECTOR AND TIME BASE CORRECTOR

Luigi C. Gallo, Woodside, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Continuation of Ser. No. 763,762, Jan. 28, 1977, Pat. No. 4,181,817. This application Dec. 31, 1979, Ser. No. 108,912

Int. Cl.³ H04N *5/785, 9/02*

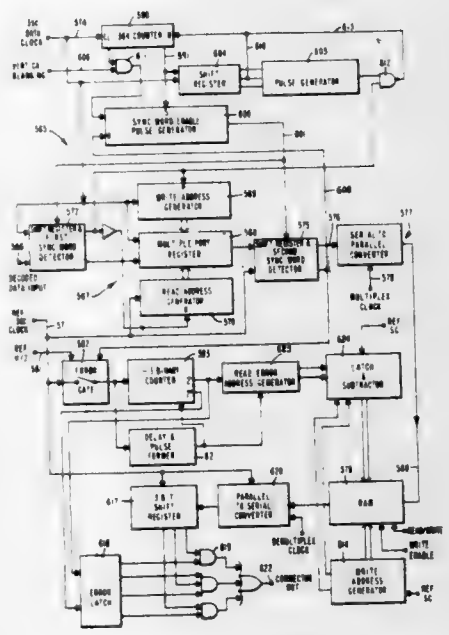
U.S. Cl. 358—8 **11 Claims**

9. A digital time base compensator for correcting timing errors in a stream of digital data, said digital data occurring at intervals and a rate that varies with timing errors and including a selected sequence of digital data bits that periodically occurs in the stream of digital data in phase with the digital data, comprising:

a first clock signal generator for generating a first clock signal at a variable rate in accordance with that of the digital data;

a second clock signal generator for generating a second clock signal at a reference rate;

a detector responsive to the first clock signal to receive the stream of digital data for generating a first indicating signal upon the detection of the occurrence of the selected sequence of digital data bits;



a digital data memory for temporarily storing the digital data at a time after the receipt of the digital data by the detector, said digital data memory responsive to one of said first and second clock signals for entering the digital data for storage at a rate determined by said one clock signal and responsive to the other of said first and second clock signals for retrieving the stored digital data at a rate determined by said other clock signal, said digital data memory further responsive to the first indicating signal for initially setting the relative times of entering and retrieving digital data.

4,349,833

APPARATUS FOR DIGITAL DEMODULATION OR MODULATION OF TELEVISION CHROMINANCE SIGNALS

Christopher K. P. Clarke, Crawley, England, assignor to British Broadcasting Corporation, London, England

Filed Sep. 8, 1980, Ser. No. 185,069

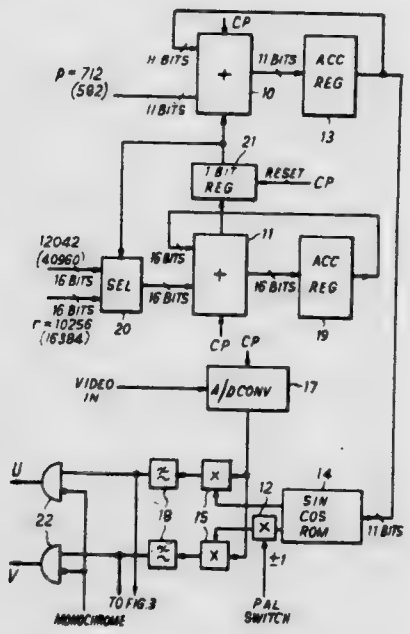
Claims priority, application United Kingdom, Sep. 12, 1979, 7931678

Int. Cl.³ H04N *9/535*

U.S. Cl. 358—23 **8 Claims**

1. Apparatus for digitally demodulating or modulating colour television chrominance signals, comprising a source of clock pulses, a sampling analogue-to-digital converter responsive to the signal to be demodulated or modulated and to the clock pulses to sample and digitize said signal, a q-value memory storing an integral number q of sine-function values for generating a series of digital samples of a subcarrier signal having a predetermined period for the demodulation or modulation, a register for an address accessing the digital values

from the memory, and means responsive to the clock pulses to repeatedly add a value p to said address, the integers p and q



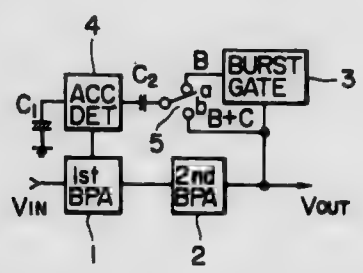
having a ratio p/q at least approximately equal to the ratio of the period of the clock pulses to the subcarrier period.

4,349,834

CHROMA SIGNAL GAIN CONTROL CIRCUIT

Kenichi Tonomura, Tachikawa; Kyoichi Takahashi, Kodaira, and Makoto Furihata, Tachikawa, all of Japan, assignors to Hitachi, Ltd. and Hitachi Microcomputer Engineering Ltd., both of Tokyo, Japan

Filed Feb. 25, 1981, Ser. No. 237,898
Claims priority, application Japan, Mar. 12, 1980, 55-30375
Int. Cl.³ H04N *9/535*
U.S. Cl. 358—27 **10 Claims**



1. A chroma signal gain control circuit comprising: a first band pass amplifier having a variable gain function; a second band pass amplifier connected to receive at its input the amplified output of the first band pass amplifier; a burst gate circuit connected to receive at its input the amplified output of the second band pass amplifier; switch circuit means for selectively transmitting either the output of said burst gate circuit or the output of the second band pass amplifier to the output thereof; and an ACC detecting circuit connected to receive the output of said switch circuit means for generating a gain control signal which is applied in control of said first band pass amplifier.

4,349,835

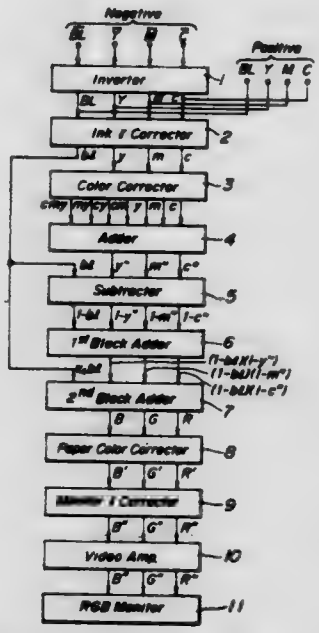
COLOR PRINTING PROCESS SIMULATOR

Satoru Horiguchi, Saitama; Takeshi Sasaoka, and Koichi Shimane, both of Kawasaki, all of Japan, assignors to Dai Nippon Printing Co., Ltd. and Ikegami Tsushinki Co., Ltd., both of Tokyo, Japan

Filed Feb. 25, 1981, Ser. No. 237,904
Claims priority, application Japan, Mar. 4, 1980, 55-27150
Int. Cl.³ H04N *9/02*
U.S. Cl. 358—76 **10 Claims**

1. A method for reproducing a color image on a screen of a color monitor for simulating a color printing process comprising

a step of processing primary color signals, which are obtained by scanning a set of color separation films formed from a color original to be simulated, on the basis of color reproduction equations of halftone representing three additive



primary colors to derive secondary color signals and a tertiary color signal; and

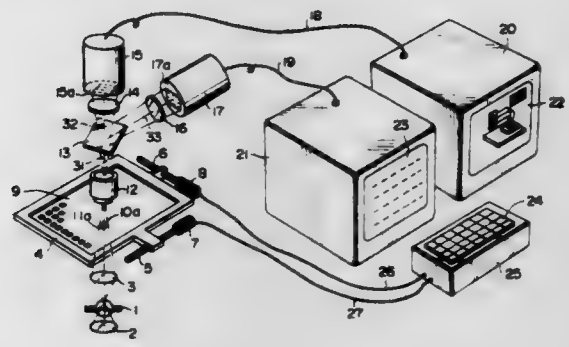
a step of adjusting amplitudes of a signal expressing paper color, the primary color signals, the secondary color signals, the tertiary color signal and the primary color signal of black in this order independently from each other.

4,349,836

APPARATUS FOR DISPLAYING INFORMATION

Yukio Sawano, Asaka, Japan, assignor to Fuji Photo Film Co., Ltd., Japan

Continuation of Ser. No. 641,493, Dec. 17, 1975, abandoned. This application Nov. 29, 1977, Ser. No. 855,626
Claims priority, application Japan, Dec. 19, 1974, 49-146089
Int. Cl.³ G03B *23/08, 21/00*; H04N *7/18*
U.S. Cl. 358—93 **2 Claims**



1. An apparatus for displaying a plurality of kinds of related information simultaneously comprising:

a plurality of superposed information carrying media having different kinds of visible information related to each other recorded separately thereon in different colors to be detected independently of each other,

illuminating means provided on one side of the information carrying media for illuminating said media,

a plurality of image pick up tubes provided on the other side of the media,

projecting means disposed between the media and the pick up tubes for projecting superposed images of the information carried by the media simultaneously onto all the image pick up tubes, said projecting means comprises a single projection lens and an image separating means

disposed between the projection lens and the plurality of image pick up tubes for separating light from the projection lens and projecting images separately on the tubes,

a color separating means provided between the projecting means and the respective image pick up tubes for separately projecting the images of different color onto the image pick up tubes, and

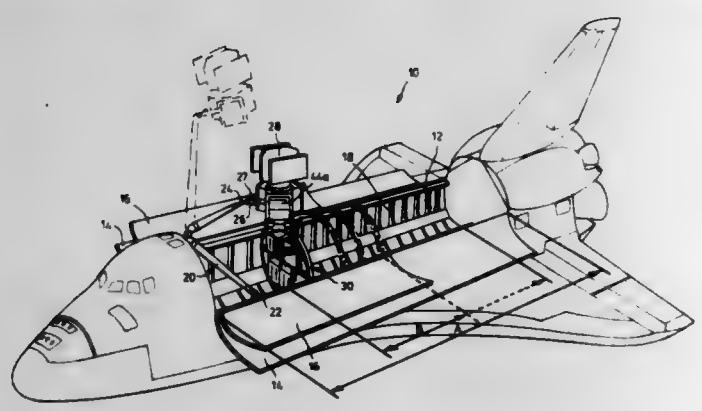
a plurality of display devices connected with the image pick up tubes respectively for simultaneously displaying said plurality of kinds of related information.

4,349,837

SATELLITE SERVICING

Charles M. Hinds, Weston, Canada, assignor to Spar Aerospace Limited, Weston, Canada

Division of Ser. No. 54,829, Jul. 3, 1979, Pat. No. 4,273,305.
This application May 6, 1980, Ser. No. 147,208
Int. Cl.³ H04N 7/18
U.S. Cl. 358—93 **5 Claims**



1. In a remote manipulator system in which a television camera is mounted at a free end of a manipulator arm to relay a target image to a monitor having image alignment markings thereon, the manipulator arm having an end effector located at the free end thereof for use in mounting and releasing a complementary component with respect to a support structure, the improvement of;

(a) a target mounted at a site remote from said complementary component in a direct line of vision of said camera when said end effector is axially aligned with said complementary component and said complementary component is mounted on said support structure, said target being proportioned such that its image viewed at the monitor is coextensive with the image alignment markings of said monitor when said end effector is operably positioned to mount or release said complementary component with respect to its associated support structure.

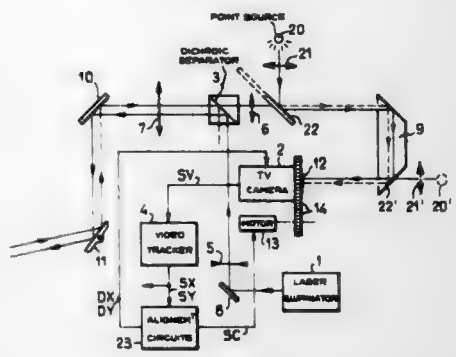
4,349,838

LASER TARGET DESIGNATOR SYSTEM

Jean P. Daniel, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Jan. 28, 1981, Ser. No. 229,261
Claims priority, application France, Feb. 1, 1980, 80 02250
Int. Cl.³ H04N 7/18
U.S. Cl. 358—125 **6 Claims**

1. A laser target designator system comprising: a laser illuminator; an electronically swept video image sensor; video tracking means with a tracker processing on the basis of the video signal the error signals at X and Y of the designated target; a system of optical components defining the respective transmission and reception paths, certain of these optical components being developed for orienting the laser beam and for receiving, in the same direction, the radiation of the external scene included in the sighting field of the sensor; a sensor rotation device; and an alignment device for making the laser beam axis coincide with that of the sighting field leading to the centre of the swept image on the sensor, said device comprising a point light source, an optical system for focusing the radiation of the source on the sensor via a mirror interposed on the reception path and which interrupts the reception of the radiation of the scene towards the sensor during the alignment phase, and electronic means for processing the error signals at X and Y and producing sweep correction signals intended for the sensor for displacing the centre of the image, said electronic means



comprising means for controlling the rotation device for producing a plurality of predetermined successive angular positions, means for storing successive error data on the image point of the source and means for calculating on the basis of the stored data errors of the invariable point of the image corresponding to the sensor rotation axis, said errors defining the sweep correction signals at X and Y to be applied to the sensor.

4,349,839

VERTICAL SYNC COUNTER HAVING MULTI MODES OF OPERATION FOR DIFFERENT TV SYSTEMS STANDARDS

Michael McGinn, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 29, 1980, Ser. No. 220,610
Int. Cl.³ H04N 5/04
U.S. Cl. 358—148 **19 Claims**

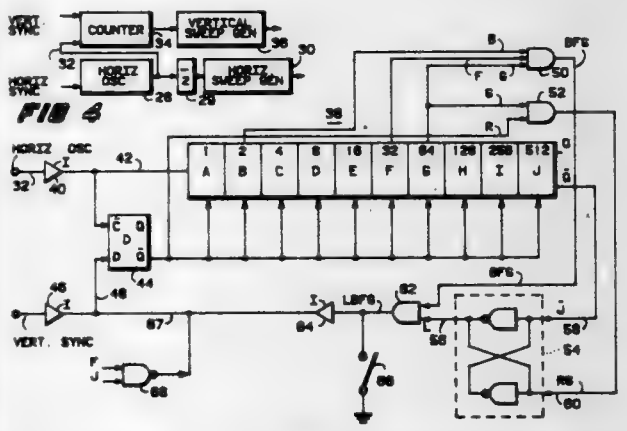


FIG 4

1. A vertical counter for a TV receiver having a horizontal oscillator for providing horizontal sync pulses which are coupled to at least said counter to be counted thereby:

said counter adapted to provide output pulses to a vertical sweep generator,

said counter adapted to receive a vertical sync pulse to synchronize said counter,

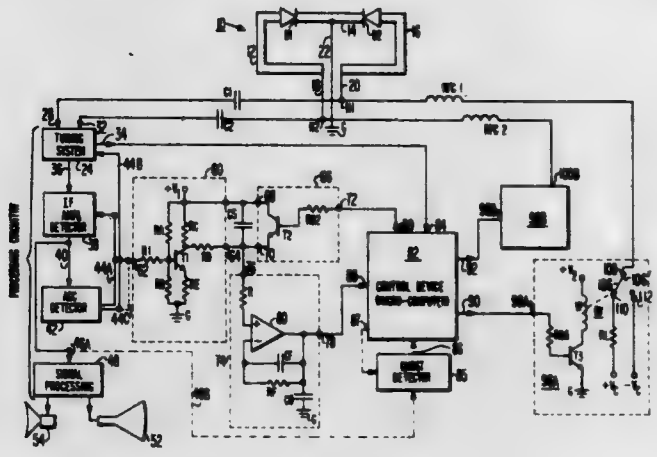
said counter having a first mode of operation wherein said counter counts up to a first predetermined number of said horizontal pulses at which time said counter is automatically reset and at least a second mode of operation wherein said counter counts up to a second predetermined number of said horizontal pulses at which time said counter is automatically reset.

4,349,840

APPARATUS FOR AUTOMATICALLY STEERING AN ELECTRICALLY STEERABLE TELEVISION ANTENNA

John G. N. Henderson, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 25, 1980, Ser. No. 210,248
Int. Cl.³ H04N 5/44
U.S. Cl. 358—188 21 Claims



1. In a receiver having a tuning system for selecting a channel frequency to be received, apparatus comprising:

a loop antenna;

switch means cooperating with said loop antenna responsive to an electrical control signal for producing a plurality of reception pattern conditions of said loop antenna;

comparison means for determining the amplitude of signals received from said loop antenna with each said reception pattern condition and for automatically determining when said reception pattern condition produces said received signal of a predetermined amplitude condition; and

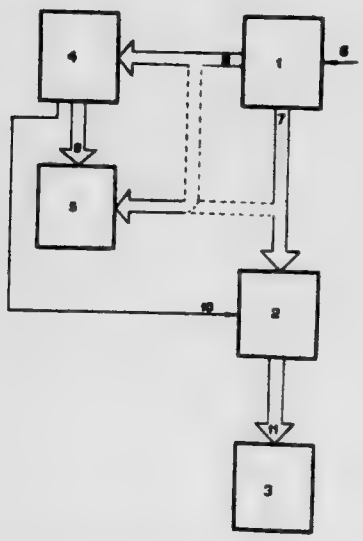
control means responsive to said comparison means for applying said electrical control signal to said switch means to establish said loop antenna in the reception pattern condition for said predetermined amplitude condition.

4,349,841

METHOD AND SYSTEM FOR INCREASING THE NUMBER OF INSTRUCTIONS TRANSMITTED IN DIGITAL SYSTEMS, I.A. IN SYSTEMS FOR REMOTE CONTROL OF TELEVISION RECEIVERS

Franciszek Marciniak, Warsaw, Poland, assignor to Zaklady Telewizyjne Unitrapolkolor Osrodek Badawczo-Rozwojwy Techniki Telewizyjnej, Warsaw, Poland

Filed Dec. 28, 1979, Ser. No. 108,077
Claims priority, application Poland, Dec. 30, 1978, 212382
Int. Cl.³ H04N 5/44
U.S. Cl. 358—194.1 5 Claims



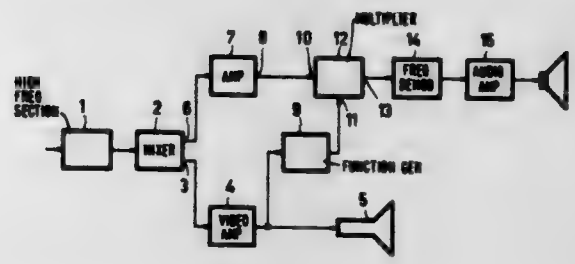
1. A method of increasing the number of instructions transmitted in remote control systems of television receivers and the like in which decoded signals directly control receiving units, comprising transmitting coded instructions in a command signal (6), decoding said instructions into a first part of an instruction signal (8), processing said first part of the instruction signal (8) in a strobing signal generation circuit (4) to provide a first signal (10) in a form for enabling the transmission of a control signal (7) through a register (2) in the form of a stored signal (11) to first receiving units (3) to be controlled while simultaneously providing a second signal (9) in a form for blocking the reception of one of said instruction signal (8) and said control signal (7) by additional receiving units (5) to be controlled, transmitting an additional coded instruction in said command signal, decoding said additional instruction into a second part of the instruction signal (8), processing said second part of the instruction signal (8) in said strobing signal generation circuit (4) to provide said first signal (10) in a form for blocking further storage of said control signal (7) in said register (2) while simultaneously providing said second signal (9) in a form for enabling the reception of said one of said instruction signal (8) and said control signal (7) by said additional receiving units (5) to be controlled, and transmitting a coded erasing instruction in said command signal for restarting the method.

4,349,842

TELEVISION RECEIVER FOR RECEIVING A PICTURE CARRIER WHOSE AMPLITUDE IS MODULATED WITH A VIDEO SIGNAL, AND A SOUND CARRIER WHOSE FREQUENCY IS MODULATED WITH AN AUDIO SIGNAL

Hans J. Apeldoorn, and Miloslav Tryzna, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 16, 1980, Ser. No. 197,449
Claims priority, application Netherlands, Nov. 9, 1979, 7908216
Int. Cl.³ H04N 5/62
U.S. Cl. 358—197 5 Claims



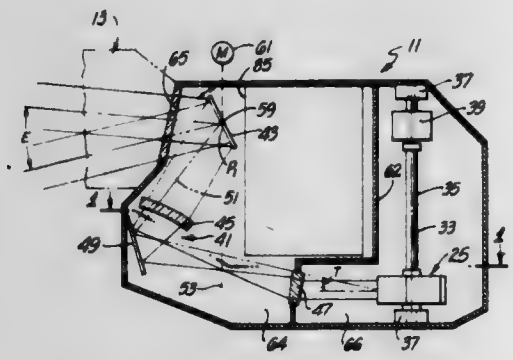
1. A television receiver for receiving a picture carrier whose amplitude is modulated with a video signal, and a sound carrier whose frequency is modulated with an audio signal comprising: a mixing circuit for generating the demodulated video signal and an amplitude-modulated sound intercarrier signal, a frequency demodulator for generating the demodulated audio signal, and a multiplying-dividing circuit for dividing said sound intercarrier signal by the amplitude modulation signal detected at an output terminal of said mixing circuit and for applying a sound intercarrier signal with a substantially constant amplitude to said frequency demodulator.

4,349,843

TELEVISION COMPATIBLE THERMAL IMAGING SYSTEM

Katherine D. Laakmann, and Peter Laakmann, both of Laguna Niguel, Calif., assignors to Flir Systems, Inc., Lake Oswego, Oreg.

Filed Jun. 26, 1978, Ser. No. 919,133
Int. Cl.[3] H04N 3/08, 5/33
U.S. Cl. 358—206 28 Claims



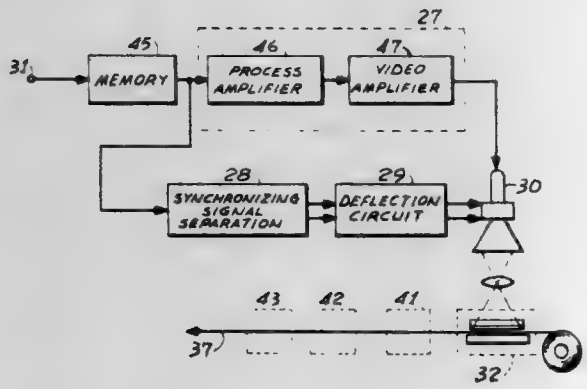
1. A radiometer system comprising:
detector means for providing an output signal related to a characteristic of thermal energy applied thereto;
first and second optical scanners;
said first scanner including first means for scanning a field of view in a first direction and providing at least some of the thermal energy received from the field of view to the second scanner;
said second scanner including second means for scanning at least some of the thermal energy received from the first means in a second direction and providing at least some of such thermal energy to said detector means, said directions being non-parallel;
means for defining an image plane in the optical path between said first and second means; and
means for providing at least one point blackbody adjacent the image plane whereby the blackbody can be scanned by said second means.

4,349,844

CIRCUIT FOR MAKING A CRT DISPLAY A TV PICTURE FOR A COPY WITH DOTS SUPERPOSED ON HALF-TONE PICTURE AREAS

Akiyoshi Kouno; Masanobu Morishita, and Yoshio Yui, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 844,982, Oct. 25, 1977, Pat. No. 4,205,340. This application Sep. 4, 1979, Ser. No. 72,417
Claims priority, application Japan, Oct. 27, 1976, 51-129903; Oct. 28, 1976, 51-130219
Int. Cl.[3] H04N 5/84, 1/40
U.S. Cl. 358—244 7 Claims



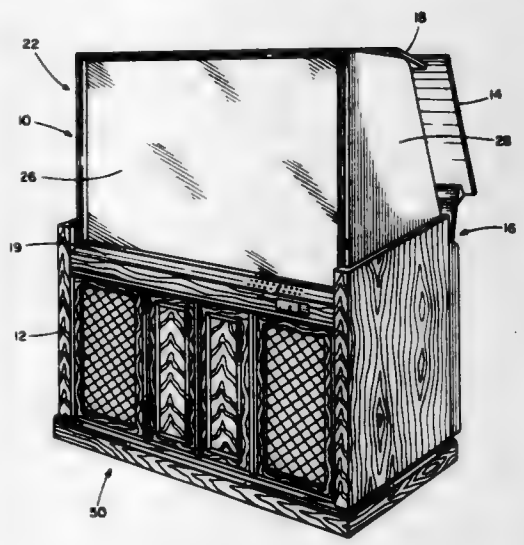
1. Apparatus to form a monochrome copy on a copying medium, said copy being a copy of a picture displayed on a monochrome television receiving cathode-ray tube along a plurality of horizontal scanning lines in each raster in response to a cathode-ray tube input signal, said apparatus including said monochrome television receiving cathode-ray tube and a circuit which is responsive to a color television signal for producing said cathode-ray tube input signal, said color television signal comprising vertical synchronizing signals at a field period equal to a half of a picture frame period, horizontal synchronizing signals between two adjacent ones of said vertical synchronizing signals, at a horizontal scanning period, luminance components interposed between two adjacent ones of said horizontal synchronizing signals and having signal levels available between a first and a second level, and color subcarrier signals carrying chrominance components and superposed on the luminance components of the signal levels between said first and said second levels, each horizontal scanning line being superposed on a horizontal scanning line displayed on said cathode-ray tube a frame period earlier to form a horizontal scanning line pair, said subcarrier signals having a subcarrier frequency equal to a half of an odd integral multiple of the horizontal scanning frequency and being in phase-opposition in each horizontal scanning line pair, said circuit comprising:
first means for storing the color television signal for a period preselected to be equal to a selected one of said field and said frame periods;
reading means for repeatedly reading the stored color television signal to produce a succession of block signals each of which lasts during said selected period and in which the subcarrier signals are in-phase in each horizontal scanning line pair; and
second means for delivering said block signal succession to said cathode-ray tube as said cathode-ray tube input signal.

4,349,845

CONTROL PANEL COVER FOR PROJECTION TELEVISION RECEIVER

Paul Strauss, Chicago, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Apr. 30, 1981, Ser. No. 259,333
Int. Cl.[3] H04N 5/64
U.S. Cl. 358—254 1 Claim



1. A control panel cover assembly for use in an ultra-compact, jack-in-the-box rear-projection television receiver housed in an open-topped cabinet having lid means pivotally attached at the back thereof for selectively opening and closing said cabinet for emergence and storage of an elevatable unitary optical assembly including rear projection screen means for displaying a television image upon said emergence, said unitary optical assembly including rigid, box-like shroud means for supporting said viewing screen on the front thereof, said receiver including widthwise-oriented control panel means located inwardly adjacent to the top section of a front panel of said receiver, said control panel cover assembly comprising:

an outwardly swinging control panel cover member for covering said control panel, said cover member being attached to said lid means at the front thereof by at least one inwardly-spring-biased hinge means;

front panel means having recess means adjacent to said control panel means for receiving said control panel cover member;

such that as said unitary optical assembly means is elevated from said cabinet, said lid means is urged upwardly, raising said control panel cover member from said recess and uncovering said control panel, said hinge means providing for the outward swinging of said cover member effective to cause said member to ride up and outwardly on said shroud means as said shroud emerges, and such that when said unitary optical assembly is lowered into said cabinet control panel, said lid means is lowered and said cover member swings downwardly and inwardly for re-entering said recess means and covering said control panel.

4,349,846

PICTURE PROCESSING METHOD

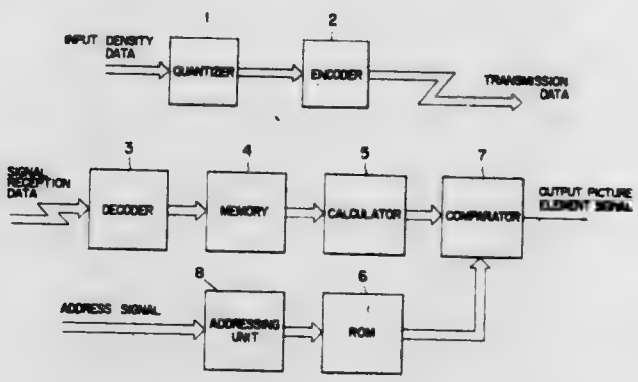
Keiji Sekigawa, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Apr. 11, 1980, Ser. No. 139,395

Claims priority, application Japan, Apr. 17, 1979, 54-47071; Apr. 17, 1979, 54-47072; Apr. 17, 1979, 54-47073; Jun. 2, 1979, 54-69041

Int. Cl.³ H04N 1/40

U.S. Cl. 358—280 **4 Claims**



1. A picture processing method of restoring a picture including half tone with binary outputs, in which said picture comprises a plurality of picture element units which are sampled in order to provide density levels of said picture elements forming said picture;

said density levels of said picture elements are coded and transmitted to a signal receiving side;

on said signal receiving side, an estimation density level of an aimed picture element is calculated in accordance with a particular equation including a modulation factor and weight factors provided for each of said picture elements in a particular picture element region constituted by said aimed picture element and picture elements surrounding said aimed picture element, by using the density level of said aimed picture element and those of said surrounding picture elements; and

said estimation density level is compared with a threshold, corresponding to said aimed picture element, in a threshold pattern preset, so that the level of said aimed picture element is determined as black or white as a result of said comparison.

4,349,847

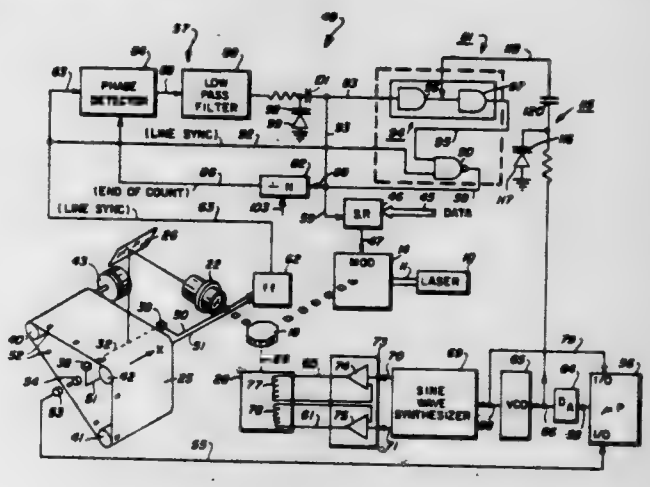
IMAGE SIZE CONTROL FOR RASTER SCANNERS

James C. Traino, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 30, 1981, Ser. No. 229,811

Int. Cl.³ H04N 1/12

U.S. Cl. 358—293 **9 Claims**



1. In a raster output scanner for producing images on a movable imaging member in response to image pixels input thereto, said scanner including a high intensity imaging beam, a movable scanning element for scanning said beam across said imaging member, a drive motor for driving said scanning element, modulator means for modulating said beam to selectively expose said imaging member in accordance with image pixels input thereto, and clock means for generating pixel clock pulses for clocking image pixels to said modulator means, the combination comprising:

(a) sensor means for producing a pulse-like signal representative of the velocity of said imaging member; and

(b) control means responsive to said signal for adjusting the speed of said drive motor to change the velocity of said scanning element to thereby maintain a predetermined velocity relationship between said imaging member and said scanning element in spite of changes in the velocity of said imaging member during operation of said scanner.

4,349,848

RECORDING CIRCUIT

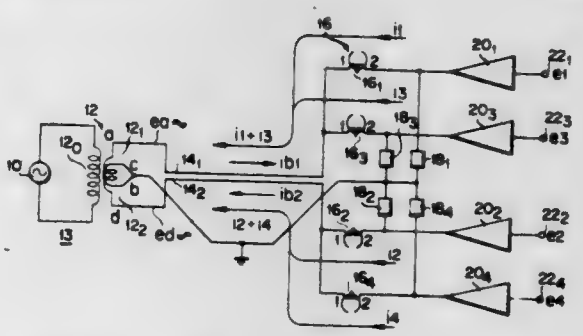
Shoichi Ishii, Warabi; Taiken Hagiwara, Yokosuka, and Masanobu Shimanuki, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 11, 1979, Ser. No. 74,762

Claims priority, application Japan, Sep. 18, 1978, 53-114435; Jun. 15, 1979, 54-75388

Int. Cl.³ G11B 5/47, 5/02

U.S. Cl. 360—66 **120 Claims**



1. A recording circuit comprising:

a multi-channel recording head each channel receiving, at one end, a recording signal;

a plurality of impedance means for bypassing a bias current, each of said impedance means being connected to a first end of a respective channel and a circuit with an AC potential of substantially zero each of said impedance

means having a smaller impedance at the bias current frequency than at the recording signal frequency;

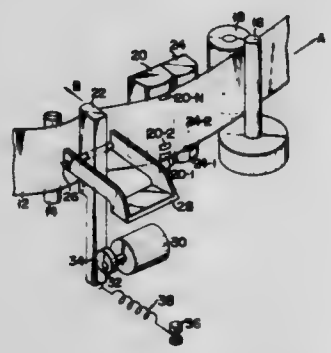
a bias oscillator, including an even number of bias signal sources for providing bias currents with the same frequencies to the respective channels of said recording head, including one bias signal source having a first phase terminal connected to a second end of one channel of said recording head and a second phase terminal connected to a AC potential-zero circuit with an AC potential of substantially zero, and another bias signal source having a first phase terminal connected to a second end of another channel of said recording head and a second phase terminal connected to a circuit with an AC potential of substantially zero, said one bias signal source first phase terminal having a bias current with a phase opposite to the phase of the bias current at said another bias signal source first phase terminal.

4,349,849

TAPE TRACKING DEVICE

Ken Satoh, Akikawa, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jun. 18, 1980, Ser. No. 160,598
Claims priority, application Japan, Jun. 26, 1979, 54/80331
Int. Cl.³ G06K *13/00*; B65H *23/02*; G11B *15/18*
U.S. Cl. 360—71 **9 Claims**



1. A device for tracking a tape during a reproduce mode of a tape recorder, comprising:

first and second position detecting reproducing heads disposed across the width of a tape such that said position detecting heads are in an overlapped relation to that area of the tape where a signal is recorded and such that said position detecting heads suffer a different amount of shift with respect to said area of the tape when the tape is displaced in a direction of the width of the tape, said position detecting heads providing respective output signals which are a function of the amount of overlap of said heads with respect to said area of said tape;

detection means coupled to said position detecting heads for producing an output signal corresponding to a difference in level between the output signals from said first and second position detecting heads; and

correction means coupled to said detection means for applying corrective pressure to one edge portion of the tape across the width of the tape according to the output signal of said detection means.

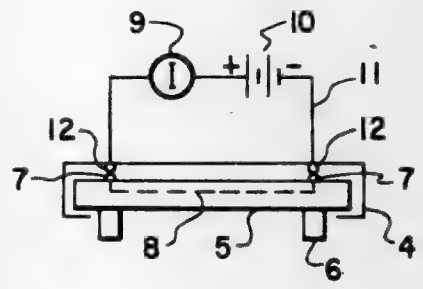
4,349,850

CASSETTE TAPE MONITOR

William Harvey, 1300 Daleside, Hinckley, Ohio 44233

Filed Jan. 25, 1979, Ser. No. 6,288
Int. Cl.³ G11B *15/48*
U.S. Cl. 360—74.2 **2 Claims**

1. An improved tape player and recorder of the type having spindles adapted to receive tape on reels or cassettes, wherein said improvement consists of a power supply, at least one contact rotating on a said spindle and at least one stationary contact carried on said player and recorder, a light and an electrical circuit comprising said contacts, said light and said power supply, said circuit, causing said light to turn on when said contacts close said circuit and to turn off when said



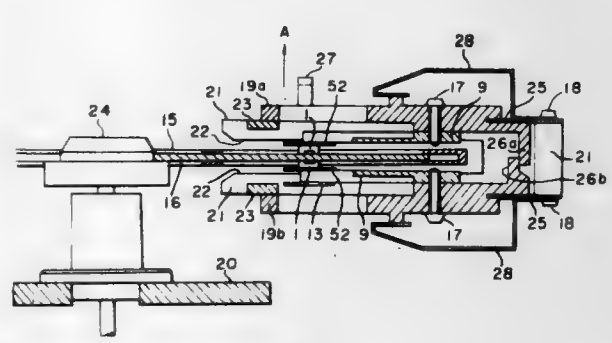
contacts open said circuit, responsive to motion of said spindles.

4,349,851

MAGNETIC HEAD SUPPORTING MECHANISM FOR A MAGNETIC DISC APPARATUS

Noboru Higashiyama, and Masaru Sasaki, both of Kamakura, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 23, 1980, Ser. No. 152,818
Claims priority, application Japan, Jul. 10, 1979, 54-87301
Int. Cl.³ G11B *21/16, 21/22, 5/54*
U.S. Cl. 360—105 **3 Claims**



1. A magnetic head supporting mechanism for a double side type flexible disc drive apparatus which comprises:

means for rotatably driving an interchangeable double side type flexible disc;

first and second magnetic heads for read-out or write-in on each magnetic recording surface respectively of said double side type flexible disc; and said magnetic heads being slidably contacted with said magnetic recording surface during the operation for the read-out or write-in;

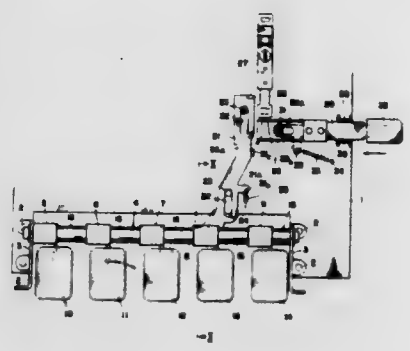
a carriage driven by means for positioning said first and second magnetic heads on a predetermined data track of said double side type flexible disc; and said carriage comprising first and second frame elements mounting first and second arms, means for rotating at least one of said first and second arms out of read-out/write-in position and first and second magnetic head assemblies respectively mounted on said first and second arms; wherein one of said magnetic head assemblies comprises one of said magnetic heads; a resilient holder consisting of a part fixed to said arm and a part for supporting to said magnetic head; a gimbal spring disposed on said supporting part of said holder and having a surface fixed to said head and a projection formed on the back surface opposite to the surface fitting said magnetic head; and a point member fixed on said holder at one end and contacting said projection at the other end.

4,349,852

SOUND-DUBBING MECHANISM FOR A VIDEO TAPE RECORDER

Tsutomu Kawai, Yokosuka, Japan, assignor to Funai Electric Co., Ltd., Osaka and Efuti Giken Co., Kanagawa, both of, Japan

Filed May 8, 1980, Ser. No. 148,004
Int. Cl.[3] G11B *15/18*
U.S. Cl. 360—137 9 Claims



1. In a videotape recorder of the type wherein circuit means is provided for playing back audio signals recorded on a magnetic tape when in a first condition and for recording audio signals on said magnetic tape when in a second condition and manually operated controls are provided for operation of the videotape recorder and circuit means in a playback mode, a recording mode and for stopping the operation of the recorder, the improvement comprising a sound dubbing mechanism which includes:

manually operated playback lever control means movable between a first inoperative position and an operative second position for operation in said playback mode;

manually operated dubbing control means movable between an inoperative first position and a second position for said dubbing;

said dubbing control means including switch means connected in said circuit means having a first condition for normal operation of said circuit in said playback mode when said manually operated playback lever means is in said second position;

said dubbing control means when in said second position being engaged by said playback lever control means during movement from first to second position to shift said switch means from its first condition to a second condition;

said circuit means, when said switch means is in said second condition being operated in said recording mode for dubbing audio signals on a magnetic tape;

said dubbing control means being responsive to movement of said playback lever control means from its second position to its first position to return said dubbing control means to its first position.

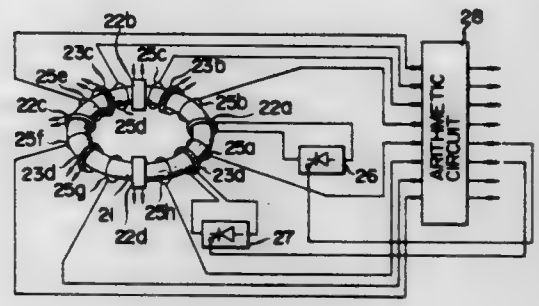
4,349,853

STRONG MAGNETIC FIELD GENERATOR AND METHOD OF OPERATING THE SAME

Yoshihisa Sato, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Feb. 7, 1980, Ser. No. 119,622
Claims priority, application Japan, Feb. 13, 1979, 54-14206
Int. Cl.[3] H02H *7/00*
U.S. Cl. 361—19 5 Claims

1. A strong magnetic field generator comprising a vacuum vessel, a plurality of superconductive coils wound on the outer periphery of said vacuum vessel, a plurality or protective coils wound on said outer periphery of said vacuum vessel similar to said superconductive coils, a control means functioning, upon occurrence of quenching in at least one of said superconductive coils, to quickly reduce current in said superconductive coil or coils with quenching taking place so as to remove the quenching while at the same time causing current corresponding to the reduction of current in said superconductive coil or coils with quenching therein to flow through said protective



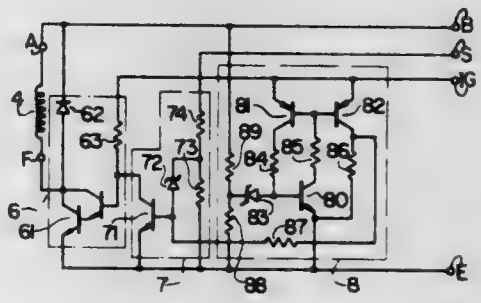
coils, and a current source for selectively supplying current to said plurality of superconductive and protective coils under the control of the control means.

4,349,854

POWER GENERATION CONTROL SYSTEM FOR VEHICLE GENERATOR

Kazumasa Mori, Aichi; Taro Asahi, Chiryu; Keiichiro Banzai, Toyota; Katsutaro Iwaki, Chiryu; Katsuya Muto, Kariya; Akira Mase, Handa; Takayasu Nimura, Nagoya; Katsumi Itoh, Ohbu, and Yoshio Akita, Ichinomiya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed May 19, 1980, Ser. No. 151,156
Claims priority, application Japan, May 25, 1979, 54-65325
Int. Cl.[3] H02J *7/24*
U.S. Cl. 361—21 5 Claims



1. A power generation control system in combination with a vehicle generator including an armature coil, an exciting coil and a rectifier for converting an a.c. voltage produced from the armature coil into a d.c. current, and a vehicle battery charged by said generator, said power generation control system comprising:

a switching circuit including a single power transistor for controlling a current flowing into the exciting coil of said generator;

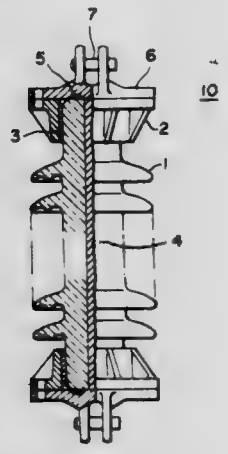
a voltage detector circuit for detecting a voltage of said battery to activate said single power transistor of said switching circuit; and

an overvoltage detecting means for deactivating said single power transistor of said switching circuit controlled by said voltage detector circuit, which in turn cuts off the current of said exciting coil independently of the operation of said voltage detector circuit when the voltage of said battery exceeds a predetermined value, said overvoltage detecting means including a transistor circuit for holding the deactivation of said switching circuit.

4,349,855
LIGHTNING ARRESTER

Nobuo Nagai, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 21,173, Mar. 16, 1979, abandoned. This application Feb. 25, 1981, Ser. No. 238,074
Int. Cl.³ H02H *9/04*
U.S. Cl. 361—127 3 Claims

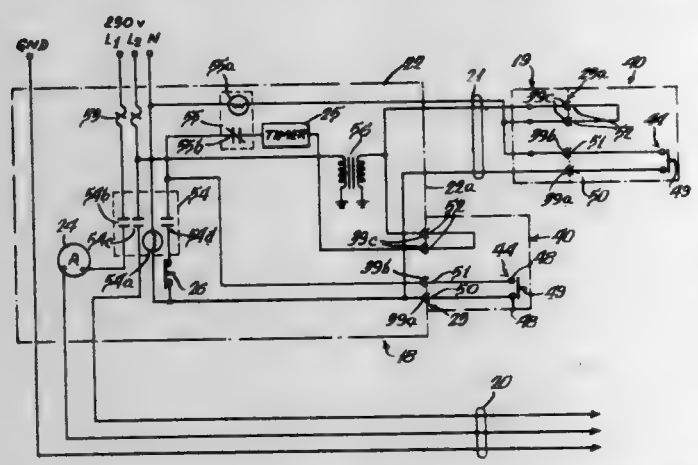


1. A lightning arrester including a sintered non-linear resistor and an insulator formed into a unitary body, comprising:
a non-linear resistor composed of a composition having zinc-oxide as a main component and sintered at approximately 1300° C.; and
an insulator having a predetermined inner volume and substantially surrounding said non-linear resistor, said insulator composed of a sintered porcelain covering said non-linear resistor and sintered at approximately 1160° C. to 1200° C., said sintering causing a contraction of said porcelain only, which eliminates any gap between said insulator and said non-linear resistor thereof,
whereby only the contraction of said insulator during the sintering thereof need be adjusted for in determining said perdetermined inner volume.

4,349,856
SAFETY START CONTROL FOR ELECTRICALLY POWERED APPARATUS

Frank L. West, Sharon, and Larry A. Norton, Elkhorn, both, Wis., assignors to Chromalloy American Corporation, New York, N.Y.

Filed Apr. 14, 1980, Ser. No. 140,202
Int. Cl.³ H01H *33/00;* F16P *3/04*
U.S. Cl. 361—160 6 Claims

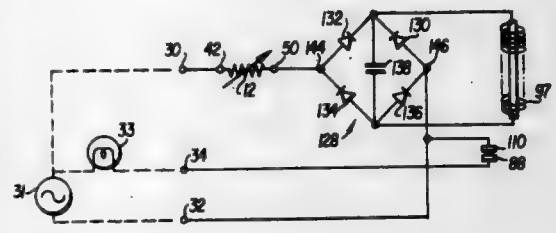


1. In a system for controlling energization of electrically powered apparatus, in combination:
a primary control station remote from said apparatus from which energization of the apparatus is usually controlled;
a secondary control station which is immediately adjacent said apparatus so as to be conveniently accessible to a person servicing the apparatus, and from which energization of said apparatus may be optionally controlled, said secondary control station having no start switch and being adapted to receive a manual start switch;
and a single manually portable apparatus start control module which is usually operatively connected to said primary control station, said start control module having a manually operable start switch and being manually removable from said primary control station to leave the primary control station without a start switch, and being manually operatively connectable to said secondary control station to provide the secondary control station with a start switch, whereby said start control module may be used to start energization of the apparatus either from said primary station or from said secondary station, and there is no start switch at the primary station when said module is operatively connected to the secondary station.

4,349,857
LIGHT RESPONSIVE CONTROL DEVICE

Michael A. Tabet, Norfolk, Va., assignor to Tabet Manufacturing Company, Norfolk, Va.

Filed Feb. 3, 1978, Ser. No. 874,759
Int. Cl.³ H01H *47/24*
U.S. Cl. 361—173 7 Claims



1. A light responsive control switch for controlling a load in response to a predetermined amount of light incident thereon, comprising:
a light sensitive element for receiving said incident light,
an electromagnet having a longitudinal axis, said electromagnet including a coil coaxial with said longitudinal axis and electrically coupled to said light sensitive element, said electromagnet having an aperture therein extending along said longitudinal axis,
an armature composed of a magnetic material positioned adjacent said electromagnet, said armature being translatable along said longitudinal axis upon energization of said electromagnet;
a non-magnetic guide pin secured to said armature, said guide pin extending into said aperture,
contact means positioned adjacent said armature, said armature making electrical contact with said contact means when said electromagnet is deenergized, and
means for coupling said contact means and said armature to said load.

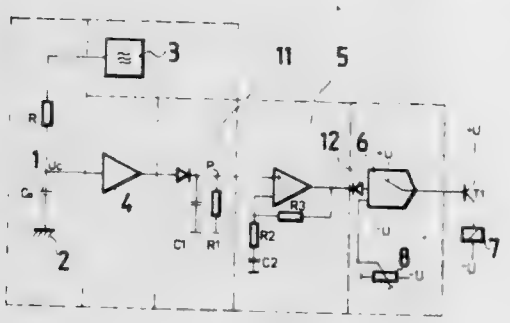
4,349,858
CONTROL CIRCUIT FOR USE WITH AN ELECTRONIC GUARD STRIP

Pekka Torenius, Korpi, and Seppo Suur-Askola, Hyvinkää, both of Finland, assignors to Elevator GmbH, Baar, Switzerland

Filed Sep. 4, 1980, Ser. No. 184,072
Int. Cl.³ G08B *13/26*
U.S. Cl. 361—181 4 Claims

1. An improved control circuit for use with an electronic guard strip to prevent collision of the strip with a moving object, said control circuit having a control means and comprising at least one antenna forming a capacitor together with a base in its ambiance, a voltage generator for conducting an alternating voltage to said antenna, a first amplifier means in circuit relation with said control means and said antenna, whereby a change of voltage arising from any capacitive perturbation in said antenna is conducted to said control means,

the improvement comprising: rectifier means and a second amplifier means, said rectifier means connected to said amplifier means and to said second amplifier means in sequence, said second amplifier means acting as an a.c. amplifier, having its direct current gain as +1, but which amplifies any change of



voltage occurring in the d.c. voltage input to a multiple, comparator means, said control means being connected to said comparator means through said amplifier means, and said control means being responsive to an action threshold value of said comparator means in respect of output voltage of said second amplifier means.

4,349,859

SHIELDED STRUCTURAL OR CONTAINMENT MEMBER

Laurence R. Sanders, St. Charles County, Mo., assignor to McDonnell Douglas Corporation, St. Louis, Mo.

Filed Sep. 24, 1980, Ser. No. 190,458
Int. Cl.³ B64D *45/02*
U.S. Cl. 361—218 **12 Claims**

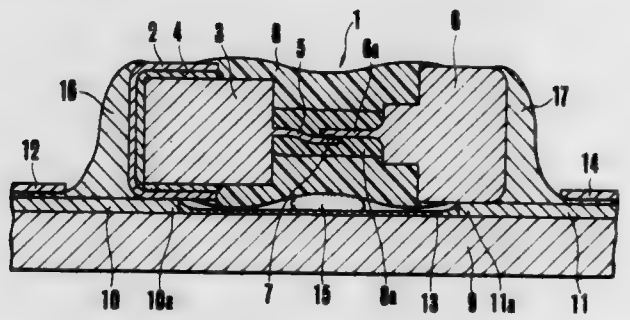
1. In an aircraft, a structural or containment member that is exposed to the atmosphere at the exterior of the aircraft, said member comprising a base adapted to carry substantially all of any forces exerted on the member and being formed from a composite material that is a relatively poor conductor of electricity, the composite material including nonmetallic fibers and a resin matrix in which the fibers are embedded; and a thin metal shield adhered to and extended over that surface of the base that is presented outwardly with respect to the aircraft, the thin metal shield being exposed to the atmosphere at the exterior of the aircraft for dissipating an electrical charge that attaches to the member, the metal of the shield being tin or a tin alloy.

4,349,860

TANTALUM CONDENSER

Mitsuo Ohsawa, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Apr. 2, 1980, Ser. No. 136,424
Claims priority, application Japan, Apr. 13, 1979, 54/45610
Int. Cl.³ H01G *1/14*
U.S. Cl. 361—310 **1 Claim**



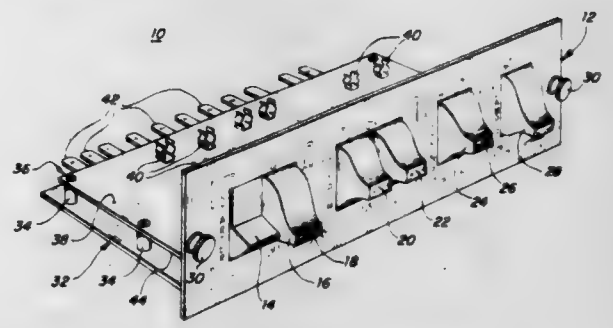
1. A tantalum capacitor comprising:
(A) a first cylindrical metallic terminal cap;
(B) a tantalum capacitor element electrically and mechanically connected to said metallic terminal cap;
(C) a second solid cylindrical metallic terminal aligned with said first metallic terminal cap and selected from the group of copper or brass;
(D) a tantalum lead projecting from one end surface of said tantalum capacitor element toward said second metallic terminal; and
(E) a projection formed as one piece with one end surface of said second metallic terminal which is welded to said tantalum lead, wherein a part of said first metallic terminal cap, and said tantalum capacitor element, a part of said second metallic terminal, said tantalum lead and said projection are covered with synthetic resin.

4,349,861

AUTOMOBILE CONTROL MODULE

John M. Zizza, 16 Lawson Ave., Revere, Mass. 02151

Filed Jun. 30, 1980, Ser. No. 164,171
Int. Cl.³ H02B *1/04*
U.S. Cl. 361—347 **10 Claims**



1. An automobile control module comprising:
a switch panel including ignition switch means, starter switch means, fuel switch means, and cooling switch means; and
a circuit board mounted with said switch panel and having high-current foil conductors including a power bus foil having means for receiving a power cable;
a fuel bus foil interconnected with said power bus foil through a first set of contacts in said ingnition switch means;
fuel output contact means, fuel fuse means interconnected between said fuel output contact means and said fuel switch means for connection through said fuel switch means to said fuel bus foil in one position of said fuel switch means;
an ignition bus foil; ignition fuse means interconnecting said ignition bus foil with said power bus foil; ignition output bus foil means including ignition output contact means, said ignition switch having a second set of contacts interconnecting said ignition bus foil with said ignition output bus boil means;
a starter bus foil, said starter switch means interconnecting said starter bus foil with said ignition bus foil;
a cooling input bus foil, cooling fuse means interconnected between said power bus foil and said cooling input bus foil, cooling output bus foil means, including cooling output contact means, said cooling switch means interconnecting said cooling input bus foil with said cooling output bus foil means.

4,349,862

CAPACITIVE CHIP CARRIER AND MULTILAYER CERAMIC CAPACITORS

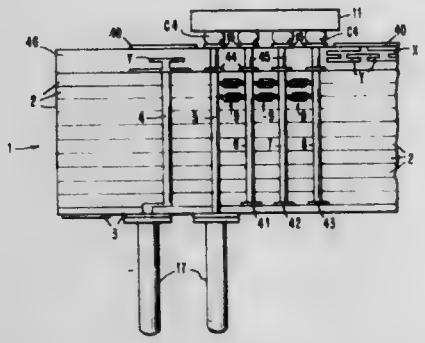
Christopher H. Bajorek, Goldens Bridge, N.Y.; Dudley A. Chance, Danbury, Conn., and Chung W. Ho, Chappaqua, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 11, 1980, Ser. No. 176,949
Int. Cl.³ H05K *1/16*
U.S. Cl. 361—401 **12 Claims**

1. In a carrier for electronic circuit chips in which a chip is

carried on conductor pads on a first external surface of said carrier which provides mechanical support means and electrical connections through said mechanical support means for said chip, said carrier including a lower surface opposing said first external surface,

said carrier including a plurality of laminated ceramic sheets with metallized conductive vias extending therethrough from said pads to said lower surface for providing electrical contact through said carrier to said chip and to terminals on said lower surface, the improvement comprising,



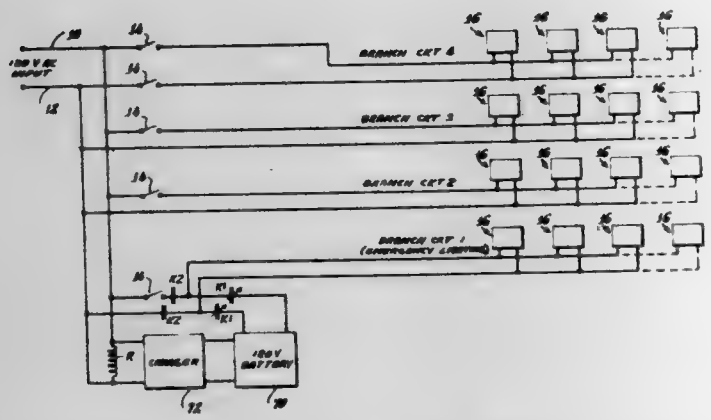
a capacitor structure consisting of an array of small capacitor elements located between a pair of said laminated ceramic sheets, each of said capacitor elements having a very small volume with a high dielectric constant material sandwiched between capacitor plates composed of two layers of conductive material for each of said small capacitor elements, said conductive vias being interspersed within said capacitor structure and isolated from said capacitor plates, with means providing electrical connections to said vias for providing electrical connections of said capacitive elements for external connections through an external surface to said chip and said terminals.

4,349,863

EMERGENCY LIGHTING SYSTEM

Warren A. Petersen, Ridgefield, Conn., assignor to Tork, Inc., Mount Vernon, N.Y.

Filed Apr. 21, 1980, Ser. No. 141,819
Int. Cl.³ F21V *19/04*; H02H *7/00*
U.S. Cl. 362—20 **5 Claims**



1. An emergency lighting system in which selected ones of the lighting fixtures used for providing normal illumination from an AC utility power supply available at their inputs, can likewise be used to furnish illumination from an emergency DC power supply available at the same inputs, said DC power supply being operatively connected to said lighting fixtures under emergency conditions when said AC utility power supply is discontinued, comprising:

a plurality of branch circuits, each having a plurality of lighting fixtures connected therein;

an AC utility power supply normally connected by said branch circuits to said inputs on said lighting fixtures;

a selected branch circuit being provided with emergency lighting fixtures, each of said emergency lighting fixtures comprising an electron discharge lighting device, a high frequency inverter power supply, and a rectifier;

each inverter power supply and each rectifier having an input and an output; the input of said rectifier being continuously connected to said selected branch circuit; the output of said rectifier being continuously connected to the input of said inverter power supply; the output of said inverter power supply being continuously connected to a respective electron discharge lighting device for supplying high frequency power to said lighting device irrespective of whether or not said AC utility power supply is discontinued;

an emergency DC power supply; and,

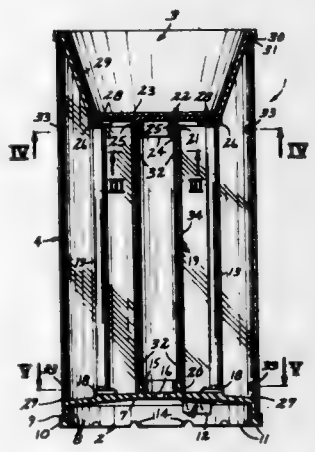
transfer means responsive to discontinuance of said AC utility power supply for selectively illuminating said emergency lighting fixtures, including switching means for connecting said selected branch circuit to said emergency DC power supply.

4,349,864

LIGHTED PLANT STAND

Phillip H. Smith, 7511 Harold Ave., Minneapolis, Minn. 55427

Continuation of Ser. No. 21,432, Mar. 19, 1979, abandoned. This application Mar. 2, 1981, Ser. No. 238,155
Int. Cl.³ F21P *1/02*
U.S. Cl. 362—122 **34 Claims**



1. A lighted plant stand for houseplants, comprising:

a base;

a plant holder spaced upwardly above the base and adapted to support a house plant of the type with foliage which extends outwardly and downwardly therefrom;

means for supporting said plant holder on said base, said supporting means including a vertical light pervious cylinder support member extending between said base and said plant holder thereby holding said plant holder and base in vertical spaced relationship; and

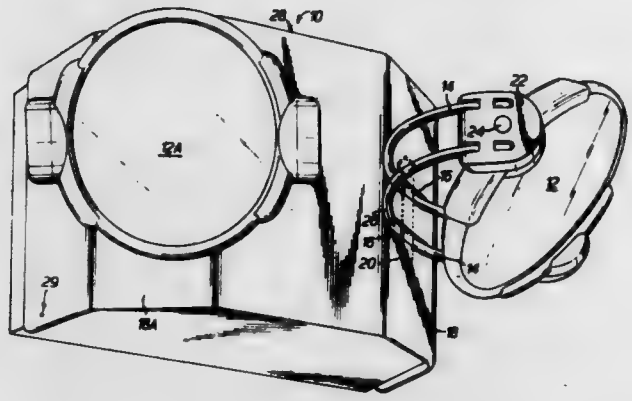
an electrical light disposed within said light pervious cylinder support member for providing growing light for the plant foliage and for backlighting such foliage from within the space below said plant holder, said electric light being spaced radially inwardly from said cylinder support member to provide an air space therebetween, said cylinder support member preventing said foliage from contacting the hot surface of said electric light.

4,349,865

LAMP MOUNTING

Christopher Terrel, London, England, assignor to Chloride Group Public Limited Company, London, England

Filed Jul. 2, 1980, Ser. No. 165,409
Claims priority, application United Kingdom, Apr. 3, 1980, 8011389
Int. Cl.[3] F21V *21/14*
U.S. Cl. 362—250
13 Claims



1. An adjustable mounting assembly for at least one lamp comprising:

a support body having an external face and at least one slot formed in said external face;

at least one arcuate member upon which the lamp is mounted; and

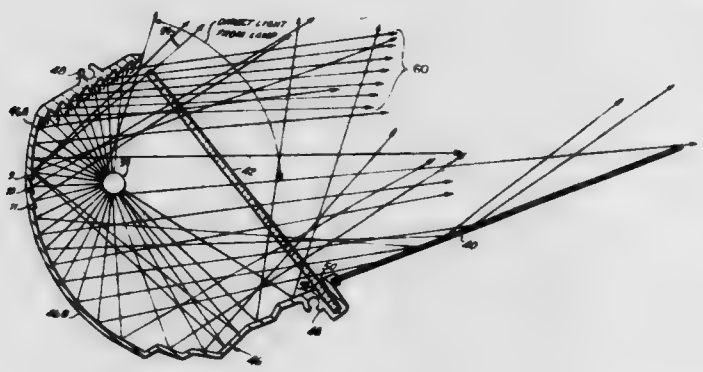
fastener means operatably associated with said support body for retaining said at least one arcuate member against opposite end portions of said at least one slot to permit the at least one arcuate member to move longitudinally in relation to the ends of the at least one slot to adjust the lamp angularly.

4,349,866

LIGHT REFLECTION SYSTEM WITH ASYMMETRIC REFLECTOR ASSEMBLY

John P. Molnar, St. Louis, Mo., assignor to General Signal Corporation, Stamford, Conn.

Filed May 27, 1980, Ser. No. 153,519
Int. Cl.[3] F21V *7/00*
U.S. Cl. 362—263
6 Claims



1. A light reflection system adapted to be mounted on the wall of a room for providing essentially uniform indirect lighting for the room comprising:

a housing having front and rear walls, a bottom wall, and side walls, and having an extended opening at its top;

a light source disposed in a horizontal orientation, said source being parallel to the rear wall of said housing and closer to the rear wall than to the front wall;

an asymetric distribution means in the form of a reflector assembly enclosed by the housing, said assembly including a main reflector wrapped substantially around said light source, said reflector extending longitudinally approximately 250° around said light source from approximately a twelve o'clock position to approximately a four o'clock position, as seen at the left side of said housing when mounted;

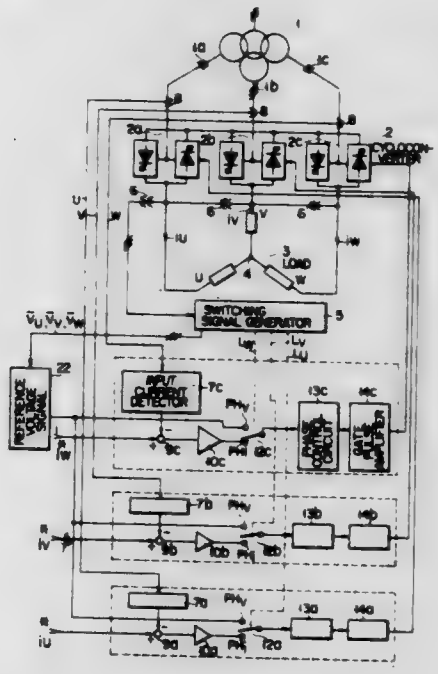
said main reflector having a reflecting, corrugated, inner surface comprising a series of at least six contiguous facets located adjacent said twelve o'clock position, said facets having appropriately selected varied angles so as to reflect light rays in a generally horizontal direction thereby to provide uniform distribution of light.

4,349,867

CONTROL APPARATUS FOR A CYCLOCONVERTER

Kenichi Otsuka, Kodaira; Hiroshi Uchino, Hachioji, and Kihei Nakajima, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 6, 1981, Ser. No. 241,100
Claims priority, application Japan, Mar. 26, 1980, 55-38649
Int. Cl.[3] H02M *5/257*
U.S. Cl. 363—160
6 Claims



1. A control apparatus for a cycloconverter which is connected to a multiphase AC power source and includes m sets of bridge converters each of which has a first output terminal connected to a common connection point and a second output terminal connected to a corresponding input terminal of a m-phase load ($m \geqq 3$) disconnected from said common connection point, and is comprised of silicon controlled rectifier (SCR) elements, said control apparatus comprising:

voltage control means for controlling the output voltages of said bridge converters in accordance with a predetermined reference voltage signal;

current control means for controlling the output voltages from said bridge converters in accordance with a phase control input signal dependent on a difference between a reference current signal to determine the output currents from said bridge converters and the load currents of said load; and

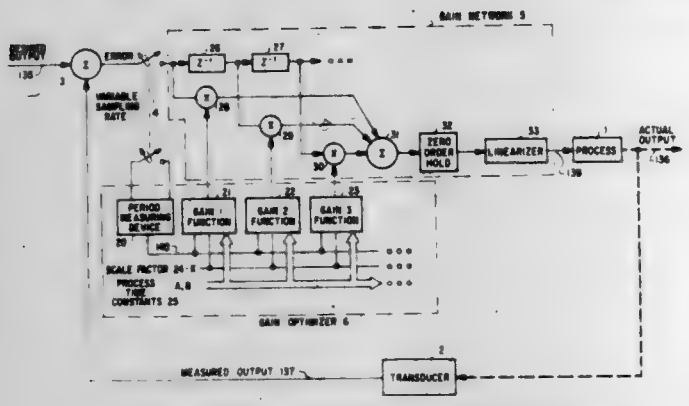
switching means for periodically switching said voltage control means and said current control means in accordance with a phase of the load voltage;

wherein said voltage control means controls by said reference voltage signal the output voltage of the bridge converter corresponding to a load voltage during a 1/m period of one cycle of said load voltage, the center of said 1/m period being located at a positive or negative maximum amplitude point of said load voltage, and said current control means controls by said phase control input signal the output voltage of said bridge converter during the remaining (1—1/m) period of said one cycle of said load voltage.

4,349,868
SAMPLED CONTROL LOOP WITH DYNAMIC GAIN OPTIMIZATION

Troy L. Brown, Loveland, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jun. 23, 1980, Ser. No. 162,221
Int. Cl.³ G05B *13/02, 21/02*
U.S. Cl. 364—157 **22 Claims**



A SAMPLED CONTROL LOOP OPTIMIZED FOR m GAIN FUNCTIONS

1. An optimizer for a sampled control loop for controlling a process having a process gain K and with which there are associated process parameters that include a sampling interval T and a time constant A, the optimizer comprising:

input means for receiving a signal indicative of the value of a process parameter;

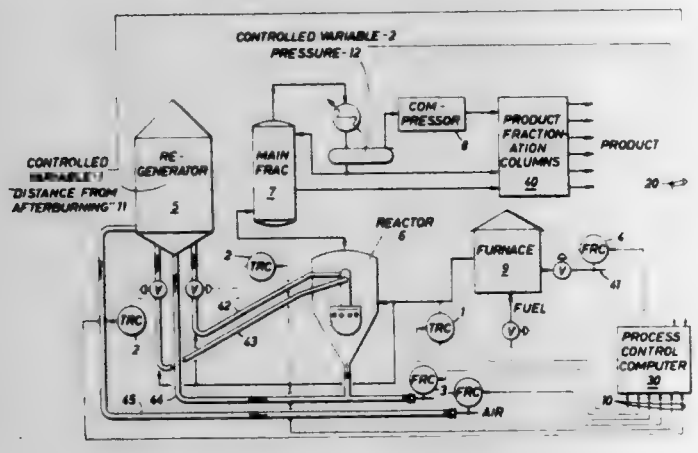
optimization means coupled to the input means for producing gain control information according to an optimization function F(T, K, A, . . .) where F is chosen to minimize the amount of time required for the process to settle within a preselected tolerance band in response to a disturbance in the equilibrium of the process; and

output means for generating a gain control signal indicative of the optimized gain control information.

4,349,869
DYNAMIC MATRIX CONTROL METHOD

David M. Prett; Brian L. Ramaker, both of Houston, and Charles R. Cutler, Katy, all of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Oct. 1, 1979, Ser. No. 80,966
Int. Cl.³ G06F *15/46;* G05B *13/04*
U.S. Cl. 364—159 **8 Claims**



1. A method of controlling and optimizing the operation of a process having a plurality of independently controlled, manipulated variables and at least one controlled variable dependent on said manipulated variables, said method comprising the steps of:

introducing test disturbances in said manipulated variables and measuring the effect of the disturbances on said controlled variable;

calculating at discrete intervals of time from said introducing and measuring the magnitude of response of said controlled variable to a given change in one of said manipulated variables;

measuring the present values of said manipulated variables and said controlled variable;

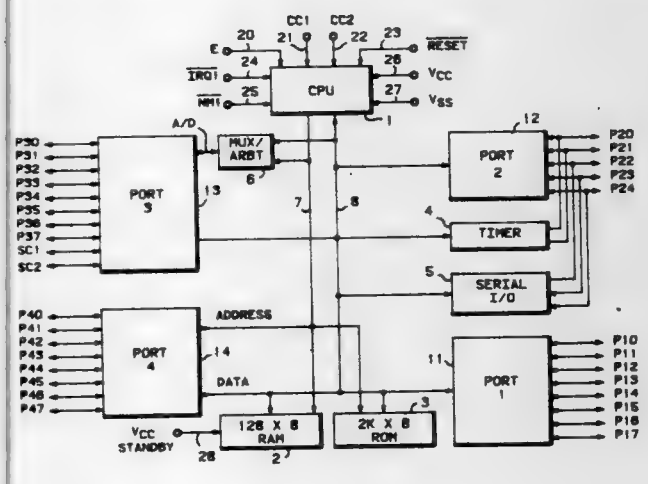
using said calculated magnitude of response to calculate for discrete intervals of time a new set of moves for said manipulated variables for obtaining new values and for moving said controlled variable toward its optimum set-point; and

adjusting said manipulated variables in accordance with said new set of moves to reach said new values.

4,349,870
MICROCOMPUTER WITH PROGRAMMABLE MULTI-FUNCTION PORT

Pern Shaw, and Fuad H. Musa, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 5, 1979, Ser. No. 72,739
Int. Cl.³ G06F *3/00*
U.S. Cl. 364—200 **6 Claims**



1. In a microcomputer comprising:

a processor;

a memory for storing data at selected addresses;

a bidirectional data bus comprising a plurality of data lines coupled to the processor and to the memory, for transferring data between the processor and the memory; and

an address bus comprising a plurality of address lines coupled to the processor and to the memory, for transferring addresses from the processor to the memory; and

a programmable multi-function port for selectively coupling the data and address buses to a plurality of input/output lines, comprising:

coupling means coupled to the data bus, the address bus, and the input/output lines, for coupling selected ones of the data lines to respective ones of the input/output lines in response to a first enable signal, for coupling each of the data lines to respective ones of the input-/output lines in response to a second enable signal, and for coupling each of the address lines to respective ones of the input/output lines in response to a third enable signal; and

mode control means coupled to the coupling means, for selectively providing the first, second and third enable signals.

4,349,871
DUPLICATE TAG STORE FOR CACHED MULTIPROCESSOR SYSTEM

Richard F. Lary, Colorado Springs, Colo., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed Jan. 28, 1980, Ser. No. 116,151
Int. Cl.³ G06F *13/00*
U.S. Cl. 364—200 **3 Claims**

1. A multiprocessor system comprising:

A. main memory means (18) including a plurality of address-

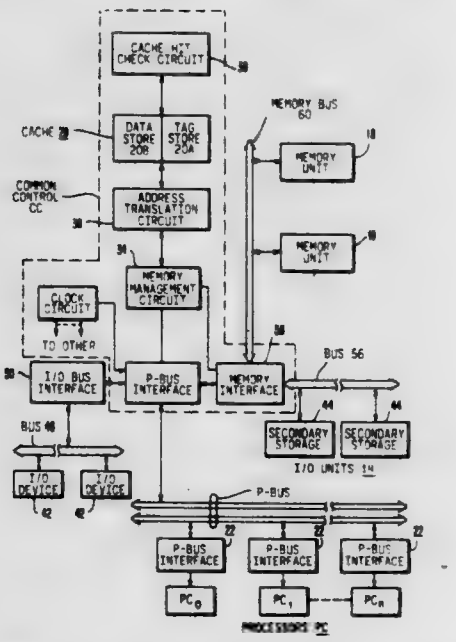
able storage locations for storing data and for generating address, data and memory control signals;

B. A plurality of processor units (22) for processing data in response to instructions and for generating signals including address, data, and writing control signals for initiating transactions that access addressable storage locations in said main memory means;

C. common control means shared by said processor units and said main memory means, said common control means including

i. receiving means (24) for receiving said address, memory control, writing control, and data signals from said processor units and said main memory means,

ii. write-through cache memory means (20) including a plurality of addressable storage locations each having a tag portion (20A) for storing a tag address that identifies a certain location in said main memory means and a corresponding data portion (20B) for storing a copy of the data stored in that location of said main memory means, said cache memory means further including updating means connected to said receiving means and responsive to said writing control signal for forgoing the writing of data signals into the data portion thereof and responsive to said memory control signal for writing the data portion of said cache memory means corresponding to an address in the main memory means;



iii. transmitting means (38) connected to said receiving means for transmitting said address, writing control, and data signals to said main memory means;

D. processor bus means (P-Bus) interconnecting said processor units and said common control means for transferring said address, writing control and data signals associated with the transactions among said processor units and said common control means;

E. memory bus means (60) interconnecting said common control means and said main memory means for transferring said address, writing control, memory control, and data signals associated with the transactions between said common control means and said memory means; and

F. said common control means further including:

ii. first queing means (70) interposed between said transmitting means and said memory bus means for receiving said address, writing control and data signals and for subsequently transmitting said signals to said memory bus means;

iii. duplicate tag storage means (86) connected to said cache memory means for maintaining copies of the tag address information stored in the tag portion of said cache memory means; and

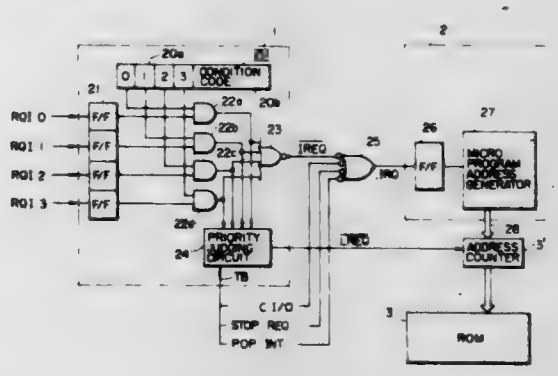
iv. second queing means (80) connected to said duplicate tag storage means and being interposed between said memory bus means and said receiving means for receiving on a first-in-first out basis said address, memory control and data signals from said main memory means, said second queing means being operative to subsequently transmit to said receiving means said address, memory control, and data signals when said address signal matches an address contained in said duplicate tag storage means thereby to enable said updating means to write the data portion of said cache memory means.

4,349,872

INTERRUPT CONTROL SYSTEM

Sigeru Fukasawa, Hachiouji, and Sadao Mizokawa, Hitachi, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 5, 1980, Ser. No. 127,318
Claims priority, application Japan, Mar. 16, 1979, 54-30015
Int. Cl.³ G06F 9/46
U.S. Cl. 364—200 **4 Claims**



1. A data processing system under microinstruction control comprising:

memory means for storing microinstruction sequences including an interrupt processing sequence comprising a first routine and a plurality of second routines, said first routine sequentially specifying polling of each of a plurality of first interrupt requests and each of a plurality of second interrupt requests in a predetermined order, and said second routines each specifying a processing of a respective one of said first and second interrupt requests;

a plurality of first means each for generating one of said first interrupt requests;

a plurality of second means each for generating one of said second interrupt requests;

executing means provided on an integrated circuit chip including receiving means for receiving said second interrupt requests in parallel from said second means, status register means for manifesting mask bits, and gate means including a plurality of gates each connected to said receiving means and said status register means for masking one of said received second interrupt requests in response to a corresponding one of said mask bits;

OR gate means for providing a single interrupt request signal in response to any of said first interrupt requests provided by said first means and in response to any of said masked interrupt requests provided by said gate means;

control means formed on an integrated circuit chip for providing an initial address of said first routine to said memory means in response to said single interrupt request signal in order to initiate said first routine thereby; and

means connected to said gate means and said first means for generating a jump signal and applying said jump signal to said memory means during the polling of said first and second interrupt requests by said first routine when a specified interrupt request is provided thereto, said jump signal ordering said memory means to jump to the one of said second routines corresponding to the specified interrupt request;

wherein said OR gate means comprises first and second OR gate means, said first OR gate means being provided outside of said integrated circuit chip on which said exe-

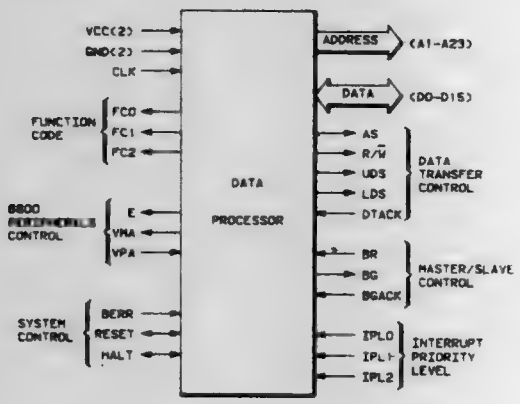
cuting means is provided and outside of said integrated circuit chip on which said control means is provided, said second OR gate means being provided within the same integrated circuit chip as said executing means, said first OR gate means being responsive to any of said generated first interrupt requests, said second OR gate means being responsive to any of said masked second interrupt requests, and said first and second OR gate means being mutually connected so that each of the outputs thereof is provided to said control means as said single interrupt request signal via a common signal line.

4,349,873

MICROPROCESSOR INTERRUPT PROCESSING

Thomas G. Gunter; John E. Zolnowsky, and Lester M. Crudele, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 2, 1980, Ser. No. 136,593
Int. Cl.[3] G06F *9/46*
U.S. Cl. 364—200 **4 Claims**



1. In a data processor for executing operations upon digital information in response to a plurality of instruction programs, an interrupt circuit comprising:

first means adapted for coupling to first and second types of circuitry external to the data processor, for receiving interrupt signals from both the first and second types of external circuitry representing requests to interrupt the execution of an instruction program currently being executed by the data processor in order to execute another of the plurality of instruction programs;

second means adapted for coupling to the first type of the external circuitry, for receiving from the first type of external circuitry a vector number indicative of a vector address within a predetermined portion of the address space of the data processor which contains an address vector comprising an address within one of the plurality of instruction programs;

third means coupled to the first means and having an output adapted for coupling to the first and second types of external circuitry, for providing, in response to the interrupt signal, a granting signal to the first and second types of external circuitry indicating that the interrupt request has been granted by the data processor;

fourth means having an input adapted for coupling to the first type of external circuitry, for receiving a first acknowledgement signal provided by the first type of external circuitry indicating that a vector number has been provided to the second means, and for latching, in response to the first acknowledgement signal, the vector number received by the second means;

fifth means having an input adapted for coupling to the second type of external circuitry, for receiving a second acknowledgement signal provided by the second type of external circuitry indicating that a vector number has not been provided to the second means, and for providing, in response to the second acknowledgement signal, a predetermined vector number independent of any vector number received by the second means; and

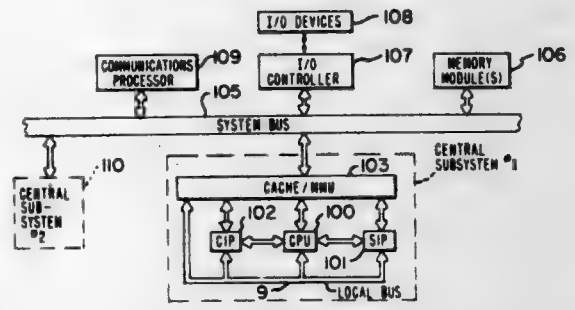
sixth means coupled to the fourth and fifth means, for generating the vector address indicated by the vector number provided by the fifth means is so provided and the vector address indicated by the vector number latched by the fourth means otherwise.

4,349,874

BUFFER SYSTEM FOR SUPPLY PROCEDURE WORDS TO A CENTRAL PROCESSOR UNIT

William E. Woods, Natick; Philip E. Stanley, Westboro; David E. Cushing, Chelmsford, and Richard A. Lemay, Carlisle, all of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Apr. 15, 1980, Ser. No. 140,630
Int. Cl.[3] G06F *3/00, 13/00*
U.S. Cl. 364—200 **11 Claims**



1. An interfacing system for controlling the transfer of procedural data words, procedural data addresses, non-procedural data words, and non-procedural data addresses from a system memory to a processor unit in response to a request by the processor unit for the procedural data words, procedural data addresses, non-procedural data words, and non-procedural data addressed said system comprising:

means for receiving said procedural data words, said procedural data addresses, said non-procedural data words, and said non-procedural data addresses transferred from said system memory in response to a processor request;

means coupled to said receiving means for storing said received procedural data words and procedural data addresses separately from said received non-procedural data words and non-procedural data addresses; and

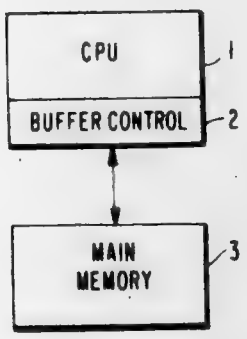
means for selectively transferring to said processor unit said procedural data words, said procedural data addresses, said non-procedural data words, or said non-procedural data address stored in said storing means.

4,349,875

BUFFER STORAGE CONTROL APPARATUS

Masahiro Tada, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed May 23, 1980, Ser. No. 152,968
Claims priority, application Japan, May 25, 1979, 54-65445
Int. Cl.[3] G06F *7/34;* G11C *7/00;* G06F *7/00*
U.S. Cl. 364—200 **3 Claims**



1. A buffer storage control apparatus disposed between a central processing unit (CTU) and a main memory unit

(MMU) or between an MMU and at least one input/output (I/O) storage unit, said control apparatus including a buffer storage unit for storing a portion of the contents of the MMU when disposed between the CPU and the MMU or a portion of the contents of said at least one I/O storage unit when disposed between MMU and said at least one I/O storage unit, and a control unit for controlling said buffer storage unit, said control unit comprising:

an address register for storing a given address having first, second and third portions and related to the MMU or said at least one I/O storage unit;

a directory memory for storing the second portion of the given address;

a plurality of address comparators, each comparing the first portion of the given address and the address register with the portions of the given address stored in said directory memory;

means responsive to the first and second portions of the given address in the address register for performing a read operation for reading a data block out of the buffer storage unit with the occurrence of a match in one of said comparators;

a replacement-block detecting circuit for detecting the read operation for specific data in said data block stored in the buffer storage unit;

a selector for selecting a selected address for a subsequent replacement of a data block, the selected address indicating the data block in which the read operation for said specific data was detected by the detecting circuit;

means for writing, in the absence of a match in any one of said comparators, into the buffer storage unit at an address location that is designated by (i) said first and second portions of the given address and (ii) the selected address of the data block previously selected by said selector, a data block stored in the corresponding address of the MMU or said at least one I/O storage unit which pairs with the buffer storage unit;

means for storing (18) the selected address;

a selector memory (20);

a selector control circuit (19) receiving the selected address, said selector control circuit comprising a plurality of exclusive OR logic means each receiving a bit from the means for storing (18); and

a detecting circuit (1920) receiving the third portion of the given address for detecting the last data word in the data block read out of the buffer storage and for providing an inverting control signal (2010) to the exclusive OR logic means, whereby the selector control circuit (19) delivers (i) the selected address to the selector memory (20) when the inverting control signal is at a first logic state, and (ii) the selected address with the bits thereof inverted when the inverting control signal is at a second logic state opposite said first logic state.

4,349,876

CONTROL ARRANGEMENT FOR IMPROVING THE DRIVING STABILITY OF MOTOR VEHICLES WHICH ARE EQUIPPED WITH ANTI-SKID BRAKE SYSTEMS

Klaus Lindemann, Hanover, Fed. Rep. of Germany, assignor to WABCO Fahrzeugbremsen GmbH, Hanover, Fed. Rep. of Germany

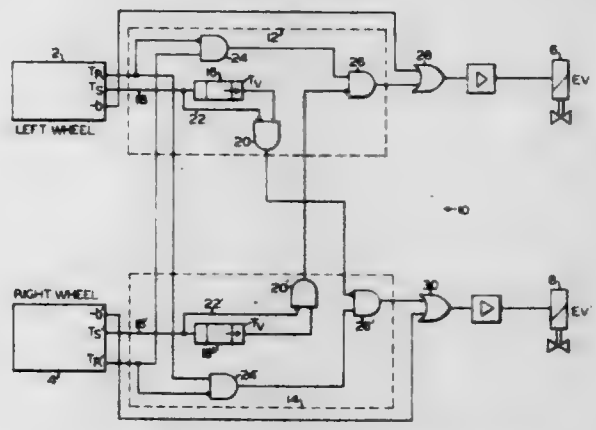
Filed Nov. 7, 1979, Ser. No. 92,015

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1978, 2855326

Int. Cl.³ B60T *8/02*

U.S. Cl. 364—426 **14 Claims**

1. A switching circuit arrangement for improving the stability of travel during the braking of a vehicle equipped with an anti-skid brake system on a roadway having different coefficients of friction on the left and right side of the vehicle comprising, sensing devices for sensing the rotational behavior of the vehicle wheels, control circuits associated with the wheels for evaluating the rotational behavior of the wheels and for obtaining deceleration, acceleration, and slip control signals which control the condition of solenoid supply valves for regulating the brake pressure on the wheels so that the braking pressure is applied in pulsating fashion to a wheel running with a higher coefficient of friction, and at least two interrelated operating circuits electrically interconnected between said control circuits and said solenoid supply valves, said interrelated operating circuits including timing means for controlling the braking



pressure on the wheel running with the higher coefficient of friction so that the brake pressure is held constant for a period of time and then is increased in response to the control signals of said control circuit of the wheel running with the lower coefficient of friction which is being controlled and at times when the wheel with the lower coefficient of friction is being braked.

4,349,877

ELECTRONICALLY CONTROLLED CARBURETOR

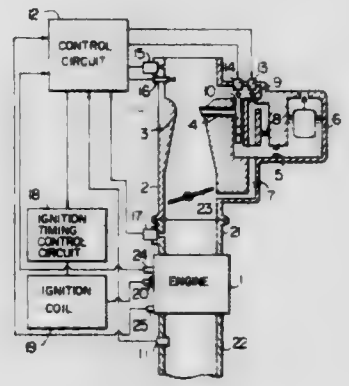
Yoshishige Oyama, Katsuta, and Hiroshi Kuroiwa, Hitachi, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 4, 1980, Ser. No. 137,490

Claims priority, application Japan, Apr. 5, 1979, 54-41733

Int. Cl.³ F02M *7/18, 7/24;* G06F *15/20*

U.S. Cl. 364—431.05 **4 Claims**



1. An electronically controlled carburetor system for controlling the air-fuel mixture supplied by a carburetor to an internal combustion engine comprising:

sensor means for sensing prescribed characteristics of selected physical parameters related to the operation of the engine;

control means for controlling at least one of the amount of intake air and the amount of fuel supplied to the engine; and

processing means, responsive to output signals produced by said sensor means representative of said prescribed characteristics, for generating an output signal representative of a change in the density of the air taken into the engine, said output signal being coupled to said control means whereby said at least one of the amount of intake air and the amount of fuel supplied to the engine is controlled in accordance with said change in air density; and wherein

said carburetor comprises a venturi portion containing a primary intake passage and a secondary intake passage and wherein said control means comprises an air density adjusting section disposed in said venturi portion and separating

said primary intake passage from said secondary intake passage and including a first air path which couples said primary intake passage with said secondary intake passage, a second air path which communicates with said first air path and opens to the upstream side of said venturi portion, and a cylindrical valve which is slidably moveable within said second air path by a pulse motor, the output signal from said processing means being coupled to said pulse motor for moving said cylindrical valve and thereby changing the cross-section area of the flow path of said first air path, to thereby control the amount of intake air supplied to the engine.

4,349,878

ARRANGEMENT FOR DETECTING DISTURBANCES INFLUENCING THE NETWORK FREQUENCY IN ELECTRIC POWER SUPPLY SYSTEMS AND USE OF SUCH ARRANGEMENT IN AN ADAPTIVE AUTOMATIC FREQUENCY CONTROL SYSTEM FOR AN ELECTRIC POWER SUPPLY SYSTEM

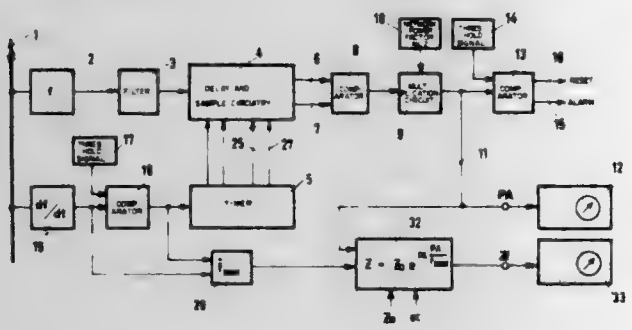
German Grimm, Anton-Günther-Strasse 7, 8060 Dachau, Fed. Rep. of Germany

Filed Dec. 10, 1979, Ser. No. 102,550

Claims priority, application Fed. Rep. of Germany, Dec. 15, 1978, 2854315

Int. Cl.³ G01R *23/00*

U.S. Cl. 364—484 **8 Claims**



3. An arrangement for detecting network frequency influencing disturbances in electric power supply systems, said arrangement comprising:

first measuring circuit means coupled to said power supply system for ascertaining the deviation of the frequency of said system from a desired frequency, said first measuring circuit comprising:

a delay and sample circuit having a plurality of outputs, a first of said outputs delivering a signal representing the system frequency immediately prior the appearance of the disturbance, a second of said outputs delivering a signal representing the system frequency shortly after the appearance of the disturbance;

second measuring circuit means coupled to said power supply system for ascertaining the rate of frequency change;

a timer connected to said first and second measuring circuitry, said timer providing a plurality of clock signals for controlling said delay and sample circuit;

a comparator adapted to receive said first and second output signals from said delay and sample circuit and to provide an output signal;

means for multiplying the output of said comparator by a network power factor proportional to the magnitude of the disturbing power per unit of frequency deviation, said network power factor being selected for the specific power supply system being monitored; and

a first indicator couple to the output of said multiplying means to provide an indication of the value of the disturbing power which causes the frequency disturbance.

4,349,879

APPARATUS FOR CONTROLLING ELECTRICAL POWER CONSUMPTION

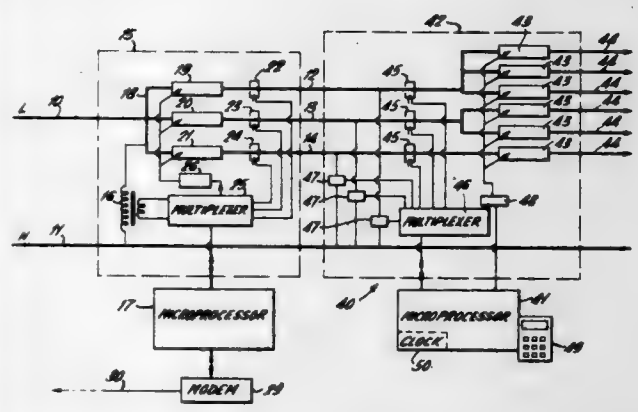
Robert A. Peddie, Reigate, and John S. Fielden, Ottery St. Mary, both of England, assignors to South Eastern Electricity Board, England

Filed Feb. 13, 1980, Ser. No. 121,203

Claims priority, application United Kingdom, Feb. 21, 1979, 7906213

Int. Cl.³ G06F *15/56*

U.S. Cl. 364—492 **16 Claims**



1. Apparatus for controlling electrical power consumption by a load of a consumer drawing power from a power supply network, said apparatus comprising current control means for controlling the flow of current to the load from the power supply network, means for sensing the magnitude of the current supplied to the load from the power supply network, a controller responsive to the sensed current and arranged to set the current limit means so as to limit the sensed current to a magnitude not exceeding a predetermined value, and means for remotely applying to the controller information defining the predetermined value.

4,349,880

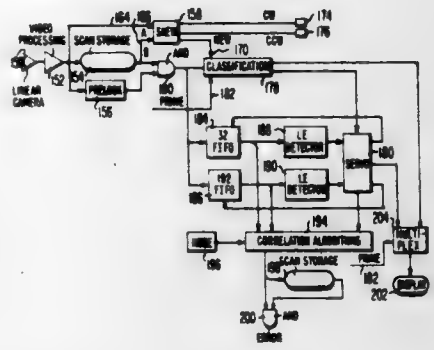
INSPECTION SYSTEM FOR DETECTING DEFECTS IN REGULAR PATTERNS

Peter D. Southgate, Princeton, and John P. Beltz, Willingboro, both of N.J., assignors to RCA Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 21,826, Mar. 19, 1979, abandoned. This application Jun. 30, 1980, Ser. No. 164,348

Int. Cl.³ G06F *15/20, 15/336*

U.S. Cl. 364—507 **10 Claims**



1. An inspection system for detecting defects in regular patterns wherein the elements of the patterns have variations in spatial period, said system comprising

means for scanning and detecting the elements of a pattern,

means for processing an output signal from said means for scanning and detecting during scanning, said means for processing including means for quantizing the output signal from the scanning and detecting means into binary digital signals, main storage means for storing the quantized signal of a portion of a scan, means for determining element period from the quantized signal and for control-

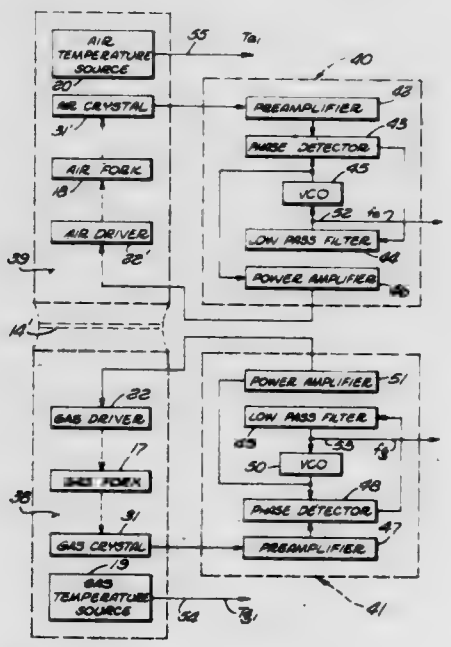
ling the output of said main storage means at times related to element period, means for correlating the output from said main storing means with a real time quantized signal of the same scan, and means for indicating the presence of an error related to a pattern defect in response to a miscorrelation signal from said correlating means.

4,349,881

VIBRATION INSTRUMENTS

Milton H. November, Hacienda Heights; LaVern D. Lyon, Claremont, and Joseph J. Ponzi, Alhambra, all of Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Jul. 14, 1980, Ser. No. 168,709
Int. Cl.³ G01F *1/00*
U.S. Cl. 364—509 **17 Claims**



1. A vibration instrument comprising: a base; a housing sealed to said base to define a first space; vibratable tuning fork means in said first space including two substantially parallel legs connected at one pair of mutually adjacent ends by a bight portion, said tuning fork means having a variable frequency of vibration f; a longitudinal magnetostrictive member having first and second opposite ends on an axis fixed relative to said base and said bight portion, respectively, said parallel legs extending in a direction from said bight portion away from the said second end of said member in positions approximately symmetrical about said axis; a piezoelectric crystal fixed relative to said bight portion to produce an output signal of said frequency f equal to the said vibrational frequency of said tuning fork means; first driver means including a first driver coil mounted around said member, said first driver means also including an amplifier connected from said crystal to impress a signal upon said first driver coil of the same said frequency f to cause said tuning fork means to vibrate at said frequency f, said first driver means having an output at which an output signal is produced, said output signal having said frequency f; and first computer means connected to receive said crystal output signal for producing an output signal directly proportional to the first expression:

$$\frac{A_g}{f_g^2} - B_g$$

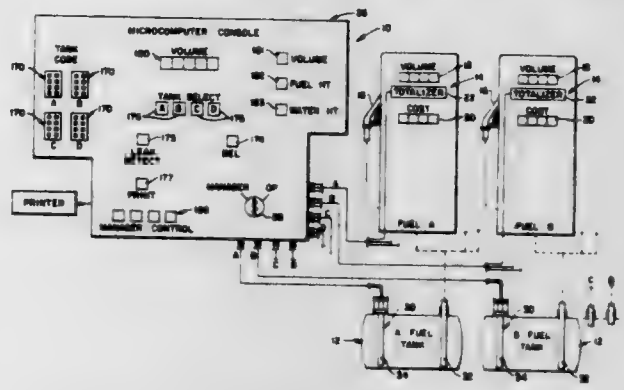
where f_g=f, and A_g and B_g are constants, said constants A_g and B_g having first and second sources, respectively, to provide first and second signals, respectively, to said first computer means directly proportional to said constants A_g and B_g, respectively, and where the said first expression is directly proportional to the density of a fluid in which said vibratable tuning form means is immersed.

4,349,882

LIQUID LEVEL MEASURING SYSTEM

Einar Asmundsson, Middle Haddam; Robert P. Hart, Glastonbury, and Donald W. Fleischer, Wethersfield, all of Conn., assignors to Veeder Industries Inc., Hartford, Conn.

Filed Aug. 22, 1980, Ser. No. 181,083
Int. Cl.³ G01F *23/26*
U.S. Cl. 364—509 **21 Claims**



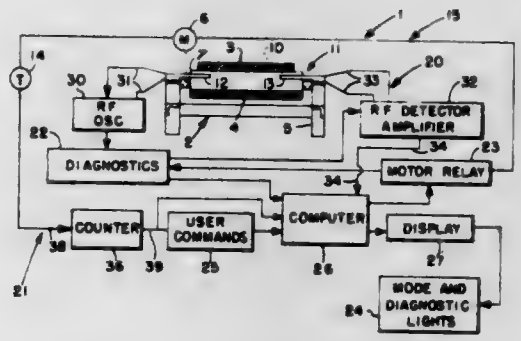
1. In a method of measuring the height of a liquid with an elongated capacitance probe mounted to extend through the surface of the liquid and having a succession of a plurality of longitudinally tending capacitor sections, each havinf a separately measurable capacitance value considered to vary with the liquid height between predetermined dry minimum and submerged maximum capacitance values thereof stored in a computing system, the method comprising the steps of electronically measuring the capacitance value of each of the plurality of capacitor sections with the computing system, calculating with the computing system the height of the liquid from the measured capacitance value of one capacitor section at the surface of the liquid and from its respective predetermined minimum and maximum capacitance values stored in the computing system, and at least when said one section is higher than the lowest section, storing in the computing system the measured capacitance value of a capacitor section lower than said one capacitor section as an updated predetermined maximum capacitance value for that lower section.

4,349,883

SIGNAL DETECTOR CIRCUIT WITH GAIN CONTROL METHOD

Frank A. Doljack, Pleasanton, Calif., assignor to The B. F. Goodrich Company, New York, N.Y.

Filed Mar. 3, 1980, Ser. No. 126,218
Int. Cl.³ G08B *21/00*; G06F *15/46*
U.S. Cl. 364—551 **40 Claims**



1. A monitoring apparatus for monitoring the occurrence of a plurality of events in a cyclical process, comprising event transducer means for detecting the occurrence of such events in such process, said event transducer means comprising means for producing an input signal which may vary in an unknown manner upon the occurrence of each event, a signal control apparatus including output means for producing an output signal, changing means for receiving such input signal and

causing said output means to produce such output signal at a predetermined magnitude in response to receipt of such input signal, and control means for controlling said changing means in discrete steps that are, respectively, proportional to the magnitude of at least one of such input and output signals, progress transducer means for detecting the progress of such process, and search means for sensing whether respective events occur at expected positions in the progress of such process.

4,349,884

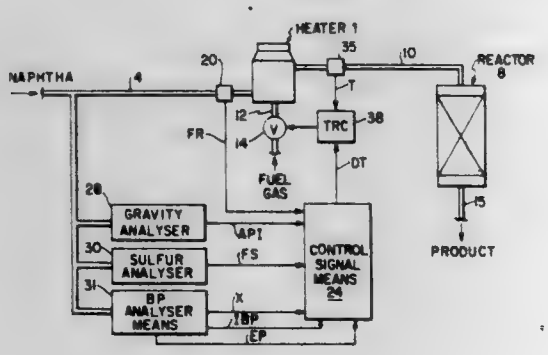
FEEDSTOCK TEMPERATURE CONTROL SYSTEM

Charles A. Ganster, Houston, and Gerald V. Nelson, Nederland, both of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Dec. 15, 1980, Ser. No. 216,724

Int. Cl.³ C10G *21/00*

U.S. Cl. 364—557 **12 Claims**



1. A control system for controlling the temperature of naphtha being fed to a reactor in a hydrotreating unit comprising heater means receiving the naphtha for heating the naphtha in accordance with a control signal DT corresponding to a desired temperature for the naphtha entering the reactor and providing the heated naphtha to the reactor, gravity analyzer means for sensing the API gravity of the naphtha and providing a signal API corresponding thereto, sulfur analyzer means for sensing the sulfur content of the naphtha and providing a corresponding signal FS, boiling point analyzer means for sensing the 50% boiling point temperature, the initial boiling point temperature and the end point temperature of the naphtha and providing corresponding signals X, IBP and EP, respectively, flow rate means for sensing the flow rate of the naphtha and providing a signal FR representative thereof, and control signal means connected to the heater means, to the gravity analyzer means, to the sulfur analyzer means, to the boiling point analyzer means and to the flow rate means for providing control signal DT in accordance with signals API, FS, X, IBP, EP and FR.

4,349,885

SET PRESSURE MEASURING SYSTEM

Leonard J. Thompson, Wrentham, Mass., assignor to Crosby Valve & Gage Company, Wrentham, Mass.

Continuation of Ser. No. 22,197, Mar. 20, 1979, abandoned. This application Dec. 11, 1980, Ser. No. 215,549

Int. Cl.³ F16K *31/00*

U.S. Cl. 364—558 **6 Claims**

1. Apparatus for monitoring the set pressure of the valve coupled to a port in a pressure line having an internal pressure S_p, said port having an effective area A_s, wherein said valve includes a closure element movable between a first limit position sealing said port and a second limit position opening said port, and includes a springloaded means for biasing said closure element towards said first limit position, comprising:

A. position transducer for generating a position signal representative of the position of said closure element between said first and second limit positions,

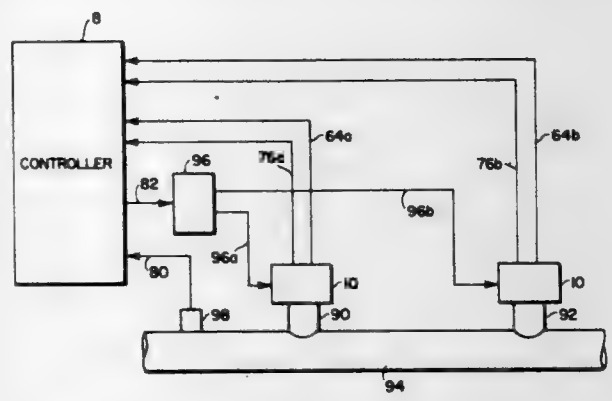
B. forcer means selectively operable to apply a force ramp to said closure element in the direction opposite to said bias provided by said springloaded means,

C. force transducer for generating a force signal representative of the force applied to the said closure element by said forcer means,

D. controller means selectively operable to control a set point measurement cycle, including:

means for activating said forcer means,

means for monitoring said position transducer and said force transducer, and for detecting a test time when said position signal is representative of a predetermined displacement of said closure element from said first limit position, and, in response to said detection, for disabling said forcer means and computing a signal T_p representative of the set pressure of said valve in accordance with



$$T_p = S_p + F/A_s$$

where F is representative of the force signal at said test time, S_p is representative of said internal pressure, and A_s is representative of the effective area of said port.

4,349,886

DEVICE FOR MODIFYING OR CONTROLLING THE SHAPE OF AN ELECTRICAL OUTPUT SIGNAL

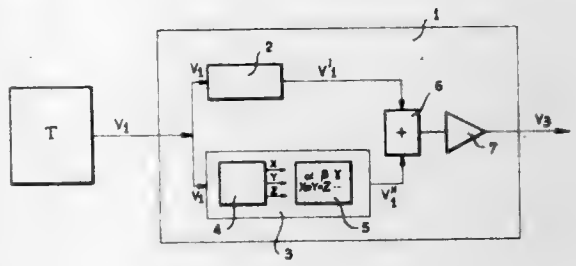
Jean-Pierre Ibar, Avenue de la Division Leclerc, Ballainvilliers (Essonne), France

Filed Mar. 24, 1980, Ser. No. 132,846

Claims priority, application France, Mar. 27, 1979, 79 07678; Feb. 1, 1980, 80 02296

Int. Cl.³ G01R *15/10*; G01K *7/14*

U.S. Cl. 364—573 **14 Claims**



1. Device for modifying and controlling the shape of an electrical output signal which is a function of a physical parameter supplied by a transducer, said device comprising an electrical circuit with at least two branches each receiving the input signal (V_1) to be transformed, one of the branches including a linear circuit effecting a linear transformation ($A_0 + A_1V_1$) of the input signal (V_1), where A_0 and A_1 are constants, and the other branch including a multiple linear circuit to effect a multiple linear transformation of the same input signal (V_1) by generating the intermediate signals ($X = A_2 + V_1$), ($Y = A_3 + V_1$) and ($Z = A_4 + V_1$) where A_2, A_3, A_4 are constants, and a combining circuit receiving the intermediate signals (X, Y, Z . . .) to combine them by multiplication or division in accordance with ($X^{\alpha}Y^{\beta}Z^{\gamma}$ . . .), where α, β

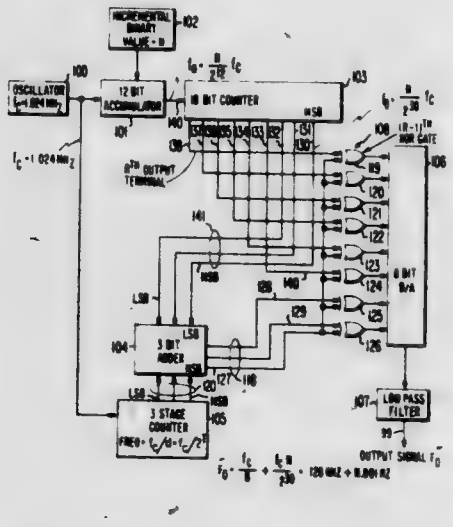
and γ are either -1, 0, or $+1$, at least one of the numbers (α, β,γ . . .) being negative, and an adder circuit receiving the linear signal ($A_0+A_1V_1$) from the first branch and the combination signal (X^{α}, Y^{β}, Z^{γ} . . .) from the second branch to add them and provide the transformed signal (V_3).

4,349,887

PRECISE DIGITALLY PROGRAMMED FREQUENCY SOURCE

Albert T. Crowley, Somerdale, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 22, 1980, Ser. No. 181,086
Int. Cl.³ H03B *19/00*
U.S. Cl. 364—703 **10 Claims**



1. A system for selectively generating any one of M signals frequency spaced apart of S Hz where S is a fixed value, and comprising:

first means for generating a first signal of frequency f_c;

second means responsive to said first signal to produce a first binary output signal of frequency $Nf_c/2^n$, where N is a variable integer and n is an integer;

first frequency divider means responsive to said first output signal to produce a second binary output signal of frequency $Nf_c/2^{n+m}$, where $f_c/2^{n+m}=S$ and m is an integer;

second frequency divider means responsive to said first signal to produce a third binary output signal of frequency f_c/d, where d is an integer $<n+m$; and

logic means responsive to said second and third binary output signal to produce a fourth output signal of average frequency $f_c/d+Nf_c/2^{n+m}$.

4,349,888

CMOS STATIC ALU

Philip S. Smith, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 8, 1980, Ser. No. 185,073
Int. Cl.³ G06F *7/48, 7/50*
U.S. Cl. 364—716 **6 Claims**

1. A CMOS static ALU comprising:

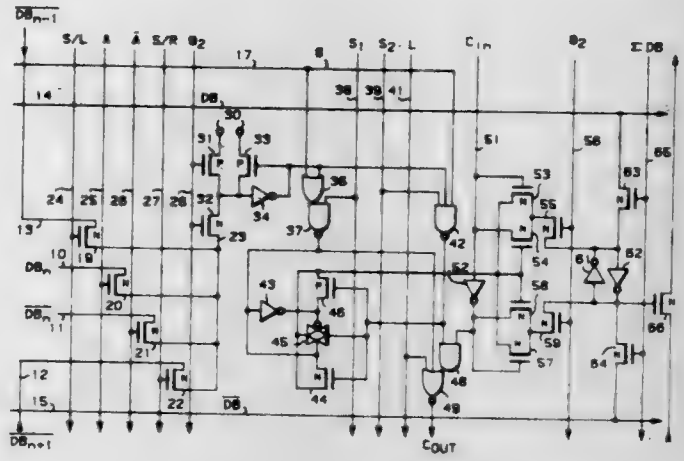
selection means for selecting a first operand from a plurality of inputs;

NOR logic means for providing an output representing the logical NOR of the first operand and a second operand in response to a first control signal;

NAND logic means for providing an output representing the logical NAND of the first and second operands;

first exclusive NOR logic means for providing an output representing the logical exclusive NOR of the outputs of the NOR and the NAND logic means;

second exclusive NOR logic means for providing an output representing the logical exclusive NOR of the output of the first exclusive NOR logic means and a carry input; and



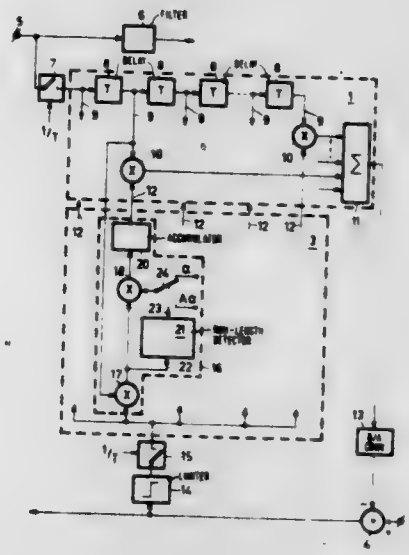
storage means for storing the output of the second exclusive NOR logic means for output from the ALU.

4,349,889

NON-RECURSIVE FILTER HAVING ADJUSTABLE STEP-SIZE FOR EACH ITERATION

Hendricus C. van den Elzen; Petrus J. Van Gerwen; Wilfred A. M. Snijders, and Nicolaas A. M. Verhoeckx, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 10, 1980, Ser. No. 168,211
Claims priority, application Netherlands, Jul. 18, 1979, 7905577
Int. Cl.³ G06F *15/34*
U.S. Cl. 364—724 **6 Claims**



1. An arrangement comprising a non-recursive filter having an input sampling circuit and means coupled to this input sampling circuit for generating a sequence of delayed versions of a signal applied to said input sampling circuit, an output circuit formed by a summing device for producing a filter output signal, a difference determining circuit coupled to this output circuit, means for applying the filter output signal and a reference signal to said difference determining circuit to produce an error signal, means coupled between said generating means and said output circuit for weighting said sequence of delayed versions of the input signal in accordance with a respective sequence of coefficients, correlation circuit means coupled between the output of said difference determining circuit and said weighting means for generating and iteratively adjusting, in positive and negative correction steps, each of said coefficients in said sequence of coefficients, said correlation circuit means having means for varying the size of said correction steps whereby the prescribed function of said error

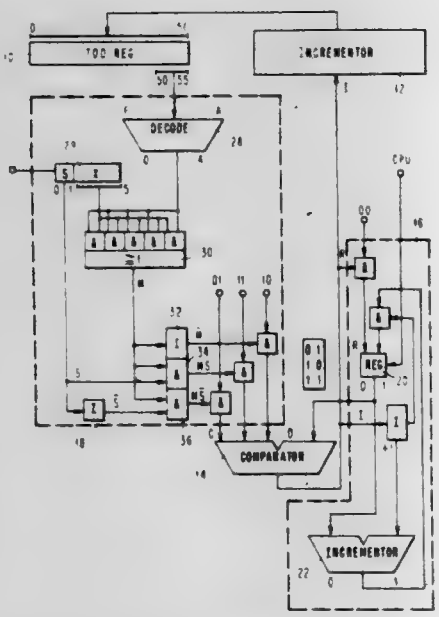
signal is minimized, the step-size for each correction step being determined by a step-size parameter selected from several step-size parameter having different values, characterized in that said correlation circuit further comprises means for determining the sign of each of said correction steps coupled to said difference determining circuit and said means for varying the size of each correction step for each coefficient comprises a run-length detector coupled to said determining means for receiving the sign of each correction step and which, depending on the number of correction steps of the same sign occurring within a group of correction steps preceding the relevant iteration, selects a larger or a smaller step-size parameter.

4,349,890

TIME OF DAY CLOCK CONTROL

David C. Chang, Pleasant Valley, N.Y., assignor to International Business Machines Corp., Armonk, N.Y.

Filed Dec. 28, 1979, Ser. No. 107,811
Int. Cl.[3] G06F *1/04*
U.S. Cl. 364—900 3 Claims



3. In a computer system having a time of day clock register run off a system clock by stepping the time of day clock register at two different rates to synthesize fractional relationship between the time of day clock period D and the system clock period T, the improvement comprising:

counting means for counting the number of pulses produced by the system clock,

binary comparator means for resetting said counter to 0 and incrementing the time of day register when it produces a compare signal,

logic circuit means responsive to binary counts in a number of stages of the register for feeding one binary number into said comparator on certain binary counts and another binary number into the register on other binary counts, and

circuit means for periodically feeding the contents of said counting means into said comparator for comparison with one of said binary numbers to produce said compare signal when said contents is equal to the one of said binary numbers,

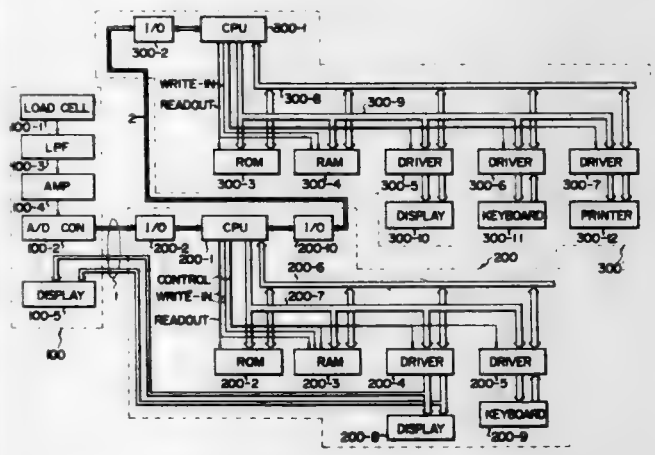
whereby the time of day register is incremented at one rate when said one binary number is fed into said comparator and another rate when said other binary number is fed into said comparator.

4,349,891

POSTAL CHARGE PROCESSING SYSTEM WHICH CALCULATES AND DISPLAYS THE DIFFERENCE BETWEEN THE POSTAL CHARGE AND THE STAMP FOR WHEN THE POSTAL CHARGE IS GREATER

Mitsuo Uchimura, Numazu, and Yoshiharu Nishimura, Mishima, both of Japan, assignors to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Feb. 25, 1980, Ser. No. 124,602
Claims priority, application Japan, Apr. 24, 1979, 54-50669
Int. Cl.[3] G06F *15/28*
U.S. Cl. 364—900 10 Claims



1. A postal charge processing system comprising:

weight measuring means for measuring the weight of a postal article and producing weight data corresponding to the weight of the postal article;

first switching means for setting postal conditions including the way of mail and region of mailing destination and for generating postal condition data in accordance with the set postal conditions;

first memory means coupled to said first switching means for storing said postal condition data in accordance with the operation of said first switching means;

display means;

second switching means operated for producing a fee data;

second memory means coupled to said second switching means for storing said fee data produced in accordance with the operation of said second switching means; and

first data processing means coupled to said measuring means, to said display means and to said first memory means, said first data processing means including:

means for calculating the postal charge for said postal article based on the weight data from said measuring means and also based on the postal condition data stored in said first memory means and for supplying the calculated postal charge data to said display means for display thereon, and

means for calculating, in response to the operation of said second switching means, the difference between the calculated postal charge data and the fee data stored in said second memory means when the calculated postal charge data is greater in value than the fee data, and for supplying difference data corresponding to said difference to said display means for display thereon;

third memory means;

third switching means coupled to said first data processing means and to said third memory means, and being operable to cause said first data processing means to transfer said difference data to said third memory means for storage of said difference data;

printer means;

fourth switching means; and

second data processing means coupled to said fourth switching means, to said printer and to said third memory means, and including means responsive to the operation of said fourth switching means for causing said printer means to

print said difference data stored in said third memory means.

4,349,892

MAGNETIC BUBBLE DETECTOR

Ryo Suzuki, Kodaira; Keiichi Uehara; Teruaki Takeuchi, both of Kokubunji, and Masatoshi Takeshita, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

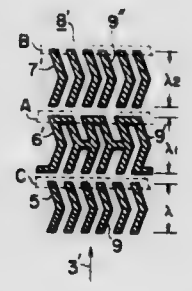
Filed Aug. 1, 1980, Ser. No. 174,513

Claims priority, application Japan, Aug. 15, 1979, 54-103138; Aug. 15, 1979, 54-103139

Int. Cl.³ G11C *19/08*

U.S. Cl. 365—8

14 Claims



1. A magnetic bubble detector comprising a bubble expander which propagates magnetic bubbles in a predetermined direction in accordance with a rotating magnetic field and which expands them gradually in a direction orthogonal to the propagating direction, a bubble detecting element which is disposed in adjacency to said bubble expander on a rear side in which propagating direction of the magnetic bubbles and which detects the existence or non-existence of the magnetic bubble as an electric signal, said bubble detecting element comprising single pattern soft magnetic material-elements extending in said propagating direction of the magnetic bubbles, and a bubble sweeper which is disposed in adjacency to said bubble detecting element on a rear side in said propagating direction of the magnetic bubbles and which sweeps the magnetic bubbles, at least a width of said soft magnetic material-elements constituting said bubble detecting element as taken in said propagating direction of the magnetic bubbles being greater than a width of soft magnetic material-elements constituting said bubble expander as taken in said propagating direction of the magnetic bubbles.

4,349,893

MEMORY WITH CURRENT-CONTROLLED SERIAL-TO-PARALLEL CONVERSION OF MAGNETIC FIELD DOMAINS

Nelie J. Wiegman, and Karel E. Kuijk, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 7, 1980, Ser. No. 166,509

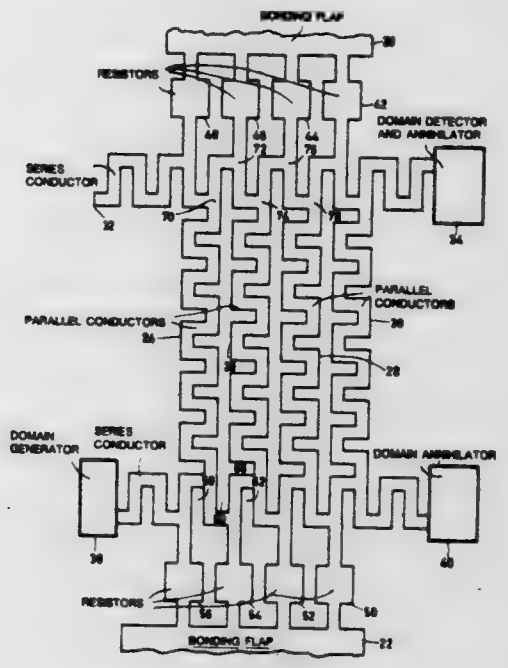
Claims priority, application Netherlands, Jul. 17, 1979, 7905543

Int. Cl.³ G11C *19/08*

U.S. Cl. 365—20

6 Claims

1. Device for the storage of digital information in the form of magnetic domains in a magnetizable layer under the control of a bias field transverse to the layer, containing, in addition, driving means in the form of at least one current conductor applied to said layer that can be driven by a cyclic electric current and has at least a meander-shaped part, wherein a path along the meander-shaped part of it is intended for the magnetic domains, in which said current conductor which is electrically singly connected comprises at least first and second parallel meander paths running in parallel and also a third conductor path transverse to these which, by means of a sequence of alterating currents in it, produces a path along it for the magnetic domains, and in which for conversion between serial and parallel drive of the domains said first and second meander paths are connected to the third conductor path owing to the fact that a first and second loop of the third



conductor path form, as terminal loops, part of said first and second meander paths respectively.

4,349,894

SEMICONDUCTOR MEMORY CELL WITH SYNTHESIZED LOAD RESISTORS

Edward R. Caudel, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

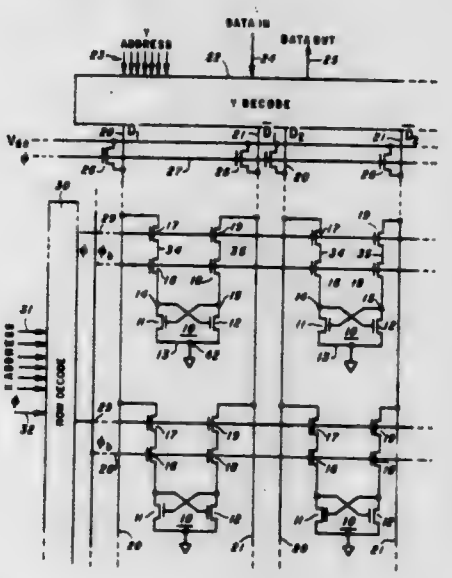
Division of Ser. No. 925,891, Jul. 19, 1978, Pat. No. 4,236,229. This application Nov. 24, 1980, Ser. No. 210,079

The portion of the term of this patent subsequent to Nov. 25, 1997, has been disclaimed.

Int. Cl.³ G11C *11/40*

U.S. Cl. 365—154

10 Claims



1. A semiconductor integrated circuit device formed in a face of a body of semiconductor material as a static self-refresh memory comprising: an array of rows and columns of memory cells formed at said face wherein each cell includes a pair of driver transistors and first and second pairs of coupling transistors of the same channel conductivity type, each of the transistors having a current path between source and drain regions in said face and a control electrode formed over said current path; a pair of storage nodes formed in said face by said regions with no d.c. path via said storage nodes and driver transistors between terminals of a voltage supply; a pair of complementary data lins for each column, the data lines being in the form of elongated conductors in said face and defining column lines;

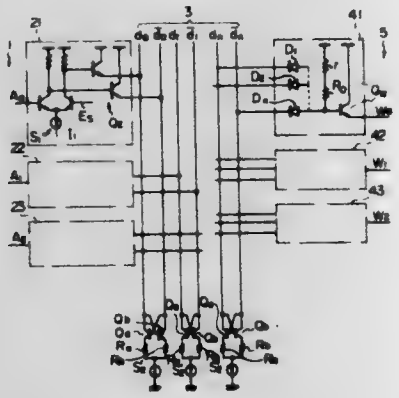
each pair of coupling transistors for each cell in each column having their current paths in said face connected separately in series between one of the data lines and one of the storage nodes; means in the device for precharging the pairs of data lines in all columns during a first time period; a plurality of first conductive means extending along said face and defining first row lines for applying operating voltage to the control electrodes of a first of the transistors in each of the pairs of coupling transistors separately for each row during said first time period; and a plurality of second conductive means extending along said face and defining second row lines for applying operating voltage to the control electrodes of the other of the transistors in each of the pairs of coupling transistors separately for each row during a second time period after said first time period in each read/write operating cycle or refresh cycle; the first conductive means applying operating voltage to the control electrodes of said first of the transistors during said second time period only during a read/write operating cycle and not during a refresh cycle, the first and second conductive means being a pair of adjacent parallel strips on said face perpendicular to said data lines and forming the control electrodes for all of the coupling transistors in a row; said voltage supply being applied to the memory cells via said data lines and a conductive line extending along said face parallel to and between said data lines and contacting ends of the source-to-drain paths of the driver transistors.

4,349,895

DECODER CIRCUIT OF A SEMICONDUCTOR MEMORY DEVICE

Hideaki Isogai, Inagi, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Apr. 21, 1980, Ser. No. 141,932
Claims priority, application Japan, Apr. 26, 1979, 54/51722
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—230 **6 Claims**



1. A decoder circuit of a semiconductor memory device, comprising:

a sequence of address signal input terminals,

a plurality of address buffers, each of said address buffers including a gate circuit for producing an address signal and an inverted address signal, a constant current source and an emitter follower connection transistor,

a plurality of decoder lines consisting of pairs of decoder lines connected to an output of said address buffer producing an address signal and another output of said address buffer producing an inverted address signal, each pair of said decoder lines being connected to said emitter follower connection transistor of said address buffer and a constant current source, a main part of the current passing through only one decoder line of each pair of said decoder lines,

a plurality of word drivers having a matrix of diodes, a resistor circuit connected to a power source and a transistor connected to a word line, each of said diodes being connected between one of said decoder lines and a junction of said resistor circuit and the base of said transistor, and,

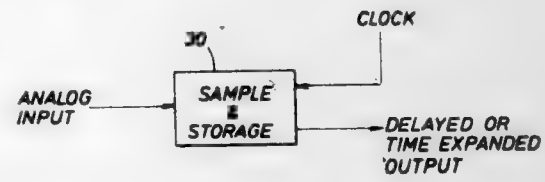
a sequence of word lines.

4,349,896

DIGITAL ACOUSTIC LOGGING METHOD AND APPARATUS

Hugh E. Hall, Jr., Huntsville, Tex., assignor to Halliburton Company, Duncan, Okla.

Filed Dec. 1, 1980, Ser. No. 211,601
Int. Cl.³ G01V *1/40*
U.S. Cl. 367—26 **7 Claims**



1. The method of accurately identifying a wave segment in a seismic analog logging signal, comprising

determining a presumed compression wave in real time, comprising

selecting a time duration before the receipt of the compression wave in the received signal that includes substantially only inherent received noise,

determining the rms amplitude value of the received noise during the selected noise time duration,

presetting a peak detector to have a value equal to the determined rms value plus a predetermined added value,

detecting with the preset peak detector the received signal following the selected noise time duration for the presumed presence of the compression wave by analog sampling the amplitude at regular intervals, three successive samples of received signal from the peak detector indicating the presence of the presumed compression wave onset, and

storing the amplitude values of a predetermined length of the presumed compression wave,

sequentially analog sampling the amplitude values of a real time portion of the logging signal in adjacent discrete time segments,

sequentially individually storing the sampled amplitude values,

reading the stored amplitude values of the presumed compression wave over an expanded period of time in excess of the real time duration of the sampled portion,

convolving the stored amplitude values of the sequentially stored sampled amplitude values over an expanded period of time in excess of the real time duration of the sampled portion with respect to the read presumed compression wave to detect the wave segment.

4,349,897

BISTATIC DOPPLER UNDERWATER INTRUSION DETECTION SONAR

Hollis Boehme; Garland R. Barnard, both of Austin; Larry L. Mellenbruch, Valle, and Danny W. Dickens, Round Rock, all of Tex., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 24, 1981, Ser. No. 257,068
Int. Cl.³ G01S *15/04, 7/66*
U.S. Cl. 367—98 **13 Claims**

1. A bistatic sonar system for detecting intrusion into a predetermined zone of a body of water, said system comprising:

a source of a reference frequency;

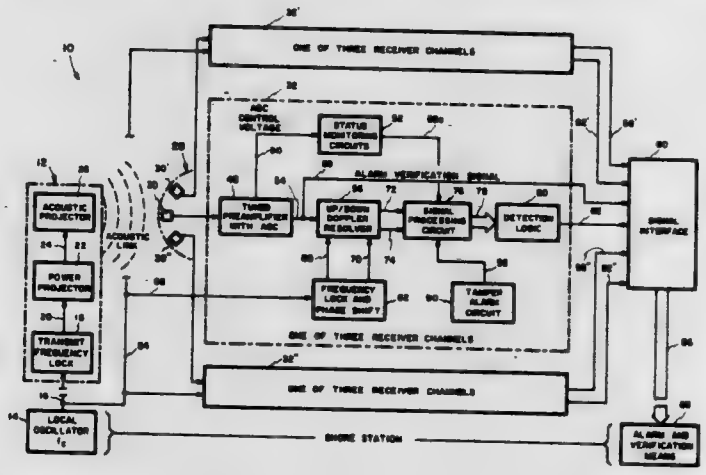
fixed, continuous wave transmitter means, responsive to said reference frequency, for insonification of said zone with acoustic energy at a predetermined frequency;

fixed receiver means including hydrophone means, separately disposed from said transmitter means, for receiving acoustic

signals from said zone and providing corresponding electrical signals as an output;

automatic gain controlled amplifier means, responsive to said hydrophone means, for amplifying target return signals with a gain that is varied in response to slowing changing background noise;

up and down Doppler resolver means, responsive to said reference frequency and to the output of said amplifer means, for providing target signal containing up Doppler and down Doppler sideband frequencies;



signal processing means, responsive to said up Doppler and down Doppler sideband frequencies, for effecting filtering and detection of signals at a plurality of fixed bandpass frequencies within said sideband frequencies and for repetitively providing a multiple bit binary word representative of samples of a plurality of detected return signal conditions including energy, spectral slope, and stroke content;

logic means, responsive to predetermined combinations of rates of occurrence of word bit binary levels, for generating a utilization initiating signal; and

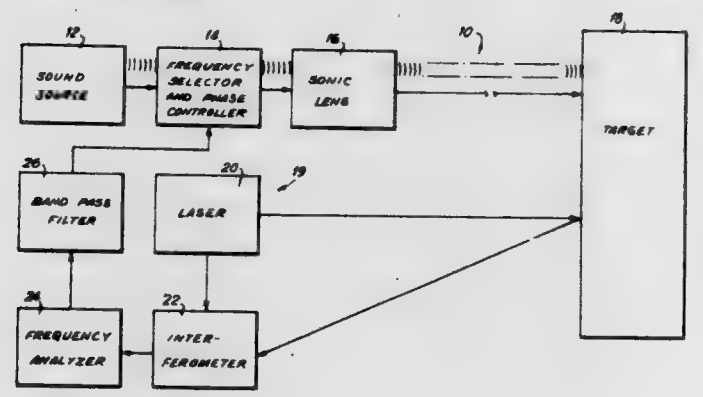
utilization means, responsive to said utilization initiating signal, for effecting a predetermined utilization function.

4,349,898

SONIC WEAPON SYSTEM

William Drewes, 100 Ellison Ave., Bronxville, N.Y. 10708, and Edward M. Vlicki, Elmwood Park, N.J., assignors to William Drewes, Bronxville, N.Y.

Filed Nov. 9, 1978, Ser. No. 959,302
Int. Cl.³ H04B *1/02*
U.S. Cl. 367—138 **36 Claims**



1. A system for transmitting a parametrically pumped sonic signal through a transmission medium to a remote location comprising:

a sound source

means for separating the sound from said source into a plurality of discrete frequency components including a fundamental component and at least one additional component, each additional component having a frequency twice that of the next lowest frequency component;

means for adjusting the phase difference between each frequency component and the next lowest frequency component to substantially 90°;

means for colinearly focusing said components on said remote location; and

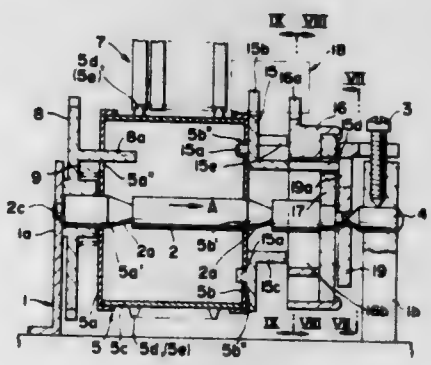
means for rendering said transmission medium nonlinear between said focusing means and said remote location.

4,349,899

MUSIC BOX HAVING TIME-SOUNDING FUNCTION

Fumito Komatsu, Shiojiri, and Junichiro Shinozaki, Chino, both of Japan, assignors to Kabushiki Kaisha Sankyo Seiki Seisakusho, Suwa, Japan

Filed Jan. 15, 1980, Ser. No. 112,268
Claims priority, application Japan, Jan. 17, 1979, 54-4837[U]
Int. Cl.³ G04B *21/02*; G10F *1/06*
U.S. Cl. 368—75 **6 Claims**



1. Music box having time-sounding function comprising:

a rotatabe drum equipped with chiming pins at the side of its leading direction of rotation and time-sounding pins successively in the rotating direction;

a means to drive said drum;

a vibration tooth to engage the pins as the drum moves;

a means to control the forward and backward movement of said drum to the vibration tooth;

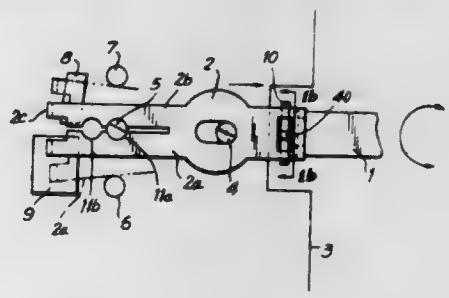
and a means to permit the drum to delay one pitch as the time-sounding pin is engaged and to forcibly push the drum forward as the chiming pin is engaged.

4,349,900

ELECTRONIC TIMEPIECE WITH ERROR COMPENSATION CIRCUIT

Hitomi Aizawa, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Chuo, Japan

Filed Feb. 26, 1980, Ser. No. 124,892
Claims priority, application Japan, Feb. 26, 1979, 54/21639
Int. Cl.³ G04C *9/00*; G04B *29/00*; H01H *9/00*
U.S. Cl. 368—187 **11 Claims**



1. An electronic timepiece including a plurality of functional modes for display, comprising:

circuit means for varying the functional mode for display;

switch means, said switch means being adapted for actuation in a plurality of modes in sequence, selected modes of switch actuation in a selected sequence initiating at least one selected variation in a display, said switch means inputting signals to said circuit means for varying the functional mode;

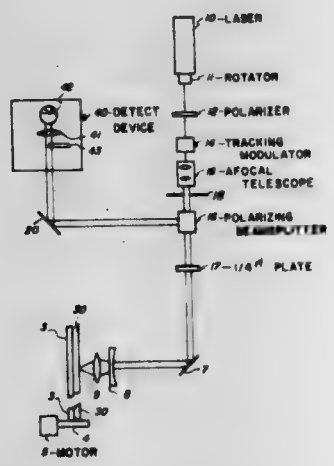
compensating circuits, said compensating circuits being adapted to discriminate between the occurrence of said switch modes of actuation in said selected sequence or in a non-selected sequence, said compensating circuits outputting control signals to said circuit means for varying the functional mode for display, variations in said display resulting from at least one actuation in said non-selected sequence being negated by a subsequent actuation in said non-selected sequence, said display being restored to the state existing prior to said non-selected sequence.

4,349,901

APPARATUS AND METHOD FOR READING OPTICAL DISCS

Dennis G. Howe, Fairport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 20, 1980, Ser. No. 161,486
Int. Cl.³ G11B *7/00*
U.S. Cl. 369—45 **8 Claims**



1. Apparatus for reading optical discs of the type having high density information recorded as tracks of phase-modulating marks of a given operative spacial frequency bandwidth; said apparatus comprising:

(a) first means for directing a beam of coherent read light into focus as a read-spot on such tracks;

(b) means for scanning said read spot along said tracks by providing relative movement between such optical disc and said light directing means;

(c) photodetector means spaced from such optical disc;

(d) second means for directing the zero diffraction order of read light from the tracks and one first diffraction order of read light from the tracks into substantially superimposed relation on said photodetector means; and

(e) first masking means constructed and located between the optical disc and said photodetector means for masking a predetermined portion of said zero diffraction order of light passing toward said photodetector means such that the amplitude of non-masked zero diffraction order light falling on said photodetector means is generally equal to the mean amplitude of first diffraction order light falling on said photodetector means over such given operative spacial frequency bandwidth.

4,349,902

PIEZOELECTRIC TRANSDUCER FOR RECORDING VIDEO INFORMATION

John Valachovic, New Brunswick; Gerard A. Alphonse; John H. Reisner, both of Princeton, and Karl-Friedrich Etzold, Hillside, all of N.J., assignors to RCA Corporation, New York, N.Y.

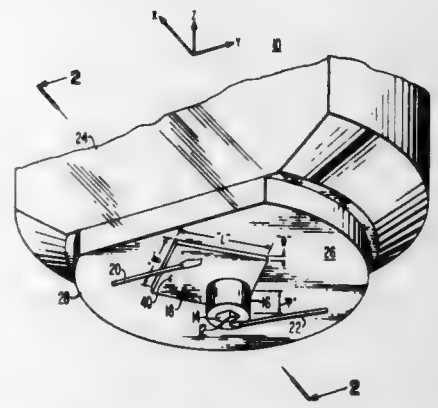
Filed Oct. 27, 1980, Ser. No. 201,057
Int. Cl.³ G11B *3/32*
U.S. Cl. 369—132 **9 Claims**

1. Apparatus for electromechanically recording signal information having a bandwidth of several megahertz along a track on a record medium, said apparatus comprising the combination of:

a mounting pedestal having a mounting surface;

a base member, coupled to said mounting surface of said mounting pedestal, having a first axis of symmetry and a first surface perpendicular to said first axis;

a piezoelectric element having a second axis of symmetry and first and second opposite parallel surfaces perpendicular to said second axis; and



a cutting stylus, mounted to said first opposite parallel surface of said piezoelectric elements having a cutting face, said cutting stylus being arranged on said piezoelectric element such that said cutting face is perpendicular to a tangent of said track;

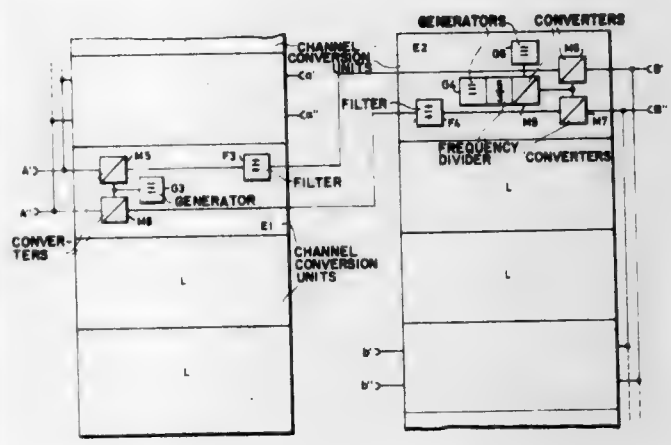
said second opposite surface of said piezoelectric element being attached to said first surface of said base member and said piezoelectric element being arranged on said base member in an asymmetrical fashion to reduce spurious motion of said stylus cutting face along said track.

4,349,903

SWITCHING OF CHANNELS BETWEEN TWO PREMODULATION SYSTEMS

Ulrich Kübler, Backnang, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Filed Jan. 30, 1980, Ser. No. 116,812
Claims priority, application Fed. Rep. of Germany, Feb. 2, 1979, 2903943
Int. Cl.³ H04J *1/04*; H04Q *11/02*
U.S. Cl. 370—57 **6 Claims**



1. In the transmission of information in first and second carrier frequency systems occupying the same frequency bands and each composed of a succession of channel carriers having different respective frequencies, each channel carrier defining a respective transmission channel and being modulated with information to be transmitted in its associated channel, by the steps of providing a respective premodulation carrier for each system, causing the information to be transmitted in each channel to premodulate the premodulation carrier of its associated system, and modulating each channel carrier with the

premodulation carrier modulated with the information to be transmitted in its associated channel, the premodulation carriers for the two systems having respectively different frequency positions relative to the frequency band of the two systems, the improvement comprising a method for switching at least one channel of the first system into a selected channel of the second system by the steps of: shifting the frequency of the modulated channel carrier of the one channel of the first system with the aid of an unmodulated channel carrier; filtering the channel to be switched through out of the shifted signal by means of a bandpass filter; and converting the filtered-out channel to the frequency of the selected channel of the second system with the aid of a carrier at the frequency of a selected channel carrier of the first system.

4,349,904

ERROR CORRECTION CIRCUIT USING CHARACTER PROBABILITY

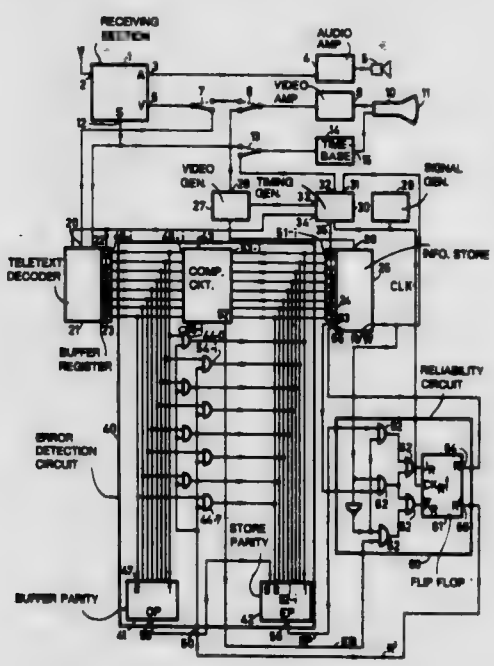
Peter J. H. Janssen, and Wilhelmus J. Christis, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 18, 1980, Ser. No. 141,546

Claims priority, application Netherlands, Apr. 27, 1979, 7903340

Int. Cl.³ G06F *11/14*

U.S. Cl. 371—69 **7 Claims**



1. An error correction circuit for a receiving device for receiving digitally transmitted symbol information, the transmission of this information being repeated one or more times, the receiving device having a decoding circuit for decoding the received information, an information store coupled to said decoding circuit for storing the information, a circuit for generating synchronizing signals and a video converter circuit coupled to said information store and said generating circuit for converting information and synchronizing signals into a composite video signal for application to a standard television receiver, a symbol address in the information store corresponding with a symbol location on a television picture screen, a symbol location being a portion of a text line which is displayed with a number of video lines greater than one, the error correction circuit being coupled to said decoding circuit and said information store and including means coupled between said decoding circuit and said information store for checking newly received symbol information against symbol information stored in the information store for the corresponding symbol location, a write-switch having one input coupled to said decoding circuit and an output coupled to said information store, and a write-setting circuit, coupled to another input of said write-switch, which determines whether the newly received information is written or not written into the information store, said write-setting circit having an input coupled to said checking means whereby the results of said checking are a factor in the setting of said write-switch by said write-setting circuit, characterized in that the error correction circuit further comprises a classification circuit coupled to the output of said decoding circuit for classifying a newly received and decoded symbol in one of at least two classes on the basis of the probability of occurrence of the newly received symbol, the input of the classification circuit being coupled to another input of the write-setting circuit.

4,349,905

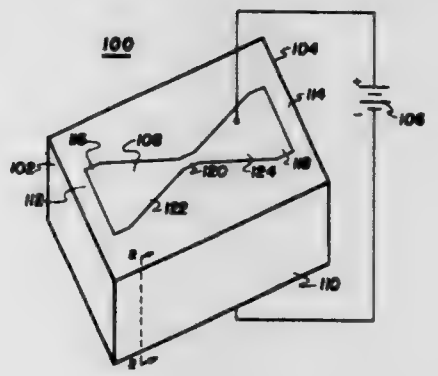
TAPERED STRIPE SEMICONDUCTOR LASER

Donald E. Ackley, Los Altos, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jul. 22, 1980, Ser. No. 171,080

Int. Cl.³ H01S *3/19*

U.S. Cl. 372—46 **3 Claims**



1. A semiconductor laser comprising:

a plurality of layers of semiconducting material including an active layer in which charge recombination and emission of optical radiation are induceable by injection of charge carriers into said active layer;

a first mirrored face and a second mirrored face at opposite ends of said active layer;

stripe means extending between said first and second mirrored faces for laterally confining the optical radiation and the charge carriers, said stripe means having a first region of tapered width for substantially preventing lasing in more than one mode, said stripe means having lower refractive index than one of said layers, for permitting leaky mode operation of said laser; and

electrode means for supplying electrical current.

4,349,906

OPTICALLY CONTROLLED INTEGRATED CURRENT DIODE LASERS

Donald R. Scifres, Los Altos; William Streifer, Palo Alto, and Robert D. Burnham, Los Altos Hills, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 18, 1979, Ser. No. 76,633

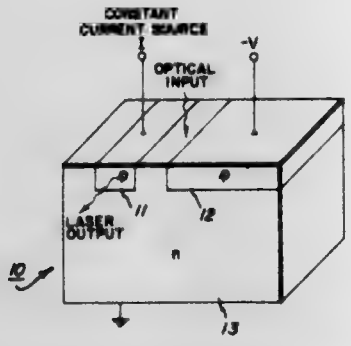
Int. Cl.³ H01S *3/19*

U.S. Cl. 372—50 **21 Claims**

1. A light emitting laser integrated on a single semiconductor chip and operating as a bipolar transistor device, wherein the improvement is characterized by:

a light sensitive region, said laser including means for detecting an external input light signal of a first modulated intensity applied to said light sensitive region of said laser, said light signal causing a change in the electric current

flow to at least one portion of said laser resulting in an output light signal of an amplified modulated intensity



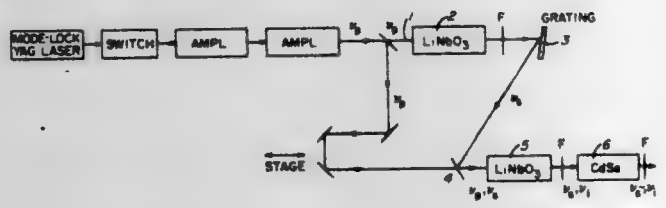
corresponding to said modulated intensity of the input light signal.

4,349,907

BROADLY TUNABLE PICOSECOND IR SOURCE

Anthony J. Campillo, Nesconset, N.Y.; Ronald C. Hyer, and Stanley J. Shapiro, both of Los Alamos, N. Mex., assignors to The United Stated of America as represented by the Department of Energy, Washington, D.C.

Filed Apr. 23, 1980, Ser. No. 143,059
Int. Cl.³ H01S *3/00*
U.S. Cl. 372—92 **18 Claims**



1. An apparatus for producing narrow-bandwidth broadly and continuously tunable, picosecond duration, coherent infrared radiation, comprising:

(a) means for repetitively producing fixed wavelength, high energy picosecond duration coherent infrared light pulses;

(b) means for receiving and dividing said high energy pulses into two parts, and directing each portion along a different pathway, one part along path 1 and the other along path 2;

(c) means for generating and emitting picosecond, broadbanded, coherent signal and idler frequencies from amplification of spontaneous noise of the required frequencies, inserted in path 1 and responsive to and using as its source of energy said high energy light pulses;

(d) means for receiving and selecting a particular spectral component and a particular spatial component of coherent radiation selected from the group of said emitted coherent signal and idler frequencies;

(e) means for receiving, further amplifying and emitting selected spectral-spatial components of said coherent radiation selected from the group of said signal and idler frequencies and regenerating a corresponding idler and signal frequency, respectively, inserted in path 2 and responsive to and using as a source of energy said high energy light pulses; and

(f) means for receiving and mixing said amplified selected spectral-spatial components of said coherent radiation selected from the group of said signal and idler frequencies and said regenerated corresponding idler and signal frequencies, respectively, producing and emitting difference frequencies of longer wavelength.

4,349,908

GAS LASER TUBE COMPRISING A CHANNEL-SHAPED HOLDER PAIR FOR COMPRESSIVELY HOLDING A BREWSTER PLATE AT PLATE CORNERS

Hiroo Hara, and Noboru Taguchi, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Aug. 25, 1980, Ser. No. 180,722
Claims priority, application Japan, Aug. 23, 1979, 54-116128[U]
Int. Cl.³ H01S *3/02*
U.S. Cl. 372—103 **5 Claims**



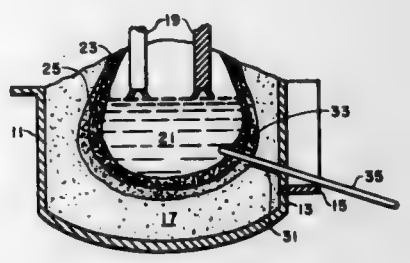
1. An internal mirror type gas laser tube comprising a cylindrical casing for containing a laser active medium therein, and first and second mirrors disposed at opposite ends of said cylindrical casing, said cylindrical casing including at one of said opposite ends a metallic cylindrical member, a first flexible metallic holder inserted in said metallic cylindrical member, a Brewster plate inserted in said metallic cylindrical member and abutted against said first flexible metallic holder with a pressure in a direction toward the central portion of said cylindrical casing, a second flexible metallic holder inserted in said metallic cylindrical member and abutted against said Brewster plate with a pressure in said direction, and means for applying a pressure to said second flexible metallic holder in said direction, each of said first and second flexible metallic holders having a pair of side walls extending in parallel with each other and in the axial direction of said metallic cylindrical member and means disposed in parallel with the axial direction of said metallic cylindrical member for connecting said side walls to each other, each of said side walls having a plurality of protrusions at its one edge portion on the side of said Brewster plate, the protrusions of each of said first and second flexible metallic holders forming a Brewster cut surface and being abutted against said Brewster plate.

4,349,909

PROCESS FOR CASTING FUSED REFRACTORY OXIDES HAVING HIGH MELTING POINTS

Paul Cichy, Buffalo, N.Y., assignor to Kennecott Corporation, Stamford, Conn.

Division of Ser. No. 45,485, Jun. 4, 1979, Pat. No. 4,304,954. This application Jul. 6, 1981, Ser. No. 280,726
Int. Cl.³ H05B *7/00*
U.S. Cl. 373—84 **5 Claims**



1. A process for the production of fused refractory oxide materials having fusion points greater than 2400° C. which comprises the steps of:

(a) insulatingly supporting a vertically elongated bed of said refractory oxide material in particulate form at its bottom and sides with additional amounts of said particulate refractory oxide material which will remain unmelted through the process,

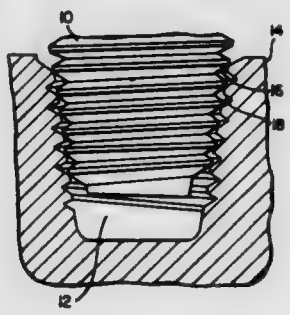
(b) exposing the upper surface of said bed to a plurality of electrodes positioned over said bed to form at least one arc adjacent to the upper surface of said bed,
(c) melting a portion of said bed by a flow of electric current from one of said electrodes to another, forming a zone of liquid refractory oxide material surrounded by an open-topped layer of congealed refractory oxide material,
(d) removing a portion of particulate material along the side of said bed to expose said congealed layer at a point adjacent to the bottom portion of said zone of liquid material,
(e) piercing said congealed layer and tapping the zone of liquid material, and
(f) tilting said bed to pour molten refractory oxide material from said liquid zone to a point outside of said bed.

4,349,910

METHOD AND APPARATUS FOR ORIENTATION OF ELECTRODE JOINT THREADS

Herman M. Belz, Berea, Ohio, assignor to Union Carbide Corporation, Danbury, Conn.

Filed Sep. 28, 1979, Ser. No. 79,886
Int. Cl.³ H05B 7/14
U.S. Cl. 373—91 **12 Claims**



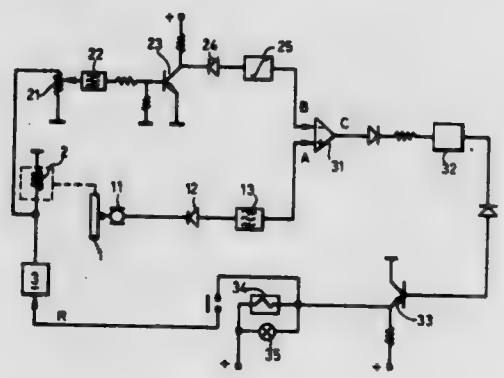
1. An electrode section having in at least one end a threaded socked capable of receiving a threaded electrode end or a threaded connecting pin, and on the periphery of said electrode section end and index mark for the purpose of alignment with a similar mark on the end of another electrode section to facilitate screwing the two electrode sections together,
said index mark designating a preselected reference point on the thread configuration of said threaded socket at a predetermined perpendicular distance from the plane of the end face of said electrode section end in the radial plane of the center of said mark.

4,349,911

SAFETY DEVICE FOR ELECTRODES OF AN ELECTRIC STEEL-MAKING FURNACE

Joseph M. W. Orbans, rue Simon Radoux, 1, 4000 Liege, Belgium

Filed Dec. 5, 1980, Ser. No. 213,378
Claims priority, application Belgium, Dec. 6, 1979, 198456
Int. Cl.³ H05B 7/148
U.S. Cl. 373—105 **4 Claims**



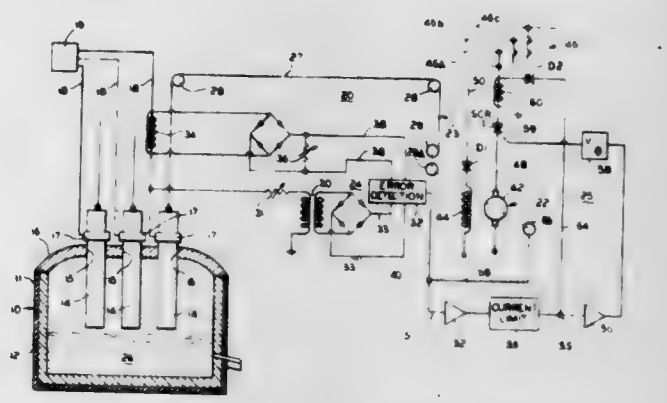
1. A safety device for protecting electrodes in an electric steel-making furnace, comprising a regulating device for producing a current regulating the motion of each electrode in dependence on the current travelling through the electrode, said safety device comprising:
first means connected to measure the regulating current and to produce set-value signal whenever a predetermined threshold value of the regulating current is exceeded;
second means coupled to the electrode-holder for detecting whether the electrode is moving and producing and electric signal having a first state when the electrode moves and a second state when the electrode is at a stop; and
a comparator device connected to receive the set-value signal at a first input and to receive the electric signal produced by the second means at a second input, the comparator device being adapted to produce a control signal having two states, namely a first state in response to two simultaneous input signals each having a first predetermined state and a second state in response to two simultaneous input signals having different states, the control signal being applied to a control input of the regulating device so that when the electrode does not move in response to a regulating current in excess of said threshold regulating current the regulating device automatically raises the electrode.

4,349,912

ELECTRODE POSITIONING CONTROL

James R. Bello, Pittsburgh, Pa., assignor to Lectromelt Corporation, Pittsburgh, Pa.

Filed Mar. 30, 1981, Ser. No. 249,096
Int. Cl.³ H05B 7/152
U.S. Cl. 373—105 **13 Claims**



1. An electric arc furnace having at lease one electrode,
drive means for positioning said electrode relative to a furnace charge,
an energy source coupled to said drive means for operating the same,
error detection circuit means coupled to said electrode for generating an error signal functionally related to the magnitude of electrode current,
electrical energy flow control means coupled to said energy source and said drive means, controller means coupled to said error detection circuit means and to flow control means, said controller means being responsive to said error signal for controlling the flow of electrical energy through said flow control means to said drive means whereby said electrode will be positioned relative to said furnace charge in accordance with electrical conditions in said electrode.

4,349,913

METHOD AND APPARATUS FOR REDUCING THE DEMAND ON THE NUMBER OF TRANSFERRED BITS WHEN TRANSFERRING PCM INFORMATION

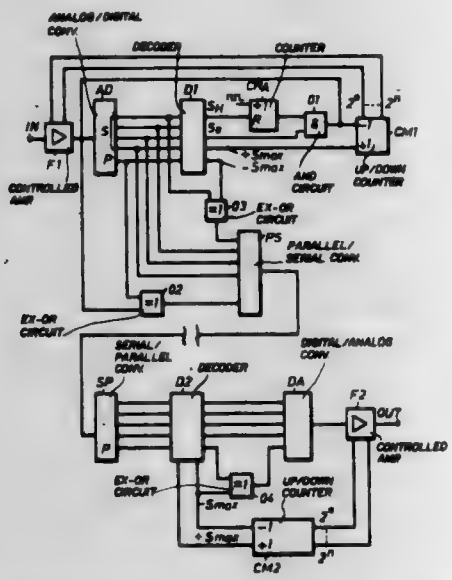
Karl I. L. Skoog, Farsta, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

PCT No. PCT/SE78/00097, § 371 Date Aug. 30, 1979, § 102(e) Date Jul. 5, 1979, PCT Pub. No. WO79/00462, PCT Pub. Date Jul. 26, 1979

PCT Filed Dec. 18, 1978, Ser. No. 154,405

Int. Cl.³ H04L *3/00*

U.S. Cl. 375—25 **13 Claims**



9. In a PCM-information transfer system wherein the PCM-words transferred from a transmitter to a receiver are normally represented by polarity information, a segmented code and an amplitude code, said amplitude code indicating a level within an amplitude segment represented by a segment code, apparatus for transmitting PCM-words representing the amplitude and polarity of an analog signal merely by transferring binary words comprising polarity information and an amplitude code and no segment code whereby the number of bits transferred is reduced, said apparatus comprising: at the transmitter, analog-to-digital means for converting an analog signal to a digital value, including a polarity value and an amplitude value, means detecting upper and lower limit values of the amplitude values for generating first and second control pulses, respectively, a first up/down counter means for units incrementally and decrementally, respectively, in response to said first and second control pulses, the instantaneous count in said counter means being associated with the segment code of the analog signal and means for transmitting the polarity value and amplitude value, and; at the receiver, second detecting means detecting upper and lower limit values of the received amplitude values for generating other first and second control signals, and second up/down counter means response to said other first and second control signals for unit incrementing and decrementing, respectively, whereby the count value accumulated in said second up/down counter means represents a segment value, and digital-to-analog means for converting the received polarity value, the received amplitude value and the accumulated count value representing a segment value to an analog signal.

4,349,914

BIT SYNCHRONOUS SWITCHING SYSTEM FOR SPACE DIVERSITY OPERATION

Randall G. Evans, San Jose, Calif., assignor to Ford Aerospace & Communications Corp., Detroit, Mich.

Filed Apr. 1, 1980, Ser. No. 136,584

Int. Cl.³ H04B *7/08*; H04L *1/06*

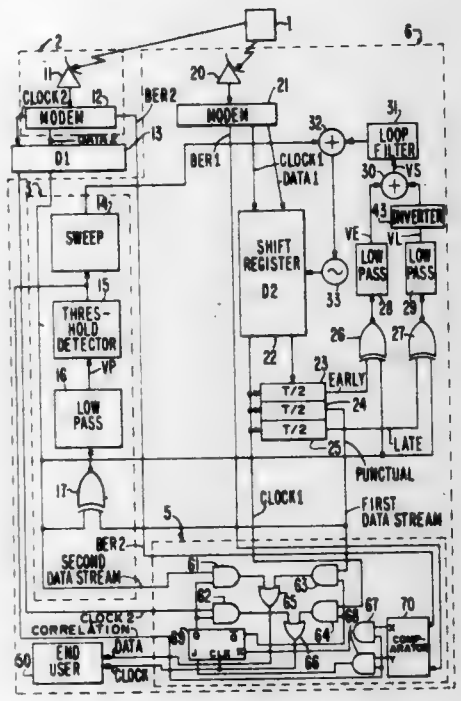
U.S. Cl. 375—40 **13 Claims**

9. Apparatus comprising the elements of:

a source of binary-encoded electromagnetic radiation;

first and second receivers spaced remotely from each other and from said source for receiving the radiation, each receiver comprising a demodulator which produces a baseband signal containing said binary information;

means for establishing correlation between the baseband signals comprising a variable delay element coupled to one of



said baseband signals and activated by a variable voltage element, means coupled to said variable voltage element for monotonically varying the voltage thereon, and means coupled to said voltage varying means for deciding when correlation has been achieved based upon a preselected correlation criterion.

4,349,915

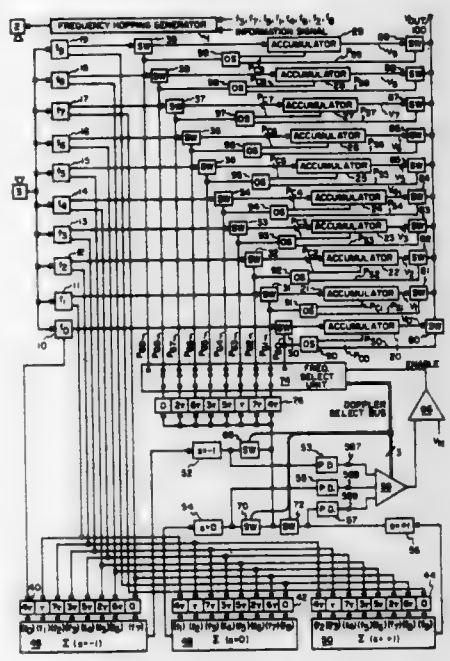
MINIMIZATION OF MULTIPATH AND DOPPLER EFFECTS IN RADIANT ENERGY COMMUNICATION SYSTEMS

John P. Costas, Manlius, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Filed Feb. 2, 1981, Ser. No. 230,813

Int. Cl.³ H04L *1/04*

U.S. Cl. 375—40 **3 Claims**



2. In a system for communicating information from a transmitter to a receiver, through a medium in which transmitted energy representative of the information is subject to multipath delay spread effects and doppler frequency-shift effects, where the information is transmitted in the form of a series of modu-

lated information pulses of differing nominal frequencies, the nominal frequencies of successive pulses being repeatedly shifted through a predetermined sequence of F frequencies repeated every transmitter time frame of period $T=F\tau$, where τ equals the duration of each information pulse and where the modulation represents the information, each of said information pulses being received in the form of a plurality of doppler-shifted arrival pulses which travelled different paths of propagation,

an improved apparatus for reproducing the information at the receiver, said apparatus comprising:

(a) a plurality of detection units, each adapted to detect arrival pulses received at a distinct frequency, the range of frequencies detected being broad enough to include all doppler shifted frequencies which will be received at predetermined doppler shifts occurring over an expected range of relative velocities of the transmitter and the receiver, each of said detection units being further adapted to produce, from each arrival pulse detected thereby, a demodulated arrival pulse simultaneous therewith, said demodulated arrival pulse having a polarity representing the information communicated by the arrival pulse and having a magnitude representing the magnitude of the arrival pulse;

(b) a plurality of delay units each utilized to test for the existence of one of the predetermined doppler shifts, each unit including F delay elements connected to respective ones of the detection units adapted to detect the doppler-shifted frequencies at which the arrival pulses will be received when one of the predetermined doppler shifts exists, each delay element delaying the detected arrival pulses produced by the detection unit connected thereto by the number of time intervals τ by which the corresponding transmitted frequency precedes a selected one of the transmitted frequencies in the sequence;

(c) a plurality of analog summers utilized in conjunction with the delay units to test for the existence of one of the predetermined doppler shifts, each summer being connected to a respective one of the delay units to continuously sum the magnitudes of the detected arrival pulses delayed thereby and to produce a series of composite pulses therefrom;

(d) comparator means for determining which analog summer is producing the composite pulses of greatest magnitude and for producing a doppler select signal representing the doppler shift tested for by the summer, said doppler select signal representing the existing doppler shift and said composite pulses representing the propagation delays at which each arrival pulse is received;

(e) switching means for receiving the composite pulses and the doppler select signal, and for passing to an output thereof the composite pulses produced by the summer testing for the doppler shift represented by said doppler select signal;

(f) a delay unit connected to the output of the switching means for receiving the composite pulses passed thereto and producing F replicas of each pulse after delays of 0, τ, 2τ, . . . $(F-1)\tau$, the replicas of each composite pulse passed being produced simultaneously with the reception of F arrival pulses detected at the F doppler-shifted frequencies received, and at the propagation delay represented by the composite pulse;

(g) a plurality of accumulators each adapted to algebraically accumulate the magnitudes of the demodulated arrival pulses produced by a respective one of the detection units;

(h) a plurality of switches, each connected between one of the accumulators and its respective detection unit;

(i) a frequency select unit for receiving the doppler select signal and the F replicas of each composite pulse passed, said doppler select signal causing the F replicas to be applied as gating pulses to respective ones of the F switches connected to the detection units adapted to detect the doppler-shifted frequencies received, the specific switch to which each of the F gating pulses is applied being selected such that the switch closes each time a demodulated arrival pulse is produced by the detection unit connected thereto and passes said pulse to the connected accumulator;

(j) means for sampling the accumulation in each accumulator after the magnitudes of all demodulated arrival pulses representing the information communicated by a single information pulse have been accumulated thereby, the sequential samples thus formed representing the information transmitted; and

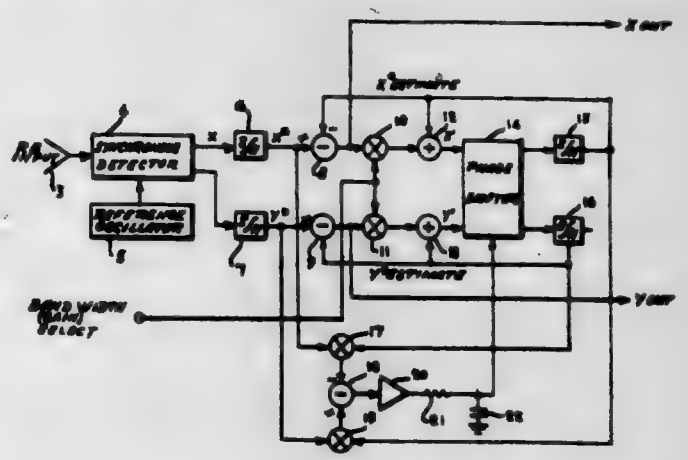
(k) means for resetting each accumulation to a predetermined magnitude after it is has been sampled.

4,349,916

ADAPTIVE INTERFERENCE TRACKER FOR SUPPRESSION OF NARROW BAND INTERFERENCE

Allan W. Roeder, Whitesboro, N.Y., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 6, 1980, Ser. No. 175,795
Int. Cl.³ H04B *1/10*
U.S. Cl. 375—103 5 Claims



1. An adaptive interference tracker for suppression of narrow band interference comprising:

a synchronous detector deriving in-phase and quadrature baseband signals from an RF input signal,

signal sampling means sampling the output of said synchronous detector to provide in-phase and quadrature sample data baseband signals,

means providing a bandwidth scaling constant,

interference signal estimating means for generating from said in-phase and quadrature sample data baseband signals and said bandwidth scaling constant estimated in-phase and quadrature interference signals, said interference signal estimating means comprising data shifting integrator means, multiplier means receiving said in-phase and quadrature output signals and said bandwidth scaling constant and outputting its products to said phase shifting integrator means, an estimated interference signal feedback loop returning the output of said phase shifting integrator means to said phase shifting integrator means and to a subtractor means, and a phase shift tracking feedback loop between the output of said phase shifting integrator means and the output of said signal sampling means controlling the phase of said phase shifting integrator means to track interfering signal frequency, and

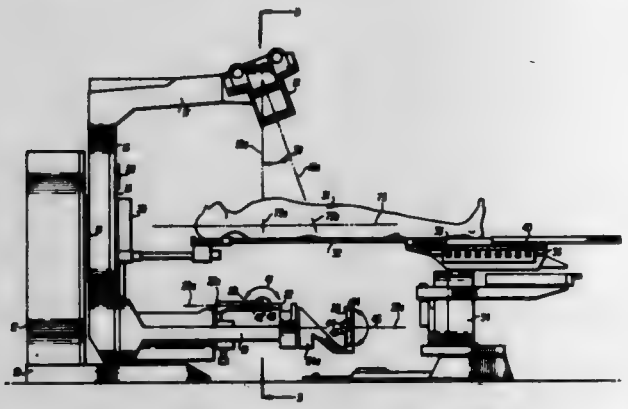
said subtractor means for subtracting said estimated in-phase and quadrature interference signals from said sample data baseband signals to provide in-phase and quadrature output signals.

4,349,917

TOMOGRAPHIC METHOD AND APPARATUS

Robert M. Moore, Midlothian, Va., assignor to Kermath Manufacturing Corporation, Richmond, Va.

Continuation of Ser. No. 963,704, Nov. 24, 1978, abandoned.
This application Jun. 9, 1980, Ser. No. 157,602
Int. Cl.[3] G03B 41/16
U.S. Cl. 378—24 19 Claims



1. Tomographic radiological apparatus having an x-ray source, an object support and a film holder for providing an image of a selected cross-section of a given object, said apparatus further comprising:

means for recording reference data on a first film within a holder, said reference data indicating the location of the object relative to the apparatus;

means for accurately positioning said selected cross-section of said object with respect to an x-ray beam from said source and a primary axis of rotation about said object by said x-ray source and a second film;

means for accurately locating said second film with respect to said reference-data so as to be in a plane parallel to the plane of said selected cross-section; and,

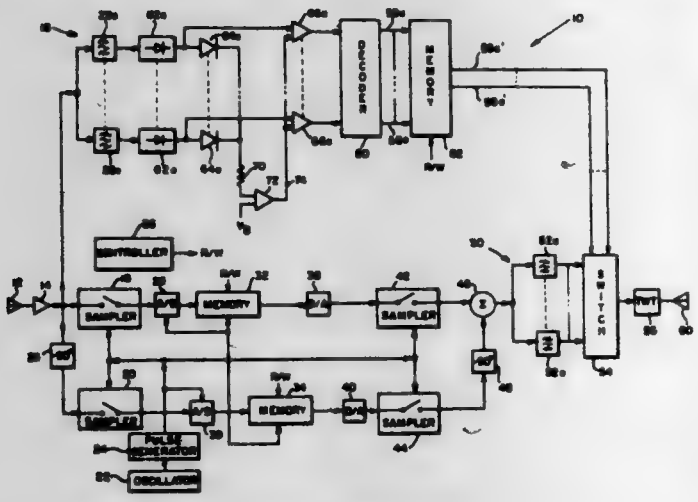
means to move said x-ray source and said second film with respect to said primary axis of rotation while maintaining parallelism between said second film and said selected cross-section so as to image said selected cross-section at said second film during such motion.

4,349,918

DIGITAL MEMORY SYSTEM

Bruce E. Gordon, Santa Barbara, Calif., assignor to Raytheon Company, Lexington, Mass.

Filed May 21, 1980, Ser. No. 152,015
Int. Cl.[3] H04B 13/00, 15/00; H03H 17/00
U.S. Cl. 455—20 4 Claims



1. A digital memory system comprising:

(a) means for separating an input signal into a plurality of signal channels, each one of the signals in each one of the channels having a frequency f;

(b) means for storing samples of the signals fed to each of the plurality of signal channels at a rate less than the Nyquist sampling rate, 2f;

(c) means for sequentially reading the stored samples from the storing means;

(d) means for combining the samples read from the storing means into a composite signal having a plurality of frequency components separated in frequency from one another by an amount having a predetermined relationship to the rate at which samples were stored in the storing means; and

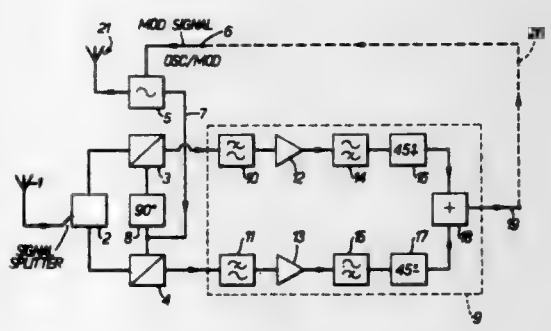
(e) means, responsive to the frequency of the input signal and fed by the composite signal, for coupling a selected one of the produced plurality of frequency components of the composite signal to an output.

4,349,919

TRANSMITTER/RECEIVERS CAPABLE OF CONTEMPORANEOUS TRANSMISSION/RECEPTION

Christopher K. Richardson, Romsey, England, assignor to Plessey Handel und Investments AG, Zug, Switzerland

Filed Jun. 30, 1980, Ser. No. 164,146
Claims priority, application United Kingdom, Jul. 6, 1979, 7923731
Int. Cl.[3] H04B 7/16, 1/54
U.S. Cl. 455—23 11 Claims



1. A communication transmitter/receiver for contemporaneous transmission and reception between more than two such transmitter/receivers, the transmitter/receiver comprising:

oscillator means, capable of being phase modulated in accordance with a phase deviation, for providing an oscillator output signal for transmission, wherein the phase deviation does not substantially exceed 90°;

aerial means for transmitting said oscillator output signal and for accepting a received signal;

first mixer means for mixing said oscillator output signal for transmission with said received signal to produce a first mixer output signal, said first mixer means having a first input terminal for receiving said oscillator output signal for transmission and a second input terminal for receiving said received signal;

second mixer means for mixing said oscillator output signal for transmission with said received signal to produce a second mixer output signal, said second mixer means having a third input terminal for receiving said oscillator output signal for transmission and a fourth input terminal for receiving said received signal;

phase quadrature means operatively associated with said first and second mixer means so as to establish a phase quadrature relationship between said first and second mixer output signals; and

demodulator means for receiving and demodulating the first and second mixer output signals having the quadrature relationship therebetween so as to provide for contemporaneous

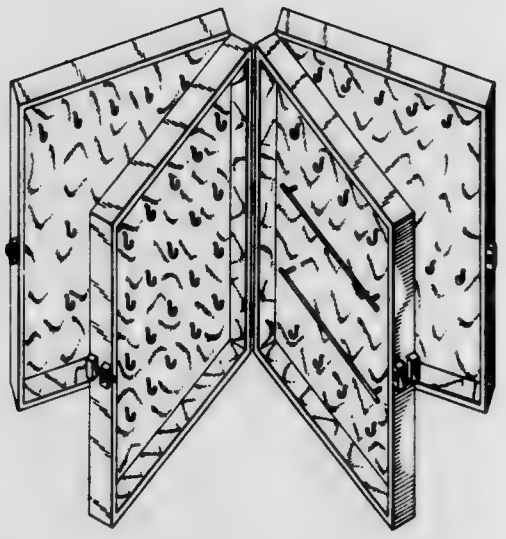
transmission and reception between more than two transmitter/receivers;

wherein said demodulator means comprises two band pass filters, each receiving a respective one of said first and second mixer output signals, and arranged to pass first and second baseband audio frequency signals, respectively, phase shift means operative at an audio frequency for imposing a differential phase shift of substantially 90° between the first and second baseband audio frequency signals from the said first and second filters to produce first and second phase shift output signals respectively, and combiner means for receiving and combining the first and second phase shift output signals, whereby to provide a demodulated output signal.

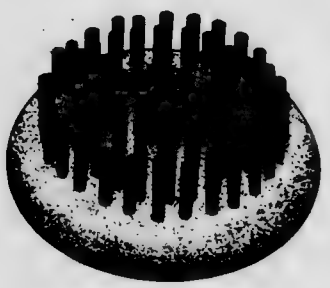
DESIGNS

SEPTEMBER 14, 1982

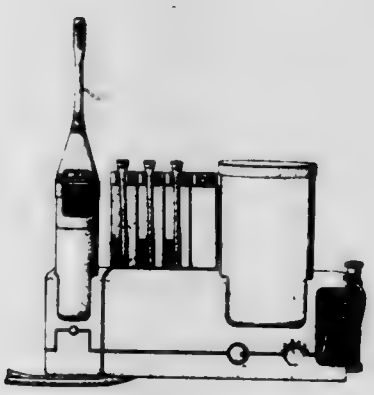
266,115
JEWELRY BOX
James E. Glenn, Sr.; Gladys M. Glenn, and James E. Glenn, Jr., all of 6149 W. Oxford St., Philadelphia, Pa. 19151
Filed May 29, 1979, Ser. No. 43,523
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—75



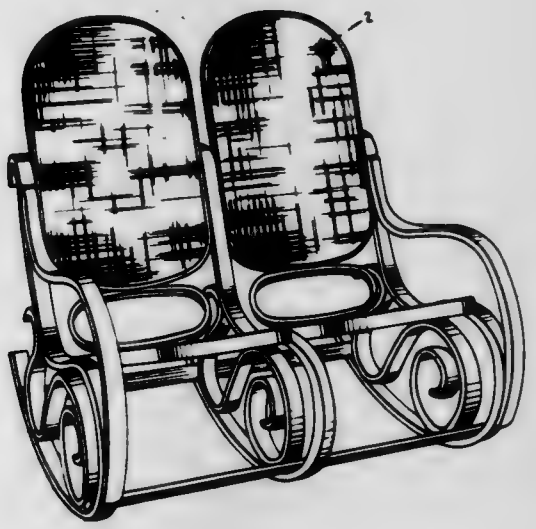
266,116
HAND BRUSH
Didier Deconinck, Seyssins, France, assignor to Allibert Exploitation Societe Anonyme, Grenoble, France
Filed Nov. 23, 1979, Ser. No. 96,912
Claims priority, application France, May 22, 1979, 2525
Term of patent 14 years
Int. Cl. D4—*02*
U.S. Cl. D4—13



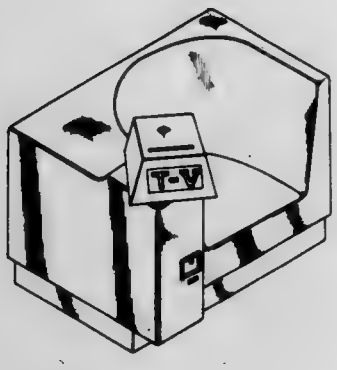
266,117
ELECTRIC TOOTHBRUSH AND HYDRAULIC JET CLEANER
Robert Oberheim, Liederbach, Fed. Rep. of Germany, assignor to Braun Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany
Filed May 2, 1979, Ser. No. 35,184
Claims priority, application Fed. Rep. of Germany, Nov. 3, 1978, 8753
Term of patent 14 years
Int. Cl. D4—*02*
U.S. Cl. D4—15



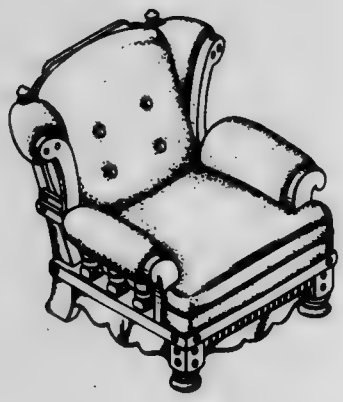
266,118
DUAL ROCKER OR SIMILAR ARTICLE
Alan J. Wexler, Lake Success, N.Y., assignor to Astra Trading Corporation, New York, N.Y.
Filed Aug. 27, 1979, Ser. No. 70,159
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—49



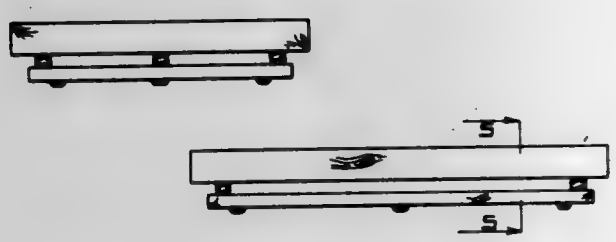
266,119
COMBINED CHAIR AND TELEVISION VIEWER
Reid S. Larsen, Bountiful, Utah, assignor to Midwest International, Inc., Salt Lake City, Utah
Filed Nov. 3, 1980, Ser. No. 203,158
Term of patent 14 years
Int. Cl. D6—*05*
U.S. Cl. D6—64



266,120
SEAT
Richard G. Brown, High Point, N.C., assignor to Null Manufacturing Corporation, Maiden, N.C.
Filed Feb. 27, 1980, Ser. No. 124,981
Term of patent 7 years
Int. Cl. D6—*01*
U.S. Cl. D6—68



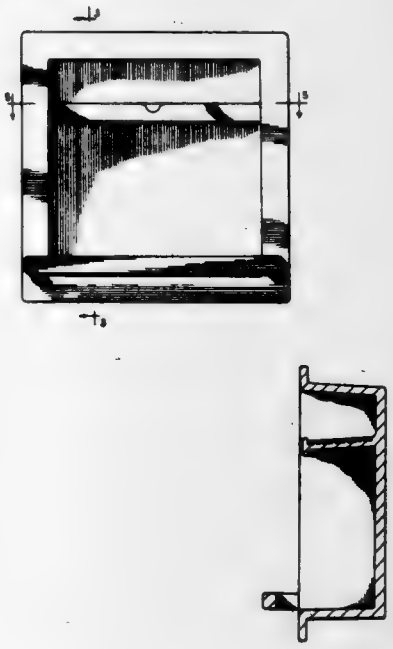
266,121
SUPPORT STAND FOR TURNTABLE
Robert L. Doughty, West Hartford, Conn., assignor to Whiting Products, Incorporated, Hamden, Conn.
Filed Jan. 11, 1980, Ser. No. 111,328
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—85



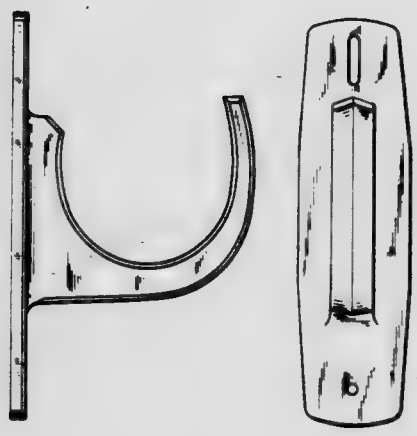
266,122
WALL RAIL FOR HAND SHOWERS
Andreas Haug, Altensteig, Fed. Rep. of Germany, assignor to Hans Grohe GmbH & Co. KG, Fed. Rep. of Germany
Filed May 13, 1980, Ser. No. 149,375
Claims priority, application Fed. Rep. of Germany, Nov. 15, 1979, MR 979 Ob
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—86



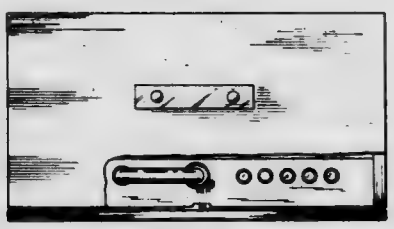
266,123
WALL MOUNTED BATHROOM ACCESSORY FIXTURE
Warren Alfano, N. 6324 Forest Blvd., Spokane, Wash. 99208
Filed Dec. 8, 1980, Ser. No. 213,890
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D6—90

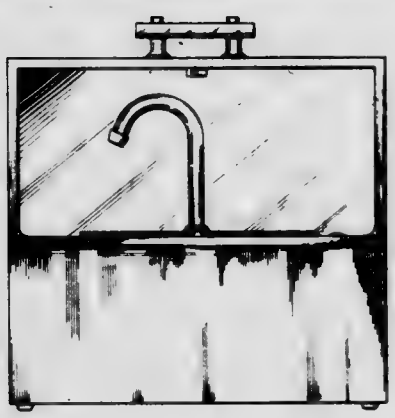


266,124
WALL HOOK
Mark E. Stankewich, 267 Stewart Ave., Garden City, N.Y. 11530
Filed Apr. 6, 1981, Ser. No. 251,274
Term of patent 14 years
Int. Cl. D6—*06*; D8—*08*
U.S. Cl. D6—120

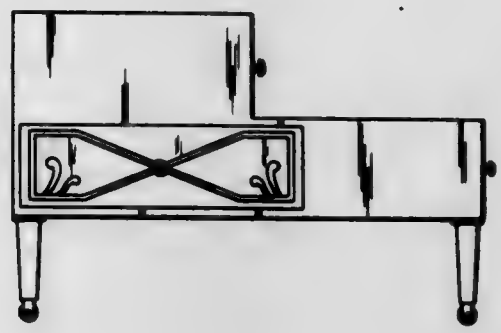


266,125
PORTABLE BAR
Lester Wolf, 5901 Feinston St., Hollywood, Fla. 33023
Filed Apr. 21, 1980, Ser. No. 142,357
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—144

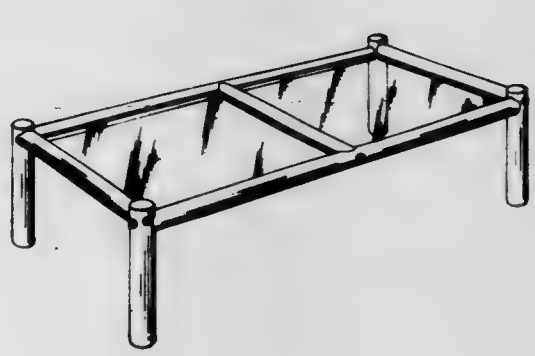




266,126
CABINET
Nadine Goodhart, 3753 Ave. 1, Space 14, Lancaster, Calif. 93534
Filed Mar. 12, 1979, Ser. No. 19,852
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—169



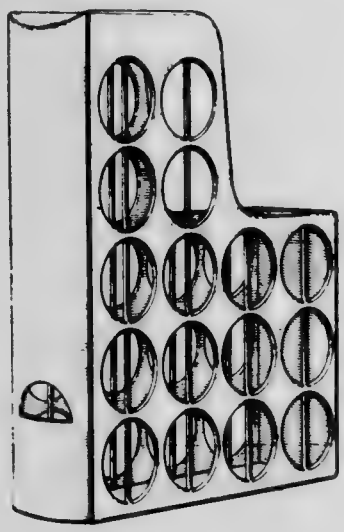
266,127
TABLE OR THE LIKE
Richard M. Chapin, Charlotte, N.C., assignor to Family Tree Furniture Company, Inc., Salisbury, N.C.
Filed Oct. 16, 1979, Ser. No. 85,309
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—175



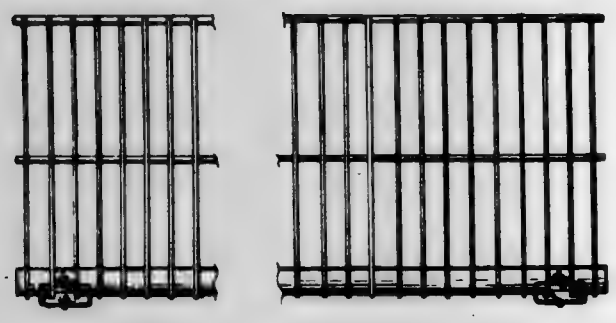
266,128
FOLDABLE TABLE FOR POWER TOOLS
Irwin J. Ferdinand, Glencoe; Richard Sylvan, Glenview, and Herbert Baisch, Palatine, all of Ill., assignors to Hirsh Company, Skokie, Ill.
Filed Sep. 24, 1980, Ser. No. 190,431
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—178



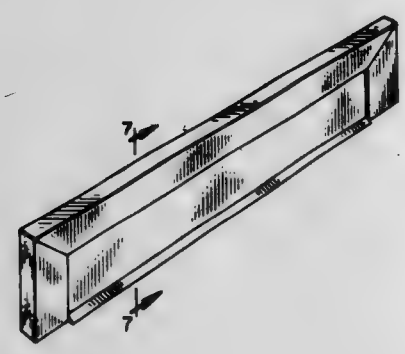
266,129
FILE FOR PERIODICALS
Anders Lidstrom, Fregattvagen 15, S-181 37 Lidingo, Sweden
Filed Jul. 15, 1980, Ser. No. 169,206
Claims priority, application Sweden, Jan. 15, 1980, 800075
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—184



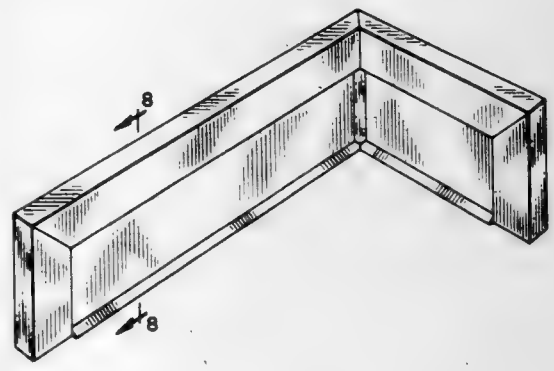
266,130
COMBINED SHELF AND GARMENT SUPPORT ROD
Cesare J. Gimmi, Oceanside, and Morton Fellman, Bayside, both of N.Y., assignors to F.C.F. Industries, Inc., Corona, N.Y.
Filed Apr. 27, 1979, Ser. No. 33,949
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—191



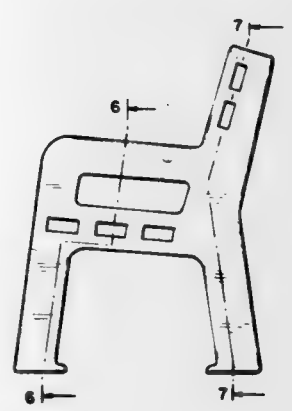
266,131
SPLASH RAIL FOR COUNTERTOP
Basil T. Kelley, 6139 SE. 103rd, Portland, Oreg. 97266
Filed Aug. 21, 1980, Ser. No. 180,096
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—191



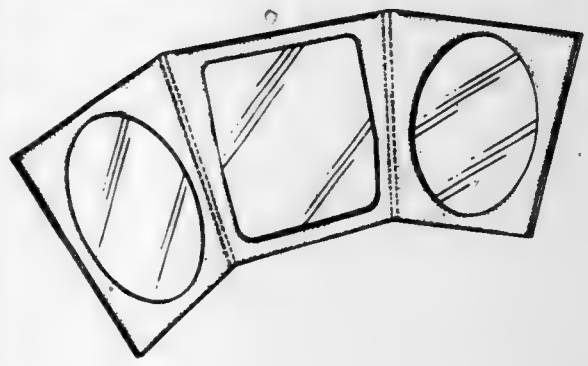
266,132
CORNER SPLASH RAIL FOR COUNTERTOP
Basil T. Kelley, 6139 SE. 103rd, Portland, Oreg. 97266
Filed Aug. 21, 1980, Ser. No. 180,165
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—191



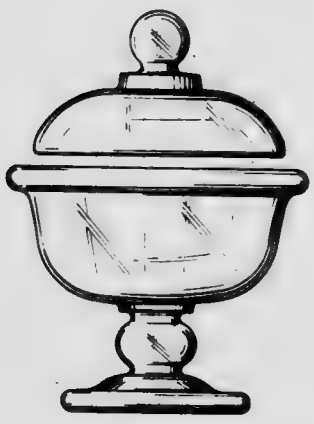
266,133
END STANDARD FOR A BENCH
Otto Stahl, Jr., Cedar Grove Rd., Annandale, N.J. 08801, and William Koelbel, 14 S. Morrell St., Geneva, N.Y. 14456
Filed Oct. 25, 1979, Ser. No. 87,988
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—192



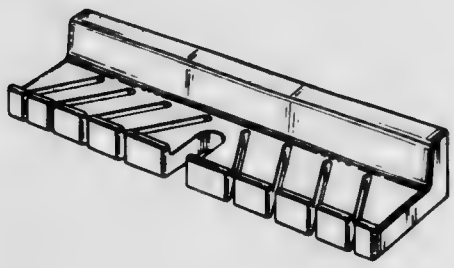
266,134
PICTURE DISPLAY FRAME
Donald B. Smith, R.R. No. 1, Mount Brydges, Ontario, Canada N0L 1W0
Division of Ser. No. 44,844, Jun. 4, 1979, Pat. No. 261,585. This application May 28, 1981, Ser. No. 267,996
Term of patent 14 years
Int. Cl. D6—*07*
U.S. Cl. D6—234



266,135
COVERED BOWL OR SIMILAR ARTICLE
Wayne Husted, Tiburon, Calif., assignor to Anchor Hocking Corporation, Lancaster, Ohio
Filed May 11, 1979, Ser. No. 37,715
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—17

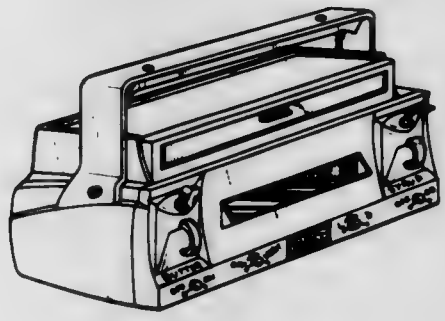


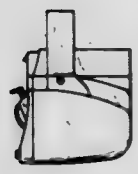
266,136
KNIFE RACK
Lawrence Peabody, New York; Theodore W. Schriever, Syracuse, and Stephen K. Wenczl, Fayetteville, all of N.Y., assignors to Syroco, Inc., Syracuse, N.Y.
Filed Jul. 15, 1980, Ser. No. 169,062
Term of patent 14 years
Int. Cl. D7—*07*
U.S. Cl. D7—74





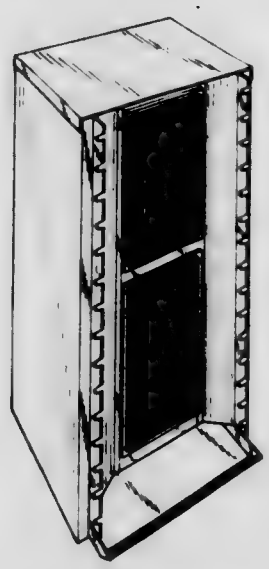
266,137
HANGING TOASTER UNIT
Eugene C. Schmidli, 136 Avery, Mt. Clemens, Mich. 48043
Filed Sep. 19, 1980, Ser. No. 188,621
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—91







266,138
COOKING DEVICE
Lazar I. Albazi, 1623 N. Klein, Oklahoma City, Okla. 73106, and Sargon P. Jillo, Norman, Okla., assignors to Lazar I. Albazi, Oklahoma City, Okla.
Filed May 8, 1980, Ser. No. 147,731
Term of patent 14 years
Int. Cl. D07—*02*
U.S. Cl. D7—110

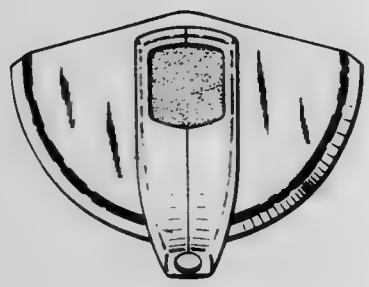


266,139
SPOON OR SIMILAR ARTICLE
Gunnar Cyren, Gavle, Sweden, assignor to Dansk International Designs Ltd., Mount Kisco, N.Y.
Filed Aug. 14, 1980, Ser. No. 178,055
Term of patent 14 years
Int. Cl. D07—*03*
U.S. Cl. D7—137

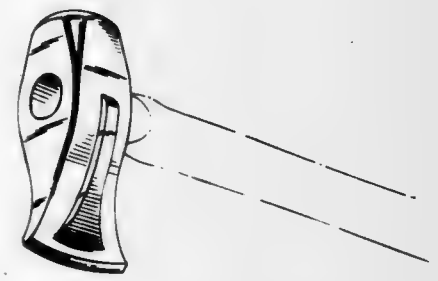


266,140
MOTOR HOUSING WITH INTEGRAL GUARD APRON FOR A GRASS CUTTER
Ruedi Fellmann, Dietlinkon, Switzerland, assignor to Max Langenstein Feld- Und Gartengeräte GmbH & Co., Illertissen, Fed. Rep. of Germany
Filed Mar. 17, 1980, Ser. No. 131,129
Claims priority, application Fed. Rep. of Germany, Sep. 18, 1979, MR896
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—8





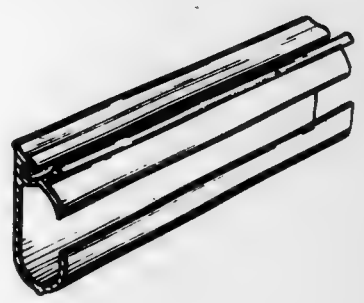
266,141
WOOD SPLITTING MAUL HEAD
Jack W. Nannen, 2712 Orchard La., Mount Penn, Pa. 19606
Filed Sep. 2, 1980, Ser. No. 183,288
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—76



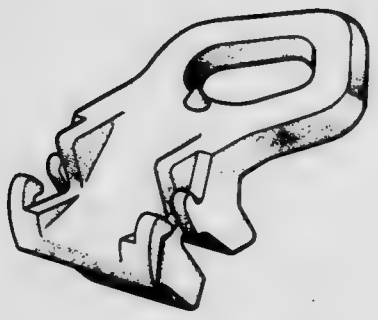
266,142
SUSPENSION ARM FOR SUPPORTING A LOAD SUCH AS A WIRE OR CABLE
Karl B. Sikstrom, Lilla Gransgatan 2, S-971 00 Malmberget, Sweden
Filed Mar. 13, 1980, Ser. No. 130,041
Claims priority, application Sweden, Sep. 17, 1979, 79-2050
Term of patent 7 years
Int. Cl. D8—*08*
U.S. Cl. D8—356



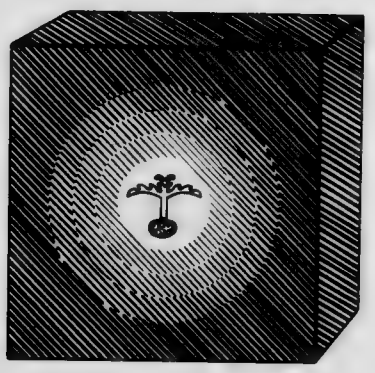
266,143
CURTAIN TRACK SECTION
Ivan A. Smith, Cheltenham, Australia, assignor to Village Nominees Pty. Ltd., Australia
Filed Jul. 22, 1980, Ser. No. 171,154
Claims priority, application Australia, Feb. 7, 1980, 80,204
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—377



266,144
PUSH LOCK HANGER FOR SHALLOW CHANNEL METAL FRAME
Robert S. Wallace, Los Angeles, Calif., assignor to Dan F. Wallace, Karlua-Kona, Hi.
Filed Jul. 21, 1980, Ser. No. 170,953
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—382



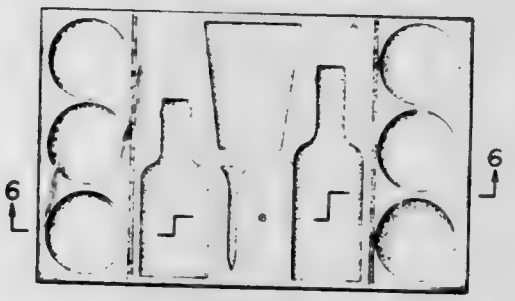
266,145
BOX
Yasuji Sayama, Yokohama, Japan, assignor to Mannan Foods Kabushiki Kaisha, Japan
Filed Sep. 19, 1980, Ser. No. 188,882
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—335



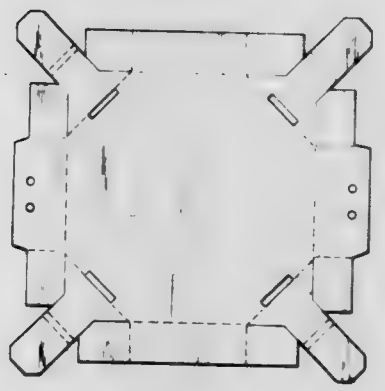
266,146
DISPENSING CONTAINER
Edward Morris, Paramus, N.J., assignor to American Cyanamid Company, Stamford, Conn.
Filed Sep. 2, 1980, Ser. No. 183,684
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—338



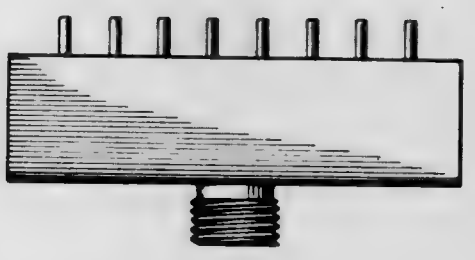
266,147
COMPARTMENTED PACKAGING CONTAINER
William R. McIntosh, 2300 NW. 78th Ave., and John R. McIntosh, 8721 NW. 24th Ct., both of Sunrise, Fla. 33322
Filed Oct. 4, 1979, Ser. No. 81,942
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—345



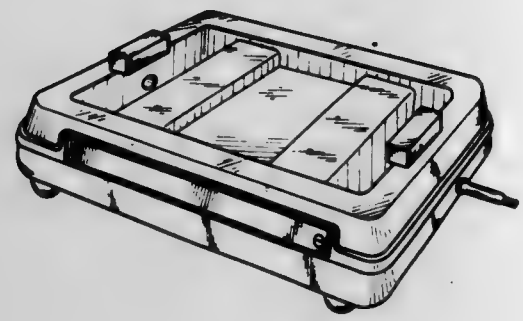
266,148
CARTON LID BLANK OR THE LIKE
Roger M. Floyd, Monroe, La., assignor to Manville Forest Products Corporation, West Monroe, La.
Filed Jul. 25, 1980, Ser. No. 172,050
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—433



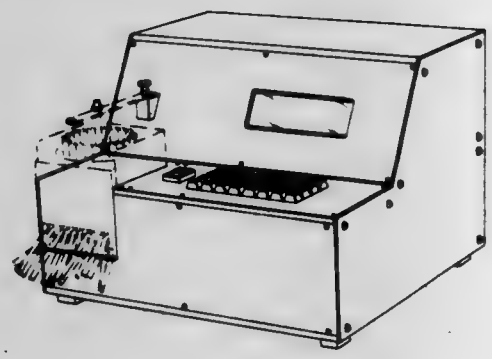
266,149
DISPENSING CAP FOR A CONTAINER
David Charlton, Toronto, and David MacMorine, Mississauga, both of Canada, assignors to Ortho Pharmaceutical (Canada) Ltd., Don Mills, Canada
Filed Aug. 21, 1980, Ser. No. 180,208
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—436



266,150
HOUSING FOR AN ELECTROPHORESIS APPARATUS OR SIMILAR ARTICLE
Janos Borsos, Budapest, Hungary, assignor to Labor Müszeripari Müvek, Esztergom, Hungary
Filed Jan. 24, 1979, Ser. No. 5,997
Claims priority, application Hungary, Nov. 21, 1978, 78638
Term of patent 14 years
Int. Cl. D10—*04;* D24—*01*
U.S. Cl. D10—81



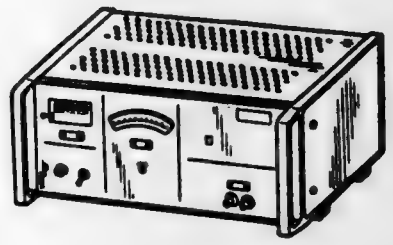
266,151
FRACTION COLLECTOR FOR LIQUID CHROMATOGRAPHY
Donald Dawson, Mt. Laurel, N.J., assignor to Siemens Corporation, Iselin, N.J.
Filed Feb. 28, 1980, Ser. No. 125,686
Term of patent 14 years
Int. Cl. D10—*04;* D24—*01*
U.S. Cl. D10—81



266,152
SCALE
Jose Oswald, 110 Plum Tree, Wilmette, Ill. 60091
Filed Sep. 11, 1980, Ser. No. 186,284
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—90



266,153
ULTRASONIC FLOWMETER
Alexandr D. Suslov, ulitsa Eniseiskaya, 4, kv. 12; Eduard A. Zalessky, ulitsa Tashkentskaya, 130, kv. 11; Vladimir V. Smyshlyaev, ulitsa Michurina, 116, kv. 57; Klavdia N. Alexandrova, 13 proezd, 33, kv. 52, and Raisa P. Demina, Zubchaninovskoe shosse, 169/9, kv. 84, all of Kuibyshev, U.S.S.R.
Filed Aug. 23, 1979, Ser. No. 69,759
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—96



266,154
JEWELRY PENDANT
Hovannes J. Zaboyan, Warwick, R.I., assignor to National Chain Company, Warwick, R.I.
Filed Aug. 11, 1980, Ser. No. 177,351
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—83



266,155
PENDANT
Sherman Scherenberg, Jr., 102 S. 50th, Bellwood, Ill. 60104
Filed Sep. 15, 1980, Ser. No. 187,182
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—83



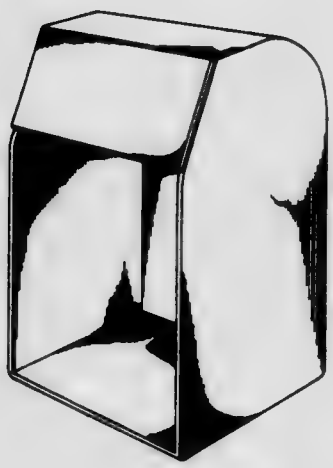


266,156

COMBINED ICE FISHING HUT AND SLED

Arnold G. Ebner, 69205 Garver Lake Rd., Edwardsburg, Mich. 49112; Leonard W. Kline, 25107 Pin Oak Dr., South Bend, Ind. 46614, and Rudolph C. Yakym, 2633 Castine Walk, Mishawaka, Ind. 46544

Filed Jun. 3, 1980, Ser. No. 156,057
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D12—6

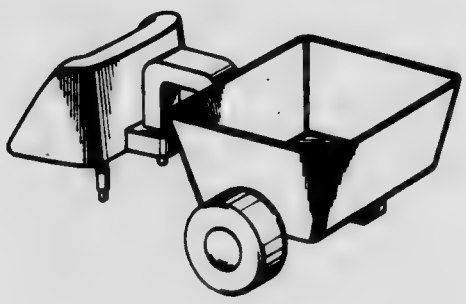


266,157

COMBINED TRICYCLE TRAILER AND BACKREST-HITCH

Robert J. Rosadini, 62 Willow Ridge Rd., North Andover, Mass. 01845

Filed Jun. 25, 1980, Ser. No. 162,756
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—114

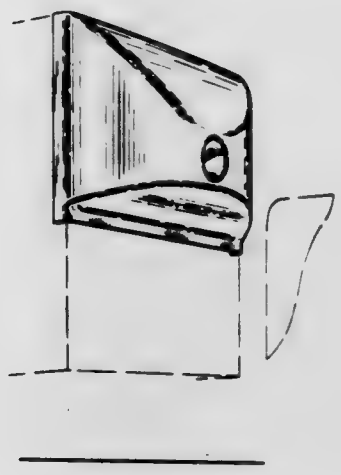


266,158

AERODYNAMIC DRAG REDUCING FAIRING

Patrick F. Sullivan, 3645 Glen Oak, Eugene, Oreg. 97405

Filed Dec. 8, 1980, Ser. No. 213,839
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—181

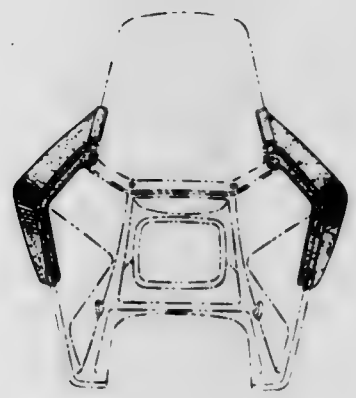


266,159

PAIR OF MOTORCYCLE FAIRING BODY EXTENDERS

Randall K. Johnson, Morro Bay; Kenneth W. Cummings, San Luis Obispo, and Charles M. Perethian, Santa Margarita, all of Calif., assignors to First Champaign Corporation, Rantoul, Ill.

Filed Jun. 9, 1980, Ser. No. 157,334
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—182

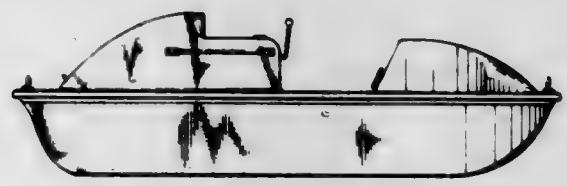


266,160

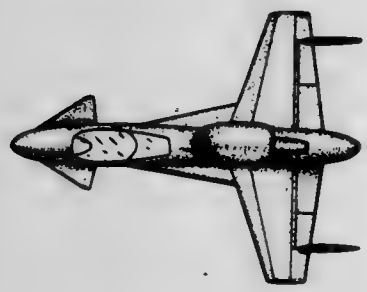
BOAT

Urban W. Simon, R.R. #1, C51, Council Grove, Kans. 66846, and Gene L. Simon, 1800 W. 26th St., Topeka, Kans. 66611

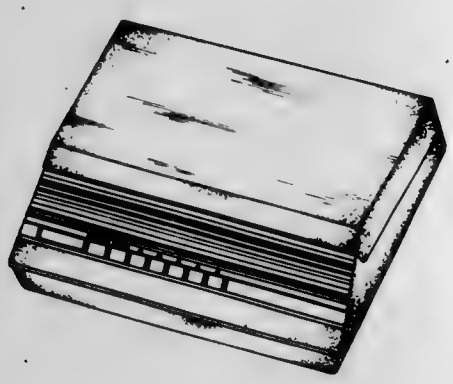
Filed Jun. 23, 1980, Ser. No. 161,898
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D12—310

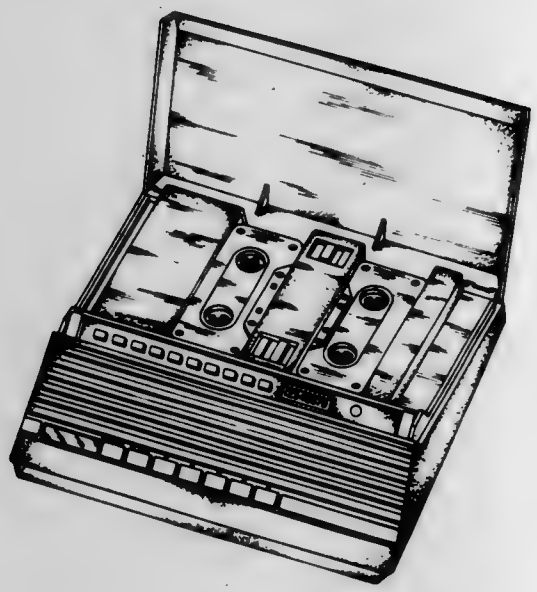


266,161
AIRCRAFT
Gordon Rosenthal, Jericho, N.Y., assignor to Fairchild Industries, Inc., Germantown, Md.
Filed Oct. 1, 1979, Ser. No. 80,801
Term of patent 14 years
Int. Cl. D12—*07*
U.S. Cl. D12—332

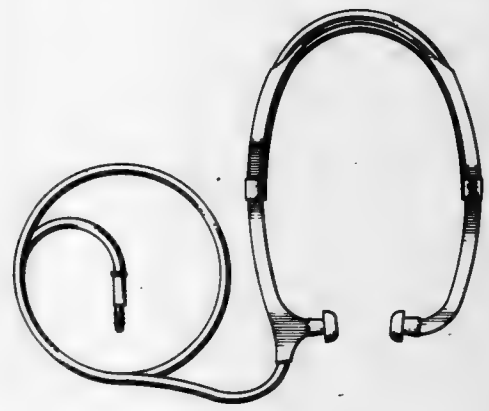


266,162
TELEPHONE ANSWERING UNIT
Arthur T. Martinez, Long Beach, Calif., assignor to T.A.D. Avanti, Inc., Compton, Calif.
Filed Oct. 30, 1980, Ser. No. 202,333
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—4

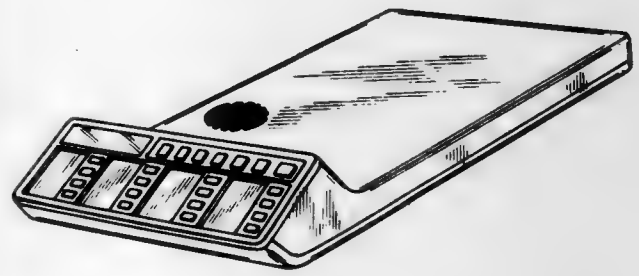




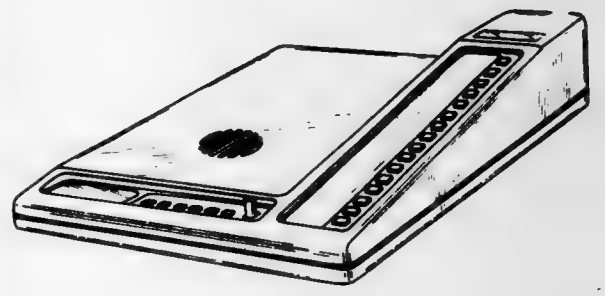
266,163
PNEUMATIC HEADSET
Robert A. Moussette, 9C, Chinachem Commercial Centre, 272 Chatham Rd., Kowloon, Hong Kong
Filed Jun. 11, 1980, Ser. No. 158,583
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—36



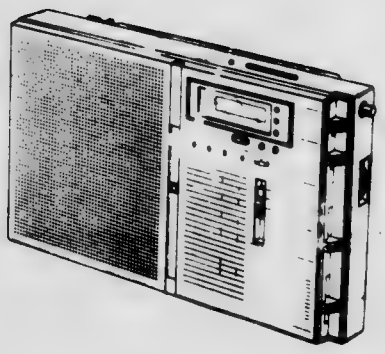
266,164
AUTOMATIC DIALING APPARATUS FOR TELEPHONE
Kenji Nakamura, Aichi, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan
Filed Jun. 13, 1980, Ser. No. 159,433
Claims priority, application Japan, Feb. 20, 1980, 55-6368; Feb. 20, 1980, 55-6369
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—66



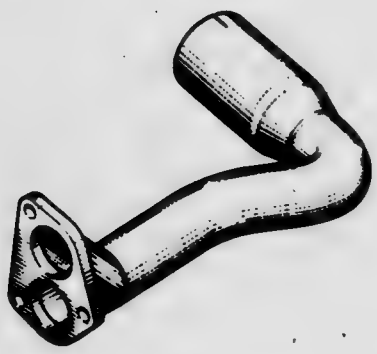
266,165
AUTOMATIC DIALING APPARATUS FOR TELEPHONE
Kenji Nakamura, and Miwaji Ikeya, both of Aichi, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan
Filed Jun. 13, 1980, Ser. No. 159,434
Claims priority, application Japan, Dec. 24, 1979, 54-54559
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—66



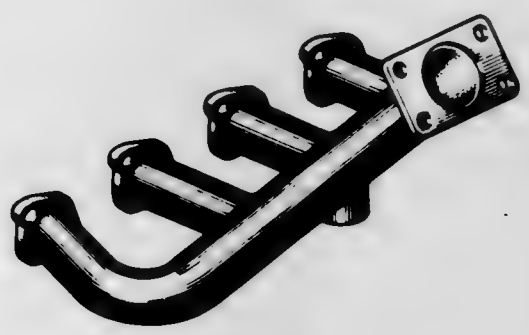
266,166
CLOCK RADIO
Masanori Hamada, Yao; Keizo Kushida, Fujiidera, and Kikuo Ohta, Ikoma, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Nov. 30, 1979, Ser. No. 99,128
Claims priority, application Japan, May 31, 1979, 54-22460
Term of patent 14 years
Int. Cl. D14—*03*; D10—*01*
U.S. Cl. D14—70



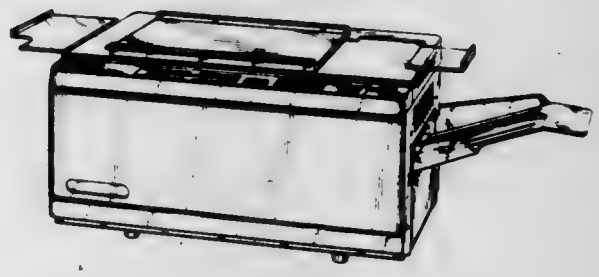
266,167
AUTOMOBILE MANIFOLDS
Benny Lindbrandt, Tidaholmsvägen 37A, 121 48 Johanneshov, Sweden
Filed May 22, 1980, Ser. No. 152,503
Claims priority, application Sweden, Nov. 30, 1979, 792642
Term of patent 14 years
Int. Cl. D15—*1*
U.S. Cl. D15—5



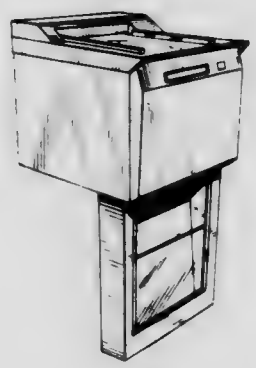
266,168
AUTOMOBILE MANIFOLDS
Benny Lindbrandt, Tidaholmsvägen 37A, 121 48 Johanneshov, Sweden
Filed May 22, 1980, Ser. No. 152,504
Claims priority, application Sweden, Nov. 30, 1979, 792642
Term of patent 14 years
Int. Cl. D15—*1*
U.S. Cl. D15—5



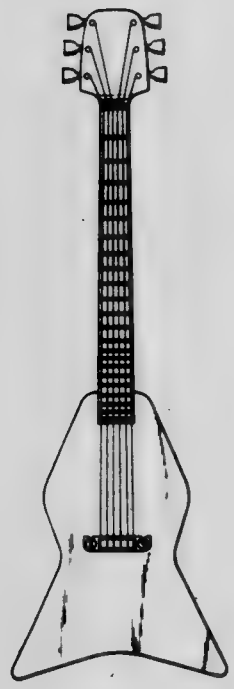
266,169
ELECTRONIC COPYING MACHINE
Shigeki Yasutani, Kashiwa, and Kunio Hara, Chiba, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan
Filed Apr. 15, 1980, Ser. No. 140,588
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D16—31



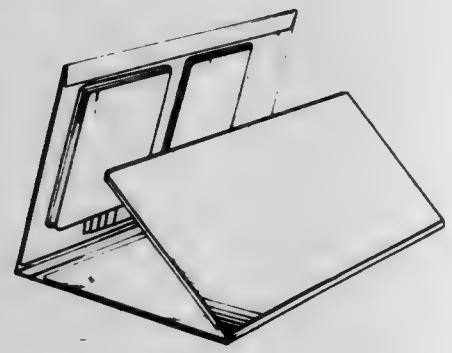
266,170
X-RAY FILM PROCESSOR
Warren G. Fischer, 4N003 Wildrose Rd., St. Charles, Ill. 60174
Filed Jun. 9, 1980, Ser. No. 157,971
Term of patent 14 years
Int. Cl. D16—*04*
U.S. Cl. D16—34

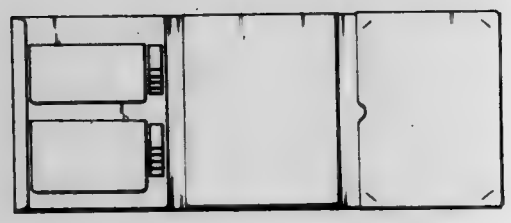


266,171
GUITAR OR SIMILAR ARTICLE
Bruce M. Lehto, 20424 Inkster Rd., Redford, Mich. 48240
Filed Jun. 30, 1980, Ser. No. 164,809
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D17—19

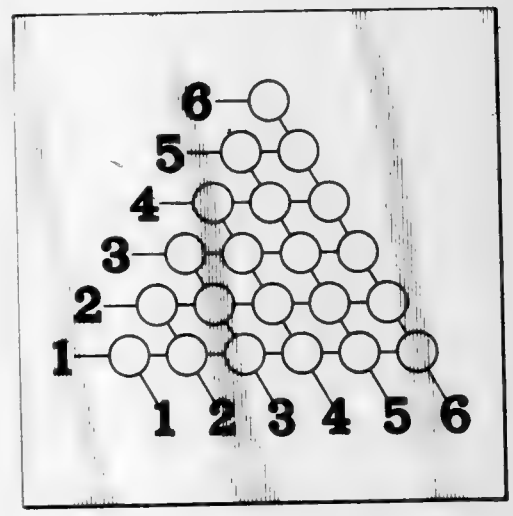


266,172
COMBINED CHECKING ACCOUNT CHECK AND CHECKBOOK ORDER RECORDING PORTFOLIO
Robert Fraser; John Rouse, both of Baltimore; Robert C. Redic, and Suzanne Frock, both of Columbia, all of Md., assignors to Falconer Security Printers, Columbia, Md.
Filed Aug. 29, 1980, Ser. No. 182,756
Term of patent 14 years
Int. Cl. D19—*04*
U.S. Cl. D19—26





266,173
GAME BOARD
Michael H. Saint Ive, Englewood, Colo., assignor to Lageos Corp., Englewood, Colo.
Filed Jun. 27, 1979, Ser. No. 52,617
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—34



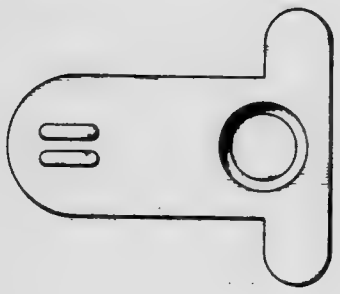
266,174
TOY BEAR
Tara A. Amato, Long Beach, N.Y., assignor to ATC Greeting Card Co., Atlantic Beach, N.Y.
Filed Jun. 4, 1979, Ser. No. 44,848
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—159



266,175
SPACE CREATURE NOVELTY FIGURE
Barbara Zachar, 324 Warburton Ave., Hastings-on-Hudson, N.Y. 10706
Filed Jun. 17, 1980, Ser. No. 160,209
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—166



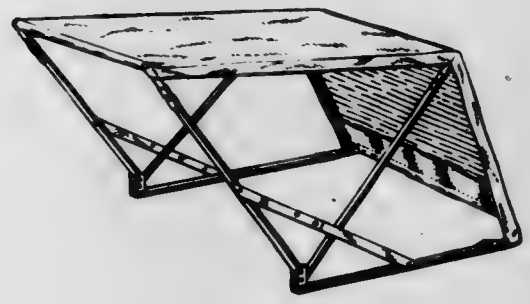
266,176
TEE FOR A PROJECTILE GAME PIECE
Les W. Thomes, 337 E. 40th St., Covington, Ky. 41015
Filed Aug. 11, 1980, Ser. No. 177,019
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—209



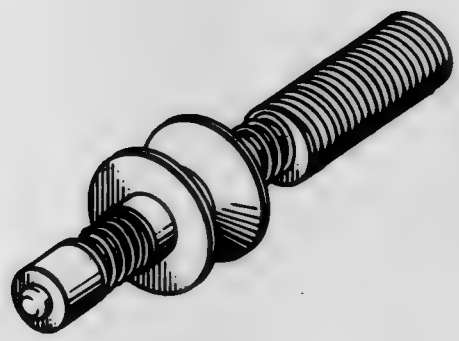
266,177
BRAKE FOR ROLLER SKATE OR THE LIKE
Dennis D. Riggs, 415 Pile St., Ramona, Calif. 92065
Filed Oct. 17, 1980, Ser. No. 197,930
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—226



266,178
TENT
John F. Lotterer, 23812 Via La Coruna, Mission Viejo, Calif. 92675
Filed Jun. 20, 1980, Ser. No. 161,554
Term of patent 14 years
Int. Cl. D21—*04*
U.S. Cl. D21—253



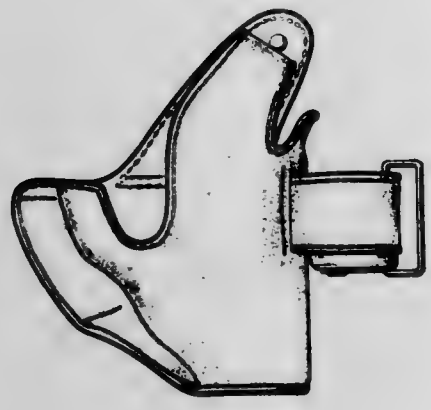
266,179
ARROW REST FOR ARCHERY BOW
Paul L. Peck, Box 427, Bryantville, Mass. 02327
Filed Jul. 7, 1980, Ser. No. 166,110
Term of patent 14 years
Int. Cl. D22—*01*
U.S. Cl. D22—5



266,180
GUN SLING
Jane H. Dickinson, and Leebert D. Clark, both of Yoakum, Tex., assignors to Torel, Inc., Yoakum, Tex.
Filed Nov. 24, 1980, Ser. No. 209,864
Term of patent 14 years
Int. Cl. D22—*01*
U.S. Cl. D22—7



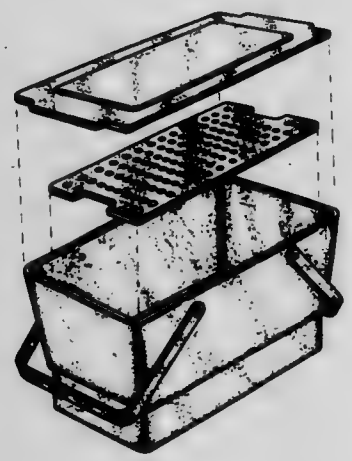
266,181
PISTOL HOLSTER
Morris C. Fry, Frederick, Md., assignor to Tandy Brands, Inc., Fort Worth, Tex.
Filed Oct. 24, 1980, Ser. No. 200,212
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D22—13



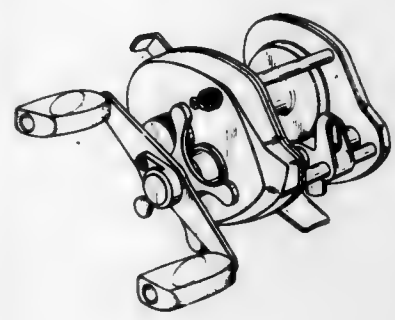
266,182
FLY SWATTER
James M. Borer, 419 Webster Ave., North Mankato, Minn. 56001
Filed Nov. 17, 1980, Ser. No. 207,403
Term of patent 14 years
Int. Cl. D22—*06*
U.S. Cl. D22—20



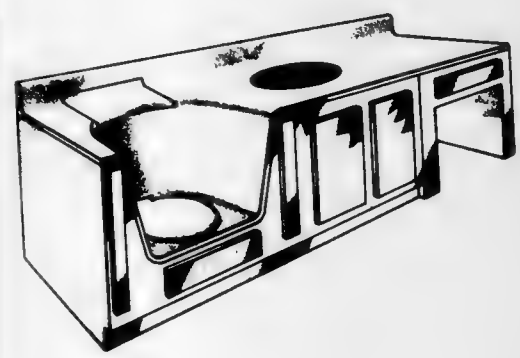
266,183
FISH BAIT KEEPING CONTAINER
James R. Snow, 2038 Majestic Way, San Jose, Calif. 95132
Filed Jun. 16, 1980, Ser. No. 159,674
Term of patent 7 years
Int. Cl. D22—*05*
U.S. Cl. D22—22



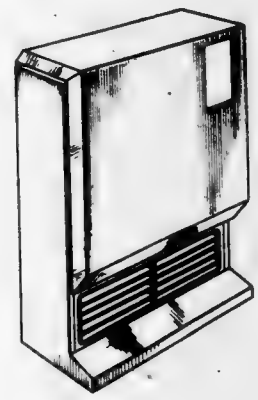
266,184
FISHING REEL
Kanji Iinuma, and Hideo Nakamura, both of Kaganei, Japan, assignors to Daiwa Seiko, Inc., Tokyo, Japan
Filed Sep. 5, 1980, Ser. No. 184,628
Claims priority, application Japan, Mar. 22, 1980, 55-11090
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—25



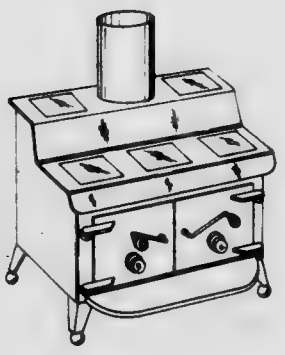
266,185
COMBINED WATER CLOSET COVER AND BATHROOM CABINET
Michael Adamcik, 357 Lakeview Dr., North Fort Myers, Fla. 33903
Division of Ser. No. 927,899, Jul. 25, 1978, abandoned. This application Jan. 22, 1980, Ser. No. 114,342
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—69



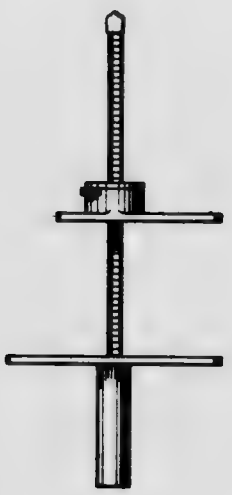
266,186
HEATER
Amos E. Chesnut, Columbus, Ind., and James F. Mariol, Cincinnati, Ohio, assignors to Arvin Industries, Inc., Columbus, Ind.
Filed Feb. 15, 1980, Ser. No. 123,969
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—92



266,187
STOVE WITH CERAMIC TILE INSERTS
Dennis G. Key, 85776 Loraine Hwy., Eugene, Oreg. 97402
Filed Dec. 1, 1980, Ser. No. 212,840
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97



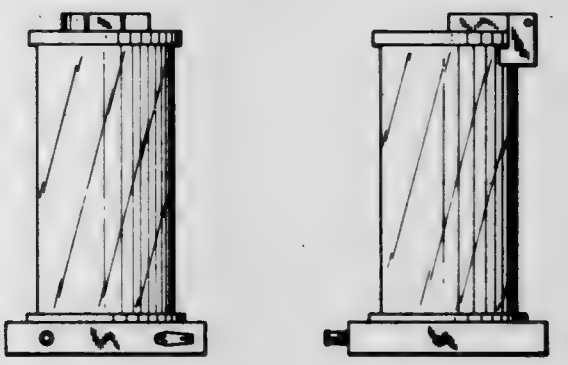
266,188
TOOTH SIZE AND FORM INDICATOR
Wayne C. Seeley, York, and Richard A. Smith, New Freedom, both of Pa., assignors to Dentsply Research & Development Corp., Milford, Del.
Filed Nov. 23, 1979, Ser. No. 97,102
Term of patent 14 years
Int. Cl. 24—*02*
U.S. Cl. D24—10



266,189
PLASMA TRANSFER BOTTLE
Albert Saffanoff, Rancho Palos Verdes, Calif., assignor to Alpha Therapeutic Corp., Los Angeles, Calif.
Filed Aug. 29, 1980, Ser. No. 182,452
Term of patent 14 years
Int. Cl. 24—*99*
U.S. Cl. D24—56



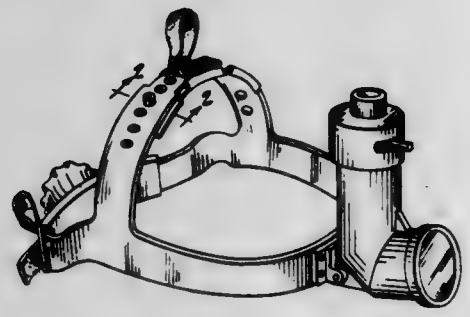
266,190
VACUUM CONTAINER FOR PARENTERAL FLUIDS OR THE LIKE
Yves Herman, Ath, Belgium, assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.
Filed Jun. 13, 1980, Ser. No. 159,273
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—99



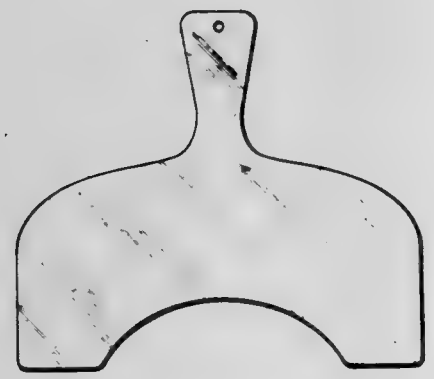
266,191
BUILDING
Victor J. Cassano, Sr., and Howard J. Neff, Sr., both of Dayton, Ohio, assignors to Cassano's Inc., Dayton, Ohio
Filed Nov. 28, 1979, Ser. No. 97,922
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—22



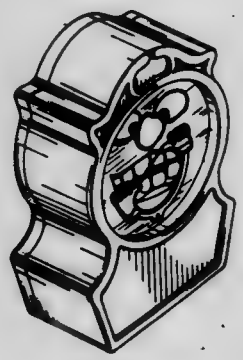
266,192
SURGICAL HEADLIGHT OR SIMILAR ARTICLE
Richard E. Feinbloom, New York, and Laszlo Endrodi, Jackson Heights, both of N.Y., assignors to Designs for Vision, Inc., New York, N.Y.
Filed Dec. 20, 1979, Ser. No. 105,729
Term of patent 14 years
Int. Cl. D26—*02*
U.S. Cl. D26—39



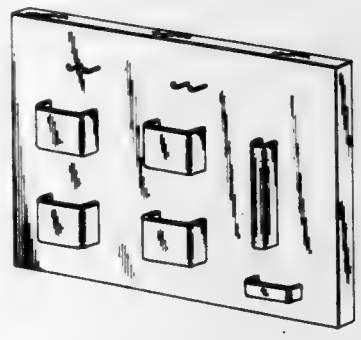
266,193
FACE SHIELD FOR HAIRDRESSERS
Peter G. Ivone, 39 Greenville Ave., Johnston, R.I. 02919
Filed Jul. 7, 1980, Ser. No. 166,673
Term of patent 7 years
Int. Cl. D28—*03*
U.S. Cl. D28—9



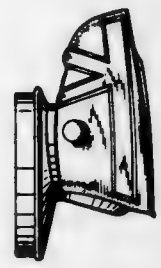
266,194
DENTAL FLOSS DISPENSER
Rodney J. Graves, 17619 N. 35th Pl., Phoenix, Ariz. 85032
Filed Jul. 17, 1980, Ser. No. 169,925
Term of patent 14 years
Int. Cl. D24—*99*
U.S. Cl. D28—64



266,195
HAIR CARE TOOL HOLDER
Robert A. Bennett, 128 113th La. Northeast, Blaine, Minn. 55434
Filed Oct. 1, 1979, Ser. No. 80,579
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—73

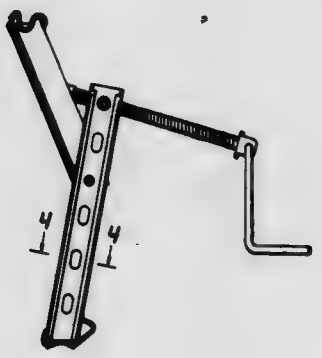


266,196
RESPIRATION MASK
Per O. Sundström, Lidingö, Sweden, assignor to Sunströms Respiratorer AB, Sweden
Filed Mar. 4, 1980, Ser. No. 127,155
Claims priority, application Sweden, Oct. 19, 1979, 792319
Term of patent 14 years
Int. Cl. D29—*02*; D24—*02*
U.S. Cl. D29—8

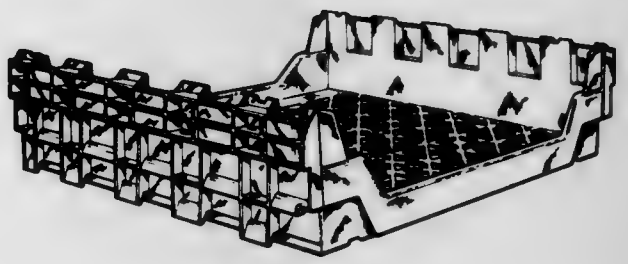




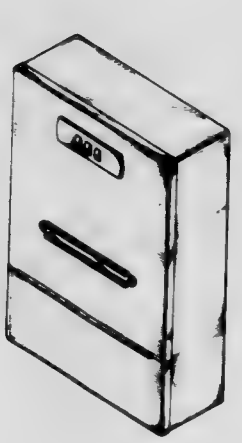
266,197
MOTOR VEHICLE JACK
Graham H. Colton, Rise Park, England, assignor to Metallifacture Limited, Redhill, England
Filed Dec. 10, 1979, Ser. No. 101,430
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D34—31



266,198
BAKERY TRAY OR SIMILAR ARTICLE
James C. Carroll, and Lewis T. Johnson, both of Hopkinsville, Ky., assignors to Phillips Petroleum Company, Bartlesville, Okla.
Filed Jun. 5, 1980, Ser. No. 156,707
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D34—40



266,199
RECEPTACLE WITH LOCK
Robert L. Schattner, Marlton, N.J., and Allen S. Schattner, Pittsburgh, Pa., assignors to Omnimed, Inc., Maple Shade, N.J.
Filed Jul. 3, 1980, Ser. No. 165,575
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D99—28



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TO WHOM

PATENTS WERE ISSUED ON THE 14TH DAY OF SEPTEMBER, 1982

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. E. Staley Manufacturing Company: *See—*
Lehnhardt, William F.; Streaty, Charles E., Jr.; Yackel, Walter C., Jr.; Yang, Ho S.; and Tang, Daniel K., 4,349,576, Cl. 426-582.000.
Wright, Kenneth N.; and Griffel, Gilbert W., Jr., 4,349,578, Cl. 426-630.000.

A. Nattermann & Cie GmbH: *See—*
Lautenschlager, Hans-Heiner; Betzing, Hans; Stoll, Brigitte; and Probst, Manfred, 4,349,684, Cl. 548-320.000.
Lautenschlager, Hans-Heiner; Betzing, Hans; Winkelmann, Johannes; Probst, Manfred; and Stoll, Brigitte, 4,349,686, Cl. 549-69.000.

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Gustafsson, Berth U., 4,348,865, Cl. 60-493.000.

AB Karlstads Mekaniska Werkstad: *See—*
Stenberg, Erik G., 4,349,414, Cl. 162-123.000.

Abbott Laboratories: *See—*
Gross, James R., 4,349,023, Cl. 128-214.400.

Abe, Masaru: *See—*
Tsurunaga, Yasuaki; Abe, Masaru; Hashimoto, Hideaki; and Tsuzura, Junichi, 4,349,062, Cl. 152-356.00R.

Abelitis, Andris, to Klockner-Humboldt-Deutz AG. Method for calcining fine-grained material, particularly for the manufacture of cement clinker. 4,349,387, Cl. 106-100.000.

Abeta, Sadaharu: *See—*
Nakatsuka, Kiyoharu; and Abeta, Sadaharu, 4,349,349, Cl. 8-527.000.

Abmayr, David W.: *See—*
Morgan, Barrie O.; and Abmayr, David W., 4,349,695, Cl. 178-22.080.

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Randolph, Robert W., 4,348,964, Cl. 105-42.00D.

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Manning, James M.; and Acharya, Seetharama A., 4,349,352, Cl. 23-230.00B.

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Ackley, Donald E., to Hewlett-Packard Company. Tapered stripe semiconductor laser. 4,349,905, Cl. 372-46.000.

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Beiswenger, John L.; and Smiesko, Frank A., 4,349,157, Cl. 239-509.000.

Adam, Habil G.: *See—*
Lischewski, Manfred; Adam, Habil G.; and Serebryakov, Edward P., 4,349,481, Cl. 549-297.000.

Adams, Alfred A., to Crystic Systems Limited. Adhesive tapes. 4,349,599, Cl. 428-233.000.

Adams, Keith J. G.; Brightwell, Alan; Price, Barry L.; Pegler, Stuart M.; and Weall, Paul, to British Gas Corporation. Testing circuit for fuel burner controls. 4,349,745, Cl. 307-12.000.

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Nakahara, Yutaka; and Haruna, Tohru, 4,349,468, Cl. 524-302.000.

Adelmann, John C.: *See—*
Trainor, James T.; Covaleski, Stanley F.; and Adelmann, John C., 4,349,595, Cl. 428-64.000.

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Pfeifer, Josef; Paulus, Rudolf; and Zieran, Eberhard, 4,349,730, Cl. 235-472.000.
Sobel, Johannes; Himmelmann, Wolfgang; and Bergthaller, Peter, 4,349,624, Cl. 430-622.000.

Aharoni, Shaul M., to Allied Corporation. Polyester compositions containing sodium nitrite. 4,349,503, Cl. 264-328.160.

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Schuster, Wilhelm; Stahl, Jurgen; and Wegner, Wilhelm, 4,349,134, Cl. 222-212.000.

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Tsujio, Hisami, 4,349,093, Cl. 192-107.00R.

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Miyakawa, Nobuhiro; and Aizawa, Tatsuo, 4,349,611, Cl. 428-500.000.

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Akitake, Isao; Noda, Tsutomu; and Yamazaki, Kazuhiko, to Hitachi, Ltd. AM Stereophonic demodulator circuit for amplitude/angle modulation system. 4,349,696, Cl. 179-1.0GS.

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Obrist, Albert; and Breuer, Hans-Werner, 4,349,174, Cl. 249-58.000.
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Albert, Orrin W., Jr., to United States of America, Navy. In-flight hydrophone deployment system for underwater vehicles. 4,349,292, Cl. 403-322.000.

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Belsky, Stephen E.; and Mathew, Chempolil T., 4,349,418, Cl. 203-45.000.
Bonfield, John H.; Sifniades, Stylianos; and Ulmer, Harry E., 4,349,520, Cl. 423-387.000.
Khattab, Ghazi M. A., 4,349,421, Cl. 204-38.00B.

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Alloy Surfaces Company, Inc.: *See—*
Baldi, Alfonso L., 4,349,612, Cl. 428-607.000.

Aloisio, Charles J., Jr.; Blyler, Lee L., Jr.; Brockway, George S.; Hart, Arthur C., Jr.; and Taylor, Carl R., to Bell Telephone Laboratories, Incorporated. Method for coating fiber waveguides. 4,349,587, Cl. 427-163.000.

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Uroshevich, Miroslav, 4,349,013, Cl. 126-442.000.

Alphonse, Gerard A.: *See—*
Valachovic, John; Alphonse, Gerard A.; Reisner, John H.; and Etzold, Karl-Friedrich, 4,349,902, Cl. 369-132.000.

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Stewart, Donald L., Jr., 4,349,420, Cl. 203-75.000.

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Arendt, Volker D.; and Li, Tsi T., 4,349,656, Cl. 528-63.000.
Brown, Dale G., 4,349,553, Cl. 424-251.000.
American Home Products Corporation: *See*—
Freed, Elisabeth H., deceased; Wei, Peter H. L.; and McCaully, Ronald J., 4,349,674, Cl. 544-353.000.
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Annis, Martin, 4,349,739, Cl. 378-99.000.
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Lu, Wen-Tong P.; and Ammon, Robert L., 4,349,428, Cl. 204-294.000.
Anneus, John S., to Procter & Gamble Company, The. Portable, measured volume dispenser. 4,349,129, Cl. 222-41.000.
AMP Incorporated: *See*—
Cobaugh, Robert F.; and Graeff, Norwood C., 4,349,237, Cl. 339-65.000.
Roberts, Lincoln E.; and Wasserlein, Henry G., Jr., 4,349,239, Cl. 339-97.00R.
Showman, Robert L.; and Yeager, Patrick F., 4,349,238, Cl. 339-75.00M.
Ampex Corporation: *See*—
Gallo, Luigi C., 4,349,832, Cl. 358-8.000.
Analog Devices, Incorporated: *See*—
Brokaw, Adrian P., 4,349,811, Cl. 340-347.0DA.
Andersson, Leif H., to Facit Aktiebolag. Assembly for moving printing means of a printing machine. 4,349,284, Cl. 400-320.000.
Ando, Haruhisa: *See*—
Ohba, Shinya; Hanamura, Shoji; Ozaki, Toshifumi; Kubo, Masaharu; Nakai, Masaaki; Takahashi, Kenji; Aoki, Masakazu; Takemoto, Iwao; Ando, Haruhisa; and Izawa, Ryuichi, 4,349,743, Cl. 250-578.000.
Ando, Hisashi; Soeno, Ko; Sakamoto, Hiroshi; Misumi, Akira; and Fukushima, Hiroshi, to Hitachi, Ltd. Directly heated cathode for electron tube. 4,349,766, Cl. 313-346.00R.
Andreas Stihl: *See*—
Dolata, Hans; Meyle, Werner; and Weyda, Gunther, 4,348,926, Cl. 83-833.000.
Andrews, Lawrence F.: *See*—
Webb, David E.; and Andrews, Lawrence F., 4,349,334, Cl. 433-9.000.
Androff, Joel W., to Carrier Corporation. Transport refrigeration machine. 4,348,871, Cl. 62-239.000.
Angelo, Lawrence F.; Bryant, Frank A.; and McLain, John D., to WellTech, Inc. Apparatus for elevating a mobile rig. 4,348,780, Cl. 14-1.000.
Angleboard Inc.: *See*—
Liebel, Henry L.; and Krier, Martin, 4,349,303, Cl. 410-154.000.
Annis, Martin, to American Science and Engineering, Inc. Micro-calcification detection. 4,349,739, Cl. 378-99.000.
Antipol Commercial Systems (Jersey) Limited: *See*—
Sejournant, Francine, 4,349,586, Cl. 427-154.000.
Antoni, Heinz: *See*—
Kluth, Manfred; Antoni, Heinz; and Stich, Werner, 4,348,909, Cl. 73-863.210.
Aoki, Harumi: *See*—
Jyojiki, Masao; and Aoki, Harumi, 4,349,254, Cl. 354-25.000.
Aoki, Hatsuo: *See*—
Kitaura, Yoshihiko; Nakaguchi, Osamu; Hemmi, Keiji; Aratani, Matsuhiko; Takeno, Hidekazu; Okada, Satoshi; Tanaka, Hirokazu; Hashimoto, Masashi; Kuroda, Yoshio; Iguchi, Eiko; Kohsaka, Masanobu; Aoki, Hatsuo; and Imanaka, Hiroshi, 4,349,466, Cl. 260-112.50R.
Aoki, Kanemasa, to Canon Kabushiki Kaisha; and Canon Seiki Kabushiki Kaisha. Flat type coreless rotary electric machine. 4,349,761, Cl. 310-266.000.
Aoki, Masakazu: *See*—
Ohba, Shinya; Hanamura, Shoji; Ozaki, Toshifumi; Kubo, Masaharu; Nakai, Masaaki; Takahashi, Kenji; Aoki, Masakazu; Takemoto, Iwao; Ando, Haruhisa; and Izawa, Ryuichi, 4,349,743, Cl. 250-578.000.
Aoyama, Shigeo: *See*—
Shimizu, Jozo; Yamaguchi, Satoru; and Aoyama, Shigeo, 4,349,608, Cl. 428-413.000.
Apeldoorn, Hans J.; and Tryzna, Miloslav, to U.S. Philips Corporation. Television receiver for receiving a picture carrier whose amplitude is modulated with a video signal, and a sound carrier whose frequency is modulated with an audio signal. 4,349,842, Cl. 358-197.000.
Arabian, Sandro, to Europtool Trust. Apparatus for dosing and forming soap foam. 4,349,131, Cl. 222-135.000.
Aratani, Matsuhiko: *See*—
Kitaura, Yoshihiko; Nakaguchi, Osamu; Hemmi, Keiji; Aratani, Matsuhiko; Takeno, Hidekazu; Okada, Satoshi; Tanaka, Hirokazu; Hashimoto, Masashi; Kuroda, Yoshio; Iguchi, Eiko; Kohsaka, Masanobu; Aoki, Hatsuo; and Imanaka, Hiroshi, 4,349,466, Cl. 260-112.50R.
Arbed S.A.: *See*—
Schleimer, Francois; Henrion, Romain; Goedert, Ferdinand; and Lorang, Lucien, 4,349,382, Cl. 75-60.000.
Arbeiter, Erich: *See*—
Nolte, Albert; Schleiermacher, Herbert; and Arbeiter, Erich, 4,348,990, Cl. 123-41.120.
Archer, Donald H.: *See*—
Bixler, Stephen D.; Thomas, David T.; and Archer, Donald H., 4,349,827, Cl. 343-786.000.
Arendt, Volker D.; and Li, Tsi T., to American Cyanamid Company. Thiodiethanol based polyurethane elastomers having improved dynamic properties and method for production thereof. 4,349,656, Cl. 528-63.000.
ARES, Inc.: *See*—
Gillum, Richard R., 4,348,938, Cl. 89-33.0BA.
Arikawa, Hiroo, to San-O Industrial Co., Ltd. Quick-acting micro-fuse. 4,349,805, Cl. 337-255.000.
Arippol, Raimondo. Method and apparatus for rapid drying of container covers. 4,348,816, Cl. 34-13.000.
Aristoff, Paul A., to Upjohn Company, The. Methano carbacyclin analogs. 4,349,689, Cl. 560-117.000.
Armstrong Cork Company: *See*—
Finney, Cecil H., 4,349,089, Cl. 192-4.00A.
Arnold, Erwin: *See*—
Gut, Edwin; Arnold, Erwin; Maugweiler, Gottfried; and Friedli, Hans, 4,349,231, Cl. 299-69.000.
Arnold, Niklaus; Schmidli, Josef; and Spiess, Peter, to BBC Brown, Boveri & Company, Ltd. Commutator for electrical machines. 4,349,759, Cl. 310-233.000.
Asada, Akihiro; Nakata, Kazuo; Umemura, Kazuhiro; Sato, Hirokazu; Murakami, Kenya; and Into, Kiyoshi, to Nippon Telegraph & Telephone Public Corporation; and Hitachi, Ltd. Speech synthesizer. 4,349,699, Cl. 179-1.0SM.
Asahi Glass Company, Ltd.: *See*—
Ogawa, Hiroyuki; and Kaki, Haruhiko, 4,349,304, Cl. 414-106.000.
Asahi Kasei Kogyo Kabushiki Kaisha: *See*—
Mimura, Akio; Takahashi, Yasuyuki; Yuasa, Katsumi; and Shibukawa, Mitsuru, 4,349,627, Cl. 435-108.000.
Asahi Kogaku Kogyo Kabushiki Kaisha: *See*—
Jyojiki, Masao; and Aoki, Harumi, 4,349,254, Cl. 354-25.000.
Kurei, Hiroshi, 4,349,261, Cl. 354-152.000.
Asahi, Taro: *See*—
Mori, Kazumasa; Asahi, Taro; Banzai, Keiichiro; Iwaki, Katsutaro; Muto, Katsuya; Mase, Akira; Nimura, Takayasu; Itoh, Katsumi; and Akita, Yoshio, 4,349,854, Cl. 361-21.000.
Asano, Hiroshi; Shimamune, Takayuki; Goto, Toshiki; Nitta, Hideo; and Hosonuma, Masashi, to Permelec Electrode Ltd. Method for forming an anticorrosive coating on a metal substrate. 4,349,581, Cl. 427-34.000.
Asano, Mitsuru: *See*—
Naito, Junichiro; Yamamoto, Shinichi; Suzuki, Jitsuo; and Asano, Mitsuru, 4,349,329, Cl. 425-461.000.
Aschwanden, Werner: *See*—
Kyburz, Emilio; and Aschwanden, Werner, 4,349,562, Cl. 424-274.000.
Ashdown, Barbara P.: *See*—
Ashdown, Raymond G.; and Ashdown, Barbara P., 4,348,807, Cl. 30-123.600.
Ashdown, Raymond G.; and Ashdown, Barbara P. Peeling device. 4,348,807, Cl. 30-123.600.
Asher, James C., to Atari, Inc. Joystick control. 4,349,708, Cl. 200-6.00A.
Asher, Lynn E.; and Conway, Antony J. End or corner fence post construction. 4,349,181, Cl. 256-35.000.
Asmundsson, Einar; Hart, Robert P.; and Fleischer, Donald W., to Veeder Industries Inc. Liquid level measuring system. 4,349,882, Cl. 364-509.000.
Association pour la Recherche et le Development des Methodes et Processus Industriels (Armines): *See*—
Thevenot, Francois H. J.; Goeuriot, Patrice M. V.; Driver, Julian H.; and Lebrun, Jean-Paul R., 4,348,980, Cl. 118-717.000.
Atari, Inc.: *See*—
Asher, James C., 4,349,708, Cl. 200-6.00A.
Atkinson, Joseph G.; Baldwin, John J.; and McClure, David E., to Merck & Co., Inc.; and Merck Sharp & Dohme Corp. Benzoxazines. 4,349,673, Cl. 544-105.000.
Atlas Copco Aktiebolag: *See*—
Heariksson, Stig R., 4,349,075, Cl. 173-134.000.
Atron, Inc.: *See*—
Savard, Hassel J., Jr., 4,349,127, Cl. 221-196.000.
Atsugi Motor Parts Co., Ltd.: *See*—
Sekiguchi, Tomoyoshi; and Ishikawa, Hiroya, 4,349,077, Cl. 180-41.000.
Audi NsU Auto Union Aktiengesellschaft: *See*—
Leitermann, Wulf; and Pflugfelder, Karl, 4,348,915, Cl. 74-473.00R.
Auer, Serge: *See*—
Obrist, Albert; Blaesi, Max; and Auer, Serge, 4,349,399, Cl. 156-86.000.
Australasian Training Aids, Pty., Ltd.: *See*—
Knight, Lindsay C., 4,349,729, Cl. 235-400.000.
Phillips, Robert B.; Bowyer, William H.; and Moxley, Bruce, 4,349,728, Cl. 235-400.000.
Avco Corporation: *See*—
Libertini, Zoltan L.; and Ivanko, Theodore, 4,349,318, Cl. 416-220.00R.
Avramidis, Stellios A.: *See*—
Stephanoff, Louis J.; and Avramidis, Stellios A., 4,349,343, Cl. 474-245.000.
Axenko, Alexandr A.; Nazarian, Miron M.; Kolyada, Vladimir A.; and Mataev, Arkady R. Apparatus for electrochemical purification of contaminated liquids. 4,349,431, Cl. 204-302.000.
Axenko, Alexandr A.: *See*—
Efimov, Vyacheslav T.; Nazarian, Miron M.; Kolyada, Vladimir A.; Mataev, Arkady R.; Shamaha, Ljudmila F.; and Axenko, Alexandr A., 4,349,430, Cl. 204-302.000.
Ayotte, Gary A.; Boh, Jules J.; and Breen, Thomas G., to Coulter Electronics, Inc. Slide holder for spinner. 4,349,275, Cl. 356-36.000.

B.A.T. Cigaretten-Fabriken GmbH: *See—*
Lorenz, Hans-Walther; Schumacher, Gerd; and Kirchner, Helmut, 4,348,887, Cl. 73-23.000.
B. F. Goodrich Company, The: *See—*
Doljack, Frank A., 4,349,883, Cl. 364-551.000.
Holloway, John A., 4,349,657, Cl. 528-66.000.
Stickler, John M.; and Shook, George L., 4,348,891, Cl. 73-81.000.
Baasner, Dietmar: *See—*
Brand, Wilhelm; and Baasner, Dietmar, 4,348,811, Cl. 33-125.00R.
Bachler, Anton R. Tracking or grading unit for ski-trails and paths. 4,348,825, Cl. 37-222.000.
Bachmann, Rainer; and Ulm, Helmut, to Black & Decker Inc. Cutting blade assembly for a power planer. 4,349,057, Cl. 144-230.000.
Baecklund, Nils J. Method of measuring the content of given element in a sample by means of X-ray radiation. 4,349,738, Cl. 378-49.000.
Bain, Benjamin H., Jr., to General Electric Company. Appliance strain relief. 4,349,240, Cl. 339-103.00R.
Bain, Kenneth J. D.; King, Dennis E.; Worship, Lesley A.; and Burton, Achmat T., to Marsden (Proprietary) Limited. Transport and storage bins. 4,349,117, Cl. 220-4.00F.
Bair, Scott S., to Woolfolk Chemical Works, Inc. Liquid metering pump. 4,349,130, Cl. 222-129.200.
Baird Corporation: *See—*
Kliman, Arthur W., 4,349,245, Cl. 350-264.000.
Bajorek, Christopher H.; Chance, Dudley A.; and Ho, Chung W., to International Business Machines Corporation. Capacitive chip carrier and multilayer ceramic capacitors. 4,349,862, Cl. 361-401.000.
Baker CAC, Inc.: *See—*
Akkerman, Neil H.; and Foster, Stephen R., 4,349,175, Cl. 251-31.000.
Christensen, Bruce D., 4,349,043, Cl. 137-505.420.
Baker, Roscoe E.: *See—*
Furbish, William B.; and Baker, Roscoe E., 4,349,323, Cl. 425-147.000.
Baldi, Alfonso L., to Alloy Surfaces Company, Inc. Metal web. 4,349,612, Cl. 428-607.000.
Baldwin, John J.: *See—*
Atkinson, Joseph G.; Baldwin, John J.; and McClure, David E., 4,349,673, Cl. 544-105.000.
Baldwin, Mark H., to Nestier Corporation. Shelf mounting bracket for storage rack. 4,349,171, Cl. 248-243.000.
Baldwin Piano & Organ Company: *See—*
Wade, David R., 4,348,931, Cl. 84-1.240.
Bales, Ray D.: *See—*
Chipman, Donald M.; and Bales, Ray D., 4,349,054, Cl. 141-1.000.
Balz, Gunther W., to Roto-Finish Company, Inc. Automatic finishing chip maker. 4,349,327, Cl. 425-436.00R.
Bandi, Jean-Pierre: *See—*
Raboud, Pierre-Benoit; Kubicek, Frantisek; and Bandi, Jean-Pierre, 4,349,579, Cl. 426-631.000.
Banks, Eddie D.: *See—*
Barnes, Franklin K.; and Banks, Eddie D., 4,349,168, Cl. 244-137.00R.
Banks, John J., Jr. Plant pot suspension apparatus and the like. 4,349,172, Cl. 248-318.000.
Banzai, Keiichiro: *See—*
Mori, Kazumasa; Asahi, Taro; Banzai, Keiichiro; Iwaki, Katsutaro; Muto, Katsuya; Mase, Akira; Nimura, Takayasu; Itoh, Katsumi; and Akita, Yoshio, 4,349,854, Cl. 361-21.000.
Barber, Norman R., to GEC Mechanical Handling Limited. Control means for motion compensation devices. 4,349,179, Cl. 254-270.000.
Barbero, Aquilino: *See—*
Bovio, Michele; Barbero, Aquilino; Gillone, Walter; and Berruti, Pierangelo, 4,349,829, Cl. 346-140.00R.
Barnard, Garland R.: *See—*
Boehme, Hollis; Barnard, Garland R.; Mellenbruch, Larry L.; and Dickens, Danny W., 4,349,897, Cl. 367-98.000.
Barnes, Franklin K.; and Banks, Eddie D., to Boeing Company, The. Cargo delivery system for aircraft. 4,349,168, Cl. 244-137.00R.
Barraque, Christian; and Darji, Jayantilal D., to Degremont. Method and apparatus for treating water by ion exchange. 4,349,442, Cl. 210-675.000.
Barry Wright Corporation: *See—*
Peterson, Robert R.; and Ventura, Daniel S., 4,349,184, Cl. 267-153.000.
Barsa, Edward A.; Lin, Chung-Yuan; and Stuber, Fred A., to Upjohn Company, The. Bis(cyclic ureas) monomer compositions useful in making polyurethane polymers. 4,349,663, Cl. 528-367.000.
Barth, Horst: *See—*
Holzbaur, Siegfried; Barth, Horst; and Osmera, Josef, 4,348,999, Cl. 123-452.000.
Barth, Tomislav: *See—*
Cort, Joseph H.; Barth, Tomislav; Jost, Karel; and Veznik, Zdenek, 4,349,544, Cl. 424-177.000.
BASF Aktiengesellschaft: *See—*
Klahr, Erhard; Trieselt, Wolfgang; Trapp, Horst; and Widder, Rudi, 4,349,669, Cl. 536-127.000.
Merger, Franz; Nestler, Gerhard; Towae, Friedrich; and Harder, Wolfgang, 4,349,484, Cl. 260-453.00P.
BASF Wyandotte Corporation: *See—*
Narayan, Thirumurti, 4,349,638, Cl. 521-125.000.
Bates, H. John, to NL Industries, Inc. Control valve system for blowout preventers. 4,349,041, Cl. 137-1.000.
Battista, Orlando A. Protein polymer hydrogels. 4,349,470, Cl. 260-117.000.
Baumann, Marcus; Buhler, Niklaus; and Bellus, Daniel, to Ciba-Geigy Corporation. Cyclobutanedicarboxisoimides and use thereof as fungicides. 4,349,565, Cl. 424-279.000.
Baumann, Marcus: *See—*
Buhler, Niklaus; Baumann, Marcus; Bellus, Daniel; and Sturm, Elmar, 4,349,564, Cl. 424-274.000.
Bautista, Peter, Jr., to North American Philips Corporation. Acoustic impedance matching device. 4,348,904, Cl. 73-644.000.
Bay, Charles L. Thumb rest for woodwind musical instruments. 4,348,935, Cl. 84-380.00R.
Bay State Plastics Corp.: *See—*
DiNardo, Richard, 4,349,120, Cl. 220-337.000.
Bayer Aktiengesellschaft: *See—*
Blank, Heinz U.; Wolters, Erich; and Langenfeld, Norbert, 4,349,471, Cl. 260-208.000.
Boshagen, Horst; Buchel, Karl H.; Draber, Wilfried; Haller, Ingo; and Plempel, Manfred, 4,349,560, Cl. 424-273.00R.
Brandt, Hans-Walter; Steude, Heinrich; Bruns, Ludwig; and Kohler, Hans-Dieter, 4,349,416, Cl. 203-19.000.
Frank, Georg; and Wehling, Klaus, 4,349,351, Cl. 23-230.00B.
Goldmann, Siegfried, 4,349,675, Cl. 546-17.000.
Raue, Roderich; and Giesecke, Heinz, 4,349,670, Cl. 542-417.000.
Timmler, Helmut; Kramer, Wolfgang; Buchel, Karl H.; Brandes, Wilhelm; Frohberger, Paul-Ernst; and Homeyer, Bernhard, 4,349,556, Cl. 424-269.000.
Bayerische Motoren Werke A.G.: *See—*
Carota, Martin; Slootz, Josef; Weiser, Klaus; Gulich, Peter; and Jovanovic, Milenko, 4,349,718, Cl. 219-78.010.
BBC Brown, Boveri & Company, Ltd.: *See—*
Arnold, Niklaus; Schmidli, Josef; and Spiess, Peter, 4,349,759, Cl. 310-233.000.
Brandli, Gerold, 4,349,765, Cl. 313-220.000.
Stieger, Karl, 4,349,312, Cl. 415-145.000.
Beach, David L.; and Zambelli, Adolfo, to Gulf Research & Development Company. Process for the preparation of aluminum trihydrocarbyls. 4,349,483, Cl. 260-448.00A.
Beam, Benjamin H.; and Beam, Richard M., to Beam Engineering, Inc. Sun tracker. 4,349,733, Cl. 250-203.00R.
Beam Engineering, Inc.: *See—*
Beam, Benjamin H.; and Beam, Richard M., 4,349,733, Cl. 250-203.00R.
Beam, Richard M.: *See—*
Beam, Benjamin H.; and Beam, Richard M., 4,349,733, Cl. 250-203.00R.
Becker, Kunibert; and Beyer, Herbert, to Gewerkschaft Eisenhutte Westfalia. Longwall mineral mining installation. 4,349,229, Cl. 299-32.000.
Bee, Edward C., to National Semiconductor Corporation. Current product limit detector. 4,349,755, Cl. 307-492.000.
Beecham Group Limited: *See—*
Bentley, Peter H.; Hardy, Kenneth D.; and Milner, Peter H., 4,349,551, Cl. 424-250.000.
Beerwald, Hans; Bohm, Gunter; and Glomaki, Gunter. Gas-discharge method for coating the interior of electrically non-conductive pipes. 4,349,582, Cl. 427-38.000.
Beier, Ulrich: *See—*
Klar, Rudolf; and Beier, Ulrich, 4,349,122, Cl. 220-373.000.
Beiswenger, John L.; and Smiesko, Frank A., to Acme Burgess, Inc. Hose-end sprayer. 4,349,157, Cl. 239-509.000.
Beitecke, Bernd: *See—*
Geschka, Hugo W.; and Beitecke, Bernd, 4,348,877, Cl. 68-13.00R.
Belgard, Alan H.; Zoll, Paul M.; and Zoll, Ross H., to Zoll, Ross H. External noninvasive electric cardiac stimulation. 4,349,030, Cl. 128-419.0PG.
Bell, Malcolm R., to Sterling Drug Inc. Anti-inflammatory 8H-phenanthro-[2,3-c]pyrazole derivatives. 4,349,558, Cl. 424-273.00P.
Bell, Malcolm R.; and Herrmann, John L., Jr., to Sterling Drug Inc. Anti-inflammatory spiro-2H-indene-[2,3']-3H-pyrazolo[4'',5'':7',6'-]naphtho[2,1-b]pyran-1,3-dione derivatives. 4,349,559, Cl. 424-273.00P.
Bell Telephone Laboratories, Incorporated: *See—*
Aloisio, Charles J., Jr.; Blyler, Lee L., Jr.; Brockway, George S.; Hart, Arthur C., Jr.; and Taylor, Carl R., 4,349,587, Cl. 427-163.000.
Chin, Maurice A.; Narayanamurti, Venkatesh; and Stormer, Horst L., 4,349,796, Cl. 333-186.000.
Federico, Joseph; and Waaben, Sigurd G., 4,349,776, Cl. 323-222.000.
Gillis, Philip W., 4,349,704, Cl. 179-84.0VF.
Guelden, Ronald H., 4,349,236, Cl. 339-44.00M.
Hartman, Adrian R.; and Shackle, Peter W., 4,349,751, Cl. 307-252.00A.
Joel, Amos E., Jr., 4,349,702, Cl. 179-18.0GE.
Okinaka, Yutaka, 4,349,411, Cl. 156-659.100.
Pirz, Frank C.; and Rabiner, Lawrence R., 4,349,700, Cl. 179-1.0SD.
Scavuzzo, Robert J., 4,349,753, Cl. 307-272.00A.
Bellem, Norman A., to Butler Manufacturing Company. Insulated roof. 4,348,846, Cl. 52-410.000.
Bello, James R., to Lectromelt Corporation. Electrode positioning control. 4,349,912, Cl. 373-105.000.
Bellus, Daniel: *See—*
Baumann, Marcus; Buhler, Niklaus; and Bellus, Daniel, 4,349,565, Cl. 424-279.000.
Buhler, Niklaus; Baumann, Marcus; Bellus, Daniel; and Sturm, Elmar, 4,349,564, Cl. 424-274.000.

Beloit Corporation: *See*—
Parker, Daniel, 4,349,610, Cl. 428-447.000.
Belsky, Stephen E.; and Mathew, Chempolil T., to Allied Corporation. Production of methylnaphthalenes and tar bases including indole. 4,349,418, Cl. 203-45.000.
Beltz, John P.: *See*—
Southgate, Peter D.; and Beltz, John P., 4,349,880, Cl. 364-507.000.
Belz, Herman M., to Union Carbide Corporation. Method and apparatus for orientation of electrode joint threads. 4,349,910, Cl. 373-91.000.
Bennett, Harry. Acoustic ear mold. 4,349,083, Cl. 181-135.000.
Bentham, Thomas J. Frost removal system. 4,349,010, Cl. 126-271.100.
Bentley Laboratories: *See*—
Raible, Donald A., 4,349,021, Cl. 128-214.00R.
Bentley, Peter H.; Hardy, Kenneth D.; and Milner, Peter H., to Beecham Group Limited. Penicillin derivatives and compositions containing them. 4,349,551, Cl. 424-250.000.
Bentley, Peter N. Liquid dispensing systems. 4,349,321, Cl. 417-250.000.
Berger, Bernard, to Pechiney Ugine Kuhlmann. Non-polluting treatment of alkaline uraniferous effluents containing $SO_4^=$ ions. 4,349,512, Cl. 423-7.000.
Berger, Leo; and Olson, Gary L., to Hoffmann-La Roche Inc. Octahydro-2-methyl-isoquinoline-6,8-dione. 4,349,678, Cl. 546-150.000.
Bergstrom, Arthur E.; Nelson, Richard H.; and Maly, George P., to Carbide Blast Joints, Inc. Blast joint for subterranean wells. 4,349,050, Cl. 138-147.000.
Bergthaller, Peter: *See*—
Sobel, Johannes; Himmelmann, Wolfgang; and Bergthaller, Peter, 4,349,624, Cl. 430-622.000.
Berlivet, Marc A.; and Guerineau, Abel A. J., to Hesston Corporation. Rotary mower conditioner. 4,348,857, Cl. 56-192.000.
Berner, George J., to Hobart Corporation. Commodity key with on site encoding feature. 4,349,731, Cl. 235-489.000.
Berney, Jean, to Les Fabriques d'Assortiments Reunies. Elevation measuring instrument with selectable measurement scales. 4,348,813, Cl. 33-172.00R.
Bernstein, Carl; Stogis, James; Riddle, Travis; and Kufrin, Robert, to Witco Chemical Corporation. Polyester resins for polyurethane foams prepared by reacting two diacids, diethylene glycol, a poly(oxyethylene) glycol and a cross-linking polyol. 4,349,662, Cl. 528-301.000.
Berruti, Pierangelo: *See*—
Bovio, Michele; Barbero, Aquilino; Gillone, Walter; and Berruti, Pierangelo, 4,349,829, Cl. 346-140.00R.
Betzing, Hans: *See*—
Lautenschlager, Hans-Heiner; Betzing, Hans; Stoll, Brigitte; and Probst, Manfred, 4,349,684, Cl. 548-320.000.
Lautenschlager, Hans-Heiner; Betzing, Hans; Winkelmann, Johannes; Probst, Manfred; and Stoll, Brigitte, 4,349,686, Cl. 549-69.000.
Beyer, Herbert: *See*—
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BFG Glassgroup: *See*—
Terneu, Robert, 4,349,370, Cl. 65-60.400.
Van Laethem, Robert; Van Cauter, Albert; and Terneu, Robert, 4,349,369, Cl. 65-60.400.
Van Laethem, Robert; Van Cauter, Albert; and Terneu, Robert, 4,349,371, Cl. 65-60.400.
Van Laethem, Robert; Van Cauter, Albert; and Terneu, Robert, 4,349,372, Cl. 65-60.400.
Bhate, Suresh K., to Mechanical Technology Incorporated. Linear oscillating electric machine with permanent magnet excitation. 4,349,757, Cl. 310-15.000.
Bigg, Dennis, to Synthelabo. Thiazole derivatives and pharmaceutical compositions containing them. 4,349,557, Cl. 424-270.000.
Bigg, Dennis C., to Synthelabo. Thiazolidine-2,4-dione derivatives. 4,349,683, Cl. 548-183.000.
Biggs, James W.; and Maringer, Melvin F., to National Distillers & Chemical Corp. Flame retardant radiation curable polymeric compositions. 4,349,605, Cl. 428-389.000.
Bilet, Claude D.; Guillard, Michel G.; and Hedoin, Dominque A., to Compagnie de Signaux et d'Entreprises Electriques. Safety coding process for track circuits. 4,349,170, Cl. 246-63.000.
Binner, Tihamer S. Rear view mirror with slit clip attachment. 4,349,246, Cl. 350-298.000.
Bittar, Joseph; and Nowak, Frederick H., to Otis Elevator Company. Elevator motor/generator run protocol. 4,349,087, Cl. 187-29.00R.
Bixler, Stephen D.; Thomas, David T.; and Archer, Donald H., to Raytheon Company. Parabolic antenna with horn feed array. 4,349,827, Cl. 343-786.000.
Black Clawson Company, The: *See*—
Eklund, Henrik J., 4,349,413, Cl. 162-23.000.
Black & Decker Inc.: *See*—
Bachmann, Rainer; and Ulm, Helmut, 4,349,057, Cl: 144-230.000.
Blackburn, Marvin J., to Vernon Tool Company Ltd. Tape-controlled metal cutting apparatus. 4,349,182, Cl. 266-57.000.
Blackington, Paul A., to Sheltered Workshop for the Disabled, Inc. Fiber optic termination method and apparatus. 4,349,497, Cl. 264-1.500.
Blackmon, Lawrence E.; Dees, John R.; Kelly, Darrell A.; Mowe, Wayne T.; and Yu, Jing-peir, to Fiber Industries, Inc. Continuous filament yarn with wool-like hand. 4,349,604, Cl. 428-370.000.
Blaesi, Max: *See*—
Obrist, Albert; Blaesi, Max; and Auer, Serge, 4,349,399, Cl. 156-86.000.
Blancke, Uwe: *See*—
Vural, Gulertan; and Blancke, Uwe, 4,348,901, Cl. 73-594.000.
Blank, Heinz U.; Wolters, Erich; and Langenfeld, Norbert, to Bayer Aktiengesellschaft. Process for the preparation of aromatic sulphonic acid halides. 4,349,471, Cl. 260-208.000.
Blaser, Paul; Schmidt, Helmut; and Strobel, Walter, to Kienzle Apparate GmbH. Keyboard assembled from individual keys. 4,349,286, Cl. 400-492.000.
Blechstein, Amihud, to Penn-Gil Fabrics, Inc. Double knit fabric processing into decorative goods. 4,349,593, Cl. 428-40.000.
Bleikolm, Anton: *See*—
Leitner, Wolfgang; Pampouchidis, Georg; and Bleikolm, Anton, 4,349,655, Cl. 528-45.000.
Blenner, Donald R.; and Boenig, Herman V., to Lord Corporation. Method for bonding elastomers to steel. 4,349,403, Cl. 156-272.600.
Bliss & Laughlin Industries, Incorporated: *See*—
Robinson, Robert J.; Johnson, David B.; and Schroeder, Verdell H., 4,348,970, Cl. 112-256.000.
Block, Jacob, to W. R. Grace & Co. Viscosifier and fluid loss control system. 4,349,443, Cl. 252-8.50A.
Blocksome, Roderick K.; Hornbeck, Sherman J.; and Fee, Donald R., to Rockwell International Corporation. Switching between radio frequency circuits. 4,349,799, Cl. 333-246.000.
Bloem, Herman, to U.S. Philips Corporation. Method of connecting a plate-shaped absorber for solar heat to a tubular heat transport system. 4,348,793, Cl. 29-157.30A.
Blumenthal, Michael M.; and Stockler, Jerry R., to Oil Process Systems, Inc. Frying oil evaluator method and composition. 4,349,353, Cl. 23-230.00R.
Blyler, Lee L., Jr.: *See*—
Aloisio, Charles J., Jr.; Blyler, Lee L., Jr.; Brockway, George S.; Hart, Arthur C., Jr.; and Taylor, Carl R., 4,349,587, Cl. 427-163.000.
Bobart, Kevin L.; and Flurry, Gregory A., to International Business Machines Corporation. Ear code with alignment mark. 4,349,741, Cl. 250-568.000.
Bodendoerfer, Raymond E., to Paper Machinery Corporation. Blank wrapping mechanism for non-cylindrical container-making machines. 4,349,345, Cl. 493-295.000.
Boehme, Hollis; Barnard, Garland R.; Mellenbruch, Larry L.; and Dickens, Danny W., to United States of America, Navy. Bistatic Doppler underwater intrusion detection sonar. 4,349,897, Cl. 367-98.000.
Boeing Company, The: *See*—
Barnes, Franklin K.; and Banks, Eddie D., 4,349,168, Cl. 244-137.00R.
Desjardins, Rene A., 4,349,317, Cl. 416-134.00A.
Eves, William J.; and Lazaro, Luis J., Jr., 4,348,806, Cl. 29-863.000.
Reilly, Mason J., 4,349,167, Cl. 244-122.00R.
Boenig, Herman V.: *See*—
Blenner, Donald R.; and Boenig, Herman V., 4,349,403, Cl. 156-272.600.
Bogel, Gerhard, to SFS Stadler AG. Plastic ribbon for supply of bolt-like fastener elements. 4,349,106, Cl. 206-347.000.
Boh, Jules J.: *See*—
Ayotte, Gary A.; Boh, Jules J.; and Breen, Thomas G., 4,349,275, Cl. 356-36.000.
Bohm, Gunter: *See*—
Beerwald, Hans; Bohm, Gunter; and Glomski, Gunter, 4,349,582, Cl. 427-38.000.
Bohner, Beat: *See*—
Durr, Dieter; Rohr, Otto; Pissiotas, Georg; and Bohner, Beat, 4,349,377, Cl. 71-98.000.
Bokros, Jack C.: *See*—
Ellis, Willard H.; Haubold, Axel D.; Slivenko, Victor; and Bokros, Jack C., 4,349,498, Cl. 264-81.000.
Bolen, Charles E.; Harrington, Edward R.; Marzocchi, Alfred; and Roberts, Michael G., to Owens-Corning Fiberglas Corporation. Glass substrates with an insolubilized asphalt coating. 4,349,590, Cl. 427-389.700.
Bolen, Charles E.: *See*—
Marzocchi, Alfred; Roberts, Michael G.; and Bolen, Charles E., 4,349,388, Cl. 106-281.00N.
Bommart, Patrick, to Delachaux, C. Rail gap adjusting device. 4,348,959, Cl. 104-15.000.
Bond, Helen I. Personal cleansing article for recto-genital region. 4,349,288, Cl. 401-7.000.
Bonfield, John H.; Sifniades, Stylianos; and Ulmer, Harry E., to Allied Corporation. Continuous hydrolysis of ketoxime. 4,349,520, Cl. 423-387.000.
Booth, George R. Inertial tire pressure regulators. 4,349,064, Cl. 152-418.000.
Borimsky, Alexandr I.: *See*—
Lysanov, Vladislav S.; Digonsky, Viktor V.; Feldgun, Leon I.; Davidenko, Valery M.; Novikov, Nikolai V.; Borimsky, Alexandr I.; Shulzhenko, Alexandr A.; Yakimenko, Valerian D.; Dovgal, Eduard Y.; Egorov, Vitaly Y.; Rovsha, Vyacheslav S.; Prikhna, Alexei I.; and Sokolov, Alexandr N., 4,349,517, Cl. 423-290.000.
Bos, Arnold, to International Chemical Engineering Establishment. Process of and apparatus for curving a casing of stretched plastic material. 4,349,490, Cl. 264-25.000.
Bosch, Yves: *See*—
Ollivier, Jean; and Bosch, Yves, 4,349,141, Cl. 227-10.000.

Bosco, Lewis R.; and Bosco, Richard J. Weather shield for the firing mechanism of a gun and its method of manufacture. 4,348,829, Cl. 42-1.00N.

Bosco, Richard J.: *See*—
Bosco, Lewis R.; and Bosco, Richard J., 4,348,829, Cl. 42-1.00N.

Boshagen, Horst; Buchel, Karl H.; Draber, Wilfried; Haller, Ingo; and Plempel, Manfred, to Bayer Aktiengesellschaft. Antimycotic imidazolyl-indeno-thiophene compounds, composition and method of use. 4,349,560, Cl. 424-273.00R.

Boulanger, Henry J., to Texas Instruments Incorporated. Snap-acting thermostatic switch using inflexible, spring biased contact arm. 4,349,806, Cl. 337-343.000.

Bouyoucos, John V., to Hydroacoustics Inc. Hydraulic press apparatus. 4,348,943, Cl. 91-355.000.

Bovio, Michele; Barbero, Aquilino; Gillone, Walter; and Berruti, Pierangelo, to Ing. C. Olivetti & C., S.p.A. Non-impact printing method. 4,349,829, Cl. 346-140.00R.

Bower, Terry F.: *See*—
Shinopulos, George; Randlett, M. Ronald; and Bower, Terry F., 4,349,145, Cl. 228-208.000.

Bowers, William D.: *See*—
Scott, Ernest R.; and Bowers, William D., 4,349,361, Cl. 55-357.000.

Bowles, Arnold G., to Pressure Technology, Inc. Hot isostatic press with rapid cooling. 4,349,333, Cl. 432-205.000.

Bowyer, William H.: *See*—
Phillips, Robert B.; Bowyer, William H.; and Moxley, Bruce, 4,349,728, Cl. 235-400.000.

Boyadjieff, George I., to Varco International, Inc. Well pipe connecting and disconnecting apparatus. 4,348,920, Cl. 81-57.250.

Boyajian, Alfred Z. Carriage support for power-driven hand tool. 4,349,301, Cl. 408-112.000.

Brachman, Dina I.: *See*—
Eigen, Edward; and Brachman, Dina I., 4,349,534, Cl. 424-52.000.

Brackmann, Warren A.; and Snaidr, Stanislav M., to Rothmans of Pall Mall Canada Limited. Tobacco moistening and opening apparatus. 4,349,037, Cl. 131-306.000.

Bradley, Michael F.; and Viecelli, Jack C., to Longview Fibre Company. Gun carton. 4,349,105, Cl. 206-317.000.

Bradshaw, William, to Edgar Pickering (Blackburn) Ltd. Drying apparatus. 4,348,817, Cl. 34-75.000.

Brand, Wilhelm; and Baasner, Dietmar, to Hermann Berstorff Maschinenbau GmbH. Vee belt measuring apparatus. 4,348,811, Cl. 33-125.00R.

Brandes, Wilhelm: *See*—
Timmler, Helmut; Kramer, Wolfgang; Buchel, Karl H.; Brandes, Wilhelm; Frohberger, Paul-Ernst; and Homeyer, Bernhard, 4,349,556, Cl. 424-269.000.

Brandli, Gerold, to BBC Brown, Boveri & Company, Limited. Ultraviolet generating device comprising discharge tube joined to two tubular envelopes. 4,349,765, Cl. 313-220.000.

Brandt, Hans-Walter; Steude, Heinrich; Bruns, Ludwig; and Kohler, Hans-Dieter, to Bayer Aktiengesellschaft; and EC Erdolchemie GmbH. Process and device for the separation of mixtures which form an azeotrope. 4,349,416, Cl. 203-19.000.

Branson Ultrasonics Corporation: *See*—
Shoh, Andrew, 4,348,908, Cl. 73-862.540.

Braun, Ernst; Braun, Gert; and Wetzchewald, Karlheinz, to Halbach & Braun. Trench hewing tool assembly with cutter guard attachment. 4,349,232, Cl. 299-92.000.

Braun, Gert: *See*—
Braun, Ernst; Braun, Gert; and Wetzchewald, Karlheinz, 4,349,232, Cl. 299-92.000.

Brayer, Eyal, to S.C.R. Engineers Ltd. Control apparatus for milking machines. 4,348,984, Cl. 119-14.080.

Breen, Thomas G.: *See*—
Ayotte, Gary A.; Boh, Jules J.; and Breen, Thomas G., 4,349,275, Cl. 356-36.000.

Bremer, Clemens; and Klumpp, Walter, to Rheinmetall GmbH. Servo-release mechanism for an automatic weapon. 4,348,940, Cl. 89-140.000.

Brenner, John A.: *See*—
Brueggemann, Walter H.; and Brenner, John A., 4,349,601, Cl. 428-323.000.

Breuer, Hans-Werner: *See*—
Obrist, Albert; and Breuer, Hans-Werner, 4,349,174, Cl. 249-58.000.

Bridges, Charles D.: *See*—
McGee, John K.; and Bridges, Charles D., 4,349,205, Cl. 277-188.00A.

Bridgestone Tire Company Limited: *See*—
Hirakawa, Hiroshi; Sato, Akio; Takusagawa, Takashi; and Ikeda, Nobumasa, 4,349,061, Cl. 152-209.00R.
Kikuchi, Michitsugu; and Suzuki, Yoshio, 4,349,063, Cl. 152-359.000.
Tsurunaga, Yasuaki; Abe, Masaru; Hashimoto, Hideaki; and Tsuzura, Junichi, 4,349,062, Cl. 152-356.00R.
Ueno, Kazunori; and Kobayashi, Toru, 4,348,841, Cl. 52-126.500.

Brightwell, Alan: *See*—
Adams, Keith J. G.; Brightwell, Alan; Price, Barry L.; Pegler, Stuart M.; and Weall, Paul, 4,349,745, Cl. 307-12.000.

Brinker, Gerald W. Display device. 4,348,827, Cl. 40-607.000.

British Broadcasting Corporation: *See*—
Clarke, Christopher K. P., 4,349,833, Cl. 358-23.000.

British Gas Corporation: *See*—
Adams, Keith J. G.; Brightwell, Alan; Price, Barry L.; Pegler, Stuart M.; and Weall, Paul, 4,349,745, Cl. 307-12.000.

Brixner, Berlyn B.; Klein, Morris M.; and Winkler, Max A., to United States of America, Energy. Compound lens. 4,349,249, Cl. 350-483.000.

Brockmann, Heinz, to Klockner-Humboldt-Deutz Aktiengesellschaft. Drive unit for land vehicles. 4,349,080, Cl. 180-301.000.

Brockway, George S.: *See*—
Aloisio, Charles J., Jr.; Blyler, Lee L., Jr.; Brockway, George S.; Hart, Arthur C., Jr.; and Taylor, Carl R., 4,349,587, Cl. 427-163.000.

Brokaw, Adrian P., to Analog Devices, Incorporated. Digital-to-analog converter with improved compensation arrangement for offset voltage variations. 4,349,811, Cl. 340-347.0DA.

Broman, John S. Process and device for wet milling of rocks and the like. 4,349,158, Cl. 241-21.000.

Bromberg, Howard M., to Flexi-Group Inc., The. Method of making slide calculator. 4,349,346, Cl. 493-325.000.

Brown, Alexander G. M.: *See*—
Jefferson, John R.; and Brown, Alexander G. M., 4,348,995, Cl. 123-366.000.

Brown, Boveri & Cie Aktiengesellschaft: *See*—
Hartmann, Bernd; and Meinhold, Henner, 4,349,773, Cl. 320-5.000.

Brown, Dale G., to American Cyanamid Company. Spiro-cyclopropyl amidinohydrazones, and use as insect and fire ant control agents. 4,349,553, Cl. 424-251.000.

Brown, David: *See*—
Rowe, Frederick; and Brown, David, 4,349,432, Cl. 208-130.000.

Brown, Robert C. Device for recovering the exhaust heat of a clothes dryer. 4,348,818, Cl. 34-77.000.

Brown, Robert H., to Talon, Inc. Slide fastener with improved clamps and method of manufacture. 4,348,789, Cl. 24-205.10R.

Brown, Troy L., to Hewlett-Packard Company. Sampled control loop with dynamic gain optimization. 4,349,868, Cl. 364-157.000.

Brown, William L., to SI Handling Systems, Inc. Substrate dispensing apparatus. 4,349,126, Cl. 221-112.000.

Brucato, George C. Auta-help. 4,348,978, Cl. 116-28.00R.

Brueggemann, Walter H.; and Brenner, John A., to Ferro Corporation. Protective skin on intricately molded product. 4,349,601, Cl. 428-323.000.

Brugere, Christiane; Goumondy, Jean-Pierre; Morel, Jean-Marie; and Zellner, Edmond, to Commissariat a l'Energie Atomique. Method for processing alkaline solutions containing radioactive iodine during reprocessing of nuclear fuels. 4,349,453, Cl. 252-627.000.

Bruhn, Andrew C. Carrying rack for motorcycles. 4,349,138, Cl. 224-30.00R.

Brunelle, Daniel J.; and Smith, William E., to General Electric Company. Monocarbonate transesterification process. 4,349,486, Cl. 260-463.000.

Bruns, Ludwig: *See*—
Brandt, Hans-Walter; Steude, Heinrich; Bruns, Ludwig; and Kohler, Hans-Dieter, 4,349,416, Cl. 203-19.000.

Brunswick Corporation: *See*—
Morgan, Edward J.; and Rohan, Neil A., 4,349,341, Cl. 440-51.000.
Staerzl, Richard E., 4,349,000, Cl. 123-491.000.

Bryant, Frank A.: *See*—
Angelo, Lawrence F.; Bryant, Frank A.; and McLain, John D., 4,348,780, Cl. 14-1.000.

Buchel, Karl H.: *See*—
Boshagen, Horst; Buchel, Karl H.; Draber, Wilfried; Haller, Ingo; and Plempel, Manfred, 4,349,560, Cl. 424-273.00R.
Timmler, Helmut; Kramer, Wolfgang; Buchel, Karl H.; Brandes, Wilhelm; Frohberger, Paul-Ernst; and Homeyer, Bernhard, 4,349,556, Cl. 424-269.000.

Buckstead, John W.; Hoppe, Frederick J.; and Williams, Dennis W., to Paccar, Inc. Front end loader with bucket ejector assembly. 4,349,308, Cl. 414-725.000.

Buhler, Niklaus; Baumann, Marcus; Bellus, Daniel; and Sturm, Elmar, to Ciba-Geigy Corporation. Use of 1,2-dimethyl-3-fluoro-, 1-methyl-3,3-difluoro-, and 1,2-dimethyl-3,3-difluoro-cyclobutane-1,2-dicarbonic acid 3,5-dichlorophenyl imides as plant fungicides. 4,349,564, Cl. 424-274.000.

Buhler, Niklaus: *See*—
Baumann, Marcus; Buhler, Niklaus; and Bellus, Daniel, 4,349,565, Cl. 424-279.000.

Bull, Jeffrey F., to RCA Corporation. Actuation rate limiter. 4,349,754, Cl. 307-443.000.

Bullard, David E.; and Myers, Allen D., to Caterpillar Tractor Co. Method and apparatus for controlling wheel slip on differentially mounted wheels. 4,349,233, Cl. 303-96.000.

Bundy, Gordon L., to Upjohn Company, The. 9-Deoxy-9-methylene-6-keto-PGE-type compounds. 4,349,690, Cl. 560-121.000.

Bunker Ramo Corporation: *See*—
Juris, Mitchell A.; and Tomsa, Vladimir, 4,349,241, Cl. 339-143.00R.

Burch, Homer A.: *See*—
Schwan, Thomas J.; Burch, Homer A.; and Gray, Joseph E., 4,349,677, Cl. 546-142.000.

Burnham, Robert D.: *See*—
Scifres, Donald R.; Streifer, William; and Burnham, Robert D., 4,349,906, Cl. 372-50.000.

Burroughs Corporation: *See*—
Rudd, Robert E., III, 4,349,830, Cl. 346-140.00R.
Volka, Lubomir J.; and Wentzel, Robert J., 4,349,173, Cl. 248-346.000.

Burton, Achmat T.: *See*—
Bain, Kenneth J. D.; King, Dennis E.; Worship, Lesley A.; and Burton, Achmat T., 4,349,117, Cl. 220-4.00F.

Busselet, Jean-Claude G., to Etablissements Valois. Aerosol container valve mounting. 4,349,135, Cl. 222-394.000.
Butler Manufacturing Company: *See*—
Bellem, Norman A., 4,348,846, Cl. 52-410.000.
Butterworth, Inc.: *See*—
Pacht, Amos, 4,349,154, Cl. 239-124.000.
Buxton, Keith, to Lucas Industries Limited. Stepper motor control circuit. 4,349,771, Cl. 318-685.000.
Byers, J. Otto, Jr.; and Locher, Donald A., to Commercial Shearing, Inc. Pressure and flow compensated control system with constant torque and viscosity sensing over-ride. 4,349,319, Cl. 417-222.000.
C-I-L Inc.: *See*—
Rowley, Edward K.; and Sprague, Allison A., 4,348,955, Cl. 102-317.000.
Cairns, Neil S.; and Hendershott, Loyd. Mobile home support system. 4,348,843, Cl. 52-167.000.
Camelot Industries Corporation: *See*—
Rupp, Wiktor J., 4,349,374, Cl. 65-107.000.
Campillo, Anthony J.; Hyer, Ronald C.; and Shapiro, Stanley J., to United States of America, Energy. Broadly tunable picosecond IR source. 4,349,907, Cl. 372-92.000.
Canon Kabushiki Kaisha: *See*—
Aoki, Kanemasa, 4,349,761, Cl. 310-266.000.
Kobayashi, Kazufumi; and Hashimoto, Shigeru, 4,349,265, Cl. 354-286.000.
Tezuka, Nobuo; and Hirohata, Michio, 4,349,264, Cl. 354-234.000.
Uchidoi, Masanori; and Urushihara, Kazunobu, 4,349,263, Cl. 354-234.000.
Watanabe, Yoshitaka, 4,349,262, Cl. 354-173.000.
Canon Seiki Kabushiki Kaisha: *See*—
Aoki, Kanemasa, 4,349,761, Cl. 310-266.000.
Carbide Blast Joints, Inc.: *See*—
Bergstrom, Arthur E.; Nelson, Richard H.; and Maly, George P., 4,349,050, Cl. 138-147.000.
Carbomedics, Inc.: *See*—
Ellis, Willard H.; Haubold, Axel D.; Slivenko, Victor; and Bokros, Jack C., 4,349,498, Cl. 264-81.000.
Cardellini, Claudio B. Loose leaf binder. 4,349,290, Cl. 402-55.000.
Cardellini, Vincenzo E. Loose leaf binder. 4,349,289, Cl. 402-30.000.
Cardot, Claude: *See*—
Lemoussu, Michel; and Cardot, Claude, 4,349,785, Cl. 329-50.000.
Carey, Norman H.; Emtage, John S.; Tacon, William C. A.; and Hallewell, Robert A., to G.D. Searle & Co. Plasmid vectors, production anduse thereof. 4,349,629, Cl. 435-172.000.
Carlsson, Eric; and Wide, Lars, to Aktiebolaget IRO. Thread delivery device with improved thread-storage drum, particularly for sticky yarns. 4,349,161, Cl. 242-47.010.
Carota, Martin; Slootz, Josef; Weiser, Klaus; Gulich, Peter; and Jovanovic, Milenko, to Bayerische Motoren Werke A.G. Installation for the resistance-welding of structural parts. 4,349,718, Cl. 219-78.010.
Carrier Corporation: *See*—
Androff, Joel W., 4,348,871, Cl. 62-239.000.
Foster, Glenn B.; and Post, John E., 4,348,868, Cl. 62-101.000.
Geary, Carl H., Jr., 4,349,291, Cl. 403-15.000.
Carroll, James C.; and Chapman, Donald L., to Square D Company. Raintight wireway. 4,349,220, Cl. 285-121.000.
Carty, John J., to Luftek, Inc. Self-cleaning chimney stack. 4,348,947, Cl. 98-58.000.
Casberg, John M.; and Putnam, Clair H., to Olin Corporation. Briquets of hydrated calcium hypochlorite. 4,349,493, Cl. 264-37.000.
Cashwell, Ernest; Grollimund, Everett C.; Duley, Walter W.; Lilly, A. Clifton, Jr.; Claflin, Warren E.; Stultz, Edward B.; and Martin, Peter, to Philip Morris Incorporated. Apparatus for laser perforation of transported articles. 4,349,719, Cl. 219-121.0LK.
Casio Computer Co., Ltd.: *See*—
Kashio, Toshio, 4,348,932, Cl. 84-1.190.
Cassella Aktiengesellschaft: *See*—
Tappe, Horst; Kindler, Horst; Roth, Kurt; and Weyer, Hans-Jurgen, 4,349,348, Cl. 8-464.000.
Caterpillar Tractor Co.: *See*—
Bullard, David E.; and Myers, Allen D., 4,349,233, Cl. 303-96.000.
Lindow, Edwin L.; and Richards, Bradley T., 4,349,717, Cl. 219-73.200.
Catoni, Mario: *See*—
Rossi, Pier P.; and Catoni, Mario, 4,349,473, Cl. 260-239.30A.
Caudel, Edward R., to Texas Instruments Incorporated. Semiconductor memory cell with synthesized load resistors. 4,349,894, Cl. 365-154.000.
Celanese Corporation: *See*—
Ochiai, Shinya, 4,349,435, Cl. 210-96.100.
Centre de Recherches Metallurgiques-Centrum Voor Research in de Metallurgie: *See*—
Paulus, Philippe; and Economopoulos, Marios, 4,349,393, Cl. 148-142.000.
Ceskoslovenska akademie ved: *See*—
Cort, Joseph H.; Barth, Tomislav; Jost, Karel; and Veznik, Zdenek, 4,349,544, Cl. 424-177.000.
Chambers, Gary R. Osteotomy apparatus. 4,349,018, Cl. 128-92.00E.
Chambers, Michael. Device to assist growth of tomato plants and method of using the same. 4,348,831, Cl. 47-32.000.
Champion International Corporation: *See*—
Faller, Rudolph A., 4,349,124, Cl. 220-453.000.
Pritchard, Sheldon S., 4,349,107, Cl. 206-449.000.
Champion Spark Plug Company: *See*—
Johnson, Michael F., 4,349,153, Cl. 239-105.000.
Chance, Dudley A.: *See*—
Bajorek, Christopher H.; Chance, Dudley A.; and Ho, Chung W., 4,349,862, Cl. 361-401.000.
Chang, David C., to International Business Machines Corp. Time of day clock control. 4,349,890, Cl. 364-900.000.
Chang, Marguerite S.: *See*—
Mueller, Kurt F.; Chang, Marguerite S.; Farncomb, Robert F.; and Malotky, Lyle O., 4,349,396, Cl. 149-19.300.
Chang, Orson. Locks of suitcases with changeable combinations. 4,348,878, Cl. 70-5.000.
Chang, Wei K.: *See*—
Gold, Elijah H.; and Chang, Wei K., 4,349,472, Cl. 260-239.0BB.
Changani, Pushpkumar D.; Peacock, Donald G.; and Roberts, David, to Raychem Corporation. Polymeric articles. 4,349,404, Cl. 156-308.400.
Chapman, Donald L.: *See*—
Carroll, James C.; and Chapman, Donald L., 4,349,220, Cl. 285-121.000.
Charles, Joel M.; and Toscano, Robert J., to Etat Francais as represented by the Delegue General pour l'Armement. Device for handling from a boat a submerged load hooked onto the end of a cable. 4,349,180, Cl. 254-277.000.
Chaudhuri, Kiranendu B., to Klockner-Humboldt-Deutz AG. Method for the pyrometallurgical production of copper. 4,349,383, Cl. 75-73.000.
Chazov, Evgeny I.: *See*—
Maximenko, Alexandr V.; Torchilin, Vladimir P.; Smirnov, Vladimir N.; and Chazov, Evgeny I., 4,349,630, Cl. 435-180.000.
Chea, Ramon C. W., Jr., to International Telephone and Telegraph Corporation. Programmable ring signal generator. 4,349,703, Cl. 179-18.0HB.
Chechile, Robert A.: *See*—
Wirt, Thomas M.; and Chechile, Robert A., 4,349,183, Cl. 267-160.000.
Chemische Werke Huls AG: *See*—
Mumcu, Salih, 4,349,661, Cl. 528-288.000.
Chida, Yoshinori; and Tada, Satoru, to Seikosha Co., Ltd. Intermittent paper feed mechanism. 4,349,287, Cl. 400-569.000.
Chilzer, Edward L. Snow shuttle. 4,349,209, Cl. 280-16.000.
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Terrel, Christopher, 4,349,865, Cl. 362-250.000.
Chobanian, Dennis A.; and McNaughton, R. Alan. Transducer for sensing string vibrational movement in two mutually perpendicular planes. 4,348,930, Cl. 84-1.150.
Christensen, Bruce D., to Baker CAC, Inc. Method and apparatus for prevention of over-pressurization of a pressure responsive device. 4,349,043, Cl. 137-505.420.
Christian Leather Company, Inc., The: *See*—
Woodson, Thomas W., 4,348,774, Cl. 2-338.000.
Christine, William C. Dispenser and refill package. 4,349,133, Cl. 222-183.000.
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Janssen, Peter J. H.; and Christis, Wilhelmus J., 4,349,904, Cl. 371-69.000.
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Hubele, Adolf; Kunz, Walter; and Eckhardt, Wolfgang, 4,349,550, Cl. 424-250.000.
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Mundy, Joseph L.; Porter, Gilbert B., III; and Cipolla, Thomas M., 4,349,277, Cl. 356-376.000.
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Cashwell, Ernest; Grollimund, Everett C.; Duley, Walter W.; Lilly, A. Clifton, Jr.; Claflin, Warren E.; Stultz, Edward B.; and Martin, Peter, 4,349,719, Cl. 219-121.0LK.
Clancy, David, to Colgate-Palmolive Company. Method and apparatus for packaging loose material. 4,348,852, Cl. 53-469.000.
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Ono, Sadao, 4,349,779, Cl. 323-318.000.
Tanaka, Yoshio; Nishikawa, Yasuhisa; and Hasumi, Ryoichi, 4,348,911, Cl. 74-10.330.
Clark, Jim W., to Superior Casing Crews, Inc. Pipe thread protector. 4,349,048, Cl. 138-96.00T.
Clark, Melford D. Magnetic drop game. 4,349,201, Cl. 273-400.000.
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Clarke, Christopher K. P., to British Broadcasting Corporation. Apparatus for digital demodulation or modulation of television chrominance signals. 4,349,833, Cl. 358-23.000.
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Fine, Jerome; and Harrington, Gene N., 4,349,597, Cl. 428-95.000.
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Hartmann, Ewald, 4,349,234, Cl. 305-56.000.
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Miyata, Teruo, 4,349,026, Cl. 128-294.000.
Collender, Robert B. Stereoscopic motion picture-circular to linear scan translator (alternate screen)-method and apparatus. 4,349,252, Cl. 352-58.000.
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von Beck, Harold F. V., 4,349,069, Cl. 165-4.000.
Commercial Shearing, Inc.: *See*—
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Fitoussi, Richard; Lours, Sylvie; and Musikas, Claude, 4,349,350, Cl. 23-230.00R.
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Bilet, Claude D.; Guillard, Michel G.; and Hedoin, Dominque A., 4,349,170, Cl. 246-63.000.
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Perrigault, Claude; and Spiteri, Jean-Claude, 4,349,707, Cl. 179-175.31R.
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Gernelle, Francois, 4,349,285, Cl. 400-320.000.
Comparetto, John E. Cutting tool and a method of using same. 4,349,058, Cl. 145-24.000.
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Schmid, Markus; and Gloor, Hans, 4,349,066, Cl. 164-453.000.
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Rohde, Edward C., 4,349,228, Cl. 299-10.000.
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Cooper, George N. Bumper hitch. 4,349,211, Cl. 280-481.000.
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Copley, Russell D.; and Schlueter, Francis E., to Deere & Company. Tractor mounted cotton harvester. 4,348,856, Cl. 56-30.000.
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Ayotte, Gary A.; Boh, Jules J.; and Breen, Thomas G., 4,349,275, Cl. 356-36.000.
Coury, Glenn E. Method for improved heat transfer. 4,349,068, Cl. 165-1.000.
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Cragoe, Edward J., Jr.; Rooney, Clarence S.; and Williams, Haydn W. R., to Merck & Co., Inc. 4-Substituted-3-hydroxy-3-pyrroline-2,5-dione inhibitors of glycolic acid oxidase. 4,349,561, Cl. 424-274.000.
Creators, Inc.: *See*—
Miller, Jack V., 4,349,768, Cl. 315-105.000.
Critical Fluid Systems, Inc.: *See*—
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Crooks, David R., to Hapad, Inc. Method and apparatus for beveling the front end of a felt pad. 4,348,837, Cl. 51-5.00R.
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Crossley, Roger, to John Wyeth & Brother Limited. Process for preparing 1-(3-bromo-2-alkylpropanoyl-L-proline derivatives. 4,349,480, Cl. 260-326.200.
Crossley, Roger; and Hill, David G., to John Wyeth & Brother Limited. Dithiocompounds. 4,349,555, Cl. 424-263.000.
Crothers, William G., to Deer Park Baking Co. Method and apparatus to make cookies. 4,349,574, Cl. 426-496.000.
Crowley, Albert T., to RCA Corporation. Precise digitally programmed frequency source. 4,349,887, Cl. 364-703.000.
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Crystal Systems Inc.: *See*—
Schmid, Frederick, 4,349,178, Cl. 254-216.000.
Crystic Systems Limited: *See*—
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Cummins Engine Company, Inc.: *See*—
Stang, John H.; Ruthmansdorfer, David A.; and Reichenbach, Dean H., 4,348,991, Cl. 123-41.290.
Curren, Arthur N.: *See*—
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Kaman, Charles H.; and Mayerjak, Robert J., 4,348,933, Cl. 84-193.000.
Curti, Ezio. Loading and unloading device to be installed between two consecutive machines. 4,349,097, Cl. 198-369.000.
Cushing, David E.: *See*—
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Prett, David M.; Ramaker, Brian L.; and Cutler, Charles R., 4,349,869, Cl. 364-159.000.
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Cyr, Clifford R.; and Hagan, Nancy C., to Du Pont de Nemours, E. I., and Company. Solvent developable photoresist film. 4,349,620, Cl. 430-259.000.
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Horiguchi, Satoru; Sasaoka, Takeshi; and Shimane, Koichi, 4,349,835, Cl. 358-76.000.
Daimler-Benz Aktiengesellschaft: *See*—
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Kurth, Hermann W.; and Krugener, Rolf, 4,349,722, Cl. 219-202.000.
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Hayashi, Masaho, 4,349,110, Cl. 206-806.000.
Dainippon Screen Mfg. Co., Ltd.: *See*—
Ohtani, Masami, 4,349,267, Cl. 354-323.000.
Daintrey, Joseph W., to Gestetner Manufacturing Limited. Developer unit for dry toner electrophotographic copier. 4,348,979, Cl. 118-688.000.
D'Alessio, Antonio. Shoe structure. 4,348,820, Cl. 36-101.000.
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Stevenson, Christopher T. S.; and D'Aloisio, Elio F., 4,349,144, Cl. 228-2.000.

Dancy, Curtis. Retractable bulkheads for railroad flat cars. 4,348,963, Cl. 105-363.000.
Daniel, Jean P., to Thomson-CSF. Laser target designator system. 4,349,838, Cl. 358-125.000.
Daniel, Roger P., to Ford Motor Company. Force-indicating dummy legs. 4,349,339, Cl. 434-274.000.
Darji, Jayantilal D.: *See—*
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Daswick, Alexander C. Shoe sole structure. 4,348,821, Cl. 36-103.000.
Data Packaging Corporation: *See—*
Lyman, George F.; and Lowry, Alan, 4,349,632, Cl. 435-284.000.
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Davidovits, Joseph. Mineral polymers and methods of making them. 4,349,386, Cl. 106-85.000.
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Davis, Earl K.; Landron, Rafael; and Taylor, Scot W., to Motorola, Inc. Lower temperature glass and hermetic seal means and method. 4,349,635, Cl. 501-15.000.
Davis, Earl K.; and Hey, Robert W., to Motorola, Inc. Glass hermetic seal. 4,349,692, Cl. 174-52.00H.
Davis, Paul; Weinstein, David; and Schneider, David, to Sweetheart Plastics, Inc. Bulk cone container. 4,349,571, Cl. 426-124.000.
Davis, William F., to Motorola, Inc. Band-gap voltage reference having an improved current mirror circuit. 4,349,778, Cl. 323-314.000.
Davy International Aktiengesellschaft: *See—*
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English, Martin; Pym, David P.; and Dawson, Lindsay G., 4,349,628, Cl. 435-161.000.
Day, Edward A., to Systems, Science and Software. Projectile having impact responsive initiator means. 4,348,958, Cl. 102-499.000.
Decalonne, Jacques, to Thomson-CSF. Inductive potentiometer. 4,349,822, Cl. 340-870.340.
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DeFilippi, Richard P.; and Vivian, J. Edward, to Critical Fluid Systems, Inc. Process for separating organic liquid solutes from their solvent mixtures. 4,349,415, Cl. 203-14.000.
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della Valle, Francesco, to Fidia S.p.A. Treatment of arrhythmia with 8-chloro- or 8-bromocoumarin derivatives. 4,349,566, Cl. 424-281.000.
Demar, Viking V. Method and apparatus for burning solid fuel. 4,348,968, Cl. 110-344.000.
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Wynn, Charles C.; and Hopkins, Donald J., 4,349,305, Cl. 414-408.000.
Dent, Anthony L.; Hertzenberg, Elliot P.; and Sherry, Howard S., to PQ Corporation. Toothpaste containing pH-adjusted zeolite. 4,349,533, Cl. 424-52.000.
Dentel, David A.; and Sanders, David C., to Great Lakes Chemical Corporation. Process for producing esters of 3,5-dibromo-4-hydroxybenzonitrile. 4,349,488, Cl. 260-465.00D.
Denzer, Walter L. Segregated slab structural products. 4,348,848, Cl. 52-432.000.
DePauw, Richard A.; and Staiert, Richard W., to International Harvester Company. Crop damage responsive control of rotor speed. 4,348,855, Cl. 56-10.200.
Desjardins, Rene A., to Boeing Company, The. Bearingless rotor for single and tandem helicopters. 4,349,317, Cl. 416-134.00A.
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Developak Corporation: *See—*
Evers, Jack R., 4,349,344, Cl. 493-11.000.
DFH, Inc.: *See—*
Farque, C. Anthony, 4,349,774, Cl. 320-25.000.
D'Hinterland, Lucien D.; Serre, Hubert; and Normier, Gerard, to Pierre Fabre S.A. Process for preparing vaccines based on antigenic ribosomal fractions. 4,349,540, Cl. 424-92.000.
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DiChiara, Anthony J. Filling valve for beverage container filling machine. 4,349,055, Cl. 141-39.000.
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DiFrancesco, John G. Needle guide for implanting intra-ocular lens. 4,349,027, Cl. 128-303.00R.
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DiNardo, Richard, to Bay State Plastics Corp. Plastic box hinge. 4,349,120, Cl. 220-337.000.
Dinella, Donald; Haller, Albert H.; and Polakowski, Theodore D., Jr., to Western Electric Co., Inc. Method for distributing liquid over a surface. 4,349,589, Cl. 427-359.000.
Di Piazza, Learco, to European Atomic Energy Community (EURATOM). Mechanical control head for guiding the movement of a tool, particularly of an electrode adapted to make a cavity in a metal piece, by electroerosion. 4,349,716, Cl. 219-69.00E.
Ditto, Fred S., deceased; and by Ditto, Teresa M., executrix. Flow plug. 4,349,047, Cl. 138-93.000.
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Dr. Boger Duplomat Apparate KG (GmbH & Co.): *See—*
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Dr. Johannes Heidenhain GmbH: *See—*
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Doljack, Frank A., to B. F. Goodrich Company, The. Signal detector circuit with gain control method. 4,349,883, Cl. 364-551.000.
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Donguy, Paul, to Societe Europeene de Propulsion. Unfoldable divergent nozzle for a rocket engine. 4,349,155, Cl. 239-265.330.
Doss, James D. Shielded differentiator for automotive ignition applications. 4,349,782, Cl. 324-390.000.
Dove, Peter G. S. Supply boat spooling system. 4,348,975, Cl. 114-254.000.
Dovgal, Eduard Y.: *See—*
Lysanov, Vladislav S.; Digonsky, Viktor V.; Feldgun, Leon I.; Davidenko, Valery M.; Novikov, Nikolai V.; Borimsky, Alexandr I.; Shulzhenko, Alexandr A.; Yakimenko, Valerian D.; Dovgal, Eduard Y.; Egorov, Vitaly Y.; Rovsha, Vyacheslav S.; Prikhna, Alexei I.; and Sokolov, Alexandr N., 4,349,517, Cl. 423-290.000.
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Ackermann, Peter; Drabek, Jozef; Farooq, Saleem; Gsell, Laurenz; Kristiansen, Odd; and Wehrli, Rudolf, 4,349,567, Cl. 424-305.000.
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Boshagen, Horst; Buchel, Karl H.; Draber, Wilfried; Haller, Ingo; and Plempel, Manfred, 4,349,560, Cl. 424-273.00R.
Draft Systems, Inc.: *See—*
Fallon, Merton R.; and Clements, Thomas W., 4,349,136, Cl. 222-396.000.
Drake, Cyril F., to International Standard Electric Corporation. Glass composition. 4,349,025, Cl. 128-260.000.
Drake, Miles P.: *See—*
Sterling, Henley F.; and Drake, Miles P., 4,349,373, Cl. 65-60.800.
Dresser Industries, Inc.: *See—*
Fish, David W., 4,349,071, Cl. 166-124.000.
Drewes, William; and Vlicki, Edward M., to Drewes, William. Sonic weapon system. 4,349,898, Cl. 367-138.000.
Driver, Julian H.: *See—*
Thevenot, Francois H. J.; Goeuriot, Patrice M. V.; Driver, Julian H.; and Lebrun, Jean-Paul R., 4,348,980, Cl. 118-717.000.
Drummond, James E.: *See—*
Fitch, Richard A.; Drummond, James E.; and Mondelli, Alfred A., 4,349,359, Cl. 55-151.000.
Ducker, William L., to Wind Engineering Corporation. Adjustable vane windmills. 4,349,315, Cl. 416-1.000.
Dudley, Betty J., deceased: *See—*
Williams, Joel L.; Dudley, Betty J., deceased; and Dudley, Kenneth H., executor, 4,349,467, Cl. 525-54.200.
Dudley, Kenneth H., executor: *See—*
Williams, Joel L.; Dudley, Betty J., deceased; and Dudley, Kenneth H., executor, 4,349,467, Cl. 525-54.200.
Dudzik, Winfried. Automatic labeling apparatus. 4,349,405, Cl. 156-358.000.
Duley, Walter W.: *See—*
Cashwell, Ernest; Grollimund, Everett C.; Duley, Walter W.; Lilly, A. Clifton, Jr.; Claflin, Warren E.; Stultz, Edward B.; and Martin, Peter, 4,349,719, Cl. 219-121.0LK.
Dumenil, Claude G.; and Dumenil, Louis P. Automatic base seal. 4,348,836, Cl. 49-311.000.
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Dumenil, Claude G.; and Dumenil, Louis P., 4,348,836, Cl. 49-311.000.
Dumont, Antonio J.; and Theriault, Mario. Bale untying machine. 4,348,801, Cl. 29-564.300.
Dunbar, Joseph E., to Dow Chemical Company, The. 5-Substituted-benzoxathiol-2-ones. 4,349,685, Cl. 549-33.000.
Dunn, Charles S.; and Hohman, Charles M., to Owens-Corning Fiberglas Corporation. Liquid cooled skimmer. 4,349,376, Cl. 65-345.000.
Dunn, Wendell E., Jr. Process for treating the gas stream from an aluminum value chlorination process. 4,349,516, Cl. 423-111.000.
Du Pont de Nemours, E. I., and Company: *See—*
Cyr, Clifford R.; and Hagan, Nancy C., 4,349,620, Cl. 430-259.000.
Krespan, Carl G., 4,349,650, Cl. 526-243.000.
Maloney, Daniel E., 4,349,422, Cl. 204-98.000.
Duraplug Electricals Limited: *See—*
Akehurst, Douglas J., 4,349,814, Cl. 340-679.000.
Durr, Dieter; Rohr, Otto; Pissiotas, Georg; and Bohner, Beat, to Ciba-Geigy Corporation. Phenoxyphenylthioalkanecarboxylic acid amides and their use as herbicides and plant growth regulants. 4,349,377, Cl. 71-98.000.
Dynascan Corporation: *See—*
Goldstein, Richard; and Schornack, Louis W., 4,349,748, Cl. 307-132.00E.
E.G.O. Electro-Gerate Blanc und Fischer: *See—*
Gossler, Gerhard, 4,349,726, Cl. 219-511.000.
E M I Limited: *See—*
Johnston, Samuel J. B., 4,349,499, Cl. 264-107.000.
E. R. Squibb & Sons, Inc.: *See—*
Morcos, Nabil A.; Haney, Thomas A.; and Wedeking, Paul W., 4,349,529, Cl. 424-1.000.
Earley, James A.: *See—*
Eldred, John W.; Legg, James B.; and Earley, James A., 4,349,101, Cl. 198-851.000.
Eastman Kodak Company: *See—*
Davis, Burns; Gray, Theodore F.; and Musser, Harry R., 4,349,469, Cl. 524-765.000.
Howe, Dennis G., 4,349,901, Cl. 369-45.000.
Meyer, James W.; and Mooney, John E., 4,349,259, Cl. 354-135.000.
Ebert, Michael: *See—*
Reick, Franklin G., 4,349,444, Cl. 252-16.000.
EC Erdolchemie GmbH: *See—*
Brandt, Hans-Walter; Steude, Heinrich; Bruns, Ludwig; and Kohler, Hans-Dieter, 4,349,416, Cl. 203-19.000.
Eckhardt, Wolfgang: *See—*
Hubele, Adolf; Kunz, Walter; and Eckhardt, Wolfgang, 4,349,550, Cl. 424-250.000.
Economopoulos, Marios: *See—*
Paulus, Philippe; and Economopoulos, Marios, 4,349,393, Cl. 148-142.000.
Edanami, Kenichi: *See—*
Yamada, Masahide; Edanami, Kenichi; and Kuroda, Toshio, 4,349,546, Cl. 424-180.000.
Eden, Robert D. Intrauterine catheter. 4,349,033, Cl. 128-660.000.
Edgar Pickering (Blackburn) Ltd.: *See—*
Bradshaw, William, 4,348,817, Cl. 34-75.000.
Edstrom, Lars G., to Malmohus Invest AB. Module for picking, transportation and depositing of sheeted or folded material. 4,349,189, Cl. 271-251.000.
Efimov, Vyacheslav T.; Nazarian, Miron M.; Kolyada, Vladimir A.; Mataev, Arkady R.; Shamsha, Ljudmila F.; and Axenko, Alexandr A. Apparatus for electrochemical purification of contaminated liquids. 4,349,430, Cl. 204-302.000.
Efuti Giken Co.: *See—*
Kawai, Tsutomu, 4,349,852, Cl. 360-137.000.
Egger, Robert S. Home roof gutter sweep. 4,349,039, Cl. 134-167.00C.
Egorov, Vitaly Y.: *See—*
Lysanov, Vladislav S.; Digonsky, Viktor V.; Feldgun, Leon I.; Davidenko, Valery M.; Novikov, Nikolai V.; Borimsky, Alexandr I.; Shulzhenko, Alexandr A.; Yakimenko, Valerian D.; Dovgal, Eduard Y.; Egorov, Vitaly Y.; Rovsha, Vyacheslav S.; Prikhna, Alexei I.; and Sokolov, Alexandr N., 4,349,517, Cl. 423-290.000.
Eickmann, Karl. Radial piston machine with free—floating piston and piston—shoe assemblies. 4,348,946, Cl. 91-489.000.
Eigen, Edward; and Brachman, Dina I., to Colgate-Palmolive Company. Dentifrice composition. 4,349,534, Cl. 424-52.000.
Eisenberg, Bernard C., to Solbern Corp. Method and apparatus for filling containers with liquid. 4,349,053, Cl. 141-1.000.
Eklund, Henrik J., to Black Clawson Company, The. Cellulosic fiber insulation and process of preparation. 4,349,413, Cl. 162-23.000.
Eldred Company, The: *See—*
Eldred, John W.; Legg, James B.; and Earley, James A., 4,349,101, Cl. 198-851.000.
Eldred, John W.; Legg, James B.; and Earley, James A., to Eldred Company, The. Conveyor of endless chain type with eccentric arrangement to overcome chordal action. 4,349,101, Cl. 198-851.000.
Elevator GmbH: *See—*
Torenius, Pekka; and Suur-Askola, Seppo, 4,349,858, Cl. 361-181.000.
Elkem A/S: *See—*
Espedalen, Kare, 4,349,060, Cl. 152-172.000.
Ellersick, Russell. Articulate radiant heater module. 4,349,724, Cl. 219-347.000.
Ellis, Brian A. J. Motion transfer apparatus for use in self steering apparatus for boats. 4,348,973, Cl. 114-144.00C.
Ellis, Edric: *See—*
Owen, Harry; and Ellis, Edric, 4,349,634, Cl. 501-13.000.
Ellis, Willard H.; Haubold, Axel D.; Slivenko, Victor; and Bokros, Jack C., to Carbomedics, Inc. Radio-opaque markers for pyrolytic carbon prosthetic members. 4,349,498, Cl. 264-81.000.
Elter, Claus: *See—*
Schoening, Josef; Elter, Claus; and Schmitt, Hermann, 4,349,507, Cl. 376-230.000.
Eltra Corporation: *See—*
Strader, Charles J.; and Walle, Richard V., 4,348,840, Cl. 52-180.000.
Emanuel, Ervin M. Apparatus and method for testing the performance of electrical machines. 4,348,892, Cl. 73-116.000.
Emerson, Reginald S.; and Lovelock, John E., to Leslie Hartridge Limited. Fuel quantity measuring apparatus. 4,348,894, Cl. 73-119.00A.
Emmons, Albert H.: *See—*
Renga, James M.; and Emmons, Albert H., 4,349,482, Cl. 549-518.000.
Emtage, John S.: *See—*
Carey, Norman H.; Emtage, John S.; Tacon, William C. A.; and Hallewell, Robert A., 4,349,629, Cl. 435-172.000.
Endo, Kiichi: *See—*
Noguchi, Tatsuhiko; Kurita, Ryuichi; Nemoto, Ken; and Endo, Kiichi, 4,349,447, Cl. 252-117.000.
English, Martin; Pym, David P.; and Dawson, Lindsay G., to Kins Developments Limited. Fermentation process for the manufacture of an organic compound. 4,349,628, Cl. 435-161.000.
Enoki, Takahiro: *See—*
Kuramoto, Kikuzo; and Enoki, Takahiro, 4,348,790, Cl. 24-211.00P.
Environmental Electronics Corporation: *See—*
Owen, Charles B., 4,349,511, Cl. 422-186.070.
Eny, Nicholas R., to Koval, Stephen F. Roof bolt tension head and method of use. 4,349,299, Cl. 405-261.000.
Equipements Automobiles Marchal: *See—*
Fournier, Gerard R., 4,348,782, Cl. 15-250.320.
Erwin, John R., to Garrett Corporation, The. Compressor diffuser and method. 4,349,314, Cl. 415-181.000.
Escaron, Pierre C.; and Hoppe, Joachim A., to Schlumberger Technology Corporation. Method and apparatus for conducting logging or perforating operations in a borehole. 4,349,072, Cl. 166-250.000.
Esmond, William G. Capillary tube exchange device. 4,349,440, Cl. 210-321.100.
Espedalen, Kare, to Elkem A/S. Means for improving the surface grip of a tire of a vehicle and a method for manufacturing such means. 4,349,060, Cl. 152-172.000.
Essex Group, Inc.: *See—*
Stein, John C.; and Hutchison, Donald W., 4,348,870, Cl. 62-140.000.
Etablissements Valois: *See—*
Busselet, Jean-Claude G., 4,349,135, Cl. 222-394.000.
Etat Francais as represented by the Delegue General pour l'Armement: *See—*
Charles, Joel M.; and Toscano, Robert J., 4,349,180, Cl. 254-277.000.

Ethyl Products Company: *See*—
Luenser, Werner R., 4,349,116, Cl. 215-330.000.
Etoh, Yukihiro: *See*—
Tanaka, Toshiaki; and Etoh, Yukihiro, 4,348,994, Cl. 123-198.00F.
Etschenberg, Eugen: *See*—
Jacobi, Haireddin; Opitz, Wolfgang; and Etschenberg, Eugen, 4,349,543, Cl. 424-177.000.
Etzold, Karl-Friedrich: *See*—
Valachovic, John; Alphonse, Gerard A.; Reisner, John H.; and Etzold, Karl-Friedrich, 4,349,902, Cl. 369-132.000.
European Atomic Energy Community (EURATOM): *See*—
Di Piazza, Learco, 4,349,716, Cl. 219-69.00E.
Europtool Trust: *See*—
Arabian, Sandro, 4,349,131, Cl. 222-135.000.
Evans, Randall G., to Ford Aerospace & Communications Corp. Bit synchronous switching system for space diversity operation. 4,349,914, Cl. 375-40.000.
Everett, Nicholas W., to Sussman, Richard; and Everett, Wynne. Garment pressing machines. 4,349,137, Cl. 223-73.000.
Everett, Wynne: *See*—
Everett, Nicholas W., 4,349,137, Cl. 223-73.000.
Evers, Jack R., to Developak Corporation. Tube and pouch forming mandrel assembly. 4,349,344, Cl. 493-11.000.
Everts & Van der Weyden Exploitatiemaatschappij: *See*—
Lubbers, Marius H., 4,349,150, Cl. 238-265.000.
Eves, William J.; and Lazaro, Luis J., Jr., to Boeing Company, The. Selective contact crimper. 4,348,806, Cl. 29-863.000.
Ewig, John F., to Parker Manufacturing Co. Electric stapler and driver assembly therefor. 4,349,143, Cl. 227-131.000.
Exide Corporation: *See*—
Werth, John, 4,349,614, Cl. 429-50.000.
Exxon Research & Engineering Co.: *See*—
Kwon, Yiduk; and Lawson, Paul, 4,349,775, Cl. 320-35.000.
Eyden, Everett A. Method for forming a concrete deck. 4,349,491, Cl. 264-35.000.
Facit Aktiebolag: *See*—
Andersson, Leif H., 4,349,284, Cl. 400-320.000.
FAD Company, Inc.: *See*—
Scott, David F., 4,349,202, Cl. 273-422.000.
Faith, Thomas J., Jr., to RCA Corporation. Monitor for oxygen concentration in aluminum-based films. 4,348,886, Cl. 73-19.000.
Faller, Rudolph A., to Champion International Corporation. Composite paperboard tray. 4,349,124, Cl. 220-453.000.
Fallon, Merton R.; and Clements, Thomas W., to Draft Systems, Inc. Safety pressure reducing regulator. 4,349,136, Cl. 222-396.000.
Fan, Albert K.: *See*—
Long, Robert A.; and Fan, Albert K., 4,349,518, Cl. 423-308.000.
Fanning, William J., to Western Electric Company, Inc. Device for receiving and packaging a strip of electrical components. 4,349,162, Cl. 242-54.00R.
Farncomb, Robert F.: *See*—
Mueller, Kurt F.; Chang, Marguerite S.; Farncomb, Robert F.; and Malotky, Lyle O., 4,349,396, Cl. 149-19.300.
Farooq, Saleem: *See*—
Ackermann, Peter; Drabek, Jozef; Farooq, Saleem; Gsell, Laurenz; Kristiansen, Odd; and Wehrli, Rudolf, 4,349,567, Cl. 424-305.000.
Farque, C. Anthony, to DFH, Inc. Polarity matching apparatus for jumper cables. 4,349,774, Cl. 320-25.000.
FBC Limited: *See*—
Cliff, Geoffrey R.; Hunt, Russell G.; and Percival, Albert, 4,349,378, Cl. 11-103.000.
Federico, Joseph; and Waaben, Sigurd G., to Bell Telephone Laboratories, Incorporated. DC-to-DC Converters utilizing FET devices. 4,349,776, Cl. 323-222.000.
Fee, Donald R.: *See*—
Blocksome, Roderick K.; Hornbeck, Sherman J.; and Fee, Donald R., 4,349,799, Cl. 333-246.000.
Feldgun, Leon I.: *See*—
Lysanov, Vladislav S.; Digonsky, Viktor V.; Feldgun, Leon I.; Davidenko, Valery M.; Novikov, Nikolai V.; Borimsky, Alexandr I.; Shulzhenko, Alexandr A.; Yakimenko, Valerian D.; Dovgal, Eduard Y.; Egorov, Vitaly Y.; Rovsha, Vyacheslav S.; Prikhna, Alexei I.; and Sokolov, Alexandr N., 4,349,517, Cl. 423-290.000.
Feller, Murray F., to Wilgood Corporation. Acoustic flow sensors. 4,348,906, Cl. 73-861.770.
Felten, Gilbert A.: *See*—
Stalter, Joseph F.; and Felten, Gilbert A., 4,349,406, Cl. 156-416.000.
Fenamec (Australia) Pty. Ltd.: *See*—
Vickers, Derek; and Waterhouse, John C., 4,349,114, Cl. 211-151.000.
Ferguson, Jesse T., Jr., to Lockheed Corporation. Pallet latching mechanism. 4,349,302, Cl. 410-69.000.
Ferro Corporation: *See*—
Brueggemann, Walter H.; and Brenner, John A., 4,349,601, Cl. 428-323.000.
Fiber Industries, Inc.: *See*—
Blackmon, Lawrence E.; Dees, John R.; Kelly, Darrell A.; Mowe, Wayne T.; and Yu, Jing-peir, 4,349,604, Cl. 428-370.000.
Fichtel & Sachs AG: *See*—
Schwerdhofer, Hans-Joachim, 4,349,342, Cl. 474-80.000.
Fidia S.p.A.: *See*—
della Valle, Francesco, 4,349,566, Cl. 424-281.000.
Fielden, John S.: *See*—
Peddie, Robert A.; and Fielden, John S., 4,349,879, Cl. 364-492.000.
Figura, Ilona W.: *See*—
Nudel, Ron; Janauer, Gilbert E.; Schrier, Eugene E.; and Figura, Ilona W., 4,349,646, Cl. 525-256.000.
Fijitsu Limited: *See*—
Shirato, Takehide, 4,348,802, Cl. 29-571.000.
Fine, Jerome; and Harrington, Gene N., to Cleveland Plastics of Tennessee, Inc. Production of synthetic leather. 4,349,597, Cl. 428-95.000.
Finike Italiana Marposs, S.p.A.: *See*—
Possati, Mario; Golinelli, Guido; and Selleri, Narciso, 4,348,814, Cl. 33-178.00E.
Fink, Anton, to Metrology Systems Corp. Fluid actuated chuck. 4,349,207, Cl. 279-4.000.
Finney, Cecil H., to Armstrong Cork Company. Automatic transmission shift locking device. 4,349,089, Cl. 192-4.00A.
Firestone Tire & Rubber Company, The: *See*—
Pilarski, Regis V., 4,349,216, Cl. 280-807.000.
Fischbeck, Kenneth H.; Schnarr, Marcus M.; and Paraskevopoulos, Demetris F., to Xerox Corporation. Method and apparatus for oscillating an array of marking elements. 4,349,828, Cl. 346-1.100.
Fish, David W., to Dresser Industries, Inc. Cement retainer and setting tool assembly. 4,349,071, Cl. 166-124.000.
Fitch, Richard A.; Drummond, James E.; and Mondelli, Alfred A., to Maxwell Laboratories, Inc. Electrostatic precipitator apparatus having an improved ion generating means. 4,349,359, Cl. 55-151.000.
Fitoussi, Richard; Lours, Sylvie; and Musikas, Claude, to Commissariat a l'Energie Atomique. Process for the determination of uranium (VI) or dialkyl dithiophosphoric acid present in an organic solvent. 4,349,350, Cl. 23-230.00R.
Flanigen, Edith M., to Union Carbide Corporation. Acetylene storage vessel. 4,349,463, Cl. 252-457.000.
Flatley, Doris W.; and Hsu, Sheng T., to RCA Corporation. Process for tapering openings in ternary glass coatings. 4,349,584, Cl. 427-85.000.
Fleischer, Donald W.: *See*—
Asmundsson, Einar; Hart, Robert P.; and Fleischer, Donald W., 4,349,882, Cl. 364-509.000.
Flesch, Wilhelm, to Davy International Aktiengesellschaft. Furnace for gasifying granular fuels. 4,349,354, Cl. 48-77.000.
Flexi-Group Inc., The: *See*—
Bromberg, Howard M., 4,349,346, Cl. 493-325.000.
Flir Systems, Inc.: *See*—
Laakmann, Katherine D.; and Laakmann, Peter, 4,349,843, Cl. 358-206.000.
Floter, Hans-Joachim, to Claudius Peters AG. Furnace installation including fuel milling and burnt product cooling and method of operating same. 4,349,331, Cl. 432-14.000.
Flurry, Gregory A.; Krieg, Michael L.; and Phillips, David W., to International Business Machines Corporation. Bar code with alignment mark. 4,349,742, Cl. 250-568.000.
Flurry, Gregory A.: *See*—
Bobart, Kevin L.; and Flurry, Gregory A., 4,349,741, Cl. 250-568.000.
Fohl, Artur, to REPA Feinstanzwerk GmbH. Deflection fitting for a safety belt. 4,349,217, Cl. 280-808.000.
Fonio, Carlo, to Rockwell-Rimoldi, S.p.A. Apparatus for loading web supply rolls into folding machines. 4,349,306, Cl. 414-684.000.
Fontana, Frank J., to Stewart-Warner Corporation. Swivel type caster with seal and lubrication ring. 4,348,784, Cl. 16-36.000.
Forbriger, Arthur W., Jr., to Tressa, Inc. Permanent wave neutralizer. 4,349,537, Cl. 424-71.000.
Ford Aerospace & Communications Corp.: *See*—
Evans, Randall G., 4,349,914, Cl. 375-40.000.
Ford Motor Company: *See*—
Daniel, Roger P., 4,349,339, Cl. 434-274.000.
Forman, Ralph: *See*—
Sovey, James S.; Forman, Ralph; Curren, Arthur N.; and Wintucky, Edwin G., 4,349,424, Cl. 204-192.00E.
Forte, Luciano, to Reliance Electric Company. Magnetic couple drive circuit for power switching device. 4,349,752, Cl. 307-254.000.
Foster, Glenn B.; and Post, John E., to Carrier Corporation. Automatic dilution control for absorption refrigeration. 4,348,868, Cl. 62-101.000.
Foster, Robert D.; and Weeden, Frank G. Apparatus for manufacturing articles by pressing and sintering. 4,349,326, Cl. 425-405.00R.
Foster, Stephen R.: *See*—
Akkerman, Neil H.; and Foster, Stephen R., 4,349,175, Cl. 251-31.000.
Fournier, Gerard R., to Equipements Automobiles Marchal. Windscreen wiper comprising an arm with an attached end fitting, in particular for motor vehicles. 4,348,782, Cl. 15-250.320.
Frank, Georg; and Wehling, Klaus, to Bayer Aktiengesellschaft. Reagent for the determination of haemoglobin. 4,349,351, Cl. 23-230.00B.
Franklin Institute, The: *See*—
Pytlewski, Louis L.; and Krevitz, Kenneth, 4,349,380, Cl. 75-0.50A.
Franklin, Joseph E.: *See*—
Demianczuk, Dionisyj; McLean, Gregory J.; and Franklin, Joseph E., 4,348,800, Cl. 29-527.700.
Franks, Larrabee: *See*—
Harvey, Francis K.; Franks, Larrabee; and Ingraham, David L., 4,349,036, Cl. 131-240.00R.
Freed, Elisabeth H., deceased (by Freed, Meier E., executor); Wei, Peter H. L.; and McCaully, Ronald J., to American Home Products Corporation. Quinoalinyl esters of carbamimidothioic acids. 4,349,674, Cl. 544-353.000.
Freed, Meier E., executor: *See*—
Freed, Elisabeth H., deceased; Wei, Peter H. L.; and McCaully, Ronald J., 4,349,674, Cl. 544-353.000.

French, Kenneth; and Piorkow, Alfred, to GTE Products Corporation. Comparator mask for aperture measuring apparatus. 4,349,278, Cl. 356-394.000.

Friedli, Hans: *See—*
Gut, Edwin; Arnold, Erwin; Maugweiler, Gottfried; and Friedli, Hans, 4,349,231, Cl. 299-69.000.

Friedman, Bernard. Fryer oil treatment composition and method. 4,349,451, Cl. 252-190.000.

Friedman, Melvin; and Holmes, William A., to Polaroid Corporation. Camera having a selected pattern of pre-exposure for final exposure correction. 4,349,257, Cl. 354-126.000.

Friedrich Grohe Armaturenfabrik GmbH & Co.: *See—*
Humpert, Jurgen, 4,349,149, Cl. 236-12.00R.

Friedrich, Jan B.: *See—*
Wainwright, Mark S.; Marsden, Warwich L.; and Friedrich, Jan B., 4,349,464, Cl. 252-463.000.

Frohberger, Paul-Ernst: *See—*
Timmler, Helmut; Kramer, Wolfgang; Buchel, Karl H.; Brandes, Wilhelm; Frohberger, Paul-Ernst; and Homeyer, Bernhard, 4,349,556, Cl. 424-269.000.

Fryer, Rodney I.: *See—*
Walser, Armin; and Fryer, Rodney I., 4,349,475, Cl. 260-244.400.
Walser, Armin; and Fryer, Rodney I., 4,349,476, Cl. 260-244.400.
Walser, Armin; and Fryer, Rodney I., 4,349,477, Cl. 260-244.400.

Fuji Jukogyo Kabushiki Kaisha: *See—*
Morozumi, Takuro, 4,348,996, Cl. 123-440.000.

Fuji Kiko Co., Ltd.: *See—*
Matsuoka, Hideoki; and Kondo, Yoshinobu, 4,349,215, Cl. 280-804.000.

Fuji Photo Film Co., Ltd.: *See—*
Ikenoue, Shinpei; Mifune, Hiroyuki; and Fuseya, Yoshiharu, 4,349,623, Cl. 430-600.000.
Kawashiri, Kazuhiro; Mizobuchi, Yuzo; Higashi, Akio; Tamura, Hiroshi; Takeda, Keiji; and Nagata, Masayoshi, 4,349,617, Cl. 430-59.000.
Kondo, Syunichi; Nomaguchi, Hirotsugu; and Sato, Hideo, 4,349,618, Cl. 430-83.000.
Okishi, Yoshio, 4,348,954, Cl. 101-465.000.
Sawano, Yukio, 4,349,836, Cl. 358-93.000.
Yamamura, Nobuo; and Takeda, Motoaki, 4,349,455, Cl. 252-312.000.

Fujii, Tadashiro; Satoi, Shuzo; Muto, Naoki; and Hayashi, Mitsuo, to Toyo Jozo Kabushiki Kaisha. Aminoglycoside antibiotic G-367-2. 4,349,667, Cl. 536-13.900.

Fujikawa, Tetsuzo; and Tamba, Shinichi, to Kawasaki Jukogyo Kabushiki Kaisha. Exhaust system for a two-cycle engine. 4,348,862, Cl. 60-314.000.

Fujimoto, Tadaaki: *See—*
Takahata, Kazunori; Taniguchi, Katsuo; and Fujimoto, Tadaaki, 4,349,419, Cl. 203-70.000.

Fujimura, Akira: *See—*
Gotoh, Osamu; Otobe, Yutaka; Kawamoto, Michio; and Fujimura, Akira, 4,349,005, Cl. 123-571.000.
Gotoh, Osamu; Otobe, Yutaka; Kawamoto, Michio; and Fujimura, Akira, 4,349,006, Cl. 123-571.000.

Fujisawa Pharmaceutical Company, Ltd.: *See—*
Kitaura, Yoshihiko; Nakaguchi, Osamu; Hemmi, Keiji; Aratani, Matsuhiko; Takeno, Hidekazu; Okada, Satoshi; Tanaka, Hirokazu; Hashimoto, Masashi; Kuroda, Yoshio; Iguchi, Eiko; Kohsaka, Masanobu; Aoki, Hatsuo; and Imanaka, Hiroshi, 4,349,466, Cl. 260-112.50R.
Takaya, Takao; and Tozuka, Zenzaburo, 4,349,552, Cl. 424-251.000.

Fujita, Yukio: *See—*
Iwanami, Teruo; Takida, Hiroshi; and Fujita, Yukio, 4,349,644, Cl. 525-57.000.

Fujitsu Limited: *See—*
Isogai, Hideaki, 4,349,895, Cl. 365-230.000.
Sasaki, Nobuo, 4,348,803, Cl. 29-574.000.
Shibayama, Hikou; Ogawa, Tetsuya; Kosugi, Makoto; Hisatsugu, Tokushige; and Kobayashi, Koichi, 4,349,409, Cl. 156-643.000.
Takeda, Shiro; and Nakajima, Minoru, 4,349,609, Cl. 428-429.000.
Terakawa, Toshiaki, 4,349,819, Cl. 340-812.000.
Toyokura, Nobuo; Tokunaga, Hiroshi; Inoue, Shinichi; Ishikawa, Hajime; and Shinoda, Masaichi, 4,349,395, Cl. 148-187.000.

Fukasawa, Sigeru; and Mizokawa, Sadao, to Hitachi, Ltd. Interrupt control system. 4,349,872, Cl. 364-200.000.

Fukui, Kiyozumi, to Teijin Seiki Company Limited. Speed change device. 4,348,918, Cl. 74-805.000.

Fukukita, Hiroshi: *See—*
Tachita, Ryobun; Hayakawa, Yoshihiro; Irioka, Kazuyoshi; Fukukita, Hiroshi; Yano, Tsutomu; and Fukumoto, Akira, 4,348,902, Cl. 73-626.000.

Fukumoto, Akira: *See—*
Tachita, Ryobun; Hayakawa, Yoshihiro; Irioka, Kazuyoshi; Fukukita, Hiroshi; Yano, Tsutomu; and Fukumoto, Akira, 4,348,902, Cl. 73-626.000.

Fukushima, Hiroshi: *See—*
Ando, Hisashi; Soeno, Ko; Sakamoto, Hiroshi; Misumi, Akira; and Fukushima, Hiroshi, 4,349,766, Cl. 313-346.00R.

Fulchiron, Noel; and Naillon, Bernard, to "Thomson-Brandt". Safety release device for a load suspended from an aircraft for transport and charge equipped with such a device. 4,348,936, Cl. 89-1.50D.

Fulmer, Glenn E., to W. R. Grace & Co. Method of making a fire-retardant product having a foamed lore and a fire-retardant protective layer. 4,349,494, Cl. 264-45.300.

Funai Electric Co., Ltd.: *See—*
Kawai, Tsutomu, 4,349,852, Cl. 360-137.000.

Furbish, William B.; and Baker, Roscoe E., to Ray-O-Vac Corporation. Apparatus for continuously feeding powders. 4,349,323, Cl. 425-147.000.

Furihata, Makoto: *See—*
Tonomura, Kenichi; Takahashi, Kyoichi; and Furihata, Makoto, 4,349,834, Cl. 358-27.000.

Furuya, Takafumi: *See—*
Yaji, Saichi; Kitawaki, Kazuya; and Furuya, Takafumi, 4,349,052, Cl. 139-92.000.

Fuseya, Yoshiharu: *See—*
Ikenoue, Shinpei; Mifune, Hiroyuki; and Fuseya, Yoshiharu, 4,349,623, Cl. 430-600.000.

G.D. Searle & Co.: *See—*
Carey, Norman H.; Emtage, John S.; Tacon, William C. A.; and Hallewell, Robert A., 4,349,629, Cl. 435-172.000.
Chinn, Leland J., 4,349,474, Cl. 260-239.55C.

Gaget, Alain; and Juillot, Guy, to Gaget, Alain. Jet for the production of a vaporized idling mixture in an internal combustion engine. 4,349,489, Cl. 261-41.00D.

Gaia, Aldino J., to McGraw-Edison Company. Current limiting fuse having transverse parallel weak spots. 4,349,802, Cl. 337-159.000.

Gaia, Aldino J., to McGraw-Edison. Fuse assembly for a miniature plug-in fuse. 4,349,804, Cl. 337-198.000.

Gailey, Lynn: *See—*
Wollam, Carl A.; and Gailey, Lynn, 4,348,849, Cl. 52-545.000.

Gallitzendorfer, Rainer J. Wave form generator for sound formation in an electronic musical instrument. 4,348,929, Cl. 84-1.010.

Gallo, Luigi C., to Ampex Corporation. Digital data rate corrector and time base corrector. 4,349,832, Cl. 358-8.000.

Gamble, James E. Heated can rolls of high thermal efficiency. 4,348,819, Cl. 34-110.000.

Ganster, Charles A.; and Nelson, Gerald V., to Texaco Inc. Feedstock temperature control system. 4,349,884, Cl. 364-557.000.

Gardner, Frank H.; and Kittle, Carl E., to Deere & Company. Control mechanism with adjustable floating cam. 4,348,917, Cl. 74-568.00R.

Garner, Robert; and Petitpierre, Jean C. Copying material employing fluoran color formers. 4,349,218, Cl. 282-27.500.

Garner, Robert; and Whitehead, Michael J., to Giba-Geigy Corporation. Pyrrolidino and piperidino benz ring substituted phthalides. 4,349,679, Cl. 546-196.000.

Garrett Corporation, The: *See—*
Erwin, John R., 4,349,314, Cl. 415-181.000.

Gasc, Jean-Claude: *See—*
Gouin d'Ambrieres, Solange; Lutz, Andre; and Gasc, Jean-Claude, 4,349,545, Cl. 424-180.000.

Gastmeier, William J., to Unitron Industries Limited. Acoustical damping element and method of forming same. 4,349,082, Cl. 181-130.000.

Geary, Carl H., Jr., to Carrier Corporation. Apparatus for securing a wheel to a rotatable shaft of a turbomachine. 4,349,291, Cl. 403-15.000.

Gebr. Hofmann GmbH & Co. KG, Maschinenfabrik: *See—*
Mueller, H. Richard, 4,348,885, Cl. 73-1.00B.

Gebrueder Loepfe AG: *See—*
Loepfe, Erich, 4,349,784, Cl. 328-138.000.

GEC Mechanical Handling Limited: *See—*
Barber, Norman R., 4,349,179, Cl. 254-270.000.

Geisthoff, Hubert, to Jean Walterscheid GmbH. Device for coupling and uncoupling a universal joint shaft. 4,349,092, Cl. 192-67.00R.

Gelius, Siegfried, to Optische Werke G. Rodenstock. Process and apparatus for the dynamic or static perimetry of the human eye. 4,349,250, Cl. 351-32.000.

General Electric Company: *See—*
Bain, Benjamin H., Jr., 4,349,240, Cl. 339-103.00R.
Brunelle, Daniel J.; and Smith, William E., 4,349,486, Cl. 260-463.000.
Ching, Ta-Yen, 4,349,602, Cl. 428-331.000.
Ching, Ta-Yen, 4,349,607, Cl. 428-412.000.
Cline, Harvey E., 4,349,621, Cl. 430-311.000.
Costas, John P., 4,349,915, Cl. 375-40.000.
Gustafson, Ralph W., 4,349,807, Cl. 337-360.000.
Hallgren, John E., 4,349,485, Cl. 260-463.000.
Levinson, Lionel M., 4,349,496, Cl. 264-61.000.
Mark, Victor; and Hedges, Charles V., 4,349,658, Cl. 528-176.000.
Mundy, Joseph L.; Porter, Gilbert B., III; and Cipolla, Thomas M., 4,349,277, Cl. 356-376.000.
Steele, Douglas S., 4,349,274, Cl. 356-1.000.
Takekoshi, Tohru; and Webb, Jimmy L., 4,349,479, Cl. 260-326.00N.
Theroux, Jean P., 4,349,831, Cl. 357-74.000.
Tomson, James M., 4,348,791, Cl. 29-598.000.
Weiss, Herbert W., 4,349,772, Cl. 318-799.000.

General Foods Corporation: *See—*
Stefanucci, Arthur; and Protomastro, Michael G., 4,349,573, Cl. 426-388.000.

General Instrument Corporation: *See—*
Sapitowicz, Thomas P.; and Meloni, Robert A., 4,349,283, Cl. 400-124.000.

General Kinematics Corporation: *See—*
Musschoot, Albert, 4,348,867, Cl. 62-64.000.

General Mills, Inc.: *See—*
Huston, Larry; Morrison, Clifton H.; Rasmussen, Glenn; and Tsuchiya, Takuzo, 4,348,923, Cl. 83-23.000.

General Motors Corporation: *See*—
Micheli, Adolph L.; and Kuo, Wey-Chaung, 4,349,709, Cl. 200-19.00R.
General Signal Corporation: *See*—
Molnar, John P., 4,349,866, Cl. 362-263.000.
Zahid, Abduz, 4,348,792, Cl. 29-157.00R.
Genthe, James E.: *See*—
Macaluso, Paul J.; and Genthe, James E., 4,349,132, Cl. 222-156.000.
Gernelle, Francois, to Compagnie Internationale pour l'Informatique CII Honeywell Bull. Printer having acoustic head locating system. 4,349,285, Cl. 400-320.000.
Geschka, Hugo W.; and Beitecke, Bernd, to Luk Lamellen und Kupplungsbau GmbH. Automatic towel dispenser. 4,348,877, Cl. 68-13.00R.
Gestetner Manufacturing Limited: *See*—
Daintrey, Joseph W., 4,348,979, Cl. 118-688.000.
Geurts, Martinus F. A. M., to U.S. Philips Corporation. Switching circuit comprising a plurality of input channels and an output channel. 4,349,750, Cl. 307-243.000.
Gewerkschaft Eisenhutte Westfalia: *See*—
Becker, Kunibert; and Beyer, Herbert, 4,349,22 , Cl. 299-32.000.
Geyer, Robert A.: *See*—
Swanson, Albert S.; and Geyer, Robert A., 4,348,783, Cl. 15-320.000.
Giba-Geigy Corporation: *See*—
Garner, Robert; and Whitehead, Michael J., 4,349,679, Cl. 546-196.000.
Gibbons, Ralph D., to Lansing Bagnall Limited. Method for the production of wiring looms. 4,348,805, Cl. 29-857.000.
Gibson, James D. M.: *See*—
Masri, Merle S.; Robinson, Brian; and Gibson, James D. M., 4,349,347, Cl. 8-139.000.
Giese, Gene E. Retirement elongation indicator for mast raising lines. 4,348,907, Cl. 73-862.390.
Giesecke, Heinz: *See*—
Raue, Roderich; and Giesecke, Heinz, 4,349,670, Cl. 542-417.000.
Gilbert, David J.; and Hollingsbee, Derek A., to Smith and Nephew Associated Companies Limited. Pharmaceutical compositions. 4,349,563, Cl. 424-274.000.
Gilbert, Donald R. Diver tow compressor unit. 4,348,976, Cl. 114-270.000.
Gilden, Morton, to Maryland Cup Corporation. Method for manufacturing two-piece containers from filled thermoplastic sheet material. 4,349,400, Cl. 156-217.000.
Gillis, Philip W., to Bell Telephone Laboratories, Incorporated. Digital multifrequency signal generator. 4,349,704, Cl. 179-84.0VF.
Gillone, Walter: *See*—
Bovio, Michele; Barbero, Aquilino; Gillone, Walter; and Berruti, Pierangelo, 4,349,829, Cl. 346-140.00R.
Gillum, Richard R., to ARES, Inc. Two stage shell feeding apparatus with shell feeding path control. 4,348,938, Cl. 89-33.0BA.
Glassman, Stephen M.; Kia, James D.; and Ryding, Paul A., to KRG, Inc. Livestock splint. 4,349,016, Cl. 128-87.00R.
Glock, Johann: *See*—
Knotik, Karl; Leichter, Peter; and Glock, Johann, 4,349,412, Cl. 159-47.0WL.
Glomski, Gunter: *See*—
Beerwald, Hans; Bohm, Gunter; and Glomski, Gunter, 4,349,582, Cl. 427-38.000.
Gloor, Hans: *See*—
Schmid, Markus; and Gloor, Hans, 4,349,066, Cl. 164-453.000.
Goedert, Ferdinand: *See*—
Schleimer, Francois; Henrion, Romain; Goedert, Ferdinand; and Lorang, Lucien, 4,349,382, Cl. 75-60.000.
Goeke, George L.: *See*—
Jorgensen, Robert J.; Goeke, George L.; and Karol, Frederick J., 4,349,648, Cl. 526-125.000.
Goeuriot, Patrice M. V.: *See*—
Thevenot, Francois H. J.; Goeuriot, Patrice M. V.; Driver, Julian H.; and Lebrun, Jean-Paul R., 4,348,980, Cl. 118-717.000.
Gold, Elijah H.; and Chang, Wei K., to Schering Corporation. (S)-8(1-Adamantanecarbonyloxy)-7-chloro-3-methyl-1-phenyl-2,3,4,5-tetrahydro-1H-3-benzazepine. 4,349,472, Cl. 260-239.0BB.
Goldberg, Arthur H.: *See*—
Mlodozeniec, Arthur R.; and Goldberg, Arthur H., 4,349,531, Cl. 424-27.000.
Goldmann, Siegfried, to Bayer Aktiengesellschaft. 4,4-Disubstituted spiro-1,4-dihydropyridines and a process for their production. 4,349,675, Cl. 546-17.000.
Goldstein, Richard; and Schornack, Louis W., to Dynascan Corporation. Timer and power control system. 4,349,748, Cl. 307-132.00E.
Golinelli, Guido: *See*—
Possati, Mario; Golinelli, Guido; and Selleri, Narciso, 4,348,814, Cl. 33-178.00E.
Gooch, Kendrick J., to USM Corporation. Cross axis mechanism. 4,348,952, Cl. 100-158.00R.
Goodnow, Warren H.; and Payne, John R., to Kaiser Aluminum & Chemical Corporation. Aluminum reduction cell electrode. 4,349,427, Cl. 204-243.00R.
Goodyear Tire & Rubber Company, The: *See*—
Stalter, Joseph F.; and Felten, Gilbert A., 4,349,406, Cl. 156-416.000.
Stan, Aurel V., 4,348,898, Cl. 374-124.000.
Goor, Gustaaf; and Kunkel, Wolfgang, to Degussa Aktiengesellschaft. Process for the production of hydrogen peroxide. 4,349,526, Cl. 423-588.000.
Gordon, Bruce E., to Raytheon Company. Digital memory system. 4,349,918, Cl. 455-20.000.
Gossler, Gerhard, to E.G.O. Electro-Gerate Blanc und Fischer. Control device for electric heating apparatus. 4,349,726, Cl. 219-511.000.
Goto, Mikio: *See*—
Yoshikawa, Yoshio; Nawata, Takanari; Goto, Mikio; and Kondo, Yukio, 4,349,509, Cl. 422-57.000.
Goto, Toshiki: *See*—
Asano, Hiroshi; Shimamune, Takayuki; Goto, Toshiki; Nitta, Hideo; and Hosonuma, Masashi, 4,349,581, Cl. 427-34.000.
Gotoh, Hiroshi: *See*—
Takahashi, Fumitaka; and Gotoh, Hiroshi, 4,348,900, Cl. 73-505.000.
Gotoh, Osamu; Otobe, Yutaka; Kawamoto, Michio; and Fujimura, Akira, to Honda Giken Kogyo Kabushiki Kaisha. Suction mixture control system for vehicle engines. 4,349,005, Cl. 123-571.000.
Gotoh, Osamu; Otobe, Yutaka; Kawamoto, Michio; and Fujimura, Akira, to Honda Giken Kogyo Kabushiki Kaisha. Suction mixture control system for vehicle engines. 4,349,006, Cl. 123-571.000.
Gouin d'Ambrieres, Solange; Lutz, Andre; and Gasc, Jean-Claude, to Roussel Uclaf. Novel erythromycin a derivatives. 4,349,545, Cl. 424-180.000.
Goumondy, Jean-Pierre: *See*—
Brugere, Christiane; Goumondy, Jean-Pierre; Morel, Jean-Marie; and Zellner, Edmond, 4,349,453, Cl. 252-627.000.
Graeff, Norwood C.: *See*—
Cobaugh, Robert F.; and Graeff, Norwood C., 4,349,237, Cl. 339-65.000.
Grant, Edward J., Jr.; Scott, William H.; and Stipanuk, John M., to Sunbeam Corporation. Modular hand mixer. 4,349,758, Cl. 310-68.00A.
Grassmann, Peter; Dietz, Kurt; and Meinel, Friedrich, to Siemens Aktiengesellschaft. Apparatus for displaying fluoroscopic tomographic images of the body. 4,349,740, Cl. 378-25.000.
Gray, Joseph E.: *See*—
Schwan, Thomas J.; Burch, Homer A.; and Gray, Joseph E., 4,349,677, Cl. 546-142.000.
Gray, Theodore F.: *See*—
Davis, Burns; Gray, Theodore F.; and Musser, Harry R., 4,349,469, Cl. 524-765.000.
Great Lakes Chemical Corporation: *See*—
Dentel, David A.; and Sanders, David C., 4,349,488, Cl. 260-465.00D.
Green, David T., to United States Surgical Corporation. Surgical stapling apparatus having self-contained pneumatic system for completing manually initiated motion sequence. 4,349,028, Cl. 128-305.000.
Griesser, Walter, to Zahnradfabrik Friedrichshafen AG. Clutch assembly for gear transmission. 4,349,090, Cl. 192-53.00G.
Griffel, Gilbert W., Jr.: *See*—
Wright, Kenneth N.; and Griffel, Gilbert W., Jr., 4,349,578, Cl. 426-630.000.
Griggs, Allen L., to Minnesota Mining and Manufacturing Company. Powdered blend of epoxy resin and anhydride containing hindered nitrogen-containing compound. 4,349,645, Cl. 525-120.000.
Grimm, German. Arrangement for detecting disturbances influencing the network frequency in electric power supply systems and use of such arrangement in an adaptive automatic frequency control system for an electric power supply system. 4,349,878, Cl. 364-484.000.
Grimm, Thomas H.: *See*—
Smith, Jay, III; Schneider, Thomas G.; and Grimm, Thomas H., 4,349,196, Cl. 273-1.0GC.
Groen, Harm Jan: *See*—
Huisman, Hendrikus F.; and Groen, Harm Jan, 4,349,385, Cl. 106-37.000.
Grohmann, Andreas: *See*—
Moll, Hans-Georg; Grohmann, Andreas; Hasselbarth, Ulrich; and Marks, Helmuth, 4,349,441, Cl. 210-512.100.
Grollimund, Everett C.: *See*—
Cashwell, Ernest; Grollimund, Everett C.; Duley, Walter W.; Lilly, A. Clifton, Jr.; Claflin, Warren E.; Stultz, Edward B.; and Martin, Peter, 4,349,719, Cl. 219-121.0LK.
Gross, James R., to Abbott Laboratories. Epidural needle catheter and adapter. 4,349,023, Cl. 128-214.400.
Grossner, Horst; Weiger, Gunter; and Schwegler, Gunter, to Daimler-Benz Aktiengesellschaft. Frequency generator. 4,349,746, Cl. 307-106.000.
Groupement d'Interet Economique Valpron: *See*—
Segard, Emile-Pierre; and Lebeault, Jean-Michel, 4,349,570, Cl. 426-52.000.
Gsell, Laurenz: *See*—
Ackermann, Peter; Drabek, Jozef; Farooq, Saleem; Gsell, Laurenz; Kristiansen, Odd; and Wehrli, Rudolf, 4,349,567, Cl. 424-305.000.
GTE Automatic Electric Laboratories, Inc.: *See*—
Kwok, Sai W., 4,349,795, Cl. 333-176.000.
GTE Products Corporation: *See*—
French, Kenneth; and Piorkow, Alfred, 4,349,278, Cl. 356-394.000.
Long, Robert A.; and Fan, Albert K., 4,349,518, Cl. 423-308.000.
Guelden, Ronald H., to Bell Telephone Laboratories, Incorporated. Weatherproof electrical jack assembly. 4,349,236, Cl. 339-44.00M.
Guerineau, Abel A. J.: *See*—
Berlivet, Marc A.; and Guerineau, Abel A. J., 4,348,857, Cl. 56-192.000.

Guhne, Wieland: *See—*
Simm, Hans-Peter; Guhne, Wieland; and Hoffmann, Klaus, 4,349,206, Cl. 277-207.00R.

Guillard, Michel G.: *See—*
Bilet, Claude D.; Guillard, Michel G.; and Hedoin, Dominque A., 4,349,170, Cl. 246-63.000.

Gulf Research & Development Company: *See—*
Beach, David L.; and Zambelli, Adolfo, 4,349,483, Cl. 260-448.00A.

Gulich, Peter: *See—*
Carota, Martin; Slootz, Josef; Weiser, Klaus; Gulich, Peter; and Jovanovic, Milenko, 4,349,718, Cl. 219-78.010.

Gunter, Thomas G.; Zolnowsky, John E.; and Crudele, Lester M., to Motorola, Inc. Microprocessor interrupt processing. 4,349,873, Cl. 364-200.000.

Gunther, John E.: *See—*
Hoffman, William C.; Gunther, John E.; and Lichty, William R., 4,349,817, Cl. 340-784.000.

Gustafson, Ralph W., to General Electric Company. Heating and cooling thermostat with adjustable limits and methods of manufacturing and operating the thermostat. 4,349,807, Cl. 337-360.000.

Gustafsson, Berth U., to AB Bonnierforetagen. Helical gear machine with regulated outlet. 4,348,865, Cl. 60-493.000.

Gut, Edwin; Arnold, Erwin; Maugweiler, Gottfried; and Friedli, Hans, to Swiss Aluminium Ltd. Chisel alignment unit for a crust breaking facility. 4,349,231, Cl. 299-69.000.

Haga, Takahiro: *See—*
Yokomichi, Isao; Haga, Takahiro; Nagatani, Kuniaki; and Nakajima, Toshio, 4,349,681, Cl. 546-304.000.

Hagan, Nancy C.: *See—*
Cyr, Clifford R.; and Hagan, Nancy C., 4,349,620, Cl. 430-259.000.

Hagberg, Carl E., to Intermatch S.A. Body having through holes and a method for manufacturing said body. 4,348,830, Cl. 46-26.000.

Hager and Allison Corp.: *See—*
Allison, Clint, 4,348,948, Cl. 99-339.000.

Hagiwara, Taiken: *See—*
Ishii, Shoichi; Hagiwara, Taiken; and Shimanuki, Masanobu, 4,349,848, Cl. 360-66.000.

Halbach & Braun: *See—*
Braun, Ernst; Braun, Gert; and Wetzchewald, Karlheinz, 4,349,232, Cl. 299-92.000.

Hall, Hugh E., Jr., to Halliburton Company. Digital acoustic logging method and apparatus. 4,349,896, Cl. 367-26.000.

Haller, Albert H.: *See—*
Dinella, Donald; Haller, Albert H.; and Polakowski, Theodore D., Jr., 4,349,589, Cl. 427-359.000.

Haller, Ingo: *See—*
Boshagen, Horst; Buchel, Karl H.; Draber, Wilfried; Haller, Ingo; and Plempel, Manfred, 4,349,560, Cl. 424-273.00R.

Hallewell, Robert A.: *See—*
Carey, Norman H.; Emtage, John S.; Tacon, William C. A.; and Hallewell, Robert A., 4,349,629, Cl. 435-172.000.

Hallgren, John E., to General Electric Company. Catalytic aromatic carbonate process using manganese tetradentate redox co-catalysts. 4,349,485, Cl. 260-463.000.

Halliburton Company: *See—*
Hall, Hugh E., Jr., 4,349,896, Cl. 367-26.000.

Halvorsen, Sigbjorn T.: *See—*
Olsen, Asbjorn L.; and Halvorsen, Sigbjorn T., 4,349,390, Cl. 148-6.15R.

Hamada, Satosi: *See—*
Hiramatsu, Toru; Koseki, Teruo; Hamada, Satosi; and Sumida, Atsushi, 4,349,523, Cl. 423-447.400.

Hamburger, Herman; and Dillingham, Robert G., to Zokor Corporation. Tunnel boring machine. 4,349,230, Cl. 299-33.000.

Hamlyn, Maxwell C., to Allied Chemical Corporation. Continuous spin-draw polyester process. 4,349,501, Cl. 264-210.300.

Hanabata, Makoto: *See—*
Kato, Yasuyuki; Sugimoto, Hiroaki; and Hanabata, Makoto, 4,349,659, Cl. 528-193.000.

Hanamura, Shoji: *See—*
Ohba, Shinya; Hanamura, Shoji; Ozaki, Toshifumi; Kubo, Masaharu; Nakai, Masaaki; Takahashi, Kenji; Aoki, Masakazu; Takemoto, Iwao; Ando, Haruhisa; and Izawa, Ryuichi, 4,349,743, Cl. 250-578.000.

Handa, Mitsuaki: *See—*
Takeda, Yasuhisa; Matsuno, Takashi; Ohtaka, Mihoko; Mitsui, Hiroki; Kawaguchi, Tsutomu; Masuda, Hisako; Okazaki, Hiroshi; Handa, Mitsuaki; Sugawara, Yutaka; and Ogawa, Haruki, 4,349,541, Cl. 424-95.000.

Haney, Thomas A.: *See—*
Morcos, Nabil A.; Haney, Thomas A.; and Wedeking, Paul W., 4,349,529, Cl. 424-1.000.

Hanss, Maxime F. Apparatus and a process for determining the rheological properties of biological fluids. 4,348,890, Cl. 73-61.400.

Hapad, Inc.: *See—*
Crooks, David R., 4,348,837, Cl. 51-5.00R.

Hara, Hiroo; and Taguchi, Noboru, to Nippon Electric Co., Ltd. Gas laser tube compriaing a channel-shaped holder pair for compressively holding a brewster plate at plate corners. 4,349,908, Cl. 372-103.000.

Hara, Kazumasa: *See—*
Kasuga, Noboru; Hara, Kazumasa; and Koike, Mikio, 4,348,969, Cl. 112-184.000.

Harada, Kunihiro: *See—*
Kamoshida, Yoichi; Yoshihara, Toshiaki; Harita, Yoshiyuki; and Harada, Kunihiro, 4,349,619, Cl. 430-196.000.

Harder, Wolfgang: *See—*
Merger, Franz; Nestler, Gerhard; Towae, Friedrich; and Harder, Wolfgang, 4,349,484, Cl. 260-453.00P.

Hardwick, John P.; Pezet, Michael J.; Sarvestany, Asadollah A.; and Satharasinghe, Dayananda. Shredding machines. 4,349,159, Cl. 241-236.000.

Hardy, Kenneth D.: *See—*
Bentley, Peter H.; Hardy, Kenneth D.; and Milner, Peter H., 4,349,551, Cl. 424-250.000.

Harita, Yoshiyuki: *See—*
Kamoshida, Yoichi; Yoshihara, Toshiaki; Harita, Yoshiyuki; and Harada, Kunihiro, 4,349,619, Cl. 430-196.000.

Harrington, Edward R.: *See—*
Bolen, Charles E.; Harrington, Edward R.; Marzocchi, Alfred; and Roberts, Michael G., 4,349,590, Cl. 427-389.700.

Harrington, Gene N.: *See—*
Fine, Jerome; and Harrington, Gene N., 4,349,597, Cl. 428-95.000.

Harris, Albert; and Spector, George. Stop box peak light. 4,348,922, Cl. 81-180.00R.

Harris, David P. Garlic press. 4,348,950, Cl. 99-510.000.

Harris, Eleanor S., to United States of America, Navy. Around-a-mast quadrifilar microstrip antenna. 4,349,824, Cl. 343-700.0MS.

Hart, Arthur C., Jr.: *See—*
Aloisio, Charles J., Jr.; Blyler, Lee L., Jr.; Brockway, George S.; Hart, Arthur C., Jr.; and Taylor, Carl R., 4,349,587, Cl. 427-163.000.

Hart, Robert P.: *See—*
Asmundsson, Einar; Hart, Robert P.; and Fleischer, Donald W., 4,349,882, Cl. 364-509.000.

Hartman, Adrian R.; and Shackle, Peter W., to Bell Telephone Laboratories, Incorporated. Control circuitry using a pull-down transistor for high voltage solid-state switches. 4,349,751, Cl. 307-252.00A.

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Hartsog, Clarence E. Solar operated shutter. 4,349,011, Cl. 126-419.000.

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Hughes, Charles W.; Harvey, Keith W.; and Sonneborn, Walter G. O., 4,349,316, Cl. 416-104.000.

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Hashimoto, Hideaki: *See—*
Tsurunaga, Yasuaki; Abe, Masaru; Hashimoto, Hideaki; and Tsuzura, Junichi, 4,349,062, Cl. 152-356.00R.

Hashimoto, Masashi: *See—*
Kitaura, Yoshihiko; Nakaguchi, Osamu; Hemmi, Keiji; Aratani, Matsuhiko; Takeno, Hidekazu; Okada, Satoshi; Tanaka, Hirokazu; Hashimoto, Masashi; Kuroda, Yoshio; Iguchi, Eiko; Kohsaka, Masanobu; Aoki, Hatsuo; and Imanaka, Hiroshi, 4,349,466, Cl. 260-112.50R.

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Kobayashi, Kazufumi; and Hashimoto, Shigeru, 4,349,265, Cl. 354-286.000.

Haslbeck, Joseph, to Highland Mfg. Company, Ltd. Eye protector. 4,348,775, Cl. 2-452.000.

Hasselbarth, Ulrich: *See—*
Moll, Hans-Georg; Grohmann, Andreas; Hasselbarth, Ulrich; and Marks, Helmuth, 4,349,441, Cl. 210-512.100.

Hastings, Otis H. Transaction security system and modular transaction processing center. 4,348,966, Cl. 109-2.000.

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Tanaka, Yoshio; Nishikawa, Yasuhisa; and Hasumi, Ryoichi, 4,348,911, Cl. 74-10.330.

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Larson, Roger R.; and Hatfield, Efton E., 4,349,572, Cl. 426-335.000.

Haubold, Axel D.: *See—*
Ellis, Willard H.; Haubold, Axel D.; Slivenko, Victor; and Bokros, Jack C., 4,349,498, Cl. 264-81.000.

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Thamerus, Theobald, 4,349,096, Cl. 198-347.000.

Hauser, Allan H. Single flower stem cutter. 4,348,832, Cl. 47-1.00R.

Hausler, Kenneth J. Method of promoting suntan using a cream containing zinc and copper salts. 4,349,536, Cl. 424-59.000.

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Hayashida, Yoshihiro, to Tokico Ltd. Master cylinder. 4,348,866, Cl. 60-561.000.
Hayes, Paul R. Scented disposal bag. 4,349,104, Cl. 206-205.000.
Haynes, Anthony C.; and Unwin, Derek K., to Sussex Instruments Limited. Measuring sheet thickness. 4,348,889, Cl. 73-37.700.
Healey, William E.; and Heineman, Morse R., to W. E. Healey and Associates, Inc. Multiple detector alarm latch and release system. 4,349,812, Cl. 340-522.000.
Heckler & Koch GmbH: *See*—
Ketterer, Dieter; Jakubaschk, Horst; and Rommel, Emil, 4,348,941, Cl. 89-155.000.
Hedges, Charles V.: *See*—
Mark, Victor; and Hedges, Charles V., 4,349,658, Cl. 528-176.000.
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Bilet, Claude D.; Guillard, Michel G.; and Hedoin, Dominque A., 4,349,170, Cl. 246-63.000.
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Healey, William E.; and Heineman, Morse R., 4,349,812, Cl. 340-522.000.
Heino, Jorgen, to Procter & Gamble Company, The. Container for liquid with non-drip measuring cap closure. 4,349,056, Cl. 141-381.000.
Hellriegel, Walter, to Jenoptik Jena GmbH. High quality objective using air bearing. 4,349,244, Cl. 350-255.000.
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Shah, Hasmukh R.; Jones, Thaddeus M.; and Hemingway, Bruce R., 4,349,111, Cl. 209-534.000.
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Kitaura, Yoshihiko; Nakaguchi, Osamu; Hemmi, Keiji; Aratani, Matsuhiko; Takeno, Hidekazu; Okada, Satoshi; Tanaka, Hirokazu; Hashimoto, Masashi; Kuroda, Yoshio; Iguchi, Eiko; Kohsaka, Masanobu; Aoki, Hatsuo; and Imanaka, Hiroshi, 4,349,466, Cl. 260-112.50R.
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Cairns, Neil S.; and Hendershott, Loyd, 4,348,843, Cl. 52-167.000.
Henderson, John G. N., to RCA Corporation. Apparatus for automatically steering an electrically steerable television antenna. 4,349,840, Cl. 358-188.000.
Hendrix, Randle L. Loose material retainer strip. 4,349,596, Cl. 428-83.000.
Hendrix, Tony D.; and Tedeschi, Rinaldo R., to United Technologies Corporation. Relative compression of an asymmetric internal combustion engine. 4,348,893, Cl. 73-116.000.
Henning, Walter; and Illig, Heinz-Peter, to Zimmerman, Jos. Coil carrier with carrier elements extending parallel to its axis. 4,349,165, Cl. 242-118.110.
Henriksson, Stig R., to Atlas Copco Aktiebolag. Hydraulically operated impact motor. 4,349,075, Cl. 173-134.000.
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Schleimer, Francois; Henrion, Romain; Goedert, Ferdinand; and Lorang, Lucien, 4,349,382, Cl. 75-60.000.
Heppler, Fred A. Daily injection site guide assembly. 4,349,338, Cl. 434-262.000.
Hepworth, Paul S.; and Whitehouse, Martin G., to Plas Plugs Limited. Blade holders. 4,349,059, Cl. 145-33.00A.
Heraeus Quarzschmelze GmbH: *See*—
Schulke, Karl A., 4,349,203, Cl. 277-26.000.
Hercules Incorporated: *See*—
Maslanka, William W.; and Spence, Gavin G., 4,349,641, Cl. 524-458.000.
Hermann Berstorff Maschinenbau GmbH: *See*—
Brand, Wilhelm; and Baasner, Dietmar, 4,348,811, Cl. 33-125.00R.
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Muller, Wolfgang, 4,349,515, Cl. 423-58.000.
Herring, William T. Gang slat animal shelter flooring with foraminous inserts, and method of constructing same. 4,348,987, Cl. 119-20.000.
Herrmann, John L., Jr.: *See*—
Bell, Malcolm R.; and Herrmann, John L., Jr., 4,349,559, Cl. 424-273.00P.
Hertzenberg, Elliot P.: *See*—
Dent, Anthony L.; Hertzenberg, Elliot P.; and Sherry, Howard S., 4,349,533, Cl. 424-52.000.
Hesston Corporation: *See*—
Berlivet, Marc A.; and Guerineau, Abel A. J., 4,348,857, Cl. 56-192.000.
Heubach, Edward C., to Owens-Corning Fiberglas Corporation. Crown vents. 4,349,332, Cl. 432-179.000.
Hewlett-Packard Company: *See*—
Ackley, Donald E., 4,349,905, Cl. 372-46.000.
Brown, Troy L., 4,349,868, Cl. 364-157.000.
Podell, Allen F.; and Mueller, Louis F., 4,349,798, Cl. 333-230.000.
Hey, Robert W.: *See*—
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Hicinbothem, Walter A., Jr.: *See*—
Tarng, Ming L.; and Hicinbothem, Walter A., Jr., 4,349,408, Cl. 156-628.000.
Higashi, Akio: *See*—
Kawashiri, Kazuhiro; Mizobuchi, Yuzo; Higashi, Akio; Tamura, Hiroshi; Takeda, Keiji; and Nagata, Masayoshi, 4,349,617, Cl. 430-59.000.
Higashiyama, Noboru; and Sasaki, Masaru, to Mitsubishi Denki Kabushiki Kaisha. Magnetic head supporting mechanism for a magnetic disc apparatus. 4,349,851, Cl. 360-105.000.
Highland Mfg. Company, Ltd.: *See*—
Haslbeck, Joseph, 4,348,775, Cl. 2-452.000.
Hill, David G.: *See*—
Crossley, Roger; and Hill, David G., 4,349,555, Cl. 424-263.000.
Hill, Kenneth W. Bulk ice bin. 4,348,872, Cl. 62-459.000.
Himmelmann, Wolfgang: *See*—
Sobel, Johannes; Himmelmann, Wolfgang; and Bergthaller, Peter, 4,349,624, Cl. 430-622.000.
Hinds, Charles M., to Spar Aerospace Limited. Satellite servicing. 4,349,837, Cl. 358-93.000.
Hinrichs, Fritz, to Siemens Aktiengesellschaft. Apparatus for sealing an electrical component. 4,349,693, Cl. 174-52.0PE.
Hipp, Johann F., to Wegman & Co. Mechanical-optoelectronic angle comparator for determination of the angular position of a weapon mounted by a combat vehicle relative to the line of sight. 4,348,939, Cl. 89-41.0ME.
Hiraga, Yoichi; Watanabe, Osamu; and Nakatani, Masaki, to Toyo Soda Manufacturing Company, Ltd. Purification of wet process phosphoric acid. 4,349,519, Cl. 423-321.00S.
Hirakawa, Hiroshi; Sato, Akio; Takusagawa, Takashi; and Ikeda, Nobumasa, to Bridgestone Tire Company Limited. Pneumatic radial tires for passenger cars having a low rolling resistance. 4,349,061, Cl. 152-209.00R.
Hiramatsu, Toru; Koseki, Teruo; Hamada, Satosi; and Sumida, Atsushi, to Toray Industries, Inc. Process for producing carbon fiber of improved oxidation resistance. 4,349,523, Cl. 423-447.400.
Hirata, Masao, to Konishiroku Photo Industry Co., Ltd. Electrostatic image-forming process and an apparatus therefor. 4,349,268, Cl. 355-4.000.
Hirohata, Michio: *See*—
Tezuka, Nobuo; and Hirohata, Michio, 4,349,264, Cl. 354-234.000.
Hirose, Akira, to Ricoh Co., Ltd. Opening and closing apparatus. 4,348,786, Cl. 16-75.000.
Hirsch, Ronald W. Firewood rack and carrier. 4,349,213, Cl. 280-638.000.
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Shibayama, Hikou; Ogawa, Tetsuya; Kosugi, Makoto; Hisatsugu, Tokushige; and Kobayashi, Koichi, 4,349,409, Cl. 156-643.000.
Hishida, Tadashi: *See*—
Okada, Tsutomu; Hishida, Tadashi; and Muramatsu, Minoru, 4,349,625, Cl. 435-4.000.
Hitachi, Ltd.: *See*—
Akitake, Isao; Noda, Tsutomu; and Yamazaki, Kazuhiko, 4,349,696, Cl. 179-1.0GS.
Ando, Hisashi; Soeno, Ko; Sakamoto, Hiroshi; Misumi, Akira; and Fukushima, Hiroshi, 4,349,766, Cl. 313-346.00R.
Asada, Akihiro; Nakata, Kazuo; Umemura, Kazuhiro; Sato, Hirokazu; Murakami, Kenya; and Into, Kiyoshi, 4,349,699, Cl. 179-1.0SM.
Fukasawa, Sigeru; and Mizokawa, Sadao, 4,349,872, Cl. 364-200.000.
Kugo, Masaru; and Igarashi, Osamu, 4,349,810, Cl. 340-79.000.
Miyake, Kiyoshi; and Miyata, Naoyuki, 4,349,425, Cl. 204-192.00P.
Ohba, Shinya; Hanamura, Shoji; Ozaki, Toshifumi; Kubo, Masaharu; Nakai, Masaaki; Takahashi, Kenji; Aoki, Masakazu; Takemoto, Iwao; Ando, Haruhisa; and Izawa, Ryuichi, 4,349,743, Cl. 250-578.000.
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Sugahara, Kenshi; and Mori, Junji, 4,349,426, Cl. 204-195.00M.
Suzuki, Ryo; Uehara, Keiichi; Takeuchi, Teruaki; and Takeshita, Masatoshi, 4,349,892, Cl. 365-8.000.
Tonomura, Kenichi; Takahashi, Kyoichi; and Furihata, Makoto, 4,349,834, Cl. 358-27.000.
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Shimizu, Jozo; Yamaguchi, Satoru; and Aoyama, Shigeo, 4,349,608, Cl. 428-413.000.
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Ho, Chung W.: *See*—
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Hobart Corporation: *See*—
Berner, George J., 4,349,731, Cl. 235-489.000.
Hochtemperatur-Reaktorbau GmbH.: *See*—
Schoening, Josef; Elter, Claus; and Schmitt, Hermann, 4,349,507, Cl. 376-230.000.
Hoechst Aktiengesellschaft: *See*—
Rebsdat, Siegfried; Mayer, Sigmund; Alfranseder, Josef; and Schaffelhofer, Iwo, 4,349,417, Cl. 203-33.000.
Schell, Loni, 4,349,391, Cl. 148-6.15R.

Hoffman, William C.; Gunther, John E.; and Lichty, William R. Liquid crystal display system using fiber optic faceplates. 4,349,817, Cl. 340-784.000.

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Simm, Hans-Peter; Guhne, Wieland; and Hoffmann, Klaus, 4,349,206, Cl. 277-207.00R.

Hoffmann-La Roche Inc.: *See*—
Berger, Leo; and Olson, Gary L., 4,349,678, Cl. 546-150.000.
Kyburz, Emilio; and Aschwanden, Werner, 4,349,562, Cl. 424-274.000.
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Montavon, Marc; and Reiner, Roland, 4,349,672, Cl. 544-027.000.
Walser, Armin; and Fryer, Rodney I., 4,349,475, Cl. 260-244.400.
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Hohman, Charles M.: *See*—
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Hohn, Herbert: *See*—
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Holden, M. James, to Mobil Oil Corporation. Packaging tray. 4,349,146, Cl. 229-2.50R.

Hollingsbee, Derek A.: *See*—
Gilbert, David J.; and Hollingsbee, Derek A., 4,349,563, Cl. 424-274.000.

Holloway, John A., to B. F. Goodrich Company, The. Polyurethane process. 4,349,657, Cl. 528-66.000.

Holmes, William A.: *See*—
Friedman, Melvin; and Holmes, William A., 4,349,257, Cl. 354-126.000.

Holthusen, Bernd, to Dr. Boger Duplomat Apparate KG (GmbH & Co.). Circuit arrangement for controlling the exposure time of reproduction cameras. 4,349,272, Cl. 355-69.000.

Holzbaur, Siegfried; Barth, Horst; and Osmera, Josef, to Robert Bosch GmbH. Apparatus for mixture formation for internal combustion engines, in particular mixture-compressing engines having externally supplied ignition. 4,348,999, Cl. 123-452.000.

Homeyer, Bernhard: *See*—
Timmler, Helmut; Kramer, Wolfgang; Buchel, Karl H.; Brandes, Wilhelm; Frohberger, Paul-Ernst; and Homeyer, Bernhard, 4,349,556, Cl. 424-269.000.

Honda Giken Kogyo Kabushiki Kaisha: *See*—
Gotoh, Osamu; Otobe, Yutaka; Kawamoto, Michio; and Fujimura, Akira, 4,349,005, Cl. 123-571.000.
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Tagami, Katsutoshi; Senzaki, Takaya; Suzuki, Nobuhiko; and Murao, Eiji, 4,349,823, Cl. 343-7.0VM.
Takahashi, Fumitaka; and Gotoh, Hiroshi, 4,348,900, Cl. 73-505.000.

Honda Giken Kogyo Kabushiki Kaisha (Honda Motor Co., Ltd.): *See*—
Shimada, Junichi; and Ogawa, Kazutake, 4,349,078, Cl. 180-69.100.

Honeywell Information Systems Inc.: *See*—
Woods, William E.; Stanley, Philip E.; Cushing, David E.; and Lemay, Richard A., 4,349,874, Cl. 364-200.000.

Hooker Chemicals & Plastics Corp.: *See*—
Steele, Duane C., 4,349,448, Cl. 252-135.000.

Hopkins, Donald J.: *See*—
Wynn, Charles C.; and Hopkins, Donald J., 4,349,305, Cl. 414-408.000.

Hoppe, Frederick J.: *See*—
Buckstead, John W.; Hoppe, Frederick J.; and Williams, Dennis W., 4,349,308, Cl. 414-725.000.

Hoppe, Joachim A.: *See*—
Escaron, Pierre C.; and Hoppe, Joachim A., 4,349,072, Cl. 166-250.000.

Horide, Fumio; Tsuji, Kozo; and Yoshida, Ryo, to Sumitomo Chemical Company, Limited. Emulsifiable concentrate for weed control. 4,349,379, Cl. 71-120.000.

Horiguchi, Satoru; Sasaoka, Takeshi; and Shimane, Koichi, to Dai Nippon Printing Co., Ltd.; and Ikegami Tsushinki Co., Ltd. Color printing process simulator. 4,349,835, Cl. 358-76.000.

Hornbeck, Sherman J.: *See*—
Blocksome, Roderick K.; Hornbeck, Sherman J.; and Fee, Donald R., 4,349,799, Cl. 333-246.000.

Hoshi, Hideo; Mitsugi, Shiro; Teruyama, Hiroichi; and Tabata, Hideo, to Kabushiki Kaisha Daini Seikosha. Tuning fork type quartz resonator. 4,349,763, Cl. 310-370.000.

Hoshi, Setsuo: *See*—
Ueno, Kazunori; Isobe, Masahiro; and Hoshi, Setsuo, 4,348,993, Cl. 123-146.50A.

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Asano, Hiroshi; Shimamune, Takayuki; Goto, Toshiki; Nitta, Hideo; and Hosonuma, Masashi, 4,349,581, Cl. 427-34.000.

Howe, Dennis G., to Eastman Kodak Company. Apparatus and method for reading optical discs. 4,349,901, Cl. 369-45.000.

Hsu, Sheng T.: *See*—
Flatley, Doris W.; and Hsu, Sheng T., 4,349,584, Cl. 427-85.000.

Hubele, Adolf; Kunz, Walter; and Eckhardt, Wolfgang, to Ciba-Geigy Corporation. Fungicidal N-(pyridazinoacetyl)-anilines. 4,349,550, Cl. 424-250.000.

Hughes, Charles W.; Harvey, Keith W.; and Sonneborn, Walter G. O., to Textron, Inc. Twist control for helicopter tail rotor pitch change. 4,349,316, Cl. 416-104.000.

Huisman, Hendrikus F.; and Groen, Harm Jan, to U.S. Philips Corporation. Method of preparing a FeOOH pigment. 4,349,385, Cl. 106-37.000.

Hullen, Helmut; and Knoth, Werner-Dieter, to Veba Glas A.G. Glassware-making apparatus with reject-catching chute and method of operating the apparatus. 4,349,368, Cl. 65-28.000.

Humpert, Jurgen, to Friedrich Grohe Armaturenfabrik GmbH & Co. Mixing valve. 4,349,149, Cl. 236-12.00R.

Hunt, Russell G.: *See*—
Cliff, Geoffrey R.; Hunt, Russell G.; and Percival, Albert, 4,349,378, Cl. 11-103.000.

Hunter, James B., to Johnson Matthey, Inc. Catalytic elements. 4,349,450, Cl. 252-466.0PT.

Hurt, Alfred A. Multi-purpose square. 4,348,815, Cl. 33-419.000.

Huston, Larry; Morrison, Clifton H.; Rasmussen, Glenn; and Tsuchiya, Takuzo, to General Mills, Inc. Method for severing portions from a plurality of frozen columns of fish or the like. 4,348,923, Cl. 83-23.000.

Hutchison, Donald W.: *See*—
Stein, John C.; and Hutchison, Donald W., 4,348,870, Cl. 62-140.000.

Hutchison, Joseph A., to Solar Kinetics, Inc. Method of installing a solar collector. 4,348,797, Cl. 29-434.000.

Hutchison, Joseph A., to Solar Kinetics, Inc. Method of manufacturing solar collector module. 4,348,798, Cl. 29-448.000.

Huvar, Robert J., to Occidental Chemical Corporation. Trivalent chromium passivate solution and process. 4,349,392, Cl. 148-6.200.

Hydroacoustics Inc.: *See*—
Bouyoucos, John V., 4,348,943, Cl. 91-355.000.

Hyer, Ronald C.: *See*—
Campillo, Anthony J.; Hyer, Ronald C.; and Shapiro, Stanley J., 4,349,907, Cl. 372-92.000.

Iannarelli, Anthony N. Thermally insulated masonry block. 4,348,845, Cl. 52-405.000.

Ibar, Jean-Pierre. Device for modifying or controlling the shape of an electrical output signal. 4,349,886, Cl. 364-573.000.

Ichikoh Industries Ltd.: *See*—
Koyama, Yukio; Kondo, Tsutomu; Matsuzaki, Mikio; and Akizuki, Kunio, 4,349,247, Cl. 350-302.000.

Ichimura, Masaaki; Tarumizu, Yasumasa; and Uranaka, Kiyouzi, to Kabushiki Kaisha Komatsu Seisakusho. Tank assembly for hydraulic system. 4,348,864, Cl. 60-454.000.

Ichinose, Yosaburo: *See*—
Ishibashi, Naoto; Taniguti, Ryosuke; Miyaji, Junichi; and Ichinose, Yosaburo, 4,349,813, Cl. 340-638.000.

Igarashi, Osamu: *See*—
Kugo, Masaru; and Igarashi, Osamu, 4,349,810, Cl. 340-79.000.

Iguchi, Eiko: *See*—
Kitaura, Yoshihiko; Nakaguchi, Osamu; Hemmi, Keiji; Aratani, Matsuhiko; Takeno, Hidekazu; Okada, Satoshi; Tanaka, Hirokazu; Hashimoto, Masashi; Kuroda, Yoshio; Iguchi, Eiko; Kohsaka, Masanobu; Aoki, Hatsuo; and Imanaka, Hiroshi, 4,349,466, Cl. 260-112.50R.

Iijima, Tashifumi: *See*—
Koitabashi, Takeo; Matsuzaka, Syozi; and Iijima, Tashifumi, 4,349,622, Cl. 430-567.000.

Ikeda, Nobumasa: *See*—
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Ikeda, Sunao: *See*—
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Ikegami Tsushinki Co., Ltd.: *See*—
Horiguchi, Satoru; Sasaoka, Takeshi; and Shimane, Koichi, 4,349,835, Cl. 358-76.000.

Ikenoue, Shinpei; Mifune, Hiroyuki; and Fuseya, Yoshiharu, to Fuji Photo Film Co., Ltd. Silver halide photographic materials. 4,349,623, Cl. 430-600.000.

Illig, Heinz-Peter: *See*—
Henning, Walter; and Illig, Heinz-Peter, 4,349,165, Cl. 242-118.110.

Imaging Technology Limited: *See*—
James, Paul M., 4,349,273, Cl. 355-72.000.

Imanaka, Hiroshi: *See*—
Kitaura, Yoshihiko; Nakaguchi, Osamu; Hemmi, Keiji; Aratani, Matsuhiko; Takeno, Hidekazu; Okada, Satoshi; Tanaka, Hirokazu; Hashimoto, Masashi; Kuroda, Yoshio; Iguchi, Eiko; Kohsaka, Masanobu; Aoki, Hatsuo; and Imanaka, Hiroshi, 4,349,466, Cl. 260-112.50R.

Imatomi, Keiichiro: *See*—
Takasaki, Masaru; and Imatomi, Keiichiro, 4,349,222, Cl. 285-363.000.

Imperial Chemical Industries Limited: *See*—
Rowe, Frederick; and Brown, David, 4,349,432, Cl. 208-130.000.
Schofield, John D., 4,349,389, Cl. 106-308.00Q.

Inasawa, Hideho; and Matsuoka, Hideoki, to Nissan Motor Company, Limited. Knee protector. 4,349,214, Cl. 280-752.000.

Ince, Norman J., to Kango Electric Hammers Limited. Convertible rotary impact hammer drill. 4,349,074, Cl. 173-48.000.

Incom International Inc.: *See*—
Patel, Jhina; and Zahuranec, Terry L., 4,349,363, Cl. 55-498.000.

Ing. C. Olivetti & C., S.p.A.: *See*—
Bovio, Michele; Barbero, Aquilino; Gillone, Walter; and Berruti, Pierangelo, 4,349,829, Cl. 346-140.00R.

Ingraham, David L.: *See*—
Harvey, Francis K.; Franks, Larrabee; and Ingraham, David L., 4,349,036, Cl. 131-240.00R.
Inoshita, Yasushi: *See*—
Shimada, Yukio; Suzuki, Naoyoshi; Ohashi, Toshio; and Inoshita, Yasushi, 4,349,177, Cl. 251-230.000.
Inoue, Satoru: *See*—
Uematsu, Tamon; Inoue, Satoru; and Yamashita, Norihisa, 4,349,554, Cl. 424-258.000.
Inoue, Shinichi: *See*—
Toyokura, Nobuo; Tokunaga, Hiroshi; Inoue, Shinichi; Ishikawa, Hajime; and Shinoda, Masaichi, 4,349,395, Cl. 148-187.000.
Inouye, Shozo: *See*—
Takeda, Keiso; Inouye, Shozo; and Kashiwakura, Toshimi, 4,348,997, Cl. 123-445.000.
Intermatch S.A.: *See*—
Hagberg, Carl E., 4,348,830, Cl. 46-26.000.
International Business Machines Corporation: *See*—
Bajorek, Christopher H.; Chance, Dudley A.; and Ho, Chung W., 4,349,862, Cl. 361-401.000.
Bobart, Kevin L.; and Flurry, Gregory A., 4,349,741, Cl. 250-568.000.
Chang, David C., 4,349,890, Cl. 364-900.000.
Flurry, Gregory A.; Krieg, Michael L.; and Phillips, David W., 4,349,742, Cl. 250-568.000.
Kulynych, Larysa H.; Romankiw, Lubomyr T.; and von Gutfeld, Robert J., 4,349,583, Cl. 427-53.100.
International Chemical Engineering Establishment: *See*—
Bos, Arnold, 4,349,490, Cl. 264-25.000.
International Flavors & Fragrances Inc.: *See*—
Sprecker, Mark A., 4,349,449, Cl. 252-174.110.
International Harvester Company: *See*—
DePauw, Richard A.; and Staiert, Richard W., 4,348,855, Cl. 56-10.200.
Klem, John E., 4,349,046, Cl. 137-899.000.
Klem, John E., 4,349,307, Cl. 414-686.000.
International Standard Electric Corporation: *See*—
Drake, Cyril F., 4,349,025, Cl. 128-260.000.
Lucanera, Constantino, 4,349,826, Cl. 343-773.000.
Sterling, Henley F.; and Drake, Miles P., 4,349,373, Cl. 65-60.800.
International Telephone and Telegraph Corporation: *See*—
Chea, Ramon C. W., Jr., 4,349,703, Cl. 179-18.0HB.
Kim, Sung C.; and Schwartz, Marvin P., 4,348,794, Cl. 29-157.3AH.
Mohiuddin, Gulam, 4,349,643, Cl. 524-560.000.
November, Milton H.; Lyon, LaVern D.; and Ponzi, Joseph J., 4,349,881, Cl. 364-509.000.
Into, Kiyoshi: *See*—
Asada, Akihiro; Nakata, Kazuo; Umemura, Kazuhiro; Sato, Hirokazu; Murakami, Kenya; and Into, Kiyoshi, 4,349,699, Cl. 179-1.0SM.
Ipco Hospital Supply Corporation: *See*—
Weissman, Bernard, 4,349,335, Cl. 433-225.000.
Weissman, Bernard, 4,349,336, Cl. 433-225.000.
Iqbal, Abul; and Lienhard, Paul, to Ciba-Geigy Corporation. Process for the production of metal complexes of isoindoline azines. 4,349,671, Cl. 542-417.000.
Irii, Shinsuke: *See*—
Iwasaki, Hiroshi; Irii, Shinsuke; and Kondo, Mitsuru, 4,349,454, Cl. 252-312.000.
Irioka, Kazuyoshi: *See*—
Tachita, Ryobun; Hayakawa, Yoshihiro; Irioka, Kazuyoshi; Fukukita, Hiroshi; Yano, Tsutomu; and Fukumoto, Akira, 4,348,902, Cl. 73-626.000.
Ishibashi, Naoto; Taniguti, Ryosuke; Miyaji, Junichi; and Ichinose, Yosaburo, to Mitsubishi Denki Kabushiki Kaisha. Blown fuse sensor. 4,349,813, Cl. 340-638.000.
Ishida, Hiroaki: *See*—
Kitai, Kiyoshi; Kobayashi, Masaru; Nakagawa, Tadashi; Ishida, Hiroaki; Watanabe, Masanori; and Takazawa, Yuzuru, 4,349,258, Cl. 354-127.000.
Ishida, Tokuji; and Sahara, Masayoshi, to Minolta Camera Kabushiki Kaisha. Automatic electronic flash device producing preliminary flash light and primary flash light. 4,349,260, Cl. 354-145.000.
Ishida, Toshihiko: *See*—
Tanaka, Kimio; and Ishida, Toshihiko, 4,349,166, Cl. 242-197.000.
Ishihara Sangyo Kaisha, Ltd.: *See*—
Yokomichi, Isao; Haga, Takahiro; Nagatani, Kuniaki; and Nakajima, Toshio, 4,349,681, Cl. 546-304.000.
Ishii, Fusao: *See*—
Muramoto, Shoichi; Tsukamura, Yoshihiro; Tozawa, Masayuki; and Ishii, Fusao, 4,349,767, Cl. 313-449.000.
Ishii, Shoichi; Hagiwara, Taiken; and Shimanuki, Masanobu, to Tokyo Shibaura Denki Kabushiki Kaisha. Recording circuit. 4,349,848, Cl. 360-66.000.
Ishikawa, Hajime: *See*—
Toyokura, Nobuo; Tokunaga, Hiroshi; Inoue, Shinichi; Ishikawa, Hajime; and Shinoda, Masaichi, 4,349,395, Cl. 148-187.000.
Ishikawa, Hiroya: *See*—
Sekiguchi, Tomoyoshi; and Ishikawa, Hiroya, 4,349,077, Cl. 180-41.000.
Ishikawa, Soji. Medical needle assembly. 4,349,022, Cl. 128-214.00R.
Ishiwata, Shoji; Kuroda, Yasuo; Tanaka, Shoichi; Watanabe, Tsuneo; and Hasegawa, Shinichi, to Mitsubishi Kinzoku Kabushiki Kaisha. Process for recovering uranium and/or thorium from a liquid containing uranium and/or thorium. 4,349,513, Cl. 423-12.000.
Isobe, Masahiro: *See*—
Ueno, Kazunori; Isobe, Masahiro; and Hoshi, Setsuo, 4,348,993, Cl. 123-146.50A.
Isogai, Hideaki, to Fujitsu Limited. Decoder circuit of a semiconductor memory device. 4,349,895, Cl. 365-230.000.
Ito, Koichi: *See*—
Toyoshima, Shigeshi; Sato, Ryuichi; Ito, Koichi; Shinohara, Toshio; and Yamamoto, Yasushi, 4,349,682, Cl. 548-110.000.
Ito, Takayoshi; Kubo, Seitoku; and Terakura, Yukio, to Aisin-Warner Kabushiki Kaisha. Device for controlling a lock-up clutch in an automatic transmission with a lock-up clutch equipped fluid torque converter. 4,349,088, Cl. 192-3.300.
Itoh, Katsumi: *See*—
Mori, Kazumasa; Asahi, Taro; Banzai, Keiichiro; Iwaki, Katsutaro; Muto, Katsuya; Mase, Akira; Nimura, Takayasu; Itoh, Katsumi; and Akita, Yoshio, 4,349,854, Cl. 361-21.000.
Itoh, Susumu: *See*—
Sato, Ichiya; Miyagawa, Kazuo; Sasaki, Yukito; Kawamura, Koji; Sato, Shuichi; Sasaki, Soji; Kubota, Jun; and Itoh, Susumu, 4,348,903, Cl. 73-643.000.
ITT Industries, Inc.: *See*—
Michalski, Dieter, 4,349,712, Cl. 200-159.00B.
Ivanchev, Sergei S.: *See*—
Pavljuchenko, Valery N.; Pessina, Zinaida M.; Vasilieva, Elena D.; and Ivanchev, Sergei S., 4,349,649, Cl. 526-234.000.
Ivanko, Theodore: *See*—
Libertini, Zoltan L.; and Ivanko, Theodore, 4,349,318, Cl. 416-220.00R.
Iwahara, Makoto, to Victor Company of Japan, Limited. Audio signal translation with no delay elements. 4,349,698, Cl. 179-1.00G.
Iwaki, Katsutaro: *See*—
Mori, Kazumasa; Asahi, Taro; Banzai, Keiichiro; Iwaki, Katsutaro; Muto, Katsuya; Mase, Akira; Nimura, Takayasu; Itoh, Katsumi; and Akita, Yoshio, 4,349,854, Cl. 361-21.000.
Iwamatsu, Seiichi: *See*—
Ogawa, Mitsuru; and Iwamatsu, Seiichi, 4,348,804, Cl. 29-580.000.
Iwanami, Teruo; Takida, Hiroshi; and Fujita, Yukio, to Nippon Gohsei Kagaku Kogyo Kabushiki Kaisha. Melt-blended resin composition of hydrolyzed ethylene/vinyl acetate copolymers. 4,349,644, Cl. 525-57.000.
Iwasaki, Hiroshi; Irii, Shinsuke; and Kondo, Mitsuru, to Kanzaki Paper Manufacturing Company Limited. Preparation of aqueous medium suitable for preparing microcapsules. 4,349,454, Cl. 252-312.000.
Iwata Electric Co., Ltd.: *See*—
Iwata, Keisuke, 4,349,820, Cl. 340-825.710.
Iwata, Keisuke, to Iwata Electric Co., Ltd. Tone signal decoder. 4,349,820, Cl. 340-825.710.
Izawa, Ryuichi: *See*—
Ohba, Shinya; Hanamura, Shoji; Ozaki, Toshifumi; Kubo, Masaharu; Nakai, Masaaki; Takahashi, Kenji; Aoki, Masakazu; Takemoto, Iwao; Ando, Haruhisa; and Izawa, Ryuichi, 4,349,743, Cl. 250-578.000.
Jackson, Dennis B., to Wiltshire Cutlery Company Proprietary Limited. Combination sharpener device and scissors. 4,348,809, Cl. 30-138.000.
Jacobi, Haireddin; Opitz, Wolfgang; and Etschenberg, Eugen, to Troponwerke GmbH & Co. KG. Histolytic agents and their use. 4,349,543, Cl. 424-177.000.
Jakubaschk, Horst: *See*—
Ketterer, Dieter; Jakubaschk, Horst; and Rommel, Emil, 4,348,941, Cl. 89-155.000.
James, Paul M., to Imaging Technology Limited. Electrophotographic printer exposure station. 4,349,273, Cl. 355-72.000.
Janauer, Gilbert E.: *See*—
Nudel, Ron; Janauer, Gilbert E.; Schrier, Eugene E.; and Figura, Ilona W., 4,349,646, Cl. 525-256.000.
Janome Sewing Machine Co. Ltd.: *See*—
Kasuga, Noboru; Hara, Kazumasa; and Koike, Mikio, 4,348,969, Cl. 112-184.000.
Janssen, Peter J. H.; and Christis, Wilhelmus J., to U.S. Philips Corporation. Error correction circuit using character probability. 4,349,904, Cl. 371-69.000.
Japan Synthetic Rubber Co., Ltd.: *See*—
Kamoshida, Yoichi; Yoshihara, Toshiaki; Harita, Yoshiyuki; and Harada, Kunihiro, 4,349,619, Cl. 430-196.000.
Matsumura, Yoshio; Nozue, Ikuo; and Ukachi, Takashi, 4,349,664, Cl. 528-491.000.
Jaworski, William R. Filtration system for spas, hot tubs, swimming pools and the like. 4,349,434, Cl. 210-94.000.
Jean Walterscheid GmbH: *See*—
Geisthoff, Hubert, 4,349,092, Cl. 192-67.00R.
Jefferson, John R.; and Brown, Alexander G. M., to Lucas Industries Limited. Fuel pumping apparatus. 4,348,995, Cl. 123-366.000.
Jenkner, Erwin. Method and apparatus for trimming laminates. 4,348,924, Cl. 83-39.000.
Jennings, Stephen J.: *See*—
Reuther, John F.; Jennings, Stephen J.; and Yannone, Robert A., 4,349,744, Cl. 290-40.00C.
Jenoptik Jena GmbH: *See*—
Hellriegel, Walter, 4,349,244, Cl. 350-255.000.
Jensen, James R., to Container Corporation of America. Tray with integral locking tab. 4,349,147, Cl. 229-34.00R.
Joel, Amos E., Jr., to Bell Telephone Laboratories, Incorporated. Nodal switching network with binary order links. 4,349,702, Cl. 179-18.0GE.

John Wyeth & Brother Limited: *See*—
Crossley, Roger, 4,349,480, Cl. 260-326.200.
Crossley, Roger; and Hill, David G., 4,349,555, Cl. 424-263.000.
Johnson, David B.: *See*—
Robinson, Robert J.; Johnson, David B.; and Schroeder, Verdell H., 4,348,970, Cl. 112-256.000.
Johnson, Gorden F., to Pullman Incorporated. Sponge iron products sampling device. 4,348,910, Cl. 73-863.510.
Johnson & Johnson: *See*—
Ramsey, Maynard, III, 4,349,034, Cl. 128-681.000.
Thomas, Joseph J.; Vaillancourt, Vincent L.; Millet, Marcus J.; and Smith, William F., 4,349,035, Cl. 128-766.000.
Johnson & Johnson Baby Products Company: *See*—
Passafiume, Anthony, 4,349,140, Cl. 225-97.000.
Johnson Matthey, Inc.: *See*—
Hunter, James B., 4,349,450, Cl. 252-466.0PT.
Johnson, Michael F., to Champion Spark Plug Company. Spray nozzle. 4,349,153, Cl. 239-105.000.
Johnston, Malcolm. Standing support for handicapped persons. 4,349,195, Cl. 272-134.000.
Johnston, Samuel J. B., to E M I Limited. Disc record preparation. 4,349,499, Cl. 264-107.000.
Jones, James H., to Merck & Co., Inc. Octahydrobenzo[6,7]cyclohept[1,2-b]-1,4-oxazines, compositions and use. 4,349,548, Cl. 424-248.400.
Jones, John F.: *See*—
Li, George S.; and Jones, John F., 4,349,652, Cl. 526-271.000.
Li, George S.; and Jones, John F., 4,349,653, Cl. 526-272.000.
Jones, Stanley; and Nyenbrink, Willard. Automatic door opening device. 4,348,835, Cl. 49-139.000.
Jones, Thaddeus M.: *See*—
Shah, Hasmukh R.; Jones, Thaddeus M.; and Hemingway, Bruce R., 4,349,111, Cl. 209-534.000.
Jordan, Gerald J. Wheel assembly. 4,348,785, Cl. 16-046.000.
Jorgensen, Robert J.; Goeke, George L.; and Karol, Frederick J., to Union Carbide Corporation. Catalyst composition for copolymerizing ethylene. 4,349,648, Cl. 526-125.000.
Jost, Karel: *See*—
Cort, Joseph H.; Barth, Tomislav; Jost, Karel; and Veznik, Zdenek, 4,349,544, Cl. 424-177.000.
Jovanovic, Milenko: *See*—
Carota, Martin; Slootz, Josef; Weiser, Klaus; Gulich, Peter; and Jovanovic, Milenko, 4,349,718, Cl. 219-78.010.
Juillot, Guy: *See*—
Gaget, Alain; and Juillot, Guy, 4,349,489, Cl. 261-41.00D.
Jukes, Christopher E., to Mod-Lok Industries Ltd. Spacer extender. 4,348,847, Cl. 52-426.000.
Jung, Eggert, to Dr. Ing. Rudolf Hell GmbH. Method for the color evaluation of pattern models of fabric, decoration or packaging printing, and a color evaluation device. 4,349,279, Cl. 356-402.000.
Jurcak, Frank C. Oyster opener. 4,348,788, Cl. 17-76.000.
Juris, Mitchell A.; and Tomsa, Vladimir, to Bunker Ramo Corporation. Electrical connector assembly having enhanced EMI shielding. 4,349,241, Cl. 339-143.00R.
Jyojiki, Masao; and Aoki, Harumi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Camera focus detecting device. 4,349,254, Cl. 354-25.000.
Kabushiki Kaisha Daini Seikosha: *See*—
Hoshi, Hideo; Mitsugi, Shiro; Teruyama, Hiroichi; and Tabata, Hideo, 4,349,763, Cl. 310-370.000.
Kaneko, Noboru; and Tabata, Junichi, 4,349,818, Cl. 340-785.000.
Kabushiki Kaisha Komatsu Seisakusho: *See*—
Akagi, Jiro, 4,349,152, Cl. 239-96.000.
Ichimura, Masaaki; Tarumizu, Yasumasa; and Uranaka, Kiyouzi, 4,348,864, Cl. 60-454.000.
Kabushiki Kaisha Kurio-Medikaru: *See*—
Yamauchi, Toshima; Nogami, Sadao; Sawada, Kengi; Moriya, Jyunichiro; Sawada, Hiroomi; and Kobayashi, Keizou, 4,348,873, Cl. 62-514.00R.
Kabushiki Kaisha Sankyo Seiki Seisakusho: *See*—
Komatsu, Fumito; and Shinozaki, Junichiro, 4,349,899, Cl. 368-75.000.
Kabushiki Kaisha Suwa Seikosha: *See*—
Aizawa, Hitomi, 4,349,900, Cl. 368-187.000.
Kabushiki Kaishi Kawai Gakki Seisakusho: *See*—
Sakashita, Noriji; Kugisawa, Toshio; Watanabe, Hironori; and Kitagawa, Hiroshi, 4,348,928, Cl. 84-1.010.
Kaeding, Warren W.: *See*—
Chu, Chin-Chiun; and Kaeding, Warren W., 4,349,461, Cl. 252-455.00Z.
Kagayama, Masao, to Unitika Ltd. Process for producing heat-resistant acetate kinase. 4,349,631, Cl. 435-194.000.
Kagiwada, Reynold S.; Yen, Kuo-Hsiung; Wang, Ke-Li; Lau, Kei F.; Lochhead, Donald L.; and Leaverton, James A., to TRW Inc. Shallow bulk acoustic wave devices. 4,349,794, Cl. 333-141.000.
Kah, Carl L. C., Jr. Magnetically actuated pilot valve. 4,349,045, Cl. 137-625.500.
Kaiser Aluminum & Chemical Corporation: *See*—
Goodnow, Warren H.; and Payne, John R., 4,349,427, Cl. 204-243.00R.
Kaki, Haruhiko: *See*—
Ogawa, Hiroyuki; and Kaki, Haruhiko, 4,349,304, Cl. 414-106.000.
Kakitani, Yohtaro: *See*—
Kaneko, Tamaki; Hibi, Kunio; Ikeda, Sunao; Okuzawa, Tugio; Kakitani, Yohtaro; and Kikuchi, Hideo, 4,349,190, Cl. 271-297.000.
Kaman, Charles H.; and Mayerjak, Robert J., to Currier Piano Company, Inc. Soundboard assembly for pianos or the like. 4,348,933, Cl. 84-193.000.
Kameyama, Masao; and Shiomi, Teiichi, to Mitsui Petrochemical Industries, Ltd. Laminated multilayer structure. 4,349,603, Cl. 428-334.000.
Kamoshida, Yoichi; Yoshihara, Toshiaki; Harita, Yoshiyuki; and Harada, Kunihiro, to Japan Synthetic Rubber Co., Ltd. Photoresist composition. 4,349,619, Cl. 430-196.000.
Kanamori, Hiroshi, to Nissan Motor Co., Ltd. Yieldable type ornament assembly. 4,349,591, Cl. 428-31.000.
Kanebo Foods, Ltd.: *See*—
Hayashi, Masaho, 4,349,110, Cl. 206-606.000.
Kaneko, Noboru; and Tabata, Junichi, to Kabushiki Kaisha Daini Seikosha. Electrochromic display device. 4,349,818, Cl. 340-785.000.
Kaneko, Tamaki; Hibi, Kunio; Ikeda, Sunao; Okuzawa, Tugio; Kakitani, Yohtaro; and Kikuchi, Hideo, to Ricoh Co., Ltd. Sheet classifying system having deflecting device. 4,349,190, Cl. 271-297.000.
Kango Electric Hammers Limited: *See*—
Ince, Norman J., 4,349,074, Cl. 173-48.000.
Kanno, Yoshinori: *See*—
Ohmae, Tadayuki; Murakami, Teruhiko; and Kanno, Yoshinori, 4,349,654, Cl. 526-273.000.
Kanzaki Paper Manufacturing Company Limited: *See*—
Iwasaki, Hiroshi; Irii, Shinsuke; and Kondo, Mitsuru, 4,349,454, Cl. 252-312.000.
Karl Mayer Textilmaschinen fabrik GmbH: *See*—
Roth, Josef, 4,348,876, Cl. 66-84.00A.
Karol, Frederick J.: *See*—
Jorgensen, Robert J.; Goeke, George L.; and Karol, Frederick J., 4,349,648, Cl. 526-125.000.
Karpodines, Marco. Controlled ambience speaker system. 4,349,084, Cl. 181-146.000.
Kashio, Toshio, to Casio Computer Co., Ltd. Musical instrument type-selecting system for an electronic musical instrument. 4,348,932, Cl. 84-1.190.
Kashiwakura, Toshimi: *See*—
Takeda, Keiso; Inouye, Shozo; and Kashiwakura, Toshimi, 4,348,997, Cl. 123-445.000.
Kasuga, Noboru; Hara, Kazumasa; and Koike, Mikio, to Janome Sewing Machine Co. Ltd. Sewing machine with a horizontal-type loop taker. 4,348,969, Cl. 112-184.000.
Kasugai, Akiyo: *See*—
Nagashima, Teruyoshi; Takami, Akio; and Kasugai, Akiyo, 4,349,585, Cl. 427-125.000.
Kato, Yasuyuki; Sugimoto, Hiroaki; and Hanabata, Makoto, to Sumitomo Chemical Company, Limited. Process for producing aromatic polyester. 4,349,659, Cl. 528-193.000.
Kaump, Roland F. Grate and water recovery system. 4,349,436, Cl. 210-104.000.
Kawaguchi, Tsutomu: *See*—
Takeda, Yasuhisa; Matsuno, Takashi; Ohtaka, Mihoko; Mitsui, Hiroki; Kawaguchi, Tsutomu; Masuda, Hisako; Okazaki, Hiroshi; Handa, Mitsuaki; Sugawara, Yutaka; and Ogawa, Haruki, 4,349,541, Cl. 424-95.000.
Kawai, Tsutomu, to Funai Electric Co., Ltd.; and Efuti Giken Co. Sound-dubbing mechanism for a video tape recorder. 4,349,852, Cl. 360-137.000.
Kawakami, Takashi: *See*—
Onishi, Masayoshi; Nobuto, Shinichi; Kawakami, Takashi; and Yamamoto, Shigemi, 4,349,007, Cl. 123-617.000.
Kawamoto, Michio: *See*—
Gotoh, Osamu; Otobe, Yutaka; Kawamoto, Michio; and Fujimura, Akira, 4,349,005, Cl. 123-571.000.
Gotoh, Osamu; Otobe, Yutaka; Kawamoto, Michio; and Fujimura, Akira, 4,349,006, Cl. 123-571.000.
Kawamoto, Tamio, to Nissan Motor Co., Ltd. Mounting structure for a lubricating oil channel of an extension bushing. 4,348,914, Cl. 74-467.000.
Kawamura, Koji: *See*—
Sato, Ichiya; Miyagawa, Kazuo; Sasaki, Yukito; Kawamura, Koji; Sato, Shuichi; Sasaki, Soji; Kubota, Jun; and Itoh, Susumu, 4,348,903, Cl. 73-643.000.
Kawasaki Jukogyo Kabushiki Kaisha: *See*—
Fujikawa, Tetsuzo; and Tamba, Shinichi, 4,348,862, Cl. 60-314.000.
Kawashiri, Kazuhiro; Mizobuchi, Yuzo; Higashi, Akio; Tamura, Hiroshi; Takeda, Keiji; and Nagata, Masayoshi, to Fuji Photo Film Co., Ltd. Function separated type electrophotographic light-sensitive members and process for production thereof. 4,349,617, Cl. 430-59.000.
Kearns, Edward C.: *See*—
Kearns, Richard F.; Kearns, Thomas R.; and Kearns, Timothy P., 4,349,398, Cl. 156-71.000.
Kearns, Richard F.; Kearns, Thomas R.; and Kearns, Timothy P., to Kearns, Edward C. Protective coating system. 4,349,398, Cl. 156-71.000.
Kearns, Thomas R.: *See*—
Kearns, Richard F.; Kearns, Thomas R.; and Kearns, Timothy P., 4,349,398, Cl. 156-71.000.
Kearns, Timothy P.: *See*—
Kearns, Richard F.; Kearns, Thomas R.; and Kearns, Timothy P., 4,349,398, Cl. 156-71.000.
Keeney, C. Neil; May, Paul W., Jr.; and Morgan, Albert W., to Monsanto Company. Inhibition of polyurethane hardening. 4,349,640, Cl. 524-294.000.

Keh-Yeu, Chiang: *See*—
Yang, Yih-Chen, 4,349,123, Cl. 220-407.000.
Kellar, John D.; and Pereman, Gordon F., to PPG Industries, Inc. Deformable vacuum mold for shaping glass sheets. 4,349,375, Cl. 65-291.000.
Kelley, Jay H. Systemic roof support. 4,349,300, Cl. 405-288.000.
Kelly, Darrell A.: *See*—
Blackmon, Lawrence E.; Dees, John R.; Kelly, Darrell A.; Mowe, Wayne T.; and Yu, Jing-peir, 4,349,604, Cl. 428-370.000.
Kelvinator Commercial Products, Inc.: *See*—
Swanson, Richard H., 4,348,965, Cl. 108-152.000.
Kemira Oy: *See*—
Toivonnen, Hannu J., 4,349,660, Cl. 528-261.000.
Kemppi Oy: *See*—
Makimaa, Toivo T., 4,349,720, Cl. 219-130.330.
Kendall Company, The: *See*—
Perlin, Alfred R., 4,349,031, Cl. 128-642.000.
Kennecott Corporation: *See*—
Cichy, Paul, 4,349,381, Cl. 75-10.00R.
Cichy, Paul, 4,349,909, Cl. 373-84.000.
Miedaner, Patrick M.; and Kucheria, Chhattar S., 4,349,637, Cl. 501-126.000.
Shinopulos, George; Randlett, M. Ronald; and Bower, Terry F., 4,349,145, Cl. 228-208.000.
Kermath Manufacturing Corporation: *See*—
Moore, Robert M., 4,349,917, Cl. 378-24.000.
Kernforschungszentrum Karlsruhe GmbH: *See*—
Kluth, Manfred; Antoni, Heinz; and Stich, Werner, 4,348,909, Cl. 73-863.210.
Ketterer, Dieter; Jakubaschk, Horst; and Rommel, Emil, to Heckler & Koch GmbH. Shoulder arm with swivel breech member. 4,348,941, Cl. 89-155.000.
KEWA Kernbrennstoff-Wiederaufarbeitungs-Gesellschaft mbH: *See*—
Krug, Gunter; Lahr, Helfried; Schween, Peter; and Wieczorek, Herbert, 4,349,465, Cl. 252-626.000.
Khattab, Ghazi M. A., to Allied Corporation. Preparation of metal plated polyamide thermoplastic articles having mirror-like metal finish. 4,349,421, Cl. 204-38.00B.
Kia, James D.: *See*—
Glassman, Stephen M.; Kia, James D.; and Ryding, Paul A., 4,349,016, Cl. 128-87.00R.
Kienzle Apparate GmbH: *See*—
Blaser, Paul; Schmidt, Helmut; and Strobel, Walter, 4,349,286, Cl. 400-492.000.
Kikuchi, Hideo: *See*—
Kaneko, Tamaki; Hibi, Kunio; Ikeda, Sunao; Okuzawa, Tugio; Kakitani, Yohtaro; and Kikuchi, Hideo, 4,349,190, Cl. 271-297.000.
Kikuchi, Hiroshi: *See*—
Oda, Takeshi; and Kikuchi, Hiroshi, 4,348,810, Cl. 30-210.000.
Kikuchi, Michitsugu; and Suzuki, Yoshio, to Bridgestone Tire Company Limited. Pneumatic radial tires. 4,349,063, Cl. 152-359.000.
Kim, Sung C.; and Schwartz, Marvin P., to International Telephone and Telegraph Corporation. Double-walled finned heat transfer tube. 4,348,794, Cl. 29-157.3AH.
Kimberly-Clark Corporation: *See*—
Singer, Wayne J., 4,349,019, Cl. 128-132.00D.
Kinaga, Eiichi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Seatbelt system. 4,349,226, Cl. 297-475.000.
Kindler, Horst: *See*—
Tappe, Horst; Kindler, Horst; Roth, Kurt; and Weyer, Hans-Jurgen, 4,349,348, Cl. 8-464.000.
King, Dennis E.: *See*—
Bain, Kenneth J. D.; King, Dennis E.; Worship, Lesley A.; and Burton, Achmat T., 4,349,117, Cl. 220-4.00F.
Kings Electronics Co., Inc.: *See*—
Scheiner, Harry, 4,349,792, Cl. 333-81.00A.
Kins Developments Limited: *See*—
English, Martin; Pym, David P.; and Dawson, Lindsay G., 4,349,628, Cl. 435-161.000.
Kirby, Roy J., to Superflexit Limited. End fitting assembly for a conduit. 4,349,221, Cl. 285-149.000.
Kirchner, Helmut: *See*—
Lorenz, Hans-Walther; Schumacher, Gerd; and Kirchner, Helmut, 4,348,887, Cl. 73-23.000.
Kishimoto, Yoshio; and Shimotsuma, Wataru, to Matsushita Electric Industrial Company, Limited. Conductive device using conductive polymer compositions. 4,349,606, Cl. 428-411.000.
Kitagawa, Hiroshi: *See*—
Sakashita, Noriji; Kugisawa, Toshio; Watanabe, Hironori; and Kitagawa, Hiroshi, 4,348,928, Cl. 84-1.010.
Kitai, Kiyoshi; Kobayashi, Masaru; Nakagawa, Tadashi; Ishida, Hiroaki; Watanabe, Masanori; and Takazawa, Yuzuru, to Seiko Koki Kabushiki Kaisha. Manual focal point adjusting and change-over device for use in automatic focal point adjuster camera. 4,349,258, Cl. 354-127.000.
Kitamura, Tomosaburo; Miyahara, Kosuke; and Kodera, Yoichi, to Sony Corporation. Fiber reinforced piezoelectric bender transducer. 4,349,762, Cl. 310-332.000.
Kitaura, Yoshihiko; Nakaguchi, Osamu; Hemmi, Keiji; Aratani, Matsuhiko; Takeno, Hidekazu; Okada, Satoshi; Tanaka, Hirokazu; Hashimoto, Masashi; Kuroda, Yoshio; Iguchi, Eiko; Kohsaka, Masanobu; Aoki, Hatsuo; and Imanaka, Hiroshi, to Fujisawa Pharmaceutical Company, Ltd. Peptide, process for preparation thereof and use thereof. 4,349,466, Cl. 260-112.50R.
Kitawaki, Kazuya: *See*—
Yaji, Saichi; Kitawaki, Kazuya; and Furuya, Takafumi, 4,349,052, Cl. 139-92.000.
Kittle, Carl E.: *See*—
Gardner, Frank H.; and Kittle, Carl E., 4,348,917, Cl. 74-568.00R.
Klahr, Erhard; Trieselt, Wolfgang; Trapp, Horst; and Widder, Rudi, to BASF Aktiengesellschaft. Purification of alkylglycosides by distillative removal of unconverted alcohols. 4,349,669, Cl. 536-127.000.
Klar, Heiner: *See*—
Pfleiderer, Hans-Joerg; and Klar, Heiner, 4,349,749, Cl. 307-221.00D.
Klar, Rudolf; and Beier, Ulrich, to Continental Gummi-Werke Aktiengesellschaft. Sealing element. 4,349,122, Cl. 220-373.000.
Klein, Morris M.: *See*—
Brixner, Berlyn B.; Klein, Morris M.; and Winkler, Max A., 4,349,249, Cl. 350-483.000.
Klem, John E., to International Harvester Co. Hydraulic valve block mounting. 4,349,046, Cl. 137-899.000.
Klem, John E., to International Harvester Co. Structure for center hinge and boom cylinder pivot. 4,349,307, Cl. 414-686.000.
Klisnan, Arthur W., to Baird Corporation. Modular natural lighting system. 4,349,245, Cl. 350-264.000.
Klockner-Humboldt-Deutz AG: *See*—
Abelitis, Andris, 4,349,387, Cl. 106-100.000.
Chaudhuri, Kiranendu B., 4,349,383, Cl. 75-73.000.
Klockner-Humboldt-Deutz Aktiengesellschaft: *See*—
Brockmann, Heinz, 4,349,080, Cl. 180-301.000.
Nolte, Albert; Schleiermacher, Herbert; and Arbeiter, Erich, 4,348,990, Cl. 123-41.120.
Kluge, Arthur F.: *See*—
Roszkowski, Adolph P.; Clark, Robin D.; and Kluge, Arthur F., 4,349,549, Cl. 424-248.550.
Klumpp, Walter: *See*—
Bremer, Clemens; and Klumpp, Walter, 4,348,940, Cl. 89-140.000.
Kluth, Manfred; Antoni, Heinz; and Stich, Werner, to Kernforschungszentrum Karlsruhe GmbH. Sampling probe for taking partial liquid quantities from various phases of two immiscible liquids. 4,348,909, Cl. 73-863.210.
Knapp, Evalyn L.: *See*—
Collins, Darryl L.; Collins, Donna L.; Knapp, Merton C.; and Knapp, Evalyn L., 4,349,225, Cl. 294-16.000.
Knapp, Frank H.; and Spector, George. Snow life shoes. 4,348,823, Cl. 36-123.000.
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Collins, Darryl L.; Collins, Donna L.; Knapp, Merton C.; and Knapp, Evalyn L., 4,349,225, Cl. 294-16.000.
Knierim, Donald V. Security device. 4,348,879, Cl. 70-93.000.
Knight, Lindsay C., to Australasian Training Aids, Pty., Ltd. Discriminatory hit detection in target apparatus. 4,349,729, Cl. 235-400.000.
Knoth, Werner-Dieter: *See*—
Hullen, Helmut; and Knoth, Werner-Dieter, 4,349,368, Cl. 65-28.000.
Knotik, Karl; Leichter, Peter; and Glock, Johann, to Osterreichische Studiengesellschaft fur Atomenergie Ges.m.b.H. Method of concentrating and drying water-containing fluent media. 4,349,412, Cl. 159-47.0WL.
Kobayashi, Kazufumi; and Hashimoto, Shigeru, to Canon Kabushiki Kaisha. Support structure for the aperture signal transmitting means in a camera lens assembly. 4,349,265, Cl. 354-286.000.
Kobayashi, Keizou: *See*—
Yamauchi, Toshima; Nogami, Sadao; Sawada, Kengi; Moriya, Jyunichiro; Sawada, Hiroomi; and Kobayashi, Keizou, 4,348,873, Cl. 62-514.00R.
Kobayashi, Koichi: *See*—
Shibayama, Hikou; Ogawa, Tetsuya; Kosugi, Makoto; Hisatsugu, Tokushige; and Kobayashi, Koichi, 4,349,409, Cl. 156-643.000.
Kobayashi, Masaru: *See*—
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Kobayashi, Toru: *See*—
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Kobishi Electric Co., Ltd.: *See*—
Shimoya, Shigeo, 4,349,800, Cl. 335-207.000.
Kock, Hendrikus G.: *See*—
Deunhouwer, Anthony H.; and Kock, Hendrikus G., 4,348,795, Cl. 29-411.000.
Kodera, Yoichi: *See*—
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Koehring GmbH-BOMAG Division: *See*—
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Kohler, Hans-Dieter: *See*—
Brandt, Hans-Walter; Steude, Heinrich; Bruns, Ludwig; and Kohler, Hans-Dieter, 4,349,416, Cl. 203-19.000.
Kohsaka, Masanobu: *See*—
Kitaura, Yoshihiko; Nakaguchi, Osamu; Hemmi, Keiji; Aratani, Matsuhiko; Takeno, Hidekazu; Okada, Satoshi; Tanaka, Hirokazu; Hashimoto, Masashi; Kuroda, Yoshio; Iguchi, Eiko; Kohsaka, Masanobu; Aoki, Hatsuo; and Imanaka, Hiroshi, 4,349,466, Cl. 260-112.50R.
Koike, Mikio: *See*—
Kasuga, Noboru; Hara, Kazumasa; and Koike, Mikio, 4,348,969, Cl. 112-184.000.
Koitabashi, Takeo; Matsuzaka, Syozi; and Iijima, Tashifumi, to Konishiroku Photo Industry Co., Ltd. Photographic silver halide emulsion

comprising epitaxial composite silver halide crystals, silver iodobromide emulsion and process for preparing the same. 4,349,622, Cl. 430-567.000.

Kokusai Denshin Denwa Kabushiki Kaisha: *See—*
Amano, Kitsutaro; Nakai, Taiichiro; Sato, Masanori; and Nunokawa, Makoto, 4,349,243, Cl. 350-96.230.

Kolehmainen, Seppo; and Tarkkanen, Veikko. Method and apparatus for measurement of samples by luminescence. 4,349,510, Cl. 422-66.000.

Kolyada, Vladimir A.: *See—*
Axenko, Alexandr A.; Nazarian, Miron M.; Kolyada, Vladimir A.; and Mataev, Arkady R., 4,349,431, Cl. 204-302.000.
Efimov, Vyacheslav T.; Nazarian, Miron M.; Kolyada, Vladimir A.; Mataev, Arkady R.; Shamsha, Ljudmila F.; and Axenko, Alexandr A., 4,349,430, Cl. 204-302.000.

Komatsu, Fumito; and Shinozaki, Junichiro, to Kabushiki Kaisha Sankyo Seiki Seisakusho. Music box having time-sounding function. 4,349,899, Cl. 368-75.000.

Kondo, Mitsuru: *See—*
Iwasaki, Hiroshi; Irii, Shinsuke; and Kondo, Mitsuru, 4,349,454, Cl. 252-312.000.

Kondo, Syunichi; Nomaguchi, Hirotsugu; and Sato, Hideo, to Fuji Photo Film Co., Ltd. Photoconductive compositions and electrophotographic light-sensitive materials using said compositions. 4,349,618, Cl. 430-83.000.

Kondo, Tsutomu: *See—*
Koyama, Yukio; Kondo, Tsutomu; Matsuzaki, Mikio; and Akizuki, Kunio, 4,349,247, Cl. 350-302.000.

Kondo, Yoshinobu: *See—*
Matsuoka, Hideoki; and Kondo, Yoshinobu, 4,349,215, Cl. 280-804.000.

Kondo, Yukio: *See—*
Yoshikawa, Yoshio; Nawata, Takanari; Goto, Mikio; and Kondo, Yukio, 4,349,509, Cl. 422-57.000.

Konersmann, Erhard, to Werkzeugmaschinenfabrik Oerlikon-Buhrle. Method for producing surfaces at a blade cutter head formed of hardened cutter blade steel. 4,348,839, Cl. 51-281.00R.

Konishiroku Photo Industry Co., Ltd.: *See—*
Hirata, Masao, 4,349,268, Cl. 355-4.000.
Koitabashi, Takeo; Matsuzaka, Syozi; and Iijima, Tashifumi, 4,349,622, Cl. 430-567.000.

Koprowski, Hilary; Mitchell, Kenneth F.; and Steplewski, Zenon, to Wistar Institute, The. Monocolonal hybridoma antibody specific for high molecular weight carcinoembryonic antigen. 4,349,528, Cl. 424-1.000.

Koseki, Teruo: *See—*
Hiramatsu, Toru; Koseki, Teruo; Hamada, Satosi; and Sumida, Atsushi, 4,349,523, Cl. 423-447.400.

Kostelc, James G.: *See—*
Labows, John N.; Kostelc, James G.; and McGinley, Kenneth J., 4,349,626, Cl. 435-38.000.

Kosugi, Makoto: *See—*
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Kouno, Akiyoshi; Morishita, Masanobu; and Yui, Yoshio, to Nippon Electric Co., Ltd. Circuit for making a CRT display a TV picture for a copy with dots superposed on half-tone picture areas. 4,349,844, Cl. 358-244.000.

Koval, Stephen F.: *See—*
Eny, Nicholas R., 4,349,299, Cl. 405-261.000.

Koyama, Yukio; Kondo, Tsutomu; Matsuzaki, Mikio; and Akizuki, Kunio, to Mitsubishi Motors Corp.; and Ichikoh Industries Ltd. Mirror apparatus for automobile. 4,349,247, Cl. 350-302.000.

Koyata, Kenzi, to Olympus Optical Co., Ltd. Endoscope with an ultrasonic probe. 4,349,032, Cl. 128-660.000.

Kral, Jaroslav J.: *See—*
Zuber, Bretislav; and Kral, Jaroslav J., 4,349,780, Cl. 324-262.000.

Kramer, Wolfgang: *See—*
Timmler, Helmut; Kramer, Wolfgang; Buchel, Karl H.; Brandes, Wilhelm; Frohberger, Paul-Ernst; and Homeyer, Bernhard, 4,349,556, Cl. 424-269.000.

Kraus, Heinz, to Dr. Johannes Heidenhain GmbH. Bolometer. 4,349,808, Cl. 338-18.000.

Krauss-Kalweit, Irene. Method and device for determining the transmissibility of a fluid-conducting borehole layer. 4,348,897, Cl. 73-155.000.

Krespan, Carl G., to Du Pont de Nemours, E. I., and Company. Polyfluoroallyloxy compounds, their preparation and copolymers therefrom. 4,349,650, Cl. 526-243.000.

Krevitz, Kenneth: *See—*
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KRG, Inc.: *See—*
Glassman, Stephen M.; Kia, James D.; and Ryding, Paul A., 4,349,016, Cl. 128-87.00R.

Krieg, Michael L.: *See—*
Flurry, Gregory A.; Krieg, Michael L.; and Phillips, David W., 4,349,742, Cl. 250-568.000.

Krier, Martin: *See—*
Liebel, Henry L.; and Krier, Martin, 4,349,303, Cl. 410-154.000.

Krikorian, William G. Shirred laminate. 4,349,020, Cl. 128-155.000.

Kristiansen, Odd: *See—*
Ackermann, Peter; Drabek, Jozef; Farooq, Saleem; Gsell, Laurenz; Kristiansen, Odd; and Wehrli, Rudolf, 4,349,567, Cl. 424-305.000.

Krug, Gunter; Lahr, Helfried; Schween, Peter; and Wieczorek, Herbert, to KEWA Kernbrennstoff-Wiederaufarbeitungs-Gesellschaft mbH. Process for the treatment of combustible, solid radioactive wastes. 4,349,465, Cl. 252-626.000.

Krugener, Rolf: *See—*
Kurth, Hermann W.; and Krugener, Rolf, 4,349,722, Cl. 219-202.000.

Krulick, Steven E.: *See—*
Zinn, Michael F.; Krulick, Steven E.; and Leonard, Ronald W., 4,349,070, Cl. 165-173.000.

Krumwiede, John F., to PPG Industries, Inc. Method of recovering waste heat from furnace flue gases using a granular heat exchange means. 4,349,367, Cl. 65-27.000.

Kruse, William E. Wedge-forming pile. 4,349,298, Cl. 405-256.000.

Kubat, Josef; Rigdahl, Hans M.; and Djurner, Jan K. Injection moulding process using polymer blends containing high molecular polyethylene of high density. 4,349,504, Cl. 264-328.170.

Kubicek, Frantisek: *See—*
Raboud, Pierre-Benoit; Kubicek, Frantisek; and Bandi, Jean-Pierre, 4,349,579, Cl. 426-631.000.

Kubler, Ulrich, to Licentia Patent-Verwaltungs-G.m.b.H. Switching of channels between two premodulation systems. 4,349,903, Cl. 370-57.000.

Kubo, Masaharu: *See—*
Ohba, Shinya; Hanamura, Shoji; Ozaki, Toshifumi; Kubo, Masaharu; Nakai, Masaaki; Takahashi, Kenji; Aoki, Masakazu; Takemoto, Iwao; Ando, Haruhisa; and Izawa, Ryuichi, 4,349,743, Cl. 250-578.000.

Kubo, Seitoku: *See—*
Ito, Takayoshi; Kubo, Seitoku; and Terakura, Yukio, 4,349,088, Cl. 192-3.300.

Kubota, Jun: *See—*
Sato, Ichiya; Miyagawa, Kazuo; Sasaki, Yukito; Kawamura, Koji; Sato, Shuichi; Sasaki, Soji; Kubota, Jun; and Itoh, Susumu, 4,348,903, Cl. 73-643.000.

Kucheria, Chhattar S.: *See—*
Miedaner, Patrick M.; and Kucheria, Chhattar S., 4,349,637, Cl. 501-126.000.

Kuffer, Hans, to Rheinmetall GmbH. Ignition arrangement for ammunition in a barrel weapon. 4,348,937, Cl. 89-24.000.

Kufrin, Robert: *See—*
Bernstein, Carl; Stogis, James; Riddle, Travis; and Kufrin, Robert, 4,349,662, Cl. 528-301.000.

Kugisawa, Toshio: *See—*
Sakashita, Noriji; Kugisawa, Toshio; Watanabe, Hironori; and Kitagawa, Hiroshi, 4,348,928, Cl. 84-1.010.

Kugo, Masaru; and Igarashi, Osamu, to Hitachi, Ltd. Signal lamp apparatus with a lamp burnout detecting circuit. 4,349,810, Cl. 340-79.000.

Kuhfus, Gerd, to Northern Telecom Limited. Lighted telephone dial. 4,349,705, Cl. 179-90.00L.

Kuhl, Rudolf: *See—*
Nutzel, Hans G.; and Kuhl, Rudolf, 4,349,423, Cl. 204-146.000.

Kuijk, Karel E.: *See—*
Wiegman, Nelie J.; and Kuijk, Karel E., 4,349,893, Cl. 365-20.000.

Kulynych, Larysa H.; Romankiw, Lubomyr T.; and von Gutfeld, Robert J., to International Business Machines Corporation. Laser enhanced maskless method for plating and simultaneous plating and etching of patterns. 4,349,583, Cl. 427-53.100.

Kunkel, Wolfgang: *See—*
Goor, Gustaaf; and Kunkel, Wolfgang, 4,349,526, Cl. 423-588.000.

Kunz, Walter: *See—*
Hubele, Adolf; Kunz, Walter; and Eckhardt, Wolfgang, 4,349,550, Cl. 424-250.000.

Kuo, Wey-Chaung: *See—*
Micheli, Adolph L.; and Kuo, Wey-Chaung, 4,349,709, Cl. 200-19.00R.

Kuramoto, Kikuzo; and Enoki, Takahiro, to Nisso Industries Co. Ltd. Locking device. 4,348,790, Cl. 24-211.00P.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*
Noguchi, Tatsuhiko; Kurita, Ryuichi; Nemoto, Ken; and Endo, Kiichi, 4,349,447, Cl. 252-117.000.

Kurei, Hiroshi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Electromagnetic release device for single lens reflex camera. 4,349,261, Cl. 354-152.000.

Kurihara, Kazuhiko: *See—*
Yazawa, Masahide; Tani, Haruhisa; Kurihara, Kazuhiko; and Yazawa, Hiroshi, 4,349,500, Cl. 264-159.000.

Kurihara, Takenori, to Takeda Riken Kogyo Kabushikikaisha. Stabilized sweep frequency generator with adjustable start and stop frequencies. 4,349,789, Cl. 331-4.000.

Kurita, Ryuichi: *See—*
Noguchi, Tatsuhiko; Kurita, Ryuichi; Nemoto, Ken; and Endo, Kiichi, 4,349,447, Cl. 252-117.000.

Kuroda, Toshio: *See—*
Yamada, Masahide; Edanami, Kenichi; and Kuroda, Toshio, 4,349,546, Cl. 424-180.000.

Kuroda, Yasuo: *See—*
Ishiwata, Shoji; Kuroda, Yasuo; Tanaka, Shoichi; Watanabe, Tsuneo; and Hasegawa, Shinichi, 4,349,513, Cl. 423-12.000.

Kuroda, Yoshio: *See—*
Kitaura, Yoshihiko; Nakaguchi, Osamu; Hemmi, Keiji; Aratani, Matsuhiko; Takeno, Hidekazu; Okada, Satoshi; Tanaka, Hirokazu; Hashimoto, Masashi; Kuroda, Yoshio; Iguchi, Eiko; Kohsaka, Masanobu; Aoki, Hatsuo; and Imanaka, Hiroshi, 4,349,466, Cl. 260-112.50R.

Kuroiwa, Hiroshi: *See*—
Oyama, Yoshishige; and Kuroiwa, Hiroshi, 4,349,877, Cl. 364-431.050.
Kurth, Hermann W.; and Krugener, Rolf, to Daimler-Benz Aktiengesellschaft. Moisture protection and drainage arrangement for motor vehicle closure locks. 4,349,722, Cl. 219-202.000.
Kwok, Sai W., to GTE Automatic Electric Laboratories, Inc. RF Trap for a cable television trunk amplifier station. 4,349,795, Cl. 333-176.000.
Kwon, Yiduk; and Lawson, Paul, to Exxon Research & Engineering Co. Temperature compensated voltage regulator for photovoltaic charging systems. 4,349,775, Cl. 320-35.000.
Kyburz, Emilio; and Aschwanden, Werner, to Hoffmann-La Roche Inc. Substituted 2-pyrrolidinones. 4,349,562, Cl. 424-274.000.
L. Schuler GmbH: *See*—
Schneider, Franz; Schumann, Burkhard; Maier, Karl; and Hohn, Herbert, 4,349,310, Cl. 414-749.000.
Laakmann, Katherine D.; and Laakmann, Peter, to Flir Systems, Inc. Television compatible thermal imaging system. 4,349,843, Cl. 358-206.000.
Laakmann, Peter: *See*—
Laakmann, Katherine D.; and Laakmann, Peter, 4,349,843, Cl. 358-206.000.
Labows, John N.; Kostelc, James G.; and McGinley, Kenneth J., to Monell Chemical Senses Center, The. Method of detecting *Pseudomonas aeruginosa* infections utilizing selected ketone and/or sulfur metabolites. 4,349,626, Cl. 435-38.000.
Lafferty, James, to Rehrig Pacific Corporation. Case with hinged lid assembly. 4,349,121, Cl. 220-341.000.
Lahr, Helfried: *See*—
Krug, Gunter; Lahr, Helfried; Schween, Peter; and Wieczorek, Herbert, 4,349,465, Cl. 252-626.000.
Laimer, Friedrich: *See*—
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Lake, Jack E., to Racine Federated, Inc. Fluid flow device. 4,349,711, Cl. 200-153.0LA.
Lalak, Joseph: *See*—
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Lambert, Lloyd J., Jr.; and Lambert, Lloyd J., Sr. Abdominal sidebend machine-upper. 4,349,191, Cl. 272-118.000.
Lambert, Lloyd J., Jr.; and Lambert, Lloyd J., Sr. Counterbalanced weight system. 4,349,192, Cl. 272-118.000.
Lambert, Lloyd J., Jr.; and Lambert, Lloyd J., Sr. Lower abdominal twist machine. 4,349,193, Cl. 272-118.000.
Lambert, Lloyd J., Jr.; and Lambert, Lloyd J., Sr. Apparatus for exercising the inner and outer thigh muscles. 4,349,194, Cl. 272-118.000.
Lambert, Lloyd J., Sr.: *See*—
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Lambert, Lloyd J., Jr.; and Lambert, Lloyd J., Sr., 4,349,193, Cl. 272-118.000.
Lambert, Lloyd J., Jr.; and Lambert, Lloyd J., Sr., 4,349,194, Cl. 272-118.000.
Lambert, Michael B.: *See*—
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Lampson, Neil F., to Riggers Manufacturing Co. Crane. 4,349,115, Cl. 212-178.000.
Landron, Rafael: *See*—
Davis, Earl K.; Landron, Rafael; and Taylor, Scot W., 4,349,635, Cl. 501-15.000.
Landry, Norman R., to RCA Corporation. Coax to rectangular waveguide coupler. 4,349,790, Cl. 333-24.100.
Langeman, Peter J. Irrigation ditch gate. 4,349,296, Cl. 405-99.000.
Langenfeld, Norbert: *See*—
Blank, Heinz U.; Wolters, Erich; and Langenfeld, Norbert, 4,349,471, Cl. 260-208.000.
Langford, William D., to Occidental Oil Shale. Mining system for in situ oil shale retorts. 4,349,227, Cl. 299-2.000.
Lansing Bagnall Limited: *See*—
Gibbons, Ralph D., 4,348,805, Cl. 29-857.000.
LaPaglia, Angelo F. Cottage cheese processor. 4,348,951, Cl. 100-127.000.
Laperle, Raymond A.: *See*—
Robson, William F.; and Laperle, Raymond A., 4,349,783, Cl. 324-457.000.
Larson, Roger R.; and Hatfield, Efton E. Process of recycling animal waste. 4,349,572, Cl. 426-335.000.
Lary, Richard F., to Digital Equipment Corporation. Duplicate tag store for cached multiprocessor system. 4,349,871, Cl. 364-200.000.
LaSalle Machine Tool, Inc.: *See*—
Wiknich, Douglas D.; and Peabody, Michael J., 4,349,099, Cl. 198-751.000.
Lau, Kei F.: *See*—
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Laupman, Robert R., to Novanex Automation N.V. Compressor. 4,349,787, Cl. 330-284.000.
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Lawson, John D., to Cyclone International, Inc. Poultry feeder with infinite adjustment. 4,348,988, Cl. 119-53.000.
Lawson, Paul: *See*—
Kwon, Yiduk; and Lawson, Paul, 4,349,775, Cl. 320-35.000.
Lazaro, Luis J., Jr.: *See*—
Eves, William J.; and Lazaro, Luis J., Jr., 4,348,806, Cl. 29-863.000.
Leaverton, James A.: *See*—
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Lebeault, Jean-Michel: *See*—
Segard, Emile-Pierre; and Lebeault, Jean-Michel, 4,349,570, Cl. 426-52.000.
Leber, Edmond, to Sevylor. Inflatable boat with additional inflatable elements compensating for loss in buoyancy. 4,348,779, Cl. 114-345.000.
Lebrun, Jean-Paul R.: *See*—
Thevenot, Francois H. J.; Goeuriot, Patrice M. V.; Driver, Julian H.; and Lebrun, Jean-Paul R., 4,348,980, Cl. 118-717.000.
Lectromelt Corporation: *See*—
Bello, James R., 4,349,912, Cl. 373-105.000.
Lee, Bong K.; Marquez, Joseph A.; and Waitz, J. Allan, to Schering Corporation. Macrolide antibiotic complex. 4,349,665, Cl. 536-7.100.
Legg, James B.: *See*—
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Leiber, Heinz, to Robert Bosch GmbH. Power steering for motor vehicles. 4,349,079, Cl. 180-143.000.
Leichter, Peter: *See*—
Knotik, Karl; Leichter, Peter; and Glock, Johann, 4,349,412, Cl. 159-47.0WL.
Leitermann, Wulf; and Pflugfelder, Karl, to Audi NsU Auto Union Aktiengesellschaft. Switching apparatus for the mechanical remote control of the gear box of a motor vehicle. 4,348,915, Cl. 74-473.00R.
Leitner, Wolfgang; Pampouchidis, Georg; and Bleikolm, Anton, to Vianova Kunstharz, A.G. Water-dilutable binders carrying oxazolidine groups. 4,349,655, Cl. 528-45.000.
Lemay, Richard A.: *See*—
Woods, William E.; Stanley, Philip E.; Cushing, David E.; and Lemay, Richard A., 4,349,874, Cl. 364-200.000.
Lemoussu, Michel; and Cardot, Claude, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Phase-controlling feedback circuit for single sideband demodulation. 4,349,785, Cl. 329-50.000.
Leonard, Ronald W.: *See*—
Zinn, Michael F.; Krulick, Steven E.; and Leonard, Ronald W., 4,349,070, Cl. 165-173.000.
Leong, Basil K. J., to Upjohn Company, The. Animal inhalation exposure system. 4,348,985, Cl. 119-15.000.
Leorat, Francois J., to Regie Nationale des Usines Renault. Piston compressor derived from a reciprocating thermal engine. 4,349,320, Cl. 417-237.000.
Lerner, Michael. Cleat. 4,348,974, Cl. 114-218.000.
Les Cables de Lyon: *See*—
Vives, Jean-Patrick, 4,349,694, Cl. 174-128.00R.
Les Fabriques d'Assortiments Reunies: *See*—
Berney, Jean, 4,348,813, Cl. 33-172.00R.
Lesavage, Stephen J. Snowshoe footwear. 4,348,822, Cl. 36-122.000.
Leslie Hartridge Limited: *See*—
Emerson, Reginald S.; and Lovelock, John E., 4,348,894, Cl. 73-119.00A.
Letica Corporation: *See*—
Letica, Ilija, 4,349,119, Cl. 220-306.000.
Letica, Ilija, to Letica Corporation. Container construction. 4,349,119, Cl. 220-306.000.
Levinson, Lionel M., to General Electric Company. Method for fabricating free-standing thick-film varistors. 4,349,496, Cl. 264-61.000.
Levy, Hilton B., to United States of America, Health and Human Services. Nuclease-resistant hydrophilic complex of polyriboinosinic-polyribocytidylic acid. 4,349,538, Cl. 424-85.000.
Lewis, Christopher M., to P A Management Consultants Limited. Coin discriminating apparatus. 4,349,095, Cl. 194-100.00A.
Li, George S.; and Jones, John F., to Sohio. High nitrile resins containing maleic anhydride. 4,349,652, Cl. 526-271.000.
Li, George S.; and Jones, John F., to Standard Oil Company, The. High nitrile resins containing maleic anhydride. 4,349,653, Cl. 526-272.000.
Li, Tai T.: *See*—
Arendt, Volker D.; and Li, Tai T., 4,349,656, Cl. 528-63.000.
Libertini, Zoltan L.; and Ivanko, Theodore, to Avco Corporation. Boltless blade retainer for a turbine wheel. 4,349,318, Cl. 416-220.00R.
Liberto, Samuel J.; and Meli, James. Emergency heating system control circuit. 4,349,148, Cl. 236-11.000.
Licentia Patent-Verwaltungs-G.m.b.H.: *See*—
Kubler, Ulrich, 4,349,903, Cl. 370-57.000.
Lichty, William R.: *See*—
Hoffman, William C.; Gunther, John E.; and Lichty, William R., 4,349,817, Cl. 340-784.000.
Liebel, Henry L.; and Krier, Martin, to Angleboard Inc. Load spacer. 4,349,303, Cl. 410-154.000.

Liede, Dieter, to Robert Bosch GmbH. Method for sterilizing containers. 4,349,508, Cl. 422-1.000.

Lienhard, Paul: *See*—
Iqbal, Abul; and Lienhard, Paul, 4,349,671, Cl. 542-417.000.

Liff, Lawrence J. Liquid base makeup composition. 4,349,535, Cl. 424-63.000.

Lilly, A. Clifton, Jr.: *See*—
Cashwell, Ernest; Grollimund, Everett C.; Duley, Walter W.; Lilly, A. Clifton, Jr.; Claflin, Warren E.; Stultz, Edward B.; and Martin, Peter, 4,349,719, Cl. 219-121.0LK.

Lin, Chung-Yuan: *See*—
Barsa, Edward A.; Lin, Chung-Yuan; and Stuber, Fred A., 4,349,663, Cl. 528-367.000.

Lindemann, Klaus, to WABCO Fahrzeugbremsen GmbH. Control arrangement for improving the driving stability of motor vehicles which are equipped with anti-skid brake systems. 4,349,876, Cl. 364-426.000.

Lindmayer, Joseph, to Solarex Corporation. Method of making constant voltage solar cell and product formed thereby utilizing low-temperature aluminum diffusion. 4,349,691, Cl. 136-261.000.

Lindow, Edwin L.; and Richards, Bradley T., to Caterpillar Tractor Co. Flux dam assembly and method. 4,349,717, Cl. 219-73.200.

Lingappa, Banadakoppa T.; and Lingappa, Yamuna. Methane generator. 4,349,355, Cl. 48-111.000.

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Lingappa, Banadakoppa T.; and Lingappa, Yamuna, 4,349,355, Cl. 48-111.000.

Lischewski, Manfred; Adam, Habil G.; and Serebryakov, Edward P., to Akademie der Wissenschaften der DDR. Tritiated gibberellin aldehydes. 4,349,481, Cl. 549-297.000.

Litton Industrial Products, Inc.: *See*—
Stevenson, Christopher T. S.; and D'Aloisio, Elio F., 4,349,144, Cl. 228-2.000.

Litton Systems Inc.: *See*—
Wirt, Thomas M.; and Chechile, Robert A., 4,349,183, Cl. 267-160.000.

Liu, Thomas M. H.; Melillo, David G.; Ryan, Kenneth M.; Shinkai, Ichiro; and Sletzinger, Meyer, to Merck & Co., Inc. Intermediate for synthesis of thienamycin via (3SR, 4RS)-3-[1 (SR)-hydroxyethyl]-2-oxo-4-azetidineacetic acid. 4,349,687, Cl. 549-291.000.

Livick, Lester R. Matching game. 4,349,197, Cl. 273-1.0GF.

Locher, Donald A.: *See*—
Byers, J. Otto, Jr.; and Locher, Donald A., 4,349,319, Cl. 417-222.000.

Lochhead, Donald L.: *See*—
Kagiwada, Reynold S.; Yen, Kuo-Hsiung; Wang, Ke-Li; Lau, Kei F.; Lochhead, Donald L.; and Leaverton, James A., 4,349,794, Cl. 333-141.000.

Lockheed Corporation: *See*—
Ferguson, Jesse T., Jr., 4,349,302, Cl. 410-69.000.

Lodige, Fritz: *See*—
Lodige, Wilhelm, 4,349,280, Cl. 366-183.000.

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Loepfe, Erich, to Gebrueder Loepfe AG. Device for monitoring yarn motion on a textile machine. 4,349,784, Cl. 328-138.000.

Long, Robert A.; and Fan, Albert K., to GTE Products Corporation. Method of making high purity calcium hydrogen phosphate dihydrate. 4,349,518, Cl. 423-308.000.

Longview Fibre Company: *See*—
Bradley, Michael F.; and Viecelli, Jack C., 4,349,105, Cl. 206-317.000.

Lorang, Lucien: *See*—
Schleimer, Francois; Henrion, Romain; Goedert, Ferdinand; and Lorang, Lucien, 4,349,382, Cl. 75-60.000.

Lord Corporation: *See*—
Blenner, Donald R.; and Boenig, Herman V., 4,349,403, Cl. 156-272.600.

Lord, Tom J.; and Snyder, William V., to PPG Industries, Inc. Apparatus for installing rolls on a conveyor shaft. 4,348,799, Cl. 29-450.000.

Lorenz, Hans-Walther; Schumacher, Gerd; and Kirchner, Helmut, to B.A.T. Cigaretten-Fabriken GmbH. Apparatus for determining the effects of dilution and/or diffusion on the gaseous components of a gas flow. 4,348,887, Cl. 73-23.000.

Lours, Sylvie: *See*—
Fitoussi, Richard; Lours, Sylvie; and Musikas, Claude, 4,349,350, Cl. 23-230.00R.

Lovelock, John E.: *See*—
Emerson, Reginald S.; and Lovelock, John E., 4,348,894, Cl. 73-119.00A.

Lowry, Alan: *See*—
Lyman, George F.; and Lowry, Alan, 4,349,632, Cl. 435-284.000.

Lu, Wen-Tong P.; and Ammon, Robert L., to United States of America, Energy. Carbon cloth supported electrode. 4,349,428, Cl. 204-294.000.

Lubbers, Marius H., to Everts & Van der Weyden Exploitatiemaatschappij. Concrete sleeper with the fastening housing. 4,349,150, Cl. 238-265.000.

Lucanera, Constantino, to International Standard Electric Corporation. Simple horizontally polarized omnidirectional antenna. 4,349,826, Cl. 343-773.000.

Lucas Industries Limited: *See*—
Buxton, Keith, 4,349,771, Cl. 318-685.000.
Jefferson, John R.; and Brown, Alexander G. M., 4,348,995, Cl. 123-366.000.

Lucke, Josef: *See*—
Lodige, Wilhelm, 4,349,280, Cl. 366-183.000.

Luenser, Werner R., to Ethyl Products Company. Thermoplastic screw-threaded closure cap. 4,349,116, Cl. 215-330.000.

Luftek, Inc.: *See*—
Carty, John J., 4,348,947, Cl. 98-58.000.

Luk Lamellen und Kupplungsbau GmbH: *See*—
Geschka, Hugo W.; and Beitecke, Bernd, 4,348,877, Cl. 68-13.00R.

Lundberg, Lynn B., to United States of America, Energy. Method of forming single crystals of beta silicon carbide using liquid lithium as a solvent. 4,349,407, Cl. 156-624.000.

Lundin, Lars I. Apparatus for collecting oil or similar substances from the surface of water. 4,349,439, Cl. 210-242.300.

Lutz, Andre: *See*—
Gouin d'Ambrieres, Solange; Lutz, Andre; and Gasc, Jean-Claude, 4,349,545, Cl. 424-180.000.

Lyman, George F.; and Lowry, Alan, to Data Packaging Corporation. Tissue culture cluster dish. 4,349,632, Cl. 435-284.000.

Lynes, Inc.: *See*—
Malone, Billy C., 4,349,204, Cl. 277-34.000.

Lyon, LaVern D.: *See*—
November, Milton H.; Lyon, LaVern D.; and Ponzi, Joseph J., 4,349,881, Cl. 364-509.000.

Lysanov, Vladislav S.; Digonsky, Viktor V.; Feldgun, Leon I.; Davidenko, Valery M.; Novikov, Nikolai V.; Borimsky, Alexandr I.; Shulzhenko, Alexandr A.; Yakimenko, Valerian D.; Dovgal, Eduard Y.; Egorov, Vitaly Y.; Rovsha, Vyacheslav S.; Prikhna, Alexei I.; and Sokolov, Alexandr N. Method of producing cubic boron nitride. 4,349,517, Cl. 423-290.000.

Macaluso, Paul J.; and Genthe, James E., to Pitney Bowes, Inc. Developer dispensing apparatus. 4,349,132, Cl. 222-156.000.

MacMaster, George H.: *See*—
Nichols, Lawrence J.; and MacMaster, George H., 4,349,791, Cl. 333-27.000.

Maeda, Keisuke; Takechi, Keiji; and Oya, Tetsuro, to Minolta Camera KK. Lens cap for a camera. 4,349,266, Cl. 354-295.000.

Maeda, Koichi, to Tokico Ltd. Vehicle height detecting device. 4,349,735, Cl. 260-229.000.

Maier, Karl: *See*—
Schneider, Franz; Schumann, Burkhard; Maier, Karl; and Hohn, Herbert, 4,349,310, Cl. 414-749.000.

Mair, William J., to Plastic Recycling Limited. Apparatus for manufacturing plastic products. 4,349,325, Cl. 425-363.000.

Makara, Satoshi, to Murata Manufacturing Co., Ltd. Cathode-ray tube socket substrate. 4,349,235, Cl. 339-14.00T.

Makimaa, Toivo T., to Kemppi Oy. Coupling arrangement for a welding apparatus. 4,349,720, Cl. 219-130.330.

Malhotra, Sudarshan K., to Dow Chemical Company, The. 6-(Chloro or substituted phenoxy)-2-di-(substituted phenoxy) methyl pyridines. 4,349,680, Cl. 546-302.000.

Malmohus Invest AB: *See*—
Edstrom, Lars G., 4,349,189, Cl. 271-251.000.

Malone, Billy C., to Lynes, Inc. Non-extruding inflatable packer assembly. 4,349,204, Cl. 277-34.000.

Maloney, Daniel E., to Du Pont de Nemours, E. I., and Company. Electrolysis process. 4,349,422, Cl. 204-98.000.

Malotky, Lyle O.: *See*—
Mueller, Kurt F.; Chang, Marguerite S.; Farncomb, Robert F.; and Malotky, Lyle O., 4,349,396, Cl. 149-19.300.

Maly, George P.: *See*—
Bergstrom, Arthur E.; Nelson, Richard H.; and Maly, George P., 4,349,050, Cl. 138-147.000.

Mannesmann Demag Kunststofftechnik Zweigniederlassung der Mannesmann Demag Aktiengesellschaft: *See*—
Schirmer, Karl, 4,349,044, Cl. 137-512.300.

Manning, James M.; and Acharya, Seetharama A., to Rockefeller University. Test for glucosylated hemoglobin and other glucosylated proteins. 4,349,352, Cl. 23-230.00B.

Manweiler, Jack. Circular saw safety pusher device. 4,348,925, Cl. 83-435.100.

Marciniak, Franciszek, to Zaklady Telewizyjne Unitrapolkolor Osrodek Badawczo-Rozwojwy Techniki Telewizyjnej. Method and system for increasing the number of instructions transmitted in digital systems, I.A. in systems for remote control of television receivers. 4,349,841, Cl. 358-194.100.

Maringer, Melvin F.: *See*—
Biggs, James W.; and Maringer, Melvin F., 4,349,605, Cl. 428-389.000.

Mariyama, Ryoiti, to Sharp Kabushiki Kaisha. Cassette tape controlled microwave cooking apparatus. 4,349,715, Cl. 219-10.55B.

Mark, Victor; and Hedges, Charles V., to General Electric Company. Flame retardant aromatic polyester-carbonate copolymer compositions. 4,349,658, Cl. 528-176.000.

Markley, Lowell D.; Tong, Yulan C.; and Wood, Steven G., to Dow Chemical Company, The. Sulfur-substituted diphenyl ethers having antiviral activity. 4,349,568, Cl. 424-330.000.

Marks, Helmuth: *See*—
Moll, Hans-Georg; Grohmann, Andreas; Hasselbarth, Ulrich; and Marks, Helmuth, 4,349,441, Cl. 210-512.100.

Marks, Stephen B., to University of Delaware. Glauber's salt heat storage compositions, crystal habit modifiers. 4,349,446, Cl. 252-70.000.

Marquez, Joseph A.: *See*—
Lee, Bong K.; Marquez, Joseph A.; and Waitz, J. Allan, 4,349,665, Cl. 536-7.100.

Marrs, James H. Farrowing pens. 4,348,986, Cl. 119-20.000.

Marsden (Proprietary) Limited: *See—*
Bain, Kenneth J. D.; King, Dennis E.; Worship, Lesley A.; and Burton, Achmat T., 4,349,117, Cl. 220-4.00F.

Marsden, Warwich L.: *See—*
Wainwright, Mark S.; Marsden, Warwich L.; and Friedrich, Jan B., 4,349,464, Cl. 252-463.000.

Marsen, Herman. Combined cooking and serving microwave apparatus. 4,349,713, Cl. 219-10.55A.

Martin, Peter: *See—*
Cashwell, Ernest; Grollimund, Everett C.; Duley, Walter W.; Lilly, A. Clifton, Jr.; Claflin, Warren E.; Stultz, Edward B.; and Martin, Peter, 4,349,719, Cl. 219-121.0LK.

Martin, Robert P., Jr. Vine-type vegetation eradicator. 4,348,834, Cl. 47-58.000.

Maryland Cup Corporation: *See—*
Gilden, Morton, 4,349,400, Cl. 156-217.000.

Marzocchi, Alfred; Roberts, Michael G.; and Bolen, Charles E., to Owens-Corning Fiberglas Corporation. Asphalt compositions modified with organo silane compounds. 4,349,388, Cl. 106-281.00N.

Marzocchi, Alfred: *See—*
Bolen, Charles E.; Harrington, Edward R.; Marzocchi, Alfred; and Roberts, Michael G., 4,349,590, Cl. 427-389.700.

Masch, Helmut E.: *See—*
Morse, Hugh B.; and Masch, Helmut E., 4,348,853, Cl. 53-566.000.

Mase, Akira: *See—*
Mori, Kazumasa; Asahi, Taro; Banzai, Keiichiro; Iwaki, Katsutaro; Muto, Katsuya; Mase, Akira; Nimura, Takayasu; Itoh, Katsumi; and Akita, Yoshio, 4,349,854, Cl. 361-21.000.

Maslanka, William W.; and Spence, Gavin G., to Hercules Incorporated. Organic pigments. 4,349,641, Cl. 524-458.000.

Masri, Merle S.; Robinson, Brian; and Gibson, James D. M., to Wool Development International Limited. Wool scouring. 4,349,347, Cl. 8-139.000.

Massa, Frank, to Stoneleigh Trust, The, Fred M. Dellorfano, Jr. and Donald P. Massa, Trustees. Means for detecting the accumulation of frost in a low temperature refrigeration system. 4,348,869, Cl. 62-140.000.

Masuda, Hisako: *See—*
Takeda, Yasuhisa; Matsuno, Takashi; Ohtaka, Mihoko; Mitsui, Hiroki; Kawaguchi, Tsutomu; Masuda, Hisako; Okazaki, Hiroshi; Handa, Mitsuaki; Sugawara, Yutaka; and Ogawa, Haruki, 4,349,541, Cl. 424-95.000.

Masuda, Yoshihiko, to Toyota Jidosha Kogyo Kabushiki Kaisha. Exhaust gas recirculation control valve. 4,349,003, Cl. 123-568.000.

Mataev, Arkady R.: *See—*
Axenko, Alexandr A.; Nazarian, Miron M.; Kolyada, Vladimir A.; and Mataev, Arkady R., 4,349,431, Cl. 204-302.000.
Efimov, Vyacheslav T.; Nazarian, Miron M.; Kolyada, Vladimir A.; Mataev, Arkady R.; Shamsha, Ljudmila F.; and Axenko, Alexandr A., 4,349,430, Cl. 204-302.000.

Mathew, Chempolil T.: *See—*
Belsky, Stephen E.; and Mathew, Chempolil T., 4,349,418, Cl. 203-45.000.

Matsuda, Hiroshi, to Nissan Diesel Kogyo Kabushiki Kaisha. Exhaust gas recirculation apparatus for diesel engine. 4,349,004, Cl. 123-569.000.

Matsumoto, Osamu: *See—*
Miyake, Hajime; Matsumoto, Osamu; and Dohi, Fumio, 4,349,091, Cl. 192-53.00F.

Matsumura, Yoshio; Nozue, Ikuo; and Ukachi, Takashi, to Japan Synthetic Rubber Co., Ltd. Doped acetylene polymer and process for production thereof. 4,349,664, Cl. 528-491.000.

Matsuno, Takashi: *See—*
Takeda, Yasuhisa; Matsuno, Takashi; Ohtaka, Mihoko; Mitsui, Hiroki; Kawaguchi, Tsutomu; Masuda, Hisako; Okazaki, Hiroshi; Handa, Mitsuaki; Sugawara, Yutaka; and Ogawa, Haruki, 4,349,541, Cl. 424-95.000.

Matsuo, Takao: *See—*
Meguro, Kanji; Tawada, Hiroyuki; and Matsuo, Takao, 4,349,547, Cl. 424-244.000.

Matsuo, Yutaka: *See—*
Yamashita, Yoshisato; and Matsuo, Yutaka, 4,349,524, Cl. 423-488.000.
Yamashita, Yoshisato; and Matsuo, Yutaka, 4,349,525, Cl. 423-488.000.

Matsuoka, Hideoki; and Kondo, Yoshinobu, to Nissan Motor Co., Ltd.; and Fuji Kiko Co., Ltd. Covering structure of a guide rail for a seat belt. 4,349,215, Cl. 280-804.000.

Matsuoka, Hideoki: *See—*
Inasawa, Hideho; and Matsuoka, Hideoki, 4,349,214, Cl. 280-752.000.

Matsushita Electric Industrial Company, Limited: *See—*
Kishimoto, Yoshio; and Shimotsuma, Wataru, 4,349,606, Cl. 428-411.000.
Tachita, Ryobun; Hayakawa, Yoshihiro; Irioka, Kazuyoshi; Fukukita, Hiroshi; Yano, Tsutomu; and Fukumoto, Akira, 4,348,902, Cl. 73-626.000.

Matsushita Electric Works, Ltd.: *See—*
Oda, Takeshi; and Kikuchi, Hiroshi, 4,348,810, Cl. 30-210.000.

Matsuzaka, Syozi: *See—*
Koitabashi, Takeo; Matsuzaka, Syozi; and Iijima, Tashifumi, 4,349,622, Cl. 430-567.000.

Matsuzaki, Mikio: *See—*
Koyama, Yukio; Kondo, Tsutomu; Matsuzaki, Mikio; and Akizuki, Kunio, 4,349,247, Cl. 350-302.000.

Matteson, Thomas O.; and Wingate, David C., to Owens-Corning Fiberglas Corporation. Dual strand packaging apparatus. 4,349,365, Cl. 65-10.100.

Maugweiler, Gottfried: *See—*
Gut, Edwin; Arnold, Erwin; Maugweiler, Gottfried; and Friedli, Hans, 4,349,231, Cl. 299-69.000.

Maximenko, Alexandr V.; Torchilin, Vladimir P.; Smirnov, Vladimir N.; and Chazov, Evgeny I. Heat-resistant water soluble urokinase derivative. 4,349,630, Cl. 435-180.000.

Maxwell Laboratories, Inc.: *See—*
Fitch, Richard A.; Drummond, James E.; and Mondelli, Alfred A., 4,349,359, Cl. 55-151.000.

May, Paul W., Jr.: *See—*
Keeney, C. Neil; May, Paul W., Jr.; and Morgan, Albert W., 4,349,640, Cl. 524-294.000.

Mayer, Sigmund: *See—*
Rebsdat, Siegfried; Mayer, Sigmund; Alfranseder, Josef; and Schaffelhofer, Iwo, 4,349,417, Cl. 203-33.000.

Mayerjak, Robert J.: *See—*
Kaman, Charles H.; and Mayerjak, Robert J., 4,348,933, Cl. 84-193.000.

McAnally, Robert W., to United States of America, Air Force. Continuous force actuator. 4,349,169, Cl. 244-219.000.

McCaully, Ronald J.: *See—*
Freed, Elisabeth H., deceased; Wei, Peter H. L.; and McCaully, Ronald J., 4,349,674, Cl. 544-353.000.

McClure, David E.: *See—*
Atkinson, Joseph G.; Baldwin, John J.; and McClure, David E., 4,349,673, Cl. 544-105.000.

McDermott, Joseph J., deceased: *See—*
White, James W.; and McDermott, Joseph J., deceased, 4,348,957, Cl. 102-378.000.

McDermott, Rosalie L., executrix: *See—*
White, James W.; and McDermott, Joseph J., deceased, 4,348,957, Cl. 102-378.000.

McDonnell Douglas Corporation: *See—*
Sanders, Laurence R., 4,349,859, Cl. 361-218.000.

McGee, John K.; and Bridges, Charles D., to Combustion Engineering, Inc. Annulus sealing device with anti-extrusion rings. 4,349,205, Cl. 277-188.00A.

McGinley, Kenneth J.: *See—*
Labows, John N.; Kostelc, James G.; and McGinley, Kenneth J., 4,349,626, Cl. 435-38.000.

McGinn, Michael, to Motorola, Inc. Vertical sync counter having multi modes of operation for different TV systems standards. 4,349,839, Cl. 358-148.000.

McGraw-Edison: *See—*
Gaia, Aldino J., 4,349,804, Cl. 337-198.000.

McGraw-Edison Company: *See—*
Gaia, Aldino J., 4,349,802, Cl. 337-159.000.

McGraw-Hill, Inc.: *See—*
Wise, David S., 4,349,163, Cl. 242-68.300.

McLain, John D.: *See—*
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McLean, Gregory J.: *See—*
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Maeda, Keisuke; Takechi, Keiji; and Oya, Tetsuro, 4,349,266, Cl. 354-295.000.

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Holden, M. James, 4,349,146, Cl. 229-2.50R.
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Davis, Earl K.; Landron, Rafael; and Taylor, Scot W., 4,349,635, Cl. 501-15.000.
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Shaw, Pern; and Musa, Fuad H., 4,349,870, Cl. 364-200.000.
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Mott, Patricia A. Drainage balloon catheter system. 4,349,029, Cl. 128-349.00B.
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Smallegan, Jon M., 4,348,796, Cl. 29-432.000.
Mumcu, Salih, to Chemische Werke Huls AG. Preparation of polyether ester amides. 4,349,661, Cl. 528-288.000.
Mundy, Joseph L.; Porter, Gilbert B., III; and Cipolla, Thomas M., to General Electric Company. Non-contact measurement of surface profile. 4,349,277, Cl. 356-376.000.
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Kohsaka, Masanobu; Aoki, Hatsuo; and Imanaka, Hiroshi, 4,349,466, Cl. 260-112.50R.
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Amano, Kitsutaro; Nakai, Taiichiro; Sato, Masanori; and Nunokawa, Makoto, 4,349,243, Cl. 350-96.230.
Nakajima, Kihei: *See*—
Otsuka, Kenichi; Uchino, Hiroshi; and Nakajima, Kihei, 4,349,867, Cl. 363-160.000.
Nakajima, Minoru: *See*—
Takeda, Shiro; and Nakajima, Minoru, 4,349,609, Cl. 428-429.000.
Nakajima, Toshio: *See*—
Yokomichi, Isao; Haga, Takahiro; Nagatani, Kuniaki; and Nakajima, Toshio, 4,349,681, Cl. 546-304.000.
Nakamura, Kunihiko, to Tokyo Shibaura Denki Kabushiki Kaisha. Thin sheet feeding apparatus. 4,349,186, Cl. 271-18.000.
Nakanisi, Takatosi; Tanaka, Atsushi; and Udagawa, Takashi, to Tokyo Shibaura Denki Kabushiki Kaisha. Vertical type vapor-phase growth apparatus. 4,348,981, Cl. 118-730.000.
Nakata, Kazuo: *See*—
Asada, Akihiro; Nakata, Kazuo; Umemura, Kazuhiro; Sato, Hirokazu; Murakami, Kenya; and Into, Kiyoshi, 4,349,699, Cl. 179-1.0SM.
Nakatani, Masaki: *See*—
Hiraga, Yoichi; Watanabe, Osamu; and Nakatani, Masaki, 4,349,519, Cl. 423-321.00S.
Nakatsuka, Kiyoharu; and Abeta, Sadaharu, to Sumitomo Chemical Company, Limited. Aqueous liquid composition of reactive dye. 4,349,349, Cl. 8-527.000.
Nalbandyan, Harutyun G. Harvesting tool. 4,348,808, Cl. 30-134.000.
Nankai Kogyo Kabushiki Kaisha: *See*—
Yaji, Saichi; Kitawaki, Kazuya; and Furuya, Takafumi, 4,349,052, Cl. 139-92.000.
Narayan, Thirumurti, to BASF Wyandotte Corporation. Process for the preparation of foams characterized by isocyanurate, and/or urethane linkages involving the use of alkali metal ammonium carboxylate catalysts. 4,349,638, Cl. 521-125.000.
Narayanamurti, Venkatesh: *See*—
Chin, Maurice A.; Narayanamurti, Venkatesh; and Stormer, Horst L., 4,349,796, Cl. 333-186.000.
National Distillers & Chemical Corp.: *See*—
Biggs, James W.; and Maringer, Melvin F., 4,349,605, Cl. 428-389.000.
Memering, Leroy J.; and Pritchett, Ervin G., 4,349,642, Cl. 524-524.000.
National Research Development Corporation: *See*—
Snee, Timothy J., 4,348,888, Cl. 73-23.000.
Staniforth, John N., 4,349,542, Cl. 424-153.000.
National Research Institute for Metals: *See*—
Amano, Muneyuki; and Sasaki, Yasuo, 4,349,527, Cl. 423-644.000.
National Semiconductor Corporation: *See*—
Bee, Edward C., 4,349,755, Cl. 307-492.000.
National Starch and Chemical Corp.: *See*—
Tessler, Martin M., 4,349,577, Cl. 426-590.000.
Nawata, Takanari: *See*—
Yoshikawa, Yoshio; Nawata, Takanari; Goto, Mikio; and Kondo, Yukio, 4,349,509, Cl. 422-57.000.
Nazarian, Miron M.: *See*—
Axenko, Alexandr A.; Nazarian, Miron M.; Kolyada, Vladimir A.; and Mataev, Arkady R., 4,349,431, Cl. 204-302.000.
Efimov, Vyacheslav T.; Nazarian, Miron M.; Kolyada, Vladimir A.; Mataev, Arkady R.; Shamsha, Ljudmila F.; and Axenko, Alexandr A., 4,349,430, Cl. 204-302.000.
Neff, Engelbert; and Laimer, Friedrich, to Netstal-Maschinen AG. Injection molding machine. 4,349,324, Cl. 425-149.000.
Nelson, Gerald V.: *See*—
Ganster, Charles A.; and Nelson, Gerald V., 4,349,884, Cl. 364-557.000.
Nelson, Richard H.: *See*—
Bergstrom, Arthur E.; Nelson, Richard H.; and Maly, George P., 4,349,050, Cl. 138-147.000.
Nemoto, Ken: *See*—
Noguchi, Tatsuhiko; Kurita, Ryuichi; Nemoto, Ken; and Endo, Kiichi, 4,349,447, Cl. 252-117.000.
Nestier Corporation: *See*—
Baldwin, Mark H., 4,349,171, Cl. 248-243.000.
Nestler, Gerhard: *See*—
Merger, Franz; Nestler, Gerhard; Towae, Friedrich; and Harder, Wolfgang, 4,349,484, Cl. 260-453.00P.
Netstal-Maschinen AG: *See*—
Neff, Engelbert; and Laimer, Friedrich, 4,349,324, Cl. 425-149.000.
Neuzil, Richard W.; and Priegnitz, James W., to UOP Inc. Process for separating glucose from fructose by selective adsorption. 4,349,668, Cl. 536-127.000.
Newman, Brian A.: *See*—
Pae, Kook D.; Newman, Brian A.; and Scheinbeim, Jerry I., 4,349,502, Cl. 264-320.000.
Newton, Anthony D., to Motorola, Inc. Phase detector with low offsets. 4,349,756, Cl. 307-514.000.
NGK Spark Plug Co., Ltd.: *See*—
Nagashima, Teruyoshi; Takami, Akio; and Kasugai, Akiyo, 4,349,585, Cl. 427-125.000.
Nichols, Lawrence J.; and MacMaster, George H., to Raytheon Company. Slow wave coupling circuit. 4,349,791, Cl. 333-27.000.
Niederer, Kurt W., to Terrell Machine Company, The. Apparatus and method for winding yarn to form a package. 4,349,160, Cl. 242-18.00R.
Nihon Denshi Kabushiki Kaisha: *See*—
Ogura, Kazumichi, 4,349,242, Cl. 350-81.000.
Nilsson, Rolf E.: *See*—
Wahlstrom, Hans V.; Nilsson, Rolf E.; and Pihlgren, Kjell A., 4,348,781, Cl. 15-40.000.
Nimura, Takayasu: *See*—
Mori, Kazumasa; Asahi, Taro; Banzai, Keiichiro; Iwaki, Katsutaro; Muto, Katsuya; Mase, Akira; Nimura, Takayasu; Itoh, Katsumi; and Akita, Yoshio, 4,349,854, Cl. 361-21.000.
Nippon Electric Co., Ltd.: *See*—
Hara, Hiroo; and Taguchi, Noboru, 4,349,908, Cl. 372-103.000.
Kouno, Akiyoshi; Morishita, Masanobu; and Yui, Yoshio, 4,349,844, Cl. 358-244.000.
Tada, Masahiro, 4,349,875, Cl. 364-200.000.
Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Yokoyama, Kenji, 4,349,786, Cl. 330-253.000.
Nippon Gohsei Kagaku Kogyo Kabushiki Kaisha: *See*—
Iwanami, Teruo; Takida, Hiroshi; and Fujita, Yukio, 4,349,644, Cl. 525-57.000.
Nippon Petrochemicals Co., Ltd.: *See*—
Yazawa, Masahide; Tani, Haruhisa; Kurihara, Kazuhiko; and Yazawa, Hiroshi, 4,349,500, Cl. 264-159.000.
Nippon Soken, Inc.: *See*—
Naito, Junichiro; Yamamoto, Shinichi; Suzuki, Jitsuo; and Asano, Mitsuru, 4,349,329, Cl. 425-461.000.
Nippon Steel Corporation: *See*—
Sato, Ichiya; Miyagawa, Kazuo; Sasaki, Yukito; Kawamura, Koji; Sato, Shuichi; Sasaki, Soji; Kubota, Jun; and Itoh, Susumu, 4,348,903, Cl. 73-643.000.
Nippon Telegraph & Telephone Public Corporation: *See*—
Asada, Akihiro; Nakata, Kazuo; Umemura, Kazuhiro; Sato, Hirokazu; Murakami, Kenya; and Into, Kiyoshi, 4,349,699, Cl. 179-1.0SM.
Nippondenso Co., Ltd.: *See*—
Mori, Kazumasa; Asahi, Taro; Banzai, Keiichiro; Iwaki, Katsutaro; Muto, Katsuya; Mase, Akira; Nimura, Takayasu; Itoh, Katsumi; and Akita, Yoshio, 4,349,854, Cl. 361-21.000.
Nishikawa, Yasuhisa: *See*—
Tanaka, Yoshio; Nishikawa, Yasuhisa; and Hasumi, Ryoichi, 4,348,911, Cl. 74-10.330.
Nishimura, Sanji: *See*—
Watanabe, Morio; and Nishimura, Sanji, 4,349,514, Cl. 423-54.000.
Nishimura, Toshifumi; and Sugihara, Kunihiko, to Nissan Motor Company, Limited. Vibration sensor for an automotive vehicle. 4,348,905, Cl. 73-654.000.
Nishimura, Yoshiharu: *See*—
Uchimura, Mitsuo; and Nishimura, Yoshiharu, 4,349,891, Cl. 364-900.000.
Nissan Diesel Kogyo Kabushiki Kaisha: *See*—
Matsuda, Hiroshi, 4,349,004, Cl. 123-569.000.
Nissan Motor Company, Limited: *See*—
Inasawa, Hideho; and Matsuoka, Hideoki, 4,349,214, Cl. 280-752.000.
Kanamori, Hiroshi, 4,349,591, Cl. 428-31.000.
Kawamoto, Tamio, 4,348,914, Cl. 74-467.000.
Matsuoka, Hideoki; and Kondo, Yoshinobu, 4,349,215, Cl. 280-804.000.
Morozumi, Takuro, 4,348,996, Cl. 123-440.000.
Murakami, Shinichi; and Okumi, Kuniaki, 4,349,594, Cl. 428-43.000.
Nishimura, Toshifumi; and Sugihara, Kunihiko, 4,348,905, Cl. 73-654.000.
Nozawa, Koji, 4,348,913, Cl. 74-339.000.
Shimada, Yukio; Suzuki, Naoyoshi; Ohashi, Toshio; and Inoshita, Yasushi, 4,349,177, Cl. 251-230.000.
Takasaki, Masaru; and Imatomi, Keiichiro, 4,349,222, Cl. 285-363.000.
Tanaka, Toshiaki; and Etoh, Yukihiro, 4,348,994, Cl. 123-198.00F.
Tsuru, Mario, 4,348,875, Cl. 464-170.000.
Nisso Industries Co. Ltd.: *See*—
Kuramoto, Kikuzo; and Enoki, Takahiro, 4,348,790, Cl. 24-211.00P.
Nitta, Hideo: *See*—
Asano, Hiroshi; Shimamune, Takayuki; Goto, Toshiki; Nitta, Hideo; and Hosonuma, Masashi, 4,349,581, Cl. 427-34.000.
NL Industries, Inc.: *See*—
Bates, H. John, 4,349,041, Cl. 137-1.000.
Nobuto, Shinichi: *See*—
Onishi, Masayoshi; Nobuto, Shinichi; Kawakami, Takashi; and Yamamoto, Shigemi, 4,349,007, Cl. 123-617.000.
Noda, Tsutomu: *See*—
Akitake, Isao; Noda, Tsutomu; and Yamazaki, Kazuhiko, 4,349,696, Cl. 179-1.0GS.
Nogami, Sadao: *See*—
Yamauchi, Toshima; Nogami, Sadao; Sawada, Kengi; Moriya, Jyunichiro; Sawada, Hiroomi; and Kobayashi, Keizou, 4,348,873, Cl. 62-514.00R.
Noguchi, Tatsuhiko; Kurita, Ryuichi; Nemoto, Ken; and Endo, Kiichi, to Kureha Kagaku Kogyo Kabushiki Kaisha. Phosphate-free detergent composition. 4,349,447, Cl. 252-117.000.

Nolte, Albert; Schleiermacher, Herbert; and Arbeiter, Erich, to Klockner-Humboldt-Deutz Aktiengesellschaft. Apparatus for regulating the rotation of a hydraulically-operated cooling fan. 4,348,990, Cl. 123-41.120.

Nomaguchi, Hirotsugu: *See*—
Kondo, Syunichi; Nomaguchi, Hirotsugu; and Sato, Hideo, 4,349,618, Cl. 430-83.000.

Norfolk, Raymond W., to Spill-Fire Alarm Systems Ltd. Transducers. 4,349,282, Cl. 374-183.000.

Normier, Gerard: *See*—
D'Hinterland, Lucien D.; Serre, Hubert; and Normier, Gerard, 4,349,540, Cl. 424-92.000.

Norsk Hydro a.s.: *See*—
Olsen, Asbjorn L.; and Halvorsen, Sigbjorn T., 4,349,390, Cl. 148-6.15R.

North American Philips Corporation: *See*—
Bautista, Peter, Jr., 4,348,904, Cl. 73-644.000.
Stupp, Edward H.; and Lalak, Joseph, 4,349,410, Cl. 156-654.000.

Northern Telecom Limited: *See*—
Kuhfus, Gerd, 4,349,705, Cl. 179-90.00L.
Thompson, Joseph, 4,349,706, Cl. 179-100.00C.
Zuber, Bretislav; and Kral, Jaroslav J., 4,349,780, Cl. 324-262.000.

Norton, Larry A.: *See*—
West, Frank L.; and Norton, Larry A., 4,349,856, Cl. 361-160.000.

Novanex Automation N.V.: *See*—
Laupman, Robert R., 4,349,787, Cl. 330-284.000.

November, Milton H.; Lyon, LaVern D.; and Ponzi, Joseph J., to International Telephone and Telegraph Corporation. Vibration instruments. 4,349,881, Cl. 364-509.000.

Novikov, Nikolai V.: *See*—
Lysanov, Vladislav S.; Digonsky, Viktor V.; Feldgun, Leon I.; Davidenko, Valery M.; Novikov, Nikolai V.; Borimsky, Alexandr I.; Shulzhenko, Alexandr A.; Yakimenko, Valerian D.; Dovgal, Eduard Y.; Egorov, Vitaly Y.; Rovsha, Vyacheslav S.; Prikhna, Alexei I.; and Sokolov, Alexandr N., 4,349,517, Cl. 423-290.000.

Nowak, Frederick H.: *See*—
Bittar, Joseph; and Nowak, Frederick H., 4,349,087, Cl. 187-29.00R.

Nozawa, Koji, to Nissan Motor Company, Limited. Transmission for a vehicle. 4,348,913, Cl. 74-339.000.

Nozue, Ikuo: *See*—
Matsumura, Yoshio; Nozue, Ikuo; and Ukachi, Takashi, 4,349,664, Cl. 528-491.000.

NSK-Warner K. K.: *See*—
Naitoh, Katsumi, 4,349,164, Cl. 242-107.40A.

Nudel, Ron; Janauer, Gilbert E.; Schrier, Eugene E.; and Figura, Ilona W., to Research Foundation of State University of New York. Water insoluble disinfectant composition. 4,349,646, Cl. 525-256.000.

Nunokawa, Makoto: *See*—
Amano, Kitsutaro; Nakai, Taiichiro; Sato, Masanori; and Nunokawa, Makoto, 4,349,243, Cl. 350-96.230.

Nussbaum, Joel H., to Standard Products Company, The. Thermoplastic elastomer molding. 4,349,592, Cl. 428-31.000.

Nutzel, Hans G.; and Kuhl, Rudolf, to SKF Industrial Trading & Development Co. B.V. Process for decomposing hard metal scrap. 4,349,423, Cl. 204-146.000.

Nyenbrink, Willard: *See*—
Jones, Stanley; and Nyenbrink, Willard, 4,348,835, Cl. 49-139.000.

Obinata, Akio; and Ohsawa, Satoshi, to Orion Machinery Co., Ltd. Combustion control device for nozzle spray type burner. 4,349,330, Cl. 431-60.000.

Obrist, Albert; and Breuer, Hans-Werner, to Albert Obrist AG. Injection mold apparatus for containers of plastics material. 4,349,174, Cl. 249-58.000.

Obrist, Albert; Blaesi, Max; and Auer, Serge, to Albert Obrist AG. Method and apparatus for shrinking a container closure. 4,349,399, Cl. 156-86.000.

Occidental Chemical Corporation: *See*—
Huvar, Robert J., 4,349,392, Cl. 148-6.200.

Occidental Oil Shale: *See*—
Langford, William D., 4,349,227, Cl. 299-2.000.

Ochi, Hideo: *See*—
Nagasawa, Kohtaro; Ochi, Hideo; Tanaka, Fujio; and Shibata, Yumi, 4,349,647, Cl. 525-285.000.

Ochiai, Chiaki, to Aisin Seiki Kabushiki Kaisha. Brake booster. 4,348,944, Cl. 91-369.00A.

Ochiai, Shinya, to Celanese Corporation. Control of anaerobic filter. 4,349,435, Cl. 210-96.100.

Oda, Takeshi; and Kikuchi, Hiroshi, to Matsushita Electric Works, Ltd. Blade part assembling structure for electric shaver. 4,348,810, Cl. 30-210.000.

Officine Minnetti di Ornella Raveggi & C.S.a.s.: *See*—
Minnetti, Federico, 4,349,309, Cl. 414-744.00A.

Ogata, Saburo. Tuning device for stringed musical instruments. 4,348,934, Cl. 84-306.000.

Ogawa, Haruki: *See*—
Takeda, Yasuhisa; Matsuno, Takashi; Ohtaka, Mihoko; Mitsui, Hiroki; Kawaguchi, Tsutomu; Masuda, Hisako; Okazaki, Hiroshi; Handa, Mitsuaki; Sugawara, Yutaka; and Ogawa, Haruki, 4,349,541, Cl. 424-95.000.

Ogawa, Hiroyuki; and Kaki, Haruhiko, to Asahi Glass Company, Ltd. Automatic glass plate piling apparatus. 4,349,304, Cl. 414-106.000.

Ogawa, Kazutake: *See*—
Shimada, Junichi; and Ogawa, Kazutake, 4,349,078, Cl. 180-69.100.

Ogawa, Mitsuru; and Iwamatsu, Seiichi, to VLSI Technology Research Association. Method of fabricating an integrated circuit device utilizing electron beam irradiation and selective oxidation. 4,348,804, Cl. 29-580.000.

Ogawa, Tetsuya: *See*—
Shibayama, Hikou; Ogawa, Tetsuya; Kosugi, Makoto; Hisatsugu, Tokushige; and Kobayashi, Koichi, 4,349,409, Cl. 156-643.000.

Ogura, Kazumichi, to Nihon Denshi Kabushiki Kaisha. Specimen observation apparatus including an optical microscope and a scanning electron microscope. 4,349,242, Cl. 350-81.000.

Ohashi, Toshio: *See*—
Shimada, Yukio; Suzuki, Naoyoshi; Ohashi, Toshio; and Inoshita, Yasushi, 4,349,177, Cl. 251-230.000.

Ohba, Shinya; Hanamura, Shoji; Ozaki, Toshifumi; Kubo, Masaharu; Nakai, Masaaki; Takahashi, Kenji; Aoki, Masakazu; Takemoto, Iwao; Ando, Haruhisa; and Izawa, Ryuichi, to Hitachi, Ltd. Solid-state imaging device. 4,349,743, Cl. 250-578.000.

Ohio State University, The: *See*—
Royer, Garfield P., 4,349,530, Cl. 424-19.000.

Ohio State University Research Foundation, The: *See*—
Shore, Sheldon G.; and Nagel, Colleen C., 4,349,521, Cl. 423-417.000.
Shore, Sheldon G.; and Plotkin, Jeffrey S., 4,349,522, Cl. 423-417.000.

Ohmae, Tadayuki; Murakami, Teruhiko; and Kanno, Yoshinori, to Sumitomo Chemical Company, Limited. Powder coating composition. 4,349,654, Cl. 526-273.000.

Ohsawa, Mitsuo, to Sony Corporation. Tantalum condenser. 4,349,860, Cl. 361-310.000.

Ohsawa, Satoshi: *See*—
Obinata, Akio; and Ohsawa, Satoshi, 4,349,330, Cl. 431-60.000.

Ohtaka, Mihoko: *See*—
Takeda, Yasuhisa; Matsuno, Takashi; Ohtaka, Mihoko; Mitsui, Hiroki; Kawaguchi, Tsutomu; Masuda, Hisako; Okazaki, Hiroshi; Handa, Mitsuaki; Sugawara, Yutaka; and Ogawa, Haruki, 4,349,541, Cl. 424-95.000.

Ohtani, Masami, to Dainippon Screen Mfg. Co., Ltd. Processing solution circulating device for film processor. 4,349,267, Cl. 354-323.000.

Oil Process Systems, Inc.: *See*—
Blumenthal, Michael M.; and Stockler, Jerry R., 4,349,353, Cl. 23-230.00R.

Oishi, Akira. Hang strap for portable instrument. 4,349,139, Cl. 224-257.000.

Okada, Osamu, to Minolta Camera Kabushiki Kaisha. Manual paper feed inhibiting device in electrographic copying machine. 4,349,269, Cl. 355-14.0SH.

Okada, Satoshi: *See*—
Kitaura, Yoshihiko; Nakaguchi, Osamu; Hemmi, Keiji; Aratani, Matsuhiko; Takeno, Hidekazu; Okada, Satoshi; Tanaka, Hirokazu; Hashimoto, Masashi; Kuroda, Yoshio; Iguchi, Eiko; Kohsaka, Masanobu; Aoki, Hatsuo; and Imanaka, Hiroshi, 4,349,466, Cl. 260-112.50R.

Okada, Tsutomu; Hishida, Tadashi; and Muramatsu, Minoru, to Mitsubishi Chemical Industries Limited. Method for assaying fatty acids. 4,349,625, Cl. 435-4.000.

Okajima, Tadishi. Water conveyance. 4,348,977, Cl. 114-273.000.

Okazaki, Hiroshi: *See*—
Takeda, Yasuhisa; Matsuno, Takashi; Ohtaka, Mihoko; Mitsui, Hiroki; Kawaguchi, Tsutomu; Masuda, Hisako; Okazaki, Hiroshi; Handa, Mitsuaki; Sugawara, Yutaka; and Ogawa, Haruki, 4,349,541, Cl. 424-95.000.

Okinaka, Yutaka, to Bell Telephone Laboratories, Incorporated. Etch procedure for aluminum alloy. 4,349,411, Cl. 156-659.100.

Okishi, Yoshio, to Fuji Photo Film Co., Ltd. Agent for protecting the surface of lithographic printing plate. 4,348,954, Cl. 101-465.000.

Okumi, Kuniaki: *See*—
Murakami, Shinichi; and Okumi, Kuniaki, 4,349,594, Cl. 428-43.000.

Okuzawa, Tugio: *See*—
Kaneko, Tamaki; Hibi, Kunio; Ikeda, Sunao; Okuzawa, Tugio; Kakitani, Yohtaro; and Kikuchi, Hideo, 4,349,190, Cl. 271-297.000.

Oldendorf, Christian; and Melcher, Franz-Josef, to Sartorius GmbH. Change-over switch with de-chattering device for electronic weighing scales. 4,349,076, Cl. 177-164.000.

Olin Corporation: *See*—
Casberg, John M.; and Putnam, Clair H., 4,349,493, Cl. 264-37.000.
Ollivier, Jean; and Bosch, Yves, 4,349,141, Cl. 227-10.000.
Rothgery, Eugene F., 4,349,458, Cl. 252-391.000.
Saeman, Walter C., 4,349,366, Cl. 65-27.000.

Ollivier, Jean; and Bosch, Yves, to Olin Corporation. Piston return for powder actuated piston tool. 4,349,141, Cl. 227-10.000.

Olmr, Jaroslav J., to Textron Inc. Safety saw chain. 4,348,927, Cl. 83-833.000.

Olsen, Asbjorn L.; and Halvorsen, Sigbjorn T., to Norsk Hydro a.s. Method for the electrolytical metal coating of magnesium articles. 4,349,390, Cl. 148-6.15R.

Olson, Gary L.: *See*—
Berger, Leo; and Olson, Gary L., 4,349,678, Cl. 546-150.000.

Olsson, Per O. Method and apparatus for the production of fancy yarn. 4,348,859, Cl. 57-401.000.

Olympus Optical Co., Ltd.: *See*—
Koyata, Kenzi, 4,349,032, Cl. 128-660.000.
Satoh, Ken, 4,349,849, Cl. 360-71.000.
Takamatsu, Takeshi, 4,349,014, Cl. 128-6.000.
Takayama, Syuichi, 4,349,255, Cl. 354-31.000.

Omnimed, Inc.: *See*—
Schattner, Robert L.; and Schattner, Allen S., 4,348,967, Cl. 109-51.000.

Onishi, Masayoshi; Nobuto, Shinichi; Kawakami, Takashi; and Yamamoto, Shigemi, to Mitsubishi Denki Kabushiki Kaisha. Internal combustion engine ignition device. 4,349,007, Cl. 123-617.000.
Onksen, Peter J.; and Spadafora, Leonard, to Pacer Systems, Inc. Temperature sensor assembly apparatus. 4,349,281, Cl. 374-136.000.
Ono, Sadao, to Clarion Co., Ltd. Volume control apparatus. 4,349,779, Cl. 323-318.000.
Opitz, Wolfgang: *See*—
Jacobi, Haireddin; Opitz, Wolfgang; and Etschenberg, Eugen, 4,349,543, Cl. 424-177.000.
Optische Werke G. Rodenstock: *See*—
Gelius, Siegfried, 4,349,250, Cl. 351-32.000.
Orbans, Joseph M. W. Safety device for electrodes of an electric steel-making furnace. 4,349,911, Cl. 373-105.000.
Orillion, Michael T., to Dow Chemical Co., The. Corrosion protection for metal surfaces. 4,349,457, Cl. 252-389.00R.
Orion Industries, Inc.: *See*—
Muller, Leslie D., 4,348,899, Cl. 73-431.000.
Orion Machinery Co., Ltd.: *See*—
Obinata, Akio; and Ohsawa, Satoshi, 4,349,330, Cl. 431-60.000.
Osman, Maged A.; and Revesz, Laszlo, to Merck Patent GmbH. Cyclohexylcyclohexanoates. 4,349,452, Cl. 252-299.610.
Osmera, Josef: *See*—
Holzbaur, Siegfried; Barth, Horst; and Osmera, Josef, 4,348,999, Cl. 123-452.000.
Osterreichische Studiengesellschaft fur Atomenergie Ges.m.b.H.: *See*—
Knotik, Karl; Leichter, Peter; and Glock, Johann, 4,349,412, Cl. 159-47.0WL.
Otis Elevator Company: *See*—
Bittar, Joseph; and Nowak, Frederick H., 4,349,087, Cl. 187-29.00R.
Otobe, Yutaka: *See*—
Gotoh, Osamu; Otobe, Yutaka; Kawamoto, Michio; and Fujimura, Akira, 4,349,005, Cl. 123-571.000.
Gotoh, Osamu; Otobe, Yutaka; Kawamoto, Michio; and Fujimura, Akira, 4,349,006, Cl. 123-571.000.
Otsuka, Kenichi; Uchino, Hiroshi; and Nakajima, Kihei, to Tokyo Shibaura Denki Kabushiki Kaisha. Control apparatus for a cycloconverter. 4,349,867, Cl. 363-160.000.
Overhead Door Corporation: *See*—
Patterson, Eddy L.; and Patterson, George D., 4,349,009, Cl. 126-121.000.
Owen, Charles B., to Environmental Electronics Corporation. Air purification apparatus. 4,349,511, Cl. 422-186.070.
Owen, Harry; and Ellis, Edric, to Pilkington Brothers Limited. Method of preparing photochromic glass. 4,349,634, Cl. 501-13.000.
Owens-Corning Fiberglas Corporation: *See*—
Bolen, Charles E.; Harrington, Edward R.; Marzocchi, Alfred; and Roberts, Michael G., 4,349,590, Cl. 427-389.700.
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Matteson, Thomas O.; and Wingate, David C., 4,349,365, Cl. 65-10.100.
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P A Management Consultants Limited: *See*—
Lewis, Christopher M., 4,349,095, Cl. 194-100.00A.
Paccar, Inc.: *See*—
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Pacer Systems, Inc.: *See*—
Onksen, Peter J.; and Spadafora, Leonard, 4,349,281, Cl. 374-136.000.
Pacht, Amos, to Butterworth, Inc. Power assisted dump valve. 4,349,154, Cl. 239-124.000.
Pae, Kook D.; Newman, Brian A.; and Scheinbeim, Jerry I., to United States of America, Navy. Fabrication method for unoriented phase-I PVF_2. 4,349,502, Cl. 264-320.000.
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Panaia, Raymond R.: *See*—
Cole, Jean R.; and Panaia, Raymond R., 4,348,953, Cl. 101-128.210.
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Schumaker, Jon S., 4,349,151, Cl. 238-349.000.
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Small, Rudolph E.; and Spalding, Michael H., 4,349,185, Cl. 270-32.000.
Paper Machinery Corporation: *See*—
Bodendoerfer, Raymond E., 4,349,345, Cl. 493-295.000.
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Fischbeck, Kenneth H.; Schnarr, Marcus M.; and Paraskevopoulos, Demetris F., 4,349,828, Cl. 346-1.100.
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Parker, Daniel, to Beloit Corporation. Method for waterproofing paper. 4,349,610, Cl. 428-447.000.
Parker, Harry A., to Transfer Print Foils, Inc. Method for producing a bright metalized foil or board. 4,349,402, Cl. 156-233.000.
Parker Manufacturing Co.: *See*—
Ewig, John F., 4,349,143, Cl. 227-131.000.
Parsons, Vaughan V. Multipurpose trimaran. 4,348,972, Cl. 114-61.000.
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Patel, Jhina; and Zahuranec, Terry L., to Incom International Inc. Filter element ledge gasket. 4,349,363, Cl. 55-498.000.
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Pavljuchenko, Valery N.; Pessina, Zinaida M.; Vasilieva, Elena D.; and Ivanchev, Sergei S. Process of preparing copolymers of butyl acrylate and 1-(α-alkyl acrylate)-1-tert-butyl peroxy ethanes. 4,349,649, Cl. 526-234.000.
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Wiknich, Douglas D.; and Peabody, Michael J., 4,349,099, Cl. 198-751.000.
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Pegler, Stuart M.: *See*—
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Penn-Gil Fabrics, Inc.: *See*—
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Petersen, Warren A., to Tork, Inc. Emergency lighting system. 4,349,863, Cl. 362-20.000.
Peterson, Guy E. Portable shower. 4,348,777, Cl. 4-596.000.
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ing visually observable information present on a data carrier. 4,349,730, Cl. 235-472.000.

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Altmann, Garhard; and Pfeiffer, Richard, 4,349,801, Cl. 336-84.00C.

Pfleiderer, Hans-Joerg; and Klar, Heiner, to Siemens Aktiengesellschaft. Integrated circuit for transferring complementary charge packets between two charge transfer devices. 4,349,749, Cl. 307-221.00D.

Pflugfelder, Karl: *See—*
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Philip Morris Incorporated: *See—*
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Piorkow, Alfred: *See—*
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Pissiotas, Georg: *See—*
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Plas Plugs Limited: *See—*
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Plempel, Manfred: *See—*
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Polaroid Corporation: *See—*
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Polymer Processing Research Institute, Ltd.: *See—*
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Ponzi, Joseph J.: *See—*
November, Milton H.; Lyon, LaVern D.; and Ponzi, Joseph J., 4,349,881, Cl. 364-509.000.

Porter, Gilbert B., III: *See—*
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Possati, Mario; Golinelli, Guido; and Selleri, Narciso, to Finike Italiana Marposs, S.p.A. Gauge for checking linear sizes of mechanical parts. 4,348,814, Cl. 33-178.00E.

Post, John E.: *See—*
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PPG Industries, Inc.: *See—*
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Krumwiede, John F., 4,349,367, Cl. 65-27.000.
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PQ Corporation: *See—*
Dent, Anthony L.; Hertzenberg, Elliot P.; and Sherry, Howard S., 4,349,533, Cl. 424-52.000.

Prakken, Bouwe. Packing machine for the production of filled sealed bags. 4,348,851, Cl. 53-75.000.

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Pressure Technology, Inc.: *See—*
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Pritchett, Ervin G.: *See—*
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Procter & Gamble Company, The: *See—*
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Heino, Jorgen, 4,349,056, Cl. 141-381.000.

Protomastro, Michael G.: *See—*
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PT Components, Inc.: *See—*
Stephanoff, Louis J.; and Avramidis, Stellios A., 4,349,343, Cl. 474-245.000.

Pullman Incorporated: *See—*
Johnson, Gorden F., 4,348,910, Cl. 73-863.510.

Putnam, Clair H.: *See—*
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Pym, David P.: *See—*
English, Martin; Pym, David P.; and Dawson, Lindsay G., 4,349,628, Cl. 435-161.000.

Pytlewski, Louis L.; and Krevitz, Kenneth, to Franklin Institute, The. Method of recovering metals from metal containing materials. 4,349,380, Cl. 75-0.50A.

Queen's University at Kingston: *See—*
Romero-Sierra, Cesar; and Webb, John C., 4,349,459, Cl. 252-400.00R.
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Racine Federated, Inc.: *See—*
Lake, Jack E., 4,349,711, Cl. 200-153.0LA.

Ragen, Robert A., to Xerox Corporation. Electronic damping apparatus. 4,349,770, Cl. 318-685.000.

Raible, Donald A., to Bentley Laboratories. Atraumatic blood access device valve. 4,349,021, Cl. 128-214.00R.

Ralston, Philip G., Jr. Multiple adapter device for interconnecting tubing of different sizes. 4,349,024, Cl. 128-247.000.

Ramaker, Brian L.: *See—*
Prett, David M.; Ramaker, Brian L.; and Cutler, Charles R., 4,349,869, Cl. 364-159.000.

Ramsey, Maynard, III, to Johnson & Johnson. Automatic mean blood pressure reading device. 4,349,034, Cl. 128-681.000.

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Randolph, Robert W., to ACF Industries, Inc. Sliding sill low friction supporting plate assembly. 4,348,964, Cl. 105-42.00D.

Rasmussen, Glenn: *See—*
Huston, Larry; Morrison, Clifton H.; Rasmussen, Glenn; and Tsuchiya, Takuzo, 4,348,923, Cl. 83-23.000.

Rau, Joseph P. Emergency toilet water protection unit. 4,348,778, Cl. 4-661.000.

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Raychem Corporation: *See—*
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Gordon, Bruce E., 4,349,918, Cl. 455-20.000.
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RCA Corporation: *See—*
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Crowley, Albert T., 4,349,887, Cl. 364-703.000.
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Flatley, Doris W.; and Hsu, Sheng T., 4,349,584, Cl. 427-85.000.
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Landry, Norman R., 4,349,790, Cl. 333-24.100.
Southgate, Peter D.; and Beltz, John P., 4,349,880, Cl. 364-507.000.
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Rebsdat, Siegfried; Mayer, Sigmund; Alfranseder, Josef; and Schaffelhofer, Iwo, to Hoechst Aktiengesellschaft. Process for the manufacture of extremely pure monoethylene glycol. 4,349,417, Cl. 203-33.000.
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Rees, James D., to Xerox Corporation. Gradient index lens array with improved exposure uniformity. 4,349,248, Cl. 350-413.000.
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Reiner, Roland: *See—*
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Renga, James M.; and Emmons, Albert H., to Dow Chemical Co., The. Process for making vicinal epoxides and dihalides. 4,349,482, Cl. 549-518.000.
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Republic Steel Corporation: *See—*
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Rhodes, Percy H.; and Snyder, Robert S., to United States of America, National Aeronautics and Space Administration. Electrophoresis device. 4,349,429, Cl. 204-299.00R.
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Lindow, Edwin L.; and Richards, Bradley T., 4,349,717, Cl. 219-73.200.
Richardson, Christopher K., to Plessey Handel und Investments AG. Transmitter/receivers capable of contemporaneous transmission/-reception. 4,349,919, Cl. 455-23.000.
Rickett, David A. Automatic and continuous chemical feed system. 4,349,437, Cl. 210-169.000.
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Kaneko, Tamaki; Hibi, Kunio; Ikeda, Sunao; Okuzawa, Tugio; Kakitani, Yohtaro; and Kikuchi, Hideo, 4,349,190, Cl. 271-297.000.
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Riddle, Travis: *See—*
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Liede, Dieter, 4,349,508, Cl. 422-1.000.
Schuhmacher, Werner, 4,348,945, Cl. 91-452.000.
Straubel, Max; Schwartz, Reinhard; Ritter, Ernst; Djordjevic, Ilija; and Doll, Reinhard, 4,348,895, Cl. 73-119.00A.
Stumpp, Gerhard, 4,348,998, Cl. 123-447.000.
Roberts, David: *See—*
Changani, Pushpkumar D.; Peacock, Donald G.; and Roberts, David, 4,349,404, Cl. 156-308.400.
Roberts, Lincoln E.; and Wasserlein, Henry G., Jr., to AMP Incorporated. Low mating force connector for connecting groups of wires. 4,349,239, Cl. 339-97.00R.
Roberts, Michael G.: *See—*
Bolen, Charles E.; Harrington, Edward R.; Marzocchi, Alfred; and Roberts, Michael G., 4,349,590, Cl. 427-389.700.
Marzocchi, Alfred; Roberts, Michael G.; and Bolen, Charles E., 4,349,388, Cl. 106-281.00N.
Robinson, Brian: *See—*
Masri, Merle S.; Robinson, Brian; and Gibson, James D. M., 4,349,347, Cl. 8-139.000.
Robinson, Robert J.; Johnson, David B.; and Schroeder, Verdell H., to Bliss & Laughlin Industries, Incorporated. Self-oiling portable bag-closing sewing machine. 4,348,970, Cl. 112-256.000.
Robson, William F.; and Laperle, Raymond A. Ground isolated electrostatic field detector. 4,349,783, Cl. 324-457.000.
Rockefeller University: *See—*
Manning, James M.; and Acharya, Seetharama A., 4,349,352, Cl. 23-230.00B.
Rockwell International Corporation: *See—*
Blocksome, Roderick K.; Hornbeck, Sherman J.; and Fee, Donald R., 4,349,799, Cl. 333-246.000.
Wagner, William R., 4,349,001, Cl. 123-557.000.
Rockwell-Rimoldi, S.p.A.: *See—*
Fonio, Carlo, 4,349,306, Cl. 414-684.000.
Roeder, Allan W., to United States of America, Air Force. Adaptive interference tracker for suppression of narrow band interference. 4,349,916, Cl. 375-103.000.
Rohan, Neil A.: *See—*
Morgan, Edward J.; and Rohan, Neil A., 4,349,341, Cl. 440-51.000.
Rohde, Edward C., to Consolidation Coal Company. Method for dewatering a subterranean formation via a borehole. 4,349,228, Cl. 299-10.000.
Rohr, Otto: *See—*
Durr, Dieter; Rohr, Otto; Pissiotas, Georg; and Bohner, Beat, 4,349,377, Cl. 71-98.000.
Rohrbach, Peter H., to SI Handling Systems, Inc. Fail-safe control device for driverless vehicles. 4,348,961, Cl. 104-252.000.
Romankiw, Lubomyr T.: *See—*
Kulynych, Larysa H.; Romankiw, Lubomyr T.; and von Gutfeld, Robert J., 4,349,583, Cl. 427-53.100.
Romero-Sierra, Cesar; and Webb, John C., to Queen's University at Kingston. Lower preservation. 4,349,459, Cl. 252-400.00R.
Romero-Sierra, Cesar; and Webb, John C., to Queen's University at Kingston. Process and solution for preserving green plant tissues. 4,349,580, Cl. 427-4.000.
Rommel, Emil: *See—*
Ketterer, Dieter; Jakubaschk, Horst; and Rommel, Emil, 4,348,941, Cl. 89-155.000.
Rooney, Clarence S.: *See—*
Cragoe, Edward J., Jr.; Rooney, Clarence S.; and Williams, Haydn W. R., 4,349,561, Cl. 424-274.000.
Rosenberger, Hugo. Compound block kit. 4,349,293, Cl. 404-41.000.
Rosenberger, Siegfried, to Ciba-Geigy Corporation. Dithiophosphates as lubricant antioxidents and anti-corrosion agents. 4,349,445, Cl. 252-46.600.
Roser, Erich. Oil lubrication system. 4,349,085, Cl. 184-6.150.
Ross Operating Valve Company: *See—*
Thornton, Douglas M., 4,349,176, Cl. 251-129.000.
Rossi, Pier P.; and Catoni, Mario, to SNIA Viscosa Societa' Nazionale Industria Applicazioni Viscosa S.p.A. Process for the preparation of ω-lactams, in particular caprolactam. 4,349,473, Cl. 260-239.30A.
Roszkowski, Adolph P.; Clark, Robin D.; and Kluge, Arthur F., to Syntex (U.S.A.) Inc. Anti-hypertensive 1-substituted spiro(piperidine-oxobenzoxazine)s. 4,349,549, Cl. 424-248.550.
Roth, Eldon N. Method for freezing and forming meat patties. 4,349,575, Cl. 426-513.000.
Roth, Josef, to Karl Mayer Textilmaschinen fabrik GmbH. Weft thread laying apparatus. 4,348,876, Cl. 66-84.00A.

Roth, Kurt: *See*—
Tappe, Horst; Kindler, Horst; Roth, Kurt; and Weyer, Hans-Jurgen, 4,349,348, Cl. 8-464.000.

Rothgery, Eugene F., to Olin Corporation. Selected poly(oxyalkylated) 1,3,4-thiadiazoles in acid baths and their use as corrosion inhibitors. 4,349,458, Cl. 252-391.000.

Rothmans of Pall Mall Canada Limited: *See*—
Brackmann, Warren A.; and Snaidr, Stanislav M., 4,349,037, Cl. 131-306.000.

Roto-Finish Company, Inc.: *See*—
Balz, Gunther W., 4,349,327, Cl. 425-436.00R.

Rottmayr, Johann, to Zinser Textilmaschinen GmbH. Method of and apparatus for making a doubled yarn. 4,348,858, Cl. 57-18.000.

Roussel Uclaf: *See*—
Gouin d'Ambrieres, Solange; Lutz, Andre; and Gasc, Jean-Claude, 4,349,545, Cl. 424-180.000.

Rovsha, Vyacheslav S.: *See*—
Lysanov, Vladislav S.; Digonsky, Viktor V.; Feldgun, Leon I.; Davidenko, Valery M.; Novikov, Nikolai V.; Borimsky, Alexandr I.; Shulzhenko, Alexandr A.; Yakimenko, Valerian D.; Dovgal, Eduard Y.; Egorov, Vitaly Y.; Rovsha, Vyacheslav S.; Prikhna, Alexei I.; and Sokolov, Alexandr N., 4,349,517, Cl. 423-290.000.

Rowe, Frederick; and Brown, David, to Imperial Chemical Industries Limited. Pyrolysis of hydrocarbons. 4,349,432, Cl. 208-130.000.

Rowley, Edward K.; and Sprague, Allison A., to C-I-L Inc. Explosive container. 4,348,955, Cl. 102-317.000.

Royer, Garfield P., to Ohio State University, The. Implants, microbeads, microcapsules, preparation thereof and method of administering a biologically-active substance to an animal. 4,349,530, Cl. 424-19.000.

Rudd, Robert E., III, to Burroughs Corporation. Conical nozzle for an electrostatic ink jet printer. 4,349,830, Cl. 346-140.00R.

Rupp, Wiktor J., to Camelot Industries Corporation. Method and apparatus for manufacturing glass progressive lenses. 4,349,374, Cl. 65-107.000.

Russell, George K., to Stanley Aviation Corporation. Apparatus and method for fractionating air and other gaseous mixtures. 4,349,357, Cl. 55-21.000.

Ruthmansdorfer, David A.: *See*—
Stang, John H.; Ruthmansdorfer, David A.; and Reichenbach, Dean H., 4,348,991, Cl. 123-41.290.

Rutt, Kenneth M. Animal cart. 4,349,210, Cl. 280-47.210.

Ryan, Kenneth M.: *See*—
Liu, Thomas M. H.; Melillo, David G.; Ryan, Kenneth M.; Shinkai, Ichiro; and Sletzinger, Meyer, 4,349,687, Cl. 549-291.000.

Ryding, Paul A.: *See*—
Glassman, Stephen M.; Kia, James D.; and Ryding, Paul A., 4,349,016, Cl. 128-87.00R.

S&C Electric Company: *See*—
Tobin, Thomas J., 4,349,803, Cl. 337-186.000.

S.C.R. Engineers Ltd.: *See*—
Brayer, Eyal, 4,348,984, Cl. 119-14.080.

Saeman, Walter C., to Olin Corporation. Glass batch pellet production and drying process. 4,349,366, Cl. 65-27.000.

Sahara, Masayoshi: *See*—
Ishida, Tokuji; and Sahara, Masayoshi, 4,349,260, Cl. 354-145.000.

Sakamoto, Hiroshi: *See*—
Ando, Hisashi; Soeno, Ko; Sakamoto, Hiroshi; Misumi, Akira; and Fukushima, Hiroshi, 4,349,766, Cl. 313-346.00R.

Sakashita, Noriji; Kugisawa, Toshio; Watanabe, Hironori; and Kitagawa, Hiroshi, to Kabushiki Kaishi Kawai Gakki Seisakusho. Electronic musical instrument. 4,348,928, Cl. 84-1.010.

San-O Industrial Co., Ltd.: *See*—
Arikawa, Hiroo, 4,349,805, Cl. 337-255.000.

Sanborn, James R.: *See*—
Powell, James E.; and Sanborn, James R., 4,349,676, Cl. 546-141.000.

Sanders, David C.: *See*—
Dentel, David A.; and Sanders, David C., 4,349,488, Cl. 260-465.00D.

Sanders, Laurence R., to McDonnell Douglas Corporation. Shielded structural or containment member. 4,349,859, Cl. 361-218.000.

Sanderson, Roger S.; and Whelchel, Robert C., to Sanderson, Roger S. Sterilizing and storing medical items. 4,349,118, Cl. 220-201.000.

Sandler, Stanley R., to Pennwalt Corporation. Polyoxyalkylene polycarboxylate esters. 4,349,688, Cl. 560-91.000.

Sanfilippo, Jasper B. Movably mounted dispenser for bulk material. 4,349,128, Cl. 222-166.000.

Sapitowicz, Thomas P.; and Meloni, Robert A., to General Instrument Corporation. Hammer for dot matrix printer. 4,349,283, Cl. 400-124.000.

Sarides, Athanase K. Apparatus for indicating pressure in pneumatic tires. 4,348,896, Cl. 73-146.500.

Sarjeant, Dale C. Collapsible splash shield for toilet. 4,348,776, Cl. 4-300.300.

Sartorius GmbH: *See*—
Oldendorf, Christian; and Melcher, Franz-Josef, 4,349,076, Cl. 177-164.000.

Sarvestany, Asadollah A.: *See*—
Hardwick, John P.; Pezet, Michael J.; Sarvestany, Asadollah A.; and Satharasinghe, Dayananda, 4,349,159, Cl. 241-236.000.

Sasaki, Masaomi, to Ricoh Co., Ltd. Disazo pigment containing electrophotographic element. 4,349,616, Cl. 430-58.000.

Sasaki, Masaru: *See*—
Higashiyama, Noboru; and Sasaki, Masaru, 4,349,851, Cl. 360-105.000.

Sasaki, Nobuo, to Fujitsu Limited. Process for producing a semiconductor device having an identification mark in an insulating substrate. 4,348,803, Cl. 29-574.000.

Sasaki, Soji: *See*—
Sato, Ichiya; Miyagawa, Kazuo; Sasaki, Yukito; Kawamura, Koji; Sato, Shuichi; Sasaki, Soji; Kubota, Jun; and Itoh, Susumu, 4,348,903, Cl. 73-643.000.

Sasaki, Yasuo: *See*—
Amano, Muneyuki; and Sasaki, Yasuo, 4,349,527, Cl. 423-644.000.

Sasaki, Yukito: *See*—
Sato, Ichiya; Miyagawa, Kazuo; Sasaki, Yukito; Kawamura, Koji; Sato, Shuichi; Sasaki, Soji; Kubota, Jun; and Itoh, Susumu, 4,348,903, Cl. 73-643.000.

Sasaoka, Takeshi: *See*—
Horiguchi, Satoru; Sasaoka, Takeshi; and Shimane, Koichi, 4,349,835, Cl. 358-76.000.

Satharasinghe, Dayananda: *See*—
Hardwick, John P.; Pezet, Michael J.; Sarvestany, Asadollah A.; and Satharasinghe, Dayananda, 4,349,159, Cl. 241-236.000.

Sato, Akio: *See*—
Hirakawa, Hiroshi; Sato, Akio; Takusagawa, Takashi; and Ikeda, Nobumasa, 4,349,061, Cl. 152-209.00R.

Sato, Hideo: *See*—
Kondo, Syunichi; Nomaguchi, Hirotsugu; and Sato, Hideo, 4,349,618, Cl. 430-83.000.

Sato, Hirokazu: *See*—
Asada, Akihiro; Nakata, Kazuo; Umemura, Kazuhiro; Sato, Hirokazu; Murakami, Kenya; and Into, Kiyoshi, 4,349,699, Cl. 179-1.0SM.

Sato, Ichiya; Miyagawa, Kazuo; Sasaki, Yukito; Kawamura, Koji; Sato, Shuichi; Sasaki, Soji; Kubota, Jun; and Itoh, Susumu, to Nippon Steel Corporation; and Hitachi, Ltd. Electromagnetic ultrasonic apparatus. 4,348,903, Cl. 73-643.000.

Sato, Masanori: *See*—
Amano, Kitsutaro; Nakai, Taiichiro; Sato, Masanori; and Nunokawa, Makoto, 4,349,243, Cl. 350-96.230.

Sato, Ryuichi: *See*—
Toyoshima, Shigeshi; Sato, Ryuichi; Ito, Koichi; Shinohara, Toshio; and Yamamoto, Yasushi, 4,349,682, Cl. 548-110.000.

Sato, Shuichi: *See*—
Sato, Ichiya; Miyagawa, Kazuo; Sasaki, Yukito; Kawamura, Koji; Sato, Shuichi; Sasaki, Soji; Kubota, Jun; and Itoh, Susumu, 4,348,903, Cl. 73-643.000.

Sato, Yoshihisa, to Tokyo Shibaura Denki Kabushiki Kaisha. Strong magnetic field generator and method of operating the same. 4,349,853, Cl. 361-19.000.

Satoh, Ken, to Olympus Optical Co., Ltd. Tape tracking device. 4,349,849, Cl. 360-71.000.

Satoi, Shuzo: *See*—
Fujii, Tadashiro; Satoi, Shuzo; Muto, Naoki; and Hayashi, Mitsuo, 4,349,667, Cl. 536-13.900.

Savard, Hassel J., Jr., to Atron, Inc. Device for affixing garments onto hangers. 4,349,127, Cl. 221-196.000.

Sawada, Hiroomi: *See*—
Yamauchi, Toshima; Nogami, Sadao; Sawada, Kengi; Moriya, Jyunichiro; Sawada, Hiroomi; and Kobayashi, Keizou, 4,348,873, Cl. 62-514.00R.

Sawada, Kengi: *See*—
Yamauchi, Toshima; Nogami, Sadao; Sawada, Kengi; Moriya, Jyunichiro; Sawada, Hiroomi; and Kobayashi, Keizou, 4,348,873, Cl. 62-514.00R.

Sawano, Yukio, to Fuji Photo Film Co., Ltd. Apparatus for displaying information. 4,349,836, Cl. 358-93.000.

Sayegh, Antoine Y. Orthopaedic apparatus. 4,349,017, Cl. 128-92.00A.

Scavuzzo, Robert J., to Bell Telephone Laboratories, Incorporated. Emitter function logic flip-flop circuit. 4,349,753, Cl. 307-272.00A.

Schaffelhofer, Iwo: *See*—
Rebsdat, Siegfried; Mayer, Sigmund; Alfranseder, Josef; and Schaffelhofer, Iwo, 4,349,417, Cl. 203-33.000.

Schall, William R. Mold producing globe-shaped bells with single-piece shells. 4,349,065, Cl. 164-368.000.

Schattner, Allen S.: *See*—
Schattner, Robert L.; and Schattner, Allen S., 4,348,967, Cl. 109-51.000.

Schattner, Robert L.; and Schattner, Allen S., to Omnimed, Inc. Public security locker. 4,348,967, Cl. 109-51.000.

Scheinbeim, Jerry I.: *See*—
Pae, Kook D.; Newman, Brian A.; and Scheinbeim, Jerry I., 4,349,502, Cl. 264-320.000.

Scheiner, Harry, to Kings Electronics Co., Inc. Pi pad attenuator. 4,349,792, Cl. 333-81.00A.

Schell, Loni, to Hoechst Aktiengesellschaft. Process for preserving planographic printing forms. 4,349,391, Cl. 148-6.15R.

Schenk, Raymond L.: *See*—
Wirtz, John W.; and Schenk, Raymond L., 4,349,067, Cl. 164-479.000.

Schering Corporation: *See*—
Gold, Elijah H.; and Chang, Wei K., 4,349,472, Cl. 260-239.0BB.
Lee, Bong K.; Marquez, Joseph A.; and Waitz, J. Allan, 4,349,665, Cl. 536-7.100.

Schiffer, Henry. Simulated brick or tile. 4,349,588, Cl. 427-230.000.

Schildknecht, Richard J., to Research Products Corporation. Solar heating control. 4,349,012, Cl. 126-422.000.

Schilf, Lothar. Thermal insulation of vessels and method of fabrication. 4,349,051, Cl. 138-149.000.

Schirmer, Karl, to Mannesmann Demag Kunststofftechnik Zweigniederlassung der Mannesmann Demag Aktiengesellschaft. Non-return device at the screwhead of screw injection molding machines. 4,349,044, Cl. 137-512.300.

Schleiermacher, Herbert: *See*—
Nolte, Albert; Schleiermacher, Herbert; and Arbeiter, Erich, 4,348,990, Cl. 123-41.120.

Schleimer, Francois; Henrion, Romain; Goedert, Ferdinand; and Lorang, Lucien, to Arbed S.A. Process for refining of a bath of metal containing cold solid substances. 4,349,382, Cl. 75-60.000.

Schlueter, Francis E.: *See*—
Copley, Russell D.; and Schlueter, Francis E., 4,348,856, Cl. 56-30.000.

Schlumberger Technology Corporation: *See*—
Escaron, Pierre C.; and Hoppe, Joachim A., 4,349,072, Cl. 166-250.000.

Schmid, Frederick, to Crystal Systems Inc. Wire blades. 4,349,178, Cl. 254-216.000.

Schmid, Markus; and Gloor, Hans, to Concast AG. Method and apparatus for continuous casting of a number of strands. 4,349,066, Cl. 164-453.000.

Schmidli, Josef: *See*—
Arnold, Niklaus; Schmidli, Josef; and Spiess, Peter, 4,349,759, Cl. 310-233.000.

Schmidlin, Albertus E., to United States of America, Army. Artillery shell comprising two sections having complementary coupling members for connecting the sections together. 4,348,956, Cl. 102-377.000.

Schmidt, Helmut: *See*—
Blaser, Paul; Schmidt, Helmut; and Strobel, Walter, 4,349,286, Cl. 400-492.000.

Schmitt, Hermann: *See*—
Schoening, Josef; Elter, Claus; and Schmitt, Hermann, 4,349,507, Cl. 376-230.000.

Schnarr, Marcus M.: *See*—
Fischbeck, Kenneth H.; Schnarr, Marcus M.; and Paraskevopoulos, Demetris F., 4,349,828, Cl. 346-1.100.

Schneider, David: *See*—
Davis, Paul; Weinstein, David; and Schneider, David, 4,349,571, Cl. 426-124.000.

Schneider, Franz; Schumann, Burkhard; Maier, Karl; and Hohn, Herbert, to L. Schuler GmbH. Unloading device for a press. 4,349,310, Cl. 414-749.000.

Schneider, Thomas G.: *See*—
Smith, Jay, III; Schneider, Thomas G.; and Grimm, Thomas H., 4,349,196, Cl. 273-1.0GC.

Schoening, Josef; Elter, Claus; and Schmitt, Hermann, to Hochtemperatur-Reaktorbau GmbH. Drive for an absorber rod of a nuclear reactor. 4,349,507, Cl. 376-230.000.

Schoennagel, Hans J., to Mobil Oil Corporation. Separately supported polymetallic reforming catalyst. 4,349,433, Cl. 208-139.000.

Schofield, John D., to Imperial Chemical Industries Limited. Dispersible inorganic pigment. 4,349,389, Cl. 106-308.00Q.

Schornack, Louis W.: *See*—
Goldstein, Richard; and Schornack, Louis W., 4,349,748, Cl. 307-132.00E.

Schreiner, Charles P., to Westinghouse Electric Corp. Wall-hung support rail. 4,349,113, Cl. 211-103.000.

Schrier, Eugene E.: *See*—
Nudel, Ron; Janauer, Gilbert E.; Schrier, Eugene E.; and Figura, Ilona W., 4,349,646, Cl. 525-256.000.

Schroeder, Verdell H.: *See*—
Robinson, Robert J.; Johnson, David B.; and Schroeder, Verdell H., 4,348,970, Cl. 112-256.000.

Schuhmacher, Werner, to Robert Bosch GmbH. Device for controlling a hydraulic power circuit. 4,348,945, Cl. 91-452.000.

Schulke, Karl A., to Heraeus Quarzschmelze GmbH. Flange connection to connect a metallic and a glass or ceramic structural element. 4,349,203, Cl. 277-26.000.

Schumacher, Gerd: *See*—
Lorenz, Hans-Walther; Schumacher, Gerd; and Kirchner, Helmut, 4,348,887, Cl. 73-23.000.

Schumaker, Jon S., to Pandrol Limited. Holding a railway rail down on a support member. 4,349,151, Cl. 238-349.000.

Schumann, Burkhard: *See*—
Schneider, Franz; Schumann, Burkhard; Maier, Karl; and Hohn, Herbert, 4,349,310, Cl. 414-749.000.

Schupack, Morris; and Suarez, Mario G. Electrically isolated reinforcing tendon assembly and method. 4,348,844, Cl. 52-230.000.

Schuster, Wilhelm; Stahl, Jurgen; and Wegner, Wilhelm, to AHK Alkohol Handelskontor GmbH. Valved, resilient-walled container for safely dispensing flammable liquids. 4,349,134, Cl. 222-212.000.

Schuurmans, Hubertus J. A.; and Peer, Andre T. M., to Shell Oil Company. Fluid treating column and apparatus for treating mixtures of liquid and gas. 4,349,360, Cl. 55-238.000.

Schwan, Thomas J.; Burch, Homer A.; and Gray, Joseph E., to Morton-Norwich Products, Inc. 3,4-Dihydro-3,4-isoquinolinedione 4-oxime. 4,349,677, Cl. 546-142.000.

Schwartz, Marvin P.: *See*—
Kim, Sung C.; and Schwartz, Marvin P., 4,348,794, Cl. 29-157.3AH.

Schwartz, Reinhard: *See*—
Straubel, Max; Schwartz, Reinhard; Ritter, Ernst; Djordjevic, Ilija; and Doll, Reinhard, 4,348,895, Cl. 73-119.00A.

Schween, Peter: *See*—
Krug, Gunter; Lahr, Helfried; Schween, Peter; and Wieczorek, Herbert, 4,349,465, Cl. 252-626.000.

Schwegler, Gunter: *See*—
Grossner, Horst; Weiger, Gunter; and Schwegler, Gunter, 4,349,746, Cl. 307-106.000.

Schweizer, Heinz: *See*—
Muller, Helmut; and Schweizer, Heinz, 4,348,874, Cl. 464-162.000.

Schwerdhofer, Hans-Joachim, to Fichtel & Sachs AG. Chain shifting device. 4,349,342, Cl. 474-80.000.

Scifres, Donald R.; Streifer, William; and Burnham, Robert D., to Xerox Corporation. Optically controlled integrated current diode lasers. 4,349,906, Cl. 372-50.000.

Scordato, Emil A.; and Pratt, Hugh W., to Medical Laboratory Automation, Inc. Disposable pipette tips and trays therefor. 4,349,109, Cl. 206-562.000.

Scott, David F., to FAD Company, Inc. Arrowhead with readily replaceable blades. 4,349,202, Cl. 273-422.000.

Scott, Ernest R.; and Bowers, William D., to Scott & Fetzer Company, The. Vacuum cleaner bag hanger assembly. 4,349,361, Cl. 55-357.000.

Scott & Fetzer Company, The: *See*—
Scott, Ernest R.; and Bowers, William D., 4,349,361, Cl. 55-357.000.

Scott, William H.: *See*—
Grant, Edward J., Jr.; Scott, William H.; and Stipanuk, John M., 4,349,758, Cl. 310-68.00A.

Scripto, Inc.: *See*—
Muller, Frank A., 4,349,639, Cl. 523-161.000.

Sebag, Henri: *See*—
Vanlerberghe, Guy; Sebag, Henri; and Zysman, Alexandre, 4,349,532, Cl. 424-47.000.

Segard, Emile-Pierre; and Lebeault, Jean-Michel, to Groupement d'Interet Economique Valpron. Process of treating the juice of squeezed vegetable material, such as lucerne, for producing alimentary proteins and super-nitrogenated protein foods, and products obtained by said process. 4,349,570, Cl. 426-52.000.

Seha, Zdenek, to Ciba-Geigy AG. Process for the carbazolation of anthrimides. 4,349,478, Cl. 260-316.000.

Seiko Koki Kabushiki Kaisha: *See*—
Kitai, Kiyoshi; Kobayashi, Masaru; Nakagawa, Tadashi; Ishida, Hiroaki; Watanabe, Masanori; and Takazawa, Yuzuru, 4,349,258, Cl. 354-127.000.

Seikosha Co., Ltd.: *See*—
Chida, Yoshinori; and Tada, Satoru, 4,349,287, Cl. 400-569.000.

Seiwa Kagaku Kabushiki Kaisha: *See*—
Nagoya, Takato, 4,348,833, Cl. 47-17.000.

Sejournant, Francine, to Antipol Commercial Systems (Jersey) Limited. Anti-adhesive composition based on wax in organic solvent medium. 4,349,586, Cl. 427-154.000.

Sekigawa, Keiji, to Ricoh Company, Ltd. Picture processing method. 4,349,846, Cl. 358-280.000.

Sekiguchi, Tomoyoshi; and Ishikawa, Hiroya, to Atsugi Motor Parts Co., Ltd. Electric control device for vehicle suspension system. 4,349,077, Cl. 180-41.000.

Selby, Jonathan W. Disposable cat relief chamber. 4,348,982, Cl. 119-1.000.

Selleck, George L. Non-saturable bun. 4,348,949, Cl. 99-426.000.

Selleri, Narciso: *See*—
Possati, Mario; Golinelli, Guido; and Selleri, Narciso, 4,348,814, Cl. 33-178.00E.

Senzaki, Takaya: *See*—
Tagami, Katsutoshi; Senzaki, Takaya; Suzuki, Nobuhiko; and Murao, Eiji, 4,349,823, Cl. 343-7.0VM.

Serebryakov, Edward P.: *See*—
Lischewski, Manfred; Adam, Habil G.; and Serebryakov, Edward P., 4,349,481, Cl. 549-297.000.

Serre, Hubert: *See*—
D'Hinterland, Lucien D.; Serre, Hubert; and Normier, Gerard, 4,349,540, Cl. 424-92.000.

Sevylor: *See*—
Leber, Edmond, 4,348,779, Cl. 114-345.000.

SFS Stadler AG: *See*—
Bogel, Gerhard, 4,349,106, Cl. 206-347.000.

Shackle, Peter W.: *See*—
Hartman, Adrian R.; and Shackle, Peter W., 4,349,751, Cl. 307-252.00A.

Shah, Hasmukh R.; Jones, Thaddeus M.; and Hemingway, Bruce R., to UMC Industries, Inc. Paper currency device. 4,349,111, Cl. 209-534.000.

Shamsha, Ljudmila F.: *See*—
Efimov, Vyacheslav T.; Nazarian, Miron M.; Kolyada, Vladimir A.; Matsev, Arkady R.; Shamsha, Ljudmila F.; and Azenko, Alexandr A., 4,349,430, Cl. 204-302.000.

Shapiro, Stanley J.: *See*—
Campillo, Anthony J.; Hyer, Ronald C.; and Shapiro, Stanley J., 4,349,907, Cl. 372-92.000.

Sharp Kabushiki Kaisha: *See*—
Mariyama, Ryoiti, 4,349,715, Cl. 219-10.55B.

Sharpe, Derrick, to W. H. D. Development Limited. Containers. 4,349,108, Cl. 206-506.000.

Shaw, Pern; and Musa, Fuad H., to Motorola, Inc. Microcomputer with programmable multi-function port. 4,349,870, Cl. 364-200.000.

Shedrow, Sidney. Adjustable eyeglass mounting. 4,349,251, Cl. 351-128.000.

Shell Oil Company: *See—*
Powell, James E.; and Sanborn, James R., 4,349,676, Cl. 546-141.000.
Prett, David M.; Ramaker, Brian L.; and Cutler, Charles R., 4,349,869, Cl. 364-159.000.
Schuurmans, Hubertus J. A.; and Peer, Andre T. M., 4,349,360, Cl. 55-238.000.
Sheltered Workshop for the Disabled, Inc.: *See—*
Blackington, Paul A., 4,349,497, Cl. 264-1.500.
Sheridan, John J. Air dispersing head for air heaters. 4,349,725, Cl. 219-373.000.
Sherman, William E. Attachment and method for grinding and filing chain saw bars. 4,348,919, Cl. 76-112.000.
Sherry, Howard S.: *See—*
Dent, Anthony L.; Hertzenberg, Elliot P.; and Sherry, Howard S., 4,349,533, Cl. 424-52.000.
Shibata, Yumi: *See—*
Nagasawa, Kohtaro; Ochi, Hideo; Tanaka, Fujio; and Shibata, Yumi, 4,349,647, Cl. 525-285.000.
Shibayama, Hikou; Ogawa, Tetsuya; Kosugi, Makoto; Hisatsugu, Tokushige; and Kobayashi, Koichi, to Fujitsu Limited. Method and apparatus for plasma etching. 4,349,409, Cl. 156-643.000.
Shibukawa, Mitsuru: *See—*
Mimura, Akio; Takahashi, Yasuyuki; Yuasa, Katsumi; and Shibukawa, Mitsuru, 4,349,627, Cl. 435-108.000.
Shimada, Junichi; and Ogawa, Kazutake, to Honda Giken Kogyo Kabushiki Kaisha (Honda Motor Co., Ltd.). Mounting for a heat producing element of an automobile. 4,349,078, Cl. 180-69.100.
Shimada, Yukio; Suzuki, Naoyoshi; Ohashi, Toshio; and Inoshita, Yasushi, to Nissan Motor Co., Ltd. Push-button type valve. 4,349,177, Cl. 251-230.000.
Shimamune, Takayuki: *See—*
Asano, Hiroshi; Shimamune, Takayuki; Goto, Toshiki; Nitta, Hideo; and Hosonuma, Masashi, 4,349,581, Cl. 427-34.000.
Shimane, Koichi: *See—*
Horiguchi, Satoru; Sasaoka, Takeshi; and Shimane, Koichi, 4,349,835, Cl. 358-76.000.
Shimano Industrial Company Limited: *See—*
Shimano, Keizo, 4,348,916, Cl. 74-489.000.
Shimano, Keizo, to Shimano Industrial Company Limited. Brake operating device for a bicycle. 4,348,916, Cl. 74-489.000.
Shimanuki, Masanobu: *See—*
Ishii, Shoichi; Hagiwara, Taiken; and Shimanuki, Masanobu, 4,349,848, Cl. 360-66.000.
Shimizu, Jozo; Yamaguchi, Satoru; and Aoyama, Shigeo, to Hitachi Maxell, Ltd. Magnetic recording medium. 4,349,608, Cl. 428-413.000.
Shimizu, Kunio. Fluid shut-off device. 4,349,042, Cl. 137-39.000.
Shimotsuma, Wataru: *See—*
Kishimoto, Yoshio; and Shimotsuma, Wataru, 4,349,606, Cl. 428-411.000.
Shimoya, Shigeo, to Kobishi Electric Co., Ltd. Magnetic proximity switch. 4,349,800, Cl. 335-207.000.
Shin-Etsu Chemical Co., Ltd.: *See—*
Toyoshima, Shigeshi; Sato, Ryuichi; Ito, Koichi; Shinohara, Toshio; and Yamamoto, Yasushi, 4,349,682, Cl. 548-110.000.
Shinkai, Ichiro: *See—*
Liu, Thomas M. H.; Melillo, David G.; Ryan, Kenneth M.; Shinkai, Ichiro; and Sletzinger, Meyer, 4,349,687, Cl. 549-291.000.
Shinoda, Masaichi: *See—*
Toyokura, Nobuo; Tokunaga, Hiroshi; Inoue, Shinichi; Ishikawa, Hajime; and Shinoda, Masaichi, 4,349,395, Cl. 148-187.000.
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Toyoshima, Shigeshi; Sato, Ryuichi; Ito, Koichi; Shinohara, Toshio; and Yamamoto, Yasushi, 4,349,682, Cl. 548-110.000.
Shinopulos, George; Randlett, M. Ronald; and Bower, Terry F., to Kennecott Corporation. Method for brazing a surface of an age hardened chrome copper member. 4,349,145, Cl. 228-208.000.
Shinozaki, Junichiro: *See—*
Komatsu, Fumito; and Shinozaki, Junichiro, 4,349,899, Cl. 368-75.000.
Shiomi, Teiichi: *See—*
Kameyama, Masao; and Shiomi, Teiichi, 4,349,603, Cl. 428-334.000.
Shiozaki, Ted M. Animal waste collecting and disposing apparatus. 4,349,224, Cl. 294-1.0BA.
Shirato, Takehide, to Fijitsu Limited. Process for producing a semiconductor device. 4,348,802, Cl. 29-571.000.
Shmitka, Clarence F. Antenna assembly for high frequency ranges. 4,349,825, Cl. 343-750.000.
Shoh, Andrew, to Branson Ultrasonics Corporation. Power measuring arrangement for vibratory welder. 4,348,908, Cl. 73-862.540.
Shoham, Dan. Method of putting in a partition of insulation material inside concrete walls which are cast in a vertical position in an industrial building site. 4,349,492, Cl. 264-35.000.
Shook, George L.: *See—*
Stickler, John M.; and Shook, George L., 4,348,891, Cl. 73-81.000.
Shore, Sheldon G.; and Nagel, Colleen C., to Ohio State University Research Foundation, The. Ruthenium carbonylates, ruthenium carbonyl hydrides, osmium carbonylates and their preparation. 4,349,521, Cl. 423-417.000.
Shore, Sheldon G.; and Plotkin, Jeffrey S., to Ohio State University Research Foundation, The. Iron, nickel and cobalt tri-osmium carbonyl hydrides and their preparation. 4,349,522, Cl. 423-417.000.
Showman, Robert L.; and Yeager, Patrick F., to AMP Incorporated. Integrated circuit package connector. 4,349,238, Cl. 339-75.00M.
Shulzhenko, Alexandr A.: *See—*
Lysanov, Vladislav S.; Digonsky, Viktor V.; Feldgun, Leon I.; Davidenko, Valery M.; Novikov, Nikolai V.; Borimsky, Alexandr I.; Shulzhenko, Alexandr A.; Yakimenko, Valerian D.; Dovgal, Eduard Y.; Egorov, Vitaly Y.; Rovsha, Vyacheslav S.; Prikhna, Alexei I.; and Sokolov, Alexandr N., 4,349,517, Cl. 423-290.000.
SI Handling Systems, Inc.: *See—*
Brown, William L., 4,349,126, Cl. 221-112.000.
Rohrbach, Peter H., 4,348,961, Cl. 104-252.000.
Siemens Aktiengesellschaft: *See—*
Diepers, Heinrich, 4,349,760, Cl. 310-248.000.
Grassmann, Peter; Dietz, Kurt; and Meinel, Friedrich, 4,349,740, Cl. 378-25.000.
Hinrichs, Fritz, 4,349,693, Cl. 174-52.0PE.
Pfleiderer, Hans-Joerg; and Klar, Heiner, 4,349,749, Cl. 307-221.00D.
Siemens Corporation: *See—*
Wei, Lawrence S., 4,349,394, Cl. 148-175.000.
Sifniades, Stylianos: *See—*
Bonfield, John H.; Sifniades, Stylianos; and Ulmer, Harry E., 4,349,520, Cl. 423-387.000.
Silvey, E. Ray. Hydraulic safety hose. 4,349,049, Cl. 138-103.000.
Simm, Hans-Peter; Guhne, Wieland; and Hoffmann, Klaus, to Vorwerk & Co. Interholding GmbH. Sealing arrangement for tubular elements of floor care device. 4,349,206, Cl. 277-207.00R.
Sims, Loyie, to Sims Oil, Inc. Oil refiner. 4,349,438, Cl. 210-180.000.
Sims Oil, Inc.: *See—*
Sims, Loyie, 4,349,438, Cl. 210-180.000.
Singer Company, The: *See—*
Whitby, Clyde M.; and White, Douglas L., deceased, 4,349,732, Cl. 250-201.000.
Singer, Wayne J., to Kimberly-Clark Corporation. Surgical leggings. 4,349,019, Cl. 128-132.00D.
Skabla, Joseph. Sound reproduction system. 4,349,697, Cl. 179-1.00D.
SKF Industrial Trading & Development Co. B.V.: *See—*
Nutzel, Hans G.; and Kuhl, Rudolf, 4,349,423, Cl. 204-146.000.
Skoog, Karl I. L., to Telefonaktiebolaget L M Ericsson. Method and apparatus for reducing the demand on the number of transferred bits when transferring PCM information. 4,349,913, Cl. 375-25.000.
Sletzinger, Meyer: *See—*
Liu, Thomas M. H.; Melillo, David G.; Ryan, Kenneth M.; Shinkai, Ichiro; and Sletzinger, Meyer, 4,349,687, Cl. 549-291.000.
Slivenko, Victor: *See—*
Ellis, Willard H.; Haubold, Axel D.; Slivenko, Victor; and Bokros, Jack C., 4,349,498, Cl. 264-81.000.
Slootz, Josef: *See—*
Carota, Martin; Slootz, Josef; Weiser, Klaus; Gulich, Peter; and Jovanovic, Milenko, 4,349,718, Cl. 219-78.010.
Small, Rudolph E.; and Spalding, Michael H., to Paper Converting Machine Company. Folding apparatus. 4,349,185, Cl. 270-32.000.
Smallegan, Jon M., to Multifastener Corporation. Nut installation apparatus and method. 4,348,796, Cl. 29-432.000.
Smiesko, Frank A.: *See—*
Beiswenger, John L.; and Smiesko, Frank A., 4,349,157, Cl. 239-509.000.
Smirnov, Vladimir N.: *See—*
Maximenko, Alexandr V.; Torchilin, Vladimir P.; Smirnov, Vladimir N.; and Chazov, Evgeny I., 4,349,630, Cl. 435-180.000.
Smith Engineering: *See—*
Smith, Jay, III; Schneider, Thomas G.; and Grimm, Thomas H., 4,349,196, Cl. 273-1.0GC.
Smith, James D. B., to Westinghouse Electric Corp. Resinous copolymer insulating compositions. 4,349,651, Cl. 526-263.000.
Smith, Jay, III; Schneider, Thomas G.; and Grimm, Thomas H., to Smith Engineering. Computer control toy track system. 4,349,196, Cl. 273-1.0GC.
Smith and Nephew Associated Companies Limited: *See—*
Gilbert, David J.; and Hollingsbee, Derek A., 4,349,563, Cl. 424-274.000.
Smith, Philip S., to Motorola, Inc. CMOS Static ALU. 4,349,888, Cl. 364-716.000.
Smith, Phillip H. Lighted plant stand. 4,349,864, Cl. 362-122.000.
Smith, Roger L.; and Murphy, Robert P., to Standard Oil Company (Indiana). Determination of movable oil saturations. 4,349,737, Cl. 250-259.000.
Smith, Stephen W., to Trinity Industries, Inc. Railway hopper car bolster assembly. 4,348,962, Cl. 105-248.000.
Smith, William E.: *See—*
Brunelle, Daniel J.; and Smith, William E., 4,349,486, Cl. 260-463.000.
Smith, William F.: *See—*
Thomas, Joseph J.; Vaillancourt, Vincent L.; Millet, Marcus J.; and Smith, William F., 4,349,035, Cl. 128-766.000.
Snaidr, Stanislav M.: *See—*
Brackmann, Warren A.; and Snaidr, Stanislav M., 4,349,037, Cl. 131-306.000.
Snee, Timothy J., to National Research Development Corporation. Explosimeter. 4,348,888, Cl. 73-23.000.
SNIA Viscosa Societa' Nazionale Industria Applicazioni Viscosa S.p.A: *See—*
Rossi, Pier P.; and Catoni, Mario, 4,349,473, Cl. 260-239.30A.
Snijders, Wilfred A. M.: *See—*
van den Elzen, Hendricus C.; Van Gerwen, Petrus J.; Snijders, Wilfred A. M.; and Verhoeckx, Nicolaas A. M., 4,349,889, Cl. 364-724.000.
Snopko, Paul A., to Zenith Radio Corporation. Television receiver with two-way telephone conversation and dial-out capabilities. 4,349,701, Cl. 179-2.0TV.

Snyder, Robert S.: *See—*
Rhodes, Percy H.; and Snyder, Robert S., 4,349,429, Cl. 204-299.00R.
Snyder, Wesley L. Laser-aiming system with means for electrical arc suppression. 4,348,828, Cl. 42-1.00A.
Snyder, William V.: *See—*
Lord, Tom J.; and Snyder, William V., 4,348,799, Cl. 29-450.000.
Sobel, Johannes; Himmelmann, Wolfgang; and Bergthaller, Peter, to Agfa-Gevaert Aktiengesellschaft. Photographic silver halide material. 4,349,624, Cl. 430-622.000.
Societe d'Assistance Technique pour Produits Nestle S.A.: *See—*
Raboud, Pierre-Benoit; Kubicek, Frantisek; and Bandi, Jean-Pierre, 4,349,579, Cl. 426-631.000.
Societe Europeene de Propulsion: *See—*
Donguy, Paul, 4,349,155, Cl. 239-265.330.
Societe Francaise d'Equipements pour la Navigation Aerienne: *See—*
Willoteaux, Guy, 4,349,769, Cl. 318-677.000.
Soeno, Ko: *See—*
Ando, Hisashi; Soeno, Ko; Sakamoto, Hiroshi; Misumi, Akira; and Fukushima, Hiroshi, 4,349,766, Cl. 313-346.00R.
Sohio: *See—*
Li, George S.; and Jones, John F., 4,349,652, Cl. 526-271.000.
Velenyi, Louis J.; and Dolhyj, Serge R., 4,349,462, Cl. 252-455.00R.
Sokolov, Alexandr N.: *See—*
Lysanov, Vladislav S.; Digonsky, Viktor V.; Feldgun, Leon I.; Davidenko, Valery M.; Novikov, Nikolai V.; Borimsky, Alexandr I.; Shulzhenko, Alexandr A.; Yakimenko, Valerian D.; Dovgal, Eduard Y.; Egorov, Vitaly Y.; Rovsha, Vyacheslav S.; Prikhna, Alexei I.; and Sokolov, Alexandr N., 4,349,517, Cl. 423-290.000.
Solar Kinetics, Inc.: *See—*
Hutchison, Joseph A., 4,348,797, Cl. 29-434.000.
Hutchison, Joseph A., 4,348,798, Cl. 29-448.000.
Solarex Corporation: *See—*
Lindmayer, Joseph, 4,349,691, Cl. 136-261.000.
Solbern Corp.: *See—*
Eisenberg, Bernard C., 4,349,053, Cl. 141-1.000.
Solex Research Corporation: *See—*
Watanabe, Morio; and Nishimura, Sanji, 4,349,514, Cl. 423-54.000.
Somar Manufacturing Co., Ltd.: *See—*
Nagasawa, Kohtaro; Ochi, Hideo; Tanaka, Fujio; and Shibata, Yumi, 4,349,647, Cl. 525-285.000.
Sondermeyer, Jack C., to Peavey Electronics Corp. Transient intermodulation distortion limiting circuit for an amplifier system. 4,349,788, Cl. 330-293.000.
Sonneborn, Walter G. O.: *See—*
Hughes, Charles W.; Harvey, Keith W.; and Sonneborn, Walter G. O., 4,349,316, Cl. 416-104.000.
Sony Corporation: *See—*
Kitamura, Tomosaburo; Miyahara, Kosuke; and Kodera, Yoichi, 4,349,762, Cl. 310-332.000.
Muramoto, Shoichi; Tsukamura, Yoshihiro; Tozawa, Masayuki; and Ishii, Fusao, 4,349,767, Cl. 313-449.000.
Ohsawa, Mitsuo, 4,349,860, Cl. 361-310.000.
Soter, Richard A., III. Electric rug binding system. 4,349,142, Cl. 227-13.000.
South Eastern Electricity Board: *See—*
Peddie, Robert A.; and Fielden, John S., 4,349,879, Cl. 364-492.000.
Southard, Edward S. Engine block heater. 4,348,992, Cl. 123-142.50R.
Southgate, Peter D.; and Beltz, John P., to RCA Corporation. Inspection system for detecting defects in regular patterns. 4,349,880, Cl. 364-507.000.
Southport Enterprises, Inc.: *See—*
Churchill, John W., 4,349,727, Cl. 219-544.000.
Sovey, James S.; Forman, Ralph; Curren, Arthur N.; and Wintucky, Edwin G., to United States of America, National Aeronautics and Space Administration. Ion sputter textured graphite. 4,349,424, Cl. 204-192.00E.
Sowman, Harold G., to Minnesota Mining and Manufacturing Company. Non-vitreous ceramic metal oxide microcapsules and process for making same. 4,349,456, Cl. 252-317.000.
Spadafora, Leonard: *See—*
Onksen, Peter J.; and Spadafora, Leonard, 4,349,281, Cl. 374-136.000.
Spalding, Michael H.: *See—*
Small, Rudolph E.; and Spalding, Michael H., 4,349,185, Cl. 270-32.000.
Spar Aerospace Limited: *See—*
Hinds, Charles M., 4,349,837, Cl. 358-93.000.
Spector, George: *See—*
Harris, Albert; and Spector, George, 4,348,922, Cl. 81-180.00R.
Knapp, Frank H.; and Spector, George, 4,348,823, Cl. 36-123.000.
Spector, Nancy R. Burglar proof bolt. 4,349,223, Cl. 292-259.00R.
Spence, Gavin G.: *See—*
Maslanka, William W.; and Spence, Gavin G., 4,349,641, Cl. 524-458.000.
Spiess, Georg: *See—*
Weyrich, Klaus, 4,349,187, Cl. 271-159.000.
Spiess, Peter: *See—*
Arnold, Niklaus; Schmidli, Josef; and Spiess, Peter, 4,349,759, Cl. 310-233.000.
Spill-Fire Alarm Systems Ltd.: *See—*
Norfolk, Raymond W., 4,349,282, Cl. 374-183.000.
Spinner, Georg. Adjustable directional coupler having tiltable coupling conductor. 4,349,793, Cl. 333-111.000.
Spiteri, Jean-Claude: *See—*
Perrigault, Claude; and Spiteri, Jean-Claude, 4,349,707, Cl. 179-175.31R.
Spooner, Archer M., to Redifon Simulation Limited. Head-movable frame-scanner for head-coupled display. 4,349,815, Cl. 340-705.000.
Sprague, Allison A.: *See—*
Rowley, Edward K.; and Sprague, Allison A., 4,348,955, Cl. 102-317.000.
Spraying Systems Company: *See—*
Haruch, James; and Williams, Robert, 4,349,156, Cl. 239-432.000.
Sprecker, Mark A., to International Flavors & Fragrances Inc. Process for enhancing or augmenting the aroma of detergents using norbornyl esters. 4,349,449, Cl. 252-174.110.
Square D Company: *See—*
Carroll, James C.; and Chapman, Donald L., 4,349,220, Cl. 285-121.000.
Staerzl, Richard E., to Brunswick Corporation. Control means for fuel injection in an internal combustion engine. 4,349,000, Cl. 123-491.000.
Stahl, Jurgen: *See—*
Schuster, Wilhelm; Stahl, Jurgen; and Wegner, Wilhelm, 4,349,134, Cl. 222-212.000.
Stahle, Martin. Cooling a motor of a centrifugal pump for conveying liquids with deposited solids. 4,349,322, Cl. 417-370.000.
Staiert, Richard W.: *See—*
DePauw, Richard A.; and Staiert, Richard W., 4,348,855, Cl. 56-10.200.
Stalter, Joseph F.; and Felten, Gilbert A., to Goodyear Tire & Rubber Company, The. Tire building machine drum. 4,349,406, Cl. 156-416.000.
Stan, Aurel V., to Goodyear Tire & Rubber Company, The. Direct reading temperature and circumferential tire monitor. 4,348,898, Cl. 374-124.000.
Standard Oil Company, The: *See—*
Li, George S.; and Jones, John F., 4,349,653, Cl. 526-272.000.
Standard Oil Company (Indiana): *See—*
Smith, Roger L.; and Murphy, Robert P., 4,349,737, Cl. 250-259.000.
Standard Products Company, The: *See—*
Nussbaum, Joel H., 4,349,592, Cl. 428-31.000.
Stang, John H.; Ruthmansdorfer, David A.; and Reichenbach, Dean H., to Cummins Engine Company, Inc. Dual coolant engine cooling system. 4,348,991, Cl. 123-41.290.
Staniforth, John N., to National Research Development Corporation. Mixture containing active ingredient and dendritic crystalline sugar for tableting. 4,349,542, Cl. 424-153.000.
Stanley Aviation Corporation: *See—*
Russell, George K., 4,349,357, Cl. 55-21.000.
Stanley, Philip E.: *See—*
Woods, William E.; Stanley, Philip E.; Cushing, David E.; and Lemay, Richard A., 4,349,874, Cl. 364-200.000.
Starp, Franz. Photographic camera such as a reflex camera. 4,349,256, Cl. 354-43.000.
Staurseth, Erik, to Westamarin A/S. Aerial cableway between a sea vessel and a fixed installation. 4,348,960, Cl. 104-114.000.
Steele, Douglas S., to General Electric Company. Optical triangulation apparatus and method. 4,349,274, Cl. 356-1.000.
Steele, Duane C., to Hooker Chemicals & Plastics Corp. Low temperature low foaming alkaline cleaner and method. 4,349,448, Cl. 252-135.000.
Steeman, Peter K. R. M.; and Vervecken, Karel R., to U.S. Philips Corporation. Low-pressure metal vapor discharge lamp. 4,349,764, Cl. 313-176.000.
Stefanucci, Arthur; and Protomastro, Michael G., to General Foods Corporation. Low density coffee process. 4,349,573, Cl. 426-388.000.
Stein, John C.; and Hutchison, Donald W., to Essex Group, Inc. Temperature probe for air conditioning device. 4,348,870, Cl. 62-140.000.
Stelck, Larry W. String for sporting goods. 4,349,198, Cl. 273-73.00D.
Stenberg, Erik G., to AB Karlstads Mekaniska Werkstad. Method for forming a multilayer jet of paper making stock. 4,349,414, Cl. 162-123.000.
Stephanoff, Louis J.; and Avramidis, Stellios A., to PT Components, Inc. Chain for variable speed transmission. 4,349,343, Cl. 474-245.000.
Steplewski, Zenon: *See—*
Koprowski, Hilary; Mitchell, Kenneth F.; and Steplewski, Zenon, 4,349,528, Cl. 424-1.000.
Sterling Drug Inc.: *See—*
Bell, Malcolm R., 4,349,558, Cl. 424-273.00P.
Bell, Malcolm R.; and Herrmann, John L., Jr., 4,349,559, Cl. 424-273.00P.
Sterling, Henley F.; and Drake, Miles P., to International Standard Electric Corporation. Plasma deposition of glass or its precursor. 4,349,373, Cl. 65-60.800.
Steude, Heinrich: *See—*
Brandt, Hans-Walter; Steude, Heinrich; Bruns, Ludwig; and Kohler, Hans-Dieter, 4,349,416, Cl. 203-19.000.
Stevenson, Christopher T. S.; and D'Aloisio, Elio F., to Litton Industrial Products, Inc. Friction welding machine with dual position end stop. 4,349,144, Cl. 228-2.000.
Stewart, Donald L., Jr., to Aluminum Company of America. Fractional distillation process for the production of aluminum chloride. 4,349,420, Cl. 203-75.000.
Stewart-Warner Corporation: *See—*
Fontana, Frank J., 4,348,784, Cl. 16-36.000.
Stich, Werner: *See—*
Kluth, Manfred; Antoni, Heinz; and Stich, Werner, 4,348,909, Cl. 73-863.210.

Stickler, John M.; and Shook, George L., to B F Goodrich Company, The. Tire hardness tester. 4,348,891, Cl. 73-81.000.

Stieger, Karl, to BBC Brown, Boveri & Company, Ltd. Apparatus for the controlled extraction of steam from extraction turbines. 4,349,312, Cl. 415-145.000.

Stipanuk, John M.: *See*—
Grant, Edward J., Jr.; Scott, William H.; and Stipanuk, John M., 4,349,758, Cl. 310-68.00A.

Stirling, William L., to United States of America, Energy. Neutral beamline with ion energy recovery based on magnetic blocking of electrons. 4,349,505, Cl. 376-130.000.

Stockler, Jerry R.: *See*—
Blumenthal, Michael M.; and Stockler, Jerry R., 4,349,353, Cl. 23-230.00R.

Stogis, James: *See*—
Bernstein, Carl; Stogis, James; Riddle, Travis; and Kufrin, Robert, 4,349,662, Cl. 528-301.000.

Stoll, Brigitte: *See*—
Lautenschlager, Hans-Heiner; Betzing, Hans; Stoll, Brigitte; and Probst, Manfred, 4,349,684, Cl. 548-320.000.
Lautenschlager, Hans-Heiner; Betzing, Hans; Winkelmann, Johannes; Probst, Manfred; and Stoll, Brigitte, 4,349,686, Cl. 549-69.000.

Stoll, Kurt. Pressure-medium connection between a valve block and a load which has at least one double-acting pressure-medium motor. 4,348,942, Cl. 91-54.000.

Stoneleigh Trust, The: *See*—
Massa, Frank, 4,348,869, Cl. 62-140.000.

Stormer, Horst L.: *See*—
Chin, Maurice A.; Narayanamurti, Venkatesh; and Stormer, Horst L., 4,349,796, Cl. 333-186.000.

Strader, Charles J.; and Walle, Richard V., to Eltra Corporation. Modular hazardous dust collection pan and walkway. 4,348,840, Cl. 52-180.000.

Straubel, Max; Schwartz, Reinhard; Ritter, Ernst; Djordjevic, Ilija; and Doll, Reinhard, to Robert Bosch GmbH. Method for angularly correct mounting of a fuel injection pump on an internal combustion engine. 4,348,895, Cl. 73-119.00A.

Strauss, Paul, to Zenith Radio Corporation. Control panel cover for projection television receiver. 4,349,845, Cl. 358-254.000.

Streaty, Charles E., Jr.: *See*—
Lehnhardt, William F.; Streaty, Charles E., Jr.; Yackel, Walter C., Jr.; Yang, Ho S.; and Tang, Daniel K., 4,349,576, Cl. 426-582.000.

Streifer, William: *See*—
Scifres, Donald R.; Streifer, William; and Burnham, Robert D., 4,349,906, Cl. 372-50.000.

Strobel, Walter: *See*—
Blaser, Paul; Schmidt, Helmut; and Strobel, Walter, 4,349,286, Cl. 400-492.000.

Strongwater, Murray. Packaging device. 4,349,102, Cl. 206-45.340.

Stuber, Fred A.: *See*—
Barsa, Edward A.; Lin, Chung-Yuan; and Stuber, Fred A., 4,349,663, Cl. 528-367.000.

Stultz, Edward B.: *See*—
Cashwell, Ernest; Grollimund, Everett C.; Duley, Walter W.; Lilly, A. Clifton, Jr.; Claflin, Warren E.; Stultz, Edward B.; and Martin, Peter, 4,349,719, Cl. 219-121.0LK.

Stumpp, Gerhard, to Robert Bosch GmbH. Fuel injection pump. 4,348,998, Cl. 123-447.000.

Stupp, Edward H.; and Lalak, Joseph, to North American Philips Corporation. Method of manufacturing a pyroelectric vidicon target, apparatus for practicing the method, and a pyroelectric target manufactured by the method. 4,349,410, Cl. 156-654.000.

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Wilks, Robert S.; Taleff, Alexander; and Sturges, Robert H., Jr., 4,349,112, Cl. 209-538.000.

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Buhler, Niklaus; Baumann, Marcus; Bellus, Daniel; and Sturm, Elmar, 4,349,564, Cl. 424-274.000.

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Suarez, Mario G.: *See*—
Schupack, Morris; and Suarez, Mario G., 4,348,844, Cl. 52-230.000.

Sugahara, Kenshi; and Mori, Junji, to Hitachi, Ltd. Anion sensing electrode. 4,349,426, Cl. 204-195.00M.

Sugawara, Yutaka: *See*—
Takeda, Yasuhisa; Matsuno, Takashi; Ohtaka, Mihoko; Mitsui, Hiroki; Kawaguchi, Tsutomu; Masuda, Hisako; Okazaki, Hiroshi; Handa, Mitsuaki; Sugawara, Yutaka; and Ogawa, Haruki, 4,349,541, Cl. 424-95.000.

Sugihara, Kunihiko: *See*—
Nishimura, Toshifumi; and Sugihara, Kunihiko, 4,348,905, Cl. 73-654.000.

Sugimoto, Hiroaki: *See*—
Kato, Yasuyuki; Sugimoto, Hiroaki; and Hanabata, Makoto, 4,349,659, Cl. 528-193.000.

Sumida, Atsushi: *See*—
Hiramatsu, Toru; Koseki, Teruo; Hamada, Satosi; and Sumida, Atsushi, 4,349,523, Cl. 423-447.400.

Sumitomo Chemical Company, Limited: *See*—
Horide, Fumio; Tsuji, Kozo; and Yoshida, Ryo, 4,349,379, Cl. 71-120.000.
Kato, Yasuyuki; Sugimoto, Hiroaki; and Hanabata, Makoto, 4,349,659, Cl. 528-193.000.
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Ohmae, Tadayuki; Murakami, Teruhiko; and Kanno, Yoshinori, 4,349,654, Cl. 526-273.000.
Uematsu, Tamon; Inoue, Satoru; and Yamashita, Norihisa, 4,349,554, Cl. 424-258.000.

Sumitomo Heavy Industries, Ltd.: *See*—
Tanaka, Itsuo; and Tanaka, Hiromi, 4,349,362, Cl. 55-390.000.

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Grant, Edward J., Jr.; Scott, William H.; and Stipanuk, John M., 4,349,758, Cl. 310-68.00A.

Superflexit Limited: *See*—
Kirby, Roy J., 4,349,221, Cl. 285-149.000.

Superior Casing Crews, Inc.: *See*—
Clark, Jim W., 4,349,048, Cl. 138-96.00T.

Sussex Instruments Limited: *See*—
Haynes, Anthony C.; and Unwin, Derek K., 4,348,889, Cl. 73-37.700.

Sussman, Richard: *See*—
Everett, Nicholas W., 4,349,137, Cl. 223-73.000.

Suur-Askola, Seppo: *See*—
Torenius, Pekka; and Suur-Askola, Seppo, 4,349,858, Cl. 361-181.000.

Suzuki, Jitsuo: *See*—
Naito, Junichiro; Yamamoto, Shinichi; Suzuki, Jitsuo; and Asano, Mitsuru, 4,349,329, Cl. 425-461.000.

Suzuki, Naoyoshi: *See*—
Shimada, Yukio; Suzuki, Naoyoshi; Ohashi, Toshio; and Inoshita, Yasushi, 4,349,177, Cl. 251-230.000.

Suzuki, Nobuhiko: *See*—
Tagami, Katsutoshi; Senzaki, Takaya; Suzuki, Nobuhiko; and Murao, Eiji, 4,349,823, Cl. 343-7.0VM.

Suzuki, Ryo; Uehara, Keiichi; Takeuchi, Teruaki; and Takeshita, Masatoshi, to Hitachi, Ltd. Magnetic bubble detector. 4,349,892, Cl. 365-8.000.

Suzuki, Yoshio: *See*—
Kikuchi, Michitsugu; and Suzuki, Yoshio, 4,349,063, Cl. 152-359.000.

Svoboda, Josef, to TMC Corporation. Holding plate, in particular for ski bindings. 4,349,212, Cl. 280-610.000.

Swanson, Albert S.; and Geyer, Robert A., to Tennant Company. Scrubbing machine with selective recycle. 4,348,783, Cl. 15-320.000.

Swanson, Richard H., to Kelvinator Commercial Products, Inc. Cantilevered shelf construction. 4,348,965, Cl. 108-152.000.

Sweetheart Plastics, Inc.: *See*—
Davis, Paul; Weinstein, David; and Schneider, David, 4,349,571, Cl. 426-124.000.

Swiatosz, Edmund, to United States of America, Navy. Electrically heated non-toxic smoke generator. 4,349,723, Cl. 219-271.000.

Swiss Aluminium Ltd.: *See*—
Gut, Edwin; Arnold, Erwin; Maugweiler, Gottfried; and Friedli, Hans, 4,349,231, Cl. 299-69.000.

Syntex (U.S.A.) Inc.: *See*—
Roszkowski, Adolph P.; Clark, Robin D.; and Kluge, Arthur F., 4,349,549, Cl. 424-248.550.

Synthelabo: *See*—
Bigg, Dennis, 4,349,557, Cl. 424-270.000.
Bigg, Dennis C., 4,349,683, Cl. 548-183.000.

Systems, Science and Software: *See*—
Day, Edward A., 4,348,958, Cl. 102-499.000.

Tabata, Hideo: *See*—
Hoshi, Hideo; Mitsugi, Shiro; Teruyama, Hiroichi; and Tabata, Hideo, 4,349,763, Cl. 310-370.000.

Tabata, Junichi: *See*—
Kaneko, Noboru; and Tabata, Junichi, 4,349,818, Cl. 340-785.000.

Tabet Manufacturing Company: *See*—
Tabet, Michael A., 4,349,857, Cl. 361-173.000.

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Tabuchi, Kenji: *See*—
Wada, Kenichi; Tanaka, Susumu; and Tabuchi, Kenji, 4,349,270, Cl. 355-15.000.

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Tacchella Macchine S.p.A.: *See*—
Tacchella, Elio, 4,348,838, Cl. 51-34.00C.

Tachita, Ryobun; Hayakawa, Yoshihiro; Irioka, Kazuyoshi; Fukukita, Hiroshi; Yano, Tsutomu; and Fukumoto, Akira, to Matsushita Electric Industrial Company, Limited. Ultrasonic imaging system using plural square wave pulse trains of successively delayed intervals. 4,348,902, Cl. 73-626.000.

Tacon, William C. A.: *See*—
Carey, Norman H.; Emtage, John S.; Tacon, William C. A.; and Hallewell, Robert A., 4,349,629, Cl. 435-172.000.

Tada, Masahiro, to Nippon Electric Co., Ltd. Buffer storage control apparatus. 4,349,875, Cl. 364-200.000.

Tada, Satoru: *See*—
Chida, Yoshinori; and Tada, Satoru, 4,349,287, Cl. 400-569.000.

Tagami, Katsutoshi; Senzaki, Takaya; Suzuki, Nobuhiko; and Murao, Eiji, to Honda Giken Kogyo Kabushiki Kaisha. Automotive radar monitor system. 4,349,823, Cl. 343-7.0VM.

Taguchi, Noboru: *See*—
Hara, Hiroo; and Taguchi, Noboru, 4,349,908, Cl. 372-103.000.

Takahashi, Fumitaka; and Gotoh, Hiroshi, to Honda Giken Kogyo Kabushiki Kaisha. Angular velocity sensor. 4,348,900, Cl. 73-505.000.

Takahashi, Kenji: *See*—
Ohba, Shinya; Hanamura, Shoji; Ozaki, Toshifumi; Kubo, Masaharu; Nakai, Masaaki; Takahashi, Kenji; Aoki, Masakazu; Takemoto, Iwao; Ando, Haruhisa; and Izawa, Ryuichi, 4,349,743, Cl. 250-578.000.

Takahashi, Kyoichi: *See*—
Tonomura, Kenichi; Takahashi, Kyoichi; and Furihata, Makoto, 4,349,834, Cl. 358-27.000.

Takahashi, Yasuyuki: *See*—
Mimura, Akio; Takahashi, Yasuyuki; Yuasa, Katsumi; and Shibukawa, Mitsuru, 4,349,627, Cl. 435-108.000.

Takahata, Kazunori; Taniguchi, Katsuo; and Fujimoto, Tadaaki, to Mitsui Petrochemical Industries Ltd. Process for separation of alkyl phenols by azeotropic distillation. 4,349,419, Cl. 203-70.000.

Takamatsu, Takeshi, to Olympus Optical Co., Ltd. Endoscope system. 4,349,014, Cl. 128-6.000.

Takami, Akio: *See*—
Nagashima, Teruyoshi; Takami, Akio; and Kasugai, Akiyo, 4,349,585, Cl. 427-125.000.

Takasaki, Masaru; and Imatomi, Keiichiro, to Nissan Motor Co., Ltd. Pneumatic duct connection. 4,349,222, Cl. 285-363.000.

Takaya, Takao; and Tozuka, Zenzaburo, to Fujisawa Pharmaceutical Company, Ltd. 5-Fluorouracil derivatives, and their pharmaceutical compositions. 4,349,552, Cl. 424-251.000.

Takayama, Syuichi, to Olympus Optical Co., Ltd. Photographing apparatus for an endoscope. 4,349,255, Cl. 354-31.000.

Takazawa, Yuzuru: *See*—
Kitai, Kiyoshi; Kobayashi, Masaru; Nakagawa, Tadashi; Ishida, Hiroaki; Watanabe, Masanori; and Takazawa, Yuzuru, 4,349,258, Cl. 354-127.000.

Takechi, Keiji: *See*—
Maeda, Keisuke; Takechi, Keiji; and Oya, Tetsuro, 4,349,266, Cl. 354-295.000.

Takeda Chemical Industries, Ltd.: *See*—
Meguro, Kanji; Tawada, Hiroyuki; and Matsuo, Takao, 4,349,547, Cl. 424-244.000.

Takeda, Keiji: *See*—
Kawashiri, Kazuhiro; Mizobuchi, Yuzo; Higashi, Akio; Tamura, Hiroshi; Takeda, Keiji; and Nagata, Masayoshi, 4,349,617, Cl. 430-59.000.

Takeda, Keiso; Inouye, Shozo; and Kashiwakura, Toshimi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Fuel injection type carburetor. 4,348,997, Cl. 123-445.000.

Takeda, Motoaki: *See*—
Yamamura, Nobuo; and Takeda, Motoaki, 4,349,455, Cl. 252-312.000.

Takeda Riken Kogyo Kabushikikaisha: *See*—
Kurihara, Takenori, 4,349,789, Cl. 331-4.000.
Mitamura, Masakazu, 4,349,777, Cl. 323-226.000.

Takeda, Shiro; and Nakajima, Minoru, to Fujitsu Limited. Electronic device having multilayer wiring structure. 4,349,609, Cl. 428-429.000.

Takeda, Yasuhisa; Matsuno, Takashi; Ohtaka, Mihoko; Mitsui, Hiroki; Kawaguchi, Tsutomu; Masuda, Hisako; Okazaki, Hiroshi; Handa, Mitsuaki; Sugawara, Yutaka; and Ogawa, Haruki, to Chugai Seiyaku Kabushiki Kaisha. Anti-tumor preparation against certain tumors and process for preparing the same. 4,349,541, Cl. 424-95.000.

Takekoshi, Tohru; and Webb, Jimmy L., to General Electric Company. Method of salvaging aromatic bisimide values. 4,349,479, Cl. 260-326.00N.

Takemoto, Iwao: *See*—
Ohba, Shinya; Hanamura, Shoji; Ozaki, Toshifumi; Kubo, Masaharu; Nakai, Masaaki; Takahashi, Kenji; Aoki, Masakazu; Takemoto, Iwao; Ando, Haruhisa; and Izawa, Ryuichi, 4,349,743, Cl. 250-578.000.

Takeno, Hidekazu: *See*—
Kitaura, Yoshihiko; Nakaguchi, Osamu; Hemmi, Keiji; Aratani, Matsuhiko; Takeno, Hidekazu; Okada, Satoshi; Tanaka, Hirokazu; Hashimoto, Masashi; Kuroda, Yoshio; Iguchi, Eiko; Kohsaka, Masanobu; Aoki, Hatsuo; and Imanaka, Hiroshi, 4,349,466, Cl. 260-112.50R.

Takeshita, Masatoshi: *See*—
Suzuki, Ryo; Uehara, Keiichi; Takeuchi, Teruaki; and Takeshita, Masatoshi, 4,349,892, Cl. 365-8.000.

Takeuchi, Teruaki: *See*—
Suzuki, Ryo; Uehara, Keiichi; Takeuchi, Teruaki; and Takeshita, Masatoshi, 4,349,892, Cl. 365-8.000.

Takida, Hiroshi: *See*—
Iwanami, Teruo; Takida, Hiroshi; and Fujita, Yukio, 4,349,644, Cl. 525-57.000.

Takusagawa, Takashi: *See*—
Hirakawa, Hiroshi; Sato, Akio; Takusagawa, Takashi; and Ikeda, Nobumasa, 4,349,061, Cl. 152-209.00R.

Taleff, Alexander: *See*—
Wilks, Robert S.; Taleff, Alexander; and Sturges, Robert H., Jr., 4,349,112, Cl. 209-538.000.

Talon, Inc.: *See*—
Brown, Robert H., 4,348,789, Cl. 24-205.10R.

Tamano, Tokuo. Apparatus for defrosting frozen foods and continuously supplying same defrosted. 4,349,714, Cl. 219-10.55A.

Tamba, Shinichi: *See*—
Fujikawa, Tetsuzo; and Tamba, Shinichi, 4,348,862, Cl. 60-314.000.

Tamura, Hiroshi: *See*—
Kawashiri, Kazuhiro; Mizobuchi, Yuzo; Higashi, Akio; Tamura, Hiroshi; Takeda, Keiji; and Nagata, Masayoshi, 4,349,617, Cl. 430-59.000.

Tanaka, Atsushi: *See*—
Nakanisi, Takatosi; Tanaka, Atsushi; and Udagawa, Takashi, 4,348,981, Cl. 118-730.000.

Tanaka, Fujio: *See*—
Nagasawa, Kohtaro; Ochi, Hideo; Tanaka, Fujio; and Shibata, Yumi, 4,349,647, Cl. 525-285.000.

Tanaka, Hirokazu: *See*—
Kitaura, Yoshihiko; Nakaguchi, Osamu; Hemmi, Keiji; Aratani, Matsuhiko; Takeno, Hidekazu; Okada, Satoshi; Tanaka, Hirokazu; Hashimoto, Masashi; Kuroda, Yoshio; Iguchi, Eiko; Kohsaka, Masanobu; Aoki, Hatsuo; and Imanaka, Hiroshi, 4,349,466, Cl. 260-112.50R.

Tanaka, Hiromi: *See*—
Tanaka, Itsuo; and Tanaka, Hiromi, 4,349,362, Cl. 55-390.000.

Tanaka, Itsuo; and Tanaka, Hiromi, to Sumitomo Heavy Industries, Ltd. Multi-stage moving bed type adsorption device. 4,349,362, Cl. 55-390.000.

Tanaka, Kimio; and Ishida, Toshihiko, to TDK Electronics Co., Ltd. Magnetic tape cassette. 4,349,166, Cl. 242-197.000.

Tanaka, Shoichi: *See*—
Ishiwata, Shoji; Kuroda, Yasuo; Tanaka, Shoichi; Watanabe, Tsuneo; and Hasegawa, Shinichi, 4,349,513, Cl. 423-12.000.

Tanaka, Susumu: *See*—
Wada, Kenichi; Tanaka, Susumu; and Tabuchi, Kenji, 4,349,270, Cl. 355-15.000.

Tanaka, Toshiaki; and Etoh, Yukihiro, to Nissan Motor Company, Limited. Internal combustion engine. 4,348,994, Cl. 123-198.00F.

Tanaka, Yoshio; Nishikawa, Yasuhisa; and Hasumi, Ryoichi, to Clarion Co., Ltd. Pushbutton. 4,348,911, Cl. 74-10.330.

Tang, Daniel K.: *See*—
Lehnhardt, William F.; Streaty, Charles E., Jr.; Yackel, Walter C., Jr.; Yang, Ho S.; and Tang, Daniel K., 4,349,576, Cl. 426-582.000.

Tani, Haruhisa: *See*—
Yazawa, Masahide; Tani, Haruhisa; Kurihara, Kazuhiko; and Yazawa, Hiroshi, 4,349,500, Cl. 264-159.000.

Taniguchi, Katsuo: *See*—
Takahata, Kazunori; Taniguchi, Katsuo; and Fujimoto, Tadaaki, 4,349,419, Cl. 203-70.000.

Taniguti, Ryosuke: *See*—
Ishibashi, Naoto; Taniguti, Ryosuke; Miyaji, Junichi; and Ichinose, Yosaburo, 4,349,813, Cl. 340-638.000.

Tappe, Horst; Kindler, Horst; Roth, Kurt; and Weyer, Hans-Jurgen, to Cassella Aktiengesellschaft. Process for printing synthetic, hydrophobic fiber material. 4,349,348, Cl. 8-464.000.

Tarancon, Gregorio, to Union Carbide Corporation. Method of mixing a gas and a vaporizable liquid. 4,349,358, Cl. 55-89.000.

Tarkkanen, Veikko: *See*—
Kolehmainen, Seppo; and Tarkkanen, Veikko, 4,349,510, Cl. 422-66.000.

Tarng, Ming L.; and Hicinbothem, Walter A., Jr., to RCA Corporation. Method of depositing a refractory metal on a semiconductor substrate. 4,349,408, Cl. 156-628.000.

Tarumizu, Yasumasa: *See*—
Ichimura, Masaaki; Tarumizu, Yasumasa; and Uranaka, Kiyouzi, 4,348,864, Cl. 60-454.000.

Tatis Plasttantningar AB: *See*—
Dahlberg, Anders, 4,349,401, Cl. 156-221.000.

Tawada, Hiroyuki: *See*—
Meguro, Kanji; Tawada, Hiroyuki; and Matsuo, Takao, 4,349,547, Cl. 424-244.000.

Taylor, Carl R.: *See*—
Aloisio, Charles J., Jr.; Blyler, Lee L., Jr.; Brockway, George S.; Hart, Arthur C., Jr.; and Taylor, Carl R., 4,349,587, Cl. 427-163.000.

Taylor, Heyward T.; and Lambert, Michael B. Regenerative energy transfer system. 4,348,863, Cl. 60-327.000.

Taylor, Scot W.: *See*—
Davis, Earl K.; Landron, Rafael; and Taylor, Scot W., 4,349,635, Cl. 501-15.000.

TDK Electronics Co., Ltd.: *See*—
Tanaka, Kimio; and Ishida, Toshihiko, 4,349,166, Cl. 242-197.000.

Tedeschi, Rinaldo R.: *See*—
Hendrix, Tony D.; and Tedeschi, Rinaldo R., 4,348,893, Cl. 73-116.000.

Teijin Seiki Company Limited: *See*—
Fukui, Kiyozumi, 4,348,918, Cl. 74-805.000.

Telefonaktiebolaget L M Ericsson: *See*—
Skoog, Karl I. L., 4,349,913, Cl. 375-25.000.

Tennant Company: *See*—
Swanson, Albert S.; and Geyer, Robert A., 4,348,783, Cl. 15-320.000.

Terakawa, Toshiaki, to Fujitsu Limited. System for driving a plasma display panel device. 4,349,819, Cl. 340-812.000.

Terakura, Yukio: *See*—
Ito, Takayoshi; Kubo, Seitoku; and Terakura, Yukio, 4,349,088, Cl. 192-3.300.

Terneu, Robert, to BFG Glassgroup. Process for coating glass. 4,349,370, Cl. 65-60.400.

Terneu, Robert: *See*—
Van Laethem, Robert; Van Cauter, Albert; and Terneu, Robert, 4,349,369, Cl. 65-60.400.
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Terrel, Christopher, to Chloride Group Public Limited Company. Lamp mounting. 4,349,865, Cl. 362-250.000.
Terrell Machine Company, The: *See*—
Niederer, Kurt W., 4,349,160, Cl. 242-18.00R.
Teruyama, Hiroichi: *See*—
Hoshi, Hideo; Mitsugi, Shiro; Teruyama, Hiroichi; and Tabata, Hideo, 4,349,763, Cl. 310-370.000.
Tessler, Martin M., to National Starch and Chemical Corp. Starch-protein clouds and preclouds. 4,349,577, Cl. 426-590.000.
Texaco Inc.: *See*—
Ganster, Charles A.; and Nelson, Gerald V., 4,349,884, Cl. 364-557.000.
Texas Instruments Incorporated: *See*—
Boulanger, Henry J., 4,349,806, Cl. 337-343.000.
Caudel, Edward R., 4,349,894, Cl. 365-154.000.
Textron, Inc.: *See*—
Hughes, Charles W.; Harvey, Keith W.; and Sonneborn, Walter G. O., 4,349,316, Cl. 416-104.000.
Olmr, Jaroslav J., 4,348,927, Cl. 83-833.000.
Tezuka, Nobuo; and Hirohata, Michio, to Canon Kabushiki Kaisha. Electromagnetically driven shutter. 4,349,264, Cl. 354-234.000.
Thamerus, Theobald, to Hauni-Werke Korber & Co. KG. Apparatus for temporary storage of stacked cigarettes or the like. 4,349,096, Cl. 198-347.000.
Theriault, Mario: *See*—
Dumont, Antonio J.; and Theriault, Mario, 4,348,801, Cl. 29-564.300.
Theroux, Jean P., to General Electric Company. Semiconductor device having glass and metal package. 4,349,831, Cl. 357-74.000.
Thevenot, Francois H. J.; Goeuriot, Patrice M. V.; Driver, Julian H.; and Lebrun, Jean-Paul R., to Association pour la Recherche et le Development des Methodes et Processus Industriels (Armines). Apparatus for the boronizing of pieces made of metal or cermet and surface-bornished pieces. 4,348,980, Cl. 118-717.000.
Thomas, David T.: *See*—
Bixler, Stephen D.; Thomas, David T.; and Archer, Donald H., 4,349,827, Cl. 343-786.000.
Thomas, Hubert E. Variable amplitude vibrator apparatus. 4,348,912, Cl. 74-61.000.
Thomas, Joseph J.; Vaillancourt, Vincent L.; Millet, Marcus J.; and Smith, William F., to Johnson & Johnson. Blood collection assembly with unidirectional flow valve. 4,349,035, Cl. 128-766.000.
Thompson, Joseph, to Northern Telecom Limited. Wall mounting adaptor for telephone set. 4,349,706, Cl. 179-100.00C.
Thompson, Leonard J., to Crosby Valve & Gage Company. Set pressure measuring system. 4,349,885, Cl. 364-558.000.
Thompson, Roger S., to U.S. Philips Corporation. Phase-compensated integrated circuit. 4,349,797, Cl. 333-215.000.
"Thomson-Brandt": *See*—
Fulchiron, Noel; and Naillon, Bernard, 4,348,936, Cl. 89-1.50D.
Thomson-CSF: *See*—
Daniel, Jean P., 4,349,838, Cl. 358-125.000.
Decalonne, Jacques, 4,349,822, Cl. 340-870.340.
Thornton, Douglas M., to Ross Operating Valve Company. Electrical terminal construction. 4,349,176, Cl. 251-129.000.
Timmler, Helmut; Kramer, Wolfgang; Buchel, Karl H.; Brandes, Wilhelm; Frohberger, Paul-Ernst; and Homeyer, Bernhard, to Bayer Aktiengesellschaft. Pesticidally active 1-acyloxy-1-phenyl-2-azolyl-ethanes. 4,349,556, Cl. 424-269.000.
Tippins, George W., to Tippins Machinery Company, Inc. Hot rolling strip. 4,348,882, Cl. 72-202.000.
Tippins Machinery Company, Inc.: *See*—
Tippins, George W., 4,348,882, Cl. 72-202.000.
TMC Corporation: *See*—
Svoboda, Josef, 4,349,212, Cl. 280-610.000.
Tobin, Thomas J., to S&C Electric Company. Fuse tube. 4,349,803, Cl. 337-186.000.
Toivonnen, Hannu J., to Kemira Oy. Process for the production of air drying modified amino resin. 4,349,660, Cl. 528-261.000.
Tokico Ltd.: *See*—
Hayashida, Yoshihiro, 4,348,866, Cl. 60-561.000.
Maeda, Koichi, 4,349,735, Cl. 260-229.000.
Tokunaga, Hiroshi: *See*—
Toyokura, Nobuo; Tokunaga, Hiroshi; Inoue, Shinichi; Ishikawa, Hajime; and Shinoda, Masaichi, 4,349,395, Cl. 148-187.000.
Tokyo Electric Co., Ltd.: *See*—
Uchimura, Mitsuo; and Nishimura, Yoshiharu, 4,349,891, Cl. 364-900.000.
Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
Ishii, Shoichi; Hagiwara, Taiken; and Shimanuki, Masanobu, 4,349,848, Cl. 360-66.000.
Nakamura, Kunihiko, 4,349,186, Cl. 271-18.000.
Nakanisi, Takatosi; Tanaka, Atsushi; and Udagawa, Takashi, 4,348,981, Cl. 118-730.000.
Otsuka, Kenichi; Uchino, Hiroshi; and Nakajima, Kihei, 4,349,867, Cl. 363-160.000.
Sato, Yoshihisa, 4,349,853, Cl. 361-19.000.
Tomes, Marcus B. Offroad vehicle inclinometer and alarm. 4,349,809, Cl. 340-52.00H.
Tomsa, Vladimir: *See*—
Juris, Mitchell A.; and Tomsa, Vladimir, 4,349,241, Cl. 339-143.00R.
Tomson, James M., to General Electric Company. Apparatus and methods for assembling end shield assemblies for dynamoelectric machines. 4,348,791, Cl. 29-598.000.
Tong, Yulan C.: *See*—
Markley, Lowell D.; Tong, Yulan C.; and Wood, Steven G., 4,349,568, Cl. 424-330.000.
Tonomura, Kenichi; Takahashi, Kyoichi; and Furihata, Makoto, to Hitachi, Ltd.; and Hitachi Microcomputer Engineering Ltd. Chroma signal gain control circuit. 4,349,834, Cl. 358-27.000.
Toray Industries, Inc.: *See*—
Hiramatsu, Toru; Koseki, Teruo; Hamada, Satosi; and Sumida, Atsushi, 4,349,523, Cl. 423-447.400.
Torchilin, Vladimir P.: *See*—
Maximenko, Alexandr V.; Torchilin, Vladimir P.; Smirnov, Vladimir N.; and Chazov, Evgeny I., 4,349,630, Cl. 435-180.000.
Toreaius, Pekka; and Suur-Askola, Seppo, to Elevator GmbH. Control circuit for use with an electronic guard strip. 4,349,858, Cl. 361-181:000.
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Petersen, Warren A., 4,349,863, Cl. 362-20.000.
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Charles, Joel M.; and Toscano, Robert J., 4,349,180, Cl. 254-277.000.
Towae, Friedrich: *See*—
Merger, Franz; Nestler, Gerhard; Towae, Friedrich; and Harder, Wolfgang, 4,349,484, Cl. 260-453.00P.
Toyo Engineering Corporation: *See*—
Wakao, Noriaki, 4,349,356, Cl. 55-16.000.
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Fujii, Tadashiro; Satoi, Shuzo; Muto, Naoki; and Hayashi, Mitsuo, 4,349,667, Cl. 536-13.900.
Toyo Soda Manufacturing Company, Ltd.: *See*—
Hiraga, Yoichi; Watanabe, Osamu; and Nakatani, Masaki, 4,349,519, Cl. 423-321.00S.
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Toyoshima, Shigeshi; Sato, Ryuichi; Ito, Koichi; Shinohara, Toshio; and Yamamoto, Yasushi, to Shin-Etsu Chemical Co., Ltd. 2-(3-Trimethylsilylpropyl)benzothiazole. 4,349,682, Cl. 548-110.000.
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Kinaga, Eiichi, 4,349,226, Cl. 297-475.000.
Masuda, Yoshihiko, 4,349,003, Cl. 123-568.000.
Takeda, Keiso; Inouye, Shozo; and Kashiwakura, Toshimi, 4,348,997, Cl. 123-445.000.
Ueno, Kazunori; Isobe, Masahiro; and Hoshi, Setsuo, 4,348,993, Cl. 123-146.50A.
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Traino, James C., to Xerox Corporation. Image size control for raster scanners. 4,349,847, Cl. 358-293.000.
Trainor, James T.; Covaleski, Stanley F.; and Adelmann, John C., to Raybestos-Manhattan, Inc. Friction material for clutch facings and the like. 4,349,595, Cl. 428-64.000.
TransAgra Corporation: *See*—
Peer, Herbert R., 4,349,569, Cl. 426-43.000.
Transfer Print Foils, Inc.: *See*—
Parker, Harry A., 4,349,402, Cl. 156-233.000.
Transfluid s.r.l.: *See*—
Pavesi, Franco, 4,349,094, Cl. 192-109.00F.
Transformatoren Union AG: *See*—
Altmann, Garhard; and Pfeiffer, Richard, 4,349,801, Cl. 336-84.00C.
Trapp, Horst: *See*—
Klahr, Erhard; Trieselt, Wolfgang; Trapp, Horst; and Widder, Rudi, 4,349,669, Cl. 536-127.000.
Treadwell, Buford W. Snowshoe and harness assembly. 4,348,824, Cl. 36-125.000.
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Troponwerke GmbH & Co. KG: *See*—
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Kagiwada, Reynold S.; Yen, Kuo-Hsiung; Wang, Ke-Li; Lau, Kei F.; Lochhead, Donald L.; and Leaverton, James A., 4,349,794, Cl. 333-141.000.
Tryzna, Miloslav: *See*—
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Tsuchiya, Tsutomu: *See*—
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Tsujio, Hisami, to Aisin Seiki Company, Limited. Clutch facing. 4,349,093, Cl. 192-107.00R.
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Tsuru, Mario, to Nissan Motor Co., Ltd. Closure member for an automotive drive shaft assembly. 4,348,875, Cl. 464-170.000.
Tsurunaga, Yasuaki; Abe, Masaru; Hashimoto, Hideaki; and Tsuzura, Junichi, to Bridgestone Tire Company Limited. Highly durable pneumatic tire comprising bias laid carcass construction formed of superimposed stacked plies. 4,349,062, Cl. 152-356.00R.
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Tuttle, Richard P.: *See*—
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Uchimura, Mitsuo; and Nishimura, Yoshiharu, to Tokyo Electric Co., Ltd. Postal charge processing system which calculates and displays the difference between the postal charge and the stamp for when the postal charge is greater. 4,349,891, Cl. 364-900.000.
Uchino, Hiroshi: *See*—
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Udagawa, Takashi: *See*—
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Uehara, Keiichi: *See*—
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Uematsu, Tamon; Inoue, Satoru; and Yamashita, Norihisa, to Sumitomo Chemical Company, Limited. Method of using carbostyril derivatives as plant fungicides. 4,349,554, Cl. 424-258.000.
Ueno, Kazunori; and Kobayashi, Toru, to Bridgestone Tire Co., Ltd. Outer heat insulating structure on a building roof. 4,348,841, Cl. 52-126.500.
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Ulm, Helmut: *See*—
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Ulmer, Harry E.: *See*—
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UMC Industries, Inc.: *See*—
Shah, Hasmukh R.; Jones, Thaddeus M.; and Hemingway, Bruce R., 4,349,111, Cl. 209-534.000.
Umemura, Kazuhiro: *See*—
Asada, Akihiro; Nakata, Kazuo; Umemura, Kazuhiro; Sato, Hirokazu; Murakami, Kenya; and Into, Kiyoshi, 4,349,699, Cl. 179-1.0SM.
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Union Carbide Corporation: *See*—
Belz, Herman M., 4,349,910, Cl. 373-91.000.
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Unisearch Limited: *See*—
Wainwright, Mark S.; Marsden, Warwich L.; and Friedrich, Jan B., 4,349,464, Cl. 252-463.000.
United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See*—
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Air Force: *See*—
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Campillo, Anthony J.; Hyer, Ronald C.; and Shapiro, Stanley J., 4,349,907, Cl. 372-92.000.
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Rawls, John M.; and Peuron, Unto A., 4,349,506, Cl. 376-142.000.
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Boehme, Hollis; Barnard, Garland R.; Mellenbruch, Larry L.; and Dickens, Danny W., 4,349,897, Cl. 367-98.000.
Harris, Eleanor S., 4,349,824, Cl. 343-700.0MS.
Mueller, Kurt F.; Chang, Marguerite S.; Farncomb, Robert F.; and Malotky, Lyle O., 4,349,396, Cl. 149-19.300.
Pae, Kook D.; Newman, Brian A.; and Scheinbeim, Jerry I., 4,349,502, Cl. 264-320.000.
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U.S. Philips Corporation: *See*—
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Bloem, Herman, 4,348,793, Cl. 29-157.30A.
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Geurts, Martinus F. A. M., 4,349,750, Cl. 307-243.000.
Huisman, Hendrikus F.; and Groen, Harm Jan, 4,349,385, Cl. 106-37.000.
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Gastmeier, William J., 4,349,082, Cl. 181-130.000.
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UOP Inc.: *See*—
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Aristoff, Paul A., 4,349,689, Cl. 560-117.000.
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Urushihara, Kazunobu: *See*—
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Gooch, Kendrick J., 4,348,952, Cl. 100-158.00R.
Vahldiek, Fred W. Method for increasing the ductility and conductivity of refractory crystals. 4,349,636, Cl. 501-87.000.
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Thomas, Joseph J.; Vaillancourt, Vincent L.; Millet, Marcus J.; and Smith, William F., 4,349,035, Cl. 128-766.000.
Valachovic, John; Alphonse, Gerard A.; Reisner, John H.; and Etzold, Karl-Friedrich, to RCA Corporation. Piezoelectric transducer for recording video information. 4,349,902, Cl. 369-132.000.
Van Cauter, Albert: *See*—
Van Laethem, Robert; Van Cauter, Albert; and Terneu, Robert, 4,349,369, Cl. 65-60.400.

Van Laethem, Robert; Van Cauter, Albert; and Terneu, Robert, 4,349,371, Cl. 65-60.400.
Van Laethem, Robert; Van Cauter, Albert; and Terneu, Robert, 4,349,372, Cl. 65-60.400.
Vancsa, Gyorgy I., to Westinghouse Electric Corp. Data acquisition system and analog to digital converter therefor. 4,349,821, Cl. 340-870.210.
van den Elzen, Hendricus C.; Van Gerwen, Petrus J.; Snijders, Wilfred A. M.; and Verhoeckx, Nicolaas A. M., to U.S. Philips Corporation. Non-recursive filter having adjustable step-size for each iteration. 4,349,889, Cl. 364-724.000.
Van Gerwen, Petrus J.: *See*—
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Varco International, Inc.: *See*—
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Vasilieva, Elena D.: *See*—
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Veenhof, Willem D. Conveyor belt cleaning or scraping devices. 4,349,098, Cl. 198-497.000.
Velenyi, Louis J.; and Dolhyj, Serge R., to SOHIO. Catalytic material. 4,349,462, Cl. 252-455.00R.
Ventura, Dahiel S.: *See*—
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Vickers, Derek; and Waterhouse, John C., to Fenamec (Australia) Pty. Ltd. Storage rack. 4,349,114, Cl. 211-151.000.
Victor Company of Japan, Limited: *See*—
Iwahara, Makoto, 4,349,698, Cl. 179-1.00G.
Viecelli, Jack C.: *See*—
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Vik, Darrell D. Adjustable waterer. 4,348,989, Cl. 119-72.000.
Vives, Jean-Patrick, to Les Cables de Lyon. Sub-marine telephone cable. 4,349,694, Cl. 174-128.00R.
Vivian, J. Edward: *See*—
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Voith Transmit GmbH: *See*—
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Volka, Lubomir J.; and Wentzel, Robert J., to Burroughs Corporation. Tilt device for use with cathode ray tube display units. 4,349,173, Cl. 248-346.000.
Von Roll A.G.: *See*—
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von Beck, Harold F. V., to Combustion Engineering, Inc. Regenerative air heater. 4,349,069, Cl. 165-4.000.
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Simm, Hans-Peter; Guhne, Wieland; and Hoffmann, Klaus, 4,349,206, Cl. 277-207.00R.
Voyer, Peter E.: *See*—
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Vozoff, Keeva, to University of California, The Regents of the. Superconducting gradiometer-magnetometer array for magnetotelluric logging. 4,349,781, Cl. 324-346.000.
Vulcano, Richard. Racquet handle. 4,349,199, Cl. 273-75.000.
Vural, Gulertan; and Blancke, Uwe, to Koehring GmbH-BOMAG Division. Apparatus for monitoring the degree of compaction. 4,348,901, Cl. 73-594.000.
W. E. Healey and Associates, Inc.: *See*—
Healey, William E.; and Heineman, Morse R., 4,349,812, Cl. 340-522.000.
W. H. D. Development Limited: *See*—
Sharpe, Derrick, 4,349,108, Cl. 206-506.000.
W. R. Grace & Co.: *See*—
Block, Jacob, 4,349,443, Cl. 252-8.50A.
Fulmer, Glenn E., 4,349,494, Cl. 264-45.300.
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WABCO Fahrzeugbremsen GmbH: *See*—
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Wada, Kenichi; Tanaka, Susumu; and Tabuchi, Kenji, to Minolta Camera Co., Ltd. Developer removing device for copying apparatus. 4,349,270, Cl. 355-15.000.
Wade, David R., to Baldwin Piano & Organ Company. Simulating wind noise in electronic organs using digital noise generators. 4,348,931, Cl. 84-1.240.
Wagner, William R., to Rockwell International Corporation. Compact diesel fuel preheater element. 4,349,001, Cl. 123-557.000.
Wahlstrom, Hans V.; Nilsson, Rolf E.; and Pihlgren, Kjell A., to Wahlstrom, Hans V.; and Nilsson, Rolf E. Hose cleaning plant. 4,348,781, Cl. 15-40.000.
Wainwright, Basil E. Apparatus for producing spark ignition of an internal combustion engine. 4,349,008, Cl. 123-620.000.
Wainwright, Mark S.; Marsden, Warwich L.; and Friedrich, Jan B., to Unisearch Limited. Catalysts for methanol synthesis and method for their production. 4,349,464, Cl. 252-463.000.
Waitz, J. Allan: *See*—
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Wakamoto Pharmaceutical Co., Ltd.: *See*—
Yamada, Masahide; Edanami, Kenichi; and Kuroda, Toshio, 4,349,546, Cl. 424-180.000.
Wakao, Noriaki, to Toyo Engineering Corporation. Process and apparatus for concentrating a component of a gaseous mixture. 4,349,356, Cl. 55-16.000.
Wakefield, Felix R., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Gas gun for ballistic testing. 4,349,200, Cl. 273-371.000.
Walle, Richard V.: *See*—
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Walser, Armin; and Fryer, Rodney I., to Hoffmann-La Roche Inc. Process for producing imidazodiazepines. 4,349,475, Cl. 260-244.400.
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Wampler, D. Eugene, to Merck & Co., Inc. Separation of hepatitis B surface antigen. 4,349,539, Cl. 424-89.000.
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Roberts, Lincoln E.; and Wasserlein, Henry G., Jr., 4,349,239, Cl. 339-97.00R.
Watanabe, Hironori: *See*—
Sakashita, Noriji; Kugisawa, Toshio; Watanabe, Hironori; and Kitagawa, Hiroshi, 4,348,928, Cl. 84-1.010.
Watanabe, Masanori: *See*—
Kitai, Kiyoshi; Kobayashi, Masaru; Nakagawa, Tadashi; Ishida, Hiroaki; Watanabe, Masanori; and Takazawa, Yuzuru, 4,349,258, Cl. 354-127.000.
Watanabe, Morio; and Nishimura, Sanji, to Solex Research Corporation. Process for recovery of reusable chromic acid from the waste chromic acid solution containing impurities. 4,349,514, Cl. 423-54.000.
Watanabe, Osamu: *See*—
Hiraga, Yoichi; Watanabe, Osamu; and Nakatani, Masaki, 4,349,519, Cl. 423-321.00S.
Watanabe, Tsuneo: *See*—
Ishiwata, Shoji; Kuroda, Yasuo; Tanaka, Shoichi; Watanabe, Tsuneo; and Hasegawa, Shinichi, 4,349,513, Cl. 423-12.000.
Watanabe, Yoshitaka, to Canon Kabushiki Kaisha. Automatic film winding device having a movable grip member. 4,349,262, Cl. 354-173.000.

Watanabe, Yutaka: *See—*
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Weall, Paul: *See—*
Adams, Keith J. G.; Brightwell, Alan; Price, Barry L.; Pegler, Stuart M.; and Weall, Paul, 4,349,745, Cl. 307-12.000.
Webb, David E.; and Andrews, Lawrence F. Orthodontic bracket assembly. 4,349,334, Cl. 433-9.000.
Webb, Jimmy L.: *See—*
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Weeden, Frank G.: *See—*
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Wegman & Co.: *See—*
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Wegner, Wilhelm: *See—*
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Wei, Lawrence S., to Siemens Corporation. Method of making a zener diode utilizing gas-phase epitaxial deposition. 4,349,394, Cl. 148-175.000.
Wei, Peter H. L.: *See—*
Freed, Elisabeth H., deceased; Wei, Peter H. L.; and McCaully, Ronald J., 4,349,674, Cl. 544-353.000.
Weiger, Gunter: *See—*
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Weikel, Maurice M. Sliding dental amalgam dispenser. 4,349,125, Cl. 221-96.000.
Weinert, Hans, to Ringsdorff-Werke GmbH. Method for the manufacture of segments for commutators. 4,349,384, Cl. 75-208.00R.
Weinstein, David: *See—*
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Weiser, Klaus: *See—*
Carota, Martin; Slootz, Josef; Weiser, Klaus; Gulich, Peter; and Jovanovic, Milenko, 4,349,718, Cl. 219-78.010.
Weiss, Herbert W., to General Electric Company. Method and apparatus for controlling an alternating current motor load using plural controlled-current inverter circuits. 4,349,772, Cl. 318-799.000.
Weissman, Bernard, to Ipco Hospital Supply Corporation. Oval dental anchor. 4,349,335, Cl. 433-225.000.
Weissman, Bernard, to Ipco Hospital Supply Corporation. Square dental anchor. 4,349,336, Cl. 433-225.000.
WellTech, Inc.: *See—*
Angelo, Lawrence F.; Bryant, Frank A.; and McLain, John D., 4,348,780, Cl. 14-1.000.
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Wentzel, Robert J.: *See—*
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Werkzeugmaschinenfabrik Oerlikon-Buhrle: *See—*
Konersmann, Erhard, 4,348,839, Cl. 51-281.00R.
Werth, John, to Exide Corporation. Platinum third electrode to improve float polarization of standby batteries. 4,349,614, Cl. 429-50.000.
West, Frank L.; and Norton, Larry A., to Chromalloy American Corporation. Safety start control for electrically powered apparatus. 4,349,856, Cl. 361-160.000.
Westamarin A/S: *See—*
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Whitby, Clyde M.; and White, Douglas L., deceased (by White, Elizabeth A., administrator), to Singer Company, The. Laser spatial stabilization transmission system. 4,349,732, Cl. 250-201.000.
White, Anthony D. Open end wrench. 4,348,921, Cl. 81-91.00C.
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White, Elizabeth A., administrator: *See—*
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White, James W.; and McDermott, Joseph J., deceased (by McDermott, Rosalie L., executrix), to United States of America, Army. Boattail emergence by ejecting nozzle exit cone. 4,348,957, Cl. 102-378.000.
White, Michael L., to Minnesota Mining and Manufacturing Company. High incidence angle retroreflective material. 4,349,598, Cl. 428-161.000.
Whitehead, Michael J.: *See—*
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Whitehouse, Martin G.: *See—*
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Wiegman, Nelie J.; and Kuijk, Karel E., to U.S. Philips Corporation. Memory with current-controlled serial-to-parallel conversion of magnetic field domains. 4,349,893, Cl. 365-20.000.
Wiknich, Douglas D.; and Peabody, Michael J., to LaSalle Machine Tool, Inc. Accumulating conveyor. 4,349,099, Cl. 198-751.000.
Wilgood Corporation: *See—*
Feller, Murray F., 4,348,906, Cl. 73-861.770.
Wilkinson, Henry L. Locking post. 4,348,842, Cl. 52-166.000.
Wilks, Robert S.; Taleff, Alexander; and Sturges, Robert H., Jr., to United States of America, Energy. Pellet inspection apparatus. 4,349,112, Cl. 209-538.000.
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Williams, Joel L.; Dudley, Betty J., deceased; and by Dudley, Kenneth H., executor. Nonthrombogenic articles and method of preparation. 4,349,467, Cl. 525-54.200.
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Winsel, August, to Varta Batterie Aktiengesellschaft. Method and apparatus for electrochemical energy production. 4,349,613, Cl. 429-17.000.
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Sovey, James S.; Forman, Ralph; Curren, Arthur N.; and Wintucky, Edwin G., 4,349,424, Cl. 204-192.00E.
Wirt, Thomas M.; and Chechile, Robert A., to Litton Systems Inc. Spring for a ring laser gyro dither mechanism. 4,349,183, Cl. 267-160.000.
Wirtz, John W.; and Schenk, Raymond L., to Wirtz Manufacturing Company, Inc. Machine and method for continuously casting battery grids. 4,349,067, Cl. 164-479.000.
Wirtz Manufacturing Company, Inc.: *See—*
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Wise, David S., to McGraw-Hill, Inc. Coreless roll film structure and apparatus for winding thereof. 4,349,163, Cl. 242-68.300.

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Witco Chemical Corporation: *See—*
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Wivinis, Gerald P. Pulling tool. 4,348,884, Cl. 72-479.000.

Wolff, Guenter G. Apparatus for treating meat products prior to packaging. 4,348,787, Cl. 17-27.000.

Wollam, Carl A.; and Gailey, Lynn, to Alcan Aluminum Corporation. Starter strip for horizontal siding panels. 4,348,849, Cl. 52-545.000.

Wolters, Erich: *See—*
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Wood, Prentice J., to Mead Corporation, The. Article carrier and blank therefor. 4,349,103, Cl. 206-188.000.

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Woods, William E.; Stanley, Philip E.; Cushing, David E.; and Lemay, Richard A., to Honeywell Information Systems Inc. Buffer system for supply procedure words to a central processor unit. 4,349,874, Cl. 364-200.000.

Woodson, Thomas W., to Christian Leather Company, Inc., The. Weight lifter's belt. 4,348,774, Cl. 2-338.000.

Wool Development International Limited: *See—*
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Woolfolk Chemical Works, Inc.: *See—*
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Worne, Howard E.; and Rabinovitch, Irving. Process of microbial extraction of hydrocarbons from oil sands. 4,349,633, Cl. 435-281.000.

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Bain, Kenneth J. D.; King, Dennis E.; Worship, Lesley A.; and Burton, Achmat T., 4,349,117, Cl. 220-4.00F.

Wright, Kenneth N.; and Griffel, Gilbert W., Jr., to A. E. Staley Manufacturing Company. Condensed vegetable seed solubles animal feed ingredient. 4,349,578, Cl. 426-630.000.

Wynn, Charles C.; and Hopkins, Donald J., to Dempster Systems Inc. Lifting and dumping apparatus. 4,349,305, Cl. 414-408.000.

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Yaji, Saichi; Kitawaki, Kazuya; and Furuya, Takafumi, to Nankai Kogyo Kabushiki Kaisha. Heald frame for looms. 4,349,052, Cl. 139-92.000.

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Yamada, Hideo. Circulating food display system. 4,349,086, Cl. 186-49.000.

Yamada, Masahide; Edanami, Kenichi; and Kuroda, Toshio, to Wakamoto Pharmaceutical Co., Ltd. D-Allose derivative and preparation method therefor. 4,349,546, Cl. 424-180.000.

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Yamamura, Nobuo; and Takeda, Motoaki, to Fuji Photo Film Co., Ltd. Emulsification process. 4,349,455, Cl. 252-312.000.

Yamashita, Norihisa: *See—*
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Yamashita, Yoshisato; and Matsuo, Yutaka, to Chisso Corporation. Process for producing purified hydrochloric acid. 4,349,524, Cl. 423-488.000.

Yamashita, Yoshisato; and Matsuo, Yutaka, to Chisso Corporation. Process for purifying hydrochloric acid produced from alkali chloride and sulfuric acid. 4,349,525, Cl. 423-488.000.

Yamauchi, Toshima; Nogami, Sadao; Sawada, Kengi; Moriya, Jyunichiro; Sawada, Hiroomi; and Kobayashi, Keizou, to Kabushiki Kaisha Kurio-Medikaru. Apparatus for refrigeration treatment. 4,348,873, Cl. 62-514.00R.

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Yang, Ho S.: *See—*
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Yang, Yih-Chen, to Keh-Yeu, Chiang. Garbage can with a packaged and folded plastic bags supplier. 4,349,123, Cl. 220-407.000.

Yanmar Diesel Engine Co., Ltd.: *See—*
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Yannone, Robert A.: *See—*
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Yazawa, Masahide; Tani, Haruhisa; Kurihara, Kazuhiko; and Yazawa, Hiroshi, to Nippon Petrochemicals Co., Ltd.; and Polymer Processing Research Institute, Ltd. Method for stretching a fibrous or film-like material. 4,349,500, Cl. 264-159.000.

Yeager, Patrick F.: *See—*
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Yen, Kuo-Hsiung: *See—*
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Yokomichi, Isao; Haga, Takahiro; Nagatani, Kuniaki; and Nakajima, Toshio, to Ishihara Sangyo Kaisha, Ltd. 2-Amino-3-chloro-5-trifluoromethylpyridine. 4,349,681, Cl. 546-304.000.

Yokoyama, Kenji, to Nippon Gakki Seizo Kabushiki Kaisha. Complementary differential amplifier circuit having source-follower driving circuits. 4,349,786, Cl. 330-253.000.

Yonezawa, Keitaro. Auxiliary die conveyor for a pressing or punching machine. 4,348,883, Cl. 72-446.000.

Yoshida, Ryo: *See—*
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Yoshihara, Toshiaki: *See—*
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Yoshikawa, Yoshio; Nawata, Takanari; Goto, Mikio; and Kondo, Yukio, to Mitsubishi Gas Chemical Co., Inc. Oxygen indicator adapted for printing or coating and oxygen-indicating device. 4,349,509, Cl. 422-57.000.

Young, William G. Re-registering feeder and method of registering. 4,349,188, Cl. 271-225.000.

Yu, Jing-peir: *See—*
Blackmon, Lawrence E.; Dees, John R.; Kelly, Darrell A.; Mowe, Wayne T.; and Yu, Jing-peir, 4,349,604, Cl. 428-370.000.

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Zahid, Abduz, to General Signal Corporation. Method of making low cost accumulator. 4,348,792, Cl. 29-157.00R.

Zahnradfabrik Friedrichshafen AG: *See—*
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Zahuranec, Terry L.: *See—*
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Zambelli, Adolfo: *See—*
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Zenith Radio Corporation: *See—*
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Zimmerman, Jos.: *See—*
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Zinn, Michael F.; Krulick, Steven E.; and Leonard, Ronald W. Tube mat heat exchanger. 4,349,070, Cl. 165-173.000.

Zinser Textilmaschinen GmbH, Firma: *See—*
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Rottmayr, Johann, 4,348,858, Cl. 57-18.000.

Zizza, John M. Automobile control module. 4,349,861, Cl. 361-347.000.

Zokor Corporation: *See—*
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Zoll, Paul M.: *See—*
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Zoll, Ross H.: *See*—
Belgard, Alan H.; Zoll, Paul M.; and Zoll, Ross H., 4,349,030, Cl. 128-419.0PG.
Zolnowsky, John E.: *See*—
Gunter, Thomas G.; Zolnowsky, John E.; and Crudele, Lester M., 4,349,873, Cl. 364-200.000.
Zuber, Bretislav; and Kral, Jaroslav J., to Northern Telecom Limited. Sensor device for continuous measurement of jacket thickness on a cable. 4,349,780, Cl. 324-262.000.
Zublin, Casper M.: *See*—
Zublin, Casper W., 4,349,073, Cl. 166-312.000.
Zublin, Casper W., to Zublin, Casper M. Hydraulic jet well cleaning. 4,349,073, Cl. 166-312.000.
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LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 14TH DAY OF SEPTEMBER, 1982

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

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Cromwell, Paul J., Re. 31,028, Cl. 241-14.000.

Cromwell, Paul J., to Cromwell Metals, Inc. Method for processing dross. Re. 31,028, Cl. 241-14.000.

Di Giovanni, Bernard A. Locking hood assembly for flow control device. Re. 31,027, Cl. 70-175.000.

Dr. Eduard Fresenius Chemisch-pharmazeutische Industrie KG, Apparatebau KG: *See—*
Schael, Wilfried, Re. 31,029, Cl. 210-321.200.

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Inoue, Akira: *See—*
Hisatsuka, Kenichi; Ishiyama, Saburo; Inoue, Akira; Tsumura, Osamu; and Sato, Mikio, Re. 31,030, Cl. 435-101.000.

Ishiyama, Saburo: *See—*
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Kissiah, Adam M., Jr. Implantable electronic hearing aid. Re. 31,031, Cl. 179-107.00R.

Sato, Mikio: *See—*
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Schael, Wilfried, to Dr. Eduard Fresenius Chemisch-pharmazeutische Industrie KG, Apparatebau KG. Dialyzer cartridge and method for its manufacture. Re. 31,029, Cl. 210-321.200.

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126.5	4,348,841
166	4,348,842
167	4,348,843
180	4,348,840
230	4,348,844
405	4,348,845
410	4,348,846
426	4,348,847
432	4,348,848
545	4,348,849
693	4,348,850

CLASS 53

75	4,348,851
469	4,348,852
566	4,348,853

CLASS 54

83 R	4,348,854

CLASS 55

16	4,349,356
21	4,349,357
89	4,349,358
151	4,349,359
238	4,349,360
357	4,349,361
390	4,349,362
498	4,349,363

CLASS 56

10.2	4,348,855
30	4,348,856
192	4,348,857

CLASS 57

18	4,348,858
100	4,348,860
401	4,348,859

CLASS 59

82	4,348,861

CLASS 60

314	4,348,862
327	4,348,863
454	4,348,864
493	4,348,865
561	4,348,866

CLASS 62

64	4,348,867
101	4,348,868
140	4,348,869
	4,348,870
239	4,348,871
459	4,348,872
514 R	4,348,873

CLASS 65

2	4,349,364
10.1	4,349,365
27	4,349,366
	4,349,367
28	4,349,368
60.4	4,349,369
	4,349,370
	4,349,371
	4,349,372
60.8	4,349,373
107	4,349,374
291	4,349,375
345	4,349,376

CLASS 66

84 A	4,348,876

CLASS 68

13 R	4,348,877

CLASS 70

5	4,348,878
93	4,348,879
175	Re.31,027
456 R	4,348,880
	4,348,881

CLASS 71

98	4,349,377
120	4,349,379

CLASS 72

202	4,348,882
446	4,348,883
479	4,348,884

CLASS 73

1 B	4,348,885
19	4,348,886
23	4,348,887
	4,348,888
37.7	4,348,889
61.4	4,348,890
81	4,348,891
116	4,348,892
	4,348,893
119 A	4,348,894
	4,348,895
146.5	4,348,896
155	4,348,897
431	4,348,899
505	4,348,900
594	4,348,901
626	4,348,902
643	4,348,903
644	4,348,904
654	4,348,905
861.77	4,348,906
862.39	4,348,907
862.54	4,348,908
863.21	4,348,909
863.51	4,348,910

CLASS 74

10.33	4,348,911
61	4,348,912
339	4,348,913
467	4,348,914
473 R	4,348,915
489	4,348,916
568 R	4,348,917
805	4,348,918

CLASS 75

0.5 A	4,349,380
10 R	4,349,381
60	4,349,382
73	4,349,383
208 R	4,349,384

CLASS 76

112	4,348,919

CLASS 81

57.25	4,348,920
91 C	4,348,921
180 R	4,348,922

CLASS 83

23	4,348,923
39	4,348,924
435.1	4,348,925
833	4,348,926
	4,348,927

CLASS 84

1.01	4,348,928
	4,348,929
1.15	4,348,930
1.19	4,348,932
1.24	4,348,931
193	4,348,933
306	4,348,934
380 R	4,348,935

CLASS 89

1.5 D	4,348,936
24	4,348,937
33 BA	4,348,938
41 ME	4,348,939
140	4,348,940
155	4,348,941

CLASS 91

54	4,348,942
355	4,348,943
369 A	4,348,944
452	4,348,945
489	4,348,946

CLASS 98

58	4,348,947

CLASS 99

339	4,348,948
426	4,348,949
510	4,348,950

CLASS 100

127	4,348,951
158 R	4,348,952

CLASS 101

128.21	4,348,953
465	4,348,954

CLASS 102

317	4,348,955
377	4,348,956
378	4,348,957
499	4,348,958

CLASS 104

15	4,348,959
114	4,348,960
252	4,348,961

CLASS 105

42 D	4,348,964
248	4,348,962
363	4,348,963

CLASS 106

37	4,349,385
85	4,349,386
100	4,349,387
281 N	4,349,388
308 Q	4,349,389

CLASS 108

152	4,348,965

CLASS 109

2	4,348,966
51	4,348,967

CLASS 110

344	4,348,968

CLASS 112

184	4,348,969
256	4,348,970

CLASS 114

61	4,348,971
	4,348,972
144 C	4,348,973
218	4,348,974
254	4,348,975
270	4,348,976
273	4,348,977
345	4,348,779

CLASS 116

28 R	4,348,978

CLASS 118

688	4,348,979
717	4,348,980
730	4,348,981

CLASS 119

1	4,348,982
4	4,348,983
14.08	4,348,984
15	4,348,985
20	4,348,986
	4,348,987
53	4,348,988
72	4,348,989

CLASS 123

41.12	4,348,990
41.29	4,348,991
142.5 R	4,348,992
146.5 A	4,348,993
198 F	4,348,994
366	4,348,995
440	4,348,996
445	4,348,997
447	4,348,998
452	4,348,999
491	4,349,000
557	4,349,001
	4,349,002
568	4,349,003
569	4,349,004
571	4,349,005
	4,349,006
617	4,349,007
620	4,349,008

CLASS 126

121	4,349,009
271.1	4,349,010
419	4,349,011
422	4,349,012
442	4,349,013

CLASS 128

6	4,349,014
28	4,349,015
87 R	4,349,016
92 A	4,349,017
92 E	4,349,018
132 D	4,349,019
155	4,349,020
214 R	4,349,021
	4,349,022
214.4	4,349,023
247	4,349,024
260	4,349,025
294	4,349,026
303 R	4,349,027
305	4,349,028
349 B	4,349,029
419 PG	4,349,030
642	4,349,031
660	4,349,032
	4,349,033
681	4,349,034
766	4,349,035

CLASS 131

240 R	4,349,036
306	4,349,037

CLASS 132

40	4,349,038

CLASS 134

167 C	4,349,039

CLASS 135

5 R	4,349,040

CLASS 136

261	4,349,691

CLASS 137

1	4,349,041
39	4,349,042
505.42	4,349,043
512.3	4,349,044
625.5	4,349,045
899	4,349,046

CLASS 138

93	4,349,047
96 T	4,349,048
103	4,349,049
147	4,349,050
149	4,349,051

CLASS 139

92	4,349,052

CLASS 141

1	4,349,053
	4,349,054
39	4,349,055
381	4,349,056

CLASS 144

230	4,349,057

CLASS 145

24	4,349,058
33 A	4,349,059

CLASS 148

6.15 R	4,349,390
	4,349,391
6.2	4,349,392
142	4,349,393
175	4,349,394
187	4,349,395

CLASS 149

19.3	4,349,396

CLASS 152

172	4,349,060
209 R	4,349,061
356 R	4,349,062
359	4,349,063
418	4,349,064

CLASS 156

64	4,349,397
71	4,349,398
86	4,349,399
217	4,349,400
221	4,349,401
233	4,349,402
272.6	4,349,403
308.4	4,349,404
358	4,349,405
416	4,349,406
624	4,349,407
628	4,349,408
643	4,349,409
654	4,349,410
659.1	4,349,411

CLASS 159

47 WL	4,349,412

CLASS 162

23	4,349,413
123	4,349,414

CLASS 164

368	4,349,065
453	4,349,066
479	4,349,067

CLASS 165

1	4,349,068
4	4,349,069
173	4,349,070

CLASS 166

124	4,349,071
250	4,349,072
312	4,349,073

CLASS 173

48	4,349,074
134	4,349,075

CLASS 174

52 H	4,349,692
52 PE	4,349,693
128 R	4,349,694

CLASS 177

164	4,349,076

CLASS 178

22.08	4,349,695

CLASS 179

1 D	4,349,697
1 G	4,349,698
1 GS	4,349,696
1 SD	4,349,700
1 SM	4,349,699
2 TV	4,349,701
18 GE	4,349,702
18 HB	4,349,703
84 VF	4,349,704
90 L	4,349,705
100 C	4,349,706
107 R	Re.31,031
175.31 R	4,349,707

CLASS 180
41 4,349,077
69.1 4,349,078
143 4,349,079
301 4,349,080

CLASS 181
130 4,349,081
4,349,082
135 4,349,083
146 4,349,084

CLASS 184
6.15 4,349,085

CLASS 186
49 4,349,086

CLASS 187
29 R 4,349,087

CLASS 192
3.3 4,349,088
4 A 4,349,089
53 F 4,349,091
53 G 4,349,090
67 R 4,349,092
107 R 4,349,093
109 F 4,349,094

CLASS 194
100 A 4,349,095

CLASS 198
347 4,349,096
369 4,349,097
497 4,349,098
751 4,349,099
783 4,349,100
851 4,349,101

CLASS 200
6 A 4,349,708
19 R 4,349,709
61.43 4,349,710
153 LA 4,349,711
159 B 4,349,712

CLASS 203
14 4,349,415
19 4,349,416
33 4,349,417
45 4,349,418
70 4,349,419
75 4,349,420

CLASS 204
38 B 4,349,421
98 4,349,422
146 4,349,423
192 E 4,349,424
192 P 4,349,425
195 M 4,349,426
243 R 4,349,427
294 4,349,428
299 R 4,349,429
302 4,349,430
4,349,431

CLASS 206
45.34 4,349,102
188 4,349,103
205 4,349,104
317 4,349,105
347 4,349,106
449 4,349,107
506 4,349,108
562 4,349,109
606 4,349,110

CLASS 208
130 4,349,432
139 4,349,433

CLASS 209
534 4,349,111
538 4,349,112

CLASS 210
94 4,349,434
96.1 4,349,435
104 4,349,436
169 4,349,437
180 4,349,438
242.3 4,349,439
321.1 4,349,440
321.2 Re.31,029
512.1 4,349,441
675 4,349,442

CLASS 211
103 4,349,113
151 4,349,114

CLASS 212
178 4,349,115

CLASS 215
330 4,349,116

CLASS 219
10.55 A 4,349,713
4,349,714
10.55 B 4,349,715
69 E 4,349,716
73.2 4,349,717
78.01 4,349,718
121 LK 4,349,719
130.33 4,349,720
145.23 4,349,721
202 4,349,722
271 4,349,723
347 4,349,724
373 4,349,725
511 4,349,726
544 4,349,727

CLASS 220
4 F 4,349,117
201 4,349,118
306 4,349,119
337 4,349,120
341 4,349,121
373 4,349,122
407 4,349,123
453 4,349,124

CLASS 221
96 4,349,125
112 4,349,126
196 4,349,127

CLASS 222
41 4,349,129
129.2 4,349,130
135 4,349,131
156 4,349,132
166 4,349,128
183 4,349,133
212 4,349,134
394 4,349,135
396 4,349,136

CLASS 223
73 4,349,137

CLASS 224
30 R 4,349,138
257 4,349,139

CLASS 225
97 4,349,140

CLASS 227
10 4,349,141
13 4,349,142
131 4,349,143

CLASS 228
2 4,349,144
208 4,349,145

CLASS 229
2.5 R 4,349,146
34 R 4,349,147

CLASS 235
400 4,349,728
4,349,729
472 4,349,730
489 4,349,731

CLASS 236
11 4,349,148
12 R 4,349,149

CLASS 238
265 4,349,150
349 4,349,151

CLASS 239
96 4,349,152
105 4,349,153
124 4,349,154
265.33 4,349,155
432 4,349,156
509 4,349,157

CLASS 241
14 Re.31,028
21 4,349,158
236 4,349,159

CLASS 242
18 R 4,349,160
47.01 4,349,161
54 R 4,349,162
68.3 4,349,163
107.4 A 4,349,164
118.11 4,349,165
197 4,349,166

CLASS 244
122 R 4,349,167
137 R 4,349,168
219 4,349,169

CLASS 246
63 4,349,170

CLASS 248
243 4,349,171
318 4,349,172
346 4,349,173

CLASS 249
58 4,349,174

CLASS 250
201 4,349,732
203 R 4,349,733
222 R 4,349,734
259 4,349,737
568 4,349,741
4,349,742
578 4,349,743

CLASS 251
31 4,349,175
129 4,349,176
230 4,349,177

CLASS 252
8.5 A 4,349,443
16 4,349,444
46.6 4,349,445
70 4,349,446
117 4,349,447
135 4,349,448
174.11 4,349,449
190 4,349,451
299.61 4,349,452
312 4,349,454
4,349,455
317 4,349,456
389 R 4,349,457
391 4,349,458
400 R 4,349,459
431 N 4,349,460
455 R 4,349,462
455 Z 4,349,461
457 4,349,463
463 4,349,464
466 PT 4,349,450
626 4,349,465
627 4,349,453

CLASS 254
216 4,349,178
270 4,349,179
277 4,349,180

CLASS 256
35 4,349,181

CLASS 260
112.5 R 4,349,466
117 4,349,470
208 4,349,471
229 4,349,735
239 BB 4,349,472
239.3 A 4,349,473
239.55 C 4,349,474
244.4 4,349,475
4,349,476
4,349,477
316 4,349,478
326 N 4,349,479
326.2 4,349,480
448 A 4,349,483
453 P 4,349,484
463 4,349,485
4,349,486
465 D 4,349,488
465 F 4,349,487

CLASS 261
41 D 4,349,489

CLASS 264
1.5 4,349,497
25 4,349,490
35 4,349,491
4,349,492
37 4,349,493
45.3 4,349,494
45.8 4,349,495
61 4,349,496
81 4,349,498
107 4,349,499
159 4,349,500
210.3 4,349,501
320 4,349,502
328.16 4,349,503
328.17 4,349,504

CLASS 266
57 4,349,182

CLASS 267
153 4,349,184
160 4,349,183

CLASS 270
32 4,349,185

CLASS 271
18 4,349,186
159 4,349,187
225 4,349,188
251 4,349,189
297 4,349,190

CLASS 272
118 4,349,191
4,349,192
4,349,193
4,349,194
134 4,349,195

CLASS 273
1 GC 4,349,196
1 GF 4,349,197
73 D 4,349,198
75 4,349,199
371 4,349,200
400 4,349,201
422 4,349,202

CLASS 277
26 4,349,203
34 4,349,204
188 A 4,349,205
207 R 4,349,206

CLASS 279
4 4,349,207

CLASS 280
12 K 4,349,208
16 4,349,209
47.21 4,349,210
481 4,349,211
610 4,349,212
638 4,349,213
752 4,349,214
804 4,349,215
807 4,349,216
808 4,349,217

CLASS 282
27.5 4,349,218

CLASS 285
21 4,349,219
121 4,349,220
149 4,349,221
363 4,349,222

CLASS 290
40 C 4,349,744

CLASS 292
259 R 4,349,223

CLASS 294
1 BA 4,349,224
16 4,349,225

CLASS 297
475 4,349,226

CLASS 299
2 4,349,227
10 4,349,228
32 4,349,229
33 4,349,230
69 4,349,231
92 4,349,232

CLASS 303
96 4,349,233

CLASS 305
56 4,349,234

CLASS 307
12 4,349,745
106 4,349,746
117 4,349,747
132 E 4,349,748
221 D 4,349,749
243 4,349,750
252 A 4,349,751
254 4,349,752
272 A 4,349,753
443 4,349,754
492 4,349,755
514 4,349,756

CLASS 310
15 4,349,757
68 A 4,349,758
233 4,349,759
248 4,349,760
266 4,349,761
332 4,349,762
370 4,349,763

CLASS 313
176 4,349,764
220 4,349,765
346 R 4,349,766
449 4,349,767

CLASS 315
105 4,349,768

CLASS 318
677 4,349,769
685 4,349,770
4,349,771
799 4,349,772

CLASS 320
5 4,349,773
25 4,349,774
35 4,349,775

CLASS 323
222 4,349,776
226 4,349,777
314 4,349,778
318 4,349,779

CLASS 324
262 4,349,780
346 4,349,781
390 4,349,782
457 4,349,783

CLASS 328
138 4,349,784

CLASS 329
50 4,349,785

CLASS 330
253 4,349,786
284 4,349,787
293 4,349,788

CLASS 331
4 4,349,789

CLASS 333
24.1 4,349,790
27 4,349,791
81 A 4,349,792
111 4,349,793
141 4,349,794
176 4,349,795
186 4,349,796
215 4,349,797
230 4,349,798
246 4,349,799

CLASS 335
207 4,349,800

CLASS 336
84 C 4,349,801

CLASS 337
159 4,349,802
186 4,349,803
198 4,349,804
255 4,349,805
343 4,349,806
360 4,349,807

CLASS 338
18 4,349,808

CLASS 339
14 T 4,349,235
44 M 4,349,236
65 4,349,237
75 M 4,349,238
97 R 4,349,239
103 R 4,349,240
143 R 4,349,241

CLASS 340
52 H 4,349,809
79 4,349,810
347 DA 4,349,811
522 4,349,812
638 4,349,813
679 4,349,814
705 4,349,815
781 4,349,816
784 4,349,817
785 4,349,818
812 4,349,819
825.71 4,349,820
870.21 4,349,821
870.34 4,349,822

CLASS 343
7 VM 4,349,823
700 MS 4,349,824
750 4,349,825
773 4,349,826
786 4,349,827

CLASS 346
1.1 4,349,828
140 R 4,349,829
4,349,830

CLASS 350
81 4,349,242
96.23 4,349,243
255 4,349,244
264 4,349,245
298 4,349,246
302 4,349,247
413 4,349,248
483 4,349,249

CLASS 351
32 4,349,250
128 4,349,251

CLASS 352
58 4,349,252

CLASS 353
112 4,349,253

CLASS 354
25 4,349,254
31 4,349,255
43 4,349,256
126 4,349,257
127 4,349,258
135 4,349,259
145 4,349,260
152 4,349,261
173 4,349,262
234 4,349,263
4,349,264
286 4,349,265
295 4,349,266
323 4,349,267

CLASS 355
4 4,349,268
14 SH 4,349,269
15 4,349,270
60 4,349,271
69 4,349,272
72 4,349,273

CLASS 356
1 4,349,274
36 4,349,275
73.1 4,349,276
376 4,349,277
394 4,349,278
402 4,349,279

CLASS 357
74 4,349,831

CLASS 358
8 4,349,832
23 4,349,833
27 4,349,834
76 4,349,835
93 4,349,836
4,349,837
125 4,349,838
148 4,349,839
188 4,349,840
194.1 4,349,841
197 4,349,842
206 4,349,843
244 4,349,844
254 4,349,845
280 4,349,846
293 4,349,847

CLASS 360
66 4,349,848
71 4,349,849
74.2 4,349,850
105 4,349,851
137 4,349,852

CLASS 361
19 4,349,853
21 4,349,854
127 4,349,855
160 4,349,856
173 4,349,857
181 4,349,858
218 4,349,859
310 4,349,860
347 4,349,861
401 4,349,862

CLASS 362
20 4,349,863
122 4,349,864
250 4,349,865
263 4,349,866

CLASS 363
160 4,349,867

CLASS 364
157 4,349,868
159 4,349,869
200 4,349,870
4,349,871
4,349,872

	4,349,873
	4,349,874
	4,349,875
426	4,349,876
431.05	4,349,877
484	4,349,878
492	4,349,879
507	4,349,880
509	4,349,881
	4,349,882
551	4,349,883
557	4,349,884
558	4,349,885
573	4,349,886
703	4,349,887
716	4,349,888
724	4,349,889
900	4,349,890
	4,349,891
CLASS 365	
8	4,349,892
20	4,349,893
154	4,349,894
230	4,349,895
CLASS 366	
183	4,349,280
CLASS 367	
26	4,349,896
98	4,349,897
138	4,349,898
CLASS 368	
75	4,349,899
187	4,349,900
CLASS 369	
45	4,349,901
132	4,349,902
CLASS 370	
57	4,349,903
CLASS 371	
69	4,349,904
CLASS 372	
46	4,349,905
50	4,349,906
92	4,349,907
103	4,349,908
CLASS 373	
84	4,349,909
91	4,349,910
105	4,349,911
	4,349,912
CLASS 374	
124	4,348,898
136	4,349,281
183	4,349,282
CLASS 375	
25	4,349,913
40	4,349,914
	4,349,915
103	4,349,916
CLASS 376	
130	4,349,505
142	4,349,506
230	4,349,507
CLASS 378	
24	4,349,917
25	4,349,740
49	4,349,738
83	4,349,736
99	4,349,739
CLASS 400	
124	4,349,283
320	4,349,284
	4,349,285
492	4,349,286
569	4,349,287
CLASS 401	
7	4,349,288
CLASS 402	
30	4,349,289
55	4,349,290
CLASS 403	
15	4,349,291
322	4,349,292
CLASS 404	
41	4,349,293
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OFFICIAL GAZETTE of the UNITED STATES PATENT AND TRADEMARK OFFICE

September 21, 1982 Volume 1022 Number 3

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT member countries and the most recent PCT rule changes see the notices appearing in the Official Gazette at 1001 O.G. 14 on Dec. 9, 1980 and at 1012 O.G. 20 on Nov. 17, 1981.

Note that the international fees have been increased as of Jan. 1, 1982. The current schedule of fees is as follows:

Transmittal fee	$ 35.00
Search fee	300.00
International Fees	
Basic Fee (first 30 pages)	270.00
Basic Supplemental Fee (for each sheet over 30)	6.00
Designation Fees	65.00

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

Jan. 19, 1982.

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

4,010,223, Re. S.N. 394,463, Filed July 1, 1982, Cl. 525/10, ADDUCTS CONTAINING SUCCINIC GROUPS ATTACHED TO ELASTOMERIC COPOLYMERS, Stanley W. Cyowood, Jr., Owner of Record: *E. I. Du Pont De Nemours & Co., Wilmington, Del.,* Attorney or Agent: Paul R. Steyermark, Ex. Gp.: 144

4,021,092, Re. S.N. 393,705, Filed June 30, 1982, Cl. 339/103R, ELECTRICAL CONNECTOR, John E. Ericson, Jr., Owner of Record: *Ericson Mfg. Co., Willoughby, Ohio,* Attorney or Agent: J. Herman, Jr., et al., Ex. Gp.: 322

4,119,102, Re. S.N. 393,628, Filed June 30, 1982, Cl. 128/804, RADIO FREQUENCY TREATMENT OF TUMORS WHILE INDUCING HYPOTENSION, Harry H. LeVeen, Owner of Record: *Inventor,* Attorney or Agent: Jim W. Gipple, et al., Ex. Gp.: 335

4,163,527, Re. S.N. 398,931, Filed July 16, 1982, Cl. 242/55, COIL DEPLETION SENSOR, Walter J. Hood, et al., Owner of Record: *Kent Corp., Twinsburg, Ohio,* Attorney or Agent: E. R. Hamilton, et al., Ex. Gp.: 245

4,208,403, Re. S.N. 399,655, Filed July 19, 1982, Cl. 424/115, A-21978 ANTIBIOTICS AND PROCESS FOR THEIR PRODUCTION, Robert L. Hamill, et al., Owner of Record: *Eli Lilly & Co., Indianapolis, Ind.,* Attorney or Agent: Arthur R. Whale, et al., Ex. Gp.: 125

4,238,202, Re. S.N. 395,553, Filed July 6, 1982, Cl. 44/64, HYDROCARBON FUELS WITH CARBURETOR DETERGENT PROPERTIES, William J. Trepka, et al., Owner of Record: *Phillips Petroleum Co., Bartlesville, Okla.,* Attorney or Agent: Louis N. French, et al., Ex. Gp.: 113

4,273,821, Re. S.N. 397,630, Filed July 12, 1982, Cl. 428/215, FIRE PROTECTIVE TAPE, J. Watson Pedlow, Owner of Record: *Thomas & Betts Corp., Raritan, N.J.,* Attorney or Agent: Robert M. Rodrick, et al., Ex. Gp.: 164

4,277,542, Re. S.N. 399,052, Filed July 16, 1982, Cl. 338/308, RESISTANCE MATERIAL, Alexander Hendrik Boonstra, et al., Owner of Record: *U.S. Philips Corp., Tarrytown, N.Y.,* Attorney or Agent: Jack Oisher et al., Ex. Gp.: 213

4,282,051, Re. S.N. 401,019, Filed July 22, 1982, Cl. 156/71, PRESSURE-SENSITIVE FLOCKED FASTENER AND METHOD OF MAKING SAME, John M. Terpay, Owner of Record: *Inventor,* Attorney or Agent: Eugene Sabol, et al., Ex. Gp.: 355

4,299,953, Re. S.N. 393,968, Filed June 29, 1982, Cl. 536/17, MYCAROSYLTYLACTONE, Robert L. Hamill, et al., Owner of Record: *Eli Lilly & Co., Indianapolis, Ind.,* Attorney or Agent: Arthur R. Whale, et al., Ex. Gp.: 123

4,321,713, Re. S.N. 397,012, Filed July 12, 1982, Cl. 4/290, LARGE CAPACITY DRAINAGE RECEPTACLE, C. Ames Thompson, Owner of Record: *Inventor,* Attorney or Agent: Herbert E. Haynes, Jr., et al., Ex. Gp.: 243

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b).

3,504,503, Reexam. No. 90/000,244, Requested: Aug. 20, 1982, Cl. 405/157, LOCATING ELEMENTS OF CONSTRUCTION BENEATH THE SURFACE OF EARTH SOILS, Gordon H. Allen, Owner of Record: *Inventor owns 50%, The Allen System, Inc. owns 50%,* Attorney or Agent: Vaden, Eickenroht, Thompson, Bednar & Jamison, Ex. Gp.: 356, Requester: Owners of record with full interest, Houston, Tex.

3,590,854, Reexam. No. 90/000,243, Requested: Aug. 18, 1982, Cl. 137/355.16, ROLLING CONDUCTOR SUPPORT, Gordon H. Cork, Owner of Record: *McGraw-Edison Co., Rolling Meadows, Ill.,* Attorney or Agent: Hugh M. Gilroy, Ex. Gp.: 341, Requester: A & A Manufacturing Co., Inc., New Berlin, Wis.

4,281,793, Reexam. No. 90/000,245, Requested: Aug. 23, 1982, Cl. 239/011, WATER SPRINKLER WITH FLAT PLATE PATTERN CONTROL, Robert E. DeWitt, Owner of Record: *Inventor, Oswego, Ill.,* Attorney or Agent: John R. Crossan, Ex. Gp.: 313, Requester: The Toro Co., Minneapolis, Minn.

National Technical Information Service

U.S. GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by agencies of the U.S. Government and are available for licensing in the U.S. in accordance with 35 U.S.C. 207 to achieve expeditious commercialization of results of federally funded research and development. Foreign patents are filed on selected inventions to extend market coverage for U.S. companies and may also be available for licensing.

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Please cite the number and title of inventions of interest.

DOUGLAS J. CAMPION,
Program Coordinator,
Office of Government Inventions and Patents
National Technical Information Service
U.S. Department of Commerce.

SN 6-247,713. (4,343,262) LABORATORY RAT FEEDER. Dept. of Health & Human Services.

SN 6-186,363. (4,343,215) PERFORATED CYLINDER. Dept. of the Treasury.

SN 6-152,874. (4,343,189) METHOD AND APPARATUS FOR EDGEWISE COMPRESSION TESTING OF FLAT SHEETS. Dept. of Agriculture.

SN 6-246,971. (4,343,095) PRESSURE DRYER FOR STEAM SEASONING LUMBER. Dept. of Agriculture.

SN 6-180,542. (4,343,070) REMOVAL OF LINT FROM COTTONSEED. Dept of Agriculture.

SN 6-318,531. (4,342,777) POLYBUTYLBENZYLPHENOLS AND BENZYL-3, 4-METHYL-ENEDIOXYBENZENES IN INSECT POPULATION CONTROL. Dept. of Agriculture.

SN 6-254,318. A CATALYTIC COATING TO DIRECTLY GENERATE HEAT UPON THE SURFACE OF A HEAT DOME. Dept. of the Interior.

SN 6-380,471. VIBRATION DOSIMETER. Dept. of Health & Human Services.

SN 6-366,165. ISOLATION OF HEPATITIS A VIRUS STRAIN HM-175. National Institutes of Health.

SN 6-386,991. INACTIVATION OF A LIPID VIRUS. National Institues of Health.

Trademark Suits

Notices under 15 U.S.C. 1116;
Trademark Act of July 5, 1946.

Reg. No. 35,228 (LUX), Lever Brothers Co.; **Reg. No. 59,032, same; Reg. No. 681,254, same, filed** July 12, 1982, D.C., S.D. Fla. (Miami), Doc. 82-1432-CIV-WMH, *Lever Brothers Co.* v. *Cleanlux Chemical Corp.*

Reg. No. 59,032. (See Reg. No. 35,228.)

Reg. No. 97,301 (MARATHON), Marathon Oil Co., **Reg. No. 608,222** (MILE-MAKER), **same; Reg. No. 609,000** (MARATHON MILE-MAKER), **same; Reg. No. 652,617** (SUPER-M), **same; Reg. No. 652,959** (MARATHON SUPER-M), **same; Reg. No. 743,273** (M MARATHON AND DESIGN), **same; Reg. No. 824,627** (M MARATHON AND DESIGN), **same, filed** July 22, 1982, D.C., N.D. Ill. (Chicago), Doc. 82 C 4573, *Marathon Petroleum Co.* v. *Sam. S. LoBosco.*

Reg. No. 297,594 ("VL" AND DESIGN), Louis Vuitton S.A., **filed** Dec. 6, 1978, D.C., S.D.N.Y., Doc. 78-Civ-5863 (CLB), *Vuitton et Fils S.A.* v. *Karen Bags, Inc., et al.* Defendants are permanently enjoined from further infringing Plaintiff's trademark. Filed July 30, 1982. **Same, filed** Mar. 9, 1982, D.C. Md. (Baltimore), Doc. J82-642, *Louis Vuitton S.A.* v. *Soretta of Reisterstown Plz., Inc.* Defendant is permanently enjoined from further infringing Plaintiff's trademark. Filed Aug. 2, 1982.

Reg. No. 298,059 (REPRESENTATION OF MOON AND STARS), The Procter & Gamble Co., **filed** July 1, 1982, D.C., N.D. Ga. (Atlanta), Doc. C82-1367A, *The Procter & Gamble Co., et al* v. *Mike Campbell.*

Reg. No. 402,475 (AA AND DESIGN), Early California Industries, Inc. **filed** May 10, 1982, D.C., C.D. Calif. (Los Angeles), Doc. 82-2278 IH, *Early California Industries, Inc., et al* v. *Pacific Eastern Trading Corp.* Plaintiff is the owner of Reg. No. 402,475 and said registration is valid. Defendant is permanently enjoined from using the letters "A", "AA" or "AAA" in connection with advertising, promotion, etc. Filed June 25, 1982.

Reg. No. 430,272 (AMBASSADOR), Allied Stores Corp., **filed** July 29, 1982, D.C., S.D.N.Y., Doc. 82-Civ-4933 ADS, *Allied Stores Corp.* v. *Ambassador Imports, Ltd.*

Reg. No. 502,629 (KAL), Makers of Kal, Inc., **filed** July 16, 1982, D.C., C.D. Calif. (Los Angeles), Doc. 82 3502, *Makers of Kal, Inc.* v. *Superkal Products, Inc.*

Reg. No. 607,761 (GREAT AMERICAN INSURANCE COMPANY), Great American Insurance Co., **Reg. No. 643,400, same filed** June 18, 1982, D.C. Del. (Wilmington), Doc. 82-391, *Great American Insurance Co. (Ohio corp.)* v. *Great American Insurance Co. (Del. corp.), et al.* Plaintiff is the owner of Reg. Nos. 607,761 and 643,400 which are good and valid in law. Defendants shall not use the name Great American or the name Great American Insurance Co. etc. in connection with the sale, offering for sale, etc. of goods or services in the field of insurance or finance. Filed July 23, 1982.

Reg. No. 608,222. (See Reg. No. 97,301.)

Reg. No. 609,000. (See Reg. No. 97,301.)

Reg. No. 643,400 (GREAT AMERICAN INSURANCE COMPANY), Great American Insurance Co., **filed** June 17, 1982, D.C., C.D. Calif. (Los Angeles), Doc. 82-3033R, *Great American Insurance Co.* v. *Anant Kumar.*

Reg. No. 643,400. (See Reg. No. 607,761.)

Reg. No. 646,221 (UNION MADE ETC. AND DESIGN), International Association of Machinists and Aerospace Workers; **Reg. No. 1,104,537** (INTERNATIONAL ASSOCIATION OF MACHINISTS OF AEROSPACE WORKERS AND DESIGN), **same; Reg. No. 1,107,599** (INTERNATIONAL ASSOCIATION OF MACHINISTS AND AEROSPACE WORKERS AND DESIGN), **same; Reg. No. 1,133,886** (INTERNATIONAL ASSOCIATION OF MACHINISTS AND AEROSPACE WORKERS AND DESIGN), **same, filed** Feb. 8, 1982, D.C., C.D. Calif. (Los Angeles), Doc. 82-0593R, *International Association of Machinists & Aerospace Workers* v. *International Automated Media, Inc.* Defendant is hereby enjoined from further infringing Plaintiff's trademarks. Filed May 3, 1982.

Reg. No. 652,617. (See Reg. No. 97,301.)

Reg. No. 652,959. (See Reg. No. 97,301.)

Reg. No. 676,630 (TRON), McGraw-Edison Co.; **Reg. No. 844,016, same, filed** July 9, 1982, D.C., N.D. Ill. (Chicago), Doc. 82 C 4286, *McGraw-Edison Co.* v. *Walt Disney Productions, et al.*

Reg. No. 676,630 (TRON), McGraw-Edison Co.; **Reg. No. 844,016, same; Reg. No. 1,135,217** (TRONS), Mego Corp., **filed** July 9, 1982, D.C., S.D.N.Y., Doc. 82-Civ-4490, *Walt Disney Productions* v. *McGraw-Edison Co.*

Reg. No. 681,254. (See Reg. No. 35,228.)

Reg. No. 714,826 (HOMETEL), Hometels of America Franchising, Inc.; **Reg. No. 1,137,050** (THE SUITE HOTEL DEAL), **same, filed** July 21, 1982, D.C. Colo. (Denver), Doc. 82-M-1235, *Hometels of America Franchising, Inc.* v. *Family Home-Tel.*

Reg. No. 718,413 (IGLOO), Igloo Corp.; **Reg. No. 961,185, same, filed** Jan. 26, 1982, D.C.N.J. (Newark), Doc. 82-211, *Igloo Corp.* v. *Igloo Line, Inc.* Consent order for permanent injunction filed July 15, 1982.

Reg. No. 743,273. (See Reg. No. 97,301.)

Reg. No. 761,091 (ALLSTATE), Allstate Insurance Co.; **Reg. No. 840,187, same; Reg. No. 1,122,022** (YOU'RE IN GOOD HANDS WITH ALLSTATE), **same, filed** June 23, 1982, D.C. Ariz. (Phoenix), Doc. 82-951-PHX-CAM, *Allstate Insurance Co.* v. *Howard D. Hanson, et al.* **Same, filed** July 1, 1982, D.C. Colo. (Denver), Doc. 82-K-1133, *Allstate Insurance Co.* v. *Allstate Realty of Colorado, Inc.* **Same, filed** July 12, 1982, D.C. Nev. (Reno), Doc. CV-R-82-243-ECR, *Allstate Insurance Co.* v. *All State Realty, Inc., et al.*

Reg. No. 809,055 (ORIGINAL HOT DOG SHOP), Original Hot Dog Shops, Inc., **filed** Dec. 22, 1981, D.C., W.D. Pa. (Pittsburgh), Doc. 81-2273, *Original Hot Dog Shops, Inc.* v. *Jiffy Foods Corp., et al.* Action dismissed without prejudice on Mar. 25, 1982.

Reg. No. 824,627. (See Reg. No. 97,301.)

Reg. No. 840,186 (ROYAL-GLOBE INSURANCE ETC. AND DESIGN), Royal Indemnity Co.; **Reg. No. 843,017** (ROYAL INSURANCE COMPANY, LIMITED AND DESIGN), **same; Reg. No. 888,464** (ROYAL GUARD), **same, filed** Mar. 15, 1982, D.C., N.D. Ga. (Atlanta), Doc. C82-527A, *Royal Indemnity Co., also known as Royal Insurance* v. *Royale Insurance Agency, Inc., doing business as Royal Insurance Agency.* Defendant is permanently enjoined from using "ROYALE," "ROYAL" or any other word confusingly similar to any company of ROYAL INSURANCE group in connection with the sale, distribution, etc. of insurance or insurance related services. Filed June 30, 1982.

Reg. No. 840,187. (See Reg. No. 761,091.)

Reg. No. 843,017. (See Reg. No. 840,186.)

Reg. No. 844,016. (See Reg. No. 676,630.)

Reg. No. 864,688 (DOCKTOR), Docktor Pet Centers, Inc.; **Reg. No., 908,817** (DOCKTOR PET CENTER AND DESIGN), **same; Reg. No. 919,625** (DOCKTOR'S), **same; Reg. No. 921,209** (DOCKTOR'S), **same; Reg. No. 1,070,868** (DOCKTOR AND DESIGN), **same; Reg. No. 1,071,042** (DOCKTOR AND DESIGN), **same; Reg. No. 1,072,409** (DOCKTOR PET CENTERS), **same; Reg. No. 1,097,167** (DOCKTOR AND DESIGN), **same; Reg. No. 1,103,578** (DOCKTOR), **same, filed** Mar. 16, 1982, D.C., C.D. Calif. (Los Angeles), Doc. 82-1286, *Docktor Pet Centers, Inc.* v. *Russo's Pets, Inc., doing business as World's Largest Pet Store.* Stipulation and order filed July 8, 1982.

Reg. No. 866,320 (M AND DESIGN), Mida Mfg. Co.; **Reg. No. 870,472** (MINI DOT AND DESIGN), **same; Reg. No. 870,473** (MICRO DOT AND DESIGN), **same; Reg. No. 874,246** (DOTS), **same, filed** July 26, 1982, D.C., S.D.N.Y., Doc. 82-Civ-4860 (JES), *Mida Mfg. Co.* v. *S. Axelrod Co., Inc.*

Reg. No. 870,472. (See Reg. No. 866,320.)

Reg. No. 870,473. (See Reg. No. 866,320.)

Reg. No. 874,246. (See Reg. No. 870,472.)

Reg. No. 888,464. (See Reg. No. 840,186.)

Reg. No. 904,499 (S-T-R-E-T-C-H & SEW), Stretch & Sew, Inc.; **Reg. No. 943,019** (S-T-R-E-T-C-H & SEW AND DESIGN), **same; Reg. No. 971,584** (S-T-R-E-T-C-H & SEW), **same; Reg. No. 981,389** (S-T-R-E-T-C-H AND SEW FABRICS AND DESIGN), **same; Reg. No. 1,049,850** (S-T-R-E-T-C-H & SEW FABRICS), **same, filed** July 15, 1982, D.C. Colo. (Denver), Doc. 82-JM-1188, *Stretch & Sew, Inc.* v. *Ronald E. Futrell.*

Reg. No. 905,126 (STAR TREK), Paramount Pictures Corp.; **Reg. No. 1,077,290, same; Reg. No. 1,095,937, same; Reg. No. 1,096,032, same; Reg. No. 1,096,135, same; Reg. No. 1,098,210, same; Reg. No. 1,160,868, same; Reg. No. 1,169,496, same, filed** July 22, 1982, D.C., S.D.N.Y., Doc. 82-4811 (MJL), *Paramount Pictures Corp.* v. *Dynacomp, Inc.*

Reg. No. 908,817. (See Reg. No. 864,688.)

Reg. No. 919,625. (See Reg. No. 864,688.)

Reg. No. 921,209. (See Reg. No. 864,688.)

Reg. No. 923,423 (BERKEBILE 2+2), The Berkebile Oil Co., Inc.; **Reg. No. 1,196,034** (2 +2), **same, filed** June 9, 1980, D.C.N.J. (Newark), Doc. 80-1649, *The Berkebile Oil Co., Inc.* v. *Rolling Auto Store, Inc., et al.*

Reg. No. 925,654 (WESTERN SIZZLIN AND DESIGN), Western Sizzlin Steak House Franchises, Inc.; **Reg. No. 945,982** (WESTERN SIZZLIN STEAK HOUSE AND DESIGN), **same; Reg. No. 1,049,143** (SIZZLIN), **same; Reg. No. 1,076,712** (FLAMEKIST), **same; Reg. No. 1,126,269** (WESTERN SIZZLIN STEAK HOUSE AND DESIGN), **same, filed** Oct. 27, 1980, D.C., M.D. Fla. (Orlando), Doc. 80-569-ORL-CIV-R, *Western Sizzlin Steak House* v. *Sheila Dyches Crosby.* Action dismissed with prejudice. Defendant to bear all cost. Filed Feb. 19, 1981.

Reg. No. 934,171 (LINENS 'N THINGS), E. W. Kalkin, Inc., **filed** June 28, 1982, D.C., N.D. Ill. (Chicago), Doc. 82C4021, *E. W. Kalkin, Inc.* v. *Linens & Things, Ltd.*

Reg. No. 943,019. (See Reg. No. 904,499.)

Reg. No. 945,982. (See Reg. No. 925,654.)

Reg. No. 961,185. (See Reg. No. 718,413.)

Reg. No. 963,828 (KWIK-KOPY AND DESIGN), Kwik-Kopy Corp.; **Reg. No. 1,088,878** (KWIK-KOPY), **same; Reg. No. 1,115,789** (KWIK-KOPY), **same, filed** July 23, 1982, D.C., N.D. Ill. (Chicago), Doc. 82 C 4610, *Kwik-Kopy Corp.* v. *Koffend's Kwik-Kopy, Inc.*

Reg. No. 971,584. (See Reg. No. 904,499.)

Reg. No. 977,015 (VIDAL SASSOON), Vidal Sasson, Inc.; **Reg. No. 986,872, same; Reg. No. 986,983, same; Reg. No. 1,065,108, same; Reg. No. 1,065,957, same filed** Nov. 7, 1979, D.C., S.D.N.Y., Doc. 79-Civ-6013 RWS, *Sasson Jeans, et al* v. *Vidal Sasson, Inc., et al.* Plaintiffs are permanently enjoined from directly or indirectly pronouncing or licensing pronunciation of the corporate, trade name or trademark "SASSON" so that the last syllable is pronounced as "soon". Filed Apr. 18, 1980.

Reg. No. 981,389. (See Reg. No. 904,499.)

Reg. No. 982,081 (RTR AND DESIGN), The Russian Tea Room, Inc.; **Reg. No. 1,005,635** (RUSSIAN TEA ROOM), **same, filed** Mar. 2, 1982, D.C., C.D. Calif. (Los Angeles), Doc. CV82-1060-RJK(Gx), *The Russian Tea Room, Inc.* v. *Varsham Corp., doing business as Russian Tea Room.* Consent judgment entered on Mar. 15, 1982.

Reg. No. 986,872. (See Reg. No. 977,015.)

Reg. No. 986,983. (See Reg. No. 977,015.)

Reg. No. 1,005,635. (See Reg. No. 982,081.)

Reg. No. 1,017,548 (SLEEPY-TIME), Celestial Seasonings, Inc.; **Reg. No. 1,114,293** (THE RED ZINGER), **same, filed** July 13, 1982, D.C. Colo. (Denver), Doc. 82-M-1173, *Celestial Seasonings, Inc.* v. *San Francisco Herb & Natural Food Co.*

Reg. No. 1,021,970 (WINDSOR), Windsor Industries, Inc.; **Reg. No. 1,094,278** (HOUSE OF WINDSOR), **same, filed** July 13, 1982, D.C., S.D.N.Y., Doc. 82-Civ-4547, *Windsor Industries, Inc.* v. *U.S. Diamond Imports, et al.*

Reg. No. 1,049,143. (See Reg. No. 925,654.)

Reg. No. 1,049,850. (See Reg. No. 904,499.)

Reg. No. 1,054,498 (THE CLEANING PEOPLE WHO CARE), Servicemaster Industries, Inc., **filed** July 29, 1982, D.C. Neb. (Omaha), Doc. 82-0-366, *Servicemaster Industries, Inc.* v. *Merry Maids, Inc.*

Reg. No. 1,054,788 (KING AND DESIGN), King Meat Packing Co., **filed** Feb. 19, 1982, D.C., C.D. Calif. (Los Angeles), Doc. 82 0825 WPG, *King Meat Packing Co.* v. *Apex Meat Co., et al.* Plaintiff is the owner of Reg. No. 1,054,788. Defendant is enjoined from further infringing Plaintiff's trademark. Filed June 18, 1982.

Reg. No. 1,065,108. (See Reg. No. 977,015.)

Reg. No. 1,065,957. (See Reg. No. 977,015.)

Reg. No. 1,070,359 (CANEI), Luigi Bosca & Figli, S.p.A., **filed** June 2, 1982, D.C., S.D.N.Y., Doc. 82-Civ-4335 RJW, *Luigi Bosca & Figli, S.p.A., et al* v. *Massie-Simms Associates, Inc., et al.*

Reg. No. 1,070,868. (See Reg. No. 864,688.)

Reg. No. 1,071,042. (See Reg. No. 864,688.)

Reg. No. 1,072,409. (See Reg. No. 864,688.)

Reg. No. 1,075,909 (CVA AND DESIGN), Connecticut Valley Mfg., Inc.; Pat. No. 4,065,866, Connecticut Valley Mfg., Inc., MUZZLE LOADING FIREARM, **filed** June 14, 1982, D.C. Conn. (Hartford), Doc. H-82-568, *Connecticut Valley Arms, Inc. & Connecticut Valley Mfg., Inc.* v. *Traditions, Inc., et al.*

Reg. No. 1,076,712. (See Reg. No. 925,654.)

Reg. No. 1,077,290. (See Reg. No. 905,126.)

Reg. No. 1,079,083 (JAZZERCISE), Judi Sheppard Missett; **Reg. No. 1,144,541** (JAZZ-ER-CISE AND DESIGN), **same, filed** Mar. 2, 1982, D.C., C.D. Calif. (Los Angeles), Doc. 82 1104, *Jazzercise, Inc.* v. *Gateway Records, et al.*

Reg. No. 1,085,017 (TMC), Advo System, Inc., **filed** Apr. 1, 1982, D.C., N.D. Ga. (Atlanta), Doc. C82-668A, *Advo System, Inc.* v. *Front Door Dispatch, Inc. of Kentucky, doing business as The TMC Co. Total Market Coverage.* Plaintiff is the owner of Reg. No. 1,085,017 which is valid. Defendant is enjoined from further infringing Plaintiff's trademark. Filed June 24, 1982.

Reg. No. 1,086,041 (CALVIN KLEIN), Calvin Klein Co., **filed** July 9, 1982, D.C., S.D. Fla. (Miami), Doc. 82-1401-CIV-SMA, *Calvin Klein Co., et al* v. *Dreams Unlimited, Inc., et al.*

Reg. No. 1,086,489 (MEMBERS ONLY), Europe Craft Imports, Inc., **filed** July 7, 1982, D.C., C.D. Calif. (Los Angeles), Doc. CV-82-3325-IH, *Europe Craft Imports, Inc.* v. *Valentino's Fashions, et al.*

Reg. No. 1,088,878. (See Reg. No. 963,828.)

Reg. No. 1,092,544 (CUTTERY), Creative Hairdressers, Inc.; **Reg. No. 1,095,509** (THE HAIR CUTTERY), **same, filed** May 28, 1982, D.C. Md. (Baltimore), Doc. B-82-1438, *Creative Hairdressers, Inc., doing business as The Hair Cuttery* v. *Dana Elmo, doing business as Clarks Lane Hair Cuttery.* Plaintiff is the owner of Reg. Nos. 1,092,544 and 1,095,509. Defendant is permanently enjoined from further infringing Plaintiff's trademarks. Filed July 16, 1982.

Reg. No. 1,094,278. (See Reg. No. 1,021,970.)

Reg. No. 1,095,509. (See Reg. No. 1,092,544.)

Reg. No. 1,095,937. (See Reg. No. 905,126.)

Reg. No. 1,096,032. (See Reg. No. 905,126.)

Reg. No. 1,096,110 (JORDACHE), Jordache Enterprises, Inc., **filed** July 14, 1982, D.C., S.D.N.Y., Doc. 82-Civ-4578 (TPG), *Jordache Enterprises, Inc., et ano* v. *Panaria International, Inc., et al.* **Same, filed** Aug. 3, 1981, D.C. Md. (Baltimore), Doc. N-81-1947, *Jordache Enterprises, Inc., etc.* v. *J & C Wholesalers, etc., et al.* Plaintiff is the owner of Reg. No. 1,096,110, which is valid and subsisting. Defendants are permanently enjoined from further infringing Plaintiff's trademark. Filed July 28, 1982. **Same, filed** July 28, 1982, D.C., S.D.N.Y., Doc. 82-Civ-4908 WK, *Jordache Enterprises, Inc.* v. *Columbia Sportswear, Inc., et al.* Action dismissed without prejudice and without costs to either party on July 30, 1982. **Same, filed** Aug. 3, 1982, D.C., S.D.N.Y., Doc. 82-Civ-5035 MEL, *Jordache Enterprises, Inc.* v. *Hanil Import & Export, Inc., also known as K.I.C. Trading, Inc.*

Reg. No. 1,096,135. (See Reg. No. 905,126.)

Reg. No. 1,097,167. (See Reg. No. 864,688.)

Reg. No. 1,098,210. (See Reg. No. 905,126.)

Reg. No. 1,103,578. (See Reg. No. 864,688.)

Reg. No. 1,104,537. (See Reg. No. 646,221.)

Reg. No. 1,107,599. (See Reg. No. 646,221.)

Reg. No. 1,113,392 (ABM), ABM Office Supply Co., Inc., **filed** July 12, 1982, D.C., M.D. Fla. (Tampa), Doc. 82-0770 CIV T H, *ABM Office Supply Co., Inc.* v. *Leslie J. Kramer, et al.*

Reg. No. 1,114,293. (See Reg. No. 1,017,548.)

Reg. No. 1,115,789. (See Reg. No. 963,828.)

Reg. No. 1,121,614 (RADIO CITY MUSIC HALL AND DESIGN), Rockefeller Center, Inc.; **Reg. No. 1,121,615** (RADIO CITY MUSIC HALL), **same, filed** July 27, 1982, D.C., S.D.N.Y., Doc. 82-Civ-4880 (MEL), *Rockefeller Center, Inc.* v. *Penucci, Inc.*

Reg. No. 1,121,615. (See Reg. No. 1,121,614.)

Reg. No. 1,122,022. (See Reg. No. 761,091.)

Reg. No. 1,122,403 (VENT), Corona Hair Net Corp., **filed** Mar. 8, 1982, D.C., C.D. Calif. (Los Angeles), Doc. CV-82 1141 WMB, *Corona Hair Net Corp.* v. *Devon, et al.*

Reg. No. 1,125,658 (BIG BEN'S), Integrity Entertainment Corp., **filed** Feb. 9, 1982, D.C., E.D. Mich. (Ann Arbor), Doc. 82-60037, *Integrity Entertainment Corp.* v. *WHR, Inc.*

Reg. No. 1,126,269. (See Reg. No. 925,654.)

Reg. No. 1,133,886. (See Reg. No. 646,221.)

Reg. No. 1,135,217. (See Reg. No. 676,630.)

Reg. No. 1,137,050. (See Reg. No. 714,826.)

Reg. No. 1,144,541. (See Reg. No. 1,079,083.)

Reg. No. 1,160,868. (See Reg. No. 905,126.)

Reg. No. 1,161,351 (FREEPORT FLING AND DESIGN), Wainwright's Travel Service, Inc., **filed** July 23, 1982, D.C., E.D. Pa. (Philadelphia), Doc. 82-3201, *Wainwright's Travel Services, Inc.* v. *Hawaiian Fling, Inc., et al.*

Reg. No. 1,164,917 (CENTURY 21 AND DESIGN), Century 21 Real Estate Corp., **filed** July 9, 1982, D.C. Md. (Baltimore), Doc. B-82-1937, *Century 21 Real Estate Corp., etc.* v. *Century Associates, Inc., etc.,*

Reg. No. 1,169,496. (See Reg. No. 905,126.)

Reg. No. 1,170,332 (SV AND DESIGN), Englishtown Sportswear Ltd., **filed** Feb. 17, 1982, D.C., C.D. Calif. (Los Angeles), Doc. 82 0765 CCH, *Englishtown Sportswear Ltd.* v. *Tiffany Jade, Inc., et al.*

Reg. No. 1,182,575 (LANDMARK), Signal Landmark, Inc., **filed** July 14, 1982, D.C., C.D. Calif. (Los Angeles), Doc. 82 3439, *Signal Landmark, Inc.* v. *William J. Lindstrom, Inc., doing business as Landmark Associates.*

Reg. No. 1,185,873 (UCLA AND DESIGN), The Regents of the University of California; **Reg. No. 1,185,874** (UCLA), **same, filed** July 1, 1982, D.C., C.D. Calif. (Los

Angeles), Doc. 82 3267, *The Regents of the University of California* v. *Champion Products, Inc.*

Reg. No. 1,185,874. (See Reg. No. 1,185,873.)

Reg. No. 1,195,878 (DRYCLEAN-U.S.A. AND DESIGN), Dryclean U.S.A., Inc., **filed** Nov. 12, 1980, D.C., S.D. Tex. (Houston), Doc. H-80-2553, *Dryclean U.S.A., Inc.* v. *Dean Lee.*

Reg. No. 1,195,913 (PARROT JUNGLE), Parrot Jungle, Inc., **filed** Jan. 9, 1981, D.C., S.D.N.Y., Doc. 81-Civ-0100, *Parrot Jungle, Inc. (Fla.)* v. *Parrot Jungle, Inc. (N.Y.).*

Reg. No. 1,196,034. (See Reg. No. 923,423.)

Reg. No. 1,196,770 (FOLIO AND DESIGN), Saks & Co.; **Reg. No. 1,197,035, same, filed** Aug. 20, 1980, D.C., S.D.N.Y., Doc. 80-Civ-4800 (LPG), *Saks & Co., et al* v. *FHI Ffolio, Inc.* Plaintiff is the owner of Reg. Nos. 1,196,770 and 1,197,035 which are valid. Defendant is permanently enjoined from further infringing Plaintiff's trademarks. Filed Mar. 26, 1981.

Reg. No. 1,197,035. (See Reg. No. 1,196,770.)

Reg. No. 1,201,179 (VITTORIO RICCI), ETF Enterprises, Inc., **filed** Aug. 24, 1979, D.C., S.D.N.Y., Doc. 79-Civ-4489 LWP, *ETF Enterprises, Inc.* v. *Nina Ricci S.A.R.L.*

Patents Available for License or Sale

Re. 30,930. GLAZING STRIP AND METHOD. *Martine Tractenburg,* 14 Candlewood La., Avon, Ct. 06001.

3,392,127. COMPOSITION OF POLYESTER RESIN AND SODIUM SILICATE. Inquires should be directed to: *Michael I, Wofson, Blum, Kaplan, Friedman, Silberman & Beran,* 730 Third Ave. New York, N.Y. 10017. (212) 867–2200.

3,676,664. WORK AND SAFETY LIGHT. *P. Corvetti,* 12 Waverly Pl., Rockville Centre, N.Y. 11570.

4,064,999. ADJUSTABLE BUILDING PANEL SCAFFOLD. *Simon Young,* 520 Railroad St., Mamou, La. 70554.

4,136,764. MOTHER ALICE'S BREAD VENDING MACHINE. *Alice Johnson,* 8650 Belford Ave. #1, Los Angeles, Ca. 90045, (213) 645–4476.

4,154,444. GAME BOARD. *Nathan D. Grenell,* 815 Hanson St., Whitehall, Mich. 49461, (616) 894–6350.

4,251,950. ELECTRONIC SILVICIDAL APPARATUS FOR KILLING BRUSH. *Doyle Nutt,* P.O. Box 693, Fayetteville, Ariz. 72702.

4,255,697. CASH REGISTER POWER SUPPLY SYSTEM. *James A. Oliff, Stevens, Davis, Miller & Mosher,* 1911 Jefferson Davis Hwy., Suite 600, Crystal Mall 1, Arlington, Va., 22202, 703–920–8900.

4,275,536. WALL ELEMENT FOR A CONSTRUCTION WALL. *Karl H. Vahlbrauk,* Kriegerweg 1 D–3353 Bad Gandersheim, Germany. Correspondence to: *Michael J. Striker,* 360 Lexington Ave., New York, N.Y. 10017.

4,293,421. METHOD & EQUIPMENT FOR A WRAP-AROUND UPFLOW SUBMERGED ANAEROBIC. *A. W. Green,* P. E. Civil/Sanitary, 7310–85th St., N. W., Gig Harbor, Wash., 98335.

4,299,268. AUTOMATICALLY CONTROLLED CASTING PLANT *James A. Oliff, Stevens, Davis, Miller, & Mosher,* 1911 Jefferson Davis Hwy., Suite 600, Crystal Mall 1, Arlington, Va. 22202, 703–920–8900.

4,316,594. FORMWORK PANEL FOR CONCRETE WALLS. Correspondence to: *Murray Schaffer,* 875 Ave. of the Americas, New York, N.Y. 10001.

4,317,457. ELECTROCONDUCTING CAST FORMING A CUTANEOUS ELECTRODE FOR APPLYING ELECTRICAL CURRENTS TO THE HUMAN BODY FOR THERAPEUTIC OR AESTHETIC TREATMENT AND METHOD OF USING SUCH ELECTROCONDUCTING CAST. *Jacqueline Guillot.* Correspondence to: *Neil F. Greenblu,* 701 South 23rd St., Arlington, Va. 22202.

4,319,748. SPORT TRAINING DEVICE. *Efim Alter* 7533 Horrocks, St., 1st Floor, Philadelphia, Pa. 19152.

4,322,483. METHOD OF UTILIZING EMPTY ALUMINUM BEVERAGE CANS TO PROVIDE AN ENERGY SOURCE. *Harold S. Tune,* Salu/Cell, P.O. Box 1174, Morro Bay, Ca. 93442.

4,328,662. MULTIPLY TWISTING MACHINE FOR HIGH SPEED HELICAL WINDING OF UNITARY STRANT TO FORM A CABLE. *Pierre Bretegnier, et al.* Correspondence to: *Neil F. Greenblum,* 701 South 23rd St., Arlington, Va. 22202, (703) 521–7800.

4,337,602. ENCLOSURE. *Richard P. King* P.O. Box 1037, Wappingers Falls, N.Y., 12590.

4,341,730. BEAM DANCER FUSION DEVICE. *Maier Solar Developments, Henry B. Maier,* 6 Sealey Ave., 3K, Hempstead, N.Y. 11550.

The RCA Corp. offers to grant non-exclusive licenses on reasonable terms and conditions under the patents listed below. Inquiries respecting licenses under RCA patents should be addressed to RCA Corp., Sr. Vice President, Licensing, 30 Rockefeller Plz., New York, N.Y. 10020.

D. 264,712. VIDEO DISC PLAYER.

D. 264,713. VIDEO DISC PLAYER.

4,332,077. METHOD OF MAKING ELECTRICALLY PROGRAMMABLE CONTROL GATE INJECTED FLOATING GATE SOLID STATE MEMORY TRANSISTOR.

4,332,841. MOLD PREPARATION METHOD.

4,332,999. METHOD FOR MACHINING A WORKPIECE WITH A BEAM OF RADIANT ENERGY ASSISTED BY A CHEMICALLY-REACTIVE GAS.

4,333,031. PHOTOMULTIPLIER TUBE HAVING DIRECTIONAL ALKALI METAL VAPOR EVAPORATION MEANS.

4,333,051. METHOD AND APPARATUS FOR DETERMINING MINORITY CARRIER DIFFUSION LENGTH IN SEMICONDUCTORS.

4,333,057. DIFFERENTIAL-INPUT COMPLEMENTARY FIELD-EFFECT TRANSISTOR AMPLIFIER.

4,333,058. OPERATIONAL AMPLIFIER EMPLOYING COMPLEMENTARY FIELD-EFFECT TRANSISTORS.

4,333,099. USE OF SILICIDE TO BRIDGE UNWANTED POLYCRYSTALLINE SILICON P-N JUNCTION.

4,333,107. JAM-RESISTANT TV SYSTEM.

4,333,174. TRANSDUCER DISPLACEMENT APPARATUS FOR VIDEO DISC PLAYER.

4,333,592. APPARATUS FOR HANDLING DEFORMABLE COMPONENTS SUPPORTED IN A MATRIX.

4,334,196. AMPLIFIER USING LATERAL AND VERTICAL TRANSISTORS.

4,334,198. BIASING OF TRANSISTOR AMPLIFIER CASCADES.

4,334,237. ADAPTIVE AMPLITUDE AVERAGING FOR WEIGHTING QUANTIZING NOISE.

4,334,267. FREE-RUNNING PUSH-PULL INVERTER.

4,334,324. COMPLEMENTARY SYMMETRY FET FREQUENCY CONVERTER CIRCUITS.

4,334,347. METHOD OF FORMING AN IMPROVED GATE MEMBER FOR A GATE INJECTED FLOATING GATE MEMORY DEVICE.

4,334,427. TESTING THE CONDITION OF A TURBOCHARGER.

4,334,829. SPUTTER-ION PUMP FOR USE WITH ELECTRON TUBES HAVING THORIATED TUNGSTEN CATHODES.

4,334,849. APPARATUS FOR MOLDING A RECORDED DISC.

4,334,945. METHOD AND DEVICE FOR SEPARATING PARTS FROM A STRIP OF MATERIAL.

4,334,948. METHOD OF AN APPARATUS FOR GROWING CRYSTAL RIBBON.

4,335,332. FOCUS MESH STRUCTURE AND BIASING TECHNIQUE FOR FLAT PANEL DISPLAY DEVICES.

4,335,335. TELEVISION RECEIVER HIGH VOLTAGE PROTECTION CIRCUIT.

4,335,360. CLASS AB PUSH-PULL AMPLIFIERS.

4,335,366. COLOR TELEVISION DISPLAY SYSTEM HAVING IMPROVED CONVERGENCE.

4,335,394. CROSSTALK FILTERING ARRANGEMENT WITH VARIABLE FREQUENCY FILTERING TO REMOVE EFFECTS OF FM CARRIER.

4,335,401. RAPID CORRELATION OF RECORDED INFORMATION.

4,335,402. INFORMATION TRANSMISSION DURING FIRST-EQUALIZING PULSE INTERVAL IN TELEVISION.

4,335,408. DIGITAL TRACKING SYSTEM.

4,335,411. LENGTH COUNTER FOR WEB TRANSPORT SYSTEM.

4,335,412. TRIAX SAFETY CIRCUIT.

4,335,470. AUDIO DE-EMPHASIS CIRCUIT.

4,335,544. STONE-POSITIONING APPARATUS AND METHOD.

4,335,926. METHOD FOR VAPORIZING GETTER MATERIAL IN A SUCCESSION OF CATHODE-RAY TUBES.

4,336,540. RADAR SYSTEM.

4,336,550. CMOS DEVICE WITH SILICIDED SOURCES AND DRAINS AND METHOD.

4,336,555. VIDEO ACCESSORY HAVING CHANNEL IDENTIFIER.

4,336,615. LINEAR LOADING FOR PWM FILTER.

4,337,423. DUAL OUTPUT SWITCHING CIRCUIT.

4,337,478. COMPOSITE TIMING SIGNAL GENERATOR WITH PREDICTABLE OUTPUT LEVEL.

4,337,522. MEMORY CIRCUIT WITH MEANS FOR COMPENSATING FOR INVERSION OF STORED DATA.

4,337,536. FLYLEAD FOR A VIDEO DISC STYLUS CARTRIDGE.

General Electric Co. is prepared to grant non-exclusive licenses under the following patents upon reasonable terms to domestic manufacturers.

Application for license may be addressed to: Patent Counsel, Industrial and Marine Steam Turbine Division, General Electric Co., 1100 Western Ave., Lynn, Mass. 01910.

4,323,109. OPEN CYCLE HEAT PUMP SYSTEM AND PROCESS FOR TRANSFERRING HEAT.

Applications for license may be addressed to: Patent Counsel, General Electric Co., Mobile Radio Products Department, Mountain View Rd., Lynchburg, Va. 24502.

4,321,481. RECURSIVE CHARGE TRANSFER FILTER WITH A TRANSMISSION ZERO AT ZERO FREQUENCY.

Applications for license may be addressed to: Patent Counsel, Gas Turbine Division, General Electric Co., 1 River Rd., Bldg. 500, Room 218, Schenectady, N.Y. 12345.

4,328,285. METHOD OF COATING A SUPERALLOY SUBSTRATE, COATING COMPOSITIONS, AND COMPOSITES OBTAINED THEREFROM.

Applications for license may be addressed to: Group Patent Counsel, Major Appliance Business Group, General Electric Co., Appliance Park, Louisville, Ky. 40225.

Des. 260,226. WALL MOUNTABLE MICROWAVE OVEN.

3,312,087. AUTOMATIC WASHING MACHINE.

3,436,838. IMPROVED DRYER CONTROL.

3,565,553. HERMETIC COMPRESSOR UNIT.

3,602,406. ICE DISPENSER FOR A HOUSEHOLD REFRIGERATOR.

3,602,441. COMBINATION ICE CUBE AND CRUSHED ICE DISPENSER.

3,639,177. FERROUS METAL SUBSTRATE WITH DENSE, BLACK GLOSSY OXIDE COATING AND PROCESS PREPARATION.

3,640,088. HOUSEHOLD REFRIGERATOR INCLUDING EXTERIOR ICE SERVICE.

3,680,328. AIR CONDITIONER.

3,736,916. SELF-CLEANING OVEN DOOR STRUCTURE.

3,757,544. CENTRIFUGALLY RESPONSIVE DISPENSER FOR WASHING MACHINE.

3,766,973. CONTROL CIRCUIT FOR HEATING AND COOLING APPARATUS.

3,767,328. ROTARY COMPRESSOR WITH CAPACITY MODULATION.

3,785,166. ROOM AIR CONDITIONER FROST PROTECTION WITH BIMETAL CONTROL THERMOSTAT.

3,805,562. TREATING AGENT DISPENSER.

3,807,419. DISHWASHER HAVING MEANS FOR COLLECTING AND REMOVING FOOD SOIL.

3,820,351. AIR CONDITIONER GRILLE ASSEMBLY.

3,854,219. ELECTRONIC DRYER.

3,861,769. DISHWASHER RACK.

3,871,443. SAFETY CONTROL FOR A REMOTE CONTROL SYSTEM.

3,902,331. ICE DISPENSING SYSTEM OF A HOUSEHOLD REFRIGERATOR.

3,937,641. METHOD OF ASSEMBLING ADHESIVE JOINT.

3,967,489. METHOD OF FORMING CONSTRUCTION IN TUBING.

3,975,920. AIR CONDITIONER DAMPER CONTROL.

4,013,870. TERMINAL BLOCK MOUNTING FOR A PLUG-IN SURFACE HEATING UNIT.

Re. 30,745. REVERSE CYCLE HEAT PUMP CIRCUIT (Reissue of 4,057,977).

4,059,325. TERMINAL PROTECTION SHIELD.

4,065,027. HINGE ARRANGEMENT FOR ROOM AIR CONDITIONER ACCESS.

4,066,094. COMBINATION DRAIN SUMP AND AIR PRESSURE CHAMBER FOR AUTOMATIC CLOTHES WASHING MACHINE.

4,069,425. FULL-TIME FLOOD PROTECTION CONTROL FOR DISHWASHER.

4,069,545. DOOR CONTROL DEVICE WITH CLOSURE REGULATOR.

4,070,204. LOW-ENERGY DISHWASHER.

4,102,391. HEAT PUMP FROST CONTROL SYSTEM.

4,149,654. DISHWASHER MULTIPLE ADDITIVE DISPENSING APPARATUS.

4,149,655. DISHWASHER ADDITIVE DISPENSER HAVING A TIMER CONTROLLED CAM MECHANISM.

4,149,656. DISHWASHER ADDITIVE DISPENSING APPARATUS HAVING A MOVABLE MEASURING CUP.

4,149,657. DISHWASHER ADDITIVE DISPENSING APPARATUS.

4,150,558. METHOD FOR FORMING A VARIABLE RESTRICTOR.

4,164,197. LIQUID LEVEL INDICATING DEVICE.

4,173,871. REFRIGERATION APPARATUS DEMAND DEFROST CONTROL SYSTEM AND METHOD.

4,175,409. CLOTHES WASHING MACHINE.

4,175,617. SKEWED TURN COILED TUBE HEAT EXCHANGER FOR REFRIGERATOR EVAPORATORS.

4,178,765. MEANS FOR CAUSING THE ACCUMULATION OF REFRIGERANT IN A CLOSED SYSTEM.

4,179,821. DISHWASHER VENT ARRANGEMENT.

4,181,773. PROCESS FOR RENDERING SURFACES PERMANENTLY WATER WETTABLE AND NOVEL PRODUCTS THUS-PRODUCED.

4,184,342. VARIABLE RESTRICTOR FOR A REFRIGERATION SYSTEM.

4,191,245. HEAT DISSIPATING MOTOR MOUNTING ARRANGEMENT.

4,313,044. SLOT CONFIGURATION FOR CHOKE SEAL.

4,316,069. MICROWAVE OVEN EXCITATION SYSTEM.

4,317,516. DEVICE AND METHOD FOR SHIPPING APPLIANCES.

4,318,165. RESONANT-FLYBACK POWER SUPPLY WITH FILAMENT WINDING FOR MAGNETRON AND THE LIKE LOADS.

4,319,109. CENTERED UTENSIL SENSOR FOR INDUCTION SURFACE UNITS.

4,320,636. MECHANISM FOR ORBITING WASHER.

4,321,577. INTEGRAL HUMIDITY SENSOR/HEATER CONFIGURATIONS.

4,321,809. WASHING MACHINE.

4,324,968. MICROWAVE OVEN CAVITY EXCITATION SYSTEM PROVIDING CONTROLLED ELECTRIC FIELD SHAPE FOR UNIFORMITY OF ENERGY DISTRIBUTION.

4,325,178. SCREW ANCHORING DEVICE AND METHOD.

4,326,390. APPARATUS AND METHOD FOR THAWING FROZEN FOOD.

4,328,600. WASHING MACHINE.

4,329,557. MICROWAVE OVEN WITH IMPROVED ENERGY DISTRIBUTION.

4,329,859. BASKET MOUNTING ARRANGEMENT FOR A WASHING MACHINE.

4,332,142. HOUSEHOLD REFRIGERATOR INCLUDING ANTISWEAT HEATER CONTROL CIRCUIT.

4,332,152. WASHING MACHINE.

4,333,323. WASHING MACINE.

4,333,588. ICE DISPENSER ASSEMBLY.

4,334,132. SWITCH WITH SHAFT POSITIONING ARRANGEMENT.

4,334,135. UTENSIL LOCATION SENSOR FOR INDUCTION SURFACE UNITS.

4,334,147. POWER CONTROL FOR APPLIANCE USING HIGH INRUSH CURRENT ELEMENT.

4,336,434. MICROWAVE OVEN CAVITY EXCITATION SYSTEM EMPLOYING CIRCULARLY POLARIZED BEAM STEERING FOR UNIFORMITY OF ENERGY DISTRIBUTION AND IMPROVED IMPEDANCE MATCHING.

4,192,564. LOAD EQUALIZING SUPPORT SYSTEM.

4,193,275. AGITATOR MECHANISM FOR CLOTHES WASHING MACHINE.

4,196,330. COMBINATION OVEN FULLY UTILIZING THE CURRENT-SUPPLYING CAPABILITY OF A POWER SOURCE.

4,196,628. PORTABLE PSYCHROMETRIC TEST APPARATUS AND METHOD FOR AIR CONDITIONING EQUIPMENT.

4,198,222. CONDENSATION PREVENTING ARRANGEMENT FOR INTERIOR OF A HOUSEHOLD REFRIGERATOR.

4,198,553. COMBINATION OVEN FULLY UTILIZING THE CAPABILITY OF A LIMITED POWER SOURCE.

4,200,829. CIRCUIT FOR PROTECTING INDUCTION MOTORS.

4,204,204. ON/OFF SWITCH ARRANGEMENT FOR A TOUCH CONTROL BAR GRAPH DEVICE.

4,205,533. REFRIGERATOR HAVING A CONTROL INDICATOR OPTIC ARRANGEMENT AND METHOD.

4,207,760. VANE ARRANGEMENT FOR CLOTHES WASHING MACHINE.

4,209,999. HOUSEHOLD REFRIGERATOR WITH THROUGH-THE-DOOR ICE SERVICE.

4,244,637. TRACK ASSEMBLY.

4,262,532. PRESSURE AND TEMPERATURE SENSOR.

4,282,422. POWER CONTROL FOR APPLIANCE USING MULTIPLE HIGH INRUSH CURRENT ELEMENTS.

4,290,052. CAPACITIVE TOUCH ENTRY APPARATUS HAVING HIGH DEGREE OF PERSONAL SAFETY.

4,290,481. ELECTRONIC THERMOSTATIC CONTROL FOR A HEAT/COOL ROOM AIR CONDITIONING SYSTEM.

4,291,303. TOUCH PAD AND DISPLAY TUBE CIRCUITRY.

4,296,297. DRIVE ARRANGEMENT FOR MICROWAVE OVEN MODE STIRRER.

4,297,852. REFRIGERATOR DEFROST CONTROL WITH CONTROL OF TIME INTERVAL BETWEEN DEFROST CYCLES.

4,298,789. OVEN HAVING A CAVITY HEATED BY AT LEAST ONE MONOLITHIC INTEGRATED HEAT SOURCE.

4,301,347. FEED SYSTEM FOR MICROWAVE OVEN.

4,301,509. METHOD FOR COOKING MEAT OR POULTRY IN THERMAL OVEN.

4,301,829. FLOOD CONTROL FOR A DISHWASHER.

4,306,423. FLEXIBLE TRAY TYPE ICE MAKER.

4,306,757. REFRIGERATOR INCLUDING THROUGH-THE-DOOR ICE SERVICE.

4,311,351. REFRIGERATOR CABINET CONSTRUCTION.

Applications for license may be addressed to: Patent Counsel Aerospace Electronic Systems Department General Electric Co. 901 Broad St. MD 410 Utica, N.Y. 13503.

U.S. 4,178,519. CHARGE TRANSFER APPARATUS.

U.S. 4,178,522. INFRARED DETECTION APPARATUS.

U.S. 4,182,010. ELECTRON BEAM MATRIX DEFLECTOR AND METHOD OF FABRICATION.

U.S. 4,185,318. METHOD AND APPARATUS FOR PROVIDING SURFACE CHARGE MEMORIES.

U.S. 4,196,373. ELECTRON OPTICS APPARATUS.

U.S. 4,197,144. METHOD FOR IMPROVING WRITING OF INFORMATION IN MEMORY TARGETS.

U.S. 4,212,082. METHOD FOR FABRICATION OF IMPROVED STORAGE TARGET AND TARGET PRODUCED THEREBY.

U.S. 4,217,586. CHANNEL ESTIMATING REFERENCE SIGNAL PROCESSOR FOR COMMUNICATION SYSTEM ADAPTIVE ANTENNAS.

U.S. 4,218,635. ELECTRON GUN WITH STATIONARY BEAM DURING BLANKING.

U.S. 4,224,552. IMPROVED MAGNETIC FINE DEFLECTION SYSTEM FOR MATRIX LENS ELECTRON OPTICS.

U.S. 4,240,089. LINEARIZED CHARGE TRANSFER DEVICES.

U.S. 4,254,383. INVERTED MICROSTRIP PHASE SHIFTER.

U.S. 4,288,858. INVERSE TWO-DIMENSIONAL TRANSFORM PROCESSOR.

U.S. 4,293,920. TWO DIMENSIONAL TRANSFORM PROCESSOR.

U.S. 4,300,108. ELECTRICAL ATTENUATOR.

U.S. 4,305,288. TEMPERATURE SENSING CIRCUIT.

U.S. 4,326,269. ONE BIT MEMORY FOR BIPOLAR SIGNALS.

Applications for license may be addressed to: Division Patent Counsel Power Delivery Division, General Electric Co. 6901 Elmwood Ave., Philadelphia, Pa. 19142.

Re. 28,604. GAS SHIELD FOR LOAD-BREAK CABLE TERMINATIONS. Patented on Nov. 4, 1975 on an application of E. J. Kotski.

3,955,874. SHIELDED POWER CABLE SEPARABLE CONNECTOR MODULE HAVING A CONDUCTIVELY COATED INSULATING ROD FOLLOWER. Patented on May 11, 1976 on an application of V. J. Boliver.

3,982,812. POWER CABLE SEPARABLE CONNECTOR HAVING GASKET MEANS FOR RESTRICTING THE FLOW OF ARC-GENERATED GASES THEREFROM. Patented on Sept. 28, 1976 on an application of V. J. Boliver.

3,997,235. SHIELDED POWER CABLE SEPARABLE CONNECTOR MODULE WITH SNUFFER LINER HAVING REDUCED ARC-QUENCHING GAS GENERATING PORTION. Patented on Dec. 14, 1976 on an application of V. J. Boliver.

4,119,358. ELECTRICAL CONNECTOR SWITCHING MODULE. Patented on Oct. 10, 1978 on an application of H. N. Tachick, et al.

4,170,394. HIGH VOLTAGE SEPARABLE CONNECTOR SYSTEM WITH MODIFIED DWELL POSITION. Patented on Oct. 9, 1979 on an application of G. V. Conway.

4,199,213. METHOD OF CONSTRUCTING AN ELECTRICAL CONNECTOR SWITCHING MODULE. Patented on Apr. 22, 1980 on an application of H. N. Tachick.

4,300,181. COMMUTATION CIRCUIT FOR AN HVDC CIRCUIT BREAKER. Patented on Nov. 10, 1981 on an application of W. J. Premerlani.

Applications for license may be addressed to: Patent Counsel, Transportation Systems Business Operations, General Electric Co., 2901 East Lake Rd., Erie, Pa. 16531.

Re. 29,579. DUAL SOURCE AUXILIARY POWER SUPPLY.

3,999,111. GATING SIGNAL CONTROL FOR A PHASE-CONTROLLED RECTIFIER CIRCUIT.

3,566,010. HEAVY-DUTY INSULATING SUPPORT CONNECTOR.

3,572,968. TURBINE BUCKET COVER.

3,652,881. GENERATOR VENTILATION DOME AND COOLER CASING CONSTRUCTION.

3,693,036. LIQUID COOLED SERIES LOOP CONNECTOR.

3,808,489. COOLED FLUX SHIELD FOR GENERATOR TERMINAL BOX.

3,864,803. CARTRIDGE BRUSH HOLDER.

4,030,019. STATIC INVERTER CONTROL CIRCUIT.

4,080,845. SHAPED DISC FLYWHEEL.

4,032,874. REACTOR CORE.

4,095,154. REGENERATIVE BRAKING SYSTEM FOR A CHOPPER CONTROLLED ELECTRIC TRACTION MOTOR.

4,102,221. CROSS-PLY COMPOSITE FLYWHEEL.

4,256,982. ELECTRIC PULSE SHAPING CIRCUIT.

4,256,983. VOLTAGE-TO-FREQUENCY CONVERTER HAVING A CONSTANT FREQUENCY MODE OF OPERATION.

4,284,936. CHOPPER TYPE PROPULSION SYSTEM WITH LOW SPEED ELECTRICAL BRAKING CAPABILITY FOR TRACTION VEHICLES.

4,284,938. CHOPPER WITH ADAPTIVE ENERGY COMMUTATION.

4,301,899. SYSTEM FOR AUTOMATICALLY CONTROLLING AN ELECTRICALLY PROPELLED TRACTION VEHICLE TRAVERSING A GAP IN WAYSIDE SOURCE OF POWER.

4,321,478. AUXILIARY POWER SUPPLY WITH KINETIC ENERGY STORAGE.

4,322,668. POWER CONTROL OF A STALLING MOTOR.

Patents Withdrawn from Availability for Licence or Sale

General Electric Co., Large Steam Turbine-Generator Division, Schenectady, N.Y., hereby withdraws the following patents from the Register of Patents Available for Licensing.

3,118,015. BALANCED TRANSPOSITION FOR STRANDED CONDUCTOR WITH ASYMMETRICALLY DISPOSED STRAND ENDS.

3,135,888. STRUCTURE FOR RETAINING GENERATOR END WINDINGS.

3,158,770. ARMATURE BAR VIBRATION DAMPING ARRANGEMENT.

3,225,231. GAS COOLED END WINDING FOR DYNAMOELECTRIC MACHINE ROTOR.

3,292,025. DYNAMOELECTRIC MACHINE ROTOR END WINDING.

3,307,252. METHOD FOR PROVIDING A NARROW FLANGE ON A LARGE ROTOR FORGING.

3,348,081. GAP PICKUP ROTOR WITH GAS SEGREGATING BAFFLES.

3,349,264. FIELD COIL CONNECTION FOR FOUR-POLE ROTORS.

3,387,155. REMOVABLE BRUSH MAGAZINE ARRANGEMENT.

3,408,517. MULTIPLE CIRCUIT WINDING PATTERNS FOR POLYPHASE DYNAMOELECTRIC MACHINES.

3,432,708. REMOVABLE BRUSH ASSEMBLY.

3,437,859. WINDING SUPPORT STRUCTURE FOR A DYNAMOELECTRIC MACHINE.

3,461,330. DYNAMOELECTRIC MACHINE STATOR CORE BAFFLE.

3,476,964. MULTIPLE CIRCUIT ARMATURE WINDING FOR POLYPHASE DYNAMOELECTRIC MACHINES.

3,531,667. LOW FREQUENCY STATOR FRAMES FOR DYNAMOELECTRIC MACHINES.

3,564,391. ROTATING ALTERNATING CURRENT GENERATOR SYSTEM.

PATENT NOTICES

Certificates of Correction for the Week of Sept. 21, 1982

Re. 30,924	4,296,323	4,327,001	4,335,730
D. 262,821	4,297,865	4,327,009	4,335,888
D. 264,367	4,300,912	4,327,046	4,335,937
D. 265,667	4,301,057	4,327,092	4,335,983
3,856,631	4,301,188	4,327,213	4,336,118
3,945,515	4,303,074	4,328,121	4,336,639
3,972,415	4,303,646	4,328,125	4,336,759
3,997,053	4,305,657	4,328,227	4,336,905
4,010,551	4,305,729	4,328,602	4,337,050
4,049,141	4,307,250	4,329,023	4,337,062
4,091,090	4,307,379	4,329,201	4,337,138
4,100,130	4,309,135	4,329,218	4,337,261
4,122,304	4,309,498	4,329,328	4,337,481
4,142,203	4,311,640	4,329,422	4,337,583
4,150,222	4,315,238	4,329,918	4,337,692
4,157,174	4,317,113	4,330,039	4,337,855
4,159,358	4,317,127	4,330,092	4,337,896
4,159,976	4,317,369	4,330,097	4,337,955
4,163,081	4,318,490	4,330,677	4,338,377
4,171,838	4,318,730	4,330,804	4,338,393
4,174,946	4,318,845	4,331,001	4,338,678
4,201,299	4,319,117	4,331,091	4,339,002
4,211,634	4,319,276	4,331,205	4,339,727
4,213,496	4,319,923	4,331,380	4,340,025
4,215,598	4,321,654	4,331,393	4,340,212
4,215,787	4,321,705	4,331,477	4,340,388
4,218,378	4,321,748	4,331,543	4,340,569
4,229,210	4,322,077	4,331,711	4,340,582
4,234,972	4,322,388	4,332,225	4,340,687
4,247,019	4,322,579	4,332,243	4,340,744
4,249,304	4,322,818	4,332,246	4,340,886
4,251,207	4,323,066	4,332,824	4,340,928
4,253,376	4,323,422	4,332,965	4,341,025
4,258,162	4,324,827	4,333,017	4,341,203
4,265,972	4,324,871	4,333,946	4,341,250
4,266,980	4,325,445	4,334,003	4,341,485
4,268,295	4,325,853	4,334,309	4,341,797
4,272,925	4,325,946	4,334,694	4,341,832
4,280,011	4,325,956	4,335,013	4,341,846
4,285,202	4,326,118	4,335,048	4,342,026
4,287,330	4,326,745	4,335,122	4,342,027
4,290,452	4,326,797	4,335,216	4,342,164
4,292,572	4,326,843	4,335,304	
4,293,429	4,326,971	4,335,594	

Disclaimers

4,134,131.—*Robert S. Hopkins, Jr.*, Marlton, N. J. DIGITAL VIDEO SYNCHRONIZER. Patent dated Jan. 9, 1979. Disclaimer filed Mar. 8, 1982, by the assignee, *RCA Corp.*

Hereby enters this disclaimer to all claims of said patent.

4,140,977.—*Adel A. A. Ahmed*, Annandale, N. J. SIGNAL TRANSLATION CIRCUITS. Patent dated Feb. 20, 1979. Disclaimer filed Sept. 26, 1979, by the assignee, *RCA Corp.*

Hereby enters this disclaimer to claims 12 and 19 of said patent.

4,161,012.—*Francis V. Cunningham*, Western Springs, Ill. HIGH VOLTAGE PROTECTION APPARATUS. Patent dated July 10, 1979. Disclaimer filed Feb. 11, 1982, by the assignee, *Joslyn Mfg. and Supply Co.*

Hereby enters this disclaimer to claims 15 through 21, inclusive, and claim 52 of said patent.

4,161,012—*Francis V. Cunningham*, Western Springs, Ill. HIGH VOLTAGE PROTECTION APPARATUS. Patent dated July 10, 1979. Disclaimer filed Nov. 9, 1981, by the assignee, *Joslyn Mfg. and Supply Co.*

Hereby enters this disclaimer to claims 32 and 45 of said patent.

4,163,978.—*Eric G. Shepherd* and *Roger D. Spragg*, Cheltenham, England. RADIO DIRECTION FINDING. Patent dated Aug. 7, 1979. Disclaimer filed July 27, 1982, by the assignee, *The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland.*

Hereby enters this disclaimer to claims 1, 4, 11 and 14 of said patent.

4,165,449.—*Patrick A. Vachon*, Arvada, Colo. ECHO SUPPRESSOR CIRCUIT. Patent dated Aug. 21, 1979. Disclaimer filed Sept. 11, 1981, by the assignee, *Storage Technology Corp.*

Hereby enters this disclaimer to claims 1-7 of said patent.

4,181,893.—*Edward L. Ehmke*, Margate, Fla. BATTERY SAVER FOR A TONE CODED SIGNALLING SYSTEM. Patent dated Jan. 1, 1980. Disclaimer filed Aug. 28, 1981, by the assignee, *Motorola, Inc.*

Hereby enters this disclaimer to claims 10, 18 and 19 of said patent.

4,196,358.—*John C. Conover*, Sunnyvale and *Larry J. Kendall*, San Jose, Calif. ANALOG MULTIPLEXER. Patent dated Apr. 1, 1980. Disclaimer filed June 14, 1982, by the assignee, *Fairchild Camera and Instrument Corp.*

Hereby enters this disclaimer to all claims of said patent.

4,260,599.—*Hisayoshi Okazaki*, Kyoto; *Tsuneo Kanamaru*, Takatsuki, and *Kazuhiko Ohta*, Ikeda, Japan. ANTIFIBROTIC SUBSTANCE P-1894B. Patent dated Apr. 7, 1981. Disclaimer filed July 1, 1982, by the assignee, *Takeda Chemical Industries, Ltd.*

Hereby enters this disclaimer to claim 1 of said patent.

4,279,944.—*Evangelos Trifon Laskaris*, Schenectady, N.Y. EPOXY IMPREGNATED VENTILATED WINDING. Patent dated July 21, 1981. Disclaimer filed Aug. 2, 1982, by the assignee, *General Electric Co.*

Hereby enters this disclaimer to claims 1, 10 and 11 of said patent.

Dedications

3,322,296—*Nick S. Khoury*, Chicago, Ill. EASY OPENING CONTAINER. Patent dated May 30, 1967. Dedication filed Feb. 1, 1982, by the assignee, *Continental Can Co.*

Hereby dedicates to the Public the remaining term of said patent.

4,164,037 —*Michael J. Cochran*, Richardson, and *Charles P. Grant, Jr.*, deceased, late of Dallas, by *Charles P. Grant, Sr.*, executor, Dallas, Tex. ELECTRONIC CALCULATOR OF MICROPROCESSOR SYSTEM HAVING COMBINED DATA AND FLAG BIT STORAGE SYSTEM. Patent dated Aug. 7, 1979. Dedication filed July 13, 1982, by the assignee, *Texas Instruments, Inc.*

Hereby dedicates to the Public the remaining term of said patent.

DEPARTMENT OF COMMERCE
Patent and Trademark Office
37 CFR Parts 1, 3 and 4

[Docket No. 2927-167]

Revision of Patent and Trademark Fees

AGENCY: Patent and Trademark Office, Commerce

ACTION: Final Rule.

SUMMARY: The Patent and Trademark Office is amending the rules of practice in patent and trademark cases to establish procedures for the payment of fees under §41(a) and (b) of Title 35, United States Code, which are reduced by 50 per centum for independent inventors and nonprofit organizations as required by the public law resulting from H.R. 6260. This action is necessary at this time in order that the procedures for paying the reduced fees will be effective on October 1, 1982, the effective date of the changes in the amounts of Patent and Trademark Office fees established by the public law resulting from H.R. 6260. This final rule also deletes Parts 3 and 4 which contain outdated sample forms and corrects a reference to a section which appears in §1.451.

EFFECTIVE DATE: October 1, 1982.

FOR FURTHER INFORMATION CONTACT:

As to the patent rules contact R. Franklin Burnett by telephone at (703) 557-3054 or by mail addressed to the Commissioner of Patents and Trademarks, Attention: R. Franklin Burnett, Room 3-11A13, Washington, D. C. 20231.

As to the trademark rules contact Miss Maude Williams by telephone at (703) 557-2222 or by mail addressed to the Commissioner of Patents and Trademarks, Attention: Miss Maude Williams, Room 3-11C17, Washington, D. C. 20231.

SUPPLEMENTARY INFORMATION:

Notices of proposed rulemaking relating to the revision of patent and trademark fees were published in the Federal Register on June 28, 1982, at 47 FR 28042-28065 and in the Official Gazette on June 29, 1982, at 1019 O.G. 57-120. Oral hearings were held on July 9, 1982. Full consideration has been given to all of the letters, statements, and testimony received at the time. A final rule on "Revision of Patent and Trademark Fees" was published on July 30, 1982 at 47 FR 33086-33112 with corrections in the printing thereof being published on August 4, 1982, at 47 FR 33688 and on August 5, 1982, at 47 FR 33959. The final rule was also published in the Official Gazette on August 10, 1982, at 1021 O.G. 19-94. In view of comments received at the hearings, additional time for comment on the rules covered by this change was given until August 13, 1982. The notice extending the time for comment was published on July 27, 1982 at 47 FR 32458.

This final rule is being adopted as soon as possible after the enactment of the public law resulting from H.R. 6260. The Patent and Trademark Office has determined that the requirement of 5 U.S.C. 553(d) for publication not less than 30 days before its effective date does not apply to this final rule since it will reduce patent fees for independent inventors and nonprofit organizations.

Objectives of Rule Changes

These rule changes are designed to implement the Patent and Trademark Office fees and procedures which are provided for by the public law resulting from H.R. 6260.

Public Law Resulting From H.R. 6260

The public law resulting from H.R. 6260 provides that funds available under the act "shall be used to reduce by 50 per centum the payment of fees under section 41(a) and (b) of Title 35, United States Code" by independent inventors, small business concerns, and nonprofit organizations. The public law resulting from H.R. 6260 gives the Commissioner authority to establish regulations defining independent inventors and nonprofit organizations. The public law resulting from H.R. 6260 defines small business concerns by reference to §3 of the Small Business Act and regulations established by the Small Business Administration. This rulemaking establishes regulations defining independent inventors and nonprofit organizations. The Small Business Administration is establishing the definition of a small business concern for the purpose of paying reduced fees under the public law resulting from H.R. 6260. This rulemaking also establishes the procedures which will be followed by independent inventors and nonprofit organizations when paying the reduced fees. The procedures to be followed by small business concerns when paying the reduced fees will be established in a separate final rule.

Discussion of Specific Sections

The following sections are changed by this final rule, effective October 1, 1982:

Section 1.9, as amended, adds paragraphs (c), (e), and (f) which define "independent inventor" and "nonprofit organization" as used in Title 37, Code of Federal Regulations, Chapter I. Each of these along with "small business concern" is identified as a "small entity" for purposes of paying fees which are set under §41(a) and (b) of Title 35, United States Code, as amended by the public law resulting from H.R. 6260. Paragraph (d) of §1.9 relates to the definition of small business concern which is being established by the Small Business Administration. Accordingly, proposed paragraph 1.9(d) is not being promulgated at this time.

The public law resulting from H.R. 6260 authorizes the Commissioner to establish regulations defining independent inventors and nonprofit organizations. Section 1.9(c) defines an independent inventor as any inventor who (1) has not assigned,

granted, conveyed, or licensed, and (2) is under no obligation under contract or law to assign, grant, convey, or license, any rights in the invention to any person who could not likewise be classified as an independent inventor if that person had made the invention, or to any concern which would not qualify as a small business concern or a nonprofit organization. Once an individual sole inventor, or one of several joint inventors, has assigned, granted, conveyed, or licensed, or comes under an obligation to assign, grant, convey, or license, any rights to the invention to anyone who could not likewise obtain status as a small entity, the inventor(s) will no longer be entitled to pay fees in the amounts established for an independent inventor (§1.9(c)). Section 1.9(c) will permit an individual inventor to make an assignment, grant, conveyance, or license of partial rights in the invention to another individual or individuals who could qualify as an independent inventor or inventors if they had made the invention. In addition, §1.9(c) will permit an individual inventor to make an assignment, grant, conveyance, or license of partial rights in the invention to a small business concern or nonprofit organization. Under the circumstances described in the previous two sentences the individual inventor could still qualify as an independent inventor. However, if the independent inventor assigned, granted, conveyed, or licensed, or came under an obligation to assign, grant, convey, or license, any rights to the invention to any individual or organization which could not qualify as a small entity (§1.9(f)), then the inventor would no longer qualify as an independent inventor.

Proposed section 1.9(d) relating to the definition of a small business concern is not being promulgated at this time.

Section 1.9(e) defines a nonprofit organization by utilizing and broadening the definition contained in 35 U.S.C. 201(i). The term "university or other institution of higher education" as used in §1.9(e) means an educational institution which (1) admits as regular students only persons having a certificate of graduation from a school providing secondary education, or the recognized equivalent of such a certificate, (2) is legally authorized within the jurisdiction in which it operates to provide a program of education beyond secondary education, (3) provides an educational program for which it awards a bachelor's degree or provides not less than a two-year program which is acceptable for full credit toward such a degree, (4) is a public or other nonprofit institution, and (5) is accredited by a nationally recognized accrediting agency or association. The definition of "university or other institution of higher education" as set forth herein essentially follows the definition of "institution of higher education" contained in 20 U.S.C. 1141(a). Institutions which are strictly research facilities, manufacturing facilities, service organizations, etc., are not intended to be included within the term "other institution of higher education" even though such institutions may perform an educational function or publish the results of their work.

Section 1.9(f) identifies an independent inventor, a small business concern, or a nonprofit organization as a "small entity" for purposes of paying fees set under §41(a) and (b) of Title 35, United States Code, as amended by the public law resulting from

H.R. 6260. Fees established under §41(c) or (d) of Title 35, United States Code, will not be reduced for small entities since such a reduction is not permitted or authorized by the public law resulting from H.R. 6260. Paragraphs (c), (e), and (f) of §1.9 should be read together with new §§1.27 and 1.28 which deal with establishing status as a small entity and the effect thereof.

New §1.27 provides in paragraph (a) that any person seeking to establish status as a small entity, as defined in §1.9(f) for the purpose of paying reduced fees, must file a statement to that effect prior to or with the payment of the first fee paid as a small entity. Paragraph 1.27(b) provides specifically for inventors filing statements claiming status as independent inventors. Paragraph 1.27(c) relating to claiming status as a small business concern is not being promulgated at this time, but will be the subject of a separate final rule. Paragraph 1.27(d) provides for claiming status as a nonprofit organization. Under §1.27, as long as all of the rights remain in small entities, the fees established for a small entity can be paid. This includes circumstances where the rights were divided between an independent inventor, a small business concern and a nonprofit organization or any combination thereof.

New §1.28 provides guidance as to the effect of failure to establish, or notify the Office of any change from, small entity status. Paragraph 1.28(a) provides that once status as a small entity has been established in an application or patent, the status remains in that application or patent without the filing of a further verified statement pursuant to §1.27, unless the Office is notified of a change in status. Under paragraph 1.28(a), status as a small entity in one application or patent does not affect any other application or patent except in applications filed under §1.60 where a reference is made to a verified statement in a parent application. Paragraph 1.28(b) requires that notification of any change in status resulting in loss of entitlement to small entity status be filed in the application or patent prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate. Section 1.28 also provides guidance as to the effect of improperly establishing status as a small entity. The intent of the reduced fees for small entities is to soften the impact of the fee increases under §41(a) and (b) of Title 35, United States Code, as such sections are amended by the public law resulting from H.R. 6260, upon those who are least able to absorb the increased fees without overall damage to their ability to participate in the patent system through the filing, issuing and maintaining of patents. Accordingly, any attempt to improperly establish status as a small entity will be viewed as a serious matter by the Office and paragraph 1.28(d) indicates that any attempt to fraudulently establish status as a small entity or pay fees as a small entity will be considered as a fraud practiced or attempted on the Office. In addition, improperly and through gross negligence establishing status as a small entity or paying fees as a small entity will be considered as a fraud practiced or attempted on the Office. Normally, the Office will not question a claim to status as a small entity. However, if the Office must resolve such an issue in a question arising

before it, the Office will look to the actual or practical status of the individual or organization claiming status as a small entity rather than the professed or apparent status.

Section 1.451, paragraph (b), is amended to correct a reference to another section of the regulations.

Parts 3 and 4 are removed to eliminate all of the patent and trademark forms from the Code of Federal Regulations. The Patent and Trademark Office has prepared a booklet entitled "Patent and Trademark Forms Booklet" which is available for sale to the public from the Superintendent of Documents and which includes full size copies of substantially all the forms in Parts 3 and 4. No need is seen to retain these forms in the Code of Federal Regulations in view of the difficulty of keeping such forms current by rule change provisions and since the use of the forms is not mandatory.

Discussion Of Significant Differences Between Proposed And Final Rules

A number of changes which have been made to §§1.9, 1.27 and 1.28 as a result of the comments received and further review of the proposed rulemaking are identified below.

Paragraph (c) of §1.9 has been changed from that proposed to simplify the definition by removing the words "including (i) the right to make, use, or sell the invention, and (ii) the right to exclude others from making, using, or selling the invention". No change in substance is intended by removing these words since the phrase "any rights in the invention" obviously is inclusive of all rights regardless of how they are, or would be, transferred. The words "or otherwise" have also been removed to simplify the definition without a change in substance.

Paragraph (d) of §1.9 is not being promulgated by this rule change.

Paragraph (e) of §1.9 is changed from that proposed by adding the words "located in any country" in item (e)(1) to clarify the fact that a university or other institution of higher education can qualify regardless of location. Paragraph (e) is also changed from that proposed by adding an item (4) to clarify that a nonprofit organization "located in a foreign country" can qualify as a nonprofit organization if it could qualify as a nonprofit organization under item (2) or (3) of paragraph (e) "if it were located in this country." Thus, under paragraph (e) of §1.9 nonprofit organizations will be treated the same for purposes of paying fees regardless of location.

Paragraph (a) of §1.27 has been changed from that proposed by substituting the words "the first fee paid as a small entity" for the words "any fee paid as a small entity". This change is intended to clarify the fact that a verified statement is not required with every fee.

Paragraph (b) of §1.27 has been changed from that proposed to clarify who is to file the verified statement. The verified statement for a small business concern or nonprofit organization is to be filed by "the owner of the small business concern, or an official of the small business concern or nonprofit organization empowered to act on behalf of the small business concern or nonprofit organization..." The term "official" as used in paragraph (b) is intended to include any officer, employee, or part-owner empowered to act on behalf of a small business concern or nonprofit organization. For example, an officer or employee of a corporation empowered to act for the corporation by its board of directors would be qualified to sign such a verified statement.

Paragraph (c) of §1.27 relating to claiming status as a small business concern is not being promulgated at this time, but will be the subject of a separate final rule.

Paragraph (d) of §1.27 has been changed from that proposed in the same manner as paragraph (b) of §1.27 to clarify who is to file the verified statement. Paragraph (d) of §1.27 has also been changed from that proposed by adding a reference to §1.9(e)(4).

Paragraph (a) of §1.28 has been changed from that proposed by adding the words "or patent" in the first and third sentences since the failure to establish status as a small entity could occur in a patent as well as in an application. An exception to the requirement for a verified statement has also been inserted into paragraph (a) of §1.28 for applications filed under §1.60 where the status as a small entity has been established in a parent application and is still proper. Under this change in paragraph (a) of proposed §1.28, the application filed under §1.60 "must include a reference to a verified statement in a parent application if status as a small entity is still proper and desired."

Paragraph (b) of §1.28 has been completely rewritten from that proposed to remove the requirement that the notification of a change in status resulting in loss of entitlement to small entity status must be filed prior to paying the next fee due. Instead, paragraph (b) of §1.28 provides that after establishment of small entity status, "fees as a small entity may thereafter be paid in that application or patent without regard to a change in status until the issue fee is due or any maintenance fee is due." Paragraph (b) of §1.28 is also changed from that proposed by removing the sentence stating that payment of any fee as a small entity serves "as a representation that such payment as a small entity is proper at the time the payment is made." This change does not sanction the payment of improper fees, but is no longer necessary in view of another change in paragraph (b) which specifically provides that notification of any change in status resulting in loss of entitlement to small entity status "must be filed in the application or patent prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate pursuant to §1.9." The effect of the changes to paragraph (b) of §1.28 is to permit status to be established and then checked only (1) at the payment of the issue fee and (2)

at the time of payment of each maintenance fee. This means that only four checks are required during the pendency and term of a patent after initial establishment of small entity status if such establishment was made prior to payment of the issue fee. The last sentence of paragraph (b) has been changed from that proposed by inserting the words "of change in status" after "notification" for clarity.

Paragraph (c) of §1.28 has been changed from that proposed to require a verified statement explaining how the error in good faith occurred only in situations where the error is not corrected within three months of the date on which the error occurred. This change from paragraph (c) as proposed will reduce paperwork and will provide a three-month grace period to correct errors with no explanations required for correction during that three-month period. The change has also been made to alleviate concerns about paragraph (d) of §1.28 which is being adopted as proposed.

Response to Comments on the Patent Rules

Specific comments were received on a number of the sections. All of the comments, including the oral testimony and the written comments, were considered in adopting the changes set forth herein.

Written comments on the patent rules and forms affected by this final rule were received from three patent law groups and thirteen individuals. The three patent law groups were (1) the American Patent Law Association; (2) the Patent, Trademark, and Copyright Section of the Virginia State Bar; and (3) the Patent, Trademark and Copyright Law Section of the Bar Association of the District of Columbia.

Oral comments were presented at the hearing on behalf of two patent law groups.

The comments appear below along with replies thereto.

Comment:

One comment suggested that the definition of "independent inventor" be simplified.

Reply:

The definition of "independent inventor" has been simplified without a change in substance by removing the words "including (i) the right to make, use, or sell the invention, and (ii) the right to exclude others from making, using, or selling the invention."

Comment:

One comment suggested that there is no need to include any more than a simplified statement that a "non-profit organization includes a university or other institution of higher education"

and that any other party that believes it qualifies will "be able to make a showing to qualify for non-profit organization status."

Reply:

The suggestion has not been adopted since it is the intent of the rules to delineate as clearly as possible what organizations can qualify as nonprofit organizations without having to expend undue resources deciding each request on a case-by-case basis.

Comment:

One comment suggested that §1.9(e) discriminates against foreigners and thus violates the principle of national equality set forth in the Stockholm text of the Paris Convention for the Protection of Industrial Property.

Reply:

Section 1.9(e), as promulgated, defines a nonprofit organization in such a way that it is clear that foreigners are not excluded.

Comment:

One comment questioned whether or not government organizations can qualify as nonprofit organizations and more specifically, whether or not a government research facility can qualify under the broad definition of a nonprofit scientific or educational organization. Another comment recommended that §1.9(e) be expanded to include the U.S. Government in the definition of a "nonprofit organization."

Reply:

Government organizations as such, whether domestic or foreign, cannot qualify as nonprofit organizations as defined in §1.9(e). Section 1.9(e) was based upon 35 U.S.C. 201(i), as established by Public Law 96-517. The limitation to "an organization of the type described in section 501(c)(3) of the Internal Revenue Code of 1954 (26 U.S.C. 501(c)(3)) and exempt from taxation under section 501(a) of the Internal Revenue Code (26 U.S.C. 501(a))" would by its nature exclude the U.S. government and its agencies and facilities, including research facilities and government corporations. State and foreign governments and governmental agencies and facilities would be similarly excluded. Section 1.9(e) is not intended to include within the definition of a nonprofit organization government organizations of any kind located in any country. A university or other institution of higher education located in any country would qualify, however, as a "nonprofit organization" under §1.9(e) even though it has some government affiliation since such institutions are specifically included.

Comment:

One comment was directed to, and opposed, Public Law 96-517 and H.R. 6260 rather than the specific provisions of §§1.9, 1.27 and

1.28 on the ground that the concept of a self-supporting agency is ill-conceived, shortsighted and wrong.

Reply:

Public Law 96-517 and H.R. 6260 are not issues for consideration in this rule change.

Comment:

One comment asserted that the imposition of different fees depending upon the status of an applicant is unwise, unworkable, and will not "improve the efficiency of the Patent Office", while another comment urged the Office to "disavow the proposal for a two-tier fee system and adopt a different approach to assuring that patent and trademark fees are set so that individual inventors and small businesses can continue to obtain the protection of the patent and trademark system." Another comment supported the two-tier fee system, particularly as related to universities.

Reply:

The imposition of different fees is a legislative mandate imposed by the public law resulting from H.R. 6260 and is not an issue for consideration in this rule change.

Comment:

Four comments expressed concern that small entity status is required to be confirmed each time a fee as a small entity is paid. Alternative procedures which involve (1) confirming status at the time of filing and at the time the issue fee is paid, or (2) allowing a statement of status to hold for a period of time were recommended.

Reply:

The last sentence in §1.27(a) states that "[s]uch a verified statement need only be filed once in an application or patent and remains in effect until changed." It was not intended that such statements would be required each time a fee is paid. In order to clarify §1.27(a), the first sentence has been changed to require the statement prior to or with the first fee paid as a small entity. Thereafter, notice is only required where a change in status occurs. In addition, §1.28(b) has been rewritten to provide that "[o]nce status as a small entity has been established in an application or patent, fees as a small entity may thereafter be paid in that application or patent without regard to a change in status until the issue fee is due or any maintenance fee is due."

Comment:

One comment suggested that a paragraph 1.27(e) be added which would require confirmation of small entity status at the time of paying the patent issue fee and each maintenance fee and that this be done by a statement which designates the applicant's

small entity status as of the close of the last fiscal year next preceding the date of the statement.

Reply:

The suggested paragraph has not been added. However, paragraph (b) of §1.28 has been completely rewritten to permit status to be established and then checked only (1) at the payment of the issue fee and (2) at the time of payment of each maintenance fee. Instead of requiring papers to be filed confirming status as suggested in the comment, the rules as adopted require that "[n]otification of any change in status resulting in loss of entitlement to small entity status must be filed in the application or patent prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate pursuant to §1.9." Paragraph (b) of §1.28, as promulgated, is considered preferable to the suggested paragraph (e) of §1.27 since it will eliminate the filing of a confirming statement where there has been no change in status as a small entity. This reduces unnecessary paperwork.

Comment:

One comment suggested that verified statements of small entity status need not be filed in Rule 60 applications.

Reply:

The suggestion was adopted and is reflected by the change in §1.28(a). In such applications, it will be sufficient to include a reference to a verified statement establishing small entity status in a parent application if status as a small entity is still proper and desired.

Comment:

One comment suggested that proposed paragraph 1.28(b) be amended by inserting the words "believed to be" after "small entity is" in the second sentence.

Reply:

Paragraph (b) of §1.28 as promulgated does not contain the sentence to which the suggestion is directed.

Comment:

One comment suggested that paragraph (c) of §1.28 be amended by deleting the word "verified" so that a statement explaining how an error in good faith occurred can be made "on the basis of information and belief."

Reply:

The suggestion has not been adopted. However, paragraph (c) of §1.28 as promulgated permits the correction of errors without a

verified statement if the correction is accomplished within three months after the date the error occurred.

Comment:

Three comments expressed concern about the provision dealing with fraud on the Patent and Trademark Office because of some questionable act in connection with paying fees as a small entity and indicated that some persons have raised a question as to the Office's authority to designate the payment of a lesser fee as fraud. The comments suggested that proposed §1.28 be withdrawn and turned over to an ad hoc group of Patent and Trademark Office officials and practitioners for immediate examination and timely comment.

Reply:

The period for comments was extended until August 13, 1982, as an alternative to, and in response to, the suggestion that §1.28 be withdrawn and turned over to an ad hoc committee. The extended period for comments has now expired and all comments which have been received have been carefully considered. In response to the statement that some persons have raised a question regarding the Office's authority to designate payment of a lesser fee as fraud, no authority has been cited which would establish or suggest that the Office does not have the authority to adopt this section. Paragraph (d) of §1.28 has been strictly limited to those situations in which there is an attempt to fraudulently establish status as a small entity, fraudulently pay fees as a small entity, or improperly and through gross negligence establish status or pay fees as a small entity. Paragraph (d) of §1.28 is clearly within the rule-making authority provided to the Commissioner pursuant to 35 U.S.C. 6 to protect the integrity of the system established by the public law resulting from H.R. 6260, whereby fees are reduced for small entities. In order to alleviate the concerns expressed about paragraph (d) of §1.28, paragraph (c) of §1.28 has been changed from that proposed to require a verified statement explaining how the error in good faith occurred only in situations where the error is not corrected within three months of the date on which the error occurred. This three-month grace period to correct errors with no explanations required for correction during that three-month period should reduce the concern about paragraph (d) of §1.28.

Comment:

One comment by an attorney (1) objected to and requested removal of the second sentence of §1.28(d) because he has to rely on the information provided by the client and does not have the facilities to check the reliability of information the client provides relating to the client's status as a small entity, and (2) raised the question as to how much investigation any attorney or other individual must make in order to avoid being guilty of "gross negligence" under §1.28(d).

Reply:

The rules do not authorize an attorney to sign a verified statement establishing status as a small entity on behalf of a client. The client has to sign the verified statement. Paragraph (b) of §1.27 requires that any verified statement filed on behalf of an independent inventor must be signed by the independent inventor except as provided in §§1.42, 1.43, or 1.47. Paragraph (d) of §1.27 requires that any verified statement filed on behalf of a nonprofit organization must be signed by an official of the nonprofit organization empowered to act on behalf of the organization. The intent of paragraphs (b) and (d) of §1.27 is that the verified statement be signed by the person in the best position to know the facts as to whether or not status as a small entity can be properly established. Insofar as the attorney's responsibilities and duty to investigate are concerned, these do not differ from those presently owed the Office under §§1.56, 1.346, and 1.555.

Comment:

One comment suggested that paragraph (d) of §1.28 be replaced by a provision under which a "stiff fine" would be assessed against "a wrongdoer who has not paid fees in good faith."

Reply:

The suggestion has not been adopted. Assessing a fine as the only penalty against "a wrongdoer who has not paid fees in good faith" might tend to encourage the payment of incorrect fees on the theory that it is unlikely that such a matter would be brought to the attention of the Office.

Comment:

Three comments opposed the proposed deletion of Part 3 for the reasons that (1) it is useful to have an up-to-date set of forms and (2) there does not seem to be a pressing need to delete the forms.

Reply:

The Patent and Trademark Office has prepared a booklet entitled "Patent and Trademark Forms Booklet" which includes full size copies of substantially all of the forms in Part 3. Since the forms currently in Part 3 are not "up-to-date" as was suggested in the comment, no present need is seen to maintain Part 3.

Response to Comments on the Trademark Rules

Specific comments were received on the proposed deletion of Part 4. All of the comments included in the written submissions and the oral testimony were considered.

Written comments were received from four individuals. Oral comments restating previously submitted written comments on Part 4 were presented by one individual on behalf of his law firm.

These comments appear below along with replies thereto.

Comment:

One comment stated that there are rules in Part 4 which are not set forth elsewhere. Such guidelines and information include, among others, the types of commerce on which an application may be based and a requirement for the use of bond paper for typed drawings.

Reply:

Part 4 does not really carry the effect of rules because the forms are not mandatory, but are merely illustrative. The information referred to by this individual can be found elsewhere, such as in the Trademark Manual of Examining Procedure. Furthermore, despite the fact that the forms do not carry the force of rules, any correction or modification to them requires the cumbersome and time-consuming processes that are associated with a rules change.

Comment:

Several comments reflected the opinion that some attorneys, particularly those who do not specialize in trademark matters, may rely on the forms that appear in Part 4. It was believed that these individuals may not have or be aware of the compilation of forms identified as the "Patent and Trademark Office Forms Booklet." In the absence of such forms in Part 4, these individuals may devise their own application formats. Such a practice would result in increased informalities which, in turn, would result in unnecessary correspondence and delayed prosecution. In addition, the commenters believed that the number of written and oral inquiries to the Office of the Director of the Trademark Examining Operation would increase dramatically.

Reply:

The Office of the Director of the Trademark Examining Operation currently has a general information telephone line to answer inquiries and to accept requests for trademark application forms and related literature. While the Office of the Director indicates the availability of the forms booklet to many callers, copies of the appropriate trademark application form are sent to those individuals who request them. It is more likely that an individual who is unaware of the trademark application format would call the Office of the Director to request an application form than create one for the particular purpose.

Comment:

One individual, aware of the Office's plans for automation of the trademark program, saw the present deletion of the forms to be inappropriate. This individual felt that the deletion of the forms at this point would signal to the user community that the Office no longer had any interest in receiving applications in any particular format. To take such a position within a year or two of the introduction of a rigidly standardized application format was, in the opinion of this commenter, unwise. The

adoption of a machine-readable application form would require greater, rather than diminished, reliance on a prescribed format.

Reply:

Within the next year or two, the Office will begin experimenting with the use of optical character recognition (OCR) equipment to automate the current data capture processes. Trademark application formats that are compatible with this equipment are likely to require special sizing and printing and, as such, are not acceptable for reduced size printing in the Code of Federal Regulations. If the existing forms were to be maintained in Part 4, they would remain available for use by applicants. As a result, the implementation of the new standardized application formats would be made more difficult.

Comment:

One commenter believed that since the next reprinting of Volume 37 of the Code of Federal Regulations will be in July, 1983, there is no pressing need to eliminate Part 4 at this time. This individual felt that users of the trademark registration system should be given additional opportunity to consider the significance of removing Part 4.

Reply:

Only four comments have been received on the deletion of Part 4. The elimination of Part 4 at this time will guarantee that the forms do not appear in the 1983 reprinting of the CFR. Of course, they will appear in the 1982 version of the CFR booklet and will be available until the new edition is published. In this matter, future access to these forms will be limited and those requiring help may contact the Office and receive the proper trademark forms.

Implementation of §§1.9, 1.27, and 1.28

Status as a small entity can be established in any application or patent for which a fee is due on or after October 1, 1982, and in which small entity status is available and desired.

OTHER CONSIDERATIONS RELATING TO PATENT AND TRADEMARK FEE REVISIONS

Environmental, energy, and other considerations: The rule change will not have a significant impact on the quality of the human environment or the conservation of energy resources.

This rule change is in conformity with the requirements of the Regulatory Flexibility Act (Public Law 96-354), Executive Order 12291, and the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 et. seq.).

The rule change will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act. Pub. L. 96-354) for several reasons. The public law resulting from H.R. 6260 has taken into consideration the

impact the increase in fees may have on small entities. Under the public law resulting from H.R. 6260 and this rulemaking, small entities will be able to pay reduced fees for filing patent applications and for the issuance and maintenance in force of patents. In general, the rule change will also expedite proceedings before the Patent and Trademark Office, changing existing procedures where they can be simplified.

The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12291. The annual effect on the economy will be less than $100 million. There will be no major increase in costs or prices for consumers, individual industries, Federal, State, or local government agencies, or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

This rule change will not impose a burden under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et. seq., since no significant additional record keeping or reporting requirements are placed upon the public.

List of Subjects in 37 CFR Parts 1, 3 and 4

Administrative practice and procedure, Colleges and universities, Courts, Fraud, Inventions and patents, Nonprofit organizations, Small businesses, Trademarks.

AMENDMENT OF REGULATIONS

For the reasons indicated above and pursuant to the authority given to the Commissioner of Patents and Trademarks by 35 U.S.C. 6, the public law resulting from H.R. 6260, and under Sections 31 and 41 of the Trademark Act of July 5, 1946, (15 U.S.C. §§1113, and 1123), Parts 1, 3 and 4 of Title 37, Code of Federal Regulations, are amended as set forth below.

PART 1 - RULES OF PRACTICE IN PATENT CASES

The table of contents for Part 1 is amended as follows:

FEES AND PAYMENT OF MONEY

* * * * *

1.27 Statement of status as small entity;

1.28 Effect on fees of failure to establish status, or change status, as a small entity.

1. Section 1.9 is amended by adding new paragraphs (c), (e) and (f) and adding and reserving paragraph (d) to read as follows:

§1.9 Definitions.

* * * * *

(c) An independent inventor as used in this chapter means any inventor who (1) has not assigned, granted, conveyed, or licensed, and (2) is under no obligation under contract or law to assign, grant, convey, or license, any rights in the invention to any person who could not likewise be classified as an independent inventor if that person had made the invention, or to any concern which would not qualify as a small business concern or a nonprofit organization under this section.

(d) [Reserved]

(e) A nonprofit organization as used in this chapter means (1) a university or other institution of higher education located in any country; (2) an organization of the type described in section 501(c)(3) of the Internal Revenue Code of 1954 (26 U.S.C. 501(c)(3)) and exempt from taxation under section 501(a) of the Internal Revenue Code (26 U.S.C. 501(a)); (3) any nonprofit scientific or educational organization qualified under a nonprofit organization statute of a state of this country (35 U.S.C. 201(i)); or (4) any nonprofit organization located in a foreign country which would qualify as a nonprofit organization under paragraphs (e)(2) or (3) of this section if it were located in this country.

(f) A small entity as used in this chapter means an independent inventor, a small business concern or a nonprofit organization.

2. Section 1.27 is added to read as follows:

§1.27 Statement of status as small entity.

(a) Any person seeking to establish status as a small entity (§1.9(f) of this Part) for purposes of paying fees in an application or a patent must file a verified statement in the application or patent prior to or with the first fee paid as a small entity. Such a verified statement need only be filed once in an application or patent and remains in effect until changed.

(b) Any verified statement filed pursuant to paragraph (a) of this section on behalf of an independent inventor must be signed by the independent inventor except as provided in §§1.42, 1.43, or 1.47 of this Part, and must aver that the inventor qualifies as an independent inventor in accordance with §1.9(c) of this Part. Where there are joint inventors in an application, each inventor must file a verified statement establishing status as an independent inventor in order to qualify as a small entity. Where any rights have been assigned, granted, conveyed, or licensed, or there is an obligation to assign, grant, convey, or license, any rights to a small business concern, a nonprofit organization, or any other individual, a verified statement must be filed by the individual, the owner of the small business concern, or an official of the small business concern or nonprofit organization empowered to act on behalf of the small business concern or nonprofit organization averring to their status.

(c) [Reserved]

(d) Any verified statement filed pursuant to paragraph (a) of this section on behalf of a nonprofit organization must (1) be signed by an official of the nonprofit organization empowered to act on behalf of the organization; (2) aver that the organization qualifies as a nonprofit organization as defined in §1.9(e) of this Part specifying under which one of §1.9(e)(1), (e)(2), (e)(3), or (e)(4) of this Part the organization qualifies; and (3) aver that exclusive rights to the invention have been conveyed to and remain with the organization or if the rights are not exclusive, that all other rights belong to small entities as defined in §1.9 of this Part. Where the rights of the nonprofit organization as a small entity are not exclusive, a verified statement must also be filed by the other small entities having rights averring to their status as such.

3. Section 1.28 is added to read as follows:

§1.28 Effect on fees of failure to establish status, or change status, as a small entity.

(a) The failure to establish status as a small entity (§§1.9(f) and 1.27 of this Part) in any application or patent prior to paying, or at the time of paying, any fee (1) precludes payment of the fee in the amount established for small entities; and (2) precludes a refund pursuant to §1.26 of this Part of any portions of fees paid prior to establishing status as a small entity. Status as a small entity is waived for any fee by the failure to establish the status prior to paying, or at the time of paying, the fee. Status as a small entity must be specifically established by a verified statement filed in each application or patent in which the status is available and desired, except those applications filed under §1.60 of this Part where the status as a small entity has been established in a parent application and is still proper. Once status as a small entity has been established in an application or patent, the status remains in that application or patent without the filing of a further verified statement pursuant to §1.27 of this Part unless the Office is notified of a change in status. Status as a small entity in one application or patent does not affect any other application or patent, including applications or patents which are directly or indirectly dependent upon the application or patent in which the status has been established, except those filed under §1.60 of this Part. Applications filed under §1.60 of this Part must include a reference to a verified statement in a parent application if status as a small entity is still proper and desired.

(b) Once status as a small entity has been established in an application or patent, fees as a small entity may thereafter be paid in that application or patent without regard to a change in status until the issue fee is due or any maintenance fee is due. Notification of any change in status resulting in loss of entitlement to small entity status must be filed in the application or patent prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer

appropriate pursuant to §1.9 of this Part. The notification of change in status may be signed by the applicant, any person authorized to sign on behalf of the assignee, or an attorney or agent of record or acting in a representative capacity pursuant to §1.34(a) of this Part.

(c) If status as a small entity is established in good faith, and fees as a small entity are paid in good faith, in any application or patent, and it is later discovered that such status as a small entity was established in error or that through error the Office was not notified of a change in status as required by paragraph (b) of this section, the error will be excused (1) if any deficiency between the amount paid and the amount due is paid within three months after the date the error occurred or (2) if any deficiency between the amount paid and the amount due is paid more than three months after the date the error occurred and the payment is accompanied by a verified statement explaining how the error in good faith occurred and how and when it was discovered.

(d)(1) Any attempt to fraudulently (i) establish status as a small entity or (ii) pay fees as a small entity shall be considered as a fraud practiced or attempted on the Office. (2) Improperly and through gross negligence (i) establishing status as a small entity or (ii) paying fees as a small entity shall be considered as a fraud practiced or attempted on the Office. See §§1.56(d) and 1.555 of this Part.

§1.451 [Amended]

4. In section 1.451, paragraph (b) is amended by removing the reference "§1.19(a)(4)" and inserting in its place the reference "§1.19(a)(3)".

PART 3 - FORMS FOR PATENT CASES

5. Part 3 is removed.

PART 4 - FORMS FOR TRADEMARK CASES

6. Part 4 is removed.

8/26/82
Date

Gerald J. Mossinghoff
Commissioner of Patents & Trademarks

REEXAMINATIONS

SEPTEMBER 21, 1982

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination

B1 Re. 29,582 (17th)

DISC BRAKES AND MOUNTING STRUCTURE THEREFORE

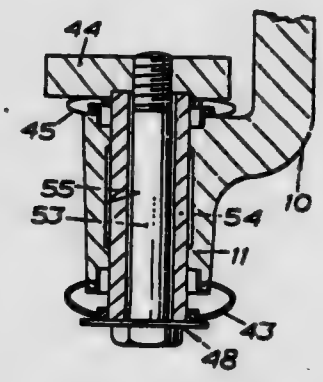
Peter William Brown, Solihull, England, assignor to Girling Limited, Warwickshire, England.

Continuation of Ser. No. 454,613, Mar. 25, 1974, abandoned.

Reexamination Request No. 90/000,026, Jul. 10, 1981.

Reexamination certificate for Patent No. Re. 29,582, issued Mar. 21, 1978, Ser. No. 615,984, Sep. 23, 1975.

U.S. Cl. 188/73.45 Int Cl.³ F16D 65/14



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1–13 and 19 is confirmed.

Claims 14–16, 18 and 20 are determined to be patentable as amended:

14. A sliding caliper disc brake comprising a rotatable disc, a torque plate member for fixing to a vehicle frame or like portion, a caliper member straddling a minor portion of the periphery of the disc for moving friction pad means disposed on opposite sides of the disc into braking engagement with the disc, motor means in the caliper member for directly urging one pad means onto one side of the disc to cause the caliper member to slide relative to the torque plate member to apply by reaction the opposite pad means to the other side of the disc, and a connection between [the caliper member and the torque plate member] *one and the other of said members* comprising a pin element [which has a] *having an axis substantially parallel to the axis of the disc rotation and an axially extending* sliding surface in *close* sliding engagement with a wall of *a* [an] *complementary* opening in [one] *the other* of said members, *and an axially extending bore passing through said pin element from end to end thereof, means for releasably connecting said pin element at one end to said one member comprising a component extending axially through said bore in said pin element and having an abutment surface at one end and means at its opposite end releasably engaging said one member to axially clamp said pin element between said one member and said abutment surface, with there being no further connection between said component and said one member whereby said pin element when clamped by said component to said one member extends freely axially away from said one member, there being no further sliding surface separate from that on said pin element in said connection between said members,* and sealing means extending between said pin elements and said [one] *other* of said members and at all times enclosing all of said sliding surface, said sealing means having one end sealed to said [one] *other* of said members, and having its other end sealed to said pin element so as to protect all of the sliding surface of *said pin element and to retain said pin element in said opening* even when said caliper member is separated from said torque plate member.

15. The disc brake according to claim 14 wherein said sealing means comprises flexible boot means in sealing engagement with said [one] *other* member at opposite ends of [said] *the* opening *therein,* and in sealing engagement with said pin element adjacent the ends of said opening.

16. A sliding caliper disc brake comprising a rotatable disc, a torque plate member for fixing to a vehicle frame or like portion, a caliper member straddling a minor portion of the periphery of the disc for moving friction pad means disposed on opposite sides of the disc into braking engagement with the disc, motor means in the caliper means for directly urging one pad means onto one side of the disc to cause the caliper member to slide relative to the torque plate member to apply by reaction the opposite pad means to the other side of the disc, and a connection between the caliper member and the torque plate comprising a two-part pin, one part of said pin having [a] *one end abutting one of said members and extending away from said one member in a direction substantially parallel to the axis of disc rotation, said one part having an axially extending* sliding surface slidable in an opening in [one] *the other* of said members [and] the other part of said pin [fixing said first part with respect to the other of said members] *having an abutment surface at one end for engaging the corresponding end of said one pin part end means at the other end for releasably engaging said one member to axially clamp said one pin part between said abutment surface and said one member with there being no further connection between said second pin part and said one member whereby said pin extends freely axially away from said one member, there being no further sliding surface separate from that on said one pin part in said connection between said members,* and sealing means extending between said one part of said pin and said [one] *other* of said members and at all times enclosing all of said sliding surfaces, said sealing means having one end sealed to said [one] of said members, and having [its] *the* other end sealed to said one pin part so as to protect all of the sliding surface of said one pin part *and to retain said one pin part in said opening in the other of said members* even when said caliper member is separated from said torque plate members.

18. A sliding caliper disc brake comprising a rotatable disc, a torque plate member for fixing to a vehicle frame or like portion, a caliper member straddling a minor portion of the periphery of the disc for moving friction pad means disposed on opposite sides of the disc into braking engagement with the disc, motor means in the caliper member for directly urging one pad means onto one side of the disc to cause the caliper member to slide relative to the torque plate member to apply by reaction the opposite pad means to the other side of the disc, and a connection between the caliper member and the torque plate *member* comprising a first component having *an axis substantially parallel to the axis of disc rotation and* a sliding surface slidably received in an opening in one of said members, a second component abutting *one end of*

said first component and *being* in releasable engagement with the other of said members to *axially* clamp *the other end of* said first component against the other of said members, *said second component engaging said other member only at the clamped end of said first component, there being no further sliding surface separate from that on said first component in said connection between said members,* and sealing means extending between said first component and said one of said members and having releasable engagement with both [so as to retain said first component in said opening], said sealing means having one end sealed to said one of said members and having [its] *the* other end sealed to said first component so as to protect all of the sliding surface of said first component *and retain said first component in said opening* even when said caliper member is separated from said torque plate member.

20. A sliding caliper disc brake comprising a rotatable disc, a torque plate member for fixing to a vehicle frame or like portion, a caliper member straddling a minor portion of the periphery of the disc for moving friction pad means disposed on opposite sides of the disc into braking engagement with the disc, motor means in the caliper member for directly urging one pad means onto one side of the disc to cause the caliper member to slide relative to the torque plate member to apply by reaction the opposite pad means to the other side of the disc, and a connection between the caliper member and the torque plate member comprising a pin [element which has] *having an axis substantially parrallel to the axis of disc rotation and* a sliding surface in sliding engagement whith a wall of [an] *a complementary* opening in one of said members and which is releasably fixed *at one end only* to the other of said members, and sealing means extending between said pin [element] and said one of said members while having no connection with the other of said members, *there being no further sliding surface separate from that on said pin in said connection between said members,* said sealing means at all times enclosing all of said sliding surface, said sealing means having one end sealed to said one of said members, and having [its] *the* other end sealed to said pin [element] so as to protect all of the sliding surface of said pin [element] *and to retain said pin within said opening* even when said caliper member is separated from said torque plate member.

Claim 17, having been finally determined to be unpatentable, is cancelled.

New claims 21 and 22 are added and determined to be patentable.

21. *The sliding caliper disc brake of claim 14 wherein said one member is the torque plate member and the other member is the caliper member.*

22. *The sliding caliper disc brake of claim 14 wherein said complementary opening in the other of said members is peripherily closed to provide the close sliding fit with said pin element.*

B1 4,148,414 (18th)

ROW CROP PLANTER

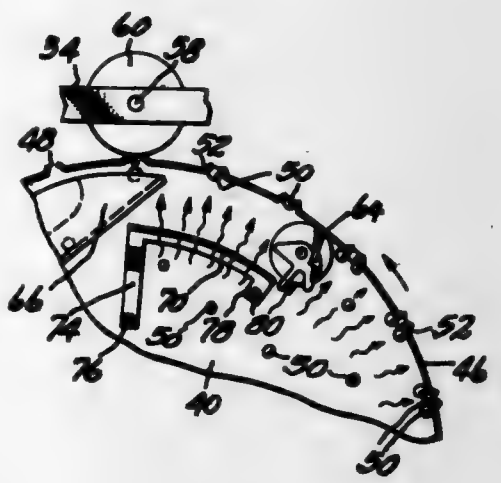
Earl R. Parks, Jr., 0141 W Rd. 700S, LaPorte, Ind. 46350

Reexamination Request No. 90/000,033, Jul. 23, 1981.
Reexamination Certificate for Patent No. 4,148,414, issued Apr. 10, 1979, Ser. No. 856,264, Dec. 1, 1977.
U.S. Cl. 221/278. Int. Cl.³ B65H 3/08

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1–3 is confirmed.

1. In a row crop planter comprising a rotatable seed-drum having a plurality of circumferential peripheral series of apertures surrounded by seed-receiving projections, means of delivering seed into said drum, means for discharging air under pressure into said drum to position and retain seeds at and adjacent each aperture as the drum rotates, roller means positioned exteriorly of and above said drum and engageable with said projections, collecting and distributing means position within said drum below said roller means, and a brush within the upper part of said drum in counter-rotational spaced relation to said roller means for engaging and releasing into the lower position of said drum seeds, in excess of a



single seed positioned at and adjacent each projection, the improvement comprising an air permeable seed barrier positioned in said drum between said collecting and distributing means and said brush to prevent reattachment of seeds at the portion of the drum between the brush and the distributing means.

B1 4,117,195 (19th)

MANUFACTURE OF EXTRUDED PRODUCTS

Peter Swarbrick, Upton-by-Chester, William John Green, Pinner, both of England, and Charles Maillefer, Lausanne, Switzerland, assignors to BICC Limited, London, England, and Etablissements Maillefer SA, Lausanne, Switzerland.

Reexamination Request No. 90/000,009, Jul. 1, 1981.
Reexamination Certificate for Patent No. 4,117,195, issued Sep. 26, 1978, Ser. No. 638,448, Dec. 8, 1975
Claims priority, application United Kingdom, Dec. 6, 1974, 52917/74
U.S. Cl. 428/379 Int. Cl.³ C08F 255/02

AS A RESULT OF REEXAMINATION IT HAS BEEN DETERMINED THAT:

The patentability of claims 1–17 is confirmed.

1. A method of making a cross-linked extruded product comprising:

metering into a screw extrusion machine having a barrel and a screw extending from end to end thereof a polymer capable of being cross-linked by the use of a hydrolysable unsaturated silane together with proportionate amounts of compounding ingredients comprising a hydrlysable unsaturated silane, a free-radical generator and a silanol condensation catalyst, at least one of said compounding ingredients being metered separately from sand polymer;

blending said compounding ingredients with said polymer in a first zone of said barrel of said extruder to form a mixture and when blending is complete heating said mixture in a second zone of said barrel downstream of said first zone until silane groups have been grafted to said polymer, the amount of said free-radical generator being sufficiently low to limit direct free radical cross linking to a level that will not prevent extrusion of the material.

extruding said mixture directly out of said extruder through an extrusion die to form an elongate product of a required final shape,

and subjecting said elongate product to the action of moisture until said polymer therein is cross-linked.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

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Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

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California	Los Angeles Public Library	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware	(302) 738-2238
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4559
Illinois	Chicago Public Library	(312) 269-2865
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
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Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214, 215
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7814
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1321**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 226
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Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

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PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF July 24, 1982

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director ..... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	9-18-80
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director ..... Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	1-09-81
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director .... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	3-18-81
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director ..... Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	4-13-81
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director ..... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	4-09-81
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	8-20-80
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director ..... Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	9-18-80
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—EARL LEVY, Director ..... Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	6-20-80
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director ..... Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling; Shaft; Impellers; Rotary Fluid Motors.	4-09-80
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director ..... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	11-26-79
DESIGN, GROUP 290—KENNETH L. CAGE, Director ..... Industrial Arts; Household, Personal and Fine Arts.	7-07-80
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director ..... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	11-14-80
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director ... Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	10-27-80
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director ..... Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	2-13-80
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director ..... Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	5-24-82
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—A. L. SMITH, Director ..... Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	11-27-79

Expiration of patents: The patents within the range of numbers indicated below expire during July 1982, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,192,536 to 3,197,783, inclusive

Plant Patents ..... Numbers 2,543 to 2,545 inclusive

REISSUES

SEPTEMBER 21, 1982

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 31,032

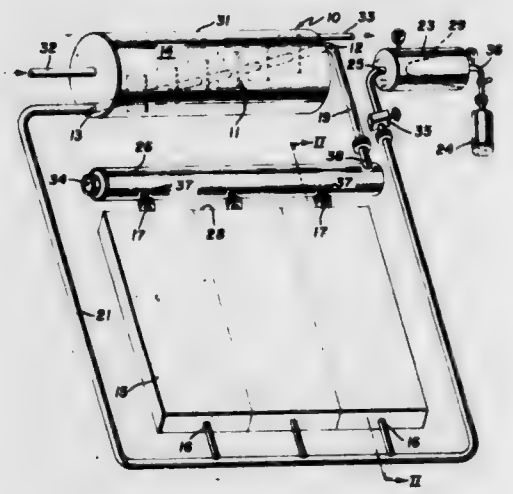
SOLAR WATER HEATER

Roger F. French, Jackson, N.H., assignor to Suntime, Inc., Bridgton, Me.

Original No. 4,240,405, dated Dec. 23, 1980, Ser. No. 34,475, Apr. 30, 1979. Application for reissue May 4, 1981, Ser. No. 260,318

Int. Cl.[3] F24J *3/02*

U.S. Cl. 126—433 6 Claims



1. Solar water heater making use of phase-change heat transfer, comprising:

(a) a condenser having an *upper* inlet and [an] *a lower* outlet, which condenser is in contact with the water to be heated,

(b) a solar collector having a bottom inlet and a top outlet and [having an] *at least one* inner conduit that connects the inlet and the outlet, the conduit being suitable for exposing a heat-transfer medium [in] *within the length of* the conduit to solar energy, the collector outlet being located below the condenser,

(c) [conduits joining] *a second conduit connecting* the outlet of the collector *directly* to the inlet of the condenser and *a third conduit connecting* the outlet of the condenser directly to the inlet of the collector to form a closed circuit, [(d) A] *said closed circuit adapted to be charged with a* phase-change [liquid] heat transfer medium [located within the circuit],

(d) means for limiting the pressure in said closed circuit during normal operation of the heater, and

[(e) an accumulator having means for regulating the pressure therein and having an inlet that is connected to the circuit below the collector, and]

[F] *(e)* a vapor-release drum connected in the circuit [between the outlet of the solar collector and the inlet of the condenser], *upstream of said condenser and downstream of said inner conduit, said inner conduit having its outlet at a point in said drum which is during normal operation of the heater below the liquid-vapor interface within said drum so as to receive heat transfer medium from said inner conduit and,* wherein the vapor-release drum has sufficient volume that the upper surface of the heat transfer medium [always] remains within the confines of the drum so that, during normal operation of the heater only the heat transfer medium which becomes vaporized is released into the inlet of the condenser *whereby all heat transfer takes place due to the conversion of the vapor to the liquid phase.*

Re. 31,033

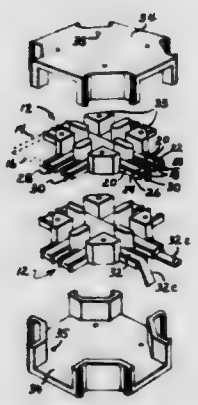
ELECTRICAL POWER DISTRIBUTION ASSEMBLY

Lester E. Wilson, Jr., Short St., Bedford, Mass. 01730, and Stephen A. Machcinski, 228 Cottage Park Rd., Winthrop, Mass. 02152

Original No. 4,148,546, dated Apr. 10, 1979, Ser. No. 893,398, Apr. 4, 1978. Application for reissue Apr. 7, 1981, Ser. No. 251,929

Int. Cl.[3] H01R *13/10*

U.S. Cl. 339—192 R 4 Claims



1. An electrical power distribution assembly comprising:

(1) a electrically insulating, electrical contact deck means having:

(a) first and second, spaced generally planar surfaces;

(b) means defining a peripheral edge between said surfaces;

(c) means defining at least two electrical contact channels in the first surface and at least two congruent electrical contact channels in the second surface, said contact channels each extending from one location on the peripheral edge to at least one other location on the peripheral edge;

(2) a first electrical contact positioned within one of said contact channels in the first surface and extending between said one peripheral edge location and the other location, said electrical contact having a portion thereof extending around the peripheral edge of the [first] *electrical contact* deck means at each location and into the congruent channel in the second surface along a portion thereof; and,

(3) a second electrical contact positioned within the second surface channel that is congruent to the other of said first surface contact channels, said second electrical contact extending between said one peripheral edge location and the other location and having a portion thereof extending around the peripheral edge of the deck means at each location and into said other first surface channel along only a portion thereof.

Re. 31,034

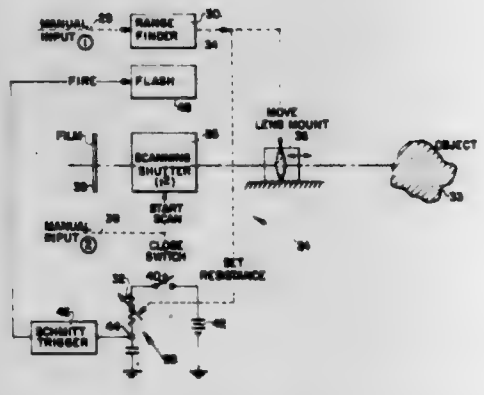
RANGE SYNCHRONIZED FLASH PHOTOGRAPHIC APPARATUS AND METHOD FOR ACHIEVING OPTIMUM FLASH EXPOSURE

Conrad H. Biber, Needham; Bruce K. Johnson, Andover, and George D. Whiteside, Lexington, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Original No. 4,188,103, dated Feb. 12, 1980, Ser. No. 898,546, Apr. 21, 1978. Application for reissue Jun. 1, 1981, Ser. No. 268,781

Int. Cl.[3] G03B *7/10, 15/05*

U.S. Cl. 354—27 20 Claims



2. Apparatus [according to claim 1] *for photographing a subject, comprising:*

a scanning shutter which when actuated produces a predetermined, timewise variation in exposure aperture area;

ranging means for providing an output representative of the range of a subject;

a flash unit; and

means for actuating the shutter to start its scanning, the improvement comprising:

means for firing the flash unit to produce a flash of illumination after a time period, measured from the first light through the shutter, dependent on the output of the ranging means, the relationship between the time period and subject range establishing a parametric relationship between the brightness of the subject due to its flash illumination and the scanning time of the shutter, the inverse of this parametric relationship constituting the timewise variation in the exposure aperture area of the shutter; and

wherein said relationship between said time [interval] *period* and range is linear, and the exposure aperture area varies as the square of the timing during scanning.

Re. 31,035

ARRANGEMENT FOR PREPARING NATURAL TISSUE FOR IMPLANTATION

Warren D. Hancock, Newport Beach, and Frederick P. Sattler, Fullerton, both of Calif., assignors to Hancock Laboratories, Inc., Anaheim, Calif.

Original No. 4,050,893, dated Sep. 27, 1977, Ser. No. 665,520, Mar. 10, 1976. Continuation of Ser. No. 490,686, Jul. 22, 1974, abandoned, which is a continuation-in-part of Ser. No. 324,217, Jan. 16, 1973, abandoned, which is a continuation of Ser. No. 28,630, Apr. 15, 1970, abandoned. Application for reissue Jul. 7, 1978, Ser. No. 922,654

Int. Cl.[3] C14C *3/16*

U.S. Cl. 8—94.11 31 Claims

1. The method of preparing *a* natural heart valve for implantation *so that said valve will have improved tensile strength, will have and retain a generally regular contour with the cusps thereof closed as in diastole, and will be in substantially its natural configuration, so that said valve will remain competent for a prolonged period upon implantation,* comprising the steps of

excising a heart valve from a donor heart, applying a tanning fluid under pressure in the physiologic range to the downstream end of [a natural] *said* heart valve *so excised* so as to cause said valve to assume *a generally regular contour with the cusps thereof coapted and closed as in diastole so that said valve is in* substantially its natural configuration,

and simultaneously applying a tanning fluid to the upstream end of said valve *and to substantially the entire exterior surface of said valve* at a pressure less than that at said downstream end,

thereby to cause said valve substantially to maintain said configuration during *and after* fixation of the tissue thereof *so that said valve can remain competent for a prolonged period of use upon implantation.*

Re. 31,036

CATALYSTS FOR DEMETALLIZATION TREATMENT OF HYDROCARBONS SUPPORTED ON SEPIOLITE

Masayoshi Inooka, Yokohama; Motoyoshi Wakabayashi, Kawasaki; Masatoshi Matsuda; Masaaki Kasuya, both of Yokohama; Munekazu Nakamura, Kamakura, and Tatsuo Morimoto, Yokohama, all of Japan, assignors to Chiyoda Chemical Engineering and Construction Co., Ltd., Yokohama, Japan

Original No. 4,196,102, dated Apr. 1, 1980, Ser. No. 907,586, May 19, 1978. Continuation of Ser. No. 748,752, Dec. 9, 1976, abandoned. Application for reissue Nov. 25, 1980, Ser. No. 210,322

Claims priority, application Japan, Dec. 16, 1975, 50-149121; Feb. 2, 1976, 51-9247; Mar. 19, 1976, 51-30628; Sep. 3, 1976. 51-104955; Sep. 14, 1976, 51-110417

Int. Cl.[3] B01J *21/14, 23/20, 23/28*

U.S. Cl. 252—456 12 Claims

1. A hydrodemetallization catalyst comprising an effective amount of a catalyst metal component supported on a sepiolite carrier, the catalyst metal being selected from the group consisting of Mo, W and V.

3. A hydrodemetallization catalyst comprising an effective amount of catalyst metal components supported on a sepiolite carrier, the catalyst metal being

(1) at least one member selected from the group consisting of Co., Ni, Fe, Cu and lanthanides and

(2) at least one member selected from the group consisting of Mo, W and V.

Re. 31,037

CATALYSTS FOR DEMETALLIZATION TREATMENT OF HYDROCARBONS SUPPORTED ON SEPIOLITE

Masayoshi Inooka, Yokohama; Motoyoshi Wakabayashi, Kawasaki, and Masatoshi Matsuda, Yokohama, all of Japan assignors to Chiyoda Chemical Engineering & Construction Co., Ltd., Yokohama, Japan

Original No. 4,196,102, dated Apr. 1, 1980, Ser. No. 907,586, May 19, 1978. Continuation of Ser. No. 748,752, Dec. 9, 1976, abandoned. Application for reissue Nov. 25, 1980, Ser. No. 210,305

Claims priority, application Japan, Mar. 19, 1976, 51-30628

Int. Cl.[3] B01J *21/16*

U.S. Cl. 252—457 9 Claims

14. A hydrodemetallization catalyst comprising an effective amount of one or more catalyst metal components supported on sepiolite, the catalyst metal being selected from the group consisting of the metals of the IIb group and the transition metals of the Periodic Table, and wherein said catalyst is prepared according to a process comprising the steps of:

(a) grinding sepiolite to a fine powder, 50% or more by weight of which has a particle size of 100-mesh or finer;

(b) adding water to the ground sepiolite to adjust the water content thereof to about 20 to about 350% by weight;

(c) kneading the resulting mixture;
(d) air-drying or heat-treating the moist kneaded sepiolite at a temperature lower than about 1000° C.; and
(e) supporting one or more of said catalyst metal components on the sepiolite, the sequence of steps being (a), (b), (c), (d), and (e) or (e), (a), (b), (c) and (d).

Re. 31,038

CATALYSTS FOR DEMETALLIZATION TREATMENT OF HYDROCARBONS SUPPORTED ON SEPIOLITE

Masayoshi Inooka, Yokohama, and Motoyoshi Wakabayashi, Kawasaki, both of Japan, assignors to Chiyoda Chemical Engineering & Construction Co., Ltd., Yokohama, Japan

Original No. 4,196,102, dated Apr. 1, 1980, Ser. No. 907,586, May 19, 1978. Continuation of Ser. No. 748,752, Dec. 9, 1976, abandoned. Application for reissue Nov. 25, 1980, Ser. No. 210,321

Claims priority, application Japan, Dec. 9, 1975, 50-145902; Feb. 2, 1976, 51-9247; Feb. 9, 1976, 51-13018; Mar. 19, 1976, 51-30628; Sep. 3, 1976, 51-104955; Sep. 14, 1976, 51-110417

Int. Cl.³ B01J *20/12*

U.S. Cl. 252—457 **4 Claims**

13. A sepiolite carrier prepared according to process comprising:
(a) grinding sepiolite to a fine powder, 50% or more by weight of which has a particle size of 100-mesh or finer;
(b) adding water to the sepiolite obtained in (a) to adjust the water content thereof to about 20 to about 350% by weight;
(c) kneading the resulting mixture in (b), and subsequently
(d) air-drying or heat-treating the resulting mixture in (c) at a temperature lower than about 1000° C.

Re. 31,039

CATALYSTS FOR DEMETALLIZATION TREATMENT OF HYDROCARBONS SUPPORTED ON SEPIOLITE

Masayoshi Inooka, Yokohama; Yoshihiro Ohguchi, Ebina, both of Japan, assignors to Chiyoda Chemical Engineering & Construction Co., Ltd., Yokohama, Japan

Original No. 4,196,102, dated Apr. 1, 1980, Ser. No. 907,586, May 19, 1978. Continuation of Ser. No. 748,752, Dec. 9, 1976, abandoned. Application for reissue Nov. 25, 1980, Ser. No. 210,306

Claims priority, application Japan, Feb. 2, 1976, 51-9247; Mar. 19, 1976, 51-30628; Jul. 10, 1976, 51-82329; Sep. 3, 1976, 51-104955; Sep. 14, 1976, 51-110417

Int. Cl.³ B01J *21/16*

U.S. Cl. 252—457 **11 Claims**

36. A hydrodemetallization catalyst comprising an effective amount of one or more catalyst metal components supported on sepiolite, the catalyst metal being selected from metals of the IIb group and transition metals of the Periodic Table, and wherein said catalyst is prepared according to a process comprising the steps of:
(a) grinding the sepiolite to a fine powder, 50% or more by weight of which has a particle size of 100-mesh or finer;
(b) adding water to the ground sepiolite to adjust the water content thereof to about 20 to about 350% by weight;
(c) kneading the resulting mixture;
(d) air-drying or heat-treating the moist kneaded sepiolite at a temperature lower than about 1000° C.; and
(e) supporting one or more of said catalyst metal components on the sepiolite by contacting the sepiolite with an aqueous acidic solution containing ions of one or more metals selected from the group consisting of metals of the Ib, IIb, IIIa and iron groups of the periodic Table, the sequence of steps being (a), (b), (c), (d), and (e), (a), (b), (c), and (d).

PLANT PATENTS

GRANTED SEPTEMBER 21, 1982

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,888

LILY NAMED FELLOWSHIP

Ted T. Kirsch, Myrtle Point, Oreg., assignor to Sun Valley Bulb Farms, Inc., Myrtle Point, Oreg.

Filed Dec. 12, 1980, Ser. No. 216,067
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—68 1 Claim

1. A new and distinct variety of Oriental hybrid lily plant, substantially as herein shown and described, characterized by its medium large, outwardly-facing, pinkish white flowers which are borne on strong, stiff, upwardly and outwardly-projecting pedicels; and by its generally white petals which are distinguished by a brilliant coral red midrib band appearing on a soft pink background surrounded by white undulating margins.

4,889

CHRYSANTHEMUM NAMED YELLOW WESTLAND

Jacques C. M. van der Knaap, De Lier, Netherlands, assignor to Pan-American Plant Company, Parrish, Fla.

Filed Oct. 2, 1980, Ser. No. 193,033
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—78 1 Claim

1. A new and distinct variety of chrysanthemum plant, substantially as herein shown and described, characterized by its yellow quill-shaped ray florets.

PATENTS

GRANTED SEP. 21, 1982

ERRATA

For CLASS	See PATENT NO.
474–012	4,350,491
525–237	4,350,621
524–831	4,350,622
524–391	4,350,623
549–435	4,350,636
549–304	4,350,637
549–275	4,350,638
549–259	4,350,639
525–327	4,350,804
378–046	4,350,889
378–110	4,350,891
372–046	4,350,960

PATENTS

GRANTED SEPTEMBER 21, 1982

GENERAL AND MECHANICAL

4,349,920

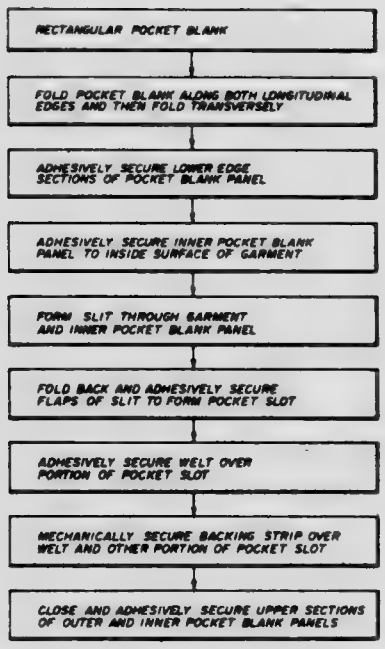
POCKET CONSTRUCTION

Joseph W. A. Off, Irving, Tex., assignor to Haggar Company, Dallas, Tex.

Division of Ser. No. 948,016, Oct. 2, 1978, Pat. No. 4,263,678, which is a continuation-in-part of Ser. No. 905,054, May 11, 1978, Pat. No. 4,156,293, which is a continuation of Ser. No. 819,843, Jul. 28, 1977, abandoned. This application Jul. 14, 1980, Ser. No. 168,503

Int. Cl.³ A41D *27/20*

U.S. Cl. 2—247 **31 Claims**



1. In a method of constructing pockets in garment panels wherein a length of pocket material having reverse and obverse sides is connected to the garment panel, folded transversely to form inner and outer pocket panels, and secured at adjacent edges and ends of the folded length of pocket material; the improvement comprising the steps of:

positioning the reverse side of the length of pocket material on the inside surface of the garment panel wherein a pocket is to be formed;

adhesively securing the length of pocket material to the garment panel; and

physically separating and removing a predetermined discrete area of the length of pocket material and the adjacent portion of the garment panel and thereby forming a pocket slot of predetermined length and width directly through the garment panel and length of pocket material with the adhesive connection therebetween.

4,349,921

INTERVERTEBRAL DISC PROSTHESIS

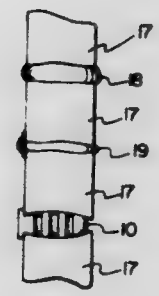
J. David Kuntz, 899 Lahakas Blvd., Kitimat, B.C., Canada

Filed Jun. 16, 1980, Ser. No. 159,843

Int. Cl.³ A61F *1/00*

U.S. Cl. 3—1 **52 Claims**

1. An intervertebral disc prosthesis, comprising a body of substantially rigid, non-porous, biologically compatible material having a superior surface, an inferior surface, opposed lateral surfaces and opposed anterior and posterior ends, each of said superior surface and inferior surface being substantially flat in the lateral-lateral direction over the entirety of said surfaces and, in the anterior-posterior direction, corresponding generally with the shape of a vertebral surface adjacent a disc space, and means located at one of said opposed anterior and



posterior ends for facilitating holding of the prosthesis during its insertion into said disc space.

4,349,922

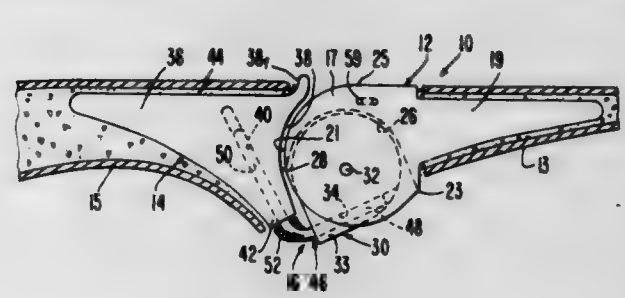
JOINT PROSTHESIS WITH IMPROVED ARTICULATION MEANS

John M. Agee, 3980 Bartley Dr., Sacramento, Calif. 95822

Continuation-in-part of Ser. No. 14,391, Feb. 22, 1979, abandoned. This application Mar. 23, 1981, Ser. No. 246,834

Int. Cl.³ A61F *1/03*

U.S. Cl. 3—1.91 **40 Claims**



1. A prosthesis for a joint of the human body with the joint being at the junction of a pair of normally aligned bones comprising: first and second elongated members, the first member adapted to be inserted into one of the bones adjacent to the joint and the second member adapted to be inserted into the other bone adjacent to the joint, the members having respective ends adjacent to each other when the same are inserted into respective bones; and means pivotally interconnecting the adjacent ends of said members, said means including a first element carried by one of the members for rotation relative thereto about a first axis, and a second element having a pair of relatively angularly disposed parts shiftably coupled with said first element and said second member, respectively, for rotation relative thereto about second and third axes, respectively, whereby said second member can pivot relative to the first member about any one of said axes without imparting substantial torsional and bending loads to the first member.

4,349,923

JET NOZZLE ASSEMBLY FOR THERAPY BATHS

Philip E. Chalberg, 1119 Maple Ave., Orange, Calif. 92668

Filed Dec. 12, 1980, Ser. No. 215,888

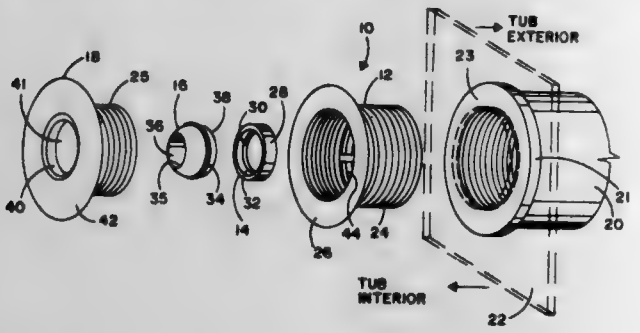
Int. Cl.³ A61H *33/02*

U.S. Cl. 4—542 **10 Claims**

1. A nozzle assembly for connection to a source outlet through an orifice in the wall of a whirlpool bath for controlling the direction of flow of a high velocity stream of aerated water into the bathtub, the assembly comprising:

a first cylindrical pipe fitting having an annular flange at one end for compressive engagement with said wall, and having means for securely engaging said source outlet,

a second cylindrical pipe fitting having an annular flange at one end for compressive overlapping engagement with said first fitting flange, and having means for securely engaging said first cylindrical pipe fitting in concentric relation therewith said second fitting flange completely blocking said first fitting flange from view,



a spherical member having a cylindrical channel for passage of said aerated water, said spherical member being rotatably seated within said second cylindrical pipe fitting, with said channel providing said flow direction control, and

means for rotatably securing said spherical member within said second cylindrical pipe fitting for limited rotation therein.

4,349,924

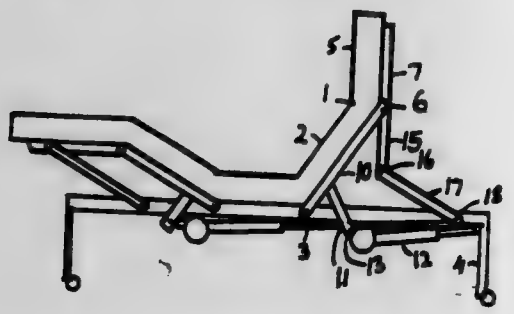
ADJUSTABLE BODY SUPPORTING ASSEMBLIES WITH FORWARD INCLINING HEAD SUPPORT

Henry C. Zur, Phoenix, Ariz., assignor to Goodman Manufacturing Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 41,354, Aug. 1, 1979, Pat. No. 4,258,445. This application Feb. 23, 1981, Ser. No. 236,433

Int. Cl.³ A61G *7/00, 7/06*

U.S. Cl. 5—68 **3 Claims**



1. An adjustable body supporting assembly comprising a horizontal frame member (4), a back support portion (1) pivotably connected to said frame member, and divided into a lower back support (2) and an upper head support (5) pivotable connected to said lower back support, and a single power means adapted to raise the lower back support and upper head support, from a horizontal position to angular positions in which the lower back support is inclined relative to the frame, and the upper head support is inclined relative to the frame and the lower back support.

4,349,925

PHYSIOLOGICAL PILLOW

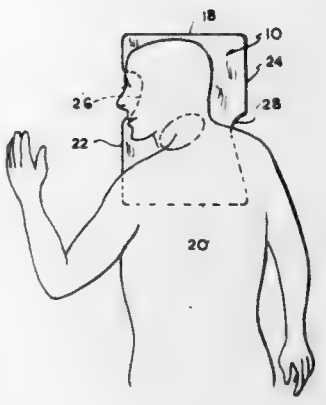
James K. Macomber, 12 Gina Dr., Centerport, N.Y. 11721, assignor to James K. Macomber, Centerport, N.Y.

Filed Mar. 13, 1980, Ser. No. 130,154

Int. Cl.³ A47G *9/00*

U.S. Cl. 5—431 **8 Claims**

1. A pillow particularly useful for a person sleeping in a prone position with the head turned at least partially to one side comprising a cushion formed of soft yielding material and of a size to support the head and adjacent chest portion of a person using the pillow, said cushion having a head area to support the head of the person, a chest area to support at least a portion of the chest of the person, said cushion being tapered generally in a direction from said head area towards said chest area and said cushion having a groove extending at least part-



way across the cushion between the head area and the chest area so that it can be folded along the groove to facilitate the use of the pillow during positions of the user other than prone.

4,349,926

WATERBED MATTRESS WITH INFLATABLE MARGINS

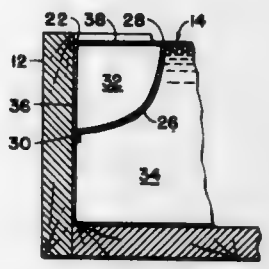
Howard A. Winther, Santa Clara, Calif., assignor to Liberty Vinyl Corporation, Santa Clara, Calif.

Division of Ser. No. 713,563, Aug. 11, 1976, Pat. No. 4,064,579. This application Dec. 19, 1977, Ser. No. 861,765

The portion of the term of this patent subsequent to Dec. 27, 1994, has been disclaimed.

Int. Cl.³ A47C *27/08*

U.S. Cl. 5—452 **1 Claim**



1. In a waterbed mattress including a bladder formed of pliant sheet material defining a top panel, a bottom panel, and side panels joining said top and bottom panels at upper peripheral margins and lower peripheral margins respectively, said side panels being adapted to conform to a rigid, circumscribing peripheral framework preventing lateral distortion thereof, the improvement comprising: at least one supplemental panel of a pliant sheet material which internally spans said upper peripheral margins, sealably separating said bladder into a main chamber for containing a liquid and at least one upper corner chamber for containing a selected fluid, the cross sectional length of said supplemental panel being no greater than the total cross sectional lengths of the portions of said top panel and said adjacent side panel forming said upper corner chamber whereby said at least one upper corner chamber establishes the structural rigidity of said upper peripheral margins.

4,349,927

BEEHIVE IMPROVEMENTS

John Q. Adams, IV, 1206 Foxcroft Rd., Richmond, Va. 23229

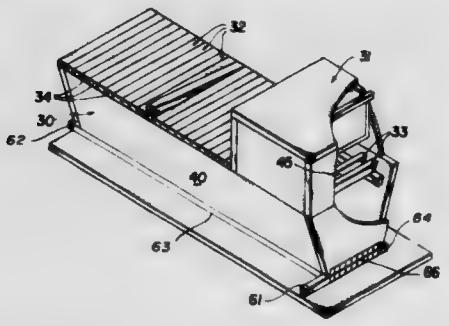
Filed Feb. 19, 1981, Ser. No. 236,112

Int. Cl.³ A01K *47/00*

U.S. Cl. 6—1 **4 Claims**

1. A beehive comprising a bottom board having a pair of side longitudinal locator strips fixed thereto in parallel relationship and having one end transverse locator strip fixed thereto between the longitudinal locator strips, the longitudinal locator

strips having interior longitudinal inclined faces, a hive body portion compriing connected vertical end walls which are trapezoidal and downwardly tapering and side walls which are inclined and downwardly convergent and adapted to engage matingly between the inclined faces of the longitudinal locator strips on the bottom wall, an overhead hive section resting bodily on the top edges of the inclined side walls of the hive body portion at one end portion of the latter, brood frames within the hive body portion beneath the overhead hive section and having transversely extending top bars, depressed support strips for the opposite ends of the top bars fixed to the interior surfaces of said side walls below the top edges thereof and disposed beneath the overhead hive section whereby the



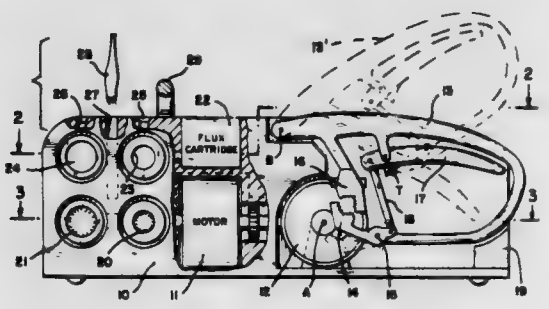
top bars of said brood frames are supported at an elevation below the bottom of the overhead hive section, said top bars being recessed in their opposite sides to form bee crawl spaces between the top bars when the latter are placed in side-by-side contacting relationship, whereby bees may travel from the brood frames in the hive body portion to the overhead hive section and vice-versa, filler strips for the recesses of the top bars to close said crawl spaces thereby enabling the hive body portion to be used alone without the overhead hive section, and honey frames within the remainder of the hive body portion beyond the overhead hive section and having top bars whose opposite ends rest on the top edges of the inclined side walls of the hive body portion.

4,349,928

MULTI-PURPOSE PLUMBING TOOL

Alexander T. Mlikotin, P.O. Box 1975, Santa Monica, Calif. 90406

Filed Nov. 28, 1980, Ser. No. 211,433
Int. Cl.³ B25F *1/00*
U.S. Cl. 7—157 **9 Claims**



1. A multi-purpose plumbing tool including, in combination:
(a) an elongated portable frame;
(b) a high speed motor;
(c) a circular pipe saw coupled to said motor for high speed rotation about a transverse saw axis when said motor is started;
(d) a pipe vise including two pairs of jaws, one on either side of the plane of said circular saw; and
(e) pivot means on said frame at a point spaced from the pipe vise for enabling relative swinging movement to take place between said circular pipe saw and said pipe vise about a transverse pivot axis parallel to and spaced from said transverse saw axis,

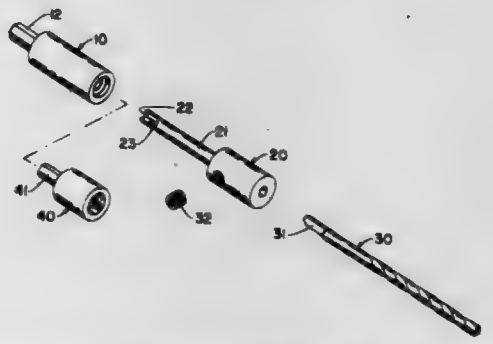
whereby a pipe can be gripped by said pipe vise and engaged by the periphery of said saw so that further relative swinging movement about said pivot axis will cause cutting of the pipe by the saw, the pipe being held on either side of the cut made by the saw by the respective pairs of jaws as the cut progresses.

4,349,929

TWIST-LOCK CONNECTION AND TOOL UTILIZING SAME

George G. Dewey, Prospect Heights, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Jul. 31, 1980, Ser. No. 174,288
Int. Cl.³ B25F *1/10*
U.S. Cl. 7—158 **7 Claims**



1. Means for attaching a drill bit or the like to a power tool, said means comprising a first member having a longitudinal bore extending at least partially therethrough; protrusion means extending laterally into said bore at a first location, resilient spring means projecting into said bore at a second location spaced from the first location; a second member having a longitudinally extending shank which is received in the bore of said first member; said shank having a first groove extending longitudinally from a first end thereof and forming two generally radially extending walls disposed generally perpendicular to one another; a second groove extending laterally of, and intersecting one of said walls of said first groove at a point spaced from the first shank end; whereby the second groove creating a wall which is arcuate in configuration and having a portion inner most from the periphery of the shank generally located in the plane of the other of said two first groove walls, said first shank end may be inserted axially into said bore such that said protrusion means is received in said first groove, said second member rotated with respect to said first member to bring said protrusion means into engagement with said second groove to thereby prevent axial displacement between the first and second members and creating torque transmission mating bearing surfaces between the innermost wall portion of the second groove and the protrusion means, said resilient spring means frictionally engaging a portion of the surface of the shank to prevent undesired counterrotation of the second member relative to said first member.

4,349,930

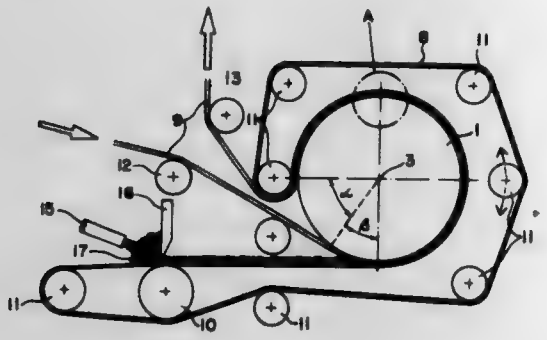
CONTINUOUS METHOD FOR UNIFORM FOAM TREATMENT OF PLANAR TEXTILE STRUCTURES

Kurt Van Wersch, Wegberg, and Manfred Pabst, Cologne, both of Fed. Rep. of Germany, assignors to A. Montforts, Monchen-Gladbach, Fed. Rep. of Germany

Filed Sep. 30, 1980, Ser. No. 192,230
Claims priority, application Fed. Rep. of Germany, Oct. 1, 1979, 2939767
Int. Cl.³ D06B *5/08*
U.S. Cl. 8—151 **4 Claims**

1. Continuous method for uniform foam treatment of planar textile structures wherein a foamed treatment medium for finishing and/or dyeing is applied to the planar structure which is then subjected to underpressure, which comprises sucking the foam onto the planar structure to which the foam is to be applied, introducing the foam together with the planar structure into an underpressure chamber wherein the pressure is low compared to the internal pressure of the bubbles of the foam, applying the foam directly to the planar structure and,

prior to disintegration of the foam by applying underpressure thereto which is low compared to the internal pressure of the



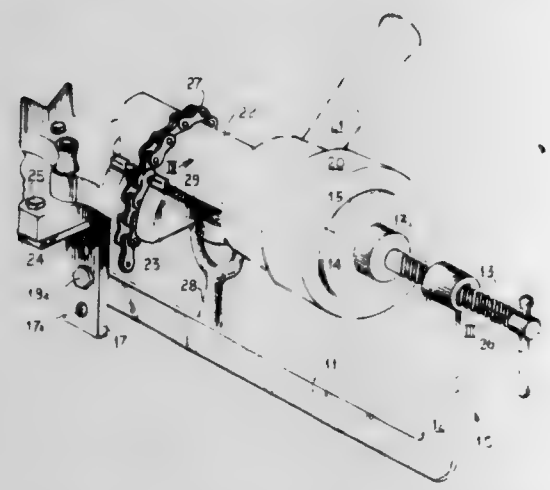
bubbles of the foam, exerting a suction force onto the foam from the planar structure beforehand ahead of an inlet gap leading to the underpressure chamber.

4,349,931

THREADING DIE COUPLE

Harry I. Leon, 924 Bowen St., NW., Atlanta, Ga. 30318

Filed May 27, 1980, Ser. No. 153,083
Int. Cl.[3] B23G *5/04*
U.S. Cl. 10—123 P 12 Claims



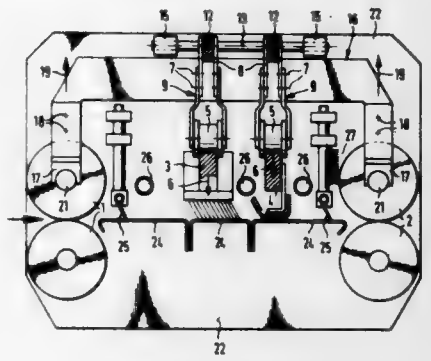
1. A tool couple for a threading die, which comprises:
(a) a frame having an elongated arm;
(b) a tailpiece to which the elongated arm is pivotally connected, said arm being movable during the threading operation about its pivotal joint with the tailpiece;
(c) means for anchoring the tailpiece in a fixed position relative to a cylindrical workpiece such as a pipe;
(d) a shaft supported by the frame, the longitudinal axes of the shaft and of the elongated arm being substantially parallel;
(e) means connected to the frame for moving the shaft toward the workpiece;
(f) a rotatable member which is supported by the shaft, a portion of the rotatable member being slidable about the shaft; and
(g) means for constraining said portion to slide around the longitudinal axis of the shaft, the distance from the longitudinal axis of the shaft to each point on said portion remaining approximately constant; said portion being adapted for physical contact with the threading die, so that an axial force can be transmitted from the tool couple through the frame of the threading die to points on the cutting edges thereof which are in contact with the workpiece.

4,349,932

DEVICE FOR UNIFORMLY PRESSING ON AND RELEASING THE PRESSURE FROM RUB-OUT BARS

Eberhard Schörnig, Taunusstein, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 15, 1981, Ser. No. 254,450
Claims priority, application Fed. Rep. of Germany, Apr. 18, 1980, 8010663[U]
Int. Cl.[3] G03D *5/06*
U.S. Cl. 15—77 4 Claims



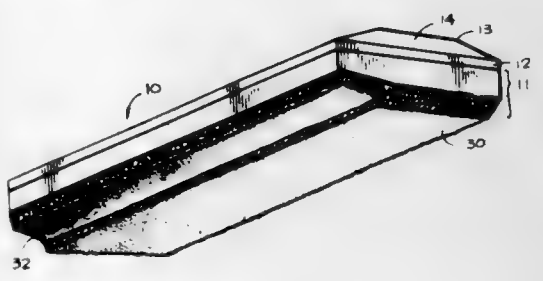
1. In a device for uniformly pressing on and releasing the pressure from, particularly oscillating, rub-out bars in an apparatus for developing printing plates including transport rolls and, if appropriate, squeezing rolls arranged in pairs, particularly in a horizontal position, with a bearing at each end of each upper roll, and means whereby each bearing and upper roll may be raised and lowered with respect to each lower roll,
the improvement comprising pivotal angle lever means, equipped with weight means, and having a lower arm with a pressure roll connected to the end thereof, said pressure roll being adapted to exert pressure on a rub-out bar in the lowered position of said each upper roll,
and lifting means for said angle lever means comprising bearing means adapted to seat on shaft means of said upper rolls, and connecting means between said bearing means and an upper arm of said pivotal angle lever means.

4,349,933

CURLING PUSH-BROOM

Albert N. Thompson, 539 Almey Ave., Winnipeg, Man., Canada (R2C 2Z2)

Filed Feb. 4, 1981, Ser. No. 231,306
Claims priority, application Canada, Feb. 11, 1980, 345392
Int. Cl.[3] A63B *67/14*
U.S. Cl. 15—118 16 Claims



1. For use in a curling push-broom, a base plate having a bottom surface and a top surface; a fabric covering fixedly secured to the bottom surface and comprising:
(a) a first area whose outside margin is generally coincident with a first end and with a part of each of two opposite sides of said bottom surface;
(b) a second area whose outside margin is generally coincident with a second end opposite to said first end and with remaining parts of each of said two opposite sides of said bottom surface;
(c) said first area being covered by a first fabric, said second

area being covered by a second fabric whose coarseness is different from that of said first fabric;

(d) means for securing said base plate to handle means with said bottom surface turned away from the handle means;

whereby a broom utilizing the base plate can be selectively applied for polishing and/or buffing the ice.

4,349,934

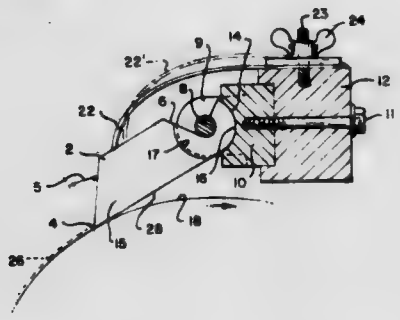
DOCTORING KNIFE FOR DRUM DRYERS AND FLAKERS

Thomas Margittai, c/o T.B.M. Technologies, Inc., 778 Cornwall Rd., State College, Pa. 16801

Filed Feb. 17, 1981, Ser. No. 234,985

Int. Cl.³ F26B *25/04*

U.S. Cl. 15—256.51 **8 Claims**



1. An improved doctoring knife for drum dryers and flakers of the type having a rotating drum upon which a product is deposited and a frame to which the doctoring knife is attached, said knife comprising:

(a) a plurality of knife blocks each having a cutting face and a bottom face which intersect to define a cutting edge, and

(b) a means for attaching the knife blocks to the frame in a manner such that each knife block can be separately removed and the knife blocks can be retained in a position where:

(i) the cutting edge of each knife block will contact the drum thereby defining a line of contact,

(ii) the bottom face of each knife block is in a plane which is substantially tangent to the drum at the line of contact,

(iii) the knife blocks cannot create sufficient radially-directed pressure to damage the drum, and

(iv) the blocks will be adjacent to one another with the cutting face of all knife blocks facing in one direction.

4,349,935

RUG AND CARPET CLEANING APPARATUS

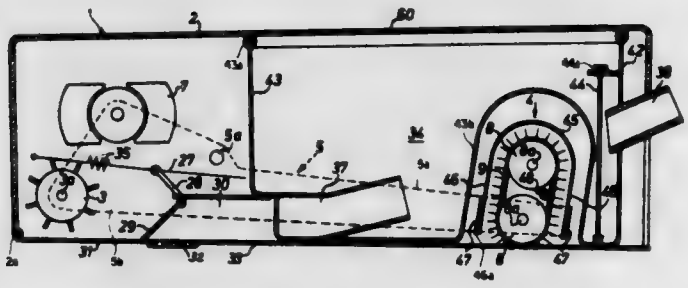
Leopold Knestele, Postfach 1241, D 7967 Bad Waldsee, Fed. Rep. of Germany

Filed Jul. 2, 1980, Ser. No. 164,532

Claims priority, application Fed. Rep. of Germany, Jan. 24, 1980, 3002422

Int. Cl.³ A47L *11/30*

U.S. Cl. 15—320 **12 Claims**



1. In a rug and carpet cleaning apparatus having a suction source, a source of cleaning liquid and a head displaceable by a handle over a surface of a carpet or rug to be cleaned and connected with said suction source and said liquid source, said head being provided with a driving motor and a plurality of drivable units selectively engageable with said surface and adapted to be coupled with said motor for performing respective cleaning operations upon said surface, said head having a housing receiving said units, the improvement which comprises:

a rocker disposed in said housing and comprising a pair of members extending in a direction of displacement of said head and spaced apart to form opposite members of a frame;

means for pivotally mounting said rocker in said housing on an axis transverse to said direction whereby parts of said rocker to opposite sides of said axis can be brought selectively closer to said surface upon the tilting of said rocker in opposite senses about said axis, said units being respectively mounted on said parts of said rocker for selective approach to said surface, said motor being mounted on said rocker;

means forming a continuous driving connection between said motor and one of said units on said rocker; and

means actuatable on said handle for controlling the direction of tilt of said rocker about said axis.

4,349,936

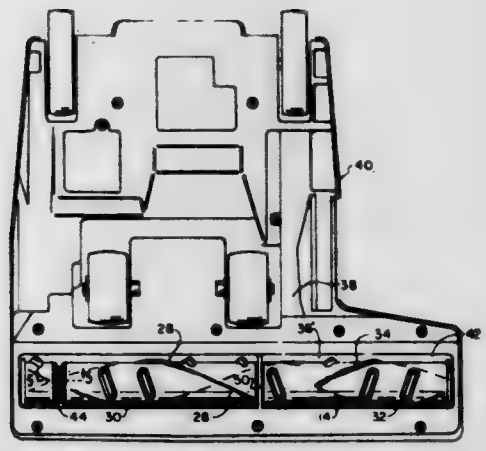
AGITATOR FOR A CLEANER OR THE LIKE

Emmett D. Lorson, Canton, and Keith G. Minton, North Canton, both of Ohio, assignors to The Hoover Company, North Canton, Ohio

Filed Feb. 25, 1981, Ser. No. 238,051

Int. Cl.³ A47L *5/30*

U.S. Cl. 15—366 **10 Claims**



1. A roll type agitator having brush strips and small, short abbreviated beater bars including;

(a) said small, short beater bars disposed around said agitator and angled obliquely relative to the axis of the agitator,

(b) said brush strips angling obliquely relative to the axis of said agitator with said brush strips being partly oriented in one angular direction and partly in the opposite angular direction said oppositely angled brush strips being offset around the periphery of said agitator roll at their contiguous ends,

(c) said contiguous ends being located at the suction opening of a cleaner supportably mounting said agitator roll,

(d) said small short beater bars being paired in adjacent obliquely angled, spiralling fashion, and

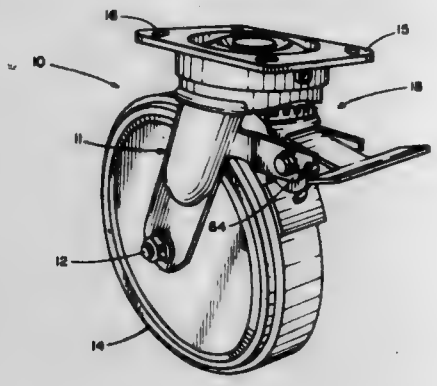
(e) said beater bars being angled towards said suction opening.

4,349,937

CASTER ASSEMBLY WITH SWIVEL LOCK AND BRAKE

Frank J. Fontana, Stratford, Conn., assignor to Stewart-Warner Corporation, Chicago, Ill.

Filed Jul. 11, 1980, Ser. No. 167,680
Int. Cl.[3] B60B *33/60*
U.S. Cl. 16—35 R 13 Claims



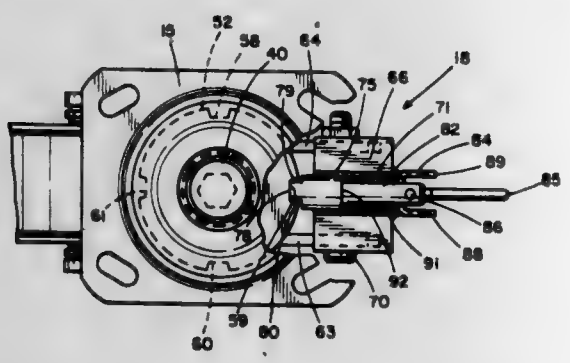
1. A caster assembly, comprising; horn means, an axle carried by said horn means, a wheel supported for rotation on said axle, a swivel plate mounted on said horn means for pivotal movement about an axis generally transverse to the axis of the wheel, a locking plate fixed to the swivel plate for movement therewith, a brake and swivel lock assembly carried by the horn means for substantially simultaneously engaging the swivel lock plate and the wheel to prevent swivelling and rotational movement of the wheel, the brake and swivel lock assembly including a brake and swivel lock member reciprocably mounted in the horn means, an operator member pivotally mounted in the horn means and engaging the brake and swivel lock member to shift the brake and swivel lock member into engagement with a swivel plate and the wheel, the brake and swivel lock member having an arcuate segment selectively engageable with the wheel, the wheel having a resilient tread surface, and said arcuate segment of the swivel lock member being rigid having a radius less than the radius of the tread surface on the wheel so that the ends of the arcuate segment bite into the tread surface to prevent rotation of the wheel in either direction.

4,349,938

CASTER ASSEMBLY WITH SWIVEL LOCK

Frank J. Fontana, Stratford, Conn., assignor to Stewart-Warner Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 167,680, Jul. 11, 1980. This application Oct. 14, 1980, Ser. No. 196,282
Int. Cl.[3] B60B *33/00*
U.S. Cl. 16—35 R 4 Claims



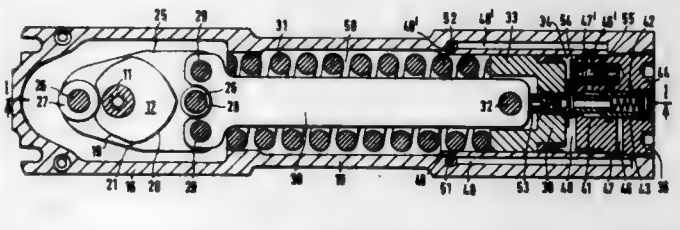
1. A caster assembly, comprising; a horn member, an axle mounted in said horn means, a wheel supported for rotation on said axle, a swivel plate mounted on said horn means for pivotal movement about an axis generally transverse to the axis of the axle, said swivel plate having at least one recess in the periphery thereof, a swivel lock member mounted on the horn member for reciprocating movement, said swivel lock member including a plunger having a projection selectively engageable with the recess in the periphery of the swivel plate, an actuator for withdrawing the plunger from the swivel plate and holding it in an active position, the plunger being pivotally mounted in the horn member and axially movable from an active position in engagement with the swivel lock plate to an inactive position pivoted 90 degrees with respect to the active position thereof, a transverse actuator member carried by the outer end of the plunger, and a U-shaped holding bracket on the horn member having spaced recesses in the ends thereof for receiving the transverse member and holding the plunger in its inactive position.

4,349,939

AUTOMATIC DOOR CLOSER

Horst Tillmann, Ennepetal, Fed. Rep. of Germany, assignor to Dorma-Baubeschlag GmbH & Co. KG, Ennepetal-Voerde, Fed. Rep. of Germany

Filed Jun. 9, 1980, Ser. No. 157,814
Claims priority, application Fed. Rep. of Germany, Jun. 15, 1979, 2924311
Int. Cl.[3] E05F *3/10*
U.S. Cl. 16—53 5 Claims



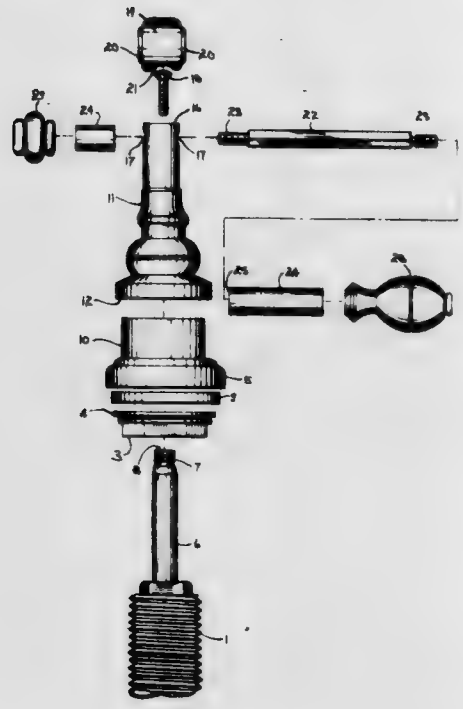
1. In an automatic door closer including an elongated housing having opposite closed ends; a closer shaft adapted to be connected to a door mounted in the region of one end of said housing turnable from a position in which the door is closed in either direction; a cam disc fixed to the closer shaft for turning therewith; a slide carrying a pair of rollers for cooperation with said cam disc for moving the slide in longitudinal direction of said housing during the turning of the closer shaft and the cam disc; a rod extending in longitudinal direction of said housing fixed at one end to said slide; a piston fixed to the other end of the rod and movable in a cylinder bore of said housing and dividing the interior of the latter into two pressure spaces; a compression spring surrounding said rod and abutting with opposite ends respectively against said piston and a stop formed in the housing to urge said piston toward the other closed end of said housing so as to reduce the volume of the one pressure space which is located between said piston and said other end of said housing and to move said slide to a position in which the rollers thereof cooperate with said cam disc to move the door connected to said closer shaft to the closed position; overpressure valve means in said piston constructed to open by the overpressure in said one pressure space during reduction of the volume thereof during the closing movement of the door, the improvement comprising a pair of channel means for connecting the pressure spaces to each other; blocking means in said other closed end of said housing movable by said piston to alternatingly open and close said channel means; one-way valve means in said piston constructed to open during movement of said piston in door opening direction; and control valve means in at least one of said channel means movable to a position permitting flow of fluid through said one channel means upon increase of pressure in said one pressure space; and adjustable throttle means in each of said channel means constructed to throttle the flow of fluid from said one to the other pressure space or completely stop such flow.

4,349,940

FAUCET HANDLE ASSEMBLY

Gary A. Fleischmann, and Clarence E. Kleesig, both of Sheboygan, Wis., assignors to Kohler Co., Kohler, Wis.

Filed Jan. 26, 1981, Ser. No. 228,458
Int. Cl.³ E05B 7/00
U.S. Cl. 16—110 R 12 Claims



1. A faucet handle assembly or the like connectable to a support comprising:

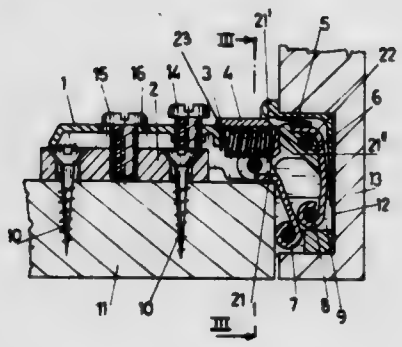
an open-ended sleeve which is connectable to the support by a fastener inserted and removed through the open end, the sleeve having aligned opposite cross openings near the open end; a cross member engaged within the cross openings; and a thimble that covers the open end and has opposite openings aligned with the cross openings, the cross member also engaged within the thimble openings to hold the thimble in place.

4,349,941

MULTI-PINTLE HINGE WITH SLIDING SPRING CLOSING MECHANISM

Erich Röck, and Josef Brunner, both of Höchst, Austria, assignors to Julius Blum Gesellschaft m.b.H., Höchst, Austria

Filed Jun. 18, 1980, Ser. No. 160,737
Claims priority, application Austria, Jul. 4, 1979, 4649/79
Int. Cl.³ E05F 1/12
U.S. Cl. 16—288 6 Claims



1. A furniture hinge including a closing mechanism and comprising:

a hinge arm adapted to be mounted on a side wall of an article of furniture;

a hinge casing adapted to be mounted on a door of the article of furniture;

an inner hinge link and an outer hinge link connecting said hinge casing to said hinge arm, adjacent first ends of said inner and outer hinge links being pivotally connected to said hinge arm by respective axles, adjacent second ends of said inner and outer hinge links being pivotally connected to said hinge casing by respective axles, and said inner hinge link adapted to be positioned closer to the furniture side wall than is said outer hinge link when said hinge is connected to the article of furniture;

said hinge arm having a generally U-shaped cross-sectional configuration including a pair of legs adapted to be directed toward the furniture side wall and a web joining said pair of legs, said web having a forward end directed toward said hinge casing, said forward end of said web having therein a recess defined by a pair of inwardly extending lateral rims integral with said legs;

a retaining member mounted within said recess, said retaining member having on opposite sides thereof grooves receiving said rims, said retaining member being guided by said rims and grooves for linear movement only with respect to said hinge arm in opposite directions substantially parallel to the mounting plane of said hinge arm;

spring means for urging said retaining member linearly toward said hinge casing;

said outer hinge link including a sliding member directed generally toward said retaining member; and

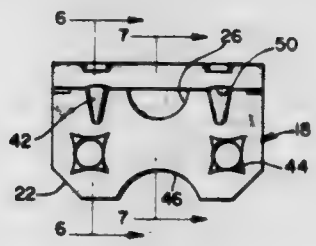
said retaining member having at a forward end thereof a guiding member directed toward said sliding member, said guiding member including first surface means for, when said hinge casing is in a door-closed position or almost door-closed position, contacting said sliding member under the force of said spring means and imparting to said outer hinge link a torque tending to move said hinge casing in a door-closed direction, and said guiding member including second surface means separate from said first surface means for, when said hinge casing is in a door-open position, contacting said sliding member under the force of said spring means without imparting torque to said outer hinge link.

4,349,942

EASEL HINGE CONSTRUCTION

Leo T. Roy, South Attleboro, Mass., assignor to Craft, Inc., South Attleboro, Mass.

Filed Sep. 22, 1980, Ser. No. 188,765
Int. Cl.³ E05D 1/04
U.S. Cl. 16—376 9 Claims



1. In an easel hinge construction including an outer hinge plate and an inner hinge plate directly interconnected to each other for relative arcuate movement therebetween without a hinge pin, said outer hinge plate having a relatively flat leaf portion terminating in a curved barrel at the upper end thereof, said inner hinge plate also having a relatively flat leaf portion terminating in a curved barrel at its upper end, said inner barrel being positioned within said outer barrel for relative rotational movement so as to permit acute angular separation between said hinge plates from a closed position wherein the inner sides of said leaves are face-to-face to a relatively open position, the improvement comprising positive stop means for simultaneously preventing longitudinal sliding movement between said plates and for limiting the degree of angular separation therebetween in said open position, said stop means including at least one opening in said outer barrel, said outer barrel

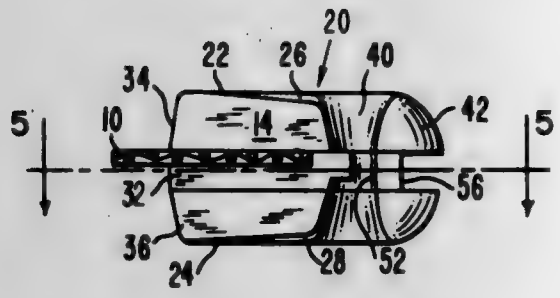
opening defined by a pair of longitudinally spaced side edges and a longitudinally extending lower edge, said inner barrel having a tang upwardly extending into said outer barrel opening, said tang engaging said outer barrel opening edges to prevent said longitudinal sliding movement, the terminal end of said tank engaging said lower edge when said plates are in their open position to thereby limit said angular separation.

4,349,943

SLIDE FASTENER STRINGER ELEMENTS WITH TONGUES AND GROOVED HEADS

George B. Moertel, Conneautville, Pa., assignor to Talon, Inc., Meadville, Pa.

Filed May 30, 1980, Ser. No. 154,649
Int. Cl.[3] A44F *19/04*
U.S. Cl. 24—205.13 R 7 Claims



1. A slide fastener stringer comprising a mounting tape, and a row of coupling elements attached to one edge of the tape; each element comprising

a body molded around the one edge of the tape,

a narrowed neck portion extending from the body away from the tape,

a head attached to the neck,

a pair of tongues extending outwardly from the neck,

the head having a longitudinal groove therein for receiving a tongue of each of a pair of adjacent elements in an opposing stringer, and

the groove and the tongues having widths perpendicular to a plane of the tape wherein the width of the groove is substantially greater than the width of the tongues,

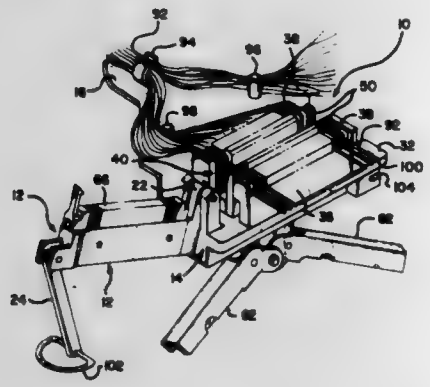
the tape, the tongues and the groove having top surfaces all of which are coplanar whereby a center plane of the tongues is upwardly offset relative to a center plane of the groove.

4,349,944

WIRE INSERTION TOOL

Edward L. Fickes, Mechanicsburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Nov. 17, 1980, Ser. No. 207,309
Int. Cl.[3] H01R *43/04*
U.S. Cl. 29—566.4 3 Claims



1. A tool for inserting wires into grooves located on opposing sides of a connector cap, said tool comprising:

a. a base plate having mounted thereon a pair of spaced apart blocks each having wire-receiving guide slots across the upper surfaces, and a wire inserter movably positioned between the two blocks and consisting of two side plates spaced apart by and fastened to a bridge, said plates having wire-receiving slots in and along their upper edge and ribs extending down their inside surfaces, said ribs, plate slots and guide slots all being in alignment;

b. a head pivotally connected to the base plate and having means thereon to removably retain a connector-cap in a pre-determined orientation so that upon pivoting the head around over the base plate, the connector-cap is in registration with the wire inserter; and

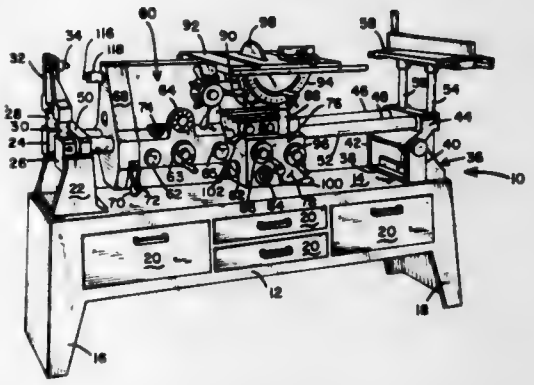
c. means to move the wire inserter upwardly with the side plates moving up the sides of the connector-cap so that wires which may have been laced across the slots are pressed into the grooves on the sides of the connector-cap by the ribs.

4,349,945

MULTI-PURPOSE POWER TOOL

Anthony Fox, 8306 Queen Ave. South, Minneapolis, Minn. 55431

Filed Jul. 21, 1980, Ser. No. 170,773
Int. Cl.[3] B23P *23/02;* B23Q *1/14*
U.S. Cl. 29—27 A 7 Claims



1. In a multi-purpose power tool of the type having a power head member with a motor driven tool supporting arbor extending from one edge thereof, said power head member being slidably mounted on tubular ways, a workpiece supporting carriage member slidably mounted on said tubular ways and movable therealong toward and away from said one edge of said power head member, the improvement comprising:

(a) a stand member having a horizontal surface;

(b) pivot means attached to said stand member and secured to one end of said tubular ways to maintain said ways in a parallel and spaced apart relationship to one another and allowing said tubular ways to be rotated between a horizontal and a vertical disposition with respect to said horizontal surface;

(c) a torsion spring member operatively coupled to said pivot means and to said stand member for facilitating the movement of said tubular ways between said horizontal and vertical dispositions;

(d) a rack gear formed on at least one of said tubular ways;

(e) a shaft journaled for rotation within said carriage member and having a pinion gear secured thereto and engagable with said rack gear;

(f) an electric motor mounted within said carriage member in driving relationship with said shaft; and

(g) manually operable crank means selectively engagable with said shaft for rotating said shaft independently of said motor and moving said carriage member along said ways.

4,349,946

TOOL CONNECTING MECHANISM

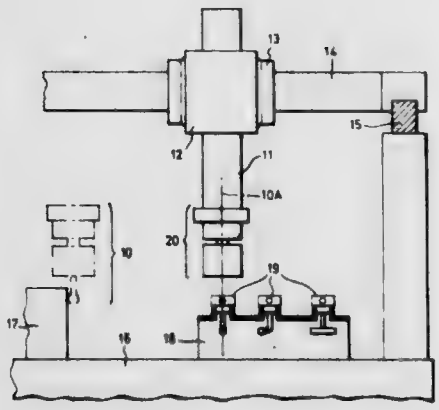
David R. McMurtry, 'Undercroft', Wotton-under-Edge, Gloucestershire, England

Filed Mar. 31, 1980, Ser. No. 136,093

Claims priority, application United Kingdom, Mar. 30, 1979, 7911328

Int. Cl.³ B23Q *3/155*

U.S. Cl. 29—57 5 Claims



1. A tool connecting mechanism comprising:

a first connecting member adapted to support a tool;

a second connecting member for supporting said first member, each of said first and second members having three support elements arranged at three locations spaced apart on an axis, the support elements of one of said members extending radially outwardly and defining axially open spaces therebetween, and the support elements of the other member extending radially inwardly and defining axially open spaces therebetween;

urging means for axially urging said first connecting member in one sense of the direction of said axis into engagement with said second connecting member at said first and second support elements, one of said first and second support elements having axial projections, the other one of said first and second support elements defining axial recesses engageable by said projections under the force of said urging means, said projections and recesses being constituted in a kinematic support means and cooperating to positively locate said first connecting member on said second connecting member against displacement relative thereto transversely to and rotationally about said axis; and

means provided on said second connecting member defining space into which said first connecting member is movable in the other sense of said direction thereby to disengage said projections from said recesses and in which said first connecting member is rotatable into axial alignment between said support elements of said one connecting member and the spaces between said support elements of said other connecting member and thereby to free the first connecting member for axial withdrawal from the second connecting member in said one sense of direction.

4,349,947

METHOD FOR MANUFACTURING AN AIRLESS SPRAY NOZZLE

Alvin A. Rood, Oberlin, Ohio, assignor to Nordson Corporation, Amherst, Ohio

Filed Sep. 29, 1980, Ser. No. 191,935

Int. Cl.³ B23P *15/00, 13/00;* B05B *1/06*

U.S. Cl. 29—157 C 5 Claims

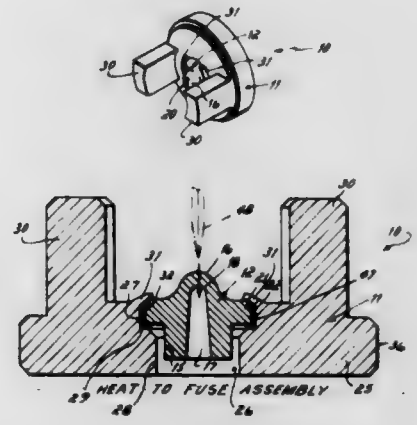
4. The method of manufacturing a spray nozzle comprising a nozzle tip and nozzle adapter, said nozzle tip being made from a hard, abrasive resistant material and said nozzle adapter being made from a material which is less hard, less abrasive resistant, and more easily mechineable than the material from which said nozzle tip is made, which method comprises,

forming on said tip a generally semi-spherical dome shaped external peripheral surface,

forming in said tip an axial approach passage terminating in a blind, generally semi-spherical end cavity coaxially aligned with said approach passage and said cone shaped peripheral surface,

drilling and counterboring an axial passage through said adapter, said counterbored portion of said axial passage extending inwardly from a front face of said adapter,

machining the front face of said adapter so as to form an annular lip on said front face between said counterbored passage and said machined portion of said front face,



milling opposite sides of said front face of said adapter to the depth of said annular lip so as to create a pair of spaced arcuate lips on opposite sides of the axial passage through said adapter,

inserting said tip into said counterbored axial passage of said adapter,

swaging said spaced lips over a portion of said tip so as to secure said tip within said bore,

applying sealing material between said tip to said adapter so as to form a liquid tight seal between the peripheral surface of said tip and the axial passage through said adapter and

forming a discharge opening in communication with said approach passage in said nozzle tip.

4,349,948

METHOD FOR MANUFACTURING METAL CASINGS FOR ACCESSORIES AND PARTICULARLY GATE VALVES

Erwin Müller, Herdecke; Bernd Kollmann, Witten; Ferdinand Sonnabend, Dortmund; Gert Petzolt, Nordkirchen; Josef Balz, Castrop-Rauxel; Bernhard Walloschek, Witten, and Friedrich Risse, Bochum, all of Fed. Rep. of Germany, assignors to Thyssen Industrie AG, Fed. Rep. of Germany

Filed Feb. 7, 1980, Ser. No. 119,506

Claims priority, application Fed. Rep. of Germany, Feb. 15, 1979, 2905744

Int. Cl.³ B23P *15/00*

U.S. Cl. 29—157.1 R 2 Claims

1. A method of manufacturing a metal gate valve casing having a large nominal width over 200 mm and welded pipe connections to collars having a selected inside diameter on opposite sides of the said casing, comprising:

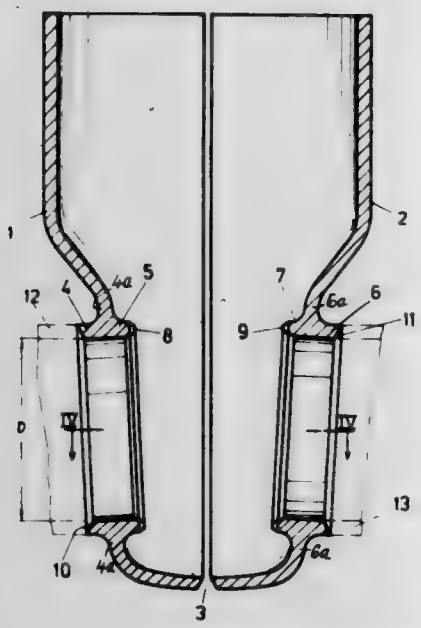
forming a bore of a diameter less than said selected diameter in each of two flat plates;

forming, in each bore of each flat plate, inwardly and outwardly extending tubular collars having said selected inside diameter, using a metal deforming tool;

holding and bracing said deformed inwardly and outwardly extending collars the surface of said selected inside diameter and a surrounding surface of each plate in the vicinity of each collar using upper and lower first die elements which expose a remainder of each plate;

forming said remainder of each plate into a three-dimensional curved part using upper and lower second die ele-

ments while maintaining said collars and surrounding surface in said upper and lower first die elements; and



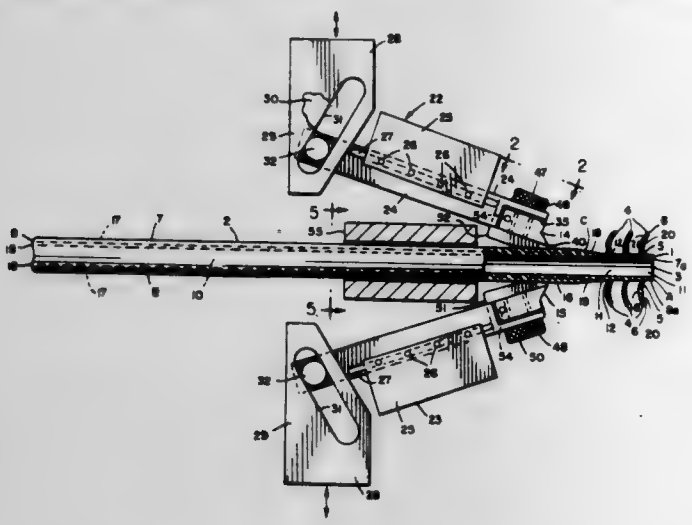
joining said curved parts together by a longitudinal weld extending between said curved parts to form said valve casing.

4,349,949

METHOD OF MAKING HEAT EXCHANGERS

Richard W. Kritzer, 400 E. Randolph, Chicago, Ill. 60601

Filed Nov. 5, 1980, Ser. No. 204,210
Int. Cl.³ B23P *15/26*
U.S. Cl. 29—157.3 A **6 Claims**



1. The method of forming fins on the surface of a heat exchange element which comprises the steps of

(a) feeding an elongated tubular body member longitudinally past a cutter,

(b) reciprocating said cutter forwardly and rearwardly toward and away from said surface at an acute angle and cutting into said surface during the forward movement thereof in a skiving action, thereby to form an upstanding fin, one side of which is integral with said body, and

(c) imparting relative vibration between said cutter and said body during said forward movement of said cutter,

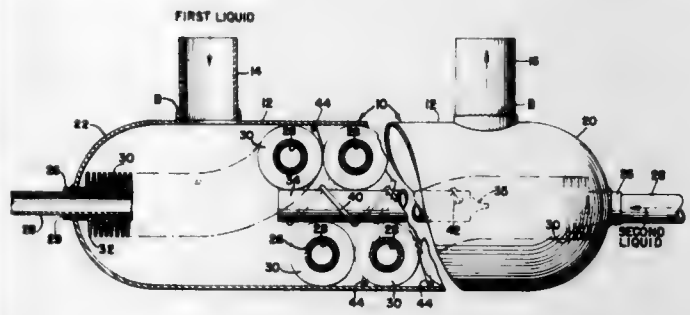
(d) thereby to produce a roughened surface on the cutter-adjacent side of the fin thus formed.

4,349,950

HEAT EXCHANGER AND METHOD OF MAKING

Donald R. Bowden, Huntsville, Ala., assignor to Solar Unlimited, Inc., Huntsville, Ala.

Division of Ser. No. 55,128, Jul. 5, 1979, Pat. No. 4,321,963.
This application Mar. 27, 1981, Ser. No. 248,111
Int. Cl.³ B23P *15/26*
U.S. Cl. 29—157.3 AH **2 Claims**



1. The method of assembling a heat exchanger having an outer cylindrical shell member, a preformed helical volute member having multiple convolutions with external fins whose outer peripheries fit into the shell member and whose inner peripheries define a central aperture and having end tubes extending from the convolutions axially of the shell member, and a core member shaped to fill the central aperture defined by the inner peripheries of the fins, including the following steps:

(a) winding a first helix of a wire whose diameter is small as compared with the diameter of a fin snugly around the core member with the same pitch as the volute member and securing the first helix to the core member;

(b) screwing the wound core member into the central aperture to fill the latter along the length of the convolutions;

(c) forming a second helix of wire whose diameter is small as compared with the diameter of a fin, the pitch of the second helix being the same as the pitch of the volute member and the outer diameter of the second helix being such as to permit the second helix to lie between the convolutions of the volute member and substantially tangent to a circle equal to the diameter of the inner surface of the shell member;

(d) interwinding the second wire helix with the volute member;

(e) inserting the volute member, the core member, and the interwound wire helices into the shell member; and

(f) closing the ends of the shell member and sealing the end tubes of the volute member to the shell member.

4,349,951

METHOD OF MAKING A KEY RING BOB

Michael W. Wefler, P.O. Box 524, Hobard, Ind. 46342

Filed Nov. 6, 1980, Ser. No. 204,567
Int. Cl.³ B23P *23/00, 17/04;* B21K *21/16*
U.S. Cl. 29—401.1 **2 Claims**

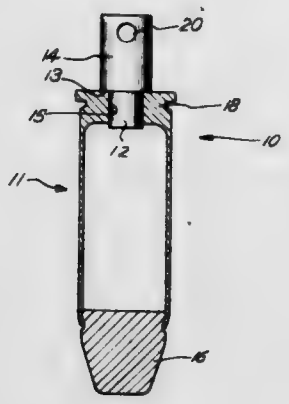
1. A method for producing a key chain bob with a bullet shape comprising the steps of:

(a) providing a shell casing having a thickened end wall forming a primer well and a side wall having an open end;

(b) providing a rod having a transverse bore through one end;

(c) providing a bullet head for said casing;

(d) boring a hole in said casing end wall at said primer well to enlarge the opening of the primer well;



(e) pressing the opposite end of said shaft into said enlarged end wall hole in a force fit; and

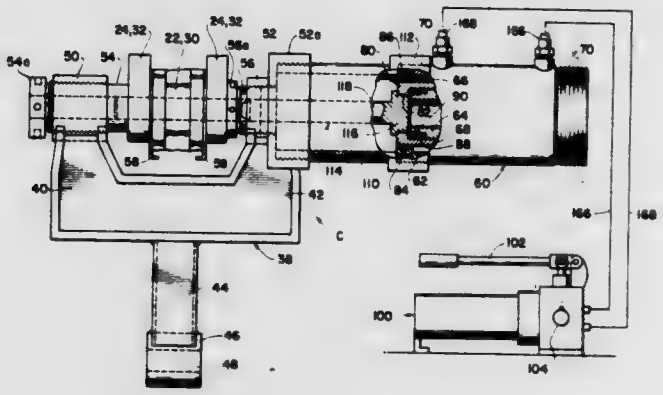
(f) seating said bullet head into said side wall open end.

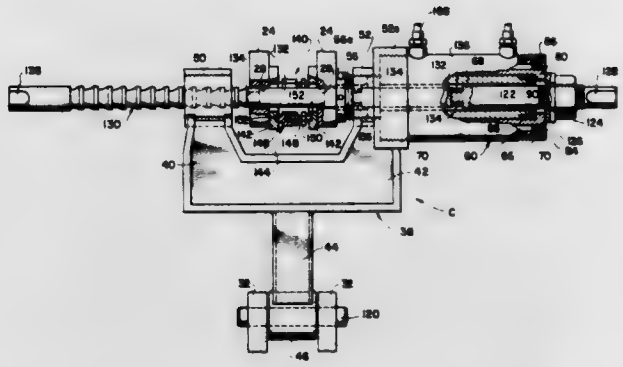
4,349,952

APPARATUS AND METHOD FOR FIELD CONVERSION OF CORRODED PIVOTAL COUPLINGS TO NON-CORRODABLE COUPLINGS

Elmer L. Decker, Long Beach, and James Moon, Santa Ana, both of Calif., assignors to Quadco Alaska, Inc., Farmington, N. Mex.

Filed Apr. 28, 1980, Ser. No. 144,063
Int. Cl.³ B23P *19/04*
U.S. Cl. 29—402.06 28 Claims





1. Apparatus for use in converting a pivotal coupling, which has become stuck and inoperative due to corrosive action on the engaged surfaces of its pivot pin and associated bearing surfaces, into a substantially non-corrosive coupling which comprises:

a frame structure for attachment to the stuck and inoperative coupling;

hydraulic means carried by said frame structure including a cylinder and reciprocable piston;

a pusher tool initially connectable to said piston and having an end engageable with an end of the stuck pivot pin, and upon energization of said hydraulic means being operative to apply pressure in a direction to axially remove the stuck pivot pin from its associated bearing surfaces; and

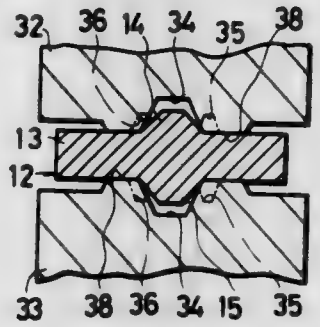
a broaching tool thereafter connectable to said piston in axial alignment with said bearing surfaces, and upon energization of said hydraulic means being operative to broach the bearing surfaces so as to increase their diameters to a size that will enable the mounting therein of new bearing liners of a substantially non-corrosive material for the reception of a new pivot pin of a substantially non-corrosive material.

4,349,953

METHOD OF MANUFACTURING SLIDE FASTENER COUPLING ELEMENTS

Takeo Fukuroi, Uozu, Japan, assignor to Yoshida Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 24, 1980, Ser. No. 132,981
Int. Cl.³ B21D *53/50*
U.S. Cl. 29—410 2 Claims



1. A method of manufacturing slide fastener coupling elements, comprising the steps of:

(a) advancing a metal strip, comprised of an elongate web and an upper and a lower longitudinal medial land each disposed on an opposite side of the web, longitudinally between a pair of upper and lower dies each having a central recess and a pair of spaced side cavities spaced on opposite sides of the central recess;

(b) stopping the metal strip with the upper and lower longitudinal medial lands located in complete vertical registry with the central recesses of the upper and lower dies, respectively, and with the side cavities of the upper and lower dies disposed transversely on opposite sides of the centers of and in partial vertical registry with the upper and lower longitudinal medial lands, respectively;

(c) stamping the metal strip between the upper and lower dies to deform a portion of each of the medial lands into a transverse projection and a pair of spaced longitudinal teeth one on each side of the transverse projection with a pocket portion formed in the metal strip surrounded by the transverse projection and teeth and with a base extending around the transverse projection and teeth, said pocket portion and base being formed thinner than the metal strip web, and said transverse projection and teeth being formed partly of material squeezed from the pocket portion and base;

(d) blanking outer profiles of coupling element legs out of marginal edges of the metal strip web; and

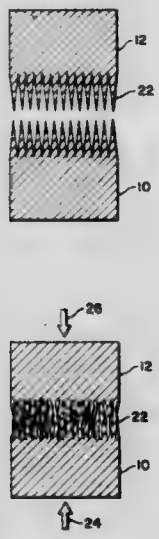
(e) thereafter, blanking out of the metal strip a coupling element including said transverse projection and teeth and said legs.

4,349,954

MECHANICAL BONDING OF METAL METHOD

Bruce A. Banks, Olmsted Township, Lorgin County, Ohio, assignor to The United States of America as represented by the United States National Aeronautics and Space Administration, Washington, D.C.

Filed Nov. 26, 1980, Ser. No. 210,632
Int. Cl.[3] B23P *3/00, 25/00, 11/00*
U.S. Cl. 29—458 10 Claims



1. A method of joining two surfaces in a mechanical bond comprising

texturing said surfaces to form a plurality of close packed cones on said surfaces, and

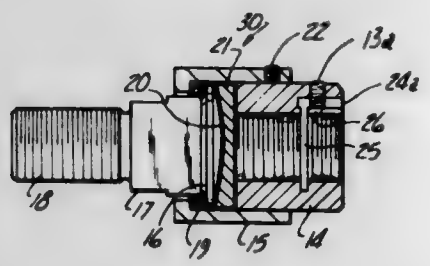
pressing said surfaces together with a force sufficient to cause plastic deformation of said cones whereby the cones buckle in random directions to permanently interlock them.

4,349,955

METHOD OF LOCKING A MALE MEMBER TO A FEMALE MEMBER

Ralph O. Keen, Roseville, Mich., assignor to Taper Line, Inc., Warren, Mich.

Division of Ser. No. 901,336, May 1, 1978, Pat. No. 4,252,458, which is a continuation-in-part of Ser. No. 684,348, May 7, 1976, Pat. No. 4,086,946. This application Sep. 11, 1980, Ser. No. 186,398
Int. Cl.[3] B23P *19/00*
U.S. Cl. 29—526 R 1 Claim



1. A method of locking a mutually engageable male body member to a female body member, said method comprising the steps of:

forming a longitudinal bore a predetermined distance into said female body member;

forming at least one slot concentric to said bore a predetermined distance into said female body member, said at least one slot defining a resilient segment portion of uniform circumferential width along its axial length;

forming a circumferential groove in said longitudinal bore at a predetermined distance substantially equal to said predetermined distance of said at least one concentric slot and communicating with said slot, such that said resilient segment portion freely deflects radially between the ends of said at least one slot;

inserting said male body member into said longitudinal bore of the female body member; and

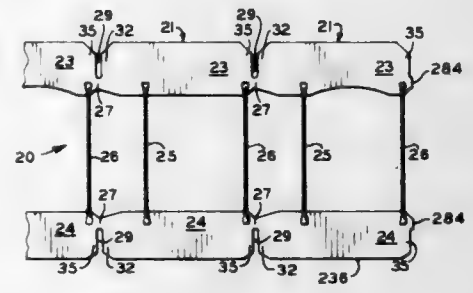
urging said resilient segment portion radially inward to engage said male body member and thereby lock said male body member to said female body member.

4,349,956

METHODS AND APPARATUS FOR FEEDING AND HANDLING ELECTRICAL PHASE INSULATORS FOR DYNAMOELECTRIC MACHINES

Fredrick Koenig, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Filed Nov. 5, 1979, Ser. No. 91,081
Int. Cl.[3] H02K *15/10*
U.S. Cl. 29—596 12 Claims



1. A method of placing phase insulators on a magnetic core having a pair of end faces, a centrally disposed axially extending bore, and a plurality of slots extending axially between the end faces and communicating with the bore; wherein the phase insulators comprise end turn insulating portions held in spaced apart relation by connector means; the method comprising the steps of: mutually aligning a gap defined by an insulator feeding device and a first part of an insulator transfer mechanism while a first insulator is disposed in such gap in preparation for loading the leading end of the first insulator on the first part of the transfer mechanism; advancing the first insulator along the feeding device defined gap toward the transfer mechanism, and depositing the leading end of the first phase insulator on the first part of the transfer mechanism and retaining the leading end of the first phase insulator on the first part of the transfer mechanism with the trailing end of the first phase insulator projecting therefrom; moving a second insulator along the feeding device defined gap and indexing the transfer mechanism relative to the feeding device so as to align a second part of the transfer mechanism with the feeding device defined gap in preparation for receipt of the leading end of the second insulator from the feeding device; feeding the leading end of the second phase insulator onto the second part of the insulator transfer mechanism and retaining the leading end of the second phase insulator on the second part of the transfer mechanism with the trailing end of the second phase insulator projecting therefrom; continuing to index the transfer mechanism and to align the feeding device defined gap and other transfer mechanism parts, and continuing to feed insulators from the feeding device defined gap and retain the leading ends of such phase insulators on the other parts of the transfer mechanism with the trailing ends of such phase insulators projecting from the transfer mechanism until a predetermined number of phase insulators are carried and retained by the transfer mechanism with the trailing ends thereof projecting therefrom; wrapping the trailing ends of the predetermined number of insulators about the transfer mechanism and holding the trailing ends of the predetermined number of insulators closely adjacent to the transfer mechanism; interfitting the transfer mechanism with the magnetic core along the bore of the core in mutually aligned relationship; and transferring the insulators from the transfer mechanism to the magnetic core.

4,349,957

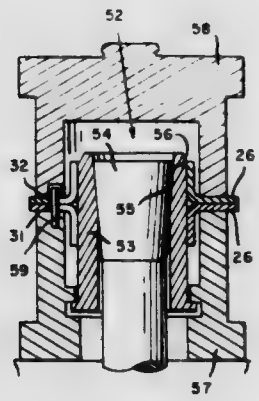
METHOD OF MAKING A BOBBIN WOUND STEPPING MOTOR

Robert S. Lundin, Northfield, Conn., assignor to The Superior Electric Company, Bristol, Conn.

Continuation of Ser. No. 946,468, Sep. 28, 1978, abandoned. This application Apr. 30, 1980, Ser. No. 145,121

Int. Cl.³ H02K *15/02*

U.S. Cl. 29—596 **22 Claims**



1. The method of assembling the stator of a motor having at least two annular units each including an annular coil and a toroidal core structure containing said coil, each said core structure including first and second pole parts each having an annular pole portion and said pole parts having respective sequences of poles upstanding from respective circular margins of said annular pole portions and regularly distributed in alternation but spaced apart arcuately in cylindrical array, the poles of said first annular unit being offset arcuately from the poles of said second annular unit, each pole having an air-gap-bounding surface spaced by an air gap from the rotor of the motor, including the steps of assembling one pole part of each of two toroidal core structures with their annular pole portions in slideable abutment with each other in approximate concentricity and with the poles thereof extending in opposite directions and establishing said arcuately offset relationship between said sequences of poles, adjusting said sequences of poles into concentricity by engaging said air-gap-bounding surfaces of the poles radially with a common radially adjustable concentricity establishing device that presses radially in all directions against said air-gap-bounding surfaces, and securing the pole pieces to each other in axial abutment while the pole parts are in their arcuate and concentric relationship thus established.

4,349,958

DEVICE FOR TEMPERATURE MEASUREMENT AND A METHOD FOR THE MANUFACTURE OF SUCH A DEVICE

Hakan B. Hakansson; Lennart P. E. Persson, both of Lund, and Berth-Ove G. Wall, Bjärred, all of Sweden, assignors to Gambro AB, Lund, Sweden

Division of Ser. No. 131,079, filed Jul. 3, 1978 as PCT/SE78/00012, published Feb. 7, 1980 as W080/00191, 102(e) date Jun. 1, 1979, U.S. Pat. 4,296,633. This application Apr. 6, 1981, Ser. No. 251,468

Int. Cl.³ H01C *7/02*

U.S. Cl. 29—612 **11 Claims**

1. A method of manufacturing temperature measurement devices, comprising the steps of:

providing a sheet of electric insulating material;

providing one side of said sheet with electric conducting material to form a first electric conductor;

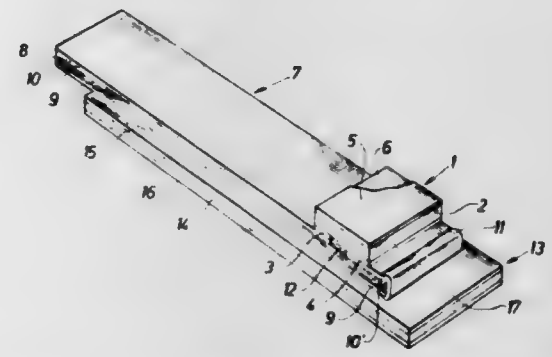
providing an opposite side of said sheet with electric conducting material to form a second electric conductor;

electrically short-circuiting said first and second electric conductors along one edge of said sheet;

removing a portion of one of said first and second electric conductors to form a gap therein extending generally parallel to said one edge of said sheet;

cutting said sheet along at least one line generally perpendicular to said gap and hence said one edge of said sheet to form a plurality of individual strips from said sheet;

providing each strip with its own temperature-sensitive sensor having a pair of electric contacts such that one



contact is electrically connected to said first electric conductor of said strip and the other contact is electrically connected to said second electric conductor of said strip, thereby forming a plurality of temperature measurement devices.

4,349,959

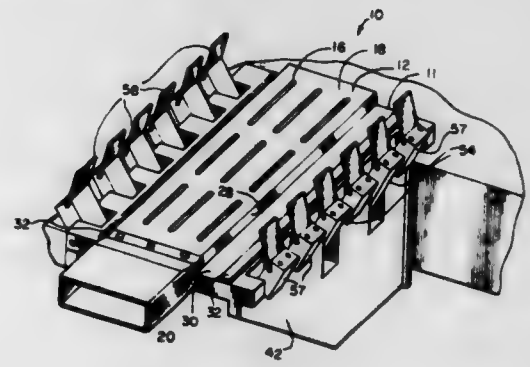
APPARATUS FOR ALIGNING BATTERY PLATES AND SEPARATORS

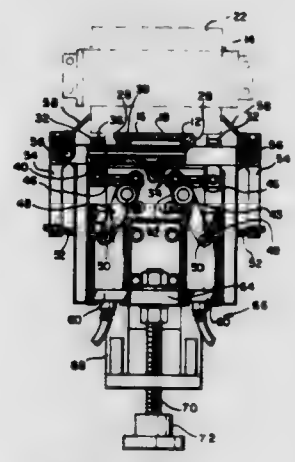
Todd A. Urban, Fleetwood, Pa., assignor to General Battery Corporation, Reading, Pa.

Filed Apr. 14, 1980, Ser. No. 140,250

Int. Cl.³ B23P *19/00*

U.S. Cl. 29—730 **22 Claims**





6. An apparatus for aligning battery plates and separators into stacks for use in an electric storage battery said apparatus comprising:

a. a frame;

b. a base surface disposed on said frame, said base surface dimensioned to receive a plurality of battery plates and separators;

c. first alignment means pivotally mounted to said frame and disposed on opposite sides of said base surface;

d. drive means for urging said first alignment means toward said base surface wherein said first alignment means will contact said plurality of battery plates and separators and align same;

e. second alignment means, said second alignment means extending above said frame, said second alignment means being located between said first alignment means and said base surface for moving across said base surface;

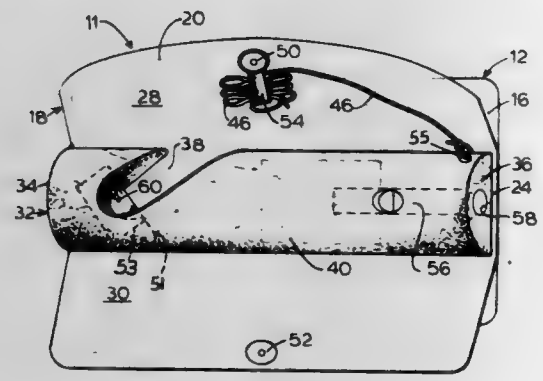
f. drive means for moving said second alignment means across said base to contact a different location on said plates from said first mentioned contact in order to additionally align same.

4,349,960

RAFT KNIFE

Wesley Kwasniak, 5979 SW. 56 St., Miami, Fla. 33155

Filed Dec. 19, 1980, Ser. No. 218,277
Int. Cl.³ B26B *11/00*
U.S. Cl. 30—153 **8 Claims**



1. A knife in combination with a pocket structure to be fixed to a raft, said pocket structure including a central zone and means attached to the central zone for fixing the pocket structure to a raft, said pocket structure comprising a pair of flaps, adapted to open and close the pocket and including means to close the pocket and maintain it in closed relation, a buoyant knife having a first end and a second end and a recess adjacent the first end, said recess having a blade within said recess and spanning said recess,

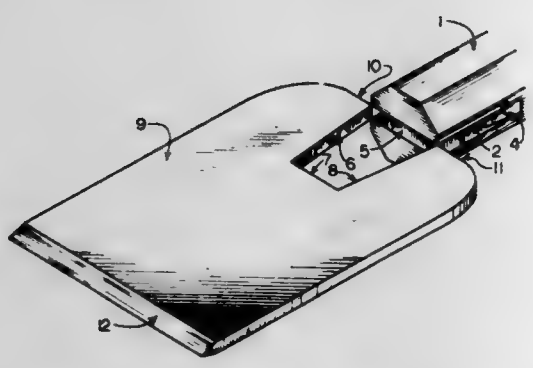
tether means to secure the knife and said pocket structure, said tether means including a first end connected to the knife and a second end connected to the pocket structure.

4,349,961

REMOVABLE CHISEL BLADE

Harlan C. Pendleton, 1606 12th Ave. West, Seattle, Wash. 98119

Continuation-in-part of Ser. No. 200,955, Oct. 27, 1980, abandoned. This application Sep. 29, 1981, Ser. No. 306,752
Int. Cl.³ B26B *3/00*
U.S. Cl. 30—168 **9 Claims**



1. A removable chisel blade capable of cleaning grout drippage from the surface of a concrete wall, comprising:

(a) a generally planar, metal body;

(b) a beveled prying edge on one end of the body; and

(c) a notch on the body, laterally opposite the edge, allowing frictional, removable interfitting and wedging of the body with a chisel shaft;

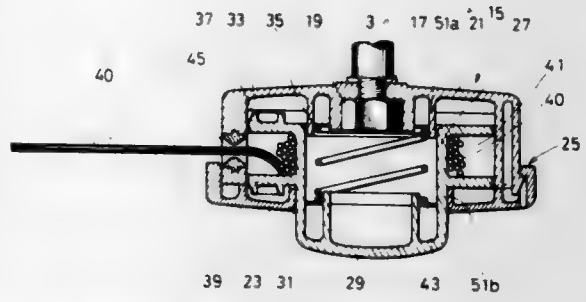
wherein the notch includes inwardly tapering side portions to improve the frictional interfitting and wedging of the body ahd shaft; and wherein the body includes beveled inset grooves at the end of the notch to enhance the frictional interfitting and wedging of the body and shaft and to reduce movement of the blade in the plane defined by the body.

4,349,962

CUTTING DOWN MACHINE

Hidehiko Itagaki, Kasukabe, and Yuji Suzuki, Akishima, both of Japan, assignors to Komatsu Zenoah Co., Japan

Filed Jul. 24, 1980, Ser. No. 171,789
Claims priority, application Japan, Jun. 14, 1980, 55-79620
Int. Cl.³ A01G *3/00*; A01D *50/00*
U.S. Cl. 30—276 **7 Claims**



1. A cutting down machine comprising:

a case driven through a rotating shaft by a prime mover which is rotatably supported by a supporting case;

said case comprising a case body having an inner peripheral surface, a bottom surface, an engaging portion on said bottom surface, and a cover member detachably mounted on said bottom surface;

a reel provided with a pair of flange portions axially spaced apart to define a groove for winding therearound and accommodating therein a cutting down tape, said flanged portions having an outer periphery in slidable confronting relation with said inner peripheral surface of said case to support the reel for rotation with and slidably disposed in the case and energized downward;

a number of first and second engaging portions disposed in confronting inner side surfaces of the case;

a number of first and second engaging protrusions engageable with said first and second engaging portions and placed in the vicinity of the outer peripheral portion of the reel;

engaging areas of said first and second engaging portions and of said first and second engaging protrusions being situated at an upper and a lower two positions;

said two engaging areas at the upper and lower portions being provided at different phases in a rotating direction; and

said reel having a pressing member at a lower portion thereof protruding downward from said cover member of the case.

4,349,963

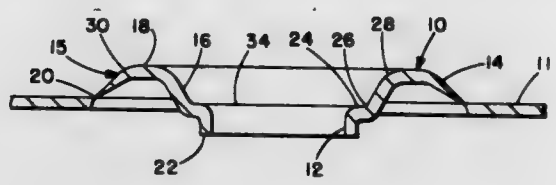
ROTARY CUTTING WHEEL AND METHOD OF MAKING

Francis C. Peterson, St. Charles, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Jan. 7, 1981, Ser. No. 223,080
Int. Cl.³ B26B *25/00*; B26D *1/14*; B21K *19/00*
U.S. Cl. 30—347 **6 Claims**

1. A one-piece sheet metal rotary cutting wheel for a can opener including a hub portion of predetermined diameter and axial dimension which includes a first, free, axial extremity and

a second, axial extremity, integrally merging with a wheel portion, the wheel portion including an inner and outer section interconnected by a bridge section, both the inner and outer section being generally frustoconical, the smallest diameter at the inner section being axially adjacent the second extremity of the hub and merging therewith, the largest diameter of the outer section presenting a cutting edge and also being axially



adjacent but radially spaced from the second extremity of the hub, the bridge region thereby interconnected the smaller diameter of the outer section and the larger diameter of the inner section, the outer section tapering in thickness from its smallest diameter and region of maximum thickness to its largest diameter and region of minimum thickness as a result of a cold forming process thereby presenting a hard, sharp, peripheral cutting edge.

4,349,964

VIEWING ANGLE MEASURING DEVICE FOR AUTOMOTIVE VEHICLES

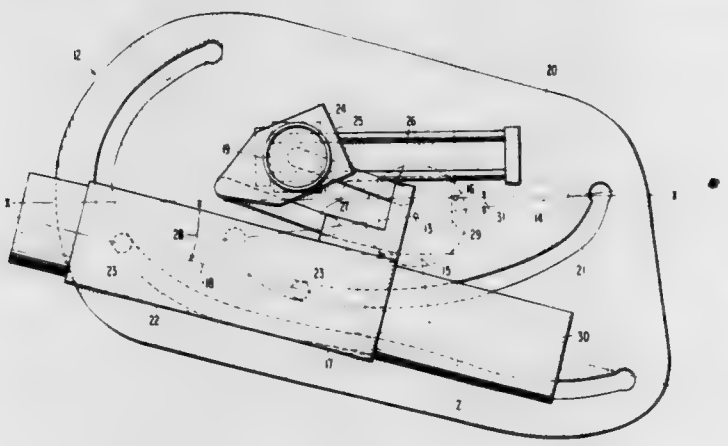
Ewald Vester, Waiblingen; Rolf Grüssaber, Murr; Wolfgang Küpper, Plochingen, and Horst Glatzhoefer, Stuttgart, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Jun. 5, 1980, Ser. No. 156,793

Claims priority, application Fed. Rep. of Germany, Jun. 22, 1979, 2925155

Int. Cl.³ G01B *11/00*

U.S. Cl. 33—264 **13 Claims**



1. A viewing angle measuring device for automobile vehicles, the measuring device comprising an elliptical template means corresponding to a visual ellipse, the template means having a governing curve and being adapted to be arranged in the vehicle at a prescribed relative position with respect to a driver's seat of the vehicle so that a center of the visual ellipse is disposed at a specific position and the visual ellipse is disposed at a predetermined axial inclination, a measuring beam projector means arranged on the template means so as to be guided with at least one of an optical axis of the projector beam and a measuring beam tangentially along the governing curve, and goniometer means connected with the measuring beam projector means for determining a direction of a measuring beam with respect to a reference plane as a measure for the viewing angle.

4,349,965

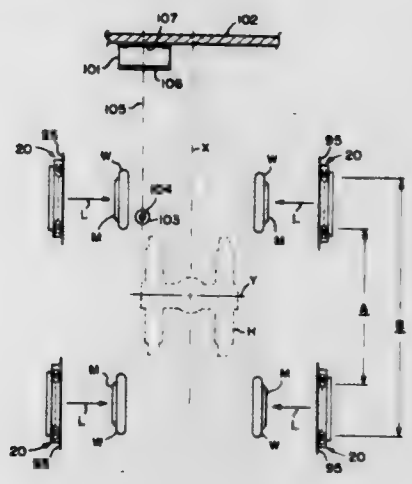
FOUR WHEEL ALIGNMENT METHOD AND APPARATUS FOR AUTOMOTIVE VEHICLES

Pierre A. Alsina, Rochester, N.Y., assignor to Security Trust Company of Rochester, Rochester, N.Y.

Filed Sep. 17, 1980, Ser. No. 188,035

Int. Cl.³ G01B *11/275*

U.S. Cl. 33—288 **15 Claims**



1. A method of checking the alignment of all four independently suspended wheels of an automotive vehicle and the like, comprising

positioning two pairs of spaced reflecting members adjacent opposite sides, respectively, of a space that is to be occupied one at a time by automotive vehicles of differing widths and wheel base lengths,

supporting the two reflecting members of each pair of limited reciprocation in aligned, horizontal paths, and generally parallel to the length of a vehicle positioned in said space,

after a vehicle has been positioned in said space, adjusting each of said members along its respective horizontal path, thereby to place a reflecting surface thereon in confronting relation with a wheel on said vehicle, and in a plane inclined to the plane containing said wheel, and in lateral registry with the reflecting surface on one of the members positioned at the opposide side of said space, and

directing a beam of light onto each of said reflecting surfaces in such manner that each beam is reflected by one of said surfaces horizontally toward an adjacent wheel on said vehicle.

4,349,966

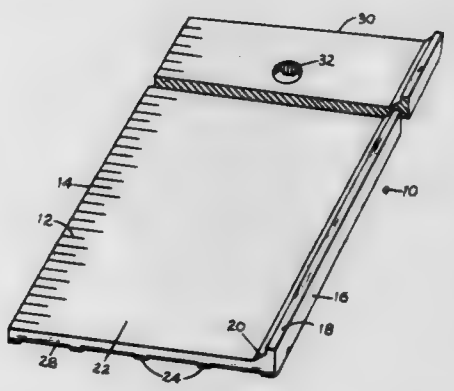
CUTTING GUIDE AND MEASURING DEVICE

Michael J. Marino, 223 Westville Ave., West Caldwell, N.J. 07006, and Michael R. Marino, 38 Alta Way, Corte Madera, Calif. 94925

Filed Mar. 19, 1981, Ser. No. 245,353

Int. Cl.³ B43L *7/00*

U.S. Cl. 33—489 **7 Claims**



1. A cutting guide and measuring device comprising:

an elongated flat base having ruled markings along one side of the upper surface, and an integral vertical raised flange along the opposite side forming a straight edge for guiding a cutting tool; and

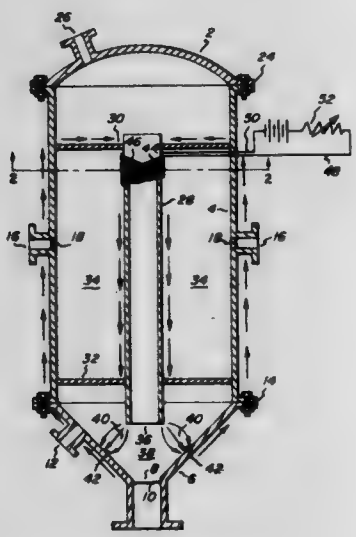
at least three parallel longitudinal feet spaced across the width and extending along the lower surface of said base, said feet being integral with and of the same material as said base and flange and adapted to grip the surface of the material to be cut so as to inhibit sideways movement of said guide, said feet having rounded lower front and back longitudinal leading edges at the opposite ends of said base to facilitate longitudinal movement along said surface.

4,349,967

MAGNETIC FIELD COUPLED SPOUTED BED SYSTEM

Thomas B. Jones, Fort Collins, Colo.; Morris H. Morgan, Clifton Park, and Peter W. Dietz, Delanson, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 6, 1980, Ser. No. 194,630
Int. Cl.³ F26B *17/10*
U.S. Cl. 34—1 **15 Claims**



1. A spouted bed device comprising:

a vessel for containing a bed of magnetizable granular material which vessel includes a vertically disposed lower base section and a fluid inlet disposed in the base section for entraining the magnetizable granular material;

a tubular member having an inlet positioned in the vessel spaced vertically above and in flow communication with the fluid inlet and an outlet terminating in an upper portion of the vessel whereby the entrained material flows through said tubular member from said inlet to said outlet and thereafter returns to said bed; and

means for forming a magnetic field oriented in the device with the lines of force extending between the tubular member inlet and a portion of the vessel base section adjacent the fluid inlet to regulate the flow of magnetizable granular material into the inlet of said tubular member.

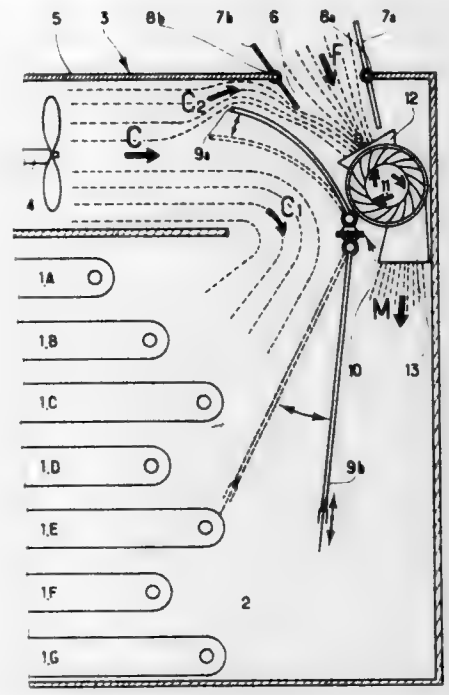
4,349,968

PROCESS AND APPARATUS FOR DRYING MATERIAL

Henri Escande, "Favol", Bias, 47300 Villeneuve-sur-Lot, France

Filed Oct. 25, 1979, Ser. No. 87,948
Claims priority, application France, Oct. 26, 1978, 78 31001
Int. Cl.³ F26B *3/04, 13/06*
U.S. Cl. 34—13 **6 Claims**

1. In a process for drying material in an oven containing a plurality of superposed horizontal endless belts on which the material moves in a circuitous path from top to bottom in the oven; comprising establishing a stream of hot air in the oven, dividing the stream of hot air into first and second portions, directing said first portion toward and along the upper of said belts, mixing the second portion with relatively cool air from



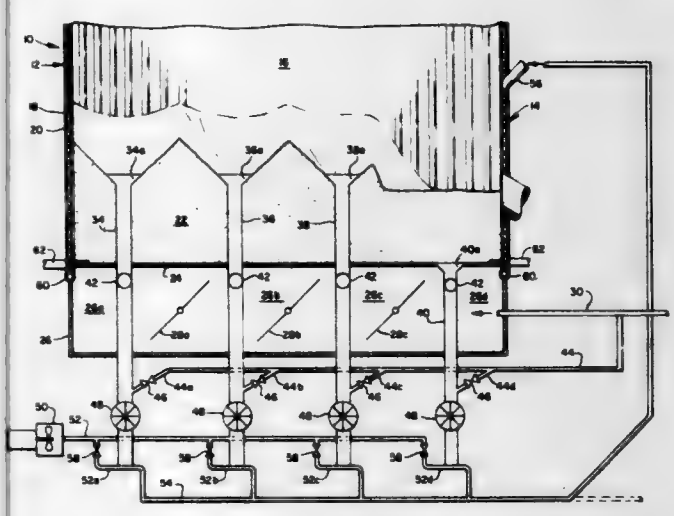
outside the oven to form a mixed air stream, and directing said mixed air stream toward the lower of said belts.

4,349,969

FLUIDIZED BED REACTOR UTILIZING ZONAL FLUIDIZATION AND ANTI-MOUNDING PIPES

Robert D. Stewart, Verona, and Robert L. Gamble, Wayne, both of N.J., assignors to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed Sep. 11, 1981, Ser. No. 300,877
Int. Cl.³ F26B *17/00;* F22B *1/02*
U.S. Cl. 34—57 A **8 Claims**



1. A fluidized bed reactor comprising a housing, grate means supported in said housing and adapted to receive a bed of particulate material at least a portion of which is combustible, means defining an air plenum extending below said grate means, damper means in said air plenum for dividing said plenum into a plurality of chambers and for selectively controlling the passage of air through said chambers and said grate means to selectively fluidize the corresponding portions of said particulate material extending above said chambers, a pipe extending through each chamber and its corresponding bed portion, means associated with each pipe for selectively admitting pressurized air into said pipe for introducing said pressurized air into its corresponding bed portion to loosen the accumulated particulate material in said latter portion, valve means associated with each air admitting means for cutting off the flow of air into its corresponding pipe to permit the pipe to collect the particulate material building up in the correspond-

ing bed portion, and means associated with said pipes for collecting the latter material from said pipes.

4,349,970

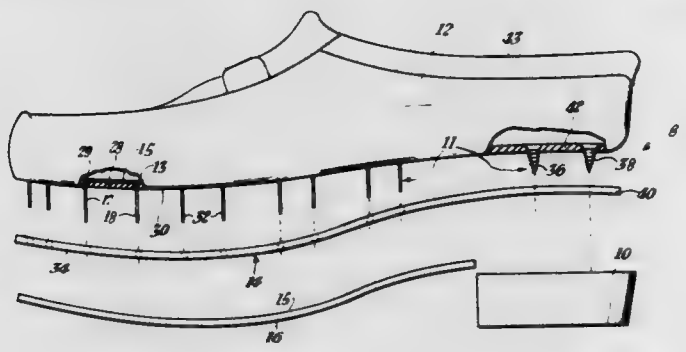
SHOE

Samuel Silver, 13953 SW. 66th St., Apt. 307, Miami, Fla. 33183

Filed Aug. 25, 1980, Ser. No. 180,604

Int. Cl.³ A43B *7/06, 13/28, 13/12*

U.S. Cl. 36—3 B **10 Claims**



1. A shoe comprising:

an upper, a lower member, an outer sole, and a heel; connecting means for securing said upper to said lower member, said heel and said outer sole;

said upper has a plurality of openings on the bottom of said upper for connecting said upper to said lower member;

said lower member constructed of at least partially synthetic material having a means for allowing the foot of a user in said upper to also breathe downward through said lower member, said lower member having a plurality of openings for connecting said upper to said lower member;

said connecting means including a first connecting means, a second connecting means and a third connecting means;

said first connecting means for passing through the openings in said lower member and the openings in said upper to fix said lower member to said upper;

said second connecting means for connecting said heel to said upper;

said third connecting means for connecting said outer sole to said lower member.

4,349,971

FORWARD LEAN ADJUSTER FOR SKI BOOTS

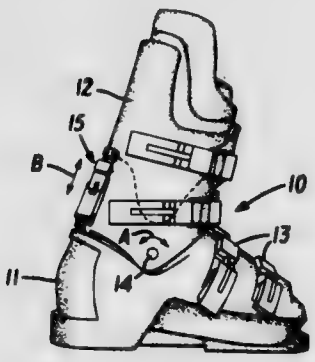
David C. Everest, III, Boulder, Colo., assignor to Lange International S.A., Fribourg, Switzerland

Filed Jan. 19, 1981, Ser. No. 226,010

Claims priority, application Switzerland, Oct. 3, 1980, 7388/80

Int. Cl.³ A43B *5/04*

U.S. Cl. 36—121 **18 Claims**



1. A ski boot forward lean angle adjuster comprising a stand adapted to be secured to a boot lower, a slide plate adapted to be secured to a boot upper, operating means pivotally mounted on the stand and the slide plate and coupling them together, said operating means being movable between (1) an open or off position permitting relative movement between the stand and the slide plate and providing a free hinging ski boot, and (2) a closed or on position locking the stand and the slide plate against relative movement and providing a boot with a selected forward lean angle.

4,349,972

SHELLFISH DREDGE CHAFING GEAR

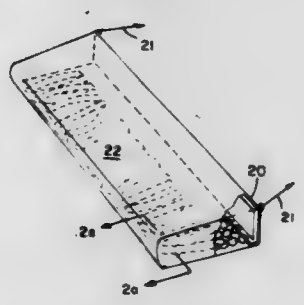
Walter J. Bruce, Jr., New Bedford, and Wayne M. Bruce, South Dartmouth, both of Mass., assignors to Bruce's Splicing & Rigging Co., Inc., New Bedford, Mass.

Continuation-in-part of Ser. No. 201,496, Oct. 28, 1980, Pat. No. 4,328,629. This application Apr. 27, 1981, Ser. No. 257,568

The portion of the term of this patent subsequent to May 11, 1999, has been disclaimed.

Int. Cl.³ A01K *73/02*

U.S. Cl. 37—55 **18 Claims**



1. A shellfish dredge chain bag having means for protection from wear caused by dragging on the ocean floor in the form of an array of elongated strips of reinforced rubber,

said strips having forward ends attached to the bottom of said chain bag in the manner to trail beneath said chain bag in a protective relationship to the underside of said bag,

wherein at least a portion of said elongated strips are segments cut from tread sections of used vehicle tires, the tread surfaces facing downwardly.

4,349,973

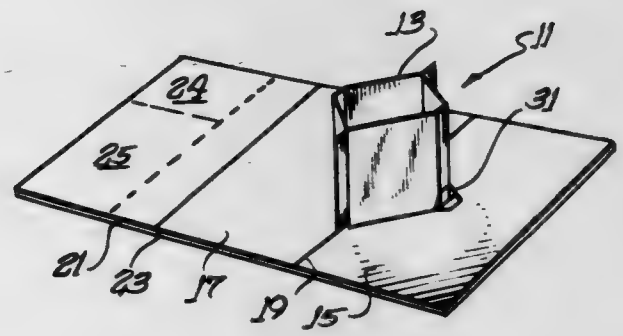
POP-UPS AND METHODS OF MAKING

Ib Penick, Prospect Heights, and John K. Volkert, Northfield, both of Ill., assignors to Compak Systems, Inc., Northfield, Ill.

Continuation-in-part of Ser. No. 934,202, Aug. 16, 1978, Pat. No. 4,212,231, which is a division of Ser. No. 746,340, Dec. 1, 1976, Pat. No. 4,146,983. This application Mar. 21, 1980, Ser. No. 133,493

Int. Cl.³ G09F *1/00*

U.S. Cl. 40—124.1 **27 Claims**



1. A method of making an item of the character described, which method comprises

providing sheet material which is proportioned to create a folder in the form of facing first and second basepieces adapted to pivot relative to each other along a substantially common line between open and closed positions and to create a pair of pop-up elements, all of which are originally interconnected in said sheet material,

forming a pair of hinge elements in said sheet material,

associating at least one of said pop-up elements with a first

surface of said first basepiece positioned adjacent a peripheral edge thereof and effecting adhesive attachment between said pop-up element and said first basepiece at one of said hinge elements,

following said association and said adhesive attachment, simultaneously severing said sheet material along said peripheral edge of said first basepiece and along a peripheral edge of said associated pop-up element to free said pop-up element from an original interconnection,

adhesively attaching said pair of pop-up elements to each other,

superimposing said basepieces with said first surface of said first basepiece facing inward toward said second basepiece, and

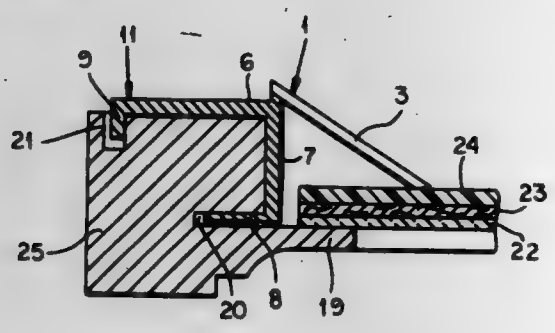
adhesively attaching the other of said pop-up elements to said second basepiece at the other of said hinge elements.

4,349,974

ASSEMBLY FOR MOUNTING A PICTURE TO BE DISPLAYED

Christian Rapayelian, Marseilles, France, assignor to Societe Brio, Societe Anonyme, Corbas, France

Filed Jul. 8, 1981, Ser. No. 281,371
Int. Cl.³ G09F *1/12*
U.S. Cl. 40—156 **6 Claims**



1. An assembly for mounting a flat carrier of rectangular outline bearing a message to be displayed, comprising:

a four-sided frame with a rabbeted inner periphery forming a planar abutment for a front surface of said carrier, said frame being provided on at least two opposite sides with an inner peripheral groove extending parallel to and rearwardly of the plane of said abutment and with a transverse groove extending on a rear face of said frame parallel to said inner periphery;

a plurality of clips of elastic material engaging said frame on said opposite sides, each of said clips overlying part of said rear face and having a channel profile with mutually perpendicular first and second lips respectively entering said inner peripheral groove and said transverse groove of the corresponding frame side, each of said clips being further provided with at least one transverse mortise with undercut edges open to the interior and to the rear of the frame; and

a plurality of detachable elbows of elastic material respectively engaging said clips, each of said elbows having two arms adjoining each other at an acute angle, one of said arms being frictionally fitted from behind into a mortise of the respective clip while the other arm resiliently bears upon a rear surface of said carrier.

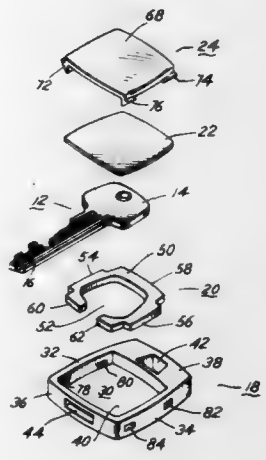
4,349,975

KEY ATTACHMENT

Wayne L. Chubb, P.O. Box 531, Beverly Shores, Ind. 46301

Filed Mar. 5, 1981, Ser. No. 240,845
Int. Cl.³ G09F *3/00*; A44C *3/00*; G09F *3/18*
U.S. Cl. 40—330 **11 Claims**

1. A key attachment for affixing identifying information to a key, comprising a handle having a body with a bottom, and side, top and botton walls joined to said bottom and defining a recess in the handle for receiving the head of the key, means in said recess for holding the head of the key in a substantially fixed position relative to said handle, one of said walls of said handle having an opening through which the shank of the key extends, a sheet on which the identifying information is placed adapted to fit in said recess on top of the head of the key, a



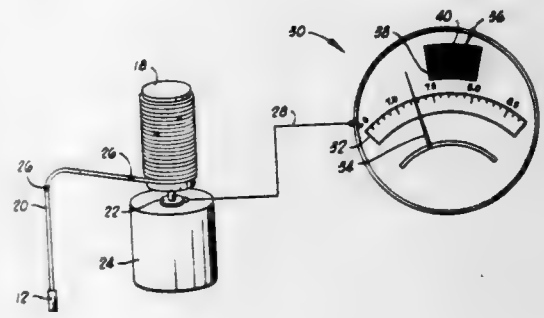
cover having a transparent portion through which the sheet with identifying information thereon is visible, cover securing means disposed on opposite sides of said cover, and recess means in the inner side of opposite walls for receiving said securing means for locking the cover onto said body.

4,349,976

APPARATUS FOR LOCATING AN AQUATIC ENVIRONMENT WITH A PH PREFERRED BY LARGEMOUTH AND STRIPED BASS FISH

Loren G. Hill, 1125 Westbrooke Ter., Norman, Okla. 73069

Division of Ser. No. 755,249, Dec. 29, 1976, Pat. No. 4,103,447.
This application Jul. 28, 1978, Ser. No. 929,005
Int. Cl.³ A01K *97/00*
U.S. Cl. 43—4 **2 Claims**



1. An apparatus for locating within a body of fresh water an aquatic environment with a pH within a predetermined range preferred by Largemouth and Striped Bass fish which comprises:

a surface aquatic craft for movement from one location to another on the surface of a body of water;

pH sensing means mounted on the aquatic craft for contacting the water, said sensing means comprising:

a pH sensing probe for sensing the pH of the water upon contact therewith; and

means for extending and retracting the probe relative to the craft;

means carried in the surface craft for indicating the pH sensed by the sensing means;

means for transmitting a signal from the sensing means to the indicating means, including an electrical lead connecting the sensing means to the indicating means; and

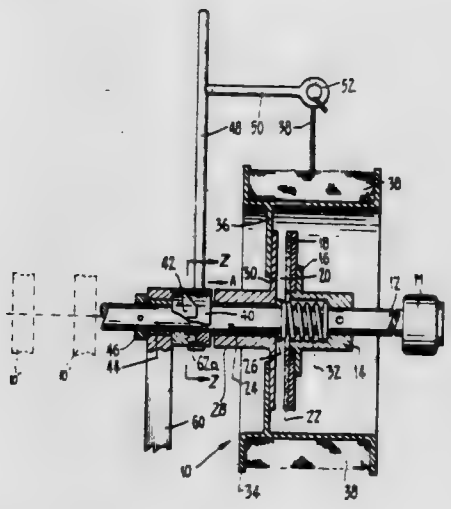
means in the craft in juxtaposition to said indicating means for sensibly portraying a range of pH values of from 7.5 to 8.0 corresponding to aquatic pH values characteristic of the aquatic pH preferred by bass, and facilitating immediate recognition of pH values within said range when they are indicated by said indicating means.

4,349,977

AUTOMATIC FISHING APPARATUS

Marcus T. Brodribb, Currie, and Antony G. Brodribb, Triabunna, both of Australia, assignors to King Reel Proprietary Limited, Tasmania, Australia

Filed Mar. 4, 1980, Ser. No. 127,090
Claims priority, application Australia, Feb. 1, 1980, PE2211
Int. Cl.[3] A01K *89/017*
U.S. Cl. 43—15 6 Claims



1. Automatic fishing apparatus including:
reel means for holding a fishing line,
a rotatable shaft supporting said reel means for selective rotation with or independent of said shaft;
driving means for driving said shaft continuously regardless of whether the reel means is selected to rotate with the shaft or independently thereof, and, actuating means for selectively coupling said reel means to the shaft for rotation therewith and for uncoupling said reel means from the shaft, said actuating means including a clutch assembly having clutch plates normally separated by a biassing member, said clutch plates including a driving clutch plate fixed for rotation with said shaft and a driven clutch plate mounted rotatably on said shaft and supporting said reel means and a line engaging member mounted pivotally on said shaft for movement from a first position to a second position as a result of a fish being hooked on said fishing line and causing increased line tension, said line engaging member having a hub portion arranged in operative abutting relationship with said driven clutch member and being associated with a cam assembly which, upon pivotal movement of said line engaging member from its said first position to its second position, causes said hub portion to move axially along said shaft and urge said driven clutch plate into engagement with said driving clutch plate to couple said reel means to said rotating shaft to reel in said fish, and once the fish is reeled in, said line engaging member being movable from the second position to the first position to uncouple the reel means from the shaft.

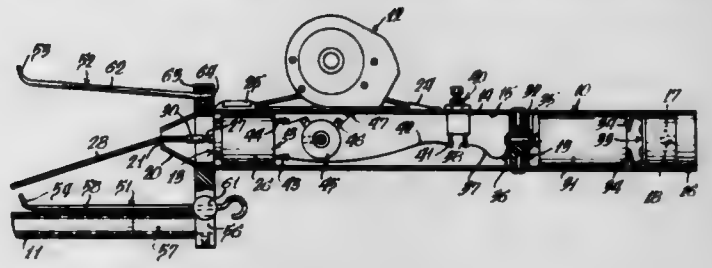
4,349,978

MOTORIZED FISHING APPARATUS

Charles R. Philip, Box 116, Haugen, Wis. 54841

Continuation of Ser. No. 896,238, Apr. 14, 1978, abandoned, which is a continuation-in-part of Ser. No. 705,947, Jul. 16, 1976, Pat. No. 4,084,342. This application Nov. 14, 1979, Ser. No. 94,271
The portion of the term of this patent subsequent to Apr. 18, 1995, has been disclaimed.
Int. Cl.[3] A01K *87/00*
U.S. Cl. 43—19.2 6 Claims

1. A fishing device, comprising: a handle; an elongate rod having a rear end portion and a projecting forward end portion, the rear end portion being secured to the handle; line guide means positioned forwardly of the handle, said line guide means including a line guide member; a fishing line secured at one end to the handle and having a free end provided with bait means and/or lure means and being suspended from the forward end portion of the rod, the line extendng through the line guide means to afford a line extension spaced from the rod and extending between the handle and the line guide means, the line extension being normally urged toward a straight-line condition by gravity applied to the free end of the line; a drive motor carried by the handle; an arm spaced laterally of the rod and rotatively driven by said motor, said arm having an eccentric portion which moves through an arcuate path when the motor rotates the arm, the eccentric portion being positioned to engage and deflect said line extension to cause movement of



the free end of the line; a rheostat electrically connected to the motor for varying the speed of rotation of the motor and the angular velocity of said arm so as to vary the deflection of the line extension by the eccentric portion and the range of movement of the free end of the line and to afford a first way of adjusting the magnitude of deflection of said line extension; and adjustable means are provided for the line guide member to afford selective adjustable movement to said line guide member to vary the position of the line extension with respect to the eccentric portion of the arm so as to change the magnitude of deflection of the line extension and to afford an additional way of adjusting said magnitude of deflection.

4,349,979

BAIT FISH HOLDER

Ralph M. Strantz, St. Paul, Minn., assignor to Lund Lures, Inc., Spring Park, Minn.

Filed Sep. 22, 1980, Ser. No. 189,639
Int. Cl.[3] A01K *83/06*
U.S. Cl. 43—44.8 4 Claims



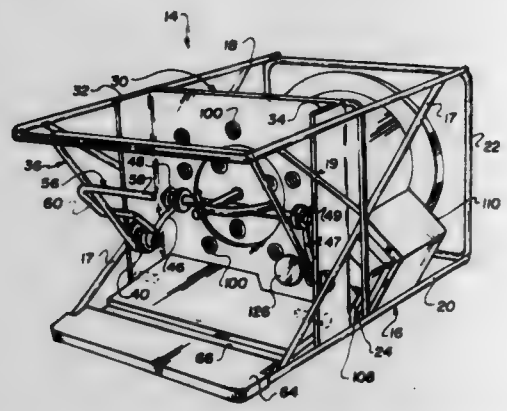
1. In combination with a fish hook having a barbed point at one end thereof and an eye at the other end thereof, a bait retaining device comprising, in combination:
an elongated flexible member having a barbed projecting means at a distal end thereof for insertion into the mouth of a bait fish and into the gill structure thereof for securing said bait fish to said member, said member also having at least one eye aperture means at the proximal end thereof for receiving the eye portion of said fish hook when inserted therethrough, said member also including further aperture means intermediate said proximal and distal ends for receiving the barbed point of said fish hook therethrough after said barbed point is inserted through the mouth of said bait fish when said member has been inserted into the mouth of said bait fish.

4,349,980

RODENT EXTERMINATING APPARATUS

James E. McKee, Suite 580, States General Life Bldg., 708 Jackson, Dallas, Tex. 75202

Filed Aug. 18, 1980, Ser. No. 179,168
Int. Cl.[3] A01M *23/14*
U.S. Cl. 43—81 22 Claims



15. An improved apparatus for exterminating rodents and the like and characterized by:

a frame including spaced apart interconnected perimeter members and a transverse member mounted between said perimeter members;

striking means including a striking bar pivotally mounted on said frame for movement from a retracted position to a striking position;

a power actuator supported on said transverse member for driving said striking means between said positions;

an enclosure disposed around said frame and substantially enclosing said apparatus;

an opening in said enclosure in proximity to said striking means;

sensing means disposed within said enclosure for sensing the presence of a rodent or the like in proximity to said striking means; and

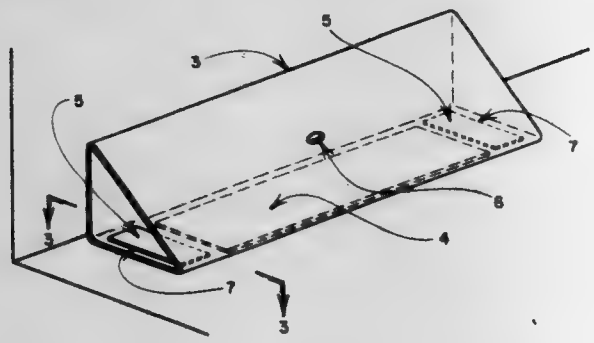
control means responsive to the sensing of the presence of a rodent by said sensing means for causing said power actuator to move said striking means from said retracted position to said striking position and return to said retracted position.

4,349,981

CONTACT POISON DELIVERY DEVICE

Daniel S. Sherman, 76 Ninth Ave., New York, N.Y. 10011

Filed Aug. 20, 1980, Ser. No. 179,775
Int. Cl.[3] A01M *25/00*
U.S. Cl. 43—131 4 Claims



1. A contact poison delivery device for depositing a particulate poison on the feet and fur of a rodent traversing at least a portion of its length, wherein the device comprises a thin walled elongated open-ended triangular tubular member, dimensioned to form a restricted passageway for rodents entering the device, and having a vertical wall member, a horizontal wall member, and an angled wall member; wherein,

the said angled wall member is provided with a centrally disposed aperture, which permits the introduction of particulate poison into the interior of the device, intermediate the ends,

the said horizontal wall member is provided with poison retention means adjacent its ends,

at least one of the said wall members being provided with means for inducing the frenzied activity of a rodent upon contact therewith, disposed intermediate the ends of said at least one wall member, and

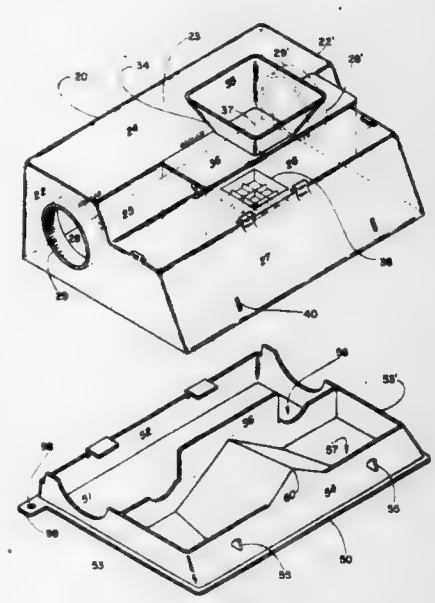
wherein the vertical wall member, the horizontal wall member, and the angled wall member are fabricated from a material which will create a static electric charge, by the contact of the rodents fur with the interior walls of the device, whereby there will be both, a direct static electric attraction, and a rubbing transfer, of the particulate poison onto the rodents fur.

4,349,982

REFILLABLE RODENT BAIT STATION CONTAINER

Daniel Sherman, 76 Ninth Ave., New York, N.Y. 10011

Filed Oct. 31, 1980, Ser. No. 202,670
Int. Cl.[3] A01M *25/00*
U.S. Cl. 43—131 7 Claims



1. A rodent bait station container comprising;

a base member and an apertured cover member which in their assembled relationship form a unit having plurality of chambers, wherein one of said chambers forms a feeding station, and another of said chambers forms a bait tray element, said cover member further comprising,

a centrally disposed aperture on the face of said cover member, which cooperates with a moveable metered load element mounted on said cover member, and moveable from a first position out of registry with said aperture, and moveable to a second position in register with said aperture to deposit bait into said bait tray element, wherein

the bait tray element is provided with a raised central portion which divides the bait tray element into two separate bait tray portions, and

the configuration of the raised central portion of the bait tray element is such that bait deposited through the central aperture of the cover member tends to accummulate in the two tray portions.

4,349,983

PLAYSET FOR TOY VEHICLES

Eugene J. Kilroy, Palos Verdes Estates; William J. Kelley, Torrance, and Philip W. Crain, San Pedro, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

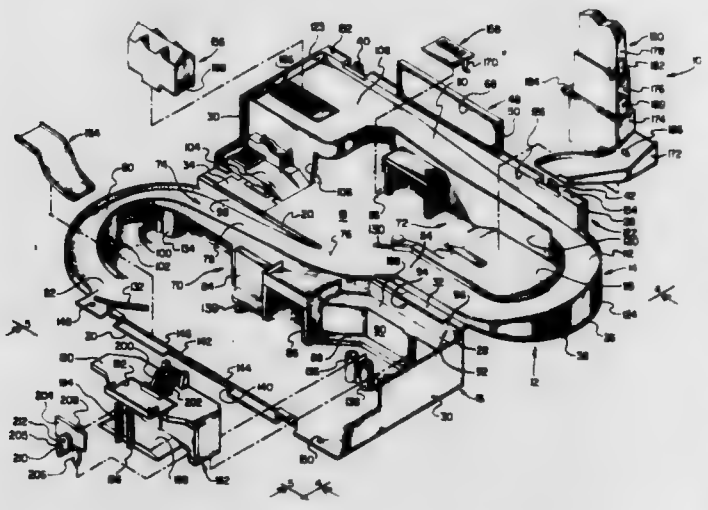
Filed Feb. 9, 1981, Ser. No. 232,758
Int. Cl.[3] A63H *33/00*
U.S. Cl. 46—12 5 Claims

1. In combination with a portable representation including an openable and closeable carrying case having two case portions, each of said case portions having a bottom wall and a sidewall, a first unitary sheet secured to the interior of one of

said case portions, a second unitary sheet secured to the interior of the other of said case portions, each of said sheets having integrally formed therewith a plurality of objects simulating a scene found in a selected human environment, said carrying case having sufficient interior room to accomodate said scene-simulating objects without interference when closed to serve as a storage and carrying means therefore, the improvement which comprises:

first means for hingedly connecting the top of a sidewall of one of said case portions to the bottom wall of the other of said case portions;

supports depending from said bottom wall of said other case portion, said supports having a length corresponding to the height of said sidewall of said one of said case portions, whereby the bottom wall of said one case portion may be placed on a horizontal surface and said other case portion



may be swung 180° about said first means whereupon said supports and said first means will support said other case portion in a horizontal plane passing through the top of said sidewall of said one of said case portions; and

second means on the front edge of the bottom wall on said one case portion and third means adjacent the upper edge of the sidewall on said other case portion for connecting the front edge of the bottom wall of said one case portion to the upper edge of the sidewall on a second carrying case having structure corresponding to said third means, the sidewall on said other case portion and said bottom wall on said one case portion, said scene-simulating objects including a pathway for toy vehicles extending in serpentine fashion from the upper portion of a sidewall of said other case portion to said bottom wall thereof and thence along said top of the sidewall of said one of said case portions to the bottom wall thereof.

4,349,984

PRESCHOOL ASSEMBLY TOY

Adolph E. Goldfarb, 4614 Monarca Dr., Tarzana, Calif. 91356, and Anita J. Goldfarb, Tarzana, Calif., assignors to Adolph E. Goldfarb, Tarzana, Calif.

Filed Feb. 11, 1981, Ser. No. 233,493

Int. Cl.³ A63H *33/06*

U.S. Cl. 46—17 **10 Claims**

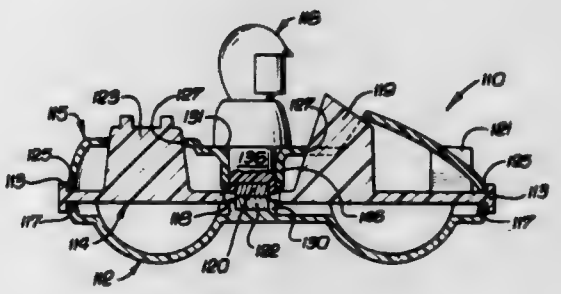
1. A simple multi-piece assembly toy for young children comprising at least three relatively large parts, the smallest of said parts being at least 1½ inch in at least one direction and at least ½ inch another direction;

(a) a first part;

(b) a second part designed to be positioned adjacent to the first part;

(c) a third part designed to be positioned adjacent to the second part;

said parts combining when positioned adjacent to one another to form the representation of a particular object visually identifiable by the child; first means on the parts which mechanically interengage to limit relative movement between said parts in only a first direction, while allowing them to be separated in a second direction generally transverse to said first direction; and second means on the parts which magnetically interengage to limit relative movement between the parts in said second



direction; said second means being engaged and disengaged by motion solely in said second direction, said first and second parts representing a toy vehicle and said third part representing the operator for such vehicle.

4,349,985

STEAM PRESSURE-PROPELLED TOY

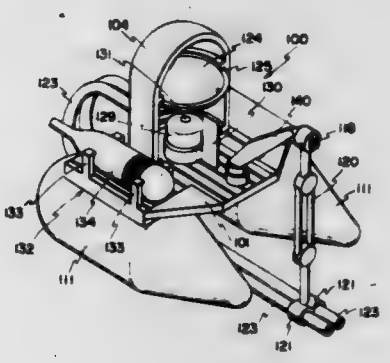
Tatsuya Kodaka, 25-6, 1-chome, Wakamiya, Nakano-ku, Tokyo, Japan

Filed Jun. 17, 1980, Ser. No. 160,356

Claims priority, application Japan, Jul. 17, 1979, 54-90505; Aug. 22, 1979, 54-105983; Jan. 30, 1980, 55-8784; Jan. 30, 1980, 55-8785

Int. Cl.³ A63H *23/06*

U.S. Cl. 46—95 **12 Claims**



1. A steam toy comprising a base structure having a front and a rear, float means comprising a pair of spaced apart float members for floatably supporting said base structure on a body of water, said base structure being disposed to overlie said spaced apart float members, first mounting means mounting said float means on said base structure, a boiler means, second mounting means mounting said boiler means on said base structure above the level of said body of water, said second mounting means comprising a windshield detachably mounted on said base structure, said boiler means being mounted on an upper portion of said windshield, a heat source disposed on said base structure in a position underlying said boiler means, a pair of pipes leading externally from said boiler means, each of said pipes having one end connected to said boiler means above the level of said body of water and each having its other end disposed below the level of said body of water when the float means floatably supports said base structure on said body of water, said pair of pipes extending from said boiler means forwardly and then curving rearwardly in U-shaped fashion to pass between said two float members and extend toward the rear of said base structure, and third mounting means mounting said other end portions of said pipes below the level of said body of water to thereby provide for propulsion of said steam toy as fluid exits from said pipes, said third mounting means comprising a first arm pivotably mounted from the rear of said base structure and extending in cantilever fashion beyond the

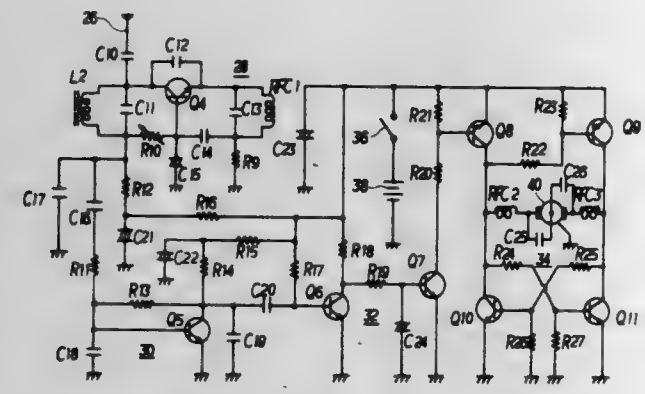
rear of said base structure, and a second arm connected to said first arm and extending downwardly to support said other end portions of said pipes.

4,349,986

RADIO-CONTROLLED TOYS

Mitsuo Tsukuda, Tokyo, Japan, assignor to Tsukuda Co., Ltd., Japan

Filed Dec. 15, 1978, Ser. No. 969,679
Int. Cl.[3] A63H *30/04, 17/36;* H04Q *7/02;* G08B *5/22*
U.S. Cl. 46—254 1 Claim



1. A radio-controlled toy comprising a transmitter which has a transmission power affording an effective transmission range of at least 2 to 3 m and which is designed to transmit a signal amplified and modulated with a low-frequency square signal by the supply of power effected by closing a switch, a d.c. motor, a receiver, and a d.c. power source, said receiver having a receiving circuit portion adopting a regenerative system and a forward-to-reverse switching control, said d.c. motor turning forward when no signal is received by said receiver and said d.c. motor turning in reverse when a signal is received by said receiver, said switching control comprising a pair of PNP transistors in a common-emitter configuration and a pair of NPN transistors in a common-emitter configuration, the collectors of the first and second of said PNP transistors being connected, respectively, to the collectors of the first and second of said pair of NPN transistors, whereby when no signal is received by said receiver, said first PNP transistor is turned off while said second PNP transistor is held on to apply bias to said first NPN transistor to hold the same on, thereby causing current to flow from said second PNP transistor to said first NPN transistor through said d.c. motor to continue forward rotation thereof, and when a signal is received by said receiver, said first PNP transistor is turned on causing the base bias of said second PNP transistor to equal about zero, turning the same off and applying bias to said second NPN transistor, thereby causing current to flow from said first PNP transistor to said second NPN transistor through said d.c. motor to cause reverse rotation thereof.

4,349,987

DOLL WHICH RISES FROM PRONE TO STANDING POSITION

Philip D. Bart, 9864 NW. 13th Ct., Coral Springs, Fla. 33065

Filed Jul. 17, 1980, Ser. No. 169,675
Int. Cl.[3] A63H *11/00*
U.S. Cl. 46—265 18 Claims

1. A robot doll comprising a torso with a hip part at the bottom thereof, and a 1st axis through said hip part, leg means mounted on said doll and pivotable about said 1st axis; drive means in the torso for causing said leg means and torso to pivot relative to each other, whereby

said doll is movable between positions of a series of positions including, with respect to a generally horizontal support surface, at least four positions, namely:

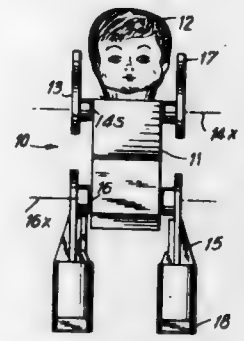
(A) prone face-down with leg means and torso generally aligned,

(B) face down with torso and leg means in inverted V-position with hip part elevated,

(C) said inverted V-position with said leg means oriented generally vertically, and

(D) erect position with said leg means and torso generally aligned and vertical, and

1st switch means for activating said drive means to pivot said leg means and torso causing said doll to move from posi-



tion (A) to position (B), said doll having configuration and weight distribution such that when the doll moves from position (A) to (B) its center of gravity shifts rearward causing said doll to tip rearward into position (C), and

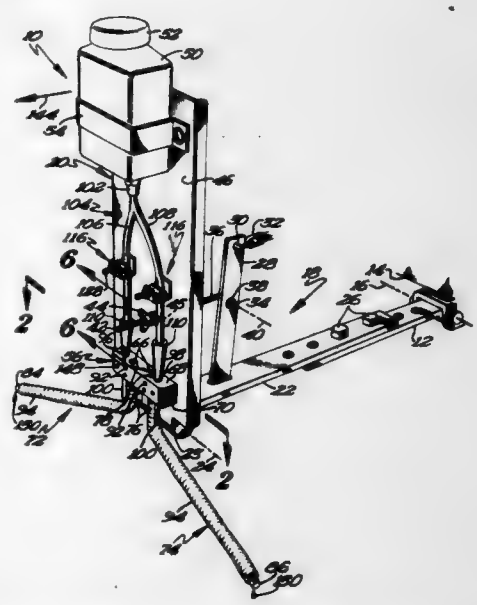
2nd switch means including means for automatically activating said drive means in response to the arrival of said doll at said position (C) to pivot said leg means and torso from pivoted position (C) to said erect position (D), whereby said doll stands.

4,349,988

HERBICIDE DISPENSING APPARATUS

Frank T. Kotula, 4058 Nevada Ave. North, New Hope, Minn. 55427, and Marvin E. Hilgemann, R.R. 4, Box 230, Pipestone, Minn. 56164

Filed Jun. 9, 1980, Ser. No. 157,358
Int. Cl.[3] A01M *21/00*
U.S. Cl. 47—1.5 5 Claims



1. A herbicide dispensing apparatus attachable to a movable vehicle for applying herbicide from a herbicide reservoir to unwanted plants which extend above crops planted in spaced-apart rows comprising:

a frame attachable to the vehicle for forward movement with the vehicle in a predetermined direction;

first and second herbicide applicator arms, each having an outer terminal end and means selectively swingably lockingly mounting each arm to said frame and said arms extending outwardly from said frame in leftward and rightward directions, respectively, generally transversely to the direction of forward movement and being slanted

downwardly from said frame to overlie and extend laterally to each side of a crop row during operation;

herbicide flow control means carried by said frame and connectable to the reservoir and extending to said first and second arms to deliver herbicide from the reservoir to each of said arms;

wicking means comprising a continuous rope type wick wrapped in closely adjacent helical coils along each of said arms to absorb the herbicide and wick the herbicide laterally along said arms and to apply such herbicide by physical contact to unwanted plants which contact said wicking means;

whereby said wicking means and said arms can be arranged to terminate between adjacent rows of crop so that any excess herbicide not applied to unwanted plants drips off only the terminal ends of said arms and falls harmlessly into the space between adjacent rows of crop so as to avoid impregnating the crops with herbicide.

4,349,989

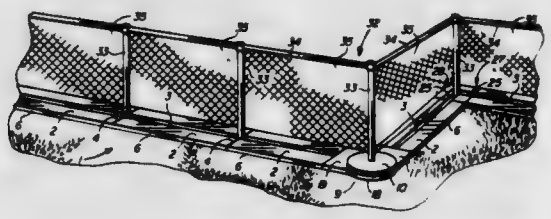
FENCE GUARD

H. Dean Snider, Jr., 9466 Pitch Pine Dr., Shreveport, La. 71118

Filed Mar. 23, 1981, Ser. No. 246,602

Int. Cl.³ E04H *17/06*

U.S. Cl. 47—33 **10 Claims**



1. A fence guard for retarding the growth of vegetation along a fence, comprising an elongated grass shield having a longitudinal slot along the center longitudinal axis thereof and provided with apertures in spaced relationship in said slot, said apertures corresponding to and in registration with the fence posts in said fence, said grass shield further comprising access slits provided in transverse relationship in said grass shield adjacent said apertures and communicating with said apertures for installation of said grass shield beneath said fence.

4,349,990

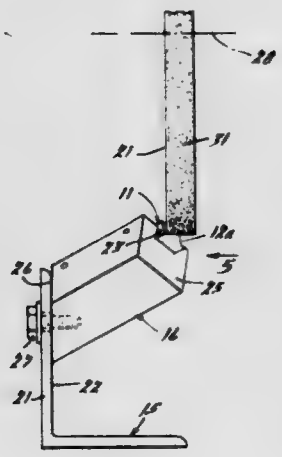
SUPPORT FOR GRINDING THREAD CUTTING TOOLS

Joseph F. St. Denis, 26545 Oakland, Roseville, Mich. 48066

Continuation of Ser. No. 120,906, Feb. 12, 1980, abandoned. This application Sep. 9, 1981, Ser. No. 300,702

Int. Cl.³ B24B *3/34*

U.S. Cl. 51—220 **2 Claims**



1. A tool support assembly for mounting a thread cutting tool having two cutting edges angularly related with respect to each other at the angle of the thread to be cut thereby and for positioning said tool relative to the periphery of a rotatably driven grinding wheel so that the cutting edges of said tool can be ground individually by separate grinding operations to sharpen said edges precisely at said thread angle and so that a desired relief for each cutting edge also can be ground in each grinding operation by a single angular adjustment of said support assembly, said assembly comprising:

support means having a flat mounting surface adapted to be disposed with said mounting surface transversely of and at right angles with respect to the rotational axis of the grinding wheel;

tool holding means having a flat seating surface on one end inclined with respect to the longitudinal axis of the holder at the same angle as said thread angle on and in engagement with said mounting surface;

connecting means including pivot means disposed with its axis at right angles to said mounting surface for releasably fastening said tool holding means on said support means with said mounting and seating surfaces in pressed mutual engagement, said tool holding means being angularly adjustable about said pivot means and said connecting means being operative to hold said tool holding means securely in any selected angularly adjusted position; and

tool clamping means for releasably holding the thread cutting tool securely on said tool holding means with one cutting edge of the tool parallel to the rotational axis of the wheel and exposed for grinding adjacent to the periphery of said grinding wheel and further with the longitudinal axis of the tool disposed with respect to said seating surface at the same angle as said thread angle,

whereby when said cutting tool is clamped on said tool holding means in the manner described said mounting and seating surfaces automatically position the tool with said one cutting edge thereof at right angles to said surfaces and parallel to the rotational axis of said grinding wheel and properly positioned with respect to the peripheral grinding surface of said wheel so that said one edge can be sharpened by a back and forth movement of said wheel along said rotational axis,

whereby repositioning of said tool on said tool holding means by turning it 180° about its axis automatically disposes the other cutting edge thereof similarly with respect to said grinding wheel for sharpening of said other edge, and whereby any desired relief angle can be ground behind each cutting edge of the tool during each grinding operation without removing said tool from or changing its position with respect to said tool holding means by a single adjustment of said tool holding means angularly about said pivot means.

4,349,991

CLOSING DEVICE FOR LARGE PASSAGES IN A PRESTRESSED PRESSURE VESSEL

Hans-Georg Schwiers, Ketsch, and Josef Schoening, Hambruecken, both of Fed. Rep. of Germany, assignors to Hochtemperatur-Reaktorbau GmbH, Cologne, Fed. Rep. of Germany

Filed Feb. 28, 1980, Ser. No. 125,708

Claims priority, application Fed. Rep. of Germany, Mar. 7, 1979, 2908969

Int. Cl.³ E04C *3/10*

U.S. Cl. 52—21 **9 Claims**

1. A closing arrangement for large passages in a prestressed pressure vessel comprising:

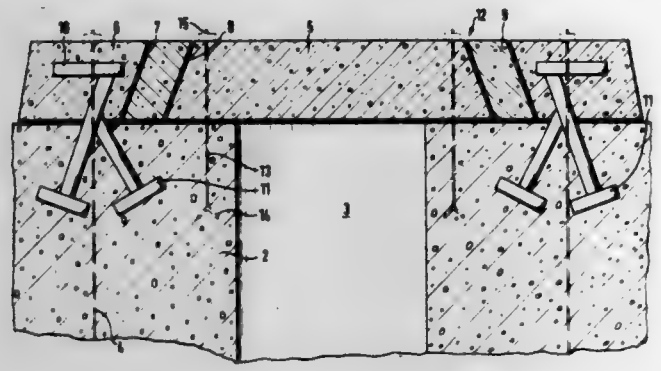
a cover means for covering the opening of a passage in said prestressed pressure vessel;

an annular structural part having an inner boundary surface surrounding said covering means at a distance and defining a space therebetween said part comprising concrete;

a means for securing said annular structural part to said prestressed pressure vessel, said securing means including a plurality of prestressing cables extending from said pressure vessel through said annular structural part and a

plurality of anchor members cast into said pressure vessel and annular structural part, and

a plurality of connecting elements disposed in said space



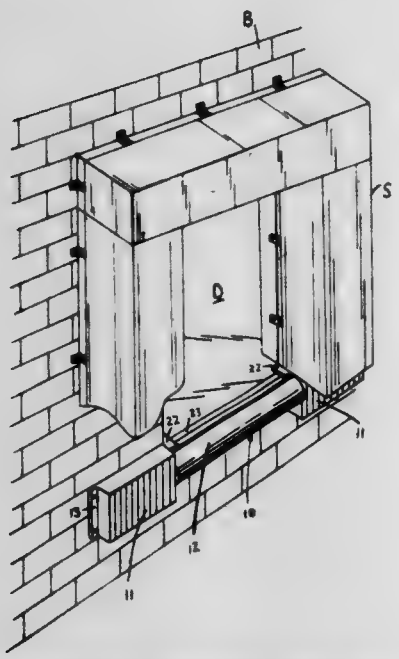
between said annular structural part and said covering means in abutting relationship with said inner boundary surface of said annular structural part and said covering means.

4,349,992

BUMPER SEAL

Richard C. Layne, 1312 King Ave., Apt. 4, Columbus, Ohio 43212

Filed Apr. 11, 1980, Ser. No. 139,230
Int. Cl.[3] E06B *7/22, 1/56*
U.S. Cl. 52—173 DS 4 Claims



1. A bumper seal for mounting along the lower edge of a loading dock for engaging a vehicle bumper, said bumper seal comprising:

(a) at least one bumper block formed of a relatively semi rigid, and relatively unyieldable material and positioned along the lower edge of a loading dock to engage and oppose the force applied by a vehicle bumper;

(b) a mounting strip mounted along said lower edge in alignment with said bumper block, said mounting strip formed with an upwardly opening slot for receipt of a dock plate lug and for retaining it against substantial movement upwardly or outwardly from said dock; and

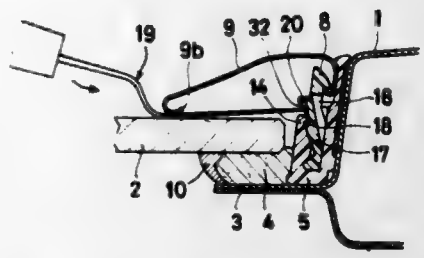
(c) a relatively yieldable and compressable sealing body mounted to said mounting strip and extending longitudinally along it for sealingly engaging said vehicle bumper.

4,349,993

MOLDING CLIP ASSEMBLAGE

Toshie Tanaka, Machida, and Takuo Yuda, Yokohama, both of Japan, assignors to Nifco Inc., Yokohama, Japan

Filed Jun. 10, 1980, Ser. No. 158,209
Int. Cl.[3] E06B *3/58*
U.S. Cl. 52—208 6 Claims



1. A molding clip assemblage for a molding member which is removable by a tool comprising:

a base plate attached to the peripheral edge of a window frame for the bonding of a glass plate thereto;

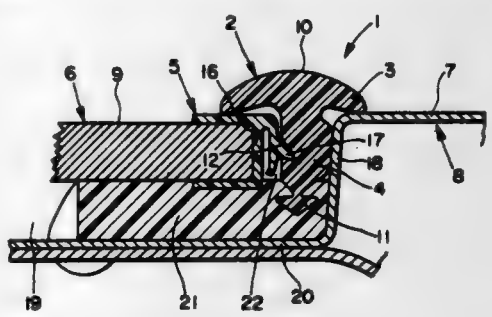
a plurality of removable clips attached to the base plate at predetermined intervals wherein the base plate is J-shaped in cross section and further comprises a rear wall of predetermined height for attachment to the peripheral edge of the window frame and a front wall of lower height than said predetermined height of said rear wall, a front surface portion of the rear wall and a back surface portion of the front wall defining a recessed part for accommodating lower portions of each of the clips wherein an upper part of the back surface of the front wall further comprises a claw, wherein each of said clips further comprise a retaining claw at an upper part thereof for retaining one edge of said molding member and a step extending therefrom at the lower part for engagement with the claw of the front wall of the base plate and wherein each of said clips further comprises release means extending upwardly from the step to protrude from the recessed part of the base plate for releasing engagement between the claw of the base plate and the step of each of the clips such that each of the clips are removable from the recessed part of the base plate by inserting said tool between the other edge of the molding and the upper surface of the glass plate and pushing the release means of each of said clips with said tool.

4,349,994

WEATHER STRIP ASSEMBLY FOR VEHICLE WINDOW

Tadashi Maekawa, Aichi, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Nov. 19, 1980, Ser. No. 208,396
Claims priority, application Japan, Nov. 19, 1979, 54-160169[U]
Int. Cl.[3] B60R *27/00;* E06B *7/098*
U.S. Cl. 52—208 5 Claims



1. A weather strip assembly for a window of a vehicle, the window glass being positioned in an opening in the vehicle body so as to leave a gap between at least one edge of the window glass and a wall of the opening, and the window glass

being adhered at a portion of its inner surface to the vehicle body by a bonding agent, the bonding agent extending into the lower portion of the gap, the assembly comprising:

(a) a weather strip having a head portion, adapted to overlie a portion of an outer surface of the wall of said opening and a portion of the outer surface of said window glass, and a leg portion integrally formed with said head portion, provided with at least one lateral groove, and having an anchor-shaped lower end, said leg portion being adapted to be inserted in said gap, and said anchor-shaped end being adapted to be embedded in said bonding agent in the lower portion of said gap, and

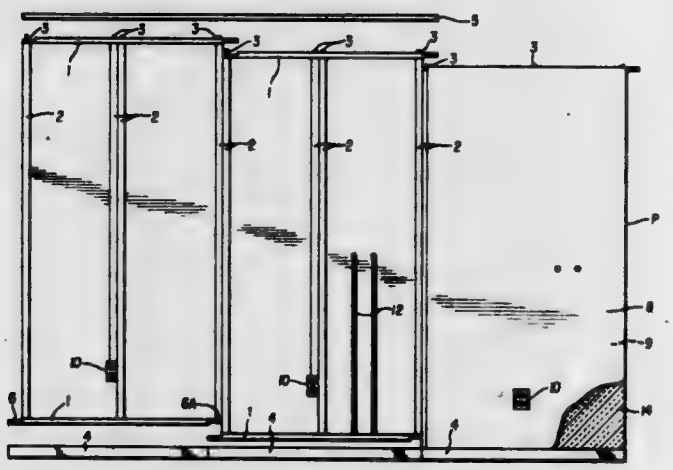
(b) a holder secured to said window glass and having a resilient elongation including a tongue disposed outwardly therefrom toward said groove in said leg portion, said tongue being adapted to engage said groove and said elongation being adapted for urging said leg portion against the wall of said opening when said weather strip is mounted on said vehicle.

4,349,995

INTERLOCKING PANEL AND PANEL TRACK SYSTEM

Danny E. Dowler, 512 Hawthorne St., and Herman F. Oldaker, 2701 18th Ave., both of Parkersburg, W. Va. 26101, assignors to Danny E. Dowler and Herman F. Oldaker, both of Parkersburg, W. Va.

Filed Feb. 4, 1980, Ser. No. 118,094
Int. Cl.³ E04B *2/74*; E04C *2/46*
U.S. Cl. 52—241 **12 Claims**



1. A wall panel assembly comprising:

a plurality of frames in abutting relationship wherein each of said frames comprises:

a plurality of upright members having first and second end portions;

a first and second connector plate member engaging said upright members at said first and second end portions, respectively, said first and second connector plate members each including a flange portion and a notched portion;

a plurality of projecting members integral with said upright members and cooperatively engaged with at least one of said first and second connector plate members;

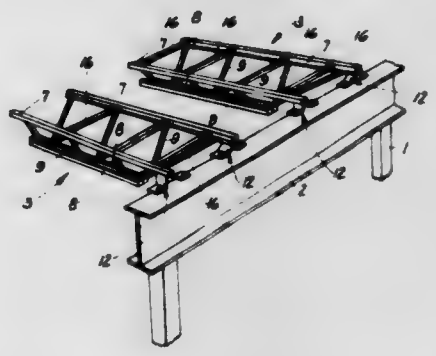
a top connector flat bar member having a substantially rectangular cross section and having a length capable of overlapping at least two of said plurality of frames and cooperatively engaged with said plurality of projecting members and cooperatively engaged with at least one of said first and second connector plate members wherein said at least one of said first and second connector plate members and said top connector member each include a plurality of apertures formed therein and through which said plurality of projecting members are fitted such that said apertures in said at least one of said first and second connector plate members and said apertures in said top connector member are aligned by said plurality of projecting members; and a track member within which at least one of said first and second connector plate members is disposed.

4,349,996

INTEGRATED ROOF SYSTEM

Richard W. Lautensleger, Middletown; Richard D. Shepard, Monroe, and Paul A. Seaburg, Middletown, all of Ohio, assignors to Armco Inc., Middletown, Ohio

Filed Apr. 24, 1980, Ser. No. 143,261
Int. Cl.³ E04B *7/00*; E04C *3/04*
U.S. Cl. 52—655 **19 Claims**



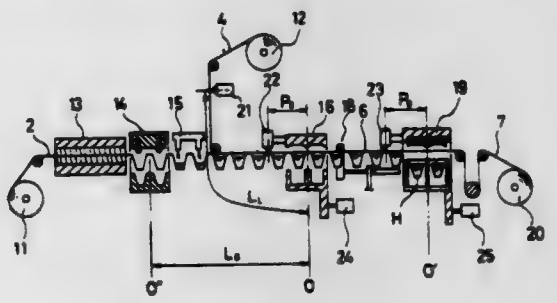
1. In a building of the type wherein the roof structure is supported on spaced apart rafters, an improved roof system comprising a series of V-trusses extending between the rafters in parallel relation at spaced apart intervals, said V-trusses each comprising a pair of half-truss sections each having a top chord and a bottom chord interconnected by web members, said truss sections being diagonally disposed with respect to each other with their bottom chords juxtaposed and secured together in face-to-face relation with their top chords spaced apart, tie members interconnecting the upper ends of said half-truss sections, seat members securing the opposite ends of the top chords of said V-trusses to said rafters, said seat members each comprising a pair of legs interconnected by an intermediate portion, feet on the lower ends of said legs, the intermediate portion of said seat member being secured to the top chord which it supports, and said feet being secured to the supporting rafter, said V-trusses being free from interconnecting braces, whereby said V-trusses comprise independent roof supporting members, and a roof structure supported on said V-trusses and secured to said top chords.

4,349,997

DEVICE FOR ENABLING REGISTRY OF OPERATIONS IN AN APPARATUS FOR CONTINUOUSLY FORMING CONTAINERS FILLED WITH MATERIAL

Yoshiyuki Hayasaka, Tsushima; Ichiro Ikeuchi, Kasugai; Hajime Matsumoto, Sagamihara, and Yukihiro Shikaya, Chiba, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha and Dainippon Printing Company Ltd., both of Tokyo, Japan

Filed Apr. 21, 1980, Ser. No. 141,888
Int. Cl.³ B65B *41/18*, *41/04*
U.S. Cl. 53—51 **4 Claims**



1. In a forming, filling and packing apparatus including a heating means for heating a bottom sheet of thermoplastic

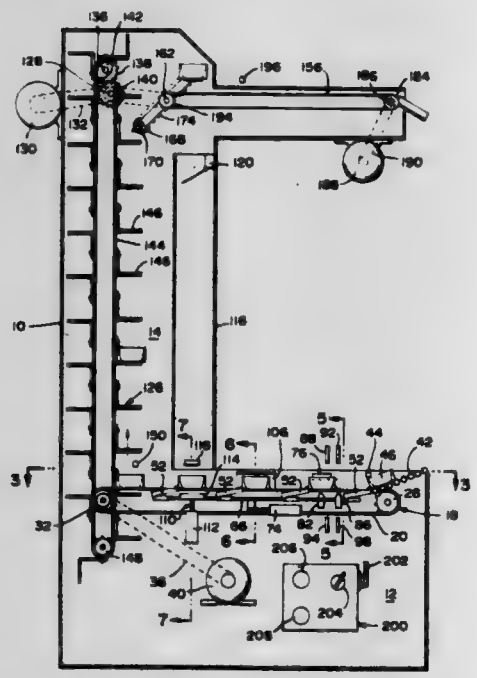
material fed intermittently, a forming means for forming successive container portions in said heated bottom sheet, a filling means for filling said container portions with material to be packed, a sealing means for sealing said container portions with a cover sheet having formed thereon reading marks and symbols corresponding to said container portions and fed intermittently together with said bottom sheet, said marks being formed with a spacing corresponding to the amount of intermittent movement of said bottom sheet and said cover sheet, and a carrying means for feeding intermittently said bottom sheet and said cover sheet, the improvement comprising reading means disposed in a position remote from said sealing means by a distance equal to the distance between said forming means and said sealing means for reading said marks.

4,349,998

CARTON INSPECTING AND CONVEYING APPARATUS

William J. Covert, Blue Anchor, N.J., assignor to Garvey Corporation, Blue Anchor, N.J.

Filed Jul. 16, 1980, Ser. No. 169,398
Int. Cl.³ B65B *57/02*
U.S. Cl. 53—53 **7 Claims**



1. A carton inspecting and conveying apparatus comprising

a continuously movable conveyor surface for transporting a series of cartons;

periodically actuated means for arresting the movement of the cartons at each of a plurality of locations along the conveyor;

means for sensing unsealed flaps on the cartons;

an ejector for selectively removing cartons from said conveyor surface at a location downstream of said sensing means; and

means responsive to said sensing means for actuating the ejector as a carton having an unsealed flap passes the ejector;

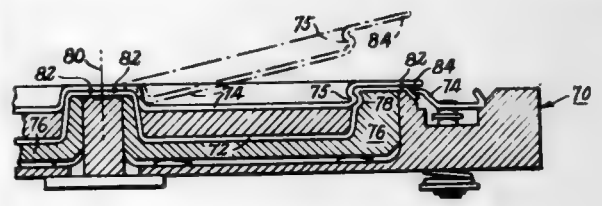
said carton arresting means including means defining a fixed channel, a plurality of pawls pivotally mounted within the channel, a finger extending upward from one end of each pawl, a cam surface at the end of the pawl opposite the finger, said pawls each being capable of limited rotation between a first position in which the fingers extend above the conveyor surface to arrest cartons thereon and a second position in which the fingers are withdrawn below the conveyor surface, the pawls being gravity biased toward said first position, an actuator bar slidably contained within the channel beneath the pawls, a plurality of shoulders on said actuator bar, one shoulder beneath each pawl for engaging a respective cam surface, and means for periodically displacing said actuator bar within said channel whereupon said shoulders engage said cam surfaces simultaneously to rotate said pawls to said second position to release cartons on the conveyor surface.

4,349,999

PACKAGING TECHNIQUES FOR SEMI-RIGID PACKAGES

Reid A. Mahaffy, Montclair, and Joel A. Hamilton, Englewood, both of N.J., assignors to Mahaffy & Harder Engineering Co., Totowa, N.J.

Division of Ser. No. 55,765, Jul. 9, 1979, which is a continuation of Ser. No. 913,822, Jun. 8, 1978, which is a division of Ser. No. 834,429, Sep. 19, 1977, Pat. No. 4,114,348, which is a continuation of Ser. No. 683,256, May 5, 1976, which is a division of Ser. No. 384,717, Aug. 1, 1973, Pat. No. 3,972,155, which is a division of Ser. No. 860,590, Sep. 24, 1969, Pat. No. 3,792,181. This application Mar. 27, 1981, Ser. No. 248,437
Int. Cl.³ B65B *47/10, 61/18*
U.S. Cl. 53—128 **5 Claims**



1. In an apparatus for making reclosable packages for food products and the like in which a first sheet of semi-rigid plastic material is formed into a receptacle in a die, said receptacle retaining a product which is to be packaged therein and a second sheet of semi-rigid plastic material which is applied over said receptacle and the product retained therein forming a closure for the receptacle, the improvement comprising:

a forming die adapted to receive said first and second sheets of semi-rigid plastic material to be formed into packages;

said forming die having at least one cavity into which said first sheet of semi-rigid plastic can be stretched to conform with the die surfaces to form said receptacle therein and said second sheet of semi-rigid plastic adapted to being subsequently stretched to engage the receptacle and the sidewall regions of said first sheet of plastic to form a cover for said receptacle so formed,

at least one sidewall of said cavity in said die having a surface irregularity located on an upper extremity thereof which will be above the level of the product which is to be packaged therein to form separable, mating, interengaged elements when said first and second sheets of plastic material are formed into said receptacle and said cover in said die,

said separable, mating interengaged elements providing a positive, interlocking closure for said package which may be opened by separating said interengaged elements and reclosed by the reengagement of said interengaged elements.

4,350,000

CROWNER NOISE SHIELD

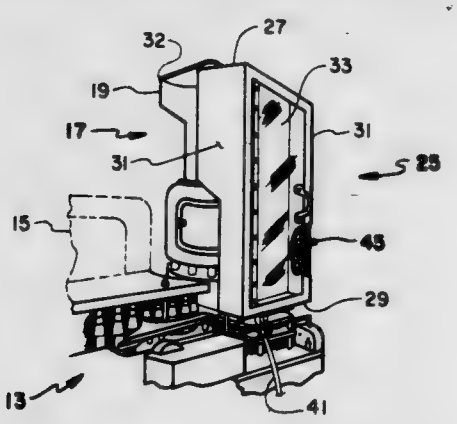
Leonard J. Schwemmer, Erie, Pa., assignor to Lord Corporation, Erie, Pa.

Filed Mar. 13, 1981, Ser. No. 243,288
Int. Cl.³ B65B *7/28;* G10K *11/00*
U.S. Cl. 53—287 **7 Claims**

1. In a crowner machine including a face plate, chute and crown advancing means, said crown advancing means producing high levels of noise, the improvement comprising:

an acoustic enclosure for absorbing at least a portion of the noise produced by the crown advancing means, said acoustic enclosure including top, bottom, front, back and two side panels connected together, at least one of said panels having sound-absorbing material removably

mounted thereto, said back panel being formed with an opening to receive the face plate, chute and crown advancing means, said panels being adapted to engage the surface of said crowner machine, said acoustic enclosure being mounted to said crowner machine so that the face



plate, chute and crown advancing means are received within said opening in said back panel as said panels engage the surface of said crowner machine thereby entirely enclosing the face plate, chute and crown advancing means within said acoustic enclosure for maximum absorption of noise.

4,350,001

METHOD FOR TREATING INSULATING FIBER

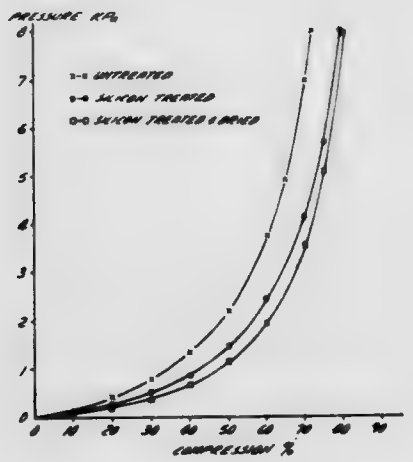
Roshan Shishoo, Askim, Sweden, assignor to Tex Innovation AB, Västra Frölunda, Sweden

Continuation-in-part of Ser. No. 53,008, Jun. 28, 1979, abandoned, which is a continuation of Ser. No. 728,374, Sep. 3, 1976, abandoned. This application Dec. 18, 1979, Ser. No. 105,049

Claims priority, application Sweden, Nov. 18, 1975, 7512944

Int. Cl.³ B65B *55/00*

U.S. Cl. 53—431 **13 Claims**



1. A method of packaging an inorganic fibrous product suitable for use as thermal or sound insulation, comprising the steps of treating the fibers of said product with a friction reducing agent, reducing the moisture content of the product, chilling or cooling the product, compressing the product to reduce its volume to at least 30% of its original volume and subsequently wrapping said product in a moisture-impermeable package.

4,350,002

PROCESS AND APPARATUS FOR PACKING INDIVIDUAL ARTICLES, IN PARTICULAR BOTTLES, ONE INTO EACH PACKAGE

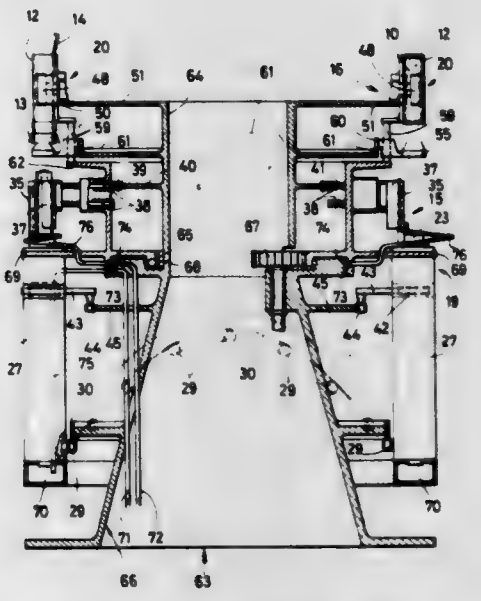
Heinz H. Focke, Verden, Fed. Rep. of Germany, assignor to Focke & Co., Verden, Fed. Rep. of Germany

Filed May 1, 1980, Ser. No. 145,536

Claims priority, application Fed. Rep. of Germany, May 5, 1979, 2918139

Int. Cl.³ B65B *21/26, 39/14*

U.S. Cl. 53—449 **9 Claims**



1. A method for packaging individual objects, in particular bottles, into a package in which the objects to be packed are wrapped with an inner liner, comprising the steps of:

(a) moving the objects (10) to be packaged in an upright position along a first path (15) in a lower plane and moving packages (12) along a second path in an upper plane on a higher level than said lower plane;

(b) fitting said objects (10) into said inner liners (11) as said objects are moved along said first path and wrapping said objects (10) with said inner liners (11);

(c) lifting said objects (10) and the inner liners (11) in which said objects (10) are wrapped upwardly and inserting said objects (10) with their respective inner liners (11) into correspondingly positioned packages (12) through openings in the bottoms of said packages (12) as said objects (10) and said packages are moved along said first and second paths, respectively.

4,350,003

SEALING HEAD

Eddie L. Greenawalt; Steve C. Ray, both of Lake Jackson, and Daniels S. Garner, Richwood, all of Tex., assignors to Package Machinery Company, East Longmeadow, Mass.

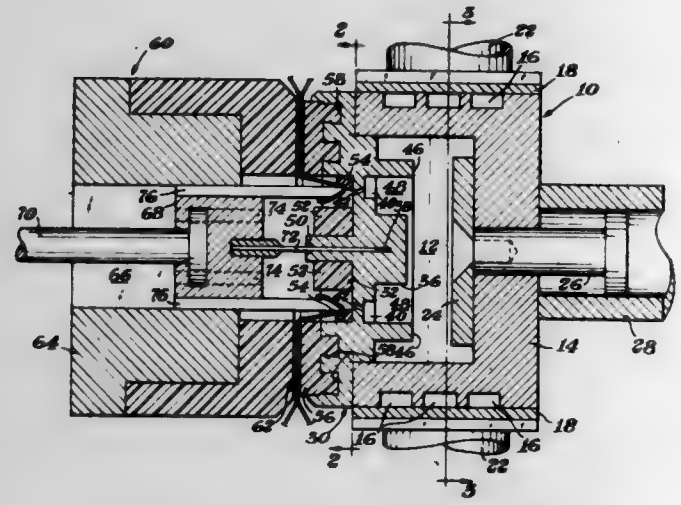
Filed Mar. 13, 1980, Ser. No. 129,968

Int. Cl.³ B65B *51/20*

U.S. Cl. 53—548 **3 Claims**

1. In a form, fill and seal machine having a gas sealing head of the general type comprising an elongated sealing face defining elongated slits communicating with a plenum for receiving pressurized gas to be emitted from said slits for forming bag end seals in producing form, fill and seal bags, the improvement which comprises, means associated with limited segments of the elongated slits and forming compartment means within said plenum by way of which pressurized gas is fed selectively from said plenum to the limited segments of the elongated slits, said compartment means defining valve seat means, a moveable valving means within said plenum and which is seatable with said valve seat means to at least partially block pressurized gas from flowing from said plenum through said compart-

ment means to the associated segments of the slits, whereby flow emitting from the slits is generally controllably channeled



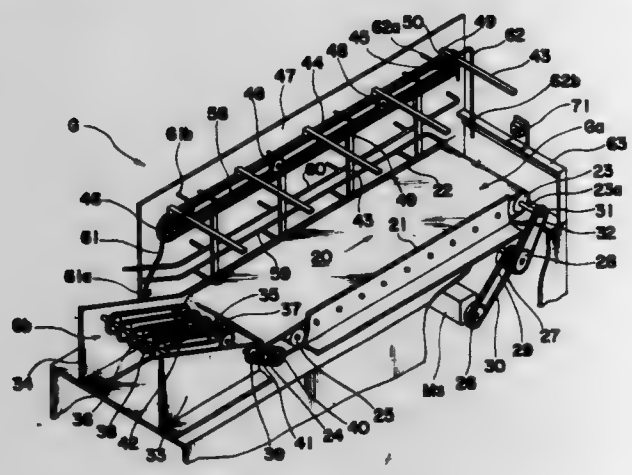
or uniform along the length of the slits depending on the valving position of said valving means.

4,350,004

MERCHANDISE DELIVERY CONVEYOR FOR AUTOMATIC BAGGING APPARATUS

Eiichi Tsujimoto, Kobe; Hiroshi Hirahara, Takarazuka, and Makoto Matsumoto, Ashiya, all of Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Filed Aug. 25, 1980, Ser. No. 181,223
Int. Cl.[3] B65B *43/14;* B31B *1/76*
U.S. Cl. 53—570 16 Claims



1. For use with an automatic merchandise bagging apparatus for automatically loading articles to be bagged into a bag, said bagging apparatus comprising a bag erecting means for the support of bags supplied thereto one at a time, said erecting means being supported for pivotal movement between horizontal and erected positions and pivotable from the horizontal position towards the erected position to erect the bag with its mouth generally facing upwards after the articles have been loaded into the bag during the positioning of the erecting means at the horizontal position, a merchandise delivery conveyor apparatus which comprises, in combination:

a merchandise delivery conveyor unit including a main endless conveyor of a length sufficient to support a plurality of the loaded bags thereon in line with each other and having one end positioned adjacent the erected position of the bag erecting means;

a first drive means for intermittently driving the main endless conveyor in one direction required to transport the loaded bags successively in a direction away from the bag erecting means and towards the other end of the main endless conveyor;

a tilt preventing means including a plurality of tilt preventing arms, drive and driven wheel members rotatably supported respectively at positions laterally of and above the opposite ends of the main endless conveyor, and an endless carrier member drivingly turned around and extending between the drive and driven wheel members, said tilt preventing arms being connected at one end to the endless carrier member in equally spaced relation to each other for pivotal movement between operative and inoperative positions, the space between each adjacent two tilt preventing arms being so selected as to hold the corresponding loaded bag therebetween;

a second drive means for driving the drive wheel member to move the endless carrier member in the same direction as and in synchronism with the main endless conveyor;

a deflecting means for causing the tilt preventing arms to pivot from the inoperative positions towards the operative positions one at a time as said tilt preventing arms are successively turned around one of said drive and driven wheel members during the movement of the endless carrier member; and

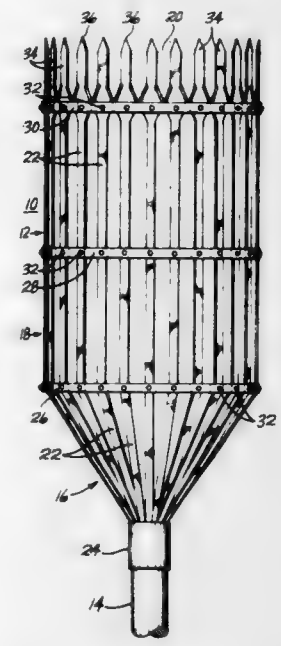
a folding means for causing the tilt preventing arms in the operative positions to pivot towards the inoperative positions one at a time as said tilt preventing arms are successively turned around the other of said drive and driven wheel members during the movement of the endless carrier member, whereby the loaded bag transferred from the bag erecting means onto the main endless conveyor and subsequently transported towards the other end of the main endless conveyor is positioned between every adjacent two tilt preventing arms in the operative positions one on each side of such loaded bag.

4,350,005

FRUIT PICKER

Thanh G. Tran, 5631 21st Ave. SW., Seattle, Wash. 98106

Filed Jul. 20, 1981, Ser. No. 285,266
Int. Cl.[3] A01D *46/24*
U.S. Cl. 56—340 4 Claims



1. An apparatus for picking fruit from a tree while standing on the ground, comprising:

(a) a plurality of individual, thin, rigid, elongate members spaced apart from each other to form a fruit receiving receptacle, said members each including:

a substantially straight main portion to cooperatively form a tubular body section of said receptacle having an opening formed therein; and

a lower portion angularly disposed relative to its corresponding main portion to cooperatively form a bottom section of said receptacle;

(b) means for securing said members in spaced apart, fixed relationship to each other to cooperatively form the body and bottom sections of said receptacle;

(c) elongate pole means secured to the center of said receptacle bottom section;
(d) a plurality of substantially straight, elongate, spaced apart fingers projecting from said receptacle along the receptacle opening, each of said fingers:
associated with an individual receptacle member and forming a coplanar extension of said associated receptacle member; and
including a base portion at the intersection with said associated receptacle member, an elongate medial portion, and a pointed tip at the end of said finger opposite said base portion, said base portion having edges oriented angularly to said medial portion and intesecting an edge of an adjacent base portion;
(e) stationary, sharp blade means extending along the edges of said base portions of adjacent fingers; and
(f) wherein said apparatus is positionable to receive a stem of the fruit between adjacent fingers and then the stem is severed either by shifting the elongate handle longitudinally to cut the stem with said blade means or by rotating the elongate handle to twist and/or cut the stem with said fingers.

4,350,006

SYNTHETIC FILAMENTS AND THE LIKE

Miyoshi Okamoto; Koji Watanabe, both of Ohtsu; Yasuhiko Nukushina, Kyoto, and Tsuneo Aizawa, Ohtsu, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Continuation of Ser. No. 613,604, Sep. 15, 1975, abandoned, which is a continuation of Ser. No. 43,101, Jun. 3, 1970, abandoned, which is a continuation of Ser. No. 607,302, Jan. 4, 1967, Pat. No. 3,531,368. This application Jul. 15, 1981, Ser. No. 283,382

Claims priority, application Japan, Jan. 7, 1966, 41-560; Nov. 18, 1966, 41-75446

Int. Cl.³ D02G *3/22, 3/36;* D01D *5/34*

U.S. Cl. 57—250 **88 Claims**





1. A bundle of ultrafine filaments composed of a fiber-forming polymer which is characterized in that said bundle comprises at least 10 substantially parallel ultrafine filaments each of which is continuous along the longitudinal axes of said bundle and has a denier of less than 0.1.

4,350,007

SPINNING FRAME

Hermann Gasser, Zürich; Karl Curiger, Pfäffikon, and Peter Novak, Winterthur, all of Switzerland, assignors to Luwa AG, Zürich, Switzerland

Filed Jun. 30, 1980, Ser. No. 164,066

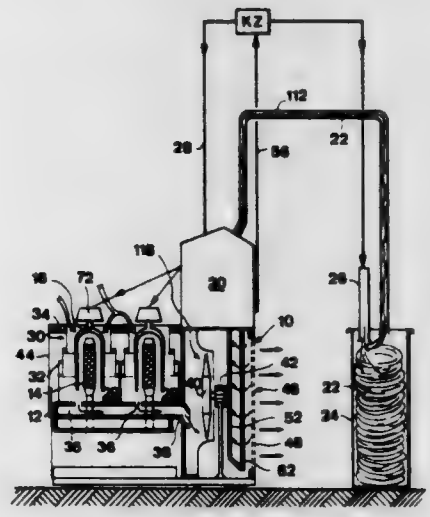
Claims priority, application Switzerland, Jul. 6, 1979, 6333/79

Int. Cl.³ D01H *11/00*

U.S. Cl. 57—304 **22 Claims**

1. A spinning frame comprising:
a spindle rail;
a plurality of spindles;
means defining a source of low pressure;
means defining a respective separate chamber for each spindle;
each said chamber being connected to a suction side of said source of low pressure by means of said spindle rail;
said chambers comprising generally circular sleeves which are variable in axial length;
each of said sleeves comprising a plurality of rings telescopically slidable within one another; and
a lowest ring of each said sleeve being sealingly connected to said spindle rail and including a vertically movable support to which an uppermost ring of each said sleeve is attached.

2. A spinning frame comprising:
a spindle rail;
a plurality of spindles supported by the spindle rail;
means defining a source of low pressure;
means defining a respective separate chamber for each spindle;



each said chamber being connected to a suction side of said source of low pressure by means of said spindle rail;
said chambers comprising generally circular sleeves which are variable in axial length;
a duct section having an orifice in said spindle rail provided for each said chamber; and
means connecting said duct sections to said source of low pressure.

4,350,008

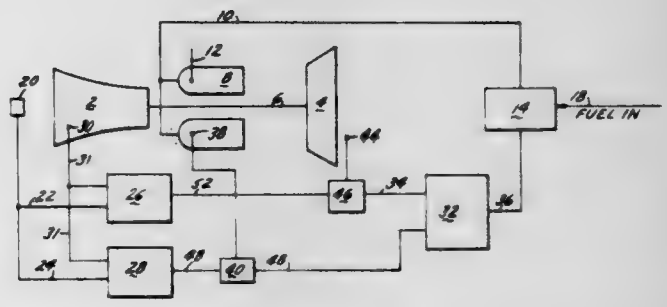
METHOD OF STARTING TURBINE ENGINES

Herbert C. Zickwolf, Jr., Bozrah, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 26, 1979, Ser. No. 107,461

Int. Cl.³ F02C *7/26*

U.S. Cl. 60—39.14 R **4 Claims**



1. A method of starting a turbine engine including the steps of:
cranking the engine until sufficient air flow is available for lightoff;
admitting fuel at a fixed flow rate to the engine; igniting the fuel; and then
increasing the rotor speed to operating speed by increasing the fuel flow at a rate of change that is a function of both rotor speed and ambient temperature.

4,350,009

COMBUSTION CHAMBER FOR A GAS TURBINE

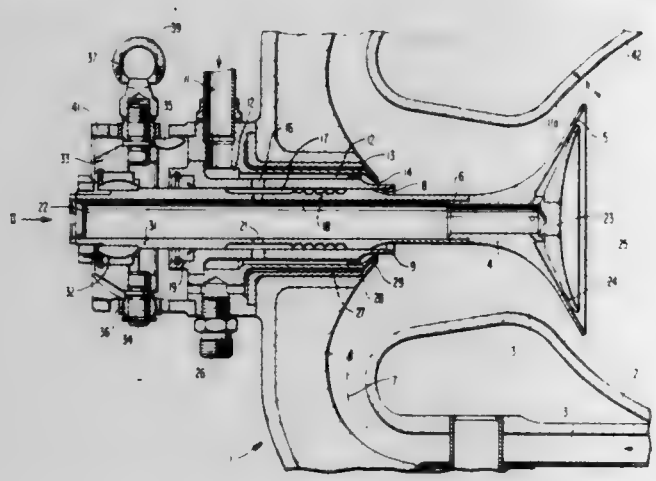
Immanuel Holzapfel, Stuttgart, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 917,482, Jun. 21, 1978, abandoned. This application Oct. 2, 1980, Ser. No. 192,992

Claims priority, application Fed. Rep. of Germany, Jun. 21, 1977, 2727795

Int. Cl.³ F02C *7/22, 9/00*

U.S. Cl. 60—39.23 **15 Claims**



1. A combustion chamber for a gas turbine, comprising:

ring-shaped atomizing nozzle means having swirl slot means for injecting a swirling mixture of fuel and air into a primary air flow,

pre-chamber means having a primary air in flow means,

combustion zone means having a primary air inlet means with a cross section,

deflection body means projecting through the inlet means of the combustion zone means and serving as flame holder means for the stabilizing of a combustion in a primary air zone means, and

means for changing the cross section of the primary air inlet means by a longitudinal movement of the deflection body means, said nozzle means causing the swirling mixture of fuel and air to enter the primary air inflow means as an annular jet disposed approximately concentrically around said flame holder means and to impinge approximately perpendicularly onto the primary air flow penetrating said primary air flow and uniformly mixing therewith.

4,350,010

EXHAUST SYSTEM FOR AN OUTBOARD ENGINE

Susumu Yukishima, Mamamatsu, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha and Sanshin Kogyo Kabushiki Kaisha, both of Iwata, Japan

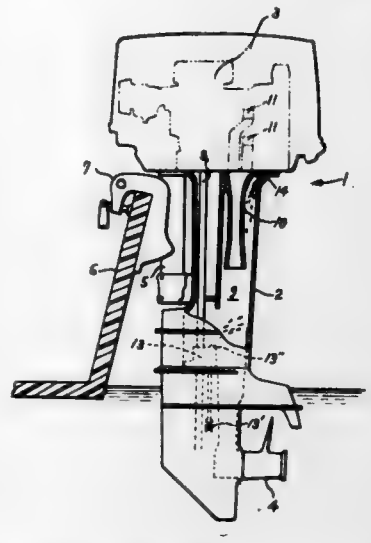
Filed Apr. 10, 1980, Ser. No. 138,939

Claims priority, application Japan, Apr. 17, 1979, 54-47379

Int. Cl.³ F01N *3/04;* F02B *27/04;* B63H *21/32*

U.S. Cl. 60—310 **9 Claims**

1. In an outboard engine assembly which includes a casing, an internal combustion engine having a water coolant circuit and an exhaust pipe, said casing enclosing an expansion chamber into which said exhaust pipe projects and into which it discharges engine exhaust gases, said exhaust pipe having an outlet end in said expansion chamber and a peripheral wall which is, for a substantial portion of its length immediately adjacent to its outlet end, exposed directly to said gases in said expansion chamber, at least part of the coolant water from said circuit being also discharged into said expansion chamber so as to contact at least part of said exposed portion of said exhaust pipe, the improvement comprising a plurality of pores extending through said peripheral wall near said outlet end of said exhaust pipe, whereby to permit flow of gases from said expansion chamber into and across said exhaust pipe, to discourage



backflow of said exhaust gases through said outlet end and into said exhaust pipe.

4,350,011

PUMPING APPARATUS FOR FLUID

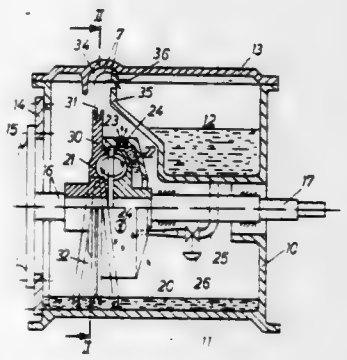
Thomas Rögner, Kirchberg, and Anton Frank, Oberspeltach, both of Fed. Rep. of Germany, assignors to Voith Turbo GmbH & Co. KG, Crailsheim, Fed. Rep. of Germany

Filed Apr. 29, 1980, Ser. No. 144,881

Claims priority, application Fed. Rep. of Germany, May 7, 1979, 2918284

Int. Cl.³ F16D *33/08*

U.S. Cl. 60—337 **26 Claims**



1. Pump apparatus for pumping a working fluid, in a hydrodynamic coupling, or the like, the pumping apparatus comprising:

a housing having a sump therein for the fluid; a container for the fluid, the container having an entrance into it which entrance is located above the level of fluid in the sump;

a spinnable disc in the housing, spinning in a plane which is substantially vertical; means for spinning the disc in the housing around a spin axis; the disc having a periphery; the disc being so shaped and the spin axis thereof being so placed that the disc periphery will dip into the liquid in the sump as the disc spins;

a stationary supply duct in the housing, the duct shaped and placed to enclose a portion of the periphery of the disc, starting from the bottom of the disc with respect to the housing and extending around the disc in the direction of

spin of the disc to an exit end of the duct; wherein the duct has a side thereof facing radially inwardly toward the disc, the duct being in spaced apart relation to the disc, and the side of the duct curving toward the disc at an exit of the duct, whereby the duct is shaped and placed for directing fluid, which would otherwise be thrown clear of the disc back toward the periphery of the disc, at least at the exit end of the duct;

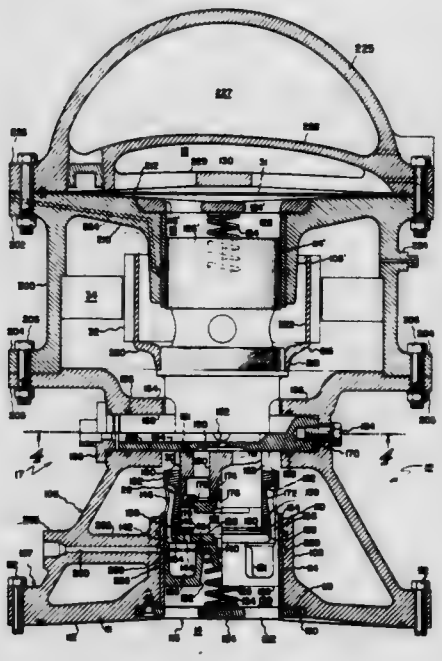
the disc including fluid carrying means at the periphery thereof for carrying fluid up beyond the exit from the duct for throwing upwardly the fluid carried by the fluid carrying means and for flinging the fluid to enter the container through the entrance thereof.

4,350,012

DIAPHRAGM COUPLING BETWEEN THE DISPLACER AND POWER PISTON

Lawrence R. Folsom, Schenectady, N.Y., and John J. Dineen, Durham, N.H., assignors to Mechanical Technology Incorporated, Latham, N.Y.

Filed Jul. 14, 1980, Ser. No. 168,075
Int. Cl.³ F02G *1/04*
U.S. Cl. 60—520 **21 Claims**



1. A free-piston Stirling engine having a sealed vessel defining therein a working space; a displacer axially movable in the working space for shuttling working gas between one end of the working space where it is heated, and the other end of the working space where it is cooled; a power piston axially movable in said vessel having a power stroke under the influence of the expansion of said working gas at a high temperature, and a compression stroke in which it compresses said working gas at a low temperature; wherein improvements comprise:

means for hermetically separating one end of said power piston from said working space;

said power piston having a second end;

a bounce space connected to said working space by connection means that allows flow of working gas only fast enough to equalize the mean gas pressure;

said power piston second end being in power transfer relation to said bounce space;

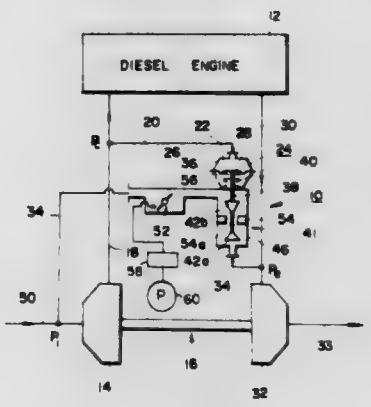
means for hermetically separating said second end of said power piston from, and for sealing said bounce space.

4,350,013

EXHAUST GAS RECIRCULATION SYSTEM

Yasutaka Yoshiba, Chiba, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jan. 29, 1980, Ser. No. 116,641
Claims priority, application Japan, Feb. 9, 1979, 54-15492[U]
Int. Cl.³ F02B *37/00*; F02M *25/06*
U.S. Cl. 60—605 **5 Claims**



1. In a diesel engine having a turbocharger which includes a compressor for supplying compressed air to the engine, and which includes a turbine driven by exhaust gas from the engine for rotating the compressor, an exhaust gas recirculation system comprising:

a recirculation passage connecting the exhaust side of the engine and the intake side of the compressor for carrying the exhaust gas from the engine to the compressor;

a control valve disposed within said recirculation passage; and

valve actuating means associated with said valve for sensing compressor output pressure and for causing said control valve to close said recirculation passage when the sensed compressor output pressure is lower than a first predetermined value, and when the sensed compressor output pressure is higher than a second predetermined value, the second predetermined value being higher than the first predetermined value.

4,350,014

PLATFORM FOR UTILIZATION OF THE THERMAL ENERGY OF THE SEA

Pierre Sanchez, Cesson, and Andre Vitalis, Paris, both of France, assignors to Societe Anonyme dite: Sea Tank Co., Rungis, France

Filed Nov. 26, 1979, Ser. No. 97,285
Claims priority, application France, Nov. 30, 1978, 78 33888; Jan. 25, 1979, 79 01971; Oct. 8, 1979, 79 24975
Int. Cl.³ F03G *7/04*
U.S. Cl. 60—641.7 **40 Claims**

1. A platform for utilization of the thermal energy of the sea, said platform comprising:

a floating structure carrying a downwardly extending tube for taking up cold water,

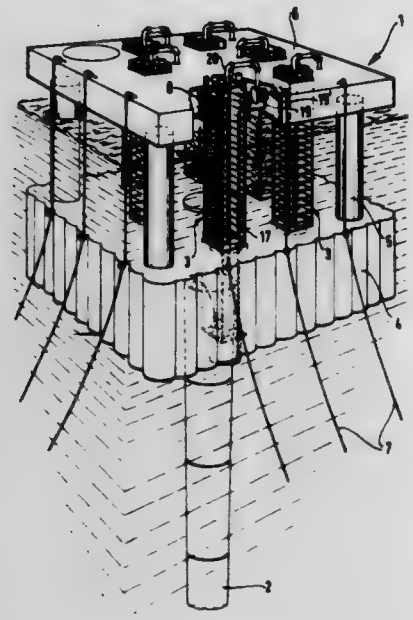
at least two power modules supported on said floating structure,

each power module comprising an evaporator and a condenser and pumps for circulation of hot and cold water,

each power module being connected to a turbine-driven generator set,

the improvement wherein the support structure has open upright cells receiving said power modules, and wherein each module has its component parts arranged in a vertical array so as to constitute a cylindrical assembly extending through the support structure cell, and wherein the

support structure is semi-submersible and comprises a cellular concrete base surmounted by columns supporting



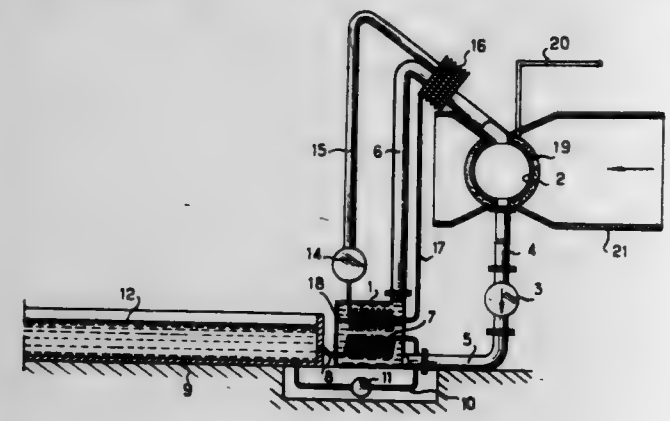
a working deck, and each module passes through said base and said working deck.

4,350,015

MACHINE FOR CONVERTING THERMAL ENERGY INTO WORK

Herve d'Achon, Domaine de Bagari, 83120 Ste Maxime S/Mer, France

Filed Sep. 24, 1980, Ser. No. 190,260
Claims priority, application France, Sep. 26, 1979, 79 23914
Int. Cl.³ F03G *7/00*; F01K *9/00*
U.S. Cl. 60—675 8 Claims



1. A closed circuit machine for converting thermal energy into work and having a heating fluid circulating therethrough, said heating fluid comprising a source of heat, said machine comprising:

(a) a tank adapted to hold liquid and traversed by a first coil for circulating said heating fluid, said coil having two ends, both of said ends being connected to a basin, said basin adapted to be partly filled with water;

(b) a condenser positioned above said tank, said condenser comprising a cold source capable of evacuating heat from said tank via a thermally insulated pipe connecting said tank and said condenser and having a low prssure therein;

(c) a hydraulic motor positioned in the lower portion of a return pipe system connected to said condenser and said tank;

(d) a Venturi tube positioned about said condenser; and

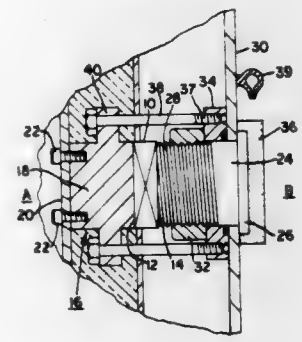
(e) a spongy material coated about said condenser and means for humidifying said spongy material, wherby when said closed circuit is filled with fluid, heat is generated within said tank and gaseous fluid rises under low pressure to said condenser, condenses into liquid therein and descends as liquid to actuate said hydraulic motor.

4,350,016

DEVICE AND PROCESS FOR EFFECTING REFRIGERATION

Shlomo Beitner, Tel-Aviv, Israel, assignor to Bipol Ltd., Tel-Aviv, Israel

Filed Feb. 20, 1981, Ser. No. 236,523
Int. Cl.³ F25B *21/02*
U.S. Cl. 62—3 10 Claims



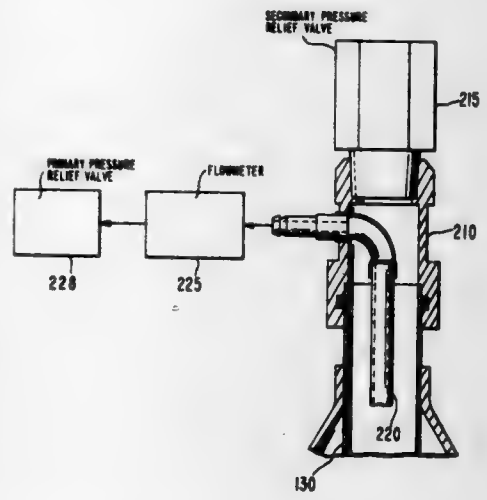
1. In a device enveloped by an ambient, gaseous medium, a process for effecting refrigeration therein by means of a thermoelectric element having a hot face and a cold face activated by imposing a direct current potential across said faces, wherein said hot face is cooled by conducting heat therefrom into said ambient, gaseous medium, the improvement in which the heat is conducted by means of a thermal sink, one face of which is in direct heat-transfer contact with said hot face and the other face of which is in direct heat-transfer contact with said ambient, gaseous medium, and in which a vaporizable liquid having a high latent heat of vaporization is applied to said other face concomitantly with it being exposed to said ambient, gaseous medium, said liquid being so applied that cooling is effected, both by direct heat transfer into said gaseous medium and by vaporization of said liquid, whereby advantage is taken of the high latent heat of vaporization of the vaporizable liquid.

4,350,017

CRYOSTAT STRUCTURE

George D. Kneip, Menlo Park; John H. Broshear, East Alviso, and Marvin H. Anderson, Mountain View, all of Calif., assignors to Varian Associates, Inc., Palo Alto, Calif.

Filed Nov. 10, 1980, Ser. No. 205,118
Int. Cl.³ F17C *7/02*
U.S. Cl. 62—50 10 Claims



1. A cryostat comprising an inner reservoir for containing a cryogenic liquid, and outer shells surrounding said reservoir, a

fill and vent tube communicating from said inner reservoir through said outer shell and a cylindrical baffle disposed interiorly of said fill and vent tube, said cylindrical baffle comprising another tube having an outer diameter substantially smaller than the inner diameter of said fill and vent tube, said interior of said another tube adapted to communicate with the exterior of said outer shell through a low pressure relief valve, and the annular conduit space formed between the exterior of said another tube and the interior of said fill and vent tube adapted to communicate with the exterior of said outer shell through a relatively high pressure relief valve.

4,350,018

GAS RECOVERY SYSTEM

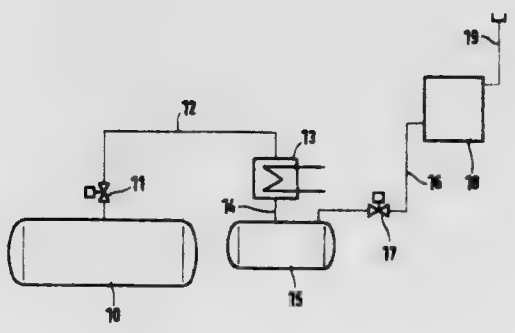
Karl Frank, Linz, and Ewald Marnette, Windhagen, both of Fed. Rep. of Germany, assignors to Kohlensäure-Werke Rud. Buse GmbH & Co., Bad Hönningen, Fed. Rep. of Germany

Filed Mar. 20, 1981, Ser. No. 245,934

Claims priority, application Fed. Rep. of Germany, Mar. 24, 1980, 3011300; Japan, Jan. 29, 1981, 3102966

Int. Cl.³ F17C *13/00*

U.S. Cl. 62—54 **13 Claims**



1. A method of recovering the gases originating from a storage tank during abnormal operation thereof, the method comprising

passing the escaping gases to a heat exchanger where they are cooled and liquified by heat exchange with a liquified, low-boiling coolant gas selected from the group consisting of CO_2, nitrogen and Freon, and

conveying the liquified escaping gases from the heat exchanger through a line to a collector tank where they can be stored.

4,350,019

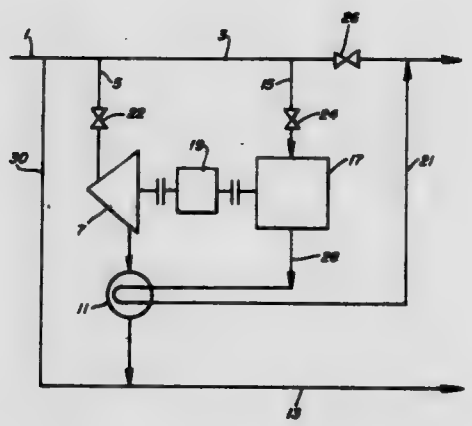
GAS EXPANSION/COMPRESSION TRAIN

William Chocas, Memphis, Tenn., assignor to W. R. Grace & Co., New York, N.Y.

Filed Dec. 22, 1980, Ser. No. 218,760

Int. Cl.³ F25D *7/00*

U.S. Cl. 62—87 **5 Claims**



1. The method of forming an initial gas stream at a pressure above atmospheric pressure which is to be used as both a fuel gas and as a feedstock stream for a chemical process into a first fuel stream of lower pressure and a second feedstock stream of higher pressure, comprising

(1) dividing the initial stream into a first fuel stream and a second feedstock stream;

(2) charging the first stream to an expander turbine coupled to a compressor and recovering this first stream as a fuel stream at lower pressure; and

(3) compressing the second stream with the compressor and recovering this second stream as a feedstock stream for a chemical process at higher pressure than the pressure of the initial gas,

whereby a portion of the initial gas being used as a feedstock stream for a chemical process is converted to a higher pressure than the pressure of the initial gas.

4,350,020

PROCESS FOR PRODUCING HEAT BY MEANS OF A HEAT PUMP OPERATED WITH A FLUID MIXTURE AS WORKING AGENT AND AIR AS HEAT SOURCE

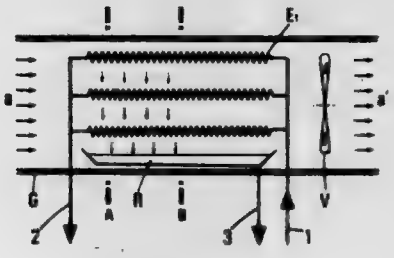
Alexandre Rojey, Garches, France, assignor to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Jan. 23, 1981, Ser. No. 227,844

Claims priority, application France, Jan. 24, 1980, 80 1575

Int. Cl.³ F17D *17/06*

U.S. Cl. 62—93 **13 Claims**



1. In a process for producing heat by means of a heat pump comprising the steps of (a) vaporizing a working fluid, in an evaporation zone, in counter-current thermal exchange contact with a first fluid used as a heat source, under a first pressure level, said working fluid consisting essentially of a non-azeotropic mixture of at least two distinct components, (b) compressing the resultant vaporized working fluid, (c) condensing the resultant compressed vaporized working fluid, in a condensation zone, in counter-current thermal exchange contact with a second fluid for heating said second fluid, under a second pressure level higher than the first pressure level, and (d) expanding the condensed working fluid from step (c) and recirculating it to step (a), the improvement comprising:

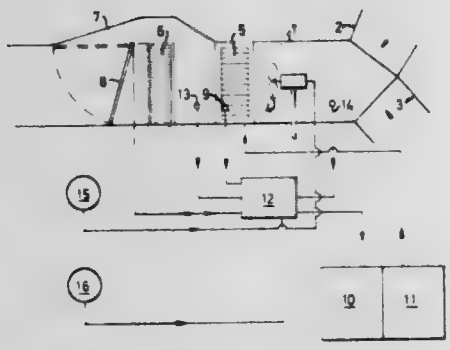
conducting said vaporization of the working fluid in counter-current thermal exchange contact with a first fluid comprising relatively cool moist air by passing the working fluid through an evaporator zone with the cool moist air being passed successively through a first section of the evaporator zone which is nearest the point of entry of the relatively cool moist air into the evaporator zone, and a second section of the evaporator zone which is nearest the point of exit of the relatively cool moist air, thereby causing water to be condensed and deposited on the surfaces of the first section of the evaporator zone and frost to form on the surfaces of the second section of the evaporator zone; and

discharging the deposited water from the first section immediately upon condensation thereof to prevent said condensed water from contacting the surfaces of the second section, thereby reducing the amount of frost formed on the surfaces of the second section.

4,350,021
DEVICE FOR PREVENTING ICING IN AN AIR CONDITIONING UNIT FOR MOTOR VEHICLES

Gustaf B. Lundström, Gothenburg, Sweden, assignor to AB Volvo, Gothenburg, Sweden

Filed Nov. 4, 1980, Ser. No. 204,080
Claims priority, application Sweden, Nov. 12, 1979, 7909329
Int. Cl.³ F25D *21/00*
U.S. Cl. 62—150 6 Claims

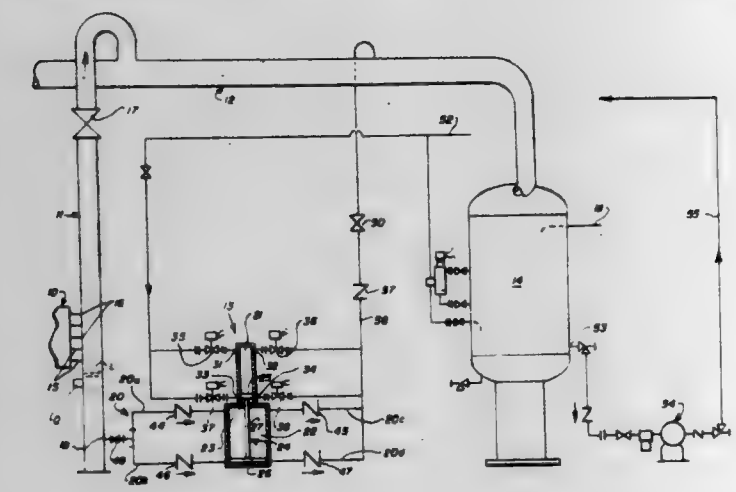


1. A device for preventing icing in a thermostat-controlled evaporator in an air conditioning unit for motor vehicles, comprising a first sensor for sensing the speed of the air flowing through the evaporator, and control means which cooperates with the sensor and the thermostat to receive information on the air speed and to send a control order dependent thereon to the thermostat to reduce the lower limit for permissible evaporator temperatur with increasing air speed, and vice versa.

4,350,022
REFRIGERANT TRANSFER SYSTEM

Paul J. Kristapovich, and Milton E. Knapp, both of Lake Mills, Wis., assignors to Crepaco, Inc., Lake Mills, Wis.

Filed Oct. 2, 1980, Ser. No. 193,168
Int. Cl.³ F25B *41/00*
U.S. Cl. 62—174 8 Claims

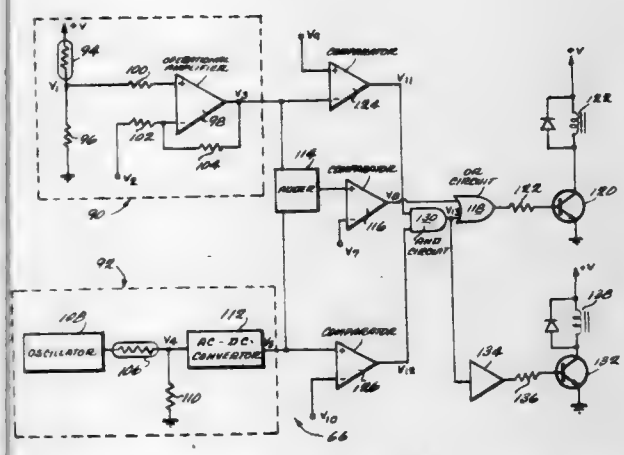


1. In a refrigeration system utilizing a pumped liquid refrigerant, a combination comprising a substantially upright suction header having a first connection to an evaporator unit; a suction main elevated relative to said header and connected to an upper end portion thereof; a pump for liquid refrigerant including a pair of elongated chambers arranged in substantially end-to-end relation and separated from one another by a common partition, one chamber having a substantially smaller cross-sectional area than the second chamber, each chamber having the opposite ends thereof provided with port means, and piston means reciprocally mounted within said chambers, said piston means having a first head slidably disposed within said one chamber and a second head slidably disposed within said second chamber, said second head having a substantially greater diameter than said first head, said heads being interconnected by means extending through said common partition whereby said heads are movable as a unit; first sets of inlet and outlet valve means connected to the port means at each end of said one chamber, each inlet valve means communicating with a source of high pressure fluid; control means operatively connected to said first sets of valve means wherein alternately an inlet valve means at one end of said one chamber and an outlet valve means at the opposite end of said one chamber open and close simultaneously; a second set of inlet and outlet valve means connected to the port means at each end of the second chamber, each inlet valve means of the second set communicating with a second connection provided in said header and spaced beneath said first connection whereby liquid refrigerant accumulated in said header is adapted to flow only in one direction through one inlet valve means of the second set into a portion of the second chamber disposed to one side of the piston means second head and simultaneously flow outwardly from the other portion of the second chamber disposed to the opposite side of the piston means second head for each stroke of the latter within the second chamber, each outlet valve of the second set communicating with said suction main and permitting liquid refrigerant flow in only one direction from said second chamber to said suction main.

4,350,023
AIR CONDITIONING APPARATUS

Eiji Kuwabara, Fujishi; Takayoshi Sakata, Jufishi; Noboru Kawauchi, Shizuokashi; Yuuichi Ide, and Takeshi Matsuo, both of Fujishi, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed Oct. 7, 1980, Ser. No. 195,065
Claims priority, application Japan, Oct. 15, 1979, 54-132673
Int. Cl.³ F25D *17/00*; B01F *3/02*
U.S. Cl. 62—176 E 3 Claims



1. An operational mode controller for an air-conditioning apparatus for controlling the temperature and the humidity comprising:

a temperature sensor for sensing temperature to produce a first signal substantially corresponding to said temperature;

a humidity sensor for sensing humidity to produce a second signal substantially corresponding to said humidity;

means for combining said first signal and said second signal to produce a third signal substantially corresponding to a sum of said temperature and said humidity;

means for comparing said first signal, said second signal and said third signal respectively with a given first signal substantially corresponding to a given temperature, a given second signal substantially corresponding to a given humidity and a given third signal substantially corresponding to a given sum of said given temperature and said given humidity; and

an actuating means responsive to said comparing means for actuating said air conditioning apparatus for controlling the temperature when said temperature and said humidity exceed said given temperature and said given humidity while said sum exceeds said given sum, for controlling the

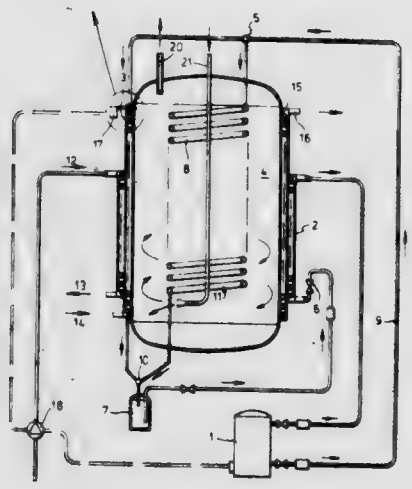
humidity when said humidity exceeds said given humidity while said temperature is below said given temperature and for stopping control of both the temperature and the humidity when both said temperature and said humidity are below said given temperature and said given humidity while said sum is below given sum.

4,350,024

HEATING SYSTEM

Thorleif Möll, Fjäras, Sweden, assignor to Cinderella AB, Sweden

Filed Oct. 15, 1980, Ser. No. 197,329
Claims priority, application Norway, Oct. 15, 1979, 793312
Int. Cl.³ F25B *27/02*
U.S. Cl. 62—238.6 **9 Claims**



1. A heating system for heating first and second fluids, comprising:

compressor means for heating a heat exchange medium, such as Freon, to a gas;

means for supplying the medium from said compressor means to first and second, parallel pipe coils;

valve means for controlling amounts of said medium supplied to said first and second pipe coils;

a tank for storing said first fluid to be heated;

said first pipe coil in said tank being submerged in said first fluid;

said second pipe coil external to and in thermal contact with said tank;

means for supplying said second fluid into thermal contact with said second pipe coil;

evaporator means external to and in proximity with said second pipe coil;

means for supplying the medium, condensed in said first and second pipe coils, to said evaporator means for evaporation; and

means for returning the evaporated medium to said compressor.

4,350,025

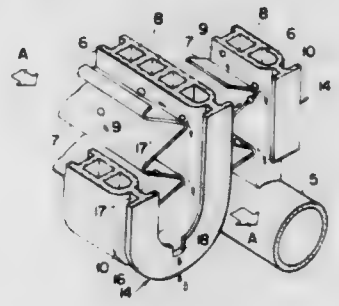
REFRIGERANT EVAPORATOR

Masao Izumi, Fujisawa, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Apr. 6, 1981, Ser. No. 251,100
Claims priority, application Japan, Apr. 18, 1980, 55-51766[U]
Int. Cl.³ F25D *21/14*
U.S. Cl. 62—285 **8 Claims**

1. A refrigerant evaporator for use with air-flow inducing means operative to establish a flow of air in a predetermined direction through the evaporator so that the evaporator has windward and leeward ends in said direction, comprising:

an evaporator tube having a longitudinal direction substantially at right angles to said predetermined direction and a serpentine-anfractuous cross section in said longitudinal direction, the evaporator tube having a plurality of parallel portions spaced apart from each other in said longitudinal direction and having formed therebetween gaps



through which said flow of air is to pass in said predetermined direction, and

a plurality of fins each secured to and intervening between neighboring two of said parallel portions,

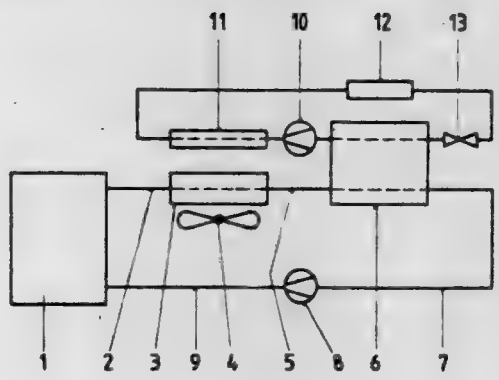
said evaporator tube having at the leeward end of the evaporator an end wall and a ridge wall projecting in a leeward direction from said end wall and forming along the end wall a pair of grooves which are opposite to each other across ridge wall.

4,350,026

COOLING DEVICE FOR ELECTRICAL AND/OR ELECTRONIC COMPONENT ELEMENTS PRODUCING LOST HEAT AND A PROCEDURE FOR OPERATING SUCH

Erwin Klein, Heddesheim, Fed. Rep. of Germany, assignor to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

PCT No. PCT/CH79/00078, § 371 Date Apr. 28, 1980, § 102(e) Date Apr. 28, 1980, PCT Pub. No. WO80/00511, PCT Pub. Date Mar. 20, 1980
PCT Filed May 25, 1979, Ser. No. 199,461
Claims priority, application Fed. Rep. of Germany, Aug. 26, 1978, 2837353
Int. Cl.³ F25D *17/00;* H01L *23/44*
U.S. Cl. 62—333 **2 Claims**



1. A cooling system for cooling at least one semiconductor component, comprising:

a coolant flow circuit connected with said component

a convection heat exchanger connected in said circuit;

a refrigeration cycle system thermally coupled to said coolant circuit and including a compressor, a condenser, a collector, an expansion valve, and an evaporator, said evaporator coupled in series with said exchanger in said circuit;

at least one fan for forcibly ventilating said convection heat exchanger for thereby cooling the at least one semiconductor component;

said condenser of said refrigeration cycle system installed in said forcibly ventilated convection heat exchanger whereby said at least one fan serves also to cool said condenser; and

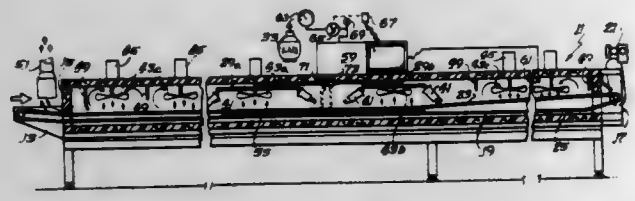
a coolant suitable for combined convection and boiling cooling being used in the coolant circiut, said coolant having a boiling point below the wall temperature of said at least one semiconductor component to be cooled.

4,350,027

CRYOGENIC REFRIGERATION APPARATUS

Lewis Tyree, Jr., 145 Briarwood Ave., North, Oak Brook, Ill. 60521

Filed Oct. 5, 1981, Ser. No. 308,373
Int. Cl.³ F25D *17/02*
U.S. Cl. 62—374 **10 Claims**



1. Refrigeration apparatus for utilizing a cryogenic liquid, such as liquid nitrogen, to cool material which is moved therethrough, which apparatus comprises:

means defining an elongated insulated enclosure,

means for conveying material to be cooled through said enclosure from an entry end to an exit end thereof,

cryogen injection devices located above said conveying means for expanding cryogen under superatmospheric pressure to substantially atmospheric pressure, which include spray nozzle means and a major portion of which include inducer means located in surrounding relationship to said spray nozzle means,

said devices being arranged in a first array with a first group of nozzle means being directed downward and toward said entrance end and with a second group of nozzle means being directed downward and toward said exit end, said first and second groups being spaced longitudinally apart to provide an intermediate region therebetween,

fan means located between said first and second groups for creating an upward flow of cryogen vapor in said intermediate region and

means for supplying liquid cryogen under superatmopheric pressure to said devices.

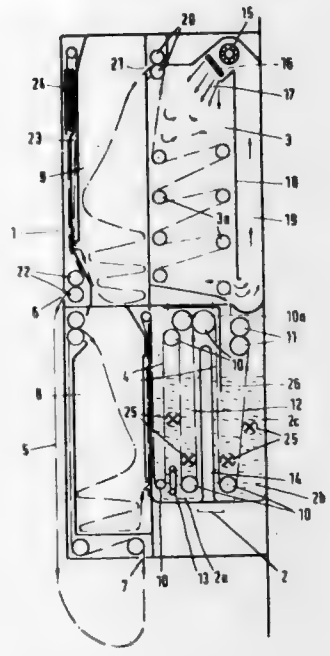
4,350,028

AUTOMATIC TOWEL DISPENSER

Hugo W. Geschka, Düsseldorf, Fed. Rep. of Germany, assignor to LUK Lamellen und Kupplungsbau GmbH, Bühl, Fed. Rep. of Germany

Continuation of Ser. No. 50,641, Jun. 21, 1979, abandoned. This application Nov. 13, 1980, Ser. No. 206,622
Claims priority, application Fed. Rep. of Germany, Jun. 21, 1978, 2827184
Int. Cl.³ A47K *10/30*
U.S. Cl. 68—13 R **2 Claims**

1. In an automatic towel dispenser having a housing containing a washing and a drying chamber for an endless towel passable therethrough, a delivery slot and an inlet slot formed in the housing, the towel having a cleaned section available for use extending outside the housing between the delivery slot and the inlet slot, respectively, means defining a path from the inlet slot to the washing chamber and from the drying chamber to the delivery slot along which the endless towel is movable, the housing also containing a first supply chamber for variably stacking a plurality of soiled towel sections of the endless towel therein, the first supply chamber being located between the inlet slot and the washing chamber, as viewed in travel direction of the towel, and the housing further containing a second supply chamber for variably stacking a plurality of cleaned towel sections of the endless towel therein, the second supply chamber being located between the drying chamber and the delivery slot, as viewed in travel direction of the towel, the path extending through the washing and drying chambers and into the second supply chamber for cleaned towel sections, means for passing the soiled towel sections, after a given quantity of the cleaned towel sections have been emptied, through the washing and drying chambers, while washing and drying processes are set into operation, and for depositing the sections in the second supply chamber for cleaned towel sections, the



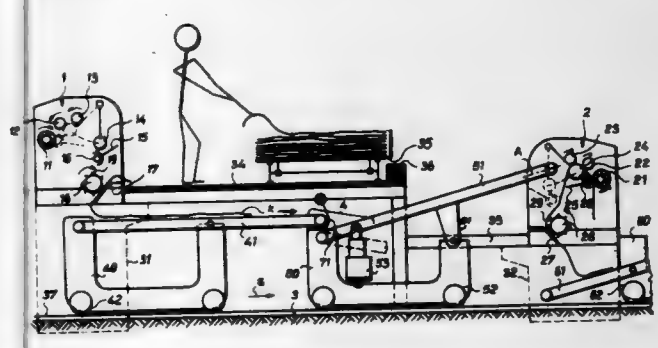
washing chamber having, in common, at least one wash tub and one rinsing tub, the path extending through the wash tub and the rinsing tub, and means for passing the endless towel in a looping manner through the wash tub and the rinsing tub along the path therethrough, the improvement therein comprising a steam or vapor barrier located between the wash tub and the rinsing tub, said barrier comprising a covering formed of material having high thermal conductivity and being located in the common washing chamber between the wash tub and the rinsing tub, said covering overlapping an upper region of the wash tub and being immersed below rinsing liquid level in the rinsing tub.

4,350,029

APPARATUS FOR DE-FLESHING SKINS OR HIDES

Ladislav Janirek, Gottwaldov; Jaroslav Hlavinka, Kromeriz; Josef Hanacek, and Zdenek Miculka, both of Otrokovice, all of Czechoslovakia, assignors to Strojosvit, Krnov, Czechoslovakia

Filed Dec. 3, 1980, Ser. No. 212,355
Claims priority, application Czechoslovakia, Dec. 7, 1979, 8538-79
Int. Cl.³ C14B *1/00*
U.S. Cl. 69—1 **4 Claims**



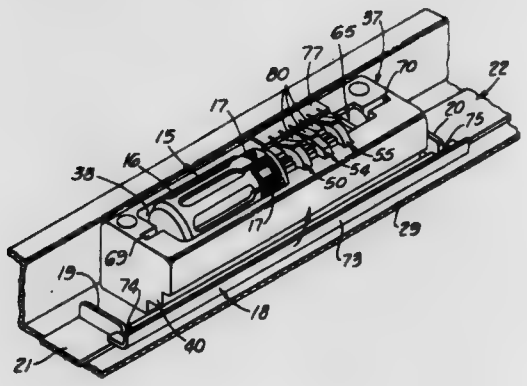
1. A system for de-fleshing skins or hides, comprising two de-fleshing stations, each having a supporting roller for receiv-

ing and carrying said hide past knife means for de-fleshing the skin and to an outlet chute, said stations being interconnected by a transfer bridge, the first de-fleshing station being attached through its outlet chute to the rear end of the transfer bridge while the second de-fleshing station is attached through its outlet chute to the rear end of a carry away conveyor said transfer bridge comprising a pair of conveyors, the first of which is set so that its front end extends over the rear end of the second conveyor, said second conveyor being provided with a means for swinging the front end thereof in a vertical plane to assure a selected fixed condition between a position above the supporting roller of the second de-fleshing station and a position above the rear end of carry-away conveyor.

4,350,030
LUGGAGE CASE RESETTABLE SEQUENTIAL COMBINATION LOCK

Robert L. Bromley, Aurora, Colo., assignor to Samsonite Corporation, Denver, Colo.

Filed Oct. 27, 1980, Ser. No. 201,026
Int. Cl.³ E05B 37/08
U.S. Cl. 70—70 6 Claims

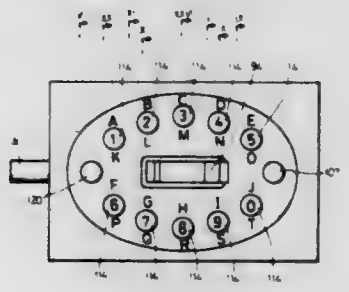


1. A combination lock, comprising:
a housing including a cavity in one side and first and second openings in another side thereof in communication with said cavity;
a shaft mounted in the housing cavity;
a numbered wheel rotatably mounted on said shaft;
drive hub means rotatably mounted on said shaft and having a first end interconnected with the numbered wheel for rotation therewith, a cylindrical hub extending away from the numbered wheel, tooth means arranged about the cylindrical hub and spaced inwardly from a second end of said hub means, and a protrusion on said second end;
first and second lock hubs each including a generally cylindrical body having an axial opening therethrough, a protrusion on a first end of the cylindrical body, a recess of larger dimensions than the diameter of the cylindrical body formed in second end of said cylindrical body, a set of teeth arranged about the cylindrical body facing the first end and a radially extending tooth located on the wall defining the recess periphery;
first, second, and third discs, each having a central bore, a set of teeth surrounding said bore adapted to mesh with the teeth on said lock hubs and drive hub means, and a flattened peripheral edge portion;
said first disc being located on the shaft and received on the drive hub means cylindrical hub with the first disc teeth meshing with the teeth on said drive hub means, the first lock hub being located on the shaft with its recess receiving the protrusion of said drive hub means therein, the second disc being received on both the shaft and the cylindrical hub of said first lock hub with the second disc teeth meshing with the teeth of said first lock hub, the second lock hub being located on the shaft with its recess receiving the protrusion of the first lock hub therein, and the third disc being received on the shaft and cylindrical hub of the second lock hub with the teeth of each meshing together;
peripheral circular edge portions of the first, second and third discs extending outwardly of the housing through said housing first opening, the flattened peripheral edge portions remaining with the housing at all rotative positions of said discs;
plate means having an edge pivotally related to the housing and extending over the housing first opening; and
spring means resiliently holding said plate means on said housing.

4,350,031
PUSHBUTTON OPERATED DOOR LOCKS

Junichi Shimono, 913 Enjoji, Kasamatsu-cho, Hashima-gun, Gifu-ken, Japan

Continuation-in-part of Ser. No. 750,563, Dec. 14, 1976, Pat. No. 4,070,881. This application Jul. 5, 1977, Ser. No. 813,224
The portion of the term of this patent subsequent to Jan. 31, 1995, has been disclaimed.
Int. Cl.³ E05B 37/02, 37/16
U.S. Cl. 70—315 6 Claims

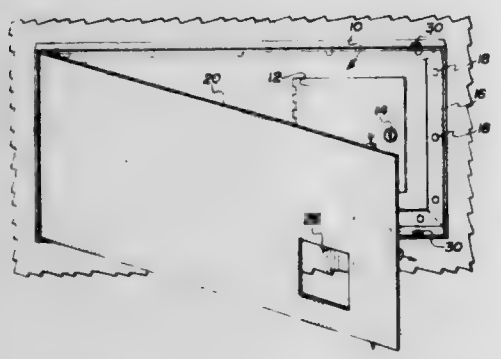


1. A pushbutton operated door lock comprising:
a casing having front and rear faces;
a lock shaft in said casing;
a lock bolt slidably carried by said lock shaft and having a multiplicity of notches juxtaposed along the length of said lock bolt;
a multiplicity of tumbler rings rotatably supported on said lock shaft and juxtaposed along the length thereof, each of said tumbler rings having an outer peripheral edge formed with a plurality of lateral bores;
a plurality of engage pins each received in one of said lateral bores of each of said tumbler rings and movable in and out relative to said one lateral bore for restricting an angle of rotation of said each tumbler ring;
a multiplicity of first pushbuttons on said front face of said casing adapted for individual engagement with said tumbler rings to rotate said tumbler rings individually;
a second pushbutton on said front face of said casing adapted for simultaneous engagement with all of said tumbler rings to rotate said tumbler rings simultaneously;
a pair of third pushbuttons on said rear face of said casing adapted for simultaneous engagement with all of said tumbler rings to rotate said tumbler rings simultaneously;
said first pushbuttons being associated with said second and third pushbuttons to permit a number of said tumbler rings to selectively engage with and disengage from said notches upon rotation of said tumbler rings;
a first guide rod and a second guide rod for guiding said engage pins for said in and out movement thereof; and
said rear face of said casing being formed therethrough with a multiplicity of guiding apertures for insertion of said guide rods, whereby the angle of rotation of said tumbler rings may be controlled for selectively changing the function of said first pushbuttons.

4,350,032
VENDING MACHINE LOCK SECURITY COVER

Donald G. Kochackis, E. Prospect St., Chula Vista, Calif. 92011

Filed Aug. 25, 1980, Ser. No. 181,075
Int. Cl.[3] E05B *17/18*
U.S. Cl. 70—427 7 Claims



1. A security cover for the lock of a vending machine or the like comprising:

(a) a frame and means mounting same over said lock;

(b) a closure moveably mounted on said frame and being moveable thereon from an open position providing substantial access to said lock to a closed position covering said lock and defining an enclosure;

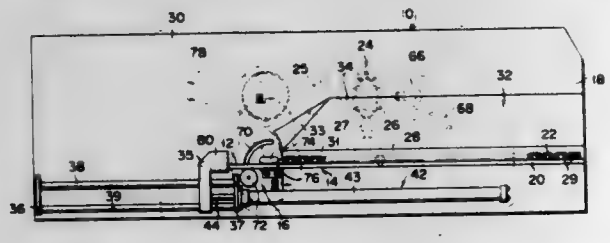
(c) locking means disposed within said enclosure for locking said enclosure to said frame and being operative from inside said enclosure;

(d) said cover defining an opening misaligned with said locking means and the keyhole of said lock to prevent the direct picking thereof and being adequately large to permit the insertion of the fingers to operate said locking means.

4,350,033
METHOD AND MECHANISM FOR CONSTANT-MEASURE FEED OF ROD MATERIALS

Masamitsu Ishihara, 628 Hirai, Kannami-cho, Tagata-gun, Shizuoka-ken, Japan

Filed Jun. 24, 1980, Ser. No. 162,423
Claims priority, application Japan, Dec. 27, 1979, 54-172001; Dec. 27, 1979, 54-172002; Mar. 25, 1980, 55-39249[U]
Int. Cl.[3] B21D *43/26*
U.S. Cl. 72—24 16 Claims



1. A method for constant-measure feed of rod materials comprising steps of:

bringing a feed member fixed to conveyor means into contact with the rear ends of rod materials and conveying said rod materials together with said feed member along guide means by said conveyor means;

causing the forward ends of said rod materials to abut against a movable stopper disposed in a normal position and further conveying said rod materials while holding said rod materials between said stopper and said feed member; and

sensing a movement of said stopper for a predetermined distance from said normal position and stopping said conveying operation of said conveyor means.

4,350,034
METAL DRAWING COMPOUND COMPOSITION AND METHOD OF USE

James L. Godek, Lincoln Park, and Lawrence P. Gowman, West Bloomfield, both of Mich., assignors to Wayne Chemical Products Company, Detroit, Mich.

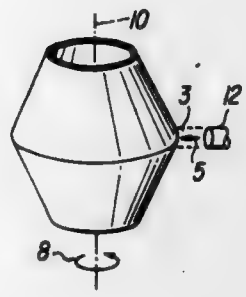
Continuation-in-part of Ser. No. 50,753, Jun. 21, 1979, Pat. No. 4,262,057. This application Oct. 23, 1980, Ser. No. 199,734
The portion of the term of this patent subsequent to Apr. 14, 1998, has been disclaimed.
Int. Cl.[3] B21B *45/02;* B21C *1/00*
U.S. Cl. 72—42 3 Claims

1. In a process of working metal pieces, the steps which comprise (1) coating the surface of the metal with a drawing compound by applying thereto an aqueous solution of a mixture of a soap and a compound which produces a borate ion, the soap and the borate ion producing compound having relative proportions of from about 1:4 to about 4:1 and said aqueous solution having a pH within the range of from about pH 7.6 to less than about pH 9, and thereafter (2) working said metal piece.

4,350,035
METHOD OF SHAPING OBJECTS BY MEANS OF A SOLID-PARTICLE BLAST APPLIED TO ONE SIDE THEREOF

Reiner Kopp, Kelmiser Strasse 13, and Klaus-Peter Hornauer, Nizzaallee 79, both of Aachen, Fed. Rep. of Germany

Filed Feb. 14, 1980, Ser. No. 121,421
Claims priority, application Fed. Rep. of Germany, Feb. 20, 1979, 2906509
Int. Cl.[3] B24C *1/10*
U.S. Cl. 72—53 14 Claims



1. In a method of shaping a workpiece consisting of a material capable of elastic and permanent deformation and which is regionally deformable in at least one direction, wherein a solid particle jet of a blasting medium is effectively applied to one side of the workpiece with a ratio of kinetic-energy to surface-area which depends on the thickness and strength of the material, the improvement comprising:

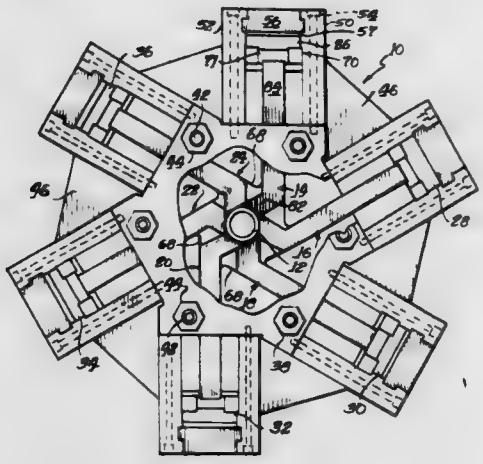
subjecting a defined geometrically regular surface area of the workpiece to deformation by impingement of at least one solid particle blast jet means directed substantially perpendicular to the defined surface area by moving the workpiece and the particle jet relative to each other, wherein any cross-section of the solid particle blast jet taken at a right angle to the direction of propagation defines a geometric planar figure substantially the same size as that of the defined surface area, and wherein deformation is substantially uniform about the center of the defined surface area; whereby the defined surface area is deformed toward the solid particle blast means to a degree beyond that which can be achieved by bending other than by using solid particle blast means, and wherein the workpiece utilized is a body of revolution and the relative motion is a rotation of the workpiece about its longitudinal axis.

4,350,036

APPARATUS FOR POINTING WORK PIECES

Raymond L. Valente, Kankakee, Ill., assignor to Vale Industries Inc., Pontiac, Ill.

Filed Feb. 7, 1980, Ser. No. 119,356
Int. Cl.³ B21D *41/04*
U.S. Cl. 72—402 **11 Claims**



1. A tube shaping machine comprising a plurality of dies each having a substantially continuous, unbroken working surface, a substantially straight support leg for supporting said working surface and for defining lateral side portions thereof and forming a predetermined angle with respect to said working surface, and a substantially straight actuating leg for driving said support leg and formed continuously therewith and at a second predetermined angle with respect thereto, means for mounting said dies and for aligning said working surfaces one adjacent to the next so as to form a tube-receiving aperture therethrough, which aperture defines in cross-section a regular polygon, and means for simultaneously reciprocating each of said plurality of dies along a predetermined straight line throughout a range of positions between a fully open position and a fully closed position of said tube shaping machine while maintaining a similar regular polygonal cross-sectional shape of said tube-receiving through aperture throughout said range of positions.

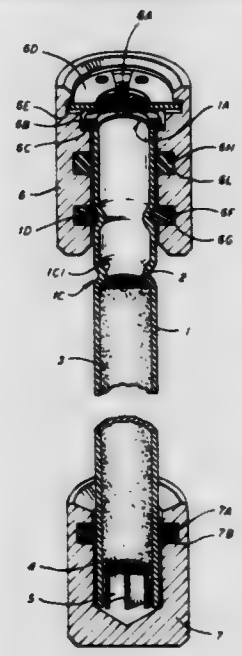
4,350,037

PERSONAL GAS MONITOR

Peter Higham, High Wycombe, England, assignor to Perkin-Elmer Limited, England

Filed Dec. 5, 1980, Ser. No. 213,249
Claims priority, application United Kingdom, Jul. 12, 1979, 7942327
Int. Cl.³ G01N *1/22, 7/04*
U.S. Cl. 73—23 **36 Claims**

1. A molecular-diffusion personal gas monitor compatible with thermal desorption of the gases adsorbed within the monitor, comprising:- a longitudinally extending hollow body into which gases can diffuse by molecular diffusion via one end thereof representing the diffusion end and through which gases can be back-flushed following thermal desorption; a low-compressibility partition pervious to said gases but not to the adsorbent, said partition being located in a predetermined longitudinal axial position within the hollow body so as to present a free surface facing the diffusion end at a predetermined distance therefrom; means including the said partition for retaining a column of adsorbent within the hollow body, with one end of the column abutting against the surface of the partition opposite said free surface; and a diffusion screen at the diffusion end in predetermined spaced relation to the partition so as to define a stagnant diffusion zone of predetermined volume therebetween, the spacing being no less than about twice the average breadth of the diffusion zone measured at right angles to the



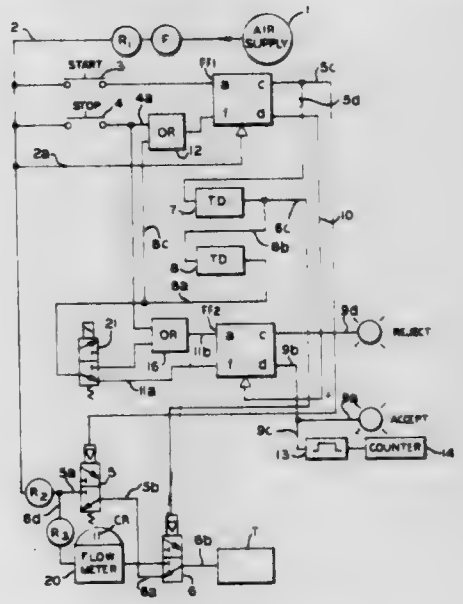
longitudinal axis of the hollow body and said average breadth being no less than 3 mm.

4,350,038

FLUIDIC TYPE LEAK TESTING MACHINE

Donald T. Soncrant, Toledo, Ohio, assignor to The Stellhorn Company, Toledo, Ohio

Continuation-in-part of Ser. No. 151,383, May 19, 1980, abandoned. This application Oct. 16, 1980, Ser. No. 197,549
Int. Cl.³ G01M *3/32*
U.S. Cl. 73—49.2 **13 Claims**



1. In a leak testing apparatus for a hollow body having a main source of pressurized air and a regulated source of pressurized air, a fluid charge connection between the hollow body and said regulated source including a fluid actuated normally closed charge valve and a fluid actuated normally open test valve, a fluid test connection between the hollow body and a test source of pressurized air including a flow meter, said flow meter including contact means that are actuated by a predetermined leakage flow through said flow meter, fluid means including a fluidic memory unit for actuating said charge valve to establish said charge connection and for actuating a first fluid time delay, said test valve being responsive to the time out of said first fluid time delay for interupting said charge connection to establish said test connection, a second fluid time delay actuated in response to the time out of said first fluid time delay, means responsive to actuation of said flow meter contact

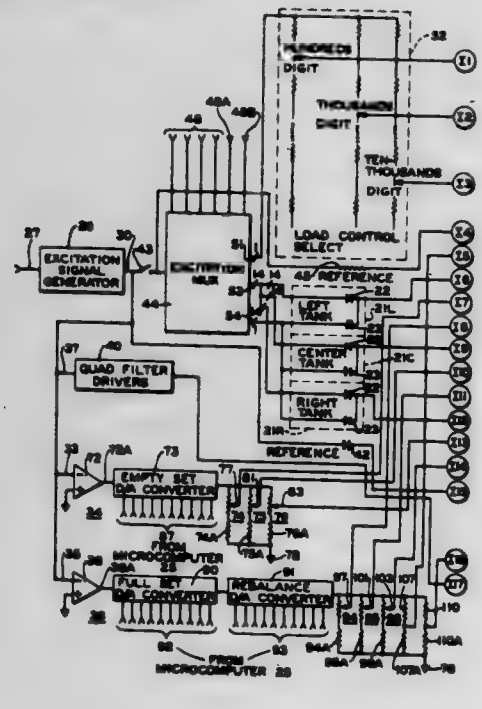
means for indicating a leaking hollow body, and means responsive to the time out of said second fluid time delay for resetting said fluid memory unit to deactuate said charge valve.

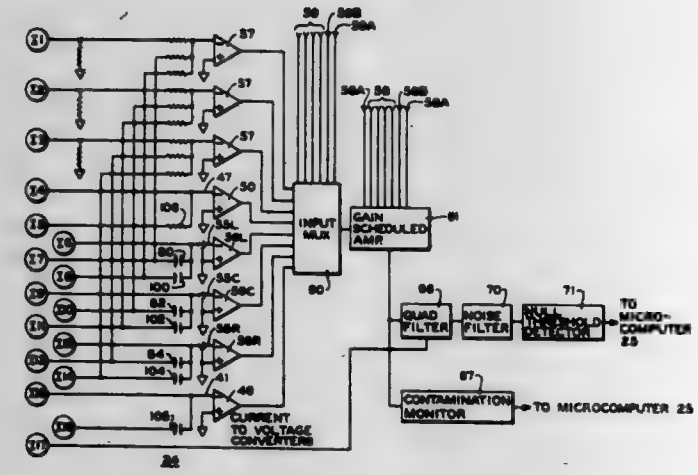
4,350,039

LIQUID GAGING SYSTEM NULL BALANCE CIRCUITRY

Martin J. van Dyke, Brooklyn Park, and Jerome A. Fahley, Fridley, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed May 14, 1980, Ser. No. 149,789
Int. Cl.[3] G01F *23/26*
U.S. Cl. 73—304 C 53 Claims





1. Apparatus for nulling a signal from a capacitive sensor means with a signal from a reference comprising:

capacitive sensor means for providing a liquid measurement signal;

reference means for selectively providing a series of reference signals having predetermined amplitudes, the reference means having terminal means for receiving a series of rebalance approximation sequence control signals for selectively controlling the signal amplitudes, the rebalance approximation sequence control signals being generated through a successive approximation sequence;

computing means for generating the series of rebalance approximation sequence control signals through the successive approximation sequence, the computing means being connected to the reference means; and

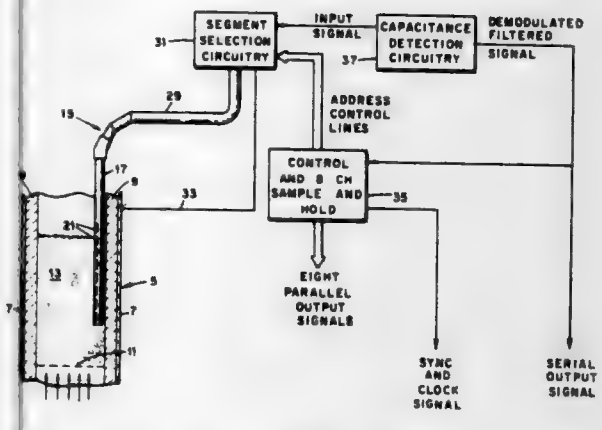
null detecting means for detecting the presence of a null, the null detecting means being connected to the capacitive sensor means and the reference means.

4,350,040

CAPACITANCE-LEVEL/DENSITY MONITOR FOR FLUIDIZED-BED COMBUSTOR

George E. Fasching, and Carroll E. Utt, both of Morgantown, W. Va., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 26, 1980, Ser. No. 163,368
Int. Cl.[3] G01F *23/26;* G01R *27/26*
U.S. Cl. 73—304 C 5 Claims



1. A capacitance based density/level monitor for a fluid-like medium within an electrically conductive containment vessel comprising:

a capacitance probe adapted to be vertically disposed in said medium and including an electrically conductive housing, a plurality of electrically conductive segments dispposed vertically of said housing, each of said segments separately insulated from said housing;

means for applying a predetermined frequency excitation voltage between said containment vessel and said probe housing, thereby generating a current through said medium;

a capacitance detection circuit means for separately detecting the quadrature component of said current flowing through said medium in the presence of a resistive current component which is in phase with said excitation voltage and generating a voltage at an output thereof indicative of the selected probe segment-to-vessel wall capacitance, including an operational amplifier having an inverting input forming a current summing junction for receiving said selected probe segment current and a feedback current, means for applying said selected probe segment current to said current summing junction, synchronous detection circuit means operable in response to said excitation voltage for separately synchronously detecting the capacitive and resistive voltage components of the voltage signal at the output of said operational amplifier corresponding to the capacitive and resistive components of said selected probe segment current and generating voltages at separate outputs thereof corresponding to said capacitive and resistive component voltages respectively, a gate-controlled amplifier means for generating said feedback current at an output thereof coupled to said current summing junction of said operational amplifier and further including a gate control input connected to said resistive component voltage output of said synchronous detection circuit means for varying the gain of said amplifier in response to the amplitude of said resistive component voltage and a phase-adjusting circuit means responsive to said excitation voltage for generating a selected phase voltage input to said gate-controlled amplifier to provide the proper phase for said feedback current to cancel the resistive component current of said selected probe segment current applied to said summing junction;

segment selection circuit means responsive to a control signal for separately connecting each of said plurality of segments of said probe in a selected sequential order to the input of said capacitance detection circuit means;

sampling circuit means having a plurality of sampling channels corresponding to said plurality of probe segments for sampling the output voltage from said detection circuit means

from corresponding ones of said plurality of probe segments in response to said control signal; and

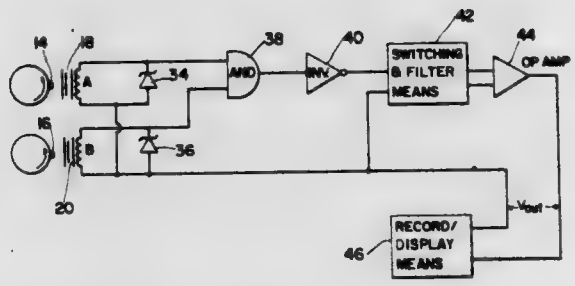
control circuit means for generating and applying said control signal to control inputs of said segment selection circuit means and said sampling circuit means to select and sample the corresponding segment detected capacitance signal at a preselected sampling rate.

4,350,041

SYSTEM AND METHOD FOR MEASUREMENT OF DYNAMIC ANGULAR OR LINEAR DISPLACEMENT

Aleck Loker, Leonardtown, and Richard Archibald, Hollywood, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 9, 1980, Ser. No. 195,444
Int. Cl.³ G01M *13/02*
U.S. Cl. 73—432 R **9 Claims**



1. Apparatus for measuring the linear or angular displacement between two, coupled, movable members comprising:

first reference means attached to a first member for marking a reference location thereon;

second reference means attached to a second member for marking a reference location thereon;

first pulse means for deriving a first pulse from the first reference means;

second pulse means for deriving a second pulse from the second reference means;

first means for converting said first pulse to a first logic level pulse;

second means for converting said second pulse to a second logic level pulse;

AND means for combining said first and second pulses to produce an AND pulse having a time duration equal to the overlap time of said first and second pulses, any change in the time duration of an AND pulse and prior AND pulses being proportional to a displacement between said coupled members; and

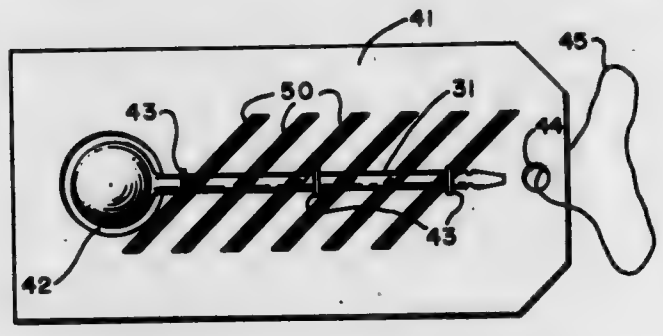
means for utilizing said AND pulse.

4,350,042

TIME-DEPTH INTEGRATOR

Douglas MacGregor, 972 E. 5650 South, Salt Lake City, Utah 84121

Filed Jan. 12, 1981, Ser. No. 223,990
Int. Cl.³ G01F *23/14*
U.S. Cl. 73—432 R **8 Claims**



1. A time-depth integrator for indicating when a diver is approaching or has reached the maximum safe limit for diving without requiring decompression procedures when surfacing comprising:

(a) An evacuated chamber;

(b) An elongate channel communicating at one end with the evacuated chamber and sealed at its other end, such seal adapted to be broken;

(c) An orifice located in the end of the channel away from the chamber for restricting flow of fluid into the channel after the seal on such channel has been broken; and

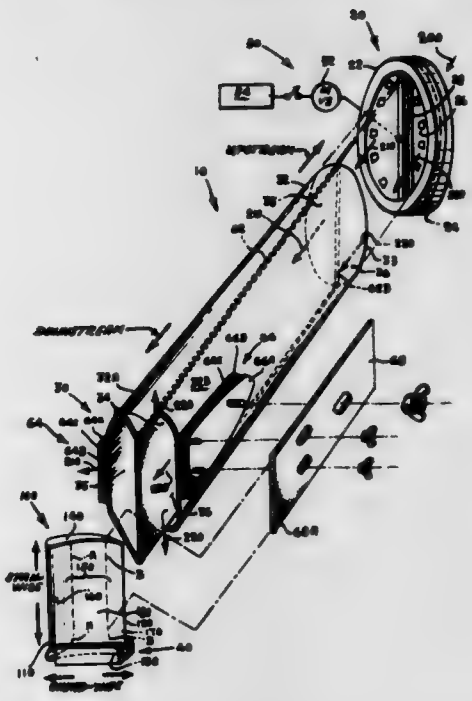
(d) An indicator along said channel to show when the maximum safe limit has been reached and the approach thereto.

4,350,043

AIRFOIL VIBRATION TEST APPARATUS

Carmen B. Jones, West Chester, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 4, 1980, Ser. No. 212,956
Int. Cl.³ G01H *13/00*
U.S. Cl. 73—579 **12 Claims**



1. An apparatus for inducing vibrations in a plate type structure, comprising:

a. a source of pressurized gas;

b. means, in communication with said source of pressurized gas, for selectively generating a flow of said pressurized gas in two out-of-phase pressure pattern streams of gaseous flow;

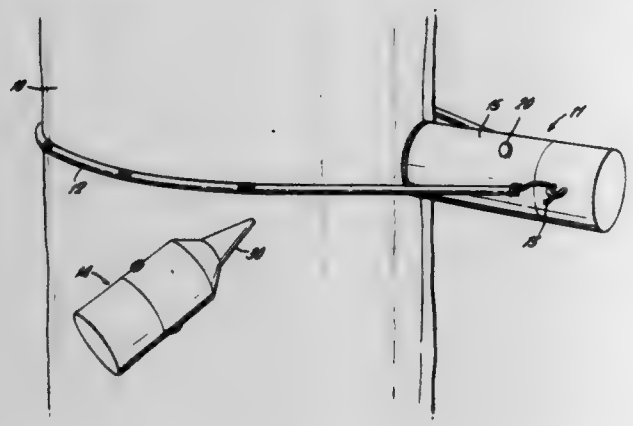
c. means, connected to said pressurized gaseous flow generating means, for conducting and directing said two out-of-phase pressure pattern streams of gaseous flow from said pressurized gaseous flow generating means to said plate type structure;

d. and, means for holding and supporting said plate type structure in alignment with said means for conducting and directing said two out-of-phase pressure pattern streams of gaseous flow, such that said streams impinge upon, and induce vibrations in, two adjacent portions of said plate type structure.

4,350,044
METHOD OF AND APPARATUS FOR TESTING WOODEN POLES

Roy Richardson, Leeds, and Bernard Czenkusz, Bradford, both of England, assignors to Yorkshire Electricity Board, Leeds, England

Filed Dec. 17, 1980, Ser. No. 217,330
Claims priority, application United Kingdom, Dec. 19, 1979, 7943725
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—600 13 Claims



1. Apparatus for testing a wooden pole comprising a transmitter unit arranged to produce regularly repetitive pulses of ultrasonic energy for transmission into the pole transversely thereof when the transmitter unit is secured to a pole, the transmitter unit also producing audible signals synchronised with the ultrasonic pulses, and a separate receiver unit having a probe for placing against the surface of the pole, a receiver transducer for detecting ultrasonic signals picked up by the probe, and visual indicator means responsive to the transducer output to give a visual indication for each received pulse exceeding a predetermined amplitude.

4,350,045
APPARATUS AND METHOD FOR CHARACTERIZING AN ACOUSTIC FIELD

Chao-Kong Chow, Chappaqua; Chao-Ning Liu, Yorktown Heights, and Sherman S. Wang, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 25, 1980, Ser. No. 162,995
Int. Cl.³ G01N *29/00*
U.S. Cl. 73—607 2 Claims

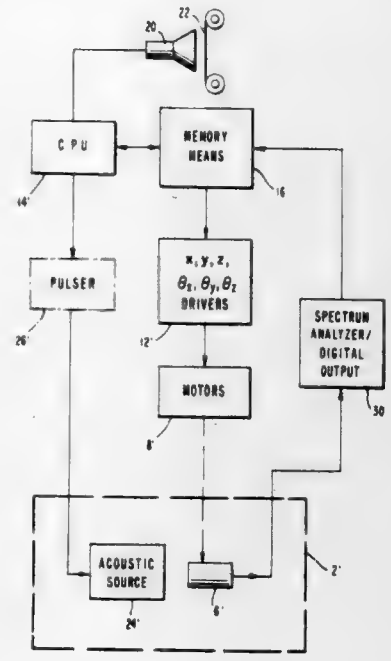
1. An apparatus for characterizing an acoustic field in a medium, comprising:

acoustic source transducer means disposed in said medium for generating acoustic energy resulting in said acoustic field to be characterized,

acoustic receiving transducer means physically separated in said medium from said source means for converting a parameter of the acoustic energy of said field to a corresponding electrical signal,

means for moving said acoustic receiving transducer means in steps to a plurality of predetermined X,Y,Z coordinate positions in an area of interest in said acoustic field, said means for moving including means for rotating said transducer means in steps to a plurality of angular positions at each X,Y,Z coordinate position in three different angular directions,

means for storing the electrical signals provided by said transducer means or signals derived from said electrical signals for each of said plurality of positions, and display means for



providing a visual image of said stored electrical signals, whereby said acoustic field is characterized.

4,350,046
CABLE STRAIN MONITORING

Colin S. Parfree, and Peter Worthington, both of Southampton, England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Nov. 13, 1980, Ser. No. 206,427
Claims priority, application United Kingdom, Nov. 15, 1979, 7939607
Int. Cl.³ G01B *7/16*
U.S. Cl. 73—768 4 Claims

1. A method of monitoring the strain to which the optical fibres of an optical fibre cable are subjected comprising:

providing said cable with at least one metallic element, the electrical resistance of the material of the element being variable with the strain to which the element is subjected,

positioning said metallic element with at least one optical fiber having a sheath into said optical fibre cable,

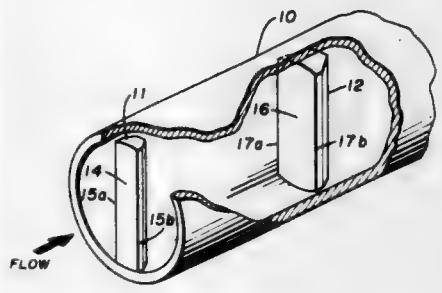
applying a current through said metallic element, and

monitoring the electrical resistance of said metallic element during assembly of the cable.

4,350,047
VORTEX-SHEDDING FLOWMETER HAVING TWO BLUFF BODIES

Clarence F. Dewey, Jr., Marblehead, Mass., and David E. Wiklund, Marshalltown, Iowa, assignors to Fisher Controls Company, Inc., Marshalltown, Iowa

Filed Sep. 18, 1980, Ser. No. 188,188
Int. Cl.³ G01F *1/32*
U.S. Cl. 73—861.22 7 Claims



1. A vortex-shedding flowmeter comprising a conduit

through which a fluid flows and disposed therein in the direction of fluid flow

(a) a first stationary vortex shedding cross-member extending across the interior of said conduit transversely to the direction of fluid flow, said first cross-member having (i) an upstream bluff surface disposed transversely to the direction of fluid flow having sharp Karman vortex-generating edges with an edge to edge width d_1 of from about 10 to 40% of the inside width of said conduit and (ii) a length l_1, extending downstream from said sharp edges of said bluff surface, of from about $0.3d_1$ to $2.0d_1$.

(b) a second stationary vortex-shedding cross-member disposed downstream from said first cross-member a distance B of from about $4d_1$ to $15d_1$, said second cross-member being disposed across the interior of said conduit transversely to the direction of fluid flow, said second cross-member having (i) an upstream bluff surface disposed transversely to the direction of fluid flow having sharp Karman vortex-generating edges with an edge to edge width d_2 of from about 10 to 40% of the inside width of said conduit and (ii) a length l_2 extending downstream from said sharp edges of said bluff surface of from about $0.3d_2$ to $2.0d_2$, and

(c) means for sensing the Karman vortices shed from said first and second cross-members:

4,350,048

MEASURING JOURNAL FOR THE CONVERSION OF FORCE TO ELECTRIC SIGNAL

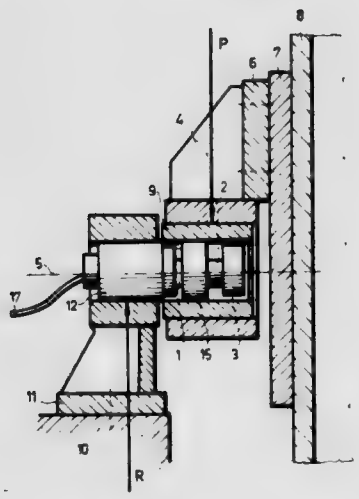
Sandor Kovacs, Budapest, Hungary, assignor to Vasipari Kutato Intezet, Hungary

Filed Oct. 23, 1979, Ser. No. 87,532

Claims priority, application Hungary, Jan. 10, 1979, VA 1538

Int. Cl.³ G01L *1/22, 5/00*

U.S. Cl. 73—862.54 **6 Claims**



1. Measuring journal for conversion of a force to an electric signal said measuring journal including at least two elongated torsion measuring elements having strain measuring sensors thereon, and where a force (P) bringing about a torsion force and a reaction force (R) to the torsion force act on the measuring elements, characterized in that said measuring elements (1, 2) are relatively and respectively long (1) and short (2) and are connected to a central body (3) with each axis of torsion passing through a respective measuring element, said measuring elements being parallel with each other, said measuring elements being arranged symmetrically on both sides of a plane determined by the force (P) acting on one of the measuring elements and bringing about a torsion force and the reaction force (R) acting on the other measuring element said measuring elements being arranged eccentrically in relation to the central axis (5) of the measuring journal, while a plane determined by said measuring elements is perpendicular to the plane determined by the reaction force (R) and by the force (P) bringing about the torsion, one of the ends of each of said measuring elements (1, 2) being respectively coupled to said connecting elements (12, 15) which take up the force (P) bringing about the torsion, as well as the reaction force (R), while the other ends of said measuring elements (1, 2) are in rigid connection with each other.

4,350,049

DEVICE AND PROCESS FOR DRAWING OFF VERY SMALL QUANTITIES OF POWDER

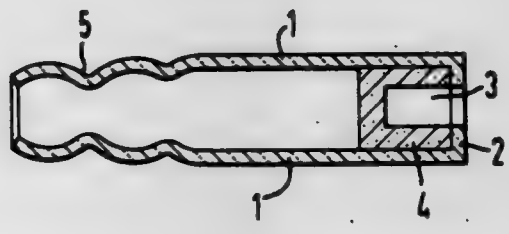
Arun R. Gupte; Heinrich Kladders, and Helmut Struth, all of Ingelheim am Rhein, Fed. Rep. of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Fed. Rep. of Germany

Filed Nov. 5, 1980, Ser. No. 204,225

Claims priority, application Fed. Rep. of Germany, Nov. 9, 1979, 2945212

Int. Cl.³ G01N *1/14*

U.S. Cl. 73—864.51 **5 Claims**



1. An apparatus for drawing off powder in metered quantities of from about 0.5 to 10 mg, comprising a tubular member having a dosing chamber at one end, the dosing chamber having walls consisting of porous material and the outer surfaces of the dosing chamber walls being air-tight against the inner wall of said tubular member, and being provided at the other end with a means for connecting the tubular member to vacuum and/or compressed air sources.

4,350,050

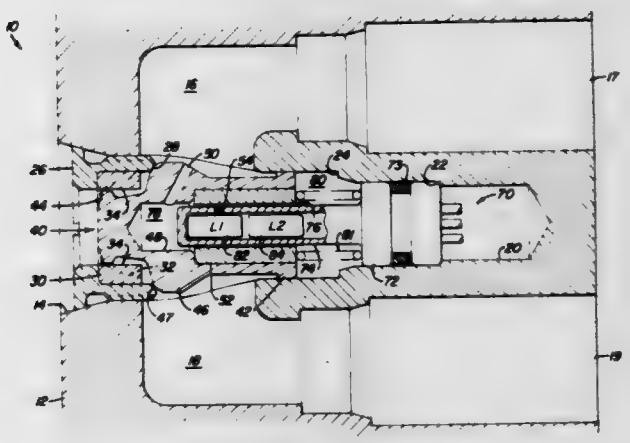
FLOW TRANSDUCER

Roger J. Nelson, Cedar Falls, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Feb. 10, 1981, Ser. No. 233,279

Int. Cl.³ G01F *1/24*

U.S. Cl. 73—861.54 **13 Claims**



1. A fluid flow transducer, comprising:

a housing defining a flow path for fluid flow therethrough;

a hollow metering member fixed in the housing and defining a portion of the flow path and having a plurality of ribs extending radially inwardly therefrom;

a flow-responsive valve member movably mounted in the housing and having a variable position therein depending upon the rate of forward fluid flow through the flow path, the valve member comprising a generally cylindrical body having a blind bore extending therein from one end of the

body, the body having a first radial projection extending outwardly from the one end for slidably engaging the housing, having a second radial projection extending outwardly from the other end of the body for slidably engaging the plurality of ribs, the second projection being received by the metering member and cooperating therewith to define a variable flow restriction therebetween and having a third radial projection located axially between the first and second projections, the first and second projections cooperating with the housing and the ribs, respectively, to maintain axial alignment of the valve member;

a check valve seat fixed in the flow path for sealingly engaging a surface of the third projection to prevent reverse fluid flow through the flow path;

variable reluctance sensing means coupled to the valve member for sensing the position of the valve member, the sensing means including a first part movable with the valve member and a second part fixed with respect to the housing, both parts being received by the blind bore; and

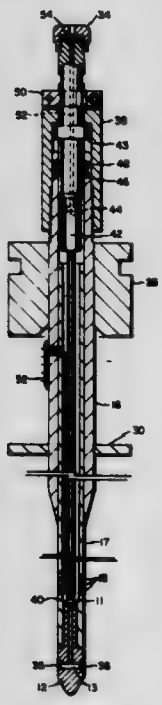
resilient means biased to urge the valve member towards a no-flow position.

4,350,051

INTERSTITIAL GAS PROBE

C. Keith Thompson, 11417 W. Ricks Cir., Dallas, Tex. 75230

Filed Jul. 7, 1981, Ser. No. 281,173
Int. Cl.³ G01N *1/22*
U.S. Cl. 73—864.74 18 Claims



1. A probe for use in withdrawing subsurface soil gas samples, said probe comprising:

an elongated shaft capable of being driven into the soil, said elongated shaft including a passage for removal of subsurface soil gas samples;

a probe tip assembly, including a sealing surface, mounted at a first end of said passage;

sealing means disposed within said passage; and

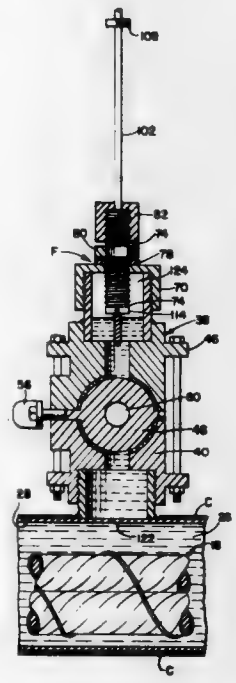
actuating means at a second end of said passage for selectively enabling said sealing means to engage said sealing surface.

4,350,052

APPARATUS AND METHOD FOR TAPPING AND EXTRACTING OIL SAMPLES FROM AN UNDERGROUND HIGH PRESSURE PIPE-TYPE TRANSMISSION CABLE SYSTEM

Robert W. Kendall, Seabrook, Md., assignor to Elizabeth Virginia Kendall, Wilmington, N.C.

Filed Jul. 30, 1980, Ser. No. 173,820
Int. Cl.³ G01N *1/10*
U.S. Cl. 73—863.86 12 Claims



1. Apparatus for tapping and extracting an oil sample from a high pressure pipe-type transmission cable system comprising valve means operatively attached to the exterior of said pipe, said valve means being operable to open and closed positions to permit access therethrough to said pipe, a fitting operatively attached to said valve means remote from said pipe, said fitting having a bore therethrough in communication with said valve, a drill bit slidably and rotatably extending through said bore and said valve means when in an open position, with a work end thereof being engageable with said pipe, and the remote end being adapted for connection to a drill driving means, resilient fluid sealing means operatively mounted in said bore in said fitting, a fluid sealing bushed packing nut in operative adjustable engagement on the free end of said fitting, said drill bit extending through said fluid sealing means and said bushed packing nut, stop means on said drill bit external of said fitting, said stop means being adjustable on said drill bit to limit depth of a tap hole drilled in said pipe to the wall thickness thereof, said sealing means and said bushed packing nut being operative to permit drilling of the tap hole while maintaining normal oil pressure in said system, partial withdrawal of said drill bit subsequent to drilling the tap hole permitting oil flow into said fitting and a subsequent closure of said valve means sealing off pressurized oil flow from said pipe, said fitting including an adjustable cap movable toward and away from the fitted end and operable, upon adjustment away from the fitting end, to increase the interior volume of said fitting and thereby relieve pressure of oil contained in the fitting and permitting a subsequent opening of the fitting to permit access to pressure relieved and therefore non-pressurized oil contained therein.

4,350,053

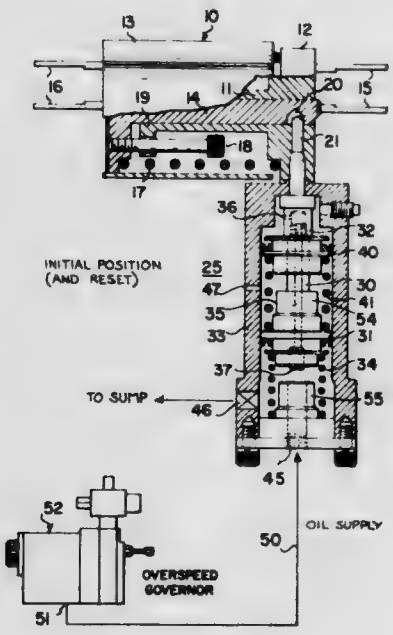
FLUID PRESSURE ACTUATING DEVICE

Philip M. Folger, Erie, Pa., assignor to General Electric Company, Erie, Pa.

Filed Sep. 5, 1980, Ser. No. 184,495
Int. Cl.³ F16H *5/48*
U.S. Cl. 74—2 8 Claims

1. A fluid pressure responsive actuator comprising a piston housing, an actuating piston and piston rod slidably mounted

within said housing and having an actuating portion extending through said housing, said rod having a peripheral abutment within said housing spaced from said actuating piston, said actuating piston and rod having a constricted axial fluid passage therethrough with one end of said passage terminating in a lateral fluid port in a portion of said rod inside said housing but outside the space between said abutment and actuating piston, a floating piston slidably mounted on said rod intermediate said abutment and said actuating piston, said abutment and actuating piston constituting limiting stops for movement of said floating piston in opposite directions on said piston rod,



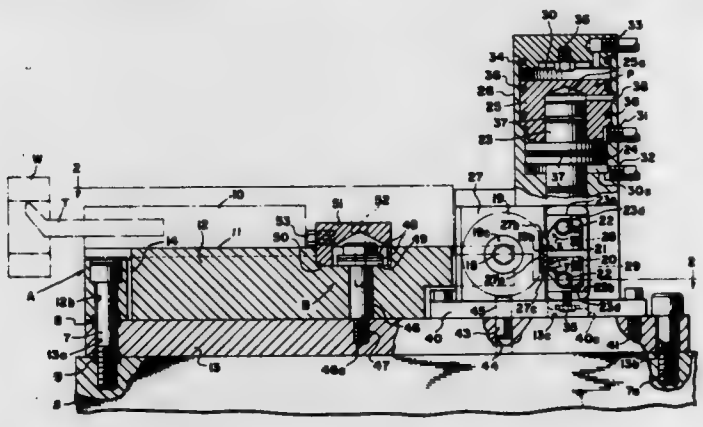
an actuating spring within said housing biasing said actuating and floating pistons into spaced apart relationship on said rod, a reset spring biasing said actuating piston toward one end of said housing with a force less than the force of said actuating spring, and means for admitting fluid under pressure to a chamber formed between said actuating piston and the other end of said housing, whereby upon abrupt reduction of fluid pressure in said chamber said actuating piston and rod are quickly moved by said actuating spring to a limiting positon at said other end of said housing and then returned by said reset spring to a limiting position at said one end of said housing independently of restoration of fluid pressure in said chamber.

4,350,054

REMOTELY CONTROLLED TOOL ARM ASSEMBLY

Carl H. Werth, Jr., Bridgeport, Mich., assignor to Werth Engineering Inc., Bridgeport, Mich.

Filed Mar. 31, 1980, Ser. No. 135,497
Int. Cl.³ F16H *27/02, 31/00*
U.S. Cl. 74—128 **13 Claims**



1. In a tool arm assembly having a longitudinally extending base means adapted to be supported on a machine tool adjacent a workpiece rotating spindle, a tool carrier means mounted on the base means and having a position adjustable portion adapted to support the tool; and motion transmission means operatively connected to adjust the position of the portion relative to the base means and spindle and thereby adjust the position of the tool relative to the workpiece;

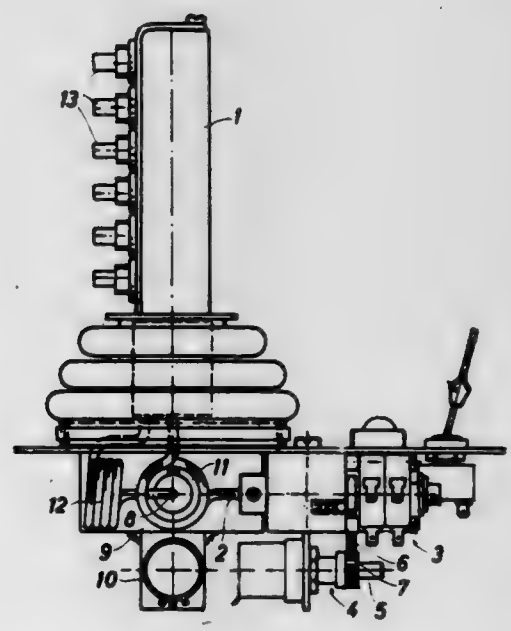
the improvement wherein a multi-toothed, bi-directional actuator movable in precise increments in opposite directions, is provided on the assembly to operate the motion transmission means; intermittently driven toothed means is carried by the base means for movement in a path of travel for moving the actuator incrementally in either direction; and cam means on the base means mounted in the path of movement of said toothed means coacts with the toothed means to determine in which direction the actuator is driven.

4,350,055

LEVER OPERATED CONTROL APPARATUS

Sakari Pinomäki, SF-39160 Julkujarvi, Finland

Filed May 23, 1980, Ser. No. 152,466
Claims priority, application Finland, May 29, 1979, 791713
Int. Cl.³ G05G *9/02*
U.S. Cl. 74—471 XY **3 Claims**



1. A lever-operated control apparatus comprising:

two shafts, said shafts supported transverse to each other, the shafts connected to drive control devices,

a lever supported to rotate in a first plane normal to one shaft and in a plane in the direction of the one shaft; and

two spring elements connecting the lever and the shafts, said spring elements being the only members coupling control movement from the lever to the shafts, said spring elements maintaining the lever in a neutral position when said lever is not being rotated.

4,350,056

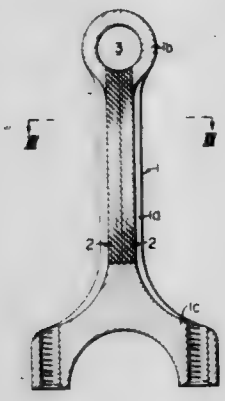
CONNECTING ROD OF AN INTERNAL COMBUSTION ENGINE

Keisuke Ban, Fujimi, and Akimasa Daimaru, Asaka, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 14, 1980, Ser. No. 177,893
Claims priority, application Japan, Aug. 17, 1979, 54-104753
Int. Cl.³ G05G *1/00;* B22D *19/02;* B32B *15/14*
U.S. Cl. 74—579 E **10 Claims**

1. A connecting rod for an internal combustion engine comprising a rod body and a fiber bundle integrated in said rod body to reinforce said body, said rod body including a small

end portion with a bore therein, a central rod portion and a large end portion, said fiber bundle extending in said central



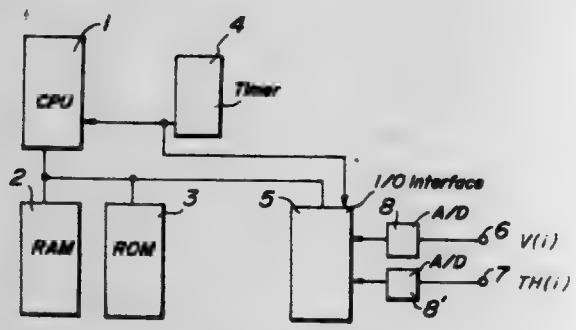
rod portion and being exposed at said small end portion at said bore.

4,350,057

SHIFT CONTROL SYSTEM FOR A VEHICLE AUTOMATIC TRANSMISSION

Norimasa Kishi, and Tadashi Suzuki, both of Yokosuka, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Mar. 28, 1980, Ser. No. 135,155
Claims priority, application Japan, Apr. 3, 1979, 54-39352
Int. Cl.³ B60K *41/06*
U.S. Cl. 74—866 **6 Claims**



1. In a shift control system for a vehicle automatic transmission comprising engine load sensor means for producing a signal corresponding to the engine load; vehicle speed sensor means for producing a signal corresponding to an actual vehicle speed; and means responsive to said signals from both of said engine load sensor means and said speed sensor means for selecting a reference shifting speed corresponding to an associated engine load from a predetermined relationship between the engine load and a plurality of reference shifting speeds, for comprising said selected reference shifting speed with the actual vehicle speed and for deciding whether shifting is needed or not, the improvement comprising means for extracting from said speed sensor signal a signal which corresponds to said engine load sensor signal and appears after a predetermined amount of time from said corresponding engine load sensor signal, said signal as extracted being used in said deciding means upon a decision of the necessity of shifting.

4,350,058

TRANSMISSION CONTROL SYSTEM FOR MULTI-RATIO GEAR ARRANGEMENT

Alan L. Miller, Mt. Prospect, Ill., and John S. Ivey, Ithaca, N.Y., assignors to Borg-Warner Corporation, Chicago, Ill.

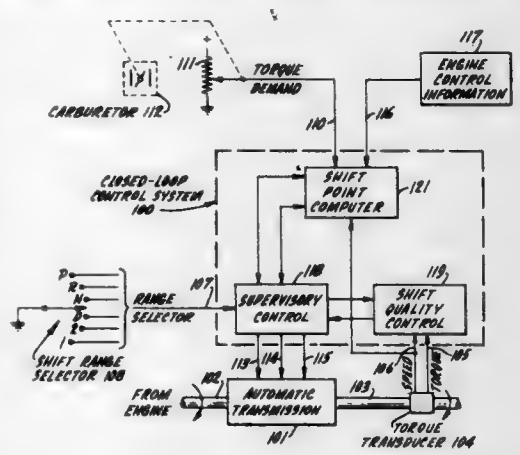
Continuation of Ser. No. 947,212, Sep. 29, 1978, abandoned. This application Nov. 10, 1980, Ser. No. 205,217
Int. Cl.³ B60K *41/08, 41/10*
U.S. Cl. 74—866 **20 Claims**

1. A control system for regulating gear ratio changes in a multi-ratio automatic transmission coupled between an engine and an output mechanical drive connection, which transmission has at least 3 forward speeds, comprising:

gear ratio command means operative to provide a ratio-change command signal upon receiving information input signals including range selector information;

a supervisory logic circuit, connected to receive the ratio-change command signal and to receive range selector information, and to provide a shift-initiate signal when a gear ratio change is indicated;

a routing logic circuit, connected to receive said shift-initiate signal from the supervisory logic circuit, range selector



information, and shift quality control signals, operative to provide selective output signals which respectively regulate selected means for placing the automatic transmission in the desired gear ratio, and

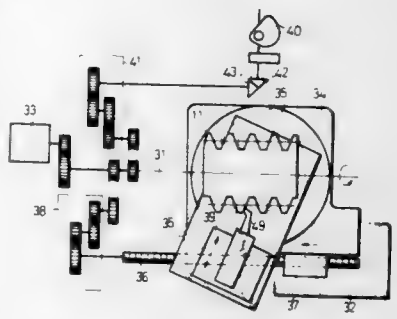
only one upshift control circuit, connected to regulate the 1–2 and 2–3 upshifts, and only one downshift control circuit connected to regulate the 3–2 and 2–1 downshifts, each connected to provide said shift quality control signals to the routing logic circuit upon receipt of the appropriate shift-initiate signal from the supervisory logic circuit.

4,350,059

METHOD OF PRODUCING SHAVING CUTTER

Masato Ainoura, 1253 Eguchi, Kita-Shigeyasu-cho, Miyaki-gun, Saga-ken, Japan

Division of Ser. No. 39,237, May 15, 1979, Pat. No. 4,280,773. This application Jun. 30, 1980, Ser. No. 164,736
Claims priority, application Japan, May 31, 1978, 53-65360; Mar. 20, 1979, 54-32469
Int. Cl.³ B21K *21/00*
U.S. Cl. 76—101 A **9 Claims**



1. A method of producing a shaving cutter comprising the steps of:

preparing a metal blank including a base shaft and a continuous helical thread on the outer periphery of said base shaft;

rotating said base shaft continuously at a constant speed;

reciprocating a cutting tool toward and away from said base shaft and laterally moving said cutting tool continuously parallel to said base shaft to form a plurality of cutting grooves on a flank of said thread, said cutting grooves extending from an inner end adjacent to said base shaft to

an outer end radially outwardly away from the shaft so that the cutting grooves are inclined at angles between 15° and 90° relative to lines extending radially outwardly from said base shaft in the direction opposite to the rotational direction of the shaft for shaving, said cutting grooves respectively defining lands therebetween having cutting edges at leading edges thereof for cutting teeth surfaces of a gear to be shaved; and

controlling said lateral and reciprocal movement of said cutting tool to synchronize with rotation of said base shaft, said reciprocal movement of said cutting tool being actuated by rotation of a cam member associated with said base shaft,

said cam member having a cam contour which exhibits a depression given by the following equation as the cam member is rotated at an angle θ, in order to form logarithmic spiral cutting edges on said thread of the base shaft,

$$\Delta S = Ro[1-\exp(-\theta \cot \xi)]$$

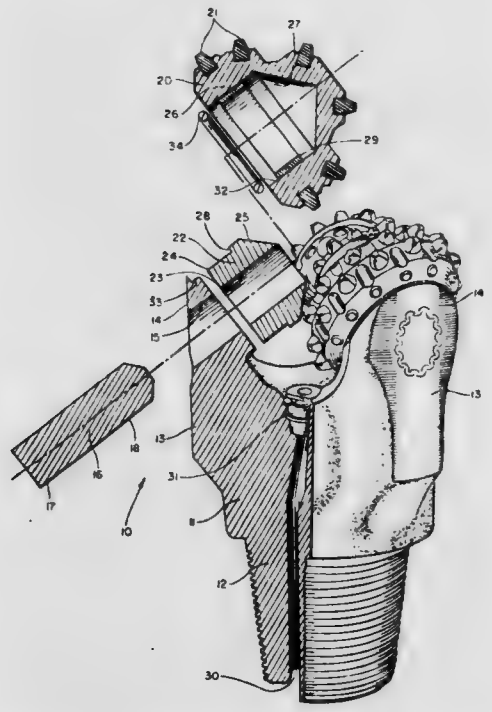
wherein ξ represents an angle formed between the radial line from said base shaft at a point on said cutting edge and a line tangential to said cutting edge at said point; θ represents a central angle of said base shaft between the point at which the cutting is commenced and another point; Ro represents the radius of said thread on the base shaft and ΔS represents a radial depression at a point on said cutting groove.

4,350,060

METHOD OF MAKING A ROTARY ROCK BIT

Edward Vezirian, Irvine, Calif., assignor to Smith International, Inc., Newport Beach, Calif.

Division of Ser. No. 3,246, Jan. 15, 1979, Pat. No. 4,266,622. This application Aug. 25, 1980, Ser. No. 180,595
Int. Cl.³ E21B 9/10
U.S. Cl. 76—108 A **10 Claims**



1. A method of manufacturing a rotary rock bit comprising the steps of:

forming a one piece bit body having an external annular gage surface and a central axis, said bit body further having at least two legs extending downwardly from the rest of the bit body substantially parallel to said central axis along the gage surface, said legs forming an open area therebetween, below the rest of the bit body;

drilling a bore through each leg;

providing a cone type cutter for each leg, each cutter having an interior cavity;

positioning each cone cutter within said open area such that the cavity of each cutter is aligned with the bore of a respective leg;

inserting a separate journal pin through the bore of each leg from the external side thereof until a portion of each journal pin extends into the cavity of the registering cone cutter;

providing at least two thrust elements having central bores, each thrust element cooperating with their respective journal pin to retain the cone cutter on the journal pin;

positioning each thrust member into the cavity of each cone cutter and retaining it therein to form subassemblies;

forming an annular shoulder on each thrust member, providing an annular member to engage the shoulder of each thrust member after it is positioned within the cavity of each cone cutter, and securing each annular member to the respective cone cutter; and

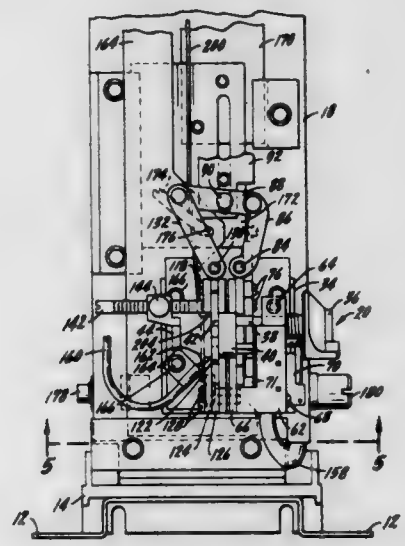
securing each journal pin to the bore of the respective leg.

4,350,061

WIRE STRIPPING MECHANISM

Leonard E. Isham; Marvin J. Peplow; Julius W. Sandy, all of Sycamore, and Clyde M. ViPond, Waterman, all of Ill., assignors to Ideal Industries, Inc., Sycamore, Ill.

Filed Nov. 1, 1979, Ser. No. 90,398
Int. Cl.³ H02G 1/12
U.S. Cl. 81—9.51 **16 Claims**

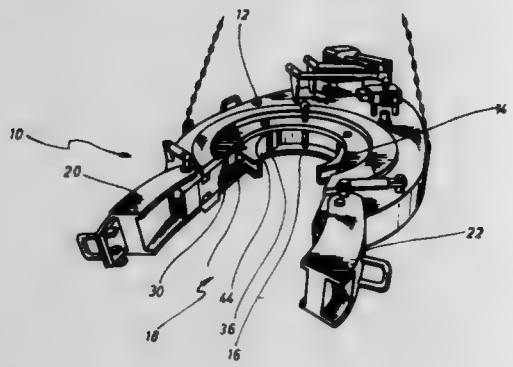


1. In a stripper mechanism for removing the insulation from the ends of insulated electric wires, a frame with a defined wire insertion path, a stripping station on the frame defined by a pair of gripping jaws and a pair of stripping jaws, the stripping jaws being movably mounted (relative to the gripping jaws) on the frame so as to define a separating action relative (thereto) to the gripping jaws in (a) the defined direction, at least one (the) of the jaws of each pair being movably mounted relative to the other jaws so as to perform an opening and closing action between them generally at right angles to the defined direction, the gripping jaws being fixed on the frame only an opening and closing action relative to the wire insertion path, a guide fixed on the frame so that it is contiguous to the gripping jaws at all times and positioned between the pairs of jaws with an opening therein defining a path of travel for the wire to be stripped when it is initially inserted between the jaws prior to a stripping action, and a collet fixed on the frame having a funnel shaped guide channel aligned with the opening in the guide and positioned on the opposite side of the gripping jaws from the guide.

4,350,062
POWER TONG

Garth M. Farr, Kingwood, Tex.; Terence D. McCoy, and Jiri Dlask, both of Edmonton, Canada, assignors to Farr Oil Tool, Inc., Houston, Tex.

Continuation of Ser. No. 6,905, Jan. 26, 1979, abandoned. This application Nov. 3, 1980, Ser. No. 203,652
Int. Cl.[3] B25B *17/00*
U.S. Cl. 81—57.18 5 Claims

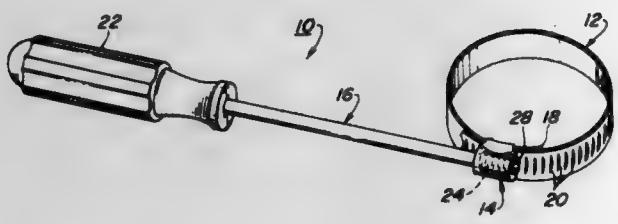


1. An open-mouth power tong comprising:
a frame having a throat at its front;
a power-driven rotary gear having a mouth adapted for alignment with the throat, said rotary gear being rotatably mounted on the frame;
a pair of pivotally mounted jaws located on opposite sides of the center line of the tong and having their pivot points rearward of the center of rotation of the rotary gear;
a cam follower associated with each jaw;
pipe gripping elements carried by the jaws; and
at least one pair of opposed cam surfaces on the interior surface of the rotary gear, the cam surfaces of the pair being cooperatively shaped such that when the cam followers are cammed at points along the opposed cam surfaces the jaws are positioned so that a pipe section gripped therebetween is centered within the rotary gear;
said at least one pair of opposed cam surfaces comprising a first cam surface defined by a portion of a first circle having its center on the line X which is perpendicular to the centerline of the throat and passes through the center of the rotary gear, and a second cam surface defined by a portion of a second circle having a smaller radius than the first circle, with the center of the second circle located at the opposite side of the throat centerline and being offset from line X.

4,350,063
ADJUSTABLE WRENCH

Robert L. Koehler, 111 S. Wilmette, Westmont, Ill. 60559

Filed Nov. 17, 1980, Ser. No. 207,240
Int. Cl.[3] B25B *13/52*
U.S. Cl. 81—64 4 Claims

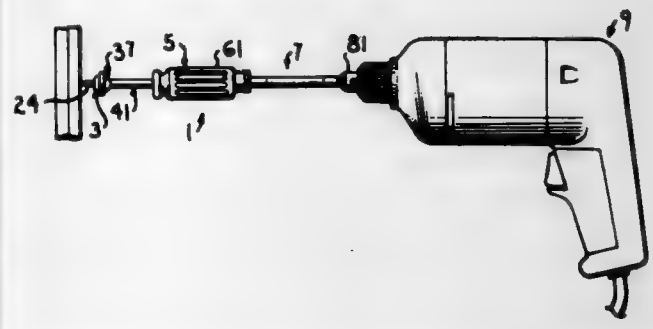


1. An adjustable wrench, comprising in combination,
a narrow, flexible band of spring material having therein a plurality of equally spaced, laterally extending slots,
a tubular socket member fixedly attached to said band near one end thereof, said band being formed into a generally circular loop with its other end portion extending through said socket member,
an elongated rectilinear handle rotatably mounted in said socket and having a worm gear portion threadedly engaging one or more of said slots so that rotation of said handle in one direction increases the size of said loop and rotation of said handle in the opposite direction decreases the size of said loop,
said socket member including a first generally tubular member having a slotted integral wall at one end through which said handle extends and with said other end being open, and
clip means movably mounted to said first member for movement into a first position over said open end into locking engagement with said handle to secure said handle in said socket member in engagement with the edges of said slot and for movement into a second position displaced from said open end out of engagement with said handle to permit removal thereof from said socket member, and
said handle, when locked in said socket, extends in a direction tangential to said loop.

4,350,064
AUXILIARY TOOL KIT FOR A SOCKET WRENCH SET

James R. Markle, 3410 Roberts, Kansas City, Mo. 64124

Filed Dec. 18, 1980, Ser. No. 217,664
Int. Cl.[3] B25B *21/00*
U.S. Cl. 81—437 7 Claims



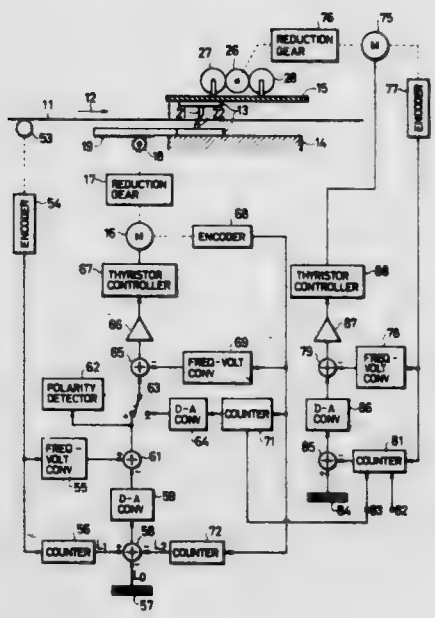
1. An auxiliary tool kit for a socket wrench set adapted to facilitate removal of a threaded fastener from an associated object having a previously formed aperture coaxial with the threads thereof; said kit comprising:
(a) an easy-out having a first end and a second end, said first end being threaded such as to be reverse threaded relative to said threaded fastener and adapted to be snugly received in the threaded fastener aperture; said second end having a socket drive first member adapted to be mated with an associated socket drive second member;
(b) a grippable extension having a first end, a second end, and a shank intermediate said first and said second end; said first end having said socket drive second member projecting axially outwardly therefrom; said extension second end having a third socket drive member therein adapted to be mated with a fourth socket drive member; said shank having a hand grip positioned therearound near said second end; said hand grip being fixedly positioned on said shank such as to prohibit rotational movement about a longitudinal axis thereof relative to said shank; and
(c) a drill adapter having a first end, a second end and a shank; said first end having said fourth socket member projecting outwardly therefrom; said second end having an elongate cylindrical member extending axially outward therefrom; said cylindrical member adapted to be operably received within a chuck of a reversible rotary drill, whereby said easy out can be operably rotated by said rotary drill.

4,350,065

RECIPROCATING TRAVELLING SHEAR

Shigeki Hayashi, Tokyo, and Mitsuo Kusakabe, Kobe, both of Japan, assignors to Nusco Kabushiki Kaisha and Kusakabe Denki Kabushiki Kaisha, both of Tokyo, Japan

Filed Nov. 10, 1980, Ser. No. 205,493
Claims priority, application Japan, Nov. 22, 1979, 54-151857
Int. Cl.³ B23D *21/00, 25/00*
U.S. Cl. 83—287 11 Claims



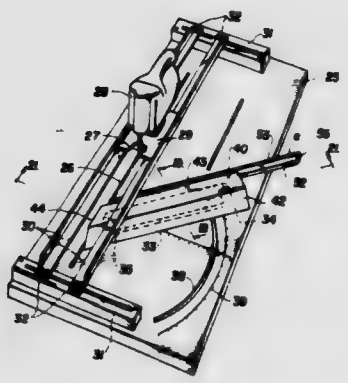
1. A reciprocating travelling shear comprising: a tool post which reciprocatingly travels in the travelling direction of a travelling material; a press mechanism which cuts said material with a cutting tool held by said tool post by raising or lowering a press ram; a first DS motor coupled to said press mechanism and used to drive it; first numerical control means which, in relation with the travel of said tool post, controls the rotation of said first DC motor to reciprocatingly move said press ram once in a vertical direction when said tool post passes a predetermined position; a second DC motor which, coupled to a mechanism for reciprocating said tool post, drives said mechanism; cut length setting means for setting a cut length of said material; and second numerical control means for controlling, in relation with the set cut length and the travelling of said material, said second DC motor to move said tool post reciprocatingly.

4,350,066

COVE MOLDING CUTTING APPARATUS AND ATTACHMENT

Michael J. Volk, 216 McKeon Rd., Severna Park, Md. 21146

Continuation-in-part of Ser. No. 128,554, Mar. 10, 1980, Pat. No. 4,320,678. This application Dec. 4, 1980, Ser. No. 212,888
Int. Cl.³ B27B *27/06, 11/04*
U.S. Cl. 83—763 10 Claims



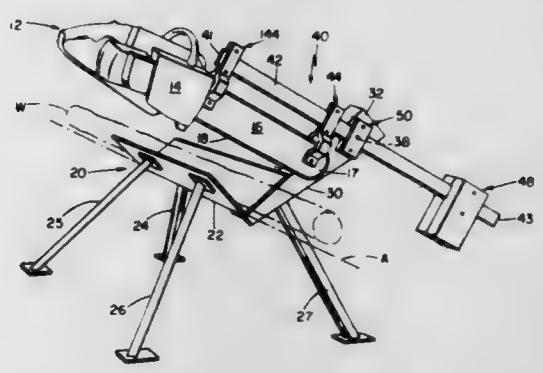
1. An apparatus for cutting cove molding comprising a flat bed plate having at least one straight edge for the guidance of a saw blade, a cove molding rest on the bed plate disposed at an angle of 45 degrees to said straight edge and extending away from said edge in one direction, and said rest having a pair of flat parallel inclined upwardly converging side surfaces rising at angles of 45 degrees to the top face of the bed plate and extending for the entire length of said rest.

4,350,067

CHAIN SAW SUPPORT APPARATUS

George E. Picard, 418 Depot St., South Easton, Mass. 02375

Filed May 6, 1981, Ser. No. 261,007
Int. Cl.³ B27B *17/02*
U.S. Cl. 83—796 6 Claims



1. For use with a support structure having a horizontally extending supporting pin for supporting for operation a portable power chain saw having at one end a power unit including a handle, a motor and motor controls, and, extending from said power unit, a rigid chain saw bar having a free end and carrying around its periphery for movement in a vertical operating plane, a plurality of movable saw teeth driven by said motor

chain saw support apparatus for supporting said chain saw by said support structure for vertical swinging movement in said operating plane around said horizontal supporting pin

said support apparatus comprising

a rigid lever arm extending perpendicularly to said supporting pin and having, between its opposite ends, fulcrum means for receiving said horizontal supporting pin for supporting said lever arm for vertical swinging movement in said operating plane

suspension means on said lever arm between said fulcrum means and one end of said lever arm for removably suspending said chain saw bar beneath said lever arm with said chain saw bar extending in a direction toward said fulcrum means with its free end spaced therefrom toward said one end for bodily vertical swinging movement of said chain saw in said operating plane, and

counterweight means mounted on said lever arm between said fulcrum means and the other end of said lever arm for counterbalancing the weight of said chain saw power unit,

whereby said supported and counterbalanced chain saw may easily be manually swung by its handle between raised and lowered positions for cutting of a workpiece supported therebeneath.

4,350,068

ELECTRONIC MUSICAL INSTRUMENT WITH TONE PRODUCTION CHANNEL GROUPS

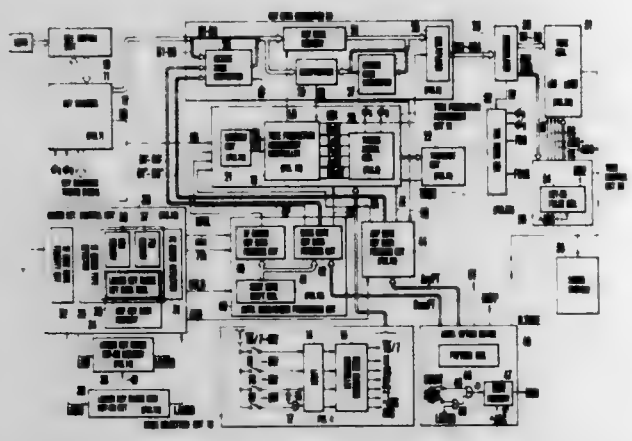
Hideo Suzuki, Shizuoka, and Makoto Kaneko, Hamakita, both of Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Jan. 27, 1981, Ser. No. 228,883
Claims priority, application Japan, Jan. 28, 1980, 55-8607; Apr. 30, 1980, 55-57713; Apr. 30, 1980, 55-57714
Int. Cl.³ G10H *1/057, 1/36, 7/00*
U.S. Cl. 84—1.01 10 Claims

1. An electronic musical instrument comprising:

a plurality of keys;

tone production means including a plurality of tone production channels of a number smaller than that of a total number of said keys;
means for detecting depressed keys;
mode selecting means for selecting a performance mode of the electronic musical instrument from among a plurality of performance modes, said tone production channels being divided into a plurality of channel groups and said keys into a plurality of key groups in accordance with the selected performance mode;



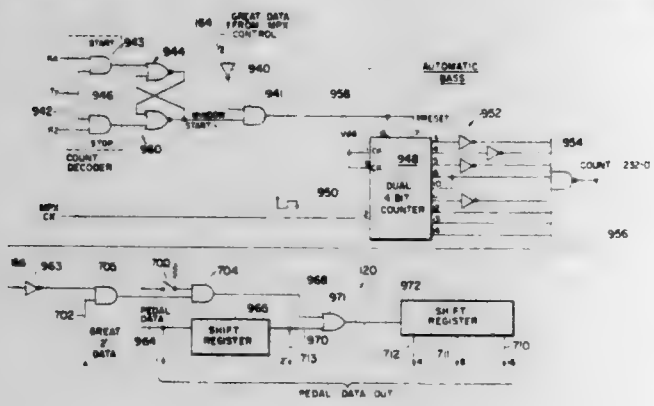
assigning means for assigning a tone production corresponding to a depressed key among said plurality of keys to one of said tone production channels, said channel group which said assigned channel belongs to corresponding to said key group which said depressed key belongs to;
detecting means for detecting the change of the performance mode and
control means for controlling tone production at said tone production channels when said detecting means has detected the mode change.

4,350,069

AUTOMATIC BASS GENERATOR FOR ELECTRONIC ORGAN

Stephen L. Howell, Huntingburg, Ind., assignor to Kimball International, Inc., Jasper, Ind.

Filed Dec. 29, 1980, Ser. No. 220,311
Int. Cl.³ G10F *1/00*
U.S. Cl. 84—1.03 **16 Claims**



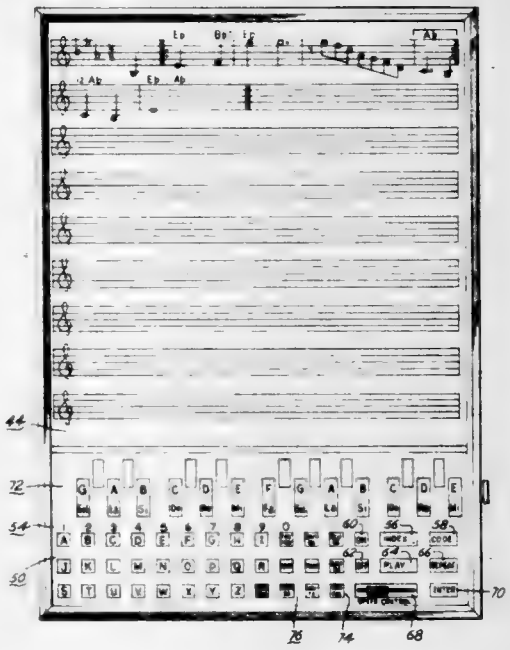
1. In an electronic organ including at least one keyboard having playing keys, multiplex means for cyclically scanning the keys in succession from the high end of the keyboard to the low end thereof and producing on an output a time division multiplexed serial data stream comprising a plurality of time slots corresponding respectively to the keys of the keyboard and keydown signals in time slots corresponding respectively to actuated keys of the keyboard, tone producing means for generating tones and placing selected tones on an output, and demultiplex means synchronized with said multiplex means for demultiplexing time division multiplexed serial data on its input and controlling said tone producing means to place tones on its output selected in accordance with the time slot positions of keydown signals in the serial data on its input, the improvement being an automatic bass generator interposed between said multiplex means and said demultiplex means comprising: an input to which the serial data stream is connected, a bass output, means responsive to one or more keydown signals in said serial data stream on the bass generator input for generating only a single keydown signal on the bass generator output for each scan of the keyboard regardless of the number of keydown signals in said serial data stream wherein said single keydown signal is a fixed number of time slots after the last keydown signal in the serial data stream for that scan of the keyboard and occurs prior to the next scan of the keyboard, and means for connecting the bass output to said demultiplex means input.

4,350,070

ELECTRONIC MUSIC BOOK

Sohail E. Bahu, 50509 Hollyhock Rd., South Bend, Ind. 46637

Filed Feb. 25, 1981, Ser. No. 238,005
Int. Cl.³ G09B *15/02*; G10H *1/40*
U.S. Cl. 84—1.03 **11 Claims**

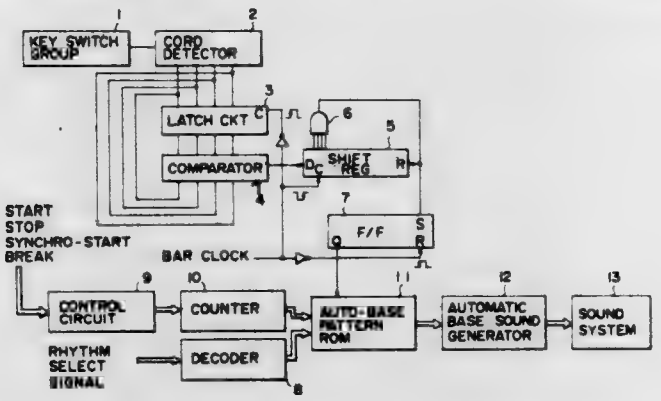


1. A music book comprising a memory means for storing a plurality of electronically coded musical scores and for storing a list of song titles for said scores in alphabetical sequence together with a code reference for each title, means for translating and for displaying said coded musical scores and said song title and code list in readable forms, indexing means for selecting a single score from said plurality of stored electronically coded musical scores, said indexing means including an alphabetical keyboard for entering at least a portion of the title of a desired score as a memory recall command for said song title and code list and a code character keyboard for entering the code reference of the desired score, a central processing and data communications means interconnecting said memory, translating and display means and said keyboards for causing a display of song titles beginning with the letters entered through said alphabetical keyboard and for causing said desired score to be displayed in response to a code entry through said code character keyboard, and a power means for operating said aforementioned means.

4,350,071
AUTOMATIC ACCOMPANIMENT CIRCUIT

Nobuaki Kondo, Omiya, Japan, assignor to Kabushiki Kaisha Kawai Gakki Seisakusho, Japan

Filed Apr. 3, 1981, Ser. No. 250,851
Claims priority, application Japan, Apr. 19, 1980, 55/51988
Int. Cl.³ G10H *1/40*
U.S. Cl. 84—1.03 2 Claims



1. An automatic accompaniment circuit comprising:

a code detector for scanning key switches to detect the code of a depressed one of the key switches;

a latch circuit for latching the output signal of the code detector by a bar clock pulse which is produced for each bar;

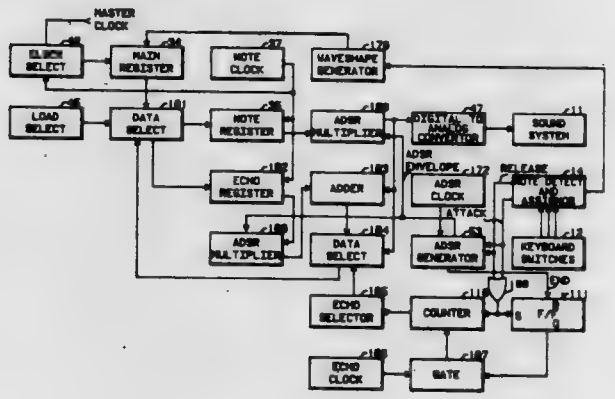
a comparator for comparing the output signals of the code detector and the latch circuit to yield a coincidence signal; and

control means for counting the coincidence signal from the comparator by a desired number of bars using the bar clock pulses and then providing a command signal for changing the pattern of an automatic accompaniment.

4,350,072
REENTRANT REVERBERATION GENERATOR FOR AN ELECTRONIC MUSICAL INSTRUMENT

Ralph Deutsch, Sherman Oaks, Calif., assignor to Kawai Musical Instrument Mfg. Co., Ltd., Hamamatsu, Japan

Filed Apr. 24, 1981, Ser. No. 257,069
Int. Cl.³ G10H *1/02*
U.S. Cl. 84—1.24 8 Claims



1. In combination with a musical instrument having a waveshape memory storing a plurality of waveshape data points corresponding to the amplitudes of a corresponding number of evenly spaced points defining a period of a musical signal and in which said data points are sequentially and repetitively read out of the waveshape memory and transferred to a digital-to-analog converter at a rate corresponding to the pitch of the musical note being generated, apparatus for producing a reverberation effect comprising;

an echo memory means for storing data to be thereafter read out,

a note clock for generating timing signals corresponding to the pitch of said generated musical note,

a first addressing means responsive to said timing signals whereby data is sequentially and repetitively read out of said echo memory means,

an adder means whereby data read out of said waveshape memory is added to data read out of said echo memory means to form an echo data set,

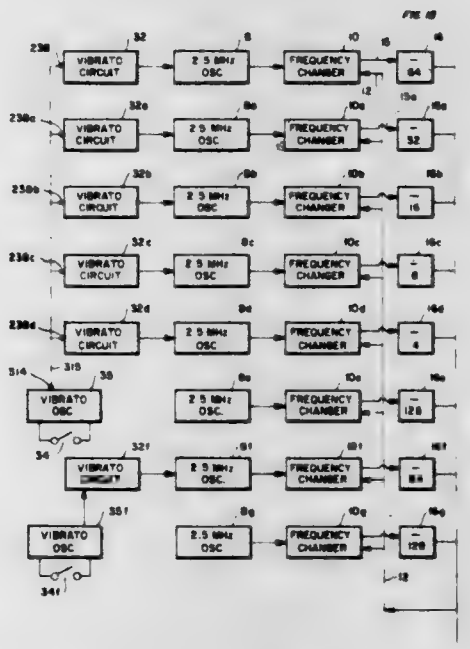
a first data select means for storing said echo data set in said waveshape memory thereby creating said reverberation effect, and

conversion means whereby data read out of said waveshape memory is converted to said musical signal.

4,350,073
HYBRID PIPE ORGAN WITH ELECTRONIC TONAL AUGMENTATION

Richard H. Peterson, 11748 Walnut Ridge Dr., Palos Park, Ill. 60464

Filed Sep. 23, 1980, Ser. No. 189,984
Int. Cl.³ G10H *1/02*
U.S. Cl. 84—1.25 10 Claims



1. A tuning circuit for a hybrid organ having both wind and electronically generated tones, comprising:

a plurality of frequency synthesizers, each synthesizer producing a corresponding one of a plurality of octaves of electronically generated tones;

a master oscillator for each frequency synthesizer, all of said oscillators having the same nominal frequency of oscillation;

a frequency changer for each master oscillator, each frequency changer being capable fo varying the frequency of the output from its corresponding master oscillator;

means connecting the frequency-varied output of each said master oscillator to its corresponding frequency synthesizer; and

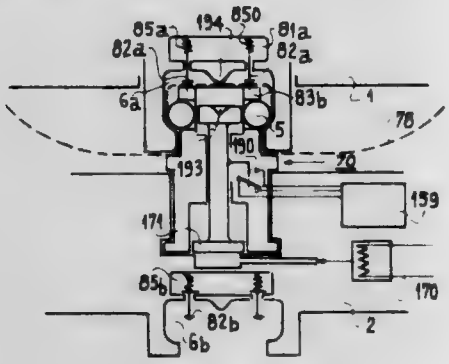
tuning control means connected in common to all of said frequency changers for simultaneously varying all of said frequency changers, whereby the outputs of all of said master oscillators can be simultaneously varied from their nominal frequencies to vary the pitches of the electronically generated tones produced by said frequency synthesizers.

4,350,074

MECHANICAL AND ELECTRICAL COUPLING DEVICE FOR CHARGES, PARTICULARLY MILITARY CHARGES

Jean P. Rouget, and Edmond Roustant, both of Paris, France, assignors to Thomson-Brandt, Paris, France

Filed May 20, 1980, Ser. No. 151,587
Claims priority, application France, Jun. 7, 1979, 79 14591
Int. Cl.[3] B64D *1/04*; F41F *5/02*
U.S. Cl. 89—1.5 D 3 Claims



1. A device for sequentially coupling and separating a plurality of projectiles carried under an aircraft, wherein said device comprises the following elements:

a male element associated with a projectile and engageable for snap-fastening by rotation within a corresponding female element placed on an adjacent projectile, said male element being provided with a first hollow cylindrical member which is capable of rotating about its longitudinal axis with respect to the projectile body, a plurality of balls inserted in the external wall of said first cylindrical member, said balls being disposed in uniformly spaced relation and maintained in position by the head of a piston internal to and concentric with said first cylindrical member, said piston being capable of sliding along the longitudinal axis of said first cylindrical member;

a cylindrical female element engageable for snap-fastening around a corresponding said male element and placed on the adjacent projectile, said female element being provided with a second hollow cylindrical member which is stationary with respect to the adjacent projectile body, the distal end of said second cylindrical member being provided with a snap-fastening rim interrupted by sockets; and

a plate fixed to said first cylindrical member and fitted with a locking member actuated by a movable key for rotating said first cylindrical member relative to said second cylindrical member between a first position in which said balls are released by said sockets and a second position in which said balls are retained by said rim.

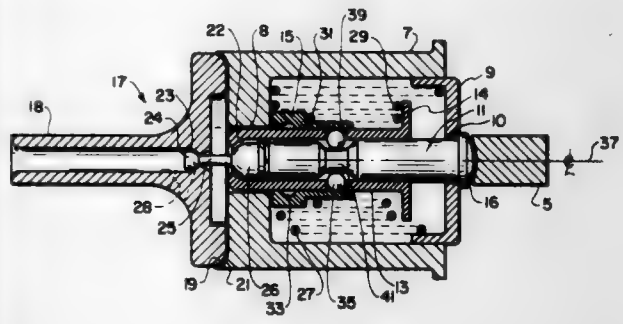
4,350,075

OMNI PULL PERCUSSION FIRING MECHANISM

Thomas V. Smith, Troy, N.Y., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 25, 1980, Ser. No. 143,656
Int. Cl.[3] F41F *13/04*
U.S. Cl. 89—27 R 4 Claims

1. A percussion type firing mechanism adapted to actuate the firing pin of a large cannon, comprising; a generally cylindrical hammer aligned with said firing pin, said hammer having an annular groove just aft of its midpoint and a flange at its forward end, said hammer being slidably mounted in a bore in a cylindrical yoke, the portion of said hammer between said annular groove and said flange closely fitting said bore in said yoke and the portion of said hammer aft of said annular groove being of reduced diameter, a pair of cage holes in the sidewalls of said yoke at diametrically opposed points, a pair of balls held captive in said cage holes; said mechanism further comprising a generally cylindrical case with a central hole in the base or after end thereof, said hole being big enough to snugly accommodate the outside diameter of said yoke, said bore in said yoke tapering at its aft end to a spherical shape and communicating to a hole in said aft end, a pivot comprising a rod with large and small bulbous end portions, said large bulbous end portion being inserted into the aft end of said yoke and engaging said spherical shape, a lever comprising a circular base with a central upstanding stem integral therewith, having its base attached to the aft end of said case, said aft end of said case having a rim portion adapted to receive and contain said circular base of said lever, a bore in said stem terminating in a spherical section near the base of said lever, the other end of said pivot engaging said spherical section of said bore to hold said lever onto the aft end of said case; a cylindrical cup with an outside diameter slightly smaller than the inside of said case



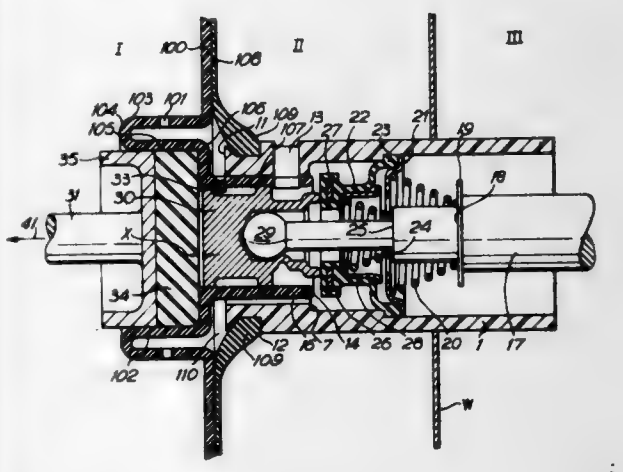
and a central hole in the forward end thereof with a diameter equal to that of said bore in said yoke, said cup being nested inside said case with the flanged head of said hammer projecting through the central hole therein, a cylindrical sleeve with a stepped outside diameter slidably mounted over said yoke, an annular groove on the inside of said sleeve near the aft thereof, three helical coil springs mounted within said case with their axes co-linear but with different turn diameters, the outmost of said springs being mounted between the inside of said cup and the base of said case, the intermediate spring being connected between a flange at the forward end of said yoke and the base of said case, and said innermost spring being connected between said stepped portion of said sleeve and said flange on said yoke.

4,350,076

VACUUM BRAKE BOOSTER

Rudolf Thiel, Frankfurt am Main, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Apr. 24, 1980, Ser. No. 143,251
Claims priority, application Fed. Rep. of Germany, May 10, 1979, 2918908
Int. Cl.[3] F15B *9/10*
U.S. Cl. 91—369 A 20 Claims



1. A vacuum booster comprising:

a low pressure housing having a longitudinal axis;

a rigid movable partition wall disposed in said housing coax-

ial of said axis to divide said housing into a vacuum chamber and a working chamber; and

a control hub disposed in said housing coaxial of said axis immovably connected to said partition wall, said control hub having a hollow interior chamber, a plurality of air guiding channels extending from said interior chamber to said vacuum chamber and said working chamber and a valve arrangement disposed in said interior chamber for controlling the air flow in said air guiding channels, said control hub including two tubes concentric with respect to each other and coaxial of said axis and at least one axially extending groove disposed in a portion of one of said two tubes sealed axially on both sides thereof by a wall of a portion of the other of said two tubes overlapping said portion of said one of said two tubes to provide one of said plurality of air guiding channels connecting said vacuum chamber to said valve arrangement, said one axial groove being coextensive with said overlapping portions of said two tubes.

4,350,077

DIFFERENTIAL PRESSURE OPERATED SERVO BOOSTERS

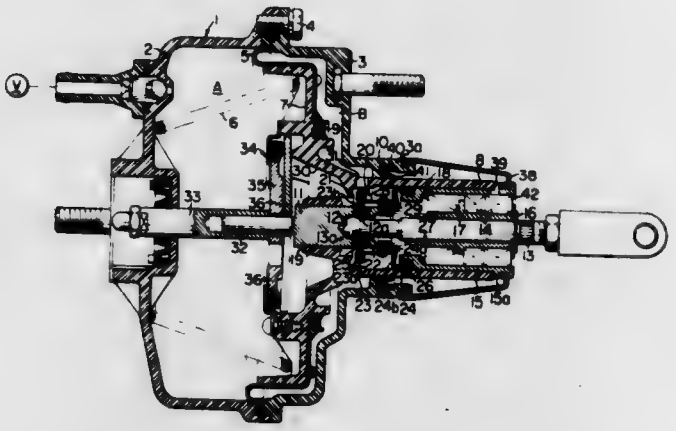
Hiroo Takeuchi, Asashina, Japan, assignor to Nissin Kogyo Kabushiki Kaisha, Ueda, Japan

Filed Jul. 23, 1980, Ser. No. 171,403

Claims priority, application Japan, Jul. 24, 1979, 54/102072[U]

Int. Cl.³ F15B *9/10*; F16J *11/02*

U.S. Cl. 91—376 R **1 Claim**



1. A differential pressure operated servo-booster comprising a booster shell having a cylindrical support, a forward first fluid chamber and a rearward second fluid chamber defined by a booster piston within the booster shell and normally in communication with a vacuum source, a valve cylinder integrally extended from the rearward surface of the booster piston and slidably received in the cylindrical support, a control valve received within the valve cylinder to permit the second fluid chamber to selectively communicate with the first fluid chamber or atmosphere, and an input rod extending through the valve cylinder and operatively connected to the control valve, the improvement comprising a plain bearing formed integral with the cylindrical support in a seamless fashion for slidably supporting the valve cylinder, and an annular recess in the inner surface of the cylindrical support for receiving a ring seal which seals between the cylindrical support and the valve cylinder, the booster shell, the cylindrical support and the plain bearing being integrally formed with each other from a synthetic resin, the valve cylinder being integrally formed with the booster piston from a synthetic resin having a hardness higher than the plain bearing.

4,350,078

APPARATUS FOR RESTRICTING THE VELOCITY OF A HYDRAULIC PISTON IN ITS END POSITIONS

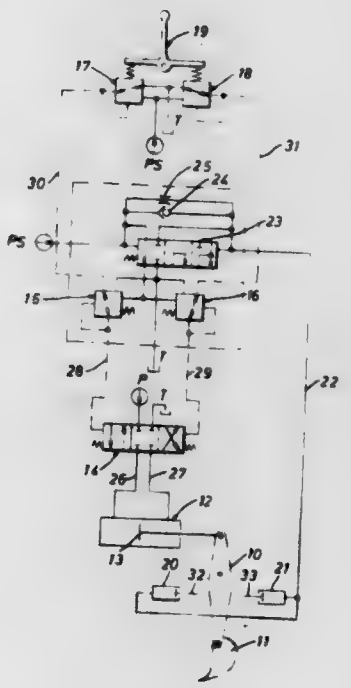
Bertil R. Olofsson, Ealöv, Sweden, assignor to Akermans Verkstad AB, Ealöv, Sweden

Filed Dec. 28, 1979, Ser. No. 108,084

Claims priority, application Sweden, Jan. 2, 1979, 7900014

Int. Cl.³ F15B *13/16*

U.S. Cl. 91—388 **3 Claims**



1. In a hydraulic excavator, an apparatus for restricting the movement of a piston of an operating hydraulic unit, when said piston approaches at least its one end position in a cylinder, comprising:

the operating hydraulic unit coupled between two excavator parts which are movable with respect to each other by means of the operating hydraulic unit;

a main valve which is coupled to the operating hydraulic unit in orner to be actuated by a first pressure medium supplied thereto;

a servo-circuit for regulating the main valve having an associated servo-pressure therein;

a hydraulic piston-cylinder sensor is secured to one of the excavator parts and has a freely projecting piston rod directed towards the second of the excavator parts; and

a pressure difference sensing valve which is coupled between said hydraulic piston-cylinder sensor and main valve;

a pressure provided in said hydraulic piston-cylinder sensor when the piston of the operating hydraulic unit approaches its end position, in that said piston rod of said hydraulic piston-cylinder sensor mounted on the one excavator part is actuated by the second excavator part, said pressure exceeds the servo-pressure, and said pressure difference sensing valve sensing the pressure difference between said pressure in said piston-cylinder sensor and the servo-pressure and, in accordance therewith, throttle valve means between said pressure difference sensing valve and main valve for throttling said first pressure medium supplied to the main valve such that a second pressure medium supplied the main valve to the operating hydraulic unit is throttled.

4,350,079

FLUID MOTOR

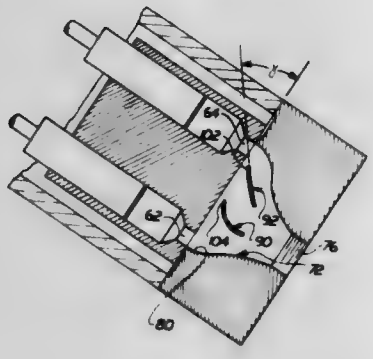
Hans-Dieter Drahtmüller, Aschaffenburg, Fed. Rep. of Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed Feb. 29, 1980, Ser. No. 125,792

Claims priority, application Fed. Rep. of Germany, Mar. 2, 1979, 2908119

Int. Cl.³ F01B *13/04*

U.S. Cl. 91—499 5 Claims



1. A fluid machine comprising a housing, a cylinder block disposed in said housing and rotatable about a first axis, a cylinder in said cylinder block parallel to and spaced from said first axis, a piston axially slidable in said cylinder, said cylinder block including an end face and a passage communicating between said cylinder and said end face, valve plate means connected with said housing and disposed in slidable engagement with said end face of said cylinder block for controlling of flow of fluid through said passage, said valve plate means including first and second arcuate openings concentric with said first axis, said arcuate openings being radially aligned with said passage in said cylinder block whereby fluid may flow between said passage and one or the other of said arcuate openings during the portion of the rotation of said cylinder block in which said passage overlaps with said opening, first and second channels in said valve plate means establishing fluid communication between the exterior of said housing and a respective one of said first and second arcuate openings, drive means for rotating said cylinder block and for effecting reciprocating motion of said piston in said cylinder at varying speeds to draw fluid into and expel fluid from said cylinder, and flow guiding means for guiding the flow of fluid through at least one of said channels to different portions of the one of said arcuate openings with which said one of said channels communicates according to the velocity of said piston as said passage rotates by a corresponding one of said arcuately extending portions of said arcuate opening, including at least one vane disposed in one of said channels in said valve plate means and adjacent said arcuately extending opening, said vane including a portion toward said end face of said cylinder block, said portion of said vane being inclined at an angle γ with a plane perpendicular to said first axis, wherein said angle γ satisfies the formula:

$$\tan \gamma = (R_{cyl}/R_v)k \text{ Sin } \alpha \text{ Sin } \phi$$

where:

R_{cyl} = radial distance between said first axis of rotation of said cylinder block and the center line of said cylinder;

R_v = the average radius of curvature of said arcuate openings in said valve plate means;

ϕ = the angular rotational position of said cylinder block with respect to a top dead center position of said piston in said cylinder;

α = the angle between said first axis and said second axis; and

k = a constant.

4,350,080

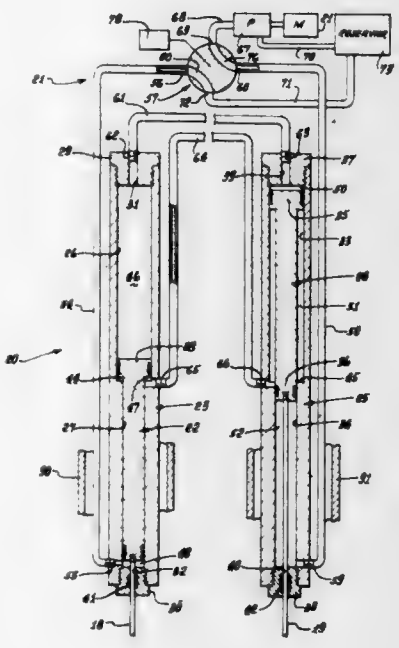
APPARATUS TO PUMP MULTIPLE WELLS

John S. Page, Jr., 21372 Brookhurst St., No. 312, Huntington Beach, Calif. 92646

Filed Dec. 16, 1980, Ser. No. 216,802

Int. Cl.³ F15B *11/16, 13/06*

U.S. Cl. 91—520 8 Claims



1. In well pumping apparatus adapted to pump two wells via two rod strings in the respective wells and pumping means operated in the wells by the strings, the combination comprising:

(a) means at the well surface operatively interconnecting the two rod strings for balancing loading imposed by said strings,

(b) said means operatively connected with said strings to lift one string while the other string is lowered, and to lift the other string while said one string is lowered,

(c) said means including

(x) first piston and cylinder elements associated with one rod string, one of said first elements being connectible with said first rod string, and

(y) second piston and cylinder elements associated with the other rod string, one of said second elements being connectible with the second rod string,

(d) said means including an hydraulic system interconnecting said first elements with said second elements so that hydraulic pressure acts alternately to lift one of the first elements and then one of the second elements, said means also including an hydraulic fluid pump connected with said hydraulic system via valving having one position in which pumped fluid pressure acts to elevate said one of the first elements, and another position in which pumped fluid pressure acts to elevate said one of the second elements, and said hydraulic system including

(i) primary ducting connected with said cylinder elements for alternately supplying fluid pressure to lower chambers defined by said piston and cylinder elements,

(ii) secondary ducting interconnecting upper chambers defined by said piston and cylinder elements, and

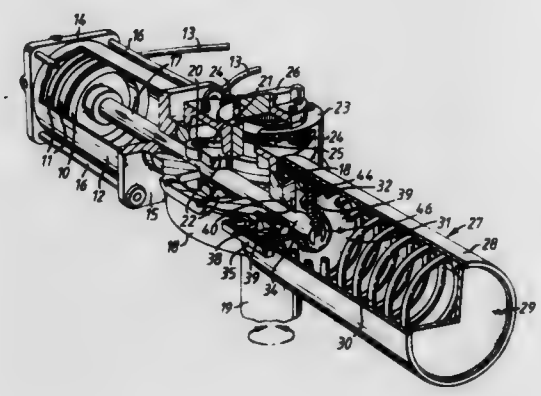
(iii) tertiary ducting interconnecting intermediate chambers defined by said piston and cylinder elements.

4,350,081

FAIL-SAFE DEVICE FOR ACTUATORS

Jeremy J. Fry, and Christopher Warnett, both of Bath, England, assignors to Rotork Controls Limited, Bath, England

Filed Jul. 16, 1980, Ser. No. 169,454
Claims priority, application United Kingdom, Jul. 20, 1979, 7925443
Int. Cl.³ F01B 29/00, 21/00
U.S. Cl. 92—128 8 Claims



1. An actuator comprising a piston and cylinder unit and means for flowing fluid under pressure into the cylinder to actuate the piston, a casing attached to said unit, an output member mounted in the casing, said piston having a piston rod attached thereto which extends through said casing and is operatively connected with said output member for actuating said output member in response to movement of said piston in said cylinder, and a fail-safe unit for returning said piston to a fail-safe position in said cylinder in the event of failure of the power supply to said cylinder, said fail-safe unit comprising a housing closed at one end and an opposite open end, a movable cap member disposed in said opposite end, a preloaded compression spring disposed in said housing between said closed end, and said movable cap member, a fixed ring member secured within said housing adjacent said opposite open end retaining the movable cap member in said housing, said piston rod extending through said ring member whereby an end thereof engages said cap member when said housing is fitted to the actuator casing, said actuator being characterized in that the fail-safe unit is detachably connected to said actuator casing by an attachment means which prevents disconnection of said fail-safe unit until said piston has been moved by said spring to its fail-safe position in said cylinder.

4,350,082

PUMP PISTON HAVING RING LUBRICATION MEANS

Donald E. Carrens, Tulsa, Okla., assignor to Dresser Industries, Inc., Dallas, Tex.

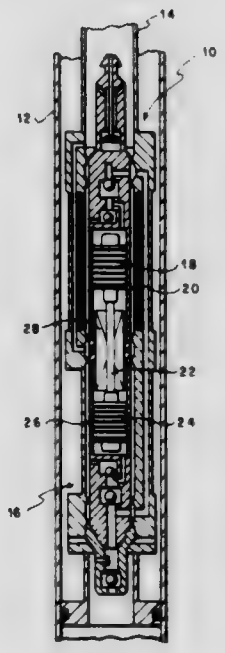
Filed Mar. 5, 1979, Ser. No. 17,755
Int. Cl.³ F01M 11/02; F04B 17/00; F16J 1/08
U.S. Cl. 92—159 5 Claims

1. In a downhole oil well pump apparatus having a reciprocating double acting piston assembly mounted within a bore, an improvement therein comprising:

(a) a generally cylindrical piston at each end of said bore with the outer cylindrical peripheral surface thereof slightly smaller than said bore, said piston having a first end portion open to hydraulic well power fluid to drive said piston and a second opposed end portion open to fluid to be pumped;

(b) a plurality of annular piston ring grooves around the outer periphery of said piston and opening to said outer cylindrical peripheral surface thereof, said piston ring groove including a main portion having an upper wall, a lower wall and a continuous inner wall arranged to provide a space of sufficient cross-section to loosely mount a piston ring, each said groove further including an auxiliary portion of a smaller width and depth than and connecting to said main portion, said auxiliary groove portion being located at one side of said groove main portion toward said first end portion of said piston, and opening substantially to said outer peripheral surface;

(c) a piston ring loosely mounted in said groove main portion and having upper and lower sides for abutting engagement with said upper and lower walls, respectively, for substantially blocking free flow of hydraulic power fluid flow therethrough during operation of said pump when said piston ring is displaced within said groove toward the



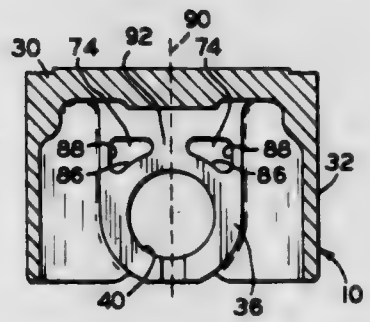
side thereof which does not have said auxiliary portion in order to permit hydraulic well power fluid to accumulate around said piston ring in order that said hydraulic well power fluid will provide lubrication for said upper and lower sides of said piston ring as it moves in said bore; and wherein said pump apparatus has one of said pistons mounted on each end of a pump rod, and said groove auxiliary portion of each piston is located on said one side of said main groove portion toward mutually facing end portions of said pistons.

4,350,083

HEAT BARRIER FOR REFRIGERATION COMPRESSOR PISTON

Edwin L. Gannaway, Adrian, Mich., assignor to Tecumseh Products Company, Tecumseh, Mich.

Filed Sep. 29, 1980, Ser. No. 191,512
Int. Cl.³ F16J 1/00
U.S. Cl. 92—238 8 Claims



1. A piston comprising: a head, a generally cylindrical piston skirt joined to said head and extending axially therefrom, a pair of aligned circular wrist pin holes extending through said skirt, and two heat barrier means in said piston skirt located between said head and the respective wrist pin holes for blocking a substantial portion of the heat conduction from the head to the respective wrist pin holes, each said heat barrier means comprising at least two openings extending completely through the piston skirt in close proximity to the respective wrist pin hole and on opposite sides in the circumferential direction of an

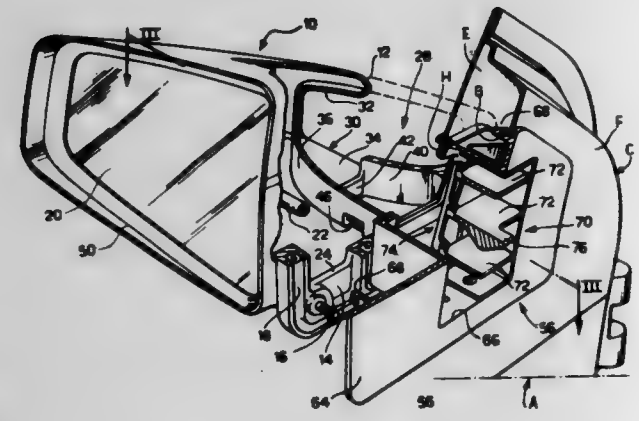
axial line intersecting the center of the respective wrist pin hole, each pair of said openings having at least a portion which is positioned axially between the respective wrist pin hole and the piston head, and the openings in each pair being separated by a narrow bridge of the piston skirt that lies along said axial line, said piston skirt including substantially opening-free heat conduction areas between said wrist pin holes and axially extending from the piston head down to an area beyond the wrist pin holes, whereby heat is channeled away from the piston head along a flow path circumferentially spaced from the wrist pin holes.

4,350,084

EXTERNAL REAR-VIEW MIRROR FOR MOTOR VEHICLES COMBINED WITH AN AIR INLET OPENING TO THE PASSENGER COMPARTMENT

Roberto Azzola, Turin, Italy, assignor to Saiag S.p.A. Industria Articoli Gomma, Turin, Italy

Filed Nov. 7, 1980, Ser. No. 205,023
Int. Cl.³ B60H *1/24*
U.S. Cl. 98—2 **8 Claims**



1. An external rear-view mirror for a motor vehicle, said mirror comprising:

a fairing in the shape of a half-shell defining an opening intended to face rearwardly with respect to the direction of travel, said half-shell including a back wall intended to face forwardly with respect to said direction of travel and a lateral wall constituting a fixing flange for fixing to an outer wall of the body of a vehicle,

a reflective plate adjustably mounted in said opening of the fairing,

a structure provided within said fairing and defining an elbow-shaped duct having an inlet situated in the said back wall which acts as an intake for external air, the duct extending into the said fixing flange, and

an outlet fitting terminating the duct at its end remote from its inlet, said fitting being intended to be mounted in a vehicle-body aperture communicating with the vehicle passenger compartment, to act as a ventilation outlet for air passing through the duct, said fitting being provided with a shutter device for controlling air flow through the duct.

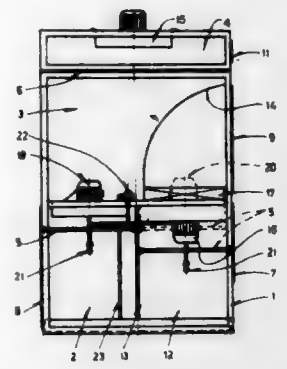
4,350,085

AIR CONDITIONING APPARATUS FOR FARMING AND ANIMAL HUSBANDRY ACTIVITIES INDUSTRIAL FACILITIES AND WELL-BEING IN GENERAL

Ricardo B. Lis, Riera, 8 - San Cugat del Valles, Province of Barcelona, Spain

Filed Dec. 18, 1980, Ser. No. 217,997
Claims priority, application Spain, Jan. 8, 1980, 487.513
Int. Cl.³ G03F *7/02*
U.S. Cl. 98—33 A **12 Claims**

1. An air conditioning apparatus for use in industrial facilities such as farming, animal husbandry, or the like, comprising a housing bounded by external walls and having a top, said housing being subdivided into a bottom compartment, a middle compartment and a top compartment by partitions spaced from one another along the height of said housing, each of said compartments including at least one opening formed on the respective external wall; and a number of fans located in said housing and provided with humidifying means, a least one of said fans being provided with a heating unit; electrical means mounted outside of said housing and operatively connected to said fans, said fans being electrically controlled by said electrical means so as to create a first air flow which is drawn in and



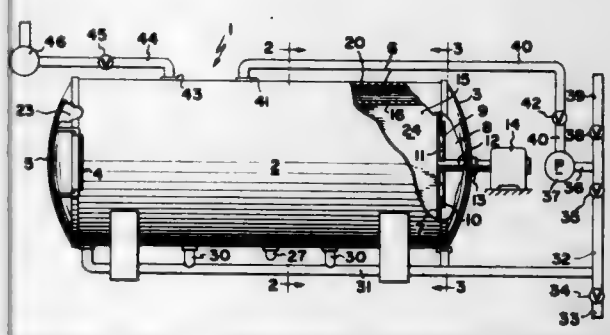
expelled from the apparatus through said top compartment for extracting of foul and toxic air from an enclosed room in which the apparatus may be positioned, a second air flow which enters said housing thrugh one of said openings, circulates within said housing in closed circuit and leaves said housing in warmed or condition, and a third air flow which enters said housing from atmosphere through one of said openings and leaves said housing through another of said openings for renewal air in the enclosed room.

4,350,086

COOKING OF FOODSTUFFS

Clifford C. Wetzel, Rte. 2, Ithaca, Mich. 48847

Continuation-in-part of Ser. No. 57,269, Jul. 13, 1979, abandoned. This application Jul. 7, 1980, Ser. No. 166,069
Int. Cl.³ A47J *27/04*
U.S. Cl. 99—368 **14 Claims**

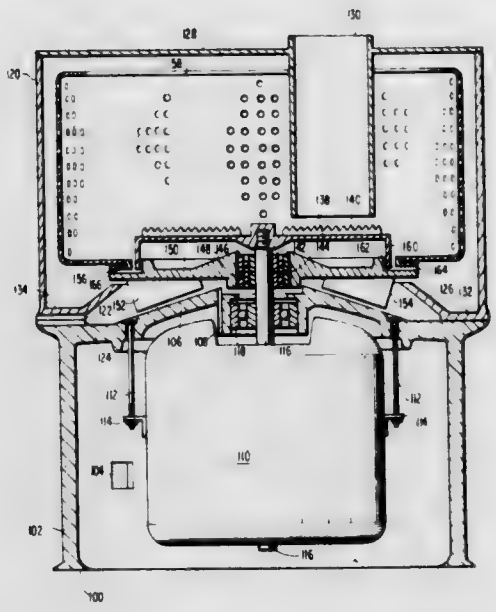


1. A pressure retort construction comprising a hollow vessel closed at one end and open at its other end; closure means at said other end for selectively opening and closing the latter; a walled, hollow housing accommodated in said vessel, said housing having its walls spaced from said vessel to form passages between said housing and said vessel, said housing being open at one end and having an end wall at its opposite end, said end wall having an opening therein; means for introducing a fluid heating medium into said vessel; circulating means occupying the opening in said housing end wall; means for driving said circulating means in a direction to circulate said heating medium from one end of said vessel to the other end through said housing and from said other end of said vessel to its said one end through said passages; foodstuff supporting means removably accommodated in said housing and being open in directions fore and aft of said housing; and means for effecting a seal between said supporting means and at least two walls of said housing.

4,350,087
JUICER HAVING IMPROVED BALANCE

Justo D. Ramirez, Calle-Garibaldi #1385 S.H., Guadalajara, Jalisco, Mexico

Filed Mar. 20, 1981, Ser. No. 245,869
Claims priority, application Mexico, Mar. 26, 1981, 181717
Int. Cl.³ A23N *1/02*
U.S. Cl. 99—511 4 Claims



1. A juicer for separating a liquid portion of a product from its solid portions comprising:

a base,

a motor means mounted on the base for rotating a spindle,

a cutting disk rigidly mounted on the spindle for positive rotation thereby,

means for introducing the product to be juiced to the cutting disk,

a centrifuging disk mounted for independent rotation on the spindle between the motor and the cutting disk by means of ballbearings on the spindle,

means mounted on the centrifuging disk for retaining the solid portions of the product and for allowing the liquid portion to pass radially outwardly, and

a collection means surrounding the retaining means for collecting the liquid portion,

whereby the motor means can rotate the cutting disk and the friction of the ballbearings will cause the centrifuging disk to rotate at a rotational speed different from that of the cutting disk to result in a relative rotational speed between the cutting disk and the centrifuging disk.

4,350,088
COCONUT SHREDDER AND CUTTER APPLIANCE

Jose V. Rubio, Jr., 6814 Hague Ave., Cleveland, Ohio 44102

Filed Oct. 27, 1980, Ser. No. 201,294
Int. Cl.³ A23N *5/03*
U.S. Cl. 99—538 15 Claims

1. A compact appliance for removing coconut meat from a coconut half section, comprising:

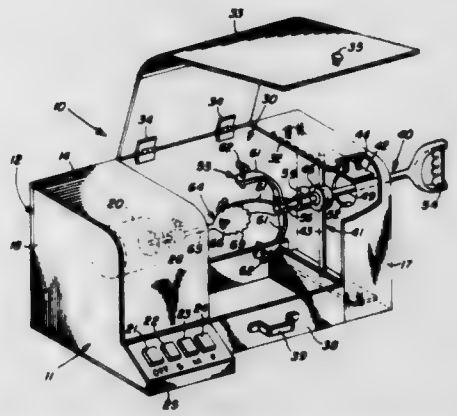
a housing having a shredding compartment therein and cover means for opening and closing said compartment;

a shredder blade located in said compartment;

means for mounting said blade in said housing and for rotating said blade about an axis;

coconut shell holder means for holding the coconut half section in said compartment;

and means for mounting and manually manipulating said holder means for both axial and universal pivotal movement with respect to said axis, whereby the coconut shell half section can be moved universally with respect to said blade to bring portions of the meat in the coconut half section progressively into engagement with the blade for effecting removal of the meat from the shell, said means for mounting and manually manipulating including a

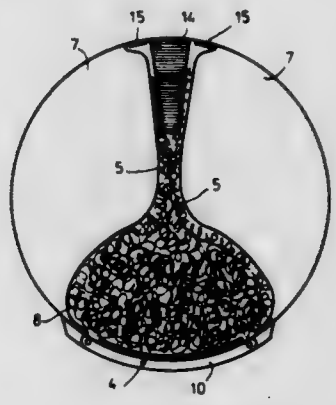


spherical bearing permitting the aforementioned universal pivotal movement of said holder means.

4,350,089
FRUIT JUICE PRESS

Oskar Braun, Lindenfels, Fed. Rep. of Germany, assignor to Josef Willmes GmbH, Bensheim, Fed. Rep. of Germany

Filed Oct. 31, 1980, Ser. No. 202,644
Claims priority, application Fed. Rep. of Germany, Nov. 9, 1979, 2945254
Int. Cl.³ B30B *5/02, 9/22*
U.S. Cl. 100—116 9 Claims



1. A press for squeezing juice-containing materials, like grapes, fruit-mashes and the like, by a closed container rotatable around a horizontal, longitudinal axis, a filling opening being provided in the jacket of the container, a pressure membrane made of flexible or elastic material being provided inside the container and fastened parallel to a vertical plane passing through the axis of rotation, said membrane dividing the interior of the container into an outer pressure-medium space and an inner squeeze space, characterized in that:

(a) there is a filling opening (4) in the container covered by a perforated sheet (9) to serve as a juice-draining means,

(b) that an elongated loosening and draining device (14) is positioned in the squeeze space (8) opposite the filling space and opposing the pressure membrane, and

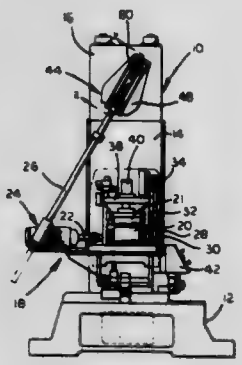
(c) that the pressure membrane (5) is tightly fastened to the opposite edges of the filling opening (4) and on opposite sides of the loosening and draining device (14).

4,350,090

MOTORIZED AND MICRO FEED LENGTH ADJUSTMENT FOR A PRESS FEED

Vernon E. Busse, Minster, and Robert L. Schockman, St. Henry, both of Ohio, assignors to The Minster Machine Company, Minster, Ohio

Filed Jan. 30, 1981, Ser. No. 229,789
Int. Cl.[3] B30B *15/30*
U.S. Cl. 100—216 14 Claims



1. In a feed apparatus for a press including a connecting rod and at least one feed roll driven by the connecting rod, a feed length adjustment mechanism for reciprocating said connecting rod comprising:

a hub member adapted to be connected to a rotating shaft in a press and rotated about an axis,

a block connected to said hub member and having a slideway therein,

a slide received in said slideway for sliding movement in a direction transverse to the axis of rotation of the hub member,

means for rotatably connecting said slide to said connecting rod,

lock means for locking said slide to said block comprising a cylinder in said slide having a lock piston mechanism therein and a fluid inlet means for pressurizing the cylinder and locking said piston mechanism against said block,

a lead screw threadedly connected to said slide,

a bidirectional fluid motor means mounted to the adjustment mechanism and being drivingly connected to said lead screw to rotate the same thereby translating said slide in said block, and

a fluid union means mounted to said adjustment mechanism for supplying pressurized fluid to said cylinder inlet means to lock said slide to said block and for supplying pressurized fluid to a pair of inlets on said motor means to rotate the motor means in either direction, said fluid union means comprising three fluid passages contained in a rotatable inner member and three fluid conduits connecting said passages to said cylinder and motor means inlets, respectively.

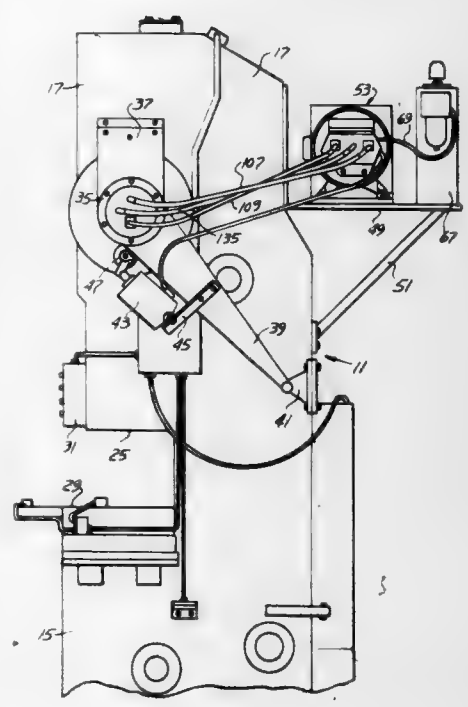
4,350,091

CRANK PRESS WITH HYDRAULIC TRANSMISSION

J. Edgar Myles, Bloomfield, Mich., assignor to J. E. Myles, Inc., Troy, Mich.

Filed Jan. 15, 1980, Ser. No. 112,375
Int. Cl.[3] B30B *1/26, 15/16*
U.S. Cl. 100—271 5 Claims

1. In a crank press having a base, pedestal, a rotatable elongated crank shaft having an axis journaled thereon for controlling reciprocal movement of a top platen guidably mounted upon said pedestal for the formation of work pieces supported on a stationary bottom platen; the improvement comprising a rotary hydraulic motor mounted on said pedestal having a reversible drive shaft connected to and longitudinally aligned with said crank shaft for rotation in unison about the same axis; a torque arm connecting said rotary hydraulic motor to said pedestal; a hydrostatic control transmission mounted on said pedestal and connected to said motor; said transmission comprising a fluid reservoir, a hydraulic pump assembly including a main variable delivery compensating pump and a charge pump, said charge pump connected to said reservoir and having an output conduit connected to a servo directional valve, said directional valve being connected to said main pump by a pair of separately operable output conduits for providing a predetermined pilot pressure to displacement servo controls for selectively controlling its operating mode, forward and reverse, an electronic driver connected to said directional valve, said driver being programmed for a particular mode, forward continuous, reverse continuous and jog, at a certain number of strokes per minute or gallons per minute; said main variable delivery compensating pump having a pair of pressure fluid outlets connected to said hydraulic motor for selectively delivering hydraulic fluid under pressure to and from opposite sides of said hydraulic motor in a closed hydraulic loop for selective forward and reverse rotation of said crank shaft; said pump assembly having a neutral mode position and a pair of alternately operable fluid motor drive positions; said hydraulic motor including a drum on its drive shaft; a drum brake including a single acting cylinder secured to said torque arm and having a reciprocal piston and piston rod; a brake element on said piston rod; a coil spring within said cylinder normally biasing said brake element into retaining registry with said

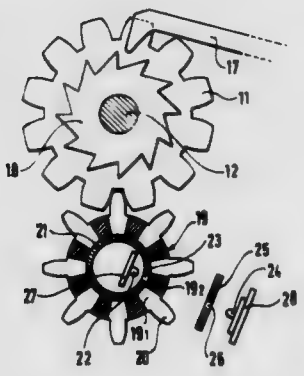


drum when the pump assembly is in a neutral mode; and a pressure conduit interconnecting said cylinder an pump assembly adapted for transmitting pressure fluid to said cylinder when said pump assembly is in one of its operating modes, to retract said brake element; said main pump having a drive shaft, a rotary variable differential transducer connected to said drive shaft, and a transmission receiver connected to said servo valve and its electronic driver; and a circuit between said transducer and said receiver providing a feedback signal to said servo valve until said pump reaches the preselected mode for closing the hydraulic loop between said servo valve and main pump; an electric motor connected to a power source and to said charge pump and main pump, and a safety circuit including a normally open electronic valve connected into the charge pump conduit, adapted in one position to drain pressure fluid to said reservoir, to deactivate said hydraulic motor; and an electric connection between said electric motor and electronic valve for maintaining said valve in a closed position while said electric motor is energized; and said hydrostatic transmission including a primary relief valve preset for the maximum operating pressure of the system; a conduit interconnecting the main pump and said relief valve, and an electronic controller connected to said primary relief valve for controlling its pressure setting.

4,350,092
PARALLEL-WHEEL PRINTERS

Christian Geney, Clichy, France, assignor to SMH-Adrex, Paris, France

Filed May 19, 1980, Ser. No. 150,906
Claims priority, application France, May 28, 1979, 79 13444
Int. Cl.³ B41J *1/44*
U.S. Cl. 101—99 6 Claims



1. A printer including a drive shaft, a plurality of parallel print wheels mounted in overriding relation on the drive shaft; each print wheel having a multiplicity k of printing positions spaced around the periphery thereof; individual electro-magnet latch means for stopping the rotation of each print wheel at an ordered printing position; means for controlling each latch means to stop its corresponding print wheel in response to an order signal; means for sensing angular positions of the drive shaft corresponding to each printing position of the print wheels; a plurality of parallel auxiliary wheels; means for mounting each auxiliary wheel for rotation about an axis parallel with the drive shaft and in meshing engagement with a corresponding print wheel; means for detecting angular positions of each auxiliary wheel corresponding to the printing positions of its print wheel; and means for comparing the detected angular position of each auxiliary wheel after actuation of the latch means of its associated print wheel with the print wheel position order signal, wherein said means for detecting the angular position of the auxiliary wheels comprises:

a fixed tubular shaft parallel to the drive shaft and rotatably supporting the auxiliary wheels, said tubular shaft having a plurality of axially-spaced radial apertures, one aperture for each auxiliary wheel;

a plurality of radiation emitters disposed inside said tubular shaft in alignment with said apertures;

a plurality of receivers sensitive to the radiation from said emitters, each receiver being disposed outside an auxiliary wheel in alignment with a respective aperture and emitter; and

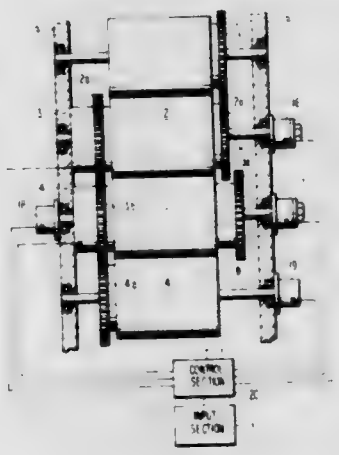
each auxiliary wheel having a plurality of angularly spaced circumferential portions which are opaque to radiation from said emitters alternating with an equal plurality of portions which are transparent to said radiation, one of the plurality of either said opaque or transparent portions being in registry with the line between the respective emitter and receiver when the corresponding print wheel is stopped at each printing position.

4,350,093
IMAGE POSITION ADJUSTING DEVICE FOR PRINTING MACHINE

Koji Ishii, Fuchu, Japan, assignor to Ryobi Ltd., Hiroshima, Japan

Filed Dec. 3, 1980, Ser. No. 212,377
Claims priority, application Japan, Dec. 5, 1979, 54-158527
Int. Cl.³ B41F *5/02, 5/22, 13/12*
U.S. Cl. 101—217 3 Claims

1. A printing machine for printing on both sides of a printing sheet comprising: a first plate cylinder mounted for rotation on a first shaft and having a first gear coupled thereto; a first rubber cylinder mounted for rotation on a second shaft and having a second gear rigidly secured to said second shaft and engaged with said first gear; a first electromagnetic clutch and third gear, said first electromagnetic clutch being operatively mounted to engage and disengage said third gear with said second shaft; a second rubber cylinder mounted for rotation on a third shaft; a second electromagnetic clutch and fourth gear, said second electromagnetic clutch being operatively mounted to engage and disengage said fourth gear with said third shaft, said fourth gear being engaged with said third gear; first and

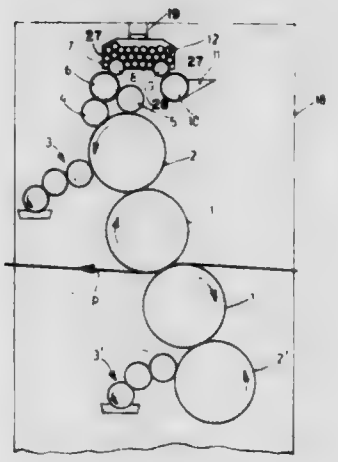


second electromagnetic brakes, said first electromagnetic brake being operatively coupled to said second shaft and said second electromagnetic brake being operatively coupled to said third shaft; a second plate cylinder mounted for rotation on a fourth shaft and having a fifth gear fixedly secured to said fourth shaft which is engaged with said fourth gear; first and second rotational angle detectors coupled to operate in response to angular positions of said third and fourth shafts, respectively; an electric motor; and a third electromagnetic clutch operatively coupling said motor to said third gear.

4,350,094
INK TRANSFER APPARATUS FOR ROTARY OFFSET PRINTING MACHINES

Hermann Fischer, Augsburg, Fed. Rep. of Germany, assignor to M.A.N.-ROLAND Druckmaschinen Aktiengesellschaft, Offenbach am Main, Fed. Rep. of Germany

Filed Sep. 12, 1980, Ser. No. 186,531
Claims priority, application Fed. Rep. of Germany, Oct. 23, 1979, 2942689
The portion of the term of this patent subsequent to Mar. 16, 1999, has been disclaimed.
Int. Cl.³ B41F *31/14, 31/26*
U.S. Cl. 101—350 10 Claims



1. Ink transfer apparatus for a rotary offset printing machine having a plate cylinder (2) to apply ink to the plate cylinder of the machine,

said ink transfer apparatus consisting of

means (11) for furnishing printing ink;
an ink pick-up roller (10) receiving ink from the ink furnishing means;
at least one ink application roller (4, 5, 6) applying ink to the plate cylinder of the printing machine and being driven at about the same circumferential speed as the plate cylinder,
said at least one ink application roller being spaced from and out of driving contact with said ink pick-up roller (10);
and an ink roller train bridging the gap between said ink pick-up roller (10) and said at least one ink application roller, said ink roller train comprising, in accordance with the invention,
a cage-like holder (7) positioned to bridge the gap between the ink pick-up roller (10) and the at least one ink application roller (4, 5, 6), said cage-like holder having confining end walls (27) and a bottom wall (28);
two ink transferring rollers (8, 9) having an ink accepting surface projecting from the cage-like holder and positioned respectively, in surface engagement and in frictional rotation transfer relation with the ink pick-up roller (10) and the at least one ink application roller (4, 5, 6) for receiving ink from the ink pick-up roller, and providing ink to the at least one ink application roller, the ink transferring rollers projecting through the bottom wall (28) for driving surface contact, respectively, with the ink pick-up roller and the at least one ink application roller;
and a plurality of loose roller elements (12) freely, centerless floatingly located in the cage-like holder (7) for centerless, self-positioned rolling movement between the confining walls and the bottom wall of the cage, some of the roller elements being in surface engagement with said ink transferring rollers (8,9) and some of the roller elements (12) being in surface engagement with each other to increase the surface area of ink being transported within the ink train,
the plurality of roller elements (12) being of such number that the distance within the cage-like holder (7) between the ink transferring rollers (8, 9) is spanned by at least some of the roller elements (12) and which will assume positions between the ink transferring rollers, the plurality of roller elements being rotated by surface frictional engagement with the ink transferring rollers (8, 9).

4,350,095

INK FOUNTAIN ON INKING UNITS OF PRINTING PRESSES

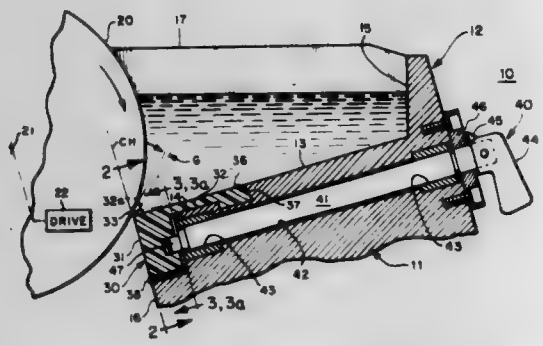
Claus Simeth, Offenbach am Main, Fed. Rep. of Germany, assignor to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 26, 1981, Ser. No. 277,954

Claims priority, application Fed. Rep. of Germany, Jun. 28, 1980, 3024453

Int. Cl.³ B41F *31/04, 31/06*

U.S. Cl. 101—365 **11 Claims**



1. In an ink fountain for a printing press, the combination comprising a frame including a trough, a fountain roller journaled in the frame, the trough and the fountain roller together defining an ink space, means for rotating the fountain roller slowly in the direction of the bottom of the trough, the bottom surface of the trough having a recess along its presented edge which is below the axis of rotation of the fountain roller and which defines a downwardly spaced ledge surface on the frame, a metering bar formed of durable resilient plastic of "L" shaped cross section having integral first and second legs, the first leg occupying the recess with the corner of the "L" closely spaced parallel to the surface of the fountain roller to form a metering edge defining a gap, the second leg overlapping the bottom of the trough and secured to the bottom of the trough along its remote edge, a plurality of adjusting keys at spaced intervals along the metering bar, each key having a rotatable stem snugly journaled in the frame and which extends through the frame generally parallel to the bottom of the trough to a position adjacent the first leg of the metering bar, the first leg of the metering bar having a groove of constant width extending longitudinally along its inner wall parallel to the fountain roller, the tip of each rotatable stem being in the form of an eccentric which projects into the groove and which is closely fitted to the walls of the groove so that when an adjusting key is rotated the corresponding portion of the metering edge moves chordwise with respect to the fountain roller for localized adjustment of the width of the gap, and a resilient sealing strip interposed between the ledge surface and the first leg of the metering bar to follow the adjusting movement of the latter while sealing the metering bar with respect to the frame.

4,350,096

ELECTRIC DEVICE FOR THE IGNITION BY MAGNETIC INDUCTION OF A PYROTECHNIC SUBSTANCE

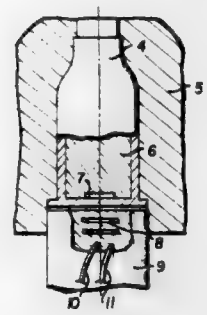
Christian G. Cannavo; Georges Cousin; Andre Espagnacq; Jacques X. Frayssac, all of Bourges; Loic Y. Laine, Saint-Doulchard; Daniel J. Midrouillet; Andre M. Pintenat, both of Bourges, and Jean B. Reboux, Savigny-sur-Orge, all of France, assignors to Etat Francais represente par le Delegation General pour l'Armement, Paris, France

Filed Oct. 15, 1979, Ser. No. 84,882

Claims priority, application France, Oct. 13, 1978, 78 29209

Int. Cl.³ F42B *5/08, 9/08*

U.S. Cl. 102—209 **12 Claims**

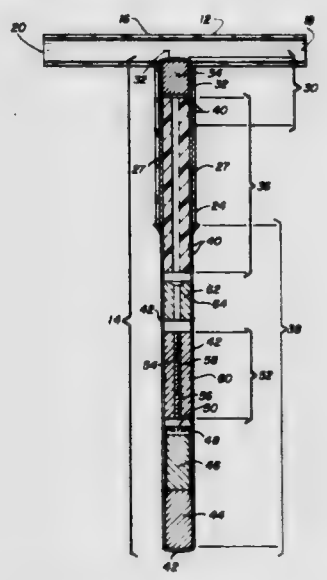


1. An electric magnetic induction ignition device for a pyrotechnic substance to be ignited by means of a weapon, comprising an induced member arranged in contact with the pyrotechnic substance, an inductor connected to a current generator and located opposite the induced member and coupled electromagnetically to it, said inductor located in a cavity open to electromagnetic radiations produced in the breech of said weapon, the induced member being formed of at least one open turn made of a material of high specific conductivity, at least one resistive element terminating the opening of each of said turns, the impedance of said turn being substantially the same as the impedance of said terminating element.

4,350,097
NONELECTRIC DELAY DETONATOR WITH TUBULAR CONNECTING ARRANGEMENT

Arthur F. Bowman, Tamaqua, and David G. Borg, Allentown, both of Pa., assignors to Atlas Powder Company, Dallas, Tex.

Filed May 19, 1980, Ser. No. 150,817
Int. Cl.³ C06C 5/04
U.S. Cl. 102—275.2 24 Claims



1. A device for securing and aligning a detonator cord and a nonelectric detonator in initiating relationship relative to each other comprising:

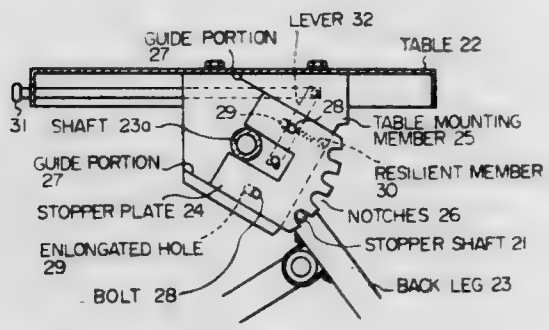
(a) a first tube open at both ends and dimensioned for receiving the detonator cord therein; and

(b) a second tube open at both ends, the first end of said second tube being joined to the wall of said first tube, and communicating with the interior of said first tube, said second tube dimensioned to allow frictional engagement of the nonelectric delay detonator therein when the nonelectric detonator is adjacent the location where said second tube is joined to said first tube so that the nonelectric detonator can be positioned adjacent the detonator cord to allow initiation of the delay detonator by the detonator cord.

4,350,098
TEST RACK FOR ELECTRONIC EQUIPMENT

Junkichi Shirono, and Katsuhisa Honda, both of Tokyo, Japan, assignors to Anritsu Electric Company Limited, Tokyo, Japan

Filed Jun. 16, 1980, Ser. No. 159,882
Claims priority, application Japan, Jun. 20, 1979, 54-76737
Int. Cl.³ A47F 5/12
U.S. Cl. 108—6 2 Claims



1. A test rack for electronic equipment comprising:

a main shaft having leg portions;

a table pivotally mounted on said main shaft; and

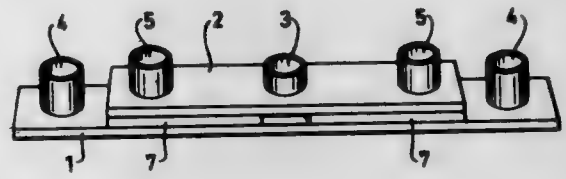
a table inclination mechanism for inclining the table at a desired angle and securing the table at the desired angle;

said table inclination mechanism including a table mounting member rotatably supported by said main shaft and fixedly mounted on a lower side of said table in a plane at right angles to said main shaft, said table mounting member including first and second guide portions spaced from said main shaft and extending parallel to one another at a sufficient length, each of said guide portions being inclined at a predetermined angle relative to the plane of said table, a stopper shaft provided on said legs so as to lie in parallel with said main shaft, and a stopper plate including a plurality of notches along one edge aligned on a circle whose central point lies on a central axis of said main shaft for engaging with said stopper shaft and carried by said table mounting member in a plane perpendicular to said main shaft, said stopper plate being slidably guided by said first and second guide portions of said table mounting member along a path parallel to said predetermined angle relative to said table whereby selected one of said notches engages with said stopper shaft and a unitary structure of said stopper plate, said table mounting member and said table can be inclined around said main shaft when said stopper plate disengages from said stopper shaft, and means for sliding said stopper plate relative to said stopper shaft.

4,350,099
CARGO PALLET

Nils G. W. Persson, Ljungsbro, Sweden, assignor to Nilssons Industriemballage AB, Ljungsbro, Sweden

Filed May 22, 1980, Ser. No. 152,175
Claims priority, application Sweden, Jan. 6, 1979, 7904847; Jun. 7, 1979, 7905923
Int. Cl.³ B65D 19/26, 19/06
U.S. Cl. 108—56.1 4 Claims



1. A cargo pallet for the transport of containers comprising first and second struts, each strut being provided with a plurality of blocks and pivotable relative to each other, the block which is arranged at the center of said first strut having an external cylindrical form and serving as the bearing pin when said first and second struts are pivoted from one position to another position, said second strut being provided with a transverse groove and an aperture located in the groove for receiving said central block, said transverse groove housing and fixing said first strut with said central block of said pallet in the operating position.

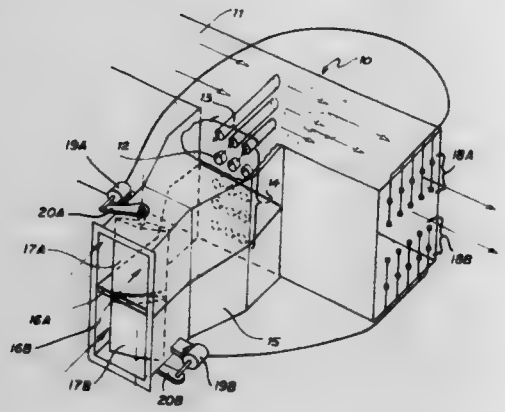
4,350,100
AIR INFILTRATION AND MIXING DEVICE

Robert G. Stephenson, Panania, Australia, assignor to James Howden Australia Pty. Limited, Australia

Filed Nov. 7, 1980, Ser. No. 204,935
Claims priority, application Australia, Nov. 13, 1979, PE1300
Int. Cl.³ F23J 15/00
U.S. Cl. 110—203 5 Claims

1. An air infiltration and mixing device comprising a first duct adapted to carry a gas at an elevated temperature and a plurality of further ducts, each of significantly smaller cross sectional area than the first duct, extending into the first duct through a side wall thereof, the further ducts each extending transversely of the longitudinal axis of the first duct and each further duct having an aperture at or adjacent its free end opening substantially in a downstream direction of the first duct, the other end of each of the further ducts having an opening adapted to communicate with a source of air at a temperature lower than that of the said gas to be conveyed through the first duct, the plurality of said further ducts being divided into at least two arrays of further ducts each of which

arrays communicates with the said air source through a variable aperture damper and the further ducts in each array opening into a discrete zone of the cross sectional area of the first duct, at least two grids of the thermocouples located in the first duct downstream of the further ducts, each grid being disposed



within a zone in the first duct corresponding to one of the discrete zones into which one of the arrays of further ducts opens, and actuator means to open and close each of the dampers individually in accordance with a signal received from the corresponding grid of thermocouples.

4,350,101

DEVICE FOR TREATING SUBSTANCES IN DIFFERENT PHASES, SUCH AS THE TREATMENT OF SUBSTANCES IN LIQUID, SEMI-LIQUID OR PASTE FORM, BY ANOTHER NOTABLY GASEOUS PHASE

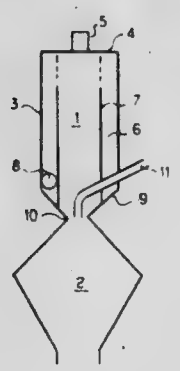
Francois Prudhon, Versailles, and Augustin Scicluna, Aubervilliers, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Division of Ser. No. 963,768, Nov. 27, 1978, Pat. No. 4,257,339, which is a continuation-in-part of Ser. No. 916,477, Jun. 19, 1977, which is a continuation of Ser. No. 770,802, Feb. 27, 1977, abandoned, which is a continuation of Ser. No. 479,774, Jun. 13, 1974, abandoned. This application Jul. 11, 1980, Ser. No. 168,657

Claims priority, application France, Jun. 20, 1974, 74 22620

Int. Cl.³ F23G *5/00*

U.S. Cl. 110—238 **8 Claims**



1. A device for treating substances in a liquid, semi-liquid, paste or solid phase by means of another, preferably gaseous phase, with or without entrained solid materials comprising:

(a) an outer casing with a surface of revolution defining a reaction chamber having a confined passage at one end;

(b) a perforated wall within the outer casing defining an annulus therebetween;

(c) a tangential supply pipe communicating with the annulus for introduction of a gaseous phase for helicoidal flow in said annulus and through the perforated wall into the interior of the reaction chamber;

(d) axial injection means in the end of the outer casing opposite the confined passage for introducing a part of the substance axially into the casing;

(e) a contact chamber which extends as a continuation of the outer casing with the confined passage therebetween; and

(f) coaxial injection means having an outlet end within the confined passage for introduction of at least one substance to be treated into the contact chamber in which treatment of the material passing through the confined passage takes place.

4,350,102

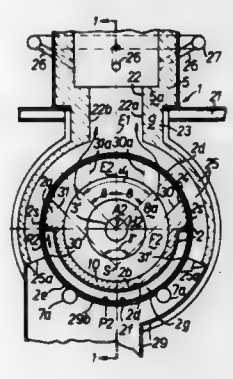
COMBINED COMBUSTION AND MELTING FURNACE FOR SOLID, PASTY AND LIQUID WASTE MATERIALS

Hans Ruegg, Wettingen, Switzerland, assignor to Von Roll AG, Gerlafingen, Switzerland

Filed Mar. 6, 1981, Ser. No. 241,116

Int. Cl.³ F23G *5/06*

U.S. Cl. 110—246 **8 Claims**



1. A combined combustion and melting furnace for solid, pasty and liquid waste materials comprising:

a drum rotatable on rollers about a longitudinal axis from a normally operative position and being adapted to be rocked about said longitudinal axis by a drive means, the waste material to be burned in said drum being stirred by the rocking motion, said drum having an upper portion and a lower portion;

a charging mechanism arranged outside a rear longitudinal end wall of said drum, said drum having a charging opening for the batchwise charging, by means of said charging mechanism, of the furnace with solid waste materials;

a burner for the liquid waste materials disposed on a burner anted amber fixed at a front longitudinal end of said drum;

a secondary combustion chamber having a gas inlet disposed at its base, said inlet connection being normally coupled to a gas outlet at the upper side of said drum, both when said drum is in its normally operative position and when it is being rocked;

a refractory lining disposed in said upper portion of said drum and on said burner anted amber;

a refractory lining disposed in said lower portion of said drum;

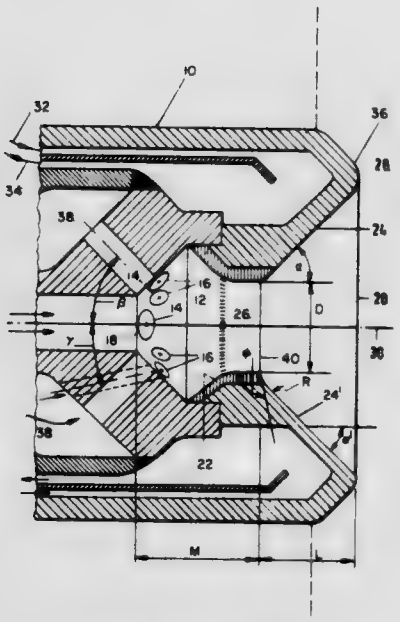
stationary water spray nozzles positioned outside said lower portion of said drum and being directed against the periphery of said drum; and

a water-filled granulating tank positioned below said drum to which molten combustion residues are removed from said drum, said drum being selectively rotated by approximately 180° from its normally operative position so that the molten residues discharge through said gas outlet into said granulating tank.

4,350,103
METHOD AND APPARATUS FOR THE COMBUSTION OF SOLID FUEL

Ian Poll, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Filed Sep. 26, 1980, Ser. No. 191,312
Claims priority, application United Kingdom, Oct. 2, 1979, 7934174
Int. Cl.³ F23D *1/02*
U.S. Cl. 110—264 9 Claims



1. A process for the gasification of a solid particulate fuel by partial combustion, which comprises the steps of:

injecting into a pre-mix zone along a central flow axis a stream of transfer fluid having the particulate fuel disposed therein to form a central flow stream;

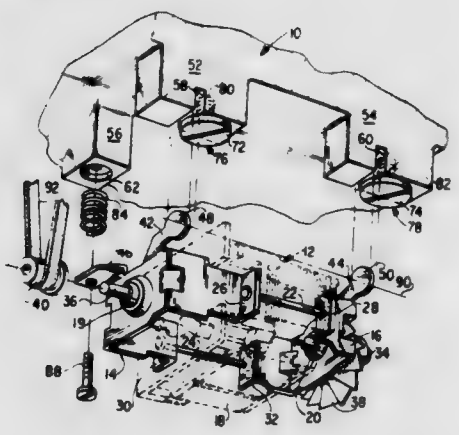
impinging a plurality of primary oxygen containing streams upon the central stream of transfer fluid having the particulate fuel disposed therein at an angle in the range of 30° to 60° relative to the central flow axis and having a velocity exceeding the velocity of the central stream; and

injecting a plurality of secondary oxygen containing gas streams into the pre-mix zone at a velocity in excess of the fuel stream for forming a shroud around the central stream as the mixture of fuel and gas streams flow from the pre-mix zone through a converging-diverging nozzle having a throat section into a combustion zone.

4,350,104
SEWING MACHINE MOTOR MOUNT

Albert N. Cook, Madison, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Oct. 15, 1981, Ser. No. 311,689
Int. Cl.³ D05B *69/02, 69/12*
U.S. Cl. 112—220 9 Claims

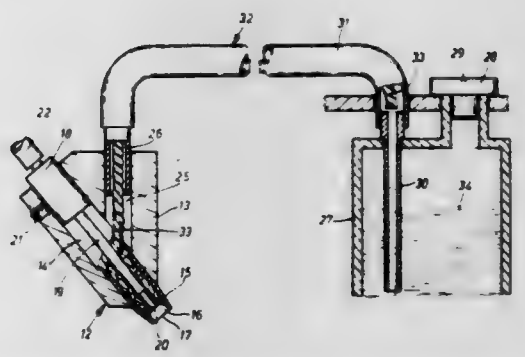


1. In a sewing machine, an electric motor including sheet metal end brackets with integral parallel arms each of which has a circularly shaped disc like end portion thereon, a frame extending over the motor and including slots for the disc like end portions of the bracket arms, means on the frame confining said disc like end portions in the said slots for pivotal movement about an axis extending through the disc like end portions of the bracket arms, a power transmission belt in the machine drivable by the motor, and means for moving said end brackets and thereby the motor about said axis to effect a tension adjustment in the belt.

4,350,105
SEWING MACHINE WITH A DEVICE FOR LUBRICATING THE LOOPER

Ernst Albrecht, Hochspeyer; Reiner Hensel, Trippstadt; Karl-Heinz Keller, and Horst Stahlschmitt, both of Kaiserslautern, all of Fed. Rep. of Germany, assignors to Pfaff Industriemaschinen GmbH, Fed. Rep. of Germany

Filed Jul. 3, 1980, Ser. No. 165,615
Claims priority, application Fed. Rep. of Germany, Jul. 12, 1979, 2928077
Int. Cl.³ D05B *71/02*
U.S. Cl. 112—256 8 Claims



1. An improved device for lubricating a looptaker of a sewing machine, comprising a storage vessel for containing a supply of oil, an injection nozzle having a mixing chamber for mixing a gas and the oil to form an oil mist and a discharge opening communicating with said chamber for passing the oil mist to the looptaker, an oil line having a bore extending therethrough from an inlet submerged within the supply of oil to an outlet in fluid communication with said mixing chamber, capillary means mounted within said bore coextensive over a zone of said oil line from a distance spaced from said inlet and the oil of the storage vessel and having an end portion protruding through said outlet into said mixing chamber, and means for intermittently injecting the gas under pressure into said mixing chamber such that a pressure gradient is created between said inlet and said outlet of said oil line and oil is passed into said oil line.

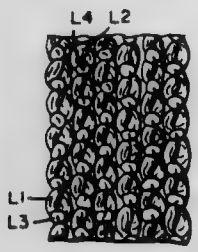
4,350,106
TUFTED PILE FABRIC

Juel T. Hash, Ft. Oglethorpe, Ga., assignor to Shirley M. Jorges, Ft. Oglethorpe, Ga., a part interest

Division of Ser. No. 123,913, Feb. 22, 1980, abandoned. This application Jun. 3, 1981, Ser. No. 269,793
Int. Cl.³ D05C *17/02*
U.S. Cl. 112—410 4 Claims

1. A tufted pile fabric comprising a base fabric having a plurality of longitudinal rows of pile yarn loops penetrating the base fabric and extending from one surface thereof, the loops of each row comprising a single yarn extending from substantially aligned penetrations of the base fabric, each loop extending through a first adjacent loop and is concatenated about a

second adjacent loop in the same longitudinal row, each loop lying substantially in the plane of said surface, and a backstitch



formed between adjacent loops of the same row lying substantially in the plane of the other surface.

4,350,107

AIR CUSHION VEHICLE

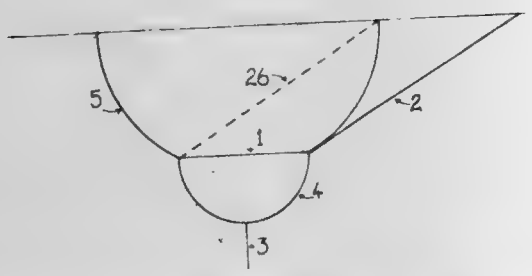
Darryl F. Mattox, 12 Rock Bath Rd., Palm Beach, N.S.W., 2108, Australia

Filed Aug. 20, 1979, Ser. No. 68,088

Claims priority, application Australia, Aug. 23, 1978, PD5620; Aug. 23, 1978, PD5621

Int. Cl.³ B63B *1/38*

U.S. Cl. 114—67 A **10 Claims**



1. A waterborne air cushion vehicle comprising, in combination, a flat rigid upper rectangular sheet-like platform, a plurality of flat rigid longitudinal walls attached substantially at right angles thereto and depending therefrom substantially parallel with the major axis of said platform, two of said walls being disposed as sidewalls along the respective edges of said platform, a plurality of longitudinally spaced laterally aligned arrays of flexible trough-shaped skirts respectively looped with a space therein and fastened via each longitudinal edge thereof with respect to the underside of said platform flush with but independently movable with respect to adjacent pairs of said walls but extendable to a lesser depth than that of said walls, a source of pressurized air admissable via apertures of fixed size at a relatively higher pressure to said skirts and also admissable at a relatively lower pressure via variable-sized openings remotely controlled and located respectively beneath said platform in communication with at least four square or rectangular opening-bottomed air cushion chambers disposed laterally in pairs and each bounded by an adjacent pair of said skirts and by an adjacent pair of said walls, and wherein the depth of said walls and of said skirts is so related to the flow rate of said air that the vehicle is buoyant upon water with said walls protruding into said water sufficiently to prevent air spillage via said walls when the vehicle is urged longitudinally through said water by propulsion means, and wherein said skirt air inlet openings are adapted to re-admit by reverse flow at least part of the compressed air in any one of said skirts independently in response to fugitive deflection of said skirts resulting from turbulence of said water, to thereby inhibit movement of said vehicle about the pitch axis thereof; characterized in that each said skirt is bag-like structure adapted to resist changes in its cross-sectional shape under load by virtue of captive air therein and is attached along one side thereof to the underside of said platform via a brace comprising a flexible sheet extending throughout the width of said skirt.

4,350,108

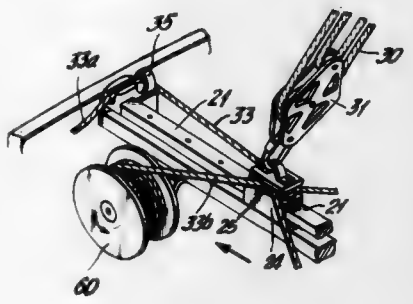
AUTOMATIC TRAVELLER TENDER

Seymour Vall, 35 W. 81 St., New York, N.Y. 10024

Continuation-in-part of Ser. No. 9,126, Feb. 5, 1979, Pat. No. 4,231,308. This application Nov. 3, 1980, Ser. No. 203,229

Int. Cl.³ B63H *9/10*

U.S. Cl. 114—102 **4 Claims**



1. An automatic sail tending system for a sailboat to maintain a constant heeling force of the sail acting on the boat during variations in wind force which system comprises a control line for controlling the angle of the sail with respect to the boat, a constant force spring reel, and means to correct adjustably the spring reel and the control line to establish a predetermined sail angle, the spring reel acting to balance the force in the control line to allow the sail to move to leeward upon an increase in wind force and to move to windward upon a decrease in wind force to adjust the sail angle to provide a constant sail heeling force.

4,350,109

WINDING ARRANGEMENTS

John C. Tattersall, Guildford, England, assignor to Olympic Power Winches Limited, England

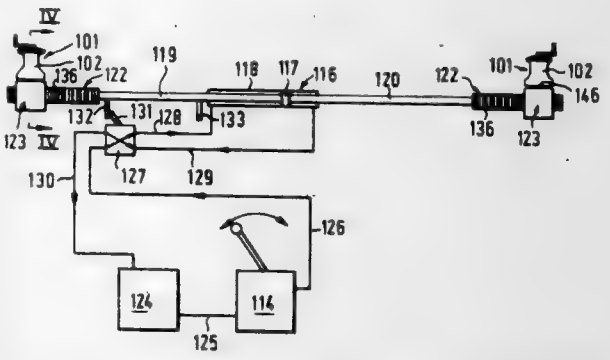
PCT No. PCT/GB79/00058, § 371 Date Dec. 14, 1979, § 102(e) Date Dec. 6, 1979, PCT Pub. No. WO79/00932, PCT Pub. Date Nov. 15, 1979

PCT Filed Apr. 10, 1979, Ser. No. 179,295

Claims priority, application United Kingdom, Apr. 14, 1978, 14744/78; Jul. 25, 1978, 30992/78; Oct. 12, 1978, 40286/78

Int. Cl.³ B63H *9/10*

U.S. Cl. 114—105 **8 Claims**



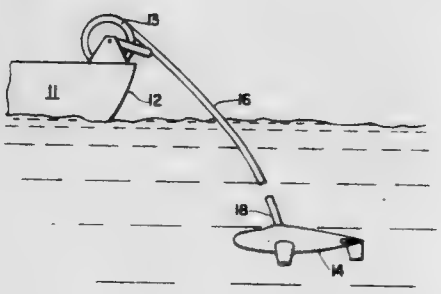
1. A winding arrangement for sheeting in a sail comprising:
(a) a winch drum;
(b) a piston-cylinder assembly having a double-acting piston, which is reciprocable within a cylinder;
(c) a manually operated pump means for supplying fluid under pressure to the piston-cylinder assembly;
(d) at least one rack member, having two toothed racks located on opposite outside edges thereof, coupled to the double-acting piston;
(e) means for directing the fluid under pressure supplied by the pump means alternately to opposite ends of the double-acting piston-cylinder assembly, thereby to reciprocate the piston, which effects reciprocating movement of the rack member;

(f) two unidirectional clutches, each having an input and an output shaft;
(g) a first gear means, meshing with one of the toothed racks of the rack member, coaxially mounted on the input shaft of each of the two unidirectional clutches;
(h) a second gear means mounted on the output shaft of each unidirectional clutch;
(i) a winch drum having a drive shaft mounted thereon; and
(j) a driving pinion gear coaxially mounted on the winch drum drive shaft and meshing with both second gear means of the two unidirectional clutches; whereby the reciprocating movement of the rack member causes the rotation, in opposite directions, of both first gear means, which, in turn, rotate the input shafts of the two unidirectional clutches, causing the rotation of the output shaft of whichever clutch is engaged and the second gear means mounted thereon, causing the driving pinion gear to rotate, driving the winch drum through the winch drum drive shaft.

4,350,110
INTEGRATED FAIRED TOWLINE WITH INTEGRAL LOCKING FEATURE

Richard K. Knutson, Gaithersburg; Bruce L. Webster, Bethesda; John W. Johnston, Gaithersburg, all of Md., and Peter P. Rispin, Washington, D.C., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 29, 1980, Ser. No. 221,157
Int. Cl.³ F16D *1/10*
U.S. Cl. 114—243 **8 Claims**

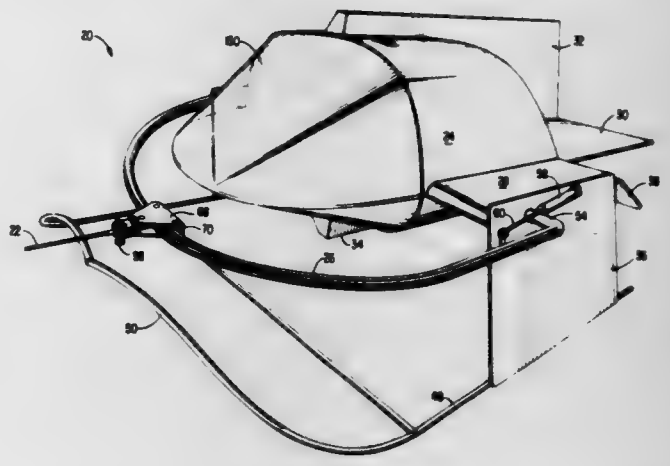


8. An elongate, low-drag fairing for towing submerged objects, comprises:
an elongate leading edge tension member extending between the submerged object and the towing vessel for withstanding the towing load of an underwater object, said leading member being formed of a composite material including a resin with high tensile strength fibers running parallel with the elongate dimension of said leading member, said leading member having a substantially U-shaped cross-section said leading member having a channel formed in the rear edge thereof;
an elongated trailing edge member of flexible material, said leading and trailing member integrally bonded together to form an integrated fairing having a streamlined hydrofoil cross-section shape with a resultant hydrodynamic center located aft of the interface defined between said leading and trailing members, and said leading member having a cross-sectional length which is between about 10 percent and about 20 percent of the chord length of the fairing said trailing member having a channel formed in the front edge thereof, said leading member channel and said trailing member channel being adjacently arranged so as to form a composite channel; and
a flange member embedded in said composite channel and secured to said leading and trailing members for preventing relative displacements between said leading and trailing members and for improving the shape stability of the fairing.

4,350,111
LATERALLY AND VERTICALLY CONTROLLABLE UNDERWATER TOWED VEHICLE

William D. Boyce, II, 1 Blvd de la Gare, Valmondois, France (95760)

Filed May 30, 1980, Ser. No. 154,891
Int. Cl.³ B63G *8/14*
U.S. Cl. 114—245 **16 Claims**

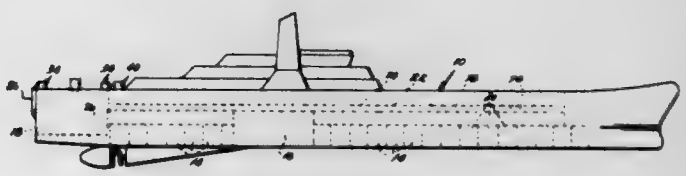


1. A vehicle for movement underwater, said vehicle being connectable to an end of a tow cable extending away from a towing vessel and comprising:
a main body;
means for stabilizing said main body;
planing surfaces positioned on said main body for enhancing controlled lateral and vertical movement of said main body when said vehicle is being towed; and
means for interconnecting said main body with the end of a tow cable extending away from a towing vessel; and
control means for effecting relative horizontal and vertical movement between the means for interconnecting and the planing surfaces to thereby vary forces exerted on said main body by the tow cable and effect horizontal and vertical movement of the vehicle with respect to the towing vessel, the relative movement between the means for interconnecting and the planing surfaces resulting in changing the point of attack of the towed vehicle on water flowing past the vehicle whereby said planing surfaces present an increased frontal area to the water thereby moving the vehicle with respect to the vessel towing the tow cable.

4,350,112
OCEAN TRANSPORTER VESSEL

Arthur E. Ayotte, 21340 NE. 14 Ave., Miami, Fla. 33179

Filed Jul. 1, 1966, Ser. No. 562,282
Int. Cl.³ B63B *35/035*
U.S. Cl. 114—260 **7 Claims**

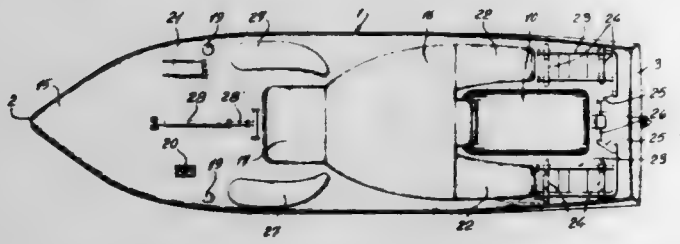


4. An improved design of multi-purpose ocean carrier comprising a hull, at least one horizontal deck, said hull having fixed structural means, and a liftable elevator platform for raising floating units from the level of the water to the level of the deck, said platform being guided within said fixed structural means and wherein said elevator platform operates in an elevator well which is enclosed within the confines of said hull and said well has common access to said deck and to the ambient water, and a sliding water-tight closure is provided for voluntarily sealing off said well from the ambient water.

4,350,113
MOTORIZED FLOATBOARD

Roland Moreau, 510 Monty St., Province of Quebec, Canada (H7A 2C3), and Robert Potvin, 6790 Renoir St., Auteuil, Canada (H7H 1A5)

Filed Jul. 31, 1980, Ser. No. 174,019
Int. Cl.³ A63H 5/08
U.S. Cl. 114—270 7 Claims

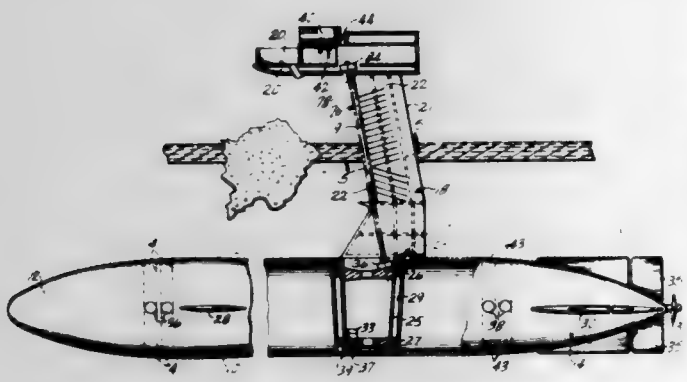


1. A motorized floatboard comprising a generally flat and at least partially hollow hull tapering at its front end, said hull having a deck long enough to support a rider in prone condition, at least two watertight compartments separated by a bulkhead, a fuel-operated and self-starting power unit located centrally and at the rear portion of said hull and having a propelling leg extending downwardly into the water, a rudder located aft of said power unit, a steering means located at the rear portion of said hull astride of said power unit to operate said rudder by the feet of a prone rider, an electrical power source for said power unit and located in said hull, a fuel reservoir also located in said hull, and spaced-apart handle grips and control means for said power unit mounted on said deck at the front portion of said hull and accessible to the hands of a prone rider, and wherein said power unit is protected by a cowl and said steering means consists of a pair of longitudinally-slidable ladder members, one on each side of said power unit, each said ladder member being linked to said rudder, whereby the floatboard may be steered by a prone rider by simple push or pull action on said ladder members by the feet of said rider.

4,350,114
SEMI-SUBMERSIBLE TANKER WITH DIRECTIONAL ICE CUTTERS

Joseph F. Schirtzinger, Pasadena, Calif., assignor to Sea-Log Corporation, Pasadena, Calif.

Filed Mar. 17, 1980, Ser. No. 131,185
Int. Cl.³ B63G 8/04
U.S. Cl. 114—339 5 Claims



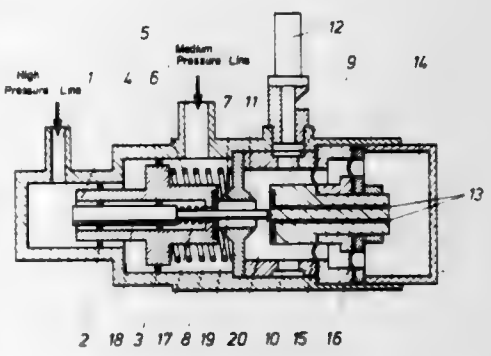
1. A semi-submersible tanker for operation in ice covered waters, comprising:

a submergible hull including propulsion means, depth control means, and attitude control means for directing the hull beneath the surface of the water and any ice, a bridge section, a bridge supporting mast projecting upwardly from the hull and supporting the bridge section above the surface of the water and any ice, bearing means in the hull supporting the bottom of the mast in the hull for rotation about a substantially vertical axis, rotary ice cutting means supported on and extending along one side of the mast and laterally offset from said axis between the hull and the bridge section for cutting ice encroaching on the mast from the direction of the cutting means, means rotating the supporting mast relative to the hull about said substantially vertical axis to position the ice cutting means between the mast and any encroaching ice, means for rotating the mast relative to the bridge section about an axis parallel to the axis of rotation of the mast relative to the hull, and means maintaining the angular position of the bridge section fixed relative to the hull with rotation of the mast.

4,350,115
WARNING SIGNAL DEVICE FOR RESPIRATORS

Adalbert Pasternack, Bad Schwartau, Fed. Rep. of Germany, assignor to Dragerwerk AG, Fed. Rep. of Germany

Filed Jan. 16, 1981, Ser. No. 225,657
Claims priority, application Fed. Rep. of Germany, Feb. 8, 1980, 3004594
Int. Cl.³ G01L 19/12
U.S. Cl. 116—70 7 Claims



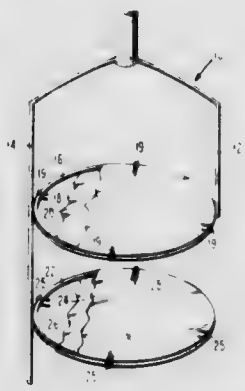
1. A warning signal device for a respirator, having a high pressure gas supply line for high pressure gas supply, and a medium pressure gas supply line, comprising: a housing defining a high pressure gas supply chamber to which the high pressure gas supply line is connected, a medium pressure chamber to which the medium pressure gas line is connected, a precontrol chamber and a control chamber; alarm means connected to said precontrol chamber, activatable by an alarm pressure in said precontrol chamber; a first valve member movable in said housing separating said high pressure gas supply chamber from said medium pressure chamber; a first valve seat between said medium pressure chamber and said precontrol chamber closed by said first valve member when gas pressure in said high pressure gas supply chamber is above a threshold value; a second valve member movable in said housing between said precontrol and said control chambers; a second valve seat between said medium pressure chamber and said precontrol chamber closable by said second valve member; means defining a throttle passage between said precontrol and said control chambers when said second valve seat is open and between said medium pressure chamber and said control chamber when said second valve seat is closed; and a sealing pressure piston movably mounted with and with respect to said first valve member having a surface exposed to said high pressure gas supply chamber, and abutting said second valve member when gas pressure in said high pressure gas supply chamber is above the threshold value to hold said second valve seat open and, when the gas pressure in said high pressure gas supply chamber falls to the threshold value, permitting said second valve member to move to close said second valve seat.

4,350,116

HOLDER FOR LIQUID PHASE EPITAXIAL GROWTH

Johannes Grandia; William G. McChesney; Hugo A. E. Santini, and Harold L. Turk, all of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 79,772, Sep. 28, 1979, abandoned. This application Dec. 22, 1980, Ser. No. 219,075
Int. Cl.[3] B05C *13/02*
U.S. Cl. 118—500 4 Claims



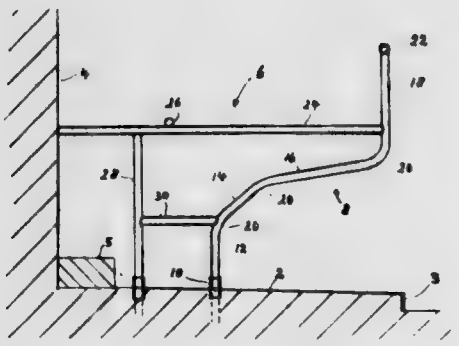
1. A wafer holder for use in growing liquid phase epitaxial films on wafers comprising:
a first leg extending vertically;
a second leg extending vertically and beyond said first leg;
a first ring for holding at least one wafer and connected to said first and second legs, and
a second ring for holding at least one wafer connected only to said second leg and spaced from said first ring wherein the mesa count on the films is held to a minimum.

4,350,117

FREE STALL CONSTRUCTION

Josef Hacker, Schulstrasse 7, 8254 Mittbach, Fed. Rep. of Germany

Filed Mar. 2, 1981, Ser. No. 239,416
Int. Cl.[3] A01K *1/00, 29/00*
U.S. Cl. 119—27 13 Claims



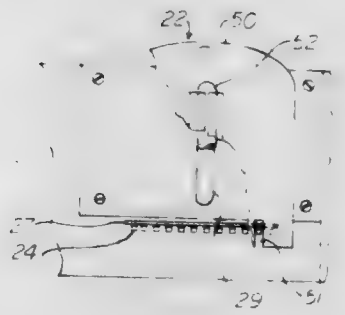
1. Cattle free stall construction for providing a resting feeding/place for cattle in which the cattle may move in and out freely and lay down therein without interfering with other cattle in adjacent stalls comprising a plurality of cantilever tube members separating the stalls from each other, said cantilever tube members being secured to the ground in the shoulder area of a reclining animal, said cantilever tube members extending upward and rearward to an end area of the stall where said members extend steeply upward beyond a standing animal, and a crossbeam (22) rigidly connecting the rear upper ends of said tube members (8) at a height such that cattle access to the stalls (2) is not hindered.

4,350,118

AUTOMATIC FEEDING APPARATUS

Earl W. Ostler, Billings, Mont., assignor to Agri-Systems, Billings, Mont.

Filed Mar. 13, 1981, Ser. No. 243,464
Int. Cl.[3] A01K *5/02*
U.S. Cl. 119—51 R 9 Claims



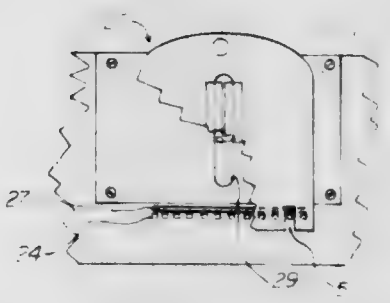
1. Automatic animal feeding apparatus including a feeding portion, a feed supplying portion, and a feed control portion; said feeding portion including a plurality of feeding stations, said feed supplying portion including feed storage means for supplying said feeding stations, mechanized transfer means capable of selectively conveying feed material from said feed storage means to each of said feeding stations, said feed control portion including a light source and a plurality of spaced sensing means at each of said feeding stations, said sensing means being capable of being activated by light supplied from said light source, means carried by an animal for diverting light from said light source with respect to said sensing means in a predetermined pattern, said sensing means being capable of transmitting signals to deciphering means located closely adjacent to said sensing means at each feeding station, at least two of said sensing means detecting proper orientation of said animal carried means with said sensing means, an odd number of said sensing means in addition to said orientation detecting sensing means detecting an identification pattern of a particular animal, said deciphering means of said feed control portion being connected electrically with deciphering means of all other feeding stations and with interrogating means, said interrogating means sequentially searching each of said deciphering means in a continuous rapidly repeating sequence, memory means capable of accepting an animal feeding schedule, means for comparing signals from said interrogating means with said animal feeding schedule, means for selectively activating said feed transfer means, recording means for compiling a log of quantities of feed material offered to particular animals and the time periods of such offerings.

4,350,119

ANIMAL FEEDING APPARATUS

Earl W. Ostler, Billings, Mont., assignor to Agri-Systems, Billings, Mont.

Filed Mar. 13, 1981, Ser. No. 243,469
Int. Cl.[3] A01K *5/02*
U.S. Cl. 119—51 R 12 Claims



1. An automatic animal feeding apparatus including a feeding portion, a feed supplying portion, and a feed control portion; said feeding portion including a feeding station, said feeding station including a trough member, said feed supplying

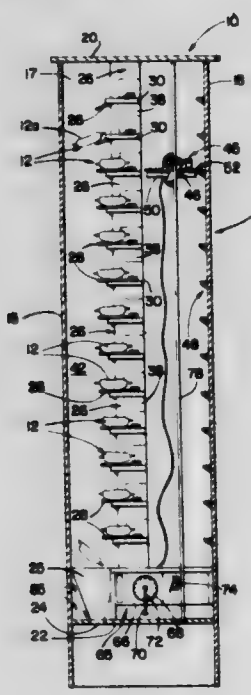
portion including feed storage means associated with said feeding station, transfer means associated with said feed storage means capable of selectively conveying feed material to said feed trough member, said feed control portion being operatively connected to said transfer means, said feed control portion including animal identifying means, said animal identifying means including a light source, a plurality of spaced phototransistors adjacent to said light source but normally shielded therefrom, said light source and said phototransistors being disposed below and adjacent to said feed trough member and arranged with their active surfaces in a generally vertical plane, electrical circuitry connecting said phototransistors with deciphering, feed schedule memory and comparing means, whereby light reflected from said light source onto one or more phototransistors by an identifying tag hanging from the neck of an animal positioned with its head in said feed trough member causes activated phototransistors to send signals to said deciphering means and depending upon the feed schedule in said memory means, said comparing means will activate said feed transfer means to convey predetermined quantities of feed material from said storage means to said trough member.

4,350,120

AUTOMATIC FEEDER FOR ANIMALS

L. Gordon Bittle, 141 Syracuse Walk, Long Beach, Calif. 90803

Filed Apr. 27, 1981, Ser. No. 257,733
Int. Cl.[3] A01K *5/02*
U.S. Cl. 119—51.13 8 Claims



1. An automatic feeder for animals, the feeder adapted to dispense packaged food and comprising:

a housing having a chute and a discharge chamber positioned at the lower end of said chute;

a plurality of contiguously stacked bins adapted to receive said packaged food therein;

a dispensing shelf movably supported in each of said bins;

an ejector means mounted in said housing for sequential ejection of each of said dispensing shelves, in order to selectively discharge said packaged food at a given time;

a retainer means positioned to engage said ejector means, and to align said ejector means with said dispensing shelf in order to engage said shelf;

said ejector means including a guide means to guide said ejector means for vertical movement between said bins and said retainer means, and to align said ejector means horizontally with respect to said movable shelves; and

wherein said ejector means comprises:

a horizontally positioned platform interconnected to said guide means;

an ejector carriage mounted to said platform, one end thereof being positioned to engage said movable shelf and the opposite end thereof being positioned to engage said retainer means; and

actuating means connected to said ejector carriage to actuate said ejector carriage;

a timing means operably connected to said ejector means to activate said ejector means, at a selected time period; and

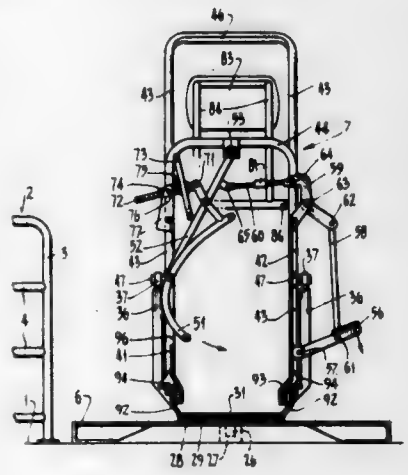
means disposed in said discharge chamber to open said packaged food as said package passes therethrough.

4,350,121

ANIMAL HANDLING APPARATUS

Norman P. Lemin, Purton Rd., Pakenham, Victoria, 3810, Australia

Filed Jul. 23, 1980, Ser. No. 171,467
Claims priority, application Australia, Jul. 25, 1979, PD9702
Int. Cl.[3] A61D *3/00*
U.S. Cl. 119—103 9 Claims



1. Animal handling apparatus including a base, a floor for supporting an animal in a normal upright position, said floor being mounted on the base for rotation about a substantially vertical axis, an animal cage including sides and means for holding an animal, said animal cage being open at the bottom and being mounted to the floor to be pivotable as a whole about a substantially horizontal axis to turn an animal from a normal upright position to give access to the ventral portion of the animal; and said animal cage having two opposite ends, one of which is normally open to provide access for the animal and which is provided with a support for the buttocks of the animal which is movable from a position in which it does not obstruct said one end to a position in which it obstructs said one end and acts as a support for the buttocks of the animal when said animal cage is pivoted about said substantially horizontal axis to give access to the ventral portion of the animal.

4,350,122

INSECT TRAPPING COLLAR

Thomas K. Shotwell, Dallas, Tex., assignor to Farnam Companies, Inc., Phoenix, Ariz.

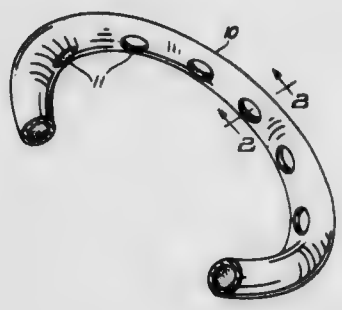
Filed Apr. 9, 1981, Ser. No. 252,378
Int. Cl.[3] A01K *27/00*
U.S. Cl. 119—106 5 Claims

1. An insect trapping collar including in combination:

a base collar member in the form of a hollow tube having holes formed through the inner side thereof for placement about the neck of an animal, the holes in said collar member facing the neck of an animal when said collar member is in place; and

a tacky substance coated on at least a portion of the hollow

interior of said base collar member for entrapping insects inside said collar member so that trapped insects are not



exposed to view when said base collar member is in place on an animal.

4,350,123

HAND-HELD POWER TOOL WITH A COMBUSTION MOTOR

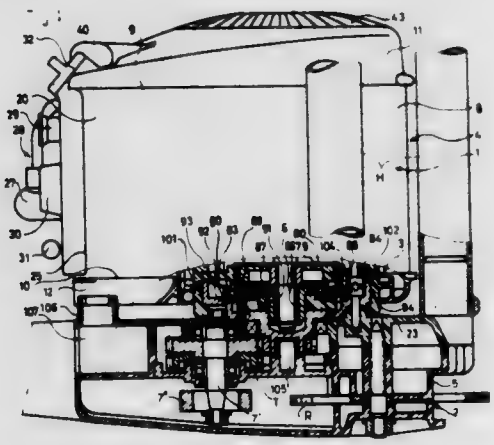
Günter Kossek, Gechingen, and Heinz Emmerich, Böblingen, both of Fed. Rep. of Germany, assignors to Solo Kleinmotoren GmbH, Sindelfingen, Fed. Rep. of Germany

Filed Feb. 2, 1981, Ser. No. 230,594

Claims priority, application Fed. Rep. of Germany, Feb. 9, 1980, 3004948

Int. Cl.³ F02B *63/02*

U.S. Cl. 123—2 **30 Claims**



1. In a hand-held power tool, a combination comprising a drive unit including a first housing, and a combustion motor fixed to and arranged in said first housing and having an output shaft; a work unit including rotatable tool means, an input shaft, transmission means between said input shaft and said tool means for rotating the latter upon rotation of said input shaft, and a second housing; quick-acting connecting means for releasably connecting said first housing to said second housing, said quick-acting connecting means comprising a centralizing ring coaxial with said output shaft and fixed to a stationary part of said combustion motor, a coupling ring turnably mounted on said centralizing ring, an annular coupling member fixed to said second housing, said coupling ring and said coupling member having cooperating cam means having inclined faces, spring means connected to said coupling ring for turning the latter in a direction in which said inclined faces are tightly engaged to couple said coupling ring with said coupling member and therewith said first housing to said second housing, and a lever fixed to and radially projecting from said coupling ring and moveable from an arresting positioning holding said coupling ring in a stationary position to a releasing position permitting turning of said coupling ring under the action of said spring means; and coupling means coaxial with said connecting means for coupling said output shaft of said combustion motor with said input shaft of said work unit.

4,350,124

OVERFLOW DEVICE FOR VEHICULAR CARBURETOR

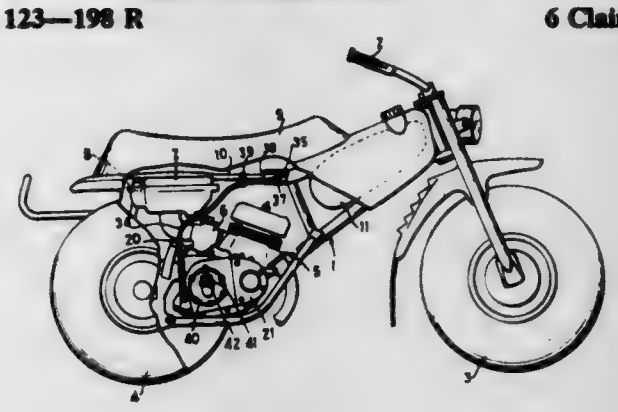
Akihiro Kitano, and Kunio Kamekawa, both of Hamamatsu, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Sep. 5, 1980, Ser. No. 184,644

Claims priority, application Japan, Sep. 29, 1979, 54-125638

Int. Cl.³ F02M *19/06*

U.S. Cl. 123—198 R **6 Claims**



1. An overflow device for a vehicular carburetor which is carried on the body of a vehicle and includes a float chamber whose overfilling is prevented by drainage through said overflow device, said overflow device comprising: a reservoir disposed at an elevation beneath said float chamber, an overflow tube opening into said float chamber at an intended maximum fuel level therein and discharging into said reservoir, and a vent tube rising from an upper level in said reservoir to a vent opening at an elevation above said carburetor.

4,350,125

FUEL INJECTION TYPE INTERNAL COMBUSTION ENGINE

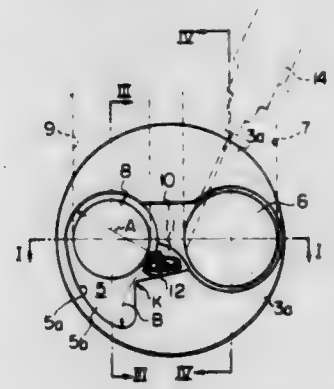
Mutsumi Kanda; Kiyoshi Nakanishi, both of Susono, and Tokuta Inoue, Mishima, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Aug. 29, 1980, Ser. No. 182,607

Claims priority, application Japan, Sep. 20, 1979, 54/129410[U]

Int. Cl.³ F02B *19/16, 3/00*

U.S. Cl. 123—261 **11 Claims**



1. In an internal combustion engine comprising:

a cylinder block having a cylinder bore therein;

a piston reciprocally movable in said cylinder bore and having a flat top face;

a cylinder head having a circular inner wall portion covering the cylinder bore and comprising a flat portion substantially parallel to the top face of the piston and a recessed portion which is arranged adjacent to the periphery of said inner wall and has a circumferential wall and a top wall, said flat portion being arranged at a position close to the flat top face of said piston when the latter is positioned at top dead center for forming a squish area therebetween, said piston and said circular inner wall

portion of said cylinder head forming a combustion chamber therebetween;

an intake valve arranged on said flat portion and having a valve head which has a front face exposed to said combustion chamber, the front face of said valve head being approximately coplanar with said flat portion;

an exhaust valve arranged on the top wall of said recessed portion and having a valve head;

a groove formed in said flat portion and extending from the valve head of said intake valve to said recessed portion, said groove having an approximately uniform depth which is slightly larger than the clearance between said flat portion and the flat top face of said piston when the latter is positioned at top dead center;

a depression formed in said groove adjacent to and opening into said recessed portion, said depression having a flat inner wall which is inclined downwardly and slightly towards said recessed portion with respect to a plane parallel to the axis of the cylinder bore and passing through the centers of said intake and exhaust valve heads;

a spark plug arranged in a bore in said inclined wall of the depression in said groove and having a spark gap located approximately on the axis of the cylinder bore, so that the flame propagation distances to the most remote surfaces of the circumferential walls of the recessed portion are minimized; and

an intake passage formed in said cylinder head and connected to said combustion chamber via said intake valve, said cylinder head having a portion which is located between said recessed portion and said intake passage, and which portion has a wall portion defining part of said intake passage;

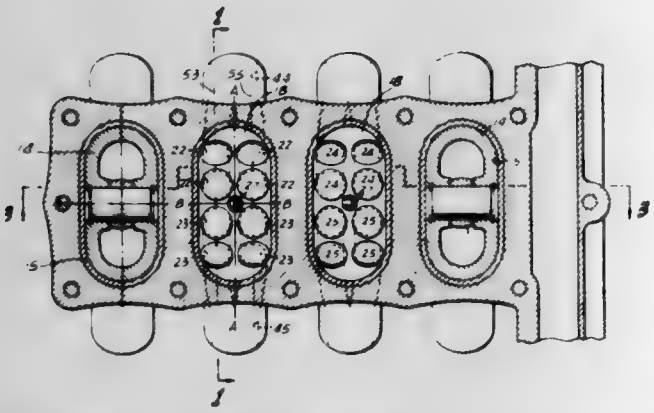
the improvement wherein a fuel injector is arranged in said intake passage and has a nozzle which is directed to said wall portion.

4,350,126

INTERNAL COMBUSTION ENGINE

Shoichi Honda, Tokyo, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 25, 1980, Ser. No. 180,957
Claims priority, application Japan, Sep. 4, 1979, 54-113315
Int. Cl.³ F02F *1/42, 3/28*
U.S. Cl. 123—315 **7 Claims**



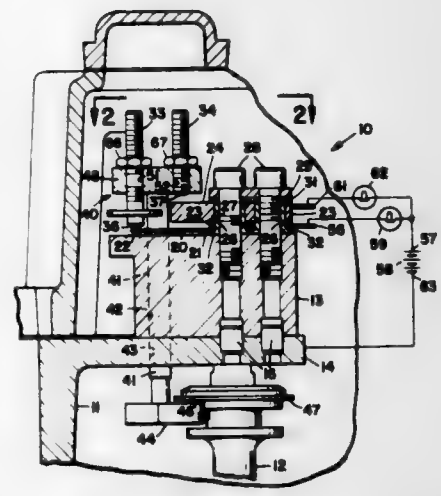
1. In an internal combustion engine having a piston mounted to slide in a cylinder bore and connected to a crank shaft by a connecting rod, the improvement comprising, in combination: the piston and the cylinder bore being oblong in cross section having major dimensions at right angles to an axis of the crank shaft, walls cooperating with said piston and said cylinder bore to form an oblong combustion chamber having major and minor dimensions with an arched roof along the major dimension thereof, a set of poppet-type intake valves communicating with said combustion chamber and all on one side of a transverse plane through the minor dimension of said combustion chamber, a set of poppet-type exhaust valves communicating with said combustion chamber and all on the other side of said transverse plane, a spark plug communicating with said combustion chamber and positioned substantially on sid transverse plane, each of the intake and exhaust valves having a longitudinal axis inclined with respect to the cylinder bore axis, the axes of two intake valves and two exhaust valves lying in one plane along the major dimension of said combustion chamber and intersecting at a common point, the angular spacing between said two intake valves and said two exhaust valves being substantially the same, whereby the heads of the latter said four valves cooperate in forming the arched roof of said combustion chamber.

4,350,127

TORQUE SPRING ADJUSTMENT MECHANISM

Dennis M. King, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Mar. 25, 1981, Ser. No. 247,566
Int. Cl.³ F02D *31/00*
U.S. Cl. 123—364 **10 Claims**



1. In a governor (10) for an internal combustion engine, said governor (10) having a housing (11), a rack actuator (12) movable in said housing (11) in a fuel-increasing direction and a fuel-decreasing direction, and a torque spring (20) with one end (21) thereof fixed to said housing (11) and a second end (22) resiliently deflectable relative to said first end (11), the improvement comprising:

a first axially-adjustable screw member (33) having an end (36) engageable with said second end (22) of said torque spring (20),

a stop member (24),

a second axially-adjustable screw member (34) having an end (37) engageable with said stop member (24),

means (40) for moving said first screw member (33) axially and in progressively-increasing, spring deflecting engagement of said first screw member end (36) with said second end (22) of said torque spring (20) in response to movement of said rack actuator (12) in its fuel-increasing direction, for concurrently moving said second screw member (34) axially and toward said stop member (24), and for preventing further movement of said rack actuator (12) in said fuel-increasing direction upon engagement of said end (37) of said second screw member (34) and said stop member (24).

4,350,128

FUEL FLOW CONTROL SUPERCHARGED ENGINE

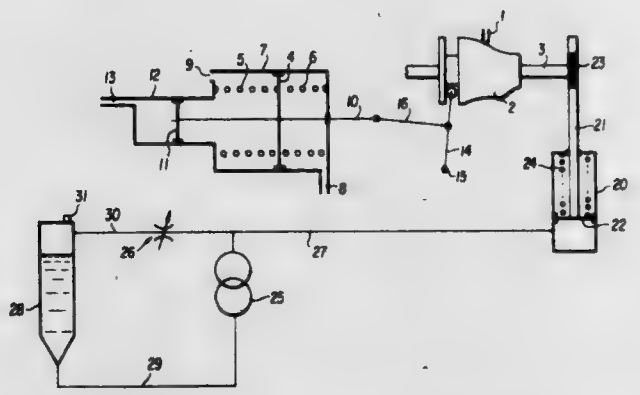
Jean-Pierre Boudy, Mennecy, France, assignor to Renault Sport, Viry-Chatillon, France

Filed Nov. 4, 1980, Ser. No. 203,884
Claims priority, application France, Nov. 15, 1979, 79 28257
Int. Cl.³ F02D *1/06, 1/14*
U.S. Cl. 123—369 **8 Claims**

1. A fuel flow regulation device for a supercharged engine of the type having an injection pump whose piston's bottom position is determined by a moving stop, comprising:

a tridimensional cam contacting said stop, the movement of said cam in at least one of two movement components actuating the movement of said stop;

first means for actuating one of said movement components, said first means including a first piston balanced between two springs and subjected on one side to engine intake pressure and on the other side to atmospheric pressure, a second piston connected to said first piston and having a



diameter smaller than that of said first piston by a predetermined ratio, said second piston being subjected to engine exhaust pressure on a side opposite said side of said first piston which is subjected to engine intake pressure, and a piston output connected between said pistons and said cam; and

second means for actuating the other of said movement components, said second means including a tachometric device sensitive to the speed of rotation of said engine.

4,350,129

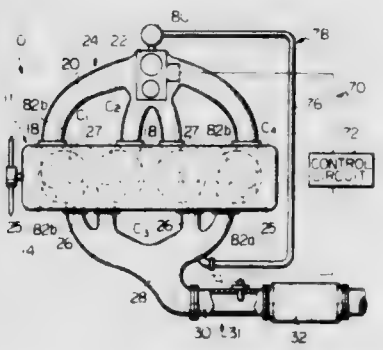
SPARK-IGNITION INTERNAL COMBUSTION ENGINE CAPABLE OF PREVENTING NOXIOUS GAS EMISSIONS

Yasuo Nakajima, Yokosuka; Yoshimasa Hayashi; Shin-ichi Nagumo, both of Yokohama, and Tooru Yoshimura, Yokosuka, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Continuation-in-part of Ser. No. 728,599, Oct. 1, 1976, abandoned. This application Apr. 5, 1978, Ser. No. 893,693

Int. Cl.³ F02D *13/04;* **F02B** *32/00;* **F02M** *7/00;* **F01L** *1/34*

U.S. Cl. 123—440 **19 Claims**



1. A spark-ignition internal combustion engine, comprising

means for defining a combustion chamber having an intake and exhaust valve;

air-fuel mixture supply means for producing an air-fuel mixture by mixing fuel and intake air and supplying it into the combustion engine;

means for adding substantially inert gas to the air-fuel mixture in the combustion chamber, said substantially inert gas consisting of mixed gases which remain substantially inert in the combustion carried out in the combustion chamber, said inert gas adding means including exhaust gas recirculating means for recirculating a portion of the exhaust gas of the engine back to the combustion chamber through the air-fuel mixture supply means of the engine, and means for variably controlling the amount of residual gases remaining in the combustion chamber after each exhaust stroke of the engine in response to an engine operating parameter, said variable control means including valve overlap control means for varying the valve overlap of said intake and exhaust valves by an amount greater than about 35 degrees in crank angle of the engine in response to changes in the engine operating parameter, whereby said substantially inert gas includes the recirculated exhaust gas and residual gas which remains in the combustion chamber;

two spark plugs disposed in the combustion chamber for igniting the air-fuel mixture mixed with the substantially inert gas;

a three-way catalytic converter capable of reducing nitrogen oxides and oxidizing carbon monoxide and hydrocarbons, communicable with the combustion chamber for receiving the exhaust gases discharge from the combustion chamber, said three-way catalytic converter being most effective when supplied with the exhaust gases which are produced by supplying the combustion chamber with the air-fuel mixture having a stoichiometric air-fuel ratio; and

air-fuel ratio control means for controlling the air-fuel ratio of the air-fuel mixture supplied into the combustion chamber at the stoichiometric air-fuel ratio in accordance with the composition of the exhaust gases discharged from the combustion chamber.

4,350,130

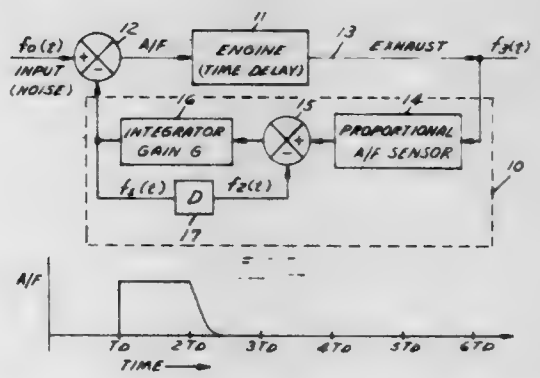
AIR FUEL MIXTURE CONTROL SYSTEM AND METHOD

Michael A. Shulman, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Aug. 27, 1980, Ser. No. 181,916

Int. Cl.³ F02B *3/08;* **F02M** *7/12*

U.S. Cl. 123—440 **4 Claims**



1. An air fuel mixture control system for an internal combustion engine coupled to a mixing means for combining air and fuel into an air fuel mixture for the internal combustion engine, and an exhaust means for passing exhaust gases from the internal combustion engine, said air fuel mixture control system including:

an air fuel sensor means coupled to the exhaust gas means for providing a signal proportional to the average air fuel ratio;

an integrator means having an input coupled to said air fuel sensor means for receiving said average air fuel ratio signal, and an output coupled to the mixing means for providing a control signal;

a feedback means coupled from said output to said input of said integrator means for governing the output of said control system so as to improve response time to a change in the desired air fuel ratio while reducing the overshoot;

said feedback means having a transfer function defined by $f_2(t)=f_1(t)-f_1(t-T_D)$ wherein $f_2(t)$ is the output of said feedback means at time (t), $f_1(t)$ is the input to said feedback means at time (t), T_D is the time delay between changes initiated in the engine and detected in the exhaust; and

said control system being characterized by the equation

$$\frac{1}{G}\ \frac{d}{dt} f_3(t + T_D) + f_3(t + T_D) =$$

$$\frac{1}{G}\ \frac{d}{dt} f_o(t) + f_o(t) - f_o(t - T_D)$$

wherein G is the gain of the integrator; $f_o(t)$ is the noise input to the mixing means at time (t); $f_3(t)$ is the output at the exhaust means at time (t).

4. A method for controlling the air fuel mixture for an internal combustion engine including the steps of:

mixing air and fuel into an air fuel mixture for the internal combustion engine;

passing exhaust gases from the internal combustion engine;

sensing the exhaust gases of the internal combustion engine with a titanium dioxide sensor;

generating an output signal proportional to the average air fuel ratio supplied to the internal combustion engine;

integrating the proportional signal to produce a control signal of governing an air fuel mixture;

feeding back a portion of the integrated control signal to modulate the signal to be integrated thereby improving the response of the control signal to a change in the desired air fuel ratio while reducing undesired overshoot in accordance with a transfer function defined by $f_2(t)=f_1(t)-f_1(t-T_D)$ wherein $f_2(t)$ is the signal being fed back at time (t) to modulate the signal being integrated, $f_1(t)$ is the portion of the integrated control signal being fed back at time (t), and T_D is the time delay between changes initiated in the engine and detected in the exhaust; and

said method for controlling the air fuel mixture being in accordance with the equation:

$$\frac{1}{G}\ \frac{d}{dt} f_3(t + T_D) + f_3(t + T_D) =$$

$$\frac{1}{G}\ \frac{d}{dt} f_o(t) + f_o(t) - f_o(t - T_D),$$

wherein G is the gain of the step of integrating, $f_o(t)$ is noise input present at the step of mixing the air and fuel at time (t); and $f_3(t)$ is the output signal at time (t) associated with the step of generating an output proportional to the air fuel mixture.

4,350,131

FUEL INJECTION DEVICE OF AN INTERNAL COMBUSTION ENGINE

Hideo Kiuchi, Aichi, and Nobuyuki Kobayashi, Toyota, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jun. 30, 1980, Ser. No. 164,882

Claims priority, application Japan, Jul. 16, 1979, 54-90698

Int. Cl.³ F02D *3/02, 5/00*

U.S. Cl. 123—453 **6 Claims**

1. A fuel injection device of an internal combustion engine having an intake passage and an exhaust passage, said device comprising:

a fuel reservoir;

fuel feed means connected to said fuel reservoir and discharging fuel of a constant pressure;

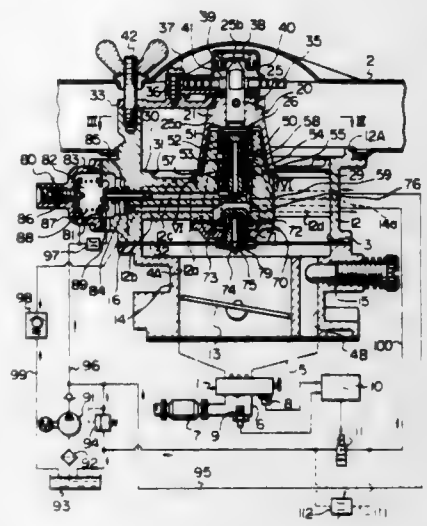
an injector unit having a fuel chamber, a back pressure chamber, a diaphragm separating said fuel chamber from said back pressure chamber, and a plunger operatively connected to said diaphragm, said fuel chamber having a fuel nozzle which opens into said intake passage and cooperates with said plunger for forming a mixture in said intake passage, said injector unit further comprising spring means for biasing said plunger towards said fuel nozzle for closing said fuel nozzle by said plunger when the engine is stopped;

a fuel feed passage connecting said fuel feed means to said fuel chamber;

flow control means arranged in said fuel feed passage for controlling the flow of a fuel to feed the fuel into said fuel chamber in an amount which is proportional to the amount of sucked air flowing within said intake passage;

pressure reducing mean connected to said fuel feed means and having a pressure reducing chamber for maintaining a fuel within said pressure reducing chamber at a constant pressure which is smaller than the constant pressure of the fuel discharged from said fuel feed means, said pressure reducing chamber being connected to said fuel chamber via a restricted opening;

a fuel return passage connecting said fuel chamber to said fuel reservoir;



an oxygen concentration detector in said exhaust passage for alternately producing a low level signal and a high level signal, said low level signal representing an air-fuel ratio of said mixture that is larger than the stoichiometric air-fuel ratio, said high level signal representing an air-fuel ratio of said mixture that is less than the stoichiometric air-fuel ratio;

control means for producing continuous output pulses having a constant period, but variable pulse widths which vary in response to said low level signal and said high level signal; and,

valve means in said fuel return passage for controlling a flow area of said fuel return passage in response to the output pulses of said control means to reduce and increase the pressure in said back pressure chamber when said oxygen concentration detector produces said low level signal and said high level signal, respectively.

4,350,132

APPARATUS FOR DRIVING ELECTROMAGNETIC DEVICES, PARTICULARLY ELECTROMAGNETIC INJECTION VALVES IN INTERNAL COMBUSTION ENGINES

Klaus Harsch, Ditzengen, and Peter Schülzke, Hemmingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 65,700, Aug. 10, 1979, abandoned. This application Apr. 23, 1981, Ser. No. 256,753

Claims priority, application Fed. Rep. of Germany, Aug. 11, 1978, 2835228

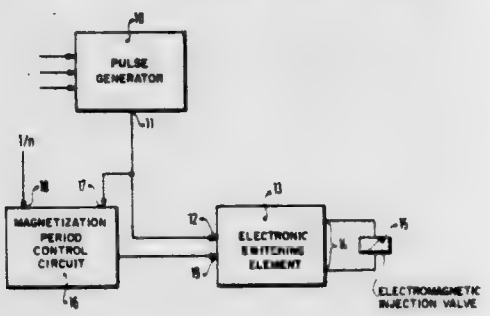
Int. Cl.³ F02B *3/00*; H01H *47/32*

U.S. Cl. 123—490 **8 Claims**

1. In an apparatus for driving an electromagnetic device, such as the electromagnetic fuel injection valves of an internal combustion engine, having an injection pulse generator for generating a train of actuating pulses, as a function of engine

operating parameters, for actuating the electromagnetic device, the improvement comprising:

a magnetization period control circuit arrangement connected to the injection pulse generator; and switch means connected to the magnetization period control circuit arrangement and the electromagnetic device, wherein the magnetization period control circuit arrangement and the switch means provide for closure of the electromagnetic device for a portion of the period between successive pulses in the train of actuating pulses and a controlled



advanced magnetization of the electromagnetic device for a different portion of the period between successive pulses in the train of actuating pulses, said magnetization period control circuit arrangement comprising:

at least one timing element means connected to the switch means and to the injection pulse generator for actuation by the train of actuating pulses; and

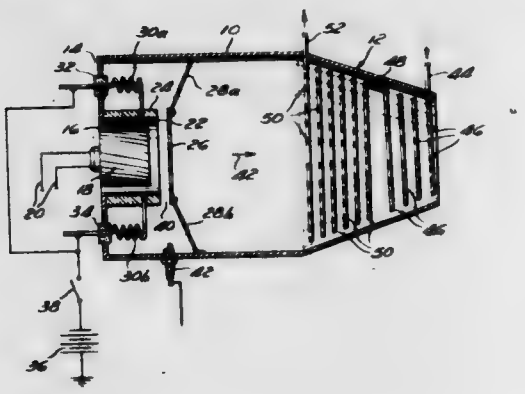
control means connected to said at least one timing element means for controlling the actuation time of said at least one timing element means and consequently the onset of the advanced magnetization.

4,350,133

COLD START CHARACTERISTICS OF ETHANOL AS AN AUTOMOBILE FUEL

Leonard Greiner, 2750-C Segerstrom, Santa Ana, Calif. 92704

Filed May 19, 1980, Ser. No. 151,191
Int. Cl.³ F02M *13/00*
U.S. Cl. 123—550 **23 Claims**



1. An alcohol fuel burner and decomposer comprising:

means for preheating at least one stream of fuel;

means for mixing said preheated fuel with air;

means for igniting the resulting air-fuel mixture;

combustion chamber means for containing the ignited air-fuel mixture during combustion thereof;

heat exchange confining means constructed and disposed to receive combustion products from the combustion chamber means in an entrance of a relatively larger size, directing the combustion products through a progressively smaller flow area to an exit of relatively smaller size, as compared with the entrance, and

heat exchange conduit means in the heat exchange confining means for conducting a stream of fuel in heat exchange contact with the combustion products for heating said fuel in said conduit means to the decomposition temperature of the fuel for forming a hydrogen gas containing starter fuel stream,

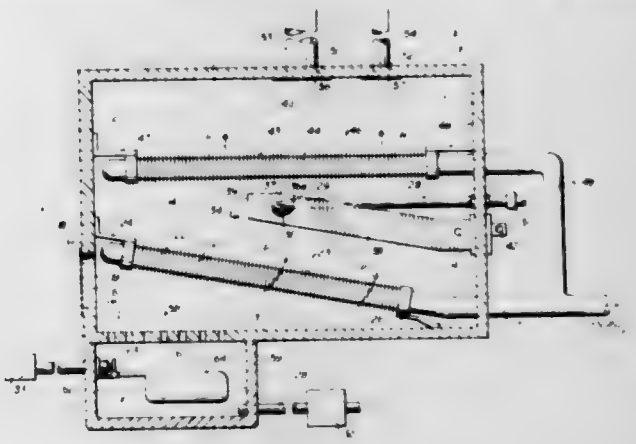
the heat exchange confining means and heat exchange conduit means being so constructed and configured that the mass flow rate of combustion products increases from entrance to exit and the heat exchange rate between the combustion products and the fuel in the heat exchange conduit means remains generally constant from entrance to exit.

4,350,134

METHOD AND APPARATUS FOR PRODUCING AN AIR/FUEL VAPOR MIXTURE

William D. Sparks, 2657 Gary Way, Sacramento, Calif. 95815

Filed Apr. 7, 1980, Ser. No. 137,760
Int. Cl.³ F02M *31/00*
U.S. Cl. 123—557 **10 Claims**



1. Apparatus for producing an air/fuel vapor mixture for an internal combustion engine or the like comprising, in combination, an enclosure having a side wall, a top wall and a bottom wall defining an interior, air inlet means on one of said enclosure walls for introducing ambient air into said enclosure interior, air heating means disposed within said enclosure interior for heating said ambient air, means for injecting liquid fuel into said enclosure interior, fuel vaporization means distinct from said air heating means disposed in said enclosure interior above said air heating means for vaporizing said injected fuel to provide a mxiture of vaporized fuel and additional heated ambient air, heating means disposed in said enclosure interior above said fuel vaporization means for heating said air/fuel vapor mixture and outlet means in one of said enclosure walls for conducting said heated air/fuel vapor mixture from said enclosure interior to a remotely located combustion zone for engine combustion.

4,350,135

SUPERCHARGING SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Gary L. Casey, Troy; Bruce J. Harvey, Sterling Heights; Kenneth A. Hebert, Garden City, and William C. Eddy, West Bloomfield, all of Mich., assignors to The Bendix Corporation, Southfield, Mich.

Filed Oct. 29, 1979, Ser. No. 88,970
Int. Cl.³ F02B *33/36*
U.S. Cl. 123—564 **18 Claims**

1. A supercharging system for an internal combustion engine having an air intake with an intake throttle valve disposed therein controlling the flow of air into said air intake, said system comprising:

air pump means for receiving air through an inlet and producing a flow of compressed air into said air intake;

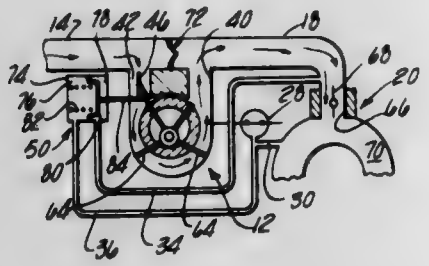
means mechanically driving said air pump means by said internal combustion engine, said means including clutch means operable to selectively establish drive to said air pump means;

clutch control means including means causing said clutch

means to be activated in a predetermined operating range of said internal combustion engine and causing said clutch means to be deactivated with said internal combustion engine operating outside of said predetermined range;

means establishing natural aspiration into said air intake whenever said compressed air flow from said air pump means into said air intake is below a predetermined level;

modulator means responsive to the pressure in the air intake



on opposite sides of the intake throttle valve for varying the air flow from said air pump means to said air intake as a function of the pressure differential across said throttle valve, reducing said air flow whenever said pressure differential is above a predetermined maximum level;

whereby said supercharging air flow is modulated to provide a transition to maximum air flow upon activation of said clutch means, and to enable less than maximum air flow under part throttle conditions.

4,350,136

EXHAUST GAS RECIRCULATION VALVE

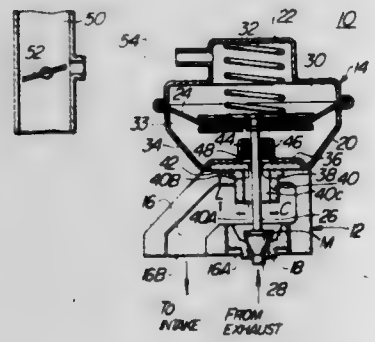
Syozo Yanagisawa, Tokaimura, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 5, 1981, Ser. No. 240,856

Claims priority, application Japan, Mar. 7, 1980, 55-29677

Int. Cl.³ F02M *25/06*

U.S. Cl. 123—568 **11 Claims**



1. An exhaust gas recirculation valve comprising:

(a) a passage structure defining therein an exhaust gas recirculation passage having an exhaust gas inlet and an exhaust gas outlet, said passage structure including an orifice provided in said exhaust gas recirculation passage, and a guide opening communicating said exhaust gas recirculation passage and the outside of said passage structure with each other;

(b) a valve member having its outer periphery diverging in a direction in which exhaust gas flows, said valve member cooperating with said orifice and being movable relative to said orifice between a first position in which exhaust gas flow passing through said orifice is maximized and a second position in which the exhaust gas flow passing through said orifice is minimized;

(c) a valve stem having one end thereof connected to said valve member and extending through said guide opening, said valve stem having the other end thereof disposed outside of said passage structure, said valve stem having a diameter slightly smaller than the diameter of said guide opening;

(d) actuator means associated with the other end of said valve stem for actuating said valve stem to move said valve member between said first and second positions;

(e) a tubular wall member projecting into said exhaust gas recirculation passage, said tubular wall member defining therein an axial bore having one end thereof facing to and communicating with said guide opening and the other end facing to said valve member, said valve stem extending through said axial bore;

(f) said tubular wall member projecting into said exhaust gas recirculation passage a distance which is such that when said valve member moves to said first position, said valve member is located close to but spaced from said the other end of said axial bore in said tubular wall member; and

(g) said the other end of said axial bore in said tubular wall member having a diameter at most equal to the maximum diameter of said valve member.

4,350,137

IGNITION SYSTEM FOR INTERNAL COMBUSTION ENGINES

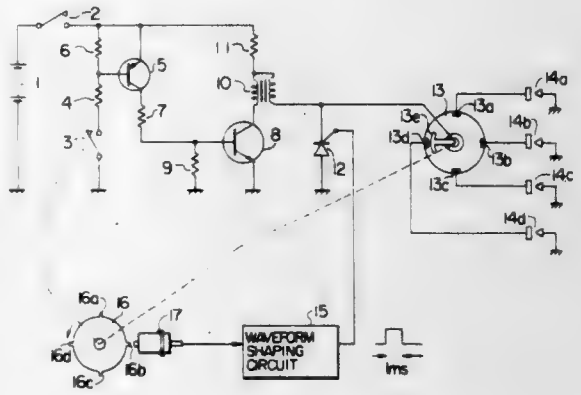
Toru Yoshinaga, Okazaki; Toshihiko Igashira, Toyokawa; Kouichi Mori, Okazaki; Hisasi Kawai, Toyohashi, and Seiji Morino, Aichi, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Apr. 24, 1981, Ser. No. 257,139

Claims priority, application Japan, May 29, 1980, 55-72273; May 29, 1980, 55-72274

Int. Cl.³ F02P *7/00*

U.S. Cl. 123—617 **4 Claims**



1. An ignition system for an internal combustion engine having an output shaft rotated by the combustion of combustible mixture ignited by a spark, said ignition system comprising:

a power supply source;

an ignition coil having a primary and secondary windings, said primary winding being connected to said power supply source and said secondary winding generating a spark voltage when said primary winding is deenergized;

a spark plug connected to said secondary winding to be supplied with said spark voltage to thereby ignite the combustible mixture of said internal combustion engine;

first switching means connected in series with said primary winding for energizing and deenergizing said primary winding by said power supply source in response to the conduction and nonconduction thereof, respectively;

second switching means connected to said secondary winding in parallel relation with said spark plug for preventing said spark voltage from being supplied to said spark plug in response to the conduction thereof; and

control means connected to said second switching means for switching said second switching means from the nonconduction to the conduction at a selected instant in time after the generating of said spark voltage.

4,350,138
AXIALLY-SPLIT ARCHERY BOW LIMB

Joseph M. Caldwell, 2259 W. Big Tujunga Canyon, Tujunga, Calif. 91042

Filed Aug. 1, 1980, Ser. No. 174,544
Int. Cl.³ F41B 5/00
U.S. Cl. 124—24 R 19 Claims



1. An elongate resilient limb for a compound archery bow, the limb defining an outboard limb end and an inboard limb end at opposite ends of an elongate limb axis;

the limb including mounting means disposed along the length of the limb in spaced relation to the limb outboard end adapting the limb to be secured to a handle riser of the archery bow;

the outboard limb end being forked to define an outboard opening crotch between a pair of limb tips, the crotch coming to a taper across the elongate axis at a location intermediate the outboard and inboard limb ends, the limb tips defining a passage for receiving an axle for mounting a pulley perpendicular to the elongate axis of the limb;

the material of the limb being split along the elongate axis from the inboard end of the crotch taper for a substantial portion of the length of the limb toward the limb inboard end thereby to divide the limb into two portions on opposite sides of the axis; and

means cooperating between said limb portions at at least one selected location toward the limb inboard end from the crotch for holding said limb portions sufficiently together so that, upon application of a limb flexing force to an axle received in the passage, the limb portions flex together essentially as though the limb were unsplit along its length.

4,350,139
SOLID FUEL HEATER WITH IMPROVED PRIMARY/SECONDARY AIR CONTROL SYSTEM

John F. Robichaud, 35 Mountain Ave., White River Junction, Vt. 05001

Filed Jan. 11, 1980, Ser. No. 111,500
Int. Cl.³ F24C 1/14
U.S. Cl. 126—77 8 Claims

1. A solid fuel heater comprising:

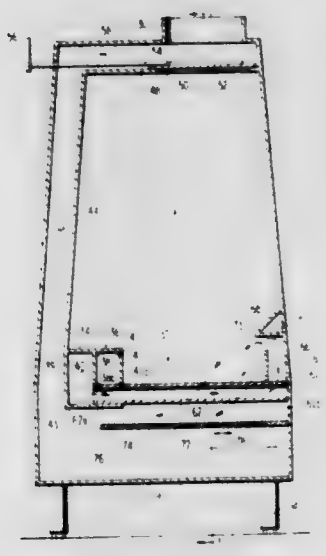
a generally hollow vertical metal enclosure having top, bottom and generally vertical front, rear and opposed sidewalls defining a vertical primary combustion chamber,

a stack extending vertically upwardly from the top of said enclosure and opening to said combustion chamber,

a generally vertical partition means extending partially along one generally vertical wall and spaced therefrom to define a generally vertical hot air flow passage to one side of said combustion chamber,

a plurality of interposed coplanar, first and second spaced horizontal air draft tubes extending respectively across the bottom of the primary combustion chamber from said generally vertical partition means to the generally vertical wall opposite that one wall forming with said partition means, the hot air flow passage, said air draft tubes forming a primary grate,

primary and secondary air manifold headers open to the enclosure exterior and operatively coupled, respectively, to the ends of said first and second horizontal air draft tubes near said generally vertical partition means, said first tubes at their ends opposite the primary manifold headers and adjacent the opposite generally vertical wall bearing openings which open upwardly towards the top of said metal enclosure, and said second horizontal tubes at their ends opposite said secondary manifold header and adjacent the opposite generally vertical wall bearing openings which open downwardly towards the bottom of said metal enclosure,



access means within said metal enclosure for supplying solid fuel to said primary combustion chamber and onto said primary grate;

whereby, primary air enters said primary manifold header and flows through said first horizontal air draft tubes to preheat said primary air and escapes through the openings within said first tubes and enters said primary combustion chamber at the lower portion thereof to effect primary combustion of the lower ends of the solid fuel and then passes across the length of said air draft tubes and downwardly between said first and second groups of horizontal tubes to seek the hot air passage to the stack, while secondary air enters said secondary air manifold header and flows horizontally through said second air draft tubes where it is preheated prior to discharge through the openings within the bottoms of said second tubes for mixing with the primary air along the full length of said air draft tubes for effecting combustion of gases given off by primary combustion of the solid fuel and combustion of solid fuel particles falling beneath said primary grate.

4,350,140
COOKING APPARATUS

Bert Hamilton, Jr., Oklahoma City, Okla., assignor to Jet-It-Done, Inc., Oklahoma City, Okla.

Filed Apr. 8, 1980, Ser. No. 137,627
Int. Cl.³ F24C 1/16
U.S. Cl. 126—276 31 Claims

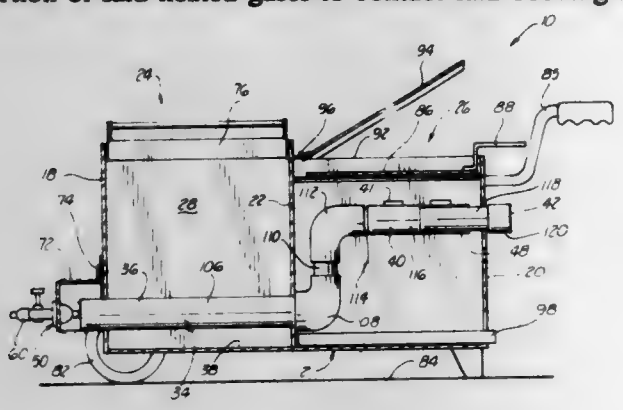
1. A cooking apparatus comprising:

container means for holding a cooking liquid;

a cooking surface disposed adjacent said container means;

heat exchanger means for transferring heat to both said cooking liquid in said container means to cook an edible

article and said cooking surface to cook a second edible article, said heat exchanger means including at least one tube means extending through said container means for conveying heated gases therethrough and beneath said cooking surface for conveying heated gases thereto, a portion of said heated gases to contact said cooking sur-



face through an opening in said tube means disposed beneath said cooking surface; and

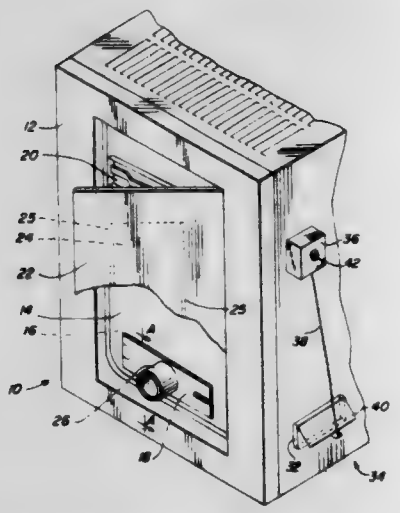
burner means, having a burner outlet directed into an inlet of said tube for directing a jet of flame into said inlet of said tube means and heating gases conveyed through said tube means, through said container means and beneath said cooking surface through said opening.

4,350,141

BLOW BACK PREVENTION APPARATUS FOR A WOOD-BURNING STOVE

Joseph N. Miller, Overland, Mo., assignor to Jackes-Evans Manufacturing Company, St. Louis, Mo.

Filed Apr. 30, 1979, Ser. No. 34,571
Int. Cl.³ F23L *3/00*; F23M *7/00*
U.S. Cl. 126—287 **6 Claims**



1. In a heating unit having a combustion chamber enclosed within an outer housing, apparatus for preventing blow back, comprising:

a first door for providing access to the combustion chamber, said first door being movable between a closed and an open position;

a second door for providing access through the outer housing to said first door, said second door being movable between a closed and an open position;

a first air inlet for supplying air to the combustion chamber;

a thermostatic damper for controlling the rate of combustion in the combustion chamber by restricting the quantity of air supplied to the combustion chamber via said first air inlet;

a second air inlet for providing an air passage to the combustion chamber; and

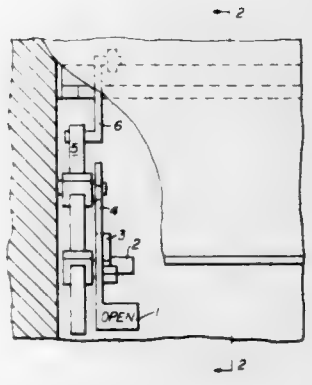
closure means rigidly mounted on said second door, said closure means being dimensioned to block said second air inlet when said second door is closed, said closure means being positioned to restrict the flow of air through said second air inlet when said second door is in the closed position and to allow air to flow into the combustion chamber through said second air inlet when said second door is not in the closed position, whereby a substantial quantity of air is permitted to flow into the combustion chamber when said second door is opened before said first door to the combustion chamber is opened.

4,350,142

FIREPLACE DAMPER INDICATOR

Charles L. Beyer, 745 Woodlake Dr., Sacramento, Calif. 95815, and Billy E. Fox, 5620 Dewey Dr., Fair Oaks, Calif. 95628

Filed Jan. 5, 1981, Ser. No. 222,633
Int. Cl.³ F23L *3/00*; G09F *19/02*
U.S. Cl. 126—288 **2 Claims**



1. A fireplace damper door indicator assembly for revealing an open or closed position of a damper door comprising: a link pivotally connected to the door at one extremity of said link, a damper arm having one extremity pivotally connected to said link at said link's other extremity; and means connected to said damper arm provided with indicators whereby said indicators tell whether said damper door is open or closed wherein said means comprises a first indicator arm having a substantially inverted "L" shaped configuration pivotally connected to said damper arm at the point of intersection of two legs that form the "L" and an outstanding tab at a lowermost extremity of said first indicator arm indicating "open", and a second indicator arm pivotally connected to said first indicator arm forward thereof but which is prevented from overlying said first indicator arm by a stop member on said damper arm interposed between said first and second indicator arms and another outstanding tab on said second indicator arm indicating "closed" so that rotation of said damper arm selectively exposes one of said tabs.

4,350,143

SOLAR POWER STATION HAVING GROUPS OF SOLAR COLLECTORS

Nikolaus Laing; Ingeborg Laing, and Oliver Laing, all of 7148 Remseck, 2, Hofener Weg 35-37, Aldingen, Fed. Rep. of Germany

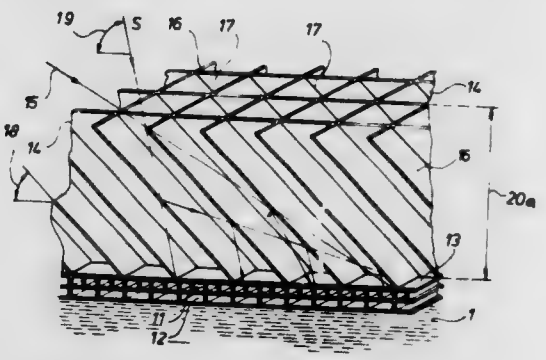
Continuation-in-part of Ser. No. 59,606, Jul. 23, 1979, abandoned, which is a division of Ser. No. 620,250, Oct. 6, 1975, Pat. No. 4,172,766. This application Aug. 4, 1981, Ser. No. 290,006

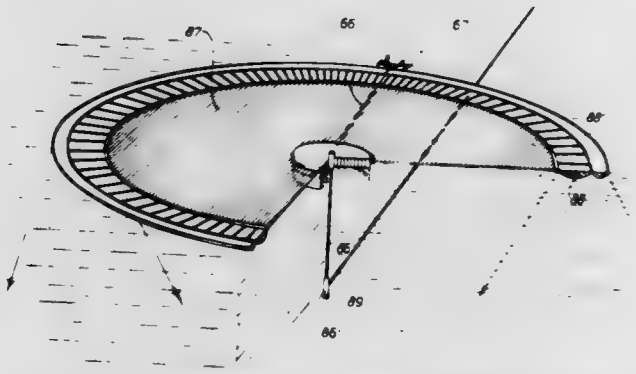
Claims priority, application Fed. Rep. of Germany, Sep. 30, 1975, 2543687; Italy, Oct. 7, 1975, 28024 A/75; France, Oct. 8, 1975, 75 31612; Japan, Oct. 9, 1975, 50-121388; United Kingdom, Oct. 9, 1975, 41446/75

Int. Cl.³ F24J *3/02*
U.S. Cl. 126—415 **21 Claims**

1. A solar power station comprising a first group of solar collectors each of the collectors of which has a solar radiation absorbing layer, a plurality of spaced parallel walls upstanding

from said solar radiation layer forming an insulation structure preventing heat loss from said absorbing layer to ambient air and a plurality of first ducts in thermal contact with said solar absorbing layer through which a heat carrier fluid is adapted to flow and to be heated by heat from the heat absorbing layer; a second group of solar collectors each collector of which has a plurality of second ducts, solar concentration means for concentrating solar radiation onto said second ducts to further





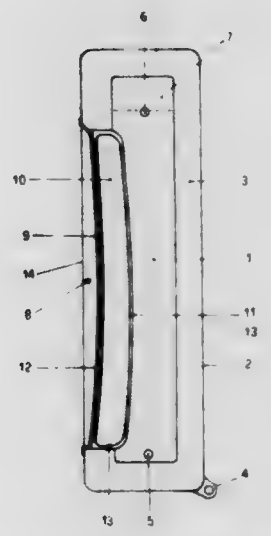
heat the heat carrier fluid therein; fluid cushion means beneath the collector of the first and second groups to support the same on a body of water; said first and second groups of collectors being joined to form an annular platform rotatable on a body of water; means for rotating said annular platform at a circumferential speed whereby said spaced parallel walls remain parallel to the projection of sun rays in a horizontal plane; and two underwater thermal storage areas each in thermal communication with one group of collectors.

4,350,145

SOLAR COLLECTOR FOR HEATING PURPOSES

Giuliano Bianchini, Narni, Italy, assignor to Societa Italiana Brevetti, Rome, Italy

Filed Jan. 30, 1981, Ser. No. 229,987
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—434 **10 Claims**



1. A solar collector for heating a fluid by transforming solar radiation energy into thermal energy, comprising in combination:

a body made of thermal insulating material having a reduced thickness with respect to the height and width thereof;

a coating of impervious material tightly fitting on said body and which has front, rear, upper and lower surfaces, said coating being provided with grooves on said surfaces, said grooves having a substantially vertical direction at said front and rear surfaces;

a plate of material which allows solar energy to be transferred from the one surface to the other surface thereof, said plate being juxtaposed on said front surface of said coating, substantially in contact with the peaks of said grooves, so that between said plate and said coating substantially vertical passages are defined;

a supporting frame including walls juxtaposed on said upper, rear and lower surfaces of said coating, substantially in contact with the peaks of said grooves, so as to define passages between said walls and said surfaces, said supporting frame being formed in coincidence with said rear surface, of a good heat conducting material, said supporting

frame being also fluid tight sealed with the side faces of said body and with the perimeter of said plate, said supporting frame being part of a housing which defines a closed chamber;

a liquid having a low thermal capacity and a high thermal expansion coefficient, which fills said passages between the plate, the supporting frame and said coating;

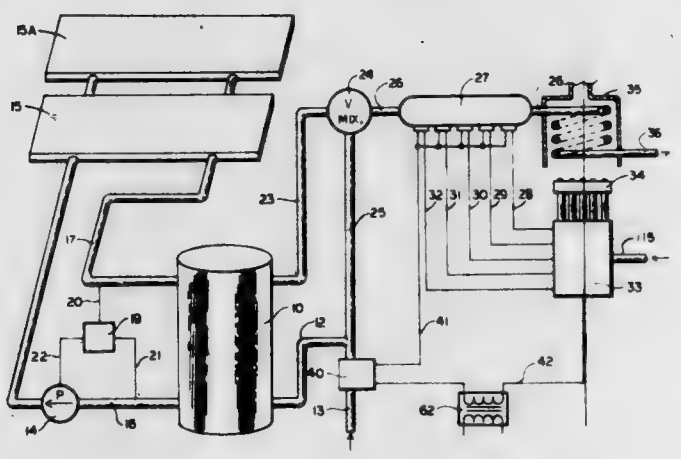
a check valve element, which in the one position allows flow of said liquid through said passages in an upward direction along said front surface and in a downward direction along said rear surface, while in the other position it inhibits a flow of said liquid in the opposite directions; and

4,350,144

HOT WATER HEATING SYSTEM

John R. Beckwith, Cupertino, Calif., assignor to Stanford Associates, Inc., Menlo Park, Calif.

Filed Aug. 18, 1980, Ser. No. 179,066
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—427 **3 Claims**



2. In a solar heating system of the type wherein water is preheated by use of solar heat and stored in a tank for subsequent removal from the tank through a conduit, an improvement for bringing the water to a predetermined temperature comprising a first control unit for restricting flow of water in said conduit to water having a temperature equal to or less than the desired temperature, and a second control unit having sensing means in said conduit downstream from said first control unit, heating means associated with said conduit and arranged when energized to heat water in said conduit, the sensing means of said second control unit being arranged to energize said heating means when the temperature of the water in said conduit is below the desired temperature.

a fluid contained in said housing, in heat exchanging relationship with said wall of the supporting frame placed in coincidence of said rear surface of the coating,

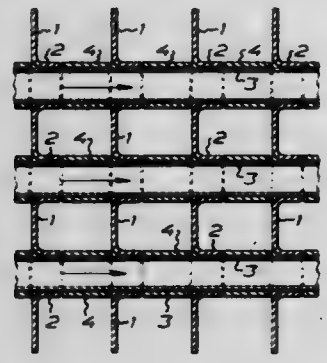
whereby the radiating energy of the sun, transferred through said plate and absorbed as heat by said liquid, causes a temperature and volume differential to be established in said liquid, said differential driving a continuous flow of said liquid towards the heat exchanging wall of said supporting frame, resulting in a heaat transfer to the fluid contained in said housing, an inverse heat transfer process being inhibited by said check valve.

4,350,146

SOLAR COLLECTOR

Bengt Rosengren, Dosvagen 7, 240 21 Loddekpinge, and Christer Persson, Hyllevagen 3, 230 40 Bara, both of Sweden

Filed Aug. 29, 1980, Ser. No. 182,360
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—447 **2 Claims**



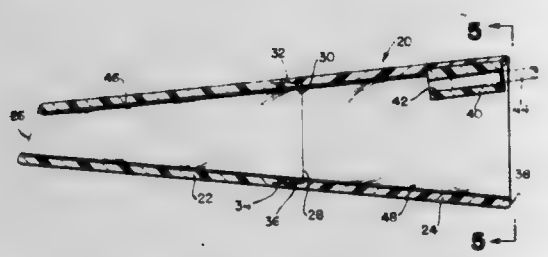
1. A solar heat collector comprising a plurality of metal plates, each having a planer first portion with a flanged hole therethrough and a planar second portion, the plane of which extends at substantially 90° with respect to the plane of the first portion; at least one tube member passing through said flanged holes to position said plates with said second portions forming a substantially continuous planar sheet, with the plane of one of said first portions and said second portions oriented substantially horizontally above at least a portion of said tube members, said at least one tube member having a cross sectional dimension at least equal to the cross sectional dimension of said flanged holes to cause said at least one tube member to be squeezed as it passes therethrough, the flanges of said flanged holes being in thermally conductive contact with said at least one tube member; and spacer means for spacing the second portions of adjacent ones of said metal plates to provide the substantially continuous planar sheet without overlapping of adjacent second portions.

4,350,147

ENDOSCOPE

Robert J. Sarrine, Ann Arbor, Mich., assignor to Transidyne General Corporation, Ann Arbor, Mich.

Filed Sep. 24, 1980, Ser. No. 190,528
Int. Cl.³ A61B *1/00*
U.S. Cl. 128—4 **12 Claims**



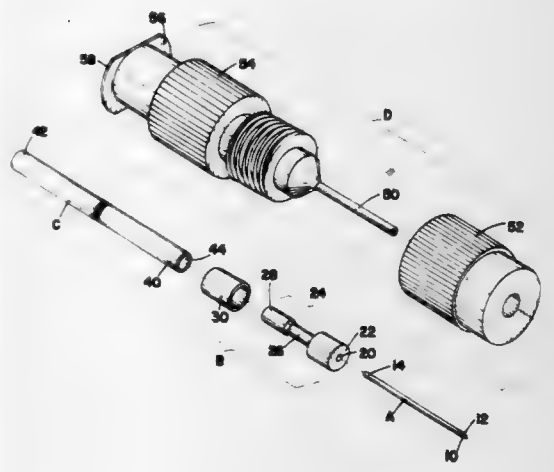
1. An endoscope (20) comprising a hollow, conical cylinder divided into multiple sections (22), (24), each section being detachably connected (30), (32)–(36) to adjacent sections whereby to provide endoscopes of various lengths and of different size openings (26), (34) for use in engaging a presenting part (16) at different stages in the birth process, the distal end (26) of a section (22) being sloped at an angle with respect to the transverse axis of the cylinder.

4,350,148

ESOPHAGEAL VARICES INJECTOR

Michael V. Sivak, Jr., Cleveland Heights, and George J. Skipper, Chagrin Falls, both of Ohio, assignors to Cleveland Clinic Foundation, Cleveland, Ohio

Filed Jan. 28, 1981, Ser. No. 229,155
Int. Cl.³ A61B *1/00*
U.S. Cl. 128—4 **7 Claims**



1. An injector comprising:

an elongated, flexible tube having an interior passage;

a tubular connector including a tubular shank frictionally received in the interior passage of the flexible tube, a stop for inhibiting the connector from passing through a puncture and an internal bore in fluid connection with the interior passage of the flexible tube;

a ferrule surrounding the end of the flexible tube and the tubular connector shank, the ferrule being firmly crimped around the end of the flexible tube; and

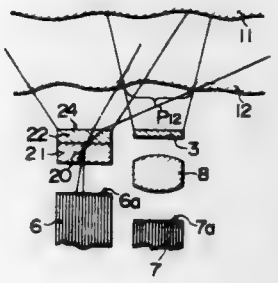
a needle affixed to the connector and having an internal bore in fluid connection with the connector bore; the flexible tube, the connector, and needle being dimensioned to be received in and slide through a biopsy channel of a flexible endoscope.

4,350,149

ENDOSCOPE AND ILLUMINATION OPTICAL SYSTEM THEREFOR

Nobuo Yamashita, Tama, and Miwako Maeda, Hino, both of Japan, assignors to Olympus Optical Co., Ltd., Japan

Filed Jul. 10, 1979, Ser. No. 56,299
Claims priority, application Japan, Oct. 27, 1978, 53-132980
Int. Cl.³ A61B *1/06*
U.S. Cl. 128—6 **17 Claims**



1. In an endoscope, the combination comprising:

(A) an observation optical system having an observation optical axis and terminating in an observation window,

said observation optical axis extending through said observation window;

(B) a source of illuminating light; and

(C) an illumination optical system including a refractive element and first and second reflecting surfaces, said illumination optical system being positioned at a location which causes:

(1) a first portion of said illuminating light to pass through said refractive element on both sides of said first reflecting surface and to be transmitted through said illumination optical system along a first optical axis which is oblique to said observation optical axis and crosses said observation optical axis at a first point located in front of said observation window; and

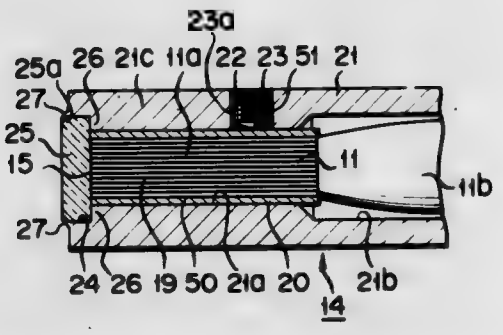
(2) a second portion of said illuminating light to reflect off said first and second reflecting surfaces and to be transmitted through said illumination optical system along a second optical axis which is oblique to said observation optical axis and crosses said observation optical axis at a second point located in front of said observation window, said first point being further from said observation window than said second point as measured along said observation optical axis whereby said first portion of illuminating light serves primarily to illuminate objects which are relatively far from said observation window and said second portion of illuminating light serves primarily to illuminate objects which are relatively close to said observation window.

4,350,150

STRUCTURE OF A LIGHT-RECEIVING END PORTION OF AN ENDOSCOPE LIGHT GUIDE

Tetsumaru Kubota, and Kenji Koyata, both of Hachioji, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Sep. 16, 1980, Ser. No. 187,545
Claims priority, application Japan, Sep. 25, 1979, 54-122936
Int. Cl.[3] A61B *1/06*
U.S. Cl. 128—6 16 Claims



1. A structure of a light-receiving end portion of an endoscope light guide including a bundle of optical fibers comprising:

an end part of the bundle of the optical fibers having an end plane for receiving light;

an adhesive applied to the end part for fixing the optical fibers together;

a support made of a metal of good heat conductivity, and provided with a bore into which said end part of the bundle of the optical fibers is inserted and also with an annular hole open to said bore and the outside; and

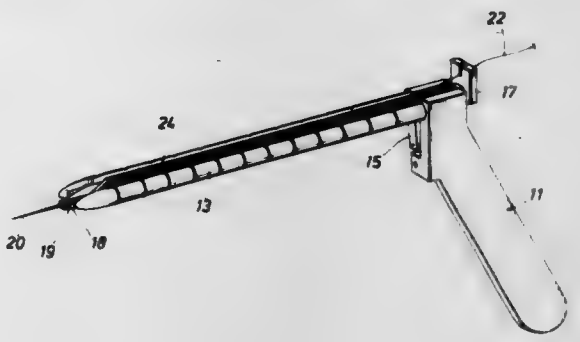
a transparent heat-resistant disc member fitted into said annular hole in a liquid tight state.

4,350,151

EXPANDING DILATOR

F. Brantley Scott, Houston, Tex., assignor to Lone Star Medical Products, Inc., Houston, Tex.

Filed Mar. 12, 1981, Ser. No. 242,720
Int. Cl.[3] A61B *1/32*; A61M *3/00*
U.S. Cl. 128—17 4 Claims



1. In apparatus for assisting in penile implant surgery, the combination comprising:

a handle for said apparatus;

a unitary dilator supported by said handle, said dilator being split longitudinally along the full length thereof in at least two radially separable sections; and

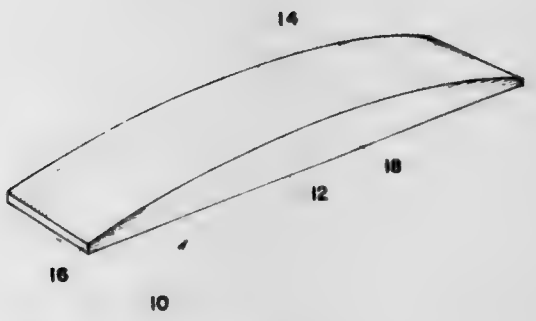
means for uniformly and positively separating said sections along substantially the entire length thereof and for securely holding and carrying an instrument along a predetermined path from one longitudinal end of said dilator to the other longitudinal end of said dilator.

4,350,152

BACK MASSAGE BOARD

Joseph Strakowski, 112 Birch Way, San Rafael, Calif. 94903

Filed Jul. 28, 1980, Ser. No. 172,521
Int. Cl.[3] A61H *1/00*
U.S. Cl. 128—24 R 2 Claims



1. A massage board having:

a planar under surface to be supported on a flat surface; and

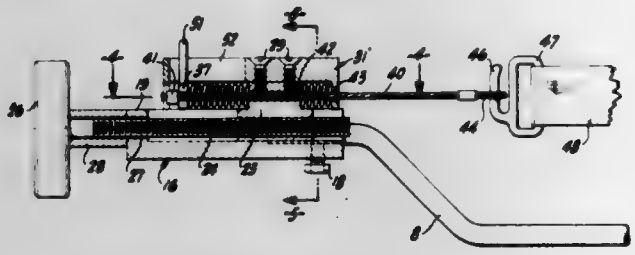
a convex smoothly curved upper surface of sufficient length and width to support the upper torso of human adult, said surface being generated by movement of a straight line along an arcuate path approaching said under surface at both ends so that said upper surface merges smoothly into said flat surface to enable one to be supported on said flat surface and roll back and forth over said upper surface without discomfort;

said board being between 18 inches and 30 inches in length and curving upward from less than ¼ inch in thickness at its ends to about 2 inches in thickness at its mid-point.

4,350,153
SPLINT FOR USE WITH A HUMAN LEG

Anthony G. Borschneck, 15649 Prospect Dr., Redding, Calif. 96001

Filed Aug. 3, 1981, Ser. No. 289,776
Int. Cl.³ A61F 5/04
U.S. Cl. 128—84 C 9 Claims

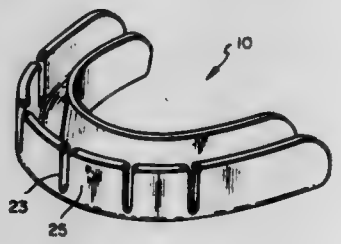


1. A splint for use with a human leg comprising a frame adapted to extend in a predetermined direction from the region of the crotch to a location beyond the foot, means on one end of said frame for abutment with the ischial tuberosity, a base block on the other end of said frame, a sliding block, means interrelating said base block and said sliding block for relative movement in said predetermined direction, means adapted to engage the leg in the ankle region, a spring structure interposed between said means engaging the leg in said ankle region and said sliding block, and means interengaging said sliding block and said base block for moving said sliding block relative to said base block to vary the tension of said spring structure.

4,350,154
TEETH PROTECTING DEVICE

Elliot V. Feldbau, 53 South St., Natick, Mass. 01760

Filed Apr. 16, 1981, Ser. No. 254,970
Int. Cl.³ A61F 5/56
U.S. Cl. 128—136 6 Claims



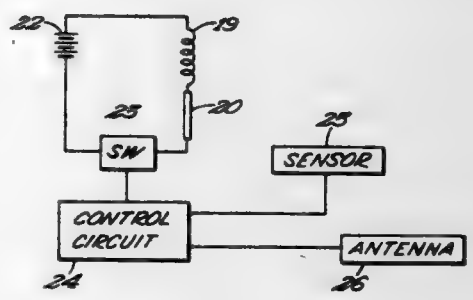
1. A teeth-protecting device comprising in combination an arcuate channel member of U-shaped cross section defined by a bottom wall and upstanding, spaced side walls comprising an inner side wall and an outer side wall, and a matrix comprising an impressionable, self-curing to a rubber-like consistency material, capable of conforming to the interior of the channel member and of receiving the impression of the teeth prior to curing and of lightly adhering to both the channel member and the teeth following curing, and wherein the outer side wall of the channel member contains arcuately-spaced, vertically-positioned slots which enable peeling the portion of the outer side wall between longitudinal slots away from the matrix to leave the matrix intact and the matrix, in turn, being peelable from the teeth.

4,350,155
BODY IMPLANTABLE MEDICAL INFUSION SYSTEM

Howard J. Thompson, New Richmond, Wis., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Apr. 2, 1980, Ser. No. 136,811
Int. Cl.³ A61M 31/00; F16K 13/04, 17/36
U.S. Cl. 128—213 R 9 Claims

1. In a body implantable medical infusion system of the type having an infusate reservoir, means for regulating infusate discharge and catheter means for delivering discharged infusate to a desired infusion site, the improvement which comprises further means for preventing an unregulated infusate

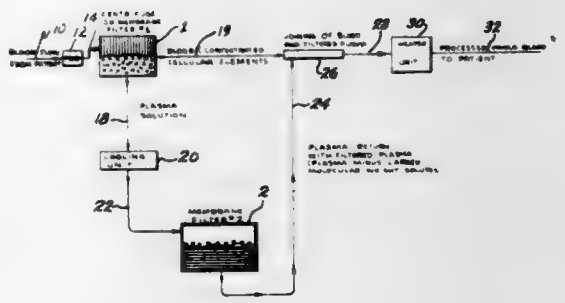


discharge including normally open valve means, means for sensing the presence of unregulated infusate and means responsive to said sensing means for closing said valve means.

4,350,156
METHOD AND APPARATUS FOR ON-LINE FILTRATION REMOVAL OF MACROMOLECULES FROM A PHYSIOLOGICAL FLUID

Paul S. Malchesky, Painesville Township, Lake County, and Yukihiko Nose, Cleveland Heights, both of Ohio, assignors to Japan Foundation for Artificial Organs, Painesville Township, Lake County, Ohio

Filed May 29, 1980, Ser. No. 154,581
Int. Cl.³ A61M 5/00
U.S. Cl. 128—214 R 32 Claims



1. A method of removing macromolecules from a plasma solution comprising; providing a plasma solution containing macromolecules including a minimum size thereof, effecting predetermined cooling of said plasma solution to a temperature not lower than just above the freezing point of the plasma solution, and filtering said cooled plasma solution with a membrane filter having a porosity up to said minimum size to remove macromolecules of predetermined size from the plasma solution.

4,350,157
ATRAUMATIC BLOOD ACCESS DEVICE VALVE

Jack Hoffa, Brea, Calif., assignor to Bentley Laboratories, Irvine, Calif.

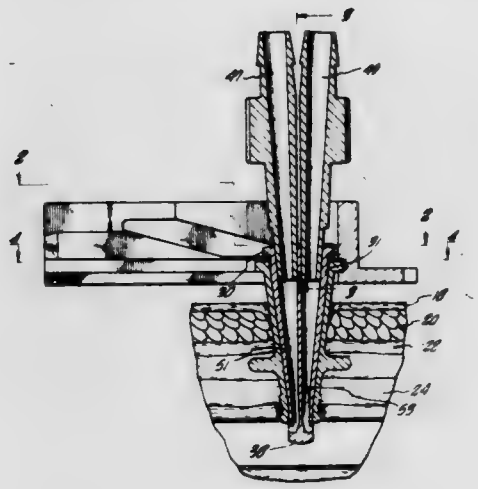
Filed Jun. 3, 1980, Ser. No. 156,259
Int. Cl.³ A61M 5/00
U.S. Cl. 128—214 R 5 Claims

3. An atraumatic valving mechanism for operation within a blood access device having an external rim, said blood access device adapted to connect a blood vessel within a body to the body exterior, said valving mechanism comprising:

a reciprocal plugging means for sealing said blood access device when said plugging means assumes a closed valving mechanism position, said plugging means including a plugging means external rim and an interior blood channel for transferring blood therethrough only when said plugging means is reciprocated into an open valving mechanism position wherein said plugging means is extended from said

blood access device for extending said first and second blood channels; and

actuator means for slidably engaging said blood access device external rim and said plugging means external rim and for



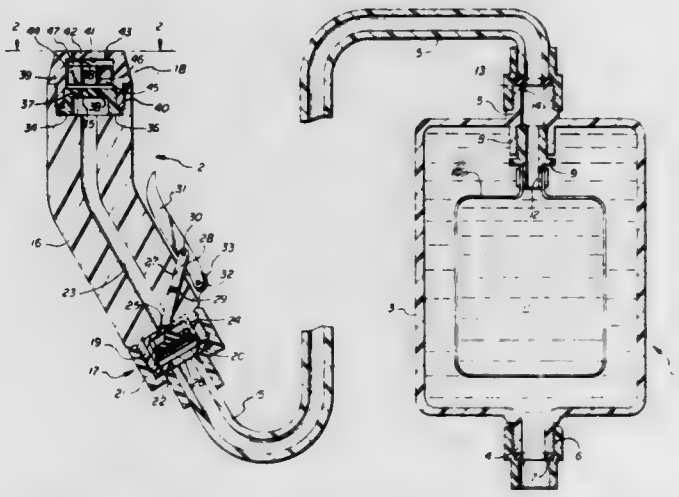
varying the position of said plugging means external rim relative to said blood access device external rim, for reciprocating said plugging means between said closed valving mechanism position and said open valving mechanism position.

4,350,158

PULSATING SPRAY NOZZLE

Raymond A. Hudson, 7415 Universal, Houston, Tex. 77072

Filed Feb. 4, 1980, Ser. No. 118,541
Int. Cl.³ A61M *3/00*
U.S. Cl. 128—224 9 Claims



1. A pulsating spray nozzle, characterized by steady operation throughout a wide range of flow rates, comprising

a hollow housing having fluid inlet at one end,

an end wall closing the other end of said housing and having a plurality of fluid discharge orifices therethrough in a predetermined pattern located symmetrically around the longitudinal axis of said housing,

a rotary valve member positioned in said housing for rotation along the surface of said end wall initially in contact therewith and movable toward and away from said surface, said valve member comprising cylindrically shaped rotary valve member having a cylindrical central passageway extending therethrough, a plurality of rotary vanes extending radially from said passageway and defining the outer boundary of said cylindrically shaped rotary member and a valve plate secured to and integral with only several of said vanes and positioned on one side of said rotary member over said several of said vanes,

said valve member being supported for rotation in said housing with said valve plate adjacent said end wall in sliding relation therewith and over the path in which said orifices are positioned whereby rotation of said vane member closes and opens selected orifices in said end wall sequence to effect a pulsing flow of fluid therethrough without a central axle and floating longitudinally of said housing relative to said end wall,

a second wall member in said housing between said valve member and said fluid inlet defining a chamber enclosing said valve member and having a plurality of fluid orifices extending therethrough at an angle and positioned to direct flow of fluid against said vanes to effect rotation of said vane member, and

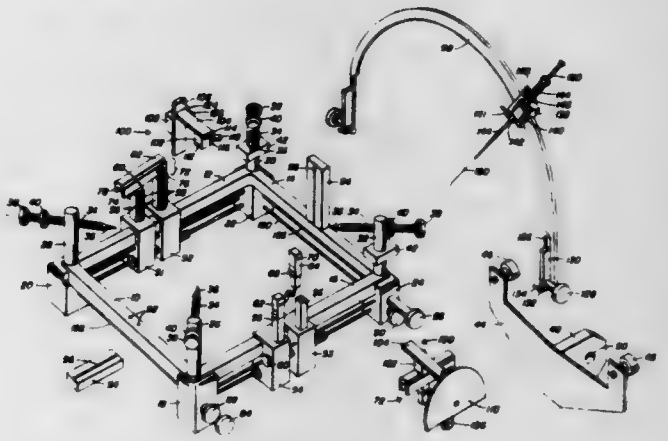
said valve plate having a surface adjacent said end wall having radially extending grooves therein permitting fluid flow radially outward along the surface thereof initially in contact with said end wall to support the same raised a predetermined distance from said end wall to permit steady rotation of said vane members throughout a wide range of fluid flow rate through said housing.

4,350,159

FRAME FOR STEREOTACTIC SURGERY

Kasim I. Gouda, 34 Sierra Rd., Readville, Mass. 02136

Filed Feb. 29, 1980, Ser. No. 125,868
Int. Cl.³ A61B *19/00*
U.S. Cl. 128—303 B 3 Claims



1. A stereotactic instrument comprising;

a rigid body-surrounding frame having segments adapted for fixation to the left and right of the skull,

four fixation pins for securing said frame on, and rendering it motionless with respect to, the body,

a pair of individually adjustable radio-opaque markers, each having a wall or walls less than 1 millimeter thick, mounted on each of said left and right segments and adapted to be aligned with radiographically visible reference points within the skull, following fixation of the frame to the skull,

a bridge simulating outside the head the length and direction of a line between the anterior and posterior commisures of the brain, movable with respect to said frame segments, connecting each of said pairs of markers,

means for maintaining said bridges coplanar with and in spaced parallel relation to each other and to a line between said reference points within the skull,

a semi-circular arc having two ends, each pivotally mounted on one of said bridges,

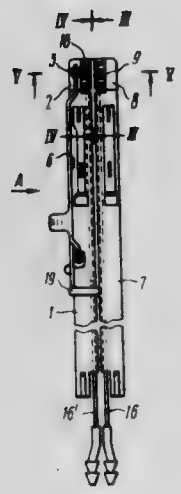
an electrode carrier slidably mounted on said arc, and

an electrode sheath supported by said electrode carrier.

4,350,160
INSTRUMENT FOR ESTABLISHING VASCULAR ANASTOMOSES

Evgeny V. Kolesov, prospekt Veteranov, 151, korpus 2, kv. 52, Leningrad; Boris A. Smirnov, ulitsa Borisa Galushkina, 17, kv. 26; Vladimir M. Fedotov, ulitsa Startovaya, 21, kv. 42, both of Moscow, and Iosif L. Lipovsky, Ozerkovsky prospekt, 7, kv. 2, Leningrad, all of U.S.S.R.

Filed Apr. 2, 1980, Ser. No. 136,736
Claims priority, application U.S.S.R., Nov. 14, 1979, 2833451
Int. Cl.[3] A61B *17/04, 17/12, 17/08;* B31B *1/00*
U.S. Cl. 128—334 R 2 Claims



1. A device for use with an instrument for establishing vascular anastomoses, said device comprising a first and second split bush, and an elongate tube connected to each of said split bushes so that the split bush and its associated tube form a detachably connectable unit;

said first and said second split bushes cooperating with each other to form a suturing zone, each of said split bushes being adapted to receive a vessel to be anastomosed through an interior space thereof and having a flange with a surface facing a surface of a flange of the other bush, one of said split bushes having a passage provided therein for passage of suturing staples, the other of said split bushes having a die for bending the suturing staples to thereby unite vessels being sutured, each of said flange facing surfaces having an annular slot formed therein, lateral faces of the flanges having openings formed therein in communication with said annular slots;

a first of said elongate tubes having one end connected to the opening in the flange of the first split bush; and

a second of said elongate tubes having one end connected to the opening in the flange of the second split bush, other ends of said first and said second tubes being connectable to a source of negative pressure, the negative pressure suction attracting and holding ends of the vessels on said flange facing surfaces;

said instrument having first and second detachably joined oblong body members, each of said detachably connectable units being connectable to a respective one of said oblong body members, each of said oblong body members having a first end portion for receiving and for mounting one of said split bushes so that said split bushes form the suturing zone when the oblong body members are joined together, each of said oblong body members having a slot formed therein for receiving a respective one of said elongate tubes so that the other end of the elongate tube extends outward from a second end portion of said oblong body member.

4,350,161
INDWELLING URETHRAL CATHETER AND METHOD

Richard C. Davis, Jr., 5828 - C Westower Dr., Richmond, Va. 23225

Filed May 9, 1980, Ser. No. 148,340
Int. Cl.[3] A61M *25/00*
U.S. Cl. 128—349 BV 22 Claims





1. An indwelling urethral catheter for use in a penile urethra comprising:

a catheter drainage shaft defining an enclosed drainage canal, said catheter to extend through said penile urethra and having distal and proximal ends;

an anchoring means attached to the catheter drainage shaft for holding said drainage shaft in position in said penile urethra; and

a valve means including a valve body attached to said catheter drainage shaft for defining a valve-body canal communicating with the drainage canal and a closure member for selectively opening and closing said valve-body canal, said closure member being normally biased to a closed position, but including a valve actuator means located in said penile urethra, for moving said closure member to an open position in response to external hand manipulation of a penis in which said indwelling urethral catheter is mounted.

20. A method for implanting an indwelling urethral catheter in a male patient comprising the steps of:

determining the length of the patient's urethral tract from his bladder to his penile meatus;

inserting a urethral catheter into the urethra of the male patient with the proximal end of the catheter inwardly spaced from the penile meatus of the patient, said urethral catheter including an inflation member having a compliant wall forming an inflation lumen extending along a portion of said catheter in said urethra;

inserting a fluid in said inflation lumen for inflating said compliant wall against the wall of the patient's urethra downstream of the patient's prostatic urethra to thereby hold the catheter in position; and

removing all exterior support items from said urethra and leaving nothing extending beyond the penile meatus.

4,350,162
WOMEN'S BRASSIERS AND OTHER SIMILAR DRESS

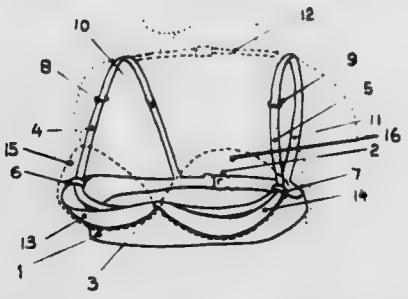
Gloria M. Kearton, and Malcolm C. Kearton, both of 27 Windermere Rd., Epping 2121, New South Wales, Australia

Filed Mar. 7, 1978, Ser. No. 884,201
Int. Cl.[3] A41C *1/14*
U.S. Cl. 128—477 5 Claims

1. An unwired brassiere or like support garment comprising:

a band of material encasing the chest just below the breasts, two sling straps being attached to said band at the centre thereof, said sling straps passing one under each breast and over the corresponding shoulder thereby lifting the

breasts, said sling straps consisting of a wide flat ribbon, and having a further attachment to said band at a single



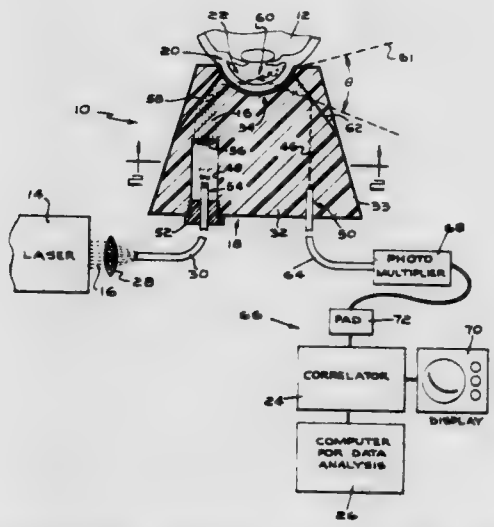
point on the outside of each breast to prevent said sling straps from slipping from their position under the breast.

4,350,163

METHOD AND APPARATUS FOR ANALYZING CONTAMINANTS IN AQUEOUS HUMOR

Norman C. Ford, Jr., 85 N. Whitney St., Amherst, Mass. 01002, and David K. Dueker, 11 Rangeley Ridge, Winchester, Mass. 01890

Filed May 29, 1980, Ser. No. 154,432
Int. Cl.[3] A61B *3/00, 5/00*
U.S. Cl. 128—633 10 Claims



1. An apparatus for measuring contaminants in humor of an eye by non-invasive measurement of the eye, the apparatus comprising:

(a) a continuous wave laser for producing light beams of known wave length;

(b) projection means for directing and converging a light beam from the laser to a focal point in the humor, said projection means including a gonioscopic lens having a transparent housing with an opaque outer surface and an attached concave recess adapted to fit over the cornea of the examined eye, wherein the concave recess is substantially opaque except for a transparent entrance port to admit the laser beam into the humor, a transparent viewing port to permit a clinician to view scattering of the beam in the humor, and a transparent exit port to collect scattered light from the humor; and

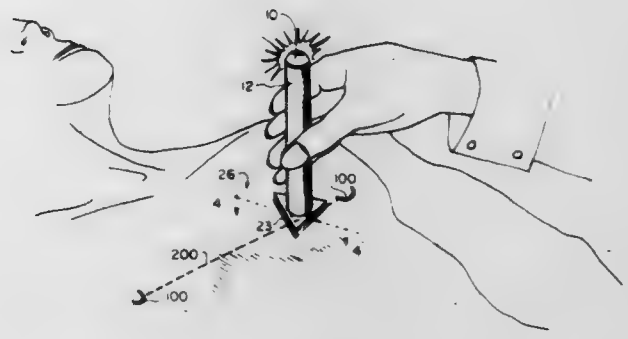
(c) means for analyzing the composition of macromolecular contaminants in the humor by analyzing the diffusion constant of each contaminant by using the light scattered from the focal point at a particular scattering angle θ relative to a line of symmetry for the beam in the humor.

4,350,164

PORTABLE, LIFE MONITOR, MEDICAL INSTRUMENT

Joseph L. Allain, Jr., 4932 Chantilly Dr., New Orleans, La. 70126

Filed Jun. 3, 1980, Ser. No. 156,056
Int. Cl.[3] A61B *5/04*
U.S. Cl. 128—639 5 Claims



1. A portable life monitor for use in monitoring body tissue for electrical signals, comprising:

electrode detector means for detecting such electrical signals in such tissue including electrode means having a first set of electrodes for electrically connecting said electrode detector means to such tissue;

a first body having amplifier means for amplifying such electrical signals and indicator means for receiving and displaying said amplified electrical signals;

first connection means for detachably electrically connecting said amplifier means to said electrode detector means;

a second, separate set of electrodes; and

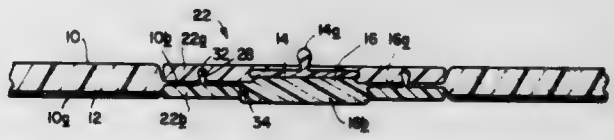
fold down means connected to said second set of electrodes for mechanically supporting said second set of electrodes on said first body in two positions, a first position being substantially parallel to said first body and a second position being substantially perpendicular to said first body; and wherein said first connection means detachably electrically connects said second set of electrodes to said amplifier means in said second position.

4,350,165

MEDICAL ELECTRODE ASSEMBLY

Jim G. Striese, Brockton, Mass., assignor to TRW Inc., Cleveland, Ohio

Filed May 23, 1980, Ser. No. 152,945
Int. Cl.[3] A61B *5/04*
U.S. Cl. 128—640 15 Claims



1. A disposable medical electrode comprising:

A. a holder comprising

(1) a first generally flat holder section having

(a) an outer surface and an inner surface,

(b) means defining a recess in said inner surface, and

(c) means defining a passage extending from said recess outside said first section for providing electrical access to said recess,

(2) a second generally flat holder section having

(a) an outer surface and an inner surface and

(b) means defining an opening through said second section extending between said outer and inner surfaces thereof,

B. a support layer having first and second faces engaged by said inner surfaces of said first and second holder sections, respectively, to hold said support layer in said holder, said

support layer also including means defining an opening therethrough extending between said first and second faces, said second face of said support layer providing an adhesive surface,

C. an electrical terminal disposed in said recess in said inner surface of said first holder section for electrical access thereto through said passage in said first holder section, and

D. a gel pad having first and second opposite faces, said gel pad being disposed in registration with said opening through said support layer with said first face of said gel pad disposed in intimate contact with said electrical terminal, said inner surfaces of said first and second holder sections engaging said first and second faces, respectively, of said gel pad to hold said gel pad in position between said holder sections with said second face of said gel pad projecting through said opening in said second holder section,

said two holder sections being secured together so as to maintain said inner surfaces thereof in engagement with said support layer and said gel pad and thereby hold them in assembly.

4,350,166

APNEA DETECTOR

John W. Mobarry, Edina, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 12, 1980, Ser. No. 216,030
Int. Cl.[3] A61B *5/08*
U.S. Cl. 128—664 8 Claims



1. An apnea detector for monitoring the respiration of a monitored subject, said apnea detector comprising:

an infrared radiation detector means;

means for defining a field of view for said radiation detector means, said field of view defining means being arranged to include an area of said monitored subject in said field of view containing exhalation products from said monitored subject;

mounting means positioning said radiation detector means spaced from said monitored subject in a non-contacting relationship to be responsive to modulations of ambient infrared radiation produced by exhalation products from said monitored subject to produce a corresponding modulation signal; and

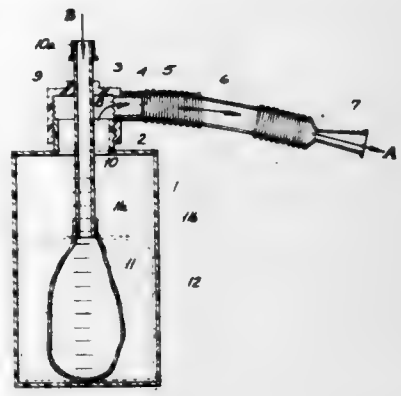
alarm means responsive to a prolonged interruption of said modulation signal produced by an interruption of the respiration of said monitored subject to effect an alarm signal indicative of apnea.

4,350,167

RESPIRATORY EXERCISER

Heary J. Heimlich, 17 Elmhurst Pl., Cincinnati, Ohio 45208

Filed May 9, 1980, Ser. No. 148,510
Int. Cl.[3] A61B *5/08*
U.S. Cl. 128—727 4 Claims



1. A respiratory exercising device comprising:

an essentially rigid transparent container,

a first orifice in communication with the interior of the container,

an inhalation tube connected to said first orifice,

a second orifice in said container in communication with the outside air,

an expansible chamber consisting of an elastic member located within said container and connected to said second orifice to communicate said expansible chamber to the outside air, said elastic member being of a size to expand within the confines of the container to conform to the contiguous wall surfaces thereof upon evacuation of air from the container through said inhalation tube,

calibrated indicia positioned on said container with respect to said elastic member for measuring the extent to which said elastic member is expanded into contact with the contiguous wall surfaces of the container, and

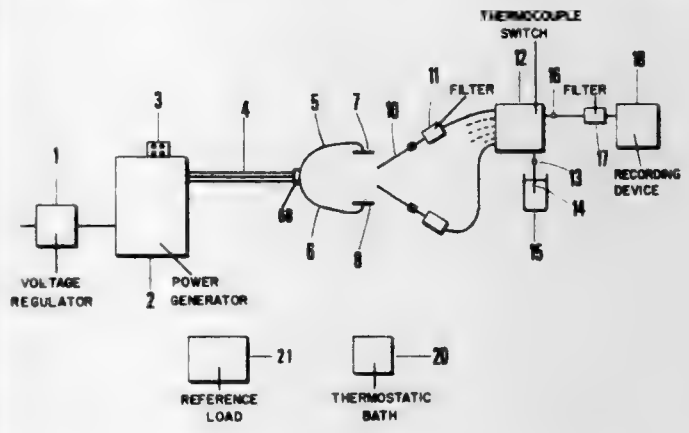
means for adjusting the position of the elastic member within said container in accordance with the inhalation capacity of the user, whereby to directly measure the volume of air withdrawn from the container through said inhalation tube.

4,350,168

HYPERTHERMIC TREATMENT DEVICE

Yves A. Chable; Serge Lacroix, and Philippe M. Rault, all of Dinan, France, assignors to Societe Anonyme de Telecommunications, France

Filed Jun. 23, 1980, Ser. No. 162,245
Claims priority, application France, Feb. 8, 1980, 80 02752
Int. Cl.[3] A61B *5/00*
U.S. Cl. 128—736 2 Claims



1. A device for measuring the temperature of a tumor in a patient'body during heating of the tumor by external applica-

tion to the tumor of a radiofrequency power, which comprises n thermocouples for measuring the temperature at a point inside the patient's body, each said thermocouple having two output leads, n hypodermic needles, and each said thermocouple being placed inside one of said hypodermic needles with the leads exiting therefrom, n band-stop filters, each of the said two output leads of each said thermocouple being connected to one of said band-stop filters as near as possible to the exit of the leads from each said hypodermic needle, a switching and temperature comparison means for selecting a said thermocouple inside the patient's body and comparing its output to a reference thermocouple, the output of each said filter being connected to the input of said switching and temperature comparison means, a low-pass filter connected to the output of said switching and temperature comparison means for enabling correct measurement of the temperature of the tumor without interrupting the application of said radiofrequency power, and a recorder connected to the output of said low-pass filter for recording said temperature.

4,350,169

FLEXIBLE TIP STIFFENING STYLET FOR USE WITH BODY IMPLANTABLE LEAD

Robert G. Dutcher, Columbia Heights, and James E. Upton, New Brighton, both of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Continuation of Ser. No. 1,203, Jan. 5, 1979, abandoned. This application Aug. 8, 1980, Ser. No. 176,410

Int. Cl.³ H61N *1/00*

U.S. Cl. 128—783 **11 Claims**



1. A stylet for insertion into the proximal opening in the lumen of a hollow vessel to manipulate rotatable means attached to the distal end of said lead, said stylet comprising:

means for manipulating said rotatable means attached to the distal end of said stylet;

a cylindrical body portion, said cylindrical body portion having a first diameter D1 from the proximal end of said stylet to a first point near the distal end of said stylet, said cylindrical body portion having a diameter gradually tapering to a second lesser diameter D2 between said first point and a second point and having said lesser diameter D2 between said second point and a third point, the diameter of said stylet gradually increasing to a larger diameter; and

means for rotating said stylet attached to the proximal end of said stylet.

4,350,170

APPARATUS FOR MONITORING THE EXTERIOR OF A MOVING CIGARETTE ROD OR THE LIKE

Anton Baier, Wentorf, Fed. Rep. of Germany, assignor to Hauni-Werke Körber & Co. K.G., Hamburg, Fed. Rep. of Germany

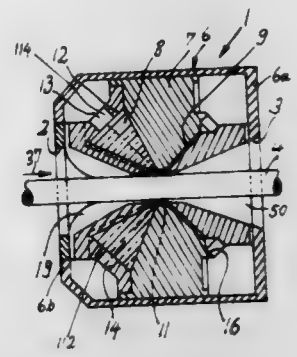
Filed Sep. 29, 1980, Ser. No. 192,345

Claims priority, application Fed. Rep. of Germany, Oct. 5, 1979, 2940408

Int. Cl.³ A24C *5/14, 5/34*

U.S. Cl. 131—84 R **18 Claims**

1. Apparatus for monitoring the exterior of rod-shaped smokers' products which move lengthwise, comprising first light conducting means defining a first light path making a first oblique angle with a line perpendicular to the axis of the moving product; means for admitting light to said first light conducting means so that light which passes through said first light conducting means impinges upon and is reflected by the exterior of the moving product at a second oblique angle which is a function of said first oblique angle; second light conducting means located in the path of and arranged to conduct light which is reflected by the moving produce; and an



annular housing for said light conducting means, said housing having a substantially axially extending opening for the moving product.

4,350,171

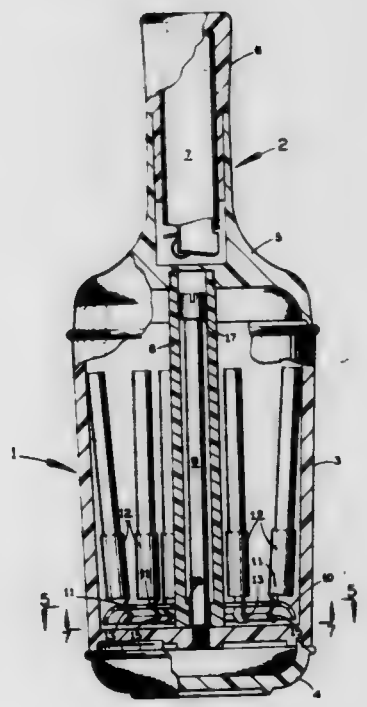
ARRANGEMENT FOR HOLDING CIGARETTES

Alexander Kemmel, 2300 Madison St., Apt. 202, Hollywood, Fla. 33020

Filed Oct. 14, 1980, Ser. No. 196,872

Int. Cl.³ A24F *19/10*

U.S. Cl. 131—234 **7 Claims**



1. A cigarette dispenser comprising:

a container in the shape of a wine bottle and having a lower annular member terminating at its upper end in an upwardly-facing annular edge, and a separate upper annular member terminating at its lower end in a downward-facing annular edge which releasably engages said upwardly-facing annular edge of said lower annular member, said upper annular member at its upper end presenting an upwardly extending neck of substantially smaller diameter than its downwardly-facing annular edge;

a holding disc received in said lower annular member of the container and movable vertically therein;

means rigidly coupling said upper annular member of said container to said disc to raise and lower said disc along the inside of said lower annular member when said upper annular member is raised and lowered with respect to said lower annular member;

a plurality of tubular cigarette holders mounted on said disc and extending up from the disc, each of said tubular hold-

ers being open at the top and shaped and dimensioned to hold the lower end of an individual cigarette;

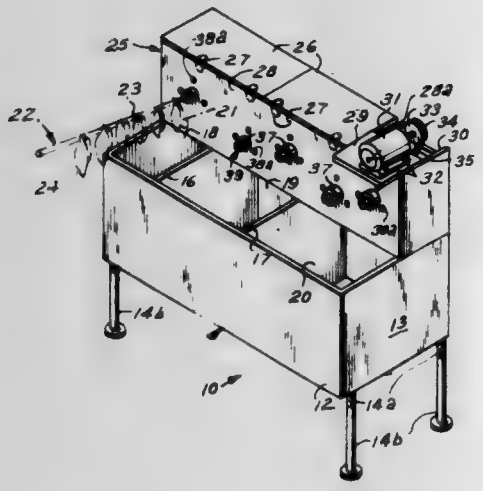
and spring means acting on said cigarette holders to tilt their upper ends laterally outward when said disc is raised to the upper end of said lower annular member.

4,350,172

TOBACCO STRIPPER

James Guthrie, Guthrie Farm Service, King St., Eminence, Ky. 40019

Filed Oct. 24, 1980, Ser. No. 200,564
Int. Cl.[3] A24B *3/00, 3/07*
U.S. Cl. 131—322 2 Claims



1. A mechanical tobacco stripper, comprising, in combination, a rectangular base formed by a pair of opposite side walls and a pair of opposite end walls, a pair of vertical partitions inside said base forming a plurality of compartments inside said base, a narrow housing secured upon said base, covering one end of each said compartment, an electric motor mounted upon the top of said housing, a pulley affixed on a shaft of said motor, an endless belt around said pulley and around a plurality of driving pulleys inside said housing, a plurality of horizontal tubes extending transversely through said housing and supported rotatably free in bearings of opposite side walls of said housing, one said driving pulley being affixed on each one of said tubes, one outwardly extending end of said tubes being above a top open end of said compartments, a circular cutter mounted within said tube end above said compartment top open ends, and said base being mounted upon downward legs.

4,350,173

FILTER MATERIAL

Matti J. Siren, Gartenstrasse 15, CH-8002 Zürich, Switzerland

Filed Nov. 27, 1979, Ser. No. 97,703
Claims priority, application Finland, Nov. 30, 1978, 783678; Sweden, Dec. 15, 1978, 7812935
Int. Cl.[3] A24D *3/02, 3/08, 3/10, 3/12*
U.S. Cl. 131—332 22 Claims

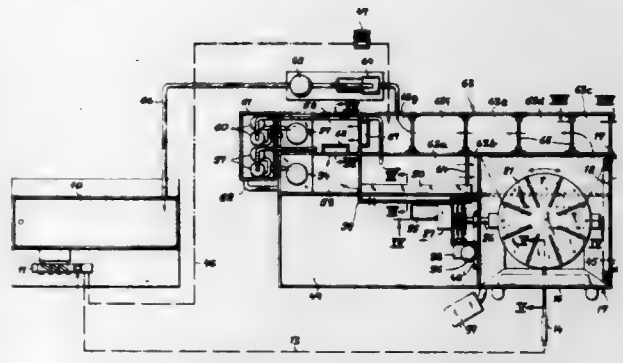
1. Filter material for removing at least one predetermined substance from an at least substantially gaseous medium, wherein said filter material comprises a carrier material comprising a cross-linked carbohydrate polymer, which is swellable to a predetermined degree and has the form of a microporous network having through-passing pores defined by the cross-linked carbohydrate molecule structures, said carrier material having uniformly distributed therein at least one agent capable of removing said substance in a substantially selective manner from the medium passing through said filter.

4,350,174

PLANT FOR CLEANING CASTINGS AND THE LIKE

Michael Bolten, Mulhheim an der Ruhr, Fed. Rep. of Germany, and Henry L. Carpenter, Edison, N.J., assignors to Woma Corporation, South Plainfield, N.J.

Filed Feb. 25, 1981, Ser. No. 238,129
Int. Cl.[3] B08B *3/02*
U.S. Cl. 134—104 10 Claims



1. A plant for cleaning intricate metallic workpieces, comprising:

a turntable adapted to hold a workpiece to be cleaned in a fixed position thereon, said turntable being provided with a central shaft;

first drive means coupled with said shaft for rotating said turntable about a central axis;

a nonrotatable platform supporting said turntable;

second drive means coupled with said platform for swinging same together with said turntable about a horizontal tilt axis intersecting said central axis;

an enclosure surrounding said platform and said turntable, said enclosure being at least partly transparent to enable viewing of said turntable and said workpiece by an outside operator;

a water gun universally jointed in a wall of said enclosure for manipulation by the operator to train a high-pressure jet upon said workpiece;

control means within reach of the operator outside said enclosure for selectively actuating said first and second drive means;

a high-pressure pump with an inlet connected to a water supply and with an outlet connected to said water gun; and

a collector underneath said turntable for catching spent water and accompanying detritus.

4,350,175

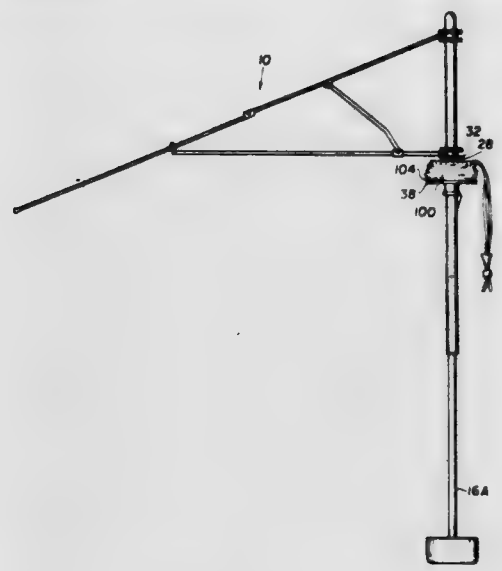
FOLDING UMBRELLA

Joseph H. DeMarco, 60 Seaman Ave., New York, N.Y. 10034

Continuation-in-part of Ser. No. 74,393, Sep. 10, 1979, abandoned. This application Sep. 24, 1980, Ser. No. 190,471
Int. Cl.[3] A45B *25/18, 25/24*
U.S. Cl. 135—33 C 1 Claim

1. In a folding umbrella of the type having a central rod and circumferentially spaced ribs hingedly connected adjacent the top of said rod, each of said ribs being further hinged at a medial location therealong and operationally disposed to fold bodily upon itself during the folding of said umbrella into a compact storage condition, the improvements to such folding umbrella serving as an integral cover for same comprising a slide member slidably disposed on said central rod, said slide member having a hinge-supporting structure adjacent the upper end thereof for completing hinge connections to said ribs and a centrally positioned panel disposed thereon in a clearance position below said hinge-supporting structure, and a fabric tube connected in encircling relation about said slide between said hinge-supporting structure and said panel, whereby said fabric tube is in an out-of-the-way position dur-

ing use of said umbrella and during non-use thereof is advantageously positioned to be pulled in covering relation up over



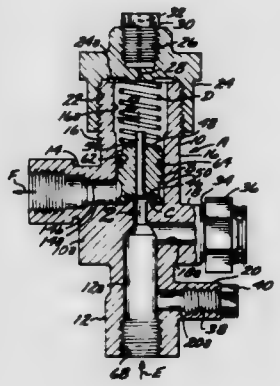
said bodily folded to thereby contribute to providing a protective cover for said umbrella.

4,350,176

CHECK VALVE STRUCTURE

Donald A. Lace, 5041 Galway Cir., Huntington Beach, Calif. 92649

Filed Aug. 18, 1980, Ser. No. 178,791
Int. Cl.³ B08B *1/00*; F16K *15/00, 17/04*
U.S. Cl. 137—242 **17 Claims**



1. A self cleaning check valve that permits fluid that may have solid particles entrained therewith to flow from a first zone to a second zone when the pressure on fluid in said first zone exceeds a predetermined magnitude, said check valve including:

a. a valve body that has first and second passages and an elongate confined space defined therein that communicate with one another, said first passage and confined space axially aligned, a circular valve seat of semi-circular transverse cross section inside said body in which said first passage terminates, and said first and second passages in communication with said first and second zones;

b. (a) an elongate cylindrical valve member slidably movable in said confined space, said valve member having first and second ends, said first end partially defined by a circular rib of hook shape transverse cross section, said rib having a transverse passage therein, and a circumferential recess on the exterior of said valve member that communicates with said passage;

c. a head supported from said first end and situated within and radially spaced from said rib, said head defined by a generally cylindrical sidewall and an end face that intersect to provide a circular knife edge of such diameter that said knife edge is centered on said valve seat when said valve member is in a first position, said head formed from a rigid material harder than said particles, and said knife edge either severing or displacing those of said particles deposited on said valve seat when said valve member is in said first position;

d. deformed spring means in said confined space that maintain said valve member in said first position until the pressure of fluid of said predetermined magnitude in said first zone exerts a force on said face of said head that is greater than the force exerted by said spring means on said valve member; and

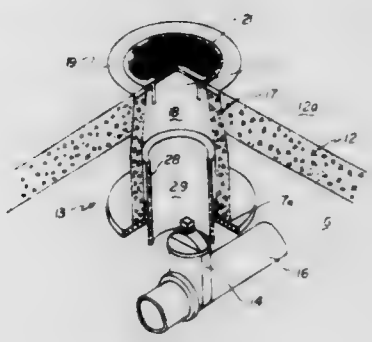
e. a first resilient sealing ring that grips said side wall and is disposed in a circumferential space defined on said first end of said valve member between said rib and side wall of said head, said valve member due to said recess having a dynamic lift imparted thereto that disposed said valve member at a second position substantially within said confined space where said sealing ring is exposed to a minimum abrasive action by said particles when said fluid flows at high velocity through said first passage, valve seat and second passage upon said fluid in said first zone exceeding said predetermined magnitude in pressure, with said valve member being moved by said spring means from said second to said first position when said pressure of said fluid in said first zone falls below said predetermined magnitude, with pressurized fluid in said second zone after said valve member returns to said first position flowing into said recess and through said passage into said circumferential space to exert an inwardly directed pressure on said first sealing ring to increase the force that urges said first sealing ring into sealing contact with said valve seat.

4,350,177

UTILITY BOX SUPPORT

John C. Firchau, 6315 Edgewood Way, Rocklin, Calif. 95677, and Morris L. Donaldson, 233 Sierra Blvd., Roseville, Calif. 95678

Filed May 12, 1980, Ser. No. 148,839
Int. Cl.³ E02D *29/10*
U.S. Cl. 137—370 **3 Claims**



1. A utility box and support comprising in combination:

an annular member, substantially circular in shape having planar parallel upper and lower surfaces and a central opening,

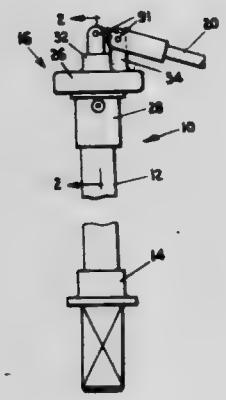
an upstanding annular flange formed integrally with said annular member having a circular central opening flush with said member opening and dimensioned to leave a peripheral portion of said planar upper surface exposed which supports the utility box formed as a tubular housing having a bottom edge surface disposed atop said planar top surface whereby an interior of said tubular housing is in registry with said central opening and constrained from radial displacement by a snug fit over said flange, said housing including a grade ring on a top edge surface thereof coplanar with a traffic bearing surface.

4,350,178

BALL COCK ASSEMBLY

Merritt J. Nelson, 857 Indian Lakes Rd., NW., Sparta, Mich. 49345, and Merritt S. Nelson, 7000 Kreuter Rd., NE., Belmont, Mich. 49306

Filed May 15, 1981, Ser. No. 263,870
Int. Cl.[3] F16K *31/26, 33/00*
U.S. Cl. 137—444 9 Claims



1. A ball cock assembly comprising:

a water supply pipe disposed in a fill tank;

a valve housing mounted to said water supply pipe, said housing including an inlet in communication with said water supply pipe, outlet means for communicating fluid to said fill tank and a central passage communicating said inlet with said outlet means;

said central passage having a first chamber of a selected diameter above said outlet means, a second chamber of a diameter less than the diameter of said first chamber and upstream of and below said first chamber, and valve seats disposed in each of said first and second chambers;

a float-operated valve member mounted for reciprocation in said central passage so as to regulate flow from said inlet to said outlet means, said valve member having

means defining an upwardly facing, first piston surface, a first shoulder cooperating with said valve seat in said first chamber to seal said first chamber from said second chamber;

means defining a second shoulder which cooperates with said valve seat in said second chamber to seal said second chamber from said inlet;

means defining a downwardly facing, second piston surface upstream of said first piston surface, said second piston surface having an area less than that of said first piston surface;

orifice means in said valve member for communicating fluid from said inlet to said first chamber so as to provide a fluid pressure in said first chamber against said first piston surface;

port means on said valve member for regulating flow from said inlet to said outlet means, said port means being selectively aligned with said outlet means during reciprocation of said valve between open and closed positions; and

a float connected with said valve member and disposed in said fill tank, said float providing a biasing force for closing said valve member as the fluid level in the tank rises;

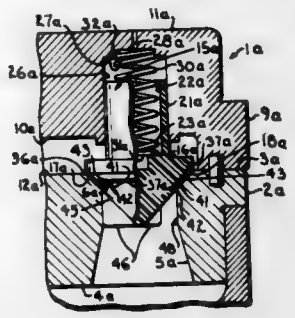
whereupon a gradual closing of the valve member is provided by the differential fluid pressure acting against said first and second piston areas until said first and second shoulders are seated against their respective valve seats.

4,350,179

VALVE ASSEMBLY WITH RELIEF GROOVE

Stuart E. Bunn, and Herbert B. Owsley, both of 6412 Carter Ave., Shawnee Mission, Kans. 66203

Filed Sep. 26, 1980, Ser. No. 191,015
Int. Cl.[3] F16K *15/06*
U.S. Cl. 137—540 17 Claims



7. A poppet valve assembly for controlling flow of fluid under pressure comprising:

(a) a passage through said poppet valve assembly for fluid flow:

(b) a seat member having an inlet portion of said passage extending therethrough and a seat face with a first mating surface surrounding said passage inlet portion;

(c) a cage member positioned in spaced relation to said seat member whereby an outlet portion of said fluid flow passage is defined between said cage and seat members for receiving fluid from said passage inlet portion, said cage member having a guide bore therein;

(d) a valve member movably mounted with respect to said seat member between a closed position and an open position whereby fluid flow is respectively prevented and allowed through said passage, said valve member including:

(1) a head having a second mating surface for engaging said first mating surface to define a contact area therebetween when said valve member is in said closed position; and

(2) a valve stem extending from said valve member head and slidably positioned within said guide bore;

(e) resilient means engaging said cage member and said valve member for urging said valve member to said closed position; and

(f) relief means comprising a relief groove extending along one of said first and second mating surfaces from an interior portion of said contact area to a periphery of said contact area; said relief groove communicating fluid from said passage with an inner portion of said contact area for operably reducing a force required to disengage said mating surfaces and move said valve member to said open position; and wherein:

(g) said first and second mating surfaces are uninterrupted by said relief groove over a continuous circumferential portion of said contact area whereby flow of fluid through said passage is prevented when said valve member is in the closed position thereof.

4,350,180

TENSION CONTROL SYSTEM

Odell D. Crittenden, 5700 W. Mercer Way, Mercer Island, Wash. 98040

Filed Jun. 10, 1980, Ser. No. 158,287
Int. Cl.[3] F16K *31/04;* B65H *23/08*
U.S. Cl. 137—596.17 5 Claims

2. A control device for use with a machine requiring a constant flow of air at a critical pressure different from that of the atmosphere wherein the flow is transmitted from a general source by means of a conduit, said device comprising:

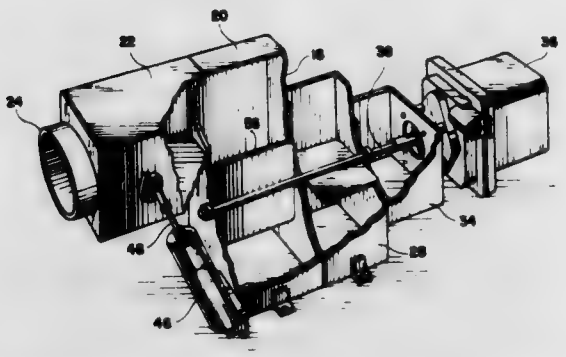
means to provide a constant flow of air;

conduit means interconnecting the control device and the source of airflow;

a first chamber in communication with an opening in the machine and with the conduit;

a second chamber in connection with the same opening in the machine and with the atmosphere;

butterfly valve means in each of the first and the second chambers, said butterfly valve means mounted to a single control shaft normal to each other such that when one is



completely open, the other is completely closed, and said valves are infinitely adjustable to control the fluid flow;

means for adjusting the valve positions to control the flow; and

means to instantly terminate the flow of air whereby the machine may be immediately shut down.

4,350,181

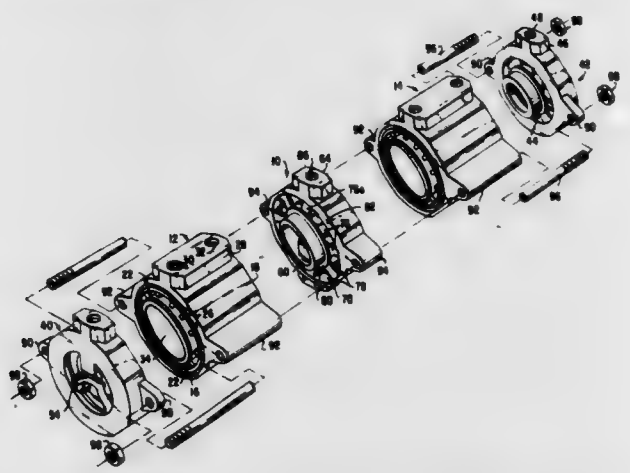
VALVE COUPLING MEMBER

Bruce K. Kreeley, Bristol, Pa., assignor to The Singer Company, Stamford, Conn.

Filed Apr. 6, 1981, Ser. No. 251,630

Int. Cl.³ F16L *37/28*; F16K *31/126*

U.S. Cl. 137—614 **5 Claims**



1. A coupling member adapted for joining in tandem a pair of axial flow valve bodies each of the type having a first end, a second end, a cylindrical opening extending from said first end to said second end, said cylindrical opening defining the interior of said valve body, at least one first open channel extending from said first end to said valve body interior and at least one second open channel extending from said valve body interior to said second end, and a flexible tubular sleeve located within said cylindrical opening, said coupling member comprising:

a central hub region;

sealing means on said central hub region for sealing the interior of each of the sleeves of said valve bodies from the open channel of the corresponding one of said valve bodies; and

means for providing a fluid path between the first open channel of one of said valve bodies and the second open channel of the other of said valve bodies.

4,350,182

OPERATING EQUIPMENT FOR GATE VALVES (PASSAGE VALVES)

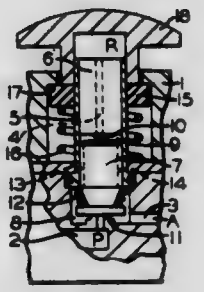
Helmut Gottling, Isernhagen, and Rudolf Moller, Gehrden, both of Fed. Rep. of Germany, assignors to WABCO Steuerungstechnik GmbH & Co., Hannover, Fed. Rep. of Germany

Filed Nov. 24, 1980, Ser. No. 209,432

Claims priority, application Fed. Rep. of Germany, Dec. 8, 1979, 2949424

Int. Cl.³ F16K *31/06*

U.S. Cl. 137—625.27 **4 Claims**



1. A valve device having at least one inlet, at least two outlets, and valve means having a first position for interrupting fluid pressure communication between said one inlet and one of said outlets, while concurrently establishing fluid pressure communication between said one outlet and the other of said outlets, and a second position for establishing fluid pressure communication between said one inlet and said one outlet, while concurrently interrupting fluid pressure communication between said one and said other of said outlets, said valve device further comprising:

(a) a bushing carried in the housing of said valve device;

(b) said valve means including

(i) a stationary valve member fixed in said bushing; and

(ii) a movable valve member operably disposed in said bushing to move axially therein relative to said stationary member;

(c) a first spring means for biasing said movable member in a direction to establish said first position of said valve means;

(d) magnetic means operably disposed in surrounding relationship with said bushing for exerting a magnetic force on said movable valve member in opposition to said first spring means;

(e) second spring means for urging said magnetic means toward an inactive position adjacent said stationary member, in which the magnetic force acting on said movable valve member is less than the biasing force of said first spring means; and

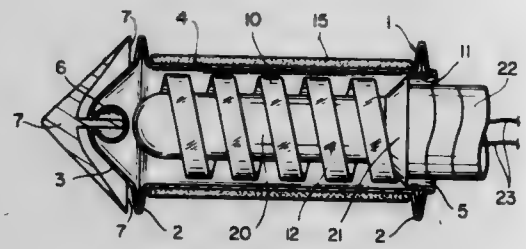
(f) actuator means operative in response to an actuating force thereto for axially displacing said magnetic means in opposition to said second spring means from said inactive position to an active position in which the magnetic force acting on said movable member is greater than the biasing force of said first spring means to thereby effect shifting of said movable valve member toward engagement with said stationary valve member with snap action to establish said second position of said valve means, said magnetic force on said movable member in said active position of said magnetic means being less than the force exerted thereon by said second spring means, so that upon release of the actuating force on said actuator means, said second spring means is effective to reset said magnetic means to said inactive position.

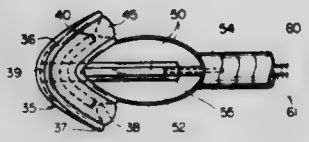
4,350,183

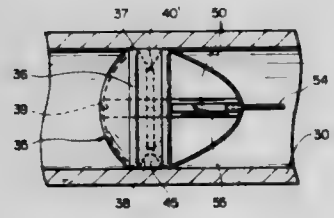
HEAT-RECOVERABLE PIPELINE TERMINATION PLUG

James C. Holmes, San Francisco, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Filed May 19, 1980, Ser. No. 150,840
Int. Cl.³ F16L *55/10*
U.S. Cl. 138—89 **3 Claims**







1. A heat-recoverable pipeline plug comprising:

a. a polymeric diaphragmal housing which is generally concavo-convex in shape and whose outer peripheral edge defines a trough;

b. a heat recoverable metal spring integrally molded within said diaphragmal housing and which expands towards the inner wall surface of the pipeline when heated to its memory transition temperature to flatten the diaphragmal housing to a generally disc shape; and

c. an adhesive sealing means contained within said trough and which is brought into contact with the inner walls of the pipeline by the force of the expanding spring to produce a seal.

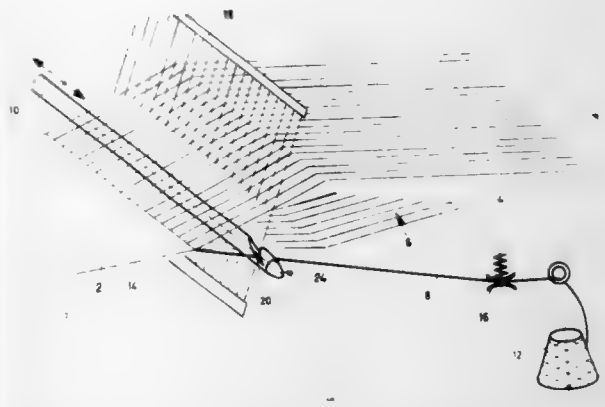
4,350,184

SHUTTLELESS WEAVING MACHINE

Jakob Müller, Kehristenstrasse 23, CH-6362 Stansstad, Switzerland, and Ferdinand Diesner, Spittelweg 1, D-7887 Murg-Hänner, Fed. Rep. of Germany

Filed Mar. 18, 1980, Ser. No. 131,367
Claims priority, application Switzerland, Mar. 29, 1979, 2947/79
Int. Cl.³ D03D *47/20*
U.S. Cl. 139—448 **14 Claims**

1. In a shuttleless weaving machine in which successive sheds are formed in the warp, means supplying a weft yarn, a movable weft yarn inserter for inserting the weft yarn into the successive warp sheds, a reed, and a cutting device on said inserter, said inserter including a housing, a replaceable cartridge insertable therein, said cartridge including a clamping device for receiving and gripping the weft yarn to be inserted into said inserter, said housing being formed with a housing slot, said cartridge being formed with a cartridge slot, said housing slot being in alignment with said cartridge slot when



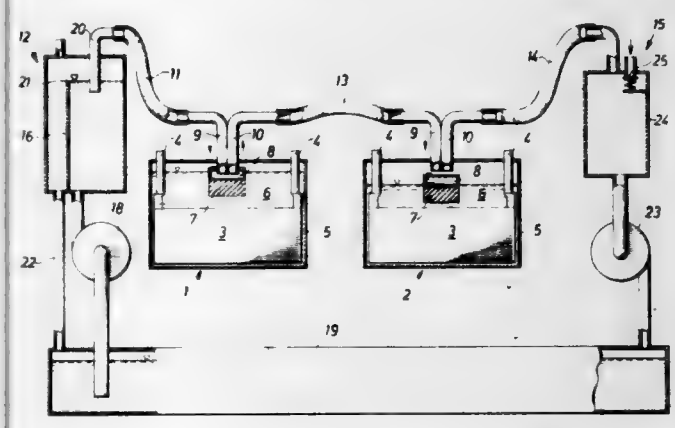
said housing and said cartridge are in assembly so as to form a slot for receiving the weft yarn from said supplying means.

4,350,185

LIQUID REPLENISHMENT SYSTEM FOR ACCUMULATOR CELLS

Kaj Quist, Nol, Sweden, assignor to AB Tudor, Nol, Sweden

Filed Dec. 16, 1980, Ser. No. 216,912
Claims priority, application Sweden, Dec. 20, 1979, 7910526
Int. Cl.³ B65B *3/04*; B67C *3/16*
U.S. Cl. 141—35 **6 Claims**

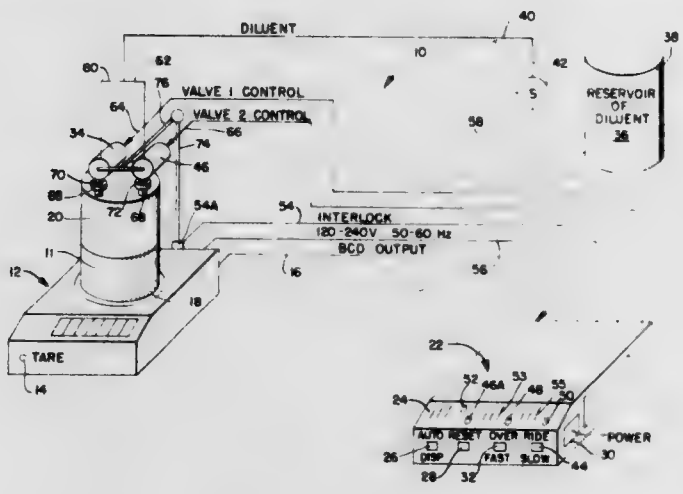


1. A liquid replenishment system for a plurality of accumulator cells comprising a central supply of battery liquid and a suction device for generating a negative pressure, said accumulator cells being disposed above said central supply and interconnected in series between the central supply and the suction device by means of air-tight inflow and outflow conduits for battery liquid in each cell, whereby the liquid is induced to flow into each of the cells by the negative pressure and means in each cell for permitting the liquid to flow into and out from the cell when the liquid level therein is normal, the improvement wherein a replenishment container for battery liquid is connected in series between the central supply and the cells at a height such that the liquid level in the container is substantially above that of said central supply and generally the same as that of the electrolyte liquid in the cells, means separate from said suction device for inducing a flow of electrolyte from said central supply to said replenishment chamber and means for limiting the negative pressure in the system.

4,350,186
GRAVIMETRIC DILUTER

Samuel Schalkowsky, Chevy Chase, Md., and Donald Whitley, Bingley, England, assignors to Spinal Systems Inc., Cincinnati, Ohio

Filed Feb. 9, 1981, Ser. No. 232,531
Int. Cl.[3] B65B *3/28*
U.S. Cl. 141—83 7 Claims



1. An apparatus for diluting a sample within a container to a dilution factor f by weight of diluent comprising:

(a) means for repeatedly measuring the weight W of the sample plus any diluent within the container;

(b) means for choosing a dilution factor f by weight of a diluent to be used for diluting the sample;

(c) means for calculating TW wherein TW = W/f and W is the weight of the sample within the container prior to the addition of diluent;

(d) means for calculating TW − W;

(e) fluid conducting means disposed between a reservoir of diluent and the container for permitting the diluent to flow from the reservoir to the container for the purpose of diluting the sample within the container to the selected dilution factor f; and

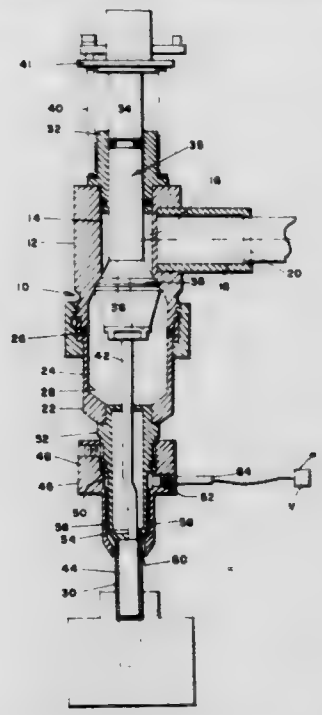
(f) means responsive to the means for calculating TW − W for controlling the flow of diluent between the reservoir and the container to cause diluent to flow between the container and the reservoir when TW > W and to stop the flow of diluent when TW = W.

4,350,187
FILLING MACHINE

William H. Trusselle, Braintree, and John A. Gustafson, Jr., Wollaston, both of Mass., assignors to Pneumatic Scale Corporation, Quincy, Mass.

Filed Jun. 25, 1980, Ser. No. 162,899
Int. Cl.[3] B65B *3/04*; B08B *3/02*
U.S. Cl. 141—90 5 Claims

1. In a filling machine, the combination with a filling head provided with a product nozzle and a container support, so arranged as to enable positioning the nozzle within the open top of the container during the filling operation and separating the nozzle and container from each other following the filling operation of means associated with the filling nozzle operable when the latter is separated from the container to clear the external surface of the nozzle of product adhering to said external surface, said means comprising a manifold block positioned about the nozzle in axially fixed relation thereto, said manifold block defining an annular chamber closed at the top and an axially-elongate annular passage extending downwardly from the bottom of the chamber about the nozzle, in concentric relation thereto, the annular passage defining a second nozzle surrounding the product nozzle through which the scavenging fluid delivered under pressure to the chamber is projected forcibly and exclusively downwardly on the external surface of the nozzle and means defining a port in the manifold which enters the manifold radially with respect to the vertical

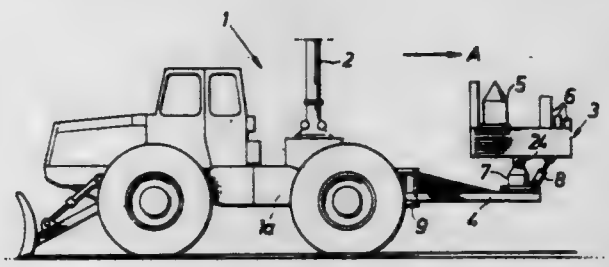


axis of the product nozzle through which a scavenging agent can be delivered under pressure into the chamber.

4,350,188
MOBILE MACHINE FOR PROCESSING TREES AND TRUNKS

Bertil Adolfsson, Umea, Sweden, assignor to Kockums Industri AB, Soderhamn, Sweden

Continuation of Ser. No. 807,188, Jun. 16, 1977, abandoned.
This application Jul. 9, 1979, Ser. No. 55,754
Claims priority, application Sweden, Jul. 17, 1976, 7606949; Sep. 3, 1976, 7609771
Int. Cl.[3] A01G *23/08*; B27L *1/00*
U.S. Cl. 144—2 Z 18 Claims

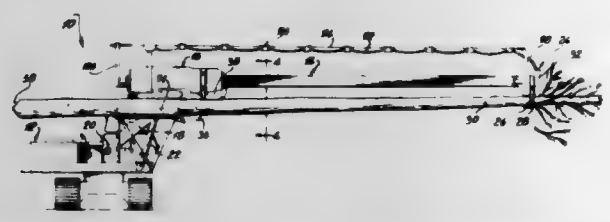


1. A mobile tree processor having a mobile carrier vehicle with a vertical center plane and carrying wheels at the sides thereof, a tree processing apparatus carried on said vehicle and tree collecting means pivotally mounted on said vehicle for gripping and feeding trees to the tree processing apparatus, the improvement comprising means to increase the lateral stability of the vehicle and counter-balance the weight of the tree collecting means including power operated means on said carrier vehicle to shift the tree processing apparatus on said carrier vehicle in such a manner that the center of gravity of said apparatus is moved in either lateral direction from said vertical center plane to an outboard position at least in line with said carrying wheels so as to counter-balance the weight of the tree collecting means.

4,350,189
APPARATUS AND METHOD FOR DEBRANCHING FELLED TREES

Ghislain Duchesne, Metabetchouan, Canada, assignor to Lar Machinerie Inc., Quebec, Canada

Filed Sep. 18, 1980, Ser. No. 188,285
Claims priority, application Canada, Sep. 12, 1980, 360164
Int. Cl.³ A01G *23/02*
U.S. Cl. 144—2 Z 9 Claims



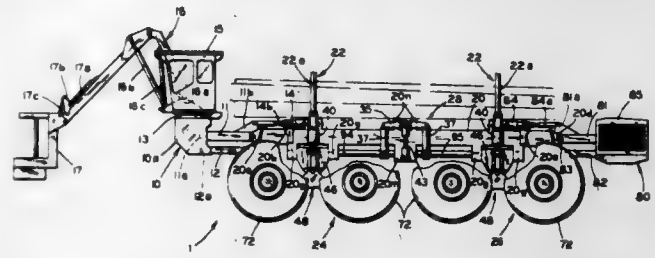
1. Apparatus for debranching a felled tree comprising:
a vehicle;
a boom processing member supported on said vehicle;
an extendable and retractable longitudinal boom mounted through said member;
first tree gripping means and debranching means mounted at one end of said boom and arranged to grasp a felled tree trunk and to remove branches therefrom;
second tree gripping means mounted to said boom processing member for grasping the tree trunk adjacent its butt end after said felled tree trunk has been grasped by said first tree gripping means and said boom retracted in said member to bring said butt end to said second tree gripping means, the longitudinal axis of said tree held by said first and second tree gripping means being substantially parallel to the axis of said longitudinal boom; said second gripping means holding said tree trunk as said boom is fully extended and said debranching means move along said tree;
means on said boom processing member for pivoting said second tree gripping means laterally so as to move said butt end away from said member and to position said tree at an angle with respect to the longitudinal axis of said boom to allow rearward retracting of said tree trunk as said boom is retracted with said first gripping means in grasping arrangement and said second gripping means being subsequently brought in grasping engagement with said tree trunk and said boom extended to effect an additional debranching length of said tree trunk by said debranching means; and
guide means on said vehicle for slidably receiving thereon said butt end as said tree trunk is moved rearwardly relative to the boom processing member.

4,350,190
SELF PROPELLED, OFF ROAD VEHICLE

Bruce J. McColl, Whitby, Canada, assignor to Owens-Illinois, Inc., Toledo, Ohio

Continuation-in-part of Ser. No. 934,457, Aug. 17, 1978, Pat. No. 4,237,994, and a continuation-in-part of Ser. No. 934,458, Aug. 17, 1978, Pat. No. 4,267,956, and a continuation-in-part of Ser. No. 934,459, Aug. 17, 1978, Pat. No. 4,223,904, and a continuation-in-part of Ser. No. 18,080, Mar. 6, 1979, abandoned. This application Jun. 2, 1980, Ser. No. 155,901
Int. Cl.³ A01G *23/08*
U.S. Cl. 144—3 D 26 Claims

14. Apparatus for transporting whole trees over natural terrain, comprising, in combination:
(1) an elongated frame element of a length at least equal to that of the trees to be transported;
(2) a plurality of tree retaining cradles transversely mounted on said frame element;
(3) a pair of quad wheel assemblies, each assembly including a primary mounting member pivotally attached to said frame element for movement about a roll axis parallel to the longitudinal axis of the elongated frame element, a pair of walking beams having their medial portions respectively pivotally attached to opposite transverse sides of said primary mounting member for movements about a transverse pitch axis and a wheel steerably mounted on the free end of each walking beam, whereby said wheels may conform to irregularities in the terrain traversed;
(4) an operator's platform having linkage means pivotally connecting same to one end of said elongated frame ele-

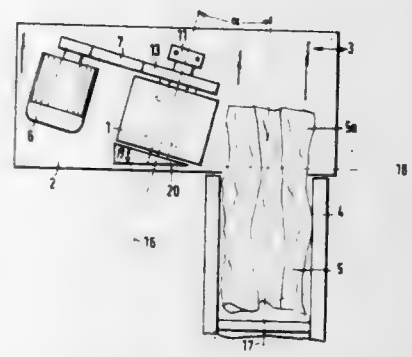


ment for vertical movements relative thereto, including power means for selectively adjusting the vertical position of said platform relative to said elongated frame element; and
(5) power operated linkage means for adjusting the position of said elongated frame element about said roll axis, thereby adjusting the position of the operator's platform, permitting same to be substantially horizontal when the vehicle wheels are positioned on the side of a slope.

4,350,191
ARRANGEMENT FOR CUTTING WOOD INTO CHIPS

Reinhold Riedl, Gensingen, Fed. Rep. of Germany, assignor to Hombak Maschinenfabrik GmbH u. Conkg, Bad Kreuznach, Fed. Rep. of Germany

Filed Jul. 11, 1979, Ser. No. 56,786
Claims priority, application Fed. Rep. of Germany, Jul. 6, 1978, 28297258
Int. Cl.³ B27C *1/00*
U.S. Cl. 144—172 9 Claims



1. An arrangement for cutting wood into chips comprising an elongated support component for supporting an elongated workpiece with an end portion of said workpiece projecting beyond one end of said support component; a tool component rotatable about an axis and having a circumferential cutting face and axial end faces one of which is directed towards said one end of said support component; means mounting one of said components movable relative to said other component along a predetermined path so that during movement of said components relative to each other said tool component will cut the end portion of the workpiece projecting beyond said one end of said support component into chips while leaving at the remainder of the workpiece a cut end face parallel to said path, at least the one end face of the tool component which is directed towards said one end of said support component includes with a plane including said cut end face a fixed acute angle so that a wedge-shaped space is developed between said one end face of the tool component and the cut end face of the

workpiece; bearing means at both end faces of said tool component supporting the latter for rotation about said axis, one of said bearing means being located entirely in said wedge-shaped space, so that said one bearing means will not interfere with the movement of said components relative to each other during cutting of said end portion of said workpiece into chips.

4,350,192

WOOD SPLITTING DEVICE

Thomas Dent, R.R. #3, Oak Grove, Mo. 64075

Filed Nov. 24, 1980, Ser. No. 209,734
Int. Cl.³ B27L *7/00*
U.S. Cl. 144—193 C **3 Claims**



1. A tool of the character described, comprising, in combination:

(1) an elongate, straight shaft of substantially uniform transverse, cross-sectional size and shape along the length thereof having an upper and a lower end,

(2) said shaft, in normal working position, extending substantially vertically and having an elongate, straight, vertical longitudinal axis,

(3) penetrating tool means attached to the lower end of said shaft in an extension of the vertical longitudinal axis thereof,

(4) said penetrating tool comprising a wedge having two broad faces and two narrow faces opposed to themselves on opposite sides thereof,

(5) the lower end of the said shaft beveled on opposite sides thereof in line with the two broad faces of the wedge and in substantial extension and continuation thereof,

(6) an elongate, hollow sleeve of internal shape like that of the transverse cross-sectional shape of the shaft and somewhat less length than said shaft closely fitting over the upper end and substantial length of said shaft and slidably movable thereon,

(7) the upper end of said sleeve closed and adapted to impact on the outer end of said shaft and transmit longitudinal thrust thereinto along the said vertical longitudinal axis thereof into said tool,

(8) the shaft and sleeve being of circular transverse cross-sectional form,

(9) a pair of opposed grasping handles on the outside of said sleeve fixed thereto intermediate the ends thereof, said handles being of closed loop form and substantially 180° opposed to one another, and

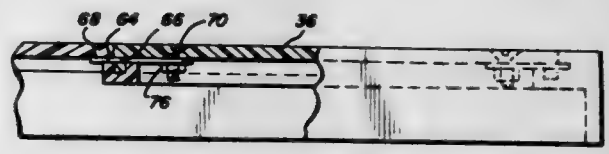
(10) a handle on the lowermost portion of said shaft below the lower extremity of the sleeve when the top of the latter rests on the top of the shaft, the handle on the shaft being of closed loop form and positioned normal to the broader faces of the wedge.

4,350,193

POWER TOOL ACCESSORY TABLE

James McCambridge, Polo, Ill., and Siebolt Hettinga, Adel, Iowa, assignors to Central Quality Industries, Inc., Polo, Ill.

Filed May 1, 1980, Ser. No. 145,423
Int. Cl.³ B25N *1/04*; B27C *9/00*
U.S. Cl. 144—286 R **13 Claims**



11. In a power tool accessory table for securing a portable power tool for use as a table mounted tool, the improvement comprising:

a tabletop with an opening therein through which a complete portable power tool may pass;

plate means for supporting said power tool and having an opening in said plate means;

means for securing the power tool to the underside of said plate means whereby the cutting component of the attached power tool projects through the opening in said plate means;

support means carried by the underside of the tabletop and overlapping the lower portion of the opening in the tabletop;

a depending flange around the bottom edge of said plate means having slots on opposite sides thereof, said depending flange resting on said support means from above;

slots in said support means on said tabletop aligning with said slots in said flange on said plate means;

means for securing said plate means and attached tool to said tabletop wherein a surface on said plate means is flush with said tabletop surface; and

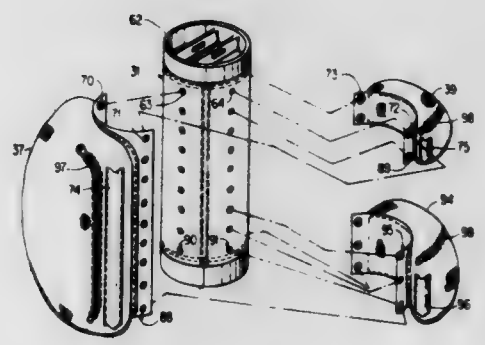
said last named means comprising tabs on said plate means which may be extended into said aligned slots.

4,350,194

UNIVERSAL GOLF BAG

William L. Brown, Sullivan's Island, S.C., assignor to Larry Harold Kline, Charleston, S.C.

Continuation of Ser. No. 88,183, Oct. 25, 1979, Pat. No. 4,282,912. This application Mar. 13, 1981, Ser. No. 243,632
Int. Cl.³ A63B *55/00*
U.S. Cl. 150—1.5 C **20 Claims**



1. A bag for transporting golf equipment comprising:

a. a longitudinal structure operative to hold said golf equipment;

b. a plurality of pockets, each removably secured to said longitudinal structure;

c. a fastening area on the outside surface of said longitudinal structure operative for the securing of said plurality of pockets;

d. a mounting area on the outside surface of said longitudinal structure not operative for the securing of said plurality of pockets;

e. a plurality of bag fastening means secured to said fastening area of said longitudinal structure and spaced apart a pre-determined distance or multiples of said pre-determined distance; and

f. a plurality of pocket fastening means spaced apart a pre-determined distance or multiples of said pre-determined distance operative to removably secure said plurality of pockets to said plurality of bag fastening means;

whereby each of said plurality of pocket fastening means is secured to one of said plurality of bag fastening means in order to removably secure each one of said plurality of pockets onto said fastening area of said bag;

whereby if said bag is mounted on any type of cart, said mounting area would face said cart and said fastening area would face away from said cart.

4,350,195

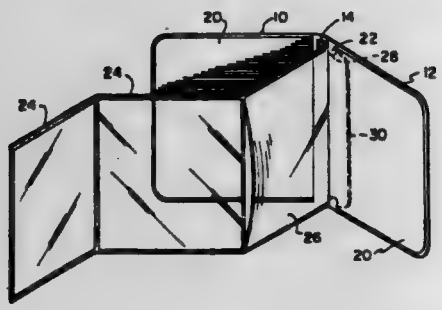
DEVICE FOR STORING DOCUMENTS

Gundar Viesturs, Oak Hill Dr., and Eric A. Viesturs, 680B Heritage Village, both of Southbury, Conn. 06488

Continuation of Ser. No. 25,119, Mar. 29, 1979, abandoned. This application Feb. 19, 1981, Ser. No. 235,925

Int. Cl.³ A45C *1/06*

U.S. Cl. 150—39 **6 Claims**



1. A device comprising:

a flat rectangular first member;

a rectangular strip disposed along and overlying one side of one surface of said member;

a plurality of posts, said posts being disposed between and secured to said strip and said member in spaced apart positions; and

a flexible rectangular sheet having at least one section having essentially the same shape as said member and smaller than said member, said section containing a pocket for storing documents, said section having on one side thereof a flap having a like plurality of notches, each notch being aligned with and detachably engaged to a corresponding post.

4,350,196

NON-PNEUMATIC STRUCTURALLY RESILIENT INTEGRATED WHEEL-TIRE

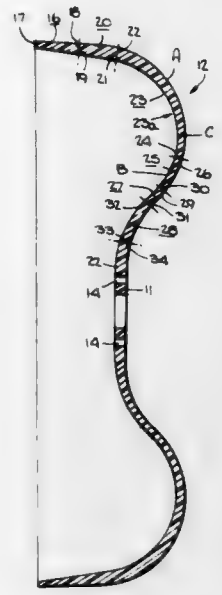
William J. Hampshire, Peninsula, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 879,586, Feb. 21, 1978, abandoned, which is a continuation-in-part of Ser. No. 722,572, Sep. 13, 1976, abandoned. This application Feb. 28, 1980, Ser. No. 125,428

Int. Cl.³ B60B *9/00*

U.S. Cl. 152—5 **52 Claims**

25. A molded resilient fiber reinforced plastic automotive wheel structure comprised of an open rim constituted by a first frustum of a right circular cone, a first toroidal segment having an outer edge attached continuously and tangentially to the smaller diameter edge of said first frustum, a radial mounting disc adapted for attachment at its inner portion to an axle, a second toroidal segment having a smaller diameter inner edge attached continuously and tangentially to the larger diameter outer edge of said disc, a second conical frustum interconnecting said first and second toroidal segments, said wheel structure having an S-shaped cross-sectional configuration and the ratio of load to deflection above the design load is greater than the ratio of load to deflection below the design load.



4,350,197

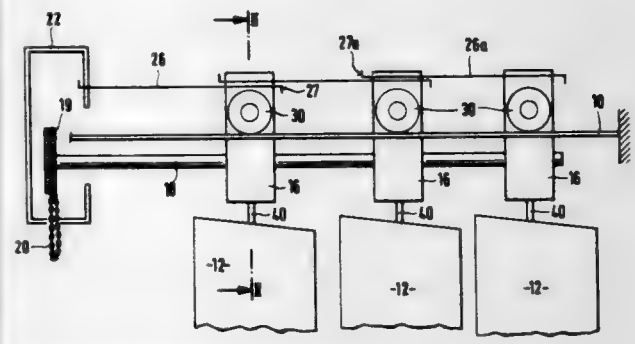
SHUTTER BLIND ASSEMBLY

Berthold Haller, Steinweg 1, 7209 Aldingen, Fed. Rep. of Germany

Filed Aug. 3, 1978, Ser. No. 930,506

Int. Cl.³ E06B *9/26*

U.S. Cl. 160—166 A **9 Claims**



1. A shutter blind comprising:

a supporting rail means;

a plurality of carriages slidably mounted on said supporting rail means;

rotating means within a respective one of said carriages, a respective one of said rotating means comprising a rotatable rod having recesses on its outer surface, a hollow cylinder surrounding said rod, said hollow cylinder being provided with a friction-locking means on its outer surface, a keying means comprising a form-lock mating interconnection between said rotatable rod and said hollow cylinder, a worn gear surrounding said hollow cylinder and interconnected to said hollow cylinder by means of said friction-locking means;

a plurality of sprocket gears, each sprocket gear drivingly interconnected with a respective one of said worm gears;

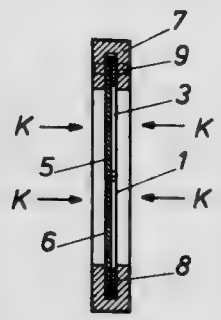
a plurality of supporting rods, each supporting rod interconnected with a respective one of said sprockets;

a plurality of shutters, each shutter being mounted on a respective one of said supporting rods.

4,350,198
ANIMAL GATE, TRAINING MEMBRANES AND METHOD OF TRAINING THE ANIMAL TO USE SUCH GATE

Werner Naegeli, Burgstrasse 50, 8408 Winterthur, Switzerland

Filed Feb. 6, 1981, Ser. No. 232,311
Claims priority, application Switzerland, Feb. 22, 1980, 1412/80
Int. Cl.³ E06B *3/80*
U.S. Cl. 160—179
34 Claims



1. An animal gate for the passage of animals and which is arranged in an opening which connects one room or area with another, comprising:

at least two coacting elastic membranes;

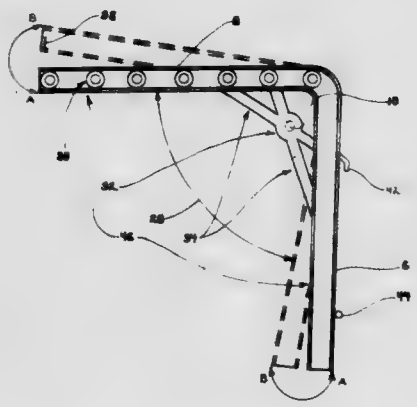
each of said elastic membranes being provided with gap means forming membrane flaps; and

frame means for retaining the membranes at their circumference in such a manner that as a result of assembly of the membranes in the frame means the membranes undergo a change in shape which causes said membranes to be pressed against one another.

4,350,199
QUICK CLOSING GATE

Isidro Pino, Zia Pueblo, San Ysidro, N. Mex. 87053

Filed Feb. 5, 1981, Ser. No. 231,651
Int. Cl.³ E05D *15/12, 15/22*
U.S. Cl. 160—201
9 Claims



1. Quick closing gate, comprising:

(a) gate track disposed on each side of said gate, comprising:

(1) lower gate track, disposed in an approximately vertical orientation;

(2) upper gate track, joined to said lower gate track at a curved junction, said upper gate track and lower gate track forming an acute angle reasonably close to 90 degrees;

(3) stop means, located at the end of said upper gate track opposite said junction, for preventing egress from said upper gate track of objects sliding within said upper gate track;

(b) rotation means, connected to said gate track and to fixed supports, for rotating said gate track about a pivot axis perpendicular to the plane of said lower gate track and said upper gate track;

(c) gate track stop means, engaging said gate track to a fixed support, for maintaining said lower gate track in a vertical position;

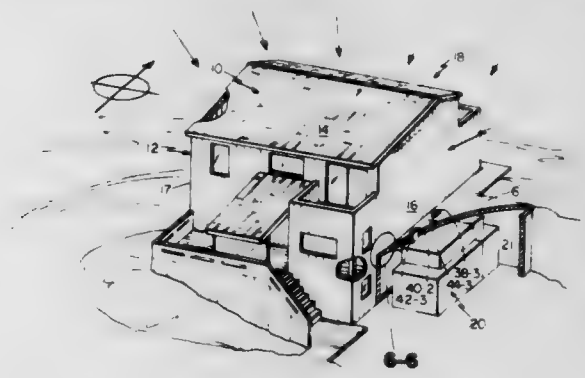
(d) a plurality of horizontal bars slidably engaged in said gate track at the ends of said bars;

(e) spacer means, flexibly attached to said bars, for maintaining uniform spacing between said bars while allowing said bars to freely slide between said upper gate track and said lower gate track.

4,350,200
SOLAR ENERGY COLLECTOR AND SYSTEM

John A. McElwain, Calle Fray Luis DeLeon 4-Entl.°, Palma de Mallorca, Spain

Continuation-in-part of Ser. No. 927,048, Jul. 24, 1978, abandoned. This application Dec. 21, 1979, Ser. No. 105,936
Int. Cl.³ F25B *29/00*
U.S. Cl. 165—48 S
24 Claims



1. A conditioning system arranged for connection to a collector of solar energy and to space to be heated or cooled, said system comprising:

a cold tank of liquid at a relatively low temperature;

a heat tank of liquid at a relatively high temperature;

a heat pump for transferring heat from said cold tank to said heat tank;

a cold exchanger in said cold tank having an air inlet and an air outlet and operative for transferring heat between air flowing therethrough and liquid in said cold tank;

conduits attached to said cold exchanger and arranged to direct said air flowing therethrough between said cold exchanger and (i) the space to be heated or cooled by said conditioning system and (ii) said collector;

a heat exchanger in the heat tank having an air inlet and an air outlet and operative to transfer heat between liquid in said heat tank and air flowing through said heat exchanger; and,

conduits attached to said heat exchanger and arranged to direct air between said heat exchanger and (i) the space to be heated or cooled by said conditioning system and (ii) said collector,

said heat exchanger being connected in parallel with said cold exchanger.

24. In a conditioning system comprising a tank of liquid for storage of heat and a heat exchanger having inlets and outlets attached to an air source and arranged to transfer heat between said tank of liquid and air from said air source, that improvement comprising;

a first set of ducts providing for flow of air in a closed loop including said source and said heat exchanger;

a second set of ducts providing for flow of air in an open path extending from the atmosphere through said source and said heat exchanger and then discharging to the atmosphere; and

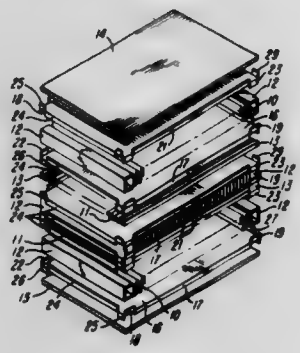
control means for causing air to flow in a selected one of said closed loop and said open path.

4,350,201

SELF FIXTURING HEAT EXCHANGER

Robert J. Steineman, West Carrollton, Ohio, assignor to United Aircraft Products, Inc., Dayton, Ohio

Filed Jan. 12, 1981, Ser. No. 224,035
Int. Cl.³ F28F *3/10*
U.S. Cl. 165—76 **9 Claims**



1. In a self fixturing heat exchanger of the plate and fin type wherein plate elements and fin elements are stacked loosely one upon another in an alternating relation and spacer members position to define flow passages through the heat exchanger and to confine the fin elements in a lateral sense, all prior to a brazing of the parts into a unitary assembly; an improved plate element marginal edge portions of which are turned over in a selective fashion to achieve a confining relation to fin elements and to spacer members in respective longitudinal senses and to achieve in conjunction with said fin elements a confining of said spacer members in a lateral sense, obviating a need for a special fixture to hold assembled parts for brazing.

4,350,202

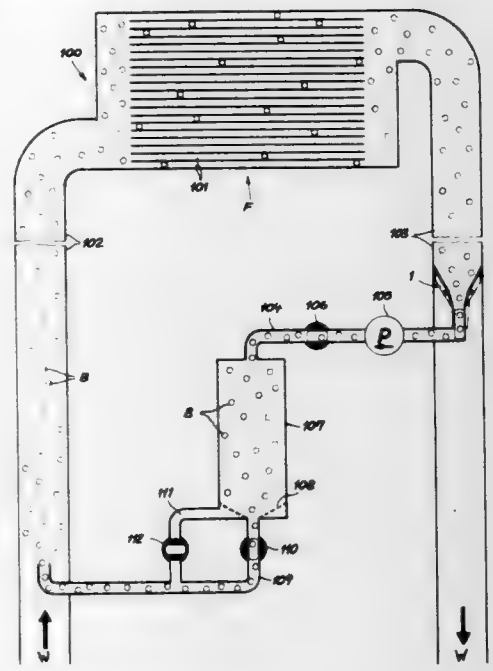
EXTRACTOR FOR RECIRCULATING CLEANING BODIES IN A FLUID-CIRCULATION SYSTEM

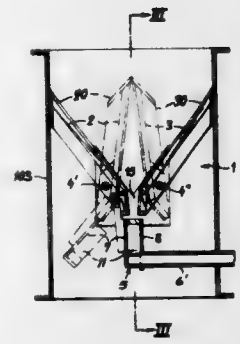
Adalbert Schulz, New York, N.Y., and Werner Borchert, Düsseldorf, Fed. Rep. of Germany, assignors to Kleiber & Schulz, Inc., Huntington Station, N.Y.

Filed Aug. 14, 1979, Ser. No. 66,380
Int. Cl.³ F28G *9/00*
U.S. Cl. 165—95 **11 Claims**

1. In a fluid-circulation system including an entrance duct, a descending exit duct, a bank of tubes of substantially identical inner diameter smaller than that of said ducts interconnecting the latter, an extractor in said exit duct for intercepting solid cleaning bodies entrained through said tubes by the circulating fluid and returning said bodies to said entrance duct via a bypass connection, and retaining means in said bypass connection operable to halt the recirculation of said bodies through said ducts and tubes during a regeneration phase, said extractor comprising a funnel divided into two generally flat sieves which converge downward in a working position from the inner periphery of said exit duct towards a central duct axis into a downwardly diverging regenerating position,

the improvement wherein said extractor further comprises an upwardly open collecting box below said sieves whose interior opens onto tubular outlet means in a plane transverse to said duct axis communicating with said bypass connection, said box having a solid bottom just below said outlet means and further having broad faces above said bottom formed by two relatively separable sidewalls which are closely spaced from each other and from lower edges of said sieves in said working position, said bottom being integral with and substantially perpendicular to one of said sidewalls and being connected through the latter with the adjoining sieve for separation from the other





sidewall and from said outlet means upon a swinging of said sieves into said regenerating position.

4,350,203

WELL PRODUCTION SYSTEM TO PREVENT CAVE-IN AND SLOUGHING IN UNCONSOLIDATED FORMATIONS

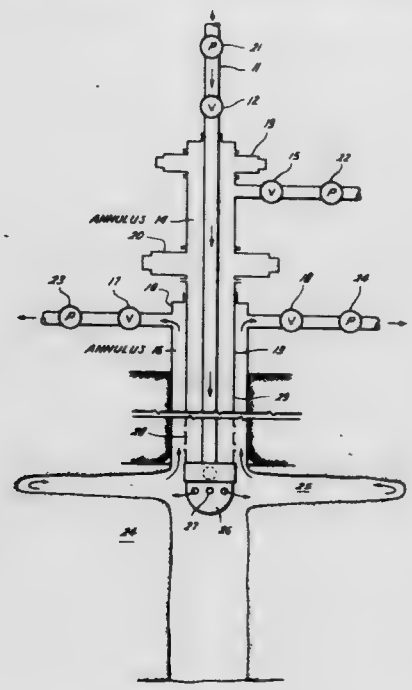
Richard H. Widmyer, Houston, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Nov. 28, 1980, Ser. No. 210,874
Int. Cl.³ E21B *43/04*
U.S. Cl. 166—51 **9 Claims**

9. A well production and sand packing system for producing a well in an unconsolidated formation having an overburden wherein the well has an inner high pressure wash pipe means, an inner annulus formed by a screen around the wash pipe means, and an outer annulus around the screen comprising in combination,

(a) control valve means for each of said wash pipe means and inner and outer annuli for controlling the ingress and egress of fluids and removed formation material from therein for forming a sand pack in the well and simulta-

neously said control valve means comprising means for applying and maintaining a positive fluid pressure against



the cavity walls to prevent cave-in and sloughing of the formation cavity walls until the sand pack is formed.

4,350,204

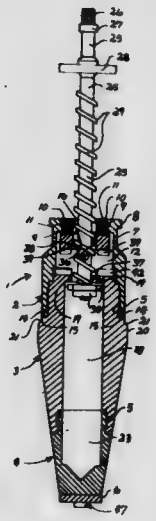
REAMER

Gary B. Horton, 4514 Palmetto Dr., Benton, La. 71006

Filed Jun. 9, 1980, Ser. No. 157,867

Int. Cl.³ E21B *37/02*

U.S. Cl. 166—175 **14 Claims**



1. A reamer for use with a wire line in the loosening of oil well tubing and casing comprising:

(a) a housing having a hollow interior and an opening in the top thereof communicating with said hollow interior;

(b) a shaft extending through said opening and into said hollow interior and provided with external shaft threads turned in the opposite direction from the tubing and casing threads;

(c) stop means on the end of said shaft projecting into said hollow interior to limit the travel of said shaft and coupling means on the outside end of said shaft extending from said hollow interior for attaching said outside end of said shaft to the wire line;

(d) a lock nut disposed in said hollow interior and having at least one lock nut lug on the bottom face thereof, and provided with internal lock nut threads in threadable cooperation with said shaft threads on said shaft; and

(e) at least on lug seat provided in said hollow interior beneath said lock nut for registration with said at least one lock nut lug to effect rotation of said lock nut and said housing on said shaft when a load is applied to said shaft.

4,350,205

WORK OVER METHODS AND APPARATUS

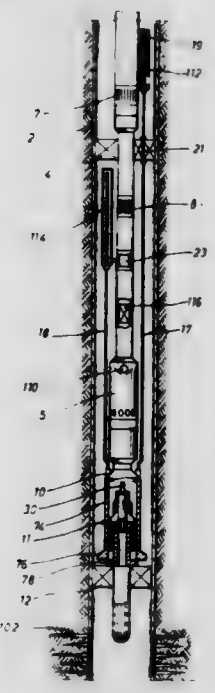
Pierre H. Goldschild, Vulaines-sur-Seine, and Christian C. Robert, Melun, both of France, assignors to Schlumberger Technology Corporation, New York, N.Y.

Filed Mar. 6, 1980, Ser. No. 127,621

Claims priority, application France, Mar. 9, 1979, 79 06053

Int. Cl.³ E21B *23/00*

U.S. Cl. 166—375 **20 Claims**



1. Apparatus for isolating an underground earth formation intersected by a well bore, comprising: packer means having an opening therethrough and adapted to be anchored in a sealed but removable manner in the well bore above said formation; valve means connected to the upper end of said packer means, said valve means including a valve body having a flow passage communicating with said opening and with the well bore above said packer means, and a valve element mounted on said valve body and arranged for movement between positions opening and closing said flow passage; and retrievable hydraulically operable valve actuator means fixed to the lower end of a pipe string extending upwardly to the surface, said actuator means including an actuator sleeve that is adapted to be releasably connected with said valve element for moving said valve element between open and closed positions in response to the pressures of fluids in the well above said packer means.

4,350,206

FIRE EXTINGUISHING FOAM CONCENTRATE AND ITS APPLICATION

Bernd Hoffmann, Frankfurt am Main; Siegfried Jüng, Karben, and Hans-Joachim Semmler, Hochheim am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 29, 1981, Ser. No. 306,880

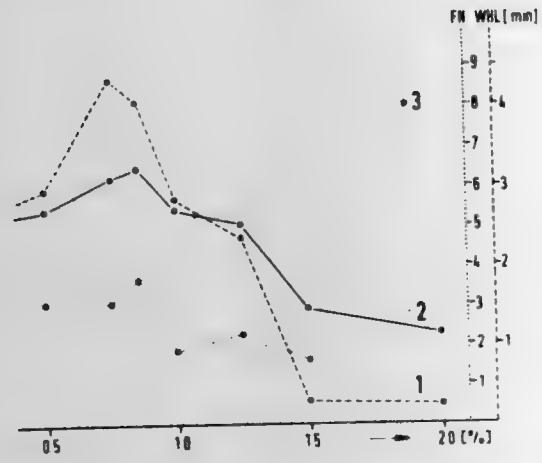
Claims priority, application Fed. Rep. of Germany, Oct. 1, 1980, 3037155

Int. Cl.³ A62B *1/12*

U.S. Cl. 169—47 **5 Claims**

1. In a film-forming fire extinguishing foam concentrate containing water, at least one hydrocarbon surfactant and at least one fluorosurfactant compatible with the hydrocarbon

surfactant; the improvement comprising 0.1 to 4% by weight based on the surfactants of an aliphatic carboxylic acid of the



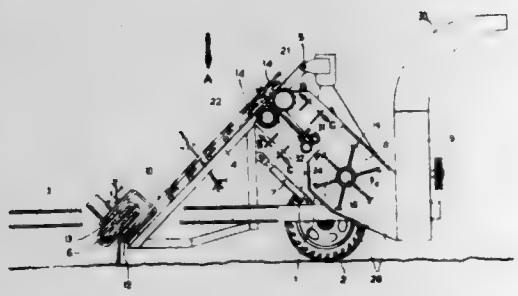
formula $C_nH_{2n+1}COOH$, in which n is an integer of from 7 to 9, or an alkali metal or ammonium salt thereof.

4,350,207

AGRICULTURAL IMPLEMENT FOR THE EXTRACTION AND SHREDDING OF STALKS AND ROOTS

Yaron Ben-Dor, No. 7 Ruth St., Haifa, Israel (34404)

Filed Feb. 6, 1981, Ser. No. 232,355
Claims priority, application Israel, Aug. 28, 1980, 61123
Int. Cl.³ A01D *13/00*
U.S. Cl. 171—58 **8 Claims**



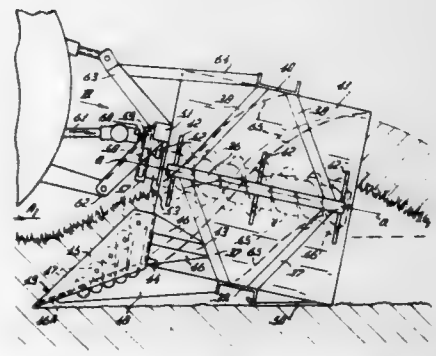
1. A stalk extracting and shredding implement, comprising:
a frame mounted on wheels,
means for attaching the frame to a vehicle,
means for shredding stalks mounted on said frame, said means including a rotary member,
at least two arms pivotally connected to the top of the frame, said arms extending obliquely downward toward the vehicle, said arms defining a space therebetween above the shredding means,
at least two parallel shafts rotatably mounted at the lower ends of each arm,
wheels for extracting stalks from the agricultural land obliquely mounted on said shafts and resilient tires on said wheels having their adjoining surfaces pressed together,
a belt conveyor on the arms adapted to convey the extracted plants from between the extractor wheels,
means for driving said parallel shafts,
a first upper and first lower pulley in spaced relation to one another on the each arm adjacent said space, said first lower pulley being mounted on one of said parallel shafts adjacent said space,
a first continuous belt tensioned between said first upper and lower pulleys,
a second upper and second lower pulley in spaced relation to each other on each arm, said second lower pulley being mounted on the other of said parallel shafts remote from said space, said second upper pulley being substantially coplanar in line with and above said first upper pulley adjacent said space,
a second continuous belt tensioned between said second upper and second lower pulley, said first and second belts having portions moving up said arm biased against one another, whereby said first and second belts convey the extracted stalks to said space,
an upper pair of feed rollers positioned in said space between the shredder and the top of said arm, and
a lower pair of rollers positioned below said upper feed rollers and opposite the shredder, said upper pair and lower pair of rollers being adapted to rotate thereby conveying the extracted stalks from the belt conveyor into the shredder.

4,350,208

PLOUGH

Cornelis van der Lely, 7 Brüschenrain, Zug, Switzerland

Filed Sep. 22, 1980, Ser. No. 189,332
Claims priority, application Netherlands, Sep. 21, 1979, 7907032
Int. Cl.³ A01B *15/08, 79/00*
U.S. Cl. 172—1 **41 Claims**



1. A plow comprising a frame and furrow forming means adjacent the front of the frame, said forming means including cutting members positioned to loosen a wide, continuous furrow strip across the width of said plow during travel, elevating means to the rear of said members and a furrow strip turning device to the rear of said elevating means, said device comprising at least one rotary member that engages the continuous strip and urges the strip from the front of the device to the rear while supporting and inverting said strip, driving means connected to rotate said device and deposit the inverted strip in the furrow being formed, said elevating means being a furrow deforming member, said deforming member comprising two groups of rollers arranged in V-shape.

9. A method of plowing ground, comprising cutting loose a continuous furrow strip, elevating the strip to a rotating worm conveyor that initially engages and depresses the top surface of the strip, turning the strip to invert same while winding and supporting the strip on the conveyor to deform the strip and thereafter continuously depositing the strip with an inverted, shallow U-shaped cross section in the formed furrow.

4,350,209

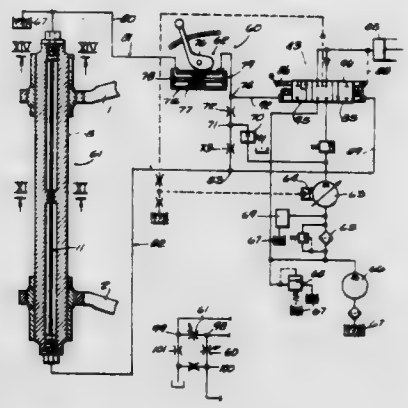
HYDRAULIC DRAFT CONTROL VALVE

John W. O'Connor, Hales Corners, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Division of Ser. No. 64,097, Aug. 6, 1979, Pat. No. 4,293,040.
This application Jun. 5, 1981, Ser. No. 270,993
Int. Cl.³ A01B *63/112*
U.S. Cl. 172—7 **8 Claims**

1. A hydraulic draft load sensing system on a vehicle comprising a source of constant pressure hydraulic fluid, a hydraulic bridge circuit having two flow paths connected to said source of constant pressure hydraulic fluid, each of said flow paths including a variable orifice and a fixed orifice connected by a fluid junction, one of said variable orifices defining a load sensing hydraulic valve, a control valve adapted for controlling fluid flow to a hydraulic actuator, a hydraulic valve operator connected to at least one of said junctions for operating said

control valve responsive to pressure changes in at least one of said junctions, a draft coupling including a three point hitch



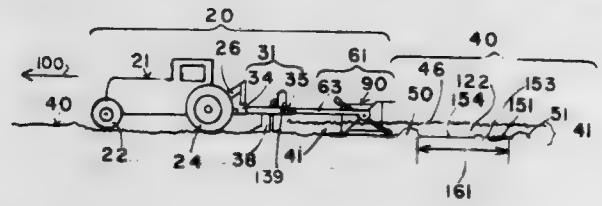
connected to said load sensing valve for controlling the rate of flow responsive to draft loads for operating said control valve.

4,350,210

DIKER, APPARATUS, SYSTEM AND PROCESS OF OPERATION

Oliver W. Shadden, 1501 Avenue L, and Jerry W. Howard, 902 First St., both of Abernathy, Tex. 79311

Filed Oct. 6, 1980, Ser. No. 194,281
Int. Cl.³ A01B *13/16*
U.S. Cl. 172—143 **9 Claims**



1. A diker assembly comprising:

(a) a yoke, said yoke comprising a transverse member and longitudinal arms attached to said transverse member, and

(b) a digging plate and backing plate unit, said digging blade and backing plate unit comprising a first, upper, backing plate portion, a second, lower, backing plate portion and a first, upper, digging plate portion and a second, lower, digging plate portion, a first locator shoe and a second locator shoe, and rigid struts connecting said locator shoes and said digging plate and backing plate unit, said plate portions being flat and rigid, said digging and backing plate unit rotatably connected to said arms of said yoke at the center of said digging plate and backing plate unit,

(c) said first, upper, backing plate portion extending transversely and in a plane forward and downward, said first digging plate extending transversely and in a second flat horizontal plane forming an angle to said first, lower, backing plate portion and said second, upper, backing plate portion extending transversely and in a plane extending rearward and upward and said second digging plate extending transversely and in a third plane and connected to and forming an angle to said second backing plate portion, said first digging plate portion and said second digging plate portion being parallel to each other,

(d) a first strut extending rearwardly and downwardly from said digging plate and backing plate unit and a second strut comprising a rigid beam extending forwardly and upwardly therefrom,

(e) said first locator shoe attached to said first strut at the rear and lower end thereof and extending horizontally and forwardly and leftward and rightward transversely of said strut, and said second locator shoe attached to said second strut at the front and upper end thereof and extending horizontally and rearwardly and transversely leftward and rightward of said second strut, each said strut being thin from side-to-side and wide in the vertical plane,

(i) said first locator shoe having a lower edge extending transversely below the plane of said first digger plate, and

(ii) a surface of said first locator shoe extending upwardly and forwardly from said lower edge of said first locator shoe,

(iii) said second locator shoe having an upper edge extending transversely above an extension of said plane of said second digger plate and,

(iv) a surface of said second locator shoe extending downwardly and rearwardly from said upper edge of said second locator shoe,

(f) said digging plate and backing plate unit and said shoes and struts being symmetrical about the center of said backing plate unit halfway between said digging plate portions, and

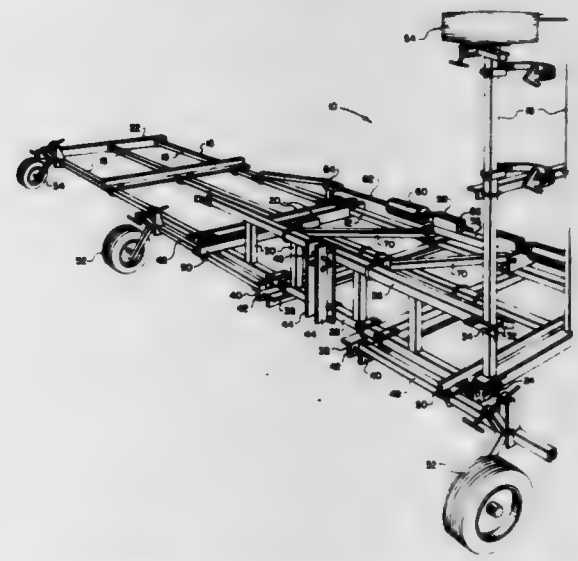
(g) each locator shoe being located in a position determined by the intersection of (i) a first straight line perpendicular to the plane of the backing plate at the center thereof, and (ii) a second straight line perpendicular to the flat plane of a digger plate, and in which position the distance from the tip of said digger plate to the locator shoe forward thereof is greater than the distance from the center of the backing plate to the locator shoe forward of said digger plate.

4,350,211

ADJUSTABLE PATTERN CULTIVATOR

Edward J. Coufal, Rte. 3, Temple, Tex. 76501

Filed Oct. 11, 1979, Ser. No. 83,818
Int. Cl.³ A01B *73/00*
U.S. Cl. 172—311 **8 Claims**



1. An implement for broadcast and row crop cultivation comprising:

first, second and third frames each defined by first and second elongated tubular members spaced apart and extending parallel to each other, and cross bars rigidly interconnecting adjacent ends of said tubular members of each of said frames;

three point hitch means connected to said second frame for connection of said implement to a tractor, said hitch means defining a forward end of said implement and said hitch means being adapted to position the forward edge of said second frame adjacent to and rearwardly of the drive wheels of said tractor;

hinge means connected to adjacent ones of said cross bars of said first and second frames and to adjacent ones of said cross bars of said second and third frames to hingedly connect said first and third frames to said second frame with said tubular members of said frames generally in alignment with each other;

first and second elongated tubular mounts spaced forward of said second frame and having respective first ends rigidly connected to said second frame, said tubular mounts having respective cantilever second ends extending, respec-

tively, in opposite directions generally parallel to said tubular members and laterally with respect to the normal direction of towing of said implement from said second frame beyond said hinge means to points spaced forwardly from said first tubular members of said first and third frames;

first and second gauge wheels slidably carried on said second ends of said first and second tubular mounts and adapted to be selectively positioned on said first and second tubular mounts along said second ends including laterally outboard of said second frame;

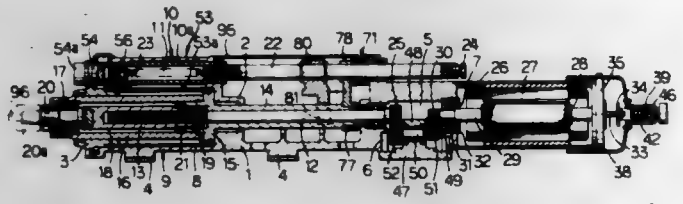
third and fourth gauge wheels slidably carried on said first and third frames and positioned at the respective ends of said first and third frames opposite said second frame; and

a plurality of plow shanks carried by said tubular members of said frames and spaced along said tubular members at positions selected according to a preselected mode of cultivation.

4,350,212
STEP FEED DRILLING MACHINE

Noboru Hirose, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Sep. 23, 1980, Ser. No. 190,068
Claims priority, application Japan, Oct. 3, 1979, 54-127483
Int. Cl.³ E21C *5/10*
U.S. Cl. 173—6 9 Claims



1. A drilling machine comprising:

a frame having a liquid tank,

a quill reciprocably mounted in the frame,

a spindle rotatably mounted in the quill and having a tool at one end thereof,

a motor operatively connected with the spindle for rotating the same,

pneumatic feed means for reciprocating the quill in advancing and returning directions,

feed control means for controlling the feed speed of the quill, including;

(a) a hydraulic cylinder having a housing disposed in parallel with the axis of the quill and connected to the liquid tank at one end thereof through a liquid passage, and a piston assembly disposed within the housing and having a portion projecting from the other end of the housing,

(b) means for biasing the piston assembly in the returning direction,

(c) regulating means disposed in the liquid passage for regulating flow of liquid from the hydraulic cylinder to the tank and allowing free-flow of the liquid from the liquid tank to the hydraulic cylinder,

(d) engaging means for engaging the quill with the projecting portion of the piston assembly when the quill arrives at a desired position in the forward movement thereof, whereby the quill is moved at a rapid speed by the pneumatic feed means until it engages with the projecting portion and then is moved at a slow speed controlled by the regulating means,

one-way clutch disposed between the piston and the frame for permitting the movement of the piston assembly only in the advancing direction of the quill,

first operation control means for controlling the pneumatic feed means to make the quill repeat a drilling cycle wherein the quill returns after a drilling operation and advance again for resuming the drilling operation,

position sensing means for generating a sensing signal when the quill has been moved to the forwardmost position,

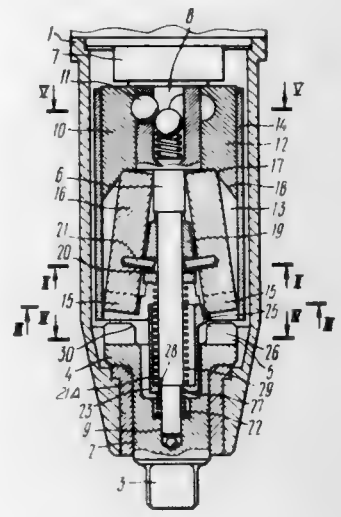
second operation control means for stopping the operation of the first control means in response to the sensing signal from the position sensing means, and

clutch releasing means for permitting the movement of the piston assembly in the returning direction of the quill when the quill has been moved to the backwardmost position.

4,350,213
IMPACT WRENCH

Georgy A. Antipov, ulitsa Krasny Mayak, 3, kv. 146; Mikhail L. Gelfand, Yaroslavskoe shosse, 129, kv. 44, both of Moscow; Yakov I. Tsipenjuk, ulitsa Kirova, 6, kv. 30, Solntsevo Moskovskoi oblasti; Boris G. Goldshtein, ulitsa Molodogvardeiskaya, 24, korpus 1, kv. 26, Moscow; Nikolai S. Lavnikov, ulitsa Kustanaiskaya, 117, kv. 10, Rostov-na-Donu; Leonid N. Teres, ulitsa 2 Koltsevaya, 61/21, Rostov-na-Donu; Ivan I. Urazhdin, ulitsa Engelsa, 52/56, kv. 18, Rostov-na-Donu; Petr S. Yakubovsky, Podshipnikovy pereulok, 12, kv. 36, Rostov-na-Donu; Vitaly T. Boiko, ulitsa Jubileinaya, 13a, kv. 24, Ljubertsy Moskovskoi oblasti; Anatoly M. Kalmykov, ulitsa Artjukhinoi, 7/7, kv. 51, Moscow; Dmitry P. Minyashkin, ulitsa Junykh Lenintsev, 43/33, kv. 213, Moscow, and Mikhail M. Stepanov, ulitsa Chistova, 13a, kv. 90, Moscow, all of U.S.S.R.

Filed Oct. 19, 1979, Ser. No. 86,285
Int. Cl.³ B25B *21/02*
U.S. Cl. 173—93.6 10 Claims



1. An impact wrench comprising a housing; a drive motor accommodated in said housing and having a drive shaft; a spindle journalled in said housing; an anvil having impact jaws and rotatable together with said spindle; a hammer having a flywheel mass coupled to the drive shaft for combined rotation and impact jaws coupled to the flywheel mass for combined rotation and for relative axial movement during acceleration of the hammer, both said anvil and flywheel mass being fixed against axial movement; flyweights in said hammer for causing said impact jaws of said hammer to move toward said anvil for engagement with said impact jaws of said anvil; means provided between said impact jaws of said hammer and said anvil for preventing said impact jaws of said hammer from engaging said impact jaws of said anvil until said flywheel mass gains a predetermined rotational speed, said means preventing the engagement comprising an axially movable sleeve mounted on said drive shaft in such a manner that it is tiltable in the plane extending through the axis of said drive shaft between a first position in which said tiltable sleeve is in engagement with said impact jaws of said hammer and a second position in which said sleeve is disengaged from said impact jaws of said hammer, said tiltable sleeve being mounted for rotation together with said impact jaws of said hammer, said anvil having means engageable with said tiltable sleeve upon the movement of said

tiltable sleeve toward said anvil together with said impact jaws of said hammer, whereby said sleeve is caused to tilt to said second position; and a spring between said tiltable sleeve and said anvil.

4,350,214

RAM BLOCK

Kjell G. Landaeus, Lund, Sweden, assignor to Lund Hydromaskin AB, Eslov, Sweden

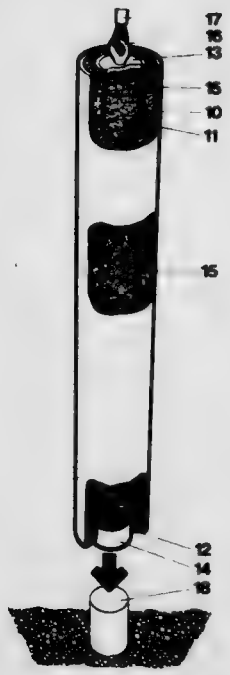
PCT No. PCT/SE79/00178, § 371 Date May 5, 1980, § 102(e) Date May 5, 1980, PCT Pub. No. WO80/00584, PCT Pub. Date Apr. 3, 1980

PCT Filed Sep. 4, 1979, Ser. No. 193,527

Claims priority, application Sweden, Sep. 5, 1978, 7809303

Int. Cl.³ B25D *17/06*

U.S. Cl. 173—126 **4 Claims**



1. A ram block for driving piles and the like into the ground comprising an inner steel cylinder, an outer steel cylinder surrounding the inner steel cylinder coaxially, annular end wall means connecting the inner steel cylinder and the outer steel cylinder at the lower ends thereof, a cap connected to and covering the lower end of the inner steel cylinder, lead enclosed within the inner steel cylinder and lead enclosed in the annular space between the inner steel cylinder and the outer steel cylinder.

4,350,215

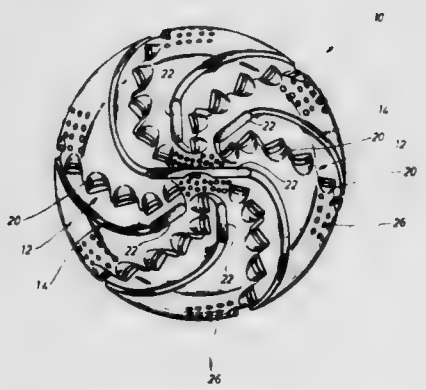
DRILL BIT AND METHOD OF MANUFACTURE

Robert P. Radtke, Kingwood, Tex., assignor to NL Industries Inc., New York, N.Y.

Continuation of Ser. No. 943,313, Sep. 18, 1978, abandoned. This application Sep. 22, 1980, Ser. No. 189,370

Int. Cl.³ E21B *10/58*

U.S. Cl. 175—329 **19 Claims**



1. A method of manufacturing a drill bit for use in association with a rotary drill stem, said bit comprising a bit head having a plurality of dimensionally controlled pockets and a plurality of cutter assemblies secured within said pockets which cutter assemblies comprise cutter face material that suffers thermal damage above a thermal degradation temperature; said method comprising the steps of:

forming a drill bit head by powder metallurgy at a temperature above the cutter face material thermal degradation temperature, with said plurality of dimensionally controlled pockets each having sidewalls and being free from internal negative relief and formed to present the cutter face of each said cutter assemblies at a predetermined rake angle;

forming said cutter assemblies, each comprising a drill blank having a cutter face and a support secured to said drill blank, wherein said support is of a material and has dimensions such that said support forms a frictional relationship with the sidewalls of a pocket without deforming said bit head when said support is force fit into said pocket and subsequently heated to a brazing temperature below the degradation temperature of said cutter face;

placing a brazing material in communication with each of said pockets;

force fitting said cutter assembly supports into said dimensionally controlled pockets; and

brazing said cutter assembly supports within said pockets by a furnace cycle having a maximum temperature below said cutter face thermal degradation temperature.

11. A drill bit comprising:

A drill bit head formed by powder metallurgy and having a plurality of dimensionally controlled pockets formed therein, which pockets have sidewalls free from internal negative relief; and

a plurality of cutter assemblies, one for each of said pockets, each comprising a drill blank having a cutter face, and a support secured to said drill blank and secured to said pocket by brazing, wherein each support is of a material and has dimensions such that said support forms a frictional relationship with the sidewalls of a pocket without deforming said bit head when said support is force fit into said pocket and subsequently said cutter assemblies and said bit head are heated to a brazing temperature below the degradation temperature of said cutter face.

4,350,216

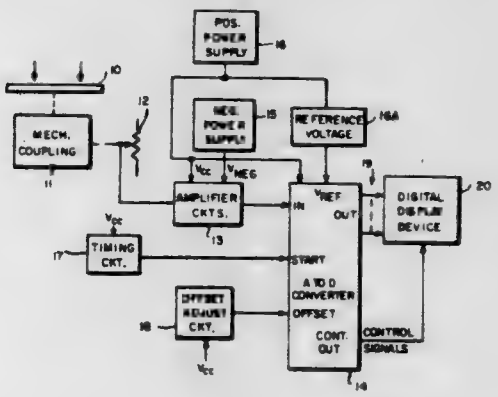
WEIGHING DEVICES USING ELECTRONIC CIRCUITRY

Anton Mavretic, Natick, Mass., assignor to Avitar, Inc., Rumford, R.I.

Filed Sep. 11, 1980, Ser. No. 186,315

Int. Cl.³ G01G *23/14, 3/14*

U.S. Cl. 177—164 **11 Claims**



1. A weighing device comprising

movable platform means for accepting a weight placed thereon;

means for providing an analog voltage;

means for mechanically coupling said movable platform means and said analog voltage providing means to pro-

duce an analog voltage therefrom which is proportional to the displacement of said platform means;

electric circuit means responsive to said analog voltage for providing a corresponding digital voltage representation thereof, said circuit means including

means for amplifying said analog voltage to produce an amplified analog voltage;

analog-to-digital converter means responsive to said amplified analog voltage to produce said digital voltage;

first power supply means for providing a fixed positive reference voltage for said amplifying means;

second power supply means for providing a fixed negative reference voltage for said amplifying means;

first variable adjusting means for adjusting the digital voltage output from said analog-to-digital converter means to zero when no weight has been placed on said movable platform means.

4,350,217

BALANCE ARM FOR FLAT WEIGHING MACHINES

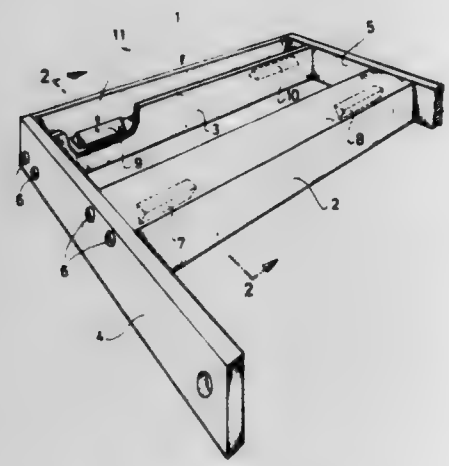
Ernst Kuhnle, and Josef Schwarz, both of Balingen, Fed. Rep. of Germany, assignors to Bizerba-Werke Wilhelm Kraut KG, Balingen, Fed. Rep. of Germany

Filed Oct. 29, 1980, Ser. No. 201,812

Claims priority, application Fed. Rep. of Germany, Nov. 2, 1979, 2944126

Int. Cl.³ G01G *21/14, 21/04*

U.S. Cl. 177—246 **4 Claims**



1. Balance arm for flat weighing machines comprising two spaced side beams, at least two girder section rails each having a U-shaped cross-section along its entire length and open ends, said U-shaped cross-section comprising a base and two spaced sides extending at right angles with respect to said base, the open ends of said rails being secured to said side beams by screw means to form a rigid frame, in which said rails are arranged in spaced parallel relation, and a pair of knife-edges attached to the base of each said rail between said sides such that each knife-edge extends parallel to the longitudinal axis of the respective rail, wherein each knife-edge has a sharp edge and the sharp edges of the knife-edges of each pair are in alignment, and wherein each rail is secured to the side beams such that the sharp edges of all the knife edges lie in a common plane.

4,350,218

WEIGH-PLATFORM, RESTING ON LOAD MEASURING SUPPORT POINTS

Arne Söderholm, Furusangsvägen, Sweden, assignor to S.E.G. Resistor A.B., Vallingby, Sweden

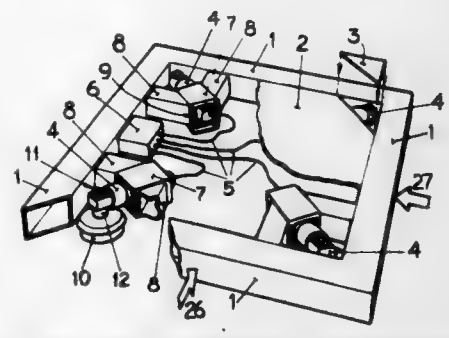
Filed Nov. 7, 1980, Ser. No. 204,906

Claims priority, application Sweden, Nov. 21, 1979, 7909626

Int. Cl.³ G01G *21/23*

U.S. Cl. 177—255 **4 Claims**

1. Electromechanical load-measuring apparatus comprising a substantially horizontal platform for receiving a load to be measured; a plurality of load-measuring means each in the form of a substantially horizontal beam which includes a load sensing cell for transducing part of the platform load to an electric signal, and means for transmitting the platform load to said load-measuring beams, said means including first connecting means connecting one end of each load-measuring beam to the platform, said first connecting means being rigid in the vertical



direction and elastically resilient in horizontal directions, at least in the direction perpendicular to the longitudinal axis of the beam and second connecting means for connecting the opposite end of each beam to a foundation in a manner such that the connection is elastically resilient in the vertical plane and in horizontal planes and elastically yielding to angular deflections to moments about axes in these planes.

4,350,219

BATTERY POWERED ELECTRIC MOTOR VEHICLE

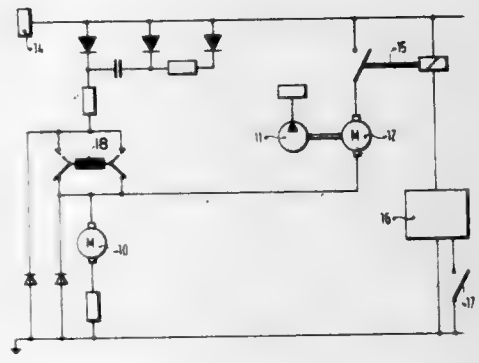
Gottfried Olbrich, Sachsenheim, and Peter Pfeffer, Lauffen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 5, 1980, Ser. No. 213,543

Claims priority, application Fed. Rep. of Germany, Dec. 15, 1979, 2950670

Int. Cl.³ B62D *5/04*

U.S. Cl. 180—65 R **5 Claims**



1. A storage battery powered, electric motor vehicle, particularly an electric fork lifter, having a main electric drive motor connected to the storage battery in series with an electrical control circuit, comprising a steering device having an auxiliary electric motor connected to the battery in series with said main drive motor and parallel to said control circuit to be energized by the voltage drop across said control circuit, wherein the sun of the instantaneous voltage applied to the drive motor and the voltage drop across said control circuit is equal to the voltage from the storage battery.

4,350,220
AUTOMOTIVE DRIVE SYSTEM

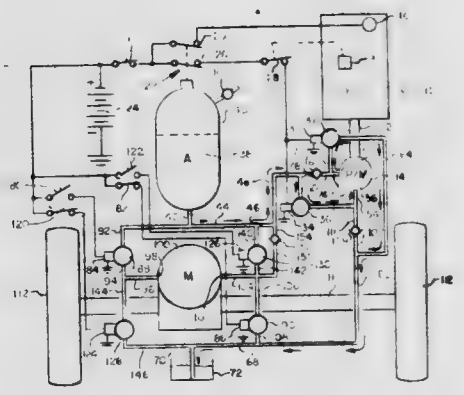
Vincent E. Carman, Portland, Oreg., assignor to Advanced Energy Systems Inc., Portland, Oreg.

Continuation of Ser. No. 948,827, Oct. 5, 1978, Pat. No. 4,227,587, which is a continuation of Ser. No. 765,951, Feb. 7, 1977, abandoned. This application Jul. 10, 1980, Ser. No. 167,446

The portion of the term of this patent subsequent to Oct. 14, 1997, has been disclaimed.

Int. Cl.[3] B60K *9/00*

U.S. Cl. 180—165 3 Claims



1. In a wheeled vehicle having an engine and a system for selectively storing energy normally lost in braking the vehicle and using said energy to drive the vehicle, a drive transmission and engine-starting system comprising:

(a) a mechanical energy storage accumulator for collecting and storing mechanical energy;

(b) a power transmission mechanically coupled to at least one wheel of said vehicle for driving and being driven by said wheel;

(c) a transmission controller selectively mechanically connecting said power transmission to said energy storage accumulator for causing said power transmission to deliver mechanical energy to said storage accumulator for storage therein in response to the driving of said power transmission by said wheel to brake said vehicle;

(d) a transmission controller selectively mechanically connecting said power transmission to said energy storage accumulator for causing said power transmission to receive mechanical energy from said storage accumulator to drive said wheel;

(e) said engine being mechanically coupled to said energy storage accumulator for delivering mechanical energy from said engine to said storage accumulator for storage therein;

(f) an energy sensor connected to said energy storage accumulator for sensing the amount of mechanical energy stored therein;

(g) an engine stop-start controller connected responsively to said energy sensor and connected to said engine for stopping said engine when the amount of energy in said energy storage accumulator exceeds a predetermined maximum and for starting said engine in response to a drop in the energy in said storage accumulator below a predetermined minimum; and

(h) means automatically responsive to the starting of said engine for selectively preventing the delivery of mechanical energy from said engine to said storage accumulator during said starting of said engine and permitting said delivery after said starting of said engine.

4,350,221
SNOWMOBILE FRAME WITH CORNER-MOUNTED DAMPERS

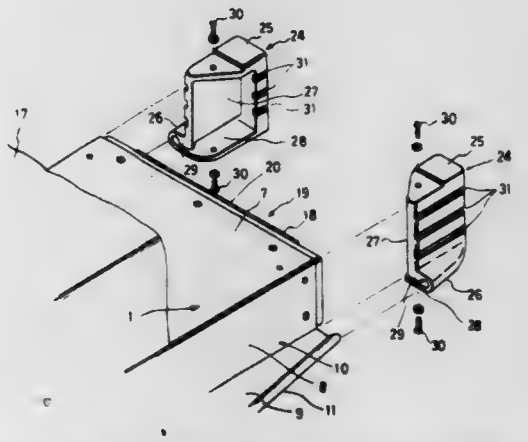
Takaharu Ishima, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Jun. 18, 1980, Ser. No. 160,469

Claims priority, application Japan, Jun. 30, 1979, 54/83141

Int. Cl.[3] B60N *3/00;* B60R *19/08*

U.S. Cl. 180—190 6 Claims



1. In a frame for the chassis of a small snowmobile, comprising an upper plate having a pair of opposite side edges, said side edges being pressed downwardly to form respective side plates, and pressed laterally to form respective foot plates at and integrally with the lower edge of the respective side plates, said side plates and foot plates extending along said side edges and terminating at the rear end thereof to form a corner, each said foot plate being substantially flat and horizontal for a substantial area adjacent to said plate at said rear end, the improvement comprising: a damper member made of elastic material disposed at each side of said frame, each said damper being fitted over and covering the top and bottom of at least the rear end portion of said foot plate, extending upwardly along said side plate, and atop said upper plate; and attachment means attaching said damper to said upper plate inwardly of said side plates whereby said damper provides structural support for said rear end of said foot plate to resist downward bending.

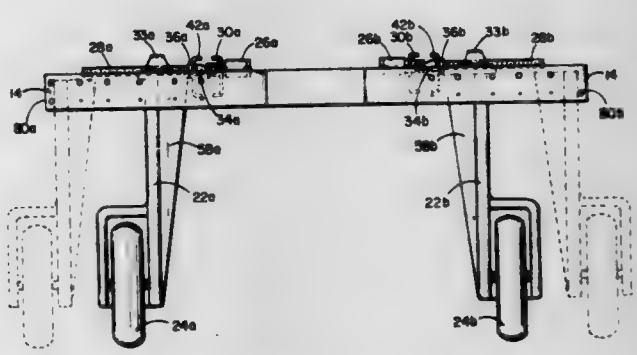
4,350,222
VARIABLE TREAD VEHICLE

Martin T. Lutteke, and Gordon M. Lutteke, both of Rte. 1, Wells, Minn. 56097

Filed Mar. 24, 1980, Ser. No. 133,466

Int. Cl.[3] B62D *61/00*

U.S. Cl. 180—209 11 Claims



1. A variable tread vehicle comprising:

a frame;

first and second parallel horizontal rails connected to the frame and extending transverse to a direction of movement of the vehicle to define a track; wherein the first and second rails comprise hollow tubes having generally rectangular cross-sections;

first movable carriage means movable on a first section of the track; the first movable carriage means comprising:

first and second slides of C-shaped cross-section for partially surrounding the first and second rails, respectively, for slidable movement thereon;

first brace means attached to and extending between the first and second slides, the first brace means having a substantially vertical portion;

first internally threaded means carried by the substantially vertical portion of the first brace means wherein the first internally threaded means is a first shaft nut attached to the vertical portion of the first brace means and an edge of the first plate means is in abutment with the first shaft nut; and

first generally horizontal plate means attached to and extending between the first and second slides;

second movable carriage means movable on a second section of the track; the second movable carriage means comprising:

third and fourth slides of C-shaped cross-section for partially surrounding the first and second rails, respectively, for slidable movement thereon;

second brace means attached to and extending between the third and fourth slides, the second brace means having a substantially vertical portion;

second internally threaded means carried by the substantially vertical portion of the second brace means wherein the second internally threaded means is a second shaft nut attached to the vertical portion of the second brace means and an edge of the second plate means is in abutment with the second shaft nut; and

second generally horizontal plate means attached to and extending between the third and fourth slides;

first drop axle means attached to the first and second slides and the first plate means of the first movable carriage means proximate its upper end and extending downward;

first gusset means attached to and extending between the first drop axle means and the first plate means;

second drop axle means attached to the third and fourth slides and the second plate means of the second movable carriage means proximate its upper end and extending downward;

second gusset means attached to and extending between the second drop axle means and the second plate means;

a first wheel connected to the first drop axle means proximate its lower end;

a second wheel connected to the second drop axle means proximate its lower end; first internally threaded means for driving the first movable carriage means on the first section of the track;

a first threaded drive shaft extending through the internally threaded means for driving the first movable carriage means on the first section of the track;

a second threaded drive shaft extending through the second internally threaded means for driving the second movable carriage means on the second section of the track;

motor means for rotating the first and second shafts to move the first and second movable carriage means on the first and second sections of the track, and thereby vary the spacing between the first and second wheels; and

first and second arch braces attached to and extending between the first and second rails at positions along the first and second sections of the track for maintaining the first and second rails in fixed relationship with respect to one another while permitting movement of the first and second carriage means on the first and second sections of track, respectively, without interference from the first and second arch braces.

4,350,223

SILENCER

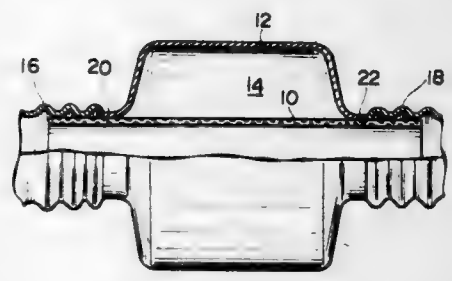
Hirofumi Takei, Yokosuka, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jan. 5, 1981, Ser. No. 222,392

Claims priority, application Japan, Jan. 16, 1980, 55-3687[U]

Int. Cl.³ F02M *35/12;* F01N *1/02*

U.S. Cl. 181—229 **7 Claims**



1. A silencer for use with an internal combustion engine comprising:

a foam metal tube; and

a non-metallic, vibration absorbing housing disposed about said tube to define a closed empty chamber between the inner surface of said housing and the outer surface of said tube.

4,350,224

RESCUE SYSTEM ON HIGH RISE BUILDINGS FOR EVACUATING PERSONS IN THE CASE OF FIRE

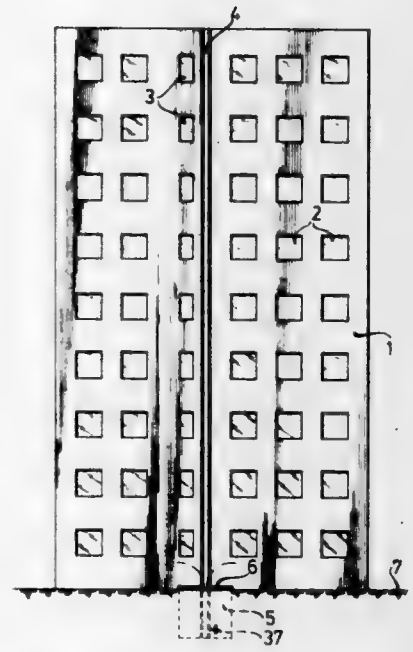
Friedrich Jochum, Kaiserslautern; Ernst Landsberg, Bergisch-Gladbach, and Plano Zschernack, Odenthal, all of Fed. Rep. of Germany, assignors to Walther & Cie Aktiengesellschaft, Cologne, Fed. Rep. of Germany

Filed Jun. 4, 1980, Ser. No. 156,635

Claims priority, application Fed. Rep. of Germany, Jun. 6, 1979, 2922859

Int. Cl.³ A62B *1/02;* B66B *9/02*

U.S. Cl. 182—82 **13 Claims**



1. A rescue system for evacuating persons from a multi-floor structure such as a high-rise building and the like, having a wall provided with at least one rescue window on each floor, comprising an upright climb rail secured to said wall in the range of said windows; a rescue cabin having transmission and guide elements for engaging said rail a driving motor attached to said transmission elements to drive said cabin upwardly and downwardly along said rail, and cabin walls provided with at least one entrance opening facing the rescue windows on respective floors; said upright climb rail being slidably connected to said

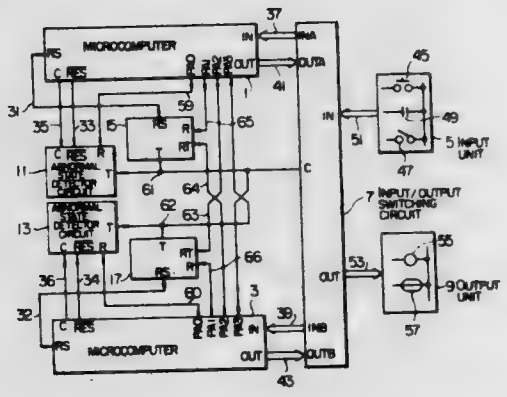
wall of the building to compensate for longitudinal extensions, and being assembled of a profiled inner rail section and two outer rail sections rigidly connected to said inner rail section and forming therewith two lateral cooling chambers.

4,350,225

ELEVATOR CONTROL SYSTEM

Kazuhiro Sakata; Takeo Yuminaka; Masao Nakazato; Kenji Yoneda, all of Katsuta; Soshiro Kuzunuki, and Yasunori Katayama, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 31, 1980, Ser. No. 117,088
Claims priority, application Japan, Feb. 2, 1979, 54/10431
Int. Cl.³ B66B *5/02*
U.S. Cl. 187—29 R **20 Claims**



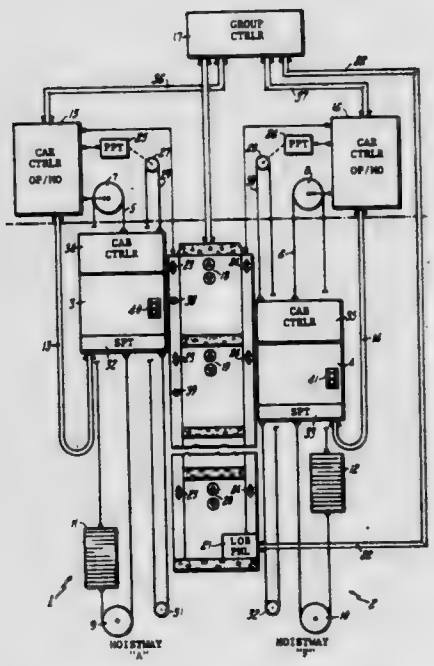
1. An elevator control system comprising an elevator servicing a plurality of floors in a building, and a control logic for the elevator including digital computers, wherein the control logic comprises a plurality of computers, and at least one computer is provided with means for retrial initializing the other computers.

4,350,226

ELEVATOR FLOOR STOP LOOK-AHEAD

George E. Sheehy, Middletown, and Joseph Bittar, Simsbury, both of Conn., assignors to Otis Elevator Company, Farmington, Conn.

Filed May 27, 1981, Ser. No. 267,281
Int. Cl.³ B66B *1/18*
U.S. Cl. 187—29 R **2 Claims**



1. An elevator system having a plurality of elevators, each having a car movable in a respective shaftway between a plurality of floor landings in a building, for servicing said landings in common, comprising:

a plurality of selectively actuable request means, each corresponding to one of said landings, a first group thereof each actuable to provide an up hall call signal indicative of a request for service in the up direction from the related landing and a second group thereof each actuable to provide a down hall call signal indicative of a request for service in the down direction from the related landing;

each of said elevators including motion means for selectively providing motion of the respective car in its shaftway in response to a go signal provided thereto and for providing a position signal indicative of the location of said car in said shaftway;

each of said elevators including car control means responsive to said position signal for providing a committable floor signal indicative of the next one of said landings at which said car could be stopped or is stopped and for providing said go signal to said motion means in response to a further demand signal provided thereto; and

group control means for exchanging signals with each of said car control means and responsive to said up hall call signals and said down hall call signals for allocating related requests for service to selected ones of said elevators and providing assigned up call signals and assigned down call signals indicative thereof, and responsive to said committable floor signal provided thereto by each of said elevators and ones of said assigned up call signals and assigned down call signals related to such elevator for providing to the corresponding car control means a further demand signal in each case in which there is an assigned up or down hall call ahead of the committable floor of the related car;

characterized by:

said group control means providing, to each of said car control means, a next committable floor signal indicative of the next floor beyond the floor indicated by the corresponding committable floor signal and for providing to the corresponding car control means a next further demand signal in each case in which there is an assigned up or down hall call ahead of the next committable floor of the car; and

each of said car control means being responsive to the committable floor signal provided thereby and the related next committable floor signal provided thereto by said group control means to provide said go signal to the related one of said motion means in response to said further demand signal only in each case in which said committable floor signal is different from said next committable floor signal and in response to the corresponding next further demand signal in each case in which said committable floor signal is identical to said next committable floor signal.

4,350,227

WHEELCHAIR BRAKE ASSEMBLY

Raymond E. Knoche, Creve Coeur, Mo., assignor to Bohn & Dawson, St. Louis, Mo.

Filed Aug. 25, 1980, Ser. No. 181,179
Int. Cl.³ B60T *1/04*
U.S. Cl. 188—2 F **7 Claims**

1. A brake assembly for a wheelchair having opposed side frames, each side frame carrying a drive wheel and having an upper longitudinal member, the brake assembly being selectively positionable in on and off positions, and comprising:

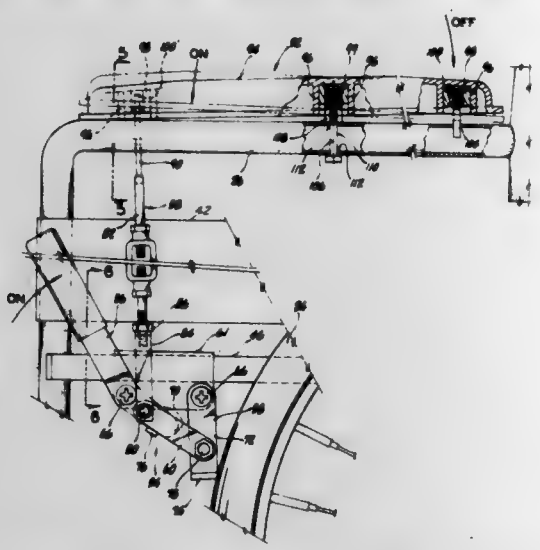
(a) a first link member operatively pivotally mounted to one of the side frames,

(b) a second link member operatively pivotally mounted to said side frame and including a brake shoe engageable with the wheel,

(c) a third link member operatively pivotally interconnecting said first and second link members,

(d) an arm rest having front and rear ends and including means pivotally mounting said arm rest to said side frame upper member, for upward and downward movement of said arm rest front end, and

(e) link means connecting said arm rest to one of said link members, whereby downward movement of the front end of the arm rest moves the brake shoe into engagement with said wheel, the link means including an upper end



connected to the arm rest and a lower end connected to the link members said brake assembly being actuated by said arm rest and associated linkage into an on position but not into an off position.

4,350,228

MECHANICAL ACTUATING DEVICE FOR A SPOT-TYPE DISC BRAKE

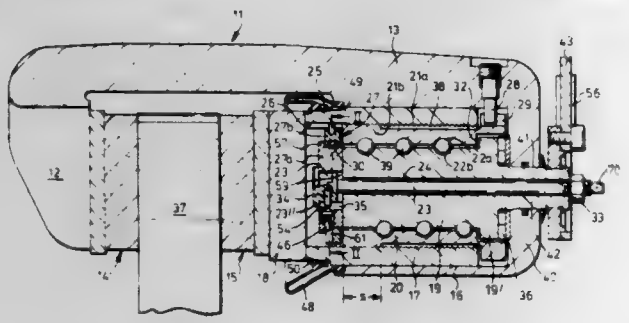
Hans-Henning Luepertz, Darmstadt, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Nov. 10, 1980, Ser. No. 205,135

Claims priority, application Fed. Rep. of Germany, Nov. 20, 1979, 2946852

Int. Cl.³ F16D *65/56*

U.S. Cl. 188—71.9 27 Claims



1. A mechanical actuating device for a spot-type disc brake comprising:

a brake caliper embracing the periphery of a brake disc, one leg of said caliper having a cylindrical bore therein, said bore having a longitudinal axis parallel to an axis of rotation of said brake disc;

a hollow cylindrical brake piston disposed in said cylindrical bore coaxial of said longitudinal axis, said brake piston being rotatable in said cylindrical bore, acting upon one brake shoe of said disc brake, and having a first thread disposed on the inner surface thereof;

an actuating nut secured against rotation disposed within said brake piston coaxial of said longitudinal axis, said actuating nut having a second thread on at least a portion of its outer surface engaging said first thread;

an actuating spindle disposed within said actuating nut coaxial of said longitudinal axis, said actuating spindle cooperating with said actuating nut to advance said brake piston toward said brake disc upon a relative axial displacement between said actuating spindle and said actuating nut caused by said actuating spindle being rotated by an actuating means coupled thereto; and

an automatic brake pad clearance adjusting device disposed in said brake piston coaxial of said longitudinal axis including

a one-way clutch disposed to act between said brake piston and said actuating spindle to enable maintaining a nominal brake pad clearance with respect to said brake disc by moving said brake piston out of said cylindrical bore when said actuating spindle is returning to its rest position after a brake actuation, said one-way clutch being connected to said actuating spindle during brake operation with this connection being capable of being removed to enable said one-way clutch to rotate independently of said actuating spindle.

4,350,229

DISC BRAKE HAVING A SLIDABLY SUPPORTED CALIPER

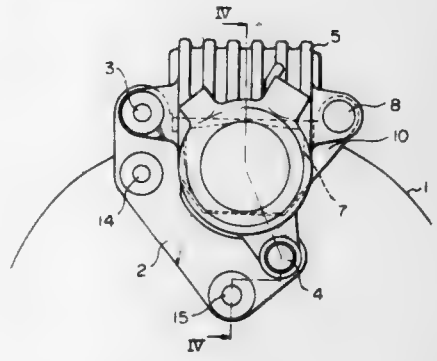
Hiroshi Ito, and Kazuo Saito, both of Kawasaki, Japan, assignors to Tokico Ltd., Kanagawa, Japan

Filed Oct. 15, 1980, Ser. No. 197,327

Claims priority, application Japan, Oct. 20, 1979, 54-145233[U]

Int. Cl.³ F16D *65/00*

U.S. Cl. 188—73.45 8 Claims



1. A disc brake comprising:

a rotatable disc having an axis of rotation; a holder provided on one side of said disc and securable to a non-rotatable part of a vehicle;

a first pin secured to said holder and extending in the direction of said axis, said first pin being located outside the outer circumference of said disc;

a second pin secured to said holder and extending parallel said first pin and being located radially inwards of the outer circumference of said disc;

a first friction pad disposed on one side of said disc;

a second friction pad disposed on the other side of said disc, each of said first and second pads having first and second ends spaced circumferentially along the circumference of said disc;

a caliper slidably supported on said holder by said first and second pins; and

a third pin mounted on said caliper and parallel with said first and second pins, said third pin being located outside of the outer circumference of the disc, said first ends of said first and second friction pads each being slidably supported on said third pin, and said second ends of at least one of said first and second friction pads being slidably supported on said first pin.

4,350,230

DRUM BRAKES FOR VEHICLES

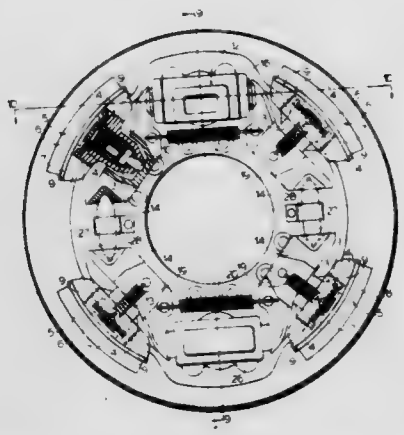
Brian Ingram, Balsall Common; David A. Harries, Solihull, both of England, and Ramamurthy Natarajan, Madras, India, assignors to Girling Limited, Birmingham, England

Continuation of Ser. No. 14,261, Feb. 22, 1979, abandoned. This application Sep. 4, 1980, Ser. No. 184,139

Claims priority, application United Kingdom, Feb. 22, 1978, 6974/78

Int. Cl.[3] F16D *51/12*

U.S. Cl. 188—79 2 Claims



1. A drum brake for a vehicle comprising a drag-taking member, four separate friction pad assemblies mounted on said drag-taking member for engagement with a rotatable drum, radially arranged drag-taking abutments on said drag-taking member, guide surfaces on said pad assemblies for cooperation with said drag-taking abutments, said drag-taking abutments and said guide surfaces being so constructed and arranged that said pad assemblies are guided for movement substantially in a radial direction towards and away from the drum and all other movements of said pad assemblies with respect to said drum are precluded, two pairs of levers for applying said pad assemblies to said drum, each of said levers acting on a respective one of said pad assemblies, each lever having an inner end and an outer end, struts being provided between said inner ends of corresponding levers of each said pair to provide articulated connections therebetween, a fixed abutment provided on said drag-taking member for engagement by said outer ends of said levers of one pair, and equalising actuating means acting on said levers to equalise the radial components of the brake applying forces applied to said pad assemblies, said actuating means acting on said outer ends of said levers of the other of said pairs to separate the same.

4,350,231

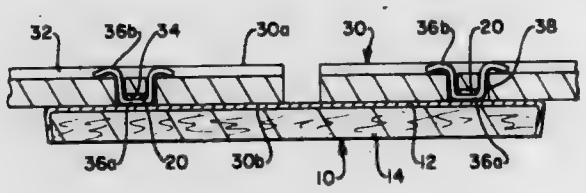
FRICTION WEAR PAD AND METHOD AND MEANS FOR FASTENING SAID PAD TO A DISK CORE MEMBER

Richard L. Crossman, Tallmadge, and Richard L. Kirk, North Canton, both of Ohio, assignors to Goodyear Aerospace Corporation, Akron, Ohio

Division of Ser. No. 44,879, Jun. 4, 1979, Pat. No. 4,279,333. This application Sep. 15, 1980, Ser. No. 187,309

Int. Cl.[3] F16D *65/12, 69/04*

U.S. Cl. 188—218 XL 4 Claims



1. A friction component comprising: a substantially circular disk core member having an inner arcuate peripheral edge and an outer arcuate peripheral edge and at least two annular grooves formed in one face surface of the disk core member, a plurality of apertures through the disk core member in alignment with and about the annular grooves, one of said grooves in spaced position from the inner peripheral edge while the other of said grooves is in spaced position from the outer peripheral edge of the disk core member;

a plurality of friction pads mounted on the other face surface of the disk core member opposite said one face surface having the annular grooves, each said pad having a substantially flat base and each said base having a plurality of tabs formed from the base and extending therefrom, said tabs being bent such that a major portion of the length thereof is substantially parallel to the plane of the base and facing toward said other face surface of said disk core member; and

clip means mounted between each of the tabs and the base and penetrating the apertures in the disk core member to said one face surface thereof to an extent such that a portion of their length may be turned down within the grooves and thus securely fasten the friction pads to the disk core member.

4. A method of mounting friction wear pads to but one face surface of a substantially circular disk core member having inner and outer peripheral edges comprising the steps of:

providing at least two annular grooves within one face surface of the disk core member and a plurality of apertures extending through the disk core member in alignment with and about the annular grooves, one of said grooves being in spaced position from the inner peripheral edge while the other of said grooves being in spaced position from the outer peripheral edge;

providing each of said friction wear pads with a base and having a plurality of tabs extending therefrom, at least one tab formed for alignment with one of said apertures in alignment with said one groove and extending toward said outer peripheral edge and at least one tab formed for alignment with one of said apertures in alignment with said other groove and extending toward said inner peripheral edge;

fastening the pads to the other face surface of the disk core member opposite said one surface by attaching U-shaped clips between the tabs and base and driving the clips through the apertures extending through the disk core member; and

bending the ends of said U-shaped clips that extend through to said one face surface of the disk core member down into the annular grooves provided in said one face surface of the disk core member.

4,350,232

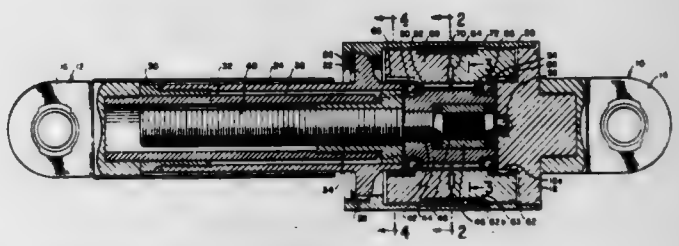
MECHANICAL SHOCK ARRESTOR

Elmer C. Yang, Orange, Calif., assignor to Pacific Scientific Company, Anaheim, Calif.

Filed Mar. 10, 1977, Ser. No. 776,397

Int. Cl.[3] F16F *7/10*

U.S. Cl. 188—378 23 Claims



1. A motion snubbing device comprising:

a pair of members mounted for relative movement;

a pair of inertia elements mounted to be freely rotated;

means connecting said members to said elements so that relative movement of said members in one direction will drive one of said inertia elements, and relative movement of said members in an opposite direction will drive the other inertia element; and

means connecting said inertia elements in a manner such that rotating either of the elements below a predetermined motion threshold causes such element to rotate the other inertia element, and attempting to rotate said other inertia element above said threshold initiates braking action on said elements and said members which limits motion to said threshold.

4,350,233

STRUCTURAL DAMPER FOR ELIMINATING WIND INDUCED VIBRATIONS

William H. Buckley, Rockville, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 1, 1980, Ser. No. 192,671
Int. Cl.³ F16F *7/10*
U.S. Cl. 188—378 **11 Claims**



1. A damping assembly for suppressing fluid flow induced vibrations in an elongated tubular structure which comprises:

a plurality of vibration damping tubes of different predetermined primary resonant frequencies suspended within the structure wherein each damping tube includes an elongated tubular shell having opposite end portions, plug elements secured to said opposite end portions, and an energy damping material disposed within said tubular shell and confined therein by said plug elements; and

means pivotally connecting the spaced end portions of adjacent damping tubes in end-to-end relationship so that said end portions of said damping tubes abut the inner surface of the structure.

4,350,234

AUTOMATIC TRANSMISSION SYSTEM PROVIDED WITH A FUNCTION OF ENGINE BRAKE

Masaaki Suga, Yokohama, and Hideo Hamada, Yokosuka, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jan. 30, 1980, Ser. No. 116,849
Claims priority, application Japan, Feb. 2, 1979, 54-11132; Sep. 7, 1979, 54-114075; Sep. 21, 1979, 54-120874
Int. Cl.³ B60K *41/20*
U.S. Cl. 192—4 A **7 Claims**

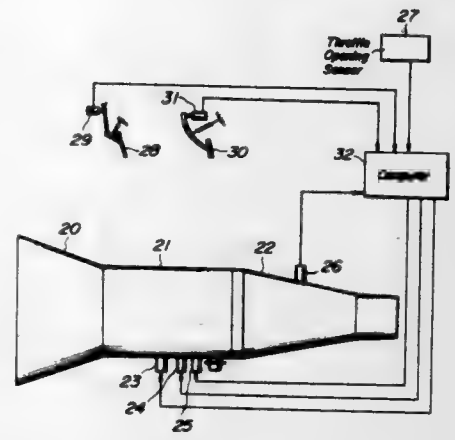
1. An automatic transmission system, wherein a plurality of vehicle speed ranges are set up selectively by controlling a plurality of shift solenoids for shifting mutually the vehicle speed ranges, comprising:

an idling detection means for detecting the release of an accelerator pedal,

a brake action detecting means for detecting the stepping of a brake pedal,

an acceleration discriminating means for detecting the acceleration which exceeds a predetermined amount thereof, and

a control means for controlling said plurality of shift solenoids only when detection output signals are derived from all of said idling detection means, said brake action detecting means and said acceleration discriminating means, so as to effect automatically the down shift of the vehicle speed range for attaining the function of engine braking.

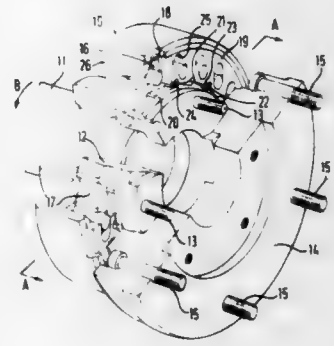


4,350,235

ANTI-REVERSAL DEVICE

Robert L. Brownett, Leicester, England, assignor to Dunlop Limited, London, England

Filed Jan. 15, 1980, Ser. No. 112,219
Claims priority, application United Kingdom, Jan. 27, 1979, 7902969
Int. Cl.³ F16D *15/00, 41/06*
U.S. Cl. 192—45 **15 Claims**



1. A device for preventing rotation in one direction of a rotating element comprising:

a rotary member having teeth connected to rotate with said element;

a stationary member relatively stationary with respect to said rotary member adjacent said rotary member having first and second concentric sets of teeth radially directed toward said rotary member teeth;

a main set of locking elements disposed between teeth along said rotary member, said locking elements being displaceable in a direction for engaging said first set of teeth and said rotary member teeth;

an auxiliary set of locking elements displaceable into and out of engagement with said second ring of teeth;

a control element rotatable with respect to said rotary member, said control element having means for maintaining said main set of locking elements out of engagement with said first ring of teeth and means for displacing said set of auxiliary locking elements out of engagement with said second ring of teeth when said control element rotates in a direction opposite said one direction; and

means for displacing said auxiliary set of locking elements into engagement with said second ring of teeth and said control element when said control element rotates in said one direction, and means for displacing said main set of locking elements into communication with said stationary member first set of teeth in response to engagement of said

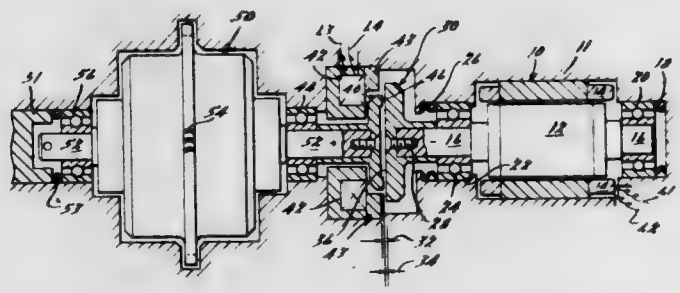
auxiliary locking elements due to rotation of said control element in said one direction whereby any initial rotation of said control member in said one direction results in engagement of said rotary member, control member, stationary member, and sets of locking elements stopping rotation of said rotary member.

4,350,236

ELECTROMAGNETIC CLUTCH ASSEMBLY

Paul H. Stahlhuth, Mission Viejo, Calif., assignor to Ford Aerospace & Communications Corp., Detroit, Mich.

Filed Dec. 8, 1980, Ser. No. 214,363
Int. Cl.³ F16D *27/10*; F02C *7/268*
U.S. Cl. 192—84 C **6 Claims**



1. An electromagnetic clutch assembly for controlling the engagement and disengagement of a rotatable prime mover with a rotatable load wherein said assembly includes:

a clutch rotor having a frictional engagement surface attached to said load and mounted for axial rotation about a first axis;

a clutch armature having a frictional engagement surface opposed to said clutch rotor engagement surface rigidly attached to said prime mover and mounted for axial rotation about said first axis;

electromagnetic means mounted adjacent said clutch rotor and clutch armature to cause engagement of said clutch rotor and clutch armature engagement surfaces and thereby communicate rotational driving forces from said prime mover to said load through said frictional engagement surfaces when energized by an external electrical source; and

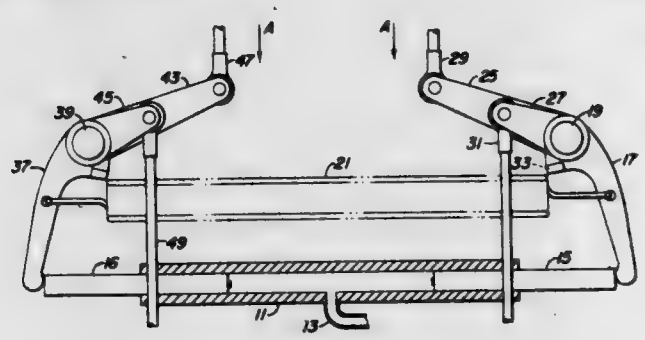
means for mounting said clutch armature and prime mover to move axially as a single unit.

4,350,237

FAIL-SAFE BRAKE LINKAGE

David L. Coleman, Dubuque, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Jul. 18, 1980, Ser. No. 170,264
Int. Cl.³ B60T *7/12*; F16D *65/14*
U.S. Cl. 192—116.5 **2 Claims**



1. A fail-safe brake linkage for a vehicle comprising:

a. hydraulic cylinder having a cylinder rod exdendable therefrom upon the introduction of pressure influenced hydraulic fluid therein, said cylinder rod to be retractable should the hydraulic cylinder pressure be reduced;

b. a first lever having one end abutting said cylinder rod;

c. biasing means for biasing said first lever against said cylinder rod;

d. a shaft rotatably mounted in said vehicle, said first lever being rotatably mounted around said shaft; and

e. first means for activating and deactivating said vehicle's braking system, said first means to communicate with said first lever such that said vehicle's braking system is automatically activated should said hydraulic cylinder experience a presssure decrease, including

i. a second lever fixably mounted on said shaft;

ii. brake actuation means for activating said braking system;

iii. a first actuation rod pivotally mounted to said second lever and in responsive communication with said brake actuation means;

iv. a second actuation rod pivotally mounted to said second lever and in responsive communication with said braking system; and

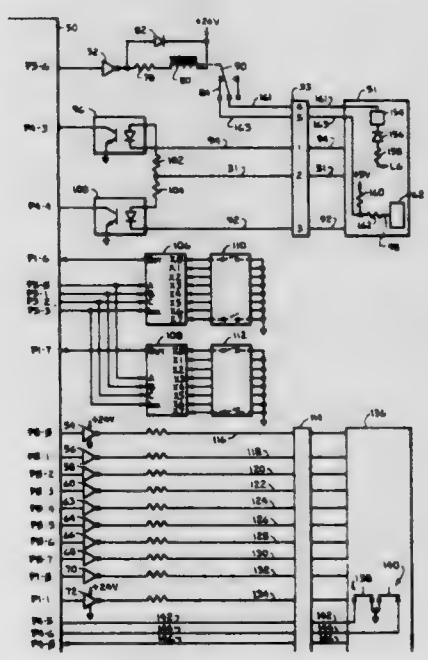
v. said first lever including a stop member oriented to allow said stop member to abut said second lever such that said vehicle's brakes are activated, whereby, should said hydraulic cylinder experience decreased pressure, said biasing member causes said first lever to rotate placing said stop member in an abutting relationship to said second lever.

4,350,238

DATA ACQUISITION UNIT

Hasmukh R. Shah, Hot Springs, Ark.; Thaddeus M. Jones, and Bruce Hemingway, both of South Bend, Ind., assignors to UMC Industries, Inc., Stamford, Conn.

Filed Apr. 4, 1980, Ser. No. 137,436
Int. Cl.³ G07F *9/08*
U.S. Cl. 194—1 N **21 Claims**



1. A data acquisition unit, which is connectable to a money-operated, multi-selection vending machine that responds to the insertion of money to develop credits and that responds to the actuation of selection switches to initiate vending operations, and which comprises a memory having locations in which resettable data can be stored, a connection between said vending machine and said data acquisition unit which enables said vending machine to transmit data to said data acquisition unit, a switch, a data processing means, and a data-receiving device which is connectable to said data acquisition unit to receive data from said acquisition unit, said data processing means normally responding to data transmitted by said vending machine to store said data in said locations in said memory, said data processing means responding to actuation of said switch to place said data acquisition unit in a data-yielding mode wherein said data processing means transfers said data from said data acquisition unit to said data-receiving device, said

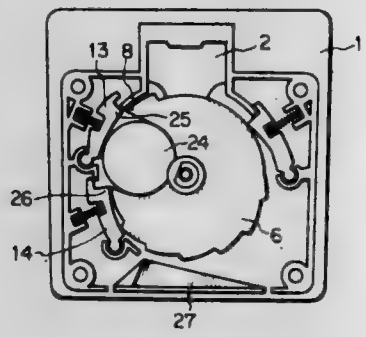
data processing means acting while said data acquisition unit is in said data-yielding mode to yield said resettable data to said data-receiving device while also retaining said resettable data in said locations in said memory, said data processing means subsequently responding to restoration of said switch to its normal condition and to the transmission of further data from said vending machine to be enabled to clear said resettable data from said locations in said memory.

4,350,239

COIN ASSORTING DEVICE FOR A VENDING MACHINE

Tadanobu Tsuiki, Fujimishi, Japan, assignor to Cosmos Company Limited, Saitama, Japan

Filed May 13, 1980, Ser. No. 149,534
Claims priority, application Japan, May 15, 1979, 54-59310
Int. Cl.³ G07F *5/04*
U.S. Cl. 194—1 G **8 Claims**



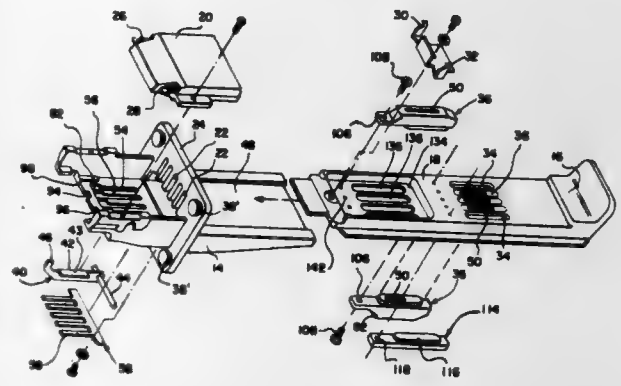
1. A coin assorting device for a vending machine in which a plurality of coins fed in a loose stack are required to operate the machine, the device comprising a plurality of coin assorting members equal in number to said plurality of coins, each of said members having a recess for clearing at least one coin and a respective coin contacting surface to be operated by a coin of a predetermined diameter in a predetermined position in said loose stack, a single rotatable ratchet formed with a single coin slot of a thickness sufficient to accept said stack of coins, said ratchet coin slot being defined by a trailing edge projecting radially outwardly towards said assorting members; each of said assorting members being pivotally mounted for motion towards and away from the axis of said rotatable ratchet; each of said assorting members comprising an edge adapted to contact said projecting edge of said rachet, said edge being positioned on said members to the front of said recess therein with respect to the direction of rotation of said ratchet with respect to said assorting members; a manual handle coupled to said ratchet via a rotatable shaft to directly drive said ratchet and to cause proper coins in said stack in said recess in said ratchet to operate said assorting members; stopper means for preventing said ratchet from reverse rotation, said stopper means comprising a step portion formed in said ratchet and a stopper member adapted to cooperate with said step portion to stop backward rotation of said ratchet when said stopper member is engaged with said step portion, a spring continually urging contact of said stopper member with said ratchet, a plurality of springs corresponding in number to said plurality of coin assorting members, a respective spring of said plurality of springs continually urging contact of a respective one of said members with said ratchet; a frame supporting said plurality of members, said ratchet, said stopper member and said plurality of springs; whereby said projecting edge of said ratchet will engage said edge of one of said assorting members to thereby prevent further forward rotation of said ratchet if a said stack of coins does not include a coin of the predetermined size and in the predetermined position in said stack needed to operate said one member of said plurality of members; said ratchet, said stopper means step portion, said projecting edge of said ratchet, and said assorting and said stopper members all being located with respect to each other such that if an improper coin is in said stack said projecting edge will contact an assorting member edge before said stropper member contacts said ratchet step position, whereby said ratchet can be turned backwards to remove the improper coin from the recess; a plate formed with a coin slot and an aperture through which said rotating shaft passes; and said frame being carried on said plate.

4,350,240

COIN SLIDE WITH INTERCHANGEABLE CORES

Harvey S. Gitlin, Ambler, and John J. Duffy, Glenside, both of Pa., assignors to Equipment Systems & Devices, Inc., Philadelphia, Pa.

Filed May 23, 1980, Ser. No. 152,684
Int. Cl.³ G07F *5/08*
U.S. Cl. 194—92 **30 Claims**



1. In a coin slide of the type including a body adapted to be mounted to function a vending machine, the combination of
a slide movable relative to the body between a coin receiving position and a vending position,
the slide being provided with a plurality of longitudinally aligned core openings;
a plurality of core means respectively secured in the core openings,
at least some of said core means being provided with coin receiving openings,
said coin receiving openings being respectively sized to receive and pass therethrough a coin of predetermined size; and
means to interchange a core means secured within a core opening, said means to interchange comprising a removable fastener interconnecting the core means to the slide,
the core means provided with a coin receiving opening being also provided with a locking edge, the locking edge being adapted to be engaged as the slide is moved from its coin receiving position to its vending position.

4,350,241

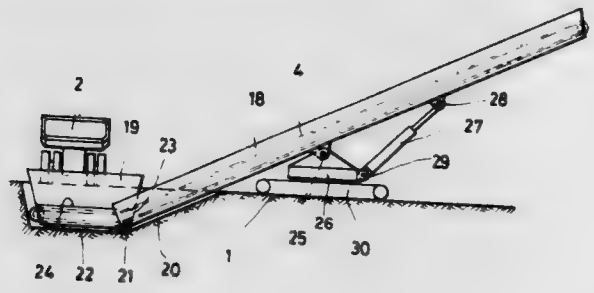
MOBILE DELIVERY FLOW EQUALIZER

Jürgen-Michael Wenzel, Düsseldorf, Fed. Rep. of Germany, assignor to Mannesmann Demag, A.G., Fed. Rep. of Germany

Continuation of Ser. No. 33,851, Apr. 27, 1979, abandoned. This application Oct. 6, 1980, Ser. No. 194,676
Claims priority, application Fed. Rep. of Germany, May 18, 1978, 2821674
Int. Cl.³ B65G *41/00, 47/18*
U.S. Cl. 198—311 **4 Claims**

1. A mobile delivery flow equalizer adapted to be placed into an excavation below ground level and adapted to receive and transmit bulk goods from wheeled vehicles, said delivery flow equalizer having an operational mode for receiving and transmitting bulk goods and a transport mode for moving the delivery flow equalizer from one working site to another, comprising
(a) an open-topped bulk goods receiving container;
(b) a supporting frame attached at one end of said container;
(c) an endless conveyor located within said supporting frame;

(d) one end of said conveyor in communication with the interior of said container;
(e) the other end of said conveyor adapted to be placed in communication with a remote processing station;
(f) said container having a horizontal pivoting axis, such that, in the operational mode, the bottom surface of said container is adapted to lie substantially flush upon the bottom of an excavation at various excavation depths beneath ground level and, in the transport mode, said container is supported above ground level;
(g) said container having upwardly extending side walls of predetermined length adapted to extend at least slightly above the ground level when said container is located on the bottom of an excavation;
(h) said side walls of predetermined length being adapted to provide positive stopping surfaces for wheeled vehicles which are driven up to said side walls when said container is located on the bottom of an excavation for unloading bulk goods into said container;



(i) said side walls of predetermined length being adapted to be low enough above ground level when said container is located on the bottom of an excavation as to enable wheeled vehicles to unload said bulk goods into said container from more than a single side of said container;
(j) a transport and tilting means attached to said supporting frame, said transport and tilting means serving to selectively move said delivery flow equalizer from one site to another site and, in addition, serving to move said supporting frame from a first position when said delivery flow equalizer is in its operational mode to a second position when said delivery flow equalizer is in its transport mode; and
(k) said supporting frame holding said container in a cantilevered manner, such that said container is above ground level when said delivery flow equalizer is in its transport mode and below ground level when said delivery flow equalizer is in its operational mode.

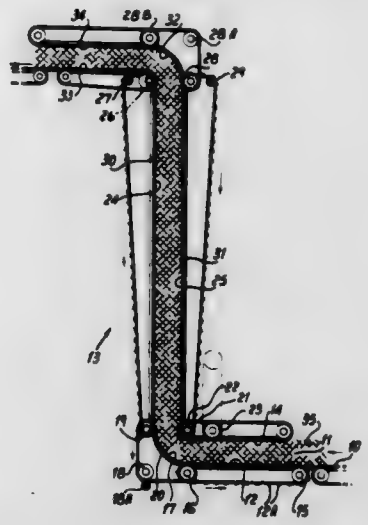
4,350,242

CONVEYOR SYSTEMS FOR CIGARETTES AND SIMILAR ROD-LIKE ARTICLES

Dennis Hinchcliffe; Stanley V. Starkey, and William A. Stone, all of London, England, assignors to Molins Limited, London, England

Continuation of Ser. No. 859,708, Dec. 12, 1977, abandoned. This application Feb. 28, 1980, Ser. No. 125,665
Claims priority, application United Kingdom, Dec. 16, 1976, 52473/76
Int. Cl.³ B65G *15/14*
U.S. Cl. 198—605 **32 Claims**

1. A cigarette elevator for conveying upwards a stack-like stream of cigarettes, comprising spaced substantially parallel, upwardly-extending conveyors of which at least one has transversely-extending ribs on its operative face for engaging the cigarettes, a first pulley around which the ribbed conveyor passes at the upper end of the elevator, and a second pulley which is adjacent to the first pulley and has an axis of rotation which is parallel to but laterally spaced from the axis of rotation of the first pulley, and including a substantially-horizontal conveyor which passes around the second pulley, the first and second pulleys being relatively positioned such that the ribs on the ribbed conveyor disappear progressively below the upper run of the horizontal conveyor as the ribs pass around said first



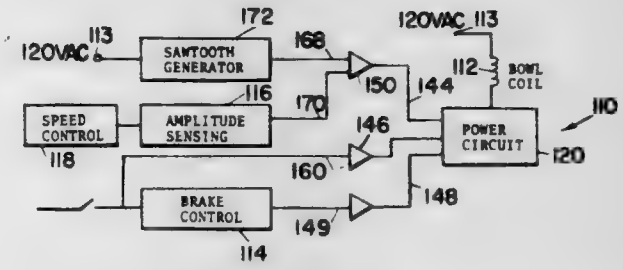
pulley from a point of vertically-upward movement substantially to a point of horizontal movement thereof.

4,350,243

CONTROL CIRCUITRY AND METHOD FOR VIBRATORY FEEDER

Ronald Weyandt, Chesterland, Ohio, assignor to Automated Packaging Systems, Inc., Twinsburg, Ohio

Continuation of Ser. No. 53,104, Jun. 28, 1979, abandoned. This application Apr. 2, 1981, Ser. No. 250,179
Int. Cl.³ B65G *27/24*; H02K *33/14*
U.S. Cl. 198—769 **10 Claims**



1. A vibratory feeder comprising:
(a) a feeder element mounted for vibratory motion relative to a fixed base, said element comprising mechanical structure for feeding articles therefrom in response to vibratory motion of said element;
(b) electromagnetic power means coupled to vibrate the feeder element at a frequency which is a function of an AC line frequency couplable to the power means; and
(c) a braking control circuit coupled to the power means for, in response to occurrence of a stop command, causing the power means to apply energy from the line to the element in pulses at approximately said vibration frequency and timed to actively counteract continued vibratory movement.

4,350,244

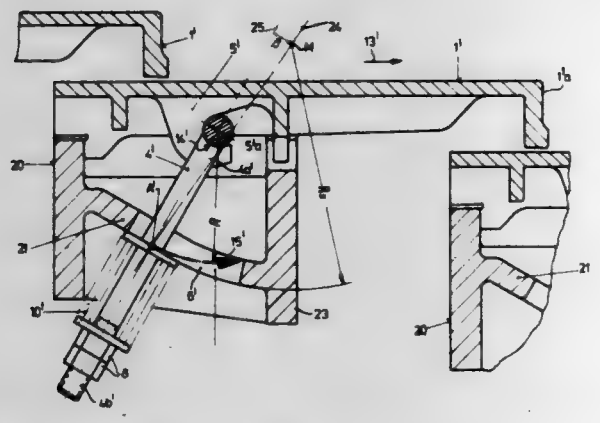
PUSH GRID

Otto Heinemann, Ennigerloh; Heinz-Herbert Schmits, Rheda-Wiedenbruck; Rainer Philipp, Ahlen, and Artur Berger, Beckum, all of Fed. Rep. of Germany, assignors to Krupp Polysius AG, Fed. Rep. of Germany

Filed Jun. 11, 1980, Ser. No. 158,479
Claims priority, application Fed. Rep. of Germany, Jul. 26, 1979, 2930406
Int. Cl.³ B65G *25/00*
U.S. Cl. 198—773 **8 Claims**

1. A push grid comprising grid panels which overlap one another and which are alternately fixed and reciprocable longi-

tudinally of the push grid; a grid panel support for each grid panel provided with a web defining a slot-like opening; a tie member which projects through the slot-like opening in each grid panel support and which, at one end, engages the associated grid panel; and a spring element arranged between the other end of each tie member and the web of its grid panel support for engaging the web and biasing the grid panel towards its grid panel support, characterised in that the surface of said web situated adjacent said opening and supporting said



spring element is inclined relative to the horizontal and is offset to the suspension point of the tie member in the longitudinal direction of the push grid with the upper portion of the web about said opening located closer to the point at which the tie member is suspended from the grid panel than the lower portion of the web about said opening, so that the force of gravity tends to urge the tie member along the opening until the spring element engages the surface of the web about the opening is situated at a greater distance from the lower end than from the upper end of the slot-like opening.

4,350,245

MEDICAL KIT FOR THE PROTECTIVE STORAGE OF TEAT SWABS

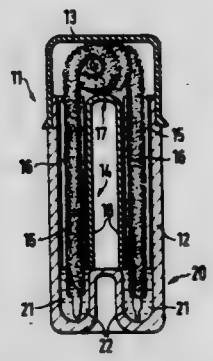
Hans Elstner, 8867 Oettingen, Fed. Rep. of Germany

Filed Aug. 18, 1980, Ser. No. 178,749

Claims priority, application Fed. Rep. of Germany, Aug. 23, 1979, 2934156

Int. Cl.³ B65D *85/20, 85/62, 81/00*

U.S. Cl. 206—207 **20 Claims**



1. A medical kit comprising in combination

a container including

a container body formed with a hollow space in a lower portion thereof, said lower portion being adapted to hold a viscous salve,

a lid at least partly removable from said container body, and

elongated insert means insertable into said container body above said hollow space and having a plurality of upright longitudinal compartmentalized spaces open at each end, and

a plurality of teat swabs arranged to be stored in said compartmentalized spaces, each teat swab being made of a chenille-covered wire for insertion into the milk duct of the udders of lactating cows, and having a rod portion including a lower end part in the form of a rounded plastic tip, and a handle in the form of a spirally rolled upper end,

at least one of said hollow and compartmentalized spaces being arranged to hold said lower end part of one of said swabs, the upper end of each compartmentalized space being arranged to be closed off upon insertion of said rod portion of a swab thereinto,

whereby, upon said viscous salve filling said hollow space at least up to the lower ends of said compartmentalized spaces, contamination of the rod portion of each teat swab is precluded, even when any of the remaining teat swabs are removed from respective of said compartmentalized spaces.

4,350,246

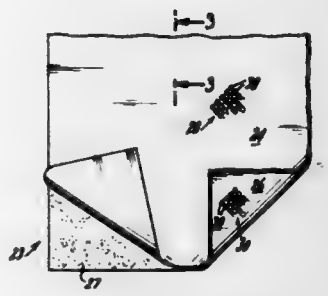
RELEASABLE SURGICAL PRODUCTS AND PROCESS OF FORMATION THEREOF

Nathan Mayer, East Brunswick, N.J., assignor to The Hartford Corporation, New Brunswick, N.J.

Filed Apr. 21, 1980, Ser. No. 141,814

Int. Cl.³ A61B *17/06;* **A61L** *15/00*

U.S. Cl. 206—210 **5 Claims**



1. A surgical product of the type which is folded to be packaged and subsequently radiation sterilized, comprising a moisture absorbent web of fibrous sheet material having a binder present on said surface in a first given pattern so that fibers of said material are exposed at given areas adjacent said first given pattern, and a release agent applied to said surface in a second lattice-like given pattern which overlies a portion of said binder and a portion of said fibers exposed at said given areas.

4,350,247

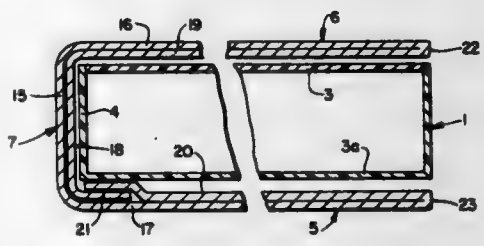
COVERS FOR CASSETTE BOXES

Norman J. Garrod, Great Common, Bletchingley, Surrey, England

Continuation of Ser. No. 968,214, Dec. 11, 1978, abandoned. This application Nov. 25, 1980, Ser. No. 210,335

Int. Cl.³ B65D *65/40*

U.S. Cl. 206—387 **12 Claims**



1. A cover for a box comprising a base and a lid mounted for pivotal movement relative to the base, said cover comprising:

a base panel for overlying the base of the box;

a cover panel for overlying the lid of the box; and

a spine panel having side edges connecting said cover panel to said base panel and of sufficient width to accommodate the box between said cover panel and said base panel;

wherein said spine panel and at least one of said cover and base

panels are each made of two layers of sheet material, the side edges of the outer one of said layers of said spine panel being integrally connected to the other of said cover and base panels and to the outer one of said layers of one of said cover and base panels, one of the side edges of the inner one of said layers of said spine panel being integrally connected to the inner one of said layers of one of said cover and base panels, the other side edge of said inner layer of said spine panel being free of any direct connection with said other of said cover and base panels, said inner layer of said spine panel being free to move relative to the outer layer thereof during relative movement of said base panel and said cover panel.

4,350,248

X-RAY FILM CASSETTE WITH MAGNETICALLY ATTRACTED CONFINING PLATES

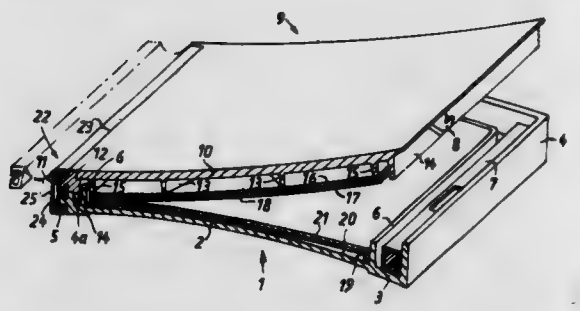
Walter Bauer, Munich, Fed. Rep. of Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 21, 1980, Ser. No. 142,442

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1979, 2917547

Int. Cl.³ G03B *41/18*

U.S. Cl. 206—455 **18 Claims**



1. A film cassette, especially for x-ray film, comprising a pair of cassette parts movable between an open position and a closed position in which said cassette parts define a film-receiving space; a magnetic plate mounted on one of said cassette parts; a ferromagnetic foil on the other of said cassette parts responsive to the magnetic force of said magnetic plate in said closed position; and means floatingly supporting said foil on said other cassette part, wherein said floatingly supporting means includes an elastic member in the form of a narrow strip-shaped frame arranged at the periphery of said foil and interposed between said other cassette part and said foil, said other cassette part includes a cassette wall which is cylindrically inwardly curved in said open position; and wherein said elastic frame has such a height that said foil at most barely touches said cassette wall at a central region thereof and does not contact said cassette wall at the region within said narrow strip-shaped frame when in said closed position.

4,350,249

VISUAL FILING SYSTEM FOR GEMS, JEWELRY ITEMS, SMALL PARTS AND THE LIKE

Alfred W. H. Caston, 90-17 Francis Lewis Blvd., Queens Village, N.Y. 11428

Filed Dec. 1, 1980, Ser. No. 211,660

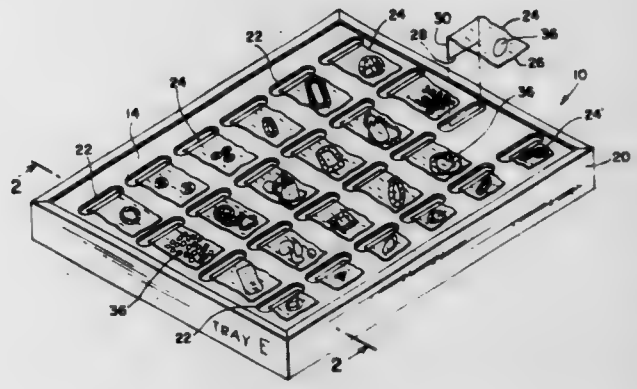
Int. Cl.³ B65D *1/34*

U.S. Cl. 206—566 **6 Claims**

1. A visual filing system for gems and the like comprising, in combination:

a tray having a top layer of substantially rigid material, a bottom layer of substantially rigid material, and a middle layer of resilient material adhered to each of said top and bottom layers, and

a plurality of flexible plastic holding tubes for holding and sealing therein gems, jewelry and the like in locked and protective fashion whereby said gems and the like are prevented from escaping said plastic holding tubes, each of said holding tubes having one closed end and one open end,



said top and middle layers forming a plurality of slots for removably receiving said open end of said holding tubes.

4,350,250

COMPOSITE PACKING

Carl H. Peters, Falsterbo, Sweden, assignor to Platmanufaktur AB, Malmo, Sweden

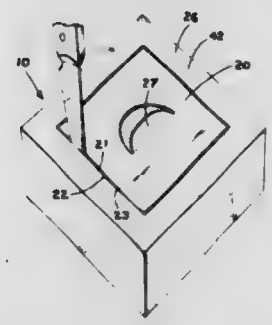
Division of Ser. No. 12,944, Feb. 15, 1979, Pat. No. 4,244,473, which is a continuation of Ser. No. 848,885, Nov. 7, 1977, abandoned. This application Jul. 10, 1980, Ser. No. 168,385

Claims priority, application Sweden, Nov. 17, 1976, 7612865

The portion of the term of this patent subsequent to Jan. 13, 1998, has been disclaimed.

Int. Cl.³ B65D *65/34, 77/36*

U.S. Cl. 206—605 **10 Claims**

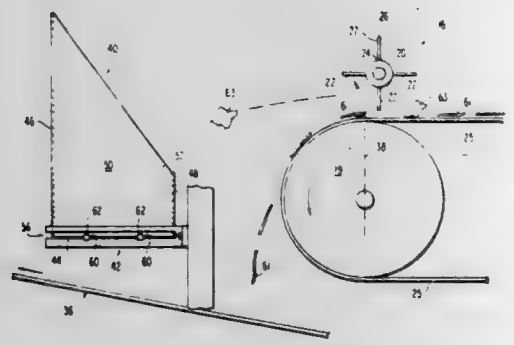


1. A packing comprising an outer cover constituted by a relatively rigid material and a filled inner container of relatively flexible material disposed within the outer cover and conforming in shape thereto, said outer cover having opposite ends and including a perimetral rim portion with a central opening at one of said ends, means connecting the inner container to the outer cover only at said rim portion, a plate disposed within the opening in said rim portion, said plate defining a narrow gap with said rim portion which is continuous and extends completely around the periphery of said plate, said plate being constituted of the same material as said outer cover, said plate having an inner surface facing the outside surface of the inner container, and means securing said inner surface of the plate to the outer surface of the inner container such that said plate is secured in said packing only to said inner container and the connection of the plate to the outer container is effected solely through the intermediary of the connection of the inner container to the outer cover by said connecting means, said flexible material of the inner container being cuttable, said gap constituting a guide means for a cutting blade for cutting the inner container so that the plate and the material of the inner container secured thereto are freely removable.

4,350,251
APPARATUS AND METHOD FOR SELECTIVELY EJECTING MALFORMED ARTICLES

Howard W. Merck, Boraville, Ga., assignor to Frito-Lay, Inc., Dallas, Tex.

Division of Ser. No. 31,375, Apr. 19, 1979, Pat. No. 4,224,350.
This application Nov. 9, 1979, Ser. No. 92,937
Int. Cl.[3] B07C *9/00*
U.S. Cl. 209—642 5 Claims



1. An apparatus for ejecting selected articles from an array of closely-spaced articles, comprising:

(a) conveyor means for conveying a flexible web along a path, said flexible web having an outer surface for supporting said articles and an inner surface for engagement by conveyor rollers for moving said web along a continuous path;

(b) said flexible web being configured to support said array of articles during movement along said path, said conveyor means having a discharge end for discharging articles of said array;

(c) rotatable ejector means located above and overlying said flexible web adjacent said discharge end for allowing articles in said array of no greater than a preselected vertical dimension to pass beneath said ejector means while ejecting from said array those articles having a vertical dimension greater than said preselected vertical dimension, said rotatable ejector means comprising a plurality of substantially linear blades extending radially from the axis of rotation of said ejector means, said blades extending substantially across said flexible web and substantially parallel to said axis; and whose outer ends are moved through a path above said flexible web with at least a portion of said path including a lowermost position substantially equal to said preselected vertical dimension with respect to said flexible web during rotation of said blades;

(d) said blades being mounted on a hub member and equally spaced peripherally about the hub and extending in a radial direction from the axis of the hub to an extent where the periphery of the blades upon rotation of the hub are positioned above the flexible web at a height slightly greater than a preselected vertical height for ejecting articles from the flexible web that extend above the preselected height, and said blades in their lowermost position being spaced away from the vertical axis of a terminal roller for the flexible web slightly upstream of the path of movement of the articles;

(e) said blades when moving through said portion of said path being moved in the same direction as said flexible web and said axis of rotation extending substantially at right angles to the path of movement of said flexible web; and

(f) means for rotating said ejector means at a substantial differential speed with respect to the speed of said flexible web sufficient to knock said articles of greater vertical dimension selectively from the said layer in a path above the path taken by those articles having a vertical dimension less than the preselected vertical dimension at said discharge end.

4,350,252
DISPLAY RACK

Grant Hopkins, 29½ Lenore, and Mark Cantrell, 150 Wilbur, Box 60, both of Walla Walla, Wash. 99362

Filed Jul. 10, 1980, Ser. No. 168,262
Int. Cl.[3] A47F *7/00*
U.S. Cl. 211—40 13 Claims



1. A storage rack mountable to a support for receiving and fully displaying individual thin rectangular articles such as record albums having opposed parallel side edges, comprising:

a pair of elongated rack members adapted to be mounted to the support in spaced parallel orientation;

each of said rack members having (a) an elongated back surface; (b) an elongated front surface longitudinally overlapping the back surface and spaced outwardly therefrom to form a longitudinal groove adapted to receive a side edge of the rectangular article; (c) a closed first end joining the front and back surfaces and (d) a second end spaced longitudinally from the first end;

a support surface on each rack member projecting from the back surface across said groove toward the front surface adapted to receive and support a side edge of the rectangular article at a location thereon adjacent the side edge received by the longitudinal groove;

article access openings formed between the back surfaces and front surfaces adjacent the second ends of said rack members enabling access to the longitudinal grooves and support surfaces by the rectangular article;

wherein the rack members are mountable to the support with the longitudinal grooves facing one another and spaced apart to receive and support parallel side edges of the rectangular article with the article in an upright, fully exposed position;

a male joint fitting at one end of each rack member; and

a female joint fitting at the remaining end of each rack member for releasably receiving a male fitting thereby enabling the rack members to be connected end-to-end.

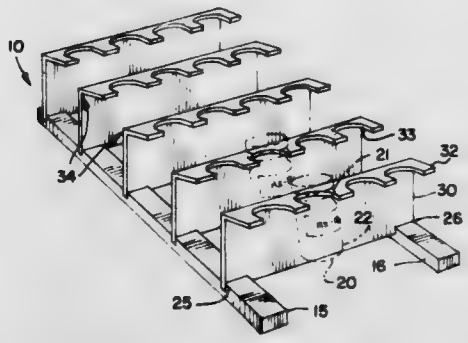
4,350,253
BOTTLE STORAGE RACK

Robert K. Rusteberg, Barrington Hills, Ill., assignor to Panmatic Company, Elk Grove Village, Ill.

Filed Jun. 19, 1980, Ser. No. 161,045
Int. Cl.[3] A47B *73/00*
U.S. Cl. 211—74 5 Claims

1. A bottle rack for the retention of a plurality of bottles having indicia on the body of said bottles in a manner allowing said indicia to be easily read, said bottle rack comprising a pair of spaced parallel longitudinal mounting means, a support member secured in perpendicular fashion to each of said mounting means, a bottle engaging arm secured in cantilever fashion to the upper end of said support member, said bottle engaging arm extending upwardly at an acute angle of about 20° to about 50° to the horizontal and having a plurality of

indentations along its length, each of said indentations being of a size to receive and hold a neck of one of said bottles, thereby



retaining said bottle at said acute angle for presenting the indicia of said bottle in full view to the user of said rack.

4,350,254

CONTAINER HANDLING AND LIFTING EQUIPMENT, SUCH AS A CRANE OR A GANTRY

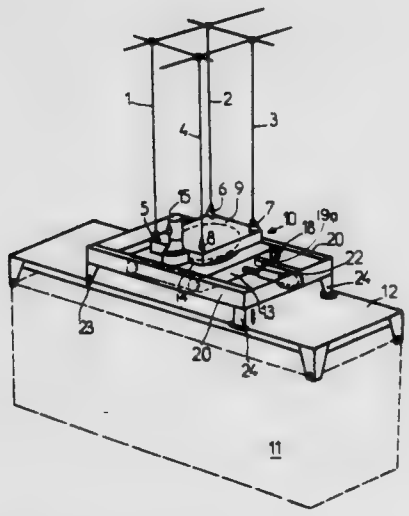
Jean Noly, La Clayette, France, assignor to Potain, France

Filed Dec. 17, 1979, Ser. No. 104,304

Claims priority, application France, Dec. 15, 1978, 78 36063

Int. Cl.³ B66C *13/16*

U.S. Cl. 212—153 **15 Claims**



1. A container handling apparatus for use with an overhead material handling device having four lifting cables, said apparatus comprising:

a four sided fixed part pendantly connected at each corner to each of said lifting cables, said four sided fixed part defining a first plane at the connection of said four lifting cables to said four sided fixed part, said first plane having a center;

a rotating member rotatably mounted below said fixed part for relative rotational movement therewith; said rotating member further comprising:

a lower frame member;

an external frame member mounted adjacent to the periphery of said lower frame member;

a secondary four sided frame member mounted adjacent to the periphery of said external frame member, said secondary four sided frame member having two parallel side rails;

four parallel rotatable members rotatably mounted to the periphery of said external frame, said four parallel rotatable members having a first pair of rotatable members, a second pair of rotatable members and a second plane defined by said four rotatable members, said second plane having a center, said first pair of said four rotatable members further engaging one of said two parallel side rails and said second pair of said four rotatable members further engaging the other of said two parallel side rails, each of said four rotatable members further being mounted to said external frame member so that said center of said second plane defined by said four rotatable members coincides with said center of said first plane defined by the connection of the four cables to said four sided fixed part;

a spreader member pendantly connected to said secondary four sided frame, said spreader member further demountably secured to said container for handling of said container;

moving means, mounted at one end to said secondary four sided frame member and mounted at the other end to said external frame member, for moving said secondary four sided frame member longitudinally relative to said external frame member so that the center of gravity of the weight of the container is located on a vertical axis through said center of said second plane defined by said four rotatable members;

load measuring means, mounted between said lower frame member and said external frame member, for measuring the load in each of said four lifting cables so as to generate a signal having a characteristic indicative of the load in each of said four cables; and

comparison means for receiving each of said signals from each of said four cables of said load measuring means to operate said moving means whenever one of said each of said signals from said measuring means exceeds a predetermined value so that said moving means moves said secondary frame member to equally distribute the load in each of said four cables.

4,350,255

TELESCOPING MOBILE CRANE

Helmut Blase, Dortmund; Arend Högemann, Witten, and Dieter Schulze, Dortmund, all of Fed. Rep. of Germany, assignors to Harnischfeger GmbH, Fed. Rep. of Germany

Filed Jun. 24, 1980, Ser. No. 162,600

Claims priority, application Fed. Rep. of Germany, Jun. 29, 1979, 2926292

Int. Cl.³ B66C *23/06*

U.S. Cl. 212—268 **5 Claims**



1. A telescopic crane comprising:

a first member;

a second member telescopically engaged with said first member;

an idle member telescopically engaged with said second member;

drive means connected to said first member and operatively connected to said second member for extending said second member;

arresting means between said drive means and said idle member for establishing engagement between said drive means and said idle member to extend said idle member;

locking means between said first and second members for establishing engagement between said first and second members to restrain movement of said second member when said drive means extends into said idle member;

said drive means comprising a single piston cylinder arrangement, and including a pin interconnecting one end of said piston cylinder arrangement to said second member and to said idle member when said idle member is in a retracted position, said pin engaged with said idle member when said idle member is in an extended position also;

said arresting means comprising an extension connected to said single piston cylinder arrangement, extending outwardly from said first member for receiving said pin and interconnecting said second member and said idle member to said extension;

a spring loaded bolt connected to one of said idle member and said extension, the other of said idle member and said extension including an oblong slot for receiving said spring loaded bolt to engage said drive means to said idle member; and

a base member pivotally mounted to a carriage and telescopically receiving said first member;

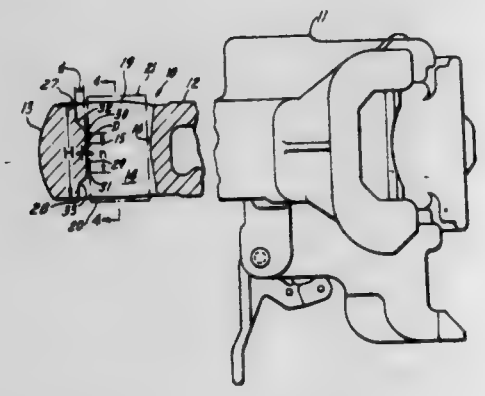
said piston cylinder arrangement comprising a double piston and cylinder arrangement having a first stage connected to said first member and a second stage operatively connected to said second member, with a base stage connected to said base member.

4,350,256

ROTARY COUPLER WITH A SPECIALLY CONFIGURED PINHOLE

Richard M. Hanula, Lyndhurst, and Fred C. Kulieke, Jr., Tallmadge, both of Ohio, assignors to Midland-Ross Corporation, Cleveland, Ohio

Filed Sep. 25, 1980, Ser. No. 190,570
Int. Cl.³ B61G *9/020*
U.S. Cl. 213—69 **10 Claims**



1. A railroad car coupler, comprising:

(a) a coupler head;

(b) a shank extending from the coupler head and terminating at a butt end thereof, the shank having a pinhole extending transversely therethrough adjacent the butt end, the pinhole having a pair of opposing ends between which are a backwall in closer spaced relation to the butt end than a frontwall which is spaced from the backwall closer the coupler head, and a pair of sidewalls connecting the backwall and frontwall, the backwall terminating at opposing ends at the opposing ends of the pinhole and including:

(I) a pin bearing surface disposed generally centrally of the backwall for contacting a cylindrical pin that is used to hold the coupler in position on a railroad car, the pin bearing surface being cylindrically curved to matingly engage the cylindrical pin when the coupler is in pull and having a generally rectangular shape defined between a pair of opposing marginal edges which are curved and contained in parallel planes which are generally parallel to planes containing the opposing ends of the backwall; and

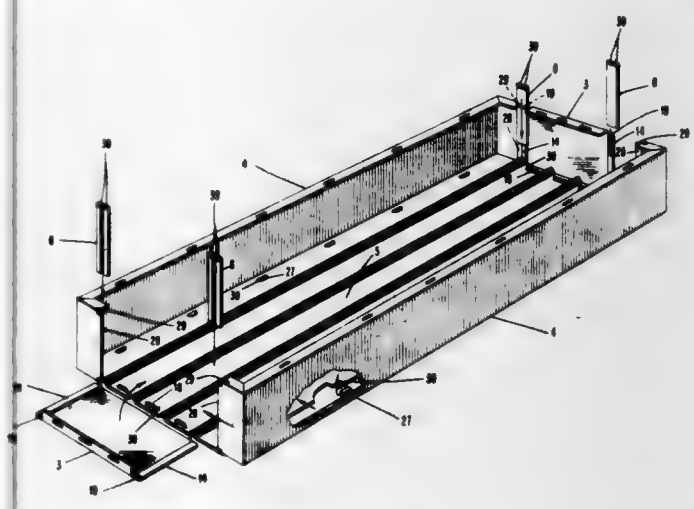
(II) a pair of curved surfaces extending in opposite directions from the pair of marginal edges of the pin bearing surface rearwardly towards the butt end of the shank, the curved surfaces terminating at opposing ends of the backwall rearwardly of the pin bearing surface closer the butt end and being shaped so that the pin bearing surface projects into the pinhole beyond the opposing ends of the backwall a distance (d) such that when a correspondingly measured distance (D) of one-quarter of an inch of the pin bearing surface is worn away, the worn pin bearing surface will still project into the pinhole beyond the opposing ends of the backwall.

4,350,257

KIT FOR ASSEMBLING TOOLBOX ADAPTED FOR INSTALLATION IN BACK OF PICKUP TRUCK AND METHOD OF ASSEMBLING THE TOOLBOX

Hugh F. Groth, Brecksville, and L. Scot Duncan, Northfield, both of Ohio, assignors to Delta, Inc., Jonesburg, Ark.

Filed Jan. 13, 1981, Ser. No. 224,841
Int. Cl.³ B65D *6/12, 6/16*
U.S. Cl. 220—4 F **10 Claims**



1. A kit for assembling a toolbox having upper and lower sections, said toolbox being adapted to extend transversely across the back of a pickup truck, with said lower section fitting snugly within the bed of the truck, and said upper section being supported at each end by the upper edges of the sidewalls of the truck, comprising:

a lower section substantially rectangular bottom panel, having a row of slots adjacent each edge of said panel;

a pair of lower section end panels, each having tab means on one edge for interconnecting with corresponding slots of said lower section bottom panel, and side channel means on opposite edges perpendicular to said one edge;

a pair of lower section side panels of the same height as said end panels, each having tab means on one edge for interconnecting with corresponding slots of said lower section bottom panel, a main body portion, relatively narrow opposite side portions bent 90° from the main body portion, said side portions having outer edges, and said outer edges having side channel means thereon, each of said side channel means to abut a corresponding one of said side channel means of said end panel, when assembled;

four integral locking means for individually slidingly interlocking abutting side channel means of said end panels and side panels;

a pre-assembled upper section; and

means for fastening said pre-assembled upper section to said lower section, when assembled.

4,350,258

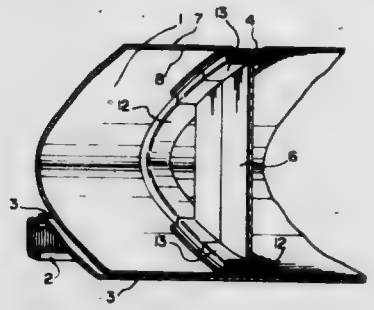
TANK-BAFFLE SYSTEM

R. Barry Rogers, London, Canada, assignor to White-McKee Inc., Elmira, Canada

Filed Oct. 8, 1980, Ser. No. 195,109
Claims priority, application Canada, Jul. 30, 1980, 357329
Int. Cl.³ B65D *25/04*
U.S. Cl. 220—22 **4 Claims**

1. A tank baffle system comprising: a tank, the outer wall of which is constructed of a plastic material, said wall having a portion which defines inwardly indented elongate channel portions on at least the top and the bottom outer surface of the tank with inwardly extending projection portions on the inner surface of the tank complementing and corresponding to said channel portions on the outer surface; a baffle member having a generally planar center portion and an elongate interlocking portion of generally U-shaped cross-section attached to and extending along at least the top and bottom ends of the planar

center portion, said planar center portion being substantially aligned with the vertical axis of said U-shaped portions, said U-shaped portions receiving portions of the inwardly extending projection portions on the inner surface of the tank to



provide a male-female interlocking arrangement; and a strap received in at least a part of the inwardly indented channel portions on the tank outer surface to provide structural rigidity and for use in mounting said tank on a carrying vehicle or other mounting location.

4,350,259

STAINLESS STEEL CONTAINER WITH THERMORADIATING BOTTOM

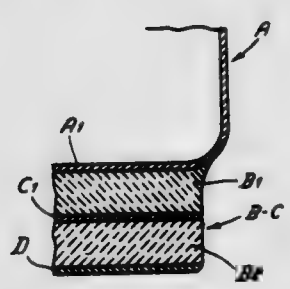
Ferdinando Cartoesi, Novara, Italy, assignor to AMC International Alfa Metalcraft Corporation S.A., Rotkreuz, Switzerland

Continuation of Ser. No. 5,723, Jan. 23, 1979, abandoned. This application Sep. 30, 1980, Ser. No. 192,239

Claims priority, application Italy, Jan. 26, 1978, 19689; Mar. 7, 1978, 20974

Int. Cl.³ B02D *20/14*

U.S. Cl. 220—66 **2 Claims**



1. Stainless steel container provided with a first integral heat-radiating stainless steel bottom, a second complemental bottom composed of aluminum or alloys thereof having a first tight restrained bond joining it to a bottom side of the heat-radiating stainless steel bottom, and a steel plate or an iron plate having a second bond securing it to a bottom side of said aluminum bottom, said first and second bonds having physical characteristics resultant from preheating of the bottoms and from then subjecting the heated bottoms to high pressure, a rim of the rolled steel plate being at least partly coated and provided with openings, the aluminum of the layer which forms the bottom of the container extending through the openings in anchored assembly.

4,350,260

LID FOR DRINKING CONTAINERS

Andrew B. Prueher, 1016 N. Sheridan, Highland Park, Ill. 60035

Continuation-in-part of Ser. No. 60,904, Jul. 26, 1979, Pat. No. 4,245,752, which is a continuation-in-part of Ser. No. 947,063, Sep. 29, 1978, abandoned, which is a continuation-in-part of Ser. No. 882,670, Mar. 2, 1978, abandoned. This application Aug. 11, 1980, Ser. No. 176,673

Int. Cl.³ A47G *19/22*; B65D *17/32, 41/26*

U.S. Cl. 220—254 **15 Claims**

1. An improved lid for drinking containers, said lid comprising:

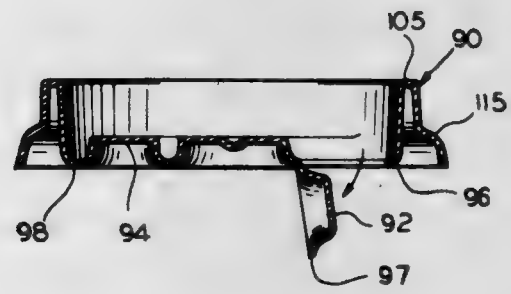
a substantially disc-like main body portion for covering the open end of a drinking container having a beverage contained therewithin;

attachment means for attaching said disc-like main body portion to said open end of the drinking container;

a substantially continuous integrated double-walled mouthpiece means including a substantially vertical first wall portion which emanates upwardly from and peripherally about said disc-like main body portion and a substantially vertical second wall portion which returns downwardly to a position proximate said attachment means;

said double-walled mouthpiece means being positioned separate from and juxtaposed to said attachment means at a position radially inward thereof;

said double-walled mouthpiece means having the substantially vertical first and second wall portions continuously joined at their tops to form a thin insertable protrusion member capable of fitting between the substantially closed



lips of a user to permit comfortable and efficient sampling of beverage temperature by said user's lips;

said double-walled mouthpiece means forming a substantially U-shaped cavity portion therein into which said beverage may flow against both said first and second wall portions, both said wall portions being formed of a relatively thin material to allow said sampling of the beverage temperature by said user's lips;

one or more valve means located in said disc-like main body portion proximate to the radially inner side of the base of said mouthpiece means for alternative release and containment of the beverage located within the container;

said valve means having a closed position and an open position to accommodate said alternative containment and release of said beverage respectively whereby said beverage in said container is kept from spilling while enabling the user to alternatively release liquid from the container for said user's consumption.

4,350,261

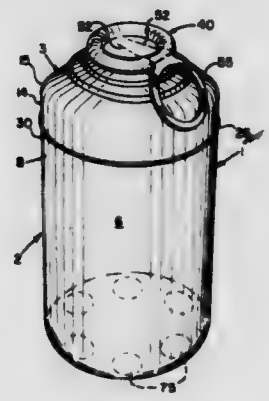
CLOSURE HAVING OPENING MEANS

Donald J. Roth, Westport, Conn., assignor to The Continental Group, Inc., New York, N.Y.

Filed Oct. 6, 1980, Ser. No. 194,519

Int. Cl.³ B65D *17/34*

U.S. Cl. 220—270 **10 Claims**



1. A closure for a container wherein the container is of the

type having a neck joined to an upper end of a frusto-conical body portion and forming a pour aperture, said neck being defined by a smoothly curved outturned extension of said body portion in the form of a rounded curl, said closure comprising a plug fitted within said neck and having a side wall complementally seated against the interior of the neck and having a bottom wall closing said aperture, said side wall and bottom wall having portions expanded radially beneath said neck and said side wall portion and complementally underlapping the upper end of the frusto-conical portion and complementally underlapping the upper end of the frusto-conical portion, and means for rupturing said closure to facilitate removal thereof.

4,350,262

EASY-OPEN CAN CAP WITH A RING PULL TAB

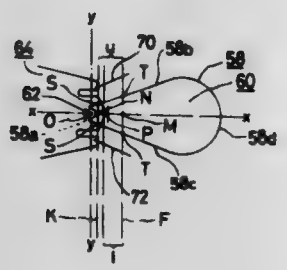
Shunji Kaneko, Ebina, Japan, assignor to Toyo Seikan Kaisha, Ltd., Tokyo, Japan

Filed Oct. 2, 1980, Ser. No. 192,974

Claims priority, application Japan, May 21, 1980, 55-68794[U]

Int. Cl.³ B65D *17/34*

U.S. Cl. 220—273 **8 Claims**



1. An easy open can cap comprising an elongated tear strip defined by a main score, a ring pull tab attached to a starting end portion of said tear strip by a rivet, said main score having a starting end portion extending partially around the area of said rivet and a terminating end portion at the opposite end of said tear strip, said main score also having transitional portions between said starting end portion and said terminating end portion, said transitional portions having a thinner score residual than that of said starting end portion, and auxiliary scores on said can cap having score residual greater than that of said main score, said auxiliary scores being spaced from said transitional portions, said auxiliary scores being formed in said can cap at the same time that said main score is being formed to thereby make it possible to have said score residual of said transitional portions less than the score residual of said starting end portion.

4,350,263

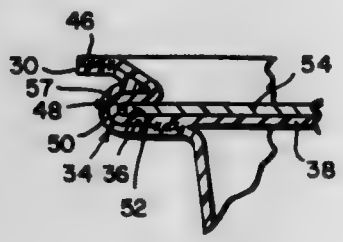
PACKAGE HAVING SEALED CLOSING MEANS

Louis S. Hoffman, Morristown, N.J., assignor to H. P. Hood, Inc., Boston, Mass.

Filed Sep. 19, 1980, Ser. No. 188,848

Int. Cl.³ B65D *41/00*

U.S. Cl. 220—359 **12 Claims**



1. A package comprising a container and lid, a flange at the open top of the container having portions of concavo/convex configuration along at least two sides of the flange defining a groove, a flange at the edge of the lid having portions of convex/concave configuration along at least two sides of the flange defining a rib elastically engaged with the concave/convex groove at the top of the container, the flanges comprising outwardly horizontal portions defining supporting and supported shoulders, upstanding portions defining containing and contained shoulders and outwardly-extending lips and wherein concave/convex, convex/concave portions are formed in the upstanding shoulders and means associated with the lid for disengaging it from the container.

4,350,264

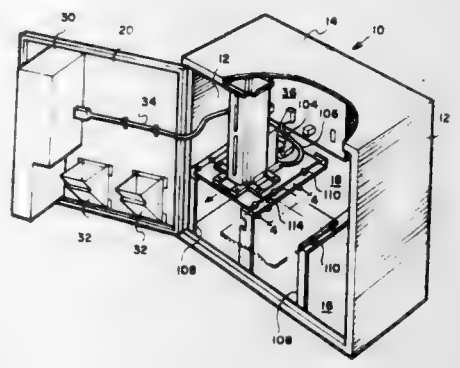
VENDING MACHINE FOR FLAT SHEET ARTICLES

Alois Muller, 138 Elvaston Dr., Toronto, Ontario, Canada

Continuation-in-part of Ser. No. 894,822, Apr. 10, 1978, abandoned. This application Nov. 26, 1979, Ser. No. 97,124

Int. Cl.³ G07F *11/04*

U.S. Cl. 221—67 **20 Claims**



1. An article dispensing unit for use in a vending machine of the type wherein articles are stacked vertically one above one another, and are dispensed downwardly one at a time, said dispensing unit comprising;

base plate means;

an opening therethrough;

mounting block means fastened on said base plate means, around said opening in fixed relation thereto;

at least three guide plate means on each of said mounting block means, at least one of said guide plate means being mounted on an edge of said mounting block means, in one plane, and two other said guide plate means being mounted on extensions of said mounting block means, in parallel spaced apart planes, at right angles to said first mentioned guide plate means, said guide plate means forming part of said mounting block means, and extending downwardly therefrom in fixed relation thereto through said opening in said base plate means, said guide plate means cooperating with one another to guide articles falling through said opening;

article storage means mounted on said mounting block means and extending upwardly therefrom in registration with said opening, and,

article dispensing means movably connected to said base plate means, and being movable relative thereto for dispensing articles from said storage means.

4,350,265

LIQUID DISPENSER METER

Ronald S. Griffiths, Rochester, and John E. Searles, Aylesford, both of England, assignors to A.G. (Patents) Limited, London, England

Filed Oct. 15, 1980, Ser. No. 197,222

Claims priority, application United Kingdom, Oct. 17, 1979, 7936007

Int. Cl.³ B67D *5/22*

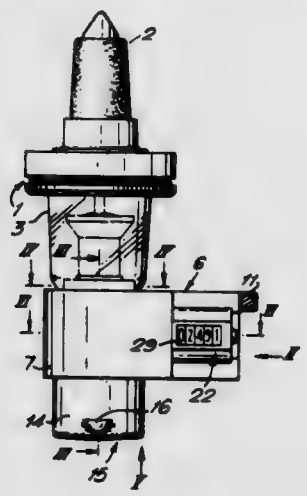
U.S. Cl. 222—38 **19 Claims**

1. A dispenser for dispensing a measured quantity of liquid from a supply thereof, comprising:

(a) dispensing means, actuation of which causes a measured quantity of liquid to be dispensed;

(b) actuating means for selectively actuating the dispensing means;

(c) metering means for recording the number of measured quantities of liquid dispensed, the metering means being operatively connected to the actuating means; and



(d) a housing on which the actuating means and the metering means are securely mounted;

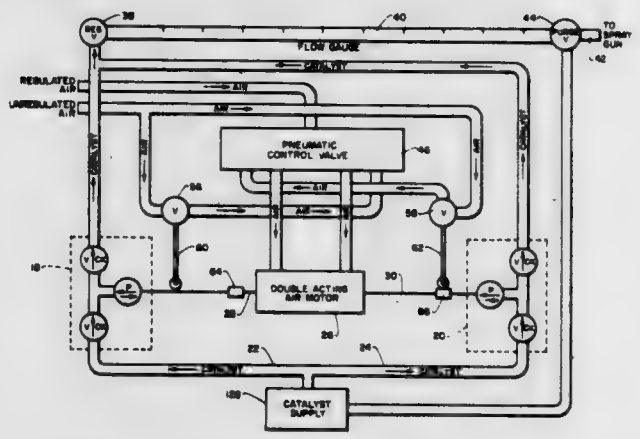
wherein the housing, with its associated actuating and metering means, is readily detachable from the dispensing means.

4,350,266

PUMPING SYSTEM FOR UNSTABLE FLUIDS

Robert D. Hetherington, Sunland, and David W. Goelz, Burbank, both of Calif., assignors to Binks Manufacturing Company, Franklin Park, Ill.

Filed Jun. 8, 1979, Ser. No. 46,969
Int. Cl.³ B67D *5/38*; G01F *11/02*
U.S. Cl. 222—40 **11 Claims**



1. A system for pumping unstable fluids comprising:

a pair of single-acting pumps having a predetermined low-volume capacity;

a double-acting air motor for simultaneous operation of said pumps;

pneumatic control means for reversing the operation of said double-acting motor to reverse the operation of said pumps from pumping to filling and vice versa;

said pneumatic control means comprising:

a pair of air pilot valves, each of said air pilot valves including an actuating arm having a roller at the end,

a pneumatic control valve means connected to said air pilot valves for reversing the flow of air to said motor,

said pair of air pilot valves, directly connecting said pneumatic control valve means to a supply of air,

mechanical means coupling said air motor to said pumps and adapted to operate said air pilot valves;

said mechanical coupling means comprising:

a pump piston rod,

an air motor piston rod,

coupling means coupling said pump piston rod to said air motor piston rod,

said coupling means having a cam surface for engaging the roller on said actuating arm to operate one or the other of said air pilot valves proximate the end of a stroke,

fluid supply means commonly connected to inputs of said pumps;

flow control means commonly connected to outlets of said pumps;

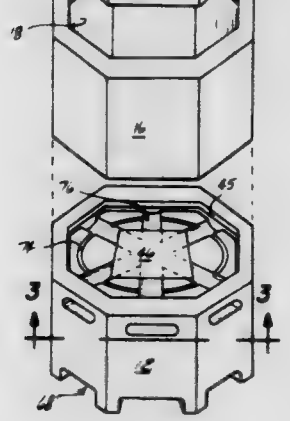
whereby when said motor operates one pump is discharging fluid while the other is taking fluid in and when said motor is reversed, the other of said pumps is discharging fluid while said one pump is taking fluid in so that fluid is pumped at a constant flow rate to said flow control means.

4,350,267

PORTABLE MODULAR BEVERAGE DISPENSER

Richard E. Nelson, 53 E. Tacoma, Clawson, Mich. 48017, and Thomas J. Starr, 31409 Mound Rd., Apt. F, Warren, Mich. 48092

Filed Dec. 26, 1979, Ser. No. 106,929
Int. Cl.³ B67D *1/04*
U.S. Cl. 222—131 **2 Claims**



2. A portable modular insulated container comprising: a base module including a refrigeration unit and having an upper end and a lower end;

a central sleeve module concentrically engageable with the base including a central bore configured to encircle a beverage container;

a cover module concentrically engageable with the sleeve to enclose the container;

a support plate at the lower end abutting a supporting surface;

an evaporator plate at the upper end;

a plurality of support rods extending between the support plate and evaporator plate;

a container centering recess formed in the upper end to engage a flange of the beverage container; and

a plurality of radial recesses formed in the upper end, said radial recesses extending across and ending radially outward from the container centering recess to provide air circulation around the evaporator plate.

4,350,268

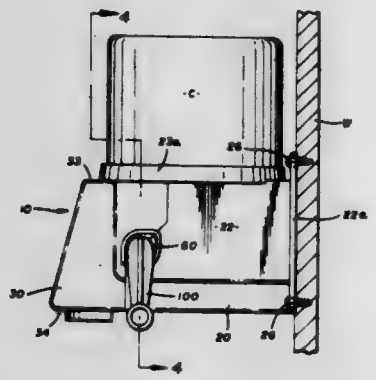
MANUALLY OPERATED DISPENSING PUMP

Charles Potter, Stow, Ohio, assignor to Go-Jo Industries, Inc., Akron, Ohio

Continuation-in-part of Ser. No. 36,763, May 7, 1979, abandoned. This application Apr. 14, 1980, Ser. No. 140,235

Int. Cl.³ B65D *37/00*

U.S. Cl. 222—214 3 Claims



1. A dispenser designed to receive a material supply source, comprising:

(A) a first housing component adapted to support the material supply source;

(B) a second housing component releasably engagable with said first housing components;

(C) an outlet nozzle carried by said second housing component;

(D) flexible tubular means interconnecting the material supply source and said nozzle;

(E) roller crank means carried within said first and second housing components for selective movement into and out of occlusive contact with said flexible tubular means;

(F) said outlet nozzle being movable with respect to said first and second housing components upon movement of said roller crank means;

(G) said second housing having an opening in its bottom wall and a wiping and sealing plate secured to said second housing and closing off a portion of said opening; and

(H) said outlet nozzle being moved into and out of engagement with said plate in response to said movement of said roller crank means.

4,350,269

TONER DISPENSING DEVICE

Yoshihiro Hanada, and Takafumi Tottori, both of Toyokawa, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Apr. 15, 1980, Ser. No. 141,612

Claims priority, application Japan, Apr. 26, 1979, 54-56818[U]

Int. Cl.³ G01F *11/24*

U.S. Cl. 222—227 10 Claims



1. A toner dispensing device comprising:

a toner storage chamber having in its lower portion an elongated narrow opening for passing toner therethrough; a cylindrical roller rotatably disposed within the storage chamber parallel to the length of said opening and spaced from and sufficiently close to said opening for substantially filling said opening and for delivering toner from said storage chamber outward through the unfilled part of said opening when said roller is rotated; an intermediate toner supply chamber in communication with said storage chamber through said opening and having a toner outlet and toner feeding means within said intermediate supply chamber for feeding toner out of said intermediate supply chamber through said toner outlet at a constant rate, said intermediate toner supply chamber having a space around said toner feeding means which is closed other than at said opening and said toner outlet and having a size for holding, when completely filled, a predetermined constant amount of toner; and drive means connected to said roller and said toner feeding means for always driving said roller when said toner supply means is driven and for driving said roller and said toner feeding means at speeds for causing said roller to deliver toner to said intermediate toner supply chamber when said intermediate toner supply chamber is not full at a rate greater than the rate of feed of toner by said toner feeding means when said intermediate toner supply chamber is full of toner; whereby said intermediate toner supply chamber accommodates therein a constant amount of toner sufficient only for substantially filling said intermediate toner supply chamber, and the density of the toner within said intermediate toner supply chamber is maintained constant while said toner feeding means is functioning, and when said toner feeding means stops and said intermediate toner supply chamber is filled, said cylindrical roller will not feed further toner even if it keeps rotating.

4,350,270

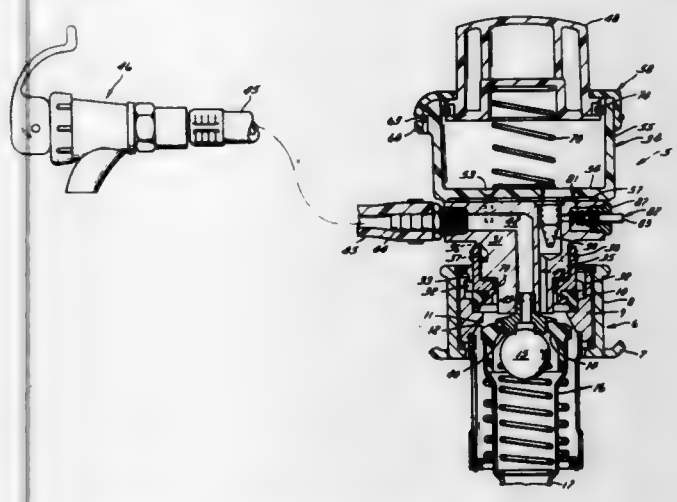
PORTABLE KEG TAPPING COUPLER WITH VENT

James E. Nezworski, Waukesha, Wis., assignor to The Perlick Company, Inc., Milwaukee, Wis.

Filed Oct. 27, 1980, Ser. No. 201,245

Int. Cl.³ B67D *5/42*

U.S. Cl. 222—336 4 Claims



1. A portable keg tapping unit for a keg closure that has an annular gas valve seat at the bottom of an upwardly opening well and wherein an upwardly biased annular gas valve normally engages said gas valve seat and itself comprises a seat for a concentric upwardly biased liquid valve, said keg tapping unit comprising an outer body member receivable in said well and detachably connectable with said closure and an inner body member coaxially movable up and down relative to said outer body member to and from a lowered operative position in which said inner body member holds said gas valve and said liquid valve unseated for flow of pressure gas into the keg and flow of liquid out of the same, said keg tapping unit being characterized by:

A. said inner body member having

(1) a lower portion received in the outer body member,
(2) a substantially coaxial intermediate portion which is above the outer body member, and
(3) an upper portion which comprises a pump chamber wherein a manually actuatable plunger is reciprocable up and down;

E. said inner body member having therein
(1) a liquid passage which opens substantially concentrically to its bottom,
(2) a gas passage which extends downwardly from said pump chamber and opens to its bottom in laterally spaced relation to said liquid passage, and
(3) a vent passage which opens outwardly from said gas passage to one side of said intermediate portion and in which there is a coaxial inwardly facing annular vent valve seat defined by a reduced diameter outer end portion of said vent passage; and

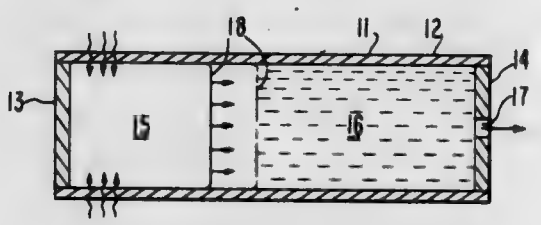
C. a push button valve in said vent passage
(1) having an actuator portion which is axially slidable in said reduced diameter portion of the vent passage and which is accessible at the exterior of the inner body member and
(2) having an enlarged diameter axially inner valve portion which is normally engaged with said vent valve seat but is disengageable therefrom for relief of excess keg pressure by inward manual actuation of said actuator.

4,350,271

WATER ABSORBING FLUID DISPENSER

James B. Eckenhoff, Los Altos, Calif., assignor to Alza Corporation, Palo Alto, Calif.

Filed Aug. 22, 1980, Ser. No. 180,353
Int. Cl.³ A61M *31/00*
U.S. Cl. 222—386.5 7 Claims



1. Fluid dispenser for use in a water containing environment comprising:
(a) a rigid, water permeable housing;
(b) a water insoluble, water swellable composition filling a portion of the space within the housing and being in contact with the housing;
(c) a fluid lipophilic composition filling the remainder of the space within the housing, said fluid composition being substantially immiscible in the water swellable composition; and
(d) fluid composition outlet means in the housing that communicates with the fluid composition.

4,350,272

PRODUCT ISOLATED AEROSOL CONTAINER AND METHOD OF MANUFACTURE

Tor H. Petterson, Palos Verdes, Calif.

Continuation-in-part of Ser. No. 93,037, Nov. 9, 1979, abandoned, which is a continuation of Ser. No. 620,691, Oct. 9, 1976, abandoned, which is a continuation of Ser. No. 384,700, Aug. 1, 1973, abandoned, which is a continuation-in-part of Ser. No. 180,790, Sep. 15, 1971, abandoned. This application Oct. 6, 1980, Ser. No. 194,015
Int. Cl.³ B65D *35/28*; B67D *5/54*
U.S. Cl. 222—386.5 17 Claims

1. A disposable aerosol barrier package containing
a. a package body having first and second end walls and an intermediate wall extending between and intersecting said end walls, wherein said first end wall has an opening for a discharge valve and said second end wall has a propellant charging plug;
b. sufficient sealing material at the intersection between the intermediate wall and the second end wall to completely fill the intersection and leave no void therein; and
c. a continuous coating of plastic material formed in situ and adhesively and sealingly bonded to at least a major portion of said intermediate wall and to all of said second wall wherein:



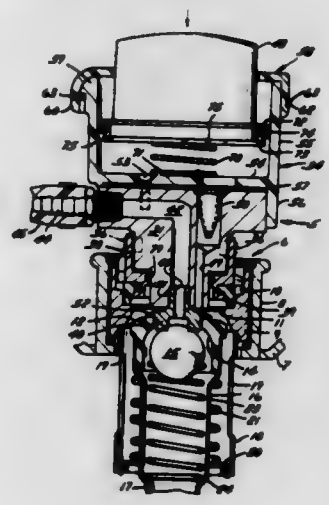
(1) said coating is free from air entrapment between the coating and the confronting wall and has a strength greater than the strength of its bond with said wall,
(2) said coating is free from air entrapment between the coating and the sealing material, and
(3) upon charging the package with a compressible fluid propellant said coating can controllably release from said second wall and said sealing material to form, in situ, a chamber, free from air entrapment, for the propellant charge while the coating remains continuous, under tension and contains the propellant in a compressed state.

4,350,273

PORTABLE KEG TAPPING COUPLER

James E. Nezworski, Waukesha, and John M. Strobel, West Allis, both of Wis., assignors to The Perlick Company, Inc., Milwaukee, Wis.

Filed Jun. 27, 1980, Ser. No. 163,782
Int. Cl.³ B65D *83/14*
U.S. Cl. 222—400.8 10 Claims



1. A keg tapping unit for cooperation with a keg that has an upwardly opening wall, lug means projecting radially into said well near the top thereof, an annular gas valve seat at the bottom of said well, an annular gas valve which is biased upwardly for engagement with said gas valve seat and which itself provides a liquid valve seat, and a concentric liquid valve which is biased upwardly for engagement with said liquid valve seat, said tapping unit comprising:

A. a substantially annular outer body member receivable in said well and having
(1) connection means thereon cooperable with said lug means to provide a bayonet connection and
(2) annular seal means at the bottom thereof whereby said gas valve seat is sealingly engaged when said bayonet connection is established;
B. an inner body member having a lower portion substantially concentrically received within said outer body member for axial and rotational motion relative thereto and having a substantially concentric upper portion which projects a substantial distance above said outer body member to be accessible for manual rotation, said upper portion being constrained to partake of all motion of said lower portion, and said inner body member having therein
(1) a liquid passage that opens substantially concentrically to its bottom and
(2) a gas passage that opens to its bottom in laterally spaced relation to said liquid passage;
C. cooperating cam means on said inner and outer body members whereby rotation in one direction of the inner body member relative to the outer body member moves the inner body member downward to a valve-unseating position;
D. valve unseating means on the bottom of said inner body member, operative when the inner body member is in its valve-unseating position and said bayonet connection is established;
(1) to hold the liquid valve off its seat and
(2) to maintain sealing engagement with the gas valve, all around the same, while holding it off its seat;

and

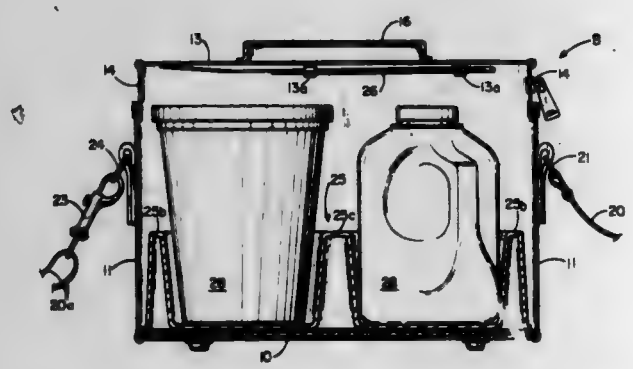
E. an elastic sealing ring confined between said body members to provide a gas seal between them and a frictional connection through which limited torque is transmitted from the inner body member to the outer body member to enable said bayonet connection to be established and subsequent unseating of said gas and liquid valves to be effected by a rotational movement of the inner body member in said one direction.

4,350,274

PORTABLE BAG FOR PET SUPPLIES

Richard T. Morgan, 6614 Annapolis La., Maple Grove, Minn. 55369

Filed Nov. 19, 1980, Ser. No. 208,241
Int. Cl.³ A45C *3/00*
U.S. Cl. 224—205 **1 Claim**



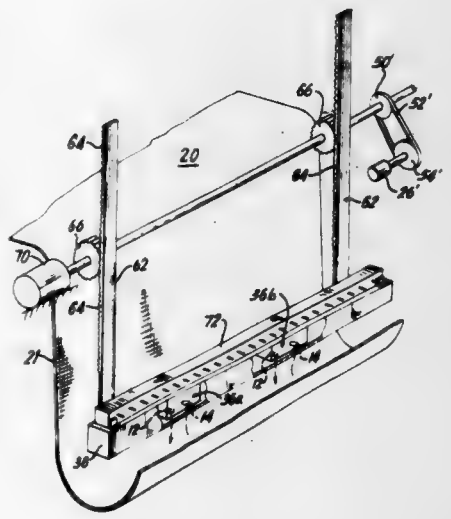
1. A complete package for carrying accessories for household animals comprising,
a carrier bag made from flexible sheet material and having a bottom, upstanding side and end panels,
a dish made from rigid material and having lower portions of the same shape and outer dimensions as the inside of the lower portion of the bag and positioned in the bottom of the bag to maintain the desired bag shape,
a carrier strap connected to the outside of the bag and being adjustable to permit the package to be carried over the shoulder or around the waist of a person using the same,
a cover for the bag hinged on one edge to the top of one of the side panels of the bag and having a 3-sided zipper connecting the other edges of the top to the top of the other panels of the bag,
said dish having a plurality of recessed compartments formed therein with the walls of the compartments spaced inwardly from the upstanding side portions thereof to provide space around the outside of the compartments,
an upstanding rigid container in each of said compartments having side wall dimensions substantially the same as the dimensions of the insides of the compartments and extending substantially to the top of the inside of the bag to support the bag top but having diminished top portions to provide space along the top of each container, and
a plurality of articles carried in the space provided along the side of the diminished top of the containers.

4,350,275

METHOD AND APPARATUS FOR CONTROLLING THE SPEED OF A TRAVELING WEB

William T. Kuhn, 4 Heather Ct., Upper Saddle River, N.J. 07458, assignor to William T. Kuhn, Upper Saddle River; Paul F. Rose, Kinnelon and Thomas H. Rose, Chatham, all of, N.J., a part interest

Filed Oct. 14, 1980, Ser. No. 196,772
Int. Cl.³ B65H *25/12, 23/22, 25/02*
U.S. Cl. 226—14 **32 Claims**



1. Apparatus for controlling the speed of a traveling web being driven along a path by means of first and second drive means located at spaced positions along said path, said apparatus comprising:
emitter means for directing a radiation signal at said traveling web at a predetermined location along said path between said first and second drive means;
detector means for detecting a reflected radiation signal reflected by said traveling web moving along said path, and for generating a position indication signal indicative of the position of said detector means relative to said traveling web at said predetermined location along said path;
moving means responsive to said position indication signal for moving said detector means so as to maintain a predetermined position of said detector means with respect to said traveling web at said predetermined location; and
control means responsive to said moving means for controlling said first drive means relative to said second drive means so as to maintain a predetermined relationship between the speed at which said first drive means drives said web along said path and the speed at which said second drive means drives said web along said path.

4,350,276

ARRANGEMENT FOR ALIGNING A MATERIAL WEB, PARTICULARLY A VENEER WEB

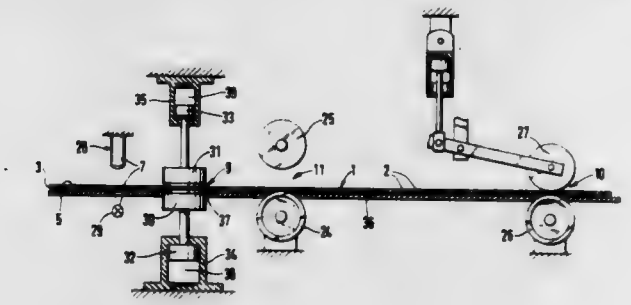
Hans Kreder, Im Asemwald 2/8, 7000 Stuttgart 70, and Horst Weislogel, Marquardtstrasse 15, 7000 Stuttgart 1, both of Fed. Rep. of Germany

Filed Apr. 17, 1980, Ser. No. 141,110

Claims priority, application Fed. Rep. of Germany, Apr. 26, 1979, 2916828

Int. Cl.³ B65H *25/26, 25/24*

U.S. Cl. 226—16 19 Claims



1. An arrangement for aligning a cross line of a material web moving in a given direction along a bearing surface, particularly a veneer web of veneer sheets, with a set portion comprising means for monitoring the position of the cross line and detecting a deviation of the cross line from a set position, retaining means for restraining movement of a leading side of the material web relative to a trailing side of the material web in the direction of movement, said monitoring means being operable to activate said retaining means associated with the leading side to restrain the leading side relative to the trailing side until the actual position of the cross line coincides with the set position, and feed drive means for urging the material in the given direction.

4,350,277

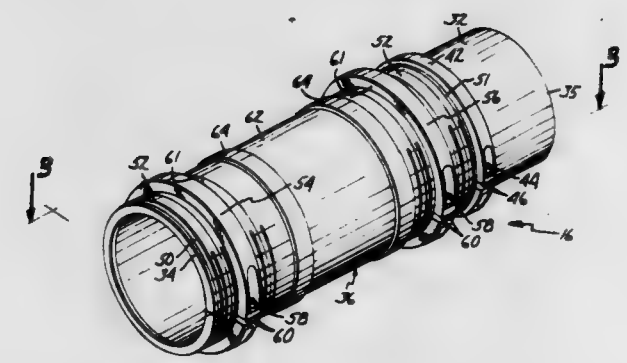
PHOTOGRAPHIC PRINT PAPER GUIDE SPOOL

Richard D. Anderson, Maple Grove, and John A. Wedel, Mendota Heights, both of Minn., assignors to Pako Corporation, Minneapolis, Minn.

Filed Sep. 16, 1980, Ser. No. 187,830

Int. Cl.³ B65H *17/20*

U.S. Cl. 226—190 11 Claims



1. For use with a photographic printer in which a photographic print paper web is transported from a print paper supply to a print mask location, an interchangeable guide spool for guiding the print paper to ensure proper centering at the print mask location, the guide spool being quickly attached or detached to accommodate a particular paper width by engaging a permanently positioned connective member of the photographic printer having a fixed spatial relationship with respect to the print mask, the guide spool comprising:

a stationary inner sleeve for attachably engaging with one end the permanently positioned connective member of the photographic printer;

a rotatable outer sleeve coaxially and rotatably mounted on the stationary inner sleeve and having an outer surface that engages the photographic print paper; and

guide means attached to the outer surface of the outer sleeve for guiding the print paper;

means for attaching the guide means to the outer sleeve such that the guide means is positioned and set for a particular print paper width.

4,350,278

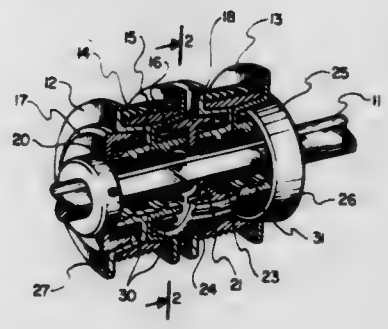
DEMAND DRIVE COMPONENT

Marvin A. Roberts, 7900 Alabama Ave., Canoga Park, Calif. 91304

Filed Oct. 27, 1980, Ser. No. 200,883

Int. Cl.³ B65H *17/20*

U.S. Cl. 226—190 1 Claim



1. In a film transport system comprising the combination of a rotatable shaft, a unitary film support roller arranged for rotation about said shaft;

a substantially rigid central hub portion disposed substantially coaxial with said shaft and arranged to rotate thereabout;

a substantially rigid constant diameter rim portion disposed about and having a larger diameter than said hub;

at least one flexible member connecting said rim portion to said hub portion whereby said rim portion may rotate about said hub at varying radial distances;

means for driving said roller comprising a drive puck arranged to rotate with said shaft and upon radial deflection of said rim portion to engage and drive said roller;

said drive puck coaxially arranged with said shaft, and said hub;

drive puck having an outer peripheral irregular surface which contacts the underside of said roller upon radial deflection of said rim portion;

said roller is provided with at least one lateral cavity defining said roller underside and wherein said drive puck is disposed within said lateral cavity;

said drive puck irregular surface comprising a plurality of spaced apart ridges laterally disposed across the width in parallel relationship;

said drive puck irregular surface includes a central crown mid-way between its side edges and said ridges diverge towards said side edges from said crown.

4,350,279

BATTEN SETTER

Norman S. Haley, 4016 Mapleton Dr., Chantilly, Va. 22021

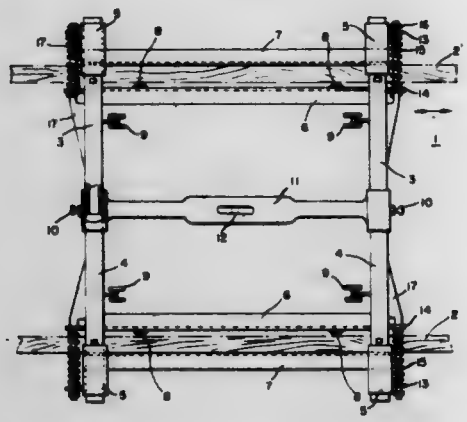
Filed Feb. 26, 1980, Ser. No. 124,848

Int. Cl.³ B27F *7/02;* B43I *13/00;* E04F *21/26*

U.S. Cl. 227—156 14 Claims

1. A batten setter which is adapted to be moved along a surface for spacing batten strips on said surface at a predetermined distance from each other which comprises a first end portion and a second end portion said first and second end portions being connected together by at least one spaced-apart, slidably adjustable frame member, so that the distance between said first and second end portions can be varied depending upon the desired distance between adjacent batten strips, said frame members connecting said end portions in substantially parallel relationships, each of said end portions including first

and second spaced-apart spring-biased guide frames adapted to be positioned on opposite sides of said batten strip for clamping



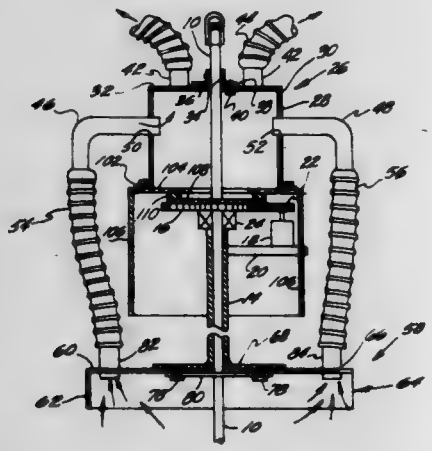
and sliding along said batten strip, and means for supporting the batten setter on said surface for spacing said batten strips while in said spaced-apart relationship.

4,350,280

SMOKE EXHAUST APPARATUS FOR A ROTARY WELDER

Stanley K. Kruse, 4122 O'Day Rd., Ft. Wayne, Ind. 46818

Filed May 12, 1980, Ser. No. 148,961
Int. Cl.³ B23K *28/02*
U.S. Cl. 228—29 **5 Claims**



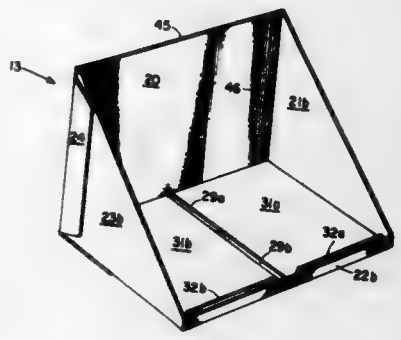
1. Smoke exhaust apparatus for a rotary welder comprising an upright elongated stationary carrier, a support member mounted on said carrier for rotation about and upright axis, plenum and shroud elements vertically spaced apart and connected to said support member for rotation therewith, said plenum having intake and exhaust ports; said shroud including a horizontally disposed plate having a depending skirt around a portion of the periphery thereof to provide an opening in the side of the shroud, smoke inlet ports in said plate, tubing connecting said smoke inlet ports to said intake ports, whereby suction applied to said exhaust ports causes a flow of air through said side opening and from the interior of said shroud upwardly through said smoke inlet ports, through said tubing and intake ports and into said plenum from which said flow passes outwardly of said exhaust ports.

4,350,281

ONE-PIECE SHIPPING CONTAINER WITH CUT-CASE PROTECTION

Arthur H. Dornbusch, and Raymond D. Smith, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Oct. 9, 1980, Ser. No. 195,464
Int. Cl.³ B65D *90/04*
U.S. Cl. 229—38 **6 Claims**



1. A corrugated container formed from a unitary blank and having economical cut-case protection, said container comprising:

(a) a pair of end walls and a pair of side walls integrally connected in alternating side-by-side relation;

(b) said end walls each having an integrally connected bottom closure flap, which flaps together form an outer coplanar section of a bottom closure;

(c) at least one of said end walls having an integrally connected top closure flap;

(d) said side walls each having integrally connected at its top end a side wall liner flap of substantially the same dimension as said side walls folded inwardly into face-to-face contact with said side walls;

(e) said side walls each having a bottom closure flap integrally connected by a first score line and which flaps together form an inner coplanar section of said bottom closure;

(f) said bottom closure flaps of said side walls each having a partial end wall liner flap integrally connected therewith along a second score line perpendicular to the associated said first score line and adjacent an end thereof;

(g) said partial end wall liner flaps being located at the same end of said container and folded at an angle of about 90° with said bottom closure flaps of said side walls, forming coplanar portions of a partial end wall liner across the lower part of one of said end walls; and

(h) printed matter on said container indicating that the container is opened by cutting across said lower part of one of said end walls, adjacent the partial end wall liner, and across the side walls.

4,350,282

SELF-PURGING CENTRIFUGE

Denis J. Dudrey, Bloomington, and John T. Herman, Mahtomedi, both of Minn., assignors to Donaldson Company, Inc., Minneapolis, Minn.

Filed Dec. 23, 1980, Ser. No. 219,502
Int. Cl.³ B04B *1/00*
U.S. Cl. 233—7 **22 Claims**

1. A self-purging centrifuge comprising:

(a) a drum having a side wall and a top wall member, mounted for rotation about a generally vertical axis;

(b) a rotor assembly coaxially mounted in said drum for independent rotation with respect to said drum, said rotor assembly comprising a plurality of nested discs having downwardly sloping, spaced surfaces and having the outer peripheral edges thereof spaced a substantial distance from said side wall of said drum, said rotor assembly

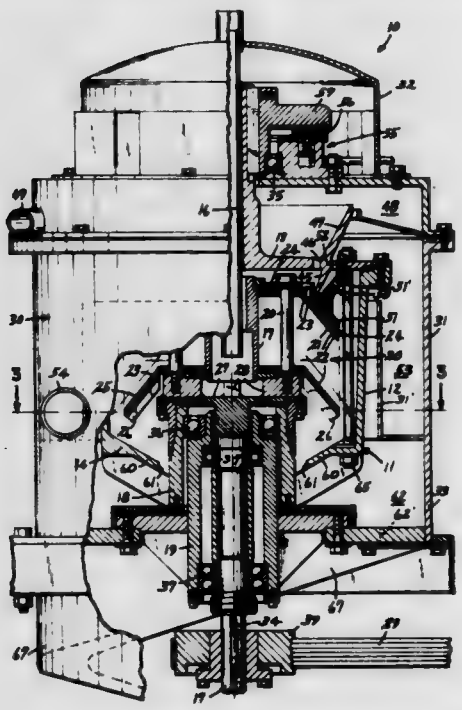
including aligned disc portions with apertures therein allowing light liquid flow therethrough;

(c) means for introducing into said drum a fluid comprising liquids of differing densities and solid particles;

(d) means for rotating said rotor assembly, said fluid rotating therewith, and said rotating fluid in turn causing rotation of said drum;

(e) said drum top wall member having portions with inner and outer radially spaced liquid discharge openings therein;

(f) an annular baffle member extending generally downward



from said top wall member intermediate said inner and said outer openings, said baffle member guiding liquid overflow from said rotor assembly apertures into said inner openings of said top wall member;

(g) extension means on said drum for preventing fluid and solids carryover into said liquid discharge openings during a purge cycle;

(h) means for defining a solid particles collection area adjacent said drum side wall; and

(i) means for slowing the rotation of said drum, to initiate a purge cycle, said fluid and particles draining from said drum over said baffle during the purge cycle.

4,350,283

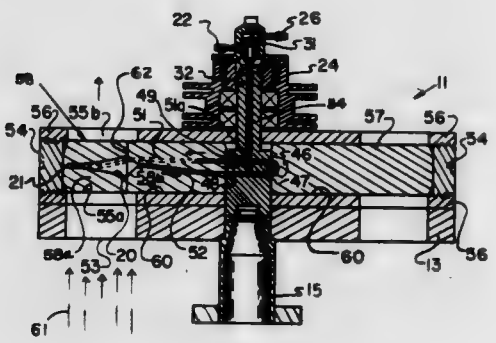
CENTRIFUGAL ELUTRIATOR ROTOR

Armen L. Leonian, Woodside, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Jul. 1, 1980, Ser. No. 164,983

Int. Cl.³ B04B *11/00*

U.S. Cl. 233—26 **8 Claims**



1. A centrifuge rotor adapted for continuous separation and collection of specific particles from mixed populations thereof, comprising:

a rotor adapted to be supported on a centrifuge drive shaft for rotation thereby;

said rotor having elutriator cell housing means with at least two equally spaced-apart elongated cavities disposed symmetrically with respect to the axis of rotation of said rotor;

a fluid delivery spindle disposed in said rotor and extending along the axis of rotation thereof, said spindle having fluid inlet and outlet passages therethrough, said passages having inlet and outlet apertures communicating with each of said elongated cavities;

elutriator cells disposed in at least two of said elongated cavities, said elutriator cells having inlet and outlet openings on one end thereof registering with said corresponding apertures in said spindle in face-to-face contact therewith for receiving and delivering fluid to and from said spindle passages;

said spindle having one end connecting with a stationary housing having rotating seals and stationary inlet and outlet ports to enable continuous loading and unloading of said elutriator cells while said rotor is rotating.

4,350,284

TRANSFERRING MEANS FOR USE IN A DEVICE FOR SEPARATING LIQUIDS

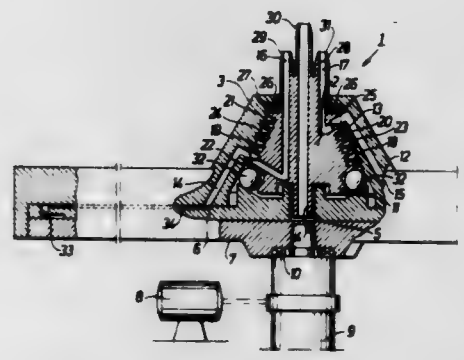
Friedrich Rosemeier, and Helmut Kerber, both of Hechingen, Fed. Rep. of Germany, assignors to Gambro Dialysatoren KG, Fed. Rep. of Germany

Filed Sep. 26, 1980, Ser. No. 191,253

Claims priority, application Fed. Rep. of Germany, Sep. 28, 1979, 7908037

Int. Cl.³ B04B *1/00*

U.S. Cl. 233—27 **8 Claims**



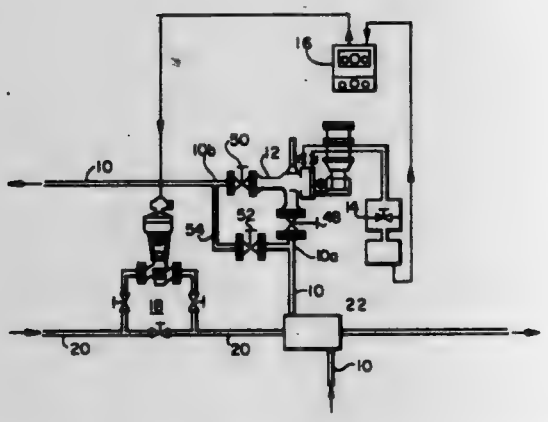
1. A device for collecting a liquid which has been separated into at least first and second fractions, said first fraction having a higher density than said second fraction, said device comprising a stationary transferring element and a housing for said stationary transferring element, said housing being rotatable about an axis of rotation for said device, said housing and said stationary transferring element providing a fluid communication space therebetween for fluid communication between said housing and said stationary transferring element, said housing including first and second outlet passages for passing said first and second separated fractions through said housing to first and second points in said fluid communication space, and said transferring element including first and second outlet channels for passing said first and second separated fractions from said first and second points in said fluid communication space through said transferring element, and wherein said first point in said fluid communication space is positioned radially outwardly from the axis of rotation of said device with respect to said second point in said fluid communication space so that when said housing is rotating the separation of said first and second fractions in said fluid communication space is maintained at least partially by centrifugal force.

4,350,285

VISCOSITY REGULATING APPARATUS AND METHOD

Eugene F. Holben, Haddonfield, N.J., assignor to Conometer Corporation, Gibbsboro, N.J.

Filed Jan. 21, 1981, Ser. No. 226,742
Int. Cl.[3] G05D *24/00*
U.S. Cl. 236—1 R 17 Claims



1. Apparatus for regulating the viscosity of a fluid flowing through a fluid line comprising:

a fluid line;

housing means connected between two points in said fluid line for flowing fluid from said fluid line through said housing means and for returning fluid flowing through said housing means to said fluid line;

first and second flow restrictors having identical flow restriction characteristics;

pump means connected between said first flow restrictor and said second flow restrictor for diverting a portion of fluid flowing through said housing means through said first flow restrictor, said pump means and said second flow restrictor;

means for sensing the pressures of fluid entering and leaving said pump means;

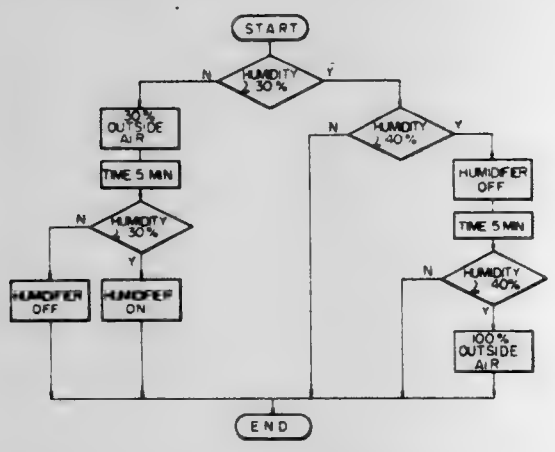
and control means responsive to said sensing means for varying the viscosity of fluid flowing through said fluid line as a function of the difference in said pressures of fluid entering and leaving said pump means.

4,350,286

HUMIDITY CONTROL APPARATUS

Shinji Sutoh, Konan; Takeshi Harada, and Shinichi Kaneko, both of Higashi Matsuyama, all of Japan, assignors to Diesel Kiki Company, Ltd., Tokyo, Japan

Filed Aug. 18, 1980, Ser. No. 179,314
Claims priority, application Japan, Aug. 20, 1979, 54-105677
Int. Cl.[3] G05D *21/00*; F24F *7/00*
U.S. Cl. 236—44 A 9 Claims



1. An apparatus for controlling a humidity in an enclosure including duct means having an outlet opening into the enclosure, a recirculated air inlet communicating with the enclosure and an outside air inlet, proportioning means for controlling a proportion of air entering the duct means from the outside air inlet relative to air entering the duct means from the recirculated air inlet and humidifier means for, when energized, increasing a humidity in the enclosure, characterized by comprising:

humidity sensor means for sensing the humidity in the enclosure; and

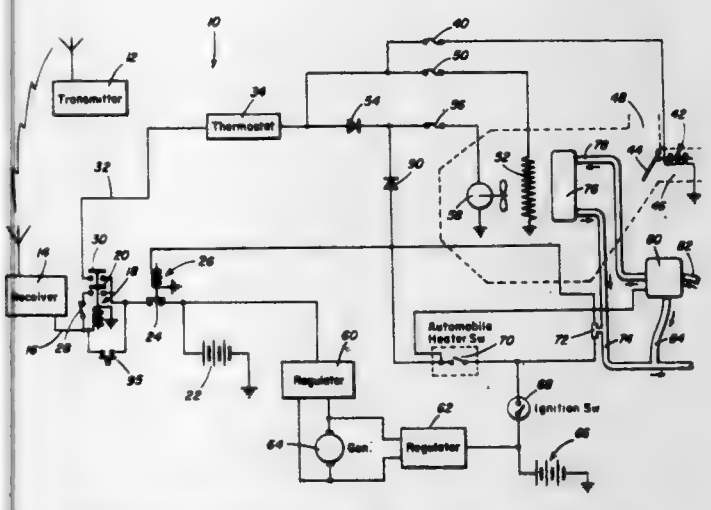
control means responsive to the humidity sensor means and constructed to, when the humidity drops below a first predetermined value, control the proportioning means to set said proportion to a predetermined low value and, after a predetermined length of time has subsequently elapsed and only if the humidity is below a second predetermined value, energize the humidifier means, and; when the humidity rises above a third predetermined value which is higher than the first predetermined value, deenergize the humidifier means and, after a predetermined length of time has subsequently elapsed and only if the humidity is above a fourth predetermined value, control the proportioning means to set said proportion to a predetermined high value.

4,350,287

REMOTE CONTROL CAR HEATER

Kennith E. Richards, Texas City, Tex., assignor to Thomas E. Mackey and Donal Haire, both of Texas City, Tex.

Filed Jul. 29, 1980, Ser. No. 173,901
Int. Cl.[3] B60H *1/02*
U.S. Cl. 237—12.3 A 9 Claims



1. A remote control auxiliary car heater comprising:

transmitter means for transmitting a start signal;

receiver means for receiving said transmitted start signal;

electrical resistance heater means operatively connected to said receiver means for being energized upon receipt of said start signal;

blower means disposed in operative relation to said electrical resistance means, said blower means energized by being operatively connected to said receiver means for causing airflow over said electrical resistance means upon receipt of said transmitted start signal;

a thermostat disposed between said receiver means and said electrical resistance heater means for controlling application of energy to said electrical resistance heater means; and

airflow control means operatively connected to said receiver means for controlling airflow from said blower means and directing said airflow to a windshield of an automobile.

4,350,288

FLUID FUEL HEATING SYSTEM

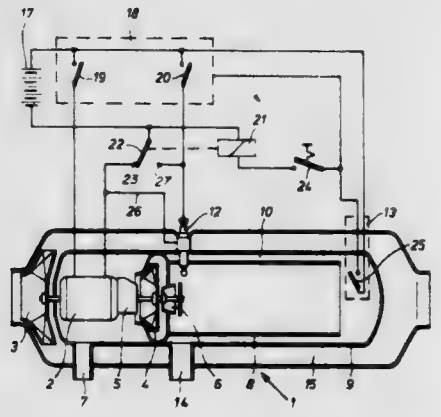
Joerg Hermann, Gauting; Werner Baier, Gauting-Stockdorf, and Josef Breidbach, Feldafing, all of Fed. Rep. of Germany, assignors to Webasto-Werk W. Baier GmbH and Co., Munich, Fed. Rep. of Germany

Filed Aug. 7, 1980, Ser. No. 176,149

Claims priority, application Fed. Rep. of Germany, Aug. 7, 1979, 2931936

Int. Cl.³ B60H *1/02*

U.S. Cl. 237—12.3 C 2 Claims



1. A fluid fuel heating system comprising:

(a) a burner unit having a combustion air blower, an electric motor drivingly connected to said blower, and an incandescent plug for igniting the fuel-air mixture only during a starting period; and

(b) a powering circuit operatively connected to said electric motor and said incandescent plug for supplying electric power thereto, said powering circuit having circuit means for selectively incorporating said incandescent plug into said powering circuit in series with said electric motor as a series resistor to reduce the blower rpm after completion of the starting period.

4,350,289

SELECTIVELY CONTROLLED AIR CONDITIONER OUTLET SYSTEM OF A VEHICLE

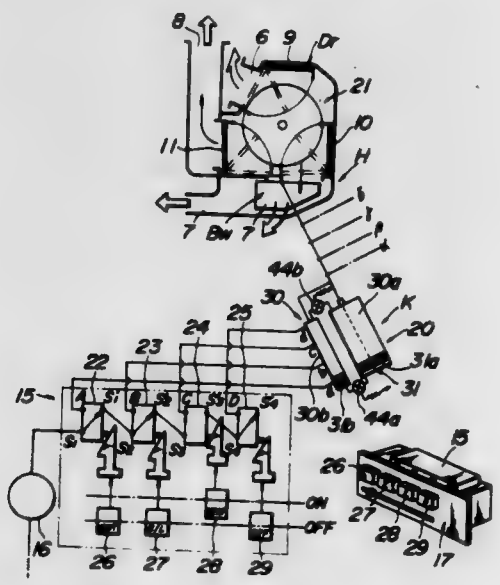
Yukio Shimada; Naoyoshi Suzuki; Toshio Ohashi, all of Yokohama, and Yasushi Inoshita, Tokyo, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Nov. 12, 1980, Ser. No. 206,260

Claims priority, application Japan, Nov. 15, 1979, 54-147065

Int. Cl.³ B60H *1/02*

U.S. Cl. 237—12.3 A 6 Claims



1. In a selectively controlled air conditioner outlet system for an air conditioner including a heater unit (H), said system provided with blowing outlets (Bw) for blowing out conditioned air to various portions of a cabin of a vehicle, a door (Dr) for controlling the amount of the blowing out conditioned air for each one of the blowing outlets (Bw), a vacuum source (16), and a driving device (K) coupled thereto through a vacuum selector (15), wherein by selection on the vacuum selector (15), the driving device (K) is operated in a predetermined condition and, by the driving device (K), the degree of opening of said doors (Dr) can be controlled, the improvement comprises that the driving device (K) is formed of a shift actuator (20) having a vacuum cylinder (30) and a piston (31), and the vacuum selector (15) is provided with a plurality of selecting buttons (26) (27) (28) (29) and a corresponding number of vacuum switches (22) (23) (24) (25), that said vacuum cylinder (30) is provided with a plurality of supply taps (a) (b) (c) (d) for supplying a unidirectional negative pressure signal only at one location corresponding to a position of one of a plurality of predetermined positions (A) (B) (C) (D) obtained by depressing one of the selecting buttons of the vacuum selector (15), and that the outlet system includes

means for supplying the negative pressure signal to none of the supply taps when none of the selecting buttons is depresssed and for supplying the negative pressure signal to any one of the supply taps when a corresponding one of the selecting buttons is depressed, means for shifting the piston to a predetermined position when the negative pressure signal is supplied to any one of the supply taps, and a link mechanism connecting the piston to the doors, for moving predetermined one or more doors to a predetermined condition in response to the movement of the piston.

4,350,290

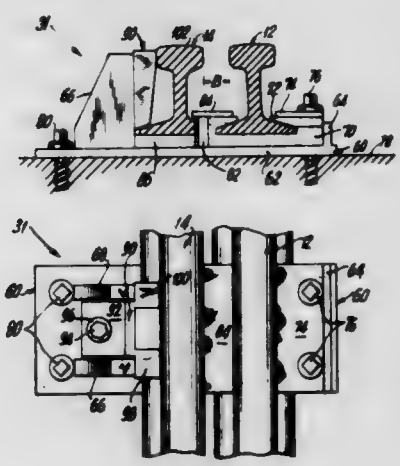
RESILIENT RAIL FASTENER ASSEMBLY FOR CURVED TRACK

Charles J. Bush, Woodridge, N.J., assignor to New York City Transit Authority, Brooklyn, N.Y.

Filed Mar. 24, 1980, Ser. No. 132,895

Int. Cl.³ E01B *5/18*

U.S. Cl. 238—17 5 Claims



1. A resilient rail fastener assembly for a paired load carrying and parallel guard rail combination, said assembly comprising:

a one-piece base plate adapted to receive said load carrying and guard rails and having a planar base portion, said base plate further including an upstanding shoulder disposed at one end of said base portion adjacent said load carrying rail, said base plate further including a pair of integrally formed spaced, generally planar upstanding brace plates disposed in parallel relationship on the opposed end thereof adjacent said guard rail and oriented transverse to the longitudinal axis of the length of said rails;

an elastomeric pad positioned between the upper surface of said base portion and the bottom of said load carrying rail; and

wedge means interposed between said brace plates and said guard rail, said wedge means including an upstanding

portion and a horizontal portion, said upstanding portion of said wedge means including two spaced tapered segments, each segment being disposed between said guard rail and one of said brace plates, said horizontal portion of the wedge means being fixedly connected to the base portion of said base plate with the upstanding portion of said wedge means being in abutting relationship with the upper portion of said guard rail such that the centrifugal forces imparted to said curved guard rail by rolling stock moving therealong is transferred from said guard rail through said wedge means and said brace plates into said base portion whereby said guard rail is maintained in a vertical orientation and noise and vibration are substantially reduced.

4,350,291

RAILWAY RAIL-FASTENING CLIP AND A RAILWAY RAIL-AND-FASTENING ASSEMBLY

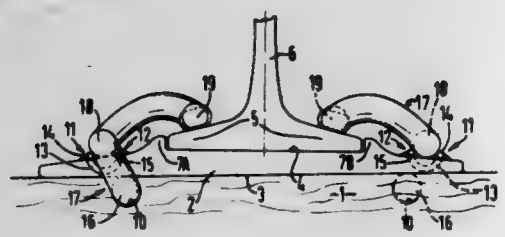
George D. Dobson, Baulkham Hills, Australia, assignor to Pandrol Limited, London, England

Filed Feb. 12, 1980, Ser. No. 120,922

Claims priority, application United Kingdom, Feb. 15, 1979, 7905443

Int. Cl.³ E01B *9/48*

U.S. Cl. 238—349 5 Claims



1. An assembly on a railway track comprising a cross tie, portions of the tie defining an opening in it, a metal plate with a flat bottom lying on the tie, an upward projection on the plate, a flange-footed rail lying on the plate, and a rail clip comprising an upwardly bearing, substantially straight leg driven into said opening, the uppermost part of said leg lying at most 2 mm. below the flat bottom of the plate, a second part bearing downwardly on the upper face of the flange of the rail and a third part, connected to said leg only by a single reverse bend, bearing downwardly on the upper face of the plate at a location which is further from the rail than is said leg, considering only the horizontal direction, said assembly further comprising a second upward projection on the plate, the flange of the rail being between the two projections and located by both of them, portions of the tie defining a second opening in it, the two openings being one on each side of the rail flange, and a second rail clip comprising an upwardly bearing substantially straight leg driven into the second opening, the uppermost part of said leg lying at most 2 mm. below the flat bottom of the plate, a second part bearing downwardly on the upper face of the flange of the rail and a third part, connected to said leg only by a single reverse bend, bearing downwardly on the upper face of the plate further from the rail than is said leg of the second clip, considering only the horizontal direction.

4,350,292

CENTRIFUGAL FEEDER

Ian D. Gilbert, St. Albans, England; Michael T. Halloran, Pembroke Pines, and Ernst Roos, Hialeah, both of Fla., assignors to Coulter Electronics, Inc., Hialeah, Fla.

Filed Dec. 27, 1979, Ser. No. 107,704

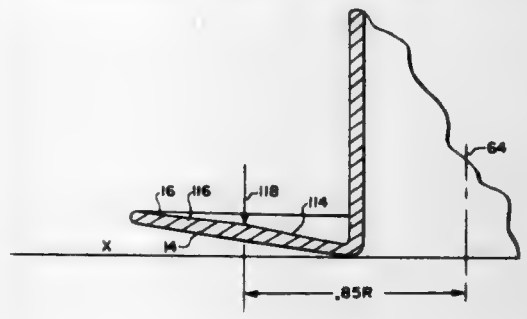
Int. Cl.³ B05B *17/04*

U.S. Cl. 239—7 19 Claims

1. A method of operating a centrifugal feeder having a substantially cylindrical feeder disc or generally conical configuration with an upwardly inclined generally concave surface symmetrical about a vertical axis comprising the steps of:

feeding an amount of particulate material onto the feeder disc surface,

rotating said disc at a first angular velocity at which particles are expelled from the disc surface, and



rotating said disc through at least one other angular velocity at which particles are expelled from the disc surface,

wherein the first angular velocity is not capable of causing the expulsion of the particles expelled at the least one other angular velocity.

4,350,293

VEHICLE EQUIPPED WITH A LIQUID SPREADER DEVICE

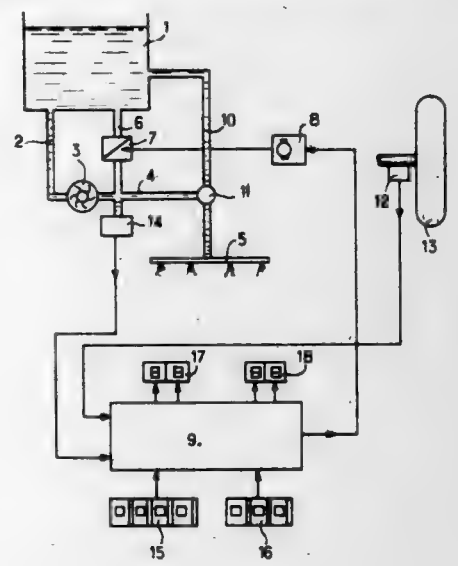
Maurice C. J. Lestradet, 291 Avenue du Marechal de Lattre de Tassigny, 51230 Fere Champenoise, France

Filed Sep. 16, 1980, Ser. No. 187,802

Claims priority, application France, Oct. 15, 1979, 79 25546

Int. Cl.³ A01C *23/04*; B05B *9/06*; G05D *7/06*

U.S. Cl. 239—155 6 Claims



1. A control system for a vehicle mounted spreader for dispensing a desired quantity of material per unit of surface area (Q), said quantity being responsive to the to the pressure (Pm) in the spreader, said system comprising:

a reservoir (1) for the material;

a conduit (2, 4) connecting said reservoir with the spreader;

a pump (3) inserted in said conduit;

means (14) for sensing the actual pressure (Pm) in the spreader;

a controllable valve (7, 8) for controlling the pressure (Pm) in the spreader and hence the amount of material dispensed by the spreader;

means (12) for sensing the speed of the vehicle (V); and

a controller (9, 25) for controlling said valve, said controller comprising encoding means for producing a digital quantity signal relating to the desired amount of material to be spread per unit area (Q), encoding means for producing a digital parameter signal (k) relating to the type of spray nozzles incorporated in the spreader, interface means responsive to said pressure sensing means and speed sensing means for providing digital pressure (Pm) and speed

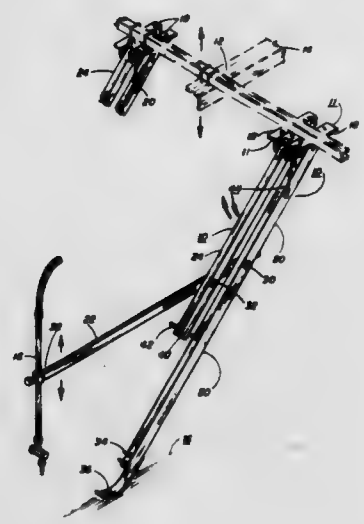
signals (V), and a microprocessor coupled to said encoding means and said interface means for producing a digital desired system pressure signal (Pcal) corresponding to the system pressure necessary to provide a desired material quantity per unit area, said microprocessor being responsive to said digital desired pressure signal (Pcal) and said digital system pressure signal (Pm) for producing a digital correction signal, said controller being connected to said valve for actuating said valve in accordance with said correction signal for causing the actual pressure to approach the necessary system pressure.

4,350,294

SPRAY CULTIVATOR FOR SPRAYING WEEDS UNDER CROPS OF VARYING HEIGHTS GROWING ON LEVEL AND NON-LEVEL FIELDS

Martin Gaspard, Rte. 1, Batchelor, La. 70715

Filed Oct. 14, 1980, Ser. No. 196,729
Int. Cl.[3] B05B *1/20*
U.S. Cl. 239—169 5 Claims



1. A spray cultivator for spraying the tops of weeds growing under crops of varying heights on rolling fields, and said cultivator being attachable to a lift bar behind a prime mover for pulling said cultivator up and down crop rows, said cultivator comprising:

(a) rigid side element means of unequal lengths pivoted together in an angularly flexible frame defining a parallelogram between pivots and with free ends extending downward and rearward, said frame being fixed normal to the cultivator lift bar by a frame side extending longitudinally of said prime mover, and with a forward element of said side element means pivotally depending to engage and follow with a free end the surface of said rolling field for pivoting the remaining side element means of said angularly flexible frame to remain respectively parallel to the respectively fixed and depending remaining side element means and with the free end of said remaining side element means opposite and parallel to said fixed side element means being kept at a constant height and attitude above said rolling field; and

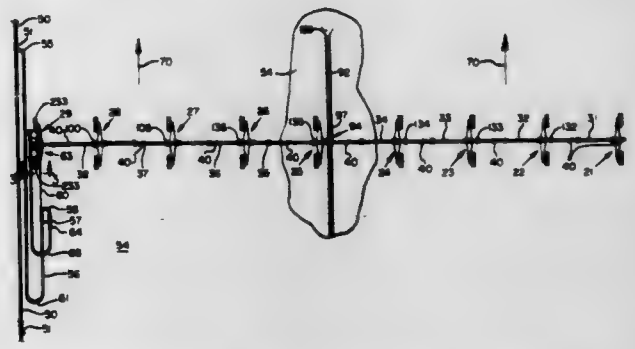
(b) spray pipe and nozzle means adjustably mounted on said free end of side element means opposite said longitudinally extending fixed side element means for spraying weeds at a constant attitude and height above a rolling field of changing levels.

4,350,295

LINEAR MOVE DEVELOPMENTS

Lyndle G. Gheen, Eugene, Oreg., assignor to Pierce Corporation, Eugene, Oreg.

Filed Feb. 8, 1980, Ser. No. 119,845
Int. Cl.[3] A01G *25/09*
U.S. Cl. 239—178 17 Claims



1. In an irrigation line move, hose means resting on the ground and adapted for connection at one end thereof to a source of water;

an irrigation line move including a pipe connected to the other end of the hose means and carriage means for moving the pipe;

cable means connected to a portion of the hose means;

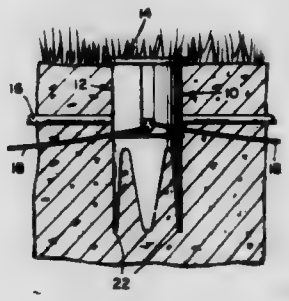
and winch means on a portion of the line move for alternately pulling the cable means in to drag the hose means along the ground toward the line portion and for paying the cable means out.

4,350,296

ACCESS SLEEVE FOR DRIP IRRIGATION EMITTERS

Ora F. Kuhlman, Portuguese Bend, and Samuel Tobey, Encino, both of Calif., assignors to Technical Irrigation Products, Inc., Lawndale, Calif.

Filed Jun. 12, 1980, Ser. No. 158,915
Int. Cl.[3] A01G *25/06*
U.S. Cl. 239—201 9 Claims



1. In an irrigation system having a distribution hose to which an emitter is attached for supply of water to soil, the improvement in permitting protective burial of said hose and said emitter in the soil comprising:

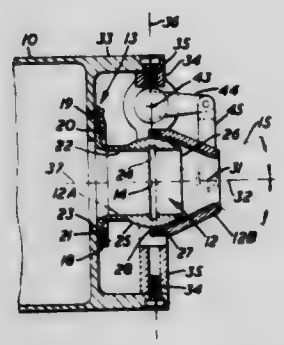
a sleeve having an opening at the surface of and extending into the soil and about said emitter and portions of said hose secured thereto, said sleeve further having at least one slot with a base at the bottom thereof for supporting said hose; and

a cap removably secured to said sleeve at its opening for closing said sleeve and enclosing said hose and said emitter within said sleeve and for permitting access thereto, said cap including a tubular extension fittably interengageable with said sleeve and extensible into butting engagement with said hose to secure said hose at said slot base and within said sleeve.

4,350,297
SWIVELLING EXHAUST NOZZLES FOR ROCKET MOTORS

Frank Martin, Cranford La., Heston, Middlesex, England

Filed Jul. 5, 1962, Ser. No. 207,821
Claims priority, application United Kingdom, Jul. 5, 1961, 24371/61
Int. Cl.³ F02K 9/84
U.S. Cl. 239—265.35 4 Claims



1. A rocket motor having a body and an exhaust nozzle which comprises a tubular main part fixed to the motor body and a hollow nozzle extension containing the nozzle mouth, with an exhaust axis, the extension being sealed to the main part of the nozzle by means of a universal joint of the spherical ball-joint type, a gimbal ring supported by the body of the motor and pivotally connected thereto about a first pivot axis transverse to the nozzle exhaust axis, the nozzle extension being pivotally supported in the gimbal ring for pivotal movements about a second pivot axis transverse to the nozzle exhaust axis and normal to the said first pivot axis, means for turning the gimbal ring relative to the motor body about the first pivot axis, including first actuating means with a first linkage operatively connected to the gimbal ring, and means for independently turning the nozzle extension relative to the gimbal ring about the second pivot axis, including second actuating means with a second linkage operatively connected to said nozzle extension, said second linkage including a first shaft supported in a bearing carried by the motor body for rotation about a fixed axis perpendicular to said first pivot axis, a second shaft supported by the gimbal ring on an axis parallel to said second pivot axis and operatively connected to said nozzle extension, and a universal coupling whose center lies on said first pivot axis, operatively connected between said two shafts.

4,350,298
FOAM DISPENSER

Tetsuya Tada, Tokyo, Japan, assignor to Canyon Corporation, Tokyo, Japan

Filed Aug. 13, 1980, Ser. No. 177,933
Claims priority, application Japan, Aug. 16, 1979, 54/104454; Sep. 5, 1979, 54/113987; Jan. 28, 1980, 55/8446
Int. Cl.³ B05B 9/043
U.S. Cl. 239—333 7 Claims

1. In a foam dispenser for foaming a liquid mixed with air supplied from an air supplying means after the liquid is discharged from an orifice formed in a foam dispenser body and is scattered at the bottom of a nozzle cap located in front of the orifice, the improvement wherein said nozzle cap includes:

a plurality of arms at the bottom of said nozzle cap which form an obstacle wall with which the spray liquid from said orifice collides,

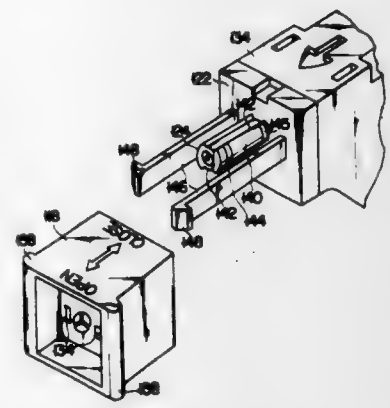
a plurality of foam outlet ports defined between adjacent ones of said arms so that scattered spray and freely flowing liquid streams are alternately formed adjacent to one another;

a sealing member which extends from the bottom of said nozzle cap for selectively sealing off said orifice in said foam dispenser body;

said nozzle cap being movable relative to said foam dispenser body between a sealing position whereat said sealing member seals off said orifice and a foaming position whereat said orifice is not sealed so that the spray stream from said orifice may be foamed;

at least one pair of through holes formed in said nozzle cap; and wherein said foam dispenser body includes a pair of cantilever support arms extending from said foam dispenser body and having locking means at the free end of at least one of said support arms; and

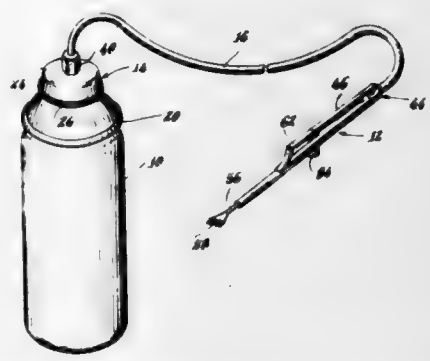
said nozzle cap being slidably mounted to said pair of cantiliver support arms which respectively extend through said pair of through holes in said nozzle cap, said locking means being engageable with said nozzle cap for preventing said nozzle cap from falling off from said support arms.



4,350,299
REMOTE DELIVERY NOZZLE AND PRESSURIZED CONTAINER ASSEMBLY

George M. Stephenson, 190 Chestnut Ridge, Bethel, Conn. 06801; David L. Begin, Brookfield, Conn.; Roger Casavant, Winsted, Conn.; Stephen Bornemeier, Ridgefield, Conn., and William J. Colucci, Danbury, Conn., assignors to George M. Stephenson, Bethel, Conn.

Filed Jun. 30, 1980, Ser. No. 164,319
Int. Cl.³ B05B 7/32
U.S. Cl. 239—337 23 Claims



10. A wand for a remote delivery nozzle assembly adapted to be connected to a pressurized container comprising:

an elongated member having a substantially parallel inlet and outlet passage,

remote valve means in a transverse bore between said inlet and outlet passage in said wand, for selectively controlling the release of the pressurized contents from said container, said valve means including

reciprocably mounted plunger means in said transverse bore for opening and closing communication between said inlet and outlet passage in response to movement thereof,

flexible membrane means on said wand member for contact with said plunger means to impart movement to said plunger means in response to pressure applied thereto, and

a cap member adapted to be seated on said flexible mem-

brane means for imparting pressure to said flexible membrane means when pressed.

4,350,300

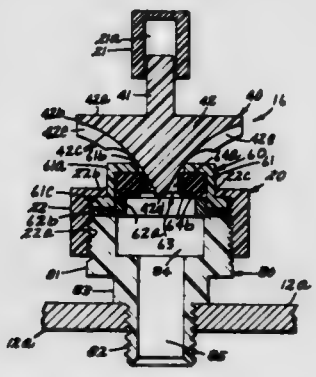
IRRIGATION SYSTEM AND CONSTANT VOLUME SPRINKLER HEAD THEREFOR

Merle A. Vikre, 32 Windward Way, Gulf Harbors New Port Richey, Fla. 33552

Continuation-in-part of Ser. No. 199,094, Oct. 20, 1980, and Ser. No. 971,038, Dec. 19, 1978, Pat. No. 4,231,523, which is a continuation of Ser. No. 765,266, Feb. 3, 1977, abandoned, said Ser. No. 199,094, is a continuation of Ser. No. 000,069, Jan. 2, 1979, abandoned. This application Apr. 24, 1980, Ser. No. 143,413

Int. Cl.³ B05B *1/26, 1/30*

U.S. Cl. 239—396 **49 Claims**



1. A spray head device for use in center pivot irrigation systems for distributing a spray of water, comprising:

frame means defining an upper carrying member and a lower housing disposed in spaced relation, the lower housing adapted for connection to a source of water;

water jet means carried by the lower housing defining an inlet for receiving water and an outlet of predetermined size constructed to issue a jet of water, the outlet disposed in opposition to the upper carrying member;

volume control means associated with the water jet means for controlling the jet of water so that its volume output is substantially constant, the volume control means comprising a resilient washer retained within the water jet means and having a control opening disposed in alignment with and immediately adjacent the outlet of said water jet means, the resilient washer having a normal unstressed state in which the control opening permits the flow of a maximum volume of water, and the range of stress states in which the control opening becomes progressively restrictive, the resilient washer being disposed within the water jet means so that the incoming water acts on and stresses the water as a function of water pressure;

and diffuser means supported by said upper carrying member in overlying relation to the housing outlet for impingement by the jet of water and constructed to disperse the water radially outward into a flow pattern of predetermined configuration, the diffuser means comprising a circular member having a peripheral edge and defining an undersurface that tapers axisymmetrically to split the jet of water substantially evenly and deflect it laterally outward over the undersurface, said undersurface having a plurality of grooves formed therein which extend radially outward to said peripheral edge.

4,350,301

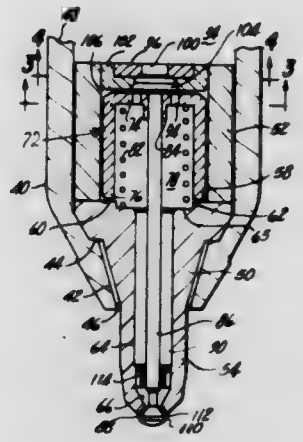
FLOW CONTROLLED PRESSURE REGULATING DEVICE

Louis R. Erwin, Livonia, and Granville W. Hurlong, Jr., Southfield, both of Mich., assignors to The Bendix Corporation, Southfield, Mich.

Filed Jun. 25, 1980, Ser. No. 162,985

Int. Cl.³ B05B *1/32;* F02M *61/08*

U.S. Cl. 239—453 **25 Claims**



1. An apparatus for delivering fluid, the apparatus being adapted to receive fluid from a pump means, wherein the pump means has means for delivering fluid at a determinable flow rate, the apparatus comprising:

fluid receiving means for receiving the delivered fluid;

spray tip means in fluid communication with said fluid receiving means comprising:

a hollow body having a fluid passage therethrough;

valve means for selectively opening and closing said fluid passage and for establishing a variable area orifice therein;

pressure regulating means comprising piston means reciprocatively mounted within said body and having at least one control orifice therein, for moving said valve means and for modulating the area of said variable area orifice to regulate the fluid pressure within said passage at a relatively constant value and for regulating the velocity of the fluid flowing from said variable area orifice independent of the quantity of flow therethrough.

4,350,302

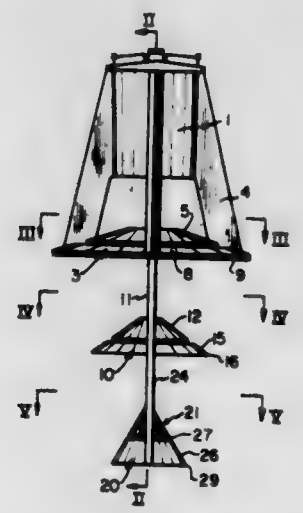
LIQUID SPRAY NOZZLE

Martin V. Gruber, and Mahendra F. Doshi, both of Tampa, Fla., assignors to Zurn Industries, Inc., Erie, Pa.

Filed Sep. 19, 1980, Ser. No. 188,627

Int. Cl.³ B05B *1/26*

U.S. Cl. 239—500 **6 Claims**



1. A nozzle including a body portion having a throat with a discharge orifice, a first splash plate, means mounting said first

splash plate below and coaxial with said discharge orifice, a second splash plate, means mounting said second splash plate below and coaxial with said first splash plate, a third splash plate, means mounting said third splash plate below and coaxial with said second splash plate, each of said first and second splash plates having an axial opening formed therein and said third splash plate including a conical portion coaxial with said axial openings, each of said first, second and third splash plates having a plurality of slots extending therethrough, said slots in said first and second splash plates being arcuate and parallel to the edge of the splash plate in which they are located, said arcuate slots being located radially outwardly of said axial opening in each of said first and second splash plates and extending substantially continuously around the complete circumference of the splash plate in which they are located, and means for mounting said nozzle on the exterior surface of a distribution pipe.

4,350,303

DEVICE FOR SPREADING MATERIAL

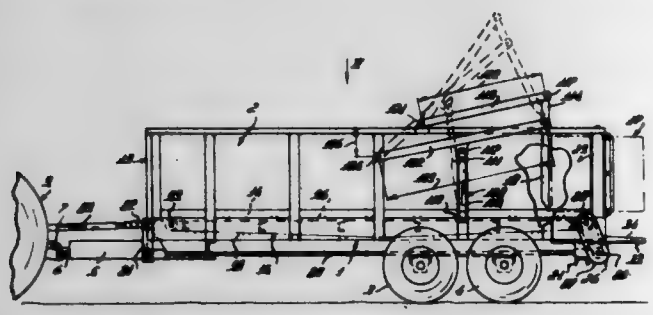
Cornelis van der Lely, 7, Brüschenrain, Zug, Switzerland

Continuation of Ser. No. 839,311, Oct. 4, 1977, Pat. No. 4,232,831. This application Dec. 10, 1979, Ser. No. 101,765

Claims priority, application Netherlands, Oct. 4, 1976, 7610949

Int. Cl.³ A01C *17/00, 19/00*

U.S. Cl. 239—673 **60 Claims**



1. A spreader comprising a hopper for containing material to be spread, said hopper having a floor and a delivery outlet at one end of said floor, and two rotary distribution members arranged adjacent said delivery outlet and adapted to rotate about a substantially vertical axes at least in part in said outlet and over said floor, each said distribution member comprising a carrier and resilient working members mounted thereon, said carrier extending in at least generally the same direction as the axis of rotation of said distribution member and being spaced from said axis, each said working member including said working members nearest said floor mounted to extend for its entire length over said floor during part of its rotation, the paths of rotation of said two distribution members extending together approximately the enitre width across said delivery outlet and individually substantially meeting midway across said delivery outlet.

4,350,304

ROTARY TYPE ELECTROSTATIC SPRAY PAINTING DEVICE

Matsuyoshi Sugiyama, Susono; Teru Morishita, Shizuoka, and Toshikazu Suzuki, Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Sep. 9, 1980, Ser. No. 185,433

Claims priority, application Japan, Apr. 4, 1980, 55-43454

Int. Cl.³ B05B *5/04*

U.S. Cl. 239—703 **15 Claims**

1. A rotary type electrostatic spray painting device comprising:

a metallic housing;

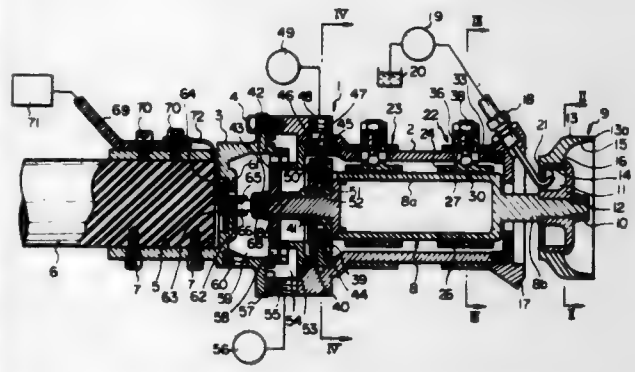
a metallic rotary shaft rotatably arranged in said housing and having a front end and a rear end;

a cup shaped metallic spray head fixed onto the front end of said rotary shaft and having a cup shaped inner wall;

feed means for feeding a paint onto said cup shaped inner wall;

drive means cooperating with said rotary shaft for rotating said rotary shaft;

non-contact type radial bearing means arranged in said housing and cooperating with said rotary shaft for radially supporting said rotary shaft under a non-contacting state;



non-contact type thrust bearing means arranged in said housing and cooperating with said rotary shaft for axially supporting said rotary shaft under a non-contacting state;

terminal means for receiving a negative high voltage, said terminal means being arranged on said metallic housing;

electrode means arranged in said metallic housing and having an electrode arranged to continuously contact the rear end of said rotary shaft; and

electrical interconnection means for electrically coupling said electrode means to said housing for applying said negative high voltage to said spray head.

4,350,305

MICRO-MILL-MIXER

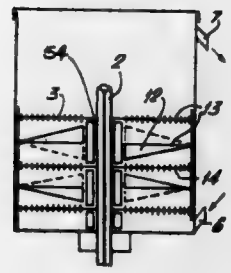
Jacques J. B. van Hoorn, Brussels, Belgium, assignor to Colortex S.A., Luxembourg, Luxembourg

Division of Ser. No. 894,238, Mar. 28, 1978, Pat. No. 4,214,712. This application Apr. 30, 1980, Ser. No. 145,015

Claims priority, application Belgium, Apr. 28, 1977, 0/177082

Int. Cl.³ B02C *23/36*

U.S. Cl. 241—46 B **13 Claims**



1. A micro-mill mixer comprising in combination:

an enclosure for treating material, the material including particles carried in a fluid,

an inlet means in said enclosure for introducing material to be treated into said enclosure, an outlet means for discharging from said enclosure material for which treatment has been completed,

an abrasive member having at least one face provided with an abrasive coating forming hard, sharp crystalline cutting points,

at least one accelerator propeller providing both centrifugal and centripetal motion of said material, said propeller having blades for projecting the fluid and particles toward the abrasive member, and means for effecting flow of material into said accelerator propeller, so that ejected material continuously re-enters the accelerator propeller to effect repetitive circulation,

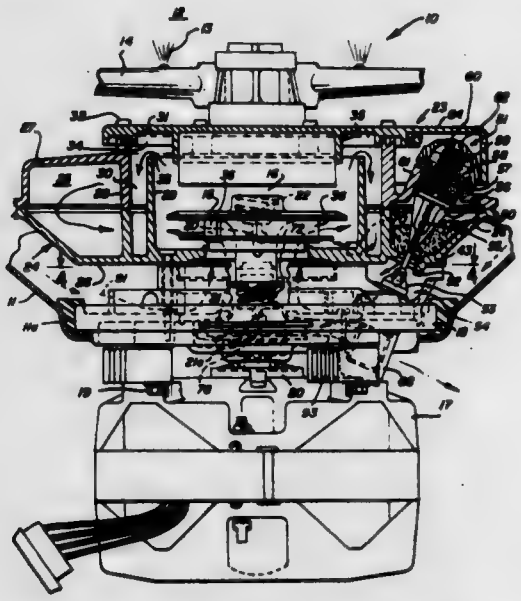
said propeller and said abrasive member being positioned relative to one another so that the particles and the fluid are projected onto said abrasive member and against said abrasive coating to produce intense splitting, slicing and particle shearing as well as fluid division jointly with coating of said particles by said fluid to form an intimate mix, and said propeller and abrasive member being furthermore positioned so as to provide a continuous repetitive circulation of said particles and fluid over said abrasive member.

4,350,306

CHOPPER FOR DISHWASHER SOIL SEPARATOR

Geoffrey L. Dingler; Wilbur W. Jarvis, both of St. Joseph Township, Berrien County, and Raymond W. Spiegel, Lincoln Township, Berrien County, all of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Sep. 22, 1980, Ser. No. 189,784
Int. Cl.³ B02C *18/10*
U.S. Cl. 241—46.15 **12 Claims**



1. In a soil separator for use in a dishwasher having wall means defining a pump chamber, a liquid impeller in said chamber, an inlet opening to said chamber, and a generally flat filter screen extending across said inlet to prevent passage of solid matter of a size greater than a preselected size to said chamber, an improved chopper for chopping such large size solid matter caught by the screen to reduce it to a size permitting passage through the screen with the liquid being drawn through said screen by the impeller, said chopper comprising:

a hub;

means for rotating said hub closely adjacent the upstream side of the screen about an axis perpendicular to said screen; and

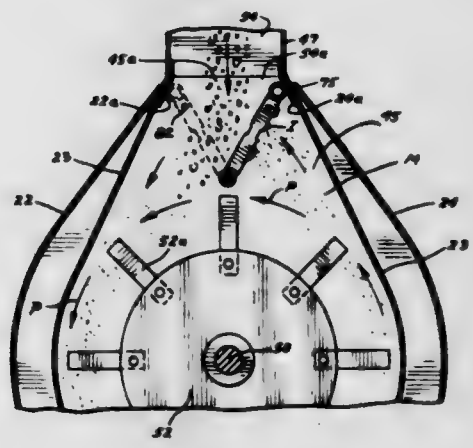
a chopping blade carried by the hub and defining a cutting edge extending outwardly from the hub substantially parallel to said screen, said blade being turned relative to a plane parallel to said screen to define means for causing turbulent agitation of the liquid immediately upstream of the screen for preventing adherence of the large size solid material to the upstream side of the screen, whereby said cutting edge chops the large size food particles caused to be agitated by said turned blade as it is swung annularly about said axis by the rotating hub.

4,350,307

TWO-SIDED MAGNETIZED DIVERTING PLATE FOR HAMMERMILL

Gerald R. Olson, Rte. 2, Box 256, Shakopee, Minn. 55379

Filed Feb. 1, 1980, Ser. No. 117,460
Int. Cl.³ B02C *13/286*
U.S. Cl. 241—81 **7 Claims**



1. A hammermill having therein an entry chute for incoming material leading into a grinding chamber and a hammer assembly mounted within said grinding chamber, in which the improvement consists of

a hammermill housing,

a grinding chamber within said housing,

an entry chute leading into said housing,

a plate member disposed between said entry chute and said grinding chamber,

means carried by said housing supporting said plate member,

said plate member having a length to traverse the width of said entry chute and of said grinding chamber,

the upper surface portion of said plate member extending across the path of incoming material through said entry chute,

the underlying surface portion of said plate member extending across the path of material circulating within said grinding chamber,

said upper and underlying surface portions of said plate member being magnetized

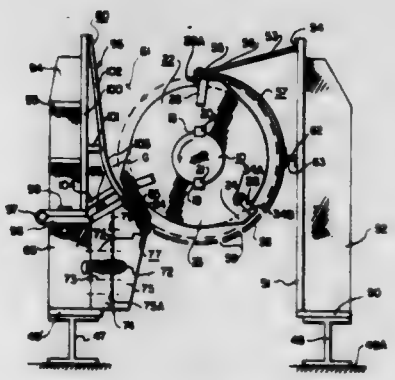
whereby said plate member attracts and extracts tramp iron from incoming material passing into said housing through said entry chute and from material circulating within said grinding chamber.

4,350,308

SHREDDING MACHINE AND COMPONENTS THEREOF

John C. Brewer, Salt Lake City, Utah, assignor to Garbalizer Corp. of America, Utah

Filed Apr. 11, 1980, Ser. No. 139,392
Int. Cl.³ B02C *18/18*
U.S. Cl. 241—294 **9 Claims**



1. For mounting to a revolving shaft, a blade-holder with a radially outwardly projecting protuberance having a forward-

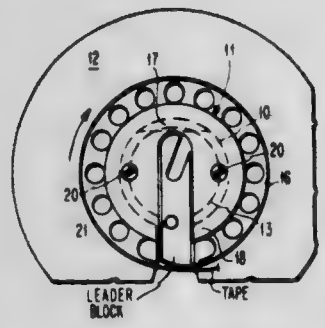
ly-facing blade-backing surface and also provided with a slot proximate said blade-backing surface, said slot having opposed surfaces, a blade seated in said slot, engaging said opposed surfaces and disposed against said blade-backing surface, said blade having a work-impact forward surface positioned above said slot, and elongate securement means disposed above and outside said slot and projecting through said blade, above and over said slot, and into said protuberance.

4,350,309

TAPE REEL HUB INCLUDING A CANTILEVER BEAM SECTION TO REDUCE TAPE TENTING

Maurice E. Richard, and Daniel J. Winarski, Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 23, 1980, Ser. No. 161,808
Int. Cl.³ B65H *75/18, 75/28*
U.S. Cl. 242—68.3 **9 Claims**



1. A reel for winding magnetic tape, including a hub member adapted to be rotated about an axis in both directions, the rotation of said member in one of said directions causing said tape to be wound under known tension on said hub member in a plurality of layers generating a predetermined radial inward compression force on said layers and said hub which is proportional to said known tension, said hub member including a generally continuous cylindrical tape receiving surface one predetermined portion of which is adapted to receive an end portion of the first layer of the tape to be wound on said hub, one outer circumferential section of said hub defining a cantilever beam of circumferential length L and radial depth W, one side of said beam being coextensive with said predetermined portion, said length and depth of said cantilever beam being determined in accordance with the modulus of elasticity of the material of said one outer circumferential section and said radial inward compression force to control the bending action of the distal end of said beam, whereby the tendency of a discontinuity associated with said end portion of said first layer of said tape to adversely affect subsequent layers of said wound tape is reduced since the controlled bending action of the distal end of said cantilever beam decreases said radial force to a point which prevents the tape from tenting when it is unwound.

4,350,310

APPARATUS FOR BRAKING TRAVELLING STRIP MATERIAL

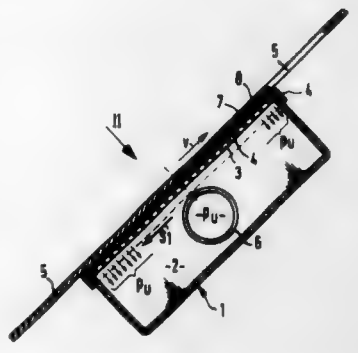
Peter Fröhling, An den Klippen 9; Franz F. Schulz, Krähenwinkel 6, both of D-5960 Olpe, Biggesee, and Karl Wiedemer, Hubertusweg 19, D-5900 Siegen, all of Fed. Rep. of Germany

Filed Dec. 9, 1980, Ser. No. 214,731
Claims priority, application Fed. Rep. of Germany, Dec. 12, 1979, 2949902
Int. Cl.³ B65H *23/10, 23/18*
U.S. Cl. 242—75.2 **3 Claims**

1. A device for the simultaneous braking of a plurality of parallel running strips comprising:

a box connectable to a source of negative pressure, the box having side and bottom walls cooperating with each to define an enclosed space and a perforated upper surface forming a slide base;

an air-permeable covering positioned on top of said slide base and contacting lower surfaces of the strips so that the lower surfaces of the strips are suction attracted towards



and into sliding contact with the air-permeable covering; and

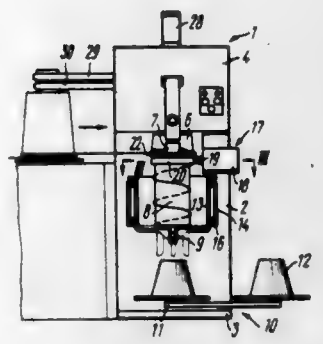
an air-impermeable covering positioned on said air-permeable covering to cover portions of the air-permeable covering not contacting said strips.

4,350,311

WIRE COILING MACHINE

Igor K. Pokhodnya, ulitsa Chkalova, 41-a, kv. 25; Valery N. Shlepakov, ulitsa Pushkinskaya, 45, kv. 9; Vladimir F. Alter, ulitsa Lenina, 88/92, kv. 77; Nikolai T. Ovcharenko, prospekt Nauki, 103, korpus 3, kv. 53; Igor P. Kaplienko, ulitsa Lenina, 88/92, kv. 66, and Petr I. Rak, ulitsa Dobrokhotova, 6, kv. 17-a, all of Kiev, U.S.S.R.

Filed Nov. 17, 1980, Ser. No. 207,790
Int. Cl.³ B21C *47/00*
U.S. Cl. 242—83 **5 Claims**



1. A wire coiling machine comprising:

a frame,

a wire bundling means mounted on said frame and including

a rotatable coil forming capstan,

a rotatable accumulator drum mounted below said capstan in axial alignment therewith and including movable normally extended support fingers for accumulating wire coils that come from said continuously rotating capstan,

means for retracting said movable normally extended support fingers, whereby the accumulated wire coils are free to fall down;

a wire cutting assembly disposed at the level where deposition of wire coils in a bundle is terminated and including

a percussion cutter unit mounted on said frame for rotation around a vertical axis,

an anvil associated with said wire bundling means for rotation around the axis of rotation of the same wire bundling means and having a surface of revolutions for taking an impact load from said cutter unit when the wire is cut at the instant a bundle of wire coils has been deposited;

means for establishing a fixed rotational ratio between said capstan and said accumulator drum, whereby wire coils of a desired size are invariably formed.

4,350,312

FISHING REEL

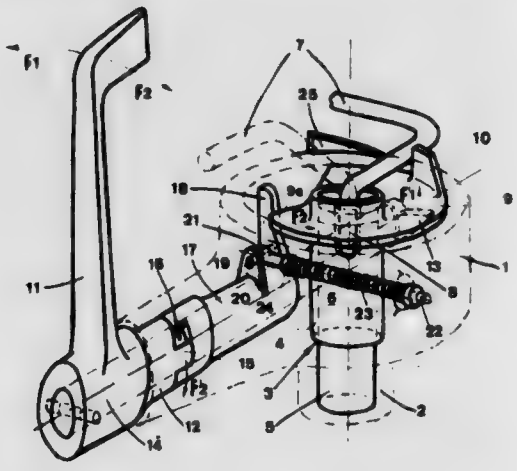
Jean Masclet, 11 Boulevard Davout, 75020 Paris, France

Continuation of Ser. No. 930,993, Aug. 4, 1978, abandoned. This application Mar. 10, 1980, Ser. No. 128,464

Claims priority, application France, Aug. 5, 1977, 77 24159

Int. Cl.³ A01K *89/01*

U.S. Cl. 242—84.2 G **9 Claims**



1. In a fishing reel of the type described, said fishing reel having a body supporting a rotatable spool having an ejectable line thereon, a spool driving means, and a line guide pivoted about an axis fixed relative to the body and which is transverse to the direction of ejection of the line, a pair of line guide supports, said line guide having two ends, one of which is received by each of said supports, the improvement comprising:

a mechanical double monostable toggle switching means forming a single assembly including one of said supports and comprising means axially for axially shifting said one support for pivoting said line guide from a first position in which a line can be wound onto said spool to a second position in which the line is unwound from said spool during casting, and for pivoting said line guide from the second position to the first position; and

said switching means including a single control lever coupled to said shifting means, said single control lever being rotatable in one direction for activating said means for shifting said one support to cause pivoting of said line guide from the first position to the second position, and said single control lever being rotatable in another direction opposite to said first direction for activating said means for axially shifting said one support to cause pivoting of the line guide from the second position to the first position, said line guide remaining in each of its said positions until its placement is changed by said single control lever.

4,350,313

BELT WIND-UP ROLLER FOR VEHICLE-SAFETY BELTS WITH BLOCKING DEVICE

Heinz D. Adomeit, Berlin, Fed. Rep. of Germany, assignor to Repa Feinstanzwerk GmbH, Alfdorf, Fed. Rep. of Germany

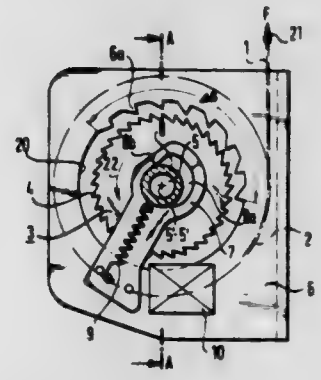
Continuation of Ser. No. 95,928, Nov. 20, 1979, abandoned, which is a continuation-in-part of Ser. No. 865,856, Dec. 30, 1977, abandoned. This application Feb. 5, 1981, Ser. No. 231,665

Claims priority, application Fed. Rep. of Germany, Oct. 13, 1976, 2646238

Int. Cl.³ A62B *35/02;* B65H *75/48*

U.S. Cl. 242—107.4 C **5 Claims**

1. Belt wind-up roller for vehicle safety belts having a wind-up roller in a housing for winding up a withdrawable belt that is supported on a rotatable shaft, blocking means for blocking rotation of the rotatable shaft with a sudden acceleration of the belt-withdrawal, to prevent a further withdrawal-or-pulling out of the belt, said blocking being effected by means of at least one blocking member which is supported on the axis of the belt wind-up roller which latter is slidably arranged in the housing, a spring exerting a force retaining the wind-up roller in position so that at a sudden acceleration of the belt pull, the axis of the wind-up roller is, at least on one side, displaced in a direction transverse to the roller axis against the force of the spring, a counterlocking part, said blocking member having at least one locking part which comes into engagement in the blocked state with the counterlocking part in the form of a tooth with



a tooth flank disposed on the housing in an angular range of approximately 120°; beginning approximately 10° before the roll-off point of the belt, in the roll-off direction of the belt, said counterlocking part constructed with a contact surface on the tooth flank which, when engaged by said locking part, forms a contact region between the two, said contact surface being disposed at the withdrawal side of the wind-up roller such that a plane parallel to the axis of the belt wind-up roller and which has a tangent from the roll-off point of the belt locking in the roll-off direction of the belt intersects said contact surface of the tooth flank thereby causing the force on the belt resulting from said belt pull to be absorbed by the counterlocking part and locking part.

4,350,314

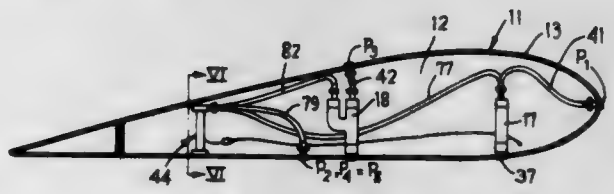
WING MOUNTED STALL CONDITION DETECTOR

Arthur W. Hoadley, Portage, Mich., assignor to The Board of Trustees of Western Michigan University, Kalamazoo, Mich.

Filed Jul. 10, 1980, Ser. No. 168,838

Int. Cl.³ G01C *21/00*

U.S. Cl. 244—1 R **8 Claims**



1. In an aircraft instrument system for use on a winged aircraft, comprising an indicator visibly displaying a linearly variable ratio of a first pressure differential between a first pressure at a first location on said wing and a second pressure at a second location on said wing spaced from said first location and a second pressure differential between a third pressure at a third location on said wing and a fourth pressure at a fourth location on said wing spaced from said third location, first means responsive to said first, second, third and fourth pressures for producing plural electrical signal outputs indicative of the individual pressures thus detected, electrical circuit means responsive to each of said electrical signal outputs for producing a quotient signal representing said linearly variable ratio and second means for effecting a connection of said

quotient signal to said indicator to render said indicator responsive to said quotient signal, the improvement comprising:

compartment means inside the wing of said winged aircraft, said first means being received in said compartment means;

securement means for securing said first means in said compartment means;

first, second, third and fourth orifice means providing communication between the exterior and interior of said wing;

air-water-sediment separator means and third means for securing said air-water-sediment separator means in said compartment means, said air-water-sediment separator means having means defining an air-water-sediment inlet, an air outlet and an intermediate sediment collection chamber;

first conduit means for connecting at least one of said first, second, third and fourth orifice means to said air-water-sediment inlet on said air-water-sediment separator means;

second conduit means for connecting said air outlet on said air-water-sediment separator means to said first means; and

third means for connecting the remainder of said first, second, third and fourth orifice means to said first means.

4,350,315

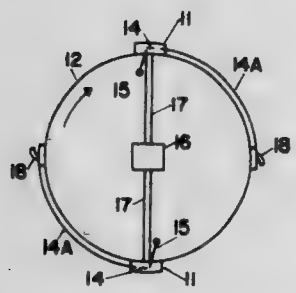
DEVICE TO DE-SPIN OBJECTS WITH VERY HIGH SPIN

Irvin Pollin, Bethesda, Md., assignor to The United Staates of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 27, 1980, Ser. No. 153,461

Int. Cl.³ F42B *13/32*

U.S. Cl. 244—3.23 **18 Claims**



1. A method of de-spinning a body rotating at a very rapid rate, comprising the steps of:

attaching a set of expendable masses to the body, each member of the set comprising two identical masses disposed symmetrically on the body, and

sequentially detaching each member of the set of expendable masses.

4,350,316

RAMP FOR AIRCRAFT TAKE-OFF

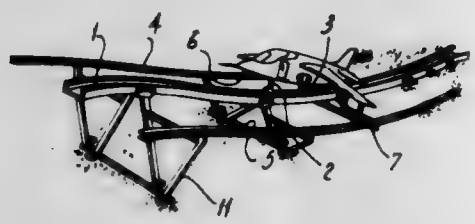
Ernest D. R. Thomas, Banstead, England, assignor to British Aerospace, Weybridge, England

Filed Mar. 20, 1980, Ser. No. 132,116

Claims priority, application United Kingdom, Mar. 22, 1979, 7910092

Int. Cl.³ B64F *1/00*

U.S. Cl. 244—63 **2 Claims**



1. A ramp along which an aircraft, having a wheeled undercarriage of the type having two main units in tandem and two stabilizing units disposed one to each side of the main units, travels during take-off including:

a single primary trackway on which the wheels of the main units roll;

twin secondary trackways spaced one to each side of said primary trackway on which the wheels of the stabilizing units roll; and

support means arranged to both support said trackways at a desired acclivity and to maintain their lateral spacing, said primary trackway alone having guide means, provided with a wider entrance mouth, which guide the undercarriage so that the wheels are prevented from deviating off the trackways, and being of such a length and so positioned to extend in advance of said secondary trackways so that said primary trackway is engaged by both main units of an aircraft undercarriage well before the stabilizing units engage said secondary trackways to ensure that the aircraft is correctly aligned even at take-off speeds before its undercarriage engages said secondary trackways.

4,350,317

DEVICE FOR THE RESILIENT SUSPENSION OF A VEHICLE SEAT WITH LONGITUDINAL ADJUSTMENT

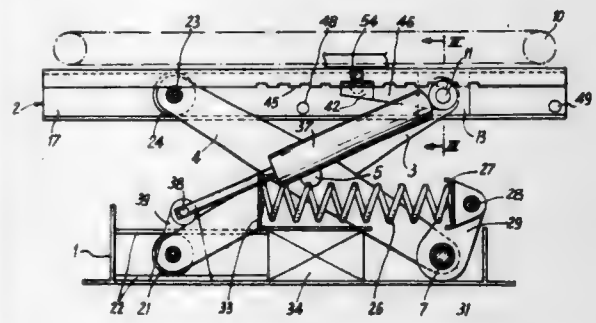
Bernard Aondetto, Nogent sur Marne, France, assignor to Sable Freres International, Pantin, France

Filed May 20, 1980, Ser. No. 151,615

Claims priority, application France, Jun. 28, 1979, 79 16704

Int. Cl.³ F16M *13/00*

U.S. Cl. 248—588 **4 Claims**



1. A device for the resilient suspension of a vehicle seat, comprising: a bottom frame to be mounted on the vehicle,

longitudinal guides in said bottom frame,

a top frame on which the seat is to be mounted,

longitudinal guides in said top frame,

vertical guiding means for guiding the vertical displacement of said top frame with respect to said bottom frame,

resilient means applied against said bottom frame and operatively connected to said top frame in order to urge said top frame in an upward direction,

a bearing slidably mounted within each of said top frame longitudinal guides,

said vertical guiding means comprising scissors-type levers pivotally connected at one end respectively to said bottom frame and to said bearings, a pivot pin for the pivotal connection of said scissors-type levers to said bearings, the ends of said levers being caused to slide within said bottom frame longitudinal guides and within said top frame longitudinal guides,

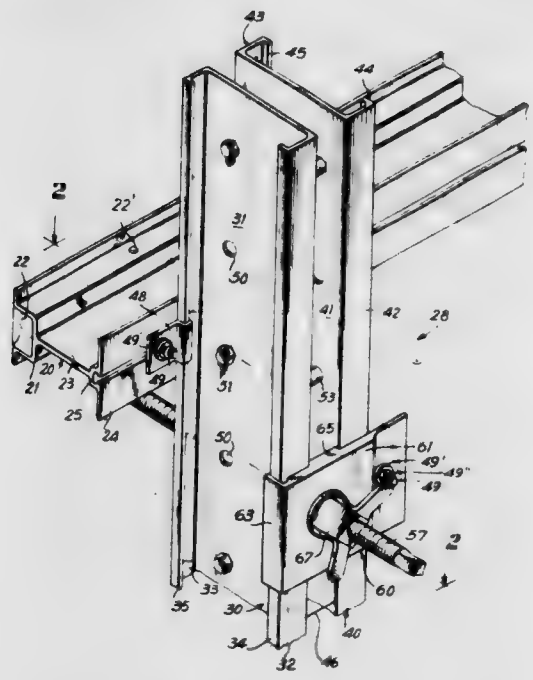
locking means interposed between at least one of said bearings and the longitudinal guide of the top frame in which said bearing is slidably mounted for locking said top frame longitudinal guides in a selected longitudinal position on said vertical guiding means,

said locking means comprising a catch pivotally mounted directly on said pivot pin, said catch comprising means to directly engage said top frame longitudinal guide which directly supports said seat.

4,350,318
TIE PLATE

Anthony J. Gallis, Lake Hiawatha, N.J., assignor to Harsco Corporation, Camp Hill, Pa.

Filed Jan. 15, 1981, Ser. No. 225,202
Int. Cl.³ E04G *17/02, 17/08*
U.S. Cl. 249—40 15 Claims

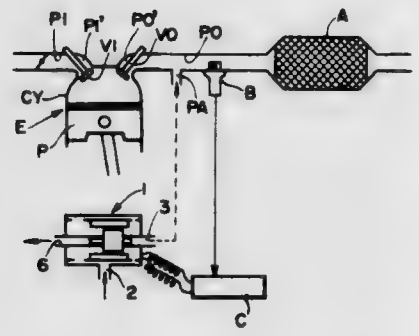


1. A connector plate adapted to be mounted on the outer flanges of a pair of U-shaped channels joined in back-to-back spaced relation as a concrete forming waler, comprising a plate portion of a size adapted to overlie both said outer flanges from beyond the outside edge of one said flange to beyond the outside edge of said other outer flange, hook means at one edge of said plate adapted for securing said plate to the outer edge of one of said flanges, fastening means adapted for use in securing said plate to said other flange, a raised spacer portion formed in the bottom face of said plate and dimensioned to fit snugly in the gap between said channels when said plate is hooked in place on said waler, and a tie rod aperture through said plate substantially centered through said raised portion.

4,350,319
CONTROL FOR AN ELECTROMAGNETIC SOLENOID VALVE

Shoji Kawata, Okazaki; Kyo Hattori, and Kazuhiro Sakurai, both of Susono, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed May 22, 1980, Ser. No. 152,293
Claims priority, application Japan, May 26, 1979, 54/65288
Int. Cl.³ F16K *31/08*
U.S. Cl. 251—65 4 Claims

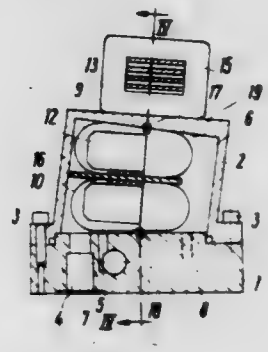


1. A solenoid controlled valve device comprising:
a valve body having fluid inlet port means and fluid outlet port means;
a valve member disposed within said valve body and having a closed position wherein said fluid outlet ports means is blocked from fluid communication with said fluid inlet port means, and
an open position wherein said fluid outlet port means is in fluid communication with said fluid inlet port means;
solenoid means for electromagnetically controlling the movement of said valve member, said solenoid means including a hollow core disposed in said valve body, a bobbin slidably mounted on the core, a coil disposed about the bobbin, and magnetic means fixed in the valve body for exposing the coil to a substantially perpendicular magnetic field;
and switching means for alternately directing an electric current to said coil in one direction wherein said valve member is moved toward said open position and in the opposite direction wherein said valve member is maintained in said closed position, said switching means being responsive to a switching signal; and
time delay means for switching the direction of said current from said one direction to said opposite direction after a predetermined time delay from application of said switching signal to said switching means.

4,350,320
VALVE, ESPECIALLY A SOLENOID VALVE

Kurt Stähle, Steinegg, Fed. Rep. of Germany, assignor to Concordia Fluidtechnik GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 6, 1979, Ser. No. 100,961
Claims priority, application Fed. Rep. of Germany, Dec. 9, 1978, 2853231
Int. Cl.³ F16K *31/06*
U.S. Cl. 251—129 22 Claims

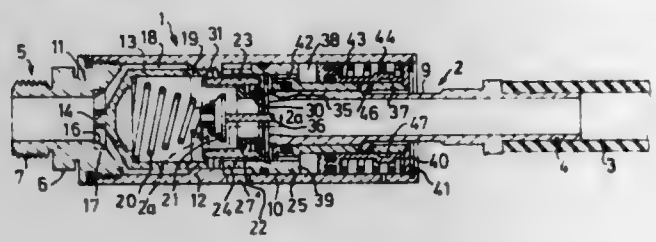


1. Valve for controlling fluid flow through at least one opening in a housing or the like comprising:
a valve chamber defined on opposite sides by a sealing surface means having at least one fluid opening thereon and a matching surface;
movable sealing body means guided in engagement between said matching surface and sealing surface means to selectively close and open said at least one fluid opening in dependence on the position of the sealing body means; and
electromagnetic drive means for changing the position of said sealing body means relative to the sealing surface means;
wherein the movable sealing body means comprises annular loops of sealing material fixedly interconnected at facing circumferential portions, a plate located between said circumferential portions, and magnetic material means carried by said plate for enabling said drive means to electromagnetically act upon said sealing body means to produce unrolling of one of said loops against the sealing surface means.

4,350,321
QUICK COUPLING DEVICE FOR PRESSURIZED FLUID CONDUITS

Lennart G. Berg, Diagnosvägen 4 B, S-141 54 Huddinge, Sweden

PCT No. PCT/SE80/00037, § 371 Date Oct. 8, 1980, § 102(e) Date Sep. 25, 1980, PCT Pub. No. WO80/01711, PCT Pub. Date Aug. 21, 1980
PCT Filed Feb. 6, 1980, Ser. No. 209,401
Claims priority, application Sweden, Feb. 8, 1979, 7901115
Int. Cl.³ F16L *37/28*
U.S. Cl. 251—149.6 14 Claims



1. A quick coupling device for a pressurized fluid conduit, said coupling device comprising a casing part and a nipple part, each part having a flow-through channel and the parts being assembled endwise to define a continuous flow channel; the nipple part having a front portion for being inserted into the casing part and the casing part having an open rear portion for receiving the inserted nipple part;

a flow channel blocking valve in the casing part, the valve including a valve seat supported in the casing part, and the valve seat being movable along the flow channel; a valve element movable along the flow channel and movable from seating on the valve seat, where the valve element and valve seat cooperate to block the flow channel, in a direction off the valve seat and away from the nipple part to open the flow channel, and a spring loading the valve element to seat on the valve seat;

a casing member extending around the valve seat; the casing member being movable along the flow channel and the flow-through channel in the casing part including an internal channel wall of the casing part which is engaged by the casing member for that member to serve as a slide valve on the channel wall;

a first opening through the channel wall and communicating from the fluid conduit into the flow channel in the casing part at the side of the valve that is further away from the nipple part;

a second opening through the channel wall and also communicating into the flow channel in the casing part at the side of the valve further toward the nipple part; the second opening also communicating to the exterior of the casing part, thereby enabling pressure evacuation of the flow channel at that side of the valve that is further toward the nipple part;

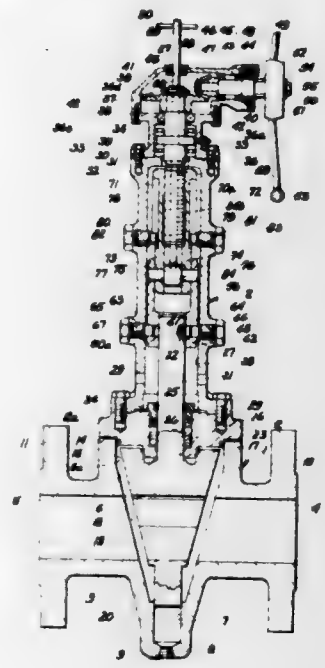
the first and second openings being so placed along the channel wall and the casing member being of such length along the channel wall that the casing member may selectively block either one or both of the first and second openings at various positions of the casing member along the channel wall;

the front portion of the nipple part being so shaped and the valve seat and valve element also being respectively so shaped and positioned that, upon insertion of the front part of the nipple part into the casing part, the front part of the nipple part eventually engages both the valve element and the valve seat for moving the valve element off the valve seat and for moving the valve seat along the flow channel between the positions thereof; the nipple part also engaging the casing member upon insertion of the nipple part into the casing part for moving the casing member among its positions along the channel wall.

4,350,322
HIGH TORQUE PLUG VALVE ACTUATOR

John H. Mueller, Cincinnati, Ohio, assignor to Grove Truseal Valve Company, Cincinnati, Ohio

Filed Aug. 31, 1981, Ser. No. 297,752
Int. Cl.³ F16K *31/50, 31/52*
U.S. Cl. 251—229 9 Claims



1. A high torque actuator for a plug valve of the type having a body with a plug chamber and diametrically opposed inlet and outlet ports communicating with said chamber, a plug in said chamber, having a transverse passage therethrough and an upstanding stem, said plug being shiftable between a first, upper, valve-open position with its transverse passage in alignment with said inlet and outlet ports and a second, lower, valve-closed portion wherein the axis of said transverse plug passage is oriented at 90° to the axes of said inlet and outlet ports, seal means on said plug, said seal means being in engagement with the interior surface of said chamber about said inlet and outlet ports when said plug is in said second, valve closed position, means closing the upper end of said chamber through which said plug stem extends in fluid-tight fashion, said actuator comprising a yoke having a vertical axial bore therethrough, said yoke having a lower end operatively attached to said plug valve with said plug stem extending into said yoke axial bore, said yoke having an upper end, a bearing spool mounted on said yoke upper end, an elongated valve stem being rotatively mounted in said bearing spool and having a lower threaded portion extending into said yoke and being coaxial with said plug stem, a cylindrical coupling located within said axial bore of said yoke and being both rotatable and vertically shiftable therein, said coupling having upper and lower portions and an axial bore therethrough, the upper end of said plug stem being non-rotatively affixed to said lower portion of said coupling, one of said yoke and coupling having a pair of diametrically opposed identical cam slots formed therein, a cam follower for each of said cam slots being supported by the other of said yoke and coupling, an elongated drive cam located within said yoke and extending axially thereof, said drive cam having an axial bore the upper part of which is threaded and threadedly engaged by said lower threaded portion of said valve stem, means to prevent rotation of said drive cam within said yoke axial bore, said drive cam having a lower portion containing a pair of diametrically opposed, identical, sloping drive slots each extending 90° thereabout, said lower portion of said drive cam being received within the axial bore of said upper portion of said coupling, said upper portion of said coupling having a pair of diametrically opposed perforations, a drive pin connecting said lower portion of said drive cam to said upper portion of said coupling, said drive pin extending through said drive cam drive slots with its ends located in said coupling perforations, said

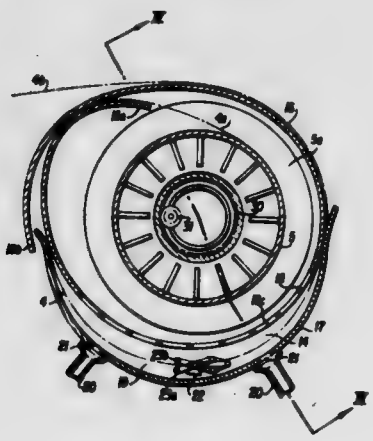
coupling cam slots being so configured that upon turning said valve stem in one direction to cause said drive cam and said coupling to shift downwardly in said yoke, said plug in said valve-open position will be simultaneously partially lowered and turned 90° and thereafter lowered without rotation to said valve-closed position with said plug seals in engagement with said chamber interior surface about said inlet and outlet ports and upon turning said valve stem in the opposite direction, to shift said drive cam and said coupling upwardly in said yoke, said plug will first be lifted vertically without rotation out of sealing relationship with said chamber inlet and outlet ports and thereafter will be simultaneously lifted and rotated 90° to said valve-open position, said drive slots of said drive cam being so configured as to cooperate with said drive pin to increase the torque imparted to said plug during said 90° turn of said plug when shifted between its valve-open and valve-closed positions.

4,350,323

DEVICE FOR RECOVERY OF A CABLE FOR HANDLING A SUBMERGED LOAD

Joël M. Charles, Toulon, and Robert J. Toscano, La Seyne/Mer, both of France, assignors to Etat Francais as represented by the Delegue General pour l'Armement, Armees, France

Filed Aug. 13, 1980, Ser. No. 177,606
Claims priority, application France, Aug. 27, 1979, 79 21424
Int. Cl.³ B66D *1/50*
U.S. Cl. 254—273 **8 Claims**



8. A device for recovery of a cable which a surface ship uses to haul a submerged load, comprising:

a drum for winding and extending said cable,

a variable speed motor for driving said drum at variable speeds,

a loop shaped, cable passageway circumscribing said drum for forming a loop of cable variable length and compensating for the inertia of said drum, and

means for sensing the length of said cable loop and for automatically controlling the speed of said variable speed motor as a function of said loop length so as to maintain the average length of the cable loop at a constant value over time, whereby said cable may be wound around said drum at a desired uniform tension despite irregularities in tension exerted onto said cable as a result of the movements of said surface ship caused by the water surrounding said ship.

4,350,324

METHOD OF REMOVAL OF SLAG DEPOSITS FROM THE BOTTOM OF A FURNACE

Petrus J. A. Kramer, Oudkarspel, Netherlands, assignor to Estel Hoogovens B.V., IJmuiden, Netherlands

Filed Dec. 16, 1980, Ser. No. 217,105
Claims priority, application Netherlands, Dec. 17, 1979, 7909062
Int. Cl.³ B08B *7/04*
U.S. Cl. 266—44 **5 Claims**

1. In a method of removal of slag deposits from the bottom of a furnace wherein a substance capable of lowering the melting point of the slag is supplied to the slag, heat is applied to the slag and the slag is then removed,

the improvement that:

in addition to the same melting point-lowering substance, a substance which performs an exothermic chemical reaction is supplied locally so as to initiate melting of the slag, and the slag is thereafter brought to a condition of fluidity which allows its removal by means of a mechanical grab, and

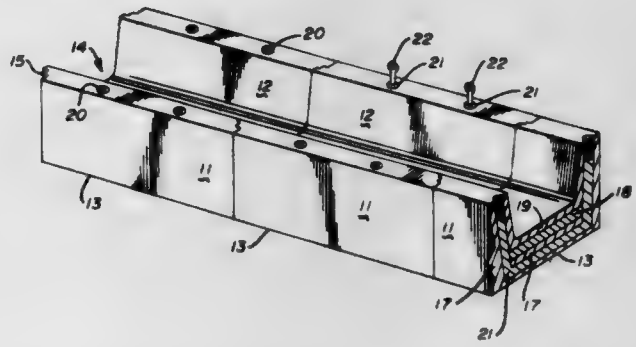
said furnace is a soaking pit of a slabbing mill, operating at about 1300° C.

4,350,325

PREFABRICATED MULTIPLE DENSITY BLAST FURNACE RUNNER

Micheal D. LaBate, 115 Hazen Ave., Ellwood City, Pa. 16117

Filed Mar. 18, 1981, Ser. No. 245,087
Int. Cl.³ F27D *3/14*
U.S. Cl. 266—196 **8 Claims**



1. A hot metal runner unit comprising an elongated trough-like body member having a base and spaced parallel upstanding side sections wherein said runner unit is a multi-layered mass of refractory material comprising a mixture of aluminum oxide, raw fire clay and binders consisting of at least one of a group consisting of phosphoric acid, silicon carbide and powdered graphite in which each layer is coalesced by physical force not under thermal influence with each of said multi-layers being of a different density and having a known predetermined lifetime when subjected to molten metal flowing therethrough.

4,350,326

APPARATUS FOR HEAT RECOVERY FROM MOLTEN SLAG

Hiroo Fujii, Kakogawa; Kiyoaki Tanaka, Kobe; Masashi Nakamura, Fujisawa; Ryuzo Okuno, Kobe; Shigeyuki Hashizume; Hideo Katayama, both of Chiba, and Tsutomu Fujita, Chiba, all of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha and Kawasaki Steel Corporation, both of Hyogo, Japan

Filed Feb. 2, 1981, Ser. No. 230,882
Int. Cl.³ F27D *15/02*
U.S. Cl. 266—201 **16 Claims**

1. Apparatus for the recovery of heat from molten slag comprising:

combination agitating and heat recovery means at a first heat recovery station for agitating molten slag to granulate the slag and for recovering heat therefrom, said means having a slag receptacle means for receiving the molten slag therein, a horizontal rotatable shaft, and a plurality of agitator rods projecting from axially spaced positions on the rotatable shaft and movable into and out of the slag in said slag receptacle means during rotating of said shaft, said rotatable shaft and said agitator rods having passageway means therein and means for passing fluid to be heated through said passageway means for heating the

fluid at least by radiation from the slag being agitated by said agitating and heat recovery means;

conveying means for conveying the granulated slag from the first heat recovery station to a second heat recovery station; and

heat recovery means at the second heat recovery station for heating a gas by convection from the granulated slag.

4,350,327

APPARATUS FOR REMOVING SUCCESSIVE SHEETS FROM A STACK OF OVERLAPPING SHEETS

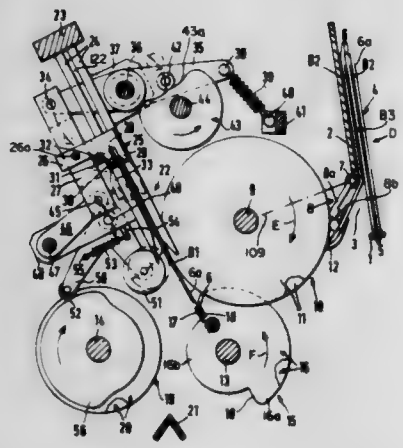
Hans Müller, Zofingen, Switzerland, assignor to Grapha-Holding AG, Hergiswil, Switzerland

Filed Sep. 30, 1980, Ser. No. 192,353

Claims priority, application Switzerland, Oct. 17, 1979, 9326/79

Int. Cl.³ B65H *39/02*

U.S. Cl. 270—54 **13 Claims**



1. Apparatus for manipulating sheets of the type having two panels, a folded back which is integral with said panels and two front edge points opposite the folded back, comprising a source of neighboring sheets; guide means defining an elongated path for the sheets; means for removing successive sheets from said source and for introducing the removed sheets seriatim into said path so that the folded back of each sheet in said path constitutes the leader of the respective sheet during introduction of the sheet into said path, comprising a rotary transfer conveyor having means for gripping successive sheets during movement of said conveyor from a first to a second angular position during each revolution of said conveyor whereby the folded back of a sheet which is engaged by said gripping means enters into and advances along said path; braking means extending across said path so as to be contacted by the folded back of a sheet which enters said path substantially at the time said conveyor reaches said second angular position and the sheet is released by said gripping means whereby the thus released sheet tends to continue its movement along said path owing to inertia and the folded back of such sheet bears against said braking means; means for withdrawing successive sheets from said path, including means for engaging at least one front edge portion of the sheet in said path and for moving the respective sheet counter to the direction of entry of the sheet into said path; and means for moving said braking means in synchronism with said conveyor so as to decelerate the sheet in said path while such sheet moves in said direction subsequent to disengagement from said gripping means.

4,350,328

SHEET FEEDING APPARATUS

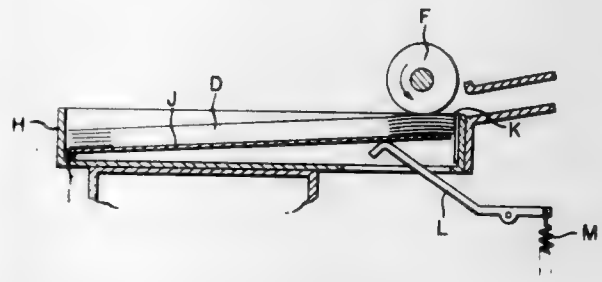
Hiroshi Katakura, and Mitsuru Nagoshi, both of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Nov. 10, 1980, Ser. No. 205,711

Claims priority, application Japan, Nov. 15, 1979, 54/148130; Nov. 15, 1979, 54/148131

Int. Cl.³ B65H *3/30*

U.S. Cl. 271—22 **5 Claims**



1. In an apparatus for feeding sheets from a stacked supply thereof,

a tray for supporting a stack of sheets and from which the uppermost sheet of a stack supported thereon is feedable at a leading edge thereof,

a sheet feeding roller operatively rotatable for drawing the uppermost sheet from a sheet stack supported on said tray and positionally fixed with respect to said tray proximate the leading edge of the uppermost sheet,

biasing means for urging said tray in opposition to said feeding roller so that the uppermost sheet of a stack supported on said tray is pressed into frictional contact with said roller, whereby operative rotation of said roller causes the uppermost sheet to be fed from the stack, and

supplemental displacement means on said tray between the tray and sheets stacked thereon for displacing said tray with respect to said feeding roller by an amount greater than that displacement otherwise imparted to the tray by the sheets stacked thereon so as to increase the urgency with which the uppermost sheet is pressed into frictional contact with said roller and thereby facilitate feeding from said tray of sheets having properties that might otherwise interfere with normal feeding from said tray, said supplemental displacement means comprising a member formed of a material of relatively light specific gravity.

4,350,329

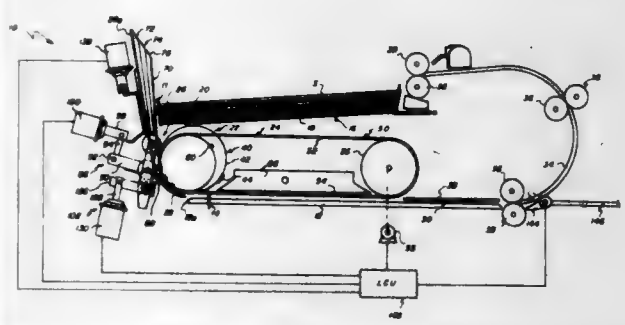
SHEET FEEDING APPARATUS

Ronald C. Holzhauser, Holley; James A. McGlen, and Matthew J. Russel, both of Rochester, all of, NY, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 25, 1980, Ser. No. 172,340

Int. Cl.³ B65H *3/44*

U.S. Cl. 271—9 **9 Claims**



1. In apparatus for feeding document sheets to an exposure position, the apparatus having means for feeding a sheet to the exposure position along a recirculating sheet path or along a non-recirculating sheet path, the feeding means having at least one drive belt for moving a sheet traveling along either sheet

path past the exposure position, the belt being supported for movement along an arcuate path and then along a straight path leading past the exposure position, the improvement comprising:

means defining a generally vertically disposed slot (i) havng a first opening for receiving a sheet to be fed along the non-recirculating path and (ii) having a second opening located adjacent to the arcuate path so that a sheet can pass through the second opening and be delivered to a position adjacent and alongside the arcuate path of the belt;

a roller adjacent the second opening engageable with the belt in the arcuate path of the belt, and

means for urging the roller toward the arcuate path of the belt so that a sheet delivered from the second opening of the slot or fed along the recirculating sheet path is urged against said belt in said arcuate path, the belt being effective to move the sheet from the arcuate path along said straight path to the exposure position.

4,350,330

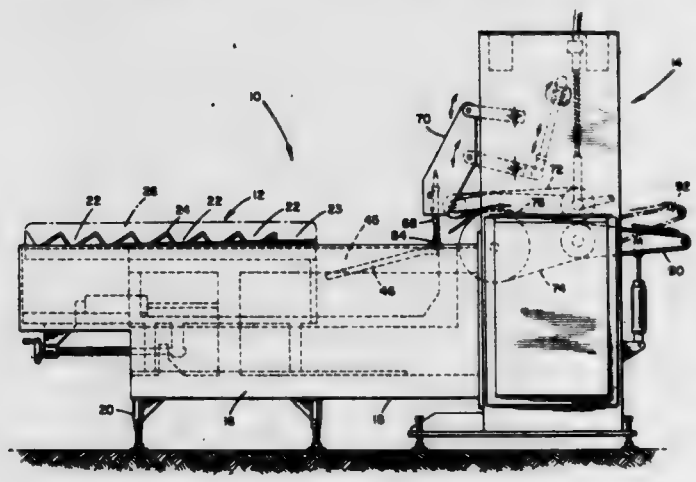
BAG UNIT FEEDER

Charles K. Brown, 8317 Robert Bruce Dr., Richmond, Va. 23235

Filed Jul. 3, 1980, Ser. No. 165,723

Int. Cl.³ B65H *1/04, 1/26, 3/08*

U.S. Cl. 271—12 **15 Claims**



1. A bag unit feeder, comprising:

an accumulating means, said accumulating means being rack-like, said accumulating means supporting an accumulated series of packets of bag units, each packet of bag units being an accumulation of bag units;

an indexing means, said indexing means being affixed to said accumulating means, said indexing means providing a capability of both lifting said series of packets of bag units enmasse and forwardly advancing said series of packets of bag units one step at a time to a new location in said accumulating means;

a receiving cavity means, said receiving cavity means being located adjacent to said accumulating means and at a lower level than said accumulating means, said receiving cavity means receiving the forward-most packet of said bag units each time said indexing means advances said series of packets said one step; and

a dispensing means, said dispensing means being located adjacent to said receiving cavity means, said dispensing means having a capability of dispensing one single bag unit from said packet of bag units in said receiving cavity means.

4,350,331

SHEET COUNTING APPARATUS

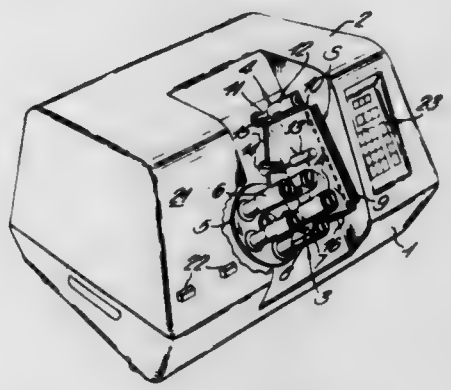
Stanley W. Middleditch, Hayling Island, England, assignor to De La Rue Systems Limited, London, England

Filed Dec. 5, 1979, Ser. No. 100,458

Claims priority, application United Kingdom, Dec. 8, 1978, 47672/78

Int. Cl.³ B65H *3/12*

U.S. Cl. 271—95 **5 Claims**



1. Apparatus for counting flexible banknotes contained in a stack, said apparatus being of a type comprising a first support surface for supporting a stack of banknotes on edge, means for clamping one end of the stack, and a rotary banknote removing assembly mounted on an axis disposed at a right-angle to said support surface, and in which said banknote removing assembly includes a plurality of rotary suction organs which are adapted to contact a side face of the free end of the stack and to deflect each banknote from its initial position and to count it, the deflecting and counting being accomplished through the sequential application of vacuum to each of the organs as the assembly rotates, said apparatus being characterized (a) in that the axis of said rotary banknote removing assembly is disposed at an acute angle with respect to the vertical and in a direction towards a frontal extremity of the apparatus (i.e. towards an operator); (b) in that the banknote clamping means is disposed in such a manner that the free end of a stack of banknotes secured thereby is also directed towards said frontal extremity; (c) by the provision of a second banknote support surface disposed at right angles to said first support surface for supporting said free end of said stack, and (d) that said second support surface is of arcuate configuration as viewed in a direction parallel to said axis.

4,350,332

SHEET HANDLING APPARATUS

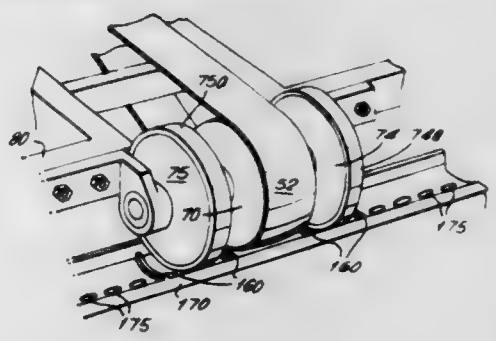
Clifford Knight, Newnham-on-Severn, England, assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 24, 1977, Ser. No. 780,946

Claims priority, application United Kingdom, Jun. 25, 1976, 26585/76

Int. Cl.³ B65H *29/20, 29/70*

U.S. Cl. 271—188 **2 Claims**



1. Sheet handling apparatus comprising a drive roller, means for rotating the roller, a pair of stationary curved guide surfaces for urging a sheet in a curved path against the periphery

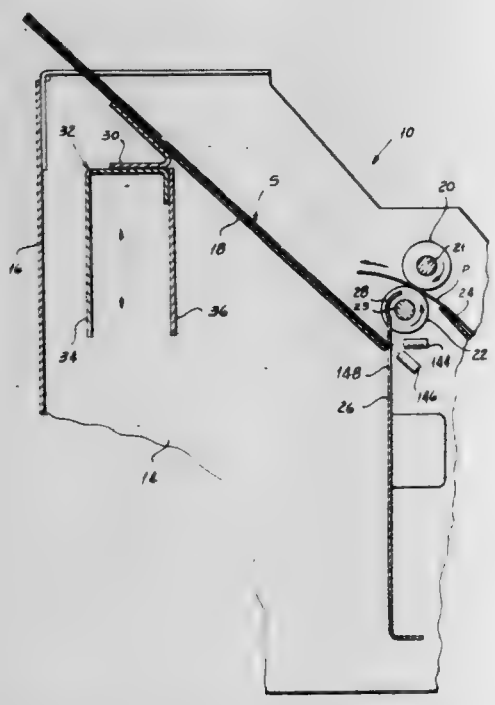
of the roller, the guide surfaces include straight lead in portions generally tangent to curved portions thereof while being spaced from the roller at opposite sides respectively thereof and arranged radially inwardly of the roller periphery such that the sheet is corrugated in the lateral direction in order to increase the beam strength of the sheet and thereby improve the coupling force between the sheet and the roller.

4,350,333

LARGE-CAPACITY SHEET-STACKING APPARATUS

Benzion Landa, Alberta, Canada, assignor to Savin Corporation, Valhalla, N.Y.

Filed Jul. 11, 1980, Ser. No. 167,462
Int. Cl.³ B65H *31/10*
U.S. Cl. 271—217 **7 Claims**



1. Sheet-stacking apparatus including in combination means adapted to support a stack of sheets, means for feeding sheets to said supporting means to form a stack thereon, means for sensing the level of the top of the stack, a lead screw, a follower engaging said lead screw, means coupling said follower to said supporting means, means responsive to said sensing means for driving said lead screw to control the level of said supporting means, a first stop extending radially from said lead screw, and a second stop extending axially from said follower, said second stop being so disposed as to intercept said first stop at a predetermined position of said follower to prevent the further rotation of said lead screw.

4,350,334

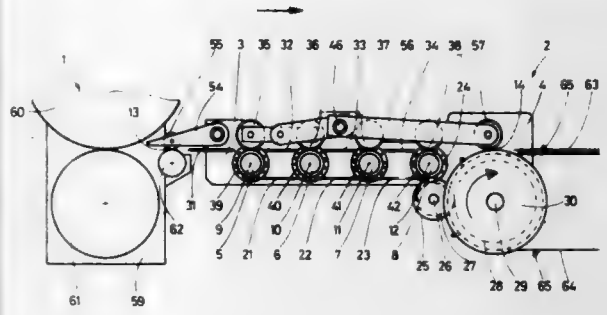
CONVEYOR DEVICE FOR TRANSFERRING SHEETS BETWEEN TWO PRINTING UNITS OF A COMBINED PRINTING MACHINE

Brian M. Quinton, Basingstoke, England, assignor to De La Rue Giori S.A., Lausanne, Switzerland

Filed Nov. 10, 1980, Ser. No. 205,289
Claims priority, application Switzerland, Nov. 30, 1979, 10646/79
Int. Cl.³ B65H *5/02*
U.S. Cl. 271—274 **4 Claims**

1. A conveyor device for use in transferring sheets to be printed between two printing units of a combined printing machine, the device comprising a frame for location between the two printing units, parallel spaced conveying rollers of the same diameter carried by the frame and having their axes of rotation lying in a common plane with their peripheries passing through a tangential plane parallel with said common plane and constituting a plane along which the sheets pass between the outlet of one printing unit and the inlet of the other, means for driving the conveying rollers in synchronism with the conveying speed of a cylinder of one of the printing units, stationary guide plates mounted between the conveying rollers with their surfaces lying in the plane along which the sheets pass, pressure rollers mounted above each conveying roller, and means for resiliently urging the pressure rollers into contact with the conveying rollers at least approximately in the plane along which the sheets are conveyed,

the pressure rollers being mounted on arms pivotable about



shafts arranged parallel to the axes of the conveying rollers and are subjected to the force of springs acting at right angles to the plane along which the sheets are conveyed,

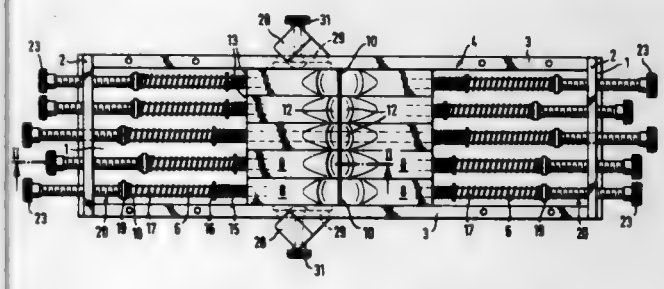
the pressure rollers being arranged side-by-side and cooperating with a respective pair of conveying rollers mounted at the ends of an arm, which at its central region is pivoted by means of a pin to one end of a further arm, and which at its other end is pivotable about a stationary pivot and is subject to the action of one of the springs.

4,350,335

APPLIANCE FOR USE IN FINGER EXERCISES

Max Pasbrig, Orselina, Switzerland, assignor to Lacrex Brevetti S.A., Orselina, Switzerland

Filed Nov. 12, 1980, Ser. No. 206,014
Int. Cl.³ A63B *11/08*
U.S. Cl. 272—67 **10 Claims**



1. An appliance for use in finger exercises, said appliance comprising:

a frame,

a common guide rod fixed in said frame,

at least one pair of axially aligned sliders, which are exposed to one side and axially slidably mounted on said common guide rod in said frame, each of said sliders having confronting faces,

spring means urging said sliders of said pair toward each other, said spring means for each of said sliders including a relatively weak spring having an inner end adjacent to the associated slider and an outer end, and a relatively strong spring having an inner end bearing on said outer end of said weak spring and an outer end adjacent to one of said end walls,

two adjusting screws screwably mounted in respective ones of said end walls and having inner ends operatively connected to said outer ends of respective ones of said strong springs, and

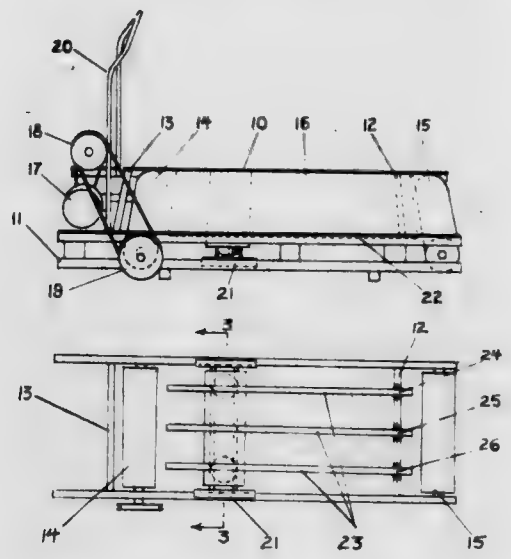
each of said confronting faces being formed with a depression which is open on said exposed side of the slider and adapted to receive a fingertip.

4,350,336

EXERCISE TREADMILL SHOCK-ABSORBING IMPROVEMENT

Norris E. Hanford, P.O. Box 1283, Fort Benton, Mont. 59442

Filed Oct. 14, 1980, Ser. No. 196,458
Int. Cl.³ A63B *23/06*
U.S. Cl. 272—69 **3 Claims**



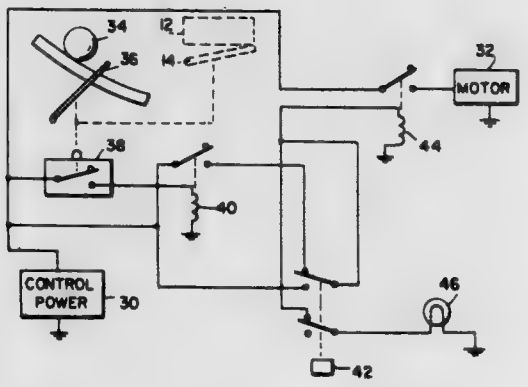
1. An exercise treadmill which comprises:
a longitudinal main frame;
an endless tread-belt mounted on said frame and having an upwardly exposed operative section;
a belt support platform having front and rear ends, said platform underlying said operative section of said belt and being connected proximate its rear end to said frame; and
shock-absorbing platform support means on said frame upon which said platform rests at a location forward of said connection, said support means being movable fore and aft on said frame for adjustment purposes so as to act as a shock-absorbing fulcrum for the platform so as to protect the body of the exerciser from the shock usually associated with running or walking on a hard surface.

4,350,337

ENERGY SAVING ARRANGEMENT FOR BOWLING APPARATUS

Joseph Knauer, Brooklyn, and Howard Moskowitz, Howard Beach, both of N.Y., assignors to Kilo-Wattch-Dog, Inc., Melville, N.Y.

Filed Dec. 26, 1979, Ser. No. 107,412
Int. Cl.³ A63D *5/00*
U.S. Cl. 273—43 A **6 Claims**



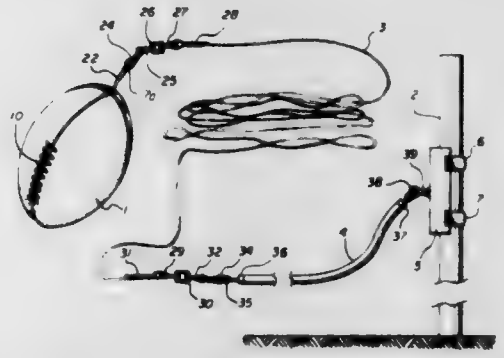
1. An energy saving arrangement for bowling equipment, comprising: switching means actuated by pin setting means during motion thereof; time delay means connected to said switching means and held in an operative state after actuation of said switching means; control circuit means operated by said time delay means and connecting a motor for pin setting to a source of power only during the operative state of said time delay means; said time delay means being set to an inoperative state when said switching means after being actuated is not re-actuated within a predetermined time interval; said motor being continuously connected to said source of power when a bowler plays continuously at a predetermined pace so that said switching means is continuously re-actuated, said time interval being dependent on said pace, said motor being disconnected from said source of power when the bowler discontinues playing for a time length exceeding said time interval whereby said switching means is not re-actuated within said predetermined time interval; manually-operated switching means for connecting, in one state of operation, said motor directly to said source of power, and connecting in a second state of operation said source of power to said control circuit means; capacitor means connected to said control circuit means so that said capacitor means is connected across said motor in the second-mentioned state of said manually operated switching means; second switching means operatively connected to and actuated by ball return means when returning a ball to a bowler or said pin setting means; second time delay means connected to said second switching means and held in an operative state after actuation of said second switching means, second control circuit means operated by said second time delay means and connecting a second motor for the ball return to a source of power only during the operative state of said second time delay means; said second time delay means being set to an inoperative state when said second switching means after being actuated is not reactuated within a predetermined time interval; and second manually operated switching means having a first state for connecting said second control circuit means to said second time delay means, and having a second state for connecting said control circuit means directly to the source of power for said second motor means.

4,350,338

FOOTBALL PRACTICE AID

Randall L. May, 8312 Seaport Dr., Huntington Beach, Calif. 92646

Filed Mar. 17, 1980, Ser. No. 131,385
Int. Cl.³ A63B *67/00*
U.S. Cl. 273—55 B **12 Claims**



1. The combination of a football practice aid with a regulation little league, junior high school, collegiate or professional football having four equally spaced grooves defined by seams extending longitudinally thereof, said practice aid comprising
a harness comprising four equally spaced non-elastic cords operatively secured each to another at opposite ends thereof and supported tightly in the grooves of said football and substantially recessed therein,
tether means comprising
a non-elastic cord operatively secured at one end to the portion of said harness where said four cords are secured together and positioned at one end of said football at the longitudinal axis thereof,
means connected to said cord permitting spin or rotation of said football about its longitudinal axis or otherwise without twisting the same,
an elastic supporting member operatively secured at one end to the other end of said non-elastic cord, and

a support member operatively secured to the other end of said elastic member and operable to be supported on a support fixed in the earth, and

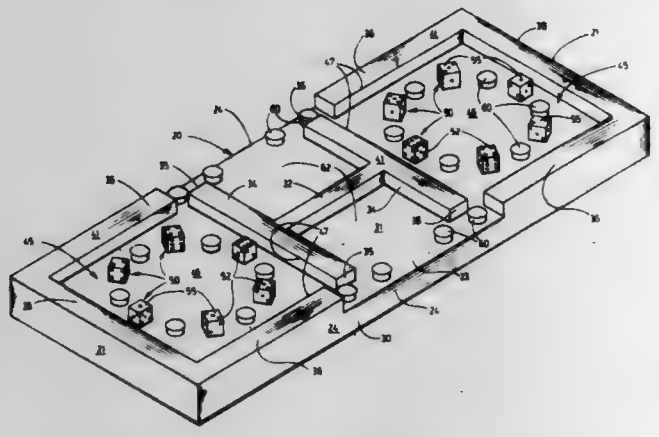
said practice aid being operable to permit said football to be passed or punted with a normal spin and to be returned by said elastic member to the player using the same.

4,350,339

COMBINED DICE AND CARD GAME APPARATUS

Leon A. Imbert, 2313 Venus Dr., Ceres, Calif. 95307

Filed Sep. 29, 1980, Ser. No. 191,390
Int. Cl.³ A63F *1/00, 1/10*
U.S. Cl. 273—148 A **9 Claims**



1. A game apparatus comprising a deck of playing cards of substantially uniform length having indicia individual thereto assigning each card a respective numerical value and means having an upwardly disposed first surface and a plurality of upwardly disposed second surfaces which are substantially coplanar with the first surface and are disposed in spaced relation in a circle, the first surface extending about the second surfaces in spaced relation thereto; said second surfaces being spaced from said first surface less than the length of said cards and being adapted individually to receive a playing card rested thereon and on the first surface in bridging relation to the space therebetween; and each of the second surfaces bearing indicia indicating a numerical value individual thereto for comparison with the numerical value of the card rested thereon.

4,350,340

ELECTRONIC LOGIC GAME METHOD AND APPARATUS

Alfred E. Hall, Dallas, Tex., assignor to Sigalos & Levine, P.C., Dallas, Tex.

Filed Sep. 25, 1980, Ser. No. 190,612
Int. Cl.³ A63F *9/06*
U.S. Cl. 273—153 R **11 Claims**

1. An electronic logic game comprising:

a. a display having a first portion for representation of a balance scale and a second portion for representation of a plurality of units to be symbolically weighed, one of said units differing from the others electronically by one of two states,

b. means for removing selected ones of said units from said second portion of said display to said first portion for display on said scale representation,

c. means associated with said balance scale representation for detecting said different unit when it is visually displayed on said representation of said balance scale, and

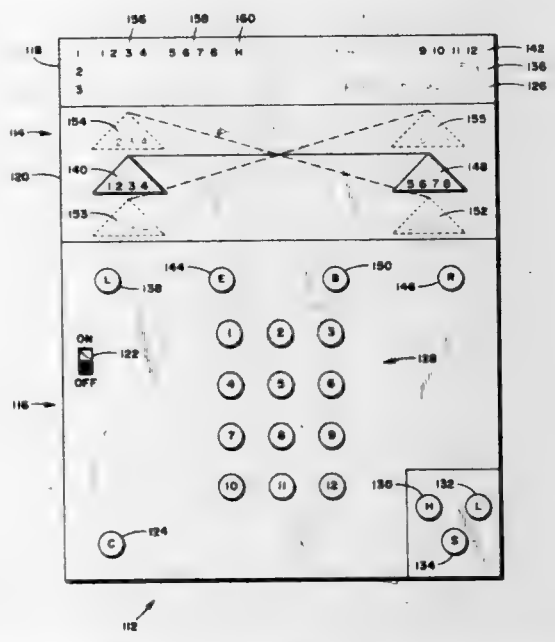
d. circuit weighing means coupled to said detecting means and said balance scale representation for visually representing said scale to be balanced or unbalanced in a predetermined direction according to said state of said different unit whereby said different unit may be logically discovered in a predetermined number of weighings by said electronic scale balance or unbalance representations.

11. A method of solving a logic problem in an electronic logic game comprising the steps of:

a. forming a display having a first area with a visual representation of a scale that may be balanced or unbalanced and a second area with a visual representation of a plurality of playing units,

b. selectively simulating one of said units to be heavier or lighter than the others,

c. transferring a combination of selected ones of said plurality of playing units from said second area of said display to said scale representation in said first area to cause an



indication of balance or imbalance of said scale representation and the direction of imbalance, and

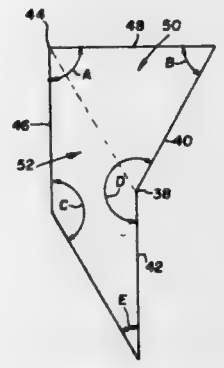
d. observing, and indicating said balance or imbalance when different combinations of said playing units from said second area are placed on said scale representation in said first area three successive times whereby said selected one of said playing units and its heavier or lighter simulated weight may be logically discovered.

4,350,341

SURFACE COVERING TILES

John Wallace, 359 Nassau St., Princeton, N.J. 08540

Filed Jun. 18, 1981, Ser. No. 274,823
Int. Cl.³ A63F *9/10*
U.S. Cl. 273—157 R **8 Claims**



1. A plurality of identically shaped tiles for covering a plane surface in a periodic or non-periodic manner, each said tile comprising:

(a) a polygon having a plurality of sides of equal length, the number of sides (S) being determined from the equation, $S=2n+1$; where n is an integer greater than 1;

(b) the angle (A) in degrees formed between a reference side and a first side being determined by, $A=120-60/n$;

(c) the angle (B) formed between said reference side and a second side being equal to 60 degrees;

(d) each of the angles (C) in degrees formed between said first side and successive sides being adjacent thereto being determined by, $C=180-60/n$;

(e) the angles (D) in degrees formed between said second side and successive slide being adjacent thereto being determined by, $D=180+60/n$; and

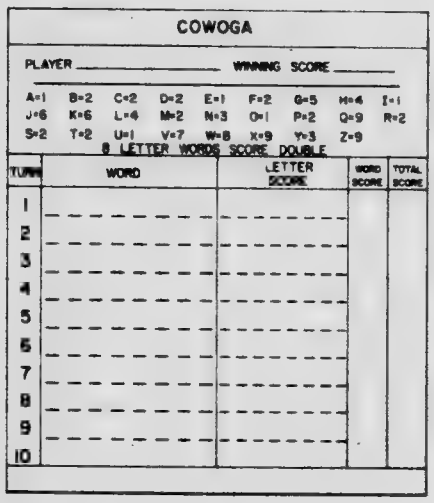
(f) the closing angle (E) in degrees between the last successive first and second sides being given by, $E=60n$.

4,350,342

WORD GAME APPARATUS

Thomas J. Barulich, R.D. 1, Box 8G, Wawayanda Ave., Slate Hill, N.Y. 10973

Filed Apr. 21, 1980, Ser. No. 141,893
Int. Cl.³ A63F 3/00
U.S. Cl. 273—240 **11 Claims**



1. A word forming game apparatus comprising a first letter supply means and a second letter supply means, each of said first and second letter supply means providing a plurality of letter selections, each letter selection being greater in number than a full complement of the letters of the alphabet, said first letter supply means having a letter distribution different from that of said second letter supply means, and said first and second letter supply means being adapted to be utilized serially and apart from each other for the respective selection of a first and a second random letter to be used in a word forming capacity, together with a letter selected directly from said alphabet sequentially intermediate thereto, said randomly selected letters and said directly selected letters all having assigned thereto certain numerical point values for scoring purposes, and means to permit the orderly and contiguous recordation of the letters selected, the words formed, and the point scores achieved thereby.

4,350,343

SOCCER BOARD GAME

Jorge Salazar, 41-40 Union St., Flushing, N.Y. 11355

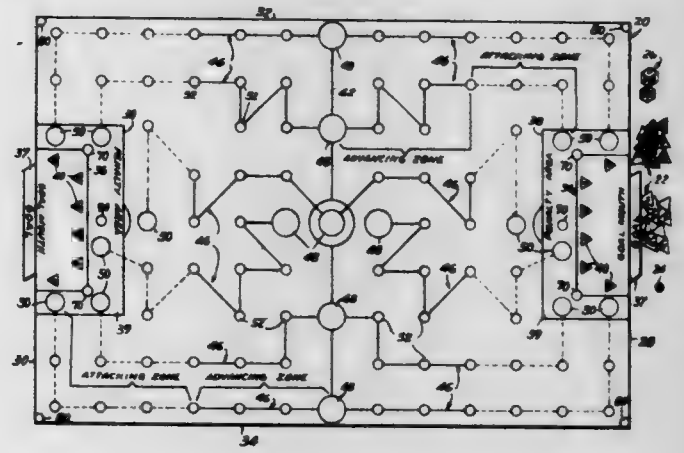
Filed Nov. 28, 1980, Ser. No. 211,185
Int. Cl.³ A63F 3/00
U.S. Cl. 273—247 **5 Claims**

1. A game apparatus for at least two players for simulating the game of soccer, said game apparatus comprising:

first and second equal pluralities of playing pieces representing first and second teams of soccermen, means for distinguishing the first team from the second and for distinguishing, among each team, a plurality of forwards, a lesser plurality of defenders, and a goalie, and means for individually distinguishing the forwards of each team from each other; a game board having indicia delineating (a) first and second goal areas at opposite ends of said board, each goal area having indicia therein corresponding to the means for distinguishing said forwards from each other, and (b) first and second pluralities of player movement paths, there being one path for each forward on each team, each path comprising a plurality of spaces representing positions for said soccermen, each path including a first group of consecutive spaces defining an advancing zone and a second group of consecutive spaces defining an attacking zone, the final space of the attacking zone of each of said first plurality of paths terminating near one goal area and the final space of the attacking zone of each of said second plurality of paths terminating near the other goal area, said defenders being positionable on the spaces in the paths occupied by the opposing team's forwards for blocking the movement of said forwards therealong;

a piece representing a soccerball, said soccerball being movable with said forwards toward said goal areas;

chance means manipulatable by said players, said chance means having indicia thereon corresponding to said means for distinguishing said forwards and to said indicia in said



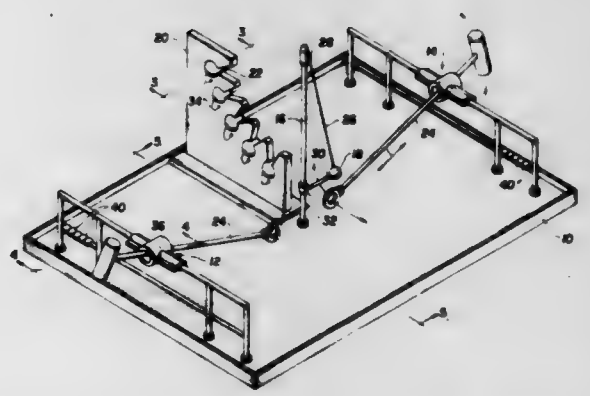
goal areas, said chance means being manipulatable by one player for passing said ball from one of said one player's forwards to said one player's forward having distinguishing means corresponding to the indicia indicated on said chance means, and for moving said ball into said goal area when the forward associated with the ball is on a predetermined space in its corresponding player movement path and the indicia indicated on said chance means corresponds to an unoccupied indicia in said goal area, said chance means being manipulatable by said other player for interrupting movement of said ball by said one player when said indicia indicated on said chance means corresponds to the distinguishing means of said one player's forward associated with the ball.

4,350,344

APPARATUS FOR PLAYING A COMPETITIVE GAME

Michael L. Bear, 1900 Pidgeon Point Rd., Beaufort, S.C. 29902

Filed Feb. 19, 1981, Ser. No. 235,783
Int. Cl.³ A63B 67/10
U.S. Cl. 273—333 **42 Claims**



24. Apparatus for playing a competitive game, said apparatus comprising:

(a) a playing board having a first player's station at one end and a second player's station at the opposite end;

(b) an upright standard mounted on said playing board intermediate said ends;

(c) a weight;
(d) first means for rotatably mounting said weight on said upright standard at a point remote from said playing board;
(e) a target holder mounted on said playing board intermediate said ends;
(f) at least one target mounted on said target holder in position to be struck by said weight;
(g) a mallet mounted at each of said player's stations, each of said mallets mounted for pivotal and longitudinal motion relative to the associated one of said player's stations;
(h) a serving platform; and
(i) second means for supporting said serving platform in position so that said weight can be struck by one of said mallets while it is supported by said serving platform,

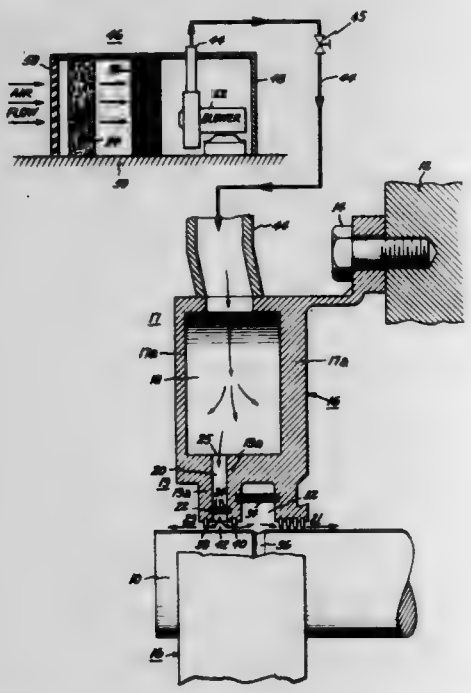
whereby said mallets can be used to strike said weight, thereby causing it to rotate about said upright and to strike said target.

4,350,345

AIR-SEALED OIL DEFLECTOR

Gary L. Kalan, Clifton Park, and Peter G. Ipsen, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 1, 1981, Ser. No. 249,781
Int. Cl.³ F16J *15/40, 15/44*
U.S. Cl. 277—3 **11 Claims**



1. To prevent leakage of lubricating oil from bearings of a rotating shaft and to prevent the in-flow of unfiltered atmospheric air to the bearing lubricating oil system, an air-sealed oil deflector comprising:

at least one set of oil deflector rings substantially concentric with the shaft and forming a labyrinth seal against lubricating oil flow;

an annular plenum substantially concentric with said deflector rings and disposed radially outward thereof, said plenum being adapted to receive a continuous flow of forced air;

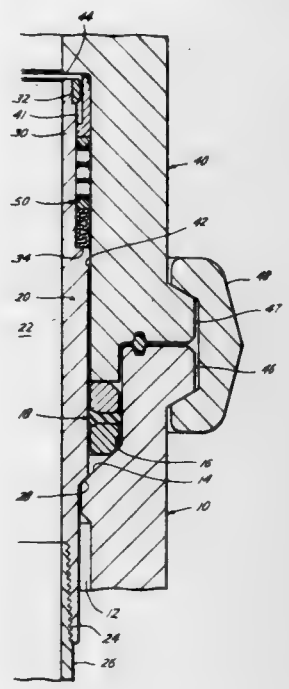
an annular feed slot substantially concentric with said deflector rings and interposed between said deflector rings and said plenum, said feed slot being fluidly connected to said plenum to receive said continuous flow of forced air uniformly along the outer circumference of said feed slot and fluidly connected to discharge said continuous flow of forced air uniformly along the inner circumference thereof to pass radially inward toward the shaft between at least two rings of said deflector rings so that said continuous flow of air is released between the shaft and said at least two deflector rings to produce a uniformly distributed circumferential air seal.

4,350,346

HEAT RESISTANT SEAL

John H. Fowler, Houston, Tex., assignor to Smith International, Inc., Newport Beach, Calif.

Filed Mar. 27, 1981, Ser. No. 248,507
Int. Cl.³ F16J *15/12*
U.S. Cl. 277—26 **35 Claims**



1. An assembly for maintaining a seal between a first member and a second member housed within the first member, the seal being maintained at both a low temperature and upon the application of extreme heat to the exterior of the first member, comprising:

nonmetal seal means for sealingly engaging the first and second member, said nonmetal seal means having a thermal expansion at least as great as that of the first member;

metal seal means disposed above and below said nonmetal seal means for sealingly engaging the first and second members; and

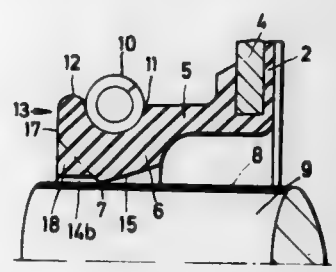
load maintaining means for maintaining a compressive load on said nonmetal means within a predetermined load range.

4,350,347

RADIAL-SHAFT SEALING RINGS WITH HEAT DISSIPATION SEGMENTS

Richard Heinrich, Heilbronn, Fed. Rep. of Germany, assignor to Kaco GmbH & Co., Heilbronn, Fed. Rep. of Germany

Filed Jan. 23, 1980, Ser. No. 114,711
Claims priority, application Fed. Rep. of Germany, Jan. 24, 1979, 2902531
Int. Cl.³ F16J *15/32, 15/54*
U.S. Cl. 277—153 **11 Claims**



1. A radial-shaft sealing ring for a medium being sealed, which comprises in combination: a sleeve-like sealing body having a radial inner periphery and at least one sealing lip with at least one sealing edge subject to radial preloading by a spring in a groove and frictional heat that causes premature wear thereof, said sealing body having two axial ends, one of

which is in the form of an end face which has a first radially inner segment, said at least one sealing lip and said at least one sealing edge being arranged on part of said radial inner periphery of said sealing body between said two axial ends, with said radially inner segment of said end face adjoining said sealing edge, with at least said end face toward the medium being sealed, at least one said radially inner segment thereof, being at least partially unevenly shaped including depressions rather than only edge projections, said depressions extending in axial direction with depth thereof decreasing from the end face side as well as the segment in a direction toward the sealing edge so that heat is removed and dissipated quickly along the shortest path to surrounding medium, said depressions being provided also with the segments having a relatively great radius of curvature so that the segments extend as far as to the groove with the spring therein, said depressions being provided for greatly enlarged inner surfacing thereof particularly to facilitate heat dissipation more uniformly from said sealing lip with said sealing edge thereof to prevent excessive heating of the sealing ring having a long life expectancy and duration of use therewith.

4,350,348

SEALING OF TELESCOPICALLY RELATED ELEMENTS

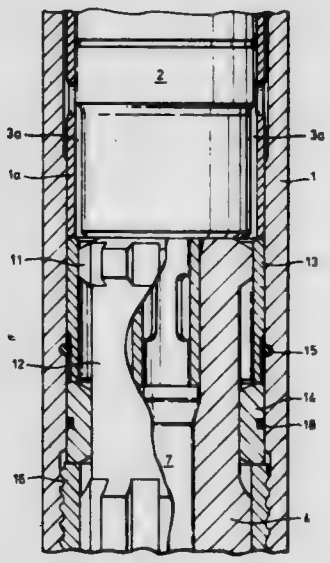
Nigel B. Cox, Southowram, England, assignor to Halifax Tool Company Limited, Yorkshire, England

Filed Nov. 8, 1979, Ser. No. 92,269

Claims priority, application United Kingdom, Nov. 10, 1978, 44129/78

Int. Cl.³ F16J *15/16*

U.S. Cl. 277—199 **9 Claims**



1. Sealing means for telescopically related elements comprising an inner element and an outer element encircling at least part of said inner element, one said element having a cylindrical sealing surface in the region of said encirclement; a sealing ring diametrically divided into two semi-circular parts, said sealing ring being dimensioned to run sealingly and circumferentially uninterruptedly on said sealing surface; means for sealingly securing said sealing ring against axial movement on the other said element; and abutment means on said one element for engagement by said sealing ring to limit movement thereof on said sealing surface, thereby to limit relative motion of the elements.

4,350,349

ROD PACKING

James C. McTavish, Santa Barbara, Calif., assignor to Harry A. Robertson, Jr., Georgetown, Colo.

Filed Feb. 12, 1981, Ser. No. 233,938

Int. Cl.³ F16J *15/24*

U.S. Cl. 277—199 **10 Claims**

1. The rod packing which comprises: at least three flat-faced arcuate segments shaped to define a first ring with a first circular opening in the center thereof when assembled in spaced end-to-end relation, each of said segments having the same one face thereof provided with a projecting portion defining an inwardly-facing shoulder extending chordally so as to intersect the periphery thereof at points spaced inwardly of its opposite ends; a corresponding set of flat-faced wedge-shaped elements insertable between adjacent shoulders cooperating therewith when the arcuate segments lie in ring-forming relation to bridge the gaps between the ends thereof and form a second ring in face-to-face vapor-tight sealed relation alongside the first, said wedge-shaped elements in spaced end-to-end ring-



forming relation also cooperating to define a second circular opening coaxial with the first and of substantially the same size; and tension means encircling one of said first and second rings operative to urge the segments closer together and hold the inside surfaces thereof bordering the central opening therein into vapor-tight sealed contact with a first cylindrical workpiece housed therein, and said adjacent projections responding to the same segment-closing bias by operatively wedging the wedge-shaped element therebetween into vapor-tight sealed engagement against a second cylindrical surface of the workpiece adjacent the first.

4,350,350

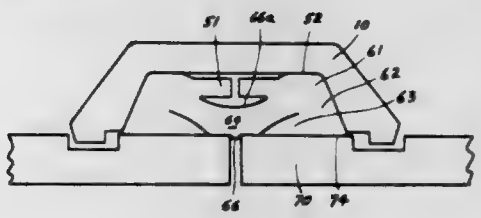
SELF-COMPENSATION GASKET FOR GROOVED END PIPE COUPLINGS

James Blakeley, Thornhill, Canada, assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Apr. 28, 1980, Ser. No. 143,980

Int. Cl.³ F16L *21/06*; F16J *15/06*

U.S. Cl. 277—207 A **7 Claims**



1. An extruded strip of resilient gasket material for forming of annular gaskets of the type designed for enclosure in a coupling housing in coupling of groove end pipe, said strip having a cross section which comprises:

two base portions,

two side portions, each having an outside and an inside face,

two compression pads, two resilient arms, each having a top, a bottom and an end face, said arms connected one to each of said respective base portions and extending therebetween,

a tongue portion having a top and a bottom face,

two lip portions, each having a top and a bottom face,

said side portions extending downward each from a respective one of said base portions,

each compression pad extending upward from a respective one of said base portions,

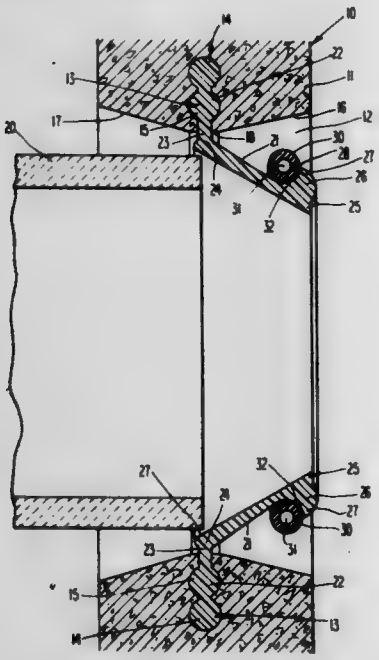
said tongue portion extending between said base portions below said resilient arms,
said tongue portion having a curved shape such that its middle portion is lower than its end portions,
each lip portion extending inward from a respective one of said side portions,
said top face of said tongue portion and said bottom faces of said resilient arms defining a compensation well,
said bottom face of said tongue portion, said top face of each lip portion and the inside face of the respective said portion respectively defining two cavities,
said lips' bottom faces having a smooth texture for efficient sealing against a pipes' external surface,
said tongue's bottom face having a smooth texture for efficient sealing against a pipe's external surface,
said tongue portion having a substantial degree of flexibility.

4,350,351

MANHOLE JOINT GASKET ASSEMBLY AND JOINT FORMED THEREWITH

A. Eugene Martin, Terre Hill, Pa. 17581

Filed Dec. 17, 1980, Ser. No. 217,549
Int. Cl.³ F16J *15/10, 15/46*
U.S. Cl. 277—207 A 15 Claims



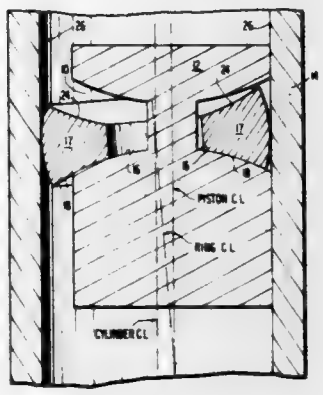
1. A manhole joint gasket assembly for use in joints where pipe is sealingly joined to a manhole through a hole in the wall of the manhole, the assembly including a gasket constructed of rubber-like material and comprising an outer generally radially disposed flange portion of generally ring-like shape for engagement with a manhole wall, and an inner longitudinally extensive sleeve portion; said sleeve portion being joined at its one end to said flange portion and having a free opposite end remote from said flange portion; with the inner periphery of the opposite end of said sleeve portion being of a smaller dimension than the inner periphery of the said one end of said sleeve portion; with at least said sleeve portion being resiliently stretchable at its said opposite end for receiving a pipe therein of larger periphery than the inner periphery of the said opposite end of said sleeve, and wherein said opposite end of said sleeve is provided with a thickened bead portion around its periphery, substantially thicker than the wall thickness of an adjacent said sleeve portion, and including a separate resiliently stretchable ring constructed of rubber-like material disposed about said sleeve portion adjacent to said bead portion.

4,350,352

PISTON RING AND GROOVE ASSEMBLIES

Oldrich S. Kolarik, Hagerstown, Md., assignor to Mack Trucks, Inc., Allentown, Pa.

Filed Jul. 24, 1981, Ser. No. 286,555
Int. Cl.³ F16J *9/20*
U.S. Cl. 277—216 11 Claims



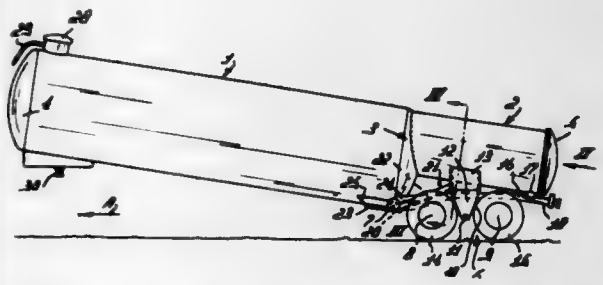
1. A piston ring and groove assembly for forming a seal during piston tilt or eccentricity within a cylinder, comprising:
(a) a piston;
(b) a piston ring groove around a peripheral surface of said piston, said groove having a spherically-convex lower wall with a radius of curvature;
(c) a piston ring in said groove for forming a seal with said cylinder and said groove, said ring having a first side facing said spherically-convex lower wall of said groove and a second side opposite said first side; and,
(d) said first side of said ring contacting said spherically-convex lower wall of said groove to form a seal around the circumference of said groove at all times, even when said piston is tilted or eccentric in a cylinder.

4,350,353

TANK WAGON

Cornelis van der Lely, 7 Brüschenrain, Zug, Switzerland

Filed May 6, 1980, Ser. No. 147,065
Claims priority, application Netherlands, May 8, 1979, 7903572
Int. Cl.³ B60P *3/22*
U.S. Cl. 280—5 C 19 Claims



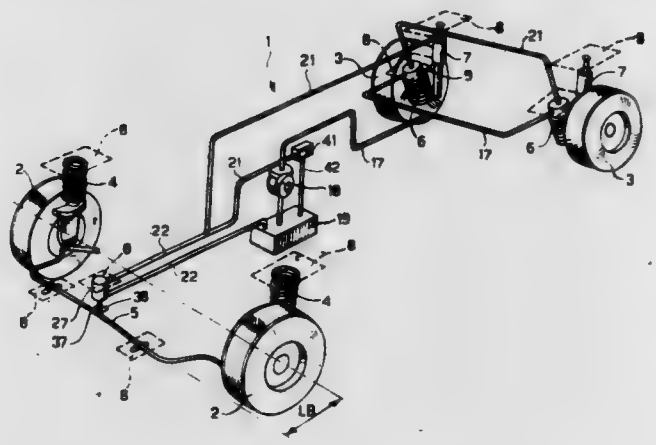
1. A tank wagon comprising a frame and a tank for transporting liquid material, said frame being supported by a rear wheel set, said tank having a longitudinal axis that extends in the direction of wagon travel and said axis being inclined upwardly in a forward direction, with reference to the normal direction of travel, a lowermost tank point being located in front of said wheel set and below the top of the wheels, tank outlet means being located adjacent said lowermost point, said tank comprising two substantially cylindrical tank compartments of different diameters that enclose an uninterrupted space, the smaller diameter compartment being located directly above said wheel set.

4,350,354

SELF-LEVELLING SUSPENSION SYSTEM FOR MOTOR-VEHICLES

Giulio Dotti, Milan, and Renzo Masoero, Turin, both of Italy, assignors to Centro Ricerche Fiat S.p.A., Turin, Italy

Filed Dec. 10, 1980, Ser. No. 214,908
Claims priority, application Italy, Jan. 7, 1980, 67012 A/80
Int. Cl.[3] B60G *17/00*
U.S. Cl. 280—6 H 10 Claims



1. Suspension system for motor vehicles, of the type comprising:

means for sensing subsidence of the front suspensions of the motor vehicle,

means for sensing subsidence of the rear suspensions of the motor vehicle,

actuator means to vary the level of the suspended masses in correspondence with the rear axle of the motor vehicle, and

control means, controlled by the said sensor means, designed to cause the operation of the said actuator means in order to maintain automatically the horizontal attitude of the motor vehicle upon variation in the loads on the front suspensions and on the rear suspensions, wherein

(a) the said system comprises at least one hydraulic cylinder interposed between the springs of the rear suspension and the suspended masses of the motor vehicle, designed to function at the same time as actuator member and as the member for sensing the subsidence of the rear suspensions, the said hydraulic cylinder comprising two members, fixed respectively to the springs of the rear suspensions and to the suspended masses of the motor vehicle, which define between them an internal chamber,

(b) the said system further comprises a tank and a hydraulic pump the inlet to which is connected to the tank and the outlet from which is connected to a first input of the said hydraulic cylinder through a first pipe, and to a second input of the said hydraulic cylinder through a second pipe,

(c) the means for sensing the subsidence of the front suspensions comprise a control valve for controlling the pressure existing in the said second pipe, the said control valve comprising a movable control member designed to move as a function of the subsidence of the front suspensions in order to cause an increase in the pressure in the second pipe as the subsidence of the front suspensions increase.

(d) the control means comprise a distribution valve incorporated in one of the two members forming the hydraulic cylinder and including a slide valve subject at one of its ends to the pressure transmitted through the said second input and at its opposite end to the pressure existing in the internal chamber of the hydraulic cylinder; the said slide valve being movable between a first end position, corresponding pressure being transmitted through the said second input, in which the internal cavity of the hydraulic cylinder is connected to exhaust, so as to cause retraction of the hydraulic cylinder, and a second end position, corresponding to there being pressure in the internal chamber of the hydraulic cylinder, in which the said internal chamber is put in communication with the said first input, so as to cause extension of the hydraulic cylinder,

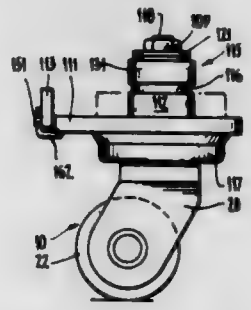
(e) the control means further comprise a spring, acting as the member for sensing the variation in the length of the hydraulic cylinder, interposed between the slide valve associated with one of the two members forming the hydraulic cylinder and the other member of the hydraulic cylinder, the said spring being designed to bring the slide valve back into one of its positions of equilibrium in which the internal chamber of the hydraulic cylinder is isolated, when the vehicle becomes situated in horizontal attitude.

4,350,355

WHEEL MEANS FOR CONTAINER HANDLING

Garnet M. U. Hannan, Bettina Lodge, Jerilderie St., Jerilderie, N.S.W., 2716, Australia

Filed Sep. 20, 1979, Ser. No. 77,168
Claims priority, application Australia, Oct. 5, 1978, PD6246; Apr. 6, 1979, PD8344; Jun. 15, 1979, PD9277
Int. Cl.[3] B60B *33/00*
U.S. Cl. 280—28.5 13 Claims



1. Apparatus for mounting in a corner aperture of a container, comprising:

a base plate;

a ground engaging means coupled to the underside of the base plate; and

means for locating and locking the base plate with the corner aperture of the container, said means for locating and locking the base plate including:

a locating plate mounted for rotation relative to the base plate and positioned in the corner aperture; and

a locking plate mounted in fixed relationship to the base plate so that when the base plate is rotated relative to the corner aperture, the locking plate is also rotated relative thereto to retain its fixed relationship to the base plate and to secure the base plate to the corner aperture, whereas the locating plate is retained positioned in the corner aperture.

4,350,356

CART

William R. Crothers, 424 W. Springfield Rd., Springfield, Pa. 19064

Division of Ser. No. 939,398, Sep. 5, 1978, Pat. No. 4,222,585.
This application Jun. 2, 1980, Ser. No. 155,392
Int. Cl.[3] B62B *11/00*
U.S. Cl. 280—47.26 2 Claims

1. A cart comprising:

a scoop-shaped body having an open front, a bottom wall, a rear wall and side walls extending upwardly from said bottom wall, wherein at least said bottom wall comprises a flexible sheet material;

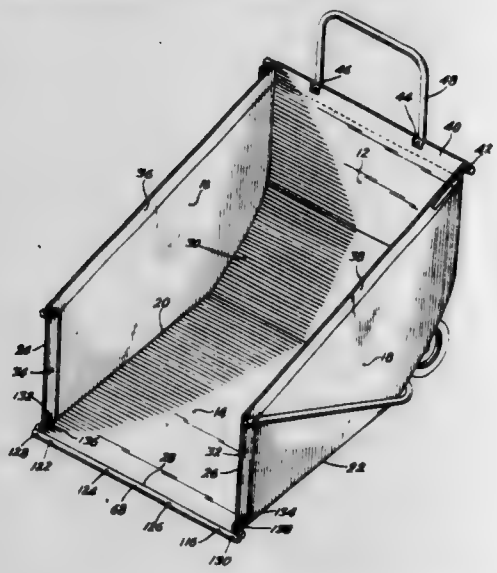
a pair of wheels rotatable on an axle located adjacent the intersection of said rear wall and said bottom wall;

frame means comprising two separate, substantially rigid frame members extending substantially from the front edge of said bottom wall to said axle;

laterally extending means fixed to the forward ends of both of said frame members; and

a substantially rigid clamping member extending along the

front edge of said bottom wall substantially from one side wall to the other and forward of said laterally extending means, said clamping member being secured to the laterally extending means on both of said frame members and securing the forward ends of said frame members in fixed relationship to each other, and said front edge of said bottom wall being clamped between said clamping member and said laterally extending means;



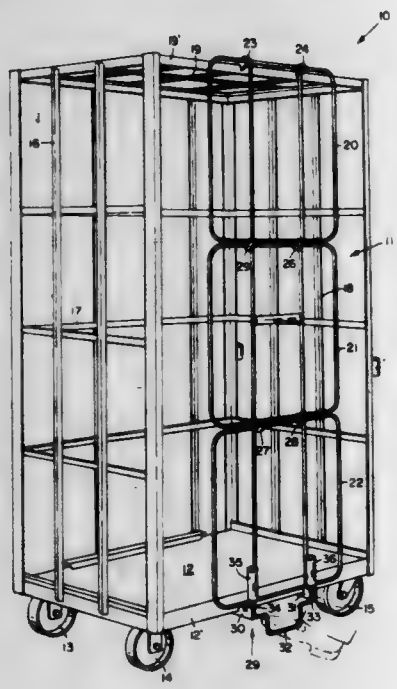
in which said laterally extending means extend laterally outwardly from their frame members, in which the frame members extend underneath the bottom wall of the body, and in which the width of the body is substantially greater than the greatest laterally measured distance between said frame members.

4,350,357

SHIPPING AND DISPLAY CART

Dennis W. Zenner, and Jesse F. Jenkins, both of San Antonio, Tex., assignors to Stinson Manufacturing Company, San Antonio, Tex.

Filed Nov. 21, 1980, Ser. No. 208,879
Int. Cl.³ B62D *53/06*
U.S. Cl. 280—79.3 **1 Claim**



1. An enclosed wheeled, shipping and display cart, comprising:

a wheeled cart having an enclosure for retaining articles being shipped thereon;

said enclosure having at least one side opening with a vertical closure member for selectively positioning in the opening to retain articles within the enclosure;

said vertical closure member including at least three rigid sections hingedly connected with each other and connected with the top of the enclosure for folding substantially flat upon each other and flat against the top of the enclosure out of the way for loading, displaying and transporting the cart;

said rigid sections being substantially equal in size and not greater in size than the top of the enclosure;

said rigid sections being connected by offset hinges so they can fold upon each other; and

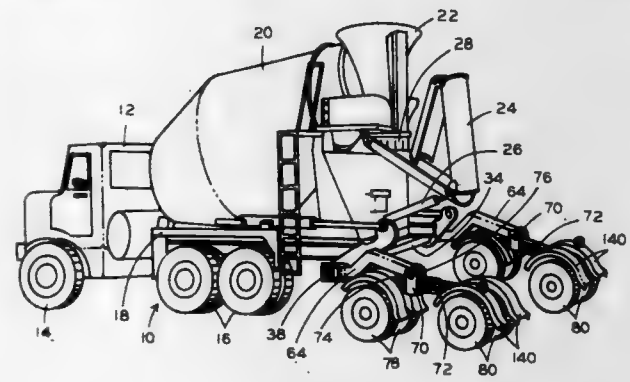
latch means for latching the gate member in place in the opening to retain articles in the enclosure, said latch means including a foot engaging member, spring means, spring retaining members for resiliently securing said foot engaging member to the lowermost end of said rigid sections, and horizontally disposed catches secured to said foot engaging member, each catch having at least two serrated notches for engaging the lower edge of said enclosure, wherein said latch means is extendably connected with the lowermost end of the rigid sections to allow the rigid sections to move outwardly from the enclosure to accomodate articles in the enclosure extending outwardly therefrom.

4,350,358

AUXILIARY LOAD-CARRYING APPARATUS

Tom E. Ferris, 4010 Wyne, Houston, Tex. 77017

Filed May 8, 1978, Ser. No. 903,861
Int. Cl.³ B60P *1/00*
U.S. Cl. 280—81 R **9 Claims**



1. A process for providing supplementary load-carrying support for a load-carrying vehicle comprising the steps of: imposing through a compound angle support which provides for both vertical raising and lowering of the wheels and castering thereof, a relatively constant force upon support wheels, and resiliently constraining each of said wheels individually through a torsion means which provides flexure of the tire and tire support in a lateral sense.

4,350,359

SIDE CAR ATTACHMENT FOR A MOTORCYCLE

James J. Van Gompel, Rte. 1, Box 215A, Fremont, Ind. 46737

Filed Aug. 7, 1980, Ser. No. 176,026
Int. Cl.³ B62K *27/12*
U.S. Cl. 280—203 **16 Claims**

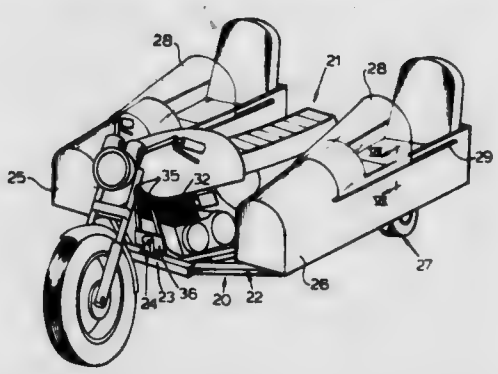
1. A side car attachment for a motorcycle, said attachment comprising:

(a) a frame having a leading end for extending horizontally between the wheels of the motorcycle in front of the motorcycle frame;

(b) wheel means carried by said frame for supporting it; and

(c) a hitch coupling having a first portion secured to said leading end and extending upwardly therefrom, and a second portion detachably securable to said first portion and adapted to be secured to the motorcycle frame in

front of of its engine at a substantially laterally centered position, said hitch coupling enabling pivoting of the



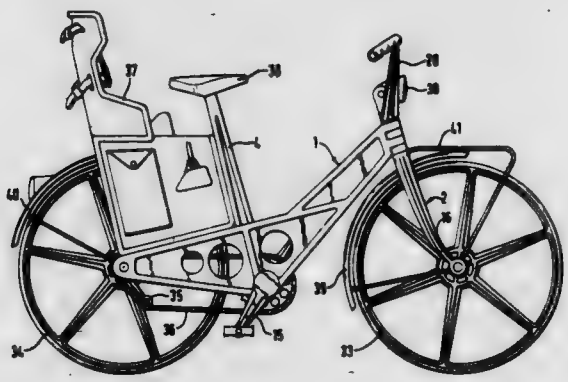
motorcycle relative to said frame about both a horizontal longitudinal axis and a vertical axis.

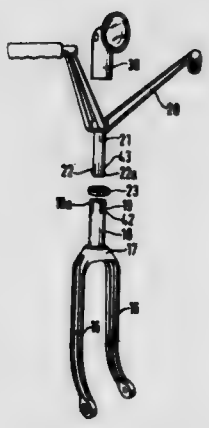
4,350,360

ASSEMBLY OF PREFABRICATED BICYCLE COMPONENTS

Jan G. Olsson, Sjögangen 6, 421 71 Via Frölunda, and Lars E. Samuelsson, Hedängen 5, 43370 Partille, both of Sweden

Filed Mar. 11, 1980, Ser. No. 129,263
Claims priority, application Sweden, Mar. 12, 1979, 7902201
Int. Cl.³ B62K *21/06*
U.S. Cl. 280—279 **3 Claims**





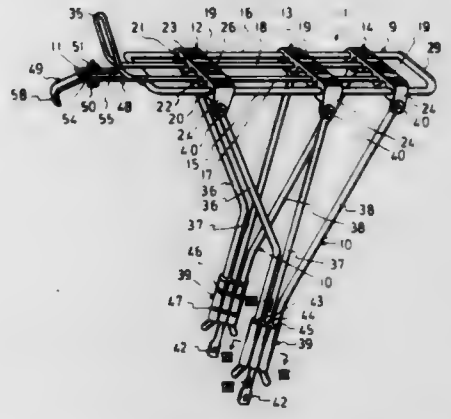
1. Assembly of prefabricated bicycle components comprising a frame member component having a sleeve-shaped steering hub, a front fork component provided with a sleeve portion, upper and lower thrust stops formed on said sleeve portion engaging the upper and lower ends respectively of the steering hub, the upper thrust stop being formed by outwardly pointing spring pawls adapted to cam into the corresponding end portion of the steering hub by snap action when the sleeve portion is being inserted into the steering hub, and the lower thrust stop comprising a lower thrust shoulder on said sleeve portion, a handle bar component provided with a sleeve shank, said sleeve shank having an outer diameter which substantially corresponds to the inner diameter of said sleeve portion of said front fork component, said sleeve shank having spring pawls in its lower portion and a shoulder in its upper portion which cooperate with lower and upper counter-stops respectively of said sleeve portion of said front fork component.

4,350,361

LOAD CARRYING PLATFORM FOR A BICYCLE

Chiaki Fujii, 6-1 Nishikikui-cho, Nishi-ku, Nagoya-shi, Aichi-ken, Japan

Filed Sep. 9, 1980, Ser. No. 185,636
Claims priority, application Japan, Dec. 6, 1979, 54-158433
Int. Cl.³ B62J *7/04*
U.S. Cl. 280—289 A **4 Claims**



1. A load carrying platform for a bicycle comprising:
(i) a platform body to support a load placed thereon,
(ii) a pair of leg members for supporting said platform body, said leg members having an upper end connected to said platform body and a lower end for connection to a bicycle frame,
(iii) a mounting member having a first end connected to said platform body and a second end for connecting to said bicycle frame,
said platform body comprising a plurality of transverse members which are elongated transversely of the platform and are spaced parallel to each other longitudinally of the platform and which have engaged therethrough a pair of rod-like outer frame members and a plurality of rod-like inner frame members, each transverse member having an upper load bearing surface and including longitudinally-disposed holes at each end receiving said outer frame members and a plurality of longitudinally-disposed holes in a central portion thereof receiving said inner frame members, said holes being disposed at a level below that of said bearing surface, each outer frame member and inner frame member being secured in position in its hole by a portion of the transverse member deformed towards the outer or inner frame member respectively, said transverse members further including at each end thereof a connecting place to which a respective one of said leg members is secured, said outer frame members being respective straight parallel arms of an outer frame and having respective inturned forward ends aligned with each other, said inner frame members being respective straight parallel arms of an inner frame connected by a forward upwardly-inclined curved portion to serve as a rope fastener.

4,350,362

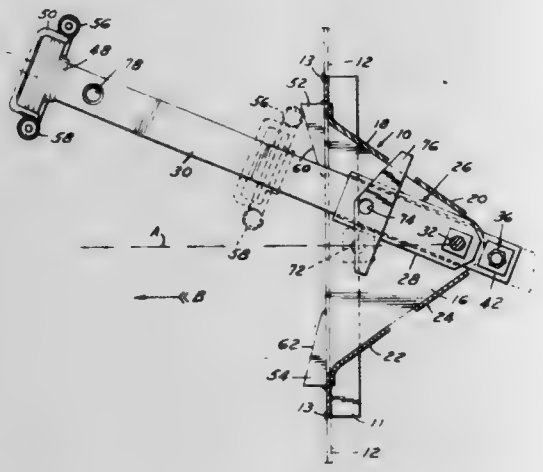
SELF-CENTERING TRAILER HITCH

Donald F. Landers, Grosse Pointe, Mich., assignor to PSI Mobile Products, Inc., Mount Clemens, Mich.

Filed Sep. 29, 1980, Ser. No. 192,179
Int. Cl.³ B60D *7/00*
U.S. Cl. 280—478 A **6 Claims**

6. A trailer hitch comprising, in combination:
a housing intended to be mounted on a towing or towed vehicle and having a pair of vertically spaced upper and lower plates,

a guide tube pivotally supported between the plates for laterally swingable movement,
a tongue telescoped into the guide tube and supported thereby for swingable movement therewith and extension and retraction relative thereto and having a projecting end disposed beyond the housing for coupling with another vehicle,
a pair of cam wedges on the housing on opposite sides of the projecting end of the tongue having inclined surfaces facing toward the tongue,
cam followers on the tongue for cooperating with said inclined surfaces,



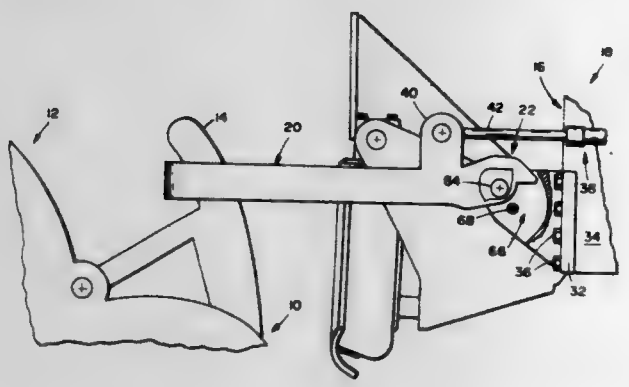
aligned apertures in said upper and lower plates,
transverse apertures in the tube alignable with the plate apertures when the tube is centered in the housing,
a transverse aperture through the tongue alignable with the tube and plate apertures when the tongue is retracted into the tube,
pin means for projection down through said apertures when the same are aligned, and
a pin stop plate on the tube extending transversely thereof for an arcuate distance sufficient to support the pin against interference with swinging movement of the tube except when the tube is centered on the housing.

4,350,363

SCRAPER BAIL STOP ASSEMBLY

Bennett N. Waddell, Minooka; Larry G. Warren, and Eugene M. Wilson, both of Joliet, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/00055, § 371 Date Jan. 21, 1980, § 102(e) Date Jan. 21, 1980
PCT Filed Jan. 21, 1980, Ser. No. 136,622
Int. Cl.³ B60D *1/004*
U.S. Cl. 280—481 **5 Claims**



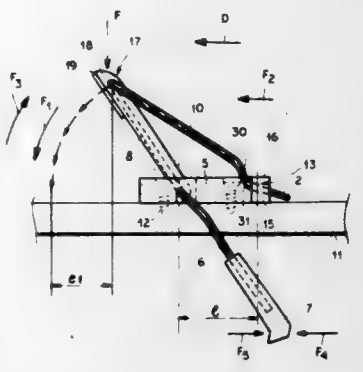
1. In a vehicle (18) having a bail (20) pivotally mounted thereto, said bail (20) being movable from a lowered position toward a raised position, the improvement comprising:
a bifurcated bracket structure (28) mounted on said vehicle (18) and defining a vertically extending pocket (50) having a stop member (68) mounted therein, said bail (20) being pivotally mounted in said bracket structure (28), said bracket structure (28) being adapted to provide a shielded stop for said bail (20);
said vertically extending pocket (50) having a lower portion (56), an upper portion (54), and an open top (52), said bail being pivotally mounted in said upper portion (54) of said pocket (50) and having a surface (80) thereon being pivotal in said open top (52), said surface (80) being of a construction sufficient for varying a horizontal dimension (Δr) of said open top (52) as said surface (80) pivots therein; and
means (70) for engaging said stop member (68) to prevent further movement of said bail (20) toward the raised position, said engaging means (70) being mounted on the bail (20).

4,350,364

SKI BRAKE

Georges P. J. Salomon, Annecy, France, assignor to Ets François Salomon & Fils, Annecy, France

Filed Mar. 18, 1980, Ser. No. 131,376
Claims priority, application France, Mar. 19, 1979, 79 07702
Int. Cl.³ A63C *7/10*
U.S. Cl. 280—605 **25 Claims**



1. A ski brake comprising:
a support securable to the upper surface of a ski and forming a longitudinally elongated passage extending and opening in the normal longitudinal direction of displacement of said ski;
a brake element pivotal on said support about an element axis between a skiing position generally parallel to said ski and lying wholly above the lower surface thereof and a braking position extending downwardly past and transverse to said lower surface; and
a wire biasing loop connected between said brake element and said support and urging said element into said braking position, said loop having a pivot section pivoted in said support for pivoting about a loop pivot axis generally parallel to said surfaces and perpendicular to said direction and another leg extending mainly longitudinally in said normal longitudinal direction of displacement of said ski through said passage and longitudinally displaceable therein between a forwardly advanced position corresponding to said braking position and a rearwardly retracted position corresponding to said skiing position, said loop being relatively greatly elastically deformed and lying generally in a plane parallel to said surfaces in said skiing position of said element and being less elastically deformed and standing up from said upper surface in said braking position of said element.

4,350,365

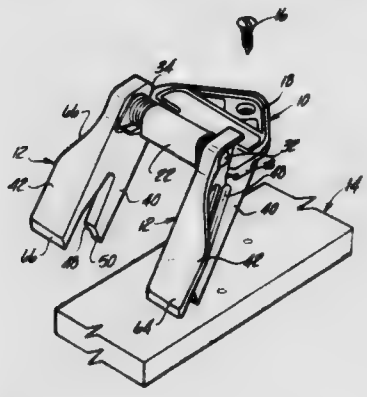
SKI BRAKING DEVICE

Walter J. DeVigili, Roseville, and Louis E. Hough, St. Clair Shores, both of Mich., assignors to Emprie Automotive, Inc., Roseville, Mich.

Filed Oct. 10, 1980, Ser. No. 195,879
Int. Cl.³ A63C *9/10*
U.S. Cl. 280—605 **14 Claims**

1. A braking device for preventing rearward movement of a

snow ski, such as when climbing a hill, comprising a plate adapted to be fixedly mounted on the upper face of a ski at generally the mid section thereof, a pair of laterally spaced brake members pivotally mounted on said plate so as to straddle the ski on which the plate is secured and pivot about a horizontal axis extending transversely of the ski, means biasing said brake members to pivot in a downward direction against the surface on which the ski is supported, each brake member comprising an upper paddle and a lower blade extending rearwardly from the pivot axis of the brake member in vertically



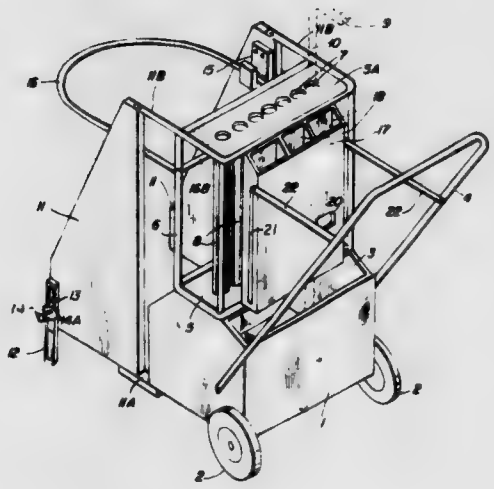
spaced relation, said blade lying in a vertical plane and being relatively thin so as to readily penetrate into the surface on which the ski is supported and produce a minimum of drag to the forwardly moving ski, said paddle lying in a plane perpendicular to the blade and being relatively wide so as to restrict the penetration of the blade into the skiing surface when the ski is moving forwardly, the rear end of said blade being relatively sharp so as to readily dig into the skiing surface in response to a slight rearward movement of the ski, the length of said paddle being at least as great as the length of said blade.

4,350,366

MANUALLY PROPELLED LAWN AND GARDEN CART

Harold R. Helms, 965 Rile St., Bushnell, Ill. 61422

Filed Nov. 17, 1980, Ser. No. 207,352
Int. Cl.[3] B26B *1/04*
U.S. Cl. 280—655 3 Claims



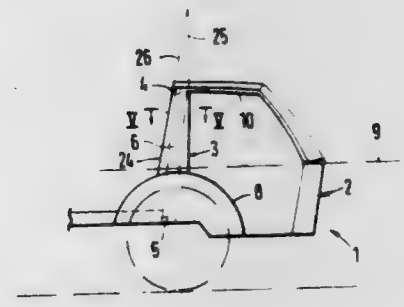
1. A manually propelled lawn and garden cart comprised of a bottom storage box having oblique openings on either side near the top of the bottom storage box, an open frame secured to the top of the bottom storage box, a cross piece attached to the top of the open frame, holes in the cross piece and in the top of the bottom storage box connected by tubes, wheels attached to the bottom storage box, a pivotable handle attached to the bottom storage box near the wheels, wings pivotably attached between extensions of the bottom storage box and extensions of the open frame, a trash bag bracket pivotably attached to the open frame near its top, brackets attached to the wings that will receive the trash bag bracket when the wings are in an open position and the trash bag bracket is moved to a horizontal position.

4,350,367

ROLL BAR FOR VEHICLES, ESPECIALLY MOTOR VEHICLES

Eugen Kolb, Stuttgart, and Rainer Srock, Leonberg, both of Fed. Rep. of Germany, assignors to Ing. h.c.F. Porsche Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Apr. 14, 1980, Ser. No. 140,414
Claims priority, application Fed. Rep. of Germany, Apr. 20, 1979, 2916010
Int. Cl.[3] B60R *21/02*
U.S. Cl. 280—756 14 Claims



1. Roll bar assembly for protection of a vehicle occupant compartment under vehicle turn-over conditions, comprising segments mounted on opposite sides of a vehicle, said segments being mounted vertically and being connected together by at least one cross member, characterized by the fact that each segment comprises a pair of elements which have deformations, said deformations increasing the section modulus in a manner producing high rigidity, said elements having the same profile and being formed of rolled sections capable of manufacture in the same set of rolls on a roll-section manufacturing tool, and each pair of elements being connected together to form a hollow member which, in cross section comprises two tubular structures connected by a common rib, said tubular structures being located symmetrically with respect to a lengthwise plane and a transverse plan of the respective segment.

4,350,368

PASSIVE SEAT BELT SYSTEM FOR THREE OCCUPANT SEAT

Richard L. Frantom, Richmond; Robert L. Stephenson, Utica, and Rudy V. Thomas, Sterling Heights, all of Mich., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Apr. 10, 1980, Ser. No. 138,956
Int. Cl.[3] B60R *21/10*
U.S. Cl. 280—804 18 Claims

1. A passive seat belt system for a vehicle having center and outboard passenger seating positions, a door adjacent said outboard passenger's seating position and a roof, said system comprising:

first anchor means mounted outboard of said outboard passenger's seating position;

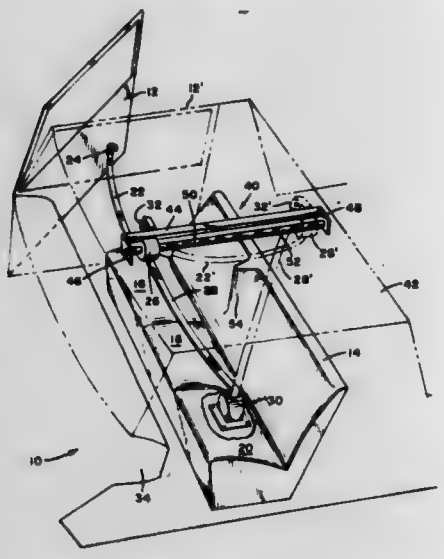
a seat belt for said outboard passenger's seating position having one end attached to said first anchor means;

second anchor means provided in said vehicle;

a seat belt for said center passenger's seating position having one end attached to said second anchor means, said second anchor means being located at a position such that said seat belt for center passenger's seating position is adapted to extend across said seating position from the inboard side thereof; and

movable means connected to said roof of said vehicle at a position adjacent to said center and outboard passengers' seating positions, each of said seat belts being connected to said movable means, said movable means being movable

to a first position in said vehicle whereby said belts are in non-restraining positions to facilitate access to said center and outboard passengers' seating positions and said mov-



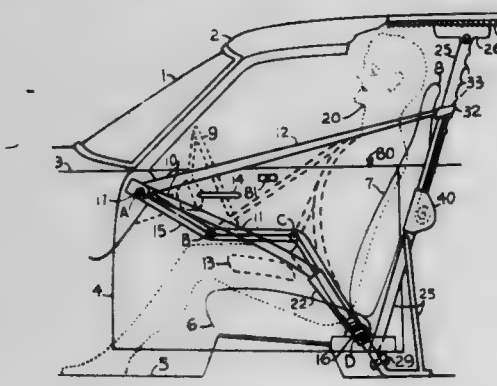
able means being movable to a second position in said vehicle whereby said belts are in restraining positions to provide seat belt restraint for said seating positions.

4,350,369

VEHICLE OCCUPANT RESTRAINING DEVICES

John J. Chika, 1350 Orchard Ridge Rd., Bloomfield Hills, Mich. 48013

Filed Sep. 8, 1980, Ser. No. 184,806
Int. Cl.³ B60R *21/10*
U.S. Cl. 280—804 41 Claims



1. A vehicle seat occupant restraining device adjustably positionable into and out of the immediate proximity to the occupant of a seat located next to a rigid side or a side door of a transportation vehicle comprising:

a continuous length of suitably configured webbing or cable type material forming a combination lap-belt and shoulder-belt restraining device (10),

the inboard end of the lap-belt portion (11) anchored to the vehicle floor inboard and behind the seated occupant,

the inboard upper end of the shoulder-belt portion (12) adjustably anchored inboard and back of the seated occupant's head to specifically configured means (25), by specifically configured bracket means (32) adjustably engageable with said means (25) for adjustably fixing the effective length of the continuous overall length of the webbing or cable (10),

the mid-portion of said webbing or cable type material slidably passing through an apperture in a carrier assembly means (35), thus adjustably, automatically, variably dividing said restraining device into its lap-portion (11) and shoulder-portion (12),

the carrier assembly (35) configured to be operatively slidable along a track channel means (15) secured substantially diagonally over the inboard surface of said rigid side or door of said vehicle in nearest proximity to the outboard side of said seat,

the rearward end of the track channel located as far downwardly and rearwardly from said seat as practical, its forward end located as far forwardly and upwardly from said seat as practical,

means to slidably, operatively propel said carrier assembly means (35) back and forth between the opposite ends of said track channel means (15),

means to repeatedly, securely lock said carrier means at the rearward and downward end of said track channel means to prevent its unwanted dislocation therefrom,

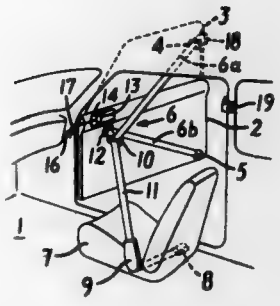
means to repeatedly unlock said carrier means therefrom.

4,350,370

BELT SHIFTING MECHANISM FOR A PASSIVE VEHICLE RESTRAINT BELT SYSTEM

Juichiro Takada, 3-12-1 Shinmachi, Setagayaku, Tokyo, Japan

Filed Nov. 24, 1980, Ser. No. 210,140
Claims priority, application Japan, Nov. 27, 1979, 54-163222[U]
Int. Cl.³ B60R *21/02*
U.S. Cl. 280—804 10 Claims



1. A belt shifting mechanism for use in a passive vehicle restraint belt system comprising a link rod and a paired slider mounted within a slide rail, said paired slider having a front slider and a rear slider, said slide rail being mounted on the inner face of the vehicle door, said link rod being attached at one end to the vehicle body adjacent the front edge of the vehicle door opening and at the other end to the front slider such that in response to the opening and closing of the vehicle door the link rod causes the front slider to slide forwardly and backwardly within the slide rail, said rear slider having attached thereto a drive member which in response to the motion of the rear slider in the slide rail causes an occupant restrain belt to shift between an occupant restraining position and an occupant releasing position, the front slider and the rear slider being releasably attached to each other by releasing means, said releasing means being adapted to cause the front and rear slider to remain attached and to move together when the paired slider is caused by the link rod to move within the rear portion of the slide rail in response to the movement of the vehicle door between a closed position and a partially opened position, and said releasing means being adapted to disengage said front slider and rear slider at a predetermined point on the slide rail forward of said rear portion such that only the front slider is caused by the link rod to slide forwardly in the slide rail beyond the predetermined point in response to the opening of the vehicle door from a partially opened to a fully opened position, said rear slider thereby acting upon said drive member to shift the occupant restraint belt between an occupant restraining position and an occupant releasing position only when the vehicle door is moved between a closed position to a partially opened position.

4,350,371

SUBSEA PIPE CONNECTOR

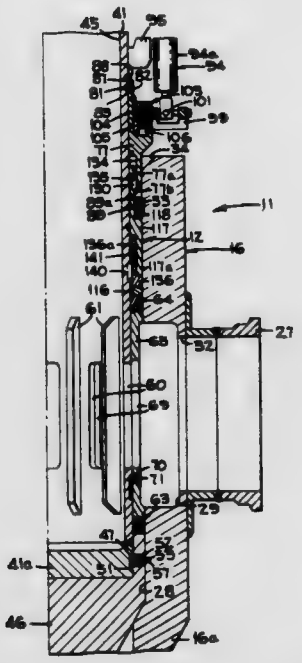
Glen E. Lochte, Houston, and Jackie R. Allen, Porter, both of Tex., assignors to FMC Corporation, Chicago, Ill.

Filed Mar. 31, 1980, Ser. No. 135,849

Claims priority, application United Kingdom, Apr. 2, 1979, 7911437

Int. Cl.³ F16L *41/00*

U.S. Cl. 285—18 10 Claims



1. A subsea connector for releasably connecting two lengths of pipe, said connector comprising:

a generally cylindrical inner member having a bore extending axially from one end thereof through a portion of said inner member, said inner member having at least one port extending from said bore radially through a wall to the outside of said inner member;

means for connecting said first length of pipe to communicate with said axial bore of said inner member;

a generally cylindrical outer member having an axially extending passage to receive said inner member, said outer member having first and second annular grooves in an inner wall thereof, said first groove being adjacent said radial port of said inner member when said inner member is operatively positioned in said axial passage of said outer member, said outer member having a passage extending radially outward from said first annular groove through a wall to the outside of said outer member;

means for connecting a second length of pipe to the outside of said wall of said outer member with said second pipe communicating with said radial passage in said wall of said outer member;

first and second annular sealing means mounted between said inner wall of said outer member and an outer wall of said inner member with said first sealing means mounted between said first groove and a first end of said outer member and said second sealing means mounted between said first groove and a second end of said outer member to facilitate the transfer of fluid from said axial bore of said inner member through said radial port and said groove to said radial passage of said outer member;

an annular locking ring mounted around said inner member, said locking ring being biased radially inward;

an annular setting ring mounted adjacent said locking ring, said setting ring having a cam surface for expanding said locking ring radially outward into a portion of said second groove in said outer member upon axial movement of said setting ring to lock said inner member in operating position inside said axial passage of said outer member; and

a hydraulic ram connected between said inner member and said setting ring to provide axial movement of said setting ring.

4,350,372

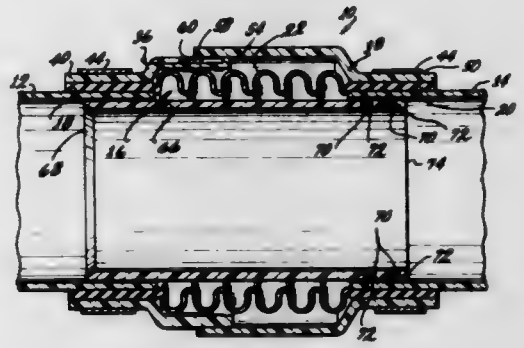
EXPANSION COUPLING FOR LARGE DIAMETER PLASTIC PIPES

Duane D. Logsdon, 1708 Calavera Dr., Fullerton, Calif. 92631

Continuation-in-part of Ser. No. 114,051, Jan. 21, 1980. This application Jul. 21, 1980, Ser. No. 170,477

Int. Cl.³ F16L *27/12*

U.S. Cl. 285—45 5 Claims



1. An expansion coupling connecting a first pipe and a second pipe which comprises:

an imperforate expansion means having a first cylindrical member capable of coaxially fitting around and being sealed to a first pipe and a second cylindrical member coaxially fitting around and being sealed to a second pipe and a cylindrical bellows means integrally formed with and interspaced between said first and said second cylindrical members;

a sliding sleeve means including a first and a second sleeve member, said first sleeve member having a first circular collar and a second circular collar integrally formed together, said second sleeve member having a third circular collar and a fourth circular collar integrally formed together, said first and third cylindrical collars including cutouts means enabling said first and third collars to be squeezed so as to reduce in diameter, said second and fourth collars being circumferentially continuous, said first collar fitting coaxially around said first cylindrical member to locate said first cylindrical member between said first pipe and said first collar of said first sleeve member, said third collar fitting coaxially around said second cylindrical member to locate said second cylindrical member between said second pipe and said third collar of said second sleeve member, said second collar coaxially located around at least a portion of said bellows means, said portion of said bellows means movable within said second collar, said fourth collar coaxially located around said second collar, said second collar slidably movable within said fourth collar;

a first and a second attaching means for fixedly attaching said first collar of said first sleeve member and said first cylindrical member to said first pipe and said third collar of said second sleeve member and said second cylindrical member to said second pipe respectively;

said cylindrical bellows means comprising a cylindrical flexible member formed into a bellows such that a cross-section through the longitudinal axis of said cylindrical flexible member has a sinusoidal shape, said sinusoidal shape defining a plurality of arcuate sectors alternately pointing toward the center of said cylindrical flexible member and away from the center said cylindrical flexible member, said bellows sized such that the internal diameter of said bellows measured across said arcuate sectors of said bellows projecting toward the interior of said bellows is greater than the inside diameter of either of said first or said second pipes;

an internal sleeve member extending within the interior of said expansion means and having one end sealably attached to the interior of one of said first or said second pipes and extending from said attachment through the

interior of said bellows means and movably sealing against the interior of the other of said first or said second pipe;

said second circular collar having a plurality of channels extending from said first circular collar longitudinally along a portion of its outside surface to a point proximal to the end of said second circular collar which is distal from said first circular collar and extending radially from said outside surface through a portion of said second collar;

said fourth circular collar including a plurality of projections equal in number to the number of said channels and projecting inwardly from the end of said fourth circular collar distal from said third circular collar;

said projections fitting in said channels guiding the sliding movement of said second circular collar within said fourth circular collar and preventing complete disengagement of said second circular collar from said fourth circular collar.

4,350,373

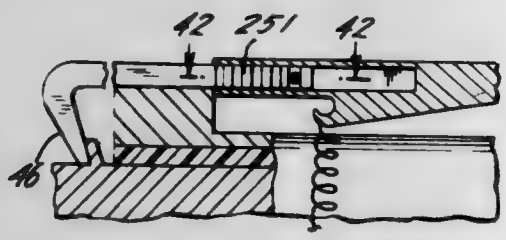
COUPLING DEVICE

Henry Fleischer, 18 Notch Park Rd., Little Falls, N.J. 07424

Division of Ser. No. 920,403, Jun. 29, 1978, Pat. No. 4,209,190, which is a division of Ser. No. 659,370, Feb. 19, 1976, Pat. No. 4,108,475, which is a division of Ser. No. 479,667, Jun. 17, 1974, abandoned, which is a continuation-in-part of Ser. No. 427,149, Dec. 21, 1973, abandoned. This application Apr. 7, 1980, Ser. No. 138,216

Int. Cl.³ F16L *21/00*

U.S. Cl. 285—55 **6 Claims**



1. A coupling device comprising, in combination, a socket member and a plug member adapted to be removably and adjustably disposed in said socket member, said plug member including inner walls defining a bore running therethrough and at least one securing means, said plug member comprising a conical-like member including a first tubular end segment, an intermediate segment and a second end segment connected to the wider end segment of said conical-like member; the inner bore of said plug member running through each of said first end, intermediate and second end segments of said plug member, said socket member comprising a body portion including inner walls defining a passageway running therethrough, said body portion of said socket member including first and second end portions, and an intermediate portion, said passageway in the form of a bore running through each of said portions, said bore defining a tapered passage, the wide segment of which extends from said first end portion into said intermediate portion, the first tubular end segment and intermediate segment of said plug member being adapted to seat in said tapered passage of said socket member, said tapered passage of said socket member including a wear-resistant lining material which contacts the outer surface of said conical-like segment of said plug member when said plug member is seated in said tapered passage of said socket member, said second end portion of said socket member including attaching means for attaching said socket member to a conduit, said plug member being adapted to be retained and adjustably positioned in said passageway to form a substantially fluid-tight seal with said socket member, whereby as portions of said socket member in contact with said plug member wear, said plug member can be repositioned in said socket member to continue to maintain a substantially fluid-tight seal with said socket member, said socket member further including at least one connecting member adapted to engage said securing means of said plug member to retain said plug member in said socket member in substantially fluid-tight engagement, said connecting member of said socket member comprising at least one connecting rod, said rod comprising at least first and second sections, said first section including a first end pivotally mounted to said socket member, and a second end which includes a longitudinal slot and at least one opening, in communication with said longitudinal slot, said second section in part including a first end which includes a latch-like member for engaging said securing means of said plug member, and a second end disposed in said longitudinal slot and including at least two pin engaging means, one pin engaging means being adapted to be in alignment with said opening of said first section, and pin means connected to said connecting rod and adapted to pass through said opening in said first section and engage one of said pin engaging means in said second section to fix the position of said first and second sections relative to each other and fix the position of said latch-like member of said second section relative to said securing means of said plug member.

4,350,374

HEADER FOR SOLAR-PANELS AND A DEVICE FOR CONNECTING HEADER TO PANEL

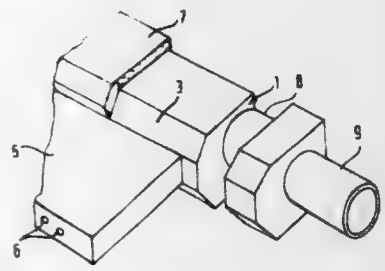
Aurelio Brollo, Milan, Italy, assignor to Industrie Pirelli S.p.A., Milan, Italy

Filed Oct. 3, 1979, Ser. No. 81,542

Claims priority, application Italy, Oct. 4, 1978, 28393 A/78

Int. Cl.³ F16L *47/00*

U.S. Cl. 285—132 **2 Claims**



1. A terminal conduit for solar panels comprising:

a prismatic housing surrounding a cavity which extends longitudinally therethrough, said housing having an elongate aperture therein which communicates with said cavity and has its longer dimension disposed parallel to the longitudinal axis of the housing,

a slab having a plurality of conduits extending therethrough disposed within one end in the aperature with its through conduits communicating with the said cavity, and

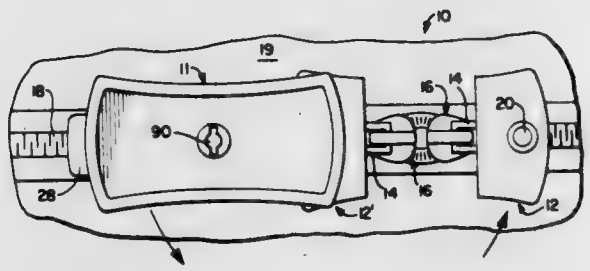
means for supporting the slab in the aperature and forming a fluid tight seal between the housing surrounding the aperature and the slab, said prismatic body formed by two sections which are joined, one to the other, in correspondence of a plane that passes through the axis of the prismatic body and through the mid-plane of the aperture, and wherein said terminal conduit compries means for joining together the said two sections, said means for joining together the two sections comprising a cantilever fin on the surface of each of the two sections, which, once joined together, form the prismatic body, the said fins each having one face lying on the plane that passes through the axis of the prismatic body and through the mid-plane of the aperture and a pair of sections fitted over said fins pressing the fins together.

4,350,375

DOUBLE-SLIDER ZIPPER LATCHING DEVICE

Lazlo Bako, Woodcliff Lake, N.J., assignor to Presto Lock, Inc., Garfield, N.J.

Filed Feb. 8, 1980, Ser. No. 119,977
Int. Cl.³ A44B *19/00*
U.S. Cl. 292—24 23 Claims



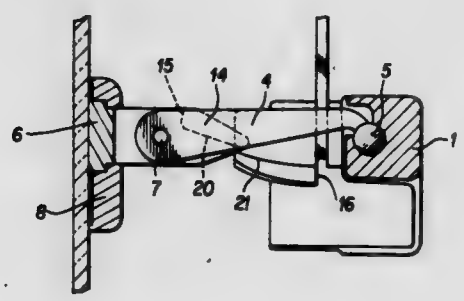
1. A latching device for a double-slider zipper arrangement comprising first and second tab assemblies, each tab assembly having an opening for receiving a pull tab pivotally connected to one of the zipper sliders and having means therein for engaging the pull tab to attach the tab assembly to the pull tab, and a latch assembly mounted on the first tab assembly, the latch assembly having means for latching engagement with the second tab assembly to latch the zipper sliders together.

4,350,376

LOCKING DEVICE FOR SWIVELING WINDOW

Jacques Bascou, Boulogne, France, assignor to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

PCT No. PCT/FR79/00098, § 371 Date May 13, 1980, § 102(e) Date May 13, 1980, PCT Pub. No. WO80/00017, PCT Pub. Date Jan. 10, 1980
PCT Filed Oct. 29, 1979, Ser. No. 206,546
Claims priority, application France, Nov. 3, 1978, 78 31210
Int. Cl.³ E05C *17/32*
U.S. Cl. 292—263 2 Claims



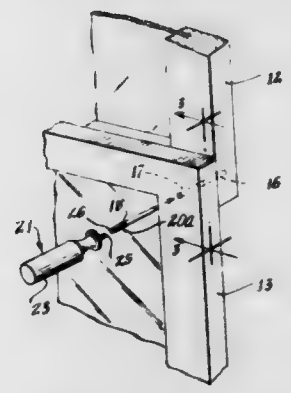
1. A device for locking a swiveling window in a closed and partially opened position comprising:
a base mounted to said window;
a body rest member;
a control lever pivotably mounted on said rest member and having an elongated channel formed therein;
a yoke member rotatably mounted on said base;
a driving rod having a first end thereof pivotably mounted to said yoke member and a second end thereof slidably mounted within said channel of such control lever; and
means operably connected to said control lever and said yoke for locking and unlocking of said control lever in said closed and partially opened position wherein said means for locking and unlocking said control lever further comprises a first and second cam for mutual abutment and sliding contact, said first cam being integrally formed with said yoke and said second cam being integrally formed with said control handle.

4,350,377

LOCK DEVICE AND METHOD FOR SECURING WINDOW SASHES IN A FIXED RELATIVE POSITION

Thomas D. McCarthy, 7 Rae La., Norwalk, Conn. 06850

Filed Mar. 13, 1980, Ser. No. 130,022
Int. Cl.³ E05C *17/54*
U.S. Cl. 292—288 16 Claims



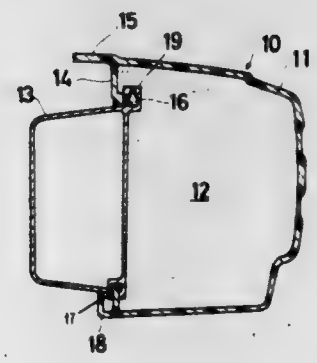
1. Lock means for securing first and second bodies, which are mounted for relative sliding movement, in fixed relative position, each of said bodies having a hole extending transversely to the direction of said sliding movement, said holes being in axial alignment when said bodies are in said fixed position; said lock means comprising:
elongate bolt means insertable into said holes when axially aligned to secure said bodies in said fixed position, said bolt means having a knurled exterior portion for frictionally engaging the interior of at least one of said holes;
handle means; and
means for releasably, axially attaching said handle means to said bolt means, said attaching means comprising screw means for releasably securing said handle means to said bolt means, whereby said bolt means may be inserted into and withdrawn from said holes when aligned and whereby said handle means may be released from said bolt means after said bolt means is inserted into said holes.

4,350,378

BUMPER FOR USE ON VEHICLES

Fumio Wakamatsu, Okazaki, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Aug. 22, 1980, Ser. No. 180,434
Claims priority, application Japan, Aug. 29, 1979, 54/119671[U]
Int. Cl.³ B60R *19/08*
U.S. Cl. 293—120 6 Claims



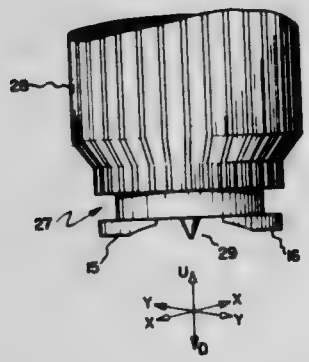
1. A bumper for vehicles comprising:
a rim member formed from setting of molten material as a result of a molding operation,
a foamed urethane form positioned within said rim member to absorb shocks to which the bumper may be subjected, and
a reinforcement member to reinforce the bumper positioned rearwardly of said foamed urethane form and affixed to

said rim member when the latter is formed, said reinforcement member having at least one extended portion which projects into said foamed urethane form and defining apertures through which the molten material is poured to form said rim member, whereby said foamed urethane form and said reinforcement member are integrally fixed to each other upon setting of the molten material.

4,350,379
UNIVERSAL LIFTING MAGNET

Donald C. Peroutky, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Oct. 10, 1980, Ser. No. 195,865
Int. Cl.³ B66C *1/04*
U.S. Cl. 294—65.5 6 Claims



1. A universal electromagnet capable of lifting different magnetic parts comprising:

a magnetic base ring;

a pair of approximately semi-annular, shaped magnetic pole pieces; and

magnetic core and coil structures between said base ring and each pole piece;

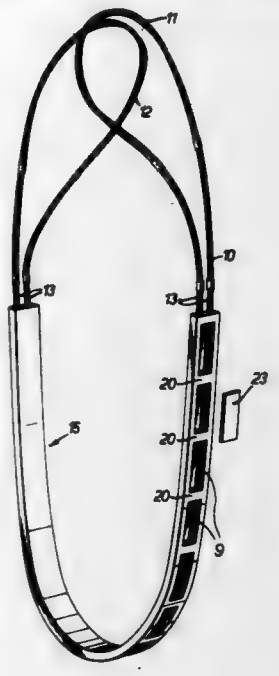
said pole pieces being shaped in mirror image fashion to have inner curved surfaces for lifting cylindrical parts and outer flat surfaces for lifting parts with substantially plane surfaces, said flat surfaces further having undercut areas that are filled with non-magnetic material and provide small air gaps, whereby heavy and light weight parts with plane surfaces can be lifted and quickly released.

4,350,380
LOAD CARRYING SLINGS

William C. Williams, 47, Channel View, Port Talbot, Glamorgan, Wales

Filed Mar. 20, 1980, Ser. No. 132,013
Claims priority, application United Kingdom, Mar. 27, 1979, 7910557
Int. Cl.³ B66C *1/18*
U.S. Cl. 294—74 7 Claims

1. A load carrying sling comprising an internal flexible load carrying tension element, and a flexible sheath formed with passage means for receiving said tension element, said sheath extending over a substantial length of said tension element and being formed with a plurality of longitudinally spaced viewing apertures peripherally framed by the material of the sheath to include transverse bridges separating the viewing apertures and providing adjacent walls of the passage means whereby

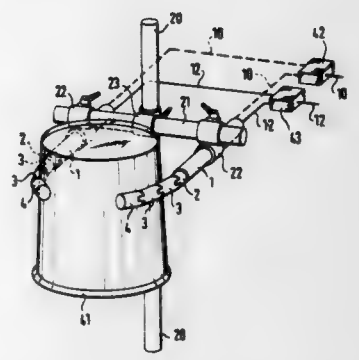


substantially all parts of said element can be inspected and substantially the full length of said element is protected.

4,350,381
GRIPPER WITH SERIALLY PIVOTED FINGERS

Wolf D. Hellmann, Leichlingen, Fed. Rep. of Germany, assignor to Colortronic Reinhard & Co. KG, Friedrichsdorf, Fed. Rep. of Germany

Filed Oct. 8, 1980, Ser. No. 195,037
Claims priority, application Fed. Rep. of Germany, Oct. 9, 1979, 2940916
Int. Cl.³ B66C *3/16*
U.S. Cl. 294—88 14 Claims



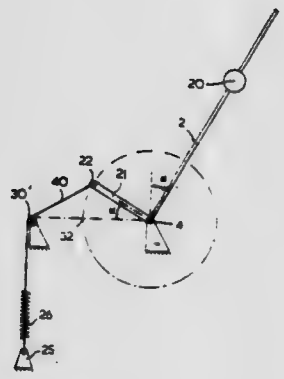
1. Gripper for use in a manipulator which removes, transports and unloads production pieces, particularly pieces made of plastic in an injection molding machine, comprising a base member and a plurality of finger members which can pivot in sequence and toward each other and which are uniformly shaped, each finger member having a hydraulic cylinder for motive force, and which can be pneumatically swung into an operating position where they make contact with the objects to be gripped, each individual finger member (3) having a cylindrical shape, each having an axially parallel eccentric bore hole (14) which accommodates a piston (5) for imparting pivoting movement to the finger member; a head of the piston acting upon a rear surface (15) of a finger member immediately in front when pressure is applied causing the latter to pivot around a bolt (11) located beside the piston in a frontal area of each finger member.

4,350,382

BALANCING DEVICE AND FOLDABLE PLATFORM SIDEBOARD

Emmanuel S. M. Spronck, Julianalaan 38, Margraten, Netherlands

Filed Dec. 20, 1979, Ser. No. 105,661
Claims priority, application Netherlands, Dec. 21, 1978, 7812389
Int. Cl.³ B62D *27/00*
U.S. Cl. 296—38 2 Claims



1. A balancing device for a part rotatable about a horizontal axis in a frame comprising:

(a) a lever arm fixedly connected with one end at said horizontal axis to said part to be balanced so as to define a right angle therewith, said horizontal axis being fixed in said frame and said part to be balanced is fully balanced in any angular position of said part when said part is balanced in only one angular position thereof;

(b) a pull or press member pivotally mounted about a point of said frame and being pivotally connected to the other end of said lever arm, said pull or press member being a pulling cable guided over a guide wheel disposed at said point of said frame, said point and said horizontal axis being located in the same plane, said point of said frame being adjustably mounted in said frame and being fixed in said frame when said part is balanced in said only one angular position;

(c) a spring member having linear characteristics mounted in said frame and operatively connected to said pull or press member;

(d) said pivotal connection between said pull or press member and said lever arm being at least partially displaceable about a circle concentric about said horizontal axis, with said lever arm defining the radius of said circle;

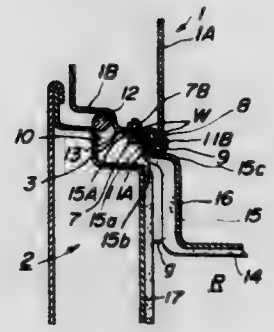
(e) said pull or press member being so mounted about said point that any pulling or pressing force exerted thereby on said lever arm in all positions of said lever arm about said circle extends through said point, whereby in a position wherein the center of gravity of said part to be balanced is positioned directly above said horizontal axis, the direction of said pulling or pressing force extends in a longitudinal direction defined by said lever arm, with the length along which said spring member is biased being equal to the distance between said point of said frame and said pivotal connection between said pull or press member and said lever arm, with said point of said frame being adjustable along said longitudinal direction defined by said lever arm when said lever arm is in a horizontal plane, with said horizontal axis, said point of said frame and said pivotal connection of said pull or press member to said other end of said lever arm all being located in said horizontal plane when said lever arm is in said horizontal plane.

4,350,383

INSTRUMENT BOARD MOUNTING STRUCTURE

Masaaki Kikuta, Sayama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jul. 24, 1979, Ser. No. 60,045
Claims priority, application Japan, Sep. 8, 1978, 53/109698
Int. Cl.³ B62D *25/14*
U.S. Cl. 296—72 1 Claim



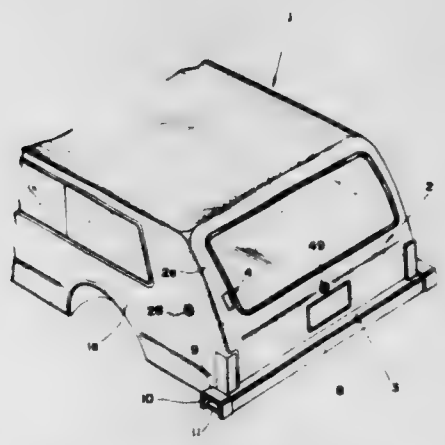
1. An instrument board mounting structure of the type which comprises a front pillar which includes an inner pillar connected to an outer pillar having a side surface to which a vehicle door is pivotally mounted for opening and closing the door, the connection between said inner pillar and said outer pillar defining a coupled portion which is normally exposed in the space defined between the inner surface of the door when closed and the most adjacent surface of an instrument board mounted to said front pillar, the side surface of said outer pillar extending outwardly from said coupled portion, the improvement comprising a lateral end on said instrument board fixed to said front pillar and structurally arranged to cover said coupled portion of said inner and outer pillars, said lateral end extending outwardly beyond said coupled portion to said side surface of said outer pillar and being secured thereto by fastening means on the side of the side surface facing said door opening, said lateral end comprising a distal end thereof which is secured to said side surface, a first bent portion connected to said distal end and to a second bent portion, and a third bent portion, spaced from said second bent portion to an extent sufficient to define a condition for determining a zero or greater space between an instrument panel pad and a door lining when said door is closed.

4,350,384

DEVICE FOR OPENING A BACK DOOR OF AN AUTOMOTIVE VEHICLE

Akira Yasuda, Tokyo, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Nov. 12, 1980, Ser. No. 206,107
Claims priority, application Japan, Nov. 17, 1979, 54-149879
Int. Cl.³ B60J *1/00*
U.S. Cl. 296—146 8 Claims



1. A device for opening a back door of an automotive vehi-

cle, the back door being used to close a back opening of the automotive vehicle, comprising:

a door-lock device for securing the back door when the back door closes the back opening of the automotive vehicle;

a door-lock release device for causing the door-lock device to release the back door;

a foot pedal placed at a rear and lower portion of the automotive vehicle in a position where the foot pedal is readily accessible;

means for lifting the back door in such a way that the back door rotates around the upper edge thereof to be opened, the door-lock release device being actuated in response to operation of the lifting means to cause the door-lock device to release the back door; and

means for actuating the lifting means in response to actuation of the foot pedal, the actuating means being mounted within the body of the automotive vehicle.

4,350,385

SLIDING ROOF FOR VEHICLES

Walter Schätzler, Aufhausen, Fed. Rep. of Germany, assignor to Webasto-Werk W. Baier GmbH & Co., Munich, Fed. Rep. of Germany

Filed Apr. 11, 1980, Ser. No. 139,410

Claims priority, application Fed. Rep. of Germany, Apr. 12, 1979, 7910778[U]

Int. Cl.³ B60J 7/04

U.S. Cl. 296—222 **9 Claims**



1. Sliding roof for automotive vehicles comprising a fixed roof section with an aperture, a sliding top for sealing off the roof aperture in its closed position, said sliding top being connected by swing-out levers to slide shoes guided in lateral guide rails in a manner enabling said sliding top to be selectively lowered from its closed position and pushed underneath a fixed, rearward roof section by shifting of said slide shoes, or swung out in an upward direction to a position wherein a rear end of the top is above the fixed roof section; a mounting plate attached to each of the lateral guide rails and carrying a guide pin that cooperates with a slotted guide in a respective one of the swing-out levers; a guide plate mounted to each lateral guide rail so as to be adjustable longitudinally relative to the lateral guide rail and which causes said guide plate, during closing of the sliding top, to be contacted by a guide member that is fixedly connected to the sliding top for guiding the sliding top into its closed position, and disengageable securing means securing guide plates against movement relative to lateral guide rails when engaged characterized in that the guide pin carrying mounting plates and the guide plates have detent elements which cooperate with each other for at least temporarily retaining said guide plates in a relative position to which they have been adjusted without said securing means being engaged.

4,350,386

RECLINING CHAIR WITH IMPROVED ACTUATION

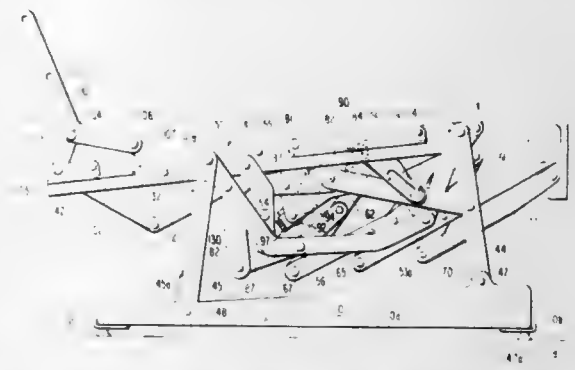
Walter C. Rogers, Jr., Denton, N.C., assignor to Parma Corporation, Denton, N.C.

Continuation-in-part of Ser. No. 199,595, Oct. 22, 1980. This application May 15, 1981, Ser. No. 264,144

Int. Cl.³ A47C 1/02

U.S. Cl. 297—85 **18 Claims**

1. In a wall-avoiding recliner chair having a fixed base, a seat and backrest mounted on the base, a footrest movable between retracted position adjacent the front of the seat and an extended position projected forwardly from the front of the seat, the improvement comprising in combination, a seat linkage mounting the seat relative to the base for movement in response to the weight of an occupant of the chair between a closed position wherein the footrest is retracted and a reclining position with the seat projected forwardly relative to the base and with the footrest extended, a footrest linkage mounting the footrest relative to the seat for movement between said positions thereof, linkage means interconnecting the footrest linkage and the seat linkage for actuating the footrest between extended and retracted positions in response to movement of the seat linkage caused by the weight of the chair occupant, lock means releasably holding the seat linkage in said closed position against movement into a reclining position under the weight of an occupant of the chair; and release means for releasing the lock mechanism to permit the seat linkage to move from said closed position to a reclining position, said



lock means including first and second knuckle links, a first pivot means interconnecting the knuckle links for movement relative to each other, a second pivot means interconnecting the first knuckle link with the footrest linkage, and a third pivot means mounting the second knuckle link relative to the seat, said knuckle links being movable between a first position locking the seat linkage against movement out of said closed position thereof and wherein said first, second and third pivot means are in substantial alignment with each other, and a second position freeing the seat linkage for movement to a reclining position and wherein said first pivot means is displaced to one side of a line drawn through said second and third pivot means, and wherein said release means includes a handle connected to said second knuckle link for pivoting the knuckle links relative to each other into said second position thereof.

4,350,387

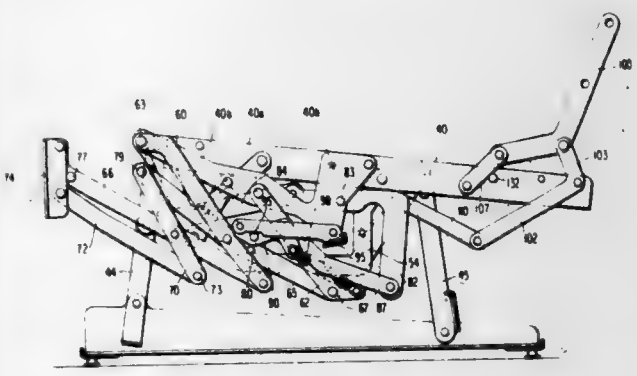
RECLINING CHAIR WITH IMPROVED ACTUATION

Walter C. Rogers, Jr., Denton, N.C., assignor to Parma Corporation, Denton, N.C.

Filed Oct. 22, 1980, Ser. No. 199,595

Int. Cl.³ A47C 1/02

U.S. Cl. 297—85 **32 Claims**



1. In a wall-avoiding recliner chair having a fixed base, a seat and backrest mounted on the base, a footrest movable between retracted position adjacent the front of the seat and an extended position projected forwardly from the front of the seat;

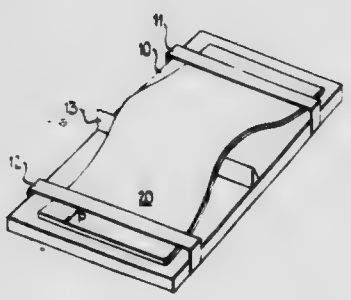
the improvement comprising in combination, a seat linkage mounting the seat relative to the base for movement in response to the weight of an occupant of the chair between a closed position wherein the footrest is retracted and a reclining position with the seat projected forwardly relative to the base and with the footrest extended, a footrest linkage mounting the footrest relative to the seat for movement between said positions thereof, linkage means interconnecting the footrest linkage and the seat linkage for actuating the footrest between extended and retracted positions in response to movement of the seat linkage caused by the weight of the chair occupant, lock means releasably holding the seat linkage in said closed position against movement into a reclining position under the weight of an occupant of the chair; and release means for releasing the lock mechanism to permit the seat linkage to move from said closed position to a reclining position.

4,350,388

BACKRESTS

Hans Weiner, Täby, Sweden, assignor to Spina-Trac AB, Stockholm, Sweden

Continuation-in-part of Ser. No. 817,008, Jul. 19, 1977, abandoned. This application Oct. 3, 1978, Ser. No. 948,285
Claims priority, application Sweden, May 23, 1978, 7805844
Int. Cl.³ A47C *7/46*
U.S. Cl. 297—284 **13 Claims**



1. A backrest suitable for use as an addition to chairs, car seats, and the like, comprising a rigid base member in the form of a substantially rectangular base plate having an upper face, two long sides, and two short sides at the ends of the base plate, an inherently elastic, substantially rectangular and curved support member having two long sides and two short sides, the short sides of the support member being adjacent to the ends of the base plate, two connecting means which respectively connect the support member to the base plate at positions adjacent to the ends of the support member, at least one of these connecting means being such as to permit sliding movement of the respective end of the support member relative to the base plate; and a distance member having substantially the same length as the width of the support member and arranged between the base plate and the support member, intermediate their ends, thereby spacing the support member from the base plate between said ends, said distance member being movable lengthwise of the base plate, characterized by the following:

at least one of said connecting means extends transversely over the support member and engages the upper face of the support member at a short distance from an adjacent short side thereof so as to make the support member positively follow and press against the base plate, each long side of the base plate being along its central portion provided with a plurality of notches spaced apart from each other, opposite notches on the two long sides defining a pair of cooperating fixation means; engagement means are provided on the distance member for engagement with any selected pair of cooperating notches, and said engagement means by the combined influence of the inherent elasticity of the support member and of the said engagement of the upper face of the support member are pressed in a selected pair of notches and are releasable therefrom by overcoming the said inherent elasticity, and the support member is held by the distance member in a convex curvature relative to the base member having an apex of curvature where it is supported by said distance member, said apex being adjustable by said distance member, said apex being adjustable longitudinally of the base member by engagement of the said engagement means of the distance member with different pairs of cooperating notches.

4,350,389

SAFETY HEADREST FOR A VEHICLE SEAT

Nils O. Pärsson, Trollhättan, and Sten E. Nilsson, Sjuntorp, both of Sweden, assignors to Saab-Scania Aktiebolag, Sodertalje, Sweden

Filed Jun. 4, 1980, Ser. No. 156,345
Claims priority, application Sweden, Jun. 8, 1979, 7905029
Int. Cl.³ A47C *1/10*
U.S. Cl. 297—410 **11 Claims**



1. A safety headrest for a seat, especially a vehicle seat, said headrest being mounted, via a holding means, on the back support of the seat, said holding means allowing the headrest to be adjusted in height relative to the seat, characterized in that the headrest comprising a frame structure having in cross-section essentially the shape of an inverted U having a web and a forward leg portion and a rear leg portion, the web being secured to a bar displaceably mounted in a guide in the upper part of the back support, the bar being connected to an adjusting mechanism for remotely controlling the height of the headrest and said leg portions embracing the upper portion of the back support and adjoining the front and the rear, respectively, of the back support, said headrest being lowerable to a position where the web portion comes into contact with the uppermost part of the back support, said adjusting mechanism including a flexible cable displaceably located in a cable tube and a housing, one end of the cable being connected to the bar, the other end of said cable coacting with cogged means rotatably mounted in the housing and manually operable for adjusting the height of the headrest.

4,350,390

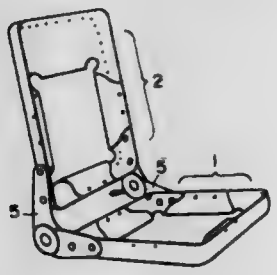
SEAT

Hiroshi Ogawa, Iwakuni, Japan, assignor to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed May 6, 1980, Ser. No. 147,049
Claims priority, application Japan, May 11, 1979, 54-56906
Int. Cl.³ A47G *7/16*
U.S. Cl. 297—452 **7 Claims**

1. A seat frame formed from a laminate comprising an inner non-metallic material and two metal foil layers, said frame comprising a unitary structure including raised peripheral ribs forming two side walls and two end walls all of which are

continuous, at least three of said walls being separately reinforced by respective reinforcing members each formed by



inner extensions of the respective walls folded back and held to the wall from which it extends.

4,350,391

IN SITU LEACHING PROCESS

Tsoung-Yuan Yan, Philadelphia, Pa., assignor to Mobil Oil Company, New York, N.Y.

Filed Aug. 19, 1980, Ser. No. 179,560

Int. Cl.³ E21B *43/28;* E21C *41/14*

U.S. Cl. 299—4 **4 Claims**

1. In the process for in situ leaching of mineral values from a mineral-bearing subterranean formation comprising the pumping of a suitable lixiviant into the formation through one or more injection wells under pressure, allowing the lixiviant to leach out the mineral values in the formation, and removing the lixiviant pregnant with mineral values from said formation through one or more production wells spaced from said injection wells, the improvement which comprises:

regulating the rate at which the lixiviant is pumped into the formation so that the pumping rate remains at or slightly above the minimum pumping rate necessary to supply adequate lixiviant to the formation and

concurrently decreasing the pumping rate proportionally to the depletion of the mineral value in said formation.

4,350,392

COAL EXTRACTION IN A LONGWALL WORKING

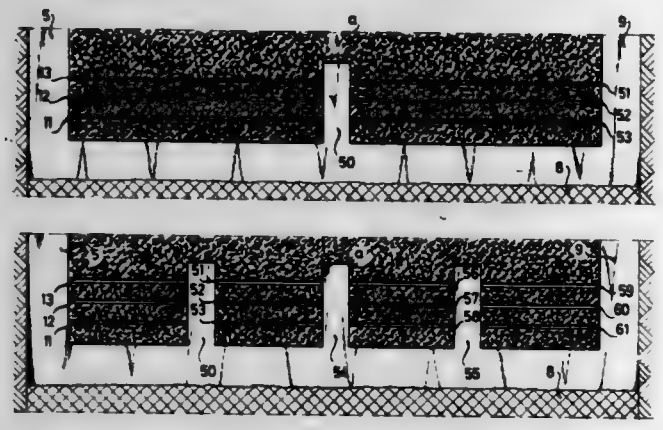
Heinz W. Wild, Essen, Fed. Rep. of Germany, assignor to Ruhr Kohle AG, Fed. Rep. of Germany

Filed Sep. 16, 1976, Ser. No. 723,814

Claims priority, application Fed. Rep. of Germany, Oct. 24, 1975, 2547712

Int. Cl.³ E21C *35/20*

U.S. Cl. 299—13 **2 Claims**



1. A method of longwall coal mining comprising the following steps:

a. exposing a longwall coal face in a coal seam between a roof of upper strata and a floor of lower strata,

b. providing at substantially right angles to the coal face two galleries spaced laterally from each other,

c. providing a screw conveyor having an associated channel coextensive with the coal face, the channel being open along one side to permit introduction of coal into said screw conveyor and being defined by floor plate means, roofing plate means, and a rear wall plate means extending between and interconnecting said floor and roofing plate means,

d. positioning the channel of said screw conveyor adjacent and in slightly spaced relation to the coal face with the floor plate means on the lower strata and the roofing plate means in supporting contact with the upper strata, and with the axis of said screw conveyor parallel to the coal face, the channel being open towards the coal face,

e. adjusting the height of said rear wall plate means to extend between said floor plate means and said roofing plate means, whereby the channel and the coal face cooperate to surround said screw conveyor,

f. drilling a plurality of long holes extending from one gallery to the other and spaced from the longwall face and from each other a predetermined distance,

g. loading each hole with explosive charge,

h. firing the charges to extract the coal so that the coal face is cut off by an amount corresponding in length to the length of such face and in height corresponding to the height of the coal seam and in depth corresponding to the predetermined effectiveness of the charge, whereby the extracted coal is loaded into the channel associated with said conveyor, and

i. removing extracted coal at all points along the longwall face simultaneously by said screw conveyor.

4,350,393

PLOUGH TRANSMISSION

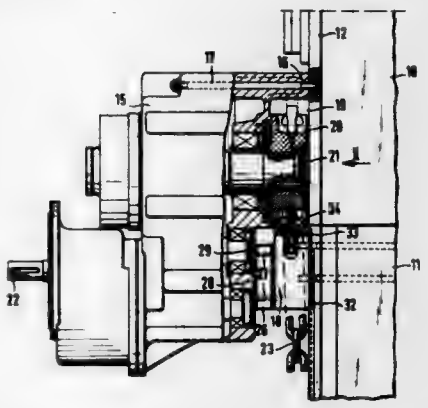
Walter Heberling; Wolfgang Muller, both of Lunen; Werner Langenberg, Werne; Gerhard Behrens, Bergkamen, and Alfred Saul, Lunen, all of Fed. Rep. of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Lunen, Fed. Rep. of Germany

Filed Jul. 9, 1980, Ser. No. 167,186

Claims priority, application Fed. Rep. of Germany, Jul. 17, 1979, 2928789

Int. Cl.³ E21C *27/32*

U.S. Cl. 299—50 **14 Claims**



1. A transmission for transmitting drive from a motor to a drive sprocket wheel for driving a drive chain of a mineral mining plough, the transmission having a housing which is directly attached to a side plate of a mine conveyor drive station, the housing being formed with a recess sized and shaped to accomodate the sprocket wheel, the recess being open at one end to permit the plough drive chain to enter and leave the sprocket wheel, and the housing being provided with attachment means adjacent to each end thereof for attaching the housing to said drive station side plate, wherein the attachment means adjacent to the housing end adjacent to said recess opening is a spacer which is detachably secured to the housing, and which is detachably securable to said drive station side plate, and wherein the attachment means adjacent to the housing end remote from said recess opening is constituted by at least one flange formed integrally with said housing, said at

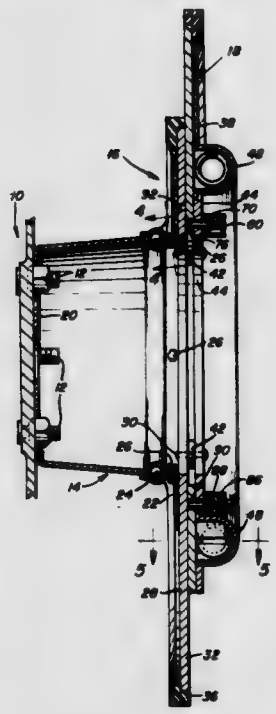
least one flange being directly attached to said drive station side plate.

4,350,394

SECTIONAL WHEEL WITH RELATIVELY ROTATABLE SECTIONS

John G. Lehtinen, 621 Lochaven, Union Lake, Mich. 48085

Filed Jun. 27, 1980, Ser. No. 163,862
Int. Cl.³ B60B *11/00*
U.S. Cl. 301—38 R 9 Claims



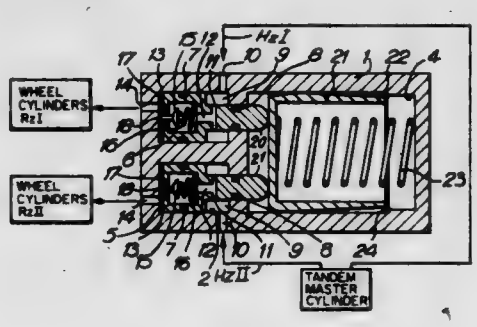
9. A pair of panel members, means joining said panel members for relative rotation about an axis disposed generally normal to said panel members and for relative angular displacement of one of said members relative to the other member between a first predetermined position and second and third positions with said one member rotated substantially 180° in opposite directions relative to the other member from said first position, and spring means connected between said panel members operative to yieldingly resist angular displacement of said one panel member relative to said other panel member from said first position toward either of said second and third positions, and latch means operative to releasably retain said one panel member in either of said second and third positions.

4,350,395

PRESSURE CONTROL UNIT

Hans-Henning Lüpertz, Darmstadt, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Continuation of Ser. No. 114,798, Jan. 24, 1980, abandoned. This application Nov. 24, 1980, Ser. No. 210,181
Claims priority, application Fed. Rep. of Germany, Feb. 26, 1979, 2907515
Int. Cl.³ B60T *11/28*
U.S. Cl. 303—6 C 10 Claims



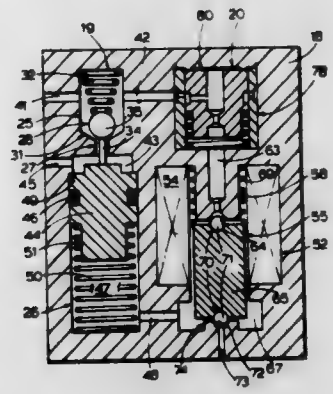
1. A pressure control unit comprising:
a housing having a longitudinal axis;
two pressure control valves disposed in said housing parallel to each other and said axis, each of said two control valves controlling a different brake circuit and being connected to a pressure generator on an inlet side thereof and to a wheel cylinder on an outlet side thereof; and
a hollow cup-shaped piston disposed in said housing coaxial of said axis tiltable within limits about said axis and having the outer surface of its closed end in direct operative relationship with adjacent ends of said two control valves to distribute a common control force to said two control valves;
said piston having an outer surface which is at least essentially conical having a larger end disposed adjacent said two control valves, coaxial of said axis and conformed to a housing bore and a smaller end close to said control force.

4,350,396

MODULATOR ASSEMBLIES FOR VEHICLE ANTI-SKID BRAKING SYSTEMS

Ivan Mortimer, Solihull, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Feb. 25, 1980, Ser. No. 124,264
Claims priority, application United Kingdom, Feb. 23, 1979, 7906551
Int. Cl.³ B60T *8/02*
U.S. Cl. 303—115 10 Claims



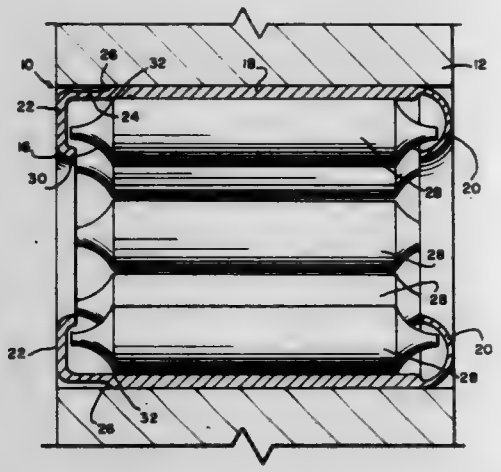
1. An anti-skid brake control system comprising a wheel having a hydraulic brake, means to sense the presence of skid conditions at the wheel during braking and thereupon to produce a skid signal, a movable wall separating first and second chambers, said first chamber being connected to the hydraulic brake and the movable wall being arranged to increase the volume of said first chamber in response to the skid signal so as to relieve the brake pressure at the braked wheel, a regulator arranged to regulate flow of fluid to said second chamber on cessation of the skid signal such that the movable wall is thereby moved progressively to reduce the volume of said first chamber so as to re-apply the brake pressure at a controlled rate, the regulator comprising a first restriction of predetermined size connected in series with a second restriction defined between two relatively movable members, relative movement of the members being controlled by the difference in fluid pressure across the first restriction such that an increase in this pressure difference causes a reduction in the size of the second restriction, a reservoir, a substantially unrestricted dump passage connecting said second chamber to said reservoir, and a dump valve member controlling said dump passage whereby on opening of said dump valve member in response to the skid signal substantially unrestricted flow of fluid is permitted from said second chamber to said reservoir.

4,350,397

LOW STRENGTH MATERIAL HOUSING BEARING

Paul M. Cornish, Plainville, and Charles E. Condon, Jr., Harwinton, both of Conn., assignors to The Torrington Company, Torrington, Conn.

Filed Oct. 23, 1980, Ser. No. 199,942
Int. Cl.[3] F16C *33/58*
U.S. Cl. 308—212 4 Claims



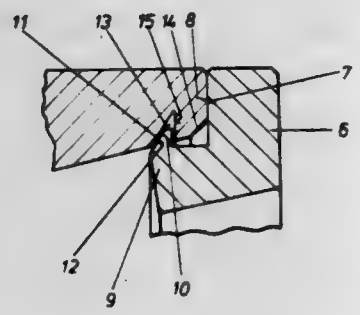
1. A bearing for use in a bore of a low strength material housing comprising: a race, a plurality of rollers contained in said race, the length of the inside of the race being greater than the race-roller contact length, said race including an annular, radially extending portion spaced lengthwise from the nearest race-roller contact point and a reduced outside diameter portion extending lengthwise from said annular portion to a point closer to said annular portion than said nearest race-roller contact point, the outside surface of the reduced diameter portion being parallel to the outside surface of the race along the race-roller contace length and the thickness of the race along the length of the reduced diameter portion being less than the thickness of the race along the race-roller contact length.

4,350,398

ROLLING BEARING HAVING SEPARATE FLANGE RING WITH SAWTOOTH-SHAPED FLANGE

Horst-Hermann Schulz, Trebel, and Johannes Köneke, Wustrow, both of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Continuation of Ser. No. 954,670, Oct. 26, 1978, abandoned.
This application Apr. 28, 1980, Ser. No. 144,355
Claims priority, application Fed. Rep. of Germany, Oct. 27, 1977, 7733083[U]
Int. Cl.[3] F16C *33/58*
U.S. Cl. 308—216 17 Claims



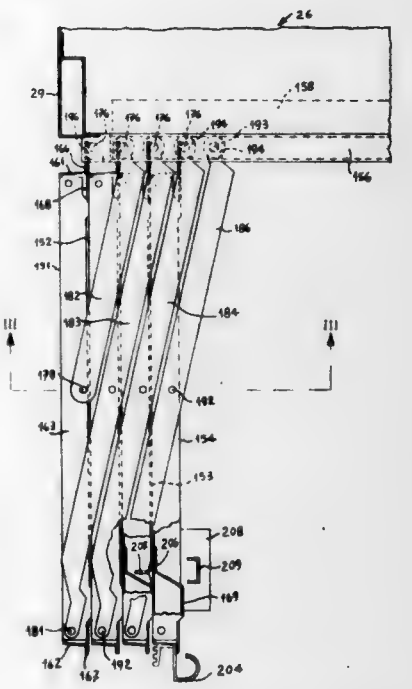
1. In a rolling bearing having a race ring with an at least partially axially directed race, and a separate flange ring connected to said race ring and having an axially directed annular shoulder extending into or over and engaging said race ring for retaining rolling elements in said bearings; the improvement wherein said flange ring is a continuous ring, said shoulder has a radially directed flange with a preformed sawtooth-shaped cross section with an inclined edge surface converging axially inwardly of said bearing, said race ring has an annular groove with a sawtooth-shaped cross section with a correspondingly inclined surface and positioned to receive said radially directed flange, said race ring having a radially extending end face, and said flange ring having a radially extending surface axially abutting said end face substantially throughout the radial extent of said end face.

4,350,399

FURNITURE WITH SPACE SAVING DOOR

Marcello Berton, Ronchi di Massa, and Dino Bertozzi, Massa, both of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Continuation of Ser. No. 920,072, Jun. 28, 1978, abandoned.
This application Feb. 15, 1980, Ser. No. 121,978
Claims priority, application Italy, Jul. 13, 1977, 68623 A/77
Int. Cl.[3] A47F *3/00*
U.S. Cl. 312—138 R 1 Claim



1. A piece of furniture with two side parts, upper and lower parts having substantially coplanar front edges, and a space saving door comprising:

a series of panels of equal size each formed of a sheet of folded metal including a pivoted vertical edge having a projecting border on an inner side of the panel, a pair of first terminal pivots connected vertically to said projecting border, a free edge opposite to the pivoted edge and a pair of other edges interconnecting the pivoted edge with the free edge and including a pair of intermediate pivots located on said other edges between said pivoted edge and said free edge and a pair of second terminal pivots adjacent to said free edge, and wherein said first terminal pivots extend above and below said other edges;

guide means for guiding the first terminal pivots of said panels;

pairs of parallelogram means connecting said first and second terminal pivots and said intermediate pivots for moving said panels from a closed position in which the panels are coplanar, to an open position in which the panels are folded and extend outwardly adjacent one of said two side parts of the furniture; and

means for facilitating the coplanarity of said panels parallel to the front edges of said upper and lower parts when closed and avoiding jamming upon opening, said means comprising a pair of hinges fixed on the front edges of said upper and lower parts and adjacent to the front edge of one of said side parts, wherein said pair of hinges fixedly hinge the first terminal pivots of a first panel of said series adjacent to the front edge of said one of said two side

parts, wherein the second terminal pivots are disposed on said other edges adjacent to an outer side of the panel opposite to said inner side, and wherein said parallelogram means comprises a series of pairs of rods, each pair having a rectilinear central portion connected with the intermediate pivots and two ends which are offset project on opposite sides with respect to said rectilinear portion and which connect said first and second terminal pivots, and wherein the last panel of said series comprises a handle adjacent to its free edge;

said guide means comprising a pair of guides having a U section arranged horizontally in the front edges of said upper and lower parts for guiding the pair of first terminal pivots of said panels except the first panel to slide and pivot on said guide means so that the other edges of the panels remain parallel, and causing one of the two ends of each rod of said pair of rods to face to the other end of the two ends of an adjacent rod of an adjacent pair of said rods, the rectilinear parts of said rods of each pair to be aligned and substantially parallel to the panels in the closed position of the panels and confined between said guides and the edges interconnecting the pivoted edge with the free edge, and the free edges of said panels to be arrested by an outer side of the borders of the other adjacent panels in the closed position of the panels, and wherein said handle is configured to be operated for rotating said last panel to facilitate the closing and opening of said panels; and

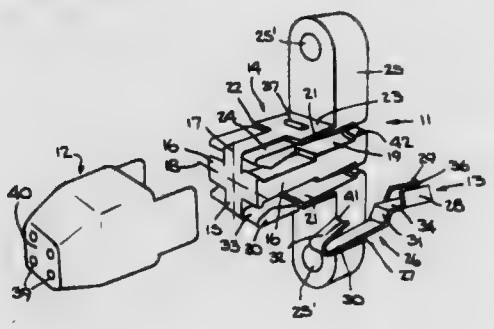
wherein said guide means comprise a pair of guides arranged horizontally in upper and lower extremities of the furniture, respectively, wherein each of said first terminal pivots comprises a vertical stud having a projecting end wherein each end except the ends of the first panel is housed in a runner, wherein the U-section of each guide comprises bottom and lateral sides to accommodate said runners and wherein said runners are guided by the lateral sides of the U-section of the upper guide and are provided in the lower part thereof with spherical cups which are engaged with the bottom side of the corresponding lower U-section to slidably support the weight of said other panels on opening and closing thereof, and wherein said hinges are fixed to the ends of said pair of guides adjacent to the front edge of said one of said two side parts.

4,350,400

CONNECTOR FOR CIRCULAR FLUORESCENT LAMP

Edwin S. Gaynor, 688 Hulls Farm Rd., Southport, Conn. 06490

Filed Jul. 14, 1981, Ser. No. 283,334
Int. Cl.³ H01R *33/08*
U.S. Cl. 339—50 C **7 Claims**



1. A four terminal female connector for a fluorescent lamp, the connector comprising:

a terminal support of molded synthetic resin having an elongated body of generally cruciform cross section formed by first and second mutually perpendicular walls intersecting at their midplanes, said midplanes defining four symmetrically arranged quadrants, and first and second flange-like members extending the first wall in spaced relation to the second wall in each quadrant adjacent to one and the other ends of the body, respectively, each second flange-like member being spaced longitudinally from the corresponding first flange-like member;

a hollow housing of molded synthetic resin having an open end for telescopically receiving the body of said terminal support, said body slidably fitting within said housing; and

an elongated electrically conductive terminal removably fitted in each quadrant of the terminal support body, each terminal being formed from a metal strip with parallel longitudinal edges, the strip having

a flat portion fitting along the surface of the respective first flange-like member on the side thereof opposite to the second wall in the corresponding quadrant,

a hooked portion formed as a bent back extension of and making an acute angle with the flat portion, said hooked portion being fitted around the first flange-like member adjacent to the one end of said body of the terminal support and extending into the space between the first flange-like member and the second wall,

an offset portion extending from the flat portion through the space between the first and second flange-like members, and

a prong-receiving portion extending longitudinally from the offset portion between the second flange-like member and the second wall to adjacent the other end of said body, the prong-receiving portion including an integral arm extending from each longitudinal edge of the strip, said arms being bent inwardly generally along the line of the respective longitudinal edge to form a channel for frictionally engaging a corresponding prong of a male connector fitting,

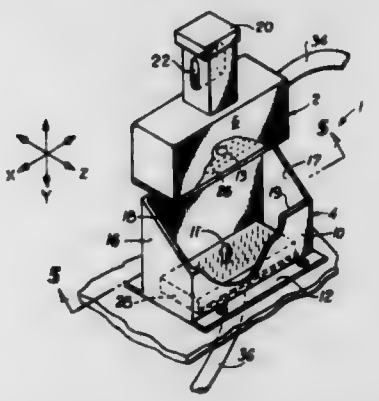
wherein the part of the strip forming the prong-receiving portion is angled relative to the midplane of the second wall to provide a flared contact surface for facilitating entry of a corresponding male connector prong into said prong-engaging channel.

4,350,401

DETACHABLE ELECTRICAL CONNECTOR ASSEMBLY HAVING IMPROVED MEANS FOR ALIGNING CONNECTOR PARTS

Ralph A. Allen, Covina, and John T. Zylkowski, Diamond Bar, both of Calif., assignors to Kortech Engineering, Inc., Fullerton, Calif.

Filed Feb. 11, 1980, Ser. No. 120,069
Int. Cl.³ H01R *13/62*
U.S. Cl. 339—65 **2 Claims**



1. An electrical connector assembly having at least two connector parts that can be detachably connected to one another at a remote location or hazardous environment by means of remote control, each of said connector parts having a respective housing and a contact member surrounded by said housing,

the housing of a first of said connector parts comprising a front wall, a back wall, and side walls, said back wall projecting above said front wall and said side walls extending between said front and back walls, said last-mentioned housing also having an opening at one end thereof

through which to receive the housing of the second of said connector parts,

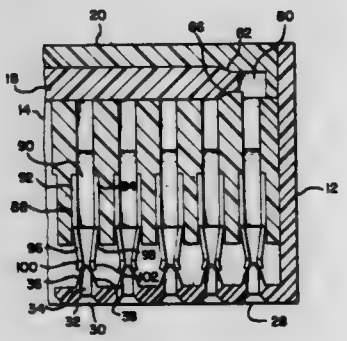
each of the front, back, and side walls of said first connector part housing being arranged with one another and adapted to be contacted by the housing of said second connector part in order that the housing of said second connector part will be accurately aligned in each of three orthogonal directions with the housing of said first connector part so as to thereby permit said second connector part to be reliably guided into connection with said first connector part via the projecting back wall and opened end of said first connector part housing in order to detachably mate the respective contact members of said two connectors parts.

4,350,402

BOARD MOUNT ZERO INSERTION FORCE CONNECTOR

George H. Douty, Mifflintown; John M. Landis, Lemoyne, and Leon T. Ritchie, Mechanicsburg, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Sep. 17, 1980, Ser. No. 187,647
Int. Cl.³ H01R *13/62*
U.S. Cl. 339—74 R 9 Claims



1. A zero insertion force connector comprising:

an outer housing having a mating front face and an oppositely directed rear face, a cavity opening into said rear face, a plurality of profiled terminal passages extending from said mating face to said cavity and at least one reaction surface adjacent each said terminal passage facing into said cavity;

a terminal housing profiled to be received in said cavity and having therein a plurality of profiled terminal receiving passages each aligned with a respective terminal passage in said outer housing, and at least one cam surface on a rear surface of said terminal housing;

a cam follower having at least one cam surface aligned to engage a respective cam surface of said terminal housing;

an actuator plate profiled to be received in said outer housing with an inwardly directed cavity receiving said cam follower;

a cam member movably mounted in said actuator plate to act against said actuator plate to effect movement of said cam follower and said terminal housing with respect to said outer housing; and

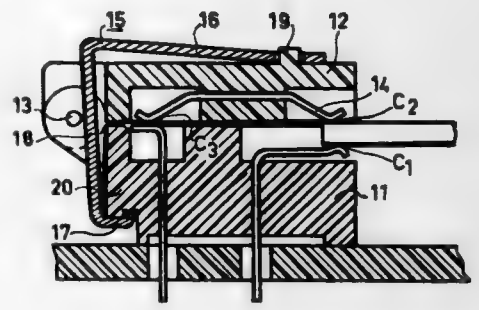
a plurality of spring contacts each received in a respective one of said terminal passages of said terminal housing and having a first mating end having at least one spring arm, with a normally relaxed first position, directed toward a respective reaction surface of said outer housing, whereby upon relative movement of said terminal housing and said outer housing each said arm being deflected to a second position allowing insertion of a terminal post into said connector without application of force.

4,350,403

CONNECTING-STRIP FOR PLUG-IN CARDS AND A CONNECTOR FITTED WITH CONNECTING-STRIPS OF THIS TYPE

Bruno Seytre, and Herve Bricaud, both of Suresnes, France, assignors to Socapex, Suresnes, France

Filed Apr. 8, 1980, Ser. No. 138,449
Claims priority, application France, Feb. 7, 1980, 80 02676
Int. Cl.³ H01R *13/62*
U.S. Cl. 339—91 R 15 Claims



1. A plug-in card connecting strip, comprising:

a parallelepiped base and a cover plate supporting a plurality of electrical contact elements endowed with elasticity,

the cover-plate being capable of pivotal displacement about a longitudinal axis parallel to the base into either an open or closed position, the open position being for inserting the edge of a card and the closed position being for placing the respective conductive elements of the connecting strip and of the card in contact with each other,

the closing action being produced by a clip having a generally U-shaped section including an intermediate portion and two arms, the clip being positioned parallel to the longitudinal axis of the strip with the two arms thereof being applied to respective zones of the base and cover-plate so that the clip deforms, thus ensuring closure by application of a force produced by elastic deformed clip,

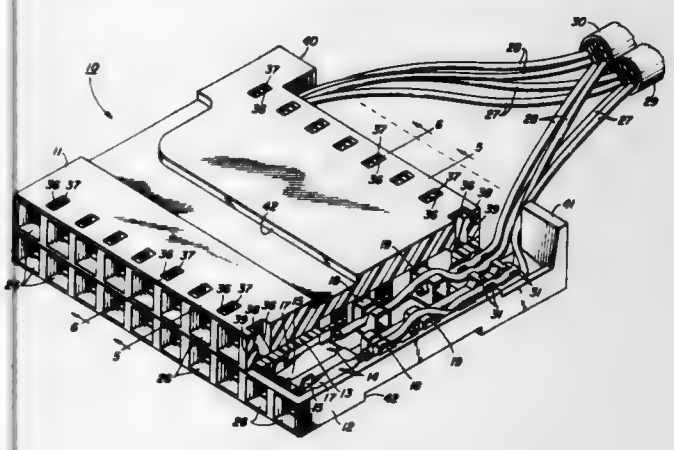
the arm of the clip which is applied against the cover plate being provided substantially at the ends thereof with bearing elements capable of pivoting within corresponding recesses in the cover plate.

4,350,404

ELECTRICAL CONNECTOR CONSTRUCTION

William C. Clark, and Clifford L. Winings, both of Lee's Summit, Mo., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 24, 1980, Ser. No. 190,370
Int. Cl.³ H01R *4/02*
U.S. Cl. 339—97 R 7 Claims



1. An electrical connector construction comprising a first and a second partial housing (11, 12) each having a base and an open side, a plurality of contact elements (14) fitted on said

base of each of said partial housings (11, 12) each of said contact elements (14) having means (15, 16) at one end for engaging electrical terminations of other connector arrangements and extending to the other end to present conductor insulation piercing means characterized in that said insulation piercing means comprises at least one blade means (20) extending outwardly from a housing (11, 12) base, each of said blade means (20) having a slot (22) parallel to the longitudinal axis of said contact (14) for engaging, respectively, an electrical conductor (27), and in that said blade means (20) is arranged on said contacts (14) in each of said partial housings (11, 12) so that when said housings (11, 12) are fitted together open sides facing, a blade means (20) of one housing (11) will extend beyond the end of the blade means (20) of the other housing (12).

4,350,405

CONNECTOR FOR INSULATED ELECTRIC CONDUCTORS

Claude Yapoudjian, Chilly-Mazarin, and Roger Pochet, La Bresse, both of France, assignors to Societe Anonyme dite: MARS-ACTEL, Paris, France

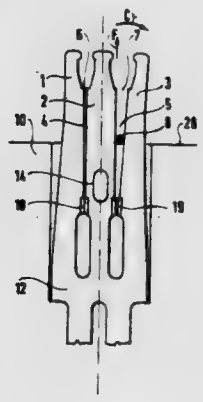
PCT No. PCT/FR80/00084, § 371 Date Jan. 25, 1981, § 102(e) Date Jan. 13, 1981, PCT Pub. No. WO80/02775, PCT Pub. Date Dec. 11, 1980

PCT Filed May 21, 1980, Ser. No. 232,044

Claims priority, application France, May 25, 1979, 79 13326

Int. Cl.³ H01R *11/20*

U.S. Cl. 339—97 P **5 Claims**



1. In a flat connector for self-stripping insulated electric conductors, said connector comprising:

a flat double fork conductive connection part comprising a central arm and two resiliently movable side arms with elongated slots between said central arm and said side arms for inserting the electric conductor to be connected, the connection part being insertable in a narrow width cavity in a stand made of insulating material, means for fixedly mounting a central arm to said stand with said side arms flexible laterally within said cavity, and wherein said longitudinal slots are inclined at least along a portion of their length with the angles of inclination converging towards the ends of said arms.

4,350,406

SEPARABLE ELECTRICAL CONNECTOR MODULE

William R. Goldbach, Hickory, N.C., assignor to General Electric Company, Philadelphia, Pa.

Filed Jan. 12, 1981, Ser. No. 224,404

Int. Cl.³ H01R *13/52*

U.S. Cl. 339—111 **4 Claims**

1. A separable electrical connector module for coupling with a mating connector module, comprising:

(a) an insulating housing having an elongated receiving passageway therein, and

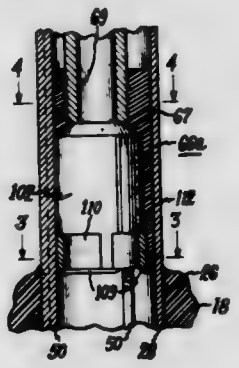
(b) a switch insert closely fitted in said passageway and comprising:

(i) a conductive container tube having an outer end adapted to receive a rod contact member of said mating connector module and an inner end;

(ii) a snuffer tube in said container tube having a central bore for receiving said rod contact member and having inside said bore a layer of ablative material;

(iii) a bore contact member within said container tube having a gas port,

(iv) a piston fixed to said bore contact member and adapted to drive said bore contact member toward the outer end of said container tube in response to the generation of gas by arcing in said bore and the passage of said gas through said port, said piston having angularly-spaced keyways in its outer periphery,



(c) the inside wall of said container tube including a plurality of axially extending keyribs angularly spaced about the longitudinal axis of said container tube and slidably received within the keyways in said piston to prevent said piston from rotating relative to the container tube,

(i) said piston comprising a generally tubular metallic portion comprising angularly-spaced segments biased radially-outwardly against the inside wall of said container tube in locations between said keyribs to establish continuous electrical contact with said inside wall while said piston is stationary and while in motion,

(ii) and means biasing said segments radially outward comprising a split annular metal spring located radially inwardly of said segments and tending to expand in diameter and urge said segments radially outward.

4,350,407

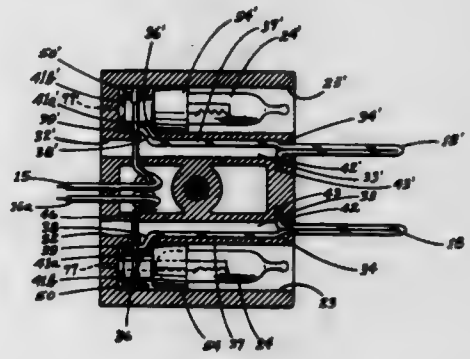
SAFETY LAMP PLUG

George K. K. Tong, Hong Kong, Hong Kong, assignor to Tung Ming Electrical Co, Ltd., Taipei, Taiwan and Chane Hwa Manufacturing Co. Ltd., Kowloon, Hong Kong

Filed May 22, 1980, Ser. No. 152,491

Int. Cl.³ H01H *85/32, 85/24;* H01R *3/00*

U.S. Cl. 339—113 L **3 Claims**



1. For providing fusing protection for a light string set or other like electrical load, a safety lamp plug comprising a body including a first pair of oppositely disposed compartments, respective prong-defining electrodes within said compartments for providing a pair of prongs extending from said body at one end, a second pair of oppositely disposed compartments within said body, and characterized by a pair of fuse lamps located

within respective ones of said second pair of compartments, said body having apertures respectively proximate said prongs and opening respectively into said second pair of compartments, said fuse lamps each being slidably, removably receivable axially within the respective one of said second pair of compartments through said apertures for polarized connection in said sockets and for replacement, each of said fuse lamps having at one end only a pair of electrodes, integrally formed polarized sockets within said body for connection of said fuse lamps, said polarized sockets being remote from said apertures, each said socket including contact means for interconnecting each of said prong-defining electrodes with respective first ones of said fuse lamp electrodes and contact means for interconnecting a pair of circuit leads of a light string set or other electrical load with respective other ones of said fuse lamp electrodes, said apertures each permitting a person to observe illumination from the respective fuse lamp upon proper operation thereof, said second pair of compartments defining the first-said apertures and located within said body on opposite sides of said prongs in parallel relationship with said prongs, whereby each said aperture permits both observation of proper operation of the respective fuse lamp adjacent a corresponding prong without removal of the respective fuse lamp from said plug body and replacement of the respective lamp without disassembly of said fuse plug body but only after unplugging said prongs, said body including slots at the opposite end respectively opening into the first-said compartments for receiving prongs of an add-on plug at the opposite end of said plug, said prong-defining electrodes being adapted for providing electrical contact between the first-said prongs and said add-on plug prongs, said body having at said opposite end a pair of further apertures of reduced size relative to the first-said apertures and each oriented with respect to a respective fuse lamp for receiving a tool for ejecting the respective fuse lamp through a corresponding first-said aperture, said further apertures opening into said second pair of compartments on opposite sides of said add-on plug prong-receiving slots and being aligned longitudinally with the respective ones of said second pair of compartments and each adapted for receiving an elongated thin tool for ejecting the respective safety lamp from said body for replacement.

4,350,408

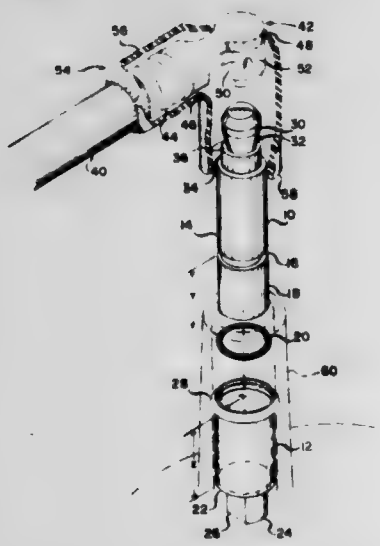
ELECTRICAL PIN CONNECTOR

Bill J. Hays, 10582 Palladium Ave., Garden Grove, Calif. 92640

Filed Jul. 23, 1980, Ser. No. 171,535

Int. Cl.[3] H01R *13/46*

U.S. Cl. 339—149 S **6 Claims**



1. The improved electrical assembly comprising:

an automotive electrical means having a standard wire receiving sleeve with an annular slot therein; and

a pin connector for securing an ignition wire within said sleeve and having:

a metal shaft having a diameter less than said sleeve to be received loosely therein;

a groove in said shaft intermediate its length to oppose said annular slot of said sleeve;

a resilient retainer seated in said groove and resiliently projecting into said slot; and

a prong connector end having a bulbous end with a reduced diameter neck.

4,350,409

CONNECTOR KEYING DEVICE

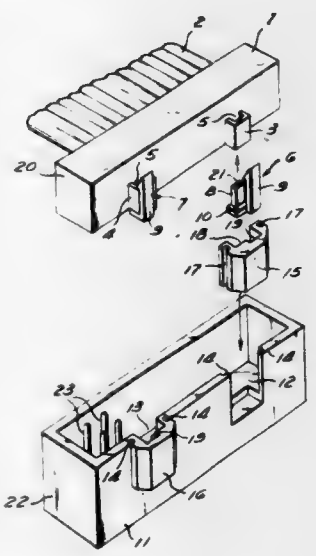
Matsuo Kato; Tomonari Ohtsuki; Yoshiaki Igarashi; Tsukasa Saito, and Toshiaki Suzuki, all of Mooka, Japan, assignors to Bunker Ramo Corporation, Oak Brook, Ill.

Continuation of Ser. No. 81,307, Oct. 2, 1979, abandoned. This application Mar. 30, 1981, Ser. No. 248,799

Claims priority, application Japan, Oct. 5, 1978, 53-136098[U]

Int. Cl.[3] H01R *13/645*

U.S. Cl. 339—186 M **13 Claims**



1. A connector keying arrangement for keying mating first and second connector parts to assure proper connection between the parts and to prevent connection to other connector parts of unlike keying comprising:

a key mount affixed to the first connector part, said key mount having means for mounting a key member thereto;

a key member removably attached to said key mount;

a key receiver mounted on the second connector part and having a key member-receiving slot therein aligned with and slidingly receiving said key member when the first and second connector parts are mated;

said key mount comprising a generally U-shaped protrusion on one face of the first connector part defining a key member mounting passageway between the interior of said protrusion and said one face, said passageway extending in the direction of connection of said first and second connector parts;

said key member comprising a base, a key projecting from said base, and a mounting leg projecting from said base parallel to said key;

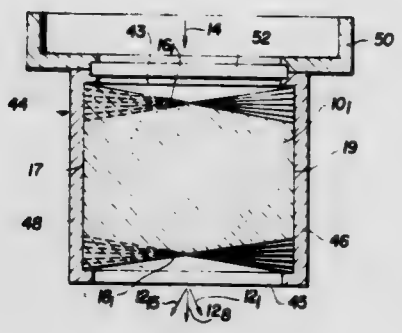
said mounting leg being sized to snugly fit into said passageway, and said key lying against the exterior surface of said U-shaped protrusion.

4,350,410

MULTIPRISM COLLIMATOR

Peter O. Minott, Bowie, Md., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Oct. 8, 1980, Ser. No. 195,228
Int. Cl.³ G02B *27/12, 5/04*
U.S. Cl. 350—170 14 Claims



1. A refractive optical system for producing multiple beams of light having predetermined angular separations comprising:

means (**20, 24, 30, 38**) for providing a collimated beam of monochromatic light;

a plurality of optically refractive prisms ($10_1 \ldots 10_{15}$) each providing a predetermined substantially constant angular deviation (δ) between an incident (**14**) and emergent light beam (**12**), said prisms being arranged to receive as an incident beam said collimated beam and operable to provide a respective emergent output beam, said plurality of output beams ($12_1 \ldots 12_{15}$) produced thereby defining a pattern of beams determined by the relative angular refractive deviation between said prisms; and

means (**44**) for mounting said prisms so that they are oriented with respect to said incident beam to provide substantially minimum angular deviation (δ_m), thereby providing an arrangement which is relatively insensitive to translational and rotational changes.

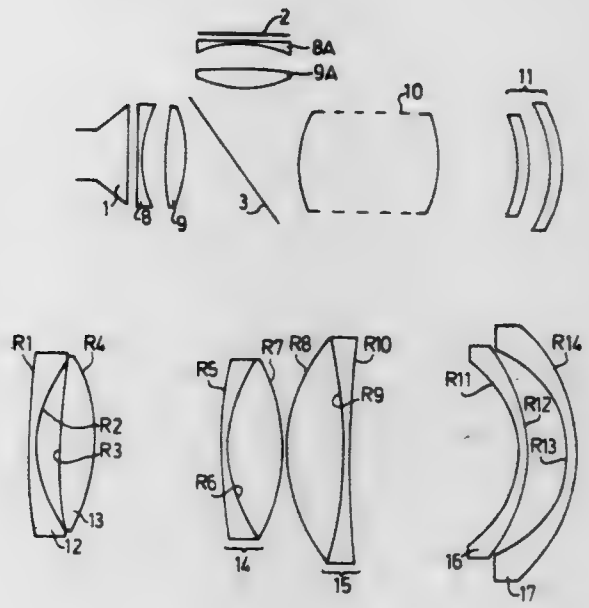
4,350,411

TRANSFER LENS AND HEAD-DOWN DISPLAY USING THE SAME

Philip J. Rogers, Clwyd, Wales, assignor to Pilkington P.E. Limited, Great Britain

Filed Apr. 25, 1980, Ser. No. 143,532
Claims priority, application United Kingdom, May 16, 1979, 7916927
Int. Cl.³ G02B *13/24, 27/10, 9/62;* F02B *9/64*
U.S. Cl. 350—174 20 Claims

1. A transfer lens comprising a first component which in use is towards the object, the first component being a field-flattening component of negative power which reduces the Petzval sum of the overall lens, a second component of positive power which provides overcorrect astigmatism, a third component of positive power consisting only of a plurality of spaced positive members and which provides most of the power of the overall lens, the third component having undercorrect astigmatism which is corrected by the overcorrect astigmatism of the second component, and a fourth component of negative power which increases the field angle of the overall lens.

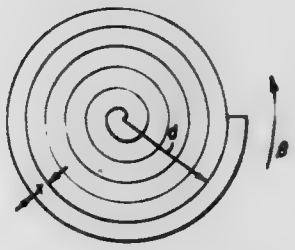


4,350,412

FRESNEL SPIRAL REFLECTOR AND METHOD FOR MAKING SAME

Richard A. Steenblik, and Dar-Veig Ho, both of Atlanta, Ga., assignors to Georgia Tech Research Institute, Atlanta, Ga.

Filed Apr. 7, 1980, Ser. No. 137,833
Int. Cl.³ G02B *5/08*
U.S. Cl. 350—292 29 Claims



2. A method for forming a substantially Fresnel reflector, said method comprising the steps of:

providing a spiral pattern of a predetermined shape on a flat sheet of reflecting material, said shape being such that, when cut and wound, said spiral forms a substantially Fresnel reflector

cutting said flat along said spiral pattern to form a flat spiral of reflecting material; and

winding said spiral about an axis normal to the plane of said flat sheet to a degree sufficient that said spiral defines a desired focal area, whereby said spiral becomes angled to said plane in the radial direction so as to form a substantially Fresnel reflector having said focal area.

13. A substantially Fresnel spiral reflector comprising:

a spiral length of flat reflective material, said spiral length having an inner end and an outer end, one of said ends being fixed and the other of said ends being circumferentially wound up in the direction of said spiral by a predetermined degree, said predetermined degree being such that the turns of said wound spiral define a predetermined focal area

whereby each circumferential portion of said spiral is tilted

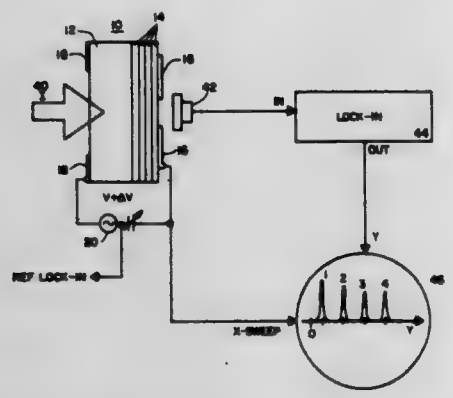
in the radial direction from the plane of said spiral to focus light reflected from said spiral onto said focal area.

4,350,413

MULTI-COLOR TUNABLE FILTER

Nicholas Bottka, Ridgecrest, Calif., and Howard Lessoff, Potomac, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 14, 1980, Ser. No. 140,352
Int. Cl.³ G07F *1/03*
U.S. Cl. 350—356 **7 Claims**



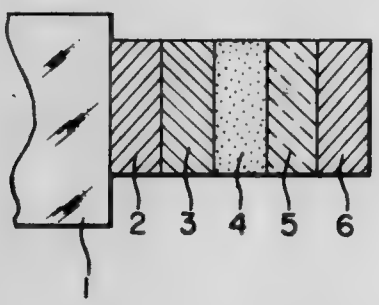
1. A multi-color tunable filter for light comprising:
a substrate in the path of light for transmitting said light;
a plurality of epitaxial layers on said substrate, placed such that said light passes through said plurality of epitaxial layers after passing through said substrate, for filtering selected wavelengths;
means for producing a variable voltage potential across said substrate and epitaxial layers in a predetermined manner;
a detector placed to intercept said light after it has passed through said epitaxial layers for measuring the amount of light that has passed through said substrate and epitaxial layers;
a lock-in set to the predetermined manner in which said voltage varies and electrically connected to said detector for extracting a particular color signal as a function of the change in the output of said detector; and
means for displaying the actual colors present in said light.

4,350,414

ALL SOLID STATE ELECTROCHROMIC DEVICE

Yosuke Takahashi, Sagamihara; Hideki Akasaka, Kawasaki; Toshikatsu Kasui, Tokyo, and Tatsuo Niwa, Kawasaki, all of Japan, assignors to Nippon Kogaku K. K., Tokyo, Japan

Filed Jun. 18, 1980, Ser. No. 160,533
Claims priority, application Japan, Jun. 26, 1979, 54-79626
Int. Cl.³ G02F *1/17*
U.S. Cl. 350—357 **5 Claims**



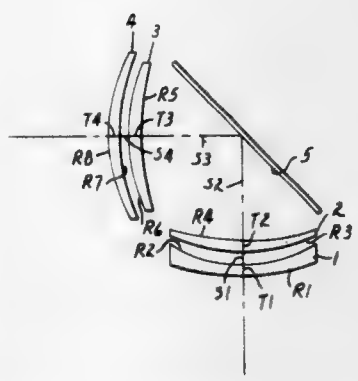
1. An all solid-state electrochromic device, comprising:
a pair of electrodes;
an oxidizable film provided between said electrodes and capable of a redox reaction;
a reducible film provided between said electrodes and capable of a redox reaction; and
an insulating film provided between the above-mentioned films and allowing passage of protons but prohibiting passage of electrons;
wherein said oxidizable film is substantially composed of iridium hydroxide and/or nickel hydroxide, and said reducible film is substantially composed of tungsten oxide and/or molybdenum oxide.

4,350,415

AUXILIARY LENS SYSTEM FOR OVERHEAD PROJECTORS

Lawrence H. Conrad, Maplewood, Minn., assignor to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

Filed Sep. 2, 1980, Ser. No. 183,205
Int. Cl.³ G02B *15/02, 17/00*
U.S. Cl. 350—422 **2 Claims**



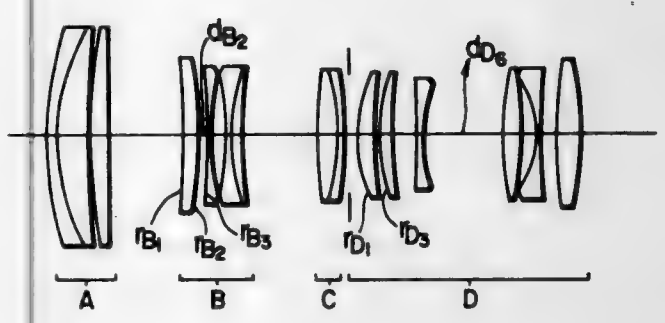
1. Auxiliary lenses for use in conjunction with the projection system in an overhead projector having a pair of converging meniscus lenses angularly positioned with relationship to each other and to a plano reflector, said auxiliary lenses comprising
a first lens positioned adjacent the stage and having negative power and an equivalent focal length of 331.952 mm and radii of curvature for the surfaces of −162.87 mm and −82.2 mm and a thickness of 7.0 mm; and
a second lens positioned adjacent the screen and having a positive power and an equivalent focal length of 1095.75 mm and radii of curvature for the surfaces of +120.60 mm and +97.65 mm and a thickness of 7.0 mm said lenses adapted to be mounted one on each side of the converging meniscus lenses to change the focal length of the system.

4,350,416

COMPACT ZOOM LENS

Shozo Ishiyama, Hachioji, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Japan

Filed Apr. 10, 1980, Ser. No. 138,932
Claims priority, application Japan, Apr. 12, 1979, 54-43591
Int. Cl.³ G02B *15/16*
U.S. Cl. 350—427 **6 Claims**



1. A compact zoom lens having, in order from the object side, a first positive lens group for focusing, a second negative lens group for variation of focal length, a third positive lens group for compensation of image position, and a fourth positive lens group for imaging, said compact zoom lens being a

mechanical compensation type zoom lens arranged so that said second lens group is moved in the direction of the optical axis for the purpose of varying the focal length and so that the variation of final image position to be caused by the above movement is compensated for by moving said third lens group to form a locus of points concave toward the object side, said first lens group having a two-component, three-element lens configuration with one lens component composed of a positive cemented doublet consisting of a negative lens and a positive lens and the other lens component consisting of a positive lens; said second lens group having a three-component, four-element lens configuration with first, second and third lens components in order from the object side, said first lens component being a positive meniscus lens concave toward the object side, said second lens component being a negative biconcave lens having a concave surface with a small radius of curvature arranged toward the image side, and said third lens component being a negative cemented doublet consisting of a negative biconcave lens and a positive meniscus lens concave toward the image side; said third lens group comprising at least one positive lens; and said compact zoom lens fulfilling the following conditions:

$$-\infty < r_{B1} < -7|f_B|$$

$$-5|f_B| < r_{B2} < -3|f_B|$$

$$-6|f_B| < r_{B3} < -3|f_B|$$

$$d_{B2} < 0.12|f_B|$$

wherein,

r_{Bi} is the radius of curvature of the ith lens surface in said second lens group in order from the object side,

d_{Bi} is the ith distance between lens surfaces in said second lens group in order from the object side, and

f_B is the focal length of said second lens group as a whole.

4,350,417

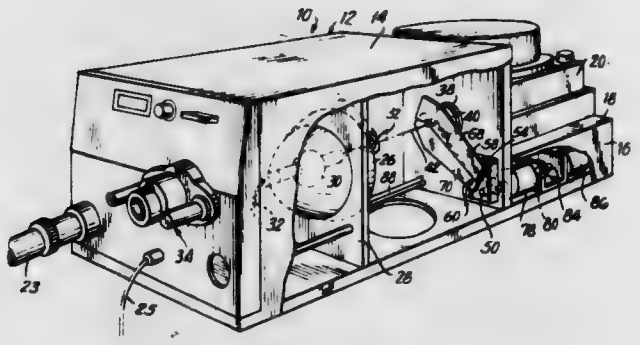
APPARATUS TO CONTROL LIGHT INTENSITY FROM ARC LAMP

Robert S. Freeman, Toledo, Ohio, assignor to Strong Electric Corporation, Toledo, Ohio

Filed Mar. 6, 1981, Ser. No. 241,287

Int. Cl.³ G05D *25/00*; G03B *21/14, 9/02*

U.S. Cl. 353—90 **13 Claims**



1. An apparatus for controlling the light intensity output from an arc lamp comprising displaceable light valve means positionable in the light path of said arc lamp output, the intensity of the light passed along said path by said light valve means being dependent upon the position of said light valve means; magnetically coupled clutch means having an output operatively coupled to said light valve means for controlling the positioning thereof and an input; continuously rotating motor means operatively coupled to said clutch means input; counter-torque means coupled to said magnetic clutch means output for resisting the rotation thereof; and programmer means for selectively applying a control signal to said magnetic clutch means, said magnetic clutch means being adapted to magnetically couple said clutch means input and output to produce a torque, dependent upon said control signal, said torque tending to displace said light valve means at said clutch means output against the resistance of said counter-torque means, whereby said light valve is positioned at a position representative of said control signal, which position is representative of an equilibrium between the output torque transmitted by said magnetic clutch means and the counter-torque produced by said counter-torque means.

4,350,418

CAMERA PROVIDED WITH AUTOMATIC FOCUS ADJUSTING DEVICE

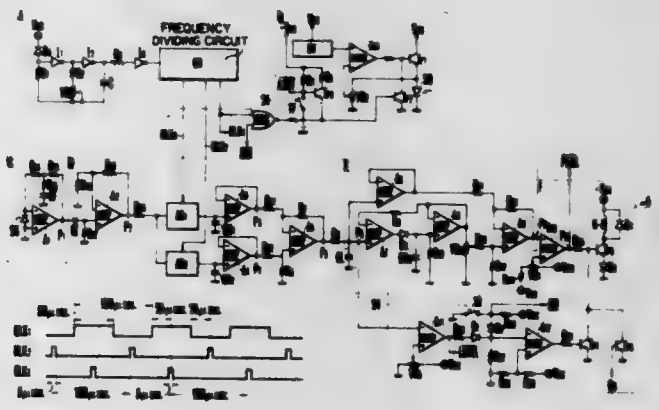
Tetsuya Taguchi, Kawasaki; Shuichi Tamura, Yokohama; Ryuji Tokuda, Tokyo, and Masahiko Ogawa, Hino, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

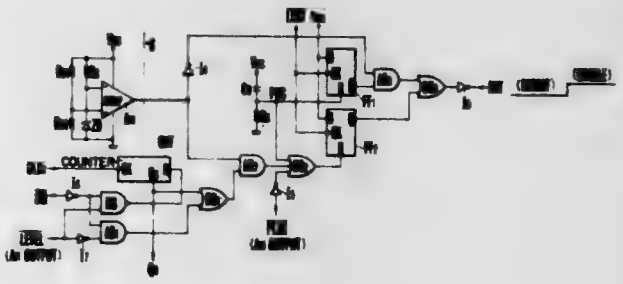
Filed Sep. 11, 1979, Ser. No. 74,313

Claims priority, application Japan, Sep. 14, 1978, 53-113048; Nov. 10, 1978, 53-139144; Nov. 30, 1978, 53-148088

Int. Cl.³ G03B *13/18, 17/40*

U.S. Cl. 354—25 **66 Claims**





1. A camera comprising:

(A) focus adjustable objective lens means for forming an image of an object to be photographed;

(B) automatic focus adjusting means for automatically adjusting the focus of said lens means;

(C) shutter means for exposing film;

(D) shutter release means for releasing said shutter means to operate the shutter means;

(E) trigger means operable for actuating said focus adjusting means;

(F) timer means actuated in synchronism with said focus adjusting means starting a focus adjustment of said lens means for defining a predetermined time and for producing a time count termination signal when said predetermined time has passed;

(F') sequence control means responsive to termination of the focus adjustment of said lens means for producing a focus adjustment completion signal; and

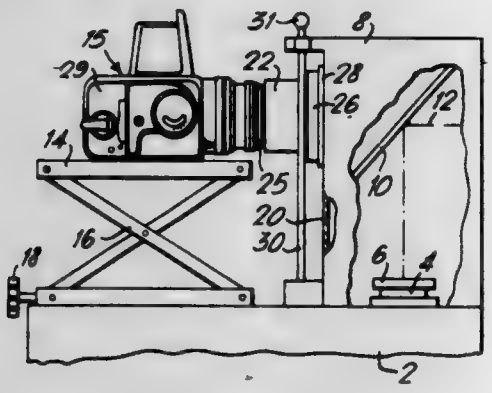
(G) release control means responsive to said focus adjustment completion signal from said sequence control means and said time count termination signal from said timer means for controlling the shutter release operation of said shutter release means in accordance with the logic condition of both of the signals.

4,350,419

FRONT PROJECTION PHOTOGRAPHIC APPARATUS

Kenneth S. Bowen, Hayling Island, England, assignor to Bowens Sales and Service Limited, London, England

Filed Oct. 23, 1980, Ser. No. 199,848
Int. Cl.³ G03B 35/00, 11/00, 27/32
U.S. Cl. 354—110 10 Claims



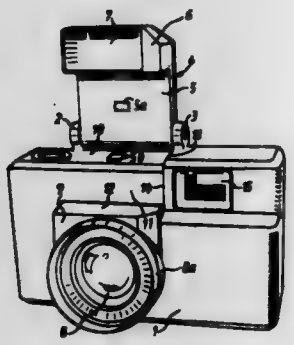
1. Front projection apparatus for use with a camera, said camera having:
a body means,
a tubular housing means extending from said body means,
a lens system secured within said housing means, and
means for selective movement of said housing means relative to said body means for focussing said camera, and
said front projection apparatus having:
an image projection means adapted to project an image along a projection axis,
support means for supporting said camera body means, said support means permitting vertical and horizontal movement of said body means relative to said projection axis, and
sighting means fixed in relation to said projection axis and releasably engageable with said lens system housing means in the position of said housing means in which said lens system axis views an image projected along said projection axis by said image projection means.

4,350,420

CAMERA WITH FLASH UNIT

Dieter Engelsmann, Unterhaching; Dieter Maas, Baldham; Kurt Zattler, and Herbert Schultes, both of Munich, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 17, 1980, Ser. No. 169,927
Claims priority, application Fed. Rep. of Germany, Oct. 4, 1979, 2940301
Int. Cl.³ G03B 15/05
U.S. Cl. 354—145 12 Claims



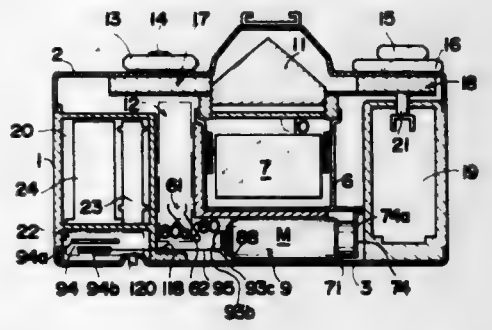
1. In a photographic camera a combination comprising a housing, a flash unit and a projecting lens unit, said housing having an axis which extends perpendicularly of an optical axis of said lens unit and two contiguous sides located in approximately perpendicular planes, said flash unit being of generally L-shaped outline, said flash unit being formed with a supporting part and a head part carrying a reflector, said flash unit being mounted on said housing for pivotal movement between an operative position in which said supporting part projects upwardly of said housing and extends along said housing axis and inoperative position in which at least some surfaces of said supporting part and head part abut against said two contiguous sides in the area of said lens unit and lockingly engage with said sides.

4,350,421

CAMERA WITH A BUILT-IN WINDER

Hiroshi Ueda, Nara, and Shigeru Oyokota, Sakai, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Azuchi, Japan

Filed Feb. 13, 1981, Ser. No. 234,217
Claims priority, application Japan, Feb. 15, 1980, 55-18005
Int. Cl.³ G03B 1/18, 17/42, 19/12
U.S. Cl. 354—152 12 Claims



1. A camera comprising:
a motor rotatable in both forward and reverse directions;
reciprocating means reciprocatable in response to the forward and reverse rotations of said motor;
a charge-type drive mechanism including a drive member engageable by said reciprocating means to move forward therewith upon the forward movement of said reciprocating means, spring means coupled to said drive member to be tensioned by the forward movement of said drive member to store a driving force urging the return movement of said drive member, and photographing means set to a photographing standby position by the forward movement of said drive member and driven from the photographing standby position for effecting photographing by the return movement of said drive member, said reciprocating means retracting from the path of the return movement of said drive member upon the return movement thereof so as not to impede the return movement of said drive member;
a film wind-up mechanism for winding-up a film in response to the return movement of said reciprocating means; and,
a circuit including means for rotating said motor in the forward direction immediately after termination of photographing and in the reverse direction after the setting of said photographing means to the photographing standby positioned by said drive member.

4,350,422

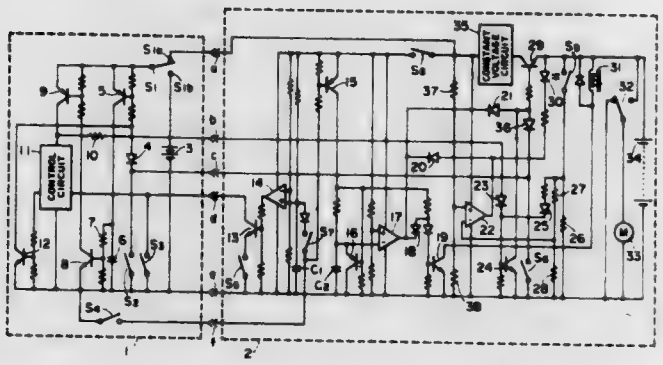
BATTERY CHECKING DEVICE OF A MOTOR DRIVEN CAMERA

Osamu Maida, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed May 21, 1981, Ser. No. 266,115
Claims priority, application Japan, May 30, 1980, 55-71494
Int. Cl.³ G03B 1/18
U.S. Cl. 354—173 6 Claims

1. A motor driven camera having a power source, a motor connected to said power source and driven by the voltage of said power source, a constant voltage circuit for converting the voltage of said power source into a predetermined constant voltage and putting out the constant voltage, and an electric

circuit connected to said constant voltage circuit and driven by said constant voltage circuit, said camera further having a battery checking device including a discriminating circuit for receiving the output of said constant voltage circuit and the



output of said power source, comparing said two outputs and discriminating whether the voltage of said power source is above a predetermined level, and an indication circuit for receiving the output of said discriminating circuit and indicating the condition of said power source.

4,350,423

STILL CAMERA WITH A RETRACTABLE OBJECTIVE

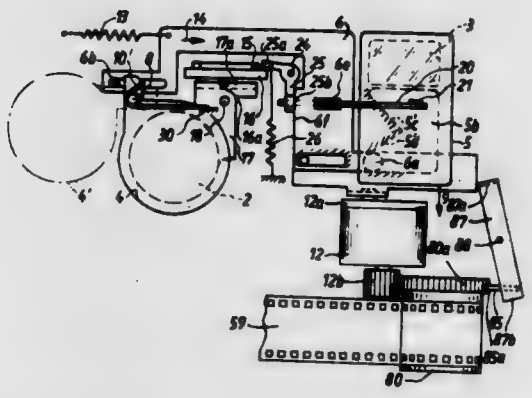
Dieter Engelsmann, Unterhaching; Reinhard Nicko, Munich; Wilfried Bittner, Aixing, and Horst Karl, Munich, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 9, 1981, Ser. No. 281,892

Claims priority, application Fed. Rep. of Germany, Jul. 26, 1980, 3028452

Int. Cl.[3] G03B *1/12, 13/02, 3/00*

U.S. Cl. 354—173 13 Claims



1. A photographic camera, comprising a housing; a viewfinder; an objective displaceable between extended and retracted positions relative to said housing; means for displacing said objective between said extended and retracted positions; film transporting means; and film take-up spool; an electric motor rotatable in two opposite directions and arranged so that when said electric motor rotates in one of said directions it is coupled with said objective displacing means and when said electric motor rotates in the other of said directions it is coupled with said film transporting means and said film take-up spool; switching means for reversing said electric motor; and locking means for said film take-up spool, coupled with said switching means so that when said electric motor is switched for rotation in said one direction for displacing said objective and is coupled with said objective displacing means said film take-up spool is locked against rotation, and when said electric motor is reversed and uncoupled said film take-up spool is released.

4,350,424

CAMERA ASSEMBLY WITH AUTOMATIC WINDING MECHANISM

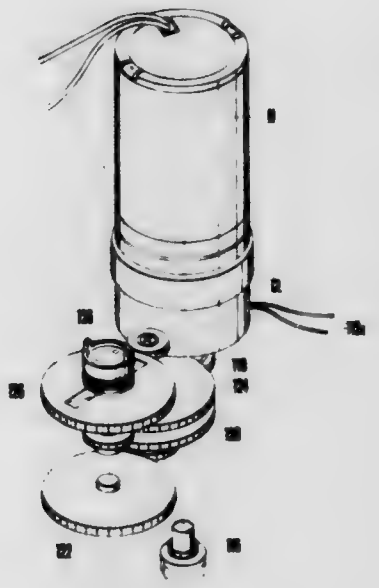
Tomonori Iwashita, Fuchu, and Tadahide Fukushima, Kamakura, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 974,374, Dec. 29, 1978, abandoned. This application Sep. 17, 1981, Ser. No. 303,119

Claims priority, application Japan, Feb. 7, 1978, 53-12747; Feb. 7, 1978, 53-14311[U]

Int. Cl.[3] G03B *1/12*

U.S. Cl. 354—173 9 Claims



1. A motor drive assembly for a photographic camera comprising a motor operated film winding unit and an electrical power source unit;

said motor operated film winding unit comprising

(a) a base casing defining a mount surface,

(b) a grip member mounted on the side of said base casing, said grip member defining an interior space,

(c) electric motor means and electrically operated clutch means, both said motor means and said clutch means being contained within said interior space of said grip member, said electric motor means and said clutch means having housings which are of about the same diameter, said housings including connecting portions of approximately the same shape and being superposed on each other into one unified body and arranged in the longitudinal direction within the interior space of said grip member,

(d) connecting means having connecting portions of approximately the same shape as the shape of said connecting portions of said motor means and clutch means housings, said connecting portions of said motor means housing and of said clutch means housing being inserted into corresponding connecting portions of said connecting means to form said unified body,

(e) speed reduction means operatively connected to said electrically operated clutch means, with at least part of said speed reduction means being arranged within said base casing, and

(f) film winding coupling means drivingly connected to the output of said speed reduction means and arranged in said base casing to cooperate with said camera;

said electrical power source unit comprising

(g) an attachment casing having an electrical power source contained therein and defining an attachment surface,

(h) first locking means arranged in said attachment surface of said attachment casing corresponding to said mount surface of said winding unit, and

(i) electrical coupling means projecting from said attachment casing.

4,350,425

FILM TRANSPORT ARRANGEMENT FOR A CAMERA

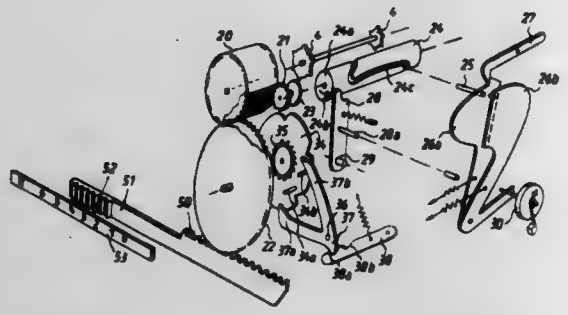
Hubert Hackenberg, Holzkirchen, Fed. Rep. of Germany, assignor to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 4, 1981, Ser. No. 260,281

Claims priority, application Fed. Rep. of Germany, May 29, 1980, 3020396

Int. Cl.[3] G03B *1/24*

U.S. Cl. 354—207 6 Claims



1. A film transport arrangement of a camera for a film accommodated in a cassette, comprising transporting means arranged to transport a film before its exposure in a first transport direction from a cassette into a film receiving space of a camera to be exposed in the camera frame after frame, and to move the film after its exposure in a second transport direction in stepped manner frame after frame back into the cassette; and a film transport handle arranged for acting upon said transporting means so as to move the film in both directions, said film transport handle being formed as a transport slider which is displaceable in two displacement directions and has a stroke of displacement in one of said displacement directions sufficient to transport the entire film length in a respective one of said transport directions.

4,350,426

TIME DETERMINATION CIRCUIT FOR CAMERA

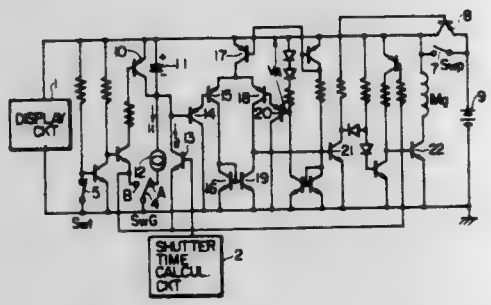
Shinji Urata, Tachikawa, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 4, 1981, Ser. No. 240,423

Claims priority, application Japan, Mar. 12, 1980, 55-32412[U]

Int. Cl.[3] G03B *7/26*

U.S. Cl. 354—234 6 Claims



1. A time determination circuit for a camera comprising: power maintaining time determination circuit means for supplying operating power to exposure conditions determining means prior to a shutter opening operation; shutter controlling time determination circuit means; and a single capacitor coupled as a time determination capacitor to both said power maintaining time determination circuit means and said shutter controlling time determination circuit means.

4,350,427

ELECTROMAGNETIC SHUTTER RELEASE DEVICE FOR CAMERAS

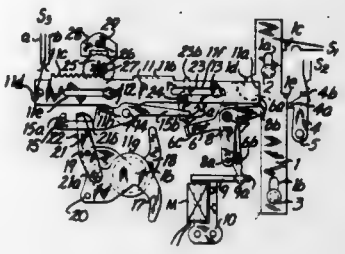
Kiyoshi Kitai; Yukio Morino; Shogo Kato, and Masanori Watanabe, all of Shikawatashi, Japan, assignors to Seiko Koki Kabushiki Kaisha, Tokyo, Japan

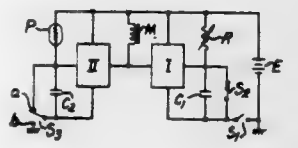
Filed May 11, 1979, Ser. No. 38,247

Claims priority, application Japan, May 29, 1978, 53-63974

Int. Cl.[3] G03B *9/64, 7/08*

U.S. Cl. 354—238 6 Claims





1. An electromagnetic shutter release device for use in taking an exposure comprising: a first delay circuit energized in response to initiation of the shutter release operation; a second delay circuit energized in response to initiation of the exposure operation; an electromagnet connected to said first and second delay circuits for energization in response to energization of said first and second delay circuits; an armature; means mounting the armature for movement to a first position by said electromagnet which is energized at the start of operation of said first delay circuit, for movement from the first position to a second position when said electromagnet is denergized at completion of operation of said first delay circuit and attracted at the second position when said electromagnet is energized at the start of operation of said second delay circuit, and for movement from the second position to a third position when said electromagnet is denergized at completion of operation of said second delay circuit, said means including a detaining member for detaining said armature at the second position, and a driving member for first changing the connection of said electromagnet from said first delay circuit to a connection to said second delay circuit and then canceling the detaining of said armature by said detaining member while starting the exposure operation; and wherein said driving member is started by the movement of said armature from said first position to said second position, and the aperture closing operation is started by the movement of said armature from said second position to said third position.

4,350,428

SHUTTER MECHANISM

Edward H. Phillips, Mountain View, Calif., assignor to Optimetrix Corporation, Mountain View, Calif.

Filed Oct. 9, 1979, Ser. No. 82,484

Int. Cl.[3] G03B *9/10*

U.S. Cl. 354—254 14 Claims

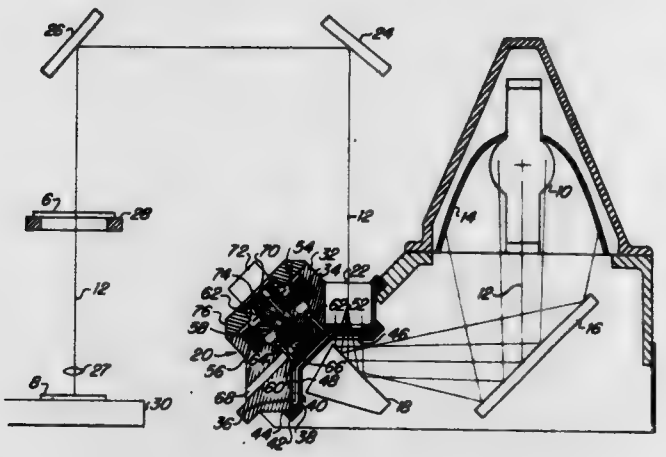
1. A shutter mechanism comprising:

a housing having a shutter aperture;

a shutter rotatably mounted within the housing for opening and closing the shutter aperture; and

drive means, coupled to the shutter, for unidirectionally rotating the shutter during each exposure period between

an initial rest position and a final rest position with a variable velocity profile controlled with respect to shutter



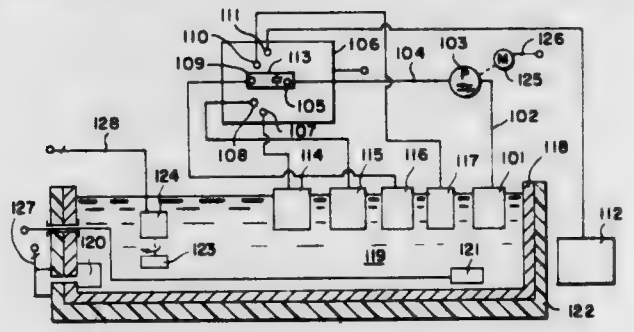
position to open the shutter aperture and with a matching variable velocity profile also controlled with respect to shutter position to close the shutter aperture.

4,350,429

MATERIAL PROCESSING APPARATUS

James A. Slavin, East Windsor, N.J., assignor to Noltac Corp., Jericho, N.Y.

Filed Feb. 22, 1980, Ser. No. 123,853
Int. Cl.[3] G03B *3/06*; F16K *11/06*
U.S. Cl. 354—299 41 Claims



1. Apparatus, comprising

(a) a plurality of material storage tanks, each adapted to contain a supply of a respective material,

(b) selector valve means having a first port and a plurality of second ports and means for establishing a connection between said first port and any one of said second ports,

(c) drive means connected to said selector valve means for actuating said valve to connect said first port to any one of said second ports,

(d) conduit means connecting said storage tanks to respective ones of said second ports,

(e) further conduit means connected to carry materials to a processing container,

(f) a material conveyance means connected between said first port and said further conduit means,

(g) means connected to said drive means for selecting one of said second ports for connection to said first port,

(h) temperature control bath containing at least one of said material storage tanks, and

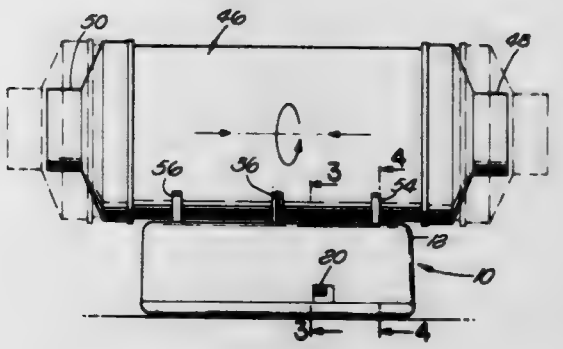
(i) means for preventing operation of said material conveyance means except when said selector valve has established a connection between said first port and a selected one of said second ports.

4,350,430

MOTOR DRIVE DESIGN

Ronald M. Johnson, Pasadena, Calif., assignor to Dev Tec Resources, Inc., Pasadena, Calif.

Filed Jan. 16, 1981, Ser. No. 225,638
Int. Cl.[3] G03D *3/04*
U.S. Cl. 354—330 4 Claims



1. A motor drive unit comprising:

a base member, said base member having an upper surface,

a drive wheel extending from said upper surface which is in operative relationship to a drive motor,

a drive motor,

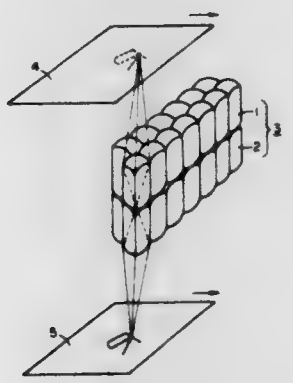
said upper surface of said base member also carrying a pair of spaced apart undriven wheels which are rotatable in planes parallel to the plane of rotation of said drive wheel, said base member being adapted to receive a cylindrical processing drum for containing photograph film and liquid processing chemicals for the film by 3-point contact on the surfaces of said wheels whereby said drum is free to move longitudinally with respect to said base until said drum has leveled itself to uniformly distribute liquid processing chemicals over the length of the interior of said drum.

4,350,431

PROJECTING DEVICE

Noritaka Mochizuki, Yokohama; Setsuo Minami, Kawasaki; Yoshiya Matsui, Yokohama; Atsuo Tsunoda, Fuchu; Koyo Midorikawa, Tokyo; Hidetoshi Murase, Yokohama; Mikio Suzuta, and Masazumi Moriwaki, both of Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 8, 1980, Ser. No. 166,849
Claims priority, application Japan, Jul. 13, 1979, 54/89109; Jul. 13, 1979, 54/89110
Int. Cl.[3] G03B *27/00, 27/44*
U.S. Cl. 355—1 10 Claims



1. A projecting device, comprising:

a plurality of element lens systems each adapted for imaging a part of an object as part of a corresponding projected image and each comprising two bar lenses having axial lengths larger than the effective diameter thereof;

a light absorbing portion provided on the external periphery of each bar lens and adapted for limiting light rays exceeding the effective diameter thereof;

an intermediate ring provided between said two bar lenses in

each element lens system for extracting the effective light beam; and

support members for arranging said plural element lens systems along grooves provided in said support member to form an array of said systems;

wherein a first of said bar lenses satisfies the following conditions:

$$K_1 \times (n'_1 - 1) \times \frac{\beta_1 S_1}{(1-\beta_1) - \frac{S_2}{\beta_1 S_1}} \leqq r_1 \leqq K_2 \times (n'_1 - 1) \times \frac{\beta_1 S_1}{(1-\beta_1) - \frac{S_2}{\beta_1 S_1}};$$

$$K_2 \times (1 - n'_1) \times \beta_1 S_1 \leqq r_2 \leqq K_1 \times (1 - n'_1) \times \beta_1 S_1;$$

$$K_1 \times n'_1 \times \beta_1 S_1 \leqq d'_1 \leqq K_2 \times n'_1 \times \beta_1 S_1;$$

$$K_1 \times \frac{-S_1/Fe}{1 - \left(\frac{1}{2Fe}\right)^2} \leqq \phi_1 \leqq K_2 \times \frac{-S_1/Fe}{1 - \left(\frac{1}{2Fe}\right)^2}; \text{ and}$$

$$K_1 \times \frac{\frac{S'_2}{\beta_1} - S_1}{\beta_1 S_1} \times \phi_1 \leqq \phi_0 \leqq K_2 \times \frac{\frac{S'_2}{\beta_1} - S_1}{\beta_1 S_1} \times \phi_1;$$

wherein:

r_1 is the radius of curvature of the first face of said first bar lens;

r_2 is the radius of curvatuve of the second face thereof;

d_1' is the axial lens thickness between the first and second faces of said first bar lens;

ϕ_1 is the effective diameter thereof;

ϕ_0 is the dimension of the object;

n_1' is the refractive index of the material of said first bar lens for the design wavelength;

β_1 is the lateral magnification of said first bar lens;

S_1 is the axial distance from the first face of said first bar lens to the object plane;

S_2' is the axial distance from the second face of said first bar lens to the intermediate image plane;

Fe is the effective F-number at the object field side;

K_1 is 0.9 and

K_2 is 1.1; and

wherein the second bar lens satisfies the following conditions:

$$K_1 \times (1 - n'_2) \times \frac{S'_4}{\beta_2} \leqq r_3 \leqq K_2 \times (1 - n'_2) \times \frac{S'_4}{\beta_2};$$

$$K_2 \times (n'_2 - 1) \times \frac{S'_4/\beta_2}{\left(1 - \frac{1}{\beta_2}\right) - \frac{S_3 \times \beta_2}{S'_4}} \leqq r_4 \leqq K_1 \times (n'_2 - 1) \times \frac{S'_4/\beta_2}{\left(1 - \frac{1}{\beta_2}\right) - \frac{S_3 \times \beta_2}{S'_4}};$$

$$-K_1 \times n'_2 \times S'_4/\beta_2 \leqq d'_2 \leqq -K_2 \times n'_2 \times S'_4/\beta_2;$$

$$K_1 \times \frac{S'_4/Fe'}{\sqrt{1 - \left(\frac{1}{2Fe'}\right)^2}} \leqq \phi_3 \leqq K_2 \times \frac{S'_4/Fe'}{\sqrt{1 - \left(\frac{1}{2Fe'}\right)^2}};$$

and

-continued

$$K_1 \times \phi_3 \times \frac{S_3\beta_2 - S'_4}{S'_4/\beta_2} \leqq \phi_4 \leqq K_2 \times \phi_3 \times \frac{S_3\beta_2 - S'_4}{S'_4/\beta_2};$$

wherein:

r_3 is the radius of curvature of the first face of said second bar lens;

r_4 is the radius of curvature of the second face thereof;

d_2' is the axial lens thickness between the first and second faces of said second bar lens;

ϕ_3 is the effective diameter of said second bar lens;

ϕ_4 is the dimension of the projected image;

n_2' is the refractive index of the material of said second bar lens for the design wavelength;

β_2 is the lateral magnification of said second bar lens;

S_2 is the axial distance from the first face of said second bar lens to the intermediate image plane;

S_4' is the axial distance from the second face of said second bar lens to the projection plane;

Fe' is the effective F-number at the image field side;

K_1 is 0.9, and

K_2 is 1.1

4,350,432

DEVELOPMENT APPARATUS FOR DEVELOPING LATENT ELECTROSTATIC IMAGES

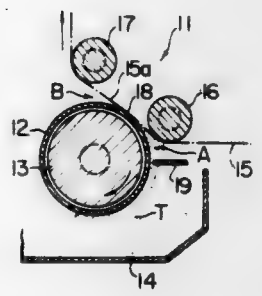
Shiroh Kondoh, Sagamihara, Japan, assignor to Ricoh Company Ltd., Tokyo, Japan

Filed Dec. 12, 1979, Ser. No. 102,782

Claims priority, application Japan, Feb. 21, 1979, 54-19450

Int. Cl.³ G03G *21/00*

U.S. Cl. 355—3 DD **15 Claims**

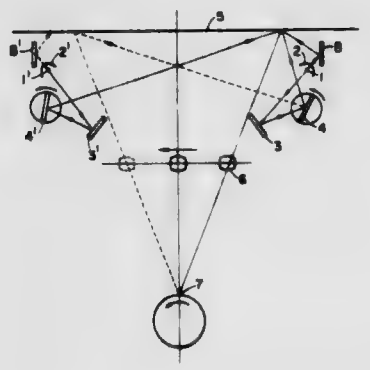


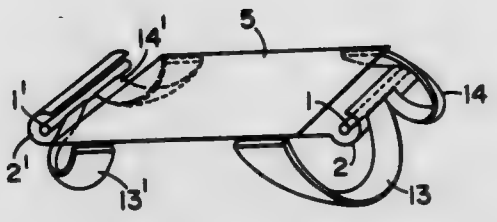
1. An apparatus for developing electrostatic latent images formed on an image bearing member movable past a development zone, including a container for holding a supply of magnetically attractible developer, and developing means for transporting said developer from said container to said development zone and forming with said image bearing member a space for accumulating developer held in contact with said member, said developer accumulating in said space being movable relative said image bearing member by movement of said member whereby the amount of developer brought into contact with said image bearing member will depend upon the movement of said member through said development zone, said means including a non-magnetic sleeve engaging developer in said container and located adjacent said development zone, a magnetized device disposed within said sleeve and drive means for providing relative movement between said magnetized device and said sleeve.

4,350,433
SCANNING ILLUMINATOR

Susumu Seto, Odawara; Mitsuhiro Tokuhara, Chigasaki; Yukio Takemura, Kawasaki; Yu Yamada, Kokubunji, and Takeshi Kuwayama, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 9, 1981, Ser. No. 281,880
Claims priority, application Japan, Jul. 24, 1980, 55-101505
Int. Cl.³ G03G *15/28*
U.S. Cl. 355—8 6 Claims





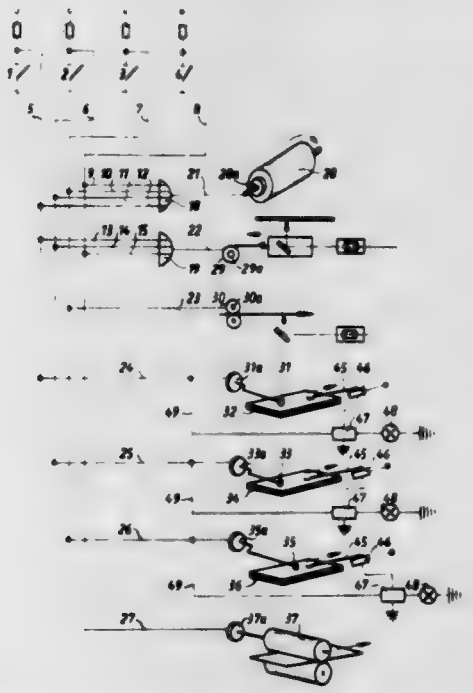
6. An illuminator comprising a first source of light fixed at a position adjacent to one end of an original for illuminating said original; a first reflector partially surrounding said first light source and including an opening formed therein behind said first light source; a first light transmitting member for transmitting the illuminating light beam passed through said opening to said one end area of said original; a second light source fixed at a position adjacent to the opposite end of said original for illuminating said original; a second reflector partially surrounding said second light source and including an opening formed therein behind said second light source; and a second light transmitting member for transmitting the light beam passed through said opening in said second reflector to said opposite end area of said original.

4,350,434
ELECTROPHOTOGRAPHIC COPYING MACHINE

Rudolf Paulus; Norbert Schankat, both of Munich; Manfred Weinzierl, Pfaffenhofen, and Walter Franke, Bad Aibling, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 4, 1978, Ser. No. 948,325
Claims priority, application Fed. Rep. of Germany, Oct. 19, 1977, 2746991
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—14 SH 14 Claims

1. In a copying machine of the type having two or more infeed capabilities and control means activatable for implementing the respective infeed capabilities, an arrangement for selecting the infeed capability to be utilized, the arrangement comprising a plurality of operator-activated dual-purpose select-and-start switches each associated with a respective infeed capability and means responsive to activation of each operator-activated select-and-start switch for activating the respective control means and also initiating copying, whereby when the operator selects the infeed capability to be utilized he

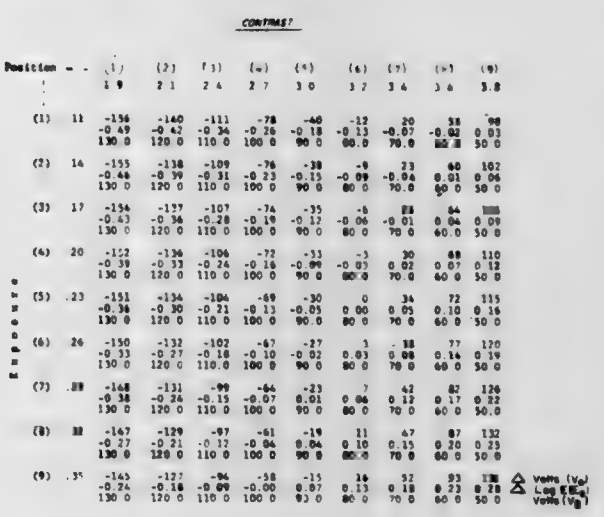


simultaneously commands initiation of copying and therefore need not activate a second switch merely to initiate copying.

4,350,435
COPY CONTRAST AND DENSITY CONTROL

John M. Fiske, Rochester, and Richard Velzen, Kodak Park, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 4, 1980, Ser. No. 137,149
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—14 C 8 Claims



1. Copy solid area, contrast and density adjusting apparatus for use in a copier having a chargeable photoconductor, adjustable charging means for varying the voltage Vo applied onto the photoconductor, an adjustable exposure station for varying the copier exposure Eo, and a development station having at least one electrode and adjustable bias means for applying an adjustable bias voltage V_B to said electrode for establishing a bias voltage between the photoconductor and said development station to affect copy solid area density; said apparatus comprising:

(a) memory means having stored therein a matrix of sets of representations of interrelated electrical values, with each such set having values which correspond to specific levels of Vo, Eo, and V_B that define a particular solid area copier Din/Dout response curve with a predetermined breakpoint;

(b) means for addressing said matrix to designate a particular set; and

(c) logic and control means responsive to the values of said designated set to adjust said adjustable charging means, said adjustable bias means and said adjustable exposure station to produce copies in accordance with the Din/Dout response curve defined by such designated set values.

4,350,436

FEED CONTROL DEVICE

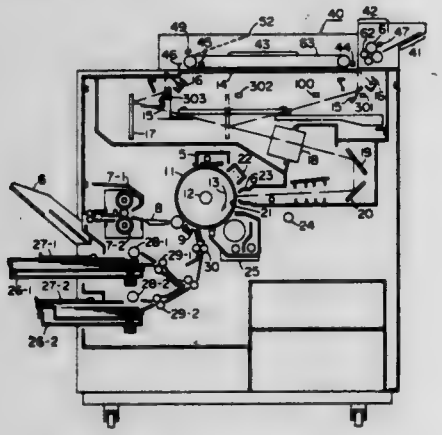
Toshiaki Yagasaki, Hino; Shunichi Masuda, Wakabaya; Katsuichi Shimizu, Kunitachi, and Hisashi Sakamaki, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

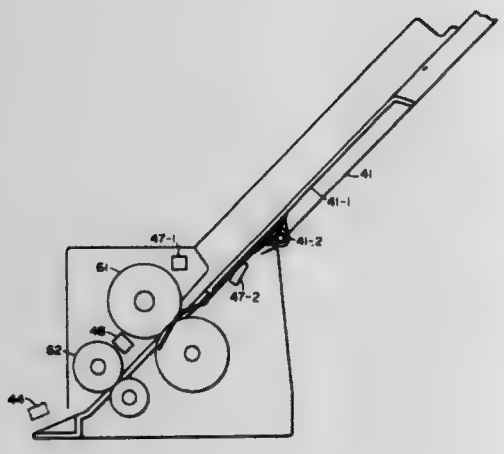
Filed May 20, 1980, Ser. No. 151,673

Claims priority, application Japan, May 25, 1979, 54-64807

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—14 SH **5 Claims**





1. A feed control device comprising:

means for feeding sheet mediums to a predetermined position;

control means for de-energizing the driving force to said feed means, while a sheet medium is engaged therein, wherein inertia forces of the feed means complete the feed of said sheet medium.

4,350,437

APPARATUS AND METHOD FOR PRODUCING IMAGES OF VARIOUS SIZES ON PHOTOSENSITIVE FILM

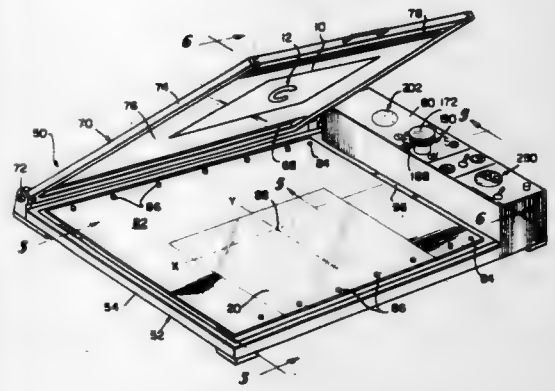
Charles E. Fishburn, Indianapolis, Ind., assignor to National Printing Plate Company, Inc., Indianapolis, Ind.

Filed Oct. 21, 1980, Ser. No. 199,285

Int. Cl.³ G03B *27/68*

U.S. Cl. 355—52 **22 Claims**

1. An apparatus for producing images of various sizes on photosensitive film, comprising a base, a platform movable relative to the base for supporting one of a photosensitive film and a photographic image in a plane in fixed proximal relationship to the other of the photosensitive film and photographic image to expose a portion of the film to a light source to produce an image on the film of generally the same size as the photographic image, a control arm for carrying the platform in fixed relationship thereto, a resilient control linkage interconnecting the control arm and the base to allow random movement of the control arm and platform, moving means for randomly moving the control arm to randomly move the platform to expose a greater portion of the film to the light source to



vary the size of the image produced on the film, and adjustable control means for limiting the random movement of the platform to define its path of movement and to selectively determine its degree of movement.

4,350,438

LIGHT DOSING DEVICE

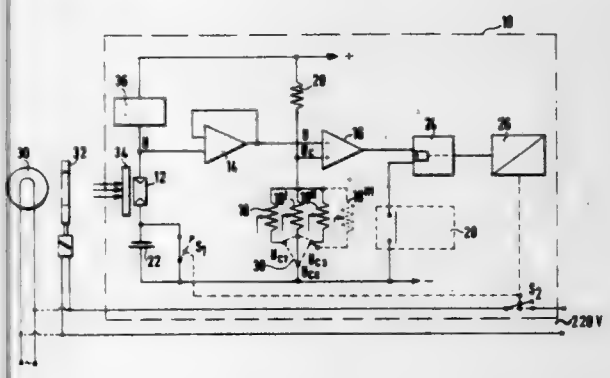
Herbert Schröter, Taunusstein, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed May 31, 1977, Ser. No. 801,734

Claims priority, application Fed. Rep. of Germany, Jun. 3, 1976, 2624866

Int. Cl.³ G03B *27/72*

U.S. Cl. 355—68 **4 Claims**



1. A device for dosing light from a light source in accordance with the intensity of light impinging upon a material to be exposed, comprising:

a photoresistor located in the beam path of the light source and controlling the exposure time in accordance with the intensity of the light impinging upon the material;

a capacitor bridged by a first switch and starting to be charged when the light source is switched on;

said photoresistor having an ohmic resistance inversely proportional to the intensity of the light impinging thereon and providing an output voltage, said photoresistor stationarily arranged in the beam path of said light source and, together with the capacitor, connected in series to form an RC-circuit;

a switching element for varying the exposure times and connected in series with the photoresistor;

amplifying means having an input and providing an amplified output voltage;

means for connecting the juncture of said photoresistor and said switching element to the input of said amplifying means;

said switching element being triggered with an adjustable frequency and/or pulse width discontinously extending

the period of time during which the capacitor is charged by exposure;

means responsive to switching-on of the light source for initiating charging of the capacitor;

means for comparing the amplified output voltage of said photoresistor with a reference voltage and producing an output signal when said amplified output voltage is equal to said reference voltage; and

means for controlling the length of time for which the light of the light source is impinging upon the material, said means including a diaphragm positioned between the light source and the material to be exposed and means for opening and closing said diaphragm in response to said output signal from said comparing means;

whereby the exposure times of said material to be exposed can be varied by a predetermined ratio to produce a desired shade of gray.

4,350,439

COPYING APPARATUS

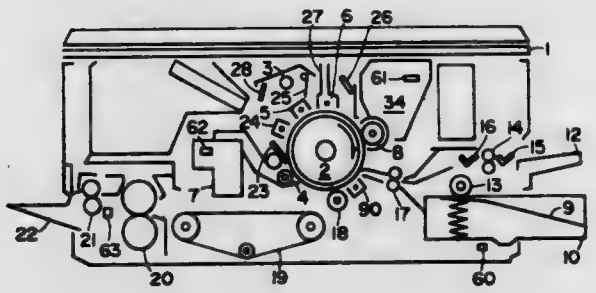
Hiroshi Tanioka, Tokyo; Masato Ishida, Kawasaki, and Tsuneki Inuzuka, Machida, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 5, 1980, Ser. No. 213,593

Claims priority, application Japan, Dec. 13, 1979, 54/161870

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—14 SH **10 Claims**



1. Copying apparatus comprising:

means for forming a reproduced image of an original on a copy material, said image forming means comprising a rotary member forming a transferred image on said copy material and means for repeatedly supplying said copy material to a transfer station;

means for entering data necessary for image formation, said data entering means comprising instruction means for selecting the position of the reproduced image on said copy material;

means for performing timing control said image forming means for image formation in response to the data entered by said data entering means, said timing control means comprising feed control means provided with switching means to be actuated by said image forming means and timer means associated with said switch means, and timer control means for controlling operation of said timer means for shifting feed timing of said feed control means in response to the instruction data supplied from said instruction means; and

means for displaying feed timing of said feed means.

4,350,440

DEVELOPING APPARATUS

Tsuyoshi Watanabe, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 9, 1980, Ser. No. 167,194

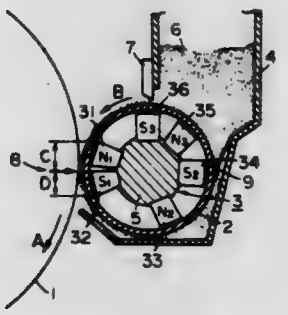
Claims priority, application Japan, Jul. 16, 1979, 54/91161

Int. Cl.³ G03G *15/09*

U.S. Cl. 355—3 DD **7 Claims**

1. A developing apparatus for developing a latent image by applying a one component magnetic developing agent to the latent image provided on a latent image bearing member, comprising:

a rotatable developing agent carrying member of non-magnetic material for carrying on its surface the one component magnetic developing agent, means for supplying the developing agent to the developing agent bearing member, magnetic field generating means disposed within said developing agent carrying member, said magnetic field generating means having a developing magnetic pole for effecting development in a developing zone and a magnetic pole, having a polarity opposite to that of said developing magnetic pole, for removing fog by transferring the



developing agent that has been deposited on the non-image area of the latent image bearing member back to said developing agent carrying body, means for defining a gap between the surface of the developing agent layer on said developing agent carrying member surface and the latent image bearing member across which the developing agent flies to develop the latent image, means for applying an alternating developing bias electric field across said gap, and regulating means for regulating the quantity of developing agent on the surface of said developing agent carrying member to regulate the thickness of the developing agent layer to be smaller than said gap.

4,350,441

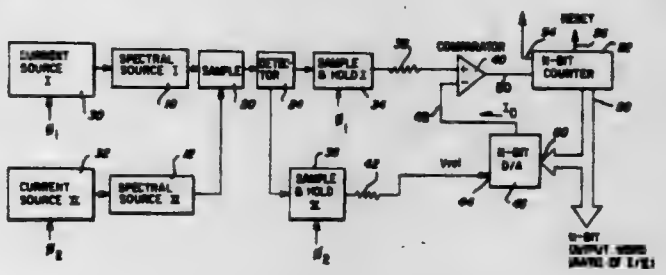
PHOTOMETRIC APPARATUS AND METHOD

Michael F. Wicnienski, Antioch, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Jun. 30, 1980, Ser. No. 164,357

Int. Cl.³ G01N *33/48, 21/31*

U.S. Cl. 356—40 **15 Claims**



1. A photometric apparatus for determining the absorbance ratio in a sample of two different wavelength lights, said apparatus comprising:

means for providing a light of a first wavelength having, when said light is energized, a postsample intensity after said light is directed through the sample;

means for providing a light of a second wavelength having, when said light is energized, a postsample intensity after said light is directed through the sample;

means for alternately energizing said first and second lights;

means for detecting said postsample intensities of said first and second lights;

a comparator having two inputs and an output;

a digital to analog converter having two inputs and an output;

means coupling the output of said digital to analog converter to an input of said comparator;

means coupled to the other input of said comparator for providing a signal that is proportional to said detected postsample intensity of said first light;

means coupled to an input of said digital to analog converter for providing a signal that is proportional to said detected postsample intensity of said second light;

an up/down counter having an up/down input and an output;

means coupling the output of the comparator to the up/-down input of said counter;

means coupling the output of the up/down counter to the other input of said digital to analog converter; and

means for clocking said up/down counter.

4,350,442

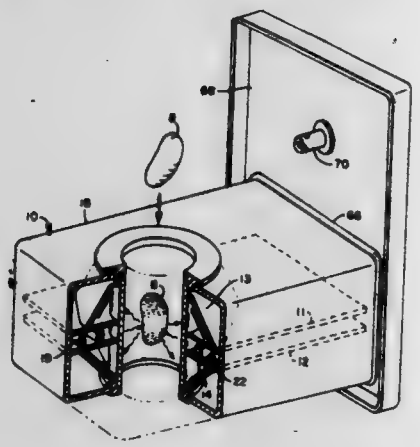
LIGHT AND COLOR DETECTING SCANNER FOR A SORTING APPARATUS

Tor Arild, Woodside, and Russell R. Ames, San Jose, both of Calif., assignors to Accusort Corporation, Belmont, Calif.

Filed May 19, 1976, Ser. No. 687,950

Int. Cl.[2] G01J *3/5;* G01N *21/26*

U.S. Cl. 356—51 **24 Claims**



1. In apparatus for sorting articles, an optical scanner comprising the combination of:

means defining a passage through which said articles may pass,

illuminating means substantially surrounding said passage for forming a multidirectional sheet of light of substantially uniform thickness in the visible and infrared spectra extending normal to and through said passage, and

light detecting means adjacent said passage for generating signals responsive to light reflected from articles passing through said sheet of light, said light detecting means including means for detecting light in the visible spectrum and for generating signals in response thereto and means for detecting light in the infrared spectrum and for generating signals in response thereto.

4,350,443

OPTICAL FRINGE ANALYSIS

Tommy L. Williamson, Centerville, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 24, 1980, Ser. No. 162,555

Int. Cl.[3] G01B *11/00;* G02B *5/32*

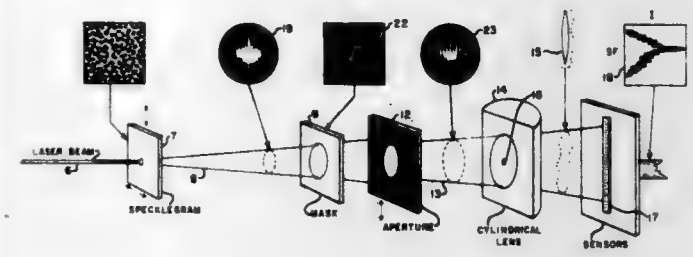
U.S. Cl. 356—358 **7 Claims**

1. An apparatus for measuring surface displacement using specklegram interferometry, comprising:

a means for generating a two-dimensional specklegram interference pattern in a coherent light beam;

a mask means for correlating spatial frequencies in the interference pattern with a pattern of known composition positioned in the path of the patterned beam;

a means for optically integrating the correlated pattern, along lines of constant spatial frequency, to generate a single varying intensity; and



a means for incrementally sensing light intensity along the length of the line formed by the optical integration.

4,350,444

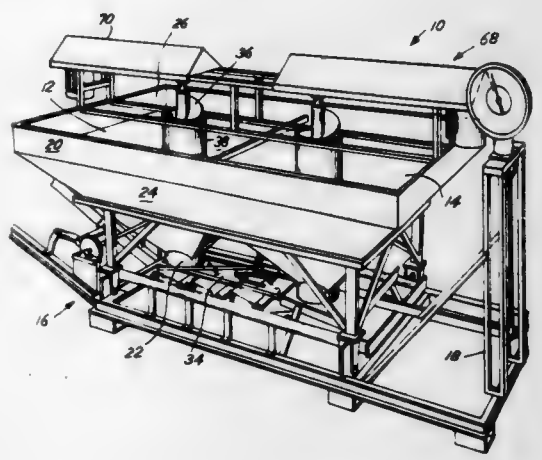
APPARATUS FOR MIXING MATERIALS SUCH AS FERTILIZER COMPONENTS

Lloyd A. Yargus, R.R. #2, Marshall, Ill. 62441; Lester W. Switzer, Sr., Marshall, Ill.; Gary N. Allen, Martinsville, Ill.; Gary S. Elliott, Cropsey, Ill.; Larry D. Yargus, 402 N. 7th St., Marshall, Ill. 62441; William D. Lowry, Martinsville, Ill.; Jeffrey M. Gosnell, Marshall, Ill., and Darrell J. Spires, Marshall, Ill., assignors to Lloyd A. Yargus and Larry D. Yargus, both of Marshall, Ill.

Filed Nov. 12, 1980, Ser. No. 205,919

Int. Cl.[3] B01F *7/24*

U.S. Cl. 366—141 **9 Claims**



1. An apparatus for mixing at least a first and second material to provide a mixture thereof comprising, in combination:

at least one hopper having an upper loading port, a lower discharge port, an inclined sidewall converging towards said discharge port, and a central region therein, said first and second materials being loaded into said hopper through said upper loading port and discharged from said hopper through said lower discharge port;

frame means for supporting said hopper in a substantially upright position;

an auger drivably mounted in said central region of said hopper, said auger being substantially vertical and extending substantially through said hopper;

a housing substantially enclosing said auger, said housing having an upper opening and a lower opening and defining a mixing chamber about said auger, said auger drawing said first and second materials into said mixing chamber through said lower opening, rotatably mixing said first and second materials therein, and discharging said first and second materials from said mixing chamber into said hopper through said upper opening;

a baffle secured to said housing, said baffle divergingly extending towards said lower discharge port of said hopper;

drive means for controllably driving said auger;

gate means for controllably closing said lower discharge port; and

roof means for substantially directing said first and second materials towards said baffle during loading of said hopper;

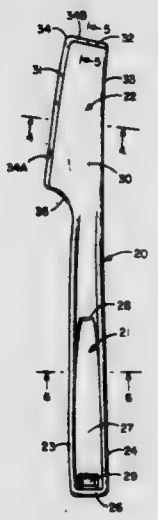
said inclined sidewall of said hopper, said baffle attached to said housing and said roof means cooperatively defining blender means for pre-mixing said first and second materials prior to mixing thereof in said mixing chamber and for providing a blending flow pattern as said first and second materials flow through said hopper.

4,350,445

PADDLE

Sven O. Olsson, 7019 Kerry Rd., Edina, Minn. 55435

Filed Dec. 15, 1980, Ser. No. 216,774
Int. Cl.³ B01F *13/00*
U.S. Cl. 366—343 9 Claims



1. A paddle usable for stirring a fluid, comprising:

an elongate linear handle having generally parallel side edges adapted to be grasped by an user for manipulation of the paddle;

a blade connected to the handle having a blade base with a width greater than the transverse dimension of the handle, said blade base having a relatively blunt trailing side edge substantially linear with one side edge of the handle, and a leading side edge offset from the handle and angularly orientated relative to the trailing side edge in diverging relationship to the handle and a leading end edge orientated in generally perpendicular relationship to the leading side edge;

an uninterrupted narrow resilient wiper lip extended from the leading side edge of the base and the leading end edge of the base adapted for surface engagement of a surface to move fluid away from the surface.

4,350,446

METHOD AND APPARATUS FOR CALORIMETRIC DIFFERENTIAL THERMAL ANALYSIS

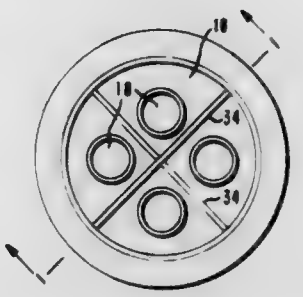
Robert C. Johnson, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 3, 1980, Ser. No. 203,639
Int. Cl.³ G01K *17/00*
U.S. Cl. 374—13 15 Claims

1. A cell for use in a differential scanning calorimeter comprising:

a unitary thermally conductive sheet formed of a material capable of forming a junction of a thermocouple and fabricated to provide a plurality of thermal test positions, at least one of said test positions being thermally connected with all other test positions by equivalent thermal paths of said sheet,

a heat source having portions contacting said sheet to transfer heat between said source and each of said test positions through thermally equivalent paths in said sheet, and



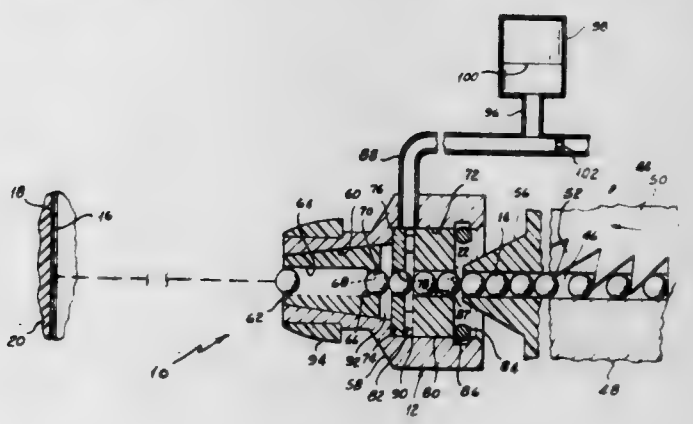
means for forming with said sheet a thermocouple at each of said positions for measuring the relative temperatures at each position.

4,350,447

SYNCHRONIZING SYSTEM FOR RAPID-FIRE GUN IN A MICROBALLISTIC PRINTER OR THE LIKE

Benzion Landa, Alberta, Canada, assignor to Savin Corporation, Valhalla, N.Y.

Continuation of Ser. No. 85,688, Oct. 17, 1979, abandoned. This application Sep. 23, 1981, Ser. No. 304,781
Int. Cl.³ B41J *3/02*
U.S. Cl. 400—118 13 Claims



13. An impact printer for producing an intelligible pattern on a print-receiving medium including in combination means for supporting said medium, means for successively firing solid projectiles toward said medium from a location spaced therefrom, means for sensing the firing of a first projectile by said firing means, and means for repositioning said firing means to propel a second projectile immediately following said first projectile toward a predetermined point on said medium forming part of said pattern, said repositioning means being responsive to said sensing means to reposition said firing means only upon sensing of the firing of said first projectile therefrom.

4,350,448

PRINTING HEAD MOUNTING DEVICE

Takayoshi Hanagata, and Atsushi Noda, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 13, 1980, Ser. No. 149,452
Claims priority, application Japan, May 29, 1979, 54/67158
Int. Cl.³ B41J *3/20*
U.S. Cl. 400—120 3 Claims

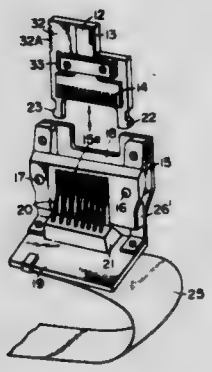
1. A printing head mounting device comprising:

head means having at least one groove formed in each side surface of said head means and integrally holding a heating member with a pattern of electrical contacts to supply an electrical signal to said heating member;

a connector body for removably holding said head means in a direction substantially vertical to a direction of movement of said head means when said means prints a line of characters with the direction of said head means deter-

mined when a bottom surface of said head means is held on a bottom surface of said connector body;

a plurality of electrically conductive contact pieces held at accurate positions by at least one groove formed in said connector body to make electrical connection with said pattern of said head means;



a plurality of rotatable members fitting in the grooves of said head means and pressing a bottom surface of said head means against a bottom surface of said connector body; and;

a resilient member for biasing said plurality of rotatable members towards each other and in a direction substantially parallel to the direction of movement of said head means.

4,350,449

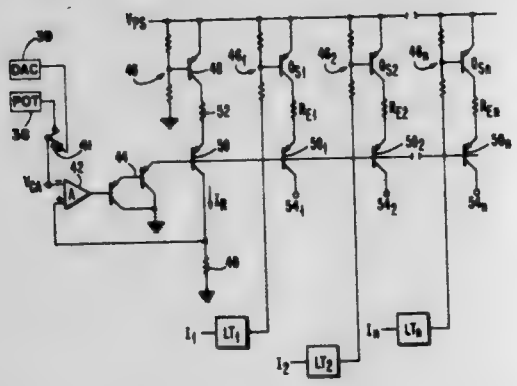
RESISTIVE RIBBON PRINTING APPARATUS AND METHOD

Gerald P. Countryman, and Ronald G. Findlay, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 23, 1980, Ser. No. 162,295

Int. Cl.³ B41J *3/20*

U.S. Cl. 400—120 **11 Claims**



6. Apparatus for marking a record medium comprising:

a transfer medium consisting of a resistive layer, a conductive layer and a thermally transferrable marking material layer;

a print head comprising a plurality of spaced printing electrodes disposed in close proximity to said transfer medium;

means for interposing the transfer medium between the record medium and the print head with the resistive layer adjacent the print head; and

means for selectively energizing said printing electrodes to cause current of a constant predetermined magnitude to flow between each selected print electrode and said conductive layer to generate resistance heating in the resistive layer and thereby heat the adjacent localized area of said marking material layer for causing transfer of marking material from the marking material layer to the record medium such that uniform marking can be effected regardless of the number of electrodes simultaneously selectively energized and regardless of the difference in contact resistance between said printing electrodes and said transfer medium.

4,350,450

STYLUS PRINTING HEAD COMPRISING ELECTROMAGNETS ON RESILIENT SUPPORTS

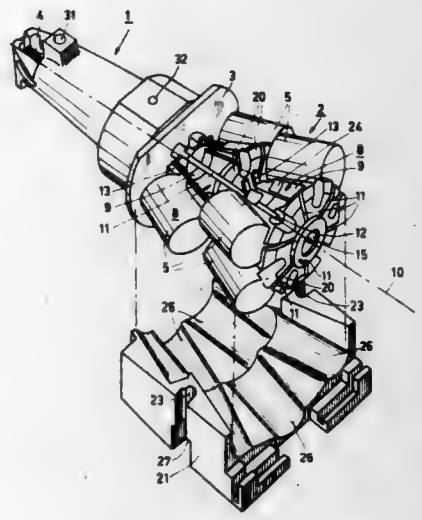
Heinrich Dürr, Wilnsdorf; Hermann Richter, Freudenberg; Wendelin Weber; Burkhard Goerke, both of Siegen, and Peter Engler, Wilnsdorf, all of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 22, 1980, Ser. No. 189,970

Claims priority, application Fed. Rep. of Germany, Oct. 2, 1979, 2939885

Int. Cl.³ B41J *3/12*

U.S. Cl. 400—124 **4 Claims**



1. A stylus printing head, comprising cylindrical electromagnets which are circularly arranged around a central axis and which operate the printing styli, said electromagnets being accomodated in cradle-shaped supports of at least one conical carrier, characterized in that the cradle-shaped supports are resilient, that electromagnets being mounted under a substantially radial spring force in the cradle-shaped supports by means of a cover which is common to all electromagnets mounted on the said carrier, each electromagnet being locked against sliding in its longitudinal direction by way of two protrusions, at least one of which is flexible, each of said electromagnets being detachable in its entirety from the cooperating cradle-shaped support by movement in a plane which is perpendicular to the cylinder axis.

4,350,451

SLIDABLY POSITIONABLE CARTRIDGE HAVING SKEWED RIBBON FEED

Edward D. Furrow, Crimora, Va., assignor to General Electric Company, Waynesboro, Va.

Filed Feb. 14, 1980, Ser. No. 121,607

Int. Cl.³ B41J *33/14*

U.S. Cl. 400—208 **25 Claims**

1. An inked ribbon supply arrangement for a printing apparatus comprising:

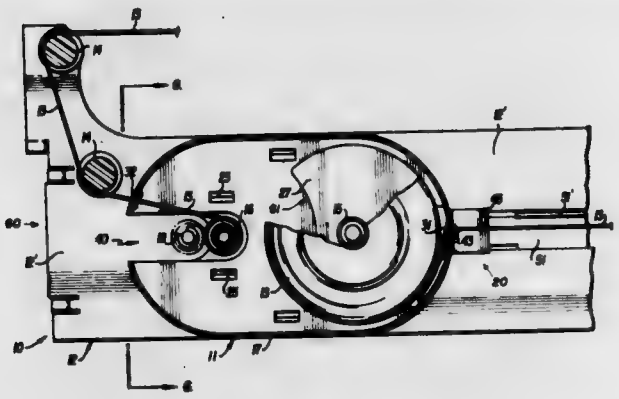
a ribbon cartridge, said cartridge comprising a housing;

a ribbon dispensing spool and a ribbon takeup spool rotatably supported in said housing on spaced axes;

an inked ribbon wound on said dispensing spool, exiting said housing at one location and re-entering said housing at a second location, and having an end attached for winding on said takeup spool;

a rotatable member extending into said cartridge housing through an aperture at a third location in driving engage-

ment with said ribbon on said takeup spool for rotating said takeup spool thereby to wind said ribbon thereon; and



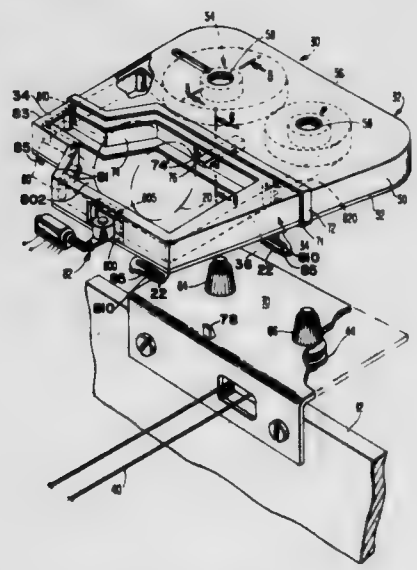
means for moving said cartridge longitudinally as a function of the diameter of inked ribbon being wound up on said takeup spool.

4,350,452

RIBBON LOADING SYSTEM FOR A TYPEWRITER OR THE LIKE USING A SIDEMOUNTED RIBBON CARTRIDGE HAVING A DETACHABLE RIBBON GUIDE

Edward N. Dials, Versailles, and Drew A. Kightlinger, Lexington, both of Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 31, 1980, Ser. No. 136,003
Int. Cl.³ B41J *33/14*
U.S. Cl. 400—208 **4 Claims**



1. A ribbon system for use with a printer that includes a printhead supported on a carrier that is moveable along a carrier path between two terminal positions, one in a forward direction for printing and the other in the reverse direction for printing, said system comprising:

a cartridge that includes a length of ribbon and a cover section for generally enclosing said ribbon, there being an output side of said cover section through which a loop of said ribbon extends;

a cartridge holder that is aligned with said carrier path and located adjacent one selected terminal position thereof, said cartridge holder including means for releasably retaining said cover section with said output side facing said selected terminal position of said carrier path;

said cartridge further including a frame that is releasably attached at the output side of said cover section and includes ribbon guides that establish a path for said ribbon loop, there being a central opening defined by said frame within said ribbon loop path, which central opening is arranged relative to said cover section to permit said frame to extend onto said carrier and around said printhead when said carrier is at said selected terminal position and said frame is attached to said cover section at said cartridge holder; and

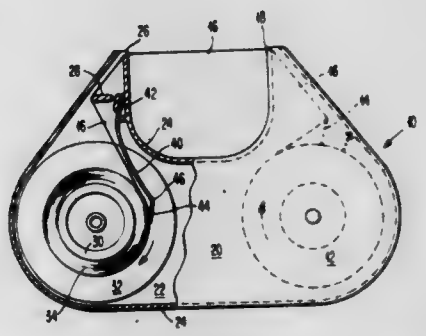
means for releasing said frame from said cover section to permit said frame to move with said printhead.

4,350,453

CARTRIDGE FOR CORRECTION MEDIA OR TACKY TAPE WITH A WRAP SPRING

Thomas R. Field; Peter F. Jagodzinski, both of Lexington; James F. King, Irvine, and John O. Schaefer, Lexington, all of Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 3, 1980, Ser. No. 165,827
Int. Cl.³ B41J *33/14*
U.S. Cl. 400—208 **3 Claims**



1. A typewriter cartridge for containing a tacky adhesive web comprising:

a top, bottom and side walls forming a chamber,

a supply means,

a takeup spool,

said takeup spool supported for rotation within said cartridge,

said side walls forming entrance and exit apertures,

a web extending from said supply means to said takeup spool and through said exit and entrance apertures to form an exposed portion of said web exterior to said cartridge, said web having at least one tacky adhesive surface,

said takeup spool having thereon accumulated convolutions of said web that has been used, including a last convolution, and

beam spring means supported by said cartridge and having a terminal edge, said terminal edge positioned in squeegeeing relation to said convolutions for forcing said web against said accumulated convolutions of said web on said takeup spool, said terminal edge positioned to be the only portion of said beam spring means engaging said web, to remove buckles in said web and said last convolution, said beam spring means formed with a portion of said beam spring means having one end, comprising said terminal edge, bent at an angle to said beam spring means, said beam spring means having a localized reduced cross section comprising the remainder of a cross section of said beam spring means with notches formed in the edges thereof, and

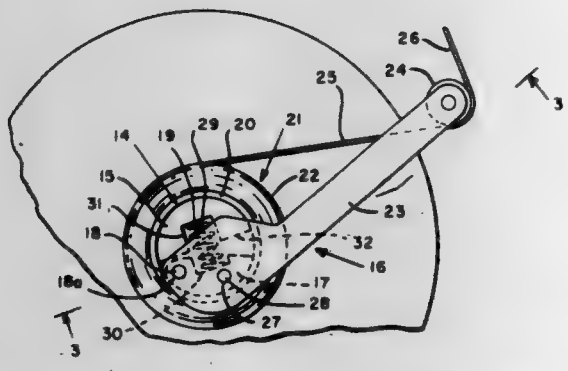
support means for supporting said beam spring means and wherein said reduced cross section is proximate said support means of said cartridge, whereby the bending stress exerted on said beam spring means by said convolutions of said web are concentrated at said reduced cross section and thereby permitting a larger radius in the remaining portion of said beam spring means to insure engagement of said terminal edge with said web in a squeegeeing relation.

4,350,454

RIBBON CARTRIDGE INCLUDING HUB BRAKE

William J. Schoenlein, Levittown, N.Y., assignor to IBM Patent Operations, Lexington, Ky.

Filed Aug. 11, 1980, Ser. No. 176,955
Int. Cl.[3] B41J *33/14*
U.S. Cl. 400—234 7 Claims



1. A ribbon cartridge containing a continuous length of transfer ribbon wound on a supply spool having a circular core member and moveable from said supply spool, through a transfer station external to said cartridge and back onto a take-up spool within said cartridge, said cartridge being suitable for use on a transfer imaging machine containing a means for moving said ribbon from said supply spool, through said transfer station and onto said take-up spool, said cartridge comprising a housing having fixed thereto a generally-circular hub supporting said circular core member of said supply spool for relative rotation thereon, said hub comprising a fixed portion which is fixed to said housing and a moveable portion which is moveable relative to said fixed portion between a relaxed position in which said moveable portion of said hub is biased to press against the inner surface of said core member to lock said core member to said hub, and a retracted position, in which said moveable portion of said hub is moved out of frictional engagement with the inner surface of said core member to permit rotation of said core member on said hub, said moveable portion of said hub comprising a lever arm extending therefrom beyond the outer circumference of the transfer ribbon wound on said core member and having a ribbon-engaging member which extends parallel to the width of the wound ribbon and which is engaged by the rear surface of said ribbon as said ribbon passes from said supply spool to said take-up spool, said lever arm being moveable under the effects of increased tension in the length of ribbon between said supply spool and said take-up spool to move the moveable portion of said hub to said retracted position to release the frictional engagement between the core member and the moveable portion of said hub and permit rotation of said supply spool and dispensing of ribbon therefrom.

4,350,455

HIGH SPEED BASIC AND CONDENSED TAB RACKS

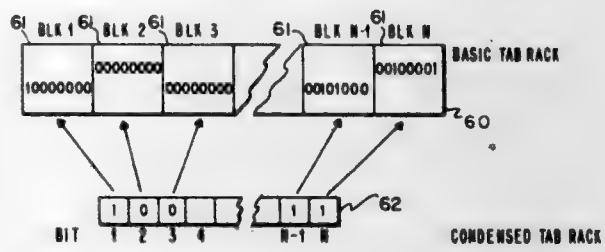
Daniel J. Moore, and Robert A. Pascoe, both of Austin, Tex., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Dec. 26, 1979, Ser. No. 107,238
Int. Cl.[3] B41J *25/18*
U.S. Cl. 400—279 5 Claims

1. In a printer having horizontal means for moving a carrier through a plurality of escapement positions, means for tabulating said carrier to at least a predetermined one of said escapement positions,

storage means for storing a sequence of bit positions each respectively corresponding to one of said escapement positions, and

means for storing a bit representative of a tab-to position only at each bit position corresponding to a predetermined tab-to position, said means for tabulating comprising



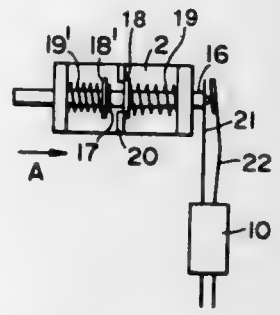
means for accessing only those segments containing a bit representative of a tab-to position.

4,350,456

PRINTER PROVIDED WITH A MARGIN SETTING MECHANISM

Atsushi Noda, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 12, 1979, Ser. No. 102,788
Claims priority, application Japan, Dec. 21, 1978, 53/160478
Int. Cl.[3] B41J *21/02*
U.S. Cl. 400—344 5 Claims



1. A printer comprising:

a carriage provided with a recording head for writing information on a recording medium;

a projecting member mounted on said carriage and moveable thereon against the force of an elastic member;

driving means for causing said carriage to effect scanning movement, and

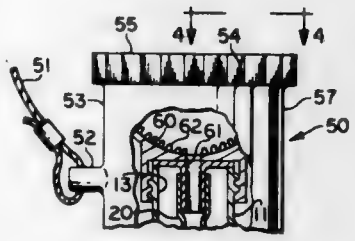
detector means for controlling a writing position of said recording head on said carriage driven by said driving means, said detector means being operable upon contact by said projecting member.

4,350,457

GOLF BALL WASHER AND CLUB CLEANER

G. E. Carnahan, 1007 Regent Ter., Kirkwood, Mo. 63122

Filed Sep. 10, 1980, Ser. No. 185,935
Int. Cl.[3] A63B *47/04*
U.S. Cl. 401—11 1 Claim



1. A golf ball and club cleaner comprising:

(a) a flexible container having a threaded neck portion projecting outwardly from the container,

(b) a closure element threadedly received by the threaded neck portion, the closure element including:
1. a cleaning bowl having a cup portion and a passage communicating between the cup portion and flexible container interior, and
2. a dip tube disposed within the flexible container and communicating with the cup portion through the passage for providing a passage between the flexible container interior and the cup portion,

(c) the cup portion of the cleaning bowl including an interior surface having a plurality of inwardly directed cleaning point projections,

(d) the cleaning bowl including a margin having a plurality of projecting teeth,

(e) the cleaning bowl margin including a substantially smooth upper surface,

(f) the teeth projecting radially outwardly from the margin forming substantially triangularly shaped ridges having radially remote cleaning edges, and

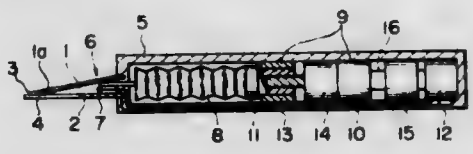
(g) the flexible container including cleaning fluid and being squeezable to supply fluid to the cup portion for application to the golf club for facilitating cleaning of the golf club with the projecting teeth.

4,350,458

FOUNTAIN PEN WITH BATTERY OPERATED SUPPLY DETECTOR AND INK PRESSURIZING DEVICE

Koichi Murahara, Isehara, and Teibun Yasunaga, Hiratsuka, both of Japan, assignors to Pilot Man-Nen-Hitsu Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 11, 1980, Ser. No. 129,309
Claims priority, application Japan, Aug. 14, 1979, 54/103403
Int. Cl.³ B43K *5/00, 5/08, 5/18*
U.S. Cl. 401—145 14 Claims



1. A hand-held fountain pen comprising:
a pen tip having a slit formed therein;
an ink holding plate provided above said pen tip in such a manner that a capillary ink pool is formed between said pen tip and said ink holding plate, said ink holding plate being made of an electrically non-conductive material;
a detector provided in said ink pool for detecting the quantity of ink therein, said detector comprising said pen tip and an electrode provided on the surface of said ink holding plate on which said ink pool is formed;
a pen holder assembly coupled to said pen tip, said pen holder assembly having an ink storing section which opens into said ink pool, an ink delivery device having a motor section and a pushing member which is coupled to the output shaft of said motor section for depressing said ink storing section, and a battery connected to said delivery device and said detector; and
means for controlling said delivery device in response to an ink quantity detection signal outputted by said detector.

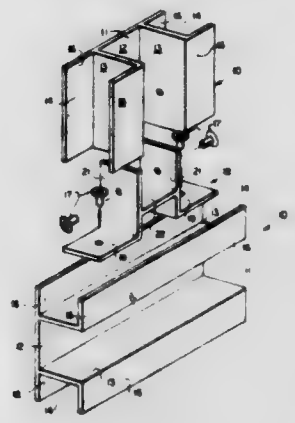
4,350,459

STRUCTURAL MEMBERS

Peter E. Bryant, 10788 La Batista, Fountain Valley, Calif. 94708

Filed Feb. 13, 1981, Ser. No. 234,366
Int. Cl.³ B25G *3/00*; F16B *9/00*; F16L *41/00*
U.S. Cl. 403—263 6 Claims

1. A beam for framework and the like said beam being of the type formed as an elongate rigid member of uniform cross section said beam comprising at least two parallel channels including a first channel defined by a base and spaced apart parallel sidewalls extending from said base normal thereto and a second channel facing outwardly from one sidewall of said first channel, said second channel being defined by a base formed by one sidewall of said first channel and by a pair of spaced apart parallel sidewalls extending from the opposite



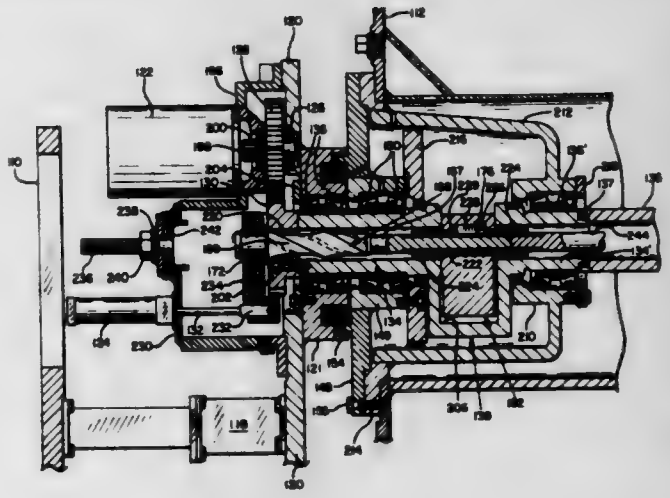
edges of said base and normal thereto so that the thickness of said beam is defined by the height of the sidewalls of said first channel; and the inside width of said first channel is slightly greater than said thickness of said beam.

4,350,460

VIBRATORY COMPACTION SYSTEM

Lynn A. Schmelzer, and W. Thomas Fouser, both of Kewanee, Ill., assignors to Hyster Company, Portland, Oreg.

Filed Mar. 21, 1980, Ser. No. 131,936
Int. Cl.³ E01C *19/38*
U.S. Cl. 404—117 14 Claims



4. A vibrator system for a drum employed in earth compaction or the like, said system comprising:
first and second eccentric weights positioned within said drum and adapted to be rotated within said drum to impart vibration thereto,
a first shaft extending coaxially through the hub of said drum, the first of said eccentric weights being mounted for rotation by said first shaft, and means external to said drum for rotating said first shaft,
a second shaft disposed coaxially with respect to said first shaft and having a driving connection with said second eccentric weight for rotating said second eccentric weight, said connection including axially slidable means allowing axial movement of said second shaft with respect to said second eccentric weight while constraining said second shaft and said second eccentric weight for simultaneous rotation,
said first shaft having a driving connection with said second shaft for bringing about concurrent rotation of said shafts and said first and second eccentric weights, said last mentioned driving connection comprising a first internal helical polygonal surface on one of said shafts and a mating externally helical polygonal surface on the other shaft

extending along an appreciable length thereof in engaging relation with said first helical polygonal surface,

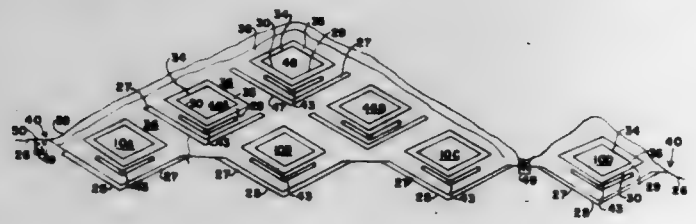
and a linear actuator external to said drum and axially engaging said second shaft for bringing about longitudinal movement of the said second shaft with respect to said first shaft and second eccentric weight, said helical polygonal shaft surfaces causing rotation of the said second shaft with respect to said first shaft to rotate said second eccentric weight and alter the angular position of said second eccentric weight with respect to said first eccentric weight and thereby alter the amplitude of the vibration caused by simultaneous rotation of said eccentric weights.

4,350,461

MULTIPLE WASTE DISPOSAL VAULTS

Richard E. Valiga, Center Square, and John R. Rosso, Mechanicsburg, both of Pa., assignors to Stabatrol Corporation, Norristown, Pa.

Filed Dec. 3, 1980, Ser. No. 212,791
Int. Cl.³ B65G *5/00*; E02D *31/00*
U.S. Cl. 405—128 **8 Claims**



1. A permanent waste disposal installation comprising a group of multiple disposal vaults positioned above the normal high water table level of a region;

at least two parallel, spaced-apart base vaults, each having a basin with a lengthwise slope from a high end toward a low end and having a channel shape from side to side, with the sides of the basins of all of the parallel base vaults being substantially parallel;

an intermediate vault positioned between adjacent base vaults and having a basin with a lengthwise slope from the same high end toward the same low end and having a channel shape from side to side;

each of said vaults having a water-impermeable encapsulation and being positioned above a distinct water-impervious barrier, a collection conduit beneath each said encapsulation and above the said distinct water-impervious barrier, said conduit extending beyond the said lower end of its respective basin; the said collection conduit for the said intermediate vault being aligned between the adjacent sides of the said adjacent base vaults;

said group of multiple disposal vaults being covered with inert covering materials which are graded to correspond to the contour of the region;

means for accumulating leakage and leachate from each said collection conduit.

4,350,462

ROOF SUPPORT PIN

Gerald W. Elders, 38 Yakashba Estates, Prescott, Ariz. 86301

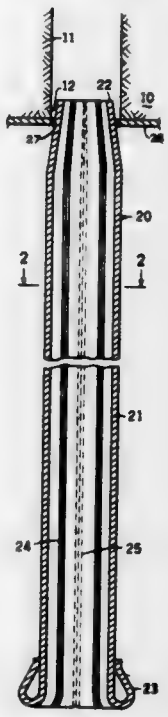
Filed Mar. 28, 1980, Ser. No. 134,939
Int. Cl.³ E21D *21/00*
U.S. Cl. 405—259 **6 Claims**

1. A roof support pin for insertion into a roof bore, the bore having an opening comprising:

(a) an elongate tube for insertion into the bore,

(b) means resiliently compressing the tube prior to insertion of the tube into the bore opening so that the tube expands to frictionally engage the bore in spaced relation to the bore opening for eliminating force exerted on the bore opening, the expansion of the tube anchoring the tube within the bore a distance from the bore opening, and

(c) the said means including a roof support plate having a hole with a diameter smaller than the diameter of the bore,



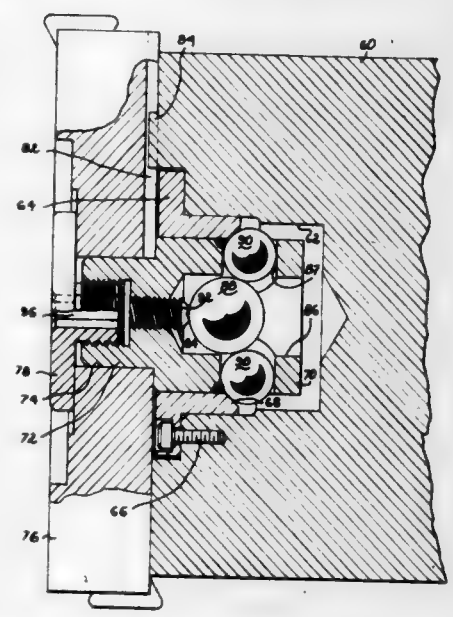
the plate hole compressing the diameter of the tube externally of the bore opening upon insertion of the tube into the bore through the plate hole, the plate hole allowing the tube to expand within the bore a distance from the bore opening.

4,350,463

ARRANGEMENT FOR MOUNTING A CUTTER

Ernest J. Friedline, Latrobe, Pa., assignor to Kennametal Inc., Latrobe, Pa.

Continuation of Ser. No. 242, Jan. 2, 1979, which is a continuation of Ser. No. 805,916, Jun. 13, 1977, abandoned. This application Mar. 21, 1980, Ser. No. 132,381
Int. Cl.³ B23B *31/00*; B23C *5/26*
U.S. Cl. 409—234 **9 Claims**



1. An arrangement for mounting on a power driven spindle, comprising: a milling cutter, a shank rigidly connecting said cutter and spindle, said cutter, shank and spindle having a common axis of rotation, but said shank and cutter are separate components not threadedly engaged with one another, cooperating elements of abutment means and cooperating elements of keying means between said spindle and said cutter, a bore in said spindle, a shoulder formed on said bore, radially movable clamp elements are mounted in radially outwardly extending

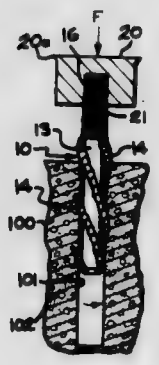
bores foremd on one end of said shank, a central axial perforation is formed in said one end of said shank and communicates with said radially outwardly extending bores having said clamp elements located therein, actuator means located and axially movable within said perforation, and an end cap having a central axial bore communicating with said actuator means on the other end of said shank, said central axial bore being coincident with the direction of axial movement of said actuator means, said clamp elements movable radially outwardly so as to abuttingly engage said shoulder on said bore and urge said cooperating elements of abutment means into engagement by drawing said end cap against said cutter.

4,350,464

ANCHOR BOLT FOR CONCRETE

Richard L. Brothers, 3570 E. M-21, Corunna, Mich. 48817

Filed Sep. 15, 1980, Ser. No. 187,578
Int. Cl.³ E04B *1/38*
U.S. Cl. 411—180 **11 Claims**



1. In an anchor bolt including a metal shaft having a longitudinal axis and having a round cross-sectioned holding portion with a cylindrical surface along and around the axis and a diameter and adapted to be inserted in a hole in concrete the improvement which comprises:

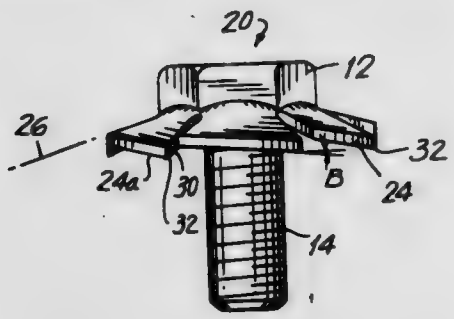
providing at least one weld line around and along the cylindrical surface of the holding portion in a helical pattern along the axis such that the bolt will rotate when forced into a hole of essentially the same diameter in concrete and wherein the holding portion resists being pulled from the concrete along the axis of the shaft.

4,350,465

SPIDER WASHER HEAD SCREW

Louis J. Lovisek, Greenlawn, N.Y., assignor to Industrial Fasteners Corp., Port Washington, N.Y.

Filed Apr. 28, 1980, Ser. No. 144,702
Int. Cl.³ F16B *39/26*
U.S. Cl. 411—186 **8 Claims**



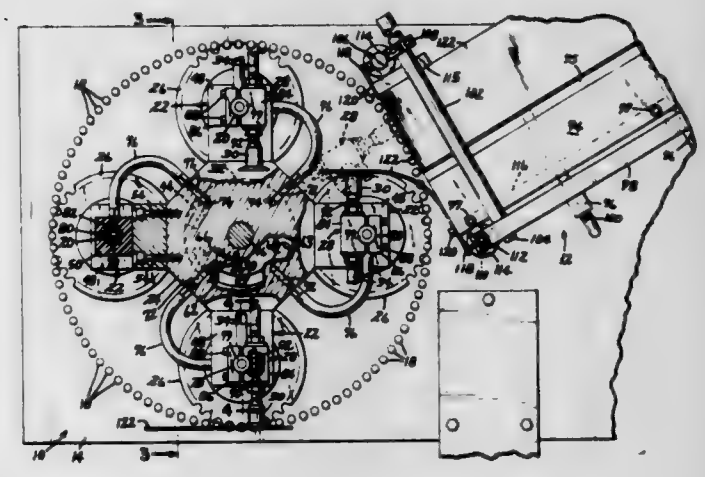
1. A screw having a head; a body defining an axis of rotation, said body extending downwardly from the head and formed integrally therewith; and a flange formed integrally with and extending radially downwardly from said head, said flange being slotted essentially to the base thereof to define a plurality of deformable tabs joined at their respective bases to said head, at least a portion of each tab being twisted relative to its base about an axis extending radially from said axis of rotation along the flange in a direction so that an edge of each of the tabs defined by the slots inclines downwardly, said edge being on the side of the tab facing in the direction of rotation of said screw for removal thereof, the bottom surface of the tabs defining an essentially straight line in radial cross-section except in the region of twist, no portion of said tabs being twisted in an upwardly direction, the thickness of said tabs being selected to permit, when engaged with a workpiece, resilient upward deflection of said tabs to a position extending essentially normally to said body and simultaneous resilient upward deflection of said twisted portions of said tabs to essentially flatten said tabs, so that essentially the entire width and length of the tabs bear on the surface of the workpiece at a fully tightened position.

4,350,466

APPARATUS FOR HANDLING ARTICLES

Melford J. Bahr, Corcoran, and Wayne R. Geist, Rogers, both of Minn., assignors to MGS Machine Corporation, Minneapolis, Minn.

Filed May 8, 1980, Ser. No. 147,956
Int. Cl.³ B65H *3/12*
U.S. Cl. 414—128 **18 Claims**



18. An apparatus for holding articles, comprising:

a support member;

a hub having a periphery and being rotatably supported by said support member;

means for driving said hub;

suction means, spaced about the periphery of and supported by said hub, for attracting and holding said articles;

means for periodically producing a vacuum in said suction means;

driven means for moving said suction means relative to said hub; and

planetary gear means for engaging said driven means as said driving means moves said hub, said planetary gear means including a plurality of pins attached to said support member, said pins being regularly spaced along a circle centered on the rotatable axis of said hub;

whereby said suction means moves articles from first to second locations.

4,350,467

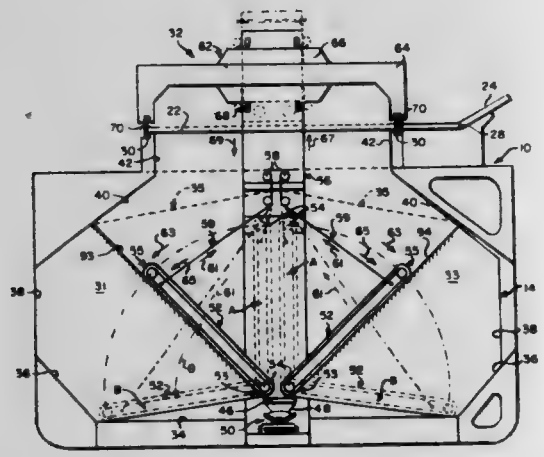
SELF-UNLOADING CARGO VESSEL

Paul Soros, 1102 Oenoke Ridge, New Canaan, Conn. 06840

Filed Jul. 18, 1980, Ser. No. 171,008
Int. Cl.³ B65G *67/58*; B23B *35/30*
U.S. Cl. 414—144 **35 Claims**

1. In a self-unloading apparatus capable of removing bulk material from a plurality of storage chambers therefor in a vessel on which each of said storage chambers has a hatch opening at the top thereof and includes at least one unloading gate extending through the base thereof for regulating the flow of said bulk material through the base of said storage chamber,

and a common longitudinal conveyor means disposed beneath the unloading gates of said chambers and in flow through communication therewith for enabling removal of said bulk material discharged through each of said unloading gates, said bulk material storable in each of said chambers being capable of forming a surface angle with respect to the discharge of said bulk material through said unloading gates; the improvement comprising frame means removably receivable within any of said plurality of storage chambers; and a scraper conveyor means pivotally supported on said frame means and removably disposable along said surface angle for conveying said formed stored bulk material to said one unloading gate for discharge therethrough onto said longitudinal conveyor means, said scraper conveyor means having a proximal end and a distal end and being pivotally supported on said frame means at said proximal end by pivot means mounted adjacent the base of said removable frame means, said frame means further comprising means for retracting and extending said scraper conveyor means distal end between a retracted position for enabling removal and insertion of said supported scraper conveyor



means through said storage chamber hatch opening and an extended position, said retracting and extending means including means for enabling said scraper conveyor means to be substantially continually disposable along said surface angle as said surface angle varies during said emptying of said stored bulk material from said storage chamber through said one unloading gate, means for raising and lowering said frame means into said storage chamber through said hatch opening, with said scraper conveyor means in said retracted position, between a raised position in which said supported scraper conveyor means is removed from said storage chamber and an inserted position in which said lowered frame enables said supported scraper conveyor means to be extended along said surface angle, and means for translating said raised frame means between said plurality of storage chambers for selectively enabling said removal and insertion of said frame supported scraper conveyor means into said inserted position in any of said storage chambers, whereby complete discharge of said stored bulk material from each of said storage chambers may be facilitated.

4,350,468

HIGH-RISE SILOS

Bernhard Jülke, Melle, Fed. Rep. of Germany, assignor to Engelbrecht & Lemmerbrock GmbH & Co., Melle, Fed. Rep. of Germany

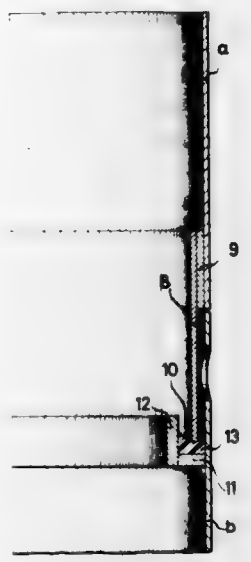
Filed Jan. 5, 1981, Ser. No. 222,283

Claims priority, application Fed. Rep. of Germany, Jan. 17, 1980, 8001051[U]

Int. Cl.³ B65G *65/36;* F16L *25/00*

U.S. Cl. 414—325 **2 Claims**

1. A high-rise silo having a central vertical clearing shaft comprising a plurality of similar pipe sections arranged loosely one above another, to the top of which shaft silage is fed by means of revolving feed members, and is drawn off outwards radially below the silo bottom by means of a conveyor, wherein each pipe section has an inner annular cylindrical flange which is spaced from the lower end of the pipe wall and is hermetically connected to the pipe wall and projects axially beyond the lower rim of the pipe section, and the upper part of



the section having an inner encircling annular groove provided with a sealing ring the bottom of said sealing ring being spaced from the upper rim of the pipe section by an amount which does not exceed the axial length of said annular flange which projects beyond the lower rim of the section.

4,350,469

HANDLING DEVICE MOUNTED ON A VEHICLE TO CARRY OUT THE HANDLING OF LOADS SUCH AS SKIPS AND CONTAINERS

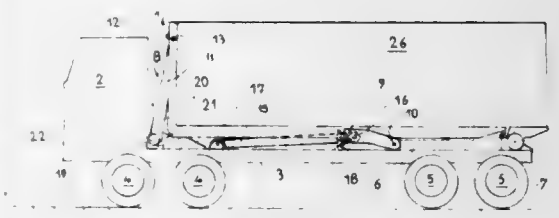
Antoine Corompt, Saint Etienne, France, assignor to Bennes Marrel S.A., France

Filed Jun. 17, 1980, Ser. No. 160,295

Claims priority, application France, Jun. 18, 1979, 79 16332

Int. Cl.³ B60P *1/64*

U.S. Cl. 414—420 **10 Claims**



1. A handling device mounted on a vehicle to carry out the handling of loads such as skips and containers, comprising:

a sub-frame pivoted on a first transverse pivot, which is closely horizontal, provided at the rear of the chassis of the vehicle;

a derrick comprising a main telescopic arm of which the base is pivoted to the free end of the sub-frame by means of a second pivot parallel to the first pivot, and an auxiliary arm provided at its free end with a hook intended to work in conjunction with an anchor point provided at the front of the load;

at least one tilting jack pivoted at the rear to the main arm of

the derrick, and at the front to the chassis of the vehicle to control the swinging movements of the derrick;

a slide jack which controls the extension and contraction of the main telescopic arm of the derrick;

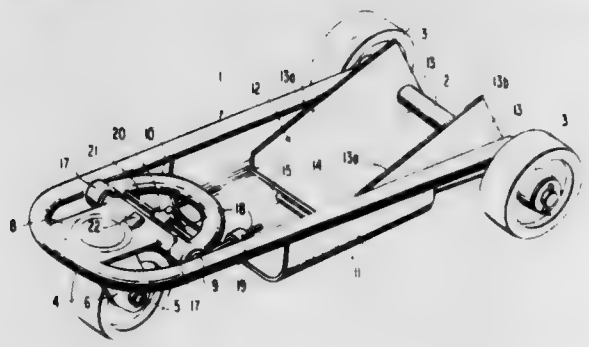
a latching system able to ensure the latching of the main derrick arm in line with the sub-frame, and characterised in that the chassis is provided at the front with a cam intended to work in conjunction with the free end of the main telescopic derrick arm to make the derrick swing slightly upwards at the beginning of the contraction travel of the said main arm from the road position of the device.

4,350,470

WHEEL TRUCK

Hernando Murillo, Calle 82 No. 14-A-17 Piso 4°, Bogotá, Colombia

Filed Jun. 9, 1980, Ser. No. 157,606
Int. Cl.³ B60B *29/00*
U.S. Cl. 414—430 11 Claims



1. A wheeled support device for the disabled tire of a vehicle, comprising

(a) a generally U-shaped tubular frame having substantially parallel side members;

(b) a front wheel mounted for pivoting movement centrally between the forward portions of said side members;

(c) at least two rear wheels mounted on an axle extending transversely between the rear portions of said side members;

(d) a substantially U-shaped cradle extending between said side members with its open end facing upwardly and having a width sufficient to receive a tire to be mounted on said support device, each of the arms of the U depending downwardly from a respective one of said side members;

(e) a ramp member mounted upon said axle mounting said rear wheels and pivotable about said axle from a first position in which it presents a rearwardly downwardly inclined surface adapted to receive a tire to be mounted on said support device to a second position in which said surface extends in a generally vertical direction for retaining said tire in its mounted position, to a third position in which said surface faces downwardly toward said cradle;

(f) said ramp member having substantially vertical, generally triangular side walls one of whose sides abuts the ground when said ramp member is in its said first position, the vertical distance of said ground abutting side from said axle being greater than the radius of said rear wheels, whereby said rear wheels are out of contact with the ground when said ramp is in its said first position;

(g) a forward restraining member mounted for movement about a pivot member from a first position in which it extends in a rearward, generally horizontal direction in the plane of said frame to a second position in which it extends in a direction within the range of 45° to 90° from a horizontal plane extending rearwardly from said pivot member above said plane, for retaining said tire in its mounted position; and

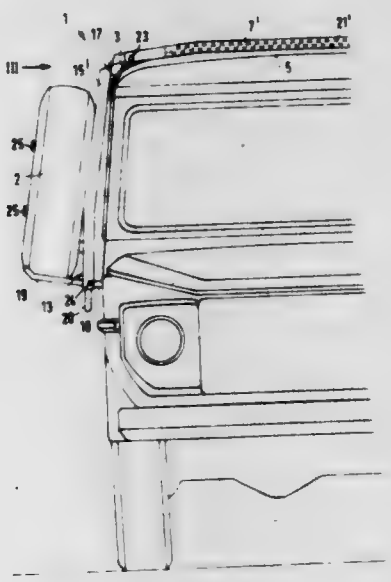
(h) means actuated by movement of said ramp member from its said first position to its said second position for moving said forward restraining member from its said first position to its said second position, said means comprising an abutment member pivotally attached adjacent the leading edge of said surface of said ramp member for forward movement therewith, and a longitudinally extending crank member having one of its ends attached to the pivot axis of said forward restraining member, the other of its ends being abutted by said abutment member as it moves with said ramp member from its said first position to its said second position.

4,350,471

ROOF RACK IN PARTICULAR FOR CROSS COUNTRY VEHICLES, AMBULANCES AND THE LIKE

J. C. Ludwig Lehmann, Lorch, Fed. Rep. of Germany, assignor to Binz GmbH & Co., Lorch, Fed. Rep. of Germany

Filed Oct. 6, 1980, Ser. No. 194,288
Claims priority, application Fed. Rep. of Germany, Oct. 16, 1979, 7929282[U]
Int. Cl.³ B62D *43/02*
U.S. Cl. 414—463 5 Claims



1. A roof rack for vehicles, comprising guide members capable of being rigidly mounted on a roof of a vehicle; a load carrying part supported and guided by said guide members; said load carrying part being displaceable on said guide members and pivotable about a substantially horizontal pivot extended transversely of said guide members to move from a substantially horizontal transport position on the roof of the vehicle into substantially vertical loading position at one side of the vehicle; a carriage adapted for limited displacement in said guide members, said pivot lying on one side of said load carrying part relative to the center of gravity of said load carrying part and having a pivot axis extending transversaly of direction of said displacement; and at least one additional guide member rigidly connected to the vehicle and extended around the edge of said vehicle to support said one side of said load carrying part when the latter is displaced between said transport position and said loading position so that the load carrying part is moved from said transport position to said loading position without contacting the vehicle roof.

4,350,472

ELECTRIC FAN APPARATUS

Masao Morimoto, Kasai, Japan, assignor to Sanyo Electric Co., Ltd., Moriguchi, Japan

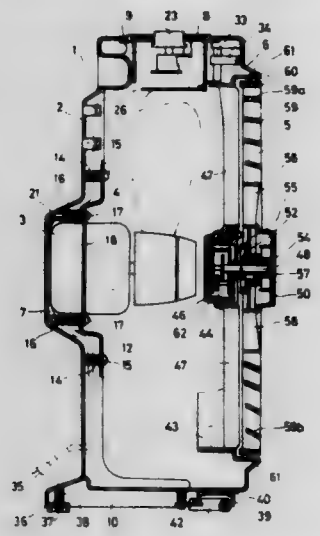
Filed Nov. 13, 1979, Ser. No. 93,596
Claims priority, application Japan, Nov. 14, 1978, 53-157845[U]; Mar. 14, 1979, 54-33343[U]; Mar. 19, 1979, 54-35849[U]; Mar. 23, 1979, 54-38447[U]; Mar. 26, 1979, 54-35826
Int. Cl.³ F04D *29/56*
U.S. Cl. 415—125 2 Claims

1. An electric fan apparatus comprising:

a fan;

a wind direction shifting plate disposed in front of said fan and being rotatable by wind generated thereby; and

stop-start means for stopping and starting rotation of said wind direction shifting plate, said stop-start means comprising an engagement piece adapted to engage with one



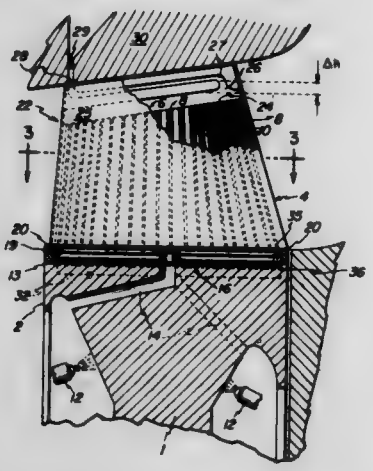
of a plurality of engagement portions formed on an outer periphery of said wind direction shifting plate, a spring urging said engagement piece in a direction to engage with one of said plurality of engagement portions and an operating portion for holding said engagement piece at a shunting position against force exerted by said spring.

4,350,473

LIQUID COOLED COUNTER FLOW TURBINE BUCKET

James T. Dakin, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Feb. 22, 1980, Ser. No. 123,519
Int. Cl.[3] F01D *5/18*
U.S. Cl. 416—1 13 Claims



1. In a liquid cooled turbine bucket adapted for mounting on a rotatable turbine wheel and having a tip region at a radially outward end and an airfoil-shaped portion located radially inward to said tip region, the improvement comprising:

a plurality of radially extending coolant passages disposed in said airfoil-shaped portion;

means for admitting liquid into said passages at radially inwardly disposed sections of said passages;

means for discharging liquid from said bucket disposed in flow communication with radially outwardly disposed sections of said passages, said liquid discharging means including a means for restricting the flow of vapor from said passages into said liquid discharging means; and

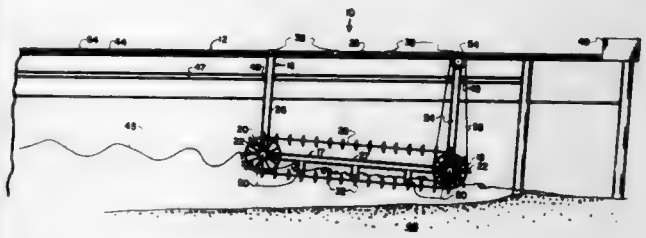
means for discharging vapor from said bucket disposed in flow communication with said passages at second radially inwardly disposed sections of said passages.

4,350,474

TIDE FOLLOWING WAVE POWER MACHINE

James T. Murphy, 6232 Caminito Araya, La Jolla, Calif. 92122

Filed Aug. 1, 1980, Ser. No. 174,365
Int. Cl.[3] F03B *9/00*
U.S. Cl. 416—7 5 Claims



1. A wave power machine for utilizing the force of breaking waves on a tidal body of water having a beach area comprising:

at least two spaced apart piers extending from the beach into the water a predetermined distance;

a carriage supported on and between said piers and horizontally movable in parallel relation to the level of said water, said carriage having two pairs of spaced wheels rotatably supporting a pair of respective horizontally extending looped endless belts;

a plurality of wave-engaging spaced blades supported at each end on said endless belts and extending between and perpendicular to said piers; the blades on the lower side of the endless belts successionally engaging the breaking waves;

means for supporting the carriage on said piers for longitudinally inclined movement with respect to said water; and

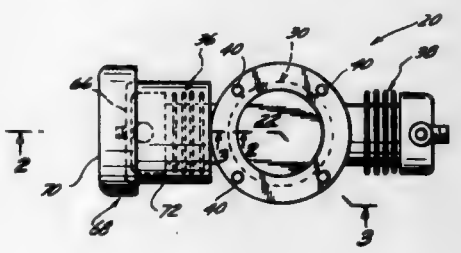
means for controlling the position of the carriage into and away from the beach to follow the incoming and outgoing tides, respectively, to enable the blades to contact the initial breaking waves and utilize their force throughout the entire extent of the wave action.

4,350,475

INTEGRATED OIL-LESS HIGH CAPACITY AIR COMPRESSOR

Meredith W. Meece, Monroe, La., and Win W. Paget, White Lake, N.C., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Mar. 20, 1980, Ser. No. 132,019
Int. Cl.[3] F04B *37/00*
U.S. Cl. 417—238 8 Claims



1. An integrated high capacity oil-less, air cooled compressor, comprising:

a motor having a shaft extending therefrom;

a frame extending about the shaft for mounting the motor;

a bearing bracket spaced from the frame for receiving the shaft for rotation relative thereto;

a fan coupled to the shaft for cooperating in circulating cooling air over parts of the compressor;

a pair of diametrically opposed piston-cylinder assemblies each having a cylinder and piston reciprocal therein coupled with the shaft for providing a compression chamber capable of undergoing a compression stroke incident to the reciprocation of the piston in the cylinder;

a shroud about each piston cylinder assembly for cooperating in directing the circulating cooling air over parts of the compressor;

a plurality of spaced dowel pin assemblies extending from the frame and bracket; and

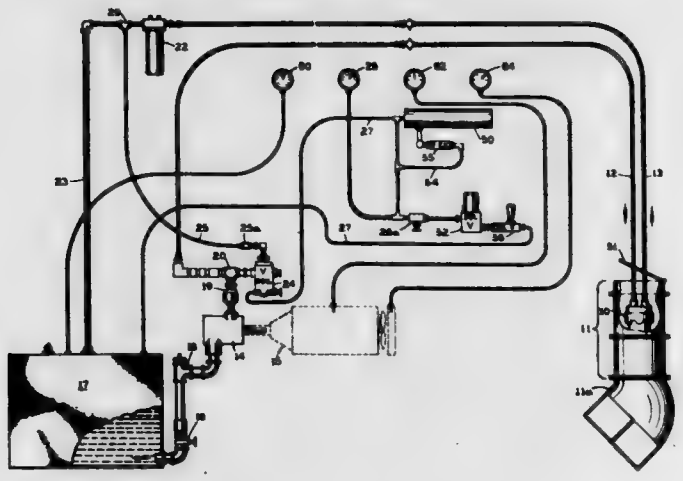
the cylinder of each piston-cylinder assembly having a plurality of lugs, each lug interposed between and coupled with the frame and the bracket by a dowel pin assembly.

4,350,476

HYDRAULIC MOTOR SYSTEM FOR DRIVING A SUBMERSIBLE IMPELLER PUMP IN WHICH HYDRAULIC SURGE AT START-UP AND SHUT-DOWN IS CUSHIONED

J. David Eller, 33 NW. 2 St., Deerfield Beach, Fla. 33441

Filed Jul. 25, 1980, Ser. No. 172,201
Int. Cl.[3] F04B *49/02, 9/10*
U.S. Cl. 417—304 3 Claims



1. In combination with

a submersible pumping unit with a gate valve and having a rotary pump including an impeller for pumping water, a hydraulic motor in driving relationship with said pump for rotating said pump in one direction to pump the water, and hydraulic lines connected to opposite sides of said motor;

and an above-ground hydraulic system for operating said hydraulic motor in the submersible pumping unit, said hydraulic system including an oil tank, an above-ground pump operatively connected to pump oil from said tank to one of said hydraulic lines of the submersible pumping unit to drive the hydraulic motor for rotating said first-mentioned pump in said one direction, and return conduit means connected between the other of said hydraulic lines for the hydraulic motor in the submersible pumping unit and said oil tank to return the oil from said hydraulic motor to said tank;

the improvement which comprises:

a bypass pressure regulating valve connected in series with means including oil viewing means between the outlet side of said above-ground pump and said return conduit means for said oil tank to limit the pressure of the oil which operates said hydraulic motor in the submersible pumping unit by bypass oil flow, said oil viewing means enabling viewing of bypass oil flow through said regulating valve for adjustment purposes;

a bypass line connected in parallel around said pressure regulating valve;

a hydraulic accumulator in said bypass line for causing hydraulic pressure at the pressure regulating valve to build up gradually at start-up and decrease gradually at shut-down;

a normally open automatic valve in said bypass line which closes at start-up to cause pressure at said pressure regulating valve to build up gradually until said pressure regulating valve diverts fluid to said motor to build up to operating pressure there;

said automatic valve opening at shut-down to drain said accumulator and cause pressure at the motor to decrease;

a flow control valve in said bypass line for limiting the decrease in pressure at shut-down to a selected level at which said motor operates at low speed to stop the closing of said gate valve;

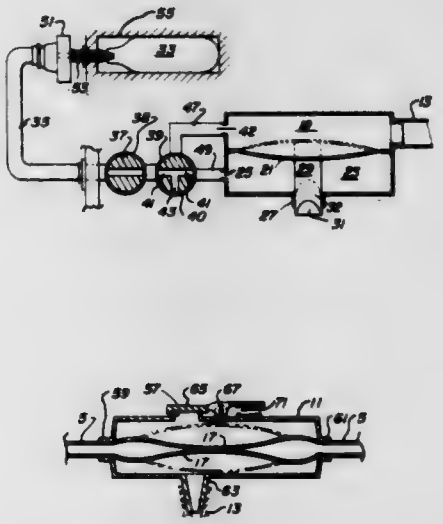
and said automatic valve re-opening after a selected time to permit total shut-down and closing of said gate valve.

4,350,477

PNEUMATIC PULSATILE FLUID PUMP

Charles N. Mazal, Sullivan 119, Mexico 4, D.F., Mexico

Filed Apr. 20, 1977, Ser. No. 789,353
Int. Cl.[3] F04B *45/06*
U.S. Cl. 417—384 3 Claims



1. A device for creating a cyclic pressure pulse in a closed volume of fluid, said device comprising:

means enclosing a volume of fluid for defining a closed system, said means including a flexible member forming a boundary portion of said enclosing means, said flexible member being biased in a first position extending in a direction outwardly of said enclosing means and movable to a second position extending in a direction inwardly of said enclosing means,

drive means for moving said flexible member from said biased first position to said second position, said driving means including

(i) a housing having a fluid inlet and a fluid outlet,

(ii) valve means operably connected to said flexible member for alternately opening and closing said fluid outlet, said valve means opening said fluid outlet when said flexible member is in said second position, and

(iii) a source of fluid under pressure operably connected to said fluid inlet of the housing to increase the pressure within said housing to move said flexible member inwardly of said enclosing means to said second position whereupon said valve means opens said fluid outlet of the housing to vent the pressurized fluid within said housing and allow said flexible member to return to the biased first position to begin a new cycle in which said source of fluid under pressure again increases the pressure with said housing to move said flexible member inwardly of said enclosing means,

said enclosing means includes a fluid inlet and a fluid outlet, said inlet and outlet each having a valve means for controlling the passage of fluid therethrough, and,

said device further includes a source of fluid under pressure connected to said fluid inlet of the enclosing means whereby each of the valve means for said inlet and outlet can be opened to flush fluid out of said enclosing means and each of said valve means can be selectively operated to raise the pressure of the fluid in said enclosing means by

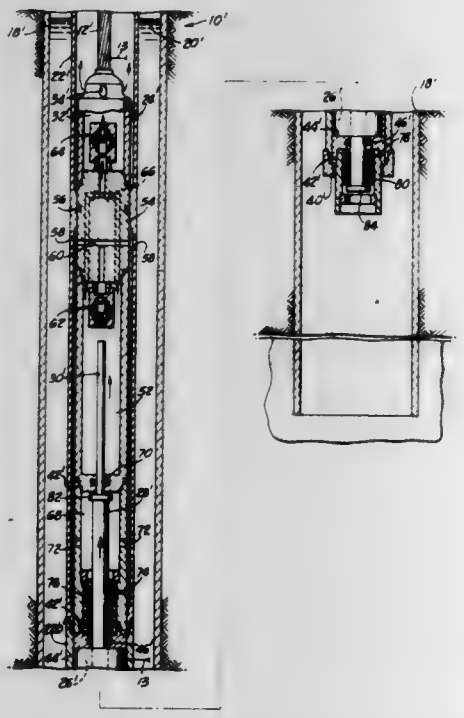
opening the valve means for the inlet and closing the valve means for the outlet and operated to lower the pressure of the fluid in said enclosing means by closing the valve means for the inlet and opening the valve means for the outlet.

4,350,478

BOTTOM HOLE OIL WELL PUMP

Paul V. Oldershaw, 4812 Hasti Bob Ct.; James E. Hansen, 3708 S. Real Rd., both of Bakersfield, Calif. 93309, and Walter E. Hinds, 1358 Schuyler Rd., Beverly Hills,, Calif. 90210

Filed May 13, 1980, Ser. No. 149,331
Int. Cl.³ F04B *47/06, 21/06, 39/10*
U.S. Cl. 417—417 **26 Claims**



1. A bottom hole pump for use in a well including a casing with tubing of substantially smaller diameter than the casing extending downwardly through the casing to a depth at which liquid is to be pumped from the well, comprising:

an elongate pump housing connected at its upper end with a control cable for lowering and raising the pump housing in the tubing and for connecting the pump with an electrical power source and controls at the surface of the well, the tubing including means for supporting the pump housing at a predetermined pumping depth within the well, the upper end of the housing adjacent its interconnection with the control cable forming an outlet chamber and passage means for connecting the outlet chamber with the interior of the tubing above the pump housing;

inlet means for admitting liquid from the well casing into the pump housing;

a pumping chamber in the pump housing;

a linear motor mounted in the pump housing and being operatively interconnected with the control cable;

a cylindrical plunger reciprocable by the linear motor and extending into the pumping chamber for producing a pumping action therein;

an inlet check valve enabling liquid flow through the inlet means into the pumping chamber; and

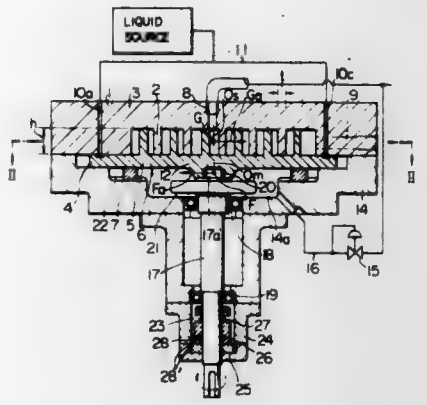
an outlet check valve enabling liquid flow from the pumping chamber into the outlet chamber for passage to the tubing above the pump housing.

4,350,479

SCROOL-TYPE FLUID MACHINE WITH LIQUID-FILLED FORCE-BALANCED POCKETS

Kenji Tojo; Masato Ikegawa; Masao Shibayashi, and Masaya Imai, all of Ibaraki, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 9, 1980, Ser. No. 138,730
Claims priority, application Japan, Apr. 11, 1979, 54/43077
Int. Cl.³ F01C *1/02, 21/00*
U.S. Cl. 418—55 **42 Claims**



1. A scroll-type machine comprising:

a stationary scroll means including an end member and a spiral wrap extending from one surface of said end member;

an orbiting scroll means including an end member and a spiral wrap extending from a surface of said end member thereof;

a rotation-preventing member adapted to prevent said orbiting scroll means from rotating about its own axis;

a frame secured to said stationary scroll means;

a crank shaft supported by said frame for rotation about an axis coincident with the axis of said stationary scroll means and having an engagement member located at a position spaced from the axis of the rotation of said crank shaft by a distance equal to a radius of an orbital movement of said orbiting scroll means, said engagement member being adapted to transmit power between said orbiting scroll means and said crank shaft;

a low pressure port;

a high pressure port;

a plurality of circumferentially spaced pockets formed in the end member of one of said stationary and orbiting scroll means and being adapted to confine a liquid therein;

liquid supplying passage means for supplying said liquid to each of said pockets;

intermittent liquid supplying means for controlling a supply of said liquid to each pocket through said liquid supplying passage means such that the supply of said liquid to each pocket is made intermittently at a constant cycle; and

a source of liquid to be supplied to said pockets.

4,350,480

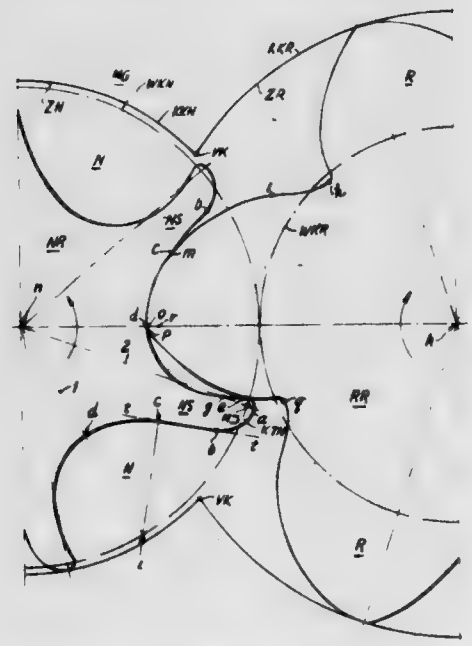
INTERMESHING SCREW ROTOR MACHINE WITH SPECIFIC THREAD PROFILE

Karl Bammert, Alleestrasse 3, 3000 Hanover, Fed. Rep. of Germany

Filed Dec. 7, 1979, Ser. No. 101,079
Claims priority, application Fed. Rep. of Germany, Mar. 23, 1979, 2911415
Int. Cl.³ F01C *1/16;* F04C *18/16;* F16H *55/08*
U.S. Cl. 418—201 **21 Claims**

1. In a screw rotor machine including a housing defining a pair of intersecting parallel bores, and a pair of rotors mounted for rotation within said bores of said housing, said rotors having intermeshing helical threads and grooves, with the threads and grooves of one of said rotors lying substantially outside the pitch circle of said one rotor and with the threads and grooves of the other of said rotors lying substantially inside the pitch

circle of said other rotor, said threads of said other rotor including a crest portion located substantially outside the pitch circle of said other rotor, with flanks of the threads of said other rotor defining, respectively, one side each of adjacent grooves located on opposite sides of said thread, one of said flanks of said threads of said other rotor operating to define the side of an adjacent groove which is the trailing side of said groove when said machine is operated as a compressor and the leading side when said machine is operated as a motor, said trailing side of said groove being substantially generated from a point in said groove closest to the axis of said other rotor to a point where said groove intersects the pitch circle of said other rotor by a crest portion of the respective thread of said one rotor which is radially most remote from the axis of said



one rotor, the improvement which comprises that said radially remote crest portion of said one rotor is rounded with a relatively small radius dimension to generate the flanks of the threads of said other rotor to be tangent to a plurality of circles having centers which lie on a radial line which is curved in the direction of rotation of said other rotor, said circles having diameters which decrease taken from the radially innermost to the radially outermost of said circles, with said crest portion of said threads of said other rotor being shaped in conformity with the radially outermost of said plurality of circles, said radially outermost circle having a center which is located within and closely adjacent to the pitch circle of said other rotor, said crest portion thereby projecting beyond said pitch circle of said other rotor a distance corresponding approximately to the radius of said outermost circle.

4,350,481

APPARATUS FOR CENTRIFUGAL CASTING OF THERMOSETTING PLASTICS

John E. Corea, 414 12th St., Lakewood, N.J. 08701; Emanuel R. Corea, 102 10th Ave., Belmar, N.J. 07719, and Irving Tashlick, 675 Ocean Ave., Long Branch, N.J. 07740

Filed Mar. 11, 1981, Ser. No. 242,594
Int. Cl.³ B29C *5/04*
U.S. Cl. 425—73 9 Claims

1. An apparatus for centrifugal casting of thermosetting plastics and the like, said apparatus including:

(a) a stationary base;

(b) a spinner rotatably journaled in and through said stationary base;

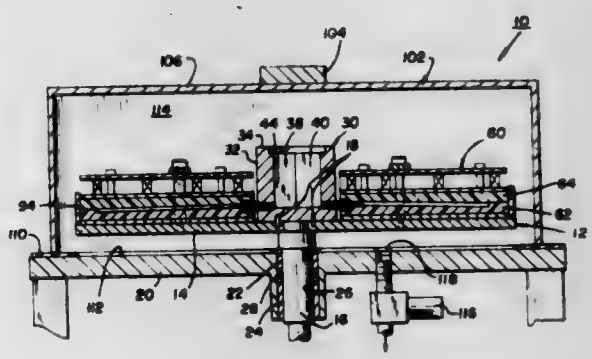
(c) means for rotating said spinner;

(d) a dividing hub adapted for removable mounting on said spinner and adapted to spin with the rotation of said spinner, said dividing hub having a top, a bottom, a plurality of sides, a reservoir within said diving hub with said hub having a plurality of nozzles, each of said nozzles extending radially from the sides of said dividing hub;

(e) each of said nozzles having a conduit connecting an extreme tip of each nozzle with a bottom portion of the reservoir within the dividing hub and providing for passage therethrough of a pre-measured quantity of the thermosetting plastic from the reservoir to the extreme tip of each nozzle during the casting process;

(f) a plurality of casting molds each adapted to removably engage a nozzle, the casting molds adapted to receive and mold the thermosetting plastic or the like after delivery from said tip of the nozzle;

(g) a clamping means for retaining the casting molds to the dividing hub during the rotation of the spinner;



(h) a vacuum hood and means for pivotally securing said hood to the stationary base and with gasket means to provide a vacuum chamber in combination with said stationary base, said vacuum hood when swung into closed condition on the stationary base enclosing the spinner, the dividing hub, the plurality of casting molds and said clamping means;

(i) a vacuum means connected to the vacuum chamber and with valve means and with the chamber closed adapted to evacuate said vacuum chamber to a predetermined pressure, and

(j) a drive means for rotating the spinner, the mounted dividing head, the plurality of casting molds after engagement with the nozzles extending from the dividing hub and the clamping means for retaining the plurality of molds to the dividing hub.

4,350,482

APPARATUS FOR PRODUCTION OF FIBROUS SHEET MATERIAL

Vyacheslav S. Alexandrov, ulitsa S. Kovalevskoi, 7, korpus 5, kv. 66; Alexandr E. Guschin, Kovensky pereulok, 13, kv. 18; Rudolf V. Zavodov, ulitsa D. Bednogo, 22/2, kv. 113; Elena I. Zhukova, prospekt M. Toreza, 92, kv. 25; Alexandr A. Ivanov, Krasnoselsky raion, Fabrichny poselok, 5; Tatyana S. Fofanova, Serebristy bulvar, 18, korpus 2, kv. 237; Evgeny I. Mikhailov, prospekt Slavy, 16, kv. 270; Ivan M. Dianov, ulitsa Zverinskaya, 17-a, kv. 9; Pavel M. Lazin, Institutsky proezd, 9, kv. 68; Igor A. Sergeev, prospekt Stachek, 27, kv. 8; Lidia A. Pankratova, ulitsa Ryleeva, 17, kv. 17; Vera E. Krylova, prospekt Slavy, 2, korpus 2, kv. 41, and Semen A. Leibenzon, Srednaya Podyacheskaya ulitsa, 15, kv. 1, all of Leningrad, U.S.S.R.

Division of Ser. No. 957,478, Nov. 3, 1978, Pat. No. 4,263,241.
This application Sep. 22, 1980, Ser. No. 189,097
Int. Cl.³ B29J *1/02*
U.S. Cl. 425—83.1 10 Claims

1. An apparatus for producing fibrous sheet material, comprising:

(a) means for dispersing fibers in a gas stream to form a gas-fiber stream;

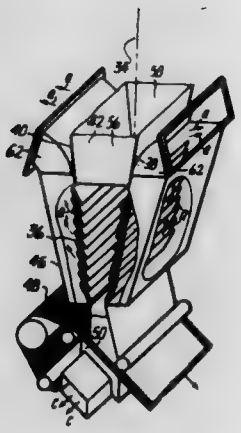
(b) a slot nozzle communicating with said fiber dispersing means, having an inlet opening to receive the gas-fiber stream, and an outlet opening,

said slot nozzle having parallel side walls normal to converging frontal walls;

(c) a chamber having an inlet opening communicating with the outlet opening of said slot nozzle, and an outlet opening;

(d) guide means for removing a portion of the gas from the gas-fiber stream, arranged in parallel rows in said chamber below the outlet opening of said slot nozzle;

(e) branch pipes to remove a portion of the gas from said chamber, said branch pipes arranged in the upper portion of said chamber;



(f) a flat screen to form a fibrous layer thereon, disposed underneath said chamber substantially in a zone where the gas-fiber stream flows from the outlet opening of said chamber;

(g) a suction box to remove the remaining portion of the gas from the gas-fiber stream flowing onto said flat screen, said suction box arranged below said flat screen; and

(h) means for converting the fibrous layer formed on said flat screen to obtain a finished sheet material.

4,350,483

APPARATUS FOR THE CONTINUOUS PRODUCTION OF BUILDING ELEMENTS HAVING CELLULAR CORES

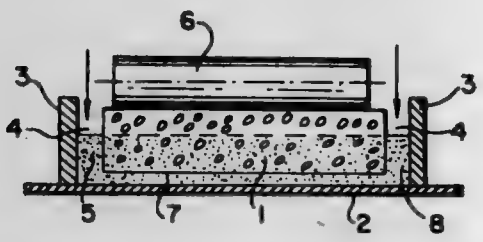
Alain Bonnet, Clermont, France, assignor to Saint Gobain Industries, Neuilly, France

Division of Ser. No. 128,087, Mar. 7, 1980, Pat. No. 4,312,822, which is a continuation of Ser. No. 12,716, Feb. 16, 1979, abandoned, which is a continuation of Ser. No. 575,387, May 9, 1975, abandoned, which is a continuation of Ser. No. 278,819, Aug. 8, 1972, abandoned. This application Jan. 19, 1981, Ser. No. 226,499

Claims priority, application France, Aug. 10, 1971, 71 29174

Int. Cl.³ B28B *5/02*; B29D *3/00*

U.S. Cl. 425—115 **14 Claims**



1. Apparatus for the manufacture of structural materials and the like which comprises

a moving channel having a bottom conveyor and side belts,

means to move it continuously,

means to put a ribbon of cellular material into said channel,

means to load said channel with fluid hardenable material by pouring it into a space between the side edges of said ribbon and said side belts to move said ribbon upwardly by the buoyant force of said fluid hardenable material,

means to stop the upward movement of the ribbon to form a bottom facing of desired thickness,

means downstream of said stop means for pouring a top facing onto the top of said ribbon and onto the lateral portions of the bottom facing;

said fluid material being in contact with the ribbon,

means to maintain the ribbon in the fluid in the channel until the fluid sets thereon, and

means to remove the ribbon and its coating of set fluid from the moving channel.

4,350,484

FORMING LINE FOR USE IN THE MANUFACTURE OF PARTICLE BOARDS

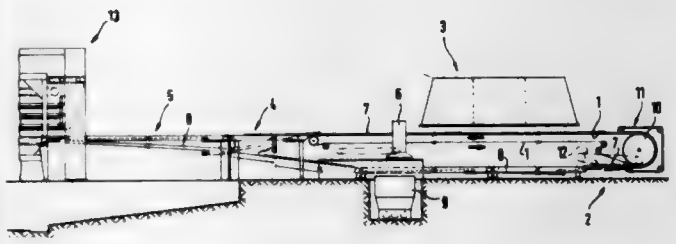
Günter Seeger, Springe, and Dieter Wiemann, Barsinghausen, both of Fed. Rep. of Germany, assignors to Bison-Werke Bähre und Greten GmbH & Co. KG, Fed. Rep. of Germany

Filed May 12, 1980, Ser. No. 148,688

Claims priority, application Fed. Rep. of Germany, May 18, 1979, 2920219; May 18, 1979, 2920220; May 18, 1979, 2920221

Int. Cl.³ B29J *5/08*

U.S. Cl. 425—140 **30 Claims**

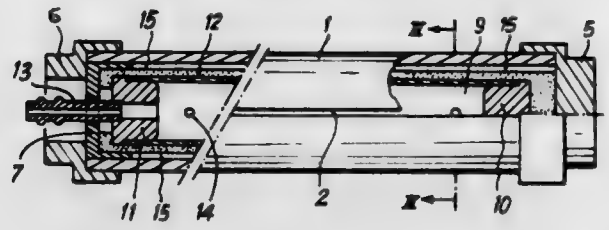


1. Apparatus for the manufacture of particleboard sections from cellulose based particulate material, the apparatus comprising a forming conveyor having upper and lower runs and arranged, in operation, to run continuously around first and second deflection drums with said upper run moving from said first deflection drum to said second deflection drum, a mat carrier forwarding station located at said first deflection drum and cooperating with said lower run to feed individual mat carriers with predetermined overlap onto said forming conveyor, a scattering station for scattering said particulate material in the form of a continuous mat onto the mat carriers, separating means for dividing the mat onto individual mat sections located on individual mat carriers, a transport conveyor section following said forming conveyor for picking up loaded mat carriers from the forming conveyor and for accelerating each mat carrier thereby to separate it from the next following mat carrier, a storage conveyor following said transport conveyor section, a multi-storey press for pressing said mat sections on said mat carriers, a vertically movable stacker loader having a number of tiers arranged between said storage conveyor and said multi-storey press, transport means for transferring loaded mat carriers from said storage conveyor into the tiers of said stacker loader, said stacker loader being adapted to transfer loaded mat carriers located in its tiers into one side of said multi-storey press and to withdraw mat carriers from the same side of said multi-storey press, and return conveyor means located beneath said storage conveyor and driven in the opposite direction thereto for returning unloaded mat carriers from said stacker loader to said mat carrier forwarding station.

4,350,485
DEVICE FOR MOULDING CYLINDRICAL PIECES

Andre Larribe, Le Pecq, France, assignor to Societe Nationale Industrielle Aerospatiale, Paris, France

Continuation of Ser. No. 147,499, May 7, 1980, abandoned. This application Aug. 31, 1981, Ser. No. 297,755
Claims priority, application France, May 25, 1979, 79 13314
Int. Cl.³ B29C *17/00*
U.S. Cl. 425—389 3 Claims



1. A mold for forming reinforced plastic tubular pieces and the like comprising:

an outer cylindrical tube formed of steel, said tube having a longitudinally extending slit formed by mechanically working the wall of an unslit tube to create therein a stress tending to cause the tube to expand transversely and then splitting the tube longitudinally, whereby said slit is formed spontaneously, said slit permitting said tube to contract diametrically on the application of an external force and to expand under the action of its inherent elasticity when said force is removed;

an inner expansible cylindrical mandrel fitted substantially concentrically within said tube, said mandrel having a diameter less than the inner diameter of said tube;

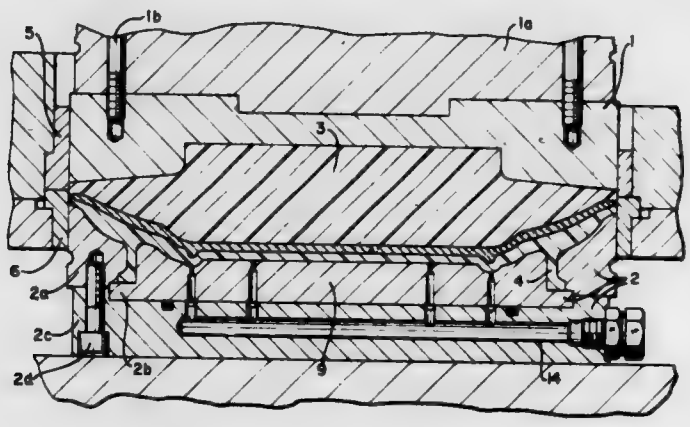
said mandrel comprising an inner rigid tube having a perforated section provided with holes for fluid flow and an inflatable bag fitted around said inner tube and enclosing said perforated section, said bag having a mouth which is hermetically sealed to said inner tube;

means for supplying fluid under pressure to said inner tube, whereby said bag can be caused to expand radially, and clamping means for applying a deforming radial force to said outer tube.

4,350,486
PRESS FOR CERAMIC MOLDINGS

Hans-Henning Croseck, Konz, and Rolf Jung, Trier, both of Fed. Rep. of Germany, assignors to Laeis-Werke AG, Trier, Fed. Rep. of Germany

Filed Dec. 1, 1980, Ser. No. 211,746
Claims priority, application Fed. Rep. of Germany, Dec. 4, 1979, 2948643
Int. Cl.³ B28B *7/06, 7/34;* B29C *1/00*
U.S. Cl. 425—412 6 Claims

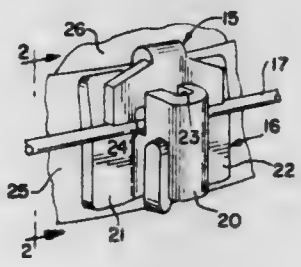


1. A press mold for pressing and molding articles of ceramic material having undulated or serrated edges, said press mold having upper and lower jaws confronting each other and movably mounted relative to each other, an upper and lower die respectively mounted on said upper and lower jaws, upper and lower parts made of synthetic material or rubber and having confronting matrices which respectively adhere to said upper and lower dies, a press ring coaxially mounted around at least one of said dies, but one matrix of said confronting matrices having an inner undulated or serrated contoured edge which corresponds to the outer undulated or serrated edge of the molding made by the press mold, and both matrices also each having an outer edge which has an even periphery, e.g. a circle, which periphery in the radial direction of the surface of the molding is at least coextensive with the largest diameter of the molding.

4,350,487
LOCK PIN

Peter C. Kesling, LaPorte, and Dennis B. Henderlong, Michigan City, both of Ind., assignors to TP Laboratories, Inc., LaPorte, Ind.

Continuation-in-part of Ser. No. 139,869, Apr. 14, 1980, abandoned. This application Mar. 16, 1981, Ser. No. 243,832
Int. Cl.³ A61C *3/00*
U.S. Cl. 433—14 25 Claims

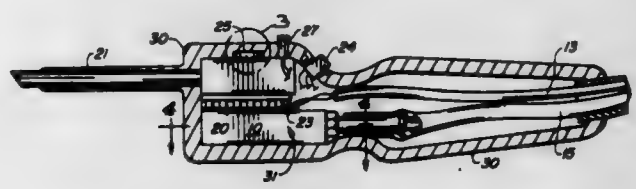


1. In combination with a bracket having a body with an occlusogingivally extending opening, attaching flanges at the lingual side of the body, and a mesiodistally extending archwire slot at the gingivolingual corner of said body, a lock pin for locking one or more archwires against the bottom of said slot comprising a tail extending into said opening, means coplanar with the tail and coacting with the bracket to prevent relative rotational movement between the bracket and the pin along a buccolingual axis, and a head on the end of the pin received in said slot in overlying relationship to said archwire or archwires and in overlapping abutting relationship to said means and having a mesiodistal width at least equal to about one-half the mesiodistal width of the bracket to extend beyond at least one side of the body and a buccolingual depth substantially equal to that of said slot thereby defining an elongated mesiodistally extending rectilinear archwire engaging face for engaging a substantial length of the archwire to control mesiodistal inclination between the bracket and archwire.

4,350,488
DENTAL PULP TESTER

Laurance B. Davis, 3417 E. Turquoise, Phoenix, Ariz. 85028

Filed Jun. 29, 1981, Ser. No. 278,834
Int. Cl.³ A61C *3/00*
U.S. Cl. 433—32 3 Claims



1. Apparatus for applying heat and cold to a tooth to determine if the nerves in the pulp of the tooth are alive, comprising,

(a) a housing;

(b) a thermoelectric module carried in said housing includ-

ing a plurality of semiconductor elements connected at their ends by a pair of opposed groups of electrically conductive plates to form an electrical series of said semiconductor elements, each of said pair of plate groups constituting hot junctions when electrical current passes through said series in one direction and constituting cold junctions when electrical current passes through said series in the reverse direction,

(c) a primary heat transfer member in thermally conductive contact with one of said pair of plate groups,

(d) a secondary heat transfer member in thermally conductive contact with the other of said pair of groups of plates, said secondary heat transfer member including

(i) a thermally conductive casing, and

(ii) passage means formed within said casing to receive and carry fluid therethrough and including at least one inlet and one outlet opening, said fluid absorbing and transporting heat away from said casing,

(e) an intake conduit for directing fluid into said inlet opening of said passage means,

(f) a discharge conduit for receiving fluid flowing through said outlet opening,

(g) a pump for imparting motive power to and directing said fluid through said conduits and said passage means,

(h) terminals for making electrical contact with said thermoelectric module,

(i) a source of current electrically connected to said terminals,

(j) normally closed switch means connected between said terminals and said current source,

(k) an elongate probe member of heat conductive material in thermally conductive contact with said primary heat transfer member; and,

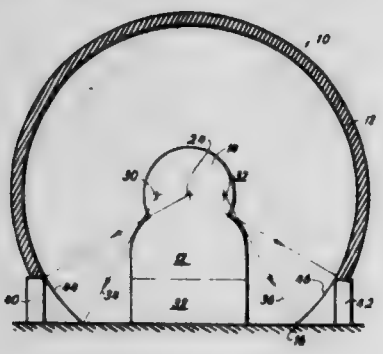
(l) a thermocouple unit in thermal contact with said primary heat transfer member for measuring the temperature of said primary heat transfer member and for causing said switch means to open when the temperature of said primary heat transfer member reaches a preselected level.

4,350,489

DOME FIELD OF VIEW SCENE EXTENDERS

David P. Gdovin, Vestal, N.Y., assignor to The Singer Company, Binghamton, N.Y.

Filed Dec. 5, 1980, Ser. No. 213,521
Int. Cl.[3] G09B *9/08*
U.S. Cl. 434—40 5 Claims



1. In a vehicle simulator including a controls section and visual system, and wherein said visual system includes a hollow, partial spherical screen surrounding said controls section such that the inside surface of said hollow screen provides the display area for said visual system, and wherein said spherical screen and said controls section are supported by a base platform such that the nominal eye point of an operator of said controls section is in close proximity to or near the center of said spherical screen, and such that said partial spherical screen includes left and right bottom edges with respect to said cockpit, an improvement for increasing the display area of said screen comprising:

first spacing means for increasing the distance between said nominal eye point of said controls section and said base platform a selected distance;

second spacing means for increasing the distance between the spherical center of said screen and said base platform said selected distance;

left and right curved screen panels with a multiplicity of edges defining a selected shape and having a curved surface, said curved surface defining a portion of the inside surface of a hollow sphere having the same diameter as said spherical screen, a selected one of said multiplicity of edges of said left panel formed to correspond with said left bottom edge of said spherical screen and a selected one of said multiplicity of edges of said right panel formed to correspond with said right bottom edge of said visible screen; and

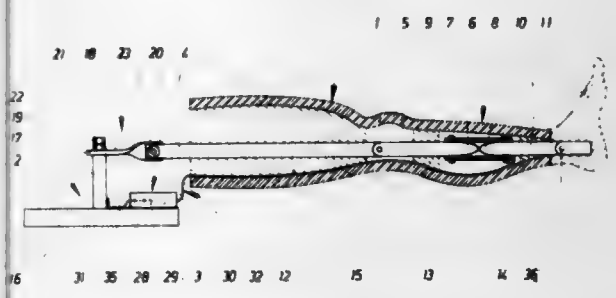
means for supporting said left and right curved panels with respect to said left and right bottom edges respectively such that the display area of said spherical screen is increased so that an operator of said vehicle simulator will view said screen panels and any visual scene presented thereon when said operator's eye point is moved from said nominal eye point to extreme left and right limits.

4,350,490

DEVICE FOR USE WHEN TRAINING THE APPROPRIATE HANDLING OF A DISLOCATED INJURY ON A PART OF A BODY

Jan D. Sandegard, 830 43 Ås, Sweden

Filed Oct. 2, 1980, Ser. No. 193,259
Claims priority, application Sweden, Oct. 4, 1979, 7908218
Int. Cl.[3] G09B *23/32*
U.S. Cl. 434—274 2 Claims



1. A device for use in training personnel for handling a fracture injury in bones of a body comprising a simulation of a part of the body provided with a simulated fracture separating a first body portion relative to a second body portion of said part, said first and second body portions being connected to each other by means of elastic connecting means to relocate the same in a normal position with respect to each other, detecting means for detecting relative location of the first and second body portions, indicating means connected to the detecting means and activated by the detecting means to indicate incorrect relative locations of the first and second body portions, said first and second artificial body portions including respectively first and second artificial portions of a fractured skeleton bone, said elastic means urging said artificial bone portions toward each other and comprising an elastic hose which is threaded onto one end of each of said artificial bone portions, said ends of the bone portions being said detecting means, which are electrically conductive and arranged to activate the indicating means and produce a signal upon establishing an electrical contact between said two ends of the bone portions thus indicating an incorrect location, said indicating means comprising an electrical current source and an electrical circuit connecting the same to said detecting means, said electrical circuit being adapted to be closed upon electrical and mechanical contact between said two ends of the artificial bone members resulting in activation of the indicating means, thereby designating an incorrect location, and to be interrupted when said ends of the bone portions are not in contact thereby resulting in an inactive condition of the indicating

means showing that an improper positioning the artificial bone members has not occurred.

4,350,491

CONE-PULLEY BELT-TYPE TRANSMISSION

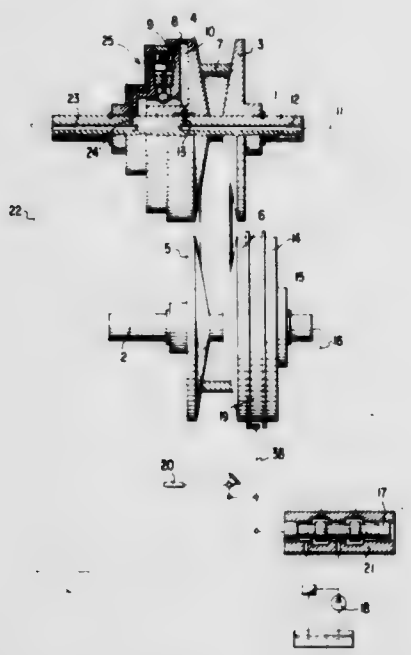
Herbert Steuer, Bad Homburg, Fed. Rep. of Germany, assignor to P.I.V. Antrieb Werner Reimers GmbH & Co. KG, Bad Homburg, Fed. Rep. of Germany

Filed Feb. 27, 1980, Ser. No. 125,250

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1979, 2910546

Int. Cl.³ F16H 55/56

U.S. Cl. 474—12 4 Claims



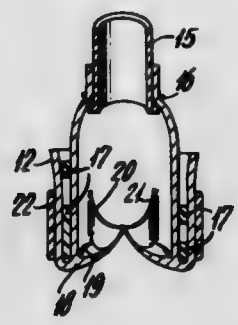
1. In an infinitely variable cone pulley transmission having driving and driven shafts, at least two cone pulley pairs each on a respective shaft, with one pulley of each pair being axially movable and rotatable relative to its associated shaft and having an axially projecting portion defining a rotating hydraulic cylinder, two pistons each mounted on a respective shaft to rotate as a unit therewith and inserted within the hydraulic cylinder of the one pulley on its associated shaft to define a hydraulic fluid chamber, a transmission element connected to circulate between the pulley pairs for transmitting power between the shafts, hydraulic fluid supply means including a source of hydraulic pressure fluid, fluid delivery passages communicating with the two hydraulic fluid chambers, a hydraulic fluid return passage communicating with a low pressure hydraulic fluid receiving region, a control slide valve connected between the source of hydraulic pressure fluid and the fluid delivery passages for controlling the hydraulic pressure in each chamber which determines the force with which the associated pulley pair bears against the transmission element, a transmission ratio setting member coupled to the slide valve for setting the transmission ratio between the shafts, a pressure control valve communicating with the fluid return passage and mounted on one of the shafts to rotate therewith and being adjustable in dependence on the torque between the shaft on which it is mounted and the one pulley of the pair on that shaft, and means including an axially extending bore in the one of the shafts for supplying the pressure control valve with hydraulic fluid at the pressure in the hydraulic fluid chamber of the cylinder associated with the driven shaft for causing the pressure control valve to control the pressure in that chamber in dependence on the set transmission ratio and the mechanical load on the transmission, the pressure control valve being composed of a member defining a pressure control cylinder communicating with the axially extending bore in the one of the shafts and with the fluid return passage, a valve body movable in the pressure control cylinder for varying the flow path defined by the flow control valve between the chamber of the cylinder associated with the driven shaft and the low pressure hydraulic fluid receiving region, a movably mounted intermediate member for moving the valve body, and means defining a V-shaped groove in the axially projecting portion defining the rotating hydraulic cylinder associated with the shaft on which the pressure control valve is mounted, the V-shaped groove extending parallel to the axis of that shaft and contacting the intermediate member for moving the valve body in response to rotation of the shaft on which the pressure control valve is mounted relative to the axially projecting portion defining the cylinder associated with that shaft, the improvement wherein said member defining said pressure control cylinder is mounted in said piston which is mounted on the same shaft as said pressure control valve and said V-shaped groove is disposed in an axially extending surface of its associated axially projecting portion.

4,350,492

METHOD FOR PREPARING TISSUE HEART VALVE

John T. M. Wright, Huntington, and George M. Acosta, Long Beach, both of Calif., assignors to Vascor, Inc., Anaheim, Calif.

Filed Aug. 24, 1981, Ser. No. 295,427
Int. Cl.[3] D01C *3/00*; A61F *1/22*
U.S. Cl. 8—94.11 29 Claims



1. A method of fixing a natural tissue heart valve for implantation comprising

excising the valve from the donor heart together with adjacent ascending aorta and vestibule tissue;

pressurizing the valve through the ascending aorta to coapt the valve cusp leaflets;

placing a cylindrical form around the valve with the base of the form aligned with the base of the valve cusps;

extending the vestibule tissue outward beyond the base of the cylindrical form, simultaneously pulling the septal shelf toward the outside edge of the valve while maintaining coaption of the valve cusp leaflets;

fixing the valve in its extended state and while the leaflets are coapted by treatment with a tanning solution.

4,350,493

CARRIER COMPOSITION FOR DISPERSE DYES

Hans-Peter Baumann, Ettingen, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

Filed Mar. 27, 1981, Ser. No. 248,625
Claims priority, application Switzerland, Mar. 27, 1980, 2422/80
Int. Cl.[3] C09B *67/00*
U.S. Cl. 8—617 19 Claims

1. A composition comprising

(a) 70–87.5% by weight of an aromatic hydrocarbon mixture containing more than 30% by weight of a mixture of alkylbenzenes having two or more methyl groups or at least one ethyl, propyl or butyl group on the benzene nucleus, which aromatic hydrocarbon mixture has a boiling point range of from 160° to 280° C.;

(b) 10 to 20% by weight of the condensation product of castor oil with 30 to 50 mols ethylene oxide;

(c) 0.5 to 5% by weight of the condensation product of a fatty acid with 5 to 8 mols ethylene oxide and

(d) 2 to 5% by weight paraffin oil,

said composition being free from any anionic dispersing agent.

4,350,494

PROCESS FOR THE DYEING OF TEXTILE MATERIAL AND APPARATUS FOR CARRYING OUT THE PROCESS

Hans Scheidegger, Binningen, Switzerland; Hermann Flensberg, Weil am Rhein, Fed. Rep. of Germany, and Roland Bauhofer, Böckten, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 935,830, Aug. 22, 1978, abandoned, which is a continuation of Ser. No. 755,699, Dec. 30, 1976, abandoned. This application Jan. 30, 1981, Ser. No. 230,150
Claims priority, application Switzerland, Jan. 6, 1976, 51/76
Int. Cl.[3] D06P *1/39, 3/06*
U.S. Cl. 8—636 10 Claims

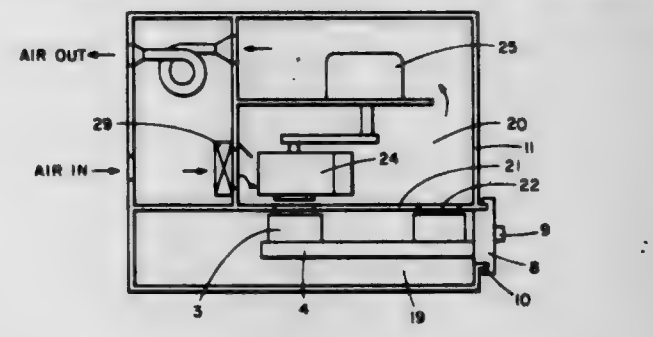
1. In a process for the level dyeing of synthetic polyamide textile material by exhaustion in an aqueous dyebath using an anionic, metal-free, non-fiber-reactive dyestuff, the improvement which comprises (1) contacting the textile material with the dyebath at a pH value in the range of 6 to 12, (2) during the dyeing, exhausting the dyestuff onto the textile material by lowering the pH by at least one pH unit by the addition of an inorganic acid having a pKa value of less than 3.8 at 20° C., (3) separating the dyed textile material from the exhausted dyebath (4) adding to the exhausted dyebath additional dyestuff and sufficient alkali to adjust the dyebath pH value to the range of 6 to 12, and (5) repeating steps (1) and (2).

4,350,495

CHEMILUMINESCENCE APPARATUS AND METHOD FOR DETERMINING THE OXIDATIVE STABILITY OF POLYMERS

Lawrence J. Broutman, 1037 Edgebrook La., Glencoe, Ill. 60022; Boris Rozhansky, 4902-B W. Carol, Skokie, Ill. 60077, and Lev Zlatkevich, 1310 Lunt, Apt. 105, Chicago, Ill. 60626

Filed Dec. 8, 1980, Ser. No. 214,231
Int. Cl.[3] G01N *21/76, 33/44*
U.S. Cl. 23—230 PC 19 Claims



1. A method of determining chemical processes accompanied by chemiluminescence and oxidative stability of a polymer by measuring the chemiluminescence produced by autooxidation of the polymer comprising heating the polymer in a cell to elevated temperature, exposing the polymer to oxygen for thermal oxidation of the polymer, recording the light intensity versus time given off by the polymer during oxidation while at relatively constant temperature from which the chemiluminescence can be determined by auto oxidation of the polymer.

4,350,496

MEASURING THE AROMATIC REACTIVITY OF A HYDROCARBON COMPOSITION

Carlon C. Chambers, 526 20 1/4 Rd., Grand Junction, Colo. 81503

Continuation-in-part of Ser. No. 54,690, Jul. 5, 1979, abandoned. This application Jan. 23, 1981, Ser. No. 273,850
Int. Cl.[3] G01N *31/06, 33/26*
U.S. Cl. 23—230 M 40 Claims

1. A method for determining the relative aromatic activity of hydrocarbon compositions comprising measuring and comparing the ability of the compositions to be sorbed by a polymeric rubber matrix.

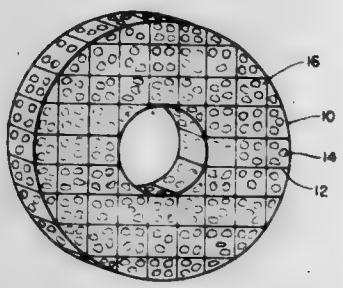
15. A method for determining the aromatic activity of a hydrocarbon composition comprising determining the aromatic equivalent (AE) value of the composition by measuring the ability of the composition, when in physical contact with a polymeric rubber matrix under standardized conditions, to cause a short term weight gain and/or swelling of the rubber matrix and comparing this value to a predetermined aromatic activity of a standard mixture to obtain the volume percent AE value.

4,350,497

REINFORCED GRINDING DEVICE

Abraham Ogman, Nine Downing Rd., Peabody, Mass. 01960

Filed Sep. 8, 1980, Ser. No. 185,347
Int. Cl.³ B24D 3/00
U.S. Cl. 51—296 6 Claims



1. A reinforced grinding device comprising:
a honeycomb structure having walls defining open cells, said honeycomb structure being configured to define the shape of the grinding device; and
a blend of abrasive grains secured within a bond matrix deposited in said cells, said cells of the honeycomb structure being filled completely with said blend of abrasive grains and bond matrix to produce a solid unitary structure.

4,350,498

DAMPENING AGENT FOR RESIN BONDED GRINDING WHEELS

William F. Zimmer, Paxton, Mass., assignor to Norton Company, Worcester, Mass.

Filed Dec. 24, 1980, Ser. No. 219,710
Int. Cl.³ C08K 5/05
U.S. Cl. 51—298 5 Claims

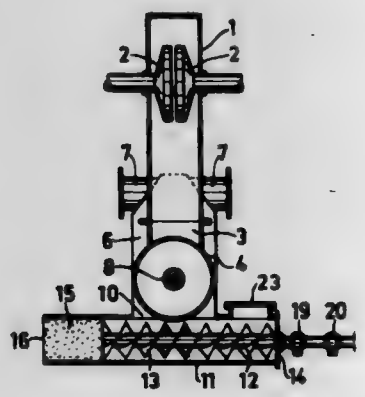
1. A process of making a grinding wheel from a mixture including abrasive grains, fillers and an uncured powdered resin bond, comprising blending said mixture, dampening the mixture during the blending step with a dampening agent selected from the group consisting of monohydroxy aliphatic alcohol with a carbon chain length of 6 to 18 carbon atoms and phenol substituted with an alkyl chain of 6 to 18 carbon atoms; said agent being essentially a non-solvent for the resin at room temperature but which may become a solvent therefor at temperatures above about 45° C.; pressing the blended mixture into a wheel form; and curing the resin with heat above 45° C.

4,350,499

VAPOR SEPARATING METHOD AND APPARATUS

Rolf B. Lundgren, Sundsvall, Sweden, assignor to Sunds Defibrator Aktiebolag, Sundsvall, Sweden

Filed Feb. 20, 1981, Ser. No. 236,494
Claims priority, application Sweden, Feb. 27, 1980, 8001538
Int. Cl.³ B01D 45/14; B02C 23/02
U.S. Cl. 55—1 10 Claims



1. A method of separating vapor from cellulosic material which has been refined at a predetermined elevated pressure comprising discharging said refined cellulosic material containing said vapor downwardly through an inlet opening into a discharge chamber maintained substantially at said predetermined elevated pressure, deflecting said vapor laterally with respect to said cellulosic material passing downwardly through said inlet opening, passing said vapor through said discharge chamber at a flow rate of less than about 15 meters/sec. whereby cellulosic material carried by said vapor is separated from said vapor by sedimentation, separating said vapor from said discharge chamber in a substantially vertical direction, and discharging said cellulosic material from said discharge chamber.

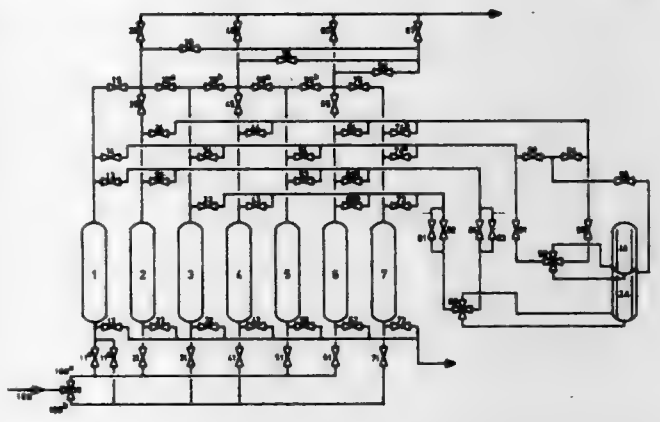
8. Apparatus for separating vapor from cellulosic material which has been refined in a refiner at a predetermined elevated pressure comprising a discharge chamber including an inlet adapted to be connected to the outlet of said refiner and an outlet, said discharge chamber including a portion disposed laterally with respect to said discharge chamber inlet opening, conveyor means for moving said cellulosic material laterally with respect to said discharge chamber inlet opening in a first direction towards said discharge chamber outlet so as to create a substantially gas-tight plug of cellulosic material at said outlet in order to maintain said discharge chamber substantially at said predetermined elevated pressure, said conveyor means including vapor passage means for causing said vapor to pass laterally with respect to said discharge chamber inlet opening in a second direction and in a direction different from the direction in which said conveyor means moves said cellulosic material, and vapor collection and discharge means located at said portion of said discharge chamber disposed laterally with respect to said discharge chamber inlet opening and displaced from said discharge chamber inlet opening in said second direction for collecting and discharging said vapor therefrom in a substantially vertical direction with respect to said discharge chamber.

4,350,500

PROCESS AND APPARATUS FOR SEPARATING GASEOUS COMPONENT FROM A MIXTURE

Abraham J. Esselink, Voorschoten, Netherlands, assignor to Ingeniersbureau "Essex" B.V., Voorschoten, Netherlands

Filed Jul. 15, 1980, Ser. No. 169,053
Claims priority, application Netherlands, Jul. 17, 1979, 7905561
Int. Cl.³ B01D 53/04
U.S. Cl. 55—26 7 Claims



1. A process for the purification of a hydrogen containing gas mixture by selective, adiabatic adsorption of impurities therein on an adsorbent, followed by desorption of the impurities and regeneration of the adsorbent by pressure relief and purging of the adsorbent at low pressure with less contaminated to practically pure gas and repressurization, while applying a number of zones containing adsorbent, said zones being used alternatively in a cyclic manner, characterized in that each cycle comprises a number of steps which, starting with a first adsorption zone wherein impurities have been adsorbed and the adsorption zone has become exhausted, comprise:

expanding a gaseous phase which is present in a void space of said first adsorption zone via the outlet thereof while the inlet thereof is closed;
introducing said expanded gas into an outlet of a regenerated adsorption zone until pressure equalization in both said regenerated and said first zones is obtained;
further expanding said gas present in said void space of said first adsorption zone through said outlet thereof;
introducing said further expanded gas into a packed column filled with an inert, non-porous packing material of high void fraction;
removing said further expanded gas from said voids in said column in a reverse direction by introducing a second further expanded gas from a second exhausted adsorption zone into an opposite end of said packing column;
introducing said removed gas either into a second regenerated adsorption zone via its outlet to partially pressurize the same or into said first adsorption zone for purging said first adsorption zone;
introducing a product quality gas from a product quality gas stream into said outlet of said first adsorption zone while said inlet thereof is closed until a pressure in said first adsorption zone is equal to a pressure of said product gas stream; and
passing said hydrogen containing gas mixture containing said impurities into said inlet of said first adsorption zone and out of said outlet of said first adsorption zone.

4,350,501

ABSORPTION PROCESS

Robert P. Bannon, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Mar. 27, 1981, Ser. No. 248,638
Int. Cl.³ B01D *53/04*; C10G *25/03*
U.S. Cl. 55—26 **8 Claims**

1. An improved process for using at least four molecular sieve adsorbent beds to effect the resolution of a continuous flow of a vapor-phase hydrocarbon feed mixture containing normal paraffins and non-normal-paraffin hydrocarbons into an adsorbate product fraction comprising normal paraffins and a raffinate product fraction comprising non-normal-paraffin hydrocarbons, which process comprises repeated sequential performance of the following steps:
step one, in which
the feed mixture is passed through a first adsorbent bed,
effluent is withdrawn from the first bed and passed through a second adsorbent bed
a major portion of a continuous flow of an eluent is passed through a third adsorbent bed,
a minor portion of the continuous flow of the eluent is passed through a fourth adsorbent bed,
adsorbate product is withdrawn as effluent from the third bed and from the fourth bed, and
raffinate product is withdrawn as an effluent from the second bed;
step two, in which
the feed mixture is passed through the second bed,
a major portion of the eluent flow is passed through the third bed,
a minor portion of the eluent flow is passed through the first bed,
effluent is withdrawn from the first bed and is passed through the fourth bed,
adsorbate product is withdrawn as effluent from the third bed, and
raffinate product is withdrawn as an effluent from the second bed and from the fourth bed;
step three, in which
the feed mixture is passed through the second bed,
effluent is withdrawn from the second bed and passed through the third bed,
a major portion of the eluent flow is passed through the first bed,
a minor portion of the eluent flow is passed through the fourth bed,
adsorbate product is withdrawn as effluent from the first bed and from the fourth bed,
raffinate product is withdrawn as an effluent from the third bed;
step four, in which
the feed mixture is passed through the third bed,
a major portion of the eluent flow is passed through the first bed,
a minor portion of the eluent flow is passed through the second bed,
effluent is withdrawn from the second bed and is passed through the fourth bed,
adsorbate product is withdrawn as effluent from the first bed, and
raffinate product is withdrawn as effluent from the third bed and from the fourth bed;
step five, in which
the feed mixture is passed through the third bed,
effluent is withdrawn from the third bed and passed through the first bed,
a major portion of the eluent flow is passed through the second bed,
a minor portion of the eluent flow is passed through the fourth bed,
adsorbate product is withdrawn as an effluent from the second bed and from the fourth bed,
raffinate product is withdrawn as an effluent from the first bed; and
step six, in which
the feed mixture is passed through the first bed,
a major portion of the eluent flow is passed through the second bed,
a minor portion of the eluent flow is passed through the third bed,
effluent is withdrawn from the third bed and is passed through the fourth bed,
adsorbate product is withdrawn as effluent from the second bed, and
raffinate product is withdrawn as effluent from the first bed and from the fourth bed.

4,350,502

METHOD AND APPARATUS FOR DECONTAMINATING GAS VENTED FROM LAND FILL AND FUGITIVE SOURCES

Joseph A. Spatola, 2431 Bryant Ave., Westfield, N.J. 07090

Filed Sep. 30, 1980, Ser. No. 192,472
Int. Cl.³ B01D *53/04*
U.S. Cl. 55—74 **17 Claims**

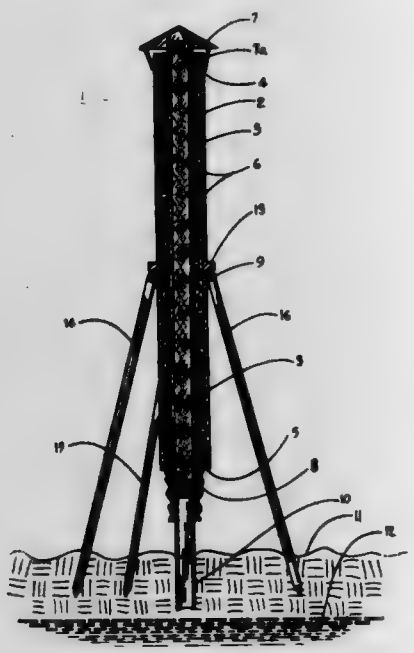
1. A system for removing contaminants from a gas stream vented from a land fill or other fugitive gas source which comprises in combination:
at least one vent pipe interposed to channel gas from said land fill or other fugitive gas source;
a housing enclosing at least one wire mesh tube substantially spaced apart from the inner wall of the housing to form a chamber surrounding said wire mesh tube;
said chamber being packed with adsorbing material having a minimum cross-sectional dimension which exceeds the interstices of said wire mesh;
said chamber being closed at the ends except for openings to accommodate at least one said wire mesh tube and openings for removing and replacing said adsorbing material;
means for supporting said housing so that at least one said wire mesh tube is maintained at one of its ends in coupled relation to receive a gas stream in flow from at least one said vent pipe;
the other end of said wire mesh tube communicating with means protruding through the upper surface of said housing for directing said gas stream into the atmosphere after one or more passes through at least one said wire mesh

tube, whereby said contaminants are radially diffused through the interstices of said wire mesh tube to become adsorbed onto said adsorbing material while the remainder of said gas stream passes in axial direction through said at least one wire mesh tube without substantial contact with said adsorbing material.

11. The method of removing contaminants from gas vented from a land fill or other fugitive gas source which comprises the steps of:

interposing adjacent one or more vent pipes from said land fill or other fugitive gas source, a housing enclosing at least one wire mesh tube substantially spaced-apart from the inner wall of said housing to form a chamber;

packing said chamber surrounding at least one said wire



mesh tube with a bed of adsorbing material having a minimum cross-sectional dimension which substantially excceds the interstices of said at least one wire mesh tube;

coupling said at least one wire mesh tube to at least one corresponding vent pipe for receiving a stream of gas vented in laminar flow from said land fill or other fugitive source for at least one pass through said wire mesh tube, whereby said contaminant is diffused radially, passing through the interstices of said wire mesh tube and becoming adsorbed into said adsorbing material, and whereby the remainder of the gas in said stream passes axially along said at least one wire mesh tube making substantially no contact with said adsorbing material; and

venting the stream of gas to the atmosphere after at least one pass through said at least one wire mesh tube.

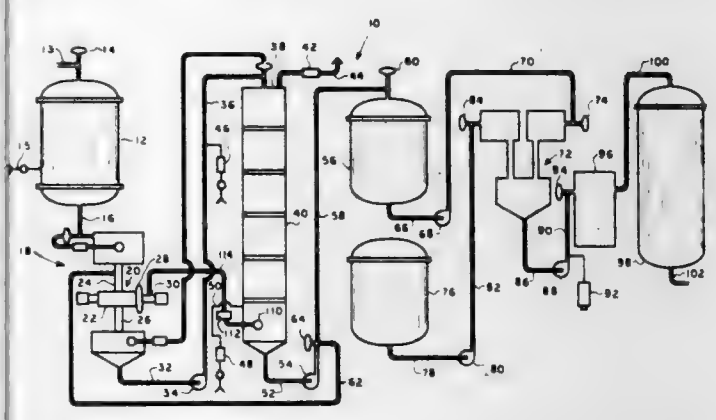
4,350,503

FLUID FLOW METERING DEVICE

Sigmund P. Skoli, Elmwood Park; David M. Kemp, Naperville, and Harry G. Mojonnier, River Forest, all of Ill., assignors to FMC Corporation, Chicago, Ill.

Continuation of Ser. No. 151,393, May 13, 1980, abandoned.
This application Aug. 24, 1981, Ser. No. 295,643
Int. Cl.³ B01D *19/00*; A23L *2/00*
U.S. Cl. 55—165 5 Claims

1. A system for processing a carbonated beverage or the like from water and a beverage concentrate, the system including a vessel for storing a quantity of water, a deaerator for removing air from the water and having a top within which the water is deoxygenated and a bottom within which the deoxygenated water is collected, a fluid flow metering device for controlling the rate of flow of water from the storage vessel to the deaerator and responsive to the water flow rate demand of the deaerator, the fluid flow metering device comprising an inlet conduit, an outlet conduit, a valve block interposed between the inlet and outlet conduits, the valve block defining a through channel providing fluid communication from the inlet conduit to the outlet conduit, a valve element-accepting bore communicating with the through channel and extending substantially normally thereto in two mutually opposed directions, and an infinitely adjustable valve selectively projectable into the valve block channel, the valve including a first fluid flow valve element within said bore and projectable into said channel, vernier adjustment means coupled to the first element for infinitely adjusting the distance in which the first element projects into the channel for establishing a maximum effective fluid flow dimension of the channel, and a second valve element within said bore and disposed oppositely to said first valve element for additionally varying the effective fluid conducting dimensions of the channel to amounts less than the maximum effective fluid flow; the system further including control means for moving the second valve element responsive to the amount of water in the deaerator bottom, the control means including an air-filled line extending from the deaerator bottom to the fluid flow metering device, a float carried in the



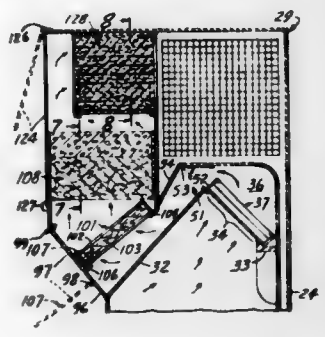
deaerator bottom for sensing the height of water in the deaerator bottom, an air valve connected to the float and the air filled line for infinitely and continuously varying pressure in the air line in response to variations in the position of the float, an air-tight chamber at the valve in pressure-sensitive communication with the air-filled line, a portion of the chamber being defined by a diaphragm connected to the second valve element, a spring biasing element acting to urge the diaphragm and connected second valve elements into retracted positions wherein the maximum effective flow rate determined by the first element is permitted, variations in air pressure within the air line and connecting chamber acting to move the diaphragm and second valve element away from their retracted positions against the influence of the spring biasing element so as to infinitely and continuously vary the positions of the second valve element and correspondingly infinitely and continuously reductively vary the effective fluid flow rate through the metering device from the set maximum flow rate.

4,350,504

AIR CLEANING SYSTEM

Wolodymyr Diachuk, Minneapolis, Minn., assignor to Century 21 Pollution Control, Inc., Minneapolis, Minn.

Filed Jan. 28, 1980, Ser. No. 116,222
Int. Cl.³ B01D *46/42, 46/52, 50/00, 53/34*
U.S. Cl. 55—217 18 Claims



1. An air cleaning apparatus comprising:

a housing having a passage, an air inlet and air outlet in communication with the passage, means located in said passage for moving air through the passage, said air moving through the inlet and being discharged through the outlet,

air pre-filter means located in the passage adjacent in inlet for removing particulates from the air moving through the pre-filter means,

primary filter means located in the passage downstream from the pre-filter means for removing additional particulates from the air moving through said primary filter means,

secondary filter means including charcoal bed filter means located in the passage downstream from the primary filter means for removing additional particulates from the air moving through the charcoal bed filter means, and, an oxidizer medium located in the passage downstream from the charcoal bed filter means to remove odors from the air moving therethrough,

high efficiency filter means located in the passage downstream from the secondary filter means for removing small particulates from the air moving through said high efficiency filter means,

damper means for closing said passage, said damper means being located between the pre-filter means and the secondary filter means, and,

control means for holding the damper means open to permit air flow through the passage, said control means including temperature responsive elements for closing the damper means to prevent the flow of air through the passage.

4,350,505

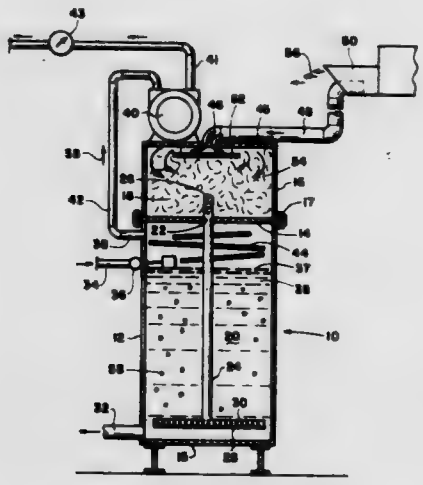
DEVICE FOR REDUCTION OF OXYGEN CONTENT IN DRILLING FLUID

Harvey E. Mallory, Tulsa, Okla., and James W. Ward, Riqua, United Arab Emirates, assignors to Loffland Brothers Company, Tulsa, Okla.

Division of Ser. No. 751,255, Dec. 17, 1976, Pat. No. 4,136,747. This application Aug. 28, 1978, Ser. No. 937,554

Int. Cl.³ B01D *47/02*

U.S. Cl. 55—227 **1 Claim**



1. A device for treating gases containing nitrogen for utilizing the nitrogen for reduction of oxygen content in well bore drilling fluids and comprising housing means, a chamber provided in said housing means and having a suitable filter material disposed therein to provide a filter chamber, a chamber provided in said housing means below said filter chamber and having a suitable liquid disposed therein to provide a liquid bath chamber, a stand-pipe means disposed in said housing means and providing communication between said filter chamber and said liquid bath chamber, level control means for controlling the level of the liquid bath in said liquid bath chamber, first discharge means in communication with said liquid bath for discharge of said liquid bath, second discharge means in communication with the liquid bath chamber and disposed above the upper level of the liquid bath, means disposed in said liquid bath chamber and disposed above the upper level of the liquid bath to provide a tortuous path of travel between the liquid bath and the second discharge means, inlet means providing access to the interior of said filter chamber for admitting the nitrogen containing gases thereto, and means operably connected with said second discharge means for creating a suction within said housing means for pulling said gases through the filter chamber and liquid bath for removing unwanted debris from the gases and discharging clean gases from said device, and including spreader plate means disposed in said filter chamber for dispersing the exhaust gases upon initial entry thereof into the filter chamber.

4,350,506

WASHING DEVICE

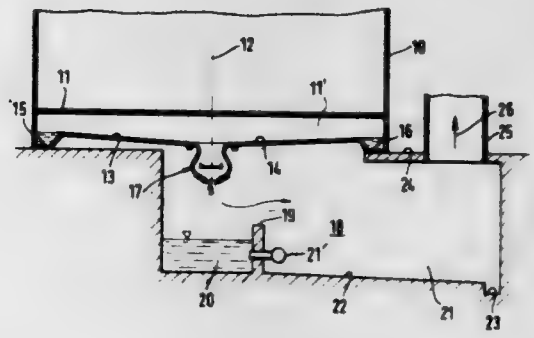
Eberhard Otto, Möglingen, Fed. Rep. of Germany, assignor to Otto Durr Anlagenbau GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 5, 1981, Ser. No. 231,680

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1980, 3042464

Int. Cl.³ B01D *47/10*; F23J *11/00*

U.S. Cl. 55—241 **25 Claims**



1. A washing device for washing solid and/or liquid particles out of gases, particularly out of exhaust air from enamel-spraying chambers, comprising a housing adapted to be positioned below the spraying chamber; partition means in said housing dividing the housing into a first chamber filled with washing fluid and a second underpressure chamber; and nozzle means arranged in said partition means between said first chamber and said second chamber, said nozzle means including a casing having an inlet communicating with said first chamber and positioned to receive and atomize the washing fluid and also to receive a gaseous mixture to be washed, and an outlet communicating with said second chamber so that a flow of the particle-containing gaseous mixture is drawn through the atomized washing fluid and through said outlet, said casing having an axis of symmetry and being bounded by two opposite faces and including an uppermost portion widening relative to said axis of symmetry and defining said inlet, an intermediate portion narrowing relative to said axis, a lower portion widening relative to said axis, and a lowermost portion narrowing with respect to said axis and defining said outlet, said uppermost portion merging directly into said intermediate portion, said intermediate portion merging into said lower portion, and said lower portion merging into said lowermost portion so that said portions define a cross-section of said casing having a bell-like configuration to thereby provide for optimum distribution of the atomized washing fluid.

4,350,507
RESPIRABLE PARTICLE SAMPLING INSTRUMENTS

George K. Greenough, and Richard C. Brown, both of Sheffield, England, assignors to National Research Development Corporation, London, England

Filed Mar. 3, 1981, Ser. No. 240,166
Claims priority, application United Kingdom, Mar. 4, 1980, 8007385
Int. Cl.³ B01D *50/00*
U.S. Cl. 55—270 7 Claims

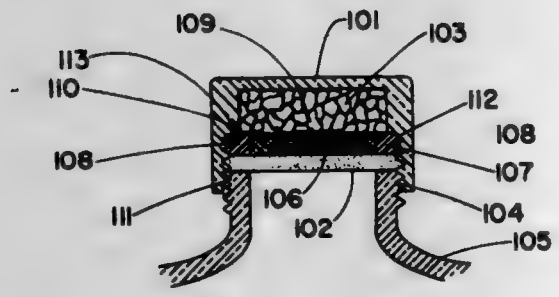


1. A respirable particle sampling instrument comprising a housing defining an air passageway therethrough, an electric fan mounted in said passageway to draw and pass air into and through said passageway, a main filter located across said passageway to collect respirable particles borne by said air passing therethrough, and a pre-filter located across said passageway upstream of said main filter to collect non-respirable particles borne by said air passing therethrough, said pre-filter being formed by a random fibrous network having interstices of such size and distribution as to capture a major proportion of the non-respirable airborne particles in an air flow therethrough within a prescribed range of velocity for which particle capture is predominantly by intertial impaction.

4,350,508
DESICCANT CAP

Dario S. Santoro; Garry Schultz, and Henry Miano, all of 231 Mt. Pleasant, Hauppauge, N.Y. 11788

Filed Dec. 21, 1981, Ser. No. 332,556
Int. Cl.³ B01D *19/00*
U.S. Cl. 55—275 5 Claims



1. A desiccant cap for a container, comprising:

(a) a transparent, substantially nonporous plastic enclosure means having a generally cylindrical cavity with a closed end, the cavity being formed about a reference axis of revolution, and the cavity being partially threaded internally begining about its open end to accept and seal an opening in the container having mating external threads, the threads within the cavity extending into the cavity, but terminating before reaching the closed end of the cavity,

(b) a mixture of desiccant and a humidity sensitive color indicator placed within the cavity adjacent the closed end beyond the termination of the threads, the color indicator being visible through the enclosure walls to indicate the humidity level within the cavity and container,

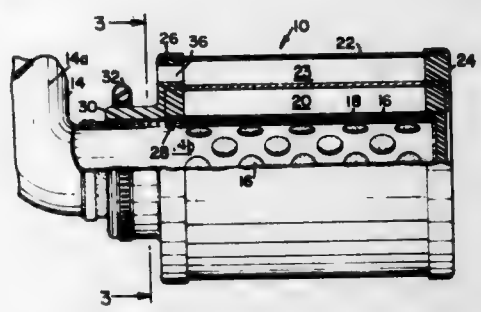
(c) a shoulder extending inwardly of and completely about the periphery of the cavity wall adjacent the termination of the threads, the shoulder providing a bearing surface positioned adjacent the termination of the threads, generally orthogonal to the reference axis of revolution, and facing the open end of the cavity, and

(d) a generally disc shaped barrier means with a diameter generally equal to that of the cavity, the barrier means formed of a wicking polymer and having a central area filter containing fine through pores, the barrier means being positioned within the cavity abutting and sealed to the bearing surface of the shoulder to separate the mixture of desiccant and humidity sensitive color indicator from the container and its contents, while permitting water vapor from the container to pass through the pores to maintain a dry atmosphere within the container and actuate the color indicator to indicate the level of humidity absorbed from the container, the extraction of water vapor from the container through the pores being aided by the characteristic of the wicking polymer.

4,350,509
DISPOSABLE AIR CLEANER

Steven M. Alseth, Bloomington, and Bruce M. Sullivan, Burnsville, both of Minn., assignors to Donaldson Company, Inc., Minneapolis, Minn.

Filed Jul. 24, 1981, Ser. No. 286,475
Int. Cl.³ B01D *46/02, 46/52, 50/00*
U.S. Cl. 55—337 10 Claims



1. An air cleaner for use with a tubular, fluid permeable, rigid intake tube having an air permeable portion, said air cleaner comprising:

a. a tubular filter element having first and second ends, and an inner opening therein adapted to receive said air permeable portion of said intake tube;

b. an outer cylindrical shell having first and second ends, said shell being located concentrically around said filter element and defining a space between said shell and said element;

c. a first end cap affixed to and forming a fluid tight junction with each of said first ends of said filter element and said shell;

d. a second end cap affixed to and forming a fluid tight junction with each of said second ends, said second cap having an aperture aligned with said inner opening and adapted to receive said intake tube;

e. at least one intake aperture in at least one of said end caps located to place said defined space in fluid communication with air outside the air cleaner;

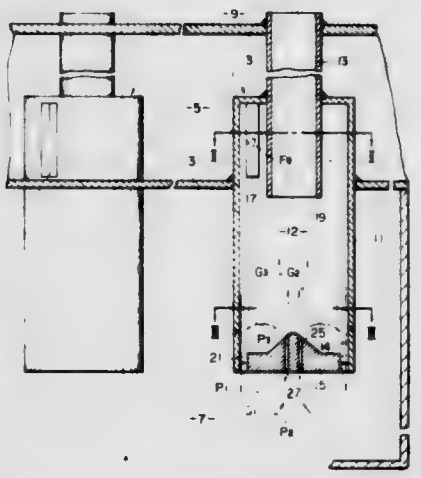
f. a tubular flange extending from said second end cap at the periphery of said second end cap apaerture; and

g. compression means for compressing said flange to reduce the diameter of said flange.

4,350,510
CENTRIFUGAL SEPARATOR

Isao Hamada; Hiroshi Nakayama; Nobuyoshi Kawakami; Hirotaka Azami; Tadasu Ikeda, all of Hitachi; Yasumasa Yukawa; Hiroshi Mitani, both of Kurashiki; Takashi Ohmori, Yokohama; Masanobu Kimura, Kurashiki, and Kohichi Seno, Chofu, all of Japan, assignors to Hirachi, Ltd. and Nippon Mining Co., Ltd., both of Tokyo, Japan

Filed Dec. 12, 1980, Ser. No. 215,843
Claims priority, application Japan, Dec. 12, 1979, 54-160241
Int. Cl.³ B01D 45/12
U.S. Cl. 55—349 9 Claims



1. A centrifugal separator for separating particles from fluid by centrifugal force, which comprises:

housing means for defining a centrifugation chamber;

fluid inlet means provided in the upper portion of said housing means for introducing a fluid containing particles into said centrifugation chamber so as to whirl the fluid;

clean fluid discharging means provided on the upper portion of said centrifugation chamber so that the end portion thereof projects coaxialy within said centrifugation chamber;

guide means provided in the lower portion of said centrifugation chamber, said guide means comprising a flat portion and a guide portion surrounded by said flat portion and projecting into said centrifugation chamber from a central portion of said guide means for guiding the fluid flowing toward the guide portion and to direct said clean fluid to the discharging means, said projecting guide portion being of a diameter which continuously reduces from a base to a top of said guide portion, and having at least one inner fine passage extending axially through a central portion of said guide portion for communication of said centrifugation chamber and the outside;

an annular groove formed between an inner surface of said centrifugation chamber and an outer portion of said guide means, and opened to said centrifugation chamber for trapping particles in the whirled fluid; and

outer passage in said annular groove for discharging the trapped particles with part of the fluid out of said centrifugation chamber, said outer passage having a width substantially equal to the width of said groove to substantially span same.

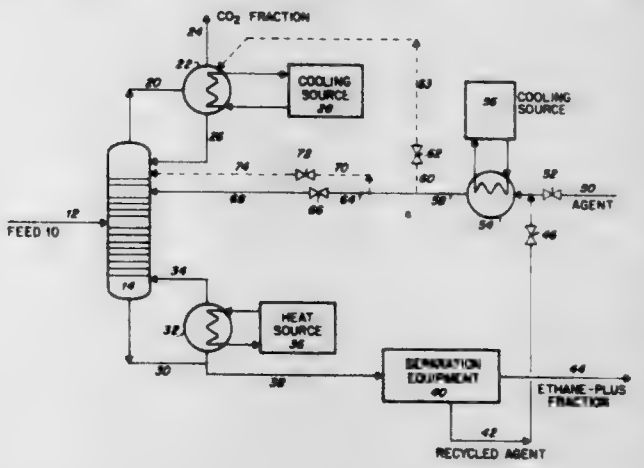
4,350,511
DISTILLATIVE SEPARATION OF CARBON DIOXIDE FROM LIGHT HYDROCARBONS

Arthur S. Holmes, Shrewsbury, and James M. Ryan, Weston, both of Mass., assignors to Koch Process Systems, Inc., Westboro, Mass.

Continuation-in-part of Ser. No. 131,416, Mar. 18, 1980, abandoned. This application Sep. 28, 1981, Ser. No. 306,419
Int. Cl.³ F25J 3/04
U.S. Cl. 62—17 24 Claims

1. In a method for the distillative separation in a distillation column of a feed stream comprising carbon dioxide and a light hydrocarbon component in a mixture, to provide a carbon-dioxide-enriched overhead product and a light hydrocarbon-enriched bottoms product, including the operation of a distillation column under conditions of temperature, pressure and composition sufficient to form a binary azeotrope between the carbon dioxide and a light hydrocarbon component, which azeotrope limits the concentration of the carbon dioxide in the overhead product withdrawn from said column, the improvement which comprises:

adding to the upper portion of the distillation column and above the point of introduction of the feed stream, a liquid agent which significantly alters the relative volatility

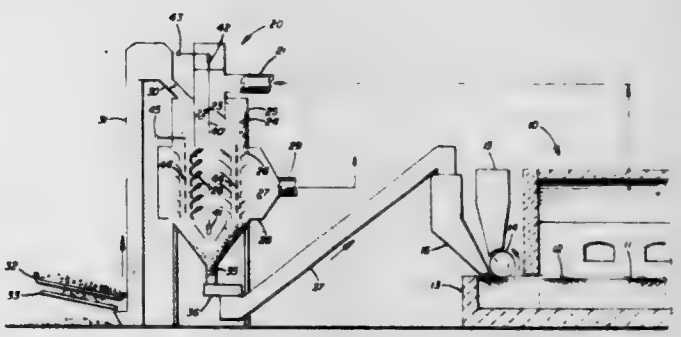


between said carbon dioxide and said light hydrocarbon component and prevents the azeotrope formation therebetween, the liquid agent added in an amount of greater than about 10 mol percent based on the mols of liquids in the column at or below the point of introduction of the liquid agent and sufficient to provide a relative volatility of greater than one of the said carbon dioxide to the said light hydrocarbon component at or below the point of introduction of the liquid agent, which provides a carbon-dioxide-enriched overhead product having a carbon dioxide concentration greater than the carbon dioxide concentration of the binary azeotrope.

4,350,512
GLASS MELTING METHOD USING CULLET AS HEAT RECOVERY AND PARTICULATE COLLECTION MEDIUM

John F. Krumwiede, Blawnox, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Mar. 31, 1981, Ser. No. 249,310
Int. Cl.³ C03B 3/00
U.S. Cl. 65—27 14 Claims



1. In a method of melting glass wherein raw glass batch materials and cullet are fed into a fuel fired melting furnace, and an exhaust gas discharge that includes waste heat is passed from the furnace, the improvement comprising: passing a stream of the exhaust gas prior to discharge to the atmosphere through a bed of cullet so as to heat the cullet, and removing cullet from the cullet bed and feeding the removed cullet while in a heated state to the melting furnace in a stream separate

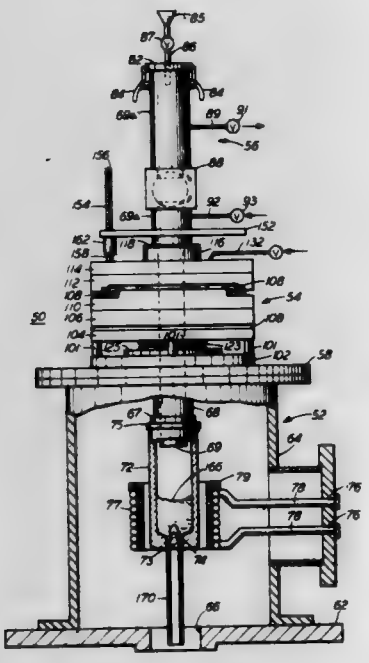
from the stream of raw glass batch materials being fed to the furnace.

4,350,513

METHOD AND APPARATUS FOR EXTRUDING GLASS TUBES

Alexander Coucoulas, Bridgewater Township, Somerset County, and Carroll D. Spainhour, Princeton Township, Mercer County, both of N.J., assignors to Western Electric Company, Inc., New York, N.Y.

Filed Nov. 23, 1981, Ser. No. 324,336
Int. Cl.³ C03B *15/14*
U.S. Cl. 65—29 **5 Claims**



1. A method of substantially eliminating the bend in a tube that is extruded from a glass melt in a crucible heated by heating means surrounding and spaced from said crucible, the method comprising the steps of:

monitoring the bend of the extruded tube exiting the crucible; and

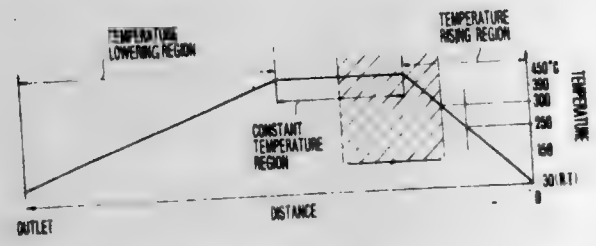
moving the crucible relative to the heating means, in the direction of the bend, to straighten the tube within predetermined limits in response to said monitoring means.

4,350,514

METHOD FOR MANUFACTURING CATHODE RAY TUBES

Masatoshi Akiyama, Yotsukaidomachi; Shigeki Kitamura, Mobara; Junichi Tetsu, Mobara, and Koichi Nakazato, Mobara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 14, 1981, Ser. No. 263,709
Claims priority, application Japan, May 19, 1980, 55-65406
Int. Cl.³ C03B *23/20;* C03C *17/22, 17/38*
U.S. Cl. 65—36 **6 Claims**



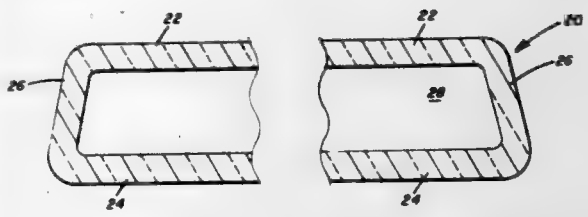
1. In a method of manufacturing a cathode ray tube including a panel having an inner wall coated with a phosphor film an organic film and a metallic reflective film; comprising the step of fusing said panel with a funnel with its inner surface coated with an electroconductive film, said fusing step being carried out by successively passing through a baking furnace a plurality of tube assemblies each comprising an assembly of a funnel and a panel with frit glass interposed therebetween, the improvement wherein oxygen containing gas is forced into said baking furnace during said fusing step said oxygen containing gas being in an amount sufficient to prevent depleation of oxygen due to decomposition of the organic film.

4,350,515

METHOD OF PRODUCING GLASS EDGE MULTIPLE GLAZED UNITS

John L. Stewart, Murrysville, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jan. 30, 1981, Ser. No. 229,710
Int. Cl.³ C03B *23/203, 23/24*
U.S. Cl. 65—40 **10 Claims**



1. In a method of fusing edge portions of glass sheets to form a multiple glazed unit, wherein the method includes the steps of positioning at least two sheets having adjacent major surfaces in face-to-face relation; heating the marginal edge portions of at least one of the sheets to form a weld which unites edge portions of the sheets; and drawing the sheets apart to provide a spaced distance between adjacent major surfaces of the sheets, the improvement comprising:

increasing the time period between the end of the heating step and the start of the drawing step; and

cooling the welded edge portions of the sheets during said increasing step to produce a substantially uniform temperature condition in a fillet-forming body of fused glass to provide a multiple glazed unit having fillets of substantially uniform thickness about the periphery thereof after the practice of the drawing step.

7. The method as set forth in claim 1 or 2 wherein the marginal edge heating step is practiced using electrical currents.

8. The method as set forth in claim 7 wherein the marginal edge heating step comprises the steps of:

applying a continuous volatilizable electroconductive stripe to the marginal edge portions of at least one of the sheets;

passing an electrical current through the stripe to heat the marginal edge portions of the at least one sheet to a temperature where the marginal edge portions of the at least one sheet become appreciably electroconductive; and

passing an electrical current through the electroconductive marginal edge portions of the at least one sheet to heat adjacent portions of the other of the sheets to a temperature above a fusing temperature to unite the marginal edge portions of the at least one sheet and the heated portions of the other sheet.

4,350,516

OUTLET FOR A GLASS MELTING FURNACE

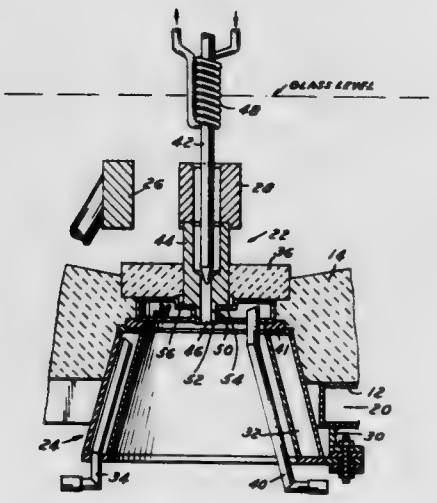
Duane H. Faulkner, Battle Creek, Mich., and Vaughn C. Chenoweth, Hollansburg, Ohio, assignors to Guardian Industries Corporation, Northville, Mich.

Filed Feb. 13, 1981, Ser. No. 234,274
Int. Cl.³ C03B *5/26*
U.S. Cl. 65—327 **5 Claims**

1. In a furnace for melting glass or other high melting point materials, characterized by a refractory-lined vessel having a heat source for melting a charge of material placed within a melting zone within the vessel and outlet means establishing a channel through which molten material can flow from the melting zone through the vessel lining and wall to the exterior

of the vessel, the improved outlet means construction which comprises:

an orifice block formed of a single integral block of high melting point refractory material having an orifice through which the molten material may flow, the inner end of the orifice block extending into the melting zone within the vessel where such end of the block is directly in contact with and exposed to the heat of the molten charge, the inner end of said orifice being subjected to the eroding effect of molten material contacting said block as it flows through said orifice, said block extending through the vessel lining and wall so that its outer end is exposed to normal atmosphere on the exterior of the furnace, the portions of the orifice block at and adjacent to its outer end having a minimal cross-sectional area consistent with minimum safe wall-thickness thereof; and



a cooling jacket surrounding and intimately contacting said minimal cross-sectional area portions at and adjacent to the outer end of said orifice block, said cooling jacket receiving a circulating flow of cooling fluid to reduce the temperature of the outer end of said orifice block below the point at which such block would oxidize.

3. The furnace of claim 1 wherein said outer end portions of said orifice block are cylindrical in cross-section, the outside diameter thereof abruptly changing at a position intermediate the ends of said block to define an outer end portion of minimal diameter to provide said minimal cross-sectional area and an intermediate portion of substantially greater diameter, said change in diameter creating a shoulder surface area interconnecting said outer end portion and said intermediate portion, said cooling jacket surrounding and intimately contacting the full peripheral surface of said outer end portion and said shoulder surface of said orifice block.

4,350,517

HYDROXYACETYL OXAXOLIDINE HERBICIDAL ANTIDOTES

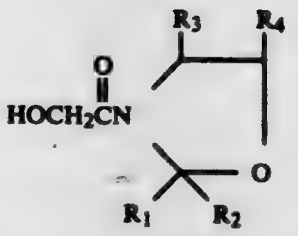
Eugene G. Teach, El Cerrito, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 143,665, Apr. 25, 1980, Pat. No. 4,269,986. This application Dec. 22, 1980, Ser. No. 219,277

Int. Cl.³ A01N *43/76*; C07D *263/06*

U.S. Cl. 71—88 **6 Claims**

1. A method of controlling undesirable vegetation while reducing herbicidal injury due to thiolcarbamate herbicides to crops which comprises adding to the soil an antidotally effective amount of a compound of the formula



in which R_1–R_4 are each independently selected from the group consisting of hydrogen and alkyl having 1–4 carbon atoms.

4,350,518

PLANT GROWTH REGULATING SUBSTITUTED ALKYLAMMONIUM SALTS

Hubert Sauter, Mannheim; Bernd Zeeh; Ernst Buschmann, both of Ludwigshafen, and Johann Jung, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

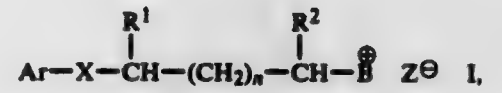
Continuation of Ser. No. 130,450, Mar. 14, 1980, abandoned. This application Feb. 23, 1981, Ser. No. 236,812

Claims priority, application Fed. Rep. of Germany, Apr. 4, 1979, 2913523

Int. Cl.³ A01N *43/46, 43/40*; C07D *295/08*

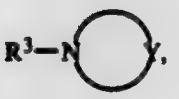
U.S. Cl. 71—88 **5 Claims**

1. A substituted alkylammonium salt of the formula



I,

where Ar denotes phenyl substituted by trifluoromethyl or cyano, or by 2 to 3 indentical or different substituents selected from the group consisting of alkyl, alkenyl, alkynyl, cycloalkyl, alkoxy, trifluoromethyl, alkylcarbonylamino, alkylsulfonyl, alkylaminosulfonyl, dialkylaminosulfonyl, all of a maximum of 6 carbon atoms, fluoro, chloro, bromo, iodo, cyano, aminosulfonyl, phenyl and benzyl, X denotes oxygen or sulfur, n denotes one of the integers 0, 1 and 2, R^1 and R^2 are identical or different and each denotes hydrogen or C_1–C_4-alkyl, B denotes



Y denoting a $—(CH_2)_4—$, $—(CH_2)_5—$, $—(CH_2)_7—$ group which is unsubstituted or substituted by from 1 to 3 identical or different radicals selected from the group consisting of C_1–C_4-alkyl, C_1–C_4-alkoxy, chloro, bromo, hydroxy and cyano, and R^3 denoting linear or branched C_1–C_6-alkyl, C_2–C_6-alkenyl or C_2–C_6-alkynyl, each of which is unsubstituted or substituted by halogen, hydroxy, cyano, C_1–C_4-alkoxy or C_1–C_4-alkylcarbonyl, and Z denotes the anion of any non-phytotoxic acid HX.

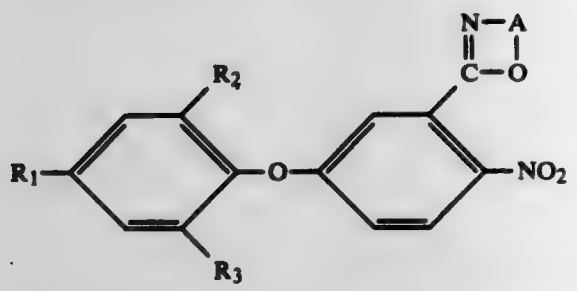
5. An agent for regulating plant growth, comprising a solid or liquid carrier, and an effective amount of a compound of claim 1.

4,350,519
HERBICIDALLY ACTIVE 2-NITRO-5-PHENOXYPHENYLOXAZOLES AND -OXAZOLINES

Dieter Dürr, Bottmingen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Mar. 2, 1981, Ser. No. 239,721
Claims priority, application Switzerland, Mar. 5, 1980, 1739/80
Int. Cl.³ A01N *43/00*; C07C *263/14*
U.S. Cl. 71—88 15 Claims

1. A compound of the formula



wherein A is ethylene or vinylene optionally substituted by C_1–C_4 alkyl or C_1–C_4 haloalkyl, and each of R_1, R_2 and R_3 is hydrogen, halogen, trifluoromethyl, nitro or cyano.

11. A herbicidal and plant growth inhibiting composition which contains, as active component, a herbicidally or plant growth inhibiting effective amount of at least one compound according to claim 1, and an inert carrier.

12. A method of controlling undesired plant growth at a locus, which comprises applying to said locus a herbicidally effective amount of a compound according to claim 1.

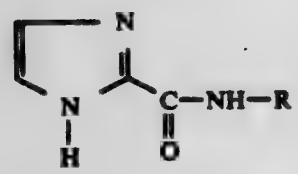
13. A method of selectively controlling weeds in crops of useful plants, which comprises applying thereto a herbicidally effective amount of a compound according to claim 1.

4,350,520
PLANT GROWTH REGULANT COMPOSITIONS

Gunther Beck; Helmut Heitzer, both of Leverkusen, and Klaus Lürssen, Bergisch-Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 5, 1980, Ser. No. 213,704
Claims priority, application Fed. Rep. of Germany, Dec. 19, 1979, 2951201
Int. Cl.³ A01N *43/50*
U.S. Cl. 71—92 8 Claims

1. Method of promoting the growth of sugar beets, which method comprises applying to the plants or their habitat an effective amount of an imidazole-2-carboxylic acid amide compound of the formula



(I)

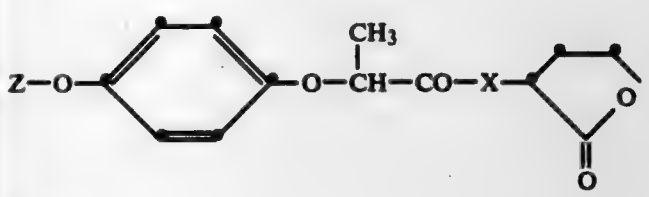
wherein R is alkyl with 1 to 18 carbon atoms.

4,350,521
HERBICIDAL α-[4-(3',5'-DICHLOROPYRID-2'-YL)-OXY]-PHENOXY-PROPIONIC ACID γ-BUTYROLACTONE ESTER AND THIOESTER

Beat Böhner, Binningen, and Hermann Rempfler, Ettingen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 106,797, Dec. 26, 1979, Pat. No. 4,284,566. This application Mar. 9, 1981, Ser. No. 241,808
Claims priority, application Switzerland, Jan. 4, 1979, 52/79
Int. Cl.³ A01N *43/40*; C07D *239/72*
U.S. Cl. 71—94 5 Claims

1. An α-phenoxy-propionic acid-γ-butyrolactone ester or thioester of the formula I



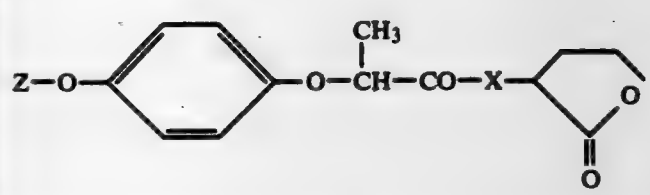
(I)

wherein

X is oxygen or sulfur,

Z is the 3,5-dichloropyridyl-2 group.

5. A method for controlling undesirable growth in cultures of cultivated crops which comprises applying to said cultures a herbicidally effective amount of a compound of the formula



(I)

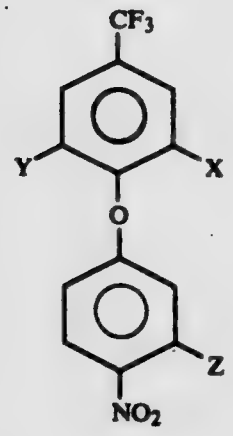
wherein X is oxygen or sulfur, and Z is 3,5-dichloropyridyl-2.

4,350,522
HERBICIDAL 4-TRIFLUOROMETHYL-4'-NITRODIPHENYL ETHERS

Horst O. Bayer, Levittown, and Colin Swithenbank, Perkasie, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 808,415, Jun. 20, 1977, Pat. No. 4,185,995, which is a division of Ser. No. 617,562, Sep. 29, 1975, Pat. No. 4,046,798, which is a division of Ser. No. 331,719, Feb. 12, 1973, Pat. No. 3,928,416, which is a continuation-in-part of Ser. No. 234,651, Mar. 14, 1972, Pat. No. 3,798,276. This application Sep. 1, 1978, Ser. No. 939,086
The portion of the term of this patent subsequent to Dec. 23, 1992, has been disclaimed.
Int. Cl.³ C07C *69/78, 43/22*; A01N *37/10*
U.S. Cl. 71—111 28 Claims

1. A herbicidal composition comprising a herbicidally-effective amount of a compound of the formula



wherein
X is a halogen atom,
Y is a hydrogen atom, and
Z is a carboxy group or a carbalkoxy group having up to 4 carbon atoms in the alkoxy moiety,
and an agronomically acceptable carrier.

4,350,523

POROUS IRON ORE PELLETS

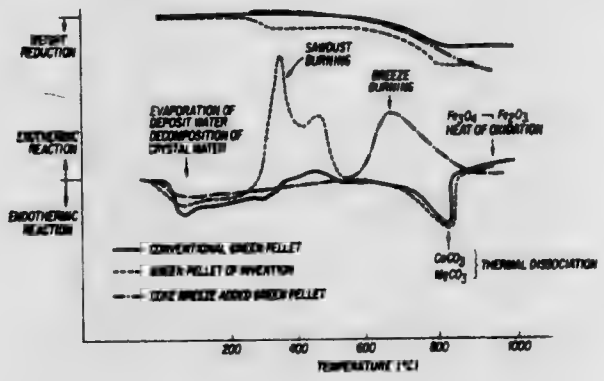
Kazumasa Taguchi, Amagasaki; Hiroshi Isako, Kobe; Koichi Ikeda, Kakogawa; Keisuke Honda, Kasai; Masaru Kanemoto, Kakogawa, and Keishiro Hanaoka, Kobe, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Apr. 8, 1980, Ser. No. 138,407

Claims priority, application Japan, Apr. 12, 1979, 54/45109; Aug. 28, 1979, 54/110079

Int. Cl.³ C22B *1/14*

U.S. Cl. 75—0.5 R **5 Claims**



1. Porous iron ore pellets, which are obtained by admixing to iron ore a combustible material having a grain size smaller than 2 mm and inflammable at a temperature below 400° C., pelletizing the resulting mixture and burning off said combustible material, said iron ore pellets having a pore size distribution consisting of more than 30% of pores having a diameter of 10 microns to 100 microns and a balance of pores having a diameter smaller than 10 microns, a total porosity greater than 30%, and an FeO content less than 1%.

4,350,524

PROCESS FOR REMOVAL OF BASE METAL IMPURITIES FROM MOLTEN SILVER WITH SULFUR HEXAFLUORIDE

John R. Knoepke, and David B. George, both of Salt Lake County, Utah, assignors to Kennecott Corporation, Salt Lake City, Utah

Filed May 15, 1981, Ser. No. 264,009

Int. Cl.³ C22B *11/02*

U.S. Cl. 75—63 **14 Claims**

1. A process for removing base Metal impurities from silver, comprising the steps of treating a molten bath of metallic silver containing base metal impurities with only that amount of sulfur hexafluoride gas that will form the respective fluorides of said base metal impurities substantially, without alteration of the silver; and removing the resulting base metal fluorides while leaving substantially all of the silver in the molten bath.

4,350,525

MAGNETIC SUSPENSION RAILROAD PARTS

Karl Forch, Hattingen-Blankenstein, Fed. Rep. of Germany, assignor to Thyssen Aktiengesellschaft, Duisburg, Fed. Rep. of Germany

Filed Mar. 11, 1981, Ser. No. 242,470

Claims priority, application Fed. Rep. of Germany, Mar. 11, 1980, 3009234

Int. Cl.³ C22C *38/06*

U.S. Cl. 75—124 **2 Claims**

1. A magnetic suspension railroad part, especially a lateral guide rail, adapted to sustain the support, steering and propulsion forces of suspended railroad use, and made of a magnetically soft steel having high magnetic induction and electric resistivity, magnetic aging stability, weather resistance and good weldability, said steel consisting of:
0 to 0.15—% carbon,
0 to 0.045—% phosphorus,
0 to 0.008—% nitrogen,
0.75 to 2.0—% silicon,
0.15 to 1.00—% manganese,
0.02 to 0.07—% aluminum, soluble,
0.25 to 0.55—% copper,
0.65 to 1.00—% chromium,
Remainder—iron with impurities due to melting.

4,350,526

PALLADIUM/SILVER ALLOY FOR USE WITH DENTAL PROCELAINS

Stephen P. Schaffer, Bloomfield, Conn., assignor to The J. M. Ney Company, Bloomfield, Conn.

Filed Aug. 4, 1980, Ser. No. 174,759

Int. Cl.³ C22C *30/06*

U.S. Cl. 75—134 B **4 Claims**

1. A palladium/silver alloy especially adapted for use with dental porcelains consisting essentially of:
A. 45–60 percent by weight palladium;
B. 25–45 percent by weight silver;
C. 3–15 percent by weight of a hardening and oxidizing component selected from the group consisting of tin, indium and mixtures thereof;
D. 0.3–9.0 percent by weight zinc;
E. 0.1–1.0 percent by weight silicon to substantially eliminate discoloration of porcelains fired thereagainst;
F. up to 0.5 percent by weight of a grain refining component selected from the group consisting of rhenium, iridium and mixtures thereof; and
G. up to 5.0 percent by weight of a modifying component selected from the group consisting of copper, magnesium, gallium, ruthenium and mixtures thereof.

4,350,527

GOLD-COLORED, ACID AND CORROSION RESISTANT ALLOY

Daniel Davitz, 8117 Church, Niles, Ill. 60648

Continuation-in-part of Ser. No. 145,425, May 1, 1980. This application Oct. 13, 1981, Ser. No. 310,475

Int. Cl.³ C22C *5/08*

U.S. Cl. 75—173 C **22 Claims**

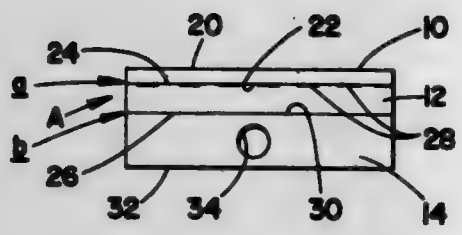
1. A gold-colored, acid and corrosion-resistant alloy which consists essentially of 15 to 20 weight percent of indium, 7 to 20 weight percent of copper, 5 to 15 weight percent of palladium, and from 0 to 10 weight percent of gold, the balance consisting essentially of silver.

4,350,528

METHOD FOR DIFFUSION BONDING WORKPIECES AND ARTICLE FABRICATED BY SAME

Edgar W. Engle, Rogers, Ark., assignor to TRW Inc., Cleveland, Ohio

Filed Jun. 12, 1980, Ser. No. 158,761
Int. Cl.³ B22F 7/02
U.S. Cl. 75—203 12 Claims



1. A method for diffusion bonding at least a pair of bodies to each other at a bond zone defined at the interface of cooperating surfaces of said bodies disposed in a contacting relationship with each other and wherein each of said bodies is formed of a cemented tungsten carbide material which includes cobalt as a low melting phase component and tungsten carbide as a high melting phase component, said method comprising the steps of:

sintering each of said bodies in an inert atmosphere to a temperature intermediate the melting temperature of said low and high melting phase components thereof to obtain substantially the full density and hardness characteristics for said bodies;

shaping said bodies to have substantially the desired conformations with one of said bodies having a first bond surface and the other of said bodies having a second bond surface, said first and second bond surfaces adapted to substantially mate with each other;

placing said first and second bodies in an assembled relationship with each other so that said first and second bond surfaces are in engagement and define said bond zone; and,

heating said bodies in said assembled condition in an inert atmosphere to a temperature intermediate the melting temperatures of the low and high melting phase components thereof for causing grains in said first and second bodies at least adjacent said first and second bond surfaces to grow across said bond zone and thereby effect an integral interconnection between said bodies.

4,350,529

CORROSION-RESISTANT POWDER-METALLURGY STAINLESS STEEL POWDERS AND COMPACTS THEREFROM

David H. Ro, Cleveland Heights; Erhard Klar, Beachwood, and Charles I. Whitman, Bay Village, all of Ohio, assignors to SCM Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 10,956, Feb. 9, 1979, Pat. No. 4,240,831. This application Jun. 20, 1980, Ser. No. 161,552
The portion of the term of this patent subsequent to Dec. 23, 1997, has been disclaimed.
Int. Cl.³ B22F 3/00
U.S. Cl. 75—228 10 Claims

1. In a process for atomizing a melt of metals for producing stainless steel powder, wherein said atomizing is conducted in an oxidizing environment whereby the resulting stainless steel powder is surface-enriched in silicon oxides, the improvement for increasing the corrosion resistance of said powder or a compact thereof which comprises:

adding an effective proportion of modifier metal prior to said atomization, said modifier metal selected from the group consisting of antimony, arsenic, and bismuth, each being capable of enrichment about the surface of said resulting atomized stainless steel powder and effective under reductive sintering conditions in the depletion of said silicon oxides about said surface.

4,350,530

SINTERED ALLOY FOR FRICTION MATERIALS

Nobuo Kamioka, Kasukabe, Japan, assignor to Akebono Brake Industry Co., Ltd., Tokyo, Japan

Filed Apr. 1, 1980, Ser. No. 136,301
Int. Cl.³ B22F 5/00
U.S. Cl. 75—231 1 Claim

1. A Fe-base sintered alloy friction material comprising 3 to 15% by weight of bismuth, copper in an amount ranging from 10 to 50% by weight of the iron content and tin in an amount ranging from 1/7 to 1/20 by weight of the copper content.

4,350,531

PRINTING PASTES WITH FOAM INHIBITORS

Harry Distler, Bobenheim; Rudi Widder, Leimen, and Guenter Uhl, Worms, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Sep. 1, 1981, Ser. No. 298,354
Claims priority, application Fed. Rep. of Germany, Sep. 4, 1980, 3033276
Int. Cl.³ C09D 11/02
U.S. Cl. 106—19 8 Claims

1. In a printing paste composition containing a binder, water, a thickener, a foam inhibitor, and other optional ingredients, the improvement which comprises using as the foam inhibitor from 0.05 to 5 percent by weight, relative to the total weight of the printing paste, of a mixture comprising

(a) a liquid solution of 0.1 to 50 percent by weight, relative to the weight of the foam inhibitor, of a monoalkyl phosphate having 10 to 20 carbon atoms; and

(b) from 50 to 99.9 percent by weight, relative to the weight of the foam inhibitor, of a compound selected from the group consisting of aliphatic esters having a molecular weight of 200 to 800, aliphatic hydrocarbons having a boiling point above 100° C., and mixtures thereof.

4,350,532

GLASS COMPOSITION AND ARTICLES

Ronald M. Randklev, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 184,917, Sep. 8, 1980, abandoned. This application Jul. 30, 1981, Ser. No. 288,290
Int. Cl.³ A61K 6/04; C03C 1/04
U.S. Cl. 106—30 4 Claims

1. A single phase glass composition consisting essentially of, in percent by weight:

Zinc oxide	20 to 35%
Silica	45 to 65%
Boric oxide	3 to 15%
Aluminum oxide	0 to 10%
Aluminum fluoride	At least 2%
Alkali metal oxide or alkaline earth metal oxide	0 to 5%

wherein the combined weight of aluminum oxide and aluminum fluoride is in the range of at least about 5%, and wherein

said composition exhibits an X-ray absorption characteristic of at least 1/16 inch.

4,350,533

HIGH EARLY STRENGTH CEMENT

Richard E. Galer, Hanover Park; John R. Blasius, Evanston, and Paul C. Webb, Arlington Heights, all of Ill., assignors to United States Gypsum Company, Chicago, Ill.

Filed Aug. 3, 1981, Ser. No. 289,589
Int. Cl.³ C04B 7/02
U.S. Cl. 106—89 21 Claims

1. A hydratable cement powder which during the early stages of hydration produces an amount of ettringite equal to from about 40% to about 60% of the weight of the cement/water paste, said powder comprising, by weight, from about 18% to about 65% high alumina cement, from about 16% to about 35% calcium sulfate, from 0% to about 65% portland cement, and from 0% to about 8.5% extraneous lime, said portland cement and said extraneous lime being alternative or complementary sources of from about 3.5% to about 8.5% of calcium oxide during hydration of the cement powder.

4,350,534

FLUID, STABLE FORMULATIONS OF COPPER PHTHALOCYANINE OR INDANTHRONE

Wolf D. Fechner, Dirmstein; Joachim Kranz, Ludwigshafen, and Rudolf Polster, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

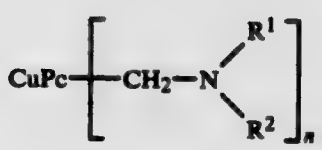
Filed Jul. 2, 1981, Ser. No. 279,778
Claims priority, application Fed. Rep. of Germany, Jul. 15, 1980, 3026697
Int. Cl.³ C09B 47/04
U.S. Cl. 106—288 Q 9 Claims

1. A fluid, stable formulation which contains

(a) finely divided copper phthalocyanine in the α- or β-modification, or finely divided indanthrone,

(b) one or more C_6–C_{18}-alkylbenzenesulfonic acids,

(c) a basic copper phthalocyanine of the formula:



where CuPc is an n-valent radical of copper phthalocyanine, R^1 and R^2 independently of one another are hydrogen or C_1–C_8-alkyl and n is 1, 2, 3 or 4,

(d) one or more compounds which are obtained by Mannich condensation of 2-hydroxynaphthalene, which may or may not contain 1 or 2 additional β-hydroxyl groups, formaldehyde and primary or secondary aliphatic, cycloaliphatic or aromatic monoamines, diamines, triamines or polyamines or 5-membered or 6-membered heterocyclic compounds which contain an >NH group as a ring member, and which contain from 1 to 6 β-hydroxynaphthyl groups, and

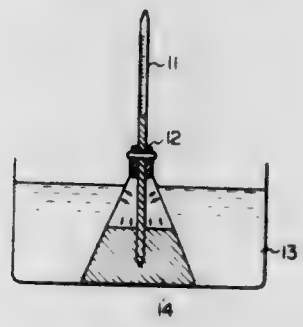
(e) one or more organic liquids, the weight ratio of (b):(c):(d) being from 1:1:1 to 2.5:1.25:1 and the amount of (d) being from 10 to 50% by weight, based on (a).

4,350,535

WATER-DISPERSIBLE PASTE COMPOSITION OF METAL POWDER

Shizuo Ishijima, Mishima; Takeshi Kiritani, Yokohama, and Yukio Hayashi, Fujinomiya, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Japan

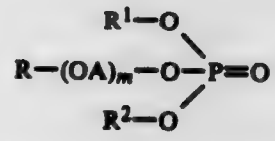
Filed May 22, 1980, Ser. No. 152,294
Claims priority, application Japan, May 28, 1979, 54-65007
Int. Cl.³ C04B 31/40
U.S. Cl. 106—308 Q 10 Claims



1. A water-dispersible paste composition of metal powders comprising:

(a) metal powders, and;

(b) from 0.1 to 20% by weight, based on the weight of the metal powders, of at least one organic phosphoric ester having a general formula:



[I]

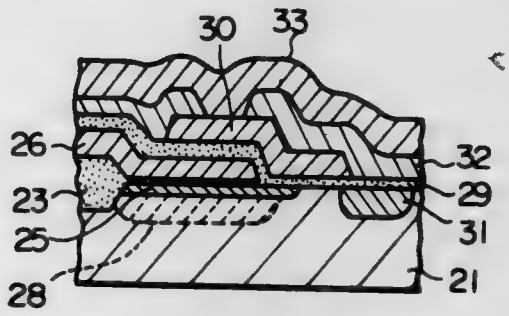
where R represents an alkyl group having 6 to 24 carbon atoms, an alkenyl group having 6 to 24 carbon atoms or an aryl group consisting at least one alkyl substituent having 6 to 24 carbon atoms or at least one alkenyl substituent having 6 to 24 carbon atoms, A represents an alkylene group having 2 to 4 carbon atoms, m represents an integer of from 0 to 20, and R^1 and R^2 independently represent hydrogen, an alkyl group having 1 to 24 carbon atoms, an alkenyl group having 1 to 24 carbon atoms, an aryl group having 6 to 24 carbon atoms or R— $(OA)_m$ (R, A and m are the same as set forth above).

4,350,536

METHOD OF PRODUCING DYNAMIC RANDOM-ACCESS MEMORY CELLS

Motoo Nakano, Yokohama, and Tsutomu Ogawa, Tokyo, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 25, 1980, Ser. No. 180,947
Claims priority, application Japan, Aug. 30, 1979, 54-110718
Int. Cl.³ H01L 21/02, 21/18, 21/22, 21/265
U.S. Cl. 148—1.5 18 Claims



1. A method of producing a dynamic random-access memory cell having a capacitor plate and a transfer gate positioned on a semiconductor substrate of a first conductivity type, a shallow doped region of the opposite conductivity type

formed in said substrate to extend under said capacitor plate, and a deeper highly doped region of the first conductivity type formed under said shallow doped region without any portion of said deeper region extending beyond said shallow region from said capacitor plate toward said transfer gate, to avoid the formation of a barrier region between said capacitor plate and said transfer gate, said method comprising the steps of:

forming an oxide layer on said semiconductor substrate;

forming a patterned photo resist layer on said oxide layer;

selectively implanting impurities of said opposite conductivity type into said substrate to form said shallow doped region using said patterned photo resist layer as a mask;

forming a layer of material for said capacitor plate on said oxide layer and said patterned photo resist layer;

in selective order forming a masking layer on said capacitor plate material layer and implanting impurities of the first conductivity type into said capacitor plate material layer, the diffusion rate of said impurities of said first conductivity type in said semiconductor substrate being faster than that of said impurities of the opposite conductivity type,

removing said patterned photo resist layer together with the portions of said masking layer and said capacitor plate material layer formed on said photo resist layer to leave said capacitor plate, and a portion of said masking layer on said capacitor plate,

removing an end portion of said capacitor plate from under an end portion of the remaining masking layer overlaying said capacitor plate by etching;

removing the remaining masking layer remaining on said capacitor plate; and

diffusing said impurities of the first conductivity type from said capacitor plate through said oxide layer and into said semiconductor substrate under said shallow doped region by heating said substrate in an atmosphere containing a predetermined gas to form said deeper highly doped region under said shallow doped region, said removed end portion being such as to prevent said formation of said barrier region as a result of said shallower region extending beyond said deeper region toward said transfer gate.

4,350,537

SEMICONDUCTOR ANNEALING BY PULSED HEATING

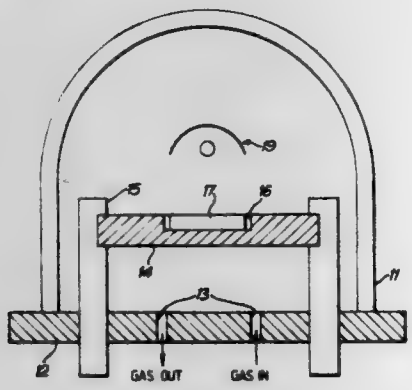
John M. Young, Harlow, and Peter D. Scovell, Chelmsford, both of England, assignors to ITT Industries Inc., New York, N.Y.

Filed Oct. 9, 1980, Ser. No. 195,688

Claims priority, application United Kingdom, Oct. 17, 1979, 7936041; Jul. 29, 1980, 8024758

Int. Cl.³ H01L *21/265, 21/26*

U.S. Cl. 148—1.5 8 Claims



1. A method of annealing an ion damaged semiconductor body, including contacting the body with a heater element of low thermal mass, pulse heating the body by raising the temperature of the heater element and the body to 450° to 900° C. so as to effect annealing, and allowing the element and the body to cool.

4,350,538

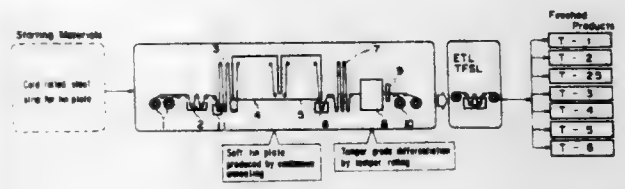
METHOD FOR PRODUCING STEEL STRIP FOR TIN PLATE AND TIN-FREE STEEL PLATE IN VARIOUS TEMPER GRADES

Ichiro Imai, Kitakyusyushi; Takashi Furuya; Narumi Ando, both of Tokyo, and Satoyuki Kitajima, Kitakyusyushi, all of Japan, assignors to Nippon Steel Corporation, Chiyodaku, Japan

Filed Aug. 4, 1980, Ser. No. 175,044

Int. Cl.³ C21D *7/02, 7/04*

U.S. Cl. 148—12 D 2 Claims



1. A method for adjustment of temper grade in steel strip for use in production of surface-treated plate, particularly tin plate and tin-free steel plate, by temper rolling, which method comprises subjecting a cold rolled strip of low-carbon steel to continuous annealing and subsequently effecting temper-grade differentiation of the steel strip over the entire range of temper grades T-1 through T-6 by subjecting the steel strip to dry temper rolling for obtaining at least some of the temper grades, the dry temper rolling being carried out with a temper rolling mill provided with work rolls 50 to 300 mm in diameter, and subjecting the steel strip to wet temper rolling for obtaining any temper grades not obtained by the dry temper rolling.

4,350,539

METHOD OF IMPROVING THE DUCTILITY OF THE COATING OF AN ALUMINUM-ZINC ALLOY COATED FERROUS PRODUCT

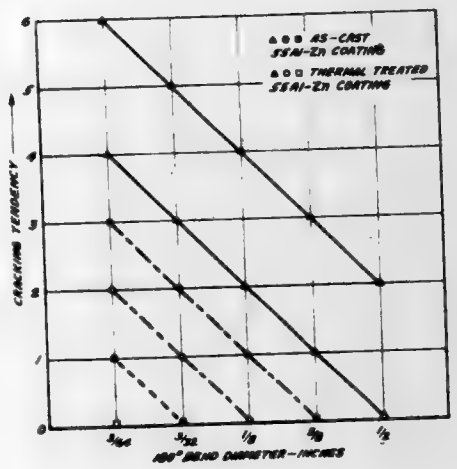
Theodore E. Torok, Springtown; Paik W. Shin, Coopersburg, and Angelo R. Borzillo, Norristown, all of Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Division of Ser. No. 92,786, Nov. 8, 1979, Pat. No. 4,287,008.

This application May 26, 1981, Ser. No. 267,132

Int. Cl.³ B32B *15/01*

U.S. Cl. 148—31.5 2 Claims



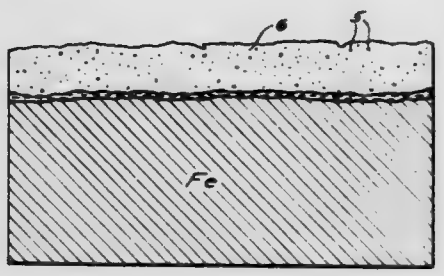
1. A thermally treated metallic coated ferrous base product having a ductile coating, characterized by an intermetallic layer adjacent said ferrous base and a coating overlay, whereby said overlay (1) comprises by weight, 25 to 70% aluminum, balance essentially zinc with a small addition of silicon, (2) contains precipitates of incoherent, overaged second phase particles, and (3) has a hardness no greater than about 115 VHN.

4,350,540

METHOD OF PRODUCING AN ALUMINUM-ZINC ALLOY COATED FERROUS PRODUCT TO IMPROVE CORROSION RESISTANCE

Louis K. Allegra, Bethlehem; Herbert E. Townsend, Center Valley, and Angelo R. Borzillo, Norristown, all of Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Division of Ser. No. 92,787, Nov. 8, 1979, Pat. No. 4,287,009. This application May 26, 1981, Ser. No. 267,134
Int. Cl.³ B32B *15/18*
U.S. Cl. 148—31.5 1 Claim



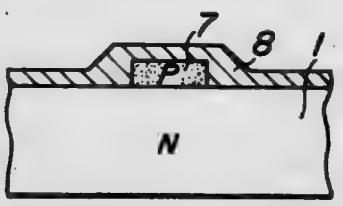
1. A thermally-treated metallic coated ferrous base product having improved atmospheric corrosion resistance, characterized by a solution treated coating overlay comprised of an aluminum-zinc alloy consisting essentially of by weight 25 to 70% aluminum; a small addition of silicon and the balance zinc and a thin intermetallic layer interposed between said overlay and said ferrous base, whereby the structure of said overlay consists of a fine dispersion of zinc within an aluminum-rich matrix.

4,350,541

DOPING FROM A PHOTORESIST LAYER

Yoshihiko Mizushima, Fuchu; Akitsu Takeda, Tokyo; Akira Yoshikawa, Higashiyamato; Osamu Ochi, Sayama, and Tomoko Hisaki, Hamuramachi, all of Japan, assignors to Nippon Telegraph & Telephone Public Corp., Tokyo, Japan

Filed Jul. 31, 1980, Ser. No. 174,275
Claims priority, application Japan, Aug. 13, 1979, 54-103051; Aug. 13, 1979, 54-103052
Int. Cl.³ H01L *21/225*
U.S. Cl. 148—188 22 Claims



1. A method of fabricating a semiconductor device comprising the steps of:

forming on the main surface of a semiconductor substrate an inorganic photoresist layer having a first amorphous layer which contains selenium as a matrix component and includes an impurity for providing one conductivity type, and a second layer formed on said first layer, said second layer being a silver or silver-containing layer;

exposing said inorganic photoresist layer with an exposure pattern;

developing the exposed inorganic photoresist layer to form an impurity-containing inorganic photoresist layer having a pattern corresponding to said exposure pattern;

forming a heat resistive overcoating layer on said main surface of said semiconductor substrate, said impurity containing inorganic photoresist layer being covered by said heat resistive overcoating layer; and

forming a doped semiconductor region by diffusing said impurity from said impurity-containing inorganic photoresist layer into a region of said semiconductor substrate underlying said impurity-containing inorganic photoresist layer.

4,350,542

BONDING AGENT FOR HMX (CYCLOTETRAMETHYLENETETRANITRAMINE)

John F. Kincaid, Arlington, Va., and Russell Reed, Jr., Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 31, 1980, Ser. No. 135,563
Int. Cl.³ C06B *45/22, 25/34;* C07D *251/14*
U.S. Cl. 149—11 27 Claims

1. A process for the preparation of a propellant composition having enhanced toughness and improved hazard properties which comprises:

coating an HMX or RDX structure with a material to effect the hydroxyl interaction to the surface of HMX or RDX selected from the group consisting of nitrocellulose, polyhydroxyethyl acrylate and poly-hydroxymethyl acrylate, or mixture thereof;

treating said coated HMX or RDX structure with an amino silane selected from the group consisting of $H_2N(CH_2)_nSi(OR)_3$ wherein n=3 and R=methyl or ethyl; $H_2N(CH_2)_mN(CH_2)_nSi(OR)_3$ wherein n=3 or 4 and m=2 or 3, and R=methyl or ethyl; $H_2N(CH_2)_pN(CH_2)_mN(CH_2)_nSi(OR)_3$ wherein n=3 or 4, m=2 or 3, p=2 or 3, and R=methyl or ethyl; and $H_2N(CH_2)_qN(CH_2)_pN(CH_2)_mN(CH_2)_nSi(OR)_3$ wherein n=3 or 4, m=2 or 3, p=2 or 3, q=2 or 3, and R=methyl or ethyl or mixtures thereof;

reacting said amino silane treated and coated HMX or RDX structure with a primary hydroxyl forming material selected from the group consisting of epsilon caprolactone, glycidol, and ethylene oxide, and

curing said HMX or RDX structure in the presence of a binder and forming a permanent bond between said HMX structure and said binder.

4,350,543

UREA/FORMALDEHYDE ADHESIVES

Ramon Bruguera, Cervello, Spain, assignor to Patentes Y Novedades, S.A., Madrid, Spain

Division of Ser. No. 26,918, Apr. 4, 1979, Pat. No. 4,246,152. This application Jul. 23, 1980, Ser. No. 172,225
Int. Cl.³ B29J *5/00*
U.S. Cl. 156—62.8 2 Claims

1. A process for the production of an agglomerated wooden material comprising binding a particulate wooden material using a urea/formaldehyde adhesive obtained by mixing an inorganic salt with a formaldehyde source, heating the resulting mixture and reacting the resulting mixture with urea to initiate polymerization in an acid medium at a pH between 5 and 6.5, the polymerization reaction being stopped by rendering the reaction mixture alkaline when the mixture has reached a required viscosity and urea being added to the mixture during cooling to give the adhesive after cooling.

4,350,544

METHOD OF MANUFACTURING A PADDED PANEL

Yoshio Matsuno, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Sep. 24, 1980, Ser. No. 190,224
Claims priority, application Japan, Sep. 28, 1979, 54-126030
Int. Cl.³ B32B *31/06*
U.S. Cl. 156—79 1 Claim

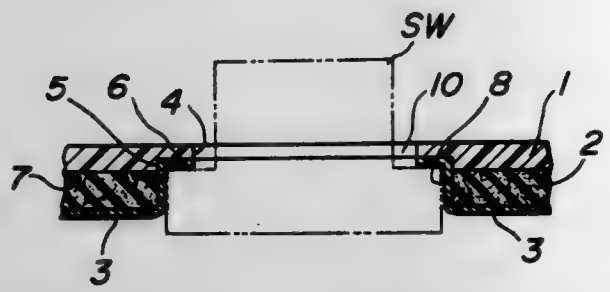
1. A method of manufacturing a padded panel having an opening for mounting a desired article on the panel, comprising the steps of:

forming a groove in the form of a closed loop on a surface of a relatively thick and rigid base plate to form a thin-walled portion around the periphery of said closed loop;

adhering a portion of a relatively thin and flexible surface

layer with the surface of the groove, thus forming a closed space between the base plate and the surface layer;

injecting foamable plastics material into the closed space, and causing the foamable plastics material to foam and harden in the closed space; and



cutting the base plate and the surface layer along the inner periphery of the groove, to thereby form the opening of the panel, while leaving the bottom of the groove as a thin-walled portion around the opening, which affords a seat for positioning and mounting the desired article.

4,350,545

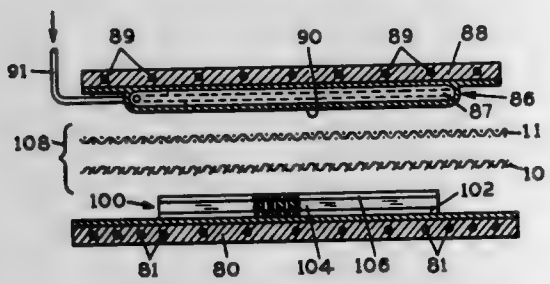
METHOD OF LAMINATING PLASTIC SHEETS

Armen Garabedian, 8-22 Astoria Blvd., New York, N.Y. 11102

Continuation of Ser. No. 84,430, Oct. 12, 1979, abandoned. This application May 18, 1981, Ser. No. 264,954

Int. Cl.³ B32B *31/20*

U.S. Cl. 156—87 **4 Claims**



1. The method of laminating a plurality of layers together comprising, selecting said layers to be laminated such that no more than one of said layers is gas impermeable, also selecting said layers such that at least one thereof is a layer of plastic powder and any other layers are pre-existing gas permeable thermoplastic film or sheet, placing said layers against one another to form an assembly, providing a gas release means on at least one side of said assembly, applying a fluid-like even pressure to said assembly by means of at least one flexible diaphragm which is positioned to exert pressure thereon when flexed by the application of positive or negative pressure thereto, heating said assembly sufficiently while under said fluid-like pressure to fuse said powder to form a continuous integrated ply, venting through said gas permeable layers of said assembly and through said gas release means any gases within or between the layers, said venting taking place at least in part during heating of said assembly, and continuing said heat and pressure for a time and at a temperature sufficient to laminate said layers together.

4,350,546

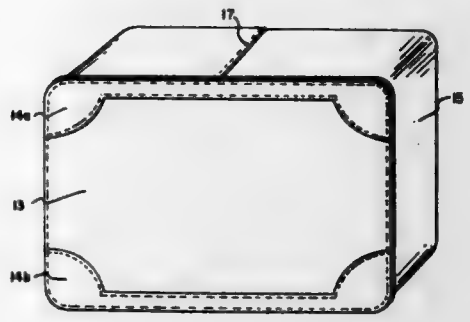
METHOD OF MAKING A COVER FOR A LUGGAGE CASE

Michael Davis, New Castle, Pa., assignor to Airway Industries, Inc., Ellwood City, Pa.

Division of Ser. No. 111,205, Jan. 11, 1980, Pat. No. 4,307,765, which is a continuation of Ser. No. 820,597, Aug. 1, 1977, abandoned. This application Aug. 3, 1981, Ser. No. 289,697

Int. Cl.³ B32B *7/08*

U.S. Cl. 156—93 **2 Claims**



1. A method of making a cover for a luggage case, comprising the steps of:

(a) providing a main cover member of sheet material and substantially rectangular contour with the four corners marginally recessed,

(b) providing two decorative strips of sheet material corresponding in length to the main cover member, each of said strips comprising a central portion of relatively narrow width and end areas in the shape of quadrant sectors,

(c) securing said decorative strips to one face of the main cover member along opposite edges thereof so as to overlie and project beyond the opposite edges with the quadrant sectors overlying the marginal recesses at the corners of the main cover member and provide a single thickness of sheet material around the entire periphery of the main cover member, and

(d) providing a flat strip of sheet material of uniform width and securing it along one edge thereof to the non-recessed areas of the main cover member and to the marginal areas of the decorative strips to form a loop for disposal at a right angle to the main cover member.

4,350,547

FLEXIBLE HOSE

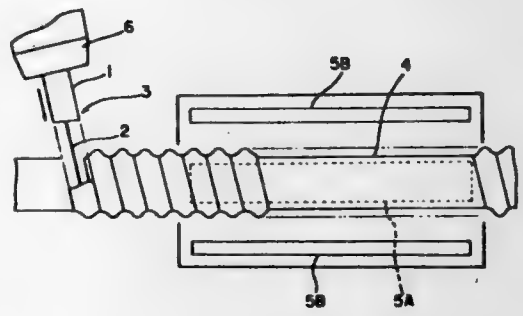
Shiro Kanao, 32-460 Nanpeidai, Takatsuki-shi, Osaka-fu, Japan

Continuation of Ser. No. 120,204, Feb. 11, 1980, abandoned, which is a continuation of Ser. No. 924,409, Jul. 13, 1978, abandoned, which is a division of Ser. No. 776,034, Mar. 9, 1977, abandoned. This application Mar. 19, 1981, Ser. No. 245,292

Claims priority, application Japan, May 13, 1976, 51-54883

Int. Cl.³ B29D *23/12*

U.S. Cl. 156—143 **8 Claims**



1. A method of making a flexible hose having a peripheral rubber wall and a linear reinforcement of rigid resin for reinforcing the rubber wall, which comprises the steps of

selecting a rubber material and a rigid resin material which are approximate to each other in solubility parameter;

integrally extruding a mass of the rubber material in an

uncured state and a mass of the rigid resin material in a molten state to form a composite strip of the rubber material and a linear reinforcement of the rigid resin material which is at least partially embedded in the rubber material and which extends along the length of the strip;

winding the strip helically about a mandrel with rubber side edges of adjacent convolutions of the strip; being disposed in overlapping engagement; and

heating the strip disposed about the mandrel to cure the rubber material of the strip;

whereby the rigid resin material of the reinforcement is effectively bonded to the rubber material over the entire portion of the reinforcement periphery in contact with the rubber material, and adjacent convolutions of the strip are bonded together along the overlapping engaged rubber side edges of these adjacent convolutions, so as to form the flexible hose.

4,350,548

METHOD AND APPARATUS FOR PROVIDING THE INNER SURFACE OF A PIPE LINE WITH A LINING

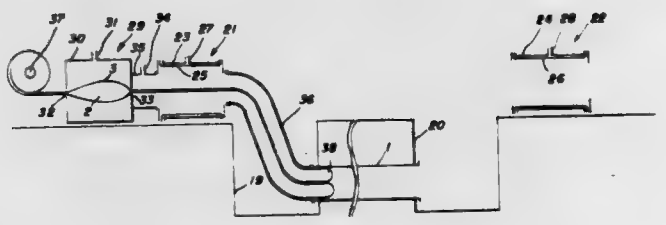
Katsuaki Zenbayashi; Akio Morinaga, both of Fujisawa; Masao Hirayama, and Akira Morita, both of Settsu, all of Japan, assignors to Tokyo Gas Co., Ltd., Tokyo and Ashimori Industry, Co., Ltd., Osaka, both of, Japan

Filed Feb. 13, 1981, Ser. No. 234,861

Claims priority, application Japan, Feb. 18, 1980, 55-19569

Int. Cl.³ B32B *31/20*

U.S. Cl. 156—156 **14 Claims**



1. A method for providing the inner surface of a pipe line with a flexible tubular lining material, said lining material containing a binder material on the internal surface thereof which comprises,

fixing the annular portions of one end of the flexible tubular lining material, at a position in advance of the pipe line,

applying fluid pressure to the rear of the annularly fixed portion of the flexible tubular lining material causing the flexible tubular lining material to be turned inside out at a turning point formed in the tubular lining material,

continuing to apply fluid pressure to the flexible tubular lining material causing the turning point to advance within the pipe line, said fluid pressure also pushing the evanginated tubular lining material against the inner surface of the pipe line, to which it is firmly attached to the aid of the binder material,

providing a flexible hose attached directly or indirectly to the end of the flexible tubular lining material, said flexible hose having a porous structure and a diameter smaller than that of the flexible lining material whereby, upon the continual evagination of the tubular lining material, the flexible hose is drawn into the interior of the pipe line, and

introducing a heated gaseous fluid stream in the form of pressurized steam into the interior of said flexible hose whereby the heated gaseous fluid stream is introduced through the pores of the flexible hose along the inner surface of the pipe line, the flexible tubular lining material being warmed so as to accelerate the curing of the binder interposed between the inner surface of the pipe line and the flexible lining material.

4,350,549

METHOD AND APPARATUS FOR THE PRODUCTION OF HOLLOW BODIES BY WINDING

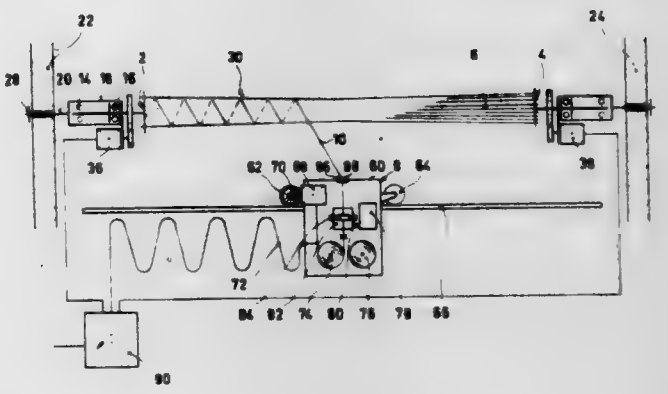
Roland Frehner, Switzerland

Continuation of Ser. No. 881,788, Feb. 27, 1978, abandoned. This application Nov. 28, 1979, Ser. No. 98,314

Claims priority, application Switzerland, Feb. 27, 1977, 002377/77

Int. Cl.³ B65H *81/00*

U.S. Cl. 156—161 **10 Claims**



1. Method for the production of an elongated hollow body comprising the steps of:

providing a pair of spaced gripping members with an area between them,

attaching longitudinally under tension a plurality of filaments or bands between the gripping members without support in the area between the gripping members in order to form an elongated hollow winding core as a lost core part of the final hollow body to be produced,

applying tension to the filament or bands along their lengths via tensioning means disposed completely outside the area between the gripping members,

winding a filamentous or band type wrapping material around and along the length of said filaments or bands forming said hollow core under controlled tension so as to deflect the filaments or bands of the hollow core inwardly to produce a closed body having a generally hyperboloid shape,

solidifying the hollow body in its hyperboloid shape,

releasing the gripping members, and

removing the completed hollow body from the gripping members without disassembling the gripping members and tensioning means.

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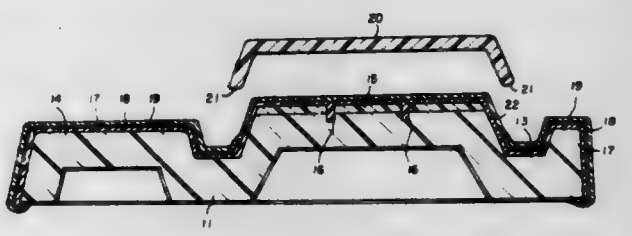
METHOD OF DECORATING CONTRASTING REGIONS OF A MOLDED RESIN PANEL

Dick T. Van Manen, Canandaigua, N.Y., assignor to Voplex Corporation, Pittsford, N.Y.

Division of Ser. No. 150,283, May 16, 1980, abandoned. This application May 4, 1981, Ser. No. 259,991

Int. Cl.³ B05D *5/00*; B32B *31/04*; B44C *1/24*

U.S. Cl. 156—237 **2 Claims**



1. A method of decorating contrasting regions of the front surface of a molded resin panel with a decorative material in one region of said front surface and a decorative coating in another region of said front surface, said decorative coating

having a resin undercoating and a clear resin top coating, and said method comprising:

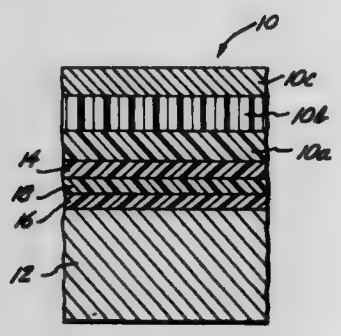
a. securing said decorative material to said one region to form a surface decoration differing from the appearance of said molded resin of said front surface of said panel;
b. masking said decorative material throughout said one region of said front surface;
c. applying said decorative coating to unmasked front surface regions of said panel outside said one region bearing said decorative material, so said decorative coating covers said other region of said front surface of said panel;
d. unmasking said decorative material; and
e. forming said top coating to extend over all of said front surface of said panel to cover both said decorative coating and said decorative material.

4,350,551

FLUID SLIP SHEET AND METHOD

Gary L. Michaelson, Kent, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Dec. 29, 1980, Ser. No. 221,321
Int. Cl.³ B29C *19/00*
U.S. Cl. 156—245 **6 Claims**



1. A method for curing a part and allowing it to conform to the contoured surface of a mold, said mold and said part having dissimilar coefficients of expansion, comprising:

interposing a sheet of flexible material that is a solid at room temperature and a liquid at an elevated curing temperature between said part and said mold,

heating said sheet, said mold, and said part to an elevated curing temperature, and

allowing said part and said mold to move relative to one another as they differentially expand.

4,350,552

METHOD AND APPARATUS FOR CUTTING STONE PANELS

Patrick T. Bourke, Doon House, Maam, County Galway, Ireland

Continuation-in-part of Ser. No. 64,999, Aug. 7, 1979, which is a division of Ser. No. 848,352, Nov. 3, 1977, abandoned, which is a continuation-in-part of Ser. No. 868,213, May 12, 1976, Pat. No. 4,063,982, which is a continuation-in-part of Ser. No. 394,138, Sep. 4, 1973, Pat. No. 3,963,846. This application May 8, 1980, Ser. No. 147,757

Claims priority, application United Kingdom, Sep. 4, 1972, 40839/72; Jan. 19, 1973, 2795/73

The portion of the term of this patent subsequent to Dec. 20, 1994, has been disclaimed.

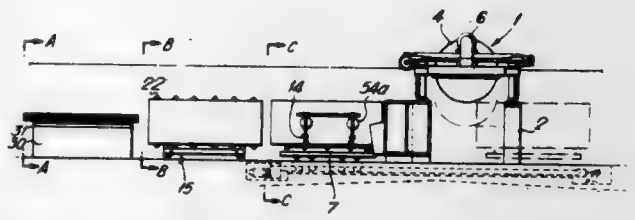
Int. Cl.³ B32B *31/00*
U.S. Cl. 156—254 **3 Claims**

1. A method of manufacturing composite surface elements having a lamina of stone bonded to a backing layer comprising the steps of:

(i) applying and bonding to each of the two opposed faces of a stone slab a backing layer comprising a core of lightweight material which is resistant to compressive forces in a direction substantially normal to the plane of the layer;

(ii) gripping the slab, with backing layers attached, by means of a slab-gripping device;

(iii) presenting one longitudinal edge of the slab to a disc saw and sawing the slab along a cutting plane substantially parallel to and midway between the aforesaid opposed faces of the slab to a depth which is approximately half the depth of the slab; and



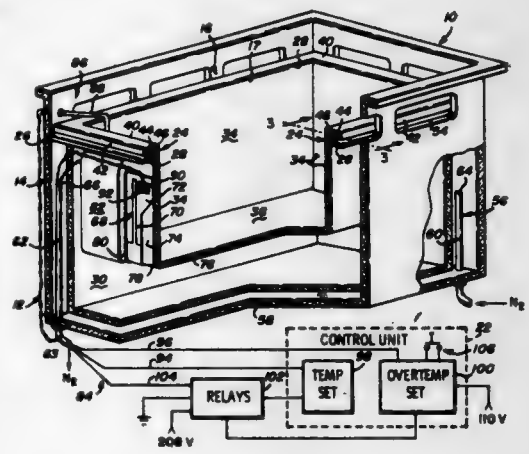
(iv) presenting the opposite longitudinal edge of the slab to a disc saw, gripping the slab as in step (ii), and sawing along the same cutting plane as in step (iii) through the remainder of the depth of the slab thereby sawing the slab in two to leave a thin stone lamina adhered to each of the backing layers.

4,350,553

ACID BATH APPARATUS

Paul V. Mendes, 941 Tamarack, Sunnyvale, Calif. 94086

Filed Jul. 27, 1981, Ser. No. 287,424
Int. Cl.³ C23F *1/02*
U.S. Cl. 156—345 **9 Claims**



1. An acid bath apparatus comprising, in combination:

(a) housing means forming a first container having an open top, the opening being rectangular in configuration and defined by the inside edges of a circumscribing upwardly facing surface;

(b) resilient seal means disposed upon said upwardly facing surface; and

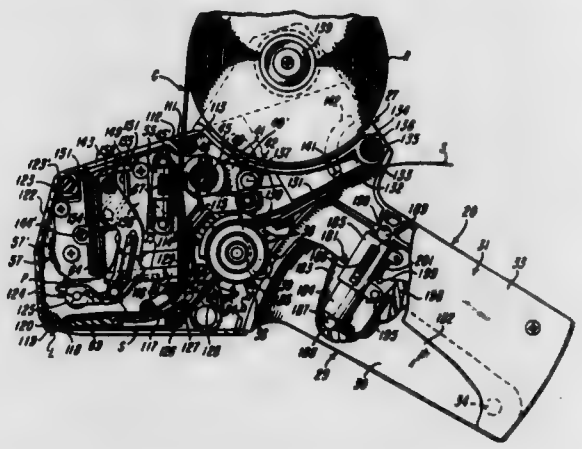
(c) beaker means forming a rectangular second container having a rectangularly configured open top, the opening being defined by an outwardly and downwardly turned lip, said beaker means being disposed within said first container with said lip extending over said surface and engaging said seal means, said beaker means being supported by said seal means and said surface, said seal means forming an airtight seal at the top of a chamber defined by the inside surface of said housing means and the outside surface of said beaker means.

4,350,554

LABEL PRINTING AND APPLYING APPARATUS

Robert M. Pabodie, Dayton, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Division of Ser. No. 110,720, Jan. 9, 1980, Pat. No. 4,290,839.
This application Jun. 25, 1981, Ser. No. 277,420
Int. Cl.³ B65C *11/02*
U.S. Cl. 156—384 5 Claims



1. Hand-held apparatus for printing and applying pressure sensitive labels releasably carried on a web of supporting material including a frame having a handle, an actuator disposed at the handle and movable between an initial position and an actuated position, means for printing on the labels, the printing means having an initial position and an actuated position, means for delaminating printed labels, means for applying printed labels, means engageable with the web to advance the web to effect label delamination at the delaminating means, moving means coupled to the actuator, to the printing means and to the web advancing means for printing on a label and thereafter advancing the printed label to the applying means, and return spring means for returning the printing means and the actuator to their initial positions and for operating the moving means to move the web advancing means, the improvement comprising an easy-to-handle subassembly including a pair of telescoping members having an internal opening, a compression spring captive in the opening for urging the members apart, means for preventing separational movement of the members and release of the spring, means coupled to the telescoping members for preventing return of the actuator to its initial position until the actuator has been moved from its initial position into its actuated position, wherein the return preventing means of the subassembly includes a ratchet on one telescoping member and a pawl mounted on the other telescoping member, the pawl having a ratcheting position in which the pawl cooperates with the ratchet and a reset position in which the pawl is out of contact with the ratchet, an overcenter mechanism including a spring for moving the pawl between its ratcheting and reset positions and for holding the pawl in either its ratcheting position or its reset position, and reset means carried by the one telescoping member for resetting the pawl to its reset position.

4,350,555

PRECISION LAMINATING PRESS

Andrew Popoff, Mountain Lakes, N.J., assignor to Keuffel & Esser Company, Morristown, N.J.

Filed Jul. 10, 1980, Ser. No. 168,235
Int. Cl.³ B32B *31/00;* B44C *1/00;* B65H *25/00;* B41D *7/00*
U.S. Cl. 156—540 9 Claims

1. A laminating press comprising:

(a) a frame;

(b) a first roller supported for rotation upon a first axle journaled in bearing means mounted on said frame;

(c) a second roller supported for rotation upon a second axle disposed substantially parallel to said first axle and journaled in bearing means mounted on said frame;

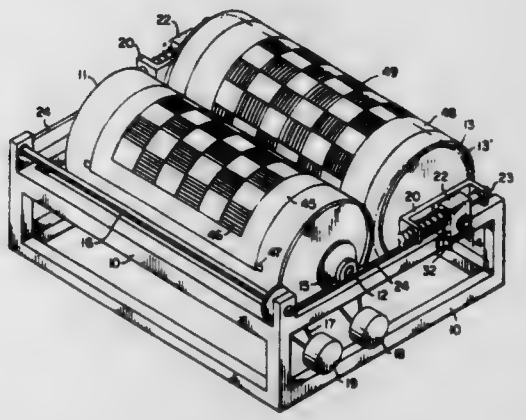
(d) at least one of said first and second bearing means being mounted on said frame for reciprocal movement transverse to the axle of its supported roller and in the plane coincident with the axes of both said rollers to thereby effect relative movement of said rollers into and out of surface contact;

(e) first drive means for imparting said reciprocal movement

(1) in one direction to effect and maintain said rollers in surface contact, and

(2) in an opposite direction to effect separation of said rollers,

(f) first drive control means for establishing the direction of said reciprocal movement;



(g) alignment means associated with each of said rollers arranged to retain said rollers in precise circumferential alignment prior to the time their respective surfaces come into contact;

(h) registration means associated with at least one of said first and second rollers for temporarily locating a flexible sheet in a precise position on the surface thereof;

(i) holding means associated with the other of said rollers for maintaining a flexible sheet in a fixed position on the surface thereof;

(j) second drive means for imparting rotational movement to at least one of said rollers; and

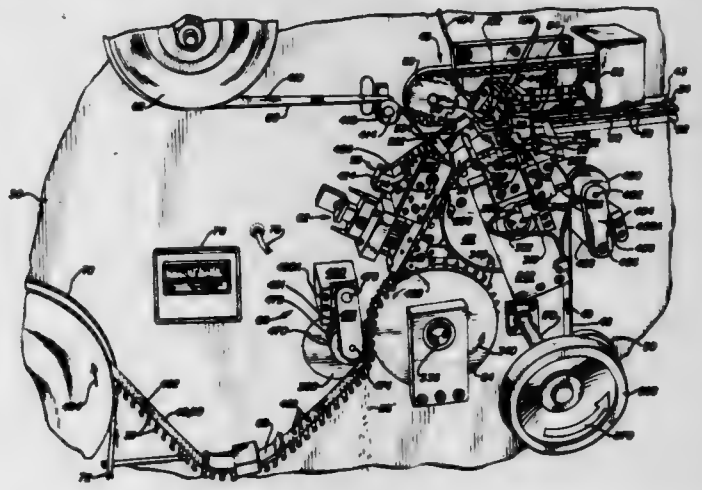
(k) second drive control means for controlling the operation of said second drive means.

4,350,556

COMPONENT RETAPING MACHINE WITH TOOTH ENGAGING MEANS

John Hofbauer, Des Plaines, Ill., assignor to Die-Craft Metal Products, Inc., Des Plaines, Ill.

Filed Sep. 19, 1980, Ser. No. 188,967
Int. Cl.³ B65B *15/04;* B65H *5/26*
U.S. Cl. 156—541 17 Claims



1. Apparatus for removing components from a carrier strip, comprising:

means for receiving an input carrier strip having at least one radial lead component releaseably secured thereto, said

component including a head and at least one lead extending from said component head, said component head and said lead extending from said input carrier strip;

puller tool means including tooth means;

transport means for engaging said tooth means against some surface of said component which faces toward said input carrier strip, and transporting said puller tool means in a direction to pull said component free of said input carrier strip whereby removal is accomplished without pinching said component.

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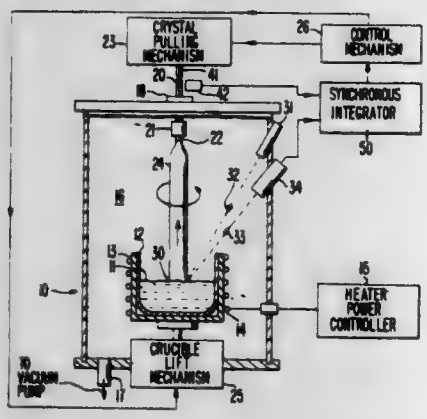
METHOD FOR CIRCUMFERENTIAL DIMENSION MEASURING AND CONTROL IN CRYSTAL ROD PULLING

Richard A. Scholl, Palo Alto, and John L. Cole, Fremont, both of Calif., assignors to Ferrofluidics Corporation, Nashua, N.H.

Continuation of Ser. No. 85,089, Oct. 15, 1979, abandoned, which is a division of Ser. No. 857,331, Dec. 5, 1977, Pat. No. 4,207,293, which is a continuation of Ser. No. 682,293, May 3, 1976, abandoned, which is a continuation of Ser. No. 479,316, Jun. 14, 1974, abandoned. This application Apr. 27, 1981, Ser. No. 257,591

Int. Cl.³ C30B *15/26, 15/30*

U.S. Cl. 156—601 **18 Claims**



1. A method for controlling the growth of a crystal rod in a direction transverse to the axis of said rod, as said rod is being drawn from a melt in a substantially vertical direction, which method comprises:

(a) providing relative rotation of said rod with respect to the melt, while drawing the crystal rod from the melt;

(b) sensing electromagnetic radiation from the circumference of the meniscus, which occurs at the interface between said rod and said melt, and obtaining a signal responsive to a substantial circumferential dimension of said crystal rod, for successive rotations thereof;

(c) integrating successive circumferential signals to generate a correction signal indicative of the change of any circumferential dimensions of said drawn rod; and

(d) adjusting the rate at which the rod is drawn from the melt, to provide for a rod of controlled growth in the transverse direction.

4,350,558

PROCESS FOR THE MANUFACTURE OF POLYCRYSTALLINE GARNET AND CORRESPONDING MONOCRYSTALS

Bernard Boudot, Paris, and Georges Nury, Frepillon, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Nov. 7, 1980, Ser. No. 204,894

Claims priority, application France, Nov. 9, 1979, 79 27658

Int. Cl.³ C30B *15/00*

U.S. Cl. 156—617 SP **20 Claims**

1. A process for manufacturing a pure polycrystalline garnet consisting essentially of aluminium and/or gallium and/or indium, oxygen and at least one element taken from the group consisting of the rare earths and yttrium, which process comprises the following steps:

(1) a solution is prepared consisting essentially of the salts of the constituent cations of the garnet, in the proportions corresponding to the composition of the desired garnet structure;

(2) the corresponding hydroxides are co-precipitated by means of a base in order to obtain a co-hydroxide, the solution of salts and the base being added simultaneously at a temperature between ambient temperature and the boiling point of the solution of salts so that the pH of the medium is between about 5 and 10 and the pH is kept at a



constant value, within these limits, throughout the co-precipitation, said constant pH value being that at which no aluminum hydroxide and/or gallium hydroxide and/or indium hydroxide is redissolved, and at which the precipitation of the rare earth hydroxides and yttrium hydroxide is complete;

(3) the co-hydroxide is filtered off;

(4) the co-hydroxide is washed;

(5) the co-hydroxide is dried; and

(6) the co-hydroxide is then subjected to a single calcination at a temperature between about 800° C. and 1500° C. until completely reacted, whereby said pure polycrystalline garnet is produced.

4,350,559

PROCESS FOR THE MANUFACTURE OF POLYCRYSTALLINE GARNET AND CORRESPONDING MONOCRYSTAL

Bernard Boudot, Paris, and Georges Nury, Frepillon, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Nov. 7, 1980, Ser. No. 204,896

Claims priority, application France, Nov. 9, 1979, 79 27657

Int. Cl.³ C30B *15/00*

U.S. Cl. 156—617 SP **17 Claims**



1. A process for manufacturing a pure polycrystalline garnet, which process consists essentially of the following steps:

(1) a solution consisting essentially of the salts of the constituent cations of the garnet is prepared in accordance with the process comprising the following steps:

(a) the oxides of the constituent cations of the garnet are calcined;

(b) the amounts of oxides fixed by the formula of the garnet are weighed;

(c) each oxide is dissolved in an acid; and

(d) the resulting solutions of salts are mixed;

(2) the corresponding hydroxides are co-precipitated by

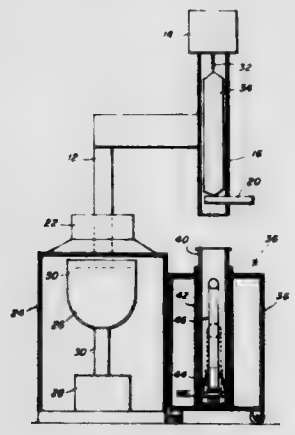
addition of a base to the solution in order to obtain a co-hydroxide;
(3) the co-hydroxide is filtered off;
(4) the co-hydroxide is washed;
(5) the co-hydroxide is dried; and
(6) the co-hydroxide is then subjected to a single calcination at a temperature of between about 800° C. and 1500° C. until completely reacted, whereby said pure polycrystalline garnet is produced, said garnet consisting essentially of the constituent cations from the solution and oxygen.

4,350,560

APPARATUS FOR AND METHOD OF HANDLING CRYSTALS FROM CRYSTAL-GROWING FURNACES

Walter Helgeland, Lexington; Alex Teverovsky, Concord, both of Mass.; Kenneth H. Kerwin, II, Londonderry, N.H., and Carl P. Chartier, Danvers, Mass., assignors to Ferrofluidics Corporation, Nashua, N.H.

PCT No. PCT/US81/00668, § 371 Date Aug. 7, 1981, § 102(e) Date Aug. 7, 1981
PCT Filed May 19, 1981, Ser. No. 298,242
Int. Cl.³ C30B *15/32*
U.S. Cl. 156—617 SP **17 Claims**



8. A method of handling a grown crystal from a Czochralski crystal-growing furnace, which method comprises:
(a) drawing a seeded crystal from a melt in a crucible in a lower melt chamber, having a contaminant-free atmosphere, into an upper crystal-receiving chamber;
(b) supporting the grown crystal in the upper chamber;
(c) sealing the lower melt chamber from the upper chamber;
(d) opening the upper chamber to the atmosphere;
(e) transferring the upper crystal chamber with the supported crystal to a crystal-discharging position free of the lower melt chamber;
(f) positioning a separate, lower, crystal-receiving chamber in a position to receive the supported crystal from the upper crystal chamber;
(g) lowering the crystal from the upper crystal chamber into the lower crystal chamber; and
(h) transporting the grown crystal in the lower crystal chamber to a new location.

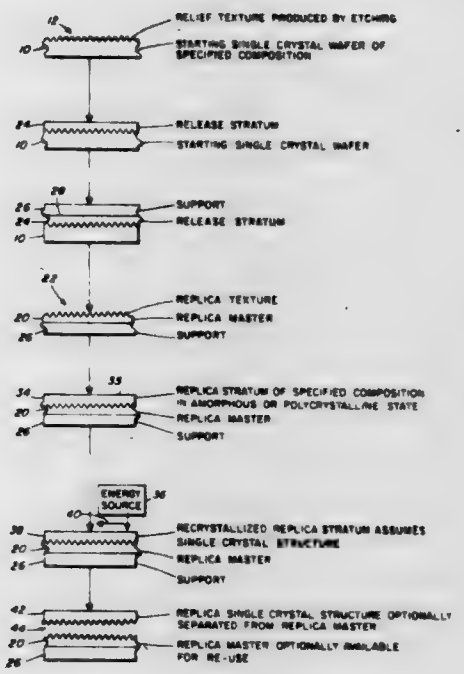
4,350,561

SINGLE CRYSTAL PROCESSES AND PRODUCTS

Roger G. Little, Bedford, Mass., assignor to Spire Corporation, Bedford, Mass.

Filed May 16, 1980, Ser. No. 150,331
Int. Cl.³ B01J *17/04*
U.S. Cl. 156—624 **7 Claims**

1. A method for forming a single crystal structure which is a replica of a starting single crystal structure comprising:
(a) texture etching a surface of a starting single crystal structure of a specific crystalline orientation;
(b) making a replica master of said texture-etched surface of said starting single crystal structure;
(c) depositing a replica stratum in the amorphous state on said replica master; and
(d) recrystallizing said amorphous replica stratum to form a replica single crystal structure corresponding in crystal-



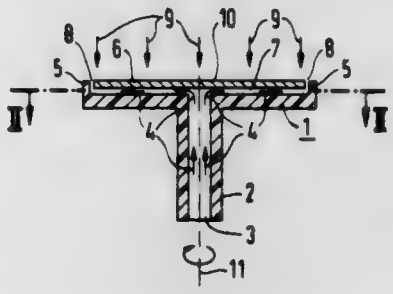
line orientation to said specific crystalline orientation of said starting single crystal structure and with a relief surface analogous to the texture-etched surface of said starting single crystal structure.

4,350,562

METHOD FOR ETCHING SEMICONDUCTOR WAFERS ON ONE SIDE

Bonü Bonü, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jun. 18, 1981, Ser. No. 274,883
Claims priority, application Fed. Rep. of Germany, Jul. 23, 1980, 3027934
Int. Cl.³ H01L *21/306*
U.S. Cl. 156—639 **7 Claims**

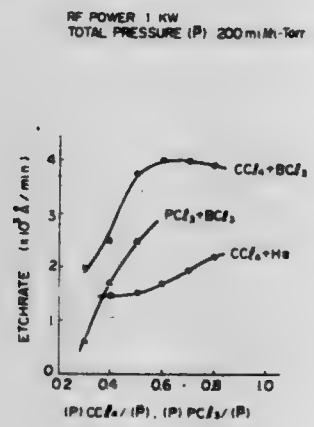


1. Method for etching semiconductor wafers on one side, which comprises suspending a semiconductor wafer to be etched on a rotating gas cushion with the semiconductor wafer surface not to be etched facing the rotating gas cushion while the semiconductor wafer surface to be etched is free, and spraying the free semiconductor surface with etchant, said wafer in contact with the rotating gas cushion rotating and moving the etchant thereon outward away from the center.

4,350,563
DRY ETCHING OF METAL FILM

Tadakazu Takada, Kawasaki; Kazuo Tokitomo, Aizuwakamatsu, and Hitoshi Hoshino, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jul. 31, 1980, Ser. No. 174,140
Claims priority, application Japan, Jul. 31, 1979, 54/98201; Jul. 31, 1979, 54/98202; Jul. 31, 1979, 54/98203
Int. Cl.³ C23F *1/02*
U.S. Cl. 156—643 12 Claims

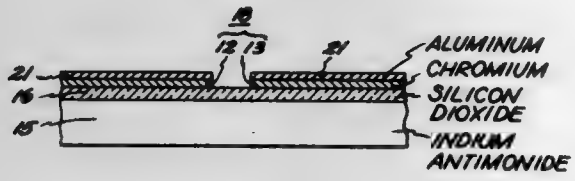


1. A process for dry etching of metal film having aluminum as a main component, comprising the step of exposing said metal film to an etchant gas consisting essentially of carbon chloride and boron chloride.

4,350,564
METHOD OF ETCHING METALLIC MATERIALS INCLUDING A MAJOR PERCENTAGE OF CHROMIUM

Ching-Yeu Wei, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Oct. 27, 1980, Ser. No. 200,771
Int. Cl.³ B44C *1/22*
U.S. Cl. 156—659.1 16 Claims



1. A method of etching a first pattern in a film of a metal including a major percentage of chromium formed on the surface of a substrate comprising:

depositing a layer of a material which is resistant to the etching action of an acidic etchant over the exposed surface of said film of metal,

forming in said layer of etch-resistant material a second pattern which is substantially identical to said first pattern to expose portions of said film of metal constituting said first pattern,

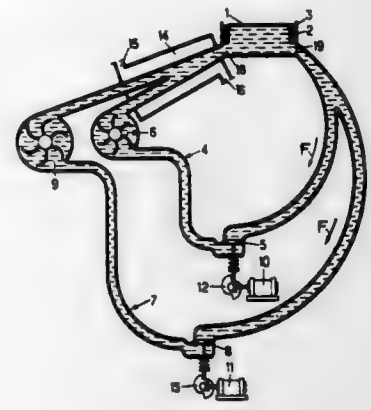
depositing a thin layer of a metal electropositive with respect to chromium on the portions of said film of metal exposed by said second pattern, said layer being provided with a multiplicity of holes extending between major surfaces thereof,

etching the portions of said layer of metal deposited in the portions of said layer of etch-resistant material exposed by said second pattern and the portions of said film of metal lying thereunder with said acidic etchant to remove the portions of said film of metal contained within said first pattern and the portions of said layer of metal lying thereover.

4,350,565
PROCESS FOR CONCENTRATING FLUIDS

Rene J. Bocognano, 3, square d'Amiens, Paris, France

Filed Jun. 25, 1980, Ser. No. 162,850
Claims priority, application France, Jun. 26, 1979, 79 16469
Int. Cl.³ B01D *1/30, 3/10*
U.S. Cl. 159—47 R 13 Claims



1. A process for concentrating fluids by effecting vibration of an element at a predetermined frequency, comprising the steps of:

providing at least one resiliently-mounted element across an opening in a hollow housing:

circulating a circulation fluid through said housing such that it comes into direct contact with, and at least partially supports, said at least one element;

feeding the fluid to be concentrated onto said resiliently-mounted element; and

generating periodic vibrations in said fluid by at least partially obstructing the circulation of said circulation fluid so as to produce a water hammering effect sufficient to cause vibration of said element at a predetermined frequency so as to divide said liquid to be concentrated into fine droplets such that the evaporation surface thereof is substantially increased.

4,350,566
PROCESS FOR THE DELIGNIFICATION OF LIGNOCELLULOSE MATERIALS WITH DINITROANTHRAQUINONES

Heinz U. Blank, Odenthal; Günther Klag, Leverkusen, and Peter Schnegg, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 158,022, Jun. 9, 1980, abandoned. This application Apr. 27, 1981, Ser. No. 257,842
Claims priority, application Fed. Rep. of Germany, Jun. 25, 1979, 2925544
Int. Cl.³ D21C *3/02*
U.S. Cl. 162—72 4 Claims

1. In the delignification of lignocellulose material by digestion in a liquid containing an anthraquinone-type compound, the improvement which comprises effecting the delignification in a closed reaction vessel at a maximum temperature in the range from 150° to 200° C. for 0.5 to 480 minutes employing as said anthraquinone-type compound a dinitroanthraquinone in 0.001 to 10% by weight of the lignocellulosic material.

4,350,567
METHOD OF PRODUCING A BUILDING ELEMENT

David R. Moorehead, and Michael Davis, both of Sydney, Australia, assignors to CSR Limited, Sydney, Australia

Continuation of Ser. No. 27,063, Apr. 5, 1979, abandoned. This application Aug. 29, 1980, Ser. No. 182,633
Claims priority, application Australia, Aug. 4, 1978, PD5375
Int. Cl.³ D21H *3/73*
U.S. Cl. 162—145 10 Claims

1. A method of manufacturing a cellulose fibre reinforced,

high impact strength carbonate building element which comprises steps of:

(a) mixing solids and water to produce a slurry in which the solids consist essentially of at least one alkali earth oxide or hydroxide and an amount of cellulose fibres in the range 7–40% by weight of solids;

(b) forming the slurry as a gas permeable shape having voids that contain water and so that the shape has a porosity in the range 35 to 50%, where porosity is the volume of the voids within the shape expressed as a percentage of the volume of the whole shape; and

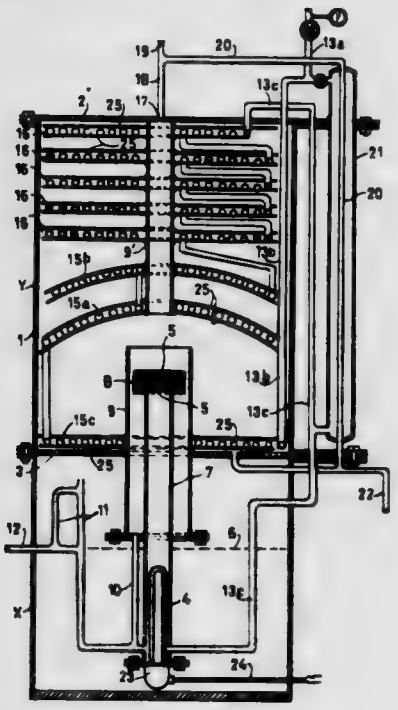
(c) causing carbon dioxide gas to permeate into the shape by means of the voids thereby converting the hydroxide(s) to carbonate(s) and imparting high impact strength to the resulting element, this converting step being performed in a short time period dependent on the percentage carbon dioxide present in the processing atmosphere to produce a building element of high impact strength which is not dependent on the presence of aggregate for its impact strength, said period being about 30 minutes for 100 percent carbon dioxide.

4,350,568

HIGH EFFICIENCY WATER DISTILLATION APPARATUS

Romulo V. Dalupan, No. 1351 Bayswater Cresc., Windsor, Ontario, Canada

Filed Apr. 15, 1981, Ser. No. 254,305
Int. Cl.³ B01D *3/02*
U.S. Cl. 202—180 **3 Claims**



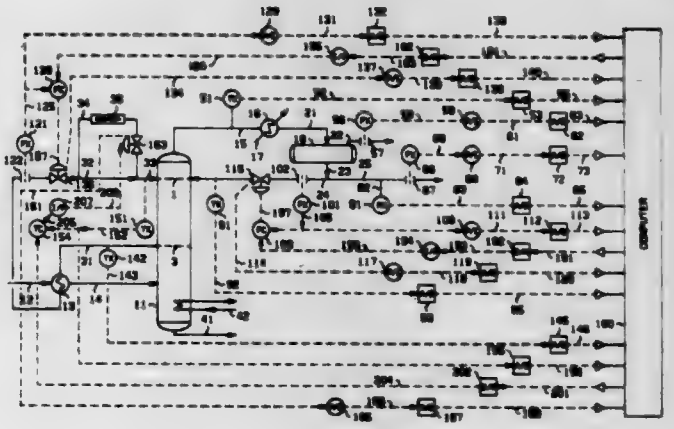
1. A water-distillation apparatus built of non-corrosive materials and comprising, in combination, an enclosed, generally cylindrical container, a divider plate in an intermediate potion of said container dividing said container into an upper chamber and a lower chamber, an upright tube in said lower chamber and communicating with a central portion of said upper chamber, heating means within said upright tube, a perforated container positioned at the top of said upright tube and containing balls for separating boiling water and vaporized water so that the boiling water can be returned to said upright tube, a plurality of coiled tubes in spaced, generally horizontal planes in said upper chamber, means forming a condenser chamber located outside said cylindrical container, a centrally-located tube in said upper chamber extending through said plurality of coils, a first outlet pipe communicating with the upper end of said central tube and extending through said condenser chamber, a second outlet pipe communicating with the lower end of said upper chamber and with said first outlet pipe, a return pipe communicating with the uppermost one of said coiled tubes and with the lower end of said upright tube for supplying heated water from said coiled tubes to said upright tube, a supply water pipe for supplying water to be distilled to said condenser chamber around said first outlet pipe and for supplying water to be distilled to the lowermost one of said coiled tubes in said upper chamber, whereby water is supplied to said upright tube through said condenser chamber and through said coiled tubes.

4,350,569

FRACTIONAL DISTILLATION COLUMN CONTROL

Danny L. Furr, Broken Arrow, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 165,463, Jul. 2, 1980, Pat. No. 4,295,196.
This application May 20, 1981, Ser. No. 265,476
Int. Cl.³ B10D *3/42*
U.S. Cl. 203—2 **3 Claims**



1. A method for maintaining a desired internal reflux flow rate in an upper portion of a fractional distillation column, wherein a feed stream to said fractional distillation column is preheated by a pump around stream which is withdrawn from a first upper portion of said fractional distillation column and returned to a second upper portion of said fractional distillation column which is above said first upper portion of said fractional distillation column and wherein an overhead vapor stream is withdrawn from an upper portion of said fractional distillation column, cooled, and separated into a liquid phase and a vapor phase, with a first portion of said liquid phase being returned to a third upper portion of said fractional distillation column as an upper external reflux which is above said first upper portion and a second portion of said liquid phase being withdrawn as a product stream, said method comprising the steps of:

using computing means to calculate and establish a first signal representative of the actual flow rate of the internal reflux in an upper portion of said fractional distillation column;

using computing means to calculate and establish a second signal representative of the flow rate of the internal reflux in the upper portion of said fractional distillation column required to maintain a desired product specification for said product stream;

comparing said first signal and said second signal to thereby determine if the internal reflux flow rate in the upper portion of said fractional distillation column should be increased or decreased;

determining if the flow rate of said pump around stream can be increased;

determining if the flow rate of said upper external reflux can be decreased;

using computing means to calculate and establish a third signal representative of the flow rate of said pump around stream required to make said first signal substantially equal to said second signal;

establishing a fourth signal representative of the highest desired flow rate of said pump around stream;

using computing means to calculate and establish a fifth

signal representative of the flow rate of said upper external reflux required to make said first signal substantially equal to said second signal;

establishing a sixth signal representative of the lowest desired flow rate of said upper external reflux;

manipulating the flow rate of said pump around stream in response to said third signal and manipulating the flow rate of said upper external reflux in response to said sixth signal if it is desired to increase the flow rate of said internal reflux and it is determined that the flow rate of said pump around stream can be increased or if it is desired to decrease the flow rate of said internal reflux and it is determined that the flow rate of said upper external reflux cannot be decreased; and

manipulating the flow rate of said pump around stream in response to said fourth signal and manipulating the flow rate of said upper external reflux in response to said fifth signal if it is desired to increase the flow rate of said internal reflux and it is determined that the flow rate of said pump around stream cannot be increased, or if it is desired to decrease the flow rate of said internal reflux and it is determined that the flow rate of said upper external reflux can be decreased.

4,350,570

WATER DESALINATION METHOD

Valery S. Maisotsenko, ulitsa Sadovaya, 21, kv. 7; Alexandr B. Tsimerman, Chernomorskaya doroga, 19, kv. 7, and Mikhail G. Zexer, ulitsa Varnenskaya, 2/2, kv. 91, all of Odessa, U.S.S.R.

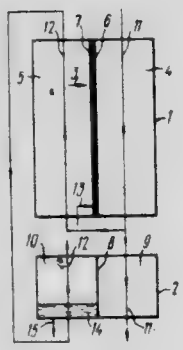
PCT No. PCT/SU80/00069, § 371 Date May 17, 1981, § 102(e) Date May 8, 1981, PCT Pub. No. WO81/00707, PCT Pub. Date Mar. 19, 1981

PCT Filed May 5, 1980, Ser. No. 261,200

Claims priority, application U.S.S.R., Sep. 17, 1979, 2817564

Int. Cl.³ C02F *1/10*

U.S. Cl. 203—10 **4 Claims**



1. A method for desalinating water from an aqueous salt solution comprising

(a) passing a primary air stream through a cooling zone of an evaporation unit;

(b) withdrawing about 20 to 90 volume percent of the cooled primary air stream from the outlet of said evaporation unit cooling zone and passing it as a secondary air stream through an evaporation zone of said evaporation unit wherein said secondary air stream becomes humidified with moisture evaporating from an aqueous salt solution contained therein, said humidification being accomplished by virtue of the psychrometric temperature difference between the primary air stream and the secondary air stream as they pass in indirect heat exchange through the cooling zone and evaporation zone, respectively, thereby increasing the moisture content in the secondary air stream from about 3.5 to 116 g/kg;

(c) passing the remaining 10 to 80 volume percent of the cooled primary air stream through a cooling zone of a condensing unit;

(d) passing the humidified secondary air stream from the outlet of said evaporation zone to a condensing zone of the condensing unit wherein moisture is condensed therefrom in the form of desalinated water, as a result of indirect heat exchange between the secondary air stream in the condensing zone and the cooled primary air stream in the cooling zone.

4,350,571

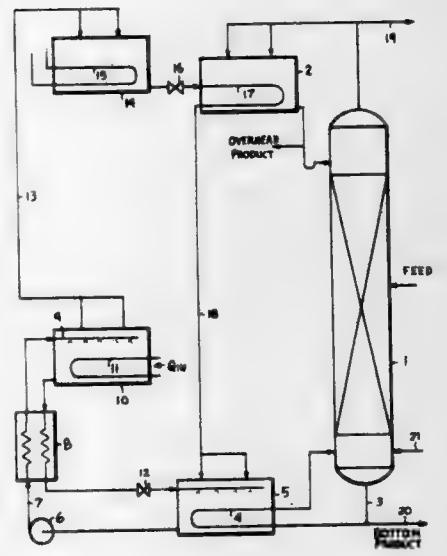
ABSORPTION HEAT PUMP AUGMENTED THERMAL SEPARATION PROCESS

Donald C. Erickson, 1704 S. Harbor La., Annapolis, Md. 21401

Filed Oct. 10, 1980, Ser. No. 195,842

Int. Cl.³ E01D *3/14*

U.S. Cl. 203—21 **5 Claims**



1. In a plural stage fractional distillation process including the steps of reboiling bottom product and condensing overhead product, and wherein the overhead product condensing temperature is above ambient temperature, the improvement comprising:

(a) providing a closed cycle absorption heat pump including an absorber with heat rejection means and a condenser with heat rejection means;

(b) supplying the heat necessary for said reboiling step from both of said heat rejection means;

(c) supplying the heat required by the absorption heat pump evaporator only from at least part of the above ambient temperature heat rejected by said condensing overhead product step.

4,350,572

PURIFICATION OF CARBOXYLIC ACID ESTERS CONTAINING ALDEHYDES AND/OR ACETALS

Rudolf Kummer, Frankenthal; Volker Taglieber, Ludwigshafen; Franz-Josef Weis, Weinheim, and Heinz-Walter Schneider, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Nov. 6, 1980, Ser. No. 204,637

Claims priority, application Fed. Rep. of Germany, Dec. 6, 1979, 2949073

Int. Cl.³ B01D *3/34*

U.S. Cl. 203—35 **7 Claims**

1. A process for purifying carboxylic acid esters which have been obtained by carbonylizing olefinically unsaturated compounds with carbon monoxide and alkanols and which contain color formers including aldehydes or acetals, wherein the said esters are contacted with strongly acidic agents of preselected kind and concentration sufficient to reduce said color formers sufficiently to provide a polymer grade ester product, with or without addition of water.

4,350,573

HALOGENATED AROMATIC AMINES WHICH ARE STABLE IN COLOR, AND A PROCESS FOR THEIR PREPARATION

Helmuth Kritzler, Odenthal; Walter Böhm; Ulrich Kappler, both of Leverkusen, all of Fed. Rep. of Germany, and Hans D. Winkelmann, Charleston, S.C., assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 27, 1980, Ser. No. 200,843

Claims priority, application Fed. Rep. of Germany, Nov. 14, 1979, 2945868

Int. Cl.³ B01D *3/14*

U.S. Cl. 203—86 14 Claims

1. A halogenated aromatic amine which is stable in color, said halogenated aromatic amine obtained by a process wherein an aromatic amine is recovered by distillation, the distillation being carried out in equipment made of a rustproof material.

4,350,574

METHOD FOR DEPOSITING AN OXIDE COATING

Glen E. McDonald, Strongsville, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Mar. 23, 1981, Ser. No. 246,772

Int. Cl.³ C25B *1/02*

U.S. Cl. 204—56 R 4 Claims

1. In a method of coating a substrate with a black metal oxide film from an electroplating solution containing about 44 ounces per gallon (a salt of a metal selected from the group consisting essentially) of cobalt sulfate, about 6 ounces per gallon of cobalt chloride, and about 5 ounces per gallon of boric acid having PH in the range between about 1.0 and about 6.0 at a temperature of about 115° F. (, nickel, chromium, and manganese) to form a solar collector that is highly absorbing, the improvement comprising

adding an oxidizing agent to said plating solution,

mounting said substrate in said solution to form a cathode, and

electrodepositing cobalt (said metal) from said solution onto said substrate at said cathode by passing a current of about 40 amps per square foot of substrate therethrough while simultaneously oxidizing the same.

4,350,575

METHOD FOR PREPARING AN AQUEOUS TREATMENT SOLUTION CONTAINING AT LEAST HYDROGEN PEROXIDE IONS AND HYDROXYL IONS IN PREDETERMINED CONCENTRATIONS

Augusto Porta, Geneva, Switzerland; Jean-Marie Fresnel, Haut-Thoiry, France, and Antonin Kulhanek, Le Lignon, Switzerland, assignors to Battelle Memorial Institute, Carouge, Switzerland

PCT No. PCT/CH78/00044, § 371 Date Aug. 6, 1979, § 102(e) Date Jul. 23, 1979, PCT Pub. No. WO79/00347, PCT Pub. Date Jun. 28, 1979

PCT Filed Dec. 4, 1978, Ser. No. 130,167

Claims priority, application Switzerland, Dec. 6, 1977, 14876/77

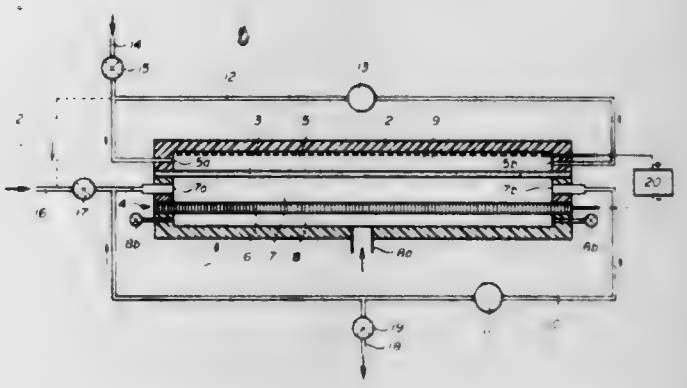
Int. Cl.³ C25B *1/30*

U.S. Cl. 204—84 1 Claim

1. An electrolytic oxidation and reduction method for preparing an aqueous treatment solution comprising hydrogen peroxide and hydroxyl ions in predetermined concentrations variable within a concentration range such that said treatment solution has a total hydrogen peroxide concentration of 0.1 to 10 g of H_2O_2/liter of solution and a predetermined pH of less than 14, which comprises the steps of:

(a) applying an electric current across at least one flat, horizontal electrolytic cell comprising a horizontal anode in contact with an anolyte in a flat, horizontal anolyte compartment and a porous, horizontal cathode in contact with a catholyte in a flat, horizontal catholyte compartment, said anode and said cathode being separated from one another by a horizontal cationic exchange membrane or a horizontal semipermeable microporous diaphragm, said catholyte being constituted by an aqueous alkaline solution of an initial pH of 7 to 12 which is lower than the predetermined pH value of the treatment solution to be prepared, and wherein said anolyte compartment is located above said catholyte compartment;

(b) circulating in contact with said porous cathode during application of said electric current, said catholyte, while feeding an oxygen-containing compressed gas through



said cathode into said catholyte compartment to form hydrogen peroxide ions and hydroxyl ions at said cathode by electrolytic reduction of the oxygen;

(c) continuing said catholyte circulation in contact with said porous cathode, without otherwise altering its chemical composition until said catholyte attains said predetermined concentration of hydrogen peroxide ions and hydroxyl ions to form an aqueous treatment solution;

(d) following step (c), terminating said circulation and cutting off said electric current; and

(e) discharging the electrolyte as said aqueous treatment solution with a weight ratio of hydrogen peroxide to sodium hydroxide between 0.4 and 4.

4,350,576

METHOD OF PRODUCING A GRAPHITE INTERCALATION COMPOUND

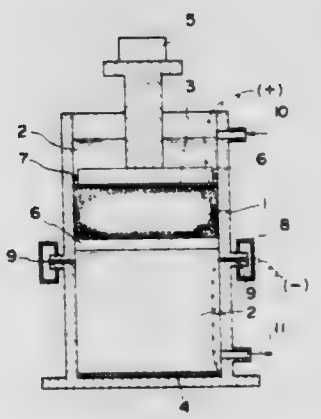
Nobuatsu Watanabe, Nagaokakyo; Teruhisa Kondo, Toyonaka, and Jiro Ishiguro, Suita, all of Japan, assignors to Toyo Tanso Co., Ltd., Osaka, Japan

Filed Dec. 12, 1980, Ser. No. 215,846

Claims priority, application Japan, Dec. 14, 1979, 54-161439

Int. Cl.³ C25B *1/00, 1/22*

U.S. Cl. 204—101 6 Claims



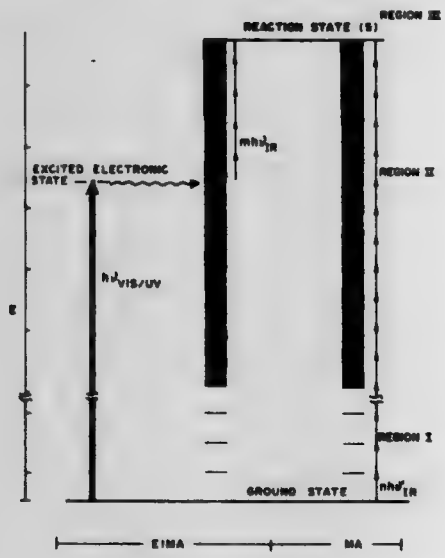
1. A method of producing a graphite intercalation compound in an electrolytic cell having a cathode, an anode and an anode chamber adapted to accommodate graphite particles therein, which comprises electrolyzing graphite particles in the anode chamber in an aqueous electrolytic solution con-

taining a substance capable of intruding into the interlayer spacings of graphite, thereby intercalating said substance into the interlayer spacings of graphite, wherein the electrolyzing is carried out at a current density of less than 500 mA^2/cm^2 and while applying a pressure to the graphite particles accommodated in the anode chamber in at least one direction so as to press the graphite particles against the surface of the anode.

4,350,577
ELECTRONICALLY INDUCED MULTIPHOTON ABSORPTION

Donald F. Heller, Morris Plains, N.J., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed Nov. 13, 1979, Ser. No. 93,659
Int. Cl.³ B01D *59/00*
U.S. Cl. 204—157.1 R **17 Claims**



1. A multiphoton excitation method comprising the sequential steps of:

(a) exposing a material comprising polyatomic molecules to electromagnetic radiation of a predetermined wavelength in the range from visible to ultraviolet whereby the polyatomic molecules are excited to an excited electronic state having a nonradiative lifetime for decay to an excited vibrational state of a lower electronic state and

(b) exposing the material to infrared laser radiation, whereby the excited molecules that have decayed to the excited vibrational state of the lower electronic state are excited by multiphoton absorption to higher vibrational states to produce a state at which the excited molecules undergo a chemical reaction.

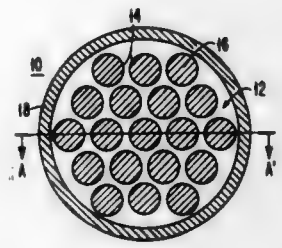
4,350,578
CATHODE FOR ETCHING

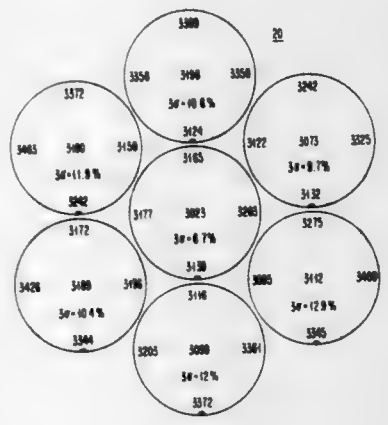
Rudolf G. Frieser, Poughkeepsie; William H. Ma; Gunars M. Ozols, both of Wappingers Falls, and Bryant N. Zingerman, Monroe, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 11, 1981, Ser. No. 262,020
Int. Cl.³ C23C *15/00*
U.S. Cl. 204—192 R **6 Claims**

1. In a process for reactive ion etching workpieces that are supported in a plurality of recesses formed in one face of a quartz plate cathode, the improvement comprising:

1. placing disks made of the same material as the workpiece to be etched in each of said recesses so that the disks are below the level of said face and larger than the workpiece, and



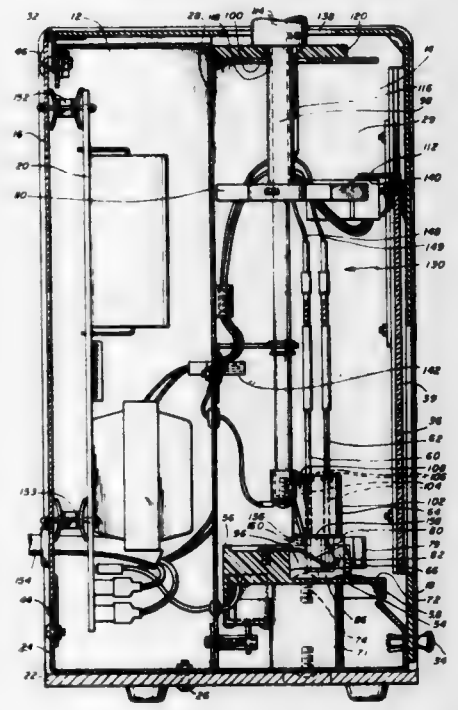


2. placing a border of the same material as the workpiece around the outer edge of the quartz plate cathode.

4,350,579
TESTING APPARATUS FOR MEASURING IONS IN FLUIDS

Henry D. Schwartz, Palo Alto; Irwin H. Krull, Santa Clara; Carl J. Clement, Los Altos Hills; Frederick H. Stengel, Palo Alto, and David D. Hayslett, San Jose, all of Calif., assignors to Applied Medical Technology, Inc., Mountain View, Calif.

Filed Sep. 4, 1980, Ser. No. 183,983
Int. Cl.³ G01N *27/28*
U.S. Cl. 204—195 R **35 Claims**



27. A portable testing apparatus for use in the measurement of ions in fluids,

said apparatus having an enclosing casing,

said enclosing casing including an area closed to the atmosphere by door means,

a hand operable vertical and horizontally movable electrode holder,

oscillating means operatively arranged with respect to said electrode holder and having a plurality of spaced positions for mounting of sample chambers through access provided by said door means,

said electrode holder acting to provide positioning of an electrode in any one of a plurality of sample chambers positioned on said oscillating means,

said sample chambers being removable and cooperating with a detent means for maintaining said sample chambers in operative position with respect to said electrode holder.

4,350,580

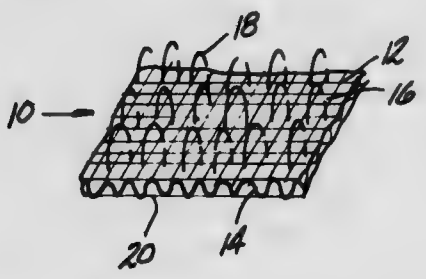
CURRENT DISTRIBUTORS FOR RETICULATE ELECTRODES

Igor V. Kadija, Cleveland, Tenn., assignor to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 143,970, Apr. 25, 1980. This application May 5, 1980, Ser. No. 146,558

Int. Cl.³ C25B *9/04, 11/03, 11/04;* H01B *5/08*

U.S. Cl. 204—279 **9 Claims**



1. In a method for distributing electric current to a foraminous electrode used in an electrolytic cell for the electrolysis of aqueous solutions of ionic compounds the improvement which comprises employing as a current distributor:

an electrically conductive fabric having a front side comprised of a plurality of electrode-engaging means selected from the group consisting of hooks or barbs projecting from said front side for attachment to said foraminous electrode and a substantially planar back side suitable for attachment to an electrical conductor, said plurality of electrode-engaging means being at least 2 per square centimeter.

4,350,581

ELECTRODIALYSIS-CELL ASSEMBLY

Harm Schmoldt, Hamburg; Klaus Kock, and Heinrich Strathmann, both of Tubingen, all of Fed. Rep. of Germany, assignors to Forschungsinstitut Berghof GmbH, Tobingen, Fed. Rep. of Germany

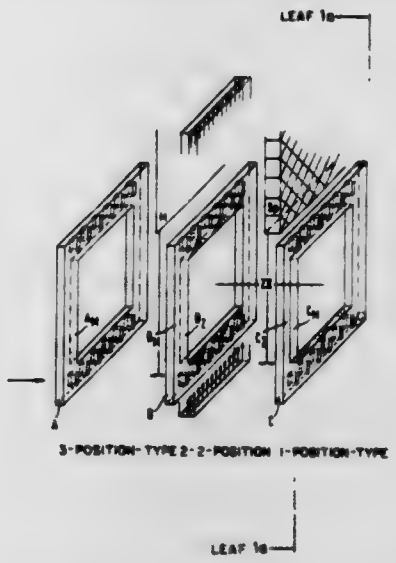
Filed Oct. 20, 1980, Ser. No. 198,368

Claims priority, application Fed. Rep. of Germany, Nov. 16, 1979, 2946284

Int. Cl.³ B01D *13/02*

U.S. Cl. 204—301 **7 Claims**

1. In an electrodialysis apparatus of the type comprising a series of cells formed of membranes and frame members which are bonded together to form a consolidated apparatus, the improvement wherein said frame members form chambers of substantially identical dimensions and wherein said adjacent frame members comprise flow-distribution conduit formed



along substantially the entire perimeter of at least one side of said frame member.

4,350,582

TWO-STAGE COAL LIQUEFACTION PROCESS WITH PROCESS-DERIVED SOLVENT

Joel W. Rosenthal, El Cerrito; Arthur J. Dahlberg, Rodeo, and Christopher W. Kuehler, Larkspur, all of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 86,186, Oct. 18, 1979, Pat. No. 4,264,429. This application Sep. 10, 1980, Ser. No. 183,112

The portion of the term of this patent subsequent to Mar. 10, 1998, has been disclaimed.

Int. Cl.³ C10G *1/06*

U.S. Cl. 208—8 LE **33 Claims**

1. A process for liquefying coal which comprises:

forming a coal-solvent slurry by mixing subdivided coal with a solvent;

passing said slurry with added hydrogen through a dissolving zone to substantially dissolve said coal;

contacting at least a portion of the effluent from said dissolving zone in a reaction zone containing hydrocracking catalyst under hydrocracking conditions, to produce a second effluent containing heptane-insolubles;

mixing an antisolvent with at least a portion of said second effluent containing heptane-insolubles to produce a substantially heptane-insoluble-free hydrocarbon liquid; and

recycling said substantially heptane-insoluble-free hydrocarbon liquid for use as coal-solvent.

4,350,583

ISOBARIC PROCESS FOR SEPARATING NORMAL PARAFFINS FROM HYDROCARBON MIXTURES

Andrija Fuderer, Antwerp, Belgium, assignor to Union Carbide Corporation, Danbury, Conn.

Filed Sep. 30, 1980, Ser. No. 189,352

Int. Cl.³ C10G *25/03*

U.S. Cl. 208—310 Z **7 Claims**

1. In an isobaric process for separating normal paraffins from non-normal hydrocarbons in a gas oil-containing vapor feed stream by (1) the selective adsorption of normal paraffins by passage of said feed stream through a molecular sieve adsorbent bed, (2) cocurrent purge with n-hexane to sweep out void space vapor containing a high concentration of non-normal hydrocarbons from the effluent end of the bed, (3) countercurrent purge with n-hexane to desorb normal paraffin adsorbate from the bed, (4) recovery of n-hexane from said separated normal paraffins and non-normal hydrocarbons, and (5) recycling of said n-hexane for purging and desorbing of said bed and to dilute the gas oil-containing feed stream for adsorption

at less than 700° F., the improvement comprising diluting said gas oil-containing feed stream with the final portion of the total countercurrent purge effluent obtained in desorption step (3) as a source of n-hexane used to enable processing of said feed stream to be separated at less than 700° F. without capillary condensation effects, said final portion comprising countercurrent purge effluent containing less than about 6 weight percent normal paraffins other than n-hexane desorbent, whereby the equipment size and energy consumption for processing of said recycle n-hexane are reduced.

4,350,584

GARDEN SIEVE

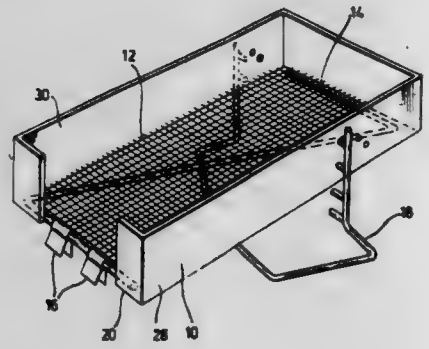
Jerrold H. Donington, 87 Alexandra Dr., Surbiton, Surrey, England

Filed Mar. 10, 1981, Ser. No. 242,408

Claims priority, application United Kingdom, Jun. 2, 1980, 8020523

Int. Cl.³ B07B *1/04*

U.S. Cl. 209—352 **5 Claims**



1. A sieve comprising:

a frame;

a mesh mounted in said frame; and

a stand having at least two equally spaced interconnection means;

said frame having at least two interconnection means spaced along a circumference of a circle and an additional interconnection means disposed at the center of said circle, the radius of said circle equaling the distance between said stand interconnection means, one of said stand interconnection means detachably interconnecting with said additional interconnection means and an adjacent one of said stand interconnection means detachably connecting with one of said frame interconnection means for detachably connecting said stand to said frame in any of a plurality of positions.

4,350,585

DEVICE FOR BLOOD SEPARATION

Anne S. Johansson, Vrakvägen 7A, S-752 52 Uppsala; Claes F. Högman, Statarvägen 14, S-752 45 Uppsala, and Kenneth G. Hedlund, Skiftesvägen 1, S-754 60 Uppsala, all of Sweden

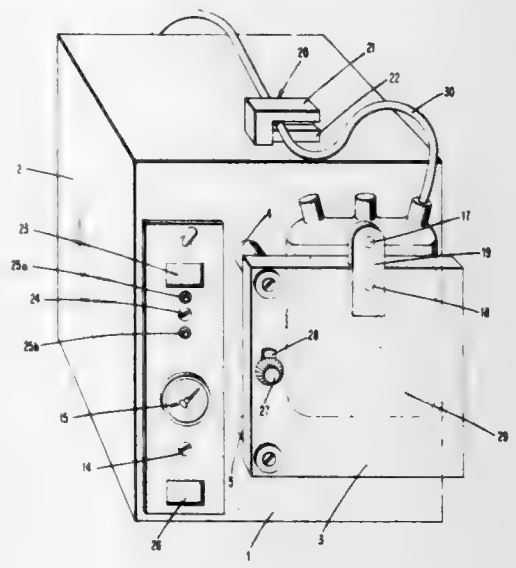
Filed Mar. 25, 1980, Ser. No. 133,867

Claims priority, application Sweden, Mar. 28, 1979, 7902760

Int. Cl.³ B01D *21/26*

U.S. Cl. 210—94 **13 Claims**

1. Apparatus for the separation of whole blood components stratified within a blood bag by essentially uniform compression of said blood bag over the entire bag surface, said apparatus comprising (i) a stationary, rigid planar support surface; (ii) a rigid planar pressure surface fixedly disposed substantially parallel to said support surface (i) and perpendicularly displaceable relative thereto while maintaining said substantially parallel relationship; (iii) means for engagedly positioning and securing a flexible bag of stratified whole blood components comprising at least one outlet conduit between said support surface (i) and said pressure surface (ii); (iv) means for parallely biasing and displacing said pressure surface (ii) towards said support surface (i) along said perpendicular path of displacement and to exert an essentially uniform compressive force upon any blood bag engagedly positioned and secured therebetween, over essentially the entire surface thereof, to squeeze blood component from said at least one outlet conduit; (v)



sensing means for automatically detecting when a pre-selected blood component layer has reached a given level in the blood bag; and (vi) means responsive to said sensing means (v) for automatically terminating the outlet flow of said pre-selected blood component from said blood bag.

4,350,586

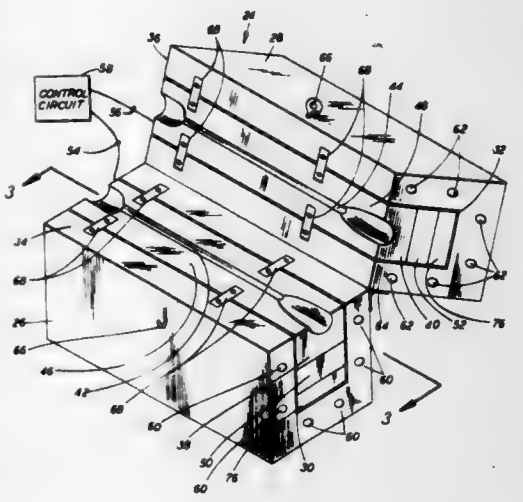
APPARATUS USEFUL WITH A CHROMATOGRAPHY COLUMN

Ralph D. Conlon, Wilton; Stanley F. Miles, New Canaan, and Roland C. Paradis, Bridgeport, all of Conn., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Sep. 25, 1981, Ser. No. 305,659

Int. Cl.³ G01N *15/08*

U.S. Cl. 210—149 **13 Claims**



1. Apparatus useful for controlling the temperature of a chromatography column; said apparatus comprising:

a first base member;

first means, associated with said first base member, for receiving said column, said first means being adapted to substantially uniformly accept said column;

a second base member;

second means, associated with said second base member, for receiving said column, said second means being adapted to substantially uniformly accept said column, said first means and said second means being cooperatively formed such that the peripheral surface of said column can be substantially completely contacted thereby; and

means for controlling the temperature of said first and said

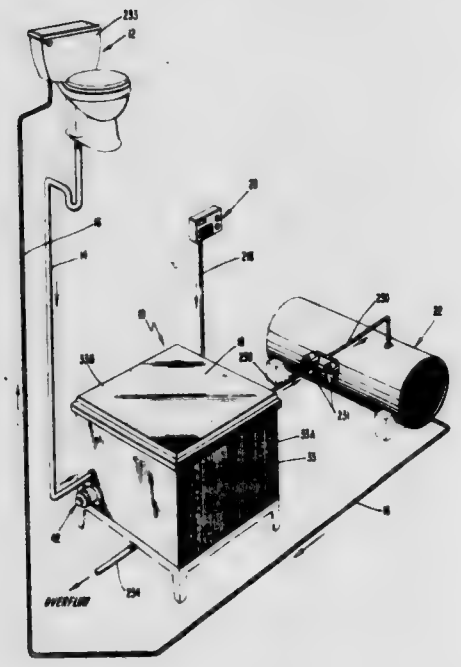
second means whereby said temperature of said column is controlled.

4,350,587

SEWAGE TREATMENT SYSTEM

Donald Jarrell, 4510 Glendale Pl., Nashville, Tenn. 37215, assignor to Donald Jarrell; John G. Logan and Richard H. Carpenter, all of Nashville, Tenn., a part interest

Filed Dec. 5, 1980, Ser. No. 213,665
Int. Cl.³ C02F *3/04*
U.S. Cl. 210—151 **11 Claims**



1. In a sewage treatment apparatus of the type comprising tank means, a grinder submerged in said tank means, means for delivering sewage-containing liquid to said tank means such that solid waste matter is ground into a colloidal mixture by said grinder, sonic nozzles submerged in said tank means, means for delivering oxygen-containing gas to said nozzles which gas is converted by said nozzles into minute oxygen-containing bubbles which permeate the liquid and support the aerobic digestive action of bacteria in the liquid, and means for delivering ozone gas to the treated liquid to disinfect same for delivery to an outlet, the improvement wherein:

said tank means comprises:

a plurality of aerobic pre-treatment compartments interconnected in series for gravity-flow communication, a first of said aerobic pre-treatment compartments having an inlet communicating with said liquid delivery means for receiving sewage-containing liquid and conducting same downstream by gravity flow to a succeeding pre-treatment compartment,

said grinder means communicating with said inlet for grinding all solid waste matter in said liquid and discharging the ground waste and liquid as a colloidal mixture into said first pre-treatment chamber,

some of said sonic nozzles being submerged in said pre-treatment compartments to saturate the latter with minute oxygen-containing bubbles to support aerobic digestive action of bacteria,

an intensive aerobic treatment compartment connected by gravity flow with a final one of said aerobic pre-treatment compartments,

said intensive treatment compartment including an outer wall and containing therein an upright porous member forming a closed loop which is spaced inwardly from said outer wall, said porous member forming circumferentially spaced pockets which are open in a radially outward direction, said porous member supporting the growth of bacteria thereon for consuming waste matter,

said porous member being disposed across the path of travel of the pre-treated liquid toward said oulet, and having its lower end sealed against the passage of liquid therebeneath, so that all of the pre-treated liquid is required to pass through the porous member,

some of said sonic nozzles being disposed in said intensive treatment compartment between said wall and said porous member to saturate said pre-treatment compartment with minute oxygen-containing bubbles, said last-named sonic nozzles having their outlets oriented for establishing a circular flow of liquid in one direction around said porous member,

a disinfecting compartment disposed within the closed loop formed by said porous member and communicating with said intensive treatment compartment by gravity flow, and

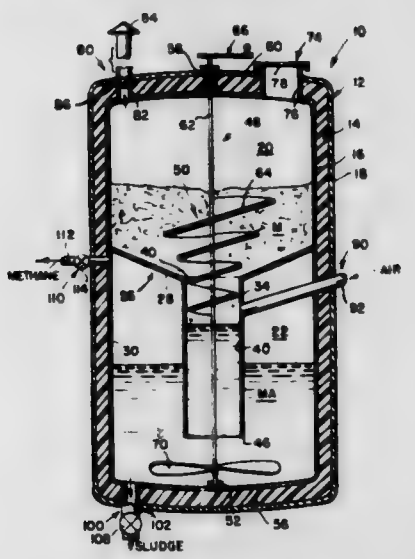
nozzle means submerged in said disinfecting compartment and communicating with a source of ozone gas for saturating the liquid in said disinfecting compartment with ozone gas bubbles to disinfect the liquid.

4,350,588

BIOLOGICAL FERMENTATION DEVICE

Junjiro Tsubota, 2392, Jindaiji-Machi, Chofu-shi, Tokyo 182, Japan

Filed Aug. 14, 1980, Ser. No. 177,878
Int. Cl.³ C02F *11/04*
U.S. Cl. 210—208 **34 Claims**



1. A device for conducting fermentation of materials comprising:

a unitary insulated vessel having an inlet for organic material to be fermented;

a partition mounted in said vessel dividing said vessel into an aerobic fermentation chamber and an anaerobic fermentation chamber, said partition including a conical portion and a downcomer means, said aerobic chamber being in fluid communication with said inlet and said anaerobic chamber, said partition supporting the organic material and being constructed of material capable of transferring heat from said aerobic chamber to said anaerobic chamber in quantities sufficient so that an anaerobic fermentation process conducted in said anaerobic chamber occurs at a desired temperature;

material separating means in said aerobic chamber separating material in said aerobic chamber into high and low molecular weight groups;

air ingesting means fluidly connected to said aerobic chamber;

material transfer means mounted in said vessel to transfer said low molecular weight material from said aerobic chamber to said anaerobic chamber while retaining said high molecular weight material in said aerobic chamber so that anaerobic fermentation occurs with the low molecular weight material;

gas bleed means fluidly connected to said anaerobic chamber;

a gas vent means fluidly connected to said aerobic chamber; and

sludge removal means connected to said anaerobic chamber.

4,350,589

FLOATING JET AERATOR

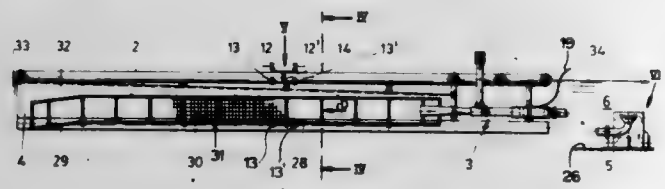
Wilhelm Stog, Waltrop, Fed. Rep. of Germany, assignor to WSW Stahl- und Wasserbau GmbH, Waltrop, Fed. Rep. of Germany

Filed Jul. 9, 1981, Ser. No. 281,644

Claims priority, application Fed. Rep. of Germany, Jul. 12, 1980, 3026519

Int. Cl.³ B01F *3/04*; C02F *7/00*

U.S. Cl. 210—220 **15 Claims**



1. A water-aeration apparatus comprising:

a tubular form defining a substantially closed chamber, said frame being capable of floating and carrying a load when said chamber is filled with air;

means for introducing water into said chamber and for withdrawing air therefrom;

a double-walled conduit supported on said frame and having an outer substantially gas-impervious wall and spaced inwardly therefrom an inner gas-pervious wall, said conduit being inclined to the horizontal when said frame is floating and having an upper conduit end and a lower conduit end; and

a pump carried on said frame and having an air intake above the water when said frame is floating and an air output at said lower end and directed toward said upper end.

4,350,590

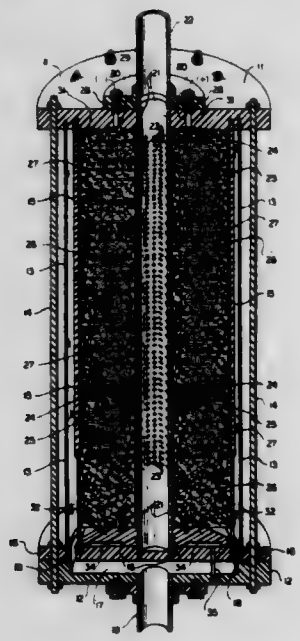
FILTRATION SYSTEM

Norman R. Robinson, 407 E. Edgehill Dr., Davis County, Bountiful, Utah 84010

Filed Feb. 25, 1981, Ser. No. 237,937

Int. Cl.³ B01D *35/06*

U.S. Cl. 210—243 **6 Claims**



1. Filter apparatus capable of removing particles as small as one micron or less from a liquid passing through the filter, said apparatus comprising

a plurality of superimposed layers of fibrous filter media;

a plurality of electrically conductive porous sheets with the electrically conductive porous sheets alternating with the layers of fibrous filter media so that adjacent layers of the superimposed filter media have an electrically conductive porous sheet positioned therebetween;

means for connecting a source of direct current voltage to the electrically conductive porous sheets so that the sheets in the superimposed filter media alternate in polarity;

means for directing a flow of liquid to be filtered through the superimposed filter media;

means for directing a flow of backwash fluid through the superimposed filter media in reverse flow to backwash the filter media;

means for selectively compressing the filter media as the flow of liquid to be filtered passes through the filter media; and

means for decompressing and expanding the filter media as the flow of backwash fluid passes through the filter media during backwash of the filter.

4,350,591

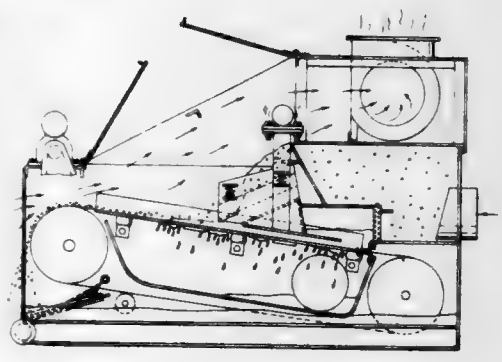
DRILLING MUD CLEANING APPARATUS

Joseph E. Lee, 1802 Crestview, Kilgore, Tex. 75662

Filed Oct. 20, 1980, Ser. No. 198,920

Int. Cl.³ B01D *33/04*

U.S. Cl. 210—384 **5 Claims**



1. Apparatus for separating cuttings from drilling mud, which comprises:

a housing having laterally spaced, upwardly standing sidewalls defining an open area therebetween;

means for directing cutting-laden drilling mud into the open area of the housing;

a traveling belt screen having a planar surface for receiving in an area thereof cutting-laden drilling mud and separating the cuttings therefrom,

the planar screen surface being upwardly inclined in the direction of screen travel, so as to form a puddle of drilling mud over an aft portion of the planar surface;

a mud compaction plate resiliently mounted in the housing opening for vertical movement, the plate extending substantially parallel to the planar screen surface for immersion in the puddle of mud forming thereon; and

a vibrator coupled to the mud compaction plate for imparting vertical vibrational movement to the plate to force penetration of drilling mud through the planar screen surface.

4,350,592

CARTRIDGE FILTER

Dirk G. Kronsbein, Heinrich-Heine Allee 3, 4000 Duesseldorf, Fed. Rep. of Germany

Filed Apr. 10, 1980, Ser. No. 136,085

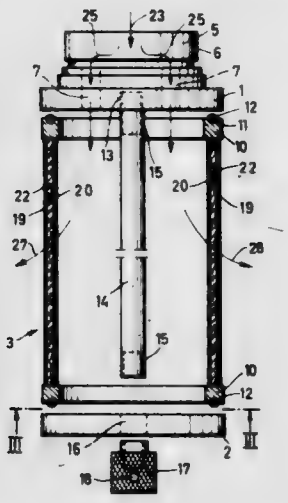
Claims priority, application Fed. Rep. of Germany, Apr. 19, 1979, 2915730

Int. Cl.³ B01D *27/08, 46/02*

U.S. Cl. 210—450 **6 Claims**

1. In a cartridge filter for gases and liquids having a filter element clamped between an upper and lower cover, the improvement comprising that said filter includes a profile ring

composed of a epoxy resin sealing compound cast onto the upper end edge of the filter element and an identical and corresponding profile ring cast onto the lower end edge of the filter



element and sealing rings embedded in said profile rings, said profile rings each including one circumferential groove engaging around said sealing rings in a claw-like manner.

4,350,593

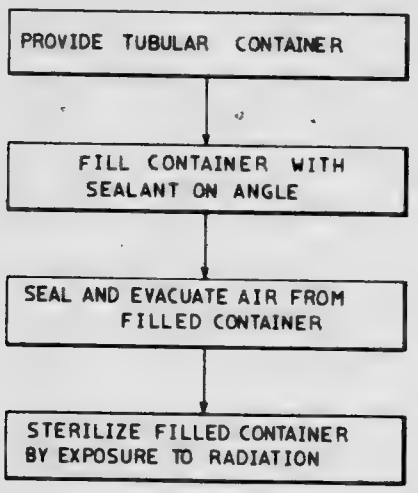
ASSEMBLY, COMPOSITIONS AND METHOD FOR SEPARATING BLOOD

Stephen B. Kessler, North Bergen, N.J., assignor to Becton, Dickinson and Company, Rutherford, N.J.

Continuation of Ser. No. 861,676, Dec. 19, 1977, abandoned, which is a continuation-in-part of Ser. No. 802,724, Jun. 2, 1977, abandoned, which is a continuation of Ser. No. 665,964, Mar. 11, 1976, abandoned, which is a continuation-in-part of Ser. No. 629,707, Nov. 7, 1975, abandoned. This application Jun. 25, 1979, Ser. No. 51,976

Int. Cl.³ B01D *21/26*; C07F *7/18*

U.S. Cl. 210—516 **10 Claims**



1. In a pre-assembled assembly for the collection and separation of blood into its light, liquid and heavy, substantially cellular phases under centrifugal force with the establishment of a non-Newtonian fluid barrier between the separated phases, wherein said assembly comprises, a tubular container having an open end and a closed end, a removable closure for said open end, and a non-Newtonian fluid disposed in said container, the improvement which comprises; as said non-Newtonian fluid a blend of from about 93 to 97 parts of a polyester prepared by the condensation of equal molar proportions of azelaic acid with a mixture of neopentyl glycol and butanediol in a molar ratio of 5:2 and having a viscosity of from 100 to 5,000 poises and a density of from 1.007 to 1.067 gms/cc with from 3 to 7 parts by weight of a fumed silica, saidblend having a specific gravity of from 1.03 to 1.09 and said fluid having substantially time independent rheological properties, said non-Newtonian fluid being inert in respect to chemical reactivity toward blood and blood components.

9. A composition, which comprises;

from 93 to 97 parts by weight of a fluid polymeric polyester prepared by the condensation of substantially equimolar proportions of azelaic acid and a mixture of neopentyl glycol and butanediol in a molar ratio of 5:2, said polyester having a viscosity of from 100 to 5000 poises at 25° C. and a density of from 1.007 to 1.067; and

from 3 to 7 parts by weight of a fumed silica.

4,350,594

BLOOD PURIFICATION USING PLURAL ULTRAFILTRATION STAGES

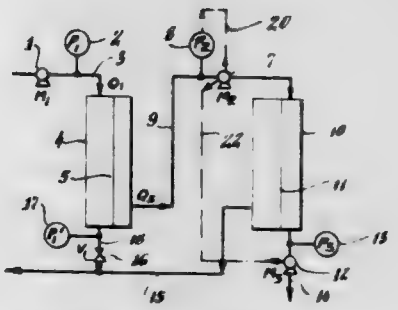
Syuji Kawai, Kurashiki; Tadayuki Yamane, Kyoto; Michio Abe, Saiki; Toshihiko Ono, Oita, and Shuji Yamauchi, Saiki, all of Japan, assignors to Kuraray Co., Ltd., Kurashiki and Kawasumi Laboratories, Inc., Tokyo, both of, Japan

Filed Apr. 8, 1981, Ser. No. 252,245

Claims priority, application Japan, Apr. 16, 1980, 45-50735; Apr. 16, 1980, 45-50736

Int. Cl.³ B01D *13/00, 31/00*

U.S. Cl. 210—637 **12 Claims**



9. A method of treating blood comprising:

separating plasma from the blood in a first membrane module utilizing a semipermeable membrane having pores of a size retaining a blood corpuscular fraction and permeating a plasma fraction,

pumping said plasma through a plasma outlet circuit including a flowmeter and a first pump,

fractionating said plasma in a second membrane module into two fractions utilizing a semipermeable membrane having pores of a size permeating human blood serum albumin,

expelling a high-molecular-weight fraction separated in the second membrane module through a plasma fraction outlet circuit having a second pump positioned downstream of said second membrane module,

combining, in a blood return circuit having a valve, the low-molecular-weight fraction containing human blood serum albumin separated in said second membrane module with the blood corpuscular fraction separated in said first membrane module,

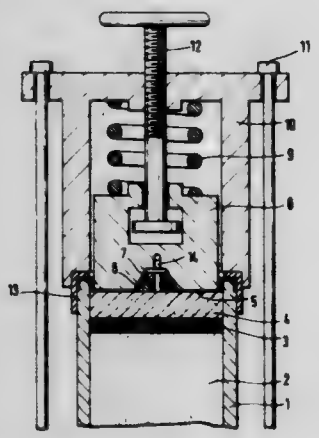
controlling said valve in association with said flowmeter so as to maintain the pressure in said plasma outlet circuit within a range of from about −40 mmHg to 40 mmHg, and

adjusting the ratio between the rate of flow of the plasma flowing into said second membrane module and the rate of plasma fraction being expelled from said second membrane module to a predetermined value by controlling the flow rate between said first and second pumps.

4,350,595
SEPARATION COLUMN FOR LIQUID CHROMATOGRAPHY AND SEALING ARRANGEMENT THEREFOR

Werner Gunkel, Wingerstweg, Fed. Rep. of Germany, assignor to Merck Patent Gesellschaft mit Beschränkter Haftung, Darmstadt, Fed. Rep. of Germany

Filed Jun. 5, 1981, Ser. No. 270,717
Claims priority, application Fed. Rep. of Germany, Jun. 6, 1980, 3021366
Int. Cl.³ B01D *15/08*
U.S. Cl. 210—656 11 Claims



1. A separation column for liquid chromatography containing compressible column packing therein, said separation column comprising:

flexible seal means fixedly secured to one end of the column for sealing the packing containing column; and

compression means operatively associated with said flexible seal means for compressing said compressible column packing to reduce dead volume therein whereby said compression means exerts a force on said flexible seal means to cause stretching thereof into the column for reducing dead volume within the column while said flexible seal means remain secured to said one end of the column.

4,350,596
METHOD AND APPARATUS FOR RECOVERING WASTE OIL

Alvin B. Kennedy, Jr., P.O. Box 282, Angleton, Tex. 77515

Filed May 22, 1981, Ser. No. 266,201
Int. Cl.³ B01D *17/04*
U.S. Cl. 210—708 6 Claims

1. Method of recovering oil from a mixture of oil, water, including emulsions of oil and water, and suspended solids and polymers, which comprises the steps of:

heating the mixture;

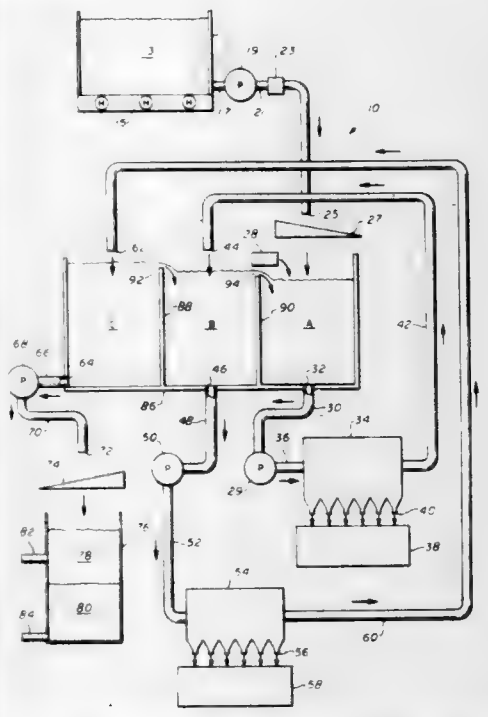
adding a de-emulsifier to the heated mixture;

passing the heated mixture with the de-emulsifier added thereto through a first vibrating screen to remove large particles and to mix thoroughly the de-emulsifier with the mixture;

adding a surface tension reducer in the heated mixture after passing said mixture through said first vibrating screen;

processing said mixture with said surface tension reducer added thereto through a hydrocyclone to remove suspended solids and to agglomerate polymers contained in said mixture;

passing said mixture after said processing step through a second vibrating screen to remove said agglomerated polymers;

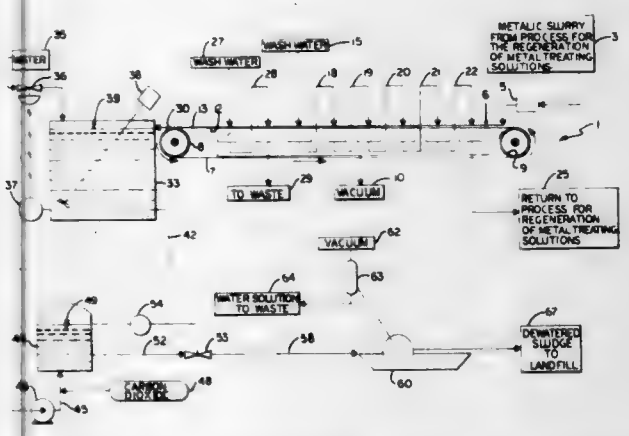


and allowing said mixture passed through said second vibrating screen to settle, whereby the oil separates from the water.

4,350,597
APPARATUS AND PROCESS FOR TREATMENT OF SLUDGE

Robert P. Selm, and Leland M. Shepard, both of Salina, Kans., assignors to Wilson & Company, Salina, Kans.

Filed Oct. 31, 1980, Ser. No. 202,690
Int. Cl.³ C02F *1/52*
U.S. Cl. 210—710 11 Claims



1. In a process for regeneration of spent metal treating solutions including the steps of: collecting a metal-treating solution portion, said solution portion containing metal salts of a metal being treated in a treating receptacle; introducing a precipitating agent into said collected solution portion; mixing the precipitating agent and collected solution portion; settling out solids formed in the mixture to provide a supernatant solution; returning the supernatant solution to the treating receptacle; said metal salts in the metal-treating solution are at least one of a class consisting of carbonates, sulfates, chromates and aluminates; and said precipitating agent is an hydroxide of a metal selected from a class consisting of calcium, barium and strontium; the improvement including the following steps for making said solids suitable for disposal in a landfill:

(a) passing said solids through filtering means so as to substantially separate said solids from said supernatant solution and produce a sludge, including the metal hydroxide of said precipitating agent, in a substantially deliquified state;

(b) reslurrying the solids with water after separation from said supernatant solution in a vessel;
(c) injecting carbon dioxide into said reslurried solids in a purified amount to substantially react stoichiometrically with the metal hydroxide of said precipitating agent within said reslurried solids and to produce a generally water insoluble carbonate of the metal of said precipitating agent therein; and
(d) thereafter separating said solids substantially including the metal carbonates from the water associated therewith after injection of said carbon dioxide to form a substantially liquid-free component suitable for disposal in a landfill.

4,350,598

PROCESS FOR EVEN DIVISION OF SUBSTANCES AND MIXTURES OF SUBSTANCES IN THE COURSE OF MANUFACTURING OF PULVERULENT PREPARATIONS BY CHEMICAL REACTION

Friedrich Bölsing, Danziger Str. 5, D-4965-Lindhorst, Fed. Rep. of Germany

Continuation of Ser. No. 709,385, Jul. 28, 1976. This application Jan. 15, 1980, Ser. No. 111,977

Claims priority, application Fed. Rep. of Germany, Jul. 29, 1975, 2533789

Int. Cl.³ C02C *5/02*

U.S. Cl. 210—751 **7 Claims**

1. A process for forming a uniform distribution of an oil in calcium hydroxide comprising:
A. adding calcium oxide to an oil which is in the presence of water, and
B. mechanically mixing said oil with said calcium oxide, said calcium oxide being capable of reacting with said water to form calcium hydroxide which has a surface area greater than the surface area of said calcium oxide, said mechanical mixing homogenizing said calcium oxide, water and oil so that said oil is substantially homogeneously distributed within said calcium oxide prior to the observation of the temperature increase associated with the exothermic reaction between calcium oxide and water, wherein said mechanical mixing substantially homogeneously distributes said substance within said hydroxide forming compound at a rate faster than the rate of reaction between water and said hydroxide forming compound, said mixing step being performed in the absence of compounds which delay the reaction between calcium oxide and water, and upon the reaction between said calcium oxide and water to provide said calcium hydroxide, a dust-dry substantially uniform distribution of said oil in calcium hydroxide is provided.

4,350,599

PROCESS FOR TREATMENT OF CAUSTIC WASTE LIQUORS

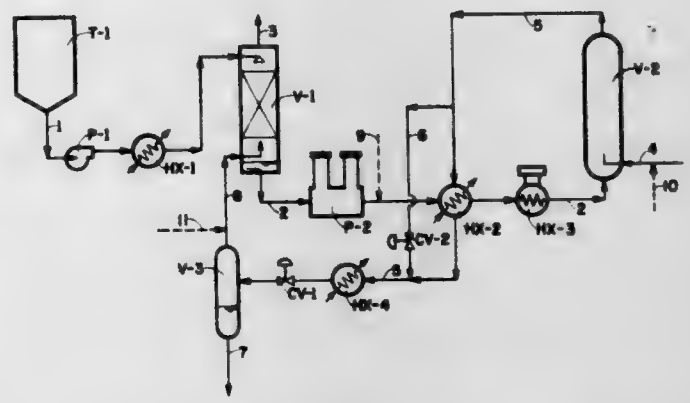
Ajit K. Chowdhury, Schofield, Wis., assignor to Sterling Drug Inc., New York, N.Y.

Filed Dec. 29, 1980, Ser. No. 220,443

Int. Cl.³ C02F *1/72*

U.S. Cl. 210—761 **13 Claims**

1. A continuous process for the treatment of a caustic waste by wet oxidation in a stainless steel system, comprising the steps of:
a. initially adjusting the pH of a portion of the raw waste to below 11.0 but above 7.0 by contacting said waste with an acid or carbon dioxide;
b. oxidizing the neutralized waste obtained in step (a) with pure oxygen or air enriched with oxygen in a wet oxidation reactor to produce a gas stream rich in carbon dioxide;
c. cooling the hot reactor effluents and separating the oxidized liquor from the noncondensible gases containing carbon dioxide;



d. contacting said noncondensible gases with additional incoming raw caustic waste to neutralize said waste with the carbon dioxide content of said gases; and
e. continuously repeating steps b, c and d in a cyclic process.

4,350,600

METHOD AND COMPOSITION FOR INHIBITING CORROSION IN HIGH TEMPERATURE, HIGH PRESSURE GAS WELLS

Shelby P. Sharp, Tulsa, Okla., and Lyman Yarborough, Naperville, Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed May 29, 1979, Ser. No. 43,298

The portion of the term of this patent subsequent to Feb. 3, 1995, has been disclaimed.

Int. Cl.³ E21B *41/02*

U.S. Cl. 252—8.55 E **7 Claims**

1. A method for inhibiting corrosion in a high temperature, high pressure gas well, characterized in that an aqueous or brine phase is present, but no petroleum condensate phase exists at a bottomhole conditions, involving the steps of:
(a) producing a corrosion inhibiting composition capable of existing in a liquid phase at said bottomhole conditions comprising a dialkyl disulfide to which has been added a high molecular weight amine having from about 12 to 30 carbon atoms in a quantity in excess of about 30 parts by weight fatty amine per 100 parts by weight dialkyl disulfide, and
(b) injecting said corrosion inhibiting composition into said gas well to inhibit corrosion.

4,350,601

PREPARATION OF VISCOSIFIERS FOR ZINC SALT WORKOVER AND COMPLETION BRINES

Benjamin Mosier, Houston, Tex.; Jack L. McCrary, and Karl G. Guilbeau, both of Lafayette, La., assignors to The Dow Chemical Co., Midland, Mich.

Continuation of Ser. No. 23,672, Mar. 26, 1979, abandoned. This application May 18, 1981, Ser. No. 264,605

Int. Cl.³ E21B *43/00*

U.S. Cl. 252—8.55 R **6 Claims**

1. A viscosified zinc salt brine for use as a well fluid, comprising an aqueous solution of zinc bromide in admixture with calcium salt selected from the class consisting of calcium bromide, calcium chloride, and mixtures thereof, said solution containing sufficient zinc to provide a density of at least 15 pounds per gallon, said brine containing from 1 to 6 pounds per barrel of a treated viscosifier prepared by forming a treating solution comprising an aldehyde reagent dissolved in a solvent carrier, said aldehyde reagent being selected from the class consisting of formaldehyde, aliphatic dialdehydes containing from 2 to 6 carbons, and mixtures thereof, said solvent carrier being selected from the class consisting of organic polar solvents in which said aldehyde reagent is soluble and mixtures thereof with a minor proportion of water, said treating solution

containing from 0.5 to 15% by weight of said aldehyde reagent, and contacting said treating solution with a viscosifier suitable for use in well fluids, said viscosifier being in the form of a particulate solid and being selected from the class consisting of hydroxyethylcellulose, xanthan gum, the natural vegetable gums and gelatin, a sufficient amount of said treating solution being used to wet said particulate viscosifier, said viscosifier being maintained is essentially unswollen condition during said contacting.

4,350,602

FUSING FLUID FOR SOLDER-PLATED CIRCUIT BOARDS

Harold Schiller, 3521 Greenbrier Rd., Long Beach, Calif. 90808

Continuation-in-part of Ser. No. 198,604, Oct. 20, 1980, abandoned. This application Dec. 18, 1980, Ser. No. 218,004

Int. Cl.³ C09K *5/00;* **H05K** *3/34*

U.S. Cl. 252—75 **7 Claims**

1. A radiation fusing fluid for coating solder-plated electrical circuit boards prior to heating by radiation to fuse the solder plating, said fluid being essentially a mixture of the following:

(a) viscous water-soluble organic compounds selected from the general group consisting of: polyoxyalkylene ether containing methyl side chains and terminal hydroxyl groups; polyalkylene glycol; polyoxyalkylene glycol; polyoxyalkylene adducts of butanol: these constituting about 40 to 60 percent of the total;

(b) a volatile solvent drivable off at the solder fusing temperature of around 204° C., constituting about 60 to 40 percent of the total;

(c) an activator constituting about 1 to 3 percent of the total; and

(d) at least about 0.05 percent by weight of an additive selected from the group consisting of phenothiazine and dioctyl phenothiazine.

2. A fluid as in claim 1 wherein said activator is hydrochloric acid.

4,350,603

NOVEL TRIS-AZO DYES AND LIQUID CRYSTAL COMPOSITIONS MADE THEREWITH

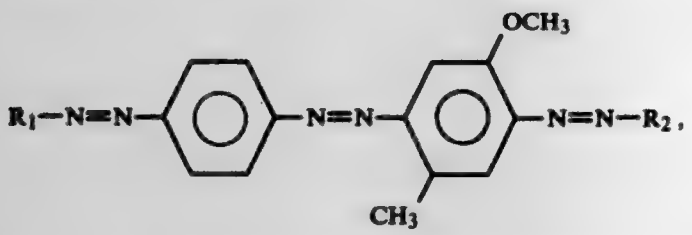
Siegfried Aftergut, Schenectady, and Herbert S. Cole, Jr., Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 30, 1980, Ser. No. 164,254

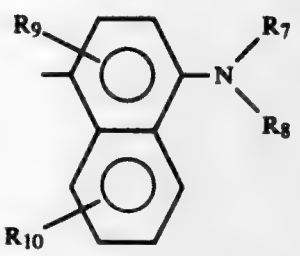
Int. Cl.³ G02F *1/13;* **C09K** *3/34;* **C09B** *31/16, 35/36, 33/22*

U.S. Cl. 252—299.1 **10 Claims**

1. A liquid crystal composition for use in a liquid crystal display, comprising a host liquid crystal material and a guest dichroic dye dissolved in said liquid crystal material, said dichroic dye having the formula,

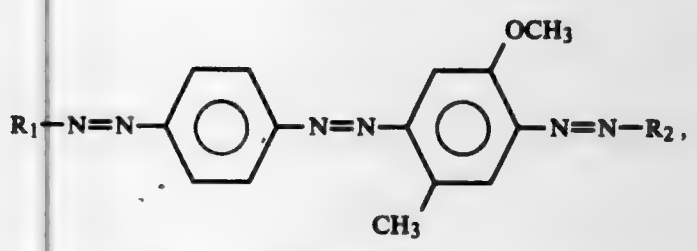


where R_1 and R_2 are selected from naphthalamine groups having the formula,

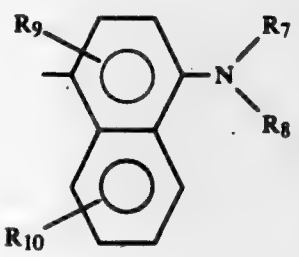


R_7 is selected from the class consisting of hydrogen, $C_{(1-6)}$ alkyl, aryl, arylalkyl and a $C_{(1-6)}$ alkyl amine radical, R_8 is selected from the class consisting of hydrogen, $C_{(1-6)}$ alkyl, and a $C_{(1-6)}$ alkyl amine radical, R_9 and R_{10} are selected from the class consisting of hydrogen, $C_{(1-3)}$ alkyl, alkoxy and halogen.

7. A tris-azo dye having the formula,



where R_1 and R_2 are selected from an aromatic amine group having the formula,



R_7 is selected from the class consisting of hydrogen, $C_{(1-6)}$ alkyl, aryl, arylalkyl and a $C_{(1-6)}$ alkyl amine radical, R_8 is selected from the class consisting of hydrogen, $C_{(1-6)}$ alkyl, and a $C_{(1-6)}$ alkyl amine radical and R_9 and R_{10} are selected from the class consisting of hydrogen, $C_{(1-3)}$ alkyl, alkoxy and halogen.

4,350,604

PHOSPHOR

Kenzo Awazu, and Kazu Matsunaga, both of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 28, 1981, Ser. No. 297,278

Claims priority, application Japan, Apr. 15, 1981, 56-56775

Int. Cl.³ C09K *11/30*

U.S. Cl. 252—301.4 R **3 Claims**

1. A phosphor having a matrix formulation of $Li(Al,Ga)O_2$ having an atomic ratio of Al to Ga ranging from 75:25 to 5:95, wherein 0.3 to 1.3 atomic percent of Fe^{3+} ions are incorporated in said matrix as an activator and Li is present in substantially a 1:1 stoichiometric ratio to the total of Al, Ga and Fe.

4,350,605

WATER-IN-OIL EMULSIONS

Paul D. Hughett, Marietta, Ga., assignor to Peterson/Puritan, Inc., Danville, Ill.

Filed Nov. 22, 1977, Ser. No. 854,062

Int. Cl.³ C09K *3/30*

U.S. Cl. 252—305 **43 Claims**

1. In a water-in-oil emulsion containing water, an oleaginous liquid, and an emulsifying composition, the improvement wherein the emulsifying composition is comprised of the combination of a finely divided montmorillonite mineral suffi-

ciently modified with quaternary ammonium cations containing 10 or more carbon atoms, per cation, to render the mineral compatible with the oleaginous liquid, a polar organic dispersing agent for the mineral, and a partial ester of a fatty acid of 10 to 20 carbon atoms and a saturated, aliphatic, polyhydric alcohol having 3 to 18 hydroxyl groups, at least 2 of said hydroxyl groups being unesterified.

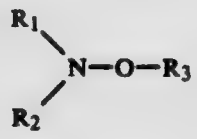
4,350,606

COMPOSITION AND METHOD FOR INHIBITING CORROSION

Dionisio G. Cuisia, Chicago, and Chih M. Hwa, Palatine, both of Ill., assignors to Dearborn Chemical Company, Lake Zurich, Ill.

Filed Oct. 3, 1980, Ser. No. 193,656
Int. Cl.[3] C23F *11/14*
U.S. Cl. 252—392 24 Claims

1. Composition consisting essentially of a hydroxylamine compound having the general formula



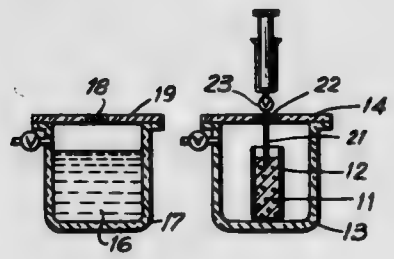
where R_1, R_2, and R_3 are either the same or different and selected from the group consisting of hydrogen, lower alkyl and aryl, and the water-soluble salts thereof, and a second neutralizing amine.

4,350,607

DETECTOR AND DOSIMETER FOR NEUTRONS AND OTHER RADIATION

Robert E. Apfel, 210 Goffe Ter., New Haven, Conn. 06511

Division of Ser. No. 820,059, Jul. 28, 1977, Pat. No. 4,143,274.
This application Sep. 11, 1978, Ser. No. 941,489
The portion of the term of this patent subsequent to Mar. 6, 1996, has been disclaimed.
Int. Cl.[3] C09K *3/00*
U.S. Cl. 252—408 21 Claims



1. A composition including droplets of superheated liquid encapsulated in a host immiscible therewith, said host being a member of the group consisting of viscous liquids, greases and soft gels, said viscous liquid and grease being of high enough viscosity to protect said droplets from initiation of vaporization by contact with a wall, and said gel being soft enough to allow essentially the full volume change corresponding to the vaporization of any droplets at the ambient temperature and pressure about said gel, said composition being useful in the detection of radiation.

4,350,608

OXYGEN CATHODE FOR ALKALI-HALIDE ELECTROLYSIS AND METHOD OF MAKING SAME

Lawrence J. Gestaut, Painesville, Ohio, assignor to Diamond Shamrock Corporation, Dallas, Tex.

Division of Ser. No. 899,548, Apr. 24, 1978, Pat. No. 4,278,525.
This application Feb. 19, 1981, Ser. No. 236,027
Int. Cl.[3] C25B *11/06*; H01M *4/04*; B27J *5/00*
U.S. Cl. 252—425.3 4 Claims

1. A method of forming a porous gas electrode comprising the steps of:

forming a composite of prefused polytetrafluoroethylene and carbon black, wherein said composite contains about 10 to 70 percent polytetrafluoroethylene and about 90 to 30 percent carbon black;

compressing said composite at a pressure ranging from about 100 to about 4,000 psig while heating at least to a temperature above the sinter temperature of said polytetrafluoroethylene and below the decomposition temperature thereof;

maintaining said temperature and pressure for a period of 5 to 60 minutes to form an electrode substrate;

and applying an electrocatalyst to said substrate.

2. The method as described in claim 1 wherein said step of applying an electrocatalyst comprises the steps of:

applying a solution of chloroplatinic acid to said substrate;

initially reducing said chloroplatinic acid to platinum by heating said electrode substrate; and

completing said reduction by contacting said electrode substrate with a reducing solution.

3. A method as in claim 2 wherein said heating is conducted at a temperature of about 400° F.

4,350,609

PROCESS FOR PRODUCING A CATALYST BY DEPOSITING MOLYBDENUM REMOVED FROM A WASTE CATALYST

Donald C. Cronauer, Gibsonia, Pa., and Robert B. Bjorklund, Linkoping, Sweden, assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Feb. 26, 1981, Ser. No. 238,538
Int. Cl.[3] B01J *23/28*
U.S. Cl. 252—465 12 Claims

1. A process for producing a molybdenum-containing catalyst comprising:

(a) selectively removing molybdenum values from a waste molybdenum-containing catalyst also comprising aluminum, silicon, iron, titanium, cobalt or nickel in a single step comprising contacting said waste catalyst with a chlorinating gas at a temperature within the range of about 100° C. to about 600° C.;

(b) depositing molybdenum removed from said waste catalyst onto fresh alumina support by contacting the effluent gas from step (a) in the presence of air or oxygen with said fresh alumina support maintained at a temperature of about 50° C. to about 400° C.; and

(c) calcining the product of step (b) to convert the deposited molybdenum to molybdenum oxide.

4,350,610

HYDROPHOBIC CATALYST FOR RECOMBINERS

Margarete Jung, and August Winsel, both of Kelkheim, Fed. Rep. of Germany, assignors to Varta Batterie Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed Apr. 9, 1981, Ser. No. 252,592
Claims priority, application Fed. Rep. of Germany, Apr. 10, 1980, 3013753
Int. Cl.[3] B01J *31/02*
U.S. Cl. 252—429 R 14 Claims

1. A catalyst for recombining hydrogen and oxygen, particularly gases evolving during operation of electric storage batteries, comprising

a mixture of polytetrafluoroethylene and Kieselgur as the

catalyst carrier material, provided with an active catalytic material, the polytetrafluoroethylene-Kieselgur mixture being formed into a rolled mat, the mat being provided after rolling with a catalytically active material, then made hydrophobic, and sintered.

4,350,611

PREPARATION OF VANADIUM PHOSPHORUS CATALYSTS USING OLEFINIC HALOGENATED ORGANIC REACTION MEDIA

Michael F. Lemanski, Cleveland; Noel J. Bremer, Stow, and Ernest C. Milberger, Solon, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Division of Ser. No. 199,148, Oct. 22, 1980, Pat. No. 4,293,498. This application Apr. 10, 1981, Ser. No. 252,751

Int. Cl.³ B01J *27/14*

U.S. Cl. 252—435 **24 Claims**

1. A process for the preparation of oxidation catalysts containing the mixed oxides of vanadium and phosphorus which comprises

(a) introducing a pentavalent vanadium-containing compound into an olefinic, halogenated organic liquid-containing liquid medium,

(b) effecting reduction of at least a portion of said vanadium to a valence state of about +4 by heating the vanadium and olefinic, halogenated organic liquid-containing liquid medium;

(c) adding a phosphorus-containing compound to said medium before or after effecting said reduction to form a catalyst precursor;

(d) recovering the catalyst precursor;

(e) drying the catalyst precursor;

(f) calcining the catalyst precursor.

4,350,612

METHOD FOR PREPARING A MAGNESIUM HALIDE SUPPORT FOR CATALYSTS

Carl C. Greco, Garnersville, N.Y., and Kelly B. Triplett, Stamford, Conn., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Jan. 13, 1981, Ser. No. 224,765

Int. Cl.³ C08F *4/02, 4/64*

U.S. Cl. 252—441 **20 Claims**

1. A process for preparing an effective support for the titanium halide component of a coordinate complex catalyst for the polymerization of alpha-olefins comprising the steps of:

(a) intimately contacting a magnesium or manganese chloride or bromide with a drying agent at an elevated temperature,

(b) milling the magnesium or manganese chloride or bromide so as to activate its surface; and

(c) repeat contacting step (a) and milling step (b) for two or more cycles, whereby the effective support is produced.

4,350,613

CATALYST FOR PURIFYING EXHAUST GASES AND METHOD FOR MANUFACTURING SAME

Atsushi Nishino, Neyagawa; Kunio Kimura, Hirakata; Kazunori Sonetaka, Hirakata, and Yasuhiro Takeuchi, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Company, Limited, Osaka, Japan

Filed Mar. 10, 1981, Ser. No. 242,176

Claims priority, application Japan, Mar. 11, 1980, 55-31186; Mar. 11, 1980, 55-31187; Jul. 24, 1980, 55-102155

Int. Cl.³ B01J *21/04, 21/06, 23/58, 23/64*

U.S. Cl. 252—455 R **18 Claims**

1. A catalyst for purifying an exhaust gas which comprises a carrier substantially composed of calcium aluminate and 5 to 90 wt% of titanium oxide based on the amount of carrier, and a catalytic component of a platinum group metal, or a metal oxide capable of oxidizing reductive gases into innoxious ones, and supported on said carrier when said platinum group metal is used, and in an amount of 0.1 to 10 wt% when said metal oxide is used.

4,350,614

CATALYTIC CRACKING CATALYST

Albert B. Schwartz, Philadelphia, Pa., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 59,805, Jul. 23, 1979, abandoned, and a continuation of Ser. No. 897,077, Apr. 17, 1978, Pat. No. 4,265,787, which is a division of Ser. No. 869,079, Jan. 13, 1978, Pat. No. 4,174,272, which is a division of Ser. No. 659,308, Feb. 19, 1976, which is a continuation-in-part of Ser. No. 649,261, Jan. 15, 1976, Pat. No. 4,072,600, which is a continuation-in-part of Ser. No. 599,920, Jul. 28, 1975, which is a continuation-in-part of Ser. No. 440,890, Feb. 8, 1974, abandoned, and a continuation-in-part of Ser. No. 399,008, Sep. 20, 1973, abandoned. This application Sep. 26, 1980, Ser. No. 191,092

Int. Cl.³ B01J *29/12, 29/16*

U.S. Cl. 252—455 Z **6 Claims**

1. A solid, acid, porous hydrocarbon cracking catalyst that contains about 0.01 to 100 parts per million, based on said catalyst, of at least one metal of the group consisting of platinum, palladium, iridium, osmium, rhodium, ruthenium and rhenium in a form inherently capable of dehydrogenting gas oil; which catalyst has substantial activity to catalyze the endothermic cracking, in a cracking zone of a catalytic cracking apparatus, of gas oil boiling range hydrocarbons at elevated tempertures and in the absence of added hydrogen, with concomitant deactivation during said cracking by reasons of the deposition of coke thereon, in an amount not substantially higher than the amount of coke, based upon feed, which would have been deposited on said catalyst under the same operating conditions in the absence of said incorporated metal; which catalyst in its coked condition is adapted to be transported to a regeneration zone of said apparatus and therein, in combination with sufficient oxygen, to be exothermically regenerated and heated by burning coke thereof to produce a heated, reactivated catalyst and a flue gas having a higher ratio of carbon dioxide to carbon monoxide than said flue gas would have using said catalyst without said metal; which heated, reactivated catalyst is adapted to be returned to said cracking zone; and which catalyst acquired a portion of said metal content while in said cracking apparatus.

4,350,615

CATALYTIC CRACKING WITH REDUCED EMISSION OF NOXIOUS GAS

Garbis H. Meguerian, Olympia Fields; John M. Lorntson, Will County, and Iacovos A. Vasalos, Downers Grove, all of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Division of Ser. No. 84,141, Oct. 12, 1979, Pat. No. 4,300,997. This application Dec. 4, 1980, Ser. No. 212,883

Int. Cl.³ B01J *29/12*

U.S. Cl. 252—455 Z **8 Claims**

1. A composition of matter comprising a particulate physical mixture of:

(a) a particulate zeolite-type cracking catalyst; and

(b) a particulate solid other than said cracking catalyst comprising an inorganic oxide in association with palladium and ruthenium, wherein the palladium and ruthenium are in free or combined form, the ratio by weight of an elemental basis of palladium to ruthenium is from about 0.1 to about 10, the combined amount of palladium and ruthenium is from about 0.001 to about 10 weight percent with respect to the particulate solid other than said cracking catalyst, and the combined amount of palladium and ruthenium is from about 0.01 to about 100 parts per million by weight with respect to said particulate physical mixture.

2. The composition as set forth in claim 1 wherein the amount of said cracking catalyst is from about 50 to about

99.999 weight percent with respect to said particulate physical mixture.

3. The composition as set forth in claim 2 wherein the combined amount of palladium and ruthenium is from about 0.1 to about 25 parts per million by weight with respect to said particulate physical mixture.

4,350,616

METHOD OF MAKING CATALYSTS FOR THE PRODUCTION OF ETHYLENE OXIDE

Anne S. Boussert, Baton Rouge, La., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jul. 3, 1980, Ser. No. 165,512

Int. Cl.³ B01J *21/04, 23/02, 23/04, 23/66*

U.S. Cl. 252—463 **9 Claims**

1. In a process for making an improved silver catalyst for use in producing ethylene oxide, wherein ethylene and oxygen are reacted in the vapor phase at an elevated temperature in the presence of said catalyst, by

(a) impregnating a porous alumina support by contacting said support with an aqueous solution of a silver salt,

(b) drying said impregnated support

(c) impregnating said dry support with a reducing agent selected from high boiling organic esters, mineral oil or mixtures thereof by contacting said support with said reducing agent,

(d) heating said support to reduce said silver salt on said support to silver metal and to remove residual reducing agent, the silver metal made thereby characterized in having a predominance of particles of no more than about one micron in diameter,

the improvement which consists of:

(1) impregnating said silver-containing support with cesium by contacting said silver-containing support with a solution of cesium compound in a lower alkanol, and

(2) heating said cesium-impregnated silver-containing support at a temperature sufficient to remove said lower alkanol.

4,350,617

CYLINDRICAL METAL HONEYCOMB CATALYST SUPPORTS, AND METHOD FOR FORMING THEM

William B. Retallick, 1432 Johnny's Way, West Chester, Pa. 19380, and Harold R. Smithson, 880 E. Street Rd., Box 11, Westtown, Pa. 19395

Filed Apr. 20, 1981, Ser. No. 255,568

Int. Cl.³ B01J *35/04*

U.S. Cl. 252—477 R **10 Claims**

1. A frame for a metal catalyst support, comprising a cylindrical shell and at least one partition that is parallel to the straight line that generates the cylindrical shell, wherein the frame encloses a plurality of indented metal strips, the strips being laid parallel to the partition, the strips being oriented so that indentations on adjacent strips do not coincide, so that adjacent strips cannot nest together.

4,350,618

THICK FILM CONDUCTORS FOR USE IN MICROELECTRONIC PACKAGING

David G. Hilson; Gary W. Johnson, both of Norwalk, Conn., and Ronald J. Schoonejongen, Lake Carmel, N.Y., assignors to Electro Materials Corp. of America, Mamaroneck, N.Y.

Filed Nov. 16, 1979, Ser. No. 94,900

Int. Cl.³ H01B *1/02;* **H01L** *23/48;* **C09D** *5/10*

U.S. Cl. 252—514 **5 Claims**

1. A thick film conductor suitable for use in association with Si-based integrated circuits in a eutectic die attachment process, said thick film conductor comprising by weight, about 87.88% Au, 1.41% Pd, 0.43% Pt, 1.41% ZnO and the remainder being Bi_2O_3 and glass frit in a ratio of about 2 to 1, said Pd having a surface area of at least about five meters²/gram.

4,350,619

GRANULAR DETERGENT CONTAINING ZEOLITE, SILICATE, LAS AND OLEFIN SULFONATE

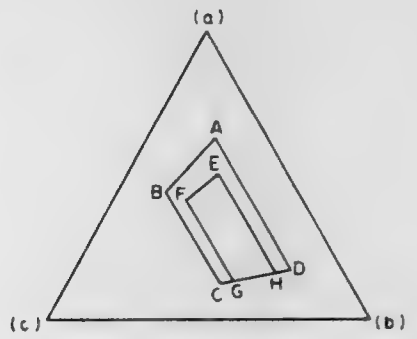
Masayoshi Nakamura, Chiba; Teruo Magari, Funabashi; Seiji Abe, Kokubunji, and Mitsuyoshi Yazaki, Chiba, all of Japan, assignors to Lion Corporation, Tokyo, Japan

Filed Apr. 21, 1981, Ser. No. 256,157

Claims priority, application Japan, Apr. 23, 1980, 55-54627

Int. Cl.³ C11D *1/14, 1/22, 3/12, 11/02*

U.S. Cl. 252—537 **4 Claims**



1. A zeolite-containing non phosphate granular detergent composition comprising:

(a) at least one α-olefin sulfonate having 14 to 20 carbon atoms,

(b) at least one linear alkylbenzene sulfonate having 10 to 14 carbon atoms in the alkyl group thereof,

(c) at least one sodium silicate having the general formula of $Na_2O.nSiO_2$, wherein n is a number of from 2.0 to 2.6, and

(d) at least one type A zeolite, the total amount of the components (a) and (b) being 20 to 25% by weight of the total amount of the composition, the amount of the component (d) being 10 to 20% by weight of the total amount of the composition and the weight ratio of the components (a), (b) and (c) being within the area enclosed by the points A [(a):(b):(c)=64:21:15], B [(a):(b):(c)=45:15:40], C [(a):(b):(c)=12:48:40] and D [(a):(b):(c)=17:68:15] defined in the accompanying triangular diagram.

4,350,620

PROCESS FOR FILTERING AND ENCAPSULATING RADIOACTIVE PARTICLES

Edmund Hartinger, Baden; Elias Jülke, Wettingen, and Harald Sandmann, Nussbaumen, all of Switzerland, assignors to Maschinenfabrik Meyer AG, Deitingen, Switzerland

Filed Apr. 18, 1980, Ser. No. 141,353

Claims priority, application Switzerland, May 14, 1979, 4448/79

Int. Cl.³ G21F *9/16*

U.S. Cl. 252—628 **25 Claims**

1. A method for removing a particulate solid radioactive matter dispersed in an aqueous process stream from said stream comprising the steps of:

(1) filtering said process stream containing said dispersed radioactive matter through a filter medium consisting of at least predominantly of a water-wettable but substantially water-insoluble polymer material that is thermally fusible at temperatures in the range of from about 100° C. to about 300° C. whereby there are produced (A) a filtered aqueous stream substantially free of said solid radioactive matter and (b) a filter residue containing said thermally fusible polymer material and said particulate solid radioactive matter; and

(2) heating said filter residue to a temperature in said range of from about 100° C. to about 300°for at least partially interfusing said thermally fusible polymer material whereby there is produced a compacted mixture of said particulate solid radioactive matter and said at least partially interfused polymer material.

4,350,621

ELASTOMER COMPOSITIONS FOR TIRE TREAD

Robert Bond, Staffordshire, and Robert J. Blythe, Birmingham, both of England, assignors to Dunlop Limited, London, England

Continuation of Ser. No. 937,121, Aug. 28, 1978, abandoned. This application Jan. 26, 1980, Ser. No. 163,278

Claims priority, application United Kingdom, Sep. 9, 1977, 37824/77

Int. Cl.³ C08L *7/00, 9/06, 23/20*

U.S. Cl. 525—237 13 Claims

1. An elastomer composition which when vulcanized can be used to give good grip on wet road surfaces and low frictional resistance to rolling on road surfaces in tires whose tread contains the vulcanized composition comprising

a blend of a natural rubber and a rubbery styrene-butadiene copolymer each having a glass transition temperature of no greater than minus 50° C. and

a polyisobutylene having a viscosity average molecular weight of at least 250,000, said composition containing substantially no polybutadiene wherein said natural rubber, said rubber-styrene copolymer, and said polyisobutylene are present in quantities sufficient to yield a vulcanized composition displaying good grip on wet road surfaces and low frictional resistance to rolling on road surfaces in tires whose treads contain the vulcanized composition.

4,350,622

AQUEOUS DISPERSIONS OF VINYLIDENE CHLORIDE RESINS

Kazuhiko Hiyoshi; Norio Matsuura; Michiharu Matsugichi, all of Nobeoka; Norio Onofusa, and Tadao Nishikage, both of Yokohama, all of Japan, assignors to Asahi-Dow Limited, Tokyo, Japan

Filed Aug. 10, 1981, Ser. No. 291,728

Int. Cl.³ C08L *35/04*

U.S. Cl. 524—831 2 Claims

1. An aqueous dispersion of a vinylidene chloride copolymer resin obtained by emulsion polymerizing a mixture of vinylidene chloride as a major component, methacrylic acid, methyl methacrylate and, optionally, acrylonitrile; said aqueous dispersion containing: (a) from about 87 to about 93 mole percent, based on polymer solids content, vinylidene chloride units; (b) from about 13 to about 7 mole percent, based on polymer solids content, of a mixture of acrylonitrile and methyl methacrylate, said mixture having a molar ratio of acrylonitrile to methyl methacrylate of from about 0 to 1 to about 1 to 1; (c) from about 1×10^{-4} to about 3×10^{-4} moles of methacrylic acid units per gram of said polymer solids content, with the further limitation that the content of methacrylic acid existing in a form titratable with a 1/20 N aqueous solution of sodium hydroxide does not exceed either about 1.3×10^{-4} moles per gram of polymer solids content or about 50 percent of the total methacrylic acid content, whichever is smaller.

4,350,623

PHENOLATED NAPHTHALENE FORMALDEHYDE RESIN VARNISH

Joseph G. Robinson, Winchcombe, and Sally A. Brain, Evesham, both of England, assignors to Coal Industry (Patents) Limited, London, England

Filed Feb. 19, 1981, Ser. No. 236,064

Claims priority, application United Kingdom, Mar. 25, 1980, 8009948

Int. Cl.³ C08K *5/05*

U.S. Cl. 524—391 6 Claims

1. A varnish for preparing glasscloth laminates for use at high temperatures comprising a solvent, about 50% w/w of a resin and a curing agent for the resin, wherein the solvent is a lower secondary alcohol and the resin consists essentially of a phenolated naphthalene formaldehyde resin having a molecular weight from 350 to 500 and a combined phenol content from 37 to 54% w/w.

4,350,624

METHOD FOR RECOVERING MEAT PROTEINS REMAINING ATTACHED TO THE BONES AFTER THE BONING OPERATION

Jean-Frederic Herubel, Guebwiller, France, assignor to N. Schlumberger & Cie, Guebwiller, France

Filed Jan. 9, 1980, Ser. No. 110,792

Claims priority, application France, Jan. 11, 1979, 79 00638

Int. Cl.³ A23J *1/02*

U.S. Cl. 260—112 R 9 Claims

1. A method for recovering proteins from meat attached to bones comprising the steps of:

(a) mechanically comminuting the bones into fragments,

(b) contacting the bone fragments with an aqueous solution of an alkaline base having a pH of from about 10 to 12 at room temperature, until the meat attached to the bones is released,

(c) keeping said fragments at room temperature in contact with the aqueous solution for a time sufficient to extract proteins,

(d) separating the aqueous solution containing extracted protein from the bone fragments,

(e) adjusting the pH of the separated aqueous solution down to between about 4 to 8 to precipitate the proteins from the solution, and

(f) separating the precipitated proteins.

4,350,625

SUBSTANCE WITH FIBRINOLYTIC ACTIVITY AND METHOD OF MANUFACTURING THE SAME

Takeshi Abe, 36-5, Kitazawa 1-chome, Setagaya-ku, Tokyo, 115, Japan

PCT No. PCT/JP79/00296, § 371 Date Jul. 20, 1980, § 102(e) Date Jul. 3, 1980, PCT Pub. No. WO80/01039, PCT Pub. Date May 29, 1980

PCT Filed Nov. 16, 1979, Ser. No. 201,390

Claims priority, application Japan, Nov. 20, 1978, 53-143224

Int. Cl.³ A23J *1/00;* C09H *1/00;* A61K *37/00*

U.S. Cl. 260—112 R 7 Claims

7. A substance with a strong plasminogen activator activity obtained by subjecting a solution of venom of Trimeresurus to multiple chromatography consisting essentially of a combination of: providing a first molecular sieve chromatography using Sephadex G-75 or G-100; thereafter providing a second molecular sieve chromatography using Sephadex G-50 as a stationary phase; and, at a time before or after or intermediate said first and second chromatographies, carrying out ion exchange chromatography using a cation exchange body as a stationary phase; fractionating each protein-containing solution eluted in turn during each stage of said first second and ion exchange chromatographies using a buffer solution of electrolyte with pH 6–8 as a mobile phase; confirming the plasminogen activator activity of each of the fractionated portions; collecting the fractionated portions having the largest plasminogen activator activity dialyzing said largest activity fractionated portions in distilled water; and subjecting said largest activity portions to an operation of separation by subsequent chromatography, thereby singly isolating a substance with plasminogen activator activity, which substance has its maximal absorption spectrum in the proximity of ultraviolet ray, 278 nm and infrared ray, around 3400 cm^{-1} (large scale), 1640 cm^{-1} (medium scale), 14355 cm^{-1} (large), 1350 cm^{-1} (large), 1250^{-1} (small scale), 1100 cm^{-1} (medium), 1025 cm^{-1} (small), 925 cm^{-1} (medium) and 780 cm^{-1} (small) respectively and having a molecular weight within the range of 28,000–35,000 and observed to have a glycoprotein having a total mount of nitrogen, 12.4±1%, being soluble in water and capable of operating a plasminogen activator, the amino acids of the

substance being present in a relative N mol quantity as follows,

Aspartic acid	15.366
Threonine	7.132
Serine	5.578
Glutamic acid	9.797
Glycine	9.475
Alanine	7.668
Cystine	5.454
Valine	7.422
Methionine	2.936
Isoleucine	4.836
Leucine	7.215
Tyrosine	8.923
Phenylalanine	2.895
Lysine	17.729
Ammonia	13.278
Histidine	1.793
Arginine	3.674.

4,350,626

ANTITUMOR HYBRID AND PROCESS FOR THE PREPARATION THEREOF

Yasuhiko Masuho, Hino, and Takeshi Hara, Hachioji, both of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Jul. 21, 1980, Ser. No. 170,332

Claims priority, application Japan, Jul. 20, 1979, 54-91634

Int. Cl.[3] **C07C** *103/52;* **C07G** *7/00;* **A61K** *37/00*

U.S. Cl. 260—112.5 R **6 Claims**

1. Antitumor protein hybrid comprising (1) a moiety which is substantially the fragment Fab of an antitumor immunoglobulin and (2) a moiety which is the subunit A of ricin, which is expressed by the following formula (I):

$$Fab(S_1\text{-}(X)_n\text{-}S_2\text{-}RA)_m \quad (I)$$

where Fab indicates a moiety which is substantially the fragment Fab of an antitumor immunoglobulin; RA indicates a moiety which is the subunit A of ricin; X indicates a divalent organic radical; S_1 and S_2 are both sulfur atoms, S_1 indicating a sulfur atom arising from the disulfide bond in the immunoglobulin and S_2 a sulfur atom arising from the disulfide bond in ricin; n represents 0 or 1 and m represents an integer of 1 to 5.

4,350,627

BIOLOGICALLY ACTIVE PEPTIDES

Roberto de Castiglione; Fiorenzo Faoro; Giuseppe Perseo; Silvano Piani, and Francesco Santangelo, all of Milan, Italy, assignors to Farmitalia Carlo Erba S.p.A., Italy

Continuation-in-part of Ser. No. 120,832, Feb. 12, 1980, abandoned. This application Dec. 3, 1980, Ser. No. 212,586

Claims priority, application United Kingdom, Sep. 20, 1979, 7932590; Sep. 15, 1980, 8015412

Int. Cl.[3] **C07C** *103/52;* **A61K** *37/00*

U.S. Cl. 260—112.5 E **131 Claims**

1. A biologically active peptide selected from the group consisting of

H-Tyr-ala-Phe-Gly-Tyr-Pro-Ser-NH_2,
H-Tyr-ala-Phe-Gly-Tyr-NH_2,
H-Tyr-ala-Phe-Gly-OMe,
H-Tyr-ala-Phe-Gly-OH,
H-Tyr-ala-Phe-Gly-NH_2,
H-Tyr-ala-Phe-Gly-NH-NH_2,
H-Tyr-ala-Phe-Sar-NH-NH_2,
H-Tyr-ala-Phe-Sar-NH-NH-Z,
Boc-Tyr-ala-Phe-Sar-NH-NH_2,
Boc-Tyr-ala-Phe-Phe-NH-NH_2,
H-Tyr-ala-Phe-Gly-Tyr-Pro-NH_2,
H-Tyr-ala-Phe-Gly(Bzl)-Pro-NH_2,
Boc-Tyr-ala-Phe-Gly-Tyr-Pro-NH_2,
Boc-Tyr-ala-Phe-Gly-Tyr(Bzl)-Pro-NH_2,
H-Tyr-ala-Phe-Gly-Tyr-Ser-NH_2,
Boc-Tyr-ala-Phe-Gly-Tyr-Ser-NH_2,
H-Tyr-ala-Phe-Gly-Tyr-Hyp-Ser-NH_2,
H-Tyr-ala-Phe-Gly-Tyr(Bzl)-Hyp-Ser(Bzl)-NH_2,
Boc-Tyr-ala-Phe-Gly-Tyr-Hyp-Ser-NH_2,
Boc-Tyr-ala-Phe-Gly-Tyr(Bzl)-Hyp-Ser(Bzl)-NH_2,
H-Tyr-ala-Phe-Gly-Tyr-Val-Ser-NH_2,
Boc-Tyr-ala-Phe-Gly-Tyr-Val-Ser-NH_2,
H-Tyr-ala-Phe-Gly-Tyr-Gly-Ser-NH_2,
Boc-Tyr-ala-Phe-Gly-Tyr-Gly-Ser-NH_2,
H-Tyr-ala-Phe-Gly-Phe-Pro-Ser-NH_2,
Boc-Tyr-ala-Phe-Gly-Phe-Pro-Ser-NH_2,
H-Tyr-ala-Phe-Gly-Phe-Hyp-Ser-NH_2,
H-Tyr-ala-Phe-Gly-Phe-Hyp-Ser(Bzl)-NH_2,
Boc-Tyr-ala-Phe-Gly-Phe-Hyp-Ser-NH_2,
Boc-Tyr-ala-Phe-Gly-Phe-Hyp-Ser(Bzl)-NH_2,
H-Tyr-ala-Phe-Gly-Trp-Pro-Ser-NH_2,
Boc-Tyr-ala-Phe-Gly-Trp-Pro-Ser-NH_2,
H-Tyr-ala-Phe-Phe-Tyr-Pro-Ser-NH_2,
H-Tyr-ala-Phe-Phe-Tyr(Bzl)-Pro-Ser-NH_2,
Boc-Tyr-ala-Phe-Phe-Tyr-Pro-Ser-NH_2,
H-Tyr-ala-Phe-Gly-Tyr-Pro-Ser-NH-NH-Z,
H-Tyr-ala-Phe-Gly-Tyr-NH-NH-Z,
H-Tyr-ala-Phe-Gly-NH-NH-Z,
H-Tyr-ala-Phe-Gly-NH-NH-CO-CH_2-CH_2-CH_3,
H-Tyr-ala-Phe-Gly-NH-NH-tyr-H,
H-Tyr-ala-Phe-Sar-NH-NH-Z,
Boc-Tyr-ala-Phe-Sar-NH-NH-Z,
H-Tyr-ala-Phe-Sar-Tyr-NH-NH-Z,
Boc-Tyr-ala-Phe-Sar-Tyr-NH-NH-Z,
H-Tyr-ala-Phe-Sar-Tyr-NH-NH-Boc,
Tfa-Tyr-ala-Phe-Sar-Tyr-NH-NH-Boc,
H-Tyr-ala-Phe-Gly-Tyr-NH-NH-Ph,
Boc-Tyr-ala-Phe-Gly-NH-NH-Ph,
H-Tyr-ala-Phe-Gly-Tyr-NH-NH-Boc,
Tfa-Tyr-ala-Phe-Gly-Tyr-NH-NH-Boc,
H-Tyr-ala-Phe-Gly-Tyr-NH-NH-Adoc,
Tfa-Tyr-ala-Phe-Gly-Tyr-NH-NH-Adoc,
H-Tyr-ala-Phe-Gly-Tyr-NH-NH-Ad,
Boc-Tyr-ala-Phe-gly-NH-NH-Ad,
H-Tyr-ala-Phe-Gly-Leu-NH_2,
H-Tyr-ala-Phe-Gly-Met-NH_2,
H-Tyr-ala-Phe-Sar-Tyr-Pro-Ser-NH_2,
H-Tyr-ala-Phe-Gly-Gly-Pro-Ser-NH_2,
H-Tyr-ala-Phe-Gly-Tyr-Pro-Ser-NHMe,
H-Tyr-ala-Phe-Gly-Tyr-Pro-Ser-NHEt,
H-Tyr-ala-Phe-Gly-Tyr-Pro-Ser-OMe,
H-Tyr-met-Phe-Gly-NHNHZ,
H-Tyr-met(O)-Phe-Gly-NHNHZ,
H-Tyr-ala-Phe-Gly-NHNHLrl,
H-Tyr-ala-Phe-Gly-MHNHBnl,
H-Tyr-ala-Phe-Gly-tyrNHNH$_2$,
H-Tyr-ala-Phe-Gly-NHNHAdoc,
H-Tyr-ala-Phe-Gly-NHNHBoc,
H-Tyr-ala-Phe-Gly-Pro-NH_2,
H-Tyr-ala-Phe-Gly-Ser-NH_2,
H-Tyr-ala-Phe-Gly-tyr-NH_2,
H-Tyr-ala-Phe-Sar-Tyr-NH_2,
H-Tyr-ala-Phe-Gly-Tyr-Sar-Ser-NH_2
H-Tyr-ala-Phe-Gly-Pro-Ser-NH_2,
H-Tyr-ala-Phe-Gly-Tyr-Pro-Ser-NH-NH_2,
H-Tyr-met-Phe-Gly-Tyr-NH_2,
H-Tyr-met-Phe-Gly-Tyr-Pro-Ser-NH_2,
H-Tyr-ala-Phe-Pro-Tyr-Pro-Ser-NH_2,
H-Tyr-ala-Phe-MePhe-Tyr-Pro-Ser-OMe,
H-Tyr-ala-Phe-Gly-Tyr-Ppa-Ser-NH_2,
H-Tyr-ala-Phe-Gly-Tyr-Aze-Ser-NH_2,
H-Tyr-ala-Phe-Gly-Tyr-Tia-Ser-NH_2,
H-Tyr-ala-Phe-Gly-Tyr-ΔPr-Ser-NH_2,
H-Tyr-ala-Phe-Gly-Phe(NO_2)-Pro-Ser-NH_2,
H-Tyr-ala-Phe-Gly-Tyr-Pro-Abu-NH_2,
H-Tyr-ala-Phe-Tyr-Pro-Gly-NH_2,
H-Tyr-ala-Phe-Gly-Tyr(Bzl)-Pro-Ser(Bzl)-NH_2,
H-Tyr-ala-Phe-Gly-Tyr-Pro-Ser(Bzl)-NH_2,

H-Tyr-ala-Phe-Gly-Tyr-NH-Ad,
H-Tyr-ala-Phe-Gly-Tyr-Pro-Ser-OH,
H-Tyr-ala-Phe-Gly-Tyr-NH-Ch_2CF_3,
H-Tyr-ala-met-Phe-Gly-$NHNH_2$,
H-Tyr-ala-Phe-Gly-tyr-NHNHZ,
H-Tyr-ala-Phe-Gly-Met(O)-NH_2,
H-Tyr-ala-Phe-Gly-Nva-NH_2,
H-Tyr-met-Phe-Gly-Pro-NH_2,
H-Tyr-met-Phe-Gly-Nva-NH_2,
H-Tyr-met(O)-Phe-Gly-Tyr-Pro-Ser-NH_2,
H-Tyr-ala-Phe-Sar-Tyr-Hyp-Ser-NH_2,
H-Tyr-ala-Phe-Sar-Tyr(Bzl)-Hyp-Ser(Bzl)-NH_2,
H-Tyr-ala-Phe-Gly-Tyr(Bzl)-Ppa-Ser-NH_2,
H-Tyr-ala-Phe-Gly-Tyr-alloHyp-Ser-NH_2,
H-Tyr-ala-Phe-Gly-Tyr-3Hyp-Ser-NH_2,
H-Tyr-ala-Phe-Gly-Tyr(Bzl)-3-Hyp-Ser(Bzl)-NH_2,
H-Tyr-ala-Phe-Gly-Tyr(Bzl)-Aze-Ser-NH_2,
H-Tyr-ala-Phe-Gly-Tyr(Bzl)-Tia-Ser-NH_2,
H-Tyr-ala-Phe-Gly-Tyr(Bzl)-ΔPr-Ser-NH_2,
H-Tyr-ala-Phe-Gly-Tyr-βAla-Ser-NH_2,
H-Tyr-ala-Phe-Gly-Phe(F)-Pro-Ser-NH_2,
H-Tyr-ala-Phe-Gly-Cha-Pro-Ser-NH_2,
H-Tyr-ala-Phe-Gly-Phg-Pro-Ser-NH_2,
H-Tyr-ala-Phe-Gly-Tyr(Me)-Pro-Ser-NH_2,
H-Tyr-ala-Phe-Gly-Tyr-Pro-Ser-NH-$CH(CH_3)_2$,
H-Tyr-met(O)-Phe-Gly-$NHNH_2$,
H-Tyr-ala-Phe-Sar-Tyr-$NHNH_2$,
H-Tyr-ala-Phe-Phe-NH-NH_2,
H-Tyr-ala-Phe-MePhe-Tyr-Pro-Ser-NH_2,
H-Tyr-ala-Phe-Gly-Tyr-MeAla-Ser-NH_2,
H-Tyr-ala-Phe-Phe-NH-NHZ,
H-Tyr-ala-Phe-Gly-Tyr-NH-NH_2,
H-Tyr-ala-Phe-Gly-Leu-NH-NHZ,
H-Tyr-ala-Phe-Gly-Tyr(Me)-Hyp-Ser-NH_2,
H-Tyr-ala-Phe-Tyr(Bzl)-alloHyp-Ser-(Bzl)-NH_2,
H-Tyr-ala-Phe-MePhe-Tyr-Pro-Ser-OH,
H-Tyr-ala-Phe-Sar-Tyr(Bzl)-Pro-Ser-NH_2,
H-Tyr-ala-Phe-Pro-Tyr(Bzl)-Pro-Ser-NH_2,
H-Tyr-ala-Phe-Pro-Tyr-Hyp-Ser-NH_2,
H-Tyr-ala-Phe-Pro-Tyr(Bzl)-Hyp-Ser(Bzl)-NH_2, and
H-Tyr-ala-Phe-Gly-Tyr-3alloHyp-Ser-NH_2,
and a pharmaceutically acceptable salt thereof.

4,350,628

PREPARATION OF DEHYDROPEPTIDES

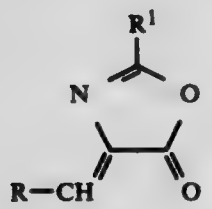
Charles H. Stammer, Athens, Ga., assignor to Research Corporation, New York, N.Y.

Division of Ser. No. 80,210, Oct. 1, 1979, Pat. No. 4,283,328, which is a division of Ser. No. 921,239, Jul. 3, 1978, abandoned. This application Mar. 24, 1981, Ser. No. 247,006

Int. Cl.³ C07C *103/52*; C09B *23/00*

U.S. Cl. 260—112.5 R **10 Claims**

1. A method of preparing compounds represented by the formula (II)



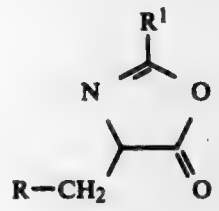
wherein

R is a straight- or branched-chain alkyl group of from 1 to 8 carbon atoms, which may be unsubstituted or substituted by hydroxyl, methylthio, guanidino or amino;

a phenyl or naphthyl group, which may be unsubstituted or substituted by hydroxyl, iodo or phenoxy; or

a 5-membered ring containing at least one nitrogen atom and at least 3 carbon atoms or a 5-membered ring containing one nitrogen atom and 4 carbon atoms fused to a benzene ring, which may be unsubstituted or substituted by hydroxyl; and

R^1 is an N-blocked amino acid residue or peptide chain or stereoisomer thereof; which comprises reacting a compound represented by the formula (I)



wherein

R and R^1 are as defined above in an organic solvent with a benzoguinone oxidizing agent in the presence of a base having a pK of about 6 to 8 and recovering the product.

4,350,629

PROCEDURES FOR PREPARING COMPOSITE MATERIALS FROM COLLAGEN AND GLYCOSAMINOGLYCAN

Ioannis V. Yannas, Newton Center, Mass., and Martin J. Forbes, Kirkland, Canada, assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Jul. 29, 1981, Ser. No. 287,998

Int. Cl.³ C07G *7/00*; C08H *1/00, 1/06*

U.S. Cl. 260—123.7 **6 Claims**

1. A method for preparing a crosslinked collagen-glycosaminoglycan composite material, comprising:

a. soaking collagen in an aqueous acidic solution having a pH of below about six;

b. contacting said solution with a crosslinking agent; and

c. contacting a source of glycosaminoglycan with said solution.

4,350,630

CONTINUOUS EXTRACTION OF CAPROLACTAM FROM AN AQUEOUS SOLUTION CONTAINING CAPROLACTAM AND ITS OLIGOMERS

Hugo Fuchs, Ludwigshafen; Uwe Brand, Rosengarten; Ernst Deuker, Gruenstadt, and Elmar Frommer, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 25, 1981, Ser. No. 276,815

Claims priority, application Fed. Rep. of Germany, Jul. 12, 1980, 3026538

Int. Cl.³ C07D *201/16*

U.S. Cl. 260—239.3 A **4 Claims**

1. In a process for continuously extracting caprolactam from an aqueous solution, containing caprolactam and its oligomers, with organic solvents, by introducing the aqueous solution into the upper part of an extraction zone and organic solvents into the lower part, and taking off a solution of caprolactam in organic solvents at the upper end and an aqueous phase containing caprolactam oligomers at the lower end, the improvement that liquid aromatic hydrocarbons are used and the extraction is carried out at a pH of from 2.0 to 6.0.

4,350,631
6- AND 4-SUBSTITUTED-1-AZABICYCLO[3.2.0]HEPTAN-3,7-DIONE-2-CARBOXYLATES

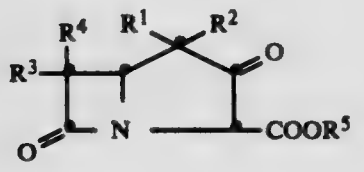
Burton G. Christensen, Scotch Plains, and David H. Shih, Manalapan, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 217,931, Dec. 18, 1980, abandoned. This application Mar. 18, 1981, Ser. No. 245,005

Int. Cl.³ C09D *487/04*

U.S. Cl. 260—245.2 T **7 Claims**

1. A compound having the structure:



wherein R^1, R^2, R^3 and R^4 are independently selected from the group consisting of hydrogen, (R^1 and R^2 are not both hydrogen), substituted and unsubstituted: alkyl, alkenyl, and alkynyl, having from 1–10 carbon atoms; cycloalkyl, cycloalkylalkyl, and alkylcycloalkyl, having 3–6 carbon atoms in the cycloalkyl ring and 1–6 carbon atoms in the alkyl moieties; spirocycloalkyl having 3–6 carbon atoms; phenyl; aralkyl, aralkenyl, and aralkynyl wherein the aryl moiety is phenyl and the alkyl chain has 1–6 carbon atoms; wherein the substituent or substituents relative to the above-named radicals are selected from the group consisting of: amino, mono-, di-, and trialkylamino, hydroxyl, alkoxyl, mercapto, alkylthio, phenylthio, sulfamoyl, amidino, guanidino, nitro, chloro, bromo, fluoro, iodo, cyano, and carboxy; and wherein the alkyl moieties of the above-recited substituents have 1–6 carbon atoms; R^5 is hydrogen, salt cation, a pharmaceutically acceptable ester moiety or a removable blocking group.

4,350,632
WATER-SOLUBLE PHTHALOCYANINE COMPOUNDS

Hartmut Springer, Königstein, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

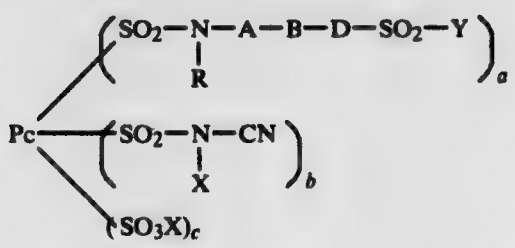
Filed Jul. 6, 1981, Ser. No. 280,814

Claims priority, application Fed. Rep. of Germany, Jul. 8, 1980, 3025790

Int. Cl.³ C09B *47/04, 47/28*

U.S. Cl. 260—314.5 **8 Claims**

1. A phthalocyanine compound of formula (1)



(1)

in which

Pc is the radical of the copper, cobalt or nickel phthalocyanine additionally not substituted or substituted by chlorine or phenyl in the 3- and/or 4-positions of the carboxylic aromatic rings of the phthalocyanine, the sulfonylcyanamide, sulfonamide and/or sulfonic acid groups being linked in the 3- and/or 4-positions of the carboxylic aromatic rings of the phthalocyanine,

a is a whole or fractional number from 1 to 3,

b is a whole or fractional number from 1 to 3 and

c is a whole or fractional number from zero to 2,

a, b and c being identical or different from one another, but the total of (a+b+c) is equal to a whole or fractional number from 2 to 4,

R is hydrogen or alkyl of 1 to 4 C atoms,

A is a direct bond or a group of the formula $-(CH_2)_m-$ or $-(CH_2)_n-NH-$ in which m is 1, 2, 3 or 4 and n is 2, 3, 4, 5 or 6,

B is phenylene or naphthylene, each unsubstituted or substituted by substituents selected from the group consisting of alkyl of 1 to 4 C atoms, alkoxy of 1 to 4 C atoms, halogen, carboxy, sulfo, carbamoyl, sulfamoyl, alkylsulfonyl of 1 to 4 C atoms, carboalkoxy of 2 to 5 C atoms, acetylamino and nitro,

D is a direct bond or a group of the formula $-CH_2-$ or $-CH_2-CH_2-$,

Y is vinyl, β-sulfatoethyl, β- phosphatoethyl, β-thiosulfatoethyl, β-hydroxyethyl or β-chloroethyl, and

X is hydrogen or the equivalent of a monovalent, bivalent or trivalent metal.

4,350,633
N-(2-SUBSTITUTED-1-OXOALKYL)-2,3-DIHYDRO-1H-INDOLE-2-CARBOXYLIC ACID DERIVATIVES

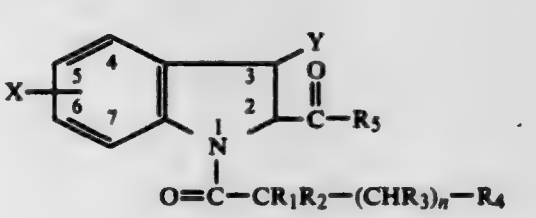
Dong H. Kim, Wayne, and Ronald J. McCaully, Malvern, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 164,992, Jul. 1, 1980, Pat. No. 4,303,583, which is a continuation-in-part of Ser. No. 65,817, Aug. 13, 1979. This application Jul. 20, 1981, Ser. No. 284,433

Int. Cl.³ C07D *209/04, 209/42*

U.S. Cl. 260—326.11 R **14 Claims**

1. A compound of the formula:



wherein:

n is 1 or 0;

R_1 is hydrogen, lower alkyl, aryl, or aralkyl;

R_2 is hydrogen or lower alkyl;

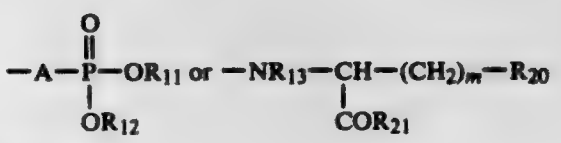
R_3 is hydrogen, lower alkyl or aroyl;

R_5 is hydroxy, amino, or lower alkoxy;

X is hydrogen, hydroxy, lower alkyl, lower alkoxy or halogen;

Y is hydrogen, lower alkyl, or aryl;

R_4 is



wherein:

A is 0, NR_{13} or S;

R_{11} and R_{12} are, independently, hydrogen, lower alkyl, aralkyl or aryl;

R_{13} is hydrogen or lower alkyl;

m is 0, 1, 2, or 3;

R_{20} is hydrogen or aryl; and

R_{21} is hydroxy or lower alkoxy;

or pharmaceutically acceptable salts thereof, wherein aryl is phenyl or phenyl substituted by a halogen, lower alkyl, or lower alkoxy group; aralkyl is benzyl or benzyl substituted on the phenyl ring by a halogen, lower alkyl, or lower alkoxy group; and aroyl is benzoyl or benzoyl substituted as above for phenyl.

4,350,634
N-BENZOYL-N'-3-INDOLYL-N'ALKYL-1,3-DIAMINO-PROPANES

Paul Stadler, Biel-Benken, and Franz Troxler, Bottmingen, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

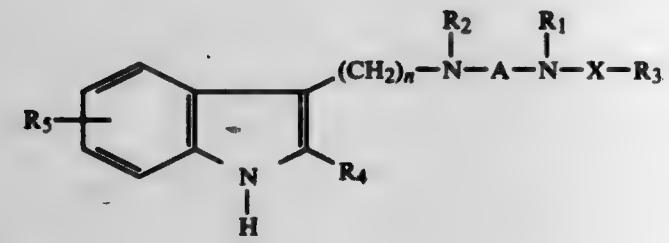
Continuation-in-part of Ser. No. 922,520, Jul. 7, 1978, abandoned. This application Jan. 11, 1980, Ser. No. 111,445

Claims priority, application Switzerland, Jul. 12, 1977, 8583/77; Jul. 12, 1977, 8584/77; Jul. 12, 1977, 8585/77; Jul. 12, 1977, 8586/77; Jul. 12, 1977, 8587/77; Jul. 12, 1977, 8588/77; Jul. 12, 1977, 8589/77; Mar. 20, 1978, 3008/78

Int. Cl.³ C07D *209/12;* A61K *31/40*

U.S. Cl. 260—326.13 B 5 Claims

1. A compound of the formula



wherein

n is 2 or 3,

A is trimethylene optionally monosubstituted by (C_{1-4})alkyl, or 1,4-cyclohexylidene,

R_1 is hydrogen or (C_{1-5})alkyl,

R_2 is hydrogen or (C_{1-5})alkyl,

R_3 is unsubstituted phenyl,

R_4 is hydrogen,

R_5 is hydrogen, and

X is —CO—,

in free base form and in pharmaceutically acceptable salt form.

4,350,635
N(2-PYRROLIDINYLMETHYL)META-SULFONAMIDO-BENZAMIDES

Masaru Ogata, Kobe, and Hiroshi Matsumoto, Takatsuki, both of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

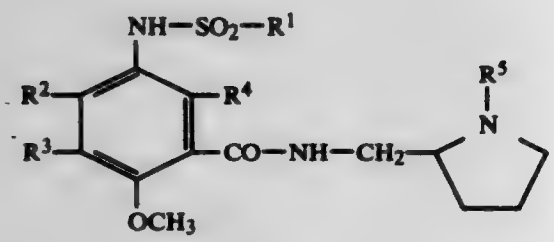
Division of Ser. No. 872,584, Jan. 26, 1978, abandoned. This application Feb. 26, 1980, Ser. No. 124,726

Claims priority, application Japan, Jan. 27, 1977, 52-8443; Aug. 8, 1977, 52-94884

Int. Cl.³ C07D *207/09;* A61K *31/40*

U.S. Cl. 260—326.47 25 Claims

1. A compound selected from the group consisting of a compound of the formula



wherein R^1 is methyl, ethyl, propyl, butyl or phenyl, R^2 is hydrogen, chlorine, fluorine, methyl, ethyl, methoxy or dimethylamino, R^3 is hydrogen, methyl or methoxy, R^4 is hydrogen or chlorine, and R^5 is ethyl, allyl, cyclohexyl, benzyl or p-fluorobenzyl, and

a pharmaceutically acceptable acid addition salt thereof.

4,350,636
PREPARATION OF PHENYLACETONITRILES CARRYING BASIC SUBSTITUENTS

Gerhard Kastner, Ludwigshafen-Maudach; Hardo Siegel, Speyer, and Karl-Heinz Geiss, Beindersheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

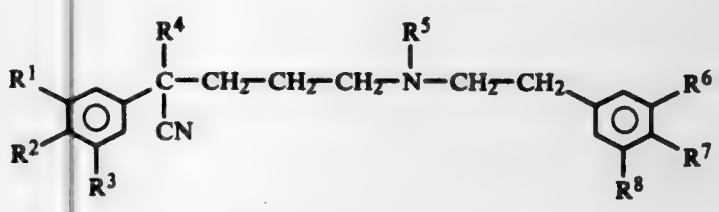
Filed Aug. 27, 1981, Ser. No. 296,893

Claims priority, application Fed. Rep. of Germany, Sep. 11, 1980, 3034221

Int. Cl.³ C07D *317/60;* C07C *121/78*

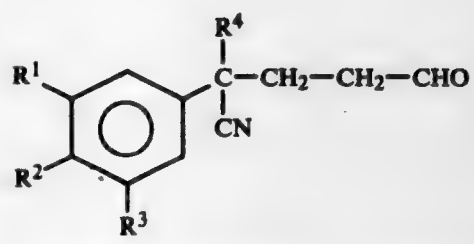
U.S. Cl. 549—435 1 Claim

1. A process for the preparation of phenylacetonitriles, carrying basic substituents, of the formula I



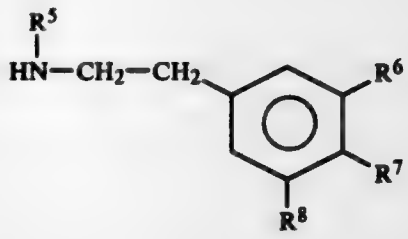
I

where R^1, R^2 and R^3 are hydrogen, halogen, trifluoromethyl or C_1–C_6-alkoxy, and R^1 and R^2 together can also be methylenedioxy, R^4 and R^5 are C_1–C_6-alkyl, R^6 and R^7 are C_1–C_6-alkoxy or together are methylenedioxy, and R^8 is hydrogen or C_1–C_6-alkoxy, which comprises reacting an aldehyde of the formula II



II

where R^1, R^2, R^3 and R^4 have the above meanings, with from 0.8 to 1.5 equivalents of an amine of the formula III



III

where R^5, R^6, R^7 and R^8 have the above meanings, in the presence of from 0.8 to 1.5 equivalents of formic acid at from 20° to 150° C.

4,350,637
SUBSTITUTED LACTONES OF AMINO ACIDS

Jacques Martel, Bondy; Jean Tessier, Vincennes, and Andre Teche, Paris, all of France, assignors to Roussel Uclaf, Paris, France

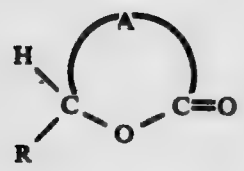
Filed Dec. 3, 1980, Ser. No. 212,569

Claims priority, application France, Dec. 10, 1979, 79 30201

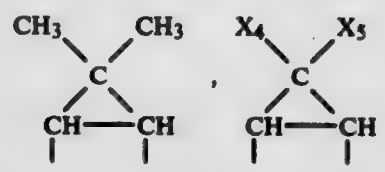
Int. Cl.³ C07D *307/77, 307/32, 309/30*

U.S. Cl. 549—304 8 Claims

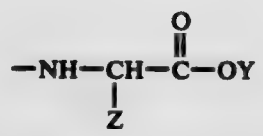
1. A substituted lactone of amino acids in all their possible stereoisomeric forms or mixtures thereof of the formula:



wherein A is selected from the group consisting of an aliphatic hydrocarbon of 2 to 3 carbon atoms optionally containing a double bond, a monocyclic hydrocarbon of 3 to 6 carbon atoms optionally containing one unsaturation, a bicyclic hydrocarbon of 5 to 10 carbon atoms containing one unsaturation,



and X_4 and X_5 are individually selected from the group consisting of hydrogen, fluorine, chlorine, bromine and alkyl of 2 to 6 carbon atoms or taken together with the carbon atoms to which they are attached form a carbon homocycle of 3 to 7 carbon atoms and R is:



wherein Z is the organic remainder of an amino acid of the group consisting of leucine, phenylalanine and methionine Y is derived from an alcohol selected from the group consisting of primary aliphatic alcohols of 1 to 12 carbon atoms, primary cycloaliphatic alcohols of 4 to 8 carbon atoms and benzyl alcohol.

4,350,638

BRUCEOLIDES

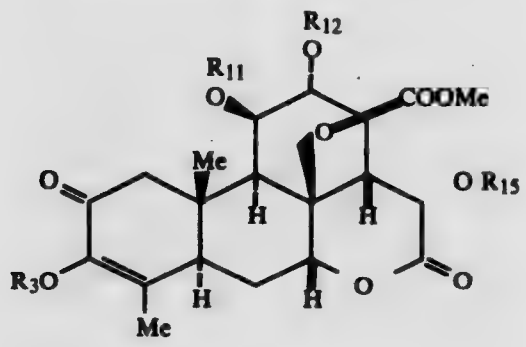
Kuo-Hsiung Lee, Chapel Hill, N.C., assignor to Research Corporation, New York, N.Y.

Filed Oct. 3, 1980, Ser. No. 193,601

Int. Cl.³ C07D *493/04*

U.S. Cl. 549—275 **1 Claim**

1. A compound of the formula



wherein R_3 is benzoyl, trimethoxybenzoyl, bruceantinyl malonyl, bruceantinyl succinoyl, bruceantinyl glutaroyl, and lower alkanoyl at 1 to 5 carbon atoms, brusatolyl malonyl, brusatolyl succinoyl, brusatolyl glutaroyl,

R_{15} is benzoyl, trimethoxybenzoyl, dihydrosenecioyl and lower alkanoyl 1 to 5 carbon atoms or senecioyl where R_3 is brusatolyl succinoyl or brusatolyl glutaroyl,

R_{11} and R_{12} are hydrogen or lower alkanoyl of 1 to 5 carbon atoms.

4,350,639

PREPARATION OF MALEIC ANHYDRIDE

Ernest C. Milberger, Solon; Noel J. Bremer, Stow, and Dennis E. Dria, Cleveland, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Division of Ser. No. 146,971, May 5, 1980, Pat. No. 4,333,853. This application Apr. 29, 1981, Ser. No. 258,712

Int. Cl.³ C07D *307/60*

U.S. Cl. 549—259 **16 Claims**

1. A process for the production of maleic anhydride by the oxidation of n-butane, n-butene, 1,3 butadiene or a mixture thereof with molecular oxygen or an oxygen-containing gas in the vapor phase at a reaction temperature of 250° C.–600° C. in the presence of a catalyst containing the mixed oxides of vanadium and phosphorus, wherein said catalyst is prepared by

(a) introducing a substantially pentavalent vanadium-containing compound and a pentavalent phosphorus-containing compound into an organic liquid medium capable of reducing the vanadium to a valence state less than +5;

(b) effecting the reduction of at least a portion of the vanadium to a valence state of +4 while in the presence of the phosphorus-containing compound and in the absence of a corrosive reducing agent by heating the vanadium-containing reducing medium of step (a);

(c) recovering the mixed vanadium phosphorus oxide-containing catalyst precursor;

(d) drying the catalyst precursor;

(e) calcining the catalyst precursor to form the active oxidation catalyst.

13. A process for the production of maleic anhydride by the oxidation of n-butane, n-butene, 1,3-butadiene or a mixture thereof with molecular oxygen or an oxygen-containing gas in the vapor phase at a reaction temperature of 250° C.–600° C. in the presence of a catalyst comprising the mixed oxides of vanadium and phosphorus, said catalyst characterized by an average valence state of vanadium from about +3.9 to about +4.6, a phosphorus to vanadium ratio of about 1:1 to about 1.2:1, wherein the macrostructure of the catalyst predominantly comprises generally spheroid particles consisting of stacks of integrally associated sheets of catalytic material.

4,350,640

PREPARATION OF SUBSTITUTED (CYCLO)ALKANECARBOXYLIC ACID α-CYANO-3-PHENOXY-BENZYL ESTERS

Rainer Fuchs; Fritz Maurer, both of Wuppertal; Uwe Priesnitz, Unna-Massen, and Hans-Jochem Riebel, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

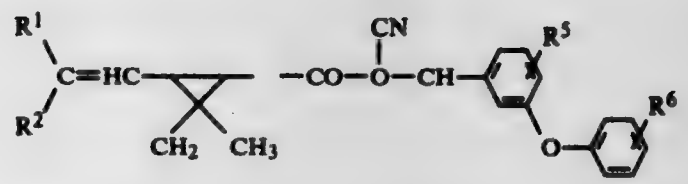
Filed Jul. 30, 1980, Ser. No. 173,545

Claims priority, application Fed. Rep. of Germany, Aug. 18, 1979, 2933496

Int. Cl.³ C07C *120/00*

U.S. Cl. 260—465 D **11 Claims**

1. A process for the preparation of a substituted (cyclo)alkanecarboxylic acid α-cyano-3-phenoxy-benzyl ester of the formula



in which

R^1 is hydrogen, methyl, fluorine, chlorine or bromine and

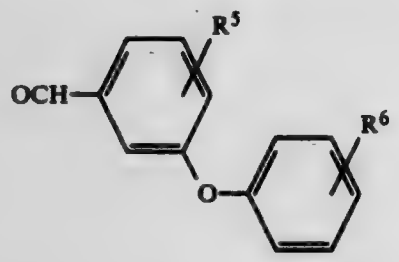
R^2 is methyl, fluorine, chlorine, bromine, C_1–C_2-fluoroalkyl or C_1–C_2-chlorofluoroalkyl, phenyl, phenyl substituted by halogen and/or by an optionally halogen-substituted C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-alkylthio or C_1–C_2-alkylenedioxy radical, or

R^1 and R^2 together are C_2–C_5-alkanediyl, comprising adding

an aqueous solution or suspension of at least an equimolar amount of a water-soluble cyanide to a mixture of an alkanecarboxylic acid chloride of the formula

R—CO—Cl

and a 3-phenoxy-benzaldehyde of the formula



in a hydrocarbon solvent which is virtually immiscible with water at a temperature between about 0° and 80° C.

4,350,641

4-TERT.-BUTOXYPHENYLGLYCINONITRILE AND THE PREPARATION OF D-(−)- AND L-(+)-4-HYDROXYPHENYLGLYCINE

Dieter Degner, Dannstadt-Schauernheim; Hans J. Pander, Roedersheim-Gronau, and Hardo Siegel, Speyer, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 31, 1980, Ser. No. 221,540

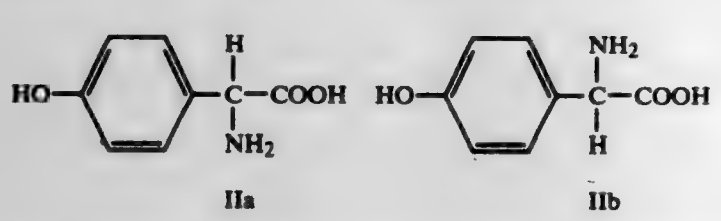
Claims priority, application Fed. Rep. of Germany, Jan. 25, 1980, 3002543

Int. Cl.³ C07C *121/80, 99/10, 101/30*

U.S. Cl. 260—465 E **3 Claims**

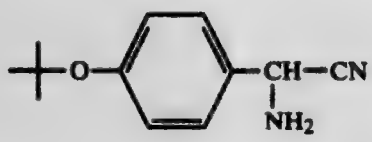
1. 4-tert.-Butoxyphenylglycinonitrile (I).

2. A process for the preparation of D-(−)-4-hydroxyphenylglycine (IIa) and L-(+)-4-hydroxyphenylglycine (IIb)



IIa IIb

which comprises: reacting DL-4-tert.-butoxyphenylglycinonitrile (I)



I

in alcoholic solution and in the presence of a carbonyl compound, with about the equimolar amount of L-(+)-tartaric acid or D-(−)-tartaric acid and the D-(−)-I-L-(+)-tartrate or L-(+)-I-D-(−)-tartrate thereby obtained in crystalline form is converted to IIa or IIb respectively in aqueous acid solution at 20°–110° C. by splitting off the L-(+)-tartaric acid or D-(−)-tartaric acid, hydrolyzing the nitrile group and hydrolytically splitting off the tert.-butyl group.

4,350,642

PROCESS FOR PREPARATION OF A PESTICIDAL PHENYLACETATE ENANTIOMER PAIR

Walter L. Petty, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Mar. 16, 1981, Ser. No. 244,372

Int. Cl.³ C07C *121/66, 121/75*

U.S. Cl. 260—465 D **23 Claims**

1. A method for the preparation of an enantiomer pair phenylacetate Y consisting of an S-α-cyano-3-phenoxybenzyl S-α-isopropylphenylacetate and the corresponding R-α-cyano-3-phenoxybenzyl R-α-isopropylphenylacetate, which process comprises precipitating crystals enriched in phenylacetate X in the presence of crystals of phenylacetate X, consisting of S-α-cyano-3-phenoxybenzyl R-α-isopropylphenylacetate and the corresponding R-α-cyano-3-phenoxybenzyl S-α-isopropylphenylacetate, from a solution of the corresponding racemic R,S-α-cyano-3-phenoxybenzyl R,S-α-isopropylphenylacetate, separating the phenylacetic X-enriched crystals from the mother liquor, redissolving the crystals in a solvent and treating the resulting solution with a base to epimerize the dissolved enantiomer pair phenylacetate X to the corresponding racemic mixture, recycling the racemic mixture back to the precipitation step and recovering mother liquor enriched in phenylacetate Y.

4,350,643

PROCESS FOR PRODUCING 2,3-DIHALOPROPIONITRILE

Shosuke Nagai, Yokohama; Toshio Kato, Kawasaki; Chojiro H. Iguchi; Nobuyuki Kawashima, both of Kamakura; Ryuichi Mita, Kawasaki; Akihiro Yamaguchi, Kamakura, and Takao Takano, Fujisawa, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Dec. 12, 1980, Ser. No. 215,818

Claims priority, application Japan, Dec. 18, 1979, 54-163586; Jan. 23, 1980, 55-5864

Int. Cl.³ C07C *120/00, 121/16*

U.S. Cl. 260—465.7 **11 Claims**

1. A process for producing a 2,3-dihalopropionitrile which comprises halogenating acrylonitrile with a halogenating agent in the presence of, as a catalyst, a carbonate of an alkali metal or an alkaline earth metal, or a hydrogen carbonate of an alkali metal or an alkaline earth metal, or a hydrogen phosphate of an alkali metal or an alkaline earth metal, the halogenating agent being chlorine or bromine, the halogenation being carried out in substantially the absence of irradiation by light, and the halogenation being carried out at −70° to 110° C.

4,350,644

ISOPROPYLBENZENE DERIVATIVES

John Stevens, and Stephen Newman, both of Harlow, England, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

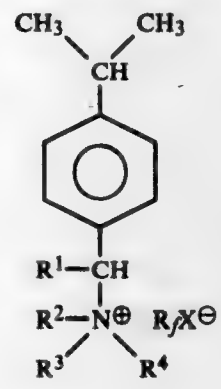
Filed May 14, 1979, Ser. No. 38,699

Claims priority, application United Kingdom, May 15, 1978, 19554/78

Int. Cl.³ C07C *143/02*

U.S. Cl. 260—501.15 **10 Claims**

1. An isopropylbenzene having the general formula:



in which:

R^1=CH_3, R^2=R^3=R^4=H and R_fX^- is $C_8F_{17}SO_3^-$,
R^1=R^4=CH_3, R^2=R^3=H and R_fX^- is $C_8F_{17}SO_3^-$,
R^1=R^3=R^4=CH_3, R^2=H and R_fX^- is $C_8F_{17}SO_3^-$,
R^1=R^2=R^3=R^4=CH_3 and R_fX^- is $C_8F_{17}SO_3^-$,
R^1=R^2=H, R^3=R^4=CH_3 and R_fX^- is $C_8F_{17}SO_3^-$,
R^1=R^2=R^3=H, R^4=CH_3 and R_fX^- is $C_8F_{17}SO_3^-$,

R^1=CH_3, R^2=C_2H_5, R^3=R^4=H and R_fX^- is $C_8F_{17}SO_3^-$,
R^1=C_3H_7, R^2=R^3=R^4=H and R_fX^- is $C_5F_{17}SO_3^-$, and
R^1=CH_3, R^2=R^3=R^4=H and R_fX^- is $C_5F_{11}SO_2^-$.

4,350,645

METHOD FOR PRODUCING A PHOSPHORIC MONOESTER

Tomihiro Kurosaki, Osaka, and Akio Manba, Wakayama, both of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Nov. 25, 1980, Ser. No. 210,352
Claims priority, application Japan, Dec. 17, 1979, 54-163791
Int. Cl.³ C07F *9/141*
U.S. Cl. 260—978 **8 Claims**

1. A method for producing a phosphoric monoester comprising reacting a mixture of (1) a mole amount, calculated as P_2O_5, of one or more phosphorylating agents (A) selected from the group consisting of phosphorus pentoxide, phosphoric acid and polyphosphoric acid, (2) 0.8 to 1.2 per mole of phosphorylating agent of water (B) including nH_2O when said phosphorylating agents are represented by $P_2O_5.nH_2O$, and (3) 0.4 to (2.8−B) mole of an organic hydroxy compound (C) per mole calculated as P_2O_5 of phosphorylating agent, and then adding an additional amount (D) of said organic hydroxy compound to the reaction mixture, the amount of D being derived from the equation:

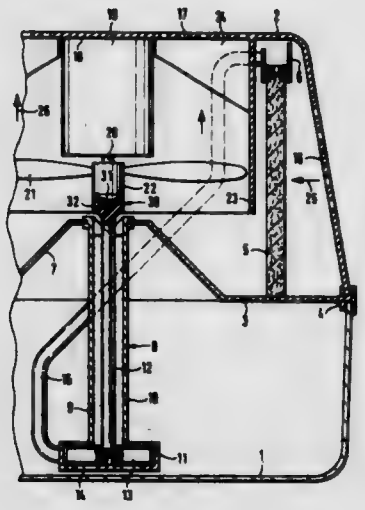
$$(B+C+D)/A=2.9 \text{ to } 3.1.$$

4,350,646

EVAPORATION AIR-HUMIDIFIER

Heinz G. Baus, Wartbodenstrasse 35, CH-3626 Hünibach-Thun, Fed. Rep. of Germany

Filed May 20, 1981, Ser. No. 265,654
Claims priority, application Fed. Rep. of Germany, May 24, 1980, 3020031
Int. Cl.³ B01F *3/04*
U.S. Cl. 261—29 **4 Claims**



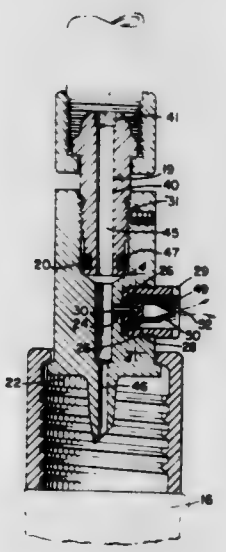
1. Evaporation air-humidifier having a water storage container with a support plate carrying an evaporation filter and a pump extending into the water storage container, a fan, a motor for driving the pump, a hood formed with air inlet and air outlet openings, the motor being fastened to the hood, and a clutch between the motor and the pump, the clutch being automatically engageable when the hood is disposed on the storage container and automatically disengageable when the hood is removed from the storage container, comprising a substantially hollow cylindrical flow channel wherein the motor and the fan are disposed, said flow channel extending from the underside of the hood at least to the fan and including stiffening ribs located at the underside of the hood and within said flow channel, said flow channel and said stiffening ribs being formed in one piece with said hood, and said flow channel having a lower edge spaced from the support plate so as to define an annular space therebetween through which air may flow.

4,350,647

PERMANENT ADAPTER FOR A MEDICAL HUMIDIFIER

Exequiel de la Cruz, Palatine, Ill., assignor to Respiratory Care, Inc., Arlington Heights, Ill.

Filed Jun. 19, 1981, Ser. No. 275,220
Int. Cl.³ B01F *3/04*; A61M *15/00*
U.S. Cl. 261—65 **6 Claims**



1. A permanent adapter for mounting on an engagable portion of a container over a pierceable seal thereon sealing therein a supply of purified or sterile water, and to be connected to a pressurized gas tube for introducing gas into the supply of water to moisten the gas, the adapter comprising:

a. two oppositely facing cups, an upper cup for connection to a gas conduit, a lower cup for connection to a container;

b. a body piece intermediate the oppositely facing cups;

c. an axial bore through the adapter;

d. a spike member for assembly within the adapter, the spike member having a tubular body defining a gas passage therein;

e. relief means in the tubular body of the spike means establishing communication between the gas passage and the outside atmosphere, the relief means being a cross T having a tubular body defining a second gas passage therethrough which is perpendicular to the gas passage of the spike means; said second gas passage extending directly outwardly from the gas passage of the spike means to the relief means;

f. audible relief valve means located in the relief means to effect audible pressure relief of the gas passage under above normal pressure conditions.

4,350,648

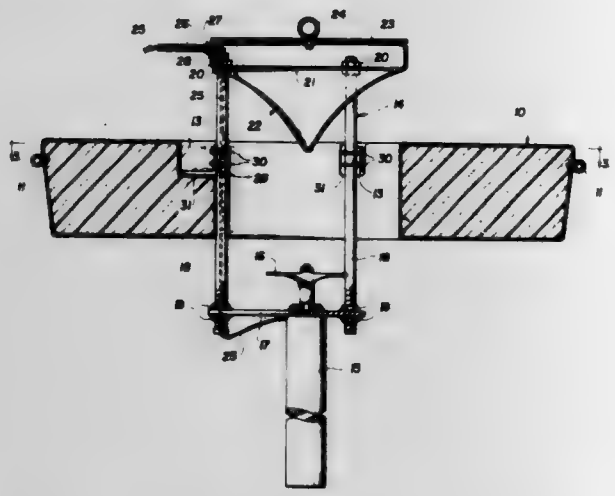
FLOATING AERATOR

William L. Watkins, III, Rte. 1, Box 223, Lexington, S.C. 29072; Thurston L. Chavis, Jr., Rte. 1, Box 395A, Chapin, S.C. 22036, and George L. Fuchsluger, 22 Tipton Cir., Irmo, S.C. 29063

Filed Jun. 30, 1981, Ser. No. 279,231
Int. Cl.³ B01F *3/04*
U.S. Cl. 261—120 **2 Claims**

1. A floating aerator comprising a float body having a central through opening and having a plurality of circumferentially spaced recesses in its top face, said recesses having substantially level bottom walls and spaced substantially vertical side walls rising from the bottom walls of the recesses, a motor and deflector cone assembly including circumferentially spaced substantially vertical suspension rods corresponding in

number to the recesses and being disposed in the through opening of the float body and projecting above and below the float body, a deflector cone fixedly secured to the tops of the suspension rods and disposed at least in part above the top of the float body, a motor and impeller unit secured to the bottom of the suspension rods in coaxial relationship with the deflector cone and being spaced a predetermined distance therefrom, a plurality of substantially L-shaped support feet for said assembly corresponding in number and circumferential spacing to said recesses and suspension rods and being received removably in the recesses and resting on the bottom walls of the recesses between the vertical side walls of the recesses, the vertical side walls preventing relative rotation of said assembly and float body around a vertical axis, and U-bolts embracing the interior sides of said suspension rods and having outer ends secured to vertical webs of the L-shaped support feet within said recesses, whereby said feet are clampingly locked to said suspension rods and able to bear the weight of said assembly and to transmit such weight to the float body through the bottom walls of the recesses.

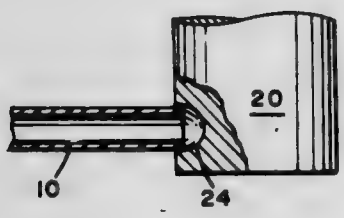


4,350,649

METHOD FOR CLOSING AN END OF A THERMOPLASTIC TUBE USING ULTRASONIC ENERGY

Arthur M. Summo, Londonderry, N.H., assignor to Branson Ultrasonics Corporation, Newtown, Conn.

Filed Dec. 5, 1980, Ser. No. 213,416
Int. Cl.³ B29C *17/00*
U.S. Cl. 264—23 **6 Claims**



1. A method for closing an open ended thermoplastic tube comprising:

providing a horn adapted to be rendered resonant along its longitudinal axis at a predetermined frequency of vibration, said horn having a cavity disposed substantially at an antinodal region of longitudinal motion of said horn and oriented substantially normal to the longitudinal motion of said horn;

urging the open tube end into said cavity in a direction normal to the direction of longitudinal motion of said horn;

rendering said horn resonant along its longitudinal axis at its predetermined frequency while concomitantly urging the open tube end into said cavity to cause a softening and flowing of the thermoplastic tube until the tube end is formed to the shape of said cavity;

ceasing rendering said horn resonant when the desired degree of closing has occurred, thereby causing solidification of the softened and flowed material, and

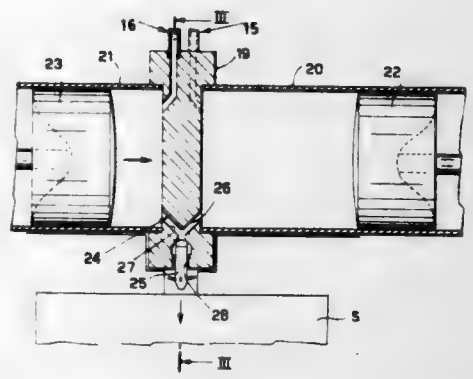
withdrawing the closed tube from said cavity.

4,350,650

METHOD FOR ADMIXING AT LEAST TWO LIQUIDS AND FEEDING THEM TO A SHAPING MOULD

Giuseppe Cereghini, Trento, Italy, assignor to Euro-Linea S.n.c. di Colombo & C., Trento, Italy

Continuation of Ser. No. 2,180, Jan. 9, 1979, abandoned. This application Dec. 24, 1980, Ser. No. 219,964
Int. Cl.³ B29F *1/03*
U.S. Cl. 264—39 **1 Claim**



1. A method for admixing at least two liquids and feeding them into a mould via first and second branched, converging throttling passageways formed in a nozzle block leading to a discharge passage and defining a first and second chamber which comprises the steps of:

feeding a first liquid through a first inlet passage into said first chamber;

circulating the first liquid under pressure between the first and second chambers through the throttling passageways to clean the chambers and passageways;

converging the first liquid through the first and second branched, converging passageways in the nozzle block for impressing on the liquid a laminar flow motion;

thereafter feeding a second liquid through a second inlet passage into said second chamber separated from the first chamber by said nozzle block;

circulating the first and second liquids back and forth under laminar flow from one to ten times in a closed loop between the first and second chambers;

converging the first and second liquids through the first and second branched, converging passageways in the nozzle block to thoroughly admix the first and second liquids and to generate a desirable sliding velocity gradient; and

feeding the admixed liquids through said discharge passage in the nozzle block directly into said mould, thus preventing incrustations of the liquids in the first and second chambers and nozzle block.

4,350,651

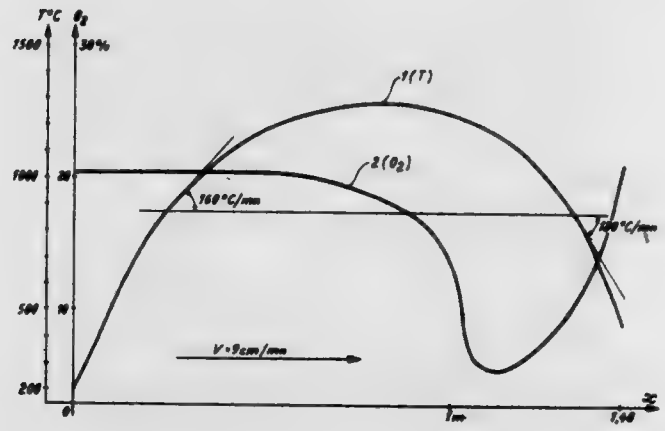
PROCESS FOR THE RAPID SINTERING OF CERAMIC COMPONENTS AND A KILN FOR CARRYING OUT SAID PROCESS

Antoinette Morell, and Antonio Hermosin, both of Paris, France, assignors to Thomson-CSF, Paris, France

Continuation of Ser. No. 968,818, Dec. 12, 1978, abandoned. This application Aug. 26, 1980, Ser. No. 181,668
Claims priority, application France, Dec. 13, 1977, 77 37469
Int. Cl.³ C04B *35/28, 35/36*
U.S. Cl. 264—65 **2 Claims**

1. A process for rapidly sintering ceramic components comprising oxides of iron, manganese and zinc mixed with a binder, wherein the unbaked components of the ceramic to be sintered,

in the shape of half-cores for telecommunication pots, have a diameter in the range of 9–14 mm and a height in the range of 2.5–4 mm, in the state of unbaked component is subjected to a heat treatment in a nitrogen atmosphere wherein said treatment has a total duration of 16 to 33 minutes, during which



treatment the curve of the temperature as a function of the time has a first part rising with a positive slope between 50° C./min. and 500° C./min., then a second part which rises then descends in passing through a maximum of 1300° C., and a third part descending with a negative slope of absolute value between 30° C./min. and 300° C./min.

4,350,652

MANUFACTURE OF ELECTRICALLY CONDUCTIVE POLYOLEFIN MOLDINGS, AND THEIR USE

Rainer Theysohn, Ludwigshafen; Klaus Boehlke, Hessheim; Erhard Seiler, Ludwigshafen, and Martin Welz, Bad Duerkheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 107,903, Dec. 28, 1979, abandoned.
This application Apr. 16, 1981, Ser. No. 254,937
Claims priority, application Fed. Rep. of Germany, Jan. 18, 1979, 2901758

Int. Cl.³ B29B *1/04*
U.S. Cl. 264—104 **6 Claims**

1. A process for the manufacture of electrically conductive polyolefin moldings, which comprise

(a) 100 parts by weight of a finely divided, partially crystalline polyolefin, which has a mean particle diameter of from 10 to 5,000 μm and an intrinsic viscosity [η], measured in decalin at 130° C., of from 0.5 to 15 and

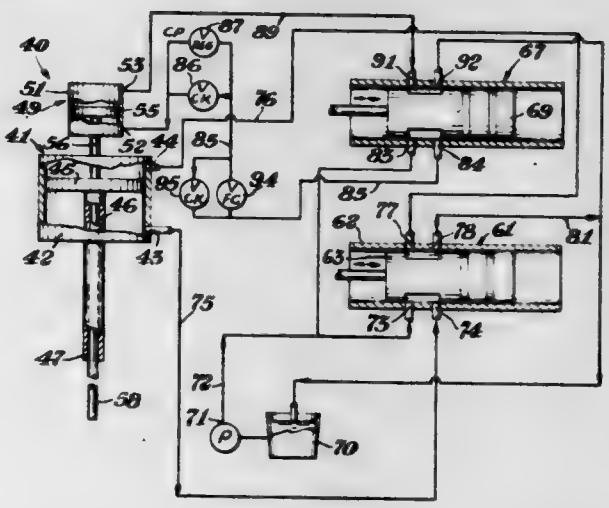
(b) from 0.01 to 30 parts by weight of an electrically conductive additive which has a maximum particle diameter of <200 μm and a mean particle diameter which is less than 1/25 of the mean particle diameter of the polyolefin (a), and has a melting point which is at least 50° C. higher than the melting point of the polyolefin (a), wherein, in a first process step (A) a finely divided molding material comprising the components (a) and (b), is produced by mixing the components (a) and (b), in a first stage (I), in a mixer, during which first stage (I), in a first sub-stage (I.1), the mixture is brought, at a mixing intensity of from 100 to 500 W/l of useful capacity, and within a period of from 2 to 50 minutes, from ambient temperature, which is below the crystallite melting point of the polyolefin (a) and is, in particular, room temperature, to the crystallite melting point of the polyolefin (a), and is immediately thereafter, in the course of a second sub-stage (I.2), subjected to a mixing intensity which is from 0.3 to 0.8 times as great as the mixing intensity in the first sub-stage (I.1) and is brought, within a period of from 0.2 to 20 minutes, from the crystallite melting point of the polyolefin (a) to a temperature which is from 3° to 40° C. above this, and immediately thereafter, in a second stage (II), is discharged from the mixer within a period of from 0.5 to 30 seconds to provide free flowing powder of polyolefin having bonded thereto said conductive additive and is either brought, within 120 seconds, to a temperature below the crystallite melting point of the polyolefin (a), or is directly processed further in a second process step (B), in which the finely divided powder blend molding material obtained from the first process step (A) is molded at above the crystallite melting point of the polyolefin (a), by a compression-molding process, under minimal shear, to give electrically conductive moldings having a specific conductivity of $>10^{-6}\Omega^{-1}cm^{-1}$, preferably of $>10^{-3}\Omega^{-1}cm^{-1}$.

4,350,653

METHOD FOR THE EXTRUSION OF TETRAFLUOROETHYLENE POLYMER TUBES

Edward L. Burnett, and Eugene V. Stack, both of Bay City, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jan. 23, 1981, Ser. No. 227,840
Int. Cl.³ B01J *2/06*
U.S. Cl. 264—127 **3 Claims**



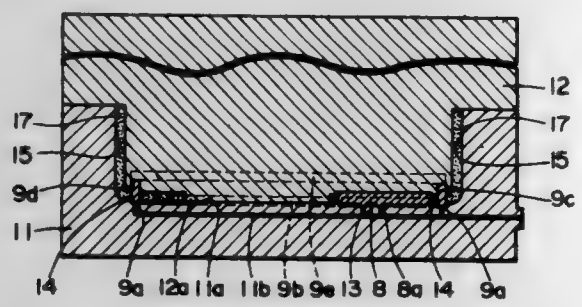
1. In a method for the fabrication of a tetrafluoroethylene polymer tube wherein a tetrafluoroethylene polymer resin is ram extruded in a ram extruder to generally fuse together particles of the tetrafluoroethylene polymer resin to provide a coherent tetrafluoroethylene polymer tube discharging the coherent tetrafluoroethylene polymer tube from the ram extruder, the ram extruder having a hollow cylindrical barrel, the barrel having a resin entrance end and a resin exit end, a hollow cylindrical ram reciprocally movable to a location within and external to the entrance end of the barrel, a generally cylindrical mandrel disposed within and passing through the hollow cylindrical ram, the mandrel extending into the barrel and terminating generally adjacent the discharge end of the barrel, the ram being in operative association with means to reciprocally position the hollow cylindrical ram generally along an axis of the direction of extrusion of the barrel and means to reciprocally position the mandrel along the axis of extrusion of the barrel,

the improvement which comprises means to continuously vary the force required to maintain the mandrel in a position generally remote from the discharge end of the barrel and to permit movement of the mandrel toward the discharge end of the barrel when a predetermined force of the ram provided by frictional engagement with the tetrafluoroethylene polymer resin has been reached.

4,350,654
METHOD OF PROVIDING DISPLAY ON MOLDED BASE

Akihiro Yoshida, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jan. 26, 1980, Ser. No. 228,661
Claims priority, application Japan, Feb. 6, 1980, 55-13245
Int. Cl.[3] B29D 3/00, 9/10
U.S. Cl. 264—129 7 Claims



1. A method of forming a base panel for a cabinet for an electrical device comprising the steps of providing a female mold with a female cavity formed with depressions for receiving one or more display elements of a first material with at least one of said display elements formed with a cross bar, placing said one or more display elements in said depressions, inserting a male mold into said female cavity of said female die, filling a space between said male and female dies with molten synthetic resin material embedding said one or more display elements, removing said base panel from said male and female molds, covering exposed surfaces of said base panel including said display elements with a coating of finish material, and mechanically removing said finish coating from exposed surfaces of said display elements.

4,350,655
PROCESS FOR PRODUCING HIGHLY POROUS THERMOPLASTIC FILMS

William H. Hoge, Flemington, N.J., assignor to Biax Fiberfilm, Neenah, Wis.

Continuation-in-part of Ser. No. 794,050, May 5, 1977, abandoned. This application Jun. 25, 1980, Ser. No. 162,684
Int. Cl.[3] B29D 7/24
U.S. Cl. 264—145 15 Claims

1. A process for forming a synthetic paper-like film which comprises:

(a) admixing a thermoplastic orientable polymer with a coated inorganic filler selected from the group consisting of calcium carbonate, clays and titanium oxide in an amount sufficient to constitute at least 50 weight percent of the resulting mixture, said coated inorganic filler being coated with a fatty acid ester of the formula:

$$(A-O-)_a-M-(O-\overset{O}{\overset{\|}{C}}-C_xH_{2x}CH_3)_b$$

wherein
A=alkyl radical of from 1 to 6 carbons,
M=Si or Ti,
x=12 to 24,
a=0 to 3,
b=1 to 4, and
a+b=4.

(b) extruding said mixture at elevated temperatures to form a film thereof;

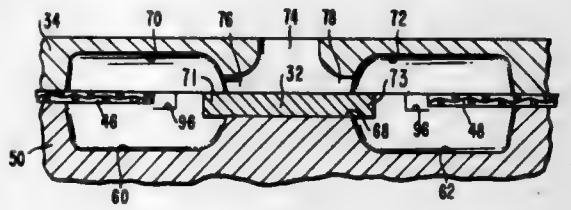
(c) cooling said film to a temperature below about 70° C.; and

(d) stretching said thus cooled film.

4,350,656
METHOD AND APPARATUS FOR CONTINUOUS MOLDING OF ARTICLES

George B. Moertel, Conneautville, Pa., assignor to Talon, Inc., Meadville, Pa.

Continuation-in-part of Ser. No. 154,650, May 30, 1980, abandoned. This application Jul. 23, 1981, Ser. No. 285,906
Int. Cl.[3] B29D 5/00
U.S. Cl. 264—166 32 Claims



1. A method of continuously molding articles, comprising the steps of

continuously moving an outer continuous peripheral portion of a first molding member in a first endless path defined by the outer peripheral portion;

continuously moving a second molding member, which is band-like, in a second endless path defined by the second molding member;

continuously moving a third molding member, which is band-like, in a third endless path defined by the third molding member,

said continuous moving steps including continuously interposing the third molding member between the second molding member and the outer peripheral portion of the first molding member as the molding members pass through a region of engagement;

continuously engaging portions of the second and third molding members and the outer continuous peripheral portion of the first molding member together as they pass through the region of engagement;

said engaging step including the continuous forming of molding cavities for the articles wherein respective portions of the second molding member, the third molding member, and the outer peripheral portion of the first molding member form respective wall portions of each cavity;

injecting hardenable material into the molding cavities;

hardening the hardenable material in the molding cavities to form the articles;

continuously disengaging the second and third molding members from each other and from the outer continuous peripheral portion of the first molding member during their movement away from the region of engagement; and

removing the articles during the disengaging step.

16. An apparatus for continuously molding articles, comprising

a first molding member having an outer continuous peripheral portion defining a first endless path in which the outer peripheral portion is movable;

a second molding member, which is band-like, defining a second endless path in which the second molding member is movable;

a third molding member, which is band-like, defining a third endless path in which the third molding member is movable;

means for holding the second and third molding members and the peripheral portion of the first molding member together in engagement through a region of engagement through which the second and third molding members and the peripheral portion of the first molding member are movable;

said third endless path having at least a portion which is interposed between the second and third endless paths within a region of engagement;

said second and third molding members and said peripheral

portion of the first molding member forming molding cavities for the articles in the region of engagement wherein respective portions of the first, second and third molding members form respective wall portions of each molding cavity;

means for injecting hardenable material into the molding cavities during a first portion of the region of engagement;

said region of engagement being sufficient to permit hardening of the hardenable material during the region of engagement; and

said holding means permitting separation of the second and third molding members from each other and from the peripheral portion of the first molding member during movement from the region of engagement to permit removal of the articles from the apparatus.

4,350,657

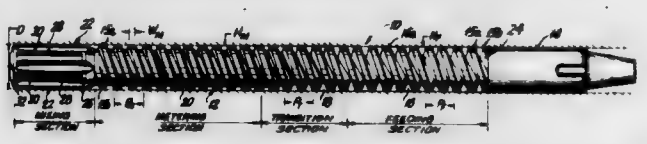
LOW-ENERGY EXTRUDER-PUMP SYSTEM

David N. Jones, Long Valley; Archibald L Burnett, Warren, and John C. Miller, Piscataway, all of N.J., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Nov. 4, 1980, Ser. No. 204,001

Int. Cl.³ B29B *1/04, 1/06*

U.S. Cl. 264—349 **8 Claims**



4. A method for the extrusion of synthetic thermoplastic materials comprising passing such materials continuously to and through a rotary extruder having a successive feeding, transition, metering and mixing section; the extruder screw forming the feeding, transition and metering sections, in cooperation with the cylindrical interior of the outer extruder housing, having equal outer diameter, thread width and lead, high thread pitch in the feeding, transition and metering sections, decreasing root depth of the threads of said transition section between relatively deep root depth in said feeding section to relatively shallow root depth in said metering section, said mixing section having a plurality of flutes formed by alternate groove and land means arranged to extend substantially longitudinally in the surface thereof and capable of substantially complete, final melting and mixing and complete homogenization of the material before discharge from the extruder; and wherein the extrudate from said extruder is successively passed through a breaker plate and an upstream adapter member, to the inlet of a rotary gear pump which, in turn, discharges, through a downstream adapter member, to a die.

5. A double-flighted melter screw for use in an extruder in combination with a gear pump to form a melting and pumping system, said melter screw successively having an inlet feeding section, a transition section, a metering section and a mixing section at the downstream end thereof, each of said feeding, transition and metering sections having an equal outer diameter, thread width and lead, high thread pitch in the feeding, transition and metering sections, decreasing root depth of the threads of said transition section between relatively deep root depth in said feeding section to relatively shallow root depth in said metering section; said mixing section having a plurality of groove means arranged to extend substantially longitudinally in the surface thereof, said groove means open at the upstream ends and closed at the downstream ends, hollow internal passage means positioned axially within said mixing section over a substantial portion of its terminal length, and a plurality of radial inlet conduits communicating between said internal passage means and the exterior of said mixing section, said inlet conduits being positioned between a pair of lands which are positioned, in turn, between said groove means.

4,350,658

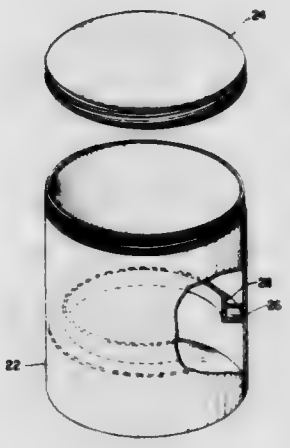
INTERIM PRESERVATION OF SURFACE COATING APPLICATORS

Floyd M. Knowlton, Forty Chirchill Ct., Fayetteville, N.Y. 13066

Filed Jun. 16, 1981, Ser. No. 274,242

Int. Cl.³ B01J *19/00*; B65D *81/24, 85/00*

U.S. Cl. 422—40 **12 Claims**



1. The method of preserving a coating applicator comprising

providing a sealable container including a volatile, liquid preservation agent in the interior thereof;

said container further including an interior space in gaseous communication with said liquid preservation agent;

supporting in said interior space a coating applicator having a substantial quantity of dryable liquid surface coating composition on the application surface, said coating applicator being supported out of liquid contact with said liquid preservation agent;

reversibly sealing said container;

and maintaining said applicator in said interior space and in said condition of having said dryable liquid coating composition on the application surface until further use of the coating applicator.

4,350,659

STABILIZATION OF SENSITIVE BIOLOGICALLY ACTIVE INTERMEDIATE METABOLITES SUCH AS FOLIC ACID DERIVATIVES

Louis J. Riceberg, Needham, Mass., assignor to Corning Glass Works, Corning, N.Y.

Filed Jul. 30, 1981, Ser. No. 288,463

Int. Cl.³ G01N *33/68, 1/00*

U.S. Cl. 422—61 **15 Claims**

1. A method for stabilizing an intermediate metabolite which is a folic acid derivative or analog, which method comprises complexing said intermediate metabolite in a liquid medium with a complementary binder or receptor therefor and then lyophilizing said complex to yield a dry powder containing said stable complex.

4,350,660

AMMONIA GAS SENSORS

Grenville A. Robinson, Hanwell; Peter N. Kember, Ealing, and Derek K. Burns, Wendover, all of England, assignors to EMI Limited, Hayes, England

Filed May 13, 1981, Ser. No. 263,912

Claims priority, application United Kingdom, Jun. 7, 1980, 8018738

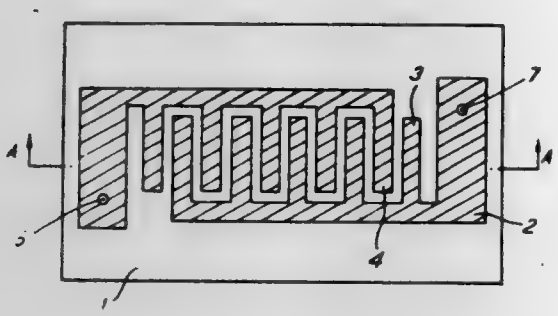
Int. Cl.³ G01N *27/04*

U.S. Cl. 422—90 **4 Claims**

1. A detector sensitive to gaseous ammonia consisting of an electrically insulating support member, an ammonia sensitive layer, consisting solely of copper phthalocyanine, mounted to the support member,

a plurality of electrodes mounted, in spaced apart relation-

ship, in electrical contact with the layer, the electrical resistance of the layer, as measured between the elec-



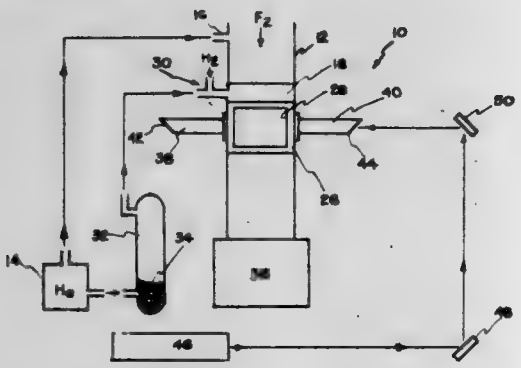
trodes, being indicative of ammonia gas sensed by the detector.

4,350,661

METHOD AND APPARATUS FOR ANALYZING SUPERSONIC FLOW FIELDS BY LASER INDUCED FLUORESCENCE

Steven J. Davis, and Nazareno L. Rapagnani, both of Albuquerque, N. Mex., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jan. 10, 1980, Ser. No. 110,889
Int. Cl.[3] G01N *21/63, 3/091, 31/00*
U.S. Cl. 422—98 4 Claims



1. An apparatus for visually analyzing mixing efficiencies in a gas laser comprising:

a supply section means for providing a flow of oxidizing gases;

mixing nozzle means connected to said supply section for receiving and directing the flowing oxidizing gases provided by said supply section;

fuel supply means connected to said mixing nozzle means for supplying fuel gas to said mixing nozzle means, whereby the fuel gas is directed out of said mixing nozzle means along with said oxidizing gas,

gas injection means connected to said fuel supply means for injecting a suitable vaporous substance into the fuel gas flow from said fuel supply means for mixing therewith,

optical cavity means connected to said mixing nozzle means for receiving the mixing gases exhausted by said mixing nozzle means,

window means mounted on said optical cavity means for visually observing the gas flow in said optical cavity means, and,

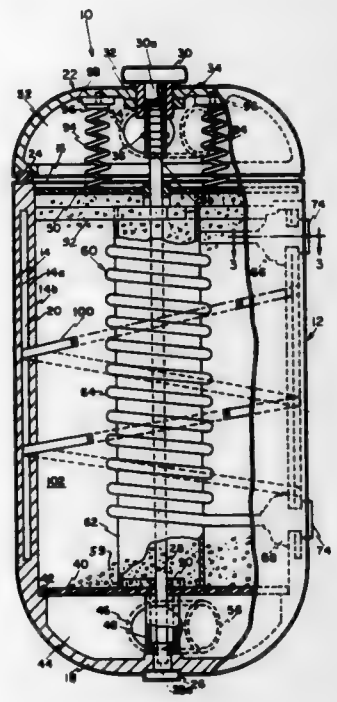
a pump laser means mounted adjacent said optical cavity means and in optical communication with the interior of said optical cavity means for irradiating a selected portion of the flowing gases to cause a visible fluorescence of the vaporous substance in that portion of the gas flow irradiated by said laser to provide a visible indication of the mixing occurring between said oxidizing gas and said fuel gas in the irradiated portion.

4,350,662

CARBON DIOXIDE ABSORBENT CANISTER WITH BREATHING GAS TEMPERATURE AND FLOW CONTROL

Ronald W. Dowgul, and Glendle W. Noble, both of Panama City Beach, Fla., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 22, 1981, Ser. No. 227,285
Int. Cl.[3] A62B *7/10;* A61M *15/00;* B01D *53/14*
U.S. Cl. 422—122 2 Claims



1. A scrubber device for removal of carbon dioxide from breathing gas in a closed or semi-closed breathing circuit circuit diving apparatus, said device comprising:

a canister having an elongated, hollow body portion comprising an inner wall defining a chamber for containing particulate, carbon dioxide absorbent material, an outer wall spaced from said inner wall so as to define a heating water jacket space around said inner wall;

first and second canister end closure means at opposite ends of said body portion;

gas inlet and outlet ports communicating respectively with opposite ends of said chamber;

a heat exchanger column disposed concentrically in said chamber and comprising a central tube, a helical water-tube heating coil for containing particulate, carbon dioxide absorbent material having its turns distributed along and fixed to a surface of said central tube and having water inlet and outlet connections for connection to water supply and drain means;

said water inlet and outlet connections being characterized by orifice means communicating with said water jacket space, whereby a portion of heated water entering said inlet connection is passed into said water jacket space and the remainder is passed through said heating coil, whereby the inner surface of said inner wall is heated and the inner and outer surfaces of said central tube are heated so as to heat gas flowing along those surfaces and through interstices of said absorbent material.

4,350,663

EXTRUSION APPARATUS FOR MAKING STABILIZED POLYESTER

Roy E. McAlister, 5285 Red Rock North, Phoenix, Ariz. 85018

Division of Ser. No. 32,633, Apr. 23, 1979, Pat. No. 4,243,779.
This application Dec. 11, 1980, Ser. No. 215,444
Int. Cl.[3] B29F *3/02*
U.S. Cl. 422—137 5 Claims

1. Apparatus for applying a reactant gas to an extrudable polymer comprising:

means for containing a supply of non-fused polymer to be extruded,

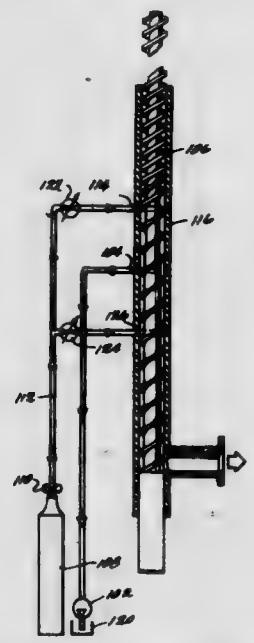
an extrusion die,

a heatable extruder barrel having a receiving end in flow communication with said polymer supply containing means and a discharge end in flow communication with said extrusion die,

means for feeding a supply of non-fused polymer from said containing means to the receiving end of said barrel,

extruder screw means rotatably mounted in said barrel for moving a supply of non-fused polymer from said receiving end through said barrel and to the discharge end thereof for passage therefrom through the extrusion die,

means for heating the extruder barrel and said non-fused



polymer to fusion temperature as the polymer is moved within the barrel,

reactant gas inlet means disposed annularly in flow communication with the interior periphery of said barrel at a position between the receiving and discharge ends thereof, said inlet means being located so as to feed said reactant gas to said barrel at a position upstream from the position in the barrel where the polymer reaches its fusion temperature,

means for feeding a reactant gas to said reactant gas inlet means, and

reactant by-product gas venting means disposed annularly in flow communication with the interior periphery of said barrel at a position downstream of said reactant gas inlet means.

4,350,664

CATALYTIC CONVERTER FOR TREATMENT OF THE EXHAUST GASES OF INTERNAL COMBUSTION ENGINES

Gerhard Gaysert, Esslingen am Neckar, Fed. Rep. of Germany, assignor to J. Eberspächer, Fed. Rep. of Germany

Continuation of Ser. No. 393,665, Aug. 31, 1973, abandoned. This application Oct. 28, 1975, Ser. No. 626,616

Claims priority, application Switzerland, Sep. 9, 1972, 12966/72

Int. Cl.³ F01N *3/15*; B01J *8/06*

U.S. Cl. 422—179 **3 Claims**

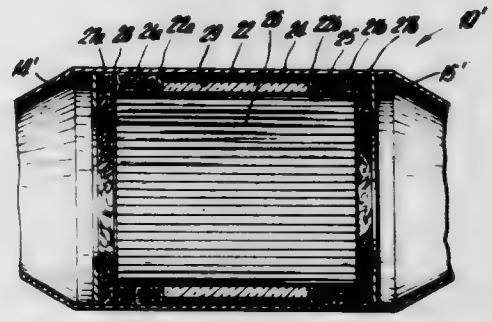
1. A catalytic converter for the treatment of exhaust gases of internal combustion engines comprising:

a housing defining an axial flow passage for the exhaust gases having an annular interior wall with an entrance end and an opposite discharge end;

a monolithic ceramic honeycomb forming a catalyst carrier disposed in said flow path having exterior walls spaced radially inwardly of said-interior wall of said housing;

a metal stop disc having an opening of a size smaller than an axial cross-sectional size of said catalyst carrier connected to said interior wall of said housing and extending radially thereof into said flow passage and axially spaced from said catalyst carrier at said housing entrance end and opposite discharge end;

at least one first high temperature resistant compacted metal wire mesh disposed in the space between said carrier exterior wall and said housing interior wall adjacent said flow passage entrance and opposite discharge ends;



a second high temperature resistant compacted metal wire mesh disposed in the axial spacing between said catalyst carrier and each metal stop disc adjacent said flow passage entrance and discharge ends; and

a radially extending gasket disposed between said at least one first wire mesh and said second wire mesh at said flow passage entrance end for blocking a passage of exhaust gases through said at least one first wire mesh.

4,350,665

CATALYTIC REACTOR

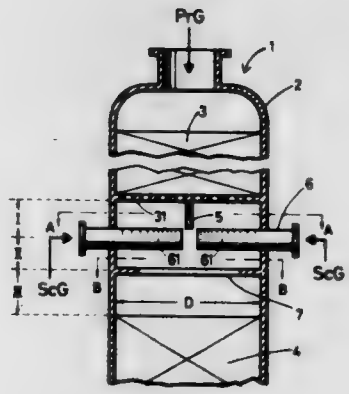
Noboru Hashimoto, Yokohama, and Mitsu Akatsu, Kawasaki, both of Japan, assignors to JGC Corporation, Tokyo, Japan

Filed Nov. 10, 1980, Ser. No. 205,158

Claims priority, application Japan, Nov. 8, 1979, 54-144835

Int. Cl.³ B01J *8/04, 12/00, 19/24*

U.S. Cl. 422—191 **9 Claims**



1. A catalytic reactor including

a vessel having an inner diameter and a top,

a plurality of catalyst beds supported in the vessel, each having an upper surface and a bottom,

a plurality of gratings fixed in the vessel, each supporting the bottom of one of the beds,

a first gas inlet at the top of the vessel for introducing a first gas downwardly through the beds,

a second gas inlet for introducing a second gas to a space between two of the beds to be mixed with the first gas, and

a gas mixing apparatus comprising:

at least one vertical separator plate vertically mounted in said space on the downstream face of the grating supporting the upstream bed,

a second gas-distributor tube connected to the second gas inlet, the gas-distributor tube being mounted in said space below the separator plate and having multiple nozzles therein, and

a gas-dispersing plate having multiple openings and being mounted in said space below the gas-distributor tube a certain distance above the upper surface of the downstream

bed, the height of a first mixing zone being formed between or corresponding to the space between the bottom of the upstream catalyst bed and the axis of the second gas-distributor tube being at least 0.18 times the inner diameter of the vessel, and the height of the vertical separator plate being at least ½ of the height of the first mixing zone whereby substantially uniform mixing of the first and second gases results across the entire diameter of the vessel.

4,350,666

APPARATUS FOR DISPENSING A CHEMICAL INTO A FLUID

James H. Klutts, 2076 W. 9th Ave., Apache Junction, Ariz. 85220

Filed Aug. 19, 1980, Ser. No. 179,507
Int. Cl.³ B01D *11/02*
U.S. Cl. 422—263 **11 Claims**



1. An apparatus for dispensing a soluble chemical into a solvent fluid, comprising:

pellet means comprising a solid unitary body of said soluble chemical and having substantially planar surfaces for substantially retaining said chemical as a unitary mass prior to dissolving;

substantially encapsulating non-separable case means in contact with all but a small portion of one of said planar surfaces of said solid unitary body for initially permitting a fluid restricted access to only said planar surface portion of said solid unitary body.

4,350,667

EXTRACTION OF COPPER FROM AN AMMONIACAL COPPER SOLUTION

Sven O. S. Andersson, Kallered; Harald D. Ottertun, Mölndal, and Hans Reinhardt, Västra Frölunda, all of Sweden, assignors to MX-Processor Reinhardt & Co AB, Sweden

Filed Feb. 20, 1981, Ser. No. 236,562
Claims priority, application Sweden, Mar. 18, 1980, 8002119
Int. Cl.³ C01G *3/00*
U.S. Cl. 423—24 **3 Claims**

1. A method for the extraction of copper from an ammoniacal copper solution, comprising contacting the ammoniacal copper solution, in a first extraction process, with an organic phase containing an extraction reagent consisting of a beta-diketone, and subsequently contacting the ammoniacal copper solution, in a second extraction process, with an organic phase containing an extraction reagent consisting of a hydroxy oxime, a hydroxy quinoline, or an alkylaryl sulphonamide quinoline.

3. A method for the extraction of copper from an ammoniacal copper solution, comprising contacting the ammoniacal copper solution with an organic phase containing an extraction reagent consisting of a beta-ketone and an extraction reagent consisting of a hydroxy oxime, a hydroxy quinoline, or an alkylaryl sulphonamido quinoline.

4,350,668

RECOVERY OF COBALT COMPONENT FROM 3-PENTENOIC ESTER SYNTHESIS

Nobuo Isogai; Takashi Okawa; Motoyuki Hosokawa; Toshiyasu Watanabe, and Natsuko Wakui, all of Niigata, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Mar. 20, 1981, Ser. No. 246,065
Claims priority, application Japan, Mar. 24, 1980, 55/37127
Int. Cl.³ C01G *51/00*; C07C *29/86, 67/38*
U.S. Cl. 423—139 **7 Claims**

1. A process for recovering cobalt component from the reaction mixture obtained by reacting butadiene, carbon monoxide and an alcohol in the presence of a solvent and a catalyst selected from cobalt carbonyl or cobalt carbonyl complex which comprises distilling the reaction mixture to remove organic volatile components comprised of the unreacted raw materials, a 3-pentenoic ester and the solvent, and contacting the residue with an organic solvent selected from the group consisting of water-insoluble ethers, aliphatic hydrocarbons, alicyclic hydrocarbons and aromatic hydrocarbons to dissolve and/or disperse the residue in the solvent, and contacting the resulting organic solution with an aqueous acid solution to extract any cobalt component from the organic solution with the aqueous acid solution, and separating the aqueous acid solution containing the cobalt component from the organic solution, and neutralizing the aqueous acid solution with an alkaline solution to precipitate a cobalt component.

7. In a process for producing a 3-pentenoic ester which comprises reacting butadiene, carbon monoxide and an alcohol in the presence of a solvent and a catalyst selected from cobalt carbonyl or cobalt carbonyl complex, the improvement which comprises distilling the reaction mixture to remove organic volatile components comprises of the 3-pentenoic ester and the unreacted raw materials and the solvent, and contacting the distillation residue with an organic solvent to dissolve and/or disperse the residue in the solvent, and contacting the resulting organic solution with an aqueous acid solution to extract any cobalt component from the organic solution with the aqueous acid solution, and separating the aqueous acid solution containing the cobalt component from the organic solution, and neutralizing the aqueous acid solution with an alkaline solution to precipitate a cobalt component.

4,350,669

PROCESS FOR CONTROLLING NITROGEN OXIDES IN EXHAUST GASES

Jun Izumi, and Nobuaki Murakami, both of Nagasaki, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 762,245, Jan. 25, 1977, abandoned. This application Apr. 27, 1978, Ser. No. 900,607
Claims priority, application Japan, Jan. 30, 1976, 51-8378
Int. Cl.³ B01D *53/34*
U.S. Cl. 423—235 **3 Claims**

1. In a process for the removal of NO from combustion exhaust gases wherein NO is oxidized to NO_2 and the NO_2 is removed from the resulting gas, the improvement which comprises mixing oxygen and a compound selected from the group of oxygen-containing hydrocarbon and precursors which, on being subject to oxidation, form said oxygen-containing compounds with the exhaust gas and heating the mixture to a temperature sufficient to effect oxidation of the NO therein, wherein the temperature is between 100° to 700° C., the amount of oxygen used is between 1 to 4% and the amount of oxygen-containing hydrocarbon is between 75 to 1500 ppm.

4,350,670

PROCESS FOR TREATING FLUE GAS

Shimpei Matsuda, Ibaraki; Akira Kato, Hitachi; Toshikatsu Mori, Hitachi; Teruo Kumagai, Hitachi; Yukio Hishinuma, Hitachi; Hidetoshi Akimoto, Ibaraki, and Fumito Nakajima, Hitachi, all of Japan, assignors to Hitachi, Ltd. and Babcock-Hitachi Kabushiki Kaisha, both of Tokyo, Japan

Filed Aug. 18, 1980, Ser. No. 179,238

Claims priority, application Japan, Aug. 20, 1979, 54-105032; Aug. 20, 1979, 54-105033

Int. Cl.³ B01J *8/00*; C01B *17/00*

U.S. Cl. 423—244 7 Claims

1. A process for treating flue gas containing sulfur oxides, comprising sulfur dioxide, and dust containing at least one metal oxide capable of forming a sulfate through reaction with sulfur trioxide, comprising:

moving the flue gas through a catalyst reactor containing a shaped sulfur dioxide-oxidizing catalyst comprising at least 70% by weight on the basis of the total amount of the catalyst of titanium dioxide, and between 0.01-2% by weight of platinum, at a temperature of 350° to 500° C. and a space velocity of 200 to 100,000 hr^{-1}, thereby converting 87 to 99% of the sulfur dioxide to sulfur trioxide;

allowing the sulfur trioxide to react with the metal oxides;

absorbing the sulfur trioxide into the dust as a sulfate; and

removing the dust.

4,350,671

METHOD OF PREPARING PHOSPHORIC ACID BY A WET PROCESS

Bernard Bigot, La Londe, and Jean-Francois Gielly, Rouen, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Oct. 22, 1980, Ser. No. 199,645

Claims priority, application France, Oct. 31, 1979, 79 26993

Int. Cl.³ C01B *25/16*

U.S. Cl. 423—320 9 Claims

1. A method of preparing phosphoric acid by a wet process from calcium phosphate and sulphuric acid in the presence of dilute phosphoric acid in a homogeneous reaction medium comprising the steps of:

(a) forming separately a primary attack slurry containing phosphoric acid and calcium sulphate products, said primary attack slurry being formed from a primary reaction medium containing reagents comprising:

(i) calcium phosphate to be treated;

(ii) sulphuric acid, said sulphuric acid being added in a quantity at least equal to the quantity necessary to convert the phosphate present to phosphoric acid but less than the quantity which results in blocking the phosphate conversion, and

(iii) a continuously-supplied recycle flux containing dilute phosphoric acid (P_2O_5);

(b) forming a final reaction medium to produce phosphoric acid and calcium sulphate products, said final reaction medium differing in composition from said primary attack slurry and comprising;

(i) from 3 to 50% of the calcium phosphate to be treated;

(ii) sulphuric acid in a quantity at most equal to the quantity needed to convert the phosphate to phosphoric acid;

(iii) a continuously-supplied recycled flux containing dilute phosphoric acid (P_2O_5), said recycled flux being introduced in a quantity less than the quantity necessary to convert calcium phosphate to monocalcium phosphate in solution; and

(iv) the separately formed primary attack slurry, said primary attack slurry having a P_2O_5 concentration 1 to 8% less than the P_2O_5 concentration in said final reaction medium; and

(c) separating the phosphoric acid product from the solid calcium sulfate product.

4,350,672

BINDERLESS CARBON OR GRAPHITE ARTICLES

George K. Layden, Jr., Glastonbury; Romeo G. Bourdeau, South Windsor, and Roscoe A. Pike, Simsbury, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Division of Ser. No. 661,211, Feb. 25, 1976, which is a continuation of Ser. No. 481,438, Jun. 20, 1974, abandoned. This application Dec. 23, 1977, Ser. No. 863,839

Int. Cl.³ C01B *31/00*

U.S. Cl. 423—445 18 Claims

1. A high strength, high modulus, binderless, single phase bulk carbon article having fibrillar microstructure and a Young's modulus of at least 2.5×10^7 psi (172 GPa) consisting essentially of a heat distortion flowed, unimpregnated, concomitant, self-bonded pyrolysis product of a plurality of substantially unidirectionally oriented polymer fibers.

11. A high strength, high modulus, binderless, single phase bulk carbon article having fibrillar microstructure and a modulus of rupture of at least 7000 psi (48.2 MPa) consisting essentially of a heat distortion flowed, unimpregnated, concomitant, self-bonded pyrolysis product of a plurality of two or three dimensionally oriented short-length polymer fibers.

4,350,673

METHOD OF STORING HYDROGEN

Toshio Yamashita, Katano; Takaharu Gamo, Fujiidera; Yoshio Moriwaki, Moriguchi, and Masataro Fukuda, Toyonaka, all of Japan, assignors to Matsushita Electric Industrial Company, Limited, Osaka, Japan

Division of Ser. No. 686,067, Jun. 10, 1976, abandoned. This application Feb. 2, 1979, Ser. No. 8,932

The portion of the term of this patent subsequent to Oct. 14, 1997, has been disclaimed.

Int. Cl.³ C01B *6/24*

U.S. Cl. 423—644 6 Claims

1. A method of storing hydrogen comprising contacting gaseous hydrogen with a solid binary titanium-manganese alloy, said alloy consisting of 35 to 50 percent by weight of titanium, the remainder being manganese.

4,350,674

SUBSTITUTED ACETANILIDOIMINODIACETIC ACID COMPOUNDS, DIAGNOSTIC AGENTS CONTAINING SUCH COMPOUNDS LABELED WITH TECHNETIUM-99M, AND METHODS FOR MAKING AND USING SUCH COMPOUNDS AND AGENTS

Michael Molter, Frankfurt am Main, and Gerhard Kloss, Kelkheim, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed May 16, 1980, Ser. No. 150,573

Claims priority, application Fed. Rep. of Germany, May 18, 1979, 2920174

Int. Cl.³ A61K *49/00, 43/00*

U.S. Cl. 424—1 22 Claims

13. A method for making a diagnostic agent for liver function studies, which method comprises preparing an aqueous solution of a tin (II) compound and member selected from the group consisting of (2,3,4,5,6-pentafluoroacetanilido-iminodiacetic acid (PFIDA) and (4-n-pentylacetanilido)-iminodiacetic acid (PIDA) in a molar ratio from 1:10 to 1:200, adjusting the pH of the aqueous solution to a value between 4 and 9, and adding a physiological saline solution containing from 0.1 l to 100 millicuries of technetium-99m.

4,350,675

CONTROLLED RELEASE GLASS

Cyril F. Drake, Harlow, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Aug. 21, 1980, Ser. No. 180,068

Claims priority, application United Kingdom, Aug. 30, 1979, 7930041

Int. Cl.³ A61K *49/00, 43/00;* A45C *13/10*

U.S. Cl. 424—1 20 Claims

1. A process of dispersing a predetermined quantity of at least one metal into an aqueous medium in man, animal or a microbiological entity comprising

contacting an aqueous medium in man, animal or a microbiological entity with a water soluble glass composition consisting essentially of from 50–75 mole percent of phosphorus pentoxide as the glass forming oxide; from 1–20 mole percent of an alkali metal oxide as the principal glass modifier, the remainder including from 1–25 mole percent of an oxide selected from the group consisting of an alkaline earth metal oxide, an oxide of a metal of Group IIIA of the Periodic Table, a transition metal oxide and combinations of the foregoing, the aqueous solution time of said glass composition being controlled by adjusting the mole proportions of said oxides between the indicated ranges.

12. The process of claim 1 in which inorganic ions are dispersed from the glass composition, the ions including a tagged ion such as a radioactive isotope.

4,350,676

OPHTHALMIC USE OF CARBOXYFLUORESCEIN

Alan M. Laties, 2403 Spruce St., Philadelphia, Pa. 19103, and Richard A. Stone, 1720 Sue Ellen Dr., Havertown, Pa. 19083

Filed May 21, 1981, Ser. No. 265,934

Int. Cl.³ A61K *49/00;* G01N *21/25, 21/64*

U.S. Cl. 424—7 3 Claims

1. The method of performing ophthalmic studies comprising applying to the eye an effective amount therefor of at least one active isomer of carboxyfluorescein.

4,350,677

REAGENT FOR OPTIMIZING AGGLUTINATION

Gustav K. von Schulthess; Richard J. Cohen, both of Brookline, and George B. Benedek, Belmont, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Division of Ser. No. 743,678, Nov. 22, 1976, Pat. No. 4,164,558. This application Feb. 12, 1979, Ser. No. 11,281

Int. Cl.³ G01N *33/50, 33/54*

U.S. Cl. 424—12 6 Claims

1. A composition useful to maximize sensitivity for determining the concentration of the agglutinator of the composition which comprises carrier particles coated with an antigen or antibody suspended in an aqueous medium having, to maximize particle charge, a pH as far from the isoelectric point of said antigen or antibody as possible without significantly reducing the binding capacity of the coating and the ionic strength of said aqueous medium being just below the ionic strength where nonspecific agglutination occurs so that coulomb effect and van Der Waals forces on and exerted by the particles are balanced.

4,350,678

PESTICIDE-CONTAINING PLASTIC COVERINGS FOR AGRICULTURAL CULTIVATIONS

Attilio Palvarini, Menaggio; Simone Lorusso, S. Giuliano Milanese, and Angelo Longoni, Milan, all of Italy, assignors to Montedison S.p.A., Milan, Italy

Continuation of Ser. No. 968,565, Dec. 11, 1978, Pat. No. 4,243,703, which is a continuation of Ser. No. 783,270, Mar. 31, 1977, abandoned. This application Aug. 5, 1980, Ser. No. 175,532

Claims priority, application Italy, Apr. 1, 1976, 21835 A/76

Int. Cl.³ A01G *13/02;* D21H *5/22;* D06N *7/06*

U.S. Cl. 424—27 3 Claims

1. Polyethylene films for covering and protecting agricultural cultivations characterized in that they hold on the surface facing the cultivation, by surface electrical charges, from 0.2 to 1050 g/m^2 of at least one pesticide selected from the group consisting of:

methylamide of 5(O,O-dimethyl-dithiophosphoryl)acetic acid,

O,O-diethylphthalimido-phosphonothioate,

O,O-diethyl-O-(2-isopropyl-6-methyl-pyrimidin-4-yl)phosphorothioate,

2,2-dichlorovinyl-dimethyl-phosphate, and

2,6-dinitro-N,N-dipropyl-4-trifluoromethyl-aniline, as such or in the form of formulates.

4,350,679

SOFT CAPSULE COATED WITH A FILM OF CARNAUBA WAX AND PROCESS FOR THE PREPARATION OF THE SAME

Yasuhiko Mizuno, Kagamihara, and Masanori Kayano, Honjo, both of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

Filed Apr. 13, 1981, Ser. No. 253,626

Claims priority, application Japan, May 8, 1980, 55-59981

Int. Cl.³ A61K *9/42, 9/48*

U.S. Cl. 424—38 4 Claims

1. A soft-gelatin capsule, comprising a core material containing a pharmaceutically active substance; a soft-gelatin shell encapsulating said core material, said soft-gelatin shell containing from about 5 to about 10% by weight of water; and a uniform coating film layer consisting of carnauba wax covering the external surface of said soft-gelatin shell, with the provisos that the amount of said carnauba wax is at least 0.002 parts by weight per 100 parts by weight of said shell when said shell contains about 5% by weight of water, the amount of said carnauba wax is at least 0.004 parts by weight per 100 parts by weight of said shell when said shell contains about 8% by weight of water, and the amount of said carnauba wax is at least 0.006 parts by weight per 100 parts by weight of said shell when said shell contains about 10% by weight of water.

4,350,680

DENTIFRICE

Kenneth Harvey, Wilmslow; Harry Hayes, Warrington, and Anthony J. Morton, Withington, all of England, assignors to Colgate-Palmolive Company, New York, N.Y.

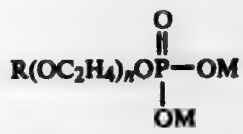
Filed Sep. 21, 1981, Ser. No. 304,438

Claims priority, application United Kingdom, Sep. 24, 1980, 8030772

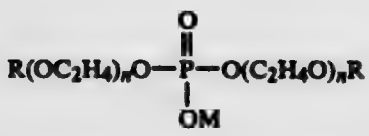
Int. Cl.³ A61K *7/16, 7/18*

U.S. Cl. 424—52 11 Claims

1. A dentifrice which reduces sloughing of oral mucosa in the oral cavity comprising 20–99% by weight of a polishing agent consisting essentially of an agent selected from the group consisting of insoluble sodium metaphosphate having a water-soluble impurity content of 2–4% by weight and a mixture of said insoluble sodium metaphosphate with up to half the total polishing agent of water-insoluble calcium or magnesium salt, and surface active agent which in combination with said insoluble sodium metaphosphate tends to cause oral sloughing, and additional anionic surface active agent in amount of at least 0.2% by weight of an anionic phosphate ester surface active agent comprising a mixture of monoester of the formula



and diester of the formula



wherein R is an alkyl group of 10–20 carbon atoms, n a number from 1–6 and M is hydrogen, alkali metal or ammonium.

4,350,681

STABILIZED BENZOYL PEROXIDE COMPOSITIONS

James E. Fulton, Jr., Key Biscayne, Fla., assignor to A.H.C. Pharmacal, Inc., Miami, Fla.

Continuation-in-part of Ser. No. 840,339, Oct. 7, 1977, Pat. No. 4,189,501. This application Dec. 17, 1979, Ser. No. 104,629
The portion of the term of this patent subsequent to Feb. 19, 1997, has been disclaimed.
Int. Cl.³ A61K *7/20, 31/075*
U.S. Cl. 424—53 13 Claims

1. A stabilized benzoyl peroxide composition, comprising from 1 to 30 weight % of benzoyl peroxide, from 5 to 50 volume % of glycerol and from 25 to 35 weight % of a mild abrasive in an aqueous medium, said composition being useful in toothpastes and as a body scrub.

4,350,682

CARTILAGE EXTRACTION PROCESSES AND PRODUCTS

Leslie L. Balassa, Blooming Grove, N.Y., assignor to Lescarden Ltd., Goshen, N.Y.

Continuation-in-part of Ser. No. 38,051, May 11, 1979, abandoned. This application Apr. 4, 1980, Ser. No. 137,547
Int. Cl.³ A61K *7/025, 35/12;* A23L *1/30*
U.S. Cl. 424—64 27 Claims

1. The method of producing a biologically active cartilage product which consists of:

admixing pieces of raw cartilage derived from a cartilage bearing animal, fish or reptile, with water in the ratio from about 1:100 to 100:1, cartilage to water,

heating said admixture in a confined space to a predetermined pressure between 10 and about 60 pounds per square inch at a temperature in the range between about 50° C. and 150° C.,

maintaining said admixture at said pressure and temperature for a period of time between about five minutes and five hours to form an aqueous cartilage extract containing suspended solid material, and

separating said suspended solid material from said aqueous cartilage extract to yield a separated solid material and a separated aqueous cartilage extract.

4,350,683

ANTIBODY PRODUCTION FROM HYBRID CELL LINE

Giovanni Galfre; Cesar Milstein, both of Cambridge, and Bruce W. Wright, Comberton, all of England, assignors to National Research Development Corporation, London, England

Filed Jan. 3, 1980, Ser. No. 109,391
Claims priority, application United Kingdom, Jan. 9, 1979, 7900775
Int. Cl.³ C12P *21/00;* C12N *15/00, 5/00*
U.S. Cl. 424—85 15 Claims

1. A substantially pure rat myeloma cell line having the C.N.C.M. designation I-078.

2. A hybrid cell line prepared from cells of the cell line C.N.C.M. I-078 through the fusion thereof with immunocyte cells from an animal sensitized to an immunogen in a nutrient medium for said cells, followed by isolation of the hybrid cell line from the resultant mixture of cells.

4,350,684

PREPARATION OF *SALMONELLA ABORTUS OVIS* STRAINS AND VACCINE COMPOSITIONS CONTAINING THEM

Pierre Pardon, Tours; Frederic Lantier, Monnaie; Jose Marly, Monnaie, and Gerard Bourgy, Monnaie, all of France, assignors to Institut National de la Recherche Agronomique, Paris, France

Filed Aug. 27, 1980, Ser. No. 181,809
Claims priority, application France, Aug. 29, 1979, 79 21685
Int. Cl.³ A61K *39/112*
U.S. Cl. 424—92 16 Claims

1. A vaccine composition which comprises a biologically acceptable carrier and an alive, reverse, mutant genetically stable strain of *Salmonella abortus ovis* which is non-virulent in vivo, and immunogenic with respect to wild *Salmonella abortus ovis* and *Salmonella typhimurium.*

11. The method of immunization of a small ruminant animal susceptible to infection by salmonellosis caused by *Salmonella abortus ovis, Salmonella typhimurium* or *Salmonella dublin,* which comprises administering to such ruminants a dose sufficient to cause an immune response, a vaccine which comprises a biologically acceptable carrier and an alive, reverse, mutuant genetically stable strain of *Salmonella abortus ovis* which is non-virulent in vivo, and immunogenic with respect to wild *Salmonella abortus ovis* and *Salmonella typhimurium* and conferring immunity to the animal against said infection.

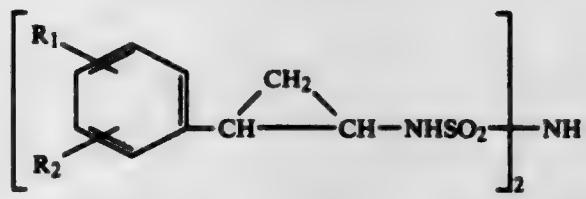
4,350,685

ANTIALLERGIC IMIDODISULFAMIDES

Faida E. Ali, Cherry Hill, and John G. Gleason, Delran, both of N.J., assignors to SmithKline Corporation, Philadelphia, Pa.

Filed Feb. 6, 1981, Ser. No. 232,073
Int. Cl.³ A61K *31/135;* C07C *143/72*
U.S. Cl. 424—45 14 Claims

1. A compound of the formula (II)



(II)

wherein R_1 and R_2, independently, are hydrogen, bromo, chloro, methyl, trifluoromethyl or methoxy; or an alkali metal salt of said compound.

7. A pharmaceutical composition for inhibiting the symptoms of asthma comprising a pharmaceutical carrier or diluent and an amount sufficient to produce said inhibition of a compound of claim 1.

4,350,686

ALLERGEN COMPOSITION AND METHOD FOR PREPARATION THEREOF

Edgar R. Relyveld, and Emile Henocq, both of Paris, France, assignors to Institut Pasteur, Paris, France

Filed Oct. 6, 1980, Ser. No. 194,577
Claims priority, application France, Oct. 8, 1979, 79 24948
Int. Cl.³ A61K *39/00, 39/36*
U.S. Cl. 424—88 8 Claims

1. A method for preparing a stable allergen aqueous composition which comprises the steps of:

(a) extracting allergen from a material selected from the group consisting of pollen, flour, house dust, kapok, wool and molds to form an aqueous solution and separating the solution from the solid material;

(b) precipitating the allergen from said aqueous solution and separating the precipitate;

(c) redissolving the allergen in a disodium phosphate aqueous solution;

(d) shortly after step (c), fractionating the solution with respect to the molecular masses of components dissolved therein and discarding the fractions which contain components having molecular masses lower than 10,000 and those have molecular masses higher than 55,000; and

(e) recovering the fractions of said solution which contain components, the molecular masses of which are in the range of 10,000 to 55,000.

4,350,687

PLATELET DERIVED CELL GROWTH FACTOR

Allan Lipton, Hershey, and Nancy Kepner, Port Royal, both of Pa., assignors to Research Corporation, New York, N.Y.

Filed Feb. 10, 1980, Ser. No. 234,448

Int. Cl.³ A61K *37/02*; C07G *7/00*; C12N *5/00*; C12P *21/00*

U.S. Cl. 424—177 **17 Claims**

1. A substantially purified glycoproteinaceous growth factor from platelets which has mitogenic activity toward transformed cells, a molecular weight of 3,000 to 5,000 daltons, a pI of 7.8–8.3, which is stable to treatment with 4 M guanidine hydrochloride, and which is heat labile when treated at 100° C. for 5 minutes, wherein said factor has mitogenic activity toward transformed cells selected from the group consisting of SV3T3, W8, and NQ-T-1 cell lines.

4,350,688

PROCEDURE FOR MANUFACTURING SAPONINE EXTRACT

Hans B. Schmittmann, Velbert, Fed. Rep. of Germany, assignor to Dr. H. Schmittmann GmbH, Velbert, Fed. Rep. of Germany

Filed Dec. 18, 1979, Ser. No. 104,792

Claims priority, application Fed. Rep. of Germany, Jan. 5, 1979, 2900304

Int. Cl.³ A61K *31/705*; C07J *17/00*

U.S. Cl. 424—182 **8 Claims**

1. A process for producing a pourable granular saponine extract product of low hygrosopicity comprising granulzing a saponine extract in a fluidized bed obtained by means of low pressure fluidization air, wherein a solution of said saponine extract is injected in said fluidized bed by means of high pressure vaporization air from directly below said fluidized bed and the temperature of said fluidized bed is from 40° C. to 80° C.

4,350,689

COMBINATIONS OF AGENTS WHICH GIVE ENHANCED ANTI-INFLAMMATORY ACTIVITY

Adolph E. Sloboda, New City, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 219,750, Dec. 23, 1980, Pat. No. 4,325,949. This application Nov. 19, 1981, Ser. No. 322,789

Int. Cl.³ A61K *31/625*

U.S. Cl. 424—232 **5 Claims**

1. An anti-inflammatory composition of matter comprising, in additive combination, a mixture of 2-(acetyloxy)benzoic acid and an agent of the formula:



wherein X is oxo or imino and ARYL is 2-thienyl or 3-thienyl in the proportion of the 2-(acetyloxy)benzoic acid to the agent of from 100:1 to 1:100 parts by weight.

4,350,690

STEROID COMPOSITION

Cyrus R. Kumana, Ancaster, Canada, assignor to Cressington Investments Ltd., Hong Kong, Hong Kong

Filed Oct. 27, 1980, Ser. No. 200,872

Int. Cl.³ A61K *31/56*

U.S. Cl. 424—243 **4 Claims**

1. The process of alleviating topical disorders of the rectum and distal colon of a patient, which comprises rectally administering to said patient a liquid aqueous suspension containing as active ingredient from about 0.1 mg to about 2 mg of a steroid drug of high topical activity and selected from the group consisting of beclomethasone dipropionate and betamethasone-17-valerate, the total volume of said suspension being from about 50 to about 150 mls.

4,350,691

CERTAIN AZABICYCLOCARBOXAMIDES AND COMPOSITIONS CONTAINING SAME

Michael S. Hadley, Sawbridgeworth, and Frank E. Blaney, London, both of England, assignors to Beecham Group Limited, England

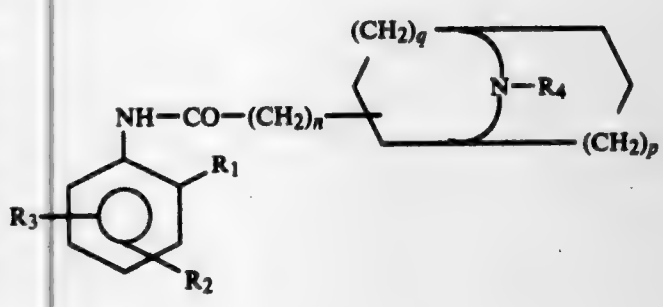
Filed Dec. 5, 1980, Ser. No. 213,237

Claims priority, application United Kingdom, Dec. 20, 1979, 7943985

Int. Cl.³ C07D *451/04, 451/14*; A61K *31/46, 31/33*

U.S. Cl. 424—244 **17 Claims**

1. A compound of the formula (III) or a pharmaceutically acceptable salt thereof:



(III)

wherein:

R_1 is a C_{1-6} alkoxy or C_{1-6} alkylthio group;

R_2 is hydrogen, halogen, CF_3, C_{1-7} alkanoyl; C_{1-7} alkanoylamino or amino, aminocarbonyl optionally substituted by one or two C_{1-6} alkoxy, C_{1-6} alkylthio, hydroxy or nitro; or R_1 and R_2 taken together are methylenedioxy or ethylenedioxy

R_3 is hydrogen, halogen, CF_3, C_{1-7} alkanoyl C_{1-7} alkanoylamino or amino, aminocarbonyl or aminosulphonyl optionally substituted by one or two C_{1-6} alkyl groups, C_{1-6} alkylthio, hydroxy or nitro;

R_4 is C_{1-7} alkyl or a group $-(CH_2)_sR_6$ where s is 0 to 2 and R_6 is a C_{3-8} cycloalkyl group, or a group $-(CH_2)_tR_7$ where t is 1 or 2 and R_7 is a phenyl group optionally substituted by one or two substituents selected from C_{1-6} alkyl, C_{1-4} alkoxy, trifluoromethyl and halogen, or a thienyl group; and

n, p and q are independently 0 to 2.

17. A pharmaceutical composition for the treatment or prophylaxis of emesis, which comprises an anti-emetic amount of a compound of the formula (III) as defined in claim 1, or a pharmaceutically acceptable salt thereof together with a pharmaceutically acceptable carrier.

4,350,692

3,7-DISUBSTITUTED-3-CEPHEM-4-CARBOXYLIC ACIDS

Takashi Kamiya, Suita, and Tsutomu Teraji, Toyonaka, both of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

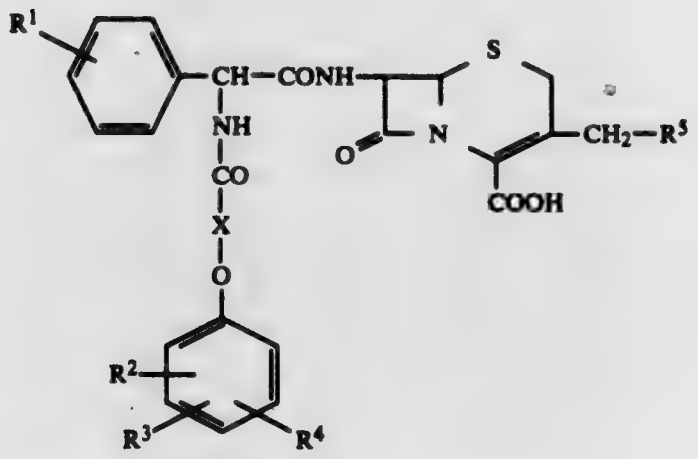
Continuation-in-part of Ser. No. 802,871, Jun. 2, 1977, abandoned, and a continuation-in-part of Ser. No. 802,957, Jun. 2, 1977, abandoned, and a continuation-in-part of Ser. No. 802,976, Jun. 2, 1977, abandoned. This application Jul. 6, 1978, Ser. No. 922,384

Claims priority, application Japan, Jun. 3, 1976, 51/65377; Aug. 19, 1976, 51/99315; Sep. 6, 1976, 51/106887

Int. Cl.³ A61K *31/545*; C07D *501/54*

U.S. Cl. 424—246 9 Claims

1. A compound of the formula:



(I)

wherein

R^1 is hydrogen or lower alkanesulfonamido,

R^2 is hydroxy, carbamoyl, N-methyl-N-phenylcarbamoyl, amino(lower)alkyl, lower alkoxycarbonylamino(lower)alkyl or benzoyl,

R^3 and R^4 are each, same or different, hydrogen or halogen,

R^5 is lower alkyl tetrazolylthio, and

X is (lower)alkylene,

or the non-toxic pharmaceutically acceptable salt thereof.

9. An antibacterial pharmaceutical composition comprising a therapeutically effective amount of the compound of claim 1 in association with a pharmaceutically acceptable, substantially non-toxic carrier or excipient.

4,350,693

3,7-DISUBSTITUTED-3-CEPHEM-4-CARBOXYLIC ACID COMPOUND AND PROCESSES FOR THE PREPARATION THEREOF

Takao Takaya, Sakai; Hisashi Takasugi, Kohamanishi; Toshiyuki Chiba, Nara, and Zenzaburo Tozuka, Toyonaka, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

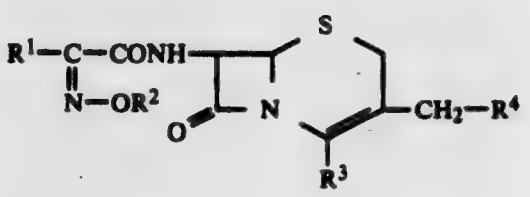
Division of Ser. No. 26,779, Apr. 3, 1979, Pat. No. 4,263,291, which is a continuation-in-part of Ser. No. 839,974, Oct. 6, 1978, abandoned. This application Nov. 12, 1980, Ser. No. 206,299

Claims priority, application United Kingdom, Oct. 8, 1976, 42057/76

Int. Cl.³ A61K *31/545*; C07D *501/56*

U.S. Cl. 424—246 6 Claims

1. 3,7-Disubstituted-3-cephem-4-carboxylic acid (syn isomer) compound of the formula:



wherein

R^1 is 1,2,3-thiadiazolyl;

R^2 is lower alkyl;

R^3 is carboxy or protected carboxy; and

R^4 is thiadiazolylthio; and

pharmaceutically acceptable salts thereof.

6. An antibacterial composition comprising an effective amount of a compound of claim 1 in association with a pharmaceutically acceptable, substantially non-toxic carrier or excipient.

4,350,694

CEPHALOSPORIN ANALOGUES AND ANTIMICROBIAL COMPOSITIONS

Misashi Hashimoto, Takarazuka; Keiji Hemmi, Kyoto; Matsuhiko Aratari, Osaka; Hidekazu Takeno, Nara, and Daijiro Hagiwara, Moriguchi, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

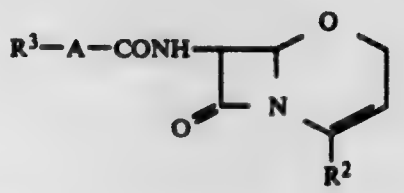
Division of Ser. No. 972,382, Dec. 22, 1978, Pat. No. 4,234,724. This application Mar. 27, 1980, Ser. No. 134,346

Claims priority, application United Kingdom, Dec. 23, 1977, 53735/77; Jun. 16, 1978, 27116/78

Int. Cl.³ A61K *31/535*; C07D *265/12*

U.S. Cl. 424—248.54 4 Claims

1. The syn isomer of a compound of the formula:



wherein R^3 is furyl;

A is lower alkoxyiminomethylene;

R^2 is carboxy; and pharmaceutically acceptable salts thereof.

4. A antimicrobial composition comprising an effective amount of a compound of claim 1 or pharmaceutically acceptable salt thereof in association with a pharmaceutically acceptable, substantially non-toxic carrier or excipient.

4,350,695

ANTIHISTAMINIC AND BRONCHOSPASMOLYTIC TRIAZOLOQUINAZOLINONES

Robert Westwood, Faringdon; Wilfred R. Tully, Cirencester, and Robert Murdoch, Highworth, all of Great Britain, assignors to Roussel Uclaf, Paris, France

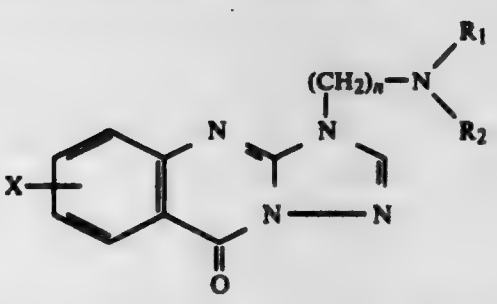
Filed Feb. 13, 1981, Ser. No. 234,544

Claims priority, application United Kingdom, Feb. 14, 1980, 8005089

Int. Cl.³ A61K *31/505*; C07D *487/04*

U.S. Cl. 424—251 23 Claims

1. A compound selected from the group consisting of triazoloquinazolinones of the formula



I

wherein X is selected from the group consisting of hydrogen, halogen, $—NO_2$, methyl, methoxy and $—CF_3$, n is an integer from 2 to 5, R_1 and R_2 are individually selected from the group consisting of hydrogen and alkyl and hydroxyalkyl of 1 to 5 carbon atoms and taken together with the nitrogen atom to which they are attached form a saturated heterocycle selected from the groups consisting of pyrrolidine, piperidino, morpho-

lino and piperazino optionally substituted with at least one member of the group consisting of hydroxy, alkoxy and hydroxyalkyl of 1 to 5 carbon atoms, cycloalkyl of 3 to 6 carbon atoms, acyl of an aliphatic carboxylic acid of 1 to 5 carbon atoms, alkoxycarbonyl of 2 to 6 carbon atoms and phenyl optionally substituted with a halogen or $—CF_3$ and their non-toxic, pharmaceutically acceptable acid addition salts.

10. An antihistaminic and bronchospasmolytic composition comprising an antihistaminically and bronchospasmolytically effective amount of at least one compound of claim 1 and an inert pharmaceutical carrier.

17. A method of treating asthma, bronchitis and allergic disorders in warm-blooded animals comprising administering to warm-blooded animals an amount of at least one compound of claim 1 sufficient to treat asthma, bronchitis and allergic disorders.

4,350,696

IMIDAZOLE DERIVATIVES, PROCESS FOR THEIR PREPARATION AND PHARMACEUTICAL COMPOSITIONS THEREOF

Peter E. Cross, Canterbury, and Roger P. Dickinson, Dover, both of England, assignors to Pfizer Inc., New York, N.Y.

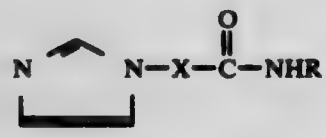
Filed Feb. 17, 1981, Ser. No. 235,330

Claims priority, application United Kingdom, Mar. 8, 1980, 8008084

Int. Cl.³ C07D *403/12, 417/12;* A61K *31/505, 31/415*

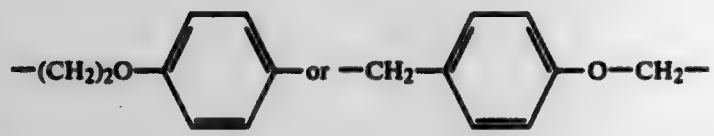
U.S. Cl. 424—251 10 Claims

1. A compound of the general formula:



(I)

wherein X is a group of the formula:



and R is a 2-thiazolyl, 2-pyridyl, 2-pyrimidinyl or 5-tetrazolyl group, and the pharmaceutically acceptable acid addition salts thereof.

9. A pharmaceutical composition for use as an inhibitor of thromboxane synthetase enzyme, comprising an effective amount of a compound of claim 1 or a pharmaceutically acceptable acid addition salt thereof together with a pharmaceutically acceptable diluent or carrier.

4,350,697

ANTIDEPRESSANT AND NEUROLEPTIC BENZOTHIOPYRANO [2,3-C]-PYRIDINES

Stephen Clements-Jewery, Near Swindon; Robert Westwood, Faringdon, and Peter W. Hairsine, Swindon, all of England, assignors to Roussel Uclaf, Paris, France

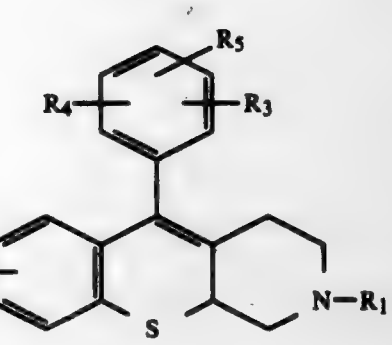
Filed Mar. 4, 1981, Ser. No. 240,392

Claims priority, application United Kingdom, Mar. 6, 1980, 8007660

Int. Cl.³ A61K *31/445;* C07D *495/04*

U.S. Cl. 424—256 21 Claims

1. A compound selected from the group consisting of compounds of the formula



wherein R_1 is selected from the group consisting of hydrogen and alkyl of 1 to 5 carbon atoms, R_2 is selected from the group consisting of hydrogen, halogen and methyl, R_3, R_4 and R_5 are individually selected from the group consisting of hydrogen, halogen, alkyl of 1 to 5 carbon atoms, alkoxy of 1 to 3 carbon atoms, $—NH_2$ and mono- and dialkylamino of 1 to 3 alkyl carbon atoms and their non-toxic, pharmaceutically acceptable acid addition salts.

15. The method of inducing antidepressant and neuroleptic acitivity in warm-blooded animals comprising administering to warm-blooded animals an antidepressantly and neuroleptically effective amount of at least one compound of claim 1.

4,350,698

ANTIALLERGIC IMIDOSULFAMIDES

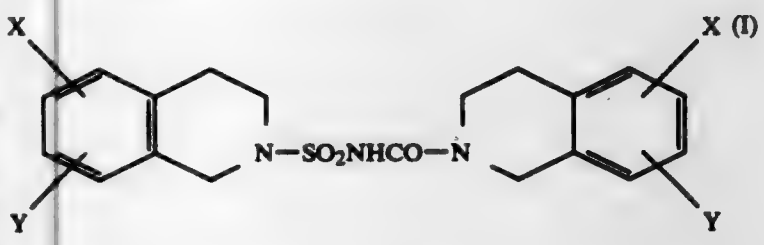
John G. Gleason, Delran, N.J., and David T. Hill, North Wales, Pa., assignors to SmithKline Corporation, Philadelphia, Pa.

Filed Sep. 25, 1981, Ser. No. 305,433

Int. Cl.³ A61K *31/47;* C07D *401/12*

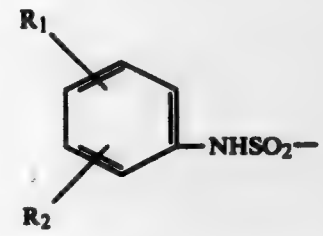
U.S. Cl. 424—258 13 Claims

1. A compound of the formula (I)



(I)

wherein X is hydrogen, bromo, chloro, or methyl; and Y is bromo, chloro, methyl or 7-benzeneaminosulfonyl radical of the formula



in which R_1 is hydrogen, bromo, chloro or methyl and R_2 is bromo or chloro; or an alkali metal salt of said compound.

9. A pharmaceutical composition for inhibiting the symptoms of asthma comprising a pharmaceutical carrier or diluent and an amount sufficient to produce said inhibition of a compound of claim 1.

4,350,699

PYRIDYLALKOXYSULFINYL DERIVATIVES OF CARBAMATE ESTERS

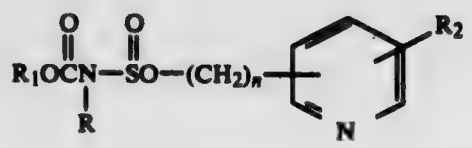
Mohamed A. H. Fahmy, Princeton, N.J.; Tetsuo R. Fukuto, Riverside, Calif., and Terunomi Jojima, Sagamihara, Japan, assignors to The Regents of the University of California, Los Angeles, Calif.

Filed Mar. 30, 1981, Ser. No. 248,820

Int. Cl.[3] C07D *213/54, 213/55, 213/56;* A01N *43/40*

U.S. Cl. 424—263 34 Claims

1. A carbamate ester having pesticidal activity selected from the group represented by the formula:



wherein R is methyl; R_1 is selected from the class consisting of a hydrocarbyl group containing from 1 to 20 carbon atoms, and a group containing the >C=N— radical; R_2 is selected from the class consisting of hydrogen; a lower alkyl group containing from 1 to 4 carbon atoms, and a halogen atom, and n is an integer of from 1 to 5.

4,350,700

PHARMACEUTICAL COMPOSITION CONTAINING 1,3,5-SUBSTITUTED BIURET COMPOUND

Hajime Fujimura, Kyoto; Yasuzo Hiramatsu, Otsu; Takahiro Yabuuchi, Takarazuka; Masakatu Hisaki, Hikone; Katsuo Takikawa, Naruto; Takaji Hosna, Tokushima; Hidekazu Miyake, Tokushima, and Makoto Kajitani, Tokushima, all of Japan, assignors to Taiho Pharmaceutical Company, Limited, Tokyo, Japan

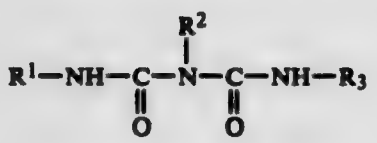
Division of Ser. No. 134,411, Mar. 27, 1980. This application Apr. 27, 1981, Ser. No. 257,583

Claims priority, application Japan, Mar. 31, 1979, 54/38791; Mar. 31, 1979, 54/38793

Int. Cl.[3] A61K *31/44*

U.S. Cl. 424—263 7 Claims

1. A method of treating a patient requiring analgesia, said method comprising administering to said patient an analgesic amount of a compound of the formula (1):



(1)

wherein R^1 is a hydrogen atom, a lower alkyl group, a substituted lower alkyl group having chlorine atom(s), cyano group(s), dimethylamino group(s), hydroxy group(s), methoxy group(s) or carboxy group(s) as the substituents, a lower alkenyl group, a hydroxy group, a methoxy group, an acetyl group or a phenyl group; R^2 is a hydrogen atom, a lower alkyl group or a phenyl group; R^3 is a pyridyl group, a substituted pyridyl group having methyl group(s) as the substituent(s) or a pyridyl methyl group.

4,350,701

1-(TRIHALOMETHYL-SULFENYL)-4-ARYL-1,2,4-TRIAZOLIN-5-ONES, AND PROCESS FOR CONTROLLING FUNGI

Costin Rentzea, Heidelberg; Bernd Zeeh, Ludwigshafen; Ernst-Heinrich Pommer, Limburgerhof, and Celia J. Mappes, Westheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

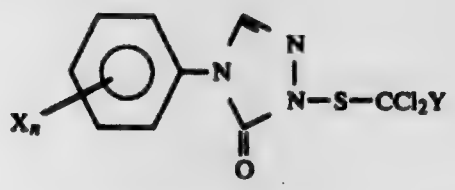
Filed Apr. 6, 1981, Ser. No. 251,125

Claims priority, application Fed. Rep. of Germany, Apr. 19, 1980, 3015090

Int. Cl.[3] A01N *43/64, 47/04;* C07D *249/12*

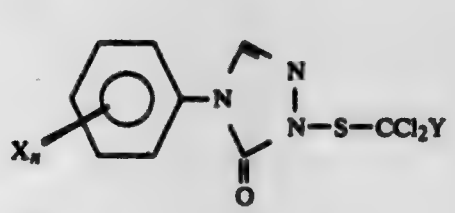
U.S. Cl. 424—269 3 Claims

1. A 1-(trihalomethyl-sulfenyl)-4-aryl-1,2,4-triazolin-5-one of the general formula



where X is hydrogen, halogen, alkyl or alkoxy of 1 to 5 carbon atoms which are unsubstituted or substituted by fluorine, chlorine or bromine, alkenyl of 2 to 4 carbon atoms, cyano or nitro, or phenyl or phenoxy which are unsubstituted or substituted by fluorine, chlorine, bromine or alkyl of 1 to 4 carbon atoms, n is an integer from 1 to 5 and Y is fluorine or chlorine.

2. A method for controlling fungi, wherein the fungus or the object to be protected from fungal attack is treated with a 1-(trihalomethyl-sulfenyl)-4-aryl-1,2,4-triazolin-5-one of the general formula



where X is hydrogen, halogen, alkyl or alkoxy of 1 to 5 carbon atoms which are unsubstituted or substituted by fluorine, chlorine or bromine, alkenyl of 2 to 4 carbon atoms, cyano or nitro, or phenyl or phenoxy which are unsubstituted or substituted by fluorine, chlorine, bromine or alkyl of 1 to 4 carbon atoms, n is an integer from 1 to 5 and Y is fluorine or chlorine.

4,350,702

METHOD OF INHIBITING PLATELET AGGREGATION

Keith H. Baggaley, Redhill, England, assignor to Beecham Group Limited, England

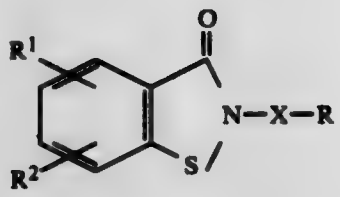
Continuation of Ser. No. 850,788, Nov. 11, 1977, abandoned, which is a division of Ser. No. 738,000, Nov. 2, 1976, Pat. No. 4,113,728. This application Oct. 31, 1980, Ser. No. 202,711

Claims priority, application United Kingdom, Nov. 18, 1975, 47373/75

Int. Cl.[3] A61K *31/425*

U.S. Cl. 424—270 19 Claims

1. A method of inhibiting platelet aggregation in humans and animals, of inhibiting thromboses in humans and animals and for treating arterial thromboses in humans and animals which comprises administering to a human or animal in need thereof, in an amount sufficient to inhibit platelet aggregation, an amount sufficient to inhibit the formation of thrombs or an amount sufficient to dissolve thromboses, a compound of the formula



or a pharmaceutically acceptable non-toxic acid addition salt thereof when there is a basic nitrogen atom in the molecule, wherein R^1 and R^2 are the same or different and each is hydrogen, lower alkyl, lower alkoxy, halo-lower alkyl, nitro, amino, acetylamino or halogen; or R^1 together with R^2 when attached to adjacent carbon atoms form an alkylene moiety of 3 to 6 carbon atoms or an oxyalkyleneoxy moiety of 1 to 3 carbon atoms; X is a bond or a straight or branched chain alkylene of 1 to 12 carbon atoms; and R is pyrrolidinyl, unsubstituted or substituted by one lower alkyl, carboxy or alkoxycarbonyl of 1 to 6 carbon atoms in the alkoxyl moiety, or a group of the formula—NH.R^3 wherein R^3 is pyrrolidinyl, unsubstituted by one lower alkyl, carboxy or alkoxycarbonyl of 1 to 6 carbon atoms in the alkoxyl moiety, provided that R^1 and R^2 are not hydrogen or lower alkyl when X is alkylene of two carbon atoms and R is unsubstituted pyrrolidinyl.

4,350,703

β-LACTAM ANTIBACTERIAL AGENTS

Kay H. Dickinson, Reading; Terence C. Smale, Epsom Downs, and Robert Southgate, Warnham, all of England, assignors to Beecham Group Limited, England

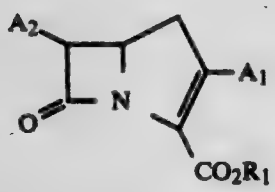
Division of Ser. No. 82,427, Oct. 5, 1979, abandoned, which is a division of Ser. No. 887,844, Mar. 17, 1978, abandoned. This application Jan. 5, 1981, Ser. No. 222,282

Claims priority, application United Kingdom, Mar. 19, 1977, 11747/77

Int. Cl.³ C07D *487/04*; A61K *37/40*

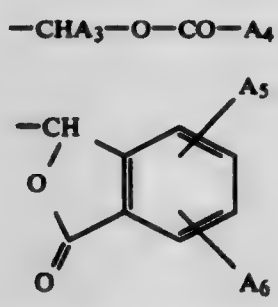
U.S. Cl. 424—274 **20 Claims**

1. A compound of the formula (II):



(II)

wherein R_1 is alkyl of up to 12 carbon atoms, alkenyl of up to 8 carbon atoms, phenyl, benzyl or said alkyl, alkenyl, phenyl or benzyl mono-substituted by lower alkoxyl, lower alkanoyloxyl, halo or nitro; or R_1 is a group of the sub-formula (a) or (b):

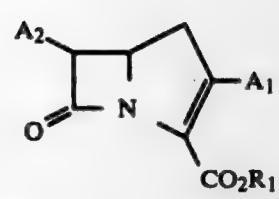


(a)

(b)

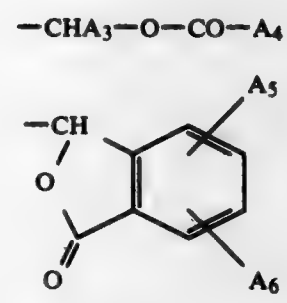
wherein A_3 is hydrogen or methyl; A_4 is lower alkyl, lower alkoxyl, phenyl, phenoxyl, benzyl or benzyloxyl; A_5 is hydrogen, methyl or methoxyl; and A_6 is hydrogen, methyl or methoxyl; A_1 is hydrogen; and A_2 is a group $CR_2R_3R_4$ wherein R_2 is hydrogen or hydroxyl; and R_4 is joined to R_3 to form part of a 5- to 7- carbon atom carbocyclic ring.

11. A pharmaceutical composition useful for treating bacterial infections in humans and animals which comprises an antibacterially effective amount of a compound of the formula (II):



(II)

wherein R_1 is alkyl of up to 12 carbon atoms, alkenyl of up to 8 carbon atoms, phenyl, benzyl or said alkyl, alkenyl, phenyl or benzyl mono-substituted by lower alkoxyl, lower alkanoyloxyl, halo or nitro; or R_1 is a group of the sub-formula (a) or (b):



(a)

(b)

wherein A_3 is hydrogen or methyl; A_4 is lower alkyl, lower alkoxyl, phenyl, phenoxyl, benzyl or benzyloxyl; A_5 is hydrogen, methyl or methoxyl; and A_6 is hydrogen, methyl or methoxyl; A_1 is hydrogen; and A_2 is a group $CR_2R_3R_4$ wherein R_2 is hydrogen or hydroxyl; and R_4 is joined to R_3 to form part of a 5- to 7-carbon atom carbocyclic ring, in combination with a pharmaceutically acceptable carrier.

4,350,704

SUBSTITUTED ACYL DERIVATIVES OF OCTAHYDRO-1H-INDOLE-2-CARBOXYLIC ACIDS

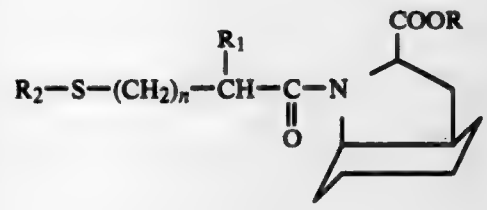
Milton L. Hoefle, and George Bobowski, both of Ann Arbor, Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 194,307, Oct. 6, 1980, abandoned, which is a continuation-in-part of Ser. No. 137,106, Apr. 2, 1980, abandoned. This application Feb. 17, 1981, Ser. No. 233,940

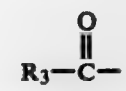
Int. Cl.³ A61K *31/405*; C07D *209/34*

U.S. Cl. 424—274 **12 Claims**

1. A octahydro-1-(ω-mercaptoalkanoyl)-1H-indole-2-carboxylic acid compound having the formula



wherein R is hydrogen or lower alkyl; R_1 is hydrogen, lower alkyl, or benzyl; R_2 is hydrogen or



where R_3 is lower alkyl, phenyl, substituted phenyl having 1 or 2 substituents selected from the group consisting of fluorine, chlorine, bromine, lower alkyl or alkoxy; and n is 0 or 1; wherein lower alkyl and lower alkoxy include straight or branched groups having 1 to 4 carbon atoms and pharmaceutically acceptable salts of the compounds when R is hydrogen.

12. A method of treating hypertension by administering an

effective amount of a substituted octahydro-1-(3-mercaptoalkanoyl)-1-indole-2-carboxylic acid compound according to claim 1 or a pharmaceutically acceptable salt thereof.

4,350,705

CYCLOHEXANE DERIVATIVES, PROCESS FOR PREPARATION THEREOF AND MEDICINES CONTAINING THESE CYCLOHEXANE DERIVATIVES

Sachiyuki Hamano; Shinichi Kitamura, both of Tokyo; Toshiji Igarashi, Tokorozawa, and Yoshikage Nakajima, Tokyo, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

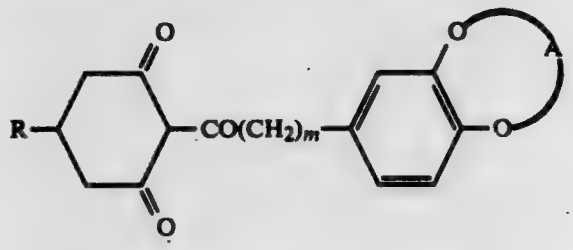
Filed Mar. 25, 1980, Ser. No. 133,694

Claims priority, application Japan, Mar. 31, 1979, 54-37696; Sep. 10, 1979, 54-115240

Int. Cl.³ A61K *31/335*; C07D *317/44*

U.S. Cl. 424—278 **21 Claims**

1. A compound having the formula:



wherein R is hydrogen, unsubstituted phenyl, furyl or substituted phenyl, in which said substituted phenyl is substituted with from 1 to 5 substituents which are the same or different and are selected from the group consisting of alkyl having 1 to 6 carbon atoms, alkoxy having 1 to 6 carbon atoms, hydroxy, halogen, halogenated alkyl having 1 to 6 carbon atoms, amino, mono-or di-alkyl amino in which the alkyl has 1 to 6 carbon atoms and $-O'(CH_2)_a-O-$ bonded to any two adjacent carbon atoms of the phenyl nucleus and in which "a" is 1 or 2, m is zero or an integer of from 1 to 4, and A is $-(CH_2)_n-$ in which n is an integer of 1 or 2,



in which R_1 and R_2, which can be the same or different, are lower alkyl or phenyl, or >C=O, and pharmacologically acceptable salts thereof.

20. A method of treating a subject suffering from hypertension which comprises administering to that subject an antihypertensive effective amount of a compound for the treatment of hypertension as defined in claim 1.

21. A pharmaceutical composition for the treatment of hypertension comprising an antihypertensive amount of a compound as defined in claim 1 mixed with a pharmaceutical carrier.

4,350,706

UREA AND THIOUREA COMPOUNDS AND INSECTICIDAL COMPOSITIONS

Marius S. Brouwer, and Arnoldus C. Grosscurt, both of Weesp, Netherlands, assignors to Duphar International Research B.V., Netherlands

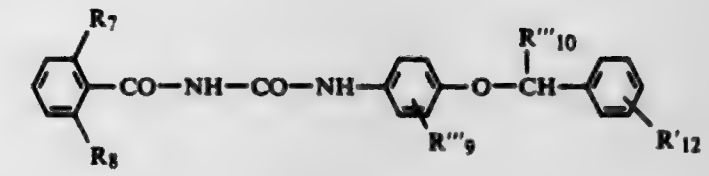
Filed Jun. 27, 1979, Ser. No. 52,371

Claims priority, application Netherlands, Jul. 6, 1978, 7807316

Int. Cl.³ C07C *127/22*; A01N *9/20*

U.S. Cl. 424—322 **30 Claims**

1. A compound of the formula:



wherein

R_7 and R_8 either are both fluorine or R_7 is a hydrogen atom and R_8 is a chlorine atom or a methyl group;

R_9''' is a hydrogen atom or 1 or 2 methyl groups in the 3- or 3,5-positions with respect to the NH-function;

R_{10}''' is an alkyl group having 1 to 4 carbon atoms, an alkenyl group having 1 to 4 carbon atoms, or trifluoromethyl, and

R_{12}' is a hydrogen atom or a substituent in the 3- and/or 4-position(s) selected from the group consisting of a halogen atom, a methyl group, and a halomethyl group.

4,350,707

INACTIVATION OF LIPID CONTAINING VIRUSES WITH BUTYLATED HYDROXYTOLUENE

Alec D. Keith, Boalsburg, and Wallace Snipes, Pine Grove Mills, both of Pa., assignors to Research Corporation, New York, N.Y.

Filed Feb. 5, 1976, Ser. No. 655,413

Int. Cl.³ A61K *31/05*

U.S. Cl. 424—346 **10 Claims**

1. A method for treating a subject having a disease caused by lipid-containing viruses comprising administering to said subject an effective inactivating amount therefor of butylated hydroxytoluene in a non-toxic, pharmaceutically acceptable barrier.

4,350,708

NATURAL OAK AROMA FOR ACCELERATING AGING OF ALCOHOLIC BEVERAGES

Jose I. Ruiz de Palacios, Logrono, Spain, assignor to Sistemas Naturales Internacionales, S.A., Sinatin, S.A., Madrid, Spain

Filed May 7, 1980, Ser. No. 147,360

Claims priority, application Spain, May 18, 1979, 480691

Int. Cl.³ C12G *1/00, 3/00*

U.S. Cl. 426—11 **9 Claims**

1. A process for the obtention of a natural oak aroma for accelerating the aging process of wines, spirits and liqueurs through solid-liquid extraction which comprises:

A. preparing a first extract by:

a. preparing a hydro-alcoholic solution of ethanol in water which titrates in an alcoholometer between about 45° and about 70°;

b. heating said hydro-alcoholic solution of ethanol in water to a temperature between about 25° C. and about 40° C.;

c. contacting successively first and second batches of oak wood shavings with said heated hydro-alcoholic solution of ethanol in water while maintaining about 0.0 to about 0.5 bar overpressure, thereby producing a first extract from the contact of said hydro-alcoholic solution of ethanol in water with said oak wood shavings;

d. cooling said first extract to about 20° C.;

e. gathering the first extract;

B. preparing a second extract by;

a. heating demineralized water to about 30° C. to about 95° C.;

b. contacting successively said second and first batches of oak wood shavings with said heated demineralized water thereby producing a second extract from the contact of said demineralized water with said oak wood shavings;

c. cooling said second extract to about 20° C.;

d. gathering the second extract;

C. wherein the hydro-alcoholic solution of ethanol in water flows through the oak wood shavings in a first direction and the demineralized water flows through the oak wood shavings in a second direction, said second direction being opposite to said first direction and wherein the demineralized water is heated to a higher temperature than the temperature to which the hydro-alcoholic solution of ethanol in water is heated; and

D. combining said first extract with said second extract in such proportions as to obtain an extract mixture which titrates in an alcoholometer between about 30° and about 50°.

4,350,709

GASEOUS ANTI-MICROBIAL TREATMENTS OF STORAGE GRAIN

Frederick D. Vidal, Englewood Cliffs, and Anantharaman Jayaraman, Nutley, both of N.J., assignors to Pennwalt Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 156,501, Jun. 4, 1980, Pat. No. 4,309,451, which is a division of Ser. No. 50,162, Jun. 20, 1979, abandoned, and a continuation-in-part of Ser. No. 38,739, May 14, 1979, abandoned. This application Jun. 26, 1980, Ser. No. 163,410

Int. Cl.³ A23B *9/00*; A23L *3/34*

U.S. Cl. 426—319 **5 Claims**

1. A method of treating moist grain to produce a preserved grain end product comprising contacting said grain with effective amounts of sulfur dioxide and a lower aliphatic fatty acid vapor to produce a preserved grain product wherein the amount of said vapor is sufficient to enhance the antimicrobial actions of said sulfur dioxide.

4,350,710

METHOD AND AN APPARATUS FOR THE MANUFACTURE OF BAKED PRODUCTS, ESPECIALLY BREAD

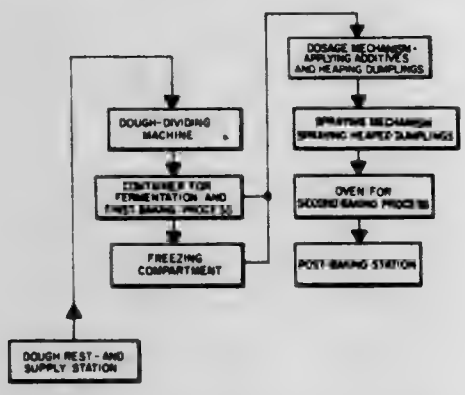
Erich Sundermann, Brunswick, Fed. Rep. of Germany, assignor to Perfluktiv-Consult AG, Zurich, Switzerland

Filed Feb. 8, 1980, Ser. No. 119,829

Claims priority, application Fed. Rep. of Germany, Feb. 12, 1979, 2905284

Int. Cl.³ A21D *8/02*

U.S. Cl. 426—19 **27 Claims**



1. A method of manufacturing a baked final product, comprising the steps of:

mixing flour, additives, and water into a dough;

allowing the dough to rest;

dividing and shaping the dough into separate dumplings, each dumpling having a volume small compared to the volume of the final product;

introducing the dumplings in one layer into molding troughs;

exposing the dumplings in the troughs to flowing gaseous and/or vaporous thermal media in a fermentation room;

subjecting the separate dumplings to a first baking process until they have reached a state of form stability with a thin skin-like coating being formed or a crust beginning to develop;

arranging subsequently the thus treated dumplings into a bulky heap in which the dumplings are piled on top of each other, whereby there will be defined gaps between the dumplings forming interspaces for gases to flow therethrough; and

thereafter, in a second baking process passing hot gases and/or vapor through the interspaces of the bulky heap until the dumplings are baked to one another and the gaps formed between the dumplings are partially or fully filled and wherein the bulky heap is subjected to the second baking process for a time sufficient to complete crust formation, whereby the dumplings will be extended to have a substantially uniform structure throughout the entire cross-section of the final product.

4,350,711

METHODS OF INFUSING FRUITS

Marvin L. Kahn, Williamsville, and Kuttikandathil E. Eapen, West Seneca, both of N.Y., assignors to Rich Products Corporation, Buffalo, N.Y.

Continuation-in-part of Ser. No. 152,050, May 21, 1980, which is a division of Ser. No. 24,128, Mar. 26, 1979, Pat. No. 4,234,611, which is a division of Ser. No. 917,379, Jun. 20, 1978, Pat. No. 4,199,604, which is a division of Ser. No. 871,995, Jan. 24, 1978, Pat. No. 4,145,863, which is a division of Ser. No. 763,613, Jan. 28, 1978, Pat. No. 4,146,652. This application Aug. 13, 1981, Ser. No. 292,411

Int. Cl.³ A23L *1/212, 1/06*

U.S. Cl. 426—102 **62 Claims**

1. A method of infusing fruits capable of undergoing osmotic exchange with sugar solids comprising:

a. bathing a fruit in a first sugar containing bath wherein said sugar component of said bath is comprised of about 35 to about 100% by weight fructose, wherein the water soluble solids content of said fruit is increased by the infusion of sugar solids from the bath into the fruit, and

b. separating the infused fruit from said first bath, and

c. bathing said infused fruit in at least one more sugar containing bath wherein said sugar component of said bath is comprised of about 35 to about 100% by weight fructose to further increase the water soluble solids content of said infused fruit product to about 32 to about 55% by weight, wherein the increase in said water soluble solids content of said fruit after treatment in said first bath and the increase in said water soluble solids content of said fruit after treatment in said at least one more bath are adjusted to provide an infused fruit product having a volume which is at least about 62% of the volume of said fruit prior to being infused with said sugar solids.

4,350,712

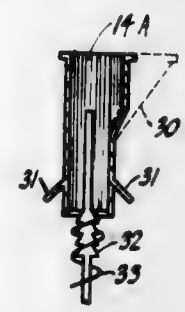
FROZEN BEVERAGE STICK INCLUDING RETRACTABLE CUP

Alfred Kocharian, c/o George Spector 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of NY, N.Y. 10007

Filed Feb. 10, 1981, Ser. No. 233,153

Int. Cl.³ B65D *83/00, 85/72*

U.S. Cl. 426—134 **1 Claim**



1. A frozen beverage stick, comprising in combination a

liquor frozen into a solid bar upon one end of a flat stick, a cup shaped shield around said solid, said shield having a hole in a flexible bottom thereof through which said stick extends, said hole in said flexible bottom of said shield corresponding in shape to the cross-section of said stick, said stick including means for retracting and retaining the shield in a plurality of sealed positions exposing sides of said solid bar in order that it may be consumed progressively wherein said means for retracting comprise said shield being slidable on said stick against one end of a compression coil spring around said stick, said compression coil spring being positioned on said flat stick and being shaped to fit around the flat stick and having one end of the spring bearing against said flexible bottom of said shield and the other end of the spring secured to said flat stick, said shield including grooves along its inner surface to facilitate drinking the beverage when melted and to facilitate retracting the shield and wherein said means for retaining comprise successive wedges on said stick below said hole providing spaced shoulders to retain the shield in various retracted positions said spring being coiled about said wedges such that said flexible bottom is abutted by said coils sealingly against said shoulders in said retracted positions to firmly bear against said shoulders preventing downward slippage and leakage, further including an enlarged opening at the top of said shield for drinking purposes, in further combination with external tabs on said shield for manually forcing the shield downward.

4,350,713

PRODUCTION OF SPONGE CAKE

David V. Dyson, Richmond Hill; David H. Lees, Bolton; Michael A. F. Fenn, Ajax, and Kenneth S. Darley, Whitby, all of Canada, assignors to The Griffith Laboratories, Limited, Scarborough, Canada

Filed Mar. 16, 1981, Ser. No. 244,247
Int. Cl.³ A21D *8/00*
U.S. Cl. 426—243 16 Claims

1. A continuous process for manufacture of sponge cake, which comprises:

feeding cake-forming components including flour, sugar, egg and water to a continuous mixing zone in quantities such that the total quantity of moisture in the cake-forming components is about 20 to about 45% by weight,

advancing the cake-forming components in plug flow manner through said mixing zone in about 20 to about 180 seconds,

subjecting said cake-forming components to conditions of shear within said mixing zone such that the work done on the materials within the mixing zone varies from about 4 to about 7 watt hr/lb. of cake-forming components to cause mixing of said components,

subjecting said cake-forming components to a back pressure within said mixing zone of about 10 to about 75 psig,

extruding from said mixing zone a cake-forming batter mix of density from about 0.65 to about 0.95 g/cc,

substantially immediately after said extrusion, baking said extruded batter mix in a microwave baking zone using microwave radiation at an input of about 3 to about 12 kw min/lb. of batter while passing air through said zone to remove generated steam, and

maintaining said batter in said zone for a time sufficient to result in a baked sponge cake having an internal temperature of about 180° to about 230° F. and to effect a loss of moisture of about 10 to about 23 wt.%.

4,350,714

CORN BRAN EXPANDED CEREAL

Leroy F. Duvall, Crystal Lake, Ill., assignor to The Quaker Oats Company, Chicago, Ill.

Continuation of Ser. No. 62,934, Aug. 2, 1979, abandoned. This application Apr. 21, 1981, Ser. No. 256,226
Int. Cl.³ A23L *1/10, 1/18*
U.S. Cl. 426—559 10 Claims

1. A process for producing a dry ready to eat high fiber cereal product comprising the steps:

admixing with cereal dough ingredients sufficient ground corn bran, as an ingredient to provide fiber content of 3.5 to 10 percent by weight, inclusive, based on the weight of the product, said corn bran having been ground to a fineness whereby 100 percent of said corn bran passes through a 40 mesh U.S. sieve, cooking the ingredients in a cooker-extruder to form an extrudate under temperature and pressure conditions sufficiently high to result in expansion of the dough upon its release from the cooker-extruder, cutting the expanded dough extrudate into discrete pieces, and drying the resulting pieces to a moisture level to 2–3 percent.

4,350,715

PLASTIC FAT BASED MATERIAL AND PRODUCTS THEREFROM

Johannes H. M. Rek, Vlaardingen, Netherlands, assignor to Internationale Octrooi Maatschappij "Octropa" B.V., Rotterdam, Netherlands

Filed Jan. 13, 1981, Ser. No. 224,824
Claims priority, application Netherlands, Jan. 16, 1980, 8000258
Int. Cl.³ A23D *3/00, 5/00;* A23C *13/12*
U.S. Cl. 426—570 11 Claims

1. An edible plastic fat-based composition at least 80 wt % of which comprises a fatty phase consisting of at least 50 wt % butterfat and at least 10 wt % of at least one fat selected from the group consisting of shea stearin and unhardened palm kernel fat, the solid fat content of the fatty phase, based on the total fat present, being at least 15 wt % at 20° C.

4,350,716

PROCESS FOR THE PRODUCTION OF A FINE GRAINED MULTIPLE LACTATE AND ITS USE AS A BAKING AGENT

Lothar Belohlawek, Freising, and Wolfgang Weber, Munich, both of Fed. Rep. of Germany, assignors to Dinalt Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Dec. 13, 1979, Ser. No. 103,419
Claims priority, application Fed. Rep. of Germany, Dec. 15, 1978, 2854291
Int. Cl.³ A21D *2/14*
U.S. Cl. 426—626 8 Claims

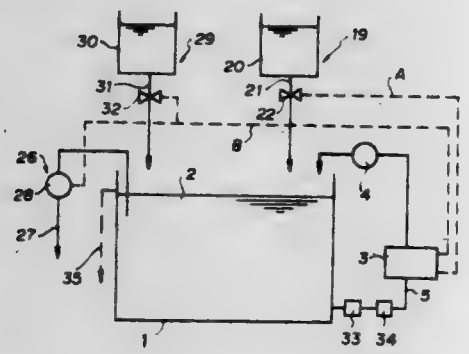
1. In a process for preparing a lactate concentrate in which 2–6 weight percent of a basic calcium compound is mixed with 30–55 weight percent of a cereal product, the mixture is then contacted with 15–40 weight percent of lactic acid and the resultant combination is allowed to react for the desired period of time to form a reaction product, the improvement which comprises adding to the reaction product, 2–10 weight percent of $CaSO_4.\frac{1}{2}H_2O$, all weights being based on the weight of the concentrate, whereby a fine-grained multiple lactate concentrate is obtained.

4,350,717

CONTROLLING ELECTROLESS PLATING BATH

Ken Araki, Ibaragi; Hiromitsu Sakai, Kawanishi, and Yutaka Sugiura, Kobe, all of Japan, assignors to C. Uyemura & Co., Ltd., Osaka, Japan

Filed Nov. 4, 1980, Ser. No. 204,084
Claims priority, application Japan, Dec. 29, 1979, 54-172961
Int. Cl.[3] C23C *3/02, 3/00*
U.S. Cl. 427—8 16 Claims



1. A method for controlling an electroless plating bath which extends the useful lifetime of the bath, the bath comprising consumable ingredients and nonconsumable ingredients, the method comprising:

a. continuously or intermittently measuring the concentration of at least one consumable ingredient in the bath;

b. automatically adding to the plating bath a first replenishing composition consisting essentially of consumable ingredients after detecting that said concentration has reached a predetermined concentration value;

c. measuring the consumption of at least one consumable ingredient of the plating bath to determine the degree of aging of the bath;

d. detecting when said consumption has reached a predetermined consumption value;

e. when said consumption has reached said predetermined consumption value, automatically discharging a predetermined voltage of the plating solution; and

f. automatically adding to the bath a second replenishing solution containing nonconsumable ingredients in an amount essentially corresponding to the amount lost by the discharging of step (e).

4,350,718

METHOD OF FABRICATING GRAPHITE TUBE

Bernhard Huber, Uberlingen, Fed. Rep. of Germany, assignor to Bodenseewerk Perkin-Elmer & Co. GmbH, Fed. Rep. of Germany

Continuation of Ser. No. 245,790, Mar. 20, 1981, abandoned. This application Sep. 21, 1981, Ser. No. 304,518
Claims priority, application Fed. Rep. of Germany, Mar. 20, 1980, 3010717
Int. Cl.[3] B05D *7/22, 3/02*
U.S. Cl. 427—181 10 Claims

1. Method of coating a graphite tube, said method comprising the steps of:

forming a layer of adhesive, volatile material on said graphite tube;

applying a powder of inert material to said layer;

pyrolyzing, in the presence of an inert gas flow, said layer; and thereafter

coating said graphite tube with pyrolytic graphite.

4,350,719

DIFFUSION COATING AND PRODUCTS THEREFROM

Alfonso L. Baldi, Wynnewood, Pa., assignor to Alloy Surfaces Company, Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 73,539, Sep. 7, 1979, Pat. No. 4,260,654, Ser. No. 851,504, Nov. 14, 1977, and Ser. No. 809,189, Jun. 23, 1977, Pat. No. 4,308,160, said Ser. No. 73,539, is a continuation-in-part of Ser. No. 953,762, Oct. 23, 1978, Pat. No. 4,241,147, said Ser. No. 73,539, Ser. No. 851,504, Ser. No. 809,189, and Ser. No. 953,762, each is a continuation-in-part of Ser. No. 752,855, Dec. 21, 1976, Pat. No. 4,208,453, Ser. No. 694,951, Jun. 11, 1976, abandoned, and Ser. No. 614,834, Sep. 19, 1975, Pat. No. 4,141,760, which is a continuation-in-part of Ser. No. 579,945, May 22, 1975, abandoned, Ser. No. 466,908, May 31, 1974, Pat. No. 3,958,047, Ser. No. 446,473, Feb. 27, 1974, Pat. No. 3,958,046, Ser. No. 404,665, Oct. 9, 1973, Pat. No. 3,948,689, Ser. No. 357,616, May 7, 1973, Pat. No. 3,948,687, and Ser. No. 304,220, Nov. 6, 1972, Pat. No. 3,936,539, said Ser. No. 752,855, is a continuation-in-part of Ser. No. 694,951, , which is a continuation-in-part of Ser. No. 614,834, , and Ser. No. 579,945, , said Ser. No. 752,855, is a continuation-in-part of Ser. No. 614,834, , and Ser. No. 579,945, , said Ser. No. 446,473, Ser. No. 404,665, Ser. No. 357,616, and Ser. No. 304,220, each is a continuation-in-part of Ser. No. 254,403, May 18, 1972, Pat. No. 3,785,854, Ser. No. 90,682, Nov. 18, 1970, Pat. No. 3,764,371, and Ser. No. 219,514, Jan. 20, 1972, Pat. No. 3,801,357, which is a continuation-in-part of Ser. No. 837,811, Jun. 30, 1969, said Ser. No. 254,403, is a continuation-in-part of Ser. No. 219,514, , and Ser. No. 90,682, , which is a continuation-in-part of Ser. No. 219,514, , and Ser. No. 837,811, , said Ser. No. 466,908, and Ser. No. 446,473, each is a continuation-in-part of Ser. No. 404,665, , Ser. No. 357,616, , and Ser. No. 304,220, , said Ser. No. 404,665, is a continuation-in-part of Ser. No. 357,616, , and Ser. No. 304,220, , said Ser. No. 357,616, is a continuation-in-part of Ser. No. 304,220,. This application Feb. 26, 1981, Ser. No. 238,500
Int. Cl.[3] C23C *11/04, 9/02*
U.S. Cl. 427—253 3 Claims



1. The process of diffusion coating a workpiece with chromium and then with aluminum, which process is characterized by loading the workpiece in a diffusion coating retort, then subjecting the retort to a diffusion-coating heat while introducing into it a chromizing vapor to cause the vapor to contact and chromize the workpiece, then without removing the workpiece, introducing into the retort an aluminizing powder pack to cause it to contact the workpiece, and then bringing the retort to diffusion aluminizing temperature to cause the chromized workpiece to be aluminized by said pack before the workpiece is removed from the retort.

4,350,720

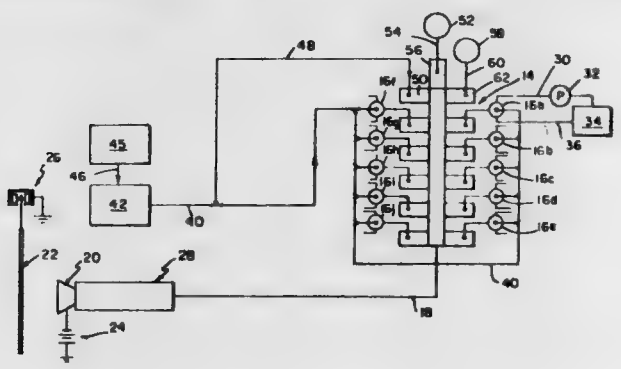
UNCONTAMINATED PURGE SOLVENT RECOVERY SYSTEM

James A. Scharfenberger, Indianapolis, Ind., assignor to Ransburg Corporation, Indianapolis, Ind.

Continuation-in-part of Ser. No. 228,166, Jan. 26, 1981, Pat. No. 4,311,724, and Ser. No. 275,872, Jun. 22, 1981. This application Nov. 30, 1981, Ser. No. 326,151

Int. Cl.³ B05D 7/14, 1/02

U.S. Cl. 427—401 5 Claims



1. In a process for terminating the flow of a coating material in a coating material delivery system which delivers the coating material to a dispensing device from which the material is dispensed during a coating operation and from which flow of the material ceases at the end of the coating operation, the process including the steps of terminating the flow of coating material to the dispensing device, initiating the flow of a fluid cleaning medium to the dispensing device, terminating the flow of cleaning medium, and establishing a partial vacuum on the remaining cleaning medium.

4,350,721

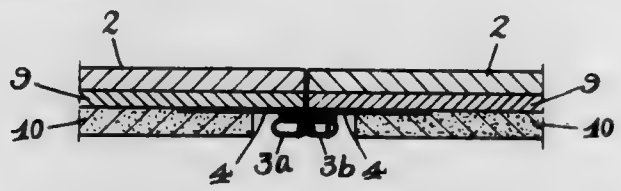
COLLAPSIBLE INDOOR SPORTS MATS

Jiro Nagase, Tokyo, Japan, assignor to Nagase Rubber Co., Ltd., Tokyo, Japan

Filed Nov. 17, 1981, Ser. No. 322,222

Int. Cl.³ D04H 11/00

U.S. Cl. 428—33 3 Claims



1. In collapsible indoor sports mats in which a plurality of unit mats can be connected to and separated from one another by means of fasteners, the improvement wherein tapes of said fasteners having engaging teeth aligned thereon are fixed on the backs of said unit mats at their connecting edges, non-toothed portions for guiding a slider formed by removing said engaging teeth are formed at the ends of parts

extending from said unit mats and location reference line marks are put at the corresponding positions on the surface of said extending parts opposing one another so that court lines on said unit mats to be connected are automatically matched with one another.

3. The combination as recited in claim 1 wherein linings are adhered to said unit mats and elastic plates of sponge materials are also adhered to said linings, said elastic plates of sponge materials having enough space to let said slider move freely between themselves.

4,350,722

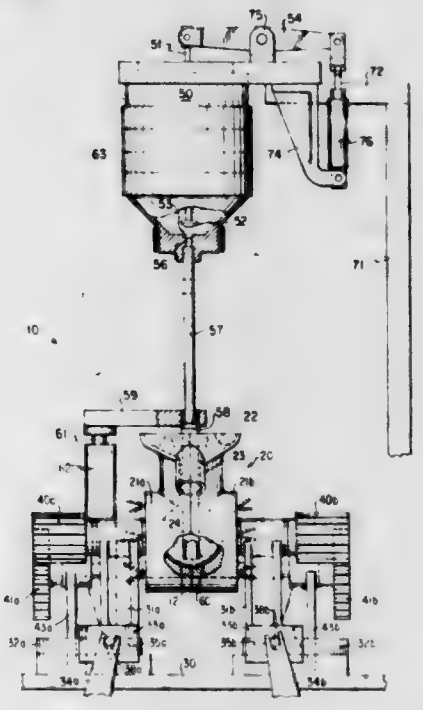
HOLLOW GLASS ARTICLE WITH IMPROVED OPTICAL FINISH

Donald G. Trutner, Chatham, N.J., and Luke Thorington, Easton, Pa., assignors to Duro-Test Corporation, North Bergen, N.J.

Division of Ser. No. 29,310, Apr. 12, 1979, Pat. No. 4,295,873. This application Mar. 9, 1981, Ser. No. 241,646

Int. Cl.³ B65D 1/02

U.S. Cl. 428—35 4 Claims



1. A hollow glass article of improved optical finish formed by depositing in the original article constrained in a mold through an opening therein a molten liquid material of a temperature sufficient to soften the glass and produce a hydrostatic pressure therein which reforms the original article into the finished article by expanding the original article to the shape of the mold.

4,350,723

PEEL-UP TYPE ADHESIVES

Takaaki Sugimura, Yokohama; Yutaka Ozawa, Tokyo, and Mari Takahashi, Yokohama, all of Japan, assignors to Nippon Zeon Co. Ltd., Tokyo, Japan

Continuation of Ser. No. 50,130, Jun. 19, 1979, abandoned, which is a continuation of Ser. No. 886,666, Mar. 15, 1978, abandoned, which is a division of Ser. No. 732,195, Oct. 14, 1976, abandoned. This application Jan. 26, 1981, Ser. No. 228,367

Claims priority, application Japan, Oct. 17, 1975, 50-125068

Int. Cl.³ D06N 3/18

U.S. Cl. 428—42 3 Claims

1. A method of removably bonding an adherend selected from paper, cushioned floor and foam-backed carpet to a substrate composed of concrete, synthetic resin board or wood, which allows the adherend to be removed from the substrate without breakage of the substrate and without adhesive remaining on the substrate, with a peel-up type adhesive which permits the adherend and adhesive to be peeled from the substrate without breakage of the adherend and without any adhesive remaining on the substrate which comprises bonding said adherend to the substrate with a peel-up type adhesive composition having a viscosity of 500 to 5,000 poises and consisting essentially of a rubber latex containing a polymeric substance which is film-forming at room temperature selected from the group consisting of a natural rubber latex, a styrene/butadiene rubber latex, a carboxy-modified styrene/butadiene rubber latex, an acrylonitrile/butadiene rubber latex, a styrene/isoprene rubber latex, a methyl methacrylate/butadiene rubber latex, a styrene/butadiene/methyl methacrylate rubber latex,

an acrylonitrile/butadiene/isoprene rubber latex, and a chloroprene rubber latex, and 20 to 200 parts by weight, per 100 parts by weight of the solid polymeric substance content of the rubber latex, of a fibrous material and 2 to 20 parts by weight, per 100 parts by weight of the solid polymeric substance content of the rubber latex, of a nonionic surface-active agent; and removing said adherend from said substrate by peeling said adherend and adhesive intact from said substrate when it is desired to replace said adherend.

4,350,724

ACOUSTIC ENERGY SYSTEMS

Ralph E. Marrs, 6809 Chateau Ct., San Jose, Calif. 95120

Continuation-in-part of Ser. No. 903,489, May 8, 1978, abandoned. This application May 9, 1980, Ser. No. 148,482

Int. Cl.³ B32B *3/00*; G10K *11/00*

U.S. Cl. 428—69 **33 Claims**



1. A volumetric gaseous system having dimensionless volumetric compliance substantially greater than unity in response to compression and expansion of the gas comprising:

spatially distributed matrix means defining a volumetric interaction region and including a distributed mass of fine fibers extending throughout the region, and also including a distributed fluid mass defining thin liquid sheaths on the surfaces of the fibers and also existing throughout the spaces in the fiber mass in the saturated vapor state, the liquid sheaths being in good thermal relationship with the fibers and also in proximity to the vapor molecules in the spaces between the fibers, such that the distributed liquid sheaths and fibers in the system interact responsively to vaporization of molecules during expansion and to condensation of molecules during compression to serve as high surface area heat sinks having a short thermal transport distance to the vapor molecules whereby the volumetric compliance of the region is increased by the interaction.

4,350,725

FABRIC AND GARMENT OF CIRCULAR WEFT-KNIT OR CIRCULAR WARP-KNIT MATERIAL

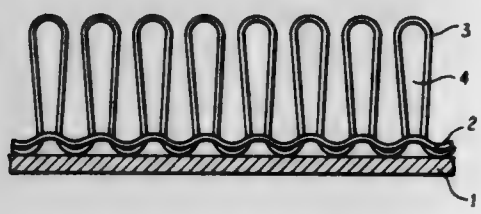
Helmut C. Pflüger, Neumünster, Fed. Rep. of Germany, assignor to Norddeutsche Faserwerke GmbH, Neumünster, Fed. Rep. of Germany

PCT No. PCT/DE80/00161, § 371 Date Jun. 25, 1981, § 102(e) Date Jun. 25, 1981

PCT Filed Oct. 24, 1980, Ser. No. 279,990

Int. Cl.³ B32B *3/02, 33/00*

U.S. Cl. 428—95 **8 Claims**



1. Fabric comprising a web which is circular weft-knit or circular warp-knit from textured synthetic continuous-filament yarn, said web having a polyurethane coating and a polysiloxane elastomer finish.

4,350,726

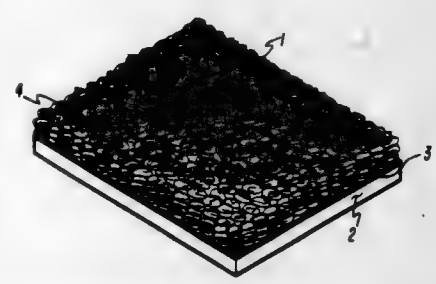
PROTECTIVE PAD FOR BACKPACKS

French J. Berry, Jr., General Delivery, Sandia Park, N. Mex. 87047

Filed Jul. 30, 1981, Ser. No. 288,663

Int. Cl.³ B32B *3/02, 5/18, 5/32*

U.S. Cl. 428—95 **5 Claims**



1. A protective pad for backpacks comprising:

(a) a pile fleece, said fleece consisting of one-half inch thick fibers woven into a cloth backing,

(b) a bonding agent or adhesive,

(c) a spongy, light-weight foam, said foam consisting of an organic material having an open, partially open or closed cell structure and being about three-eighths inch thick,

(d) said fleece is bonded to said foam with fleece side of the pad being placed directly against the skin, and

(e) the total thickness of said pad being approximately one inch.

4,350,727

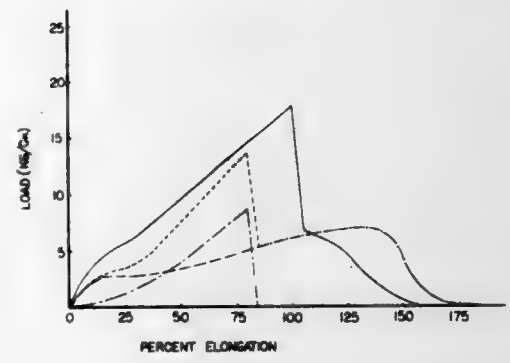
SYNERGISTIC TEXTILE COMPOSITE

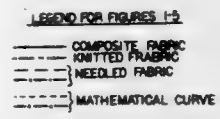
Stephen A. Wald, and Robert W. Carter, both of Winston-Salem, N.C., assignors to Lydall, Inc., Manchester, Conn.

Continuation-in-part of Ser. No. 167,216, Jul. 9, 1980, abandoned. This application Sep. 28, 1981, Ser. No. 306,533

Int. Cl.³ B32B *3/06*

U.S. Cl. 428—102 **24 Claims**





1. A textile composite comprising:

(1) a non-woven textile fabric composed of textile fibers needled together into a network of coherently entangled fibers and having an overall bulk density of between 4 and 20 lbs. per cubic foot;

(2) a knitted textile fabric having a weight of between 1 and 8 ozs. per square yard bound to the said needled fabric to form a composite thereof; and

wherein the binding of the said fabrics is such that at least one tensile property of the composite is greater than the

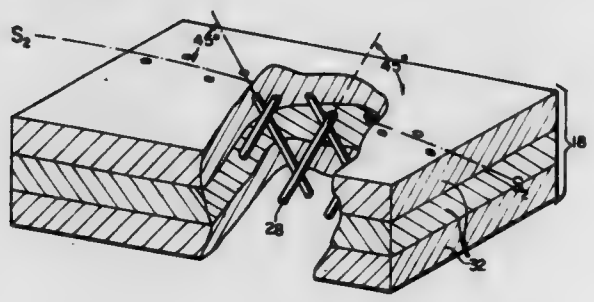
sum of that same property of the said non-woven and knitted fabrics, provided that the said same property is measurable at an extension which is the same or less than the extension at failure of the composite.

4,350,728

CROSS REINFORCEMENT IN A GRAPHITE-EPOXY LAMINATE

Shih L. Huang, Southampton; Edward J. McQuillen, Huntingdon Valley, and Robert J. Richey, Jr., Warminster, all of Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 2, 1980, Ser. No. 193,324
Int. Cl.³ B32B 5/12
U.S. Cl. 428—105 7 Claims



1. A lightweight reinforced composite material for use in structures having high stress applications, comprising:
a plurality of plies of a fibrous resin adhesively bonded together to form a laminate; and
a plurality of reinforcing rods embedded in said laminate to span the distance between the outer surfaces thereof, said rods being positioned in adjacent pairs along measured critically highest stress planes in said laminate, said pairs being parallel to said stress planes on opposite sides thereof and angularly displaced in opposite directions to planes normal to said stress planes.

4,350,729

PATTERNED LAYER ARTICLE AND MANUFACTURING METHOD THEREFOR

Hirotaka Nakano, and Kensaku Yano, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jul. 7, 1980, Ser. No. 166,780
Claims priority, application Japan, Jul. 11, 1979, 54-86882
Int. Cl.³ B32B 3/10, 15/04; B44C 1/22; C23F 1/02
U.S. Cl. 428—209 14 Claims



1. A patterned layer article comprising:
a substrate;
a protective layer formed on the surface of the substrate and resistant to dry etching, said protective layer being selected from the group consisting of yttrium oxide, scandium oxide, neodymium oxide, promethium oxide, samarium oxide, europium oxide, gadolinium oxide, terbium oxide, dysprosium oxide, holmium oxide, erbium, oxide, thulium oxide, ytterbium oxide, and lutetium oxide; and
at least one laminated and patterned layer formed on the surface of the protective layer, and having a larger etching rate than that of said protective layer.

4,350,730

PLASTIC LAMINATE

Stephen J. Cyr; John C. Schubert, both of Chippewa Falls, Wis., and John Dehlinger, Tenants Harbor, Me., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Oct. 16, 1981, Ser. No. 311,930
Int. Cl.³ B32B 7/00, 3/26, 25/16
U.S. Cl. 428—215 4 Claims

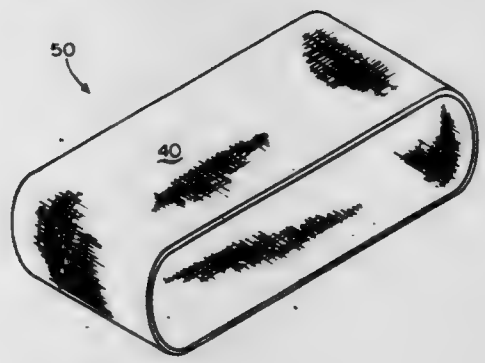
3. A laminate suitable for use as a graphic arts board comprising two solid ABS resin sheets each 2 to 10 mils thick, said ABS resin, comprising 1 to 5 weight percent of pigment, 0.05 to 3 weight percent of a UV stabilizer, said solid sheets being fusion bonded to the upper and lower surfaces of a foam resin core, said foam resin core being 50 to 500 mils thick and having a density of 1.5 to 6 pounds per cubic foot containing 100 to 70 weight percent general purpose polystyrene and 0 to 30 weight percent ABS resin, and, based on the total foam resin core, 0.1 to 1 weight percent talc, and an antistatic agent on the surfaces of the laminate.

4,350,731

NOVEL YARN AND FABRIC FORMED THEREFROM

Elizabeth Siracusano, Schenectady, N.Y., assignor to Albany International Corp., Albany, N.Y.

Filed Jun. 8, 1981, Ser. No. 271,590
Int. Cl.³ B32B 5/06
U.S. Cl. 428—234 7 Claims



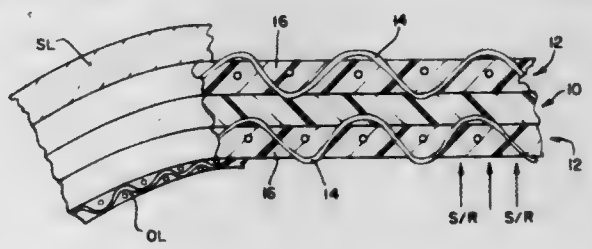
4. A composite yarn, which comprises;
a core yarn selected from the class consisting of high tensile strength non-elastic, monofilament, multifilament and spun yarn, wrapped in a first direction and in a second direction with an elastomeric filament, the lengthwise axis of said wrappings being at an angle non-perpendicular to the lengthwise axis of the core yarn.

4,350,732

REINFORCING LAMINATE

Robert F. Goodwin, Georgetown, Mass., assignor to Foss Manufacturing Company, Inc., Mass.

Continuation of Ser. No. 88,656, Oct. 26, 1976, abandoned. This application Mar. 25, 1981, Ser. No. 247,387
Int. Cl.³ F16G 1/00
U.S. Cl. 428—246 11 Claims



1. A stiff laminate, which is moldable and simultaneously bondable to a substrate surface for purposes of reinforcement or the like, comprising,
at least one layer of tough resin,

at least one solvent- or heat-activatable adhesive impregnated cloth layer,

the layers being bonded to each other at least in part through locking of cloth fiber portions of the latter layer into the adjacent resin layer,

the adhesive impregnant comprising a styrene saturant which is capable of impregnation into the fibrous layer in liquid form and hardenable therein to form a stiff solid layer.

4,350,733

CYCLOHEXYL PHENETHYLETHER AND USES THEREOF IN COMBATTING TOBACCO BEETLES AND IN AUGMENTING OR ENHANCING THE AROMA OF PERFUMES, COLOGNES AND PERFUMED ARTICLES

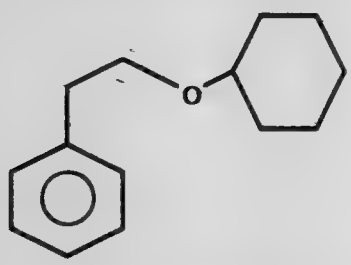
Jacob Kiwala, Brooklyn, N.Y.; Richard J. Tokarzewski, Keyport; Frederick L. Schmitt, Holmdel, and Mark A. Sprecker, Sea Bright, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 192,238, Sep. 30, 1980, Pat. No. 4,306,096. This application May 28, 1981, Ser. No. 267,845

Int. Cl.³ D06M *13/18;* B32B *27/12;* D04H *11/00*

U.S. Cl. 428—290 **1 Claim**

1. A drier-added fabric softener article comprising a substrate and a coating and intimately admixed with the coating cyclohexyl phenethylether having the structure:



the amount of said cyclohexyl phenylether being sufficient to cause the aroma of the head space above a clothes batch with which the dryer-added fabric softener article is treated to have imparted thereto a floral aroma.

4,350,734

INTEGRAL COMPOSITE FOAM PRODUCT AND METHOD

James A. Hammond, Redlands, Calif., assignor to Colamco, Inc., Columbus, Ohio

Filed Oct. 23, 1980, Ser. No. 199,996

Int. Cl.³ B32B *3/26*

U.S. Cl. 428—308.4 **13 Claims**



1. A laminate article comprising:

a soft foam member;

integrally adhered to at least one surface of said soft foam member, a hard polyurethane resin member formed by the curing of a hard resin affording material;

said integral adhesion being obtained by way of penetration of said hard resin affording material into cells of said soft foam member, while coating said soft foam member, for a distance sufficient to provide a substantially permanent bond between said two members, after curing said hard resin affording material; and

said hard resin member sufficiently thick to provide configurational support of predetermined rigidity for said article.

4,350,735

BLANKET FOR OFFSET PRINTING

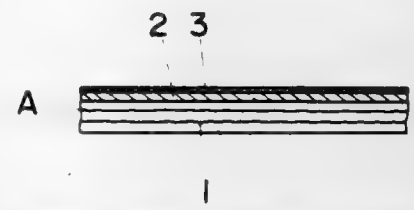
Joichi Saitoh, Hotarugaike-higashi, Japan, assignor to Kotobuki Seihan Printing Co., Ltd., Osaka, Japan

Filed Nov. 3, 1980, Ser. No. 203,506

Claims priority, application Japan, Nov. 22, 1979, 54-151642

Int. Cl.³ B32B *5/16, 3/00*

U.S. Cl. 428—328 **2 Claims**



1. An offset printing blanket comprising a substrate, a rubber layer, and an outer layer disposed on said rubber layer, said outer layer comprising an urethane type resin having aluminum powder mixed therein, said outer layer having a fine unevenness on its surface produced by said aluminum powder.

4,350,736

WEAR AND WATER RESISTANT PLASTER ARTICLES

William S. Reily, Des Plaines, Ill., assignor to United States Gypsum Company, Chicago, Ill.

Filed Jul. 14, 1980, Ser. No. 168,971

Int. Cl.³ B32B *9/06, 3/22*

U.S. Cl. 428—341 **6 Claims**

1. A wear resistant and water repellent plaster article comprising

a formed plaster article having an exterior surface portion thereof coated with a thin layer of Candelilla wax,

said wax solidified to a hard finish,

said wax present in an amount no less than about 0.020 pounds per square foot (0.010 grams per square centimeter),

said wax coating said exterior surface portion and substantially filling exterior pores and irregularities,

said coated surface portion providing a substantially water impregnable barrier and providing enhanced wear resistance,

said coated surface portion having a light yellow to light brown color and capable of being buffed to a lustrous finish,

wherein said wax has a sufficiently high melt point providing a firm surface upon exposure to ambient room temperatures of up to about 130° F. (54° C.).

4,350,737

POWER INSERTABLE NYLON COATED MAGNET WIRE

Hollis S. Saunders; Richard V. Carmer, and Lionel J. Payette, all of Fort Wayne, Ind., assignors to Essex Group, Inc., Fort Wayne, Ind.

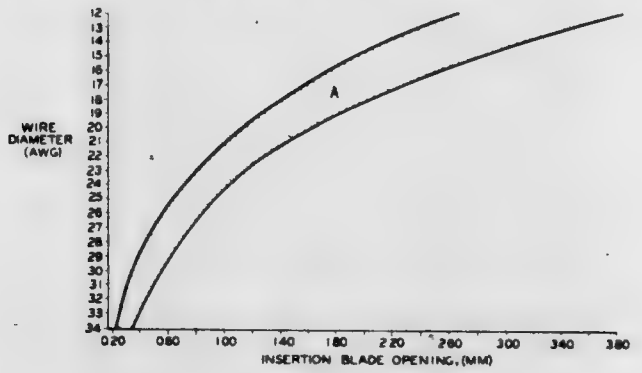
Filed Oct. 19, 1981, Ser. No. 312,599

Int. Cl.³ B32B *27/00;* H01B *7/00*

U.S. Cl. 428—383 **12 Claims**

1. A lubricated magnet wire comprising an electrically conducting substrate having an electrically insulating nylon outer coating, and a external lubricant coating on the nylon outer coating comprising a mixture of paraffin wax, hydrogenated triglyceride and an ester lubricant composition comprising esters of fatty alcohols and fatty acids, the ratio, by weight, of

paraffin wax to triglyceride being about 1:15 to 60:1 and the ratio of triglyceride to ester lubricant being about 1:30 to 30:1,



the coated magnet wire capable of power insertion into coil slots in its locking wire size range.

4,350,738

POWER INSERTABLE POLYAMIDE-IMIDE COATED MAGNET WIRE

Hollis S. Saunders; Richard V. Carmer, and Lionel J. Payette, all of Fort Wayne, Ind., assignors to Essex Group, Inc., Fort Wayne, Ind.

Filed Oct. 13, 1981, Ser. No. 310,681
Int. Cl.³ B32B *27/00;* H01B *7/00*
U.S. Cl. 428—383 **3 Claims**

1. A lubricated magnet wire comprising an electrically conducting substrate having an electrically insulating polyamide-imide outer coating, and a lubricant coating on the polyamide-imide outer coating comprising oleic acid, beeswax, fluorocarbon surfactant, and paraffin wax, the coated magnet wire capable of multiple winding power insertion into coil slots without damage to the polyamide-imide outer coating.

4,350,739

MOLDED PLASTIC PART

Gulam Mohiuddin, Brighton, Mich., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 61,633, Jul. 30, 1979, abandoned. This application Jun. 25, 1980, Ser. No. 162,682
The portion of the term of this patent subsequent to Aug. 4, 1998, has been disclaimed.
Int. Cl.³ B32B *27/40, 27/36, 27/38;* B29F *1/10*
U.S. Cl. 428—425.1 **17 Claims**

1. A process for producing a molded plastic part comprising

coating the surface of a mold, prior to molding said part, with a coating composition containing a reaction promoter for a reactive plastic molding material but not for said coating,

introducing a reactive plastic molding material into the mold,

said reaction promoter in said coating being selected from the group consisting of a catalyst, a crosslinking promoter and a crosslinking initiator for said reactive plastic molding material and being present in an amount sufficient to transfer said coating composition from said mold surface and bond it to the substrate formed by said reactive molding material,

molding said part and

removing said part from the mold, said molded part upon removal from the mold comprising a plastic substrate and a firmly adherent coating thereon.

17. A molded plastic part having a plastic substrate and a firmly adherent coating thereon produced in accordance with the process of claim 1.

4,350,740

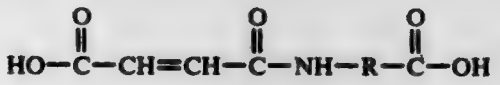
MODIFIED OLEFIN POLYMERS

Aubert Y. Coran, and Raman Patel, both of Akron, Ohio, assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 128,611, Mar. 10, 1980, abandoned. This application Aug. 28, 1981, Ser. No. 297,449
Int. Cl.³ C08F *8/30*
U.S. Cl. 428—461 **10 Claims**

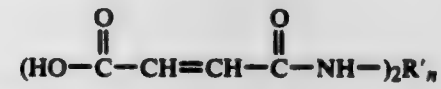
1. In a structure comprising a metal member and a polymeric material bonded thereto, the improvement comprises, providing at the interface between the metal member and the polymeric material, an adhesive comprising an adhesion enhancing amount

a modified olefin polymer comprising the reaction product of 100 parts by weight of monoolefin polymer and about 0.1 to about 20 parts by weight of substituted maleamic acid of the formulas



(a)

in which R is a straight or branched alkylene radical of 1–8 carbon atoms, or



(b)

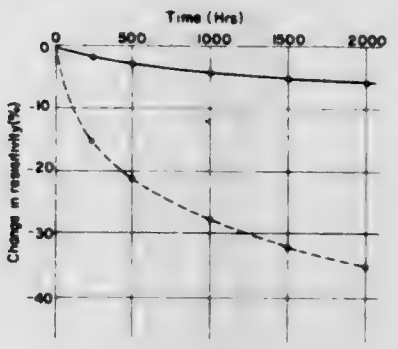
in which n is zero or one, and R' is a straight or branched alkylene radical of 2–18 carbon atoms or arylene of 6–12 carbon atoms.

4,350,741

RESISTOR ELEMENTS

Yo Hasegawa, Nara; Shigeru Yasuda, Hirakata, and Kunio Kojima, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Nov. 14, 1980, Ser. No. 207,069
Claims priority, application Japan, Nov. 19, 1979, 54-150410
Int. Cl.³ H01C *1/012, 10/06*
U.S. Cl. 428—473.5 **6 Claims**



1. A method of producing a resistor element which comprises molding a resistor film comprising aromatic polyimide and conductive powder together with a substrate comprising diallyl isophthalate prepolymer, polymerization initiators, inorganic fillers and radical polymerization inhibitors wherein the amount of inhibitors is more than 500 ppm based on the prepolymer.

4. The resistor element produced by the process of claim 1.

4,350,742
METHOD TO ADHERE ACRYLIC FILMS TO STYRENIC POLYMERS

Richard A. Hall, Naperville, and Edward J. Bernier, Jr., Romeoville, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Continuation-in-part of Ser. No. 107,146, Dec. 26, 1979, abandoned. This application Sep. 18, 1980, Ser. No. 188,516

Int. Cl.³ B32B *27/08*

U.S. Cl. 428—520 **10 Claims**

1. A method to form a two-layer laminate consisting essentially of bonding under heat and pressure (a) a substrate consisting essentially of a styrene polymer containing minor amounts of copolymerized α,β-unsaturated carboxylic acid and (b) a polymeric acrylic film formed from a sequentially emulsion polymerized cross-linked polymer of alkyl esters of acrylic and methacrylic acids.

4,350,743
STRUCTURE FOR MULTILAYER CIRCUITS

Jean-Pierre Lazzari, Montfort l'Amaury, France, assignor to Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme)

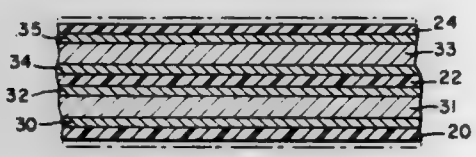
Continuation of Ser. No. 55,497, Jul. 6, 1979, abandoned, which is a continuation of Ser. No. 792,210, Apr. 29, 1977, Pat. No. 4,189,524. This application Dec. 1, 1980, Ser. No. 211,678

Claims priority, application France, May 6, 1976, 76 13553

The portion of the term of this patent subsequent to Feb. 19, 1997, has been disclaimed.

Int. Cl.³ G23P *3/00*

U.S. Cl. 428—622 **6 Claims**



1. A multilayer device adapted to withstand temperature elevations up to 450° C. without substantial risk of formation of short-circuits between thin conductive layers thereof separated by thinner intervening insulating layers, consisting essentially of a plurality of thin conductive layers stacked with intervening thin layers of insulating refractory material, each conductive layer comprising a composite of a first layer, a second and a third conductive layer, said first layer having a relatively low resistivity and appreciable thermal expansion coefficient and being disposed with opposite faces thereof in contact with adjacent faces of said second and third layers, the opposite faces of said second and third layers being disposed in contact with one face of a first and a second thin insulating material layer, respectively, said second and third conductive layers each being thinner than said first layer and of a conductive material having a relatively high resistivity, a negligible thermal expansion coefficient and having a crystalline structure closely compatible to the crystalline structure of the first conductive layer as regards lattices and crystal sizes.

4,350,744
METALLIC SOLDER COMPOSITE BONDING

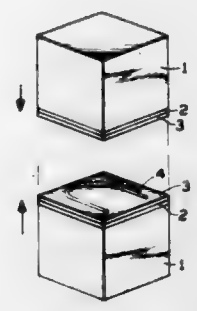
Elias Snitzer, West Hartford, and James F. Bacon, Manchester, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 12, 1980, Ser. No. 215,283

Int. Cl.³ C03C *27/02, 27/04;* B32B *17/06*

U.S. Cl. 428—630 **6 Claims**

1. A bonded composite material comprising a plurality of individual, thermally stable high strength graphite fiber reinforced glass matrix composite pieces held together by a bond comprising a solder layer laid in between two layers of a bonding metal applied to the composite bond surfaces, the metal layers being highly adherent to the composite and the solder and oxidatively stable, and the melting temperature of the



metal and solder layers being higher than the use temperature of the bonded composite.

4,350,745
ELECTROCHEMICAL CELLS HAVING HYDROGEN GAS ABSORBING AGENT

Frank E. Parsen, Irvington, N.Y., and Thomas T. Yatabe, Oakville, Canada, assignors to Duracell Inc., Bethel, Conn.

Filed Dec. 29, 1980, Ser. No. 220,615

Int. Cl.³ H01M *10/52*

U.S. Cl. 429—57 **21 Claims**

1. An electrochemical cell comprising an anode, a cathode, an electrolyte, and an agent for absorbing hydrogen gas, all operatively associated, said agent comprising a mixture of a member of the group consisting of an oxide of manganese and an oxide of lead; and a powered metal selected from the group consisting of nickel, cobalt and iron.

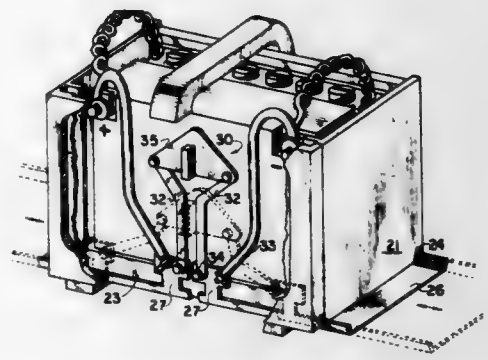
4,350,746
AUXILIARY POWER SOURCE FOR STARTING A MOTOR VEHICLE

Kenneth R. Chambers, Rte. 9, Box 301-A, Greensboro, N.C. 27409

Continuation-in-part of Ser. No. 32,789, Apr. 23, 1979, abandoned. This application Sep. 17, 1980, Ser. No. 188,222

Int. Cl.³ H01M *2/26*

U.S. Cl. 429—121 **4 Claims**



1. An auxiliary power source for use in starting a motor vehicle having a defective battery of the type having a housing and positively and negatively charged terminal posts spaced a distance apart on the top surface thereof, said auxiliary power source comprising:

(a) a housing having bottom and side walls and a removable front wall and including a battery therein;

(b) a pair of flat, electrically conductive terminal plates depending from said housing underneath said bottom wall in a plane substantially parallel thereto, said terminal plates being spaced apart horizontally;

(c) means for selectively adjusting the spacing between said plates to substantially correlate to the distance between said vehicle battery terminal posts;

(d) said terminal plates being connected to said battery so that one of said plates is negatively charged and the other is positively charged;

(e) whereby said auxiliary power source may be positioned on top of said defective battery with said positively and negatively charged terminal plates contacting the respective ones of said positively or negatively charged terminal posts, and when the vehicle ignition system is activated voltage is transmitted from said auxiliary power source sufficient to start the vehicle.

4,350,747

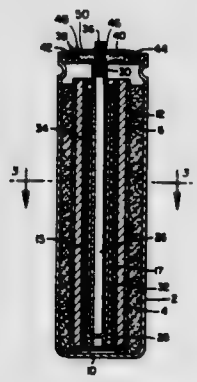
ELECTROCHEMICAL CELL WITH EXTERNALLY COATED HERMETIC SEALS

Vicente S. D. Alberto, Parma, Ohio, assignor to Union Carbide Corporation, Danbury, Conn.

Filed Jun. 16, 1981, Ser. No. 248,217

Int. Cl.³ H01M *2/08*

U.S. Cl. 429—184 **10 Claims**



1. An electrochemical cell system assembled in a closed housing comprising a container having an open end closed by a cover and having a terminal member electronically insulated from and hermetically sealed to said housing by a layer of an insulating material, the improvement wherein the exposed exterior interfacial areas of the insulating material and terminal and the insulating material and housing are coated with an adherent, nonconductive, water-resistant, protective polymeric material.

4,350,748

ELECTROPHOTOGRAPHIC PROCESS FOR THE MANUFACTURE OF PRINTING FORMS OR PRINTED CIRCUITS INCLUDING TRANSFER OF PHOTOCONDUCTIVE COATING FROM TEMPORARY SUPPORT

Erwin Lind, Wiesbaden, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 29, 1981, Ser. No. 278,665

Claims priority, application Fed. Rep. of Germany, Jun. 30, 1980, 3024718

Int. Cl.³ G03G *13/32, 13/26*

U.S. Cl. 430—49 **9 Claims**

1. In the process for the manufacture of printing forms and printed circuits by coating an electrically conductive support with an organic photoconductor layer and by charging, exposing, and developing the electrostatic image by means of a finely particulate toner, fixing and dissolving the layer away from the non-image areas by means of a decoating medium and, if appropriate, etching of the bared support surface;

the improvement which comprises, for the purpose of coating, transferring the organic photoconductor layer on a temporary support to the electrically conductive support with the aid of heat and pressure.

4,350,749

REVERSE DEVELOPMENT METHOD

Teruyuki Ohnuma, Yokohama; Seiichi Miyakawa, Nagareyama, and Hajime Oyama, Tokyo, all of Japan, assignors to Ricoh Company Ltd., Tokyo, Japan

Filed Feb. 26, 1979, Ser. No. 15,471

Claims priority, application Japan, Feb. 28, 1978, 53-22484; Apr. 11, 1978, 53-42372

Int. Cl.³ G03G *13/09*

U.S. Cl. 430—100 **5 Claims**

1. A reverse development method for use in electrophotography employing one-component type developer consisting of a toner having a volume resistivity not less than 10^{13} Ωcm in powder form to develop a latent electrostatic image formed on a recording member, comprising the steps of:

supplying said toner by a developer supply means having an elastic outer surface serving to press the toner against the latent electrostatic image,

charging said toner to the same polarity as that of the latent electrostatic image,

applying bias voltage to said developer supply means,

setting the polarity of said bias voltage at the same polarity as that of said latent electrostatic image during the time of development of said latent electrostatic image, and

setting the polarity of said bias voltage at the opposite polarity to that of said latent electrostatic image after the latent electrostatic image has been developed.

4,350,750

ELECTROPHOTOGRAPHIC PROCESS

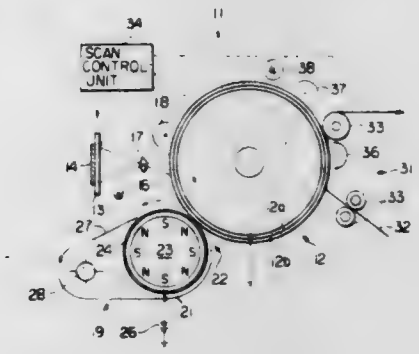
Shigeru Suzuki; Minoru Suzuki; Koichi Suzuki; Kyoji Omi; Yasumori Nagahara; Yoshiharu Kagari; Makoto Hashimoto, and Goro Mori, all of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

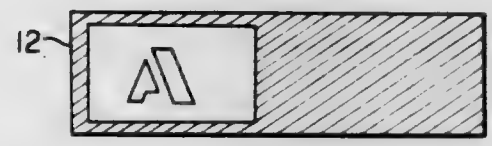
Continuation of Ser. No. 760,891, Jan. 21, 1977, abandoned. This application Aug. 14, 1980, Ser. No. 177,974

Claims priority, application Japan, Jan. 23, 1976, 51-6865

Int. Cl.³ G03G *13/22, 21/00*

U.S. Cl. 430—125 **4 Claims**





1. An electrophotographic process for making a plurality of copies from an original document utilizing a photoconductive member comprising:

(I) making the last copy of said plurality of copies utilizing the steps of:

(a) electrostatically charging the photoconductive member;

(b) radiating a light image of the original document onto the photoconductive member to form an electrostatic image thereon;

(c) applying a developing substance by means of a magnetic brush to the photoconductive member to produce a toner image thereon;

(d) transferring the toner image to a copy sheet;
(e) electrostatically discharging the photoconductive member;
(f) uniformly radiating the photoconductive member with light to further discharge the photoconductive member;
(g) cleaning the photoconductive member by means of the same magnetic brush;
(h) electrostatically discharging the photoconductive member;
(i) uniformly radiating the photoconductive member with light to further discharge the photoconductive member;
(j) cleaning the photoconductive member by means of the same magnetic brush;

(II) making all but the last copy of said plurality of copies comprising only steps (a), (b), (c), (d), (e) and (j);

(III) performing steps (b) and (d) on the same portion of the photoconductive member both for making said last copy as set forth in step (I) and for making all but the last copy of said plurality of copies as set forth in step (II);

(IV) subsequently, after completing steps (I), (II) and (III), indexing the photoconductive member a distance which is other than a multiple or submultiple of the length of the image thereon to provide a new image area partially overlapping the previous image area; and

(V) making one or more further copies utilizing said new image area such that the making of said one or more further copies operates on a different successive overlapping portion of the photoconductive member, whereby fatigue of the drum is uniformly distributed over different successive overlapping portions of the photoconductive member and localized fatigue is thereby precluded.

4,350,751

HIGH RESOLUTION HETEROGENEOUS PHOTOCONDUCTIVE COMPOSITIONS AND METHOD OF PREPARING

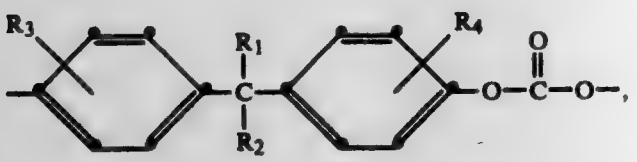
Lawrence E. Contois, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 111,428, Jan. 11, 1980, abandoned. This application Jul. 6, 1981, Ser. No. 280,199
Int. Cl.³ G03G *5/06*
U.S. Cl. 430—135 **3 Claims**

1. In a method for the preparation of a heterogeneous photoconductive composition capable of high resolution wherein a thiopyrylium dye is combined in solution with an electrically insulating polymer to form photoconductive aggregate particles, the improvement wherein the thiopyrylium dye is combined in solution with an electrically insulating polymeric blend consisting of:

(a) from about 50.0 to about 99.9 weight percent of a non-aggregating polymer effective to reduce particle size and particle size distribution of the aggregate particles formed in said blend and

(b) from about 0.1 to about 5.0 weight percent of an aggregating polymer having repeating units according to the structure:



I.

wherein:

R_1 and R_2, taken separately are the same or different, and represent hydrogen or alkyl; or R_1 and R_2 taken together, represent the carbon atoms necessary to form a cyclic hydrocarbon radical having up to 14 ring carbon atoms; and

R_3 and R_4 represent hydrogen or alkyl;

provided that when R_1 and R_2 are both methyl, R_3 and R_4 must be other than hydrogen.

4,350,752

PHOTOGRAPHIC ELEMENTS AND FILM UNITS CONTAINING IMIDOMETHYL BLOCKED PHOTOGRAPHIC REAGENTS

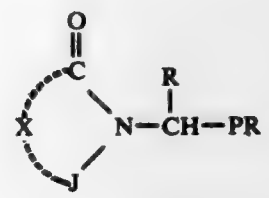
James A. Reczek, and Thomas R. Welter, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 29, 1980, Ser. No. 220,408
Int. Cl.³ G03C *7/00, 5/30, 1/48, 1/40*
U.S. Cl. 430—219 **21 Claims**

1. A photographic image transfer film unit comprising:

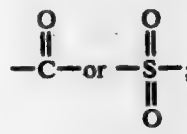
(a) a photosensitive element comprising a support bearing a layer of a silver halide emulsion having associated therewith a dye-image-providing material, and

(b) a dye image-receiving layer, the film unit containing an imidomethyl blocked photographic reagent having the structure:



wherein:

J represents



X represents the atoms to complete a heterocyclic nucleus containing at least one 5- or 6-membered ring;

R represents hydrogen, alkyl of 1 to 4 carbon atoms or aryl of 6 to 12 carbon atoms; and

PR represents the residue of an organic photographic reagent containing a heteroatom through which it is joined to the imidomethyl blocking group and which, upon unblocking, is capable of reacting with another component of the film unit.

4,350,753

POSITIVE ACTING COMPOSITION YIELDING PRE-DEVELOPMENT HIGH VISIBILITY IMAGE AFTER RADIATION EXPOSURE COMPRISING RADIATION SENSITIVE DIAZO OXIDE AND HALOALKYL-S-TRIAZINE WITH NOVOLAK AND DYESTUFF

James Shelnut, Carmel; Eugene Golda, Monsey; Alan Wilkes, Brewster, and Ken-ichi Shimazu, Briarcliff Manor, all of N.Y., assignors to Polychrome Corporation, New York, N.Y.

Filed Jun. 15, 1981, Ser. No. 273,790
Int. Cl.³ G03C *1/54, 1/60;* G03F *7/08*
U.S. Cl. 430—190 **13 Claims**

1. A colored, positive-acting composition whose color disappears or decreases upon irradiation comprising an admixture of,

I. at least one acid-free, aqueous alkali-soluble novolak resin as the major resin in the composition;

II. at least one haloalkyl-s-triazine radiation-sensitive component which upon irradiation yields acidic products;

III. at least one acid-sensitive dyestuff which upon contact with the product of irradiation of component II is rendered colorless or much less intensely colored than before such contact; and

IV. at least one positive-acting diazo oxide which upon irradiation yields acidic products.

4,350,754
BLOCKED DEVELOPMENT RESTRAINERS

James R. Bartels-Keith, Lexington, and Anthony J. Puttick, Arlington, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Jun. 12, 1981, Ser. No. 273,039
Int. Cl.³ G03C *1/40, 5/54, 1/10, 3/00*
U.S. Cl. 430—219 26 Claims

17. A diffusion transfer film unit comprising:

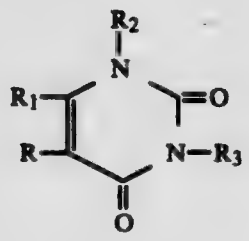
(a) a photosensitive element comprising a support, a silver halide emulsion in a layer carried by said support and an image dye-providing material in a layer carried by said support on the same side thereof as said silver halide emulsion;

(b) a second sheet-like element adapted to be superposed on said photosensitive element during or after photoexposure;

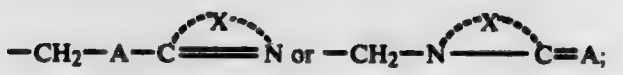
(c) an image receiving layer positioned in one of said photosensitive or second sheet-like elements;

(d) a rupturable container releasably holding an aqueous alkaline processing composition and so positioned as to be adapted to distribute said processing composition between predetermined layers of said elements; and

(e) present in at least one of said photosensitive and second sheet-like elements a compound represented by the formula



wherein R is

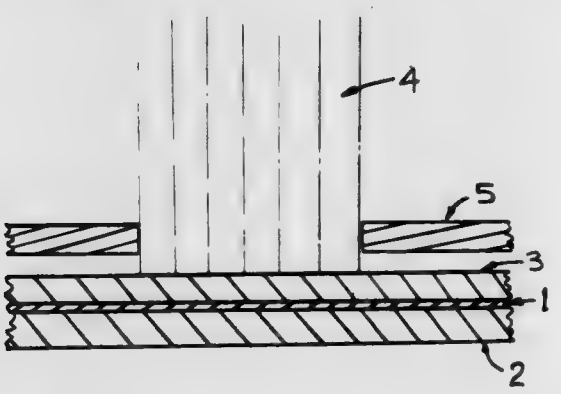


A is sulfur or selenium; X represents the nonmetallic atoms necessary to form a nucleus which completes a five or six membered heterocyclic moiety; R_1 is H or alkyl having from 1 to 6 carbon atoms; R_2 is H or a hydrolyzable group; and R_3 is H, alkyl or a hydrolyzable group.

4,350,755
AUGER MICROLITHOGRAPHY

Chia-Gee Wang, P.O. Box 211, Millwood, N.Y. 10546

Filed Jul. 23, 1980, Ser. No. 171,573
Int. Cl.³ G03C *5/00, 5/04;* G21G *5/00*
U.S. Cl. 430—264 10 Claims



1. A method of producing a latent image on a wafer material for use in the production of micro-electronic circuits comprising: coating the surface of the wafer with a carrier in which are disbursed silver halide crystals and exposing a desired portion of the coating to monochromatic X-rays having a wavelength to induce an inner shell ionization of the halide atoms with subsequent auger cascade, thereby to sensitize the silver halide crystals exposed to the monochromatic X-rays.

9. A method according to claim 8, wherein the exposed silver-bromide crystals are developed to form silver grains by the use of a developer which results in localized hardening of the gelatin in the exposed area of the layer, the silver grains then being oxidized for dissolution together with the non-exposed areas of the layer, to leave exposed desired areas of the wafer, the remaining area of the wafer being coated by the hardened gelatin which is impermeable to the materials to be used for etching the exposed surfaces of the wafer.

4,350,756
PROCESSING OF RADIATION SENSITIVE PLATES

Jeremy R. Burch, Wilberfoss, and David E. Murray, Leeds, both of England, assignors to Vickers Limited, London, England

Filed Feb. 4, 1981, Ser. No. 231,416
Claims priority, application United Kingdom, Jan. 29, 1980, 8002934
Int. Cl.³ G03F *7/02;* G11D *17/00*
U.S. Cl. 430—331 12 Claims

9. A method of processing an imagewise exposed negative working radiation sensitive plate which comprises the step of developing the plate using a substantially aqueous developer comprising an aqueous solution of a non-ionic surfactant, a salt of an aromatic carboxylic acid, and a salt of an aliphatic carboxylic acid containing up to nine carbon atoms.

4,350,757
METHOD FOR MAKING VISIBLE RESIDUAL MOISTURE DISTRIBUTIONS IN PHOTOGRAPHIC WET FILM LAYERS SUBJECTED TO AN ONCOMING FLOW

Bernhard Montag, Forchheim; Gert Magea, Nuremberg, and Heinrich Opitz, Erlangen, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Feb. 18, 1981, Ser. No. 235,672
Claims priority, application Fed. Rep. of Germany, Mar. 4, 1980, 3008266
Int. Cl.³ E03C *5/26*
U.S. Cl. 430—422 4 Claims

1. A method for making visible by photochemical means residual moisture distributions in photographic wet film layers exposed to flow, comprising:

(a) providing a silver halide-containing photographic film diffusively pre-exposed in daylight;

(b) placing said film in an aqueous swelling agent solution until the gelatin layer of said film is saturated, said swelling agent solution containing a member selected from (1) a reducing agent and (2) an alkali material;

(c) applying said swelled film to a surface;

(d) exposing said surface having said swelled film thereon to a flow to obtain invisible residual moisture distributions in said film;

(e) immersing said film in a solution selected from (1) a substantially water-free alcoholic alkali solution where the swelling agent solution of step (b) contains a reducing agent, and (2) a substantially water-free alcoholic solution of a reducing agent where the swelling agent solution of step (b) contains an alkali material, so as to make visible said moisture distributions.

4,350,758

PHOTOGRAPHIC EMULSION CONTAINING COPPER HALIDE HOST CRYSTALS

Takeo Koitabashi; Syozi Matsuzaka; Toshifumi Iijima, and Tetsuya Harada, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Nov. 3, 1980, Ser. No. 203,513
Claims priority, application Japan, Nov. 12, 1979, 54-146739
Int. Cl.³ G03C *1/02*
U.S. Cl. 430—567 7 Claims

1. A photographic gelatin silver halide emulsion comprising a composite crystal consisting essentially of (A) (i) a solid solution crystal of a copper halide and a silver halide or (ii) a copper halide, as a host crystal having a mean granular diameter of at least 0.05μ, and (B) a silver halide which is epitaxially junctioned onto said host crystal.

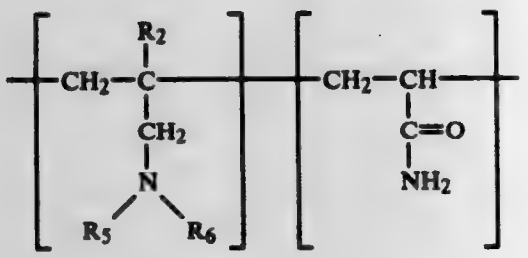
4,350,759

ALLYL AMINE POLYMERIC BINDERS FOR PHOTOGRAPHIC EMULSIONS

Maurice J. Fitzgerald, Canton, and Thomas E. Platt, Manchester, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Mar. 30, 1981, Ser. No. 249,065
Int. Cl.³ G03C *1/72*
U.S. Cl. 430—630 6 Claims

1. A photosensitive silver halide emulsion comprising silver halide crystals disposed in an emulsion binder comprising an allylamine copolymer having repeating units of the general formula:



wherein R_2 is hydrogen, methyl, or chloro; and R_5 and R_6 are independently selected from hydrogen and methyl, or are chemically joined to form a 6 membered heterocyclic ring structure.

4,350,760

METHOD FOR THE SEPARATION OF A PROTEIN SUBSTANCE FROM A SOLUTION CONTAINING THE SAME BY AFFINITY FILTRATION AND APPLICATION OF SAID METHOD TO ENZYMATIC ASSAYS

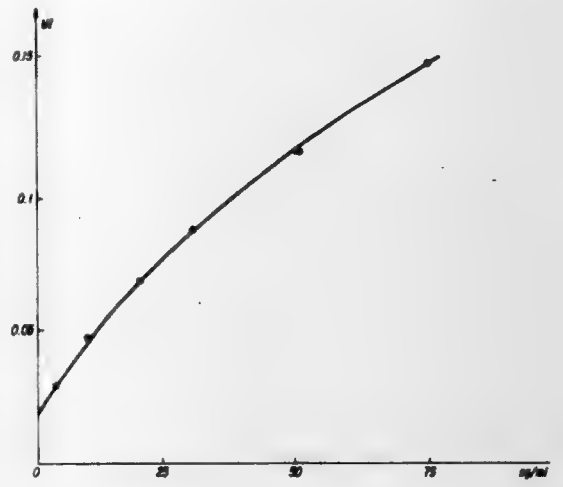
Jean-Claude Nicolas; Beatrice Terouanne; Bernard Descomps, and Andre Crastes de Paulet, all of Montpellier, France, assignors to Institut National de la Sante et de la Recherche Medicale, Paris, France

Filed Jun. 17, 1980, Ser. No. 160,271
Claims priority, application France, Jun. 21, 1979, 79 15992
Int. Cl.³ G01N *33/54*
U.S. Cl. 435—7 11 Claims

1. A method for the direct enzymatic assay for the presence of a binding agent by assaying for the product of reaction of a binding agent with an enzyme labeled substance, said binding agent having affinity for said enzyme-labeled substance, comprising the steps of:

reacting said binding agent with said enzyme-labeled substance to give a reaction solution containing a reaction product having a molecular weight higher than the molecular weight of said enzyme-labeled substance;

separating enzyme-labeled substance from said reaction product by filtering said solution through a gel having pores of a size sufficient to exclude said reaction product, said gel being coupled with a ligand for which said enzyme has affinity; and



measuring the enzymatic activity of said solution after said solution passes through said gel.

4,350,761

METHOD OF AND REAGENTS FOR QUANTITATIVE ANALYSIS OF CYCLIC NUCLEOTIDES

Itaru Yamamoto, Okayama, Japan, assignor to Yamasu Shoyu Kabushiki Kaisha, Chiba, Japan

Filed May 15, 1980, Ser. No. 149,959
Claims priority, application Japan, May 18, 1979, 54-61669
Int. Cl.³ G01N *33/54;* C12Q *1/00;* C12N *9/96*
U.S. Cl. 435—7 12 Claims

1. A method for the quantitative analysis of cyclic nucleotides which comprises:

acylating a cyclic nucleotide in an assay sample by using an acylating agent;

causing said acyl-cyclic nucleotide and a predetermined quantity of an enzyme-labeled cyclic nucleotide formed by bonding a cyclic nucleotide corresponding to the cyclic nucleotide to be assayed and an enzyme through a dicarboxylic acid to undergo a competitive antigen-antibody reaction with a predetermined quantity of an antibody corresponding to the cyclic nucleotide to be assayed;

separating the enzyme-labeled cyclic nucleotide which has become bonded to said antibody and the enzyme-labeled cyclic nucleotide which has not become bonded thereto; and

measuring the enzyme activity of either of said enzyme-labeled cyclic nucleotides thereby to determine the quantity of the cyclic nucleotide.

4,350,762

AMINOPYRINE IMPROVED TRINDER'S REAGENT AND DOSING PROCESS FOR HYDROGEN PEROXIDE FROM ENZYMATIC OXIDATION OF METABOLIC SUBSTRATA WITH THE SAME

Ugo De Luca, Milan, and Francesco Zoppi, Treviglio, both of Italy, assignors to ELVI S.p.A., Milan, Italy

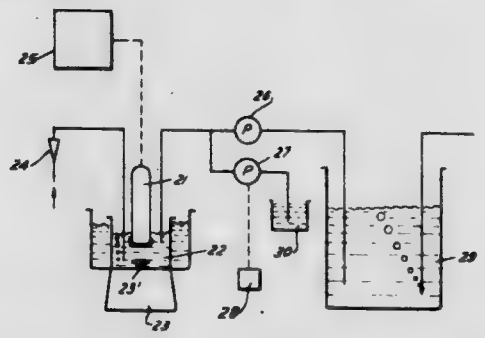
Filed Feb. 3, 1981, Ser. No. 231,152
Claims priority, application Italy, Feb. 4, 1980, 19672 A/80
Int. Cl.³ C12Q *1/62*
U.S. Cl. 435—10 3 Claims

1. In a Trinder's reagent for the clinical analysis of hydrogen peroxide by the enzymatic oxidation of a metabolic substrate in the presence of bilirubin, said reagent containing 2,4-dichlorophenyl sulphonate and 4-aminophenazone; the improvement in which the Trinder's reagent contains 1 to 30 g/l of aminopyrine to block the interferring action of said bilirubin.

4,350,763
METHOD FOR DETERMINING BIOCHEMICAL OXYGEN DEMAND

Shuichi Suzuki, Tokyo, and Isao Karube, Tachikawa, both of Japan, assignors to Ajinomoto Company, Inc., Tokyo, Japan

Continuation of Ser. No. 889,282, Mar. 23, 1978, abandoned, which is a continuation-in-part of Ser. No. 840,650, Oct. 11, 1977, abandoned. This application Apr. 7, 1980, Ser. No. 138,121
Int. Cl.³ C12Q *1/29*
U.S. Cl. 435—29 6 Claims



1. A method of determining the biochemical oxygen demand of an aqueous liquid containing organic matter which comprises

(a) contacting a sample of said liquid with molecular oxygen and with a microbial electrode comprising an oxygen-sensitive electrode covered by first and second membranes which are permeable to said liquid and oxygen and impermeable to microbial cells and microorganisms immobilized or confined between the membranes, said microorganisms being capable of aerobically metabolizing said organic matter and thereby consuming said oxygen,

(b) electrochemically sensing the rate of consumption or the decrease in steady state concentration of said oxygen caused by said microorganisms during a period not exceeding two hours; and

(c) calculating the biochemical oxygen demand from said rate of consumption or said decrease of the oxygen by making use of the direct linear relationship between the biochemical oxygen demand and the rate of consumption or the decrease of the amount of oxygen.

4,350,764
MICROBIOLOGICAL SYNTHESIS OF BETA ENDORPHIN

John D. Baxter; Ivy Fettes, both of San Francisco, Calif., and John Shine, Curtin, Australia, assignors to The Regents of the University of California, Berkeley, Calif.

Filed Mar. 10, 1980, Ser. No. 128,711
Int. Cl.³ C12P *21/02;* C12N *15/00, 1/20, 1/00*
U.S. Cl. 435—69 11 Claims

1. A method of making a peptide having opiate agonist or antagonist activity comprising the steps of:

(a) providing a cloned mammalian DNA fragment comprising a naturally occurring mammalian codon sequence, coding for said peptide,

(b) providing a stop condon selected from the group consisting of TGA, TAA and TAG, said stop codon being in phase with said coding sequence adjacent to and in reading frame phase with a codon for a COOH-terminal amino acid of said peptide,

(c) inserting said coding sequence into an internal position in an expressible bacterial gene in a DNA transfer vector, such that the cloned mammalian coding sequence is followed by said stop codon and is in the same orientation with respect to translation as the bacterial gene, such that readthrough translation of the inserted coding sequence can take place resulting in a fusion protein comprising said peptide, said peptide being joined to the remainder of said fusion protein by an arginine residue,

(d) protecting said fusion protein with a reagent capable of reacting with lysine epsilon amino groups in order to prevent trypsin action at the site of said lysine residues,

(e) digesting the fusion protein with trypsin, and

(f) deprotecting the lysine residues thereby yielding a peptide having opiate agonist or antagonist activity.

4. A DNA transfer vector having an expressible bacterial gene and having inserted therein a nucleotide sequence comprising codons coding for a peptide having opiate agonist or antagonist activity, said nucleotide sequence comprising a naturally-occurring mammalian sequence coding for said peptide and being followed by a stop codon selected from the group consisting of TGA, TAA and TAG, said stop codon being in phase with said coding sequence and being adjacent to and in reading frame phase with a codon coding for a COOH-terminal amino acid of said peptide, said nucleotide sequence being inserted in such orientation with respect to said bacterial gene that expression of said gene results in synthesis of a protein comprising said peptide.

4,350,765
METHOD FOR PRODUCING ETHANOL WITH IMMOBILIZED MICROORGANISM

Ichiro Chibata, Suita; Jyoji Kato, Yawata, and Mitsuru Wada, Nara, all of Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

Filed Jun. 5, 1980, Ser. No. 156,868
Claims priority, application Japan, Jun. 13, 1979, 54-74972; Sep. 28, 1979, 54-125966
Int. Cl.³ C12P *7/06;* C12N *11/10, 11/04*
U.S. Cl. 435—161 11 Claims

1. A method for producing ethanol by conversion reaction of fermentative sugar into ethanol, which comprises the steps of:

(1) contacting an ethanol-producing microorganism immobilized in a sulfated polysaccharide gel containing not less than 10 w/w % of sulfate (—SO_3H) moiety with a nutrient culture broth containing not more than 100 mg/ml of a fermentative sugar, said ethanol-producing microorganism being selected from the group consisting of the genera of Saccharomyces and Zymomonas and said microorganism being immobilized in said sulfated polysaccharide gel as a dense layer near the surface of said gel,

(2) microbiologically converting said sugar into ethanol until the concentration of the sugar in the broth is lowered to not more than 20% of its initial concentration;

(3) contacting the broth from step (2) and said immobilized microorganism with additional fresh culture broth containing not less than 100 mg/ml of the sugar until ethanol is produced in a concentration in the broth of not less than 75 mg/ml; and then

(4) separating the broth containing the ethanol produced.

4,350,766
PENTOSE SYRUP PRODUCTION FROM HEMICELLULOSE

Robert L. Mehlberg, West Lafayette, Ind., assignor to Purdue Research Foundation, West Lafayette, Ind.

Filed Aug. 1, 1980, Ser. No. 174,454
Int. Cl.³ C13K *1/02;* C12P *7/06*
U.S. Cl. 435—161 16 Claims

1. A method for the production of pentose syrup from hemicellulose material which comprises the separate steps of:

(a) hydrolyzing hemicellulose material in the presence of from about 1% to 15% of an acid, selected from sulfuric and hydrochloric acid, at a liquid:solid ratio between 0.1 and 4.0 by heating said material to a reaction temperature of from 90° to 120° C. for a period of time sufficient to hydrolyze substantially all of the hemicellulose; and thereafter

(b) subjecting the hydrolyzed material to leaching at a temperature of from about 15° to 100° C. with an aqueous medium by percolating said medium through said hydro-

lyzed material at a velocity of from 0.016 to 0.83 mm/sec; and

(c) recovering a syrup containing at least 5 percent of pentoses, whereby there is obtained a pentose syrup having a low pH and suitable for storage for extended periods of time without microbial degradation, said steps (a) and (b) being carried out in the same reaction vessel which is characterized as a packed bed reactor.

4,350,767

METHOD FOR ISOLATING AND PURIFYING ENZYMES FROM A CRUDE ENZYME SOLUTION

Ulrich Zimmermann, Jülich, Fed. Rep. of Germany; Mohammed Saleemuddin, Aligarh, India, and Günter Pilwat, Niederzier, Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich Gesellschaft mit beschränkter Haftung, Jülich, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 51,197, Jun. 22, 1979, abandoned. This application May 15, 1981, Ser. No. 264,022

Claims priority, application Fed. Rep. of Germany, Jun. 28, 1978, 2828235

Int. Cl.³ C12N *9/00, 9/04*

U.S. Cl. 435—183 **6 Claims**

1. A method of isolating and purifying selected enzymes from a crude enzyme solution made from animal organs or tissues, the method including the steps of:

contacting the crude enzyme solution with an adsorption medium composed of hemolyzed, ruptured, erythrocyte membranes, the membranes having an affinity to bind by adsorption the selected enzymes thereto, to thereby adsorb the selected enzyme on the membrane;

removing the membranes from contact with the crude enzyme solution with the selected enzymes adsorbed on the membranes, and

separating the selected enzyme from the membranes by elution.

4,350,768

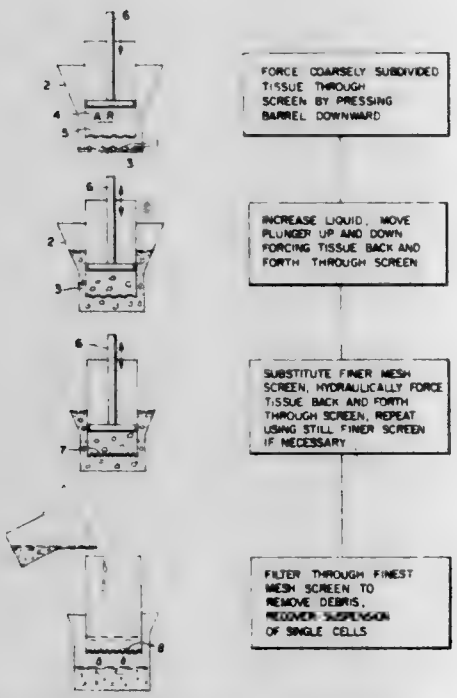
METHOD FOR PREPARING SINGLE CELL SUSPENSION

Claude Tihon, Manlius, and M. E. Curry, Syracuse, both of N.Y., assignors to Bristol Myers Company, New York, N.Y.

Filed Sep. 19, 1980, Ser. No. 188,710

Int. Cl.³ C12N *5/02*; B01D *29/00*; B26B *27/00*

U.S. Cl. 435—241 **20 Claims**



1. The method for preparing a suspension of single tissue cells comprising the steps of:

providing a subdivided tissue sample;

combining the subdivided sample material with sufficient buffered aqueous liquid medium to encompass the sample;

introducing the resulting combination into an expansible; and contractible chamber defined in part by a finely-apertured foraminous wall portion;

providing a container to receive the resulting combination; and

forcibly contracting the chamber to force the sample material through the foraminous wall portion into said container, thereby further subdividing the sample material.

4,350,769

KLEBSIELLA PNEUMONIAE, ATCC 31488

Kenneth S. Kang, LaJolla, and George T. Veeder, San Diego, both of Calif., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 210,115, Nov. 24, 1980, Pat. No. 4,311,795, which is a division of Ser. No. 16,253, Feb. 28, 1979, Pat. No. 4,291,156. This application Jul. 13, 1981, Ser. No. 282,679

Int. Cl.³ C12N *1/00*; C12R *1/22*

U.S. Cl. 435—243 **1 Claim**

1. The biologically pure lyophilized culture of a strain of *Klebsiella pneumoniae*, ATCC 31488.

4,350,770

MICROBIOLOGICAL PROCESS FOR REMOVING OLEAGINOUS MATERIAL FROM WASTEWATER AND MICROBIOLOGICAL COMBINATION CAPABLE OF SAME

Philip W. Spraker, Troutville, Va., assignor to Sybron Corporation, Rochester, N.Y.

Continuation of Ser. No. 4,241, Jan. 17, 1979, Pat. No. 4,288,545. This application May 7, 1981, Ser. No. 261,394

The portion of the term of this patent subsequent to Sep. 8, 1998, has been disclaimed.

Int. Cl.³ C12N *1/20*

U.S. Cl. 435—253 **6 Claims**

1. A microbial synergist combination comprising:

(a) a microorganism of the strain *Pseudomonas aeruginosa* $SGRR_2$ (ATCC-31480); and

(b) at least one of:

(i) a microorganism of the genus Bacillus; and

(ii) a microorganism of the genus Pseudomonas other than said strain *Pseudomonas aeruginosa* $SGRR_2$, said combination of microorganisms (a) and (b) synergistically acting to utilize oleaginous materials of animal origin or containing the same as a source of assimilable carbon and degrade said oleaginous materials of animal origin or containing the same.

4,350,771

OXIDATION RESISTANT SILICON NITRIDE CONTAINING RARE EARTH OXIDE

J. Thomas Smith, Acton, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

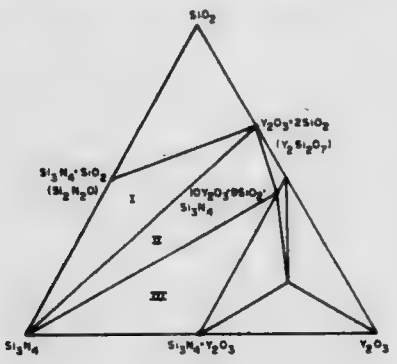
Continuation of Ser. No. 944,515, Sep. 20, 1978, abandoned. This application Sep. 18, 1981, Ser. No. 303,445

Int. Cl.³ C04B *35/50, 35/58*

U.S. Cl. 501—97 **4 Claims**

1. A polycrystalline ceramic body consisting essentially of a composition of Si_3N_4, SiO_2 and Y_2O_3, said composition lying within a triangular region of the Si_3N_4-SiO_2-Y_2O_3 ternary

composition diagram bounded by lines joining the points Si_3N_4, $Y_2O_3.2SiO_2$, $10Y_2O_3.9SiO_2.Si_3N_4$, and $Si_3N_4.Y_2O_3$,



said compositions having from about 2 to about 4 weight percent SiO_2 and up to about 13 weight percent Y_2O_3.

4,350,772

PROCESS FOR THE PREPARATION OF HYDROCARBONS FROM SYNTHESIS GAS

Martin F. M. Post, and Lambert Schaper, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 95,027, Nov. 16, 1979, abandoned. This application Mar. 6, 1981, Ser. No. 241,192

Claims priority, application Netherlands, Nov. 30, 1978, 7811766

Int. Cl.³ C07C *1/04*

U.S. Cl. 518—714 **9 Claims**

1. In a process for the preparation of a hydrocarbon mixture of C_5, containing aromatics, which comprises contacting a mixture of carbon monoxide and hydrogen at a temperature of 200°–500° C., a pressure of 1–150 bar and a space velocity of 50–5000 Nl gas/l catalyst/h, temperature with a mixture of two catalysts, said mixture consisting essentially of a catalyst X and a catalyst Y, catalyst X being capable of catalysing the conversion of an H_2/CO mixture into substantially methanol and/or dimethyl ether and containing zinc together with chromium, and catalyst Y being a crystalline silicate, which silicate is characterized by having the following properties after 1 hour's calcining in air at 500° C.:

(a) thermally stable up to a temperature above 600° C.,

(b) an X-ray powder diffraction pattern showing, inter alia, the reflections given in Table A.

TABLE A

Radiation: Cu—Ka 2 θ	Wavelength 0.15418 nm relative intensity
7.8–8.2	S
8.7–9.1	M
11.8–12.1	W
12.4–12.7	W
14.6–14.9	W
15.4–15.7	W
15.8–16.1	W
17.6–17.9	W
19.2–19.5	W
20.2–20.6	W
20.7–21.1	W
23.1–23.4	VS
23.8–24.1	VS
24.2–24.8	S
29.7–30.1	M

where the letters used have the following meanings: VS=very strong; S=strong; M=moderate; W=weak; θ=angle according to Bragg's law,

(c) after evacuation at 2×10^{-9} bar and 400° C. for 16 hours and measured at a hydrocarbon pressure of 8×10^{-2} bar and 100° C., the adsorption of n-hexane is at least 0.8 mmol/g, the adsorption of 2,2-dimethylbutane at least 0.5 mmol/g, and the ratio

$$\frac{\text{adsorption of n-hexane}}{\text{adsorption of 2,2-dimethylbutane}} \text{ at least 1.5,}$$

(d) the composition, expressed in moles of the oxides, is as follows: $y.(1.0\pm0.3)$. $M_2O.y.Al_2O_3SiO_2$, where M=H and alkali metal and y is 0.01–0.02, the improvement which comprises that the silicate contains 0.1–10% by weight on the silicate of at least one element selected from the group of manganese, calcium, magnesium and titanium.

4,350,773

WEAKLY ACIDIC CATION EXCHANGE RESIN AND PROCESS FOR PRODUCING SAME

Takaharu Itagaki, Yokohama, and Hidenaga Ouchi, Komae, both of Japan, assignors to Mitsubishi Chemical Industries, Limited, Tokyo, Japan

Division of Ser. No. 174,566, Aug. 4, 1980, Pat. No. 4,306,031. This application Jul. 6, 1981, Ser. No. 280,522

Claims priority, application Japan, Aug. 14, 1979, 54-103352; Oct. 8, 1979, 54-129745

Int. Cl.³ B01J *41/12*; C08F *16/06*

U.S. Cl. 521—31 **15 Claims**

1. A weakly acidic cation exchange resin which is obtainable by a reaction of glyoxylic acid and a polyvinyl alcohol cross-linked by cross-linking groups each containing two or more carbon atoms, and has an exchange capacity of 3 meq/g or greater and a swelling volume of 10 ml/g or smaller.

4,350,774

POLYMERIC FOAM CAULKING COMPOSITIONS

Frank Scotti, 450 Indian Rd., Wayne, N.J. 07470, and Edward H. Page, 1021 Hillcrest Ave., Ridgewood, N.J. 07450

Continuation of Ser. No. 103,428, Dec. 14, 1979, abandoned. This application Sep. 4, 1981, Ser. No. 299,507

Int. Cl.³ C08J *9/12, 9/14*

U.S. Cl. 521—95 **32 Claims**

1. A composition suitable for preparing a stable cellular foam, said composition comprising:

an emulsion of one or more foamable polymers of monomers selected from the group consisting of acrylic acid, methacrylic acid and alkyl esters of acrylic and methacrylic acids wherein the alkyl moiety includes from one to eleven carbon atoms, said polymers having a glass transition temperature of less than about 15° C.; a filler and

dispersed in said emulsion, a foam forming amount of a mixture of nitrous oxide and a volatile organic liquid compound selected from the group consisting of a volatile hydrocarbon, a volatile halogenated hydrocarbon and mixtures thereof; wherein the weight percent ratio of said nitrous oxide to said organic liquid compound is about 1.5:1 to about 6:1 and wherein said foam is self-leveling, water resistant and the volume of said foam is not greater than about six times the volume of said unfoamed composition.

4,350,775

PROCESS FOR THE PRODUCTION OF ALKALI METAL SILICATE-ORGANIC PLASTICS

David H. Blount, 5450 Lea St., San Diego, Calif. 92105

Division of Ser. No. 233,151, Feb. 10, 1981, which is a continuation-in-part of Ser. No. 146,474, May 5, 1980, Pat. No. 4,273,908, which is a continuation-in-part of Ser. No. 36,350, May 7, 1979, abandoned, which is a continuation-in-part of Ser. No. 889,932, Mar. 27, 1978, abandoned, which is a continuation-in-part of Ser. No. 663,924, Mar. 4, 1976, Pat. No. 4,097,424, which is a continuation-in-part of Ser. No. 599,000, Jul. 7, 1975, Pat. No. 4,072,637, which is a continuation-in-part of Ser. No. 262,485, Jun. 14, 1972, abandoned, which is a continuation-in-part of Ser. No. 71,628, Sep. 11, 1970, abandoned. This application Aug. 10, 1981, Ser. No. 300,302

Int. Cl.³ C08J 9/14

U.S. Cl. 521—100 25 Claims

1. The process for the production of foamed polyurethane silicate product by mixing and reacting the following components:

(a) an aqueous alkali metal silicate solution in the amount of 100 parts by weight;

(b) a polymerizable unsaturated organic compound in the amount of 5 to 100 parts by weight;

(c) a mono or polycarboxylic acid salt-forming compound in the amount of 1 to 10 parts by weight;

(d) an initiator in a catalytic amount;

(e) 50 to 200 parts by weight of a polyisocyanate, up to 10% by weight of a polyisocyanate initiator, up to 20% by weight of an emulsifier, up to 50% by weight of a blowing agent, up to 20% by weight of a regulator, and 1 to 150 parts by weight of a polyol are mixed with the emulsive mixture of Components (a), (b), (c) and (d), thereby producing a foamed polyurethane silicate product; percentages are based on weight of the Components (a), (b), (c) and (d).

4,350,776

METHOD OF MAKING A LOW-FRIABILITY, THERMOSETTING FOAM

Stuart B. Smith, Conyers, Ga., assignor to Thermoset AG, Switzerland

Filed Feb. 26, 1981, Ser. No. 238,467

Int. Cl.³ C08J 9/14

U.S. Cl. 521—110 15 Claims

1. A method for preparing a thermosetting foam product, which method comprises reacting a furfuryl-alcohol polymer with a phenol-formaldehyde resin, having a mole ratio of phenol to formaldehyde of from about 1:1.2 to 1:2.0, in the presence of a blowing agent and a catalytic amount of a strong acid catalyst, to effect the generally simultaneous condensation of the phenol-formaldehyde resin and the polymerization of the furfuryl-alcohol polymer, to provide an integral thermosetting foam produce characterized by low-friability, high-compressive-strength and good flame-retardant properties.

4,350,777

IMPERMEABLE MOLDED ARTICLES OF CELLULAR POLYURETHANE ELASTOMERS PRODUCED WITH ORGANOFUNCTIONAL POLYSILOXANE-DERIVATIVES AND THEIR USE AS SPRING ELEMENTS

Paul Heinrichs, Bergisch-Gladbach; Peter Haas, Haan; Hans-Georg Hoppe, Leichlingen, and Wolfgang Grimm, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 12, 1981, Ser. No. 242,963

Claims priority, application Fed. Rep. of Germany, Mar. 28, 1980, 3012125; Aug. 1, 1980, 3029272

Int. Cl.³ C08G 18/38

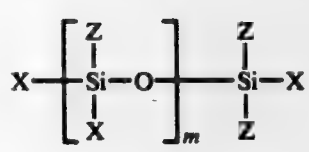
U.S. Cl. 521—110 12 Claims

1. A method of producing an impermeable, fine cellular polyurethane elastomer having a density of from 0.3 to 0.8 g/cm³ comprising reacting

(A) organic polyisocyanates,

(B) polyhydroxyl compounds having a molecular weight of from 400 to 6000, and

(C) water, the equivalent ratio of isocyanate groups to isocyanate reactive compounds in the formulation being within the range of from 0.95:1 to 1.15:1, characterized in that from 0.1 to 3% by weight of one or more organofunctional polysiloxanes corresponding to the general formula



(I)

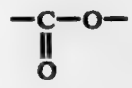
in which

m represents an integer of from 1 to 500, the groups

Z which may be the same or different represent C_1-to C_5-alkyl or C_6-to C_{15}-aryl or siloxyl groups and the groups

X have the same meaning as Z, with the proviso that at least 1, but not more than 5 of the radicals X represent H—Y—R groups, in which

Y represents —NR'—, —O—



or —S—,

R represents a C_1-to C_6-alkylene group which may contain hetero atoms, and

R' represents hydrogen, a C_1-to C_6-alkyl group or a C_5-to C_9-cycloalkyl group

are added to the reaction mixture.

4,350,778

METHOD FOR MAKING RIM POLYURETHANE ELASTOMERS USING AS THE CATALYST SYSTEM A HYDROXYALKYLAMINE, DIBUTYLTIN DILAURATE AND AN ALKYLTIN MERCAPTIDE

Richard J. G. Dominguez; Doris M. Rice, and Robert L. Zimmerman, all of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed May 29, 1981, Ser. No. 268,460

Int. Cl.³ C08G 18/14

U.S. Cl. 521—118 4 Claims

1. In a method for making a polyurethane elastomer of significantly improved properties wherein an aromatic polyisocyanate, a polyol of above about 500 equivalent weight, a chain extending agent comprising a low molecular weight active hydrogen containing compound of at least 2 functionality and a catalyst system is injected via a RIM machine into a mold cavity of the desired configuration the improvement which comprises

using as the catalyst system N-hydroxypropyl-N',N',N'',N''-tetramethyliminobispropylamine, dibutyltin dilaurate and an alkyltin mercaptide.

4,350,779

METHOD FOR MAKING RIM POLYURETHANE ELASTOMERS USING AS THE CATALYST SYSTEM METHYLDIETHANOLAMINE, DIBUTYLTIN DILAURATE AND AN ALKYLTIN MERCAPTIDE

Richard J. G. Dominguez, and David R. McCoy, both of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed May 29, 1981, Ser. No. 268,459
Int. Cl.³ C08G 18/14
U.S. Cl. 521—126 4 Claims

1. In a method for making a polyurethane elastomer of significantly improved properties wherein an aromatic polyisocyanate, a polyol of above about 500 equivalent weight, a chain extending agent comprising a low molecular weight active hydrogen containing compound of at least 2 functionality and a catalyst system is injected via a RIM machine into a mold cavity of the desired configuration the improvement which comprises:

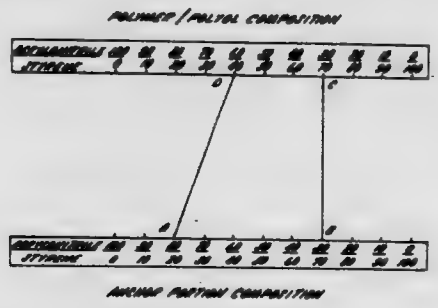
using as the catalyst system methyldiethanolamine, dibutyltin dilaurate and an alkyltin mercaptide.

4,350,780

POLYURETHANES MADE WITH POLYMER/POLYOLS PREPARED VIA PREFORMED STABILIZERS

Russell Van Cleve; George H. Armstrong, and Donald W. Simroth, all of Charleston, W. Va., assignors to Union Carbide Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 26,576, Apr. 3, 1979, Pat. No. 4,242,249, which is a continuation-in-part of Ser. No. 752,818, Dec. 20, 1976, abandoned. This application Aug. 14, 1980, Ser. No. 178,642
Int. Cl.³ C08G 18/14, 18/63
U.S. Cl. 521—137 6 Claims



1. A method for producing a polyurethane by reacting a mixture comprising (A) a polymer/polyol composition and (B) an organic polyisocyanate in the presence of (C) a catalyst for the reaction of (A) and (B) to produce a polyurethane, wherein the polymer/polyol composition (A) is produced by a process which comprises:

adding a preformed stabilizer, which is a graft or addition copolymer comprising (a) an anchor portion consisting essentially of a polymer of an ethylenically unsaturated monomer or a mixture of such monomers chemically bonded to (b) a solvatable portion consisting of a propylene oxide polymer having a number average molecular weight of at least about 800, said preformed stabilizer having a viscosity in excess of 40,000 centipoises at 25° C., to a normally liquid polypropylene oxide polyol having a number average molecular weight of at least about 400 and a hydroxyl number of from about 20 to about 280, said preformed stabilizer being present in the polyol in an amount sufficient to stabilize a polymer particle dispersed therein against phase separation, in order to provide a homogeneous mixture of said preformed stabilizer and said polyol, and subsequently

polymerizing a reaction mixture comprising (I) said homogeneous mixture of preformed stabilizer and polyol, (II) from about 10 to about 40 weight percent of an ethyleneically unsaturated monomer or a mixture of such monomers, said weight percent being based on the total weight of the monomer or monomer mixture and the polyol in said homogeneous mixture, and (III) a free radical catalyst.

2. A method for producing a polyurethane foam by reacting and foaming a mixture comprising (A) a polymer/polyol composition, (B) an organic polyisocyanate, (C) a catalyst for the reaction of (A) and (B) to produce the polyurethane, (D) a blowing agent, and (E) a foam stabilizer, wherein the polymer/polyol composition (A) is produced by a process which comprises:

adding a preformed stabilizer, which is a graft or addition copolymer comprising (a) an anchor portion consisting essentially of a polymer of an ethylenically unsaturated monomer or a mixture of such monomers chemically bonded to (b) a solvatable portion consisting of a propylene oxide polymer having a number average molecular weight of at least about 800, said preformed stabilizer having a viscosity in excess of 40,000 centipoises at 25° C., to a normally liquid polypropylene oxide polyol having a number average molecular weight of at least about 400 and a hydroxyl number of from about 20 to about 280, said preformed stabilizer being present in the polyol in an amount sufficient to stabilize a polymer particle dispersed therein against phase separation, in order to provide a homogeneous mixture of said preformed stabilizer and said polyol, and subsequently

polymerizing a reaction mixture comprising (I) said homogeneous mixture of preformed stabilizer and polyol, (II) from about 10 to about 40 weight percent of an ethylenically unsaturated monomer or a mixture of such monomers, said weight percent being based on the total weight of the monomer or monomer mixture and the polyol in said homogeneous mixture, and (III) a free radical catalyst.

4,350,781

PROCESS FOR THE PREPARATION OF POLYMER PRECURSORS CONTAINING OXAZOLIN-2-ONE RINGS

Werner Rasshofer, Cologne; Gerhard Grögler, Leverkusen, and Holger Meyborg, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 24, 1981, Ser. No. 286,419
Claims priority, application Fed. Rep. of Germany, Aug. 7, 1980, 3029922
Int. Cl.³ C08G 18/32
U.S. Cl. 521—149 11 Claims

1. A process for the preparation of a polymer precursor containing an oxazolin-2-one ring which forms a high molecular weight polymer upon heating comprising reacting:

(a) an amino-reactive group containing compound having at least two groups capable of entering into an addition or condensation reaction with primary or secondary aromatically bound amino groups with

(b) an aromatic amine having

(i) at least one primary or secondary aromatically-bound amino group and

(ii) at least one condensed oxazolin-2-one ring

in a quantity such that for each aromatically bound primary or secondary amino group there are from 0.95 to 5 groups present in the amino-reactive group containing compound which are capable of reacting with the amino group.

4,350,782

AQUEOUS PLASTIC DISPERSION, A PROCESS FOR ITS PREPARATION, ITS USE AND A SHEET PREPARED FROM THE PLASTIC DISPERSION

Manfred Küchler, Oberursel; Günther Duve, and Joachim Ebigt, both of Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 15, 1981, Ser. No. 302,400

Claims priority, application Fed. Rep. of Germany, Sep. 17, 1980, 3034949

Int. Cl.³ C08L *31/04*

U.S. Cl. 523—334 7 Claims

1. An aqueous plastic dispersion based on several different vinyl polymers, which contains (a) 4 to 54 percent by weight of a copolymer of a vinyl ester of a monocarboxylic acid and an alkyl acrylate with a glass transition temperature of at most −10° C., (b) 4 to 54 percent by weight of a copolymer of a vinyl ester of a monocarboxylic acid and an acrylate with a glass transition temperature of from 0° to 20° C., (c) 2 to 52 percent by weight of a homopolymer of a vinyl ester of a monocarboxylic acid with a glass transition temperature greater than 20° C. and (d) 10 to 80 percent by weight of a fibrous material, the quantity of the component (d) being relative to the sum of the polymers (a), (b) and (c).

4,350,783

MINE BOLT COMPOSITION

Dean W. Talbot, Coshocton, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 16, 1981, Ser. No. 254,786

Int. Cl.³ C08L *67/06*

U.S. Cl. 523—505 10 Claims

1. A resin composition adapted to maintain the rigidity of an encapsulated system, said composition comprising:

(a) an unsaturated polyester resin composition;

(b) from about 100 to about 400 parts by weight per 100 parts by weight of (a), (c) and (d) of calcium carbonate;

(c) from about 0.1 to about 1.0 part by weight per 100 parts by weight of the total composition of a relatively weak acid which is capable of reacting with calcium carbonate in the presence of water to generate carbon dioxide; and

(d) about 1 part by weight per 100 parts by weight of the total composition of water.

6. An encapsulated multicompartment system for mine roof bolting containing in one compartment a resin composition as defined in claim 1 and sufficient carbon dioxide generated in situ to provide internal rigidity in the compartment, and containing in a second compartment an organic hardener or catalyst reactive with said resin composition.

4,350,784

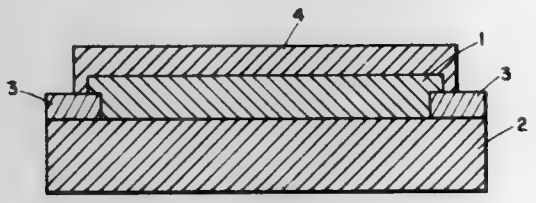
LASER TRIMMABLE RESISTOR COATING

Karl F. Baum, Milwaukee, Wis., assignor to North American Philips Corporation, New York, N.Y.

Filed May 5, 1981, Ser. No. 260,561

Int. Cl.³ C08K *5/06*

U.S. Cl. 524—759 9 Claims



1. For use as a heat cureable coating for forming an abrasive resistance protective coating for laser trimmable resistor devices, a composition consisting essentially of a mixture of a prepolymer selected from the group consisting of a diallyl isophthalate prepolymer and a diallyl phthalate prepolymer, both prepolymers being homopolymers, an ether alcohol solvent, a catalyst selected from the group consisting of t-butyl perbenzoate and t-butyl peroctate and an inert inorganic pigment.

4,350,785

SILICA-CONTAINING PROTECTIVE ADHESIVE PASTE FOR USE WITH OSTOMY APPLIANCES

Wagdi W. Habib, Roselle, Ill., assignor to Hollister Incorporated, Libertyville, Ill.

Continuation-in-part of Ser. No. 87,664, Oct. 24, 1979, abandoned. This application May 22, 1981, Ser. No. 266,448

Int. Cl.³ A61F *13/02;* A61L *15/06;* C08L *5/00*

U.S. Cl. 524—55 14 Claims

1. A protective adhesive paste applicable to skin in paste form for use with ostomy appliances which provides increased resistance to urine and intestinal fluids, said paste being composed essentially of a mixture of a water-absorbing particulate hydrocolloid gum and a volatile organic solvent solution of an organic solvent-soluble adhesive film-forming resin, wherein the improvement comprises having present in said paste form 2 to 6% by weight of colloidal silica selected from the class consisting of fumed silica and precipitated silica.

4,350,786

ORGANOSILANE ANTISTATIC AGENTS FOR GLASS-FILLED POLYARYLENE SULFIDES

Jennings P. Blackwell, and Richard R. Towers, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 10, 1981, Ser. No. 300,860

Int. Cl.³ C08L *81/04*

U.S. Cl. 524—263 6 Claims

1. A method for reducing or inhibiting an electrostatic charge build-up in glass-filled polyarylene sulfide which comprises:

adding an organosilane antistatic agent selected from the group consisting of octadecyltriethoxysilane and octyltrichlorosilane to said glass-filled polyarylene sulfide in an amount sufficient to counteract an electrostatic charge build-up produced by an operation on said glass-filled polyarylene sulfide.

4,350,787

THERMOPLASTIC ERASER

Günter Kimpel, Neumarkt, Fed. Rep. of Germany, assignor to J. S. Staedtler, Nuremberg, Fed. Rep. of Germany

Filed Feb. 10, 1981, Ser. No. 233,291

Claims priority, application Fed. Rep. of Germany, Feb. 13, 1980, 3005298

Int. Cl.³ C08K *5/36*

U.S. Cl. 524—302 8 Claims

1. In an eraser composition composed of fillers, a thermoplastic synthetic rubber as the binder, and conventional additives, the improvement which comprises the binder being a styrene-isoprene-styrene block copolymer having a styrene portion of 10 to 20% by weight and further containing 0.5 to 5% by weight polynorbornene.

4,350,788

SYNTHETIC RESIN EMULSION AND ITS USES

Wataru Shimokawa, Hachioji; Yoshiaki Ito, Itami; Koichi Kobayashi, Ibaraki; Katuaki Fukumori, Kashiwa, and Nobukazu Iwase, Tokyo, all of Japan, assignors to Nippon Gohsei Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Apr. 10, 1981, Ser. No. 252,900

Claims priority, application Japan, Sep. 26, 1980, 55-134829

Int. Cl.³ C08K *5/10*

U.S. Cl. 524—309 9 Claims

1. An aqueous emulsion of a synthetic resin containing an acetoacetylated polyvinyl alcohol as a protective colloid,

wherein the acetoacetyl content of the acetoacetylated polyvinyl alcohol is from 0.05 to 15% by mole and the residual acetyl content of the acetoacetylated polyvinyl alcohol is from 0.1 to 15% by mole.

4,350,789

POLYESTER RESINS TOUGHENED WITH VINYL TERMINATED LIQUID POLYMERS

Eugene H. Rowe, Moab, Utah, and Frank H. Howard, Akron, Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Filed Oct. 28, 1980, Ser. No. 201,108

Int. Cl.³ C08L *63/00, 67/06*

U.S. Cl. 525—31 **10 Claims**

1. Composition of matter comprising a reaction product of an unsaturated polyester resin and a vinyl terminated reactive liquid polymer, amount of said liquid polymer being sufficient to improve toughness in terms of fracture surface energy without flexibilizing said composition and without significantly deteriorating thermal or mechanical properties thereof, said liquid polymer is a reaction product of a functionally terminated reactive liquid polymer and an epoxy compound containing both an epoxy and a vinyl group.

4,350,790

COMPOSITION WITH LATENT REACTIVE CATALYST

Mohinder S. Chattha, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 109,438, Jan. 4, 1980, Pat. No. 4,307,208. This application Sep. 8, 1981, Ser. No. 299,751

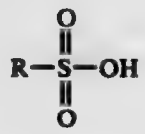
Int. Cl.³ C08L *63/00, 61/28, 37/00*

U.S. Cl. 525—110 **15 Claims**

1. A liquid, thermosetting high solids coating composition which (i) cures, at least in part, by reaction between an amine-aldehyde compound and hydroxyl functionality on a film forming component, which hydroxyl functionality is generated in situ during cure of said composition, (ii) is adapted for low temperature bake applications, (iii) contains greater than about 55% by weight of nonvolatile solids, and (iv) exclusive of pigments, solvents and other nonreactive components, consists essentially of:

(A) a monofunctional film forming copolymer bearing pendent epoxy functionality, having a number average molecular weight (M_n) of between about 1,500 and about 10,000 and a glass transition temperature (T_g) of between about −25° C. and about 70° C., said copolymer consisting of between about 10 and about 30 weight percent of monoethylenically unsaturated monomers bearing glycidyl functionality and between about 90 and about 70 weight percent of other monoethylenically unsaturated monomers;

(B) a latent reactive catalyst comprising the reaction product of (i) a monofunctional copolymer bearing pendent epoxy functionality, having a number average molecular weight (M_n) of between about 1,500 and about 10,000 and a glass transition temperature (T_g) of between about −25° C. and about 70° C., said copolymer being prepared from between about 5 and about 30 weight percent of monoethylenically unsaturated monomers bearing glycidyl functionality and between about 70 and about 95 weight percent of other monoethylenically unsaturated monomers; and (ii) a sulfonic acid having the formula



wherein R is selected from linear or branched alkyl groups and aryl groups, said copolymer bearing pendent epoxy functionality and said sulfonic acid being reacted in such amounts that there are between about 0.3 and about 1 acid groups per epoxy in the reaction mixture;

(C) an amine-aldehyde crosslinking agent; and

(D) up to 45 weight percent of hydroxy functional additive having a number average molecular weight (M_n) of between 150 and about 6,000,

said latent reactive catalyst being included in said composition in an amount ranging from between about 1 and about 5 weight percent and said amine-aldehyde crosslinking agent being included in said composition in an amount ranging from about 15 to about 45 weight percent, said weight percents being based on the total weight of (A), (B), (C) and (D).

4,350,791

VINYLPYRROLIDONE POLYMERS, THEIR PREPARATION, THEIR USE IN THE PREPARATION OF PLASMA SUBSTITUTES, AND THE SUBSTITUTES THUS OBTAINED

Ferdinand Straub, Hockenheim; Siegfried Lang, and Eckhard Roske, both of Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 31, 1980, Ser. No. 221,532

Claims priority, application Fed. Rep. of Germany, Jan. 12, 1980, 3001013

Int. Cl.³ C08L *75/12*

U.S. Cl. 525—123 **5 Claims**

1. A vinylpyrrolidone polymer of the general formula

$$[-A-B-]_m-A$$

where

A is a chain of from 8 to about 1,000 vinylpyrrolidone molecules,

B is ethyl 2,6-diisocyanatocaproate and

m is from 1 to 50,

the linkages between A and B being urethane groups formed from the hydroxyl groups on the vinylpyrrolidone chain and from the isocyanate groups.

4,350,792

BLEND OF INTERNALLY PLASTICIZED VINYL CHLORIDE COPOLYMER AND POLYURETHANE ELASTOMER

Jagadish C. Goswami, New City, N.Y., and Shridhar V. Parikh, Anderson, S.C., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Mar. 1, 1979, Ser. No. 16,661

Int. Cl.³ C08L *75/06*

U.S. Cl. 525—129 **4 Claims**

1. A film-forming blend containing from about 40% to about 60%, by weight of the blend, of an internally plasticized vinyl chloride copolymer, which copolymer comprises from about 50% to about 85%, by weight, vinyl chloride, from about 3% to about 47%, by weight, of a C_6–C_{10} alkyl acrylate, and from about 47% to about 3%, by weight, of a bis(hydrocarbyl) vinylphosphonate, and from about 5% to about 25%, by weight of the blend, of a thermoplastic polyurethane elastomer to improve the physical properties of a film formed therefrom.

4,350,793

FLAME-RETARDANT COMPOSITION OF POLYPHENYLENE ETHER, POLYSTYRENE RESIN AND POLYPHOSPHONATE

Manfred Schmidt, New Martinsville, W. Va., and Klaus Reinking, Wermelskirchen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 19, 1981, Ser. No. 226,126

Claims priority, application Fed. Rep. of Germany, Jan. 26, 1980, 3002792

Int. Cl.³ C08L *71/04, 85/02*

U.S. Cl. 525—133 **11 Claims**

1. Flame-retardant composition, characterised in that it contains (1) a usually inflammable composition of a polyphenylene ether resin and a polystyrene resin, (2) an optionally branched aromatic thermoplastic polyphosphonate with a number-average molecular weight of $\overline{M}_n$ of 4,000 to 80,000, the

constituent (2) being employed in amounts of 1 to 20 parts by weight per 100 parts by weight of the total mixture of (1) and (2), and (3) small amounts of a plasticising compound.

4,350,794

HIGH-IMPACT POLYAMIDE MOLDING AND EXTRUSION RESIN COMPOSITIONS

Marlowe V. Moncur, Pensacola, Fla., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 59,856, Jul. 23, 1979, abandoned. This application Jun. 18, 1980, Ser. No. 160,402

Int. Cl.³ C08L *77/00*

U.S. Cl. 525—183 **21 Claims**

1. The product of the process of melt blending:

(a) from about 50 to about 97% by weight of a polyamide resin derived from (1) the reaction of a dicarboxylic acid or derivative thereof containing from two to twenty carbon atoms with a diamine containing from two to fifteen carbon atoms, or (2) the polymerization of a lactam, and

(b) from about 3 to about 50% by weight of an elastomer which (1) contains from about 5 to about 500 mole equivalents of polyamide reactive chlorine or bromine atoms per 10^6 grams of elastomer, said chlorine or bromine atoms being present in the elastomer in segments of the formula:

wherein,

X is (i) a monovalent radical selected from the group consisting of phenyl, vinyl, carboxy, cyano and nitro, or (ii) a divalent radical selected from the group consisting of oxy, carbonyl, thio, sulfone and corresponding divalent radicals of said (i) radicals;

R is hydrogen or alkyl when X is an (ii) radical, and a divalent radical when X is an (i) radical; and

Halo is the chlorine or bromine; and

(2) has a glass transition temperature of less than 0° C.

4,350,795

THERMOPLASTIC ELASTOMER BLENDS

Georg G. A. Bohm, Akron; Gary R. Hamed, Uniontown, and Lee E. Vescelius, Akron, all of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 1,623, Jan. 8, 1979, Pat. No. 4,250,273, which is a continuation-in-part of Ser. No. 879,308, Feb. 21, 1978, abandoned, which is a division of Ser. No. 806,036, Jun. 13, 1977, abandoned. This application Aug. 4, 1980, Ser. No. 175,095

Int. Cl.³ C08F *8/00*

U.S. Cl. 525—194 **4 Claims**

1. A process for making a thermoplastic elastomer blend composition, comprising the steps of:

providing a blend of a 1-olefin, a random styrene-butadiene rubber copolymer and a highly saturated elastomer,

the amount of said 1-olefin polymer ranging from about 10 to about 50 parts by weight, the amount of said styrene-butadiene rubber ranging from about 80 to about 15 parts by weight, the amount of said highly saturated elastomer ranging from about 5 to about 55 parts by weight,

said 1-olefin polymer selected from the class consisting of a homopolymer and a copolymer made from 1-olefin monomers having from 2 to about 20 carbon atoms, said homopolymer or said copolymer having a melting point of at least 90° C.,

mixing said blend at a temperature at or above the melting point of said 1-olefin polymer,

partially curing said blend to have a melt flow index of at least 1.0 so that a reprocessable thermoplastic elastomer is produced, and

wherein said highly saturated elastomer is selected from the group consisting of a hydrogenated homopolymer made from dienes from 4 to 10 carbon atoms, and a hydrogenated diblock or triblock copolymer made from conjugated dienes having from 4 to 10 carbon atoms and vinyl substituted aromatics having dienes from 8 to 12 carbon atoms, the amount of said saturation of said elastomer being at least 70%.

4,350,796

OIL-RESISTANT RUBBER COMPOSITION

Motofumi Oyama, Yokosuka, and Kinro Hashimoto, Yokohama, both of Japan, assignors to Nippon Zeon Co. Ltd., Tokyo, Japan

Filed Oct. 16, 1981, Ser. No. 312,101

Claims priority, application Japan, Oct. 20, 1980, 55-146734

Int. Cl.³ C08L *9/02, 47/00*

U.S. Cl. 525—233 **5 Claims**

1. An oil-resistant rubber composition comprising a mixture of (1) a partially hydrogenated elastomer from an unsaturated nitrile monomer and a conjugated diene monomer wherein the degree of hydrogenation of the conjugated diene units is 50 to 98 mole%, and (2) a vinyl chloride resin.

4,350,797

PROCESS FOR PROMOTING THE ADHESION OF POLYOLEFINS TO METALS, GLASS SHEETS, CEMENT, ASBESTOS OR POLAR POLYMERS

Roberto Marzola, Ferrara; Enea Garagnani, Piumazzo, and Alessandro Moro, Pernate, all of Italy, assignors to Montedison S.p.A., Milan, Italy

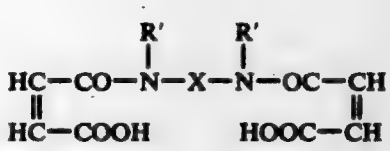
Filed Feb. 26, 1981, Ser. No. 238,463

Claims priority, application Italy, Feb. 28, 1980, 20228 A/80

Int. Cl.³ C08F *255/02, 255/04*

U.S. Cl. 525—293 **13 Claims**

1. Process for promoting the adhesion between polyolefins and metals, glass sheets, cement, asbestos or polar polymers, characterized in that the polyolefin is modified by reaction with 0.01–7% by weight of a modifying agent selected from the group consisting of (1) bismaleamic acids of general formula



wherein X is a group $(CHR)_n$, in which n is an integer from 2 to 18 and R is hydrogen or an alkyl having from 1 to 6 carbon atoms, or X is a bivalent cycloaliphatic or aromatic group, containing one, or more than one, ring or a heterocyclic group; R′ is hydrogen, or the two R′ together form a $(CHR)_n$ group when X is $(CHR)_n$, (2) the corresponding stereoisomer bisfumaramic acids, (3) alkyl esters of said acids in which the alkyl radical has from 1 to 12 carbon atoms, and (4) the reaction product of a mixture of precursors of said acids or esters; and subsequently heated at the temperature at which the polyolefin is applied onto the material to be adhered thereto.

4,350,798

CHLORINATION OF POLY(VINYL CHLORIDE) IN LIQUID CHLORINE, AND CHLORINATED POLY(VINYL CHLORIDE) COMPOSITION

Richard G. Parker, Hudson, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Jan. 26, 1981, Ser. No. 228,538

Int. Cl.³ C08F *8/20*

U.S. Cl. 525—331.6 **6 Claims**

1. A process for photochlorinating poly(vinyl chloride) homopolymer macrogranules to obtain homogeneously chlori-

nated 'chlorinated poly(vinyl chloride)' ("CPVC"), comprising,

(a) suspending said homopolymer having a chlorine content in the range from about 55% to about 57% by weight, in liquid chlorine present in an amount at least 5 times the weight of said homopolymer, for a period of time sufficient to absorb said liquid chlorine into said macrogranules,

(b) swelling said macrogranules at solid-liquid interfaces within and around said macrogranules to produce a gel phase by the action of said liquid chlorine,

(c) photo-illuminating said gel phase until said homopolymer is converted to homogeneously chlorinated CPVC having at least 65% by weight of chlorine, and the mol ratio of PVC present in a sequence of 3 or more vinyl chloride units, to the mols of total vinyl chloride units, is always less than 0.30,

(d) obtaining a solution of said homogeneously chlorinated CPVC in liquid chlorine, and,

(e) recovering solid homogeneously chlorinated CPVC from said solution with halogenated lower alkane.

4,350,799

THERMOPLASTIC TERNARY MOLDING COMPOSITION OF POLYURETHANE POLYPHOSPHONATES AND POLYCARBONATE RESINS

Hans G. Schmelzer, Pittsburgh, Pa.; Manfred Schmidt, New Martinsville, and Robert P. Yeater, Moundsville, both of W. Va., assignors to Mobay Chemical Corporation, Pittsburgh, Pa.

Filed Sep. 16, 1981, Ser. No. 302,890
Int. Cl.³ C08L *75/06, 75/28, 69/00, 85/02*
U.S. Cl. 525—453 **10 Claims**

1. A well dispersed thermoplastic ternary molding composition comprising polyurethane, polycarbonate and polyphosphonate.

4,350,800

PROCESS FOR THE PREPARATION OF SYNTHETIC RESINS BASED ON RESORCINOL COMPOUNDS

Wolfgang Hesse, Wiesbaden; Franz Landauer, Frankfurt am Main, and Klaus Schmiedel, Königstein, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 14, 1981, Ser. No. 302,024
Claims priority, application Fed. Rep. of Germany, Sep. 17, 1980, 3034948
Int. Cl.³ C08G *8/04, 8/20, 8/22, 8/24*
U.S. Cl. 525—480 **10 Claims**

1. A process for the preparation of synthetic resins which comprises reacting a resorcinol pitch which is obtained in the manufacture of resorcinol from benzenedisulfonic acid in at least one step with at least one oxo-compound selected from the group consisting of aldehydes, ketones and compounds based on or splitting off at least one of these substances.

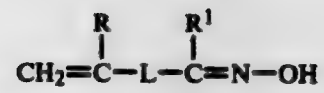
4,350,801

PROCESS FOR PREPARING POLYMERIC OXIMES

Michael J. Grasshoff, Hudson, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Feb. 27, 1981, Ser. No. 239,158
Int. Cl.³ C08F *220/60, 220/34*
U.S. Cl. 526—93 **31 Claims**

1. A process for preparing a polymeric oxime comprising the steps of providing a solution of a monomeric oxime in an aqueous acidic solvent system, said monomeric oxime being of the formula



wherein R is hydrogen or lower alkyl, R^1 is hydrogen, lower alkyl, aryl, aralkyl, or alkaryl, and L is a divalent organic linking group which is stable under the conditions of said process and which does not deleteriously affect the conduct of said process, said solution having a pH of up to about 1.5; and polymerizing said monomeric oxime dissolved in said aqueous acidic solvent system in the presence of an aqueous acid-soluble polymerization initiating agent.

4,350,802

CATALYST SYSTEM FOR POLYMERIZATION OF OLEFINS AND PROCESS FOR PRODUCTION OF POLYOLEFINS USING THE CATALYST SYSTEM

Kazuo Baba; Kizuku Wakatsuki, both of Ichihara, and Tadashi Hikasa, Chiba, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Mar. 28, 1980, Ser. No. 135,165
Claims priority, application Japan, Apr. 5, 1979, 54/41658
Int. Cl.³ C08F *4/64, 10/00*
U.S. Cl. 526—142 **8 Claims**

1. A catalyst component for a catalyst system useful for the polymerization of olefins, which comprises a reaction product of (i) a solid organomagnesium compound which is a reaction product of Mg, R—Cl and D in a hydrocarbon solvent, wherein R is an alkyl group having 1 to 20 carbon atoms, D is an ether, and the amount of D is 0.1 to 1.0 mole per 1 gram atom of magnesium, (ii) a phenol compound, (iii) a Lewis base selected from the group consisting of an ether and a carboxylic acid ester, and (iv) titanium tetrahalide, wherein the phenol compound (ii), the Lewis base (iii) and the titanium tetrahalide (iv) are used in an amount of 0.5 to 1.5 moles, 0.05 to 1.0 moles and 2 to 10 moles, respectively, per 1 gram atom of magnesium contained in the organomagnesium compound (i).

4,350,803

REACTION ARRESTMENT MIXER HEAD AND MIXING PROCESS

Laurence R. Penn, Mentor on the Lake, Ohio, assignor to Liquid Control Incorporated, Silver Spring, Md.

Continuation of Ser. No. 107,612, Dec. 27, 1979, abandoned, which is a division of Ser. No. 965,709, Nov. 30, 1978, abandoned. This application Jul. 27, 1981, Ser. No. 286,755
Int. Cl.³ C08G *85/00*
U.S. Cl. 528—10 **4 Claims**

1. In a process for mixing and then reacting at least two fluid components of the type which when mixed together undergo chemical reaction to form a solid polymeric final reaction product, said process including separately introducing said components into a mixer and therein mixing and reacting said components, and discharging the resultant reaction mixture from said mixer prior to final completion of said chemical reaction and while said reaction mixture is still in a fluid state, the improvement comprising:

cooling said reaction mixture within said mixer to a lowered temperature at which said chemical reaction will be retarded or will not occur, thereby preventing the formation of said solid reaction product within said mixer, and thereafter heating said reaction mixture within said mixer to increase the reaction rate of said chemical reaction.

4,350,804

CURABLE COMPOSITIONS COMPRISING AN AZOLE-FUNCTIONAL RESIN AND A METAL-LIGAND COMPLEX

John S. Ostrowski, Pittsburgh; John F. Grunewalder, Glenshaw, and Nicholas T. Castellucci, Pittsburgh, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Nov. 21, 1980, Ser. No. 208,971
Int. Cl.[3] C08G *59/14, 73/06*
U.S. Cl. 525—327.3 15 Claims

1. A curable composition comprising:
(A) an azole-functional resin; and
(B) a labile metal-ligand complex;
wherein said labile metal-ligand complex is capable of reacting with said azole-functional resin.

4. The composition of claim 1 wherein said azole-functional resin comprises the reaction product of
(i) a compound selected from the group consisting of a triazole, a thiadiazole, a tetrazole, an imidazole, and a mixture thereof; and
(ii) a resin capable of reacting with said compound.

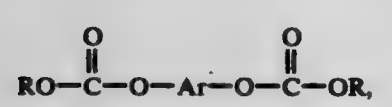
4,350,805

PROCESS FOR THE PREPARATION OF POLY(ESTER-CARBONATES)

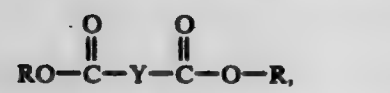
Winston J. Jackson, Jr., Kingsport, Tenn., and William R. Darnell, Weber City, Va., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 17, 1980, Ser. No. 207,817
Int. Cl.[3] C08G *63/64*
U.S. Cl. 528—271 5 Claims

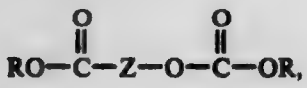
1. Process for preparation of a high molecular weight poly(ester-carbonate) comprising
(a) preparing a reaction mixture of
(1) an aromatic diol bis(alkylcarbonate) (A) having the general formula



wherein R is the same or different and selected from alkyl groups containing 1–8 carbon atoms and Ar is the aromatic residue remaining after removal of hydroxyl groups from an aromatic diol,
(2) 0 to 47.5 mole percent of at least one ester of at least one dicarboxylic acid (B) having the general formula



wherein R is the same or different and selected from alkyl groups containing 1–8 carbon atoms and Y is the residue remaining after removal of the carboxyl groups from an aliphatic, cycloaliphatic or aromatic dicarboxylic acid,
(3) 0 to 80 mole percent of at least one mixed carboxylate-carbonate ester of at least one aromatic hydroxy acid (C) having the general formula



wherein R is the same or different and selected from alkyl groups containing 1–8 carbon atoms and Z is the residue remaining after removal of the hydroxyl and carboxyl groups from meta- or para-oriented aromatic hydroxy carboxylic acids, and
(4) a catalytic amount of an ester exchange and polymerization catalyst,
wherein the molar percentages of (A)+(B)+(C)=100%, the molar percentage of (A) is at least 5 percentile units greater than the molar percentage of (B); the molar percentage of (B) or the molar percentage of (C) may be 0, but the molar percentage of (B)+ the molar percentage of (C) is at least 5% of the total reactants,
(b) heating the reaction mixture to a temperature sufficient to keep the reaction mixture molten and to distill away dialkyl carbonate condensation by-product, and
(c) reducing pressure for a time sufficient to further remove dialkyl carbonate condensation product and to increase the molecular weight of the polymer.

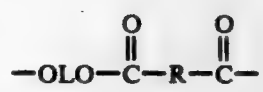
4,350,806

BIOCOMPATIBLE COPOLYMERS

Kenneth B. Wagener, Asheville, N.C., assignor to Akzona Incorporated, Asheville, N.C.

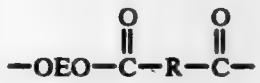
Filed Sep. 28, 1981, Ser. No. 306,110
Int. Cl.[3] C08G *63/44, 69/44, 73/16*
U.S. Cl. 528—289 12 Claims

1. A process for making articles which are compatible with biological materials, the improvement comprising forming said articles from a segmented thermoplastic copolyester consisting essentially of a multiplicity of recurring long-chain ester units and short-chain ester units joined head to tail through ester linkages, said long-chain ester units comprising from 30–70% by weight of the copolyester and being represented by the formula:



(I)

and said short-chain ester units being represented by the formula:



(II)

where L in said long-chain unit is a divalent radical remaining after removal of terminal hydroxyl groups from a poly(oxyalkylene) glycol having at least one thermally stable heterocyclic ring per molecule, each of said rings attached to said chain through amide or imide linkages and giving said radical, L, a carbon to nitrogen ratio between about 3/1 and about 350/1, and a number average molecular weight of between 200 and 8,000; R is a divalent radical remaining after removal of carboxyl groups from a dicarboxylic acid having a molecular weight of less than 300; and E in said short-chain unit is a divalent radical remaining after removal of hydroxyl groups from a low molecular weight diol having 2 to 15 carbon atoms per molecule and a molecular weight less than about 250.

4,350,807

COPOLYESTER COMPOSITIONS

Richard L. McConnell; Jimmy R. Trotter, and Glenn C. Jones, all of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 9, 1981, Ser. No. 232,768
Int. Cl.[3] C08G *3/16*
U.S. Cl. 528—302 8 Claims

1. Copolyester derived from
(a) 100 mole % of a dibasic acid component, at least 2 mole % of which is an ethylene telomer ester of ethylene and at least one dialkyl ester of an aliphatic or cycloaliphatic dibasic acid, said dibasic acid containing from 3 to 22 carbon atoms and the alkyl groups of which contain from 1 to 8 carbon atoms, and
(b) 100 mole % of at least one aliphatic or alicyclic glycol having 2 to 12 carbon atoms,
said copolyester having a crystalline melting point of less than 200° C.

4,350,808

COPOLYESTER COMPOSITIONS

Richard L. McConnell; Jimmy R. Trotter, and Glenn C. Jones, all of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 9, 1981, Ser. No. 232,769

Int. Cl.³ C08G 3/16

U.S. Cl. 528—302 8 Claims

1. Copolyester derived from

(a) 100 mole % of a dibasic acid component, from about 2 mole % to about 30 mole % of which is an ethylene telomer ester of ethylene and at least one dialkyl ester of an aliphatic or cycloaliphatic dibasic acid, said dibasic acid containing from 3 to 22 carbon atoms and the alkyl groups of which contain from 1 to 8 carbon atoms, and

(b) 100 mole % of at least one aliphatic or alicyclic glycol having 2 to 12 carbon atoms,

said copolyester having a crystalline melting point of at least 200° C.

4,350,809

PROCESS FOR THE PREPARATION OF COPOLYMERS CONTAINING HYDROXYL GROUPS

Hannes Fischer, Taunusstein, and Helmut Plum, Übach-Palenberg, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 17, 1980, Ser. No. 197,899

Claims priority, application Fed. Rep. of Germany, Oct. 19, 1979, 2942327

Int. Cl.³ C08G 63/06

U.S. Cl. 528—361 6 Claims

1. A process for the preparation of a copolymer containing hydroxy groups formed by reaction of

(A) 10 to 30% by weight of at least one glycidyl ester of an aliphatic saturated monocarboxylic acid having tertiary or quaternary α carbon atom, said glycidyl ester containing in total 12 to 14 carbon atoms; and

(B) 90 to 70% by weight of at least two unsaturated copolymerisable monomers, at least one of which contains at least one carboxyl group,

the weight percentage being based on the total of (A) plus (B) totalling always 100%, comprising first introducing component (A) to a reaction zone and polymerizing without a solvent component (A) with component (B) at 140° to 200° C. in the presence of a radical initiator until a degree of polymerization of the monomers of at least 95% is achieved to obtain a solvent-free, low-viscosity copolymer having free —OH groups and ester groups, component (B) containing at least 3.3% by weight of a monomer having carboxyl groups.

4,350,810

PREPARATION OF BRANCHED CHAIN ARYLENE SULFIDE POLYMER

Dale O. Tieszen, and Lacey E. Scoggins, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 66,584, Aug. 14, 1979, Pat. No. 4,282,347. This application May 8, 1981, Ser. No. 261,863

Int. Cl.³ C08G 75/16

U.S. Cl. 528—388 12 Claims

1. A process for the production of branched polymers of arylene sulfide said process comprising:

(a) contacting under polymerization conditions for a time sufficient to form arylene sulfide polymer a reaction mixture comprising:

(1) at least one p-dihalobenzene;

(2) at least one alkai metal sulfide;

(3) at least one organic amide;

(4) water in an amount of about 1.0 mole to about 2.4 moles per mole of alkali metal sulfide, said amount including water of hydration; and

(5) at least one alkali metal carboxylate, and

(b) contacting under polymerization conditions a polyhaloaromatic compound having more than 2 halogen constituents per molecule with said arylene sulfide polymer formed in said reaction mixture, said contacting of polyhaloaromatic compound in an amount sufficient to produce branched polymer and for a time having a time range of up to about 75 minutes before entering upon termination of the polymerization process.

4,350,811

CHIRAL SUGAR COMPLEXES

David Holland, Frodsham, and David J. Milner, Manchester, both of England, assignors to Imperial Chemical Industries Limited, London, England

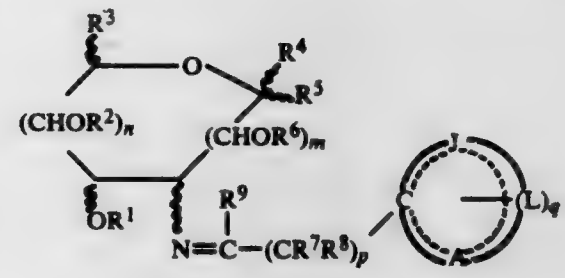
Filed Jul. 8, 1980, Ser. No. 166,838

Claims priority, application United Kingdom, Jul. 13, 1979, 7924518

Int. Cl.³ C07H 15/12, 17/02, 17/04, 23/00

U.S. Cl. 536—18 9 Claims

1. A metal complex which comprises a metal from the first or second series of the main group of transition metals in coordination with a chiral Schiff base of the formula:



wherein

at least the carbon atom of the monosaccharide to which carbon atom the iminyl nitrogen atom is attached is asymmetric,

at least one of the carbon atoms adjacent the said carbon atom bears a hydroxyl group,

R^1 and R^6 which may be the same or different, are hydrogen or lower alkyl,

R^2 is hydrogen or lower alkyl or where n is 1 and R^3 is $—CH_2OR^{10}$, OR^2 and OR^{10} together form an acetal or ketal residue,

R^3 is $—CH_2OR^{10}$ in which R^{10} is hydrogen, lower alkyl or where n is 1, OR^2 and OR^{10} together form an acetal or ketal residue,

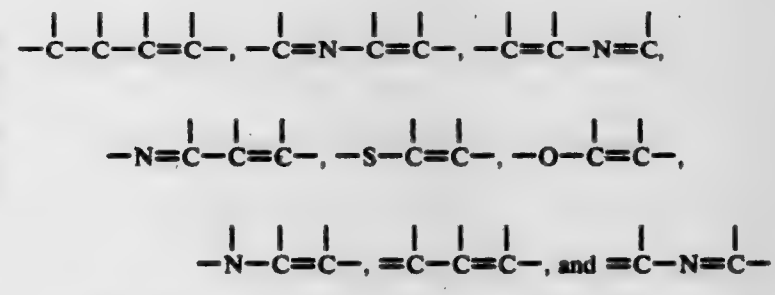
R^4 is hydrogen or $—CH_2OR^{10}$ in which R^{10} is hydrogen, or a lower alkyl,

R^5 is hydrogen or OR^1 provided that both R^4 and R^5 are not hydrogen,

R^7 and R^8, which may be the same or different, are hydrogen, or lower alkyl, or where p is 1, may with the cyclic ring to which CR^7R^8 is attached form a fused system,

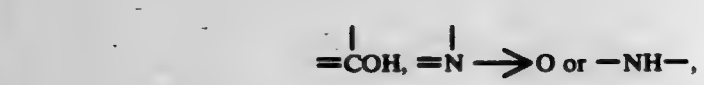
R^9 is hydrogen, alkyl, aralkyl, aryl or alkaryl,

J is a chain of 3 or 4 atoms which chain is chosen from the group consisting of



and with the group C===A forms a substantially planar cyclic conjugated system containing $(4z+2)\pi$ electrons, where z is a positive integer,

A is nitrogen, or



L each of which may be the same or different, represents a substituent attached to a carbon atom in the chain J and is (a) hydrogen, alkyl, aralkyl, aryl, alkaryl, hydroxy, OR^{11}, $OCOR^{11}$, CHO, COR^{11}, CO_2H, CO_2R^{11}, CN, $CONH_2$, NH_2, NHR^{11}, NR^{11}_2, $NHCOR^{11}$, NO_2, SH, SR^{11}, SOR^{11}, SO_3R^{11} and a halogen atom, where R^{11} is alkyl, aralkyl, or aryl, or (b) where p is 0, the L's on two adjacent atoms in the chain J may, together with the ring



form a fused bicyclic system,
m is 0 to 1,
n is 0 or 1, provided that n plus m is 0 or 1
p is 0, 1 or 2, and
q is the number of carbon atoms in the chain J.

4,350,812

ANTIARRHYTHMIC TETRAHYDRONAPHTHALENE DERIVATIVES

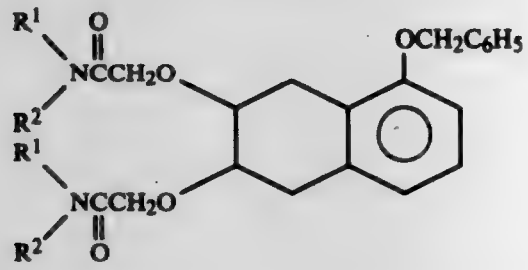
Frederic P. Hauck, Bridgewater, and Rita T. Fox, Princeton, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 195,685, Oct. 9, 1980, Pat. No. 4,302,453, which is a continuation-in-part of Ser. No. 93,654, Nov. 13, 1979, abandoned. This application Aug. 6, 1981, Ser. No. 290,558

Int. Cl.[3] C07C *103/29, 103/85;* C07D *265/30*

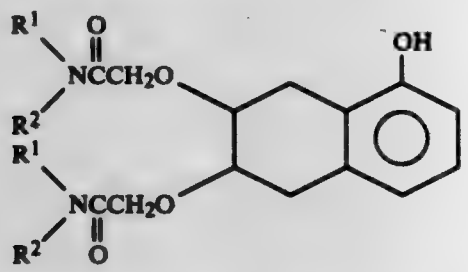
U.S. Cl. 544—79 **8 Claims**

1. A compound having the structure



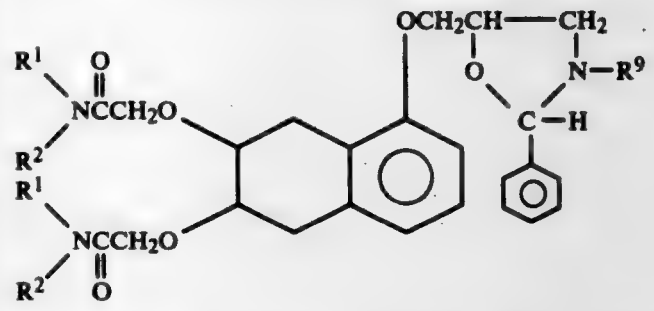
wherein R^1 and R^2 are the same or different and are hydrogen, lower alkyl, lower alkenyl or hydroxy-lower alkyl, or R^1 and R^2 are taken together with the nitrogen atom to which they are attached to form a 5- to 7-membered heterocyclic ring containing one or two heteroatoms, and which may contain in addition to said nitrogen atom, one nitrogen, oxygen or sulfur atom.

5. A compound having the structure



wherein R^1 and R^2 are the same or different and are hydrogen, lower alkyl, lower alkenyl or hydroxy-lower alkyl, or R^1 and R^2 are taken together with the nitrogen atom to which they are attached to form a 5- or 7-membered heterocyclic ring containing one or two heteroatoms, and which may contain in addition to said nitrogen atom, one nitrogen, oxygen or sulfur atom.

8. A compound having the structure



wherein R^1 and R^2 are the same or different and are hydrogen, lower alkyl, lower alkenyl or hydroxy-lower alkyl, or R^1 and R^2 are taken together with the nitrogen atom to which they are attached to form a 5- or 7-membered heterocyclic ring containing one or two heteroatoms, and which may contain in addition to said nitrogen atom, one nitrogen, oxygen or sulfur atom, and R^3 is lower alkyl.

4,350,813

PROCESS FOR PRODUCING 7-ALKOXYCARBONYL-6,8-DIMETHYL-4-HYDROXYMETHYL-1-PHTHALAZONE AND ITS INTERMEDIATES

Yukio Takei, Abiko; Masao Yoshida, Higashikurume, and Rinzo Nishizawa, Tokyo, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

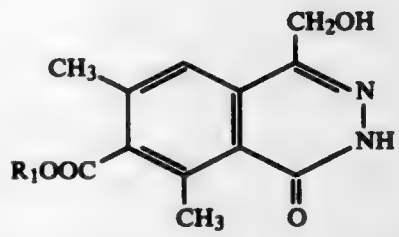
Filed Jul. 23, 1980, Ser. No. 171,363

Claims priority, application Japan, Jul. 31, 1979, 54-96763; Jul. 31, 1979, 54-96764; Dec. 13, 1979, 54-160873

Int. Cl.[3] C07D *237/32*

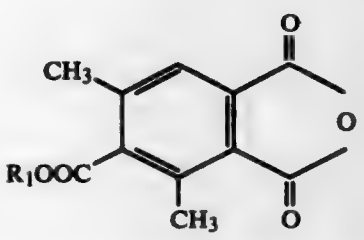
U.S. Cl. 544—237 **4 Claims**

1. A process for producing 7-alkoxycarbonyl-6,8-dimethyl-4-hydroxymethyl-1-phthalazone represented by the following formula:



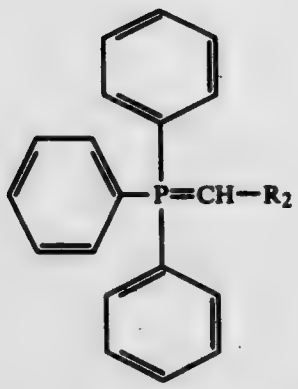
(VIII)

wherein R_1 is a lower alkyl, which comprises:
(A) reacting 3,5-dimethyl-4-alkoxycarbonylphthalic anhydride represented by the following formula:



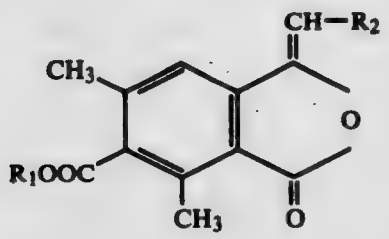
(I)

wherein R_1 is as defined above, with a compound represented by the following formula:



(II)

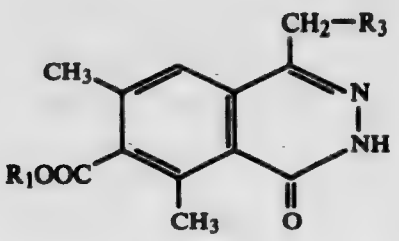
wherein R_2 is —CN, a lower alkoxycarbonyl, an aralkoxycarbonyl or an aryloxycarbonyl to obtain 6-alkoxycarbonyl-5,7-dimethyl-$\Delta^{3\alpha}$-substituted methylenephthalide represented by the following formula:



(III)

wherein R_1 and R_2 are as defined above, followed by:

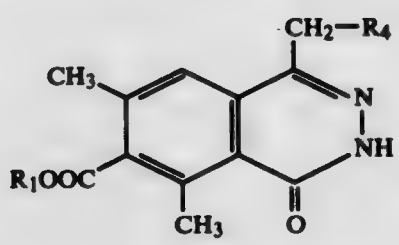
(B) reacting the compound of formula (III) with hydrazine to obtain a compound represented by the following formula



(IV)

wherein R_1 is as defined above and R_3 is —CN or —$CONHNH_2$,

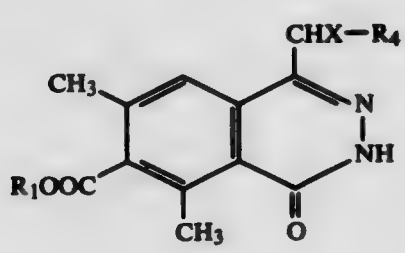
(C) hydrolyzing the compound of formula (IV) to obtain 7-alkoxycarbonyl-6, 8-dimethyl-4-substituted methyl-1-phthalazone represented by the following formula:



(V)

wherein R_1 is as defined above and R_4 is —$CONH_2$ or —COOH,

(D) halogenating the compound of formula (V) to obtain 7-alkoxycarbonyl-6, 8-dimethyl-4- (α-halogeno-α-substituted methyl)-1-phthalazone represented by the following formula:



(VI)

wherein R_1 and R_4 are as defined above and X is halogen atom, and then

(E) hydrolyzing and in an acidic or neutral condition decarboxylating by heating the compound of formula (VI) by either method of the following methods (a), (b) or (c):

(a) directly hydrolyzing and decarboxylating the compound of formula (VI),

(b) when R_4 in formula (VI) is —COOH, either reacting the compound of formula (VI) with a carboxylic acid salt represented by the following formula:

$$(R_5COO)_nM \qquad \text{(VII)}$$

wherein R_5 is a hydrogen atom, an alkyl, aryl or aralkyl, M is alkali metal or alkaline earth metal, and n is 1 when M is alkali metal while n is 2 when M is alkaline earth metal, and simultaneously decarboxylating by heating the acyloxylated compound in solvent and then hydrolyzing the decarboxylating compound, or firstly decarboxylating by heating the compound of formula (VI) in a solvent, reacting the decarboxylated product with the carboxylic acid salt of formula (VII) and then hydrolyzing the acyloxylated product.

(c) when R_4 in formula (VI) is —$CONH_2$, reacting the compound of formula (VI) with the carboxylic acid salt of formula (VII), and then hydrolyzing and decarboxylating by heating the acyloxylated compound in an acidic condition simultaneously.

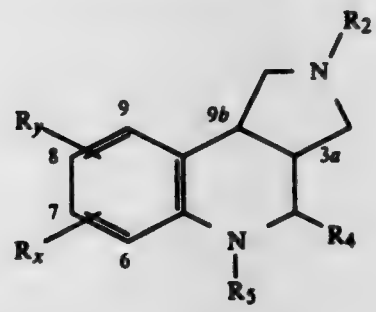
4,350,814

PYRROLO [3,4-C]QUINOLINE COMPOUNDS

Howard S. Shapiro, Wilmington, Del., assignor to ICI Americas Inc., Wilmington, Del.

Division of Ser. No. 87,458, Oct. 22, 1979, Pat. No. 4,268,513.
This application Jan. 8, 1981, Ser. No. 223,527
Int. Cl.[3] C07D *491/14, 491/22*
U.S. Cl. 546—84 7 Claims

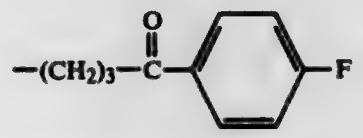
1. A compound selected from the group consisting of hexahydropyrrolo [3,4-c]quinolines of the following formula (I):



(I)

wherein

R_2 is



R_4 is hydrogen, C_1–C_3 alkyl or phenyl;

R_5 is hydrogen, C_1–C_6 alkyl, C_3–C_6 cycloalkyl, acetyl, benzyl or CH_2CF_3, and

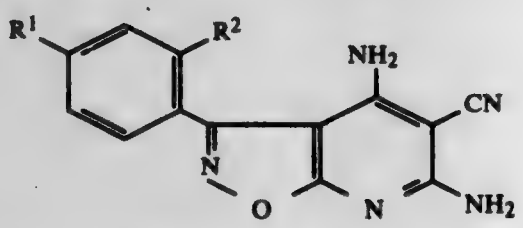
R_x and R_y, which may be the same or different, are hydrogen, halogen, trifluoromethyl, C_1–C_6 alkyl, C_3–C_6 cycloalkyl, C_1–C_3 alkoxy, C_1–C_3 alkylthio, hydroxy or cyano, or when R_x and R_y are alkoxy on adjacent carbons, they combine to form a 5-membered methylene dioxy or a 6-membered ethylene dioxy ring, and the pharmaceutically-acceptable acid addition salts thereof.

4,350,815
PROCESS FOR THE PRODUCTION OF 4,6-DIAMINO-5-CYANO-3-ARYL-ISOXAZOLO [5,4-b] PYRIDINES

Hans Junek, and Burkhard Thierrichter, both of Graz, Austria, assignors to Lonza Ltd., Gampel, Switzerland

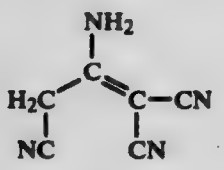
Filed Nov. 21, 1980, Ser. No. 209,150
Claims priority, application Switzerland, Nov. 22, 1979, 10408/79
Int. Cl.³ C07D *498/04*
U.S. Cl. 546—115 9 Claims

1. Process for the production of a 4,6-diamino-5-cyano-3-arylisoxazolo [5,4—b] pyridine having the formula:



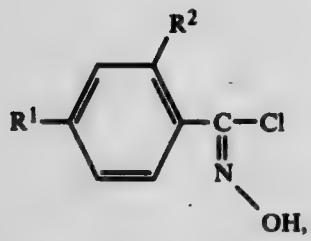
(4)

wherein (a) R^1 and R^2 are —H, or (b) R^1 is —Cl and R^2 is —H, or (c) R^1 is $—CH_3$ and R^2 is —H, or (d) R^1 is $—NO_2$ and R^2 is —H, or (e) R^1 is —H and R^2 is $—NO_2$, comprising reacting 2-amino-1-propane-1,1,3-tricarbonitrile having the formula:



(1)

with a benzohydroxyamino acid chloride having the formula:



(2)

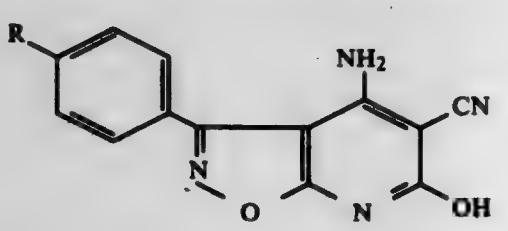
wherein R^1 and R^2 have the same meaning as above, in the presence of a strong base used in a form of at least a molar quantity.

4,350,816
PROCESS FOR THE PRODUCTION OF 4-AMINO-6-HYDROXY-3-PHENYL ISOXAZOLO [5,4-B] PYRIDINE-5-CARBONITRILES

Hans Junek, and Burkhard Thierrichter, both of Graz, Austria, assignors to Lonza Ltd., Gampel, Switzerland

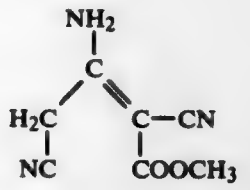
Filed Nov. 21, 1980, Ser. No. 209,149
Claims priority, application Switzerland, Nov. 22, 1979, 10409/79
Int. Cl.³ C07D *498/04*
U.S. Cl. 546—116 8 Claims

1. Process for the production of 4-amino-6-hydroxyl-3-aryl-isoxazolo[5,4-b]pyridine-5-carbonitrile having the formula:



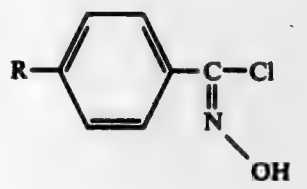
(4)

whereby R (a) is —H, or (b) is —Cl or (c) is $—CH_3$, comprising (A) reacting 3-amino-2,4-dicyanocrotonic acid methyl ester having the formula:



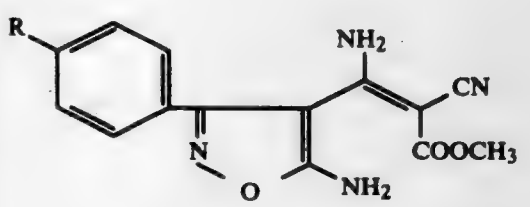
(1)

with a benzohydroxyamino acid chloride having the formula:



(2)

wherein R has the same meaning as above, in the presence of a strong base at a temperature of up to 10° C. to produce, as an intermediate, the corresponding 3-amino-2-cyano-3-(5-amino-3-aryl-isoxazol-4yl)-acrylic acid methyl ester having the formula:



(3)

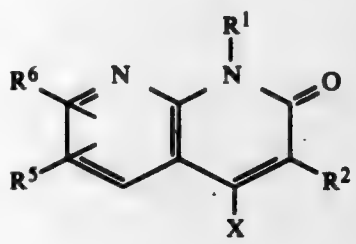
wherein R has the same meaning as above; and (B) reacting said intermediate product (1) in excess diluted NaOH or KOH at a temperature of 50° to 110° C. to produce the corresponding 4-amino-6-hydroxy-3-aryl-isoxazolo[5,4-b]pyridine-5-carbonitrile.

4,350,817
4-CL, BR OR I-3-CARBOXY OR CYANO-1,2-DIHYDRO-2-OXO-1,8-NAPHTHYRIDINE DERIVATIVES

Anthony C. Scotese, King of Prussia, and Arthur A. Santilli, Havertown, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Division of Ser. No. 125,600, Feb. 28, 1980, Pat. No. 4,324,893, which is a continuation-in-part of Ser. No. 31,255, Apr. 18, 1979, abandoned. This application Oct. 5, 1981, Ser. No. 308,306
Int. Cl.³ C07D *471/04*
U.S. Cl. 546—122 7 Claims

1. A compound of the formula:



in which
R^1 is hydrogen, alkyl of 1 to 6 carbon atoms, cycloalkyl of 5 to 6 carbon atoms, alken-(3,4,5 or 6)yl of 3 to 6 carbon atoms or alkyn(3,4,5 or 6)yl of 3 to 6 carbon atoms;
R^2 is $—CCl_3$, —CN, $—CO_2H$, or $—CO_2R^7$ where R^7 is alkyl of 1 to 6 carbon atoms;
X is chloro, bromo or iodo; and
R^5 and R^6 are independently hydrogen, halo, alkoxy, of 1 to 6 carbon atoms, or alkyl of 1 to 4 carbon atoms.

4,350,818

PREPARATION OF 2-(ISOPROPYLSULFINYL)BENZOTHIAZOLE

Roger J. Hopper, Akron; Budd H. Sturm, Hartville, and Joseph F. Geiser, Akron, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 132,049, Mar. 20, 1980, Pat. No. 4,280,967. This application Jan. 14, 1981, Ser. No. 224,988

Int. Cl.³ C07D *277/76, 277/74*

U.S. Cl. 548—166 1 Claim

1. A process for the synthesis of 2-(isopropylsulfinyl)-benzothiazole consisting of reacting a 1:1 to 1:3 molar ratio of 2-mercaptobenzothiazole to propylene in a pressure vessel in the presence of a catalytic amount of a monomeric or polymeric arenesulfonic acid optionally in the presence of an inert organic solvent and wherein the reaction is conducted at 125°–200° C. for a period of time sufficient to effect the formation of 2-(isopropylthio)-benzothiazole which is isolated, and thereafter reacting the 2-(isopropylthio)-benzothiazole with up to a 30 percent excess of aqueous sodium hypochlorite under conditions of high frequency mechanical homogenization, at 10°–40° C., in the presence of $NaHSO_4$ or $KHSO_4$ and urea, the amount of $NaHSO_4$ or $KHSO_4$ being sufficient to result in a final pH of the reaction mixture of 1.8–4.0, and the amount of urea being sufficient to suppress the formation of more than 5 weight percent of 2-(isopropylsulfonyl)-benzothiazole in the final product.

4,350,819

1-HYDROXYPYRAZOLE

Norbert Rieber, Mannheim; Heinrich Böhm, Neuhofen; Rolf Platz, Mannheim, and Werner Fuchs, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

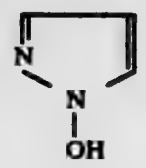
Filed Jul. 17, 1981, Ser. No. 284,397

Claims priority, application Fed. Rep. of Germany, Aug. 20, 1980, 3031385

Int. Cl.³ C07D *231/12*

U.S. Cl. 548—375 1 Claim

1. 1-Hydroxypyrazole of the formula



Ia

4,350,820

3,6,6-TRIMETHYLBICYCLO[3.1.0]HEXANE DERIVATIVES AS PYRETHROID INTERMEDIATES

Johannes L. M. Syrier, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Division of Ser. No. 189,982, Sep. 23, 1980, Pat. No. 4,284,820. This application Feb. 17, 1981, Ser. No. 235,182

Claims priority, application United Kingdom, Sep. 28, 1979, 7933836

Int. Cl.³ C07D *303/32*

U.S. Cl. 549—545 1 Claim

1. 3,4-Epoxy-4-formyl-3,6,6-trimethylbicyclo[3.1.0]hexane, having the 1R configuration in which 1 denotes the carbon atom of the cyclopropane ring bonded to the group —C—C(H)=O.

4,350,821

3,6,6-TRIMETHYLBICYCLO[3.1.0]HEXANE DERIVATIVES AS PYRETHROID INTERMEDIATES

Johannes L. M. Syrier, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Division of Ser. No. 189,982, Sep. 23, 1980, Pat. No. 4,284,820. This application Feb. 17, 1981, Ser. No. 235,183

Claims priority, application United Kingdom, Sep. 28, 1979, 7933836

Int. Cl.³ C07D *303/32*

U.S. Cl. 549—545 1 Claim

1. 3,4-Epoxy-4-formyloxy-3,6,6-trimethylbicyclo[3.1.0]hexane, having the 1R configuration in which 1 denotes the carbon atom of the cyclopropane ring bonded to the group —C—O—C(H)=O.

4,350,822

ANTILIPIDEMICPARA-[ARYL(ALKYL OR ALKENYL)AMINO]BENZOIC ACID DERIVATIVES

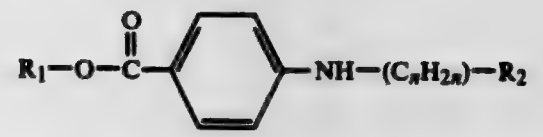
Jay D. Albright, Nanuet; Thomas G. Miner, Chester, and Robert G. Shepherd, South Nyack, all of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 557,550, Mar. 12, 1975, Pat. No. 4,185,115. This application Mar. 15, 1979, Ser. No. 20,766

Int. Cl.³ C07C *101/60, 101/62;* A61K *31/195, 31/245*

U.S. Cl. 560—45 17 Claims

1. A compound of the formula:



wherein n is an integer from 1 to 16; R_1 is selected from the group consisting of hydrogen and alkyl having from 1 to 6 carbon atoms; R_2 is selected from the group consisting of 4-halophenyl, 2,4-dihalophenyl, 2,4,6-trihalophenyl, 4-benzyloxyphenyl and 4-biphenyl; and the pharmaceutically acceptable acid-addition salts thereof and the alkali metal or organic base carboxylic acid salts thereof when R_1 is hydrogen.

4,350,823

CARBOMETHOXY METHYL NORBORNANES

Philip T. Klemarczyk, Old Bridge; James M. Sanders, Eatontown; Manfred H. Vock, Locust; Joaquin F. Vinals, Red Bank; Frederick L. Schmitt, Holmdel, and Edward J. Granda, Englishtown, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

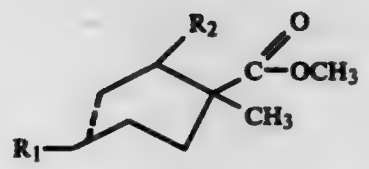
Continuation-in-part of Ser. No. 133,870, Mar. 25, 1980, Pat. No. 4,319,036. This application Jul. 16, 1981, Ser. No. 284,107

The portion of the term of this patent subsequent to Mar. 9, 1999, has been disclaimed.

Int. Cl.³ C07C *69/753*

U.S. Cl. 560—120 3 Claims

1. At least one norbornyl compound defined according to the structure:



wherein the dashed lines represents a carbon-carbon single bond or a carbon-carbon double bond and one of R_1 or R_2 is methyl and the other of R_1 or R_2 is hydrogen.

4,350,824

PROCESS FOR THE PREPARATION OF 1,1-DICHLORO-ALKENES

Hans-Jochem Riebel; Fritz Maurer, both of Wuppertal, and Uwe Priesnitz, Solingen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

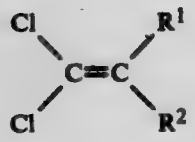
Filed Feb. 23, 1981, Ser. No. 236,484

Claims priority, application Fed. Rep. of Germany, Mar. 12, 1980, 3009486

Int. Cl.³ C07C *21/20, 67/307*

U.S. Cl. 560—124 10 Claims

1. A process for the preparation of a 1,1-dichloroalkene of the formula



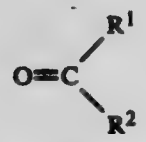
in which

R^1 is hydrogen, or an alkyl, alkenyl, alkinyl, cycloalkyl, aralkyl, aralkenyl or aryl radical, and

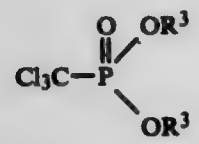
R^2 is an alkyl, alkenyl, alkinyl, cycloalkyl, aralkyl, aralkenyl or aryl radical, or

R^1 and R^2 together form an optionally branched and/or optionally benzo-fused hydrocarbon chain,

comprising reacting a carbonyl compound of the formula



with a trichloromethanephosphonic acid ester of the formula



in which

R^3 each individually is an alkyl or phenyl radical, or the two radicals R^3 together are alkanediyl,

in the presence of at least an equimolar amount of a phosphorous acid triamide of the formula

$$P(NR^4_2)_3$$

in which

R^4 each independently is an alkyl radical, or the two radicals R^4 together are alkanediyl.

4,350,825

PROCESS FOR THE MANUFACTURE OF STYRENE

I-Der Huang, West Paterson, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Division of Ser. No. 960,735, Nov. 15, 1978, abandoned, which is a continuation of Ser. No. 755,245, Dec. 29, 1976, abandoned, which is a continuation-in-part of Ser. No. 685,057, May 10, 1976, abandoned. This application May 30, 1980, Ser. No. 156,067

Int. Cl.³ C07C *51/12*

U.S. Cl. 562—406 8 Claims

1. A process for the formation and recovery of phenyl acetic acid which comprises:

(a) carbonylating at least one reactant selected from the group consisting of benzyl acetate, benzyl propionate, benzylaldehyde, and benzyl alcohol by contacting a liquid reaction mixture comprising at least one of said reactants with a carbon monoxide containing gas under conditions and in a manner sufficient to form liquid phenyl acetic acid, said liquid reaction mixture additionally comprising at least one homogeneous Group VIII element containing catalyst capable of catalyzing said carbonylation reaction, said Group VIII element being selected from the group consisting of Rh, Ir, and mixtures thereof, and at least one halogen containing promoter capable of promoting said catalyzed carbonylation reaction;

(b) recovering said liquid reaction mixture resulting from step (a) containing liquid phenyl acetic acid and cooling said mixture to a temperature sufficient to crystalize said liquid phenyl acetic acid, thereby forming a two phase mixture having a solid phase and a liquid phase, said solid phase containing said crystalyzed phenylacetic acid and said liquid phase containing the remainder of said components in said liquid reaction mixture and sufficient carbonylation catalyst to catalyze the carbonylation reaction of step (a);

(c) separating said liquid and solid phases; and

(d) recycling said separated liquid phase back to liquid reaction mixture of step (a).

4,350,826

PROCESS FOR PREPARING P-HYDROXY PHENYLGLYCINE

Philip N. Edwards, and Michael E. McMenim, both of Macclesfield, England, assignors to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 925,625, Jul. 17, 1978, abandoned. This application Dec. 12, 1980, Ser. No. 215,872

Int. Cl.³ C07C *99/00*

U.S. Cl. 562—444 12 Claims

1. A process for the manufacture of p-hydroxyphenylglycine or an N-alkyl or N,N-dialkyl derivative thereof which comprises the reaction of p-hydroxymandelic acid or a salt thereof with ammonia or an alkyl- or dialkylamine or a salt thereof in aqueous solution at a temperature of between 100° and 135° C.

4,350,827

METHOD FOR RECOVERING PURE METAHYDROXYBENZOIC ACID

Walter R. Demler, Hamburg, and Eugene Odin, Williamsville, both of N.Y., assignors to Buffalo Color Corporation, West Paterson, N.J.

Filed Sep. 8, 1981, Ser. No. 300,196

Int. Cl.³ C07C *65/01*

U.S. Cl. 562—475 10 Claims

1. A method for recovering purified metahydroxybenzoic acid from crude m-hyroxybenzoic acid alkali metal salt comprising:

(a) dissolving the crude m-hydroxybenzoic acid alkali metal salt in water at a ratio of between about 13 and 20 milliliters of water per gram of pure m-hydroxybenzoic acid alkali metal salt contained in the crude m-hydroxybenzoic acid alkali metal salt;

(b) acidifying the resulting solution to a pH of below 2 with mineral acid to neutralize all alkali metal hydroxide present and convert the m-hydroxybenzoic acid alkali metal salt to free m-hydroxybenzoic acid, the solution, during acidifying, being maintained at a sufficiently high temperature to prevent crystallization of m-hydroxybenzoic acid from the solution;

(c) cooling the solution to and maintaining the solution at from about 0° C. to about 15° C. for a sufficient time for essentially all m-hydroxybenzoic acid to crystallize from the solution; and

(d) separating the resulting m-hydroxybenzoic acid crystals from the solution.

4,350,828

CRYSTALLIZATION OF ISOPHTHALIC ACID

G. Richard Worrell, and Alan R. Hirsig, both of Media, Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Continuation of Ser. No. 164,472, Jun. 30, 1980, abandoned. This application May 18, 1981, Ser. No. 264,776

Int. Cl.³ C07C *51/42, 51/16*

U.S. Cl. 562—486 9 Claims

1. A process for the purification of isophthalic acid produced by the liquid phase, oxygen-containing gas oxidation of meta-xylene, which purification process comprises;

preparing an aqueous acetic acid solvent consisting from about 90 to 98 percent acetic acid and about 2 percent to about 10 percent water;

preparing in a dissolving zone, a hot solution of impure isophthalic acid derived from said oxidation of meta-xylene, said solution being at a temperature within the range from about 190° F. to about 300° F. while maintaining a superatmospheric pressure minimizing the volatilization of said solvent;

directing a feed stream of said hot solution of impure isophthalic acid into a single crystallization zone at a controlled rate, said single crystallization zone containing a slurry of isophthalic acid crystals dispersed in a solution of isophthalic acid in solvent, said crystallization zone being maintained at a pre-determined crystallization temperature selected within the range from 180° F. to 250° F. to promote crystallization of isophthalic acid in said single crystallization zone, the pressure in the crystallization zone being maintained at a pressure low enough that more than half of the solvent content of said feed stream is quickly distilled to promote evaporative crystallization, whereby a slurry comprising purified isophthalic acid is prepared, the solid particles constituting at least 60% of the isophthalic acid content of said slurry, the residence time of the isophthalic acid in said crystallization zone being controlled to be from about 20 to about 120 minutes, said single crystallization zone promoting formation of an acceptable distribution of particle sizes of crystals of purified isophthalic acid;

recirculating a stream of liquid from the crystallization zone, directing such recirculating stream through a, pumping zone and reinjecting said recirculating stream into the crystallization zone in such a manner that throughout most of said crystallization zone there is general uniformity of composition, said recirculating stream being heated in a heating zone to at least partially compensate for the various dissipations of heat from said crystallization zone, and to provide the heat required for significant evaporative crystallization sufficiently complete to provide final product concentration in such single stage crystallization zone;

withdrawing a purified stream from said crystallization zone at a rate correlated with the feed stream rate and volume in said crystallization zone to provide said controlled residence time, said purified stream having at least 60% of its isophthalic acid content as solids suspended as slurried solids in said purified stream, and subjecting said withdrawn purified stream to separation by centrifugation or filtration to provide a stream of filtrate containing dissolved impurities and residual isophthalic acid and an acceptable yield of purified filter cake consisting of crystalline particles of isophthalic acid; and

recovering purified isophthalic acid having an acceptable distribution of particle sizes from said purified filter cake.

4,350,829

PROCESS FOR PREPARING ISOBUTYRIC ACID

Tatsuo Masuko; Shigeo Fukaya; Nobuyuki Murai, all of Yokkaichi, and Jun Noma, Ishi, all of Japan, assignors to Mitsubishi Chemical Industries, Limited, Tokyo, Japan

Filed Jun. 27, 1979, Ser. No. 52,590

Claims priority, application Japan, Jul. 14, 1978, 53-85834; Jul. 14, 1978, 53-85835; Jul. 14, 1978, 53-85836; Jul. 21, 1978, 53-89125; Jul. 21, 1978, 53-89126

Int. Cl.³ C07C *51/235, 51/295, 53/124*

U.S. Cl. 562—531 2 Claims

1. In a process for preparing isobutyric acid by continuous liquid-phase oxidation of isobutyraldehyde with molecular oxygen or a molecular oxygen-containing gas in the presence of an alkali metal-containing compound, the improvement comprising maintaining the molar ratio of oxygen to isobutyraldehyde to be fed at 0.5 or above wherein the oxygen concentration of the reactor off-gas is between 1 percent by volume and the lower explosion limit, the water content of the reaction solution is maintained at 2.5 percent by weight or below and the amount of alkali metal containing compound is 0.01 to 1 mole per liter of reaction solution.

4,350,830

METHOD FOR MAKING ACRYLIC ACID FROM ACROLEIN

David L. Childress, Angleton; William V. Hayes, Clute, and Richard L. Poppe, Clute, all of Tex., assignors to The Dow Chemical Co., Midland, Mich.

Division of Ser. No. 955,045, Oct. 26, 1978, Pat. No. 4,208,306, which is a continuation-in-part of Ser. No. 773,992, Mar. 3, 1977, abandoned, which is a continuation-in-part of Ser. No. 678,274, Apr. 19, 1976, Pat. No. 4,035,262. This application Oct. 17, 1979, Ser. No. 85,568

Int. Cl.³ C07C *51/25, 57/055*

U.S. Cl. 562—535 2 Claims

1. In a process for the oxidation of acrolein in the vapor phase to make acrylic acid by reacting acrolein and oxygen wherein a supported catalyst is employed the improvement which comprises employing a catalyst consisting essentially of oxides of molybdenum, vanadium, chromium, copper, titanium and silicon wherein the metals are present in the atomic ratios of

$$Mo_{15}V_{5\text{-}10}Cr_{0.2\text{-}2}Cu_{2\text{-}5}Ti_{1\text{-}3}Si_{1\text{-}5}.$$

4,350,831

MITICIDAL AND MITE OVICIDAL, COMPOUNDS

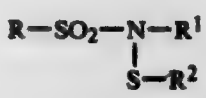
David C. K. Chan, San Francisco, and Arthur A. Whipp, Walnut Creek, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 74,358, Sep. 10, 1979, Pat. No. 4,269,856, which is a continuation of Ser. No. 912,166, Jun. 2, 1978, Pat. No. 4,208,348, which is a division of Ser. No. 760,042, Jan. 17, 1977, Pat. No. 4,107,332. This application Oct. 27, 1980, Ser. No. 201,640

Int. Cl.³ C07C *143/72, 143/84*

U.S. Cl. 564—80 1 Claim

1. A compound of the formula:



wherein one R or R^1 group is cycloalkyl of 5 to 8 carbon atoms substituted with up to 2 alkyl of 1 to 4 carbon atoms or alkenyl of 3 to 6 carbon atoms and the other R or R^1 group is alkyl of 1 to 6 carbon atoms, and R^2 is tetrachloroethyl.

4,350,832

SYNTHESIS OF N-T-BUTYL-P-MENTHANE-3-CARBOXAMIDE

Thomas V. Van Auken, Richmond, Va., assignor to Philip Morris, Incorporated, New York, N.Y.

Filed Apr. 27, 1981, Ser. No. 258,207
Int. Cl.[3] C07C *103/737*
U.S. Cl. 564—123 5 Claims

1. A process for the synthesis of N-t-butyl-p-menthane-3-carboxamide which comprises (1) reacting 3-p-menthyl halide with magnesium in an anhydrous solvent medium to form 3-p-menthylmagnesium halide; and (2) reacting the 3-p-menthylmagnesium halide with t-butyl isocyanate at a temperature between about −10° C. and 100° C. to form N-t-butyl-p-menthane-3-carboxamide product.

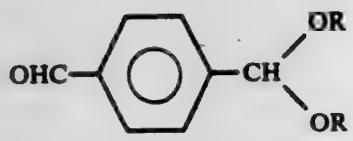
4,350,833

TEREPHTHALDIALDEHYDE MONOACETAL AND METHOD FOR MANUFACTURE THEREOF

Kunihiro Ichimura, 306-302, Matsushiro 3 chome, Yatabemachi, Tsukuba-gun, Ibaragi-ken, Japan

Filed Jan. 28, 1981, Ser. No. 229,076
Claims priority, application Japan, Mar. 29, 1980, 55/40958
Int. Cl.[3] C07C *47/548, 45/61*
U.S. Cl. 568—433 7 Claims

1. A terephthaldialdehyde monoacetal represented by the general formula:



wherein R denotes a lower alkyl group.

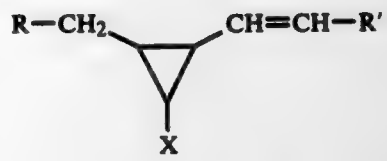
4,350,834

VINYL CYCLOPROPYL COMPOUNDS AS PRECURSORS TO FATTY ACID OXIDATION PRODUCTS

Ned A. Porter; Carl B. Ziegler, Jr., and David H. Roberts, all of Durham, N.C., assignors to Duke University, Durham, N.C.

Filed Aug. 27, 1980, Ser. No. 181,833
Int. Cl.[3] C07C *179/02*
U.S. Cl. 568—568 9 Claims

1. A method of synthesizing a nucleophile substituted unsaturated hydrocarbon based compound comprising: reacting a compound of the formula:



wherein R and R′ are hydrogen, alkyl, alkenyl, cycloalkyl, cycloalkenyl, aryl, aralkyl, alkoxyalkyl, alkoxy, alkylthioalkyl, carboxyalkyl, carboxyalkenyl, and X is a leaving group selected from the group consisting of chlorine, bromine, and iodine with a nucleophilic Ag^+ salt/H_2O_2 reagent.

4,350,835

PROCESS FOR CONVERTING ETHANE TO AROMATICS OVER GALLIUM-ACTIVATED ZEOLITE

Arthur W. Chester, and Yung F. Chu, both of Cherry Hill, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

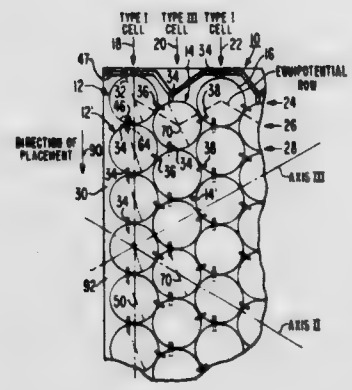
Filed Feb. 19, 1981, Ser. No. 235,777
Int. Cl.[3] C07C *12/02, 12/42*
U.S. Cl. 585—415 15 Claims

1. A process for producing aromatic compounds which comprises contacting under conversion conditions, a gaseous paraffinic hydrocarbon feed containing ethane, with a catalyst comprising gallium and a crystalline zeolite characterized by a constraint index within the approximate range of 1 to 12 and a silica to alumina ratio of at least 12, the weight of gallium in said catalyst being between about 0.05 to about 10 percent based on the total weight of catalyst whereby ethane present in said gaseous feed is converted to aromatic compounds, and recovering said aromatic compounds as liquids.

4,350,836
SOLAR ARRAY CONSTRUCTION

Marvin S. Crouthamel, Pennsauken, and Peter J. Coyle, Oaklyn, both of N.J., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 14, 1980, Ser. No. 196,273
Int. Cl.³ H01L *31/04, 31/18*
U.S. Cl. 136—244 10 Claims

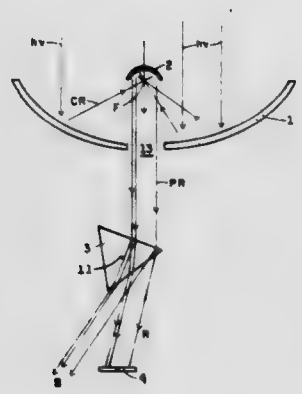


1. A solar array construction comprising:
a first plurality of spaced columns of solar cell circular wafers having first and second surfaces of opposite conductivity, the centers of the cells being aligned in the columns in first parallel axes and in rows in second parallel axes;
a second plurality of spaced columns of solar cell circular wafers having first and second surfaces of opposite conductivity, the centers of the cells being aligned in columns in axes parallel to said first axes and in rows parallel to said second axes, the row axes of said second plurality of spaced wafers being spaced about midway between said second axes; and
interconnect means for connecting the wafers in each column in series, and the wafers in each row, comprising one wafer in each column, in parallel, the radiation receiving surface of said cell wafers facing in the same direction, said interconnected means comprising a plurality of separate, discrete interconnected tabs arranged in three groups aligned parallel to three corresponding intersecting axes.

4,350,837
SPECTROVOLTAIC SOLAR ENERGY CONVERSION SYSTEM

Stephan R. Clark, 13811 Crested Pt., San Antonio, Tex. 78217

Filed Feb. 11, 1981, Ser. No. 233,465
Int. Cl.³ H01C *31/04*
U.S. Cl. 136—246 9 Claims

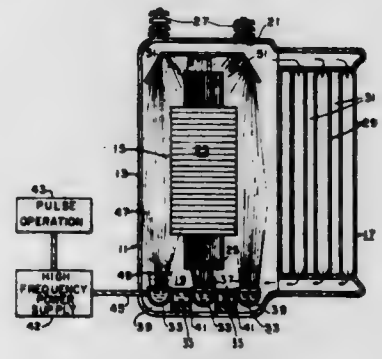


9. A spectrovoltaic energy conversion system comprising a refracting and wavelength dispersing medium variably placed in the path of photons directed from a concentrating or focusing device causing selective spectral dispersion of said photons onto a photovoltaic cell array whereby said variable placement will be achieved by a relative change in the attitude and/or distance of the refracting medium to the photovoltaic material to insure maximum power from the temperature dependent photovoltaic material by maintaining an optimal temperature and optimal number and mix of photons under varying levels of irradiance intensity.

4,350,838
ULTRASONIC FLUID-ATOMIZING COOLED POWER TRANSFORMER

Ronald T. Harrold, Murrysville, Pa., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Jun. 27, 1980, Ser. No. 163,902
Int. Cl.³ H01F *27/10*
U.S. Cl. 174—15 R 11 Claims

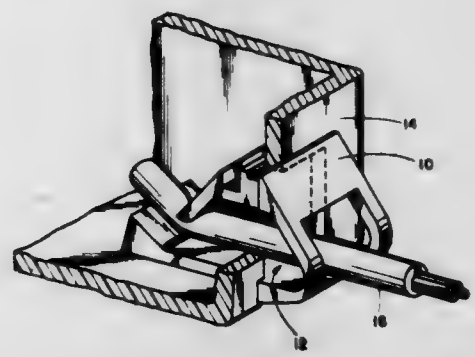


1. A vaporization-cooled electrical apparatus comprising:
a housing forming a sealed chamber;
a heat-producing electrical member disposed within the chamber;
a quantity of dielectric fluid within the chamber and vaporizable within the normal operating temperature range of said member; and
means for applying ultrasonic vibrations at the quantity of dielectric fluid such that the fluid atomizes and contacts the heat producing member.

4,350,839
CABLE LOCK FOR ELECTRICAL OUTLET BOX

John L. Lass, Homewood, Ill., assignor to Square D Company, Palatine, Ill.

Filed Jul. 18, 1980, Ser. No. 170,306
Int. Cl.³ H02G *3/18*
U.S. Cl. 174—65 G 6 Claims



3. A cable locking device comprising:
an electrical outlet box having one or more substantially rectangular openings in its walls or bottom;
an electrical cable inserted through one of the openings;
a substantially rectangular base portion;
a flexing member having a first end of said flexing member attached to a first end of said base, said flexing member also having a substantially square aperture receiving said electrical cable;
a locking section attached to a second end of said flexing member, said locking section having at least one horizon-

tal groove in its uppermost section for engaging a portion of the wall of the opening in the electrical outlet box;

a cable engaging portion extending downward from said locking section toward said base; and

a cable deflection ramp attached to a second end of said base, said cable deflection ramp cooperating with said cable engaging portion to lock the cable into position within the cable locking device;

wherein said cable locking device fits into the substantially rectangular opening in the electrical outlet box, said base contacting the bottom of the opening of the electrical outlet box and the horizontal groove in the locking section receiving the upper portion of the opening in the electrical outlet box and the flexing member contacting the outer wall of the electrical outlet box;

wherein said flexing member is larger than said base and said locking section and said flexing member contacts the outer wall of the electrical box after said base and said locking section have passed through the opening of the electrical outlet box,

wherein said base portion and locking section are inserted into the opening in the electrical outlet box by flexing said flexing member such that said cable engaging portion is moved towards said base allowing said locking section to pass by the upper wall portion of the opening in the electrical outlet box, and then allowing said flexing member to assume its original position after insertion in the opening in the electrical box, thereby engaging said horizontal groove in said locking section with the upper wall of the opening in the electrical outlet box and said base engaging the bottom of the opening in the electrical outlet box, and

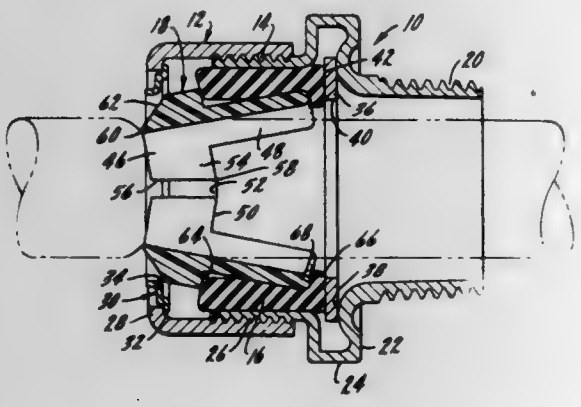
also wherein said cable locking device locks the electrical cable in position when the electrical cable is inserted through said cable receiving aperture and is deflected by said cable deflection ramp and engaged by said cable engaging portion, thereby preventing movement of said cable out of the electrical box.

4,350,840

CORD GRIP

Leonard H. Michaels, Warrenville, Ill., assignor to Ideal Industries, Inc., Sycamore, Ill.

Filed Mar. 20, 1981, Ser. No. 246,030
Int. Cl.[3] H02G *3/22*
U.S. Cl. 174—65 SS 37 Claims



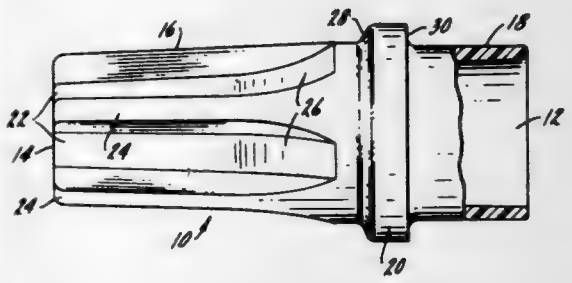
1. In a cord grip, a variable volume compression chamber defined by two interfitting parts screw threaded together and having a cord passage therethrough, a generally annular grommet in the compression chamber made of a flexible material having the general characteristics of rubber as to compressibility and distortability, a plurality of separate gripper elements having forward gripping areas disposed about the annular grommet and having opposed inner surfaces adapted to cause a rocking motion of the gripper elements when the volume of the compression chamber is axially reduced thereby causing the forward gripping areas to close on the cord disposed through the grommet.

4,350,841

ELECTRICAL CONNECTOR

William J. Scott, Sycamore, Ill., assignor to Ideal Industries, Inc., Sycamore, Ill.

Continuation of Ser. No. 936,589, Aug. 24, 1978, abandoned.
This application Dec. 31, 1979, Ser. No. 108,597
Int. Cl.[3] H01R *4/22*
U.S. Cl. 174—87 7 Claims



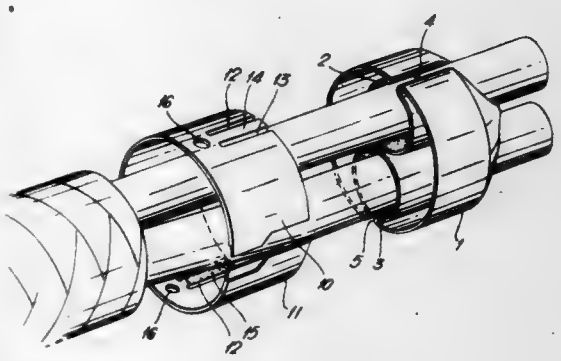
1. In an article of manufacture, a connector for joining the ends of two or more electric wires in the form of a cap made of an insulating material and having a generally central bore open at one end and closed by an end wall at the other end, the exterior of the cap being provided with a shoulder intermediate the ends thereof facing toward the open end of the cap, the shoulder dividing the exterior of the cap generally into two areas, one toward the closed end of the cap and the other toward the open end, the one area having an irregular surface formation to enable the cap to be grasped and turned down on the wires, and the other area being generally cylindrical and of substantial axial extent.

4,350,842

CABLE SLEEVE OUTLET FOR SPLICE CASE

Jean-Marie E. Nolf, Hammemille, Belgium, assignor to N.V. Raychem S.A., Belgium

Filed Aug. 6, 1980, Ser. No. 175,693
Claims priority, application United Kingdom, Aug. 7, 1979, 7927528
Int. Cl.[3] H01R *4/00;* H02G *13/06*
U.S. Cl. 174—92 17 Claims



1. A cable sleeve outlet comprising:

a substantially cylindrical member having at least one re-entrant portion in its longitudinal wall shaped to provide a longitudinal channel communicating with the exterior surface of said longitudinal wall a longitudinal opening to the exterior of said cylindrical member to form a longitudinal opening therein permitting each said re-entrant portion to be wrapped around an elongate object; and,

support means insertable into an end of said cylindrical member, said support means being so formed that in use it bears against the inner surface of said longitudinal well to provide a substantially rigid internal support for at least part of said longitudinal wall of said cylindrical member, said support means including a bridging portion corresponding to each said longitudinal opening and in use lying across each said longitudinal opening to bridge and hold closed each said longitudinal opening.

4,350,843

METHOD AND SYSTEM FOR CRIMPING A METAL CONNECTOR

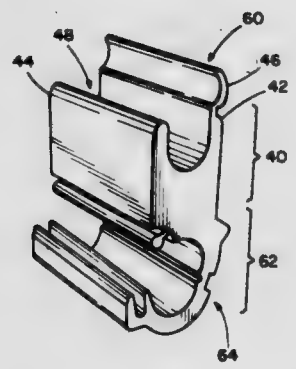
Paul K. Campbell, and Edward L. Nichols, III, both of Birmingham, Ala., assignors to Square D Company, Palatine, Ill.

Filed Aug. 31, 1978, Ser. No. 938,744

The portion of the term of this patent subsequent to Aug. 21, 1996, has been disclaimed.

Int. Cl.³ H01R 5/08

U.S. Cl. 174—94 R 1 Claim



1. An elongated malleable metal connector for electrically and mechanically connecting two cables or the like and for use with a crimping tool having first and second opposed pairs of crimping dies, said connector comprising:

a U-shaped main portion having two legs, a first leg of said two legs having a hinged segment for closing the opening created by the U-shape of said main portion, said hinged segment initially being open, said hinge segment being manually closed after transverse insertion of one of a number of different size cables, and

a tap portion capable of being deformed to a semi-cruciform transverse cross-section with offset cable lodgment and for receiving one of a number of different size cables, said tap portion being attached to said main portion along the bottom of said U-shaped main portion, the axis of said tap portion being parallel to the axis of said main portion, said tap portion including a bifurcated body member having first and second leg portions, the outer surface of said first leg portion being attached to the bottom of said U-shaped main portion, said first and second leg portions being initially connected by a reduced cross-sectional thickness portion of said body member to provide a plastically flowable hinge connection, said first and second leg portions defining an initial predetermined angle such that said body member can laterally engage an uninsulated section of an electrical cable;

said first leg having on the end opposite said reduced thickness portion an axially extending rib member and axially extending inner and outer ridges disposed on either side of said rib member;

said second leg having on the end opposite said reduced thickness portion axially extending inner and outer fingers, said rib member, said inner and outer ridges and said inner and outer fingers being oriented such that said outer finger lies between said outer ridge and said rib member, and said inner finger lies between said inner ridge and said rib member, when said body member is closed about an uninsulated section of the cable, said enclosure occuring by pivoting of said legs about said reduced thickness portion in response to hand applied external pressure; and

whereby, said inner and outer fingers and said rib members are deformed to form a positive mechanical lock when said connector is placed between the first and second opposed pairs of crimping dies, and said dies are moved simultaneously converging radially toward one another, said first pair, each having a nose portion, bites into said tap portion of said connector and one of said second pair, having a nose portion, also bites into said tap portion of said connector, and the other of said second pair, having a nest die, crimps and main portion of said connector.

4,350,844

ENCIPERING- AND DECIPHERING APPARATUS IN THE FORM OF A TYPEWRITER

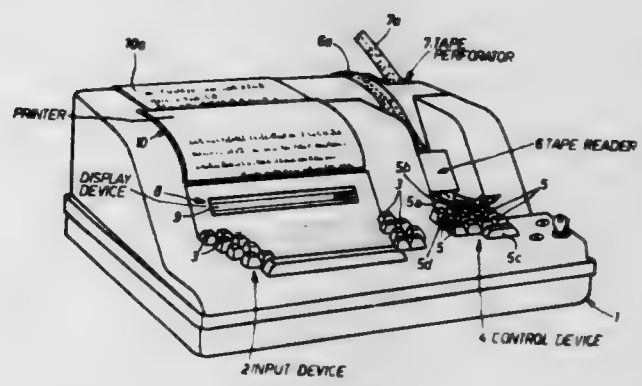
Oskar E. Stürzinger, Baar, and Peter Frutiger, Wangen, both of Switzerland, assignors to Anstalt Europaische Handelsgesellschaft, Liechtenstein

Filed Nov. 19, 1976, Ser. No. 743,130

Claims priority, application Switzerland, Nov. 20, 1975, 15063/75

Int. Cl.³ H04L 9/02

U.S. Cl. 178—22.18 13 Claims



1. An enciphering and deciphering apparatus operable in at least a key character storage mode, a plain text mode, an enciphering mode, and a deciphering mode, said apparatus substantially in the form of a typewriter and comprising:

(A) a first keyboard for permitting an operator to enter both text and key character to be processed;

(B) a second keyboard for permitting an operator to enter control commands which determine the mode of operation of said apparatus;

(C) output means including at least one page printer;

(D) a cipher computer and a key character storage associated therewith, said cipher computer for enciphering and deciphering characters applied thereto when said apparatus is operating in said enciphering and deciphering modes, respectively, said cipher computer to encipher and decipher said characters applied thereto in accordance with at least one key character stored in said key character storage;

(E) display means for displaying said entered text and key characters in a progressive stepwise manner; and

(F) central control unit means responsive to said control commands for operating said apparatus in the mode determined by said control commands, said central control unit means to:

(1) cause said entered key characters to be displayed by said display means in said progressive stepwise manner and to thereafter be stored in said key character storage when said apparatus is operated in said key character storage mode;

(2) cause said entered text characters to be displayed by said display means in said progressive stepwise manner and to thereafter be printed by said printer when said apparatus is operated in a plain text mode; and

(3) cause said entered text characters to be displayed by said display means in said progressive stepwise manner and to thereafter be enciphered by said cipher computer and finally printed by said printer when said apparatus is operated in said enciphering mode.

4,350,845

REVERBERATION APPARATUS

William H. Hall, Dallas, and John R. Saal, Arlington, both of Tex., assignors to Micmix Audio Products, Inc., Dallas, Tex.

Filed Oct. 10, 1979, Ser. No. 83,360

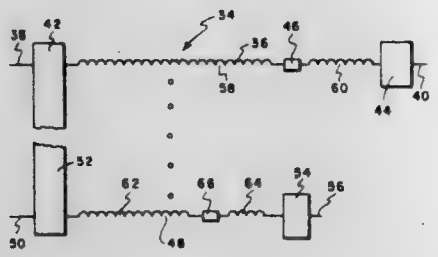
Int. Cl.³ G10H 1/04

U.S. Cl. 179—1 J 18 Claims

15. An apparatus having N time delay means, N being at

least two, for providing simulated reverberation of an electrical signal representative of sound, comprising in combination:

maximum time delay means for delaying the electrical signal; and



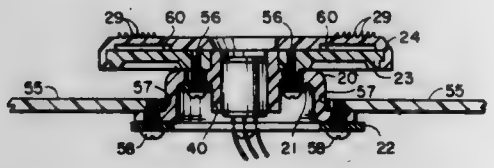
minimum time delay means functionally in parallel with the maximum time delay means for delaying the electrical signal wherein at least one of the time delay means generates reflections of the electrical signal, and the differences between the logarithms of the time delays to temporally adjacent output signals are sustantially equal.

4,350,846

ACOUSTIC MOUNTING AND COUPLER FOR A TELEPHONE HANDSET

Alan C. Busche, Dorchester, and Karlo B. Simonsen, London, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Nov. 4, 1980, Ser. No. 203,990
Int. Cl.³ H04M *1/14*
U.S. Cl. 179—1 C **10 Claims**



1. An acoustic mounting and coupler for a telephone handset, comprising:

a tubular flexible resilient member including a central hollow boss for reception of a transducer therein and an annular flange extending outwardly from the boss, the flange having an inner portion extending outwards, a central portion extending parallel to the boss from an outer edge of said inner portion and an outer portion extending outwards from said central portion;

means for attaching said outer portion of said annular flange to a support member, said tubular member extending through an aperture in said support member;

a substantially rigid plate attached to said inner portion of said annular flange and extending over said support member and presenting an upper surface facing away from said support member;

a flexible disc mounted on said plate, and including a plurality of annular flexible members on an upper surface;

said plate and said disc each having a central aperture aligned with said hollow boss of said tubular flexible member.

4,350,847

SUBWOOFER SYSTEM USING A PASSIVE RADIATOR

Matthew S. Polk, Baltimore, Md., assignor to Polk Audio, Inc., Baltimore, Md.

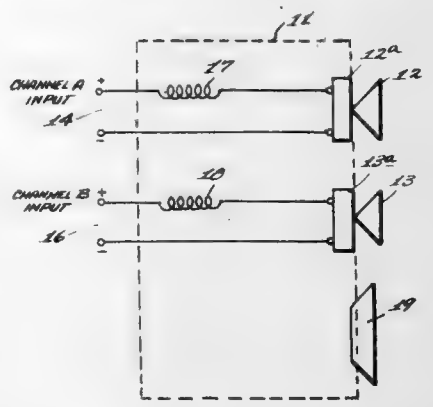
Filed Jan. 12, 1981, Ser. No. 224,451
Int. Cl.³ H04R *5/02*; H04S *1/00*
U.S. Cl. 179—1 GA **5 Claims**

1. A loudspeaker apparatus for use in a stereo sound reproducing system having a left channel signal and a right channel signal comprising

a housing containing an air mass,

a left channel loudspeaker and a right channel loudspeaker mounted in said housing, each of said left and right channel loudspeakers having voice coils,

respective means for connecting the left channel signal to said left channel loudspeaker voice coil and the right



channel signal to said right channel loudspeaker voice coil,

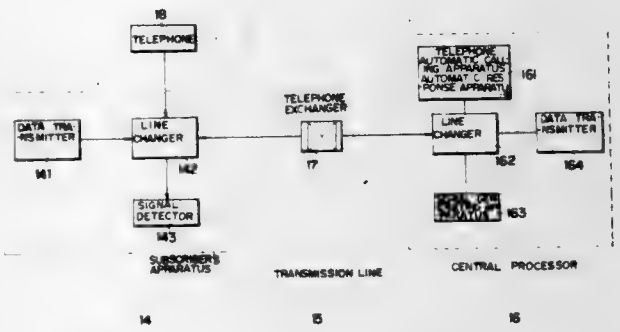
a passive radiator loudspeaker mounted in said enclosure and acoustically coupled by the air mass to said left and right channel loudspeakers for acoustically summing their acoustic outputs.

4,350,848

DATA TRANSMISSION SYSTEM

Masatane Kariya, and Akimori Tomizawa, both of Toda, Japan, assignors to Clarion Company, Ltd., Tokyo, Japan

Filed Jun. 9, 1980, Ser. No. 157,389
Claims priority, application Japan, Jun. 15, 1979, 54-75433
Int. Cl.³ H04M *11/00*
U.S. Cl. 179—2 DP **4 Claims**



1. A data transmission system which comprises:

a plurality of subscribers' equipment;

a single central equipment; and

a plurality of telephone lines each interconnecting said subscribers' equipment and said central equipment;

said subscribers' equipment each being comprised of a telephone set, a data transmitter, a signal detector, a manual switch and a line changer for selectively connecting the telephone set, data transmitter and signal detector thereof to the telephone line associated therewith;

said manual switch being connected between said line changer and said signal detector;

said telephone set being normally connected to the telephone line through said line changer to call the central equipment when data transmission is required from the data transmitter to the central equipment;

said signal detector being connected to the telephone line through said line changer and said manual switch;

said central equipment being responsive to a call from said telephone set to provide an announcement thereto and including a signal generator for providing a control signal;

said signal detector including means for detecting the con-

trol signal from said central equipment when said manual switch is operated by the subscriber and producing a line switching signal;

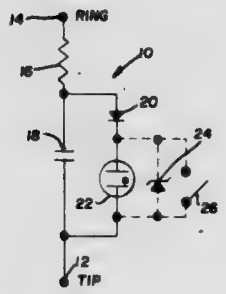
said line changer including means for switching said telephone line from said telephone set and signal detector to said data transmitter in response to the line switching signal.

4,350,849

VARYING IMPEDANCE LINE TEST TERMINATION DEVICE

Omprakash G. Ahuja, East Meadow, N.Y., assignor to TII Industries Inc., Copiague, N.Y.

Filed Jan. 15, 1981, Ser. No. 224,914
Int. Cl.³ H04M *3/22*; H04B *3/46*
U.S. Cl. 179—175 **11 Claims**



1. A varying impedance line test termination device for providing a characteristic signature to the telephone central office when a continuity test is made on a subscriber line having a pair of electrically conductive paths comprising:

(a) a first current path having a first resistor and a capacitor connected in series, said serially connected first resistor and capacitor being connected across said electrically conductive line paths; and

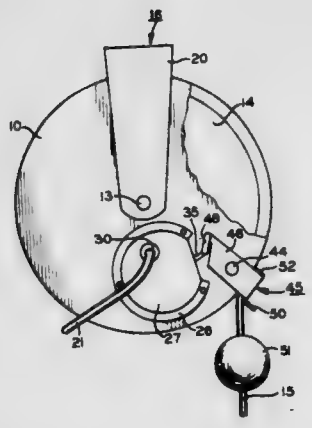
(b) a second current path having a diode and a voltage breakover device connected in series, said serially connected diode and voltage breakover device being connected across said capacitor.

4,350,850

SELF-SWITCHING ELECTRIC CORD REEL

James W. Kovacik; James D. Kovacik, both of Parma; Thomas J. Blanch, Aurora, and Paul S. Blanch, Garfield Heights, all of Ohio, assignors to Alert Stamping & Manufacturing Company, Inc., Bedford Heights, Ohio

Filed Jul. 14, 1980, Ser. No. 168,597
Int. Cl.³ H02G *11/00*
U.S. Cl. 191—12.2 R **10 Claims**



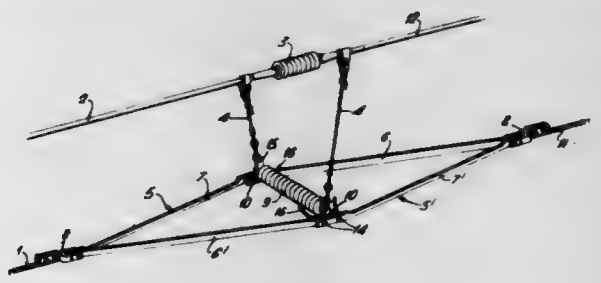
1. A self-switching electric cord reel comprising a housing, a reel rotationally mounted in the housing and containing an electric cord, said housing having an opening through which to pass said electric cord, a switch carried with respect to the housing and electrically serially connected with said electric cord to energize and de-energize the cord, lever means pivotally mounted with respect to said housing and having one arm portion extending across said housing opening and another arm portion adapted to operate said switch upon pivoting, means on said electric cord for pivoting said lever means as said cord travels lengthwise, and mechanical shock-absorbing means on said lever means adapted to strike said housing upon pivoting of said lever means sufficient to operate said switch, thereby to absorb the mechanical shock of said pivoting movement preferentially to said switch.

4,350,851

OVERHEAD ELECTRIC TRACTION SYSTEMS

Alan E. Seddon, Rainford, England, assignor to BICC Limited, London, England

Continuation of Ser. No. 937,811, Aug. 29, 1978, abandoned. This application Dec. 15, 1980, Ser. No. 216,210
Int. Cl.³ B60M *1/18*
U.S. Cl. 191—39 **8 Claims**



1. Fabricated equipment of an overhead electric traction system in the form of a section insulator in which the contact wires of two neighbouring sections of the system are mechanically connected together but electrically insulated from one another by at least two runners, each runner comprising a tension insulator and at least one elongate metal member mechanically connected together, which runners are attached at each of their ends to the end of a contact wire and are so disposed that the metal of one runner at one end of the tension insulator in the longitudinal direction, overlies the metal member of a second runner which lies at the opposite end of the tension insulator, at least two of the runners being held in spaced horizontal relationship on opposite sides of the longitudinal centre line of the section insulator and being insulated one from the other by at least one elongate insulating member which extends transversely of the longitudinal centre line, each said tension insulator being an elongate member of electrically insulating material and, in the mechanical connection between the tension insulator of each runner and the elongate metal member, an insulating end part of the elongate electrically insulating member and an end part of the elongate metal member overlap and are interconnected by separate securing means the undersurfaces of said end parts of the elongate electrically insulator material and the elongate metal member constituting a smooth running surface for a current collector travelling beneath and in contact with the mechanical connection.

4,350,852

BI-STABLE MECHANISM AND ANTI-THEFT DEVICE FOR A MOTOR VEHICLE COMPRISING SUCH MECHANISM

Guy Neyret, Oullins, France, assignor to Sodex-Magister, Societe d'Exploitation des Brevets Neiman, Croissy, France

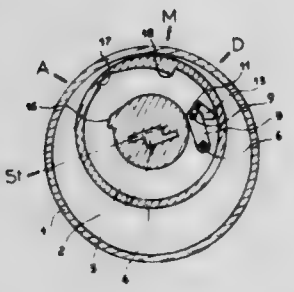
Filed Dec. 4, 1980, Ser. No. 212,774
Claims priority, application France, Dec. 7, 1979, 79 30061
Int. Cl.³ H01H *27/06*
U.S. Cl. 200—42 A **1 Claim**

1. A bi-stable mechanism comprising:

(a) a housing,

(b) a lever pivotally mounted in said housing about an axis and movable between first and second stable positions, and

(c) a spring for urging said lever towards one of said stable positions according to selection, said spring being of a hairpin-type spring of which one end is connected to one end of the said lever and the other end mounted so as to pivot at a fixed point, the distance between the ends of the spring when the lever is in either stable position is greater than the distance between the point of location of the



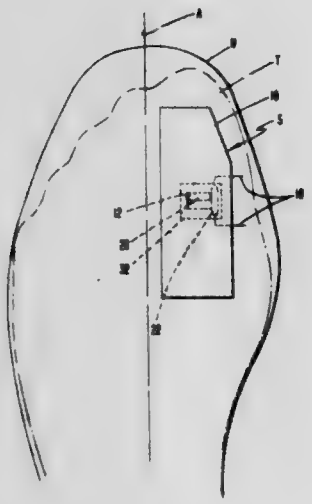
spring end with the lever end when the lever is at its centre position whereby the spring becomes more compressed as the lever approaches the centre position where the lever is unstable; the pivoted leg of the hairpin spring being accommodated at the apex of a triangular cut-out of said housing, while the other leg of the spring can come to rest at either of the other two points of the triangular cut-out.

4,350,853

ALARM TOE SWITCH

Floyd P. Ganyard, Albuquerque, N. Mex., assignor to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Nov. 18, 1980, Ser. No. 208,099
Int. Cl.³ H01H *9/00*
U.S. Cl. 200—52 R **7 Claims**



1. A covert duress alarm toe device of unitary construction for insertion within a shoe and activation by toe pressure for covert energization of an alarm circuit comprising:

a substantially flat insole mounting pad having top and bottom surfaces and adapted for placement within a shoe;

a miniature reed switch affixed within said mounting pad, said bottom surface of said pad including a slot substantially perpendicular to and adjacent said switch;

permanent magnet means for operating said reed switch positioned for movement within the slot, said magnet means being of greater thickness than the mounting pad thickness to create a bump above the surface of said mounting pad for facilitating movement of the magnet means by toe pressure from a first position in inoperative relation to said reed switch to a second position in operative relation to said reed switch, whereby the alarm circuit is energized; and

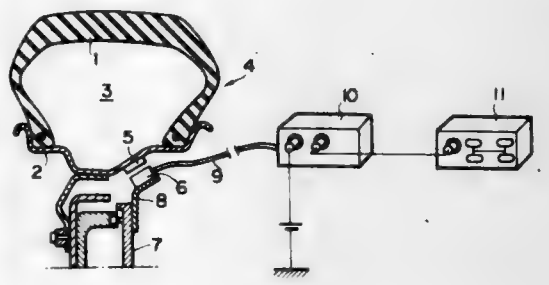
spring means positioned in the slot adjacent said magnet for returning said magnet to said first position when toe pressure is removed.

4,350,854

PRESSURE-SENSITIVE SWITCH UNIT IN RESONATOR ASSEMBLY OF TIRE PRESSURE DROP DETECTING APPARATUS

Akira Matsuda, Higashi Murayama; Yoshihiro Havakawa, Akigawa; Shigeo Yasuda, Musashino; Motoaki Iwasaki, Musashino, and Hiroshi Nishino, Musashino, all of Japan, assignors to Bridgestone Tire Company Limited and Mitaka Instrument Company Limited, both of Tokyo, Japan

Filed Jun. 27, 1980, Ser. No. 163,476
Claims priority, application Japan, Jul. 3, 1979, 54/91628[U]
Int. Cl.³ H01H *35/24*
U.S. Cl. 200—61.25 **18 Claims**



1. A pressure-sensitive switch unit to form part of a resonator assembly for use in an apparatus for detecting a pressure drop in a tire chamber of a tire-and-wheel assembly which consists essentially of a wheel rim and a pneumatic tire fitted to the wheel rim and which has said tire chamber formed between the tire and the wheel rim, comprising:

an outer receptacle,

an inner receptacle fixedly positioned within the outer receptacle with a gap formed between the inner faces of said outer receptacle and the outer surfaces of the inner receptacle and open to the atmosphere,

a casing structure received in said outer and inner receptacles, the casing structure being at least in part encapsulated in a body of a dielectric potting compound received in said inner receptacle,

a connecting member fixedly connecting said outer and inner receptacle to said wheel rim of said tire-and-wheel assembly, the connecting member fitted to said casing structure and formed with a passageway for communicating with the tire chamber in said tire-and-wheel assembly,

a resilient diaphragm positioned between the casing structure and the connecting member and forming a variable-volume pressure-acting chamber between the diaphragm and the connecting member and a variable-volume atmospheric chamber between the diaphragm and the casing structure, the pressure-acting chamber being open to said passageway, the casing structure having an axially elongated contact element having an end portion axially projecting into said atmospheric chamber toward said diaphragm, the end portion of said contact element and said diaphragm being engageable with each other for providing electrical connection therebetween,

the casing structure and said connecting member respectively having inner and outer surface portions which are held in contact with each other and which have formed therebetween an interstice which is open at one end to said gap between said outer and inner receptacles and which communicates at the other end with said atmospheric chamber, and

a body of gas-permeable synthetic rubber which is applied to said surface portions adjacent said one end of said interstice and which is in part exposed to the atmosphere through said gap between said outer and inner receptacle for providing air communication between the atmosphere

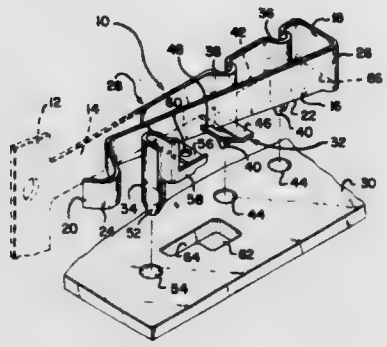
and said interstice through said body of the gas-permeable synthetic rubber.

4,350,855

ELECTRICAL SWITCH ASSEMBLY

Clifford F. Bobb, Carlisle, and Norwood C. Graeff, Harrisburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Dec. 22, 1980, Ser. No. 218,853
Int. Cl.³ H01H *1/26*
U.S. Cl. 200—292 1 Claim



1. An electrical switch assembly of conductive material for being mounted as a one piece assembly onto a circuit board or the like, the assembly comprising:

a. a first arm with a post depending therefrom for being inserted into a circuit board;

b. a vertically extending contact post detachably attached to the first arm to change the one piece switch assembly into a two piece switch assembly after being mounted on the circuit board and with a free end of the post being adapted for insertion into a circuit board;

c. a second, resilient arm spaced from and extending parallel to the first arm and hingedly connected thereto at one end to comprise a swingable, cantilever spring blade biased to bear against said contact post; and

d. removable retaining means for holding the second arm away from the contact post

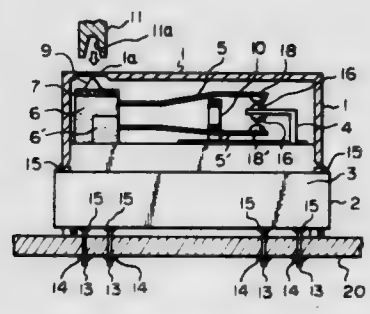
during the mounting of the switch assembly onto a circuit board and thereafter removing said retaining means so that the blade is normally in contact with the contact post.

4,350,856

RELAY FOR PRINTED CIRCUIT BOARD

Takahisa Shiratori; Masaru Tamura, and Kouji Hanada, all of Suzaka, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Oct. 10, 1980, Ser. No. 196,031
Claims priority, application Japan, Oct. 23, 1976, 51/146903
Int. Cl.³ H01H *9/02*
U.S. Cl. 200—306 10 Claims



1. A relay adapted to be mounted on a printed circuit board, comprising a relay body and a relay cover which is mounted in a fluid-tight fashion to the relay body, said relay cover being provided with a thin-walled portion which can be broken to define an opening therein, and

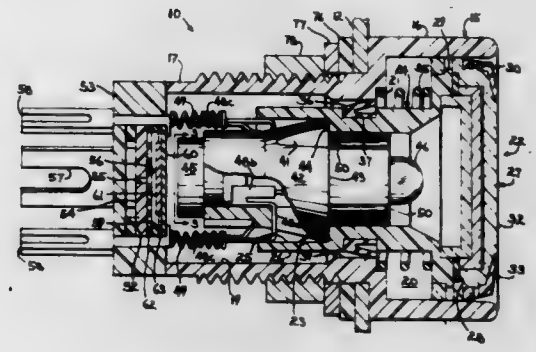
said relay body is provided with a projection which is located directly below said thin-walled portion and which is adapted to break the latter upon contact therewith.

4,350,857

ILLUMINATED INDUSTRIAL MEMBRANE SWITCH

Gary C. Fillus, South Milwaukee, Wis., and Eric L. Long, Northbrook, Ill., assignors to Allen-Bradley Company, Milwaukee, Wis.

Filed Oct. 3, 1980, Ser. No. 193,489
Int. Cl.³ H01H *9/20*
U.S. Cl. 200—314 10 Claims



1. An illuminated electrical switch which comprises:

an operator housing with a front end, a rear end and an opening therethrough from a housing entrance at the front end to a housing exit at the rear end;

an operator disposed in the opening in the operator housing, the operator extending from one end near the housing entrance to a distal end spaced inwardly from the housing exit, the operator being mounted for movement within the operator housing such that the distal end of the operator is movable toward the housing exit to actuate the switch, the operator including an axially extending plunger portion that forms the distal end, the plunger having an opposite end in which a bulb socket is formed, and the operator also having a cap portion that fits over the bulb socket end of the plunger portion;

a pair of bulb contact members disposed within the bulb socket and extending radially outward from the plunger portion into the opening within the operator housing;

a pair of bulb contact springs, each spring being mounted on a respective bulb contact member and extending towards the exit of the operator housing;

a contact support structure coupled to the operator housing;

a pair of lighting circuit terminals, each lighting circuit terminal being supported by the contact support structure, and each lighting circuit terminal being electrically connected to a respective bulb contact spring at a location corresponding to the radial extent of its respective bulb contact member to form a portion of a lighting circuit;

a substrate supported by the contact support structure, the substrate having a front side;

a pair of spaced apart contact termination areas disposed on the front side of the substrate radially inward of the electrical connections of the lighting circuit terminals to the bulb contact springs;

a pair of switch terminals, each being electrically connected to a respective termination area on the front side of the substrate; and

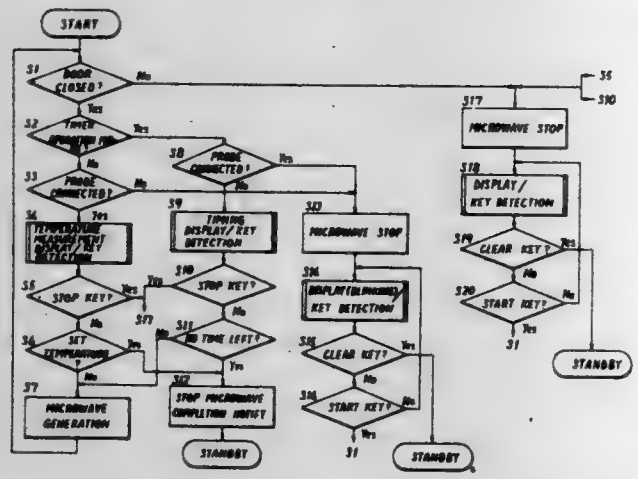
shorting means, disposed between and spaced from the distal end of the operator and the contact termination areas, and disposed radially inward of the connections of the lighting circuit terminals to the bulb contact springs, for movement by the distal end of the operator into contact with the termination areas to close a switch circuit that is formed within a space defined by the distance between the electrical connections of the lighting circuit terminals to the bulb contact springs.

4,350,858

APPARATUS AND METHOD FOR CONTROLLING ELECTRONIC CONTROLLED COOKING APPARATUS

Masahiko Yoshida, Otsu, Japan, assignor to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed Feb. 12, 1980, Ser. No. 120,740
Claims priority, application Japan, Feb. 19, 1979, 54-18614
Int. Cl.[3] H05B 6/68
U.S. Cl. 219—10.55 B 8 Claims



1. An electronically controlled cooking apparatus, comprising:

heating energy generating means for providing heating energy to a material being cooked,

control means for controlling said heating energy generating means in accordance with a predetermined cooking operation, said control means having a temperature input for determining its operation,

data entry means including a temperature operation mode commanding means for commanding the performance of a temperature operting mode and a time operation mode commanding means for commanding the performance of a time operation mode, means for selectively entering numerical data for the temperature of said temperature operating mode, and heating initiate command means for commanding initiation of the operation of said heating energy generating means,

storage means for storing said data entered from said entry means of the performance of said temperature mode and the numerical data,

temperature detecting means adapted for detachable electrical coupling to said temperature input of said control means for detecting thwe temperature of said material being cooked,

coupling state detecting means responsive to operation of said temperature operation mode commanding means and said heating initiate command means for initiating the operation of said heating energy generating means for producing a first output if said temperature detecting means is uncoupled from said temperature input and producing a second output if said temperature detecting means is coupled to said temperature input, said coupling state detecting means being further responsive to operation of said time operation mode commanding means for producing a third output if said temperature detecting means is coupled to said temperature input of said control means,

means for producing a sensory perceptible alarm signal,

said control means including first command means responsive to said first output from said coupling state detecting means for enabling said alarm means and inhibiting the operation of said heating energy generating means,

second command means responsive to production of said second output of said coupling state detecting means following the initiation of said alarm signal and after coupling of the temperature detecting means to said temperature input of said control means for controlling said heating energy generating means based on said data entered by said entry means prior to initiation of said alarm signal and said temperature of said material being cooked as detected by said temperature detecting means, and

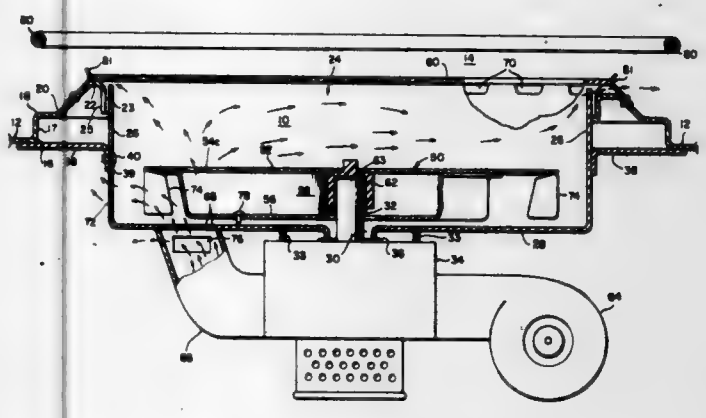
invalidating means responsive to said third output of said coupling state detecting means for invalidating an operation of said heating initiate commanding means and enabling said alarm means.

4,350,859

MICROWAVE OVEN FEED SYSTEM

Kenneth W. Dudley, Sudbury; Wesley W. Teich, Wayland, and Robert F. Bowen, Burlington, all of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed May 5, 1980, Ser. No. 146,561
Int. Cl.[3] H05B 6/64
U.S. Cl. 219—10.55 F 18 Claims



1. In combination:

an enclosure for exposing bodies to microwave energy comprising a plurality of metallic surfaces, one of said surfaces having an aperture;

a magnetron mounted external to said enclosure and having its output probe inserted through said aperture into said enclosure;

a dielectric bearing supported by said output probe in said enclosure;

a primary microwave energy radiator supported by said bearing in said enclosure, said radiator being energized by said output probe; and

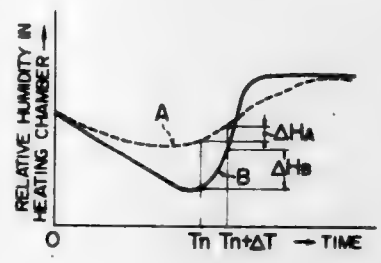
means for rotating said primary radiator about an axis passing through said probe.

4,350,860

HEATING APPARATUS WITH SENSOR

Shigeki Ueda, Nara, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 18, 1980, Ser. No. 178,935
Claims priority, application Japan, Aug. 17, 1979, 54/105317; Aug. 20, 1979, 54/106331; Aug. 20, 1979, 54/114896[U]; Aug. 20, 1979, 54/114897[U]
Int. Cl.[3] H05B 9/06, 1/02
U.S. Cl. 219—10.55 B 6 Claims



1. A heating apparatus having a plurality of sensors comprising:

a heating chamber adapted to receive a substance to be heated therein,

heating means for supplying heat toward and into said heating chamber,

sensor means including at least first and second sensors of said plurality of sensors for respectively sensing two different items of physical data independently representing the heating condition of said substance,

a main control unit including a ROM, said main control unit estimating the state of progress of a heating sequence for said substance by comparing the physical data sensed by either said first sensor or said second sensor means with a reference level stored in said ROM,

timer means for counting clock pulses applied to said main control unit,

a heating duration control unit controlled by said main control unit in accordance with the outputs from said sensor means and said timer means for controlling the power supplied to said heating means,

a heating control unit for varying the output of said heating means,

a manipulator panel including an automatic cooking select key and a temperature setting key, wherein when said automatic cooking select key is depressed said first sensor is selected and when said temperature setting key is depressed said second sensor is selected, and

a semiconductor voice synthesizer unit for reading out voice data from a semiconductor voice data memory in accordance with address data entered from said main control unit and for synthesizing the read-out voice data into corresponding voice information, said main control unit outputting said address data so that appropriate voice data including warning signals and other information required for proper use of said heating apparatus and inherent to the selected first or second sensor is read out.

4,350,861

APPARATUS FOR HEATING STRIP ELEMENTS IN A CONTINUOUS PASS PROCESS BY ELECTROMAGNETIC INDUCTION

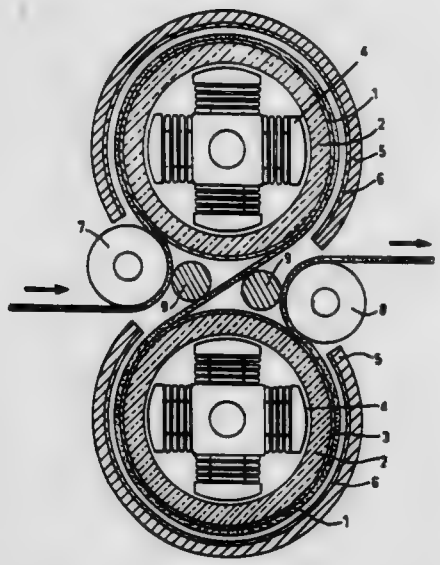
Jean P. Pouillange, Aulnay-sous-Bois; Jean P. Gaydon, Marly-le-Roi, and Bernard Chausse, Bourg-la-Reine, all of France, assignors to Compagnie Electro-Mecanique, Paris, France

Filed Jul. 8, 1980, Ser. No. 166,846

Claims priority, application France, Jul. 9, 1979, 79 17717

Int. Cl.³ H05B *6/10*

U.S. Cl. 219—10.61 R **9 Claims**



1. Apparatus for direct electromagnetic inductive heating of a metallic strip-shaped item in a continuous pass process wherein the metallic item forms the inductive element, comprising:

a hollow refractory drum having an exterior surface and means for guiding a continuously moving metallic strip shaped item along a path whereby the item is supported on said exterior surface of said drum and forms a substantial portion of an appreciably circular loop;

a magnetic inductor including a plurality of magnetized poles disposed within said drum with their polarized surfaces parallel to, and arranged about, the central axis of said loop, for generating a magnetic field of constant strength,

means for rotating said inductor about said axis to provide relative motion between said inductor and the metallic item; and

means external to said drum and the loop for providing a return path for the magnetic flux around and across said loop, whereby said portion of the loop formed by said metallic item forms an inductive element that is directly heated by said magnetic field.

4,350,862

FEEDING DEVICE IN A WELDING MACHINE FOR FEEDING CAN BODIES TO ELECTRODE ROLLS

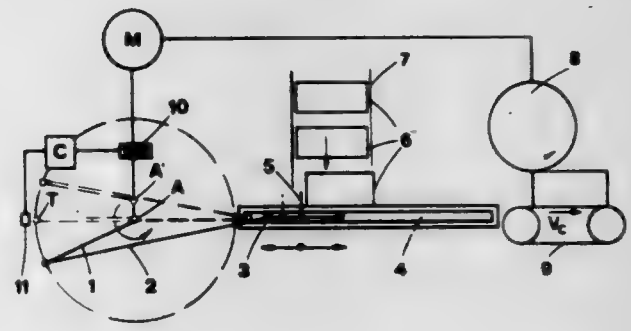
Othmar Stieger, Zurich, Switzerland, assignor to Paul Opprecht, Bergdietikon, Switzerland

Filed Jul. 3, 1980, Ser. No. 165,703

Claims priority, application Switzerland, Jul. 19, 1979, 6731/79; May 5, 1980, 3482/80

Int. Cl.³ B23K *11/06*

U.S. Cl. 219—64 **3 Claims**



1. An apparatus for transporting at a predetermined final speed successive can bodies at selectable spacings along a path of travel,

comprising in combination,

entrainment means movable in opposite directions between a can body receiving station and a pair of continuously rotating electrode rolls and being operable to convey successive can bodies from said receiving station towards said electrode rolls and to deliver them to said electrode rolls at said final speed,

rotary-to-linear movement conversion means, including a crank normally adapted to be driven at a prearranged angular velocity by drive means, a connecting rod pivoted to said crank and connected to said entrainment means,

an enlongated guiding means operable for guiding said entrainment means during its movement,

a clutch adapted to be driven by said drive means and normally connected to, but disconnectable from said crank, for cyclically reducing said angular velocity to zero upon being disconnected from said crank following a complete rotation of said crank,

whereby said crank comes to a complete stop, and the spacing of successive can bodies may accurately be adjusted without changing said predetermined final speed at the electrode rolls.

4,350,863

HIGH-FREQUENCY POWER FEEDER CIRCUITRY AND SUPPLY FOR ELECTRICAL DISCHARGE MACHINING

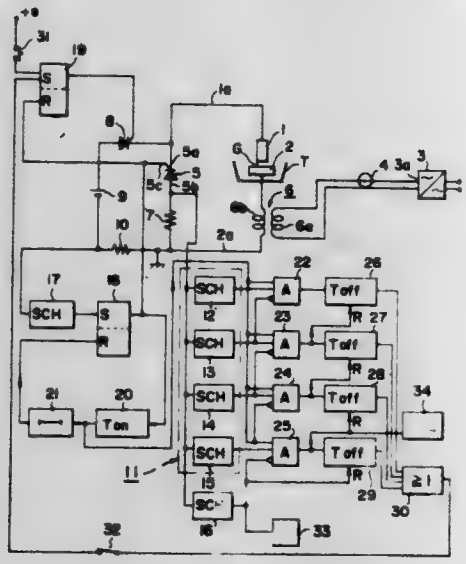
Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Continuation-in-part of Ser. No. 16,423, Mar. 1, 1979, Pat. No. 4,277,668. This application Jun. 10, 1980, Ser. No. 158,124

Claims priority, application Japan, Mar. 7, 1978, 53-26332; Jun. 13, 1979, 54-73542

Int. Cl.³ B23P *1/08*

U.S. Cl. 219—69 P 16 Claims



1. A method of supplying to an EDM gap formed between a tool electrode and a workpiece electrode, a sequence of successive and time-spaced trains of discrete and time-spaced elementary machining pulses of a predetermined polarity relative to said tool and workpiece electrodes, said method comprising the steps of:

generating a high-frequency AC power of a frequency equal to the frequency of said discrete and time-spaced elementary machining pulses in each of said successive trains with a high-frequency AC generator unit disposed remote from said machining gap;

transmitting said generated high-frequency AC power in an original and unrectified AC form along a feeder to the direct proximity of said machining gap; and

in said direct proximity of the machining gap, generally periodically interrupting said transmitted high-frequency AC power at a frequency lower than the first-mentioned frequency and simultaneously rectifying the uninterrupted portion of said transmitted high-frequency AC power, thereby producing said sequence of the successive and time-spaced trains of discrete and time-spaced elementary machining pulses of said predetermined polarity and permitting said sequence to be applied directly across said EDM gap, with the distance between said direct proximity from said gap such that there is little loss of power due to stray resistance and inductance and the pulse waveform across said gap is substantially free from distortion.

4,350,864

TRAVELING WIRE EDM APPARATUS WITH AUTOMATIC WIRE RETHREADING MECHANISM

Johann Jünicke, La Chapelle Rambaud, France, and Roger Girardin, Vernier, Switzerland, assignors to Ateliers des Charmilles, S.A., Geneva, Switzerland

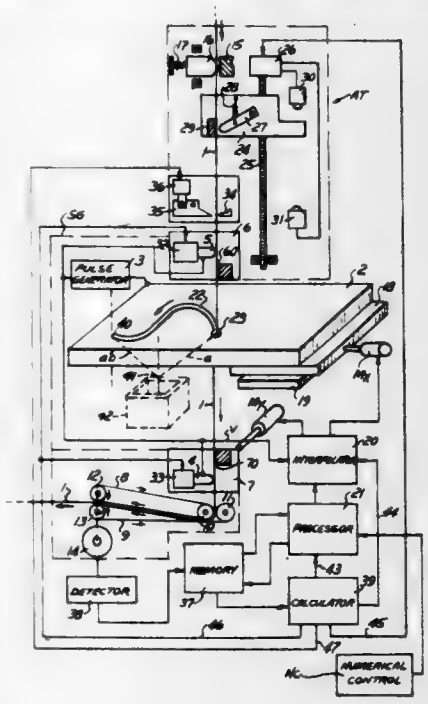
Filed Jun. 12, 1980, Ser. No. 158,914

Claims priority, application Switzerland, Jun. 21, 1979, 5800/79

Int. Cl.³ B23P *1/12*

U.S. Cl. 219—69 W 6 Claims

4. An EDM process for cutting a workpiece by a traveling wire electrode comprising threading said wire electrode through a hole pre-drilled in said workpiece prior to effecting a cutting pass in said workpiece, grasping the end of said wire passed through said hole in conveyor means for feeding said wire longitudinally, applying electrical machining pulses across a machining zone between said wire and said workpiece, transversely displacing said wire and said workpiece relative to each other for effecting a cut in said workpiece along a pre-programmed path, detecting rupture of said wire when occurring at any point of said cutting path, cutting off said machining pulses upon detection of said wire rupture, returning said wire and said workpiece from the position of wire rupture to their initial relative position corresponding to the location of said pre-drilled hole in said workpiece by passing through an intermediate position wherein the end of said



wire is suspended outside the area of said workpiece, cutting off the end of said wire at said intermediate position, rethreading the end of said wire at said initial relative position through said pre-drilled hole, grasping the end of said wire and entraining said wire by means of a feeding mechanism for longitudinal feed through the machining zone between said wire and said workpiece, returning said wire and said workpiece through the previously cut path to the point of wire rupture, and starting said cutting operation from said point of rupture by re-establishing electrical discharges across said machining zone and by displacing said wire and said workpiece relative to each other according to said pre-programmed cutting pass from said point of rupture on.

4,350,865

METHOD AND DEVICE FOR FORMING A TAPERED EXTRUSION DIE

Benjamin I. Bachrach, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Nov. 21, 1980, Ser. No. 208,964

Int. Cl.³ B23P *1/12*

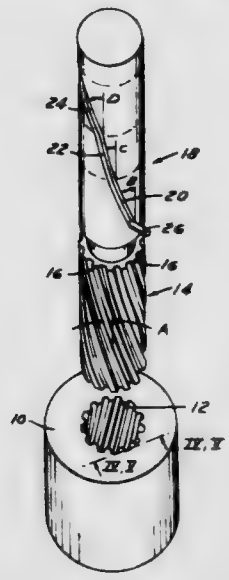
U.S. Cl. 219—69 M 7 Claims

1. A tool for making an extrusion die from a die blank comprising:

an electrode having a lobed contour formed on its outer surface adapted to form the die by electrical discharge machining upon passing the electrode through the die blank;

a lead bar adapted to rotate the electrode about the electrode axis and to displace the electrode axially with respect to the die blank, the lead bar having a guide recess formed thereon, the recess being disposed angularly with respect to the axis of the electrode thus forming a second angle

therebetween, the first and second angles being unequal; and



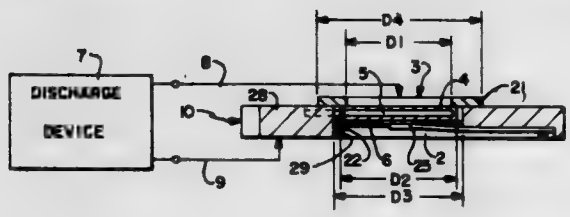
a guide pin fixed against movement extending within and engaging the guide recess whereby the path along which the electrode passes through the die blank is controlled.

4,350,866

DISCHARGE DEVICE AND METHOD FOR USE IN PROCESSING SEMICONDUCTOR DEVICES

John J. Zasio, Sunnyvale, and Michael W. Samuels, San Jose, both of Calif., assignors to Fujitsu Limited, Japan

Continuation of Ser. No. 840,674, Oct. 11, 1977, abandoned.
This application Nov. 29, 1979, Ser. No. 98,523
Int. Cl.[3] B23K *15/00*; B23P *1/00*
U.S. Cl. 219—121 EM 2 Claims



1. A process for making electrical contact to a conductive region of a wafer comprising,

covering a conductive region of the wafer with an insulating layer,

forming a resist layer on said insulating layer,

engaging said wafer in an electrically conducting wafer holder, and,

applying a voltage between said wafer and said holder to cause an electrical connection between said conductive region and said wafer holder.

4,350,867

FUSION SPLICING OF MULTI-LAYER OPTICAL FIBER BUNDLES

Kyoichi Kinoshita, and Morio Kobayashi, both of Mito, Japan, assignors to Nippon Telegraph & Telephone Public Corporation, Tokyo, Japan

Filed May 7, 1980, Ser. No. 147,670
Claims priority, application Japan, May 21, 1979, 54-62467
Int. Cl.[3] B23K *26/04*
U.S. Cl. 219—121 LC 17 Claims

1. An optical fiber splicing apparatus for splicing optical fibers in a bundle of optical fibers having first and second optical fiber groups, each composed of a plurality of optical fibers arranged in layers, comprising:

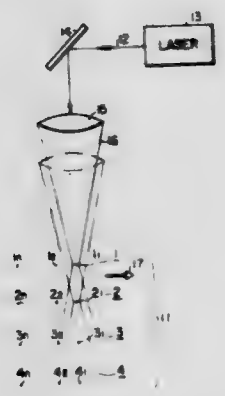
alignment mating means for holding the optical fibers of said first and second fiber groups in predetermined positions so that the axes of the corresponding pairs of individual fibers in each layer are parallel and the end faces thereof are butted together in alignment;

a light source disposed adjacent one side of said bundle for emitting a light beam from said side toward the optical fibers in said bundle to heat them;

a focusing optical system for focusing said light beam on at least one joint of the butted optical fibers in such a manner that the heating temperature of only the optical fibers on which the light beam is focused exceeds their melting point thereby to splice said optical fibers together; and

means for moving the focusing optical system and the alignment mating means relative to each other to shift the focal position of the light beam emitted from said one side of said bundle relative to said layers thereby to change the layer of said bundle in which fibers are being spliced.

15. A method of splicing a first group of optical fibers to a second similar group of optical fibers, comprising the steps of aligning the end portions of said first and second groups of



optical fibers so that the axes thereof are parallel and the end-faces thereof are in contact, forming a plurality of layers of aligned fibers, focusing a light beam on a butted joint of optical fibers in a selected one of said layers to heat only the fibers in said butted joint to a temperature in excess of the melting point of said fibers so that the endfaces of the optical fibers at said joint are fused together, effecting first relative movement between said light beam and the optical fibers in a direction perpendicular to the axes of the fibers without changing the focal length of said light beam to cause the pairs of abutted optical fibers in only said selected layer to be spliced in succession, changing the focal length of said light source in a second direction perpendicular to the direction of said first relative movement to change the effective focal position of said light beam relative to said layers, and thereafter repeating said first relative movement between said light beam and said fibers to cause the fibers in a layer which is behind the fibers of said selected layer to be spliced together in succession.

4,350,868

FOLLOW-UP CONTROL APPARATUS FOR CONTROLLING THE MOVEMENT OF A WELDING WEAVING DEVICE

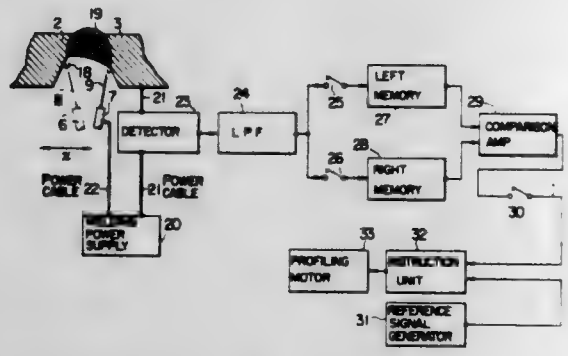
Masaharu Takagi, Takatsuki, and Yoshinori Nishida, Suita, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 9, 1976, Ser. No. 703,817
Claims priority, application Japan, Jul. 14, 1975, 50-86513; Dec. 4, 1975, 50-145422; Dec. 11, 1975, 50-148166; Feb. 20, 1976, 51-18100
Int. Cl.[3] B23K *9/12*
U.S. Cl. 219—137 R 7 Claims

1. In a welding process wherein an electric arc is traveled along a mean predetermined path from which it tends to deviate, in which said arc as it travels along said path is also reciprocated transversely of said path between and alternately towards two opposite extreme positions, at least one of said lateral extreme positions being represented by a physically projecting wall element located alongside the travel path, and wherein the arc current tends to change in value when the arc

approaches either extreme lateral position, the improvement in control of said arc mean travel position which comprises, in combination, the following steps:

(a) obtaining from the arc and storing separate timed signals indicative respectively of the arc current value when the arc is in the vicinity of said extreme positions in its transverse reciprocations,



(b) comparing said stored signals from the opposite extreme positions with each other to obtain a control signal showing need to correct the mean lateral position of the arc with respect to the travel path when the difference between said compared signals indicates such need, and

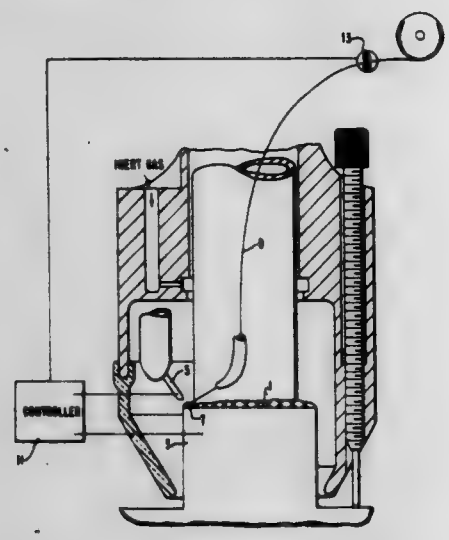
(c) using the control signal thus obtained to initiate correction of the arc mean travel position.

4,350,869

METHOD OF AUTOMATICALLY WELDING WITH A NON-CONSUMABLE ELECTRODE

Joseph H. Kiefer, Tampa, Fla., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 6, 1980, Ser. No. 175,604
Int. Cl.³ B32K *9/10*
U.S. Cl. 219—137 R **1 Claim**



1. A method of laying down at least a portion a weld bead over a predetermined path on a workpiece utilizing a non-consumable electrode and inert gas blanketing, said method comprising the steps of:

positioning the non-consumable electrode a fixed distance from the workpiece;

moving the non-consumable electrode over the predetermined path at a predetermined rate while maintaining the fixed distance from the workpiece;

establishing an arc between the non-consumable electrode and the workpiece so as to form a weld puddle of molten metal on the workpiece; and

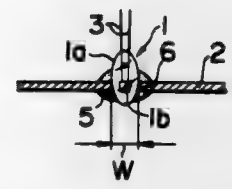
only adding filler metal to the weld puddle when the arc voltage rises above a predetermined level and only adding the filler metal at a rate necessary to maintain that predetermined arc voltage between the non-consumable electrode and the weld puddle, thereby preventing contamination of the non-consumable electrode with filler metal.

4,350,870

TEMPERATURE SENSOR FOR SHEET-SHAPED HEATING ELEMENT

Shigeru Nakayama, Hachioji, and Tastuo Takizawa, Sagamihara, both of Japan, assignors to Olympus Optical Company Ltd., Tokyo, Japan

Filed Feb. 27, 1981, Ser. No. 238,999
Int. Cl.³ H05B *1/02*
U.S. Cl. 219—216 **11 Claims**



1. A controlled heater device comprising an electrical planar heating member and a temperature sensor for determining the operating temperature of said planar heating member by means of a thermistor, comprising:

a thermistor including a heat sensitive element enclosed within an envelope and having lead wires extending from one end of said envelope, said envelope being heat conductive and electrically insulative;

said planar heating member having a mounting aperture formed therein;

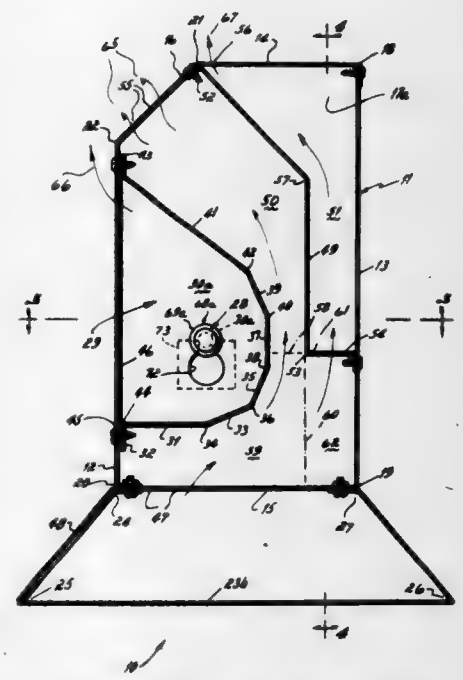
said thermistor being disposed within said mounting aperture and adhesively secured by a heat conductive adhesive to said heating member, such that said lead wires are disposed substantially normal to the plane of said planar heating member.

4,350,871

HORIZONTAL PASSIVELY COOLED HEATER

Raymond K. Davis, Sr., 40 Edgewood Dr., and Marion C. Burns, 111 Heiner Heights, both of Lawrenceburg, Ind. 47025

Filed Jul. 25, 1980, Ser. No. 172,164
Int. Cl.³ H05B *1/00*; F24C *7/00*
U.S. Cl. 219—343 **9 Claims**



1. A heater comprising an elongated generally rectangular horizontal housing having front, back, top, and bottom walls and an angled wall extending from said front wall upwardly to said top wall connecting said front and top wall;

an opening in said front wall;

a reflector positioned within said housing in alignment with said opening in said front wall; a horizontal heating element positioned in front of said reflector; a first series of exhaust openings within said angled wall; a second series of exhaust openings within said top wall; a divider panel located between said first series of openings and said second series of openings; creating a front flow chamber and a rear flow chamber; said first series of openings opening into said front chamber and said rear series of openings opening into said rear chamber; a series of intake openings within said bottom panel; a barrier panel extending below said bottom wall, said barrier panel being located forwardly of said series of intake holes; and

said barrier panel substantially preventing air from being drawn from beneath said bottom panel forwardly of said heater.

4,350,872

ELECTRICAL HEATING ELEMENT FOR FLUID MEDIA AND METHOD FOR PRODUCING SAME

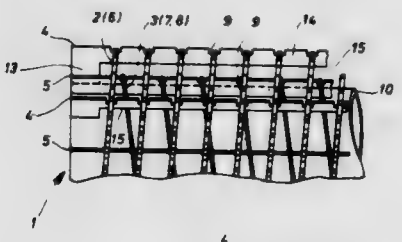
Klaus Meywald, and Helmut Ohnmacht, both of Kandel, Fed. Rep. of Germany, assignors to Firma Fritz Eichenauer, Kandel, Fed. Rep. of Germany

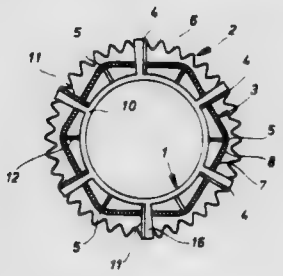
Filed Nov. 5, 1979, Ser. No. 91,460

Claims priority, application Fed. Rep. of Germany, Nov. 14, 1978, 2849266

Int. Cl.³ H05B *3/02*

U.S. Cl. 219—376 **12 Claims**





1. Electrical heating element for fluid media, especially for hot air appliances, of the type having a support member of an insulating material and at least two heating conductors of resistance wire helically wound with a mutual radial spacing therebetween and supported on supporting edges of the support member, the improvement comprising the provision of a separate and independent set of supporting edges for each of said helically wound conductors, the height and peripheral location of the supporting edges of each set being different from set to set wherein each of said resistance wires is wound around the edges of a respective one of said sets of supporting edges with the turns of the wire resting axially spaced upon the edges of the respective set, and wherein the conductors are wound with differing pitches with respect to each other in a manner so that, when viewed in a radial direction, the turns of one of the two conductors are arranged at an intersecting angle with respect to the turns of the other of the two conductors.

4,350,873

BAKER'S OVEN

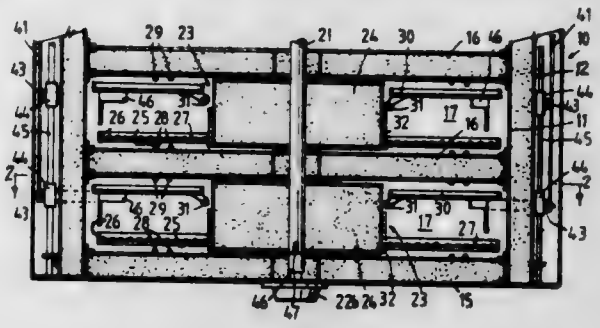
Paul E. Willett, 43 Porter St., Redcliffe, Queensland 4020, Australia

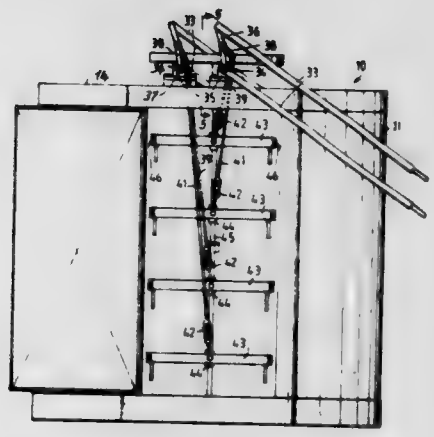
Filed Jul. 22, 1980, Ser. No. 171,262

Int. Cl.³ A21B *1/44*

U.S. Cl. 219—388 **7 Claims**

1. A baker's oven of the type having a casing with an interior of substantially vertical cylindrical form and being divided into a plurality of superimposed substantially cylindrical compartments, a loading door leading into each of said compartments, a shaft passing substantially coaxially through said compartments, a substantially horizontal support for articles to be baked within the lower part of each compartment and mounted on said shaft, heating means in each compartment, and means for driving said shaft to rotate simultaneously said





supports, the improvement comprising substantially horizontal heat insulating decks separating said compartments and being peripherally connected to said casing and centrally closely engaged about said shaft, and a substantially cylindrical heat insulating core in each compartment disposed coaxially about said shaft and extending upwardly from said support to a position close to the top of said compartment and rotating with said support.

4,350,874

HOT AIR SUPPLY TYPE ELECTRIC OVEN

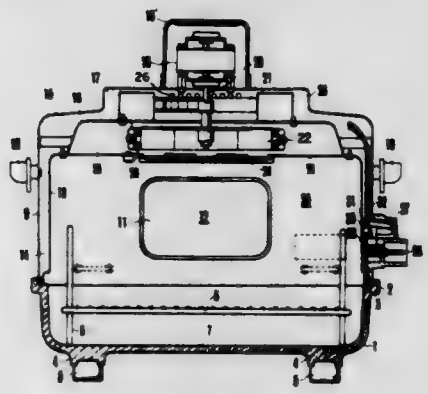
Hideo Nishikawa, Osaka, Japan, assignor to Imanishi Flexible Tube Mfg. Co., Ltd., Japan

Filed Aug. 14, 1980, Ser. No. 177,836

Claims priority, application Japan, Feb. 25, 1980, 55-22444

Int. Cl.³ A21B *1/22*; F27B *11/00*

U.S. Cl. 219—400 **8 Claims**



1. An electric oven of hot air supply type comprising a base made of a heat-resistant material, a meat support member mounted to said base, said base including a planar portion and

a peripheral wall portion extending transversely therefrom, said peripheral wall portion having a stepped surface at its upper end, a case member removably mounted on a stepped surface of said peripheral wall portion of said base to define a roasting chamber within said case member and base member, a reflector mounted within said case member adjacent the upper end thereof and defining a heating chamber and a radiating chamber, a heat generator mounted within said heating chamber, a hot air fan mounted within said heating chamber for transferring heat generated by said heat generator as hot air to said roasting chamber, a cooling fan provided within said radiating chamber adjacent to said heating chamber, and a motor provided atop said case member and coupled to said cooling fan and said hot air fan for simultaneously driving said cooling fan and said hot air fan.

4,350,875

RADIANT HEATING ELEMENTS FOR SMOOTH TOP COOKERS

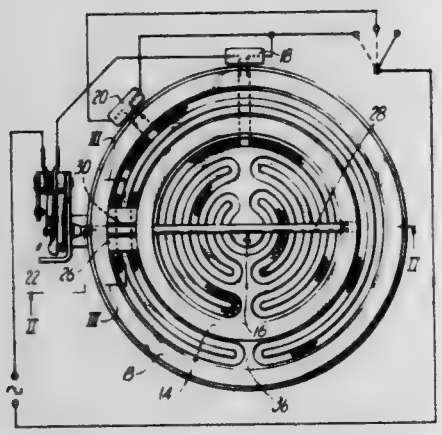
Joseph A. McWilliams, Droitwich, England, assignor to Micropore International Ltd., England

Filed Jan. 30, 1981, Ser. No. 229,999

Claims priority, application United Kingdom, Feb. 1, 1980, 8003559

Int. Cl.³ H05B 3/68

U.S. Cl. 219—449 **10 Claims**



1. An electric radiant heater unit comprising:

a heater having at least first and second heater elements located adjacent to one another on a base of electrically and thermally insulating material;

means for providing a power source for said heater;

means for energizing said first heater element independently of said second heater element;

a thermal cut-out device for controllably disconnecting said power source providing means from said heater, which thermal cut-out device extends across said first heater element and across at least a part of said second heater element; and

means for thermally insulating said thermal cut-out device from said second heater element whereby said thermal cut-out device is responsive solely to heat emitted by said first heater element.

4,350,876

CONTROL CIRCUIT FOR A GLOW PLUG ASSEMBLY SERVING AS AN ENGINE PREHEATING MEANS

Yutaka Kubota, Kawagoe, and Hitoshi Sugimoto, Higashimatsuyama, both of Japan, assignors to Diesel Kiki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 2, 1981, Ser. No. 239,433

Claims priority, application Japan, Mar. 12, 1980, 55-31048

Int. Cl.³ H05B 1/02

U.S. Cl. 219—497 **4 Claims**

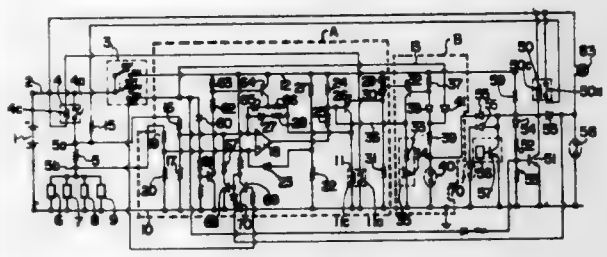
1. A control circuit in an engine for controlling the heating of at least one glow plug, comprising:

means for producing a temperature signal responsive to a temperature coefficient of resistance in said glow plug;

a key switch having at least an OFF position, an ON position and a START position;

first switch means responsive to placing said key switch in said ON position for applying a first voltage to said at least one glow plug whereby said glow plug is heated;

said first switch means being responsive to said temperature signal for interrupting said power to said glow plug when said temperature signal indicates a glow plug temperature exceeding a first temperature value, whereby said glow plug is preheated to said first temperature value;



second switch means responsive to placing said key switch in said START position for applying a second voltage lower than said first voltage to said at least one glow plug; and

said first switch means being effective, when said key switch is placed in said START position for applying said first voltage to said glow plug until said temperature signal indicates a glow plug temperature exceeding a second temperature and applying said second voltage until said temperature signal indicates a glow plug temperature less than a third temperature lower than said second temperature and then further effective for reapplying said first voltage whereby said glow plug temperature alternates between said second and said third temperatures.

4,350,877

CALCULATING RULE USEFUL FOR MAKING EYEGLASSES

Yasuo Yanagisawa, Akishima, and Yoshiaki Mitsui, Hino, both of Japan, assignors to Hoya Lens Corporation, Tokyo, Japan

Filed Jul. 18, 1980, Ser. No. 170,252

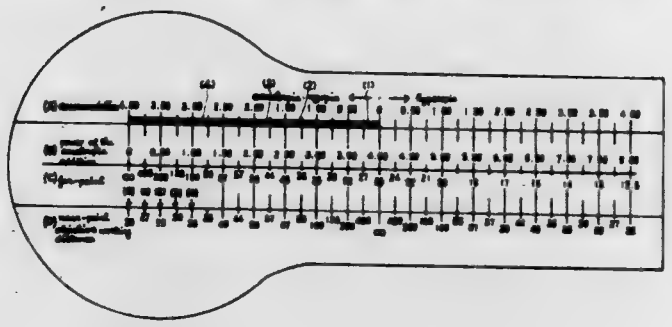
Claims priority, application Japan, Jul. 23, 1979, 54-101444[U]

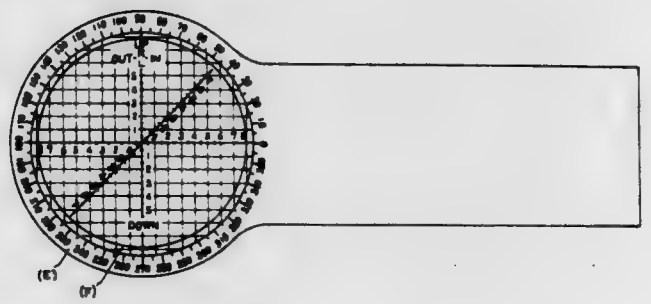
Int. Cl.³ G06G 1/06, 1/08

U.S. Cl. 235—70 A **2 Claims**

1. A calculating rule which comprises a rule for ametropia and a rule for heterophoria: the rule for ametropia consisting of a rectangular fixed rule and a rectangular slide rule; the fixed rule having two scales (A) and (D) that are apart from each other, the upper scale (A) being the scale for accommodation in dioptric units and the lower scale (D) being the scale for near-point distance and also objective working distance in centimeter units; the scale (A) consisting of a left half scale used for the calculation in the case of both emmetropia and myopia and a right half scale used for the calculation in the case of hyperopia, each half scale graduated from the center at 0 to each end at 4.00 and the scale (D) consisting of a left half scale which is used for emmetropia and myopia and represents the value before the retina, and a right half scale which is used for hyperopia and represents the value behind the retina; the slide rule that slides between the scales (A) and (D) of the fixed rule having a scale (B) for power of the ametropia in dioptric units that is also the scale for addition in dioptric units, and a scale for (C) for far-point distance in centimeter units, the scale (B) graduated from 0 at the left end to 8.00 at the right end, and the scale (C) graduated from 12.5 at the right end to infinity (∞) at the left end; the slide rule also having, at the left end of the scales (B) and (C), an arrow mark (0) for designating the near-point distance on the scale (D); the rule for ametropia further having indicia on scale (A) dividing the left half of the

accommodation scale (A) into several regions (1), (2), (3), . . . , and several arrow marks (1), (2), (3), . . . disposed to the right of arrow mark (O) on the slide rule, corresponding in number to the several regions (1), (2), (3), . . . , each of which designates a respective objective working distance on scale D standing for the distance at which the eye having a value of accommodation in a definite region has to see and can continue to see with no asthenopia based on accommodation; and the rule for heterophoria consisting of a fixed circular rule (E) and a rotating circular rule (F); the fixed circular rule (E) having a counterclockwise circular scale graduated from zero to 360, in





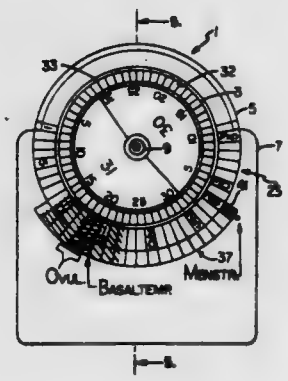
which the horizontal center-line and the vertical center-line into four guardrants, each of which graduates cross-sectionally in orthogonal coordinates 0, 1, 2, 3, 4, 5 . . . and labeled UP for the upward first and second quardrants, and labeled OUT-R-IN and IN-L-OUT which span the vertical center-line, in which R represents right eye, L represents left eye, OUT represents inward; (nose-side); and the rotating circular scale (F) is a transparent circular plate rotating at the axis that is the center of the fixed circular rule (E), which has a cursor that is a straight center-line graduated 0, 1, 2, 3, 4, 5, 6, 7 from the center in both directions with the same graduation as the fixed circular scale (E).

4,350,878

CONCEPTION CONTROL CALENDAR

Karl H. Schwarz, and Ingrid Schwarz, both of Urb. La Sirena No. 77, Benajarafe, Spain

Filed May 18, 1981, Ser. No. 264,683
Int. Cl.³ G06C *3/00*
U.S. Cl. 235—78 RC **10 Claims**



1. A conception control calendar adapted for use by women having menstrual cycles of constant length for predicting probable periods of fertility; said calendar comprising:

(a) a first circular disc having equally sized segments of a first group spaced circumferentially about an outer edge thereof with each first group segment subtending an equal inner angle, said first group segments representing the days in two calendar months;

(b) a second circular disc having a plurality of equally sized segments of a second group disposed about an outer edge thereof; each of said second group segments subtending an angle equal to said inner angle; said second group segments representing days associated with a menstrual cycle of a user; and

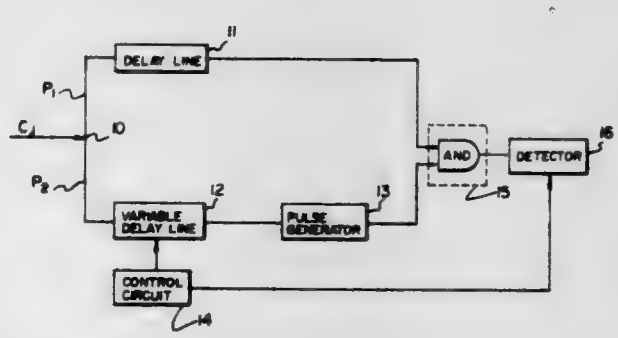
(c) a base plate having said first and said second discs concentrically and rotatably attached thereto; said base plate including an arcuate portion concentric with said first and second discs and having a plurality of segments of a third group thereon, said third group segments being registrable with said first and second group segments; said base plate having associated with one of said third group segments a menstrual cycle beginning marker and associated with other of said third group segments an ovulation indicator such that when a second group segments representing the number of days in the menstrual cycle of a user is placed in registry with a first group segment corresponding to the day that a next menstrual cycle of a user will start; and thereafter both said first second discs are simultaneously rotated relative to said base plate while remaining stationary relative to each other such that a second group segment corresponding to the number of days in the menstrual cycle of a user is placed in registry with said base plate menstrual cycle beginning marker, said base plate ovulation marker is in registry with first group segments corresponding to the period of expected ovulation in the present menstrual cycle of the user.

4,350,879

TIME JITTER DETERMINING APPARATUS

Kamilo Feher, Ottawa, Canada, assignor to Canadian Patents & Dev. Limited, Ontario, Canada

Filed Oct. 29, 1979, Ser. No. 89,585
Int. Cl.³ G06M *3/08*
U.S. Cl. 235—92 EC **14 Claims**



1. Apparatus for determining time jitter of a clock signal of period T_b, recovered from a received data signal, comprising:

means for applying the clock signal to first and second signal paths;

signal delay means for delaying the signals in the signal paths relative to one another by a variable delay factor;

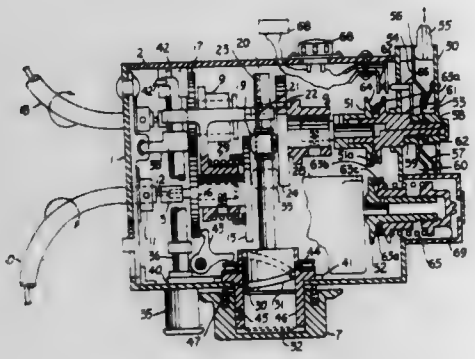
logic means coupled to the first and second signal paths for detecting coincidence of the relatively delayed clock signals, and

detector means coupled to the logic means for indicating the coincidence rate of the relatively delayed clock signals, as the delay is varied, whereby peak to peak time jitter is half of the relative shift of the delay between the point of minimum coincidence and the point of maximum coincidence.

4,350,880
AUTOMATIC FUEL-COST MONITORING SYSTEM

Bartholomew F. Quintilian, 4259 Sheldon Ave., Baltimore, Md. 21206

Filed Oct. 8, 1980, Ser. No. 195,088
Int. Cl.³ G01C *22/00*
U.S. Cl. 235—96 20 Claims



1. A system for announcing to the driver the fuel cost of operating the engine of a motor vehicle having odometer input means comprising in combination: means (28) on a said motor vehicle for displaying said cost continuously during said operation, including

(a) means including said odometer input means (10) for driving said displaying means in ratio to vehicle speed,

(b) means including a speed selector dial (7) for setting said ratio in proportion to fuel cost,

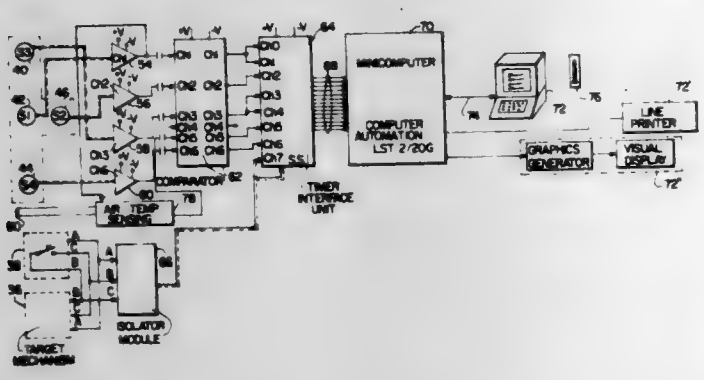
(c) screw means (69) for further setting said ratio in proportion to average vehicle engine efficiency, and

(d) means including a serve-actuator (50) for modifying said ratio in proportion to instantaneous engine efficiency during said operation.

4,350,881
PROJECTILE POSITION DETECTION APPARATUS

Lindsay C. Knight, Albury, Australia; Robert B. Phillips, Fleet, Near Aldershot, England; William H. Bowyer, Farnham, England, and Bruce Moxley, Reading, England, assignors to Australasian Training Aids, Pty., Ltd., Albury, Australia

Filed Jan. 8, 1980, Ser. No. 110,492
Claims priority, application United Kingdom, Jan. 8, 1979, 7900626; Mar. 8, 1979, 7908261; Apr. 4, 1979, 7911721; Australia, May 14, 1979, PD8800; United Kingdom, Jul. 24, 1979, 7925668
Int. Cl.³ G06F *15/20;* F41J *5/12*
U.S. Cl. 235—400 26 Claims



1. Apparatus for indicating the location in a measurement plane through which the trajectory of a projectile passes, the projectile travelling from a firing point toward a target zone and through said measurement plane, comprising:

a target member located in said target zone;

an array of at least three transducers responsive to an airborne pressure wave from the projectile and located at respective predetermined positions spaced along a line substantially parallel to said measurement plane;

means for measuring velocity of the projectile;

means for measuring velocity of propagation of sound in air in the vicinity of the array of transducers; and

computing means responsive to said array of transducers, said projectile velocity measuring means, and said propagation velocity measuring means comprising:

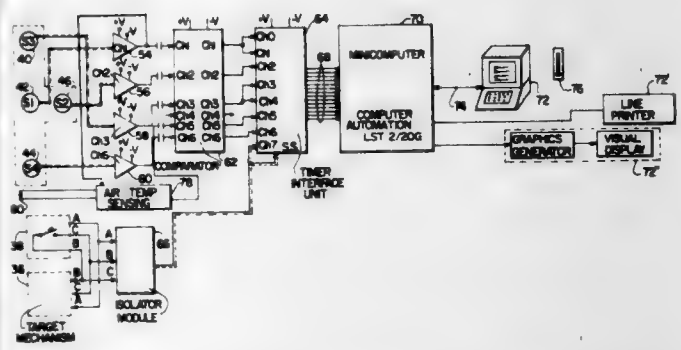
means for determining the location in said plane through which the trajectory of the projectile passes, and

means for providing an output indicating said determined location.

4,350,882
HIT DETECTION AND RICHOCHET DISCRIMINATION IN TARGET APPARATUS

Robert B. Phillips, Fleet, Near Aldershot, England, assignor to Australasian Training Aids, Pty., Ltd., Albury, Australia

Filed Jan. 8, 1980, Ser. No. 110,498
Claims priority, application United Kingdom, Jan. 8, 1979, 7900626; Mar. 8, 1979, 7908261; Apr. 4, 1979, 7911721; Australia, May 14, 1979, PD8800; United Kingdom, Jul. 24, 1979, 7925668
Int. Cl.³ G06F *15/20;* F41J *5/12*
U.S. Cl. 235—400 11 Claims



1. Apparatus for use in marksmanship training in which a projectile travels along a trajectory from a firing point toward a target member and through a measurement plane comprising:

means for detecting and indicating relative to a target representation a location in said measurement plane through which said trajectory passes, thereby providing at least an approximate indication of where said projectile passes relative to said target member; and

means for measuring velocity of the projectile in the vicinity of the target member, comparing said measured velocity with at least one expected projectile velocity value to ascertain if said measured velocity is within an expected projectile velocity range, and providing an indication of the result of said comparison between said measured velocity and said at least one expected velocity value,

whereby a marksman is provided with an approximate indication of where the projectile passes relative to the target member, as well as an indication of whether the projectile has passed through said measurement plane in free flight or has ricocheted prior to passing through said measurement plane.

4,350,883
METHOD OF MARKING AND OF IDENTIFYING OBJECTS MARKED BY ELECTRICALLY CONDUCTING ELEMENTS

Pierre Lagarde, Versailles, France, assignor to Imphy S.A., Paris, France

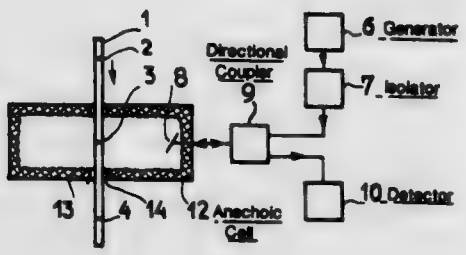
Filed Jun. 24, 1980, Ser. No. 162,670
Claims priority, application France, Jun. 26, 1979, 79 16351
Int. Cl.³ G01R *27/02;* G06K *7/00;* G08B *13/22*
U.S. Cl. 235—435 8 Claims

1. A methodfor identifying a non-metallic object,

said object having a plurality of conductive members attached thereto, each of said members having a conductivity which form a unique code for said object, comprising:

successively subjecting each of said members on said object to an alternating electromagnetic field whereby a current is successively induced in each of said members;

detecting the intensity of a radiation component resulting from each of said members carrying a current induced by



said field, said radiation component being distinctive of a radiating member; and

recording each of said responses whereby a visual identification of said radiation components is provided identifying said object.

4,350,884

AUTOMATIC FOCUSING OF EVERY IMAGE POINT IN AN IMAGE

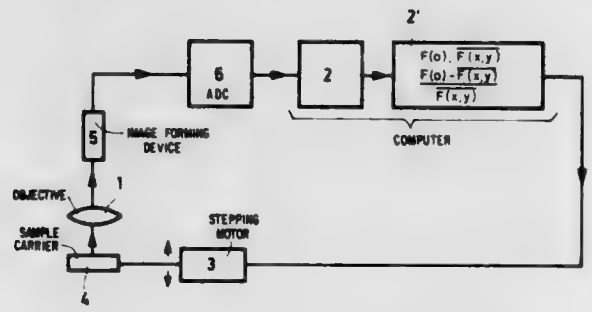
Dieter Vollath, Stutensee-Friedrichstal, Fed. Rep. of Germany, assignor to Kernforschungszentrum Karlsruhe Gesellschaft mit beschrankter Haftung, Karlsruhe, Fed. Rep. of Germany

Filed Mar. 19, 1980, Ser. No. 131,845

Claims priority, application Fed. Rep. of Germany, Mar. 20, 1979, 2910875

Int. Cl.³ G01J *1/36*

U.S. Cl. 250—204 **4 Claims**



1. A method for automatically focusing every image point of an image of a sample formed by an optical objective, comprising, for each image point: deriving a representation of the autocorrelation function of the brightness distribution of the image of that image point; deriving a representation of the average of the auto correlation function of the brightness distribution of a plurality of image points in the region of that image point; deriving a representation constituting a function of the quotient formed by dividing the representation of said autocorrelation function for that image point by the representation of said average of the autocorrelation function; and varying the distance between the objective and the sample while iteratively performing said steps of deriving for determining the distance at which said function of the quotient has a maximum value.

4,350,885

BATTERY HYDROMETER WITH ANALOG OUTPUT

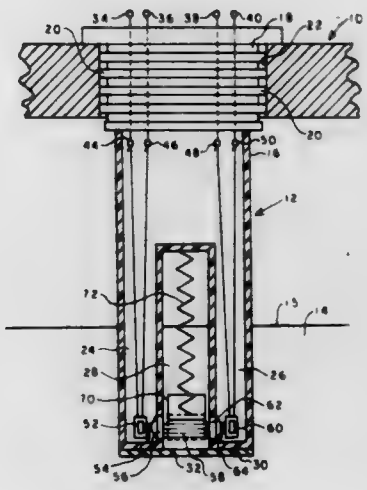
Bruce L. Patis, Addison, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Sep. 29, 1980, Ser. No. 191,785

Int. Cl.³ G01N *9/00*

U.S. Cl. 250—231 R **18 Claims**

1. A hydrometer for providing an analog indication of the specific gravity of a liquid comprising radiation source means for emitting a detectable beam of radiation; means arranged to be disposed within the liquid for continuously modulating the beam of radiation of said source in response to the specific gravity of the liquid; and detecting means arranged to receive



said modulated beam for providing an electrical signal continuously varying in magnitude responsive to said modulated beam of radiation.

4,350,886

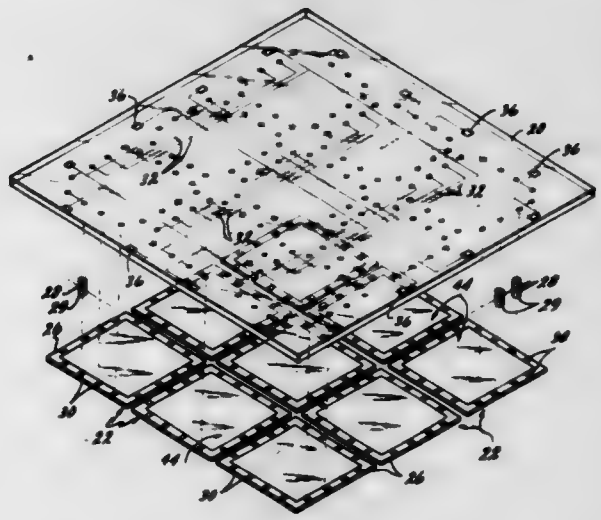
MULTI-ELEMENT IMAGER DEVICE

Dieter H. Pommerrenig, El Toro, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Feb. 25, 1980, Ser. No. 126,134

Int. Cl.³ H01J *5/02*

U.S. Cl. 250—239 **14 Claims**



1. In combination, a plurality of radiation sensitive devices, a transparent superstratum, electrical conductor means carried by said superstratum and mounting means attaching said radiation sensitive devices to said superstratum, said mounting means providing electrical connections between said radiation sensitive devices and said electrical conductor means.

4,350,887

METHOD OF ASSAYING URANIUM WITH PROMPT FISSION AND THERMAL NEUTRON BOREHOLE LOGGING ADJUSTED BY BOREHOLE PHYSICAL CHARACTERISTICS

Ralston W. Barnard, and Dal H. Jensen, both of Albuquerque, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 5, 1980, Ser. No. 204,721

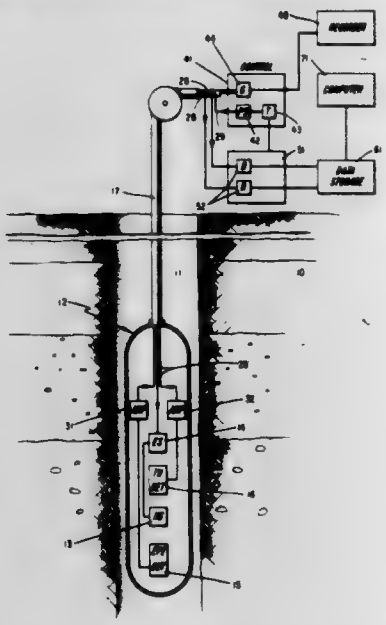
Int. Cl.³ G01J *5/00*

U.S. Cl. 250—265 **4 Claims**

1. A neutron logging method for assaying uranium formations traversed by a borehole comprising:

(a) obtaining at a plurality of logging points borehole log data defining prompt fission neutron counts and thermal neutron counts;

(b) determining the dieaway of either said prompt fission



neutron counts or said thermal neutron counts at each logging point; and

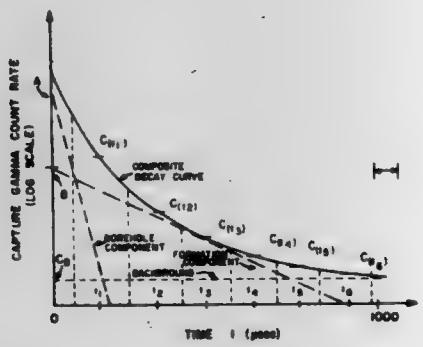
(c) producing uranium assay information at each logging point from the ratio of said prompt fission neutron count to said dieaway.

4,350,888

METHOD AND SYSTEM FOR DETERMINING THERMAL NEUTRON LIFETIME OF EARTH FORMATIONS

Harold E. Peelman, Houston, Tex., assignor to Halliburton Company, Duncan, Okla.

Filed Sep. 2, 1980, Ser. No. 183,516
Int. Cl.³ G01V *5/00*
U.S. Cl. 250—270 14 Claims



1. A method for determining the thermal neutron decay time of earth formations in the vicinity of a well borehole, comprising the steps of:

irradiating earth formations in the vicinity of a well borehole with a relatively short duration pulse of fast neutrons which are rapidly slowed down to thermal energy and engage in capture interactions with the nuclei of elements in the borehole and earth formations in the vicinity of the borehole;

detecting in a plurality of at least six sequential, non-overlapping, time intervals subsequent to said neutron pulse, radiations indicative of the population of thermal neutrons in earth formations in the vicinity of the borehole and generating signals representative of the count rate of such radiations;

determining from said count rate signals in the ultimate and penultimate of said time intervals, a slope signal representative of the rate of decay of said thermal neutron population in the earth formations in the vicinity of the borehole;

comparing said count rate signals from the first and subsequent to the first of said time intervals with predicted count rate signals for such intervals based on a function of said slope signal, until a time interval in said sequence of time intervals is selected whose count rate is within an arbitrary constant Δ of said predicted count rate signal; and

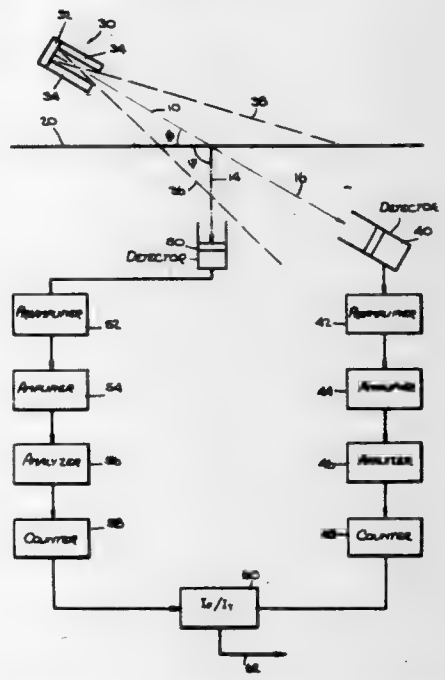
determining, using count rate signals from said selected time interval and each subsequent time interval, a signal representative of thermal neutron decay time of the earth formations in the vicinity of the well borehole.

4,350,889

X-RAY FLUORESCENT ANALYSIS WITH MATRIX COMPENSATION

Khaim Lisnyansky, Central Valley, N.Y., assignor to International Paper Company, New York, N.Y.

Filed Sep. 17, 1980, Ser. No. 188,046
Int. Cl.³ G01M *23/22*
U.S. Cl. 378—46 8 Claims



1. An X-ray fluorescence method for determining the mean average concentration of an element in a sample having essentially parallel planar first and second faces in the region being tested, said method comprising:

(a) aiming a beam of primary photons of a predetermined energy E_1 at the first face of the sample such that the beam is at angle Φ to the first face;

(b) aiming a first X-ray detector at the second face of the sample to detect the transmitted beam of photons of energy E_1;

(c) aiming a second X-ray detector at the sample at angle Ψ to either face of the sample to detect the beam of characteristic secondary fluorescent photons of energy E_2 emitted by the particular element of interest in response to the irradiation by the beam of primary photons wherein

$$\frac{\sin \phi}{\sin \psi} \approx \frac{(E_2)^3}{(E_1)^3}\text{; and}$$

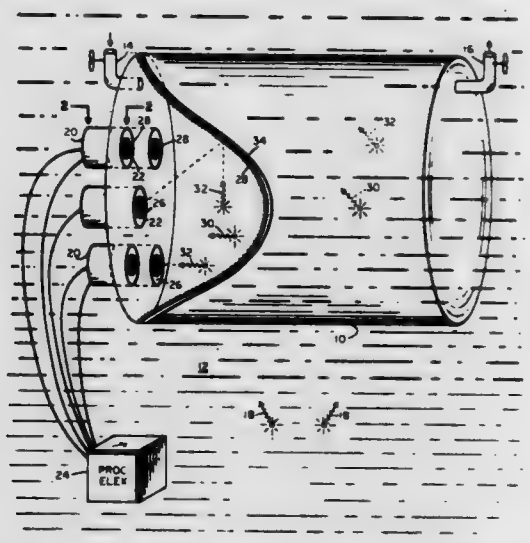
(d) utilizing the intensities of the transmitted and fluorescent beams to determine said concentration.

4,350,890

APPARATUS FOR MONITORING LOW LEVEL LIGHT EMISSION IN UNDERWATER ENVIRONMENT

Bruce D. Geelhood, La Mesa; Gary F. Mastay, San Diego; Jerry E. Solomon, San Diego; Edward J. Wesley, San Diego; Elek Lindner, San Diego; Carol A. Dooley, San Diego, and Sandra M. Lane, San Diego, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 12, 1980, Ser. No. 215,596
Int. Cl.³ G01J *1/42;* G01T *1/20;* F01C *3/00*
U.S. Cl. 250—372 14 Claims



1. Apparatus for monitoring low levels of light emission in a selected underwater environment, said apparatus comprising:

photodetection means having a light sensitive surface oriented into said environment for generating electrical signals which are representative of light impinging upon said light sensitive surface;

window means positioned between said light sensitive surface and said underwater environment for protecting said photodetection means from said underwater environment;

a first material positioned between said window means and said underwater environment for preventing biological growth upon said window means; and

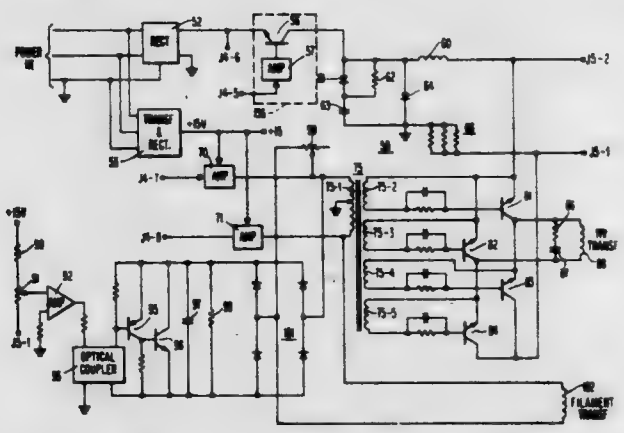
a second material placed in cooperative relationship with said first material for significantly increasing the attenuation lengths of light photons occurring in said underwater environment which have wavelengths included in a prespecified wavelength range.

4,350,891

LOW RIPPLE REGULATED X-RAY TUBE POWER SUPPLY

Don E. Wuerflein, Mountain View, Calif., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Jul. 14, 1980, Ser. No. 168,479
Int. Cl.³ H01J *40/14;* H05G *1/30, 1/10*
U.S. Cl. 378—110 22 Claims



15. A power supply for providing power to an X-ray tube, adapted to receive an unregulated voltage input and providing a regulated high voltage output and a separate tube filament output, having control means comprising:

voltage control means for regulating said high voltage output as a function of the unregulated voltage input to said supply; and

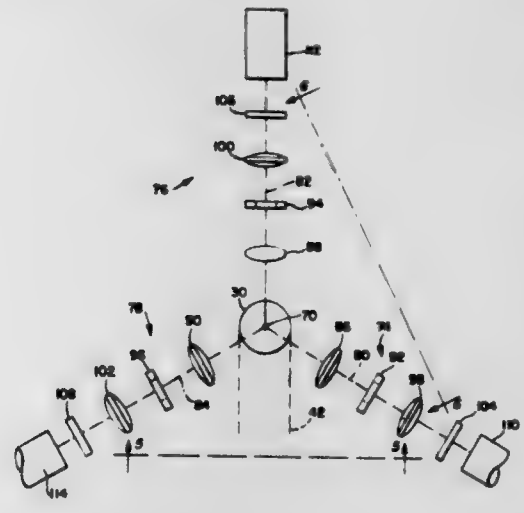
filament current control means for controlling the current delivered to said tube filament as a function of the current delivered to said tube from said high voltage control means.

4,350,892

X'-, Y'-, Z'- AXIS MULTIDIMENSIONAL SLIT-SCAN FLOW SYSTEM

David B. Kay, Rochester, and Leon L. Wheeless, Jr., Webster, both of N.Y., assignors to Research Corporation, New York, N.Y.

Filed Jul. 31, 1980, Ser. No. 174,280
Int. Cl.³ G01N *21/64*
U.S. Cl. 250—461.2 15 Claims



1. A flow fluorometer for obtaining multidimensional slit-scan type fluorescence contours of a particle, comprising:

means for conveying the particle along a flow axis;

an illumination system providing a beam of electromagnetic radiation for exciting secondary fluorescence in the particle, the beam focus being such that a central region along the flow axis is illuminated and a volume of the particle is excited to fluorescence as the particle passes through the illuminated region;

a plurality of imaging systems for slit imaging across the central region, each of said imaging systems viewing the central region along a respective optical axis, with said optical axes all lying substantially in a plane perpendicular to said flow axis, and the planes of the resultant slit-imaged portions in the central region being non-parallel with each other and non-parallel with said flow axis; and

a photodetector element coupled to each of said imaging systems for responding to fluorescence from each of the slit-imaged portions in the central region, each of said photodetector elements outputting a slit-scan type contour along a particle axis perpendicular to the plane of the respective slit-imaged portion.

4,350,893

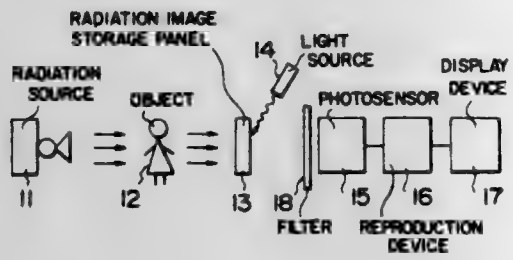
RADIATION IMAGE STORAGE PANEL

Kenji Takahashi, and Junji Miyahara, both of Minami-Ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 28, 1980, Ser. No. 144,656
Claims priority, application Japan, May 1, 1979, 54-53631
Int. Cl.³ H05B *33/00*
U.S. Cl. 250—484.1 13 Claims

1. In a radiation image storage panel, which is used in a process for recording and reproducing a radiation image

which consists essentially of steps of (1) exposing the panel to a radiation passing through an object to store a radiation image therein, (2) scanning said panel with a stimulating ray having a wavelength ranging from 500 nm to 800 nm to release the energy of the radiation stored therein as instantaneous fluorescent light, and (3) detecting said fluorescent light, having a fluorescent layer comprising a binder and a stimulable phosphor which emits instantaneous light when exposed to the



stimulating ray after exposure to a radiation dispersed in said binder, the improvement wherein said fluorescent layer contains a white powder selected from the groups consisting of TiO_2, ZnS, Y_2O_3, Ta_2O_5, Sb_2O_3, CaO, BaO, SrO, Al_2O_3, MgO, ZnO, ZrO_2, SiO_2, In_2O_3, GeO_2, SnO_2, Nb_2O_5 and BeO and dispersed therein in an amount of 0.01 to 1 parts by weight per one part by weight of said stimulable phosphor and where said white powder does not emit light by scanning of said stimulation ray.

4,350,894

IRRADIATION APPARATUS

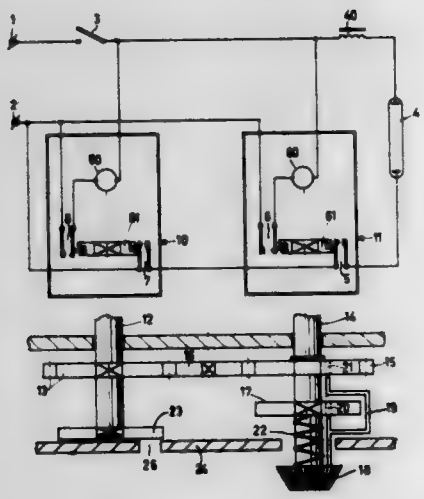
Gerrit J. Schrijver, and Jorrit Wijtsma, both of Drachten, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 39,715, May 17, 1979, abandoned. This application Mar. 9, 1981, Ser. No. 241,806

Claims priority, application Netherlands, Jun. 13, 1978, 7806373

Int. Cl.³ G01J *1/00*; H05G *1/30*

U.S. Cl. 250—504 R **1 Claim**



1. Irradiation apparatus, which comprises an ultra-violet radiation source; two timers each adjustable to a selected period; means respectively associated with said two timers for terminating irradiation by the radiation source at the end of the selected period; an adjusting disk associated with each timer and movable therewith between a set position corresponding to said selected period and a zero position, each adjusting disk being provided with an opening; a control member movable from an inactive position to an active position for coupling the two adjusting disks together to simultaneously set both timers for said selected period, said control member having two pins respectively positionable in the openings in the adjusting disks; and a shaft having the two adjusting disks positioned thereon, one adjusting disk being affixed to the shaft and the other adjusting disk being freely rotatable on the shaft, whereby movement of the control member to its active position is prevented should either adjusting disk be in other than the zero position when the irradiation has been terminated.

4,350,895

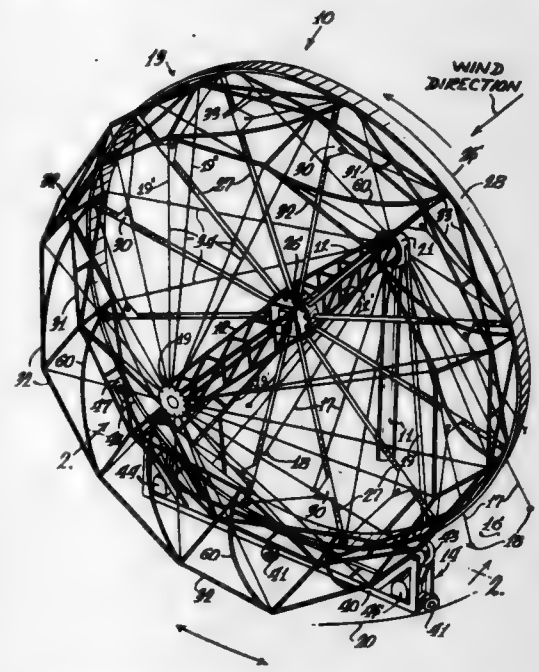
WIND TURBINE AND METHOD FOR POWER GENERATION

Gregory E. Cook, Lisle, Ill., assignor to Windpowered Machines Ltd., Warrenville, Ill.

Filed Mar. 3, 1980, Ser. No. 125,934

Int. Cl.³ F03D *5/04*

U.S. Cl. 290—55 **20 Claims**



1. A wind turbine, comprising:

(a) a vertically oriented wind turbine wheel having a rim structure, a generally horizontally oriented axle assembly including a hub suspended from said rim structure, and having means for carrying a plurality of soft airfoils disposed on spindles extending between said hub and said rim structure;

a moveable carriage underlying and supporting the wheel at its rim during rotation and having means for taking-off power mounted in engagement with said rim structure; and

(c) means spaced from the wheel and the carriage for constraining both the carriage and the wheel against movement other than along concentric circles, for preventing lateral shifting of the rim relative to the carriage, and for preventing the wheel from tipping, which constraining means includes a vertically extending pylon member anchored to ground spaced from and disposed upwind of both the wheel and the carriage, means for attaching the axle assembly to the vertical pylon member, and means for securing the carriage to the vertical pylon member.

4,350,896

LIGHTER THAN AIR WIND ENERGY CONVERSION SYSTEM UTILIZING AN INTERNAL RADIAL DISK DIFFUSER

William R. Benoit, 11718 Whittier Rd., Mitchelville, Md. 20716

Filed Oct. 24, 1980, Ser. No. 200,103

Int. Cl.³ F03D *9/00*

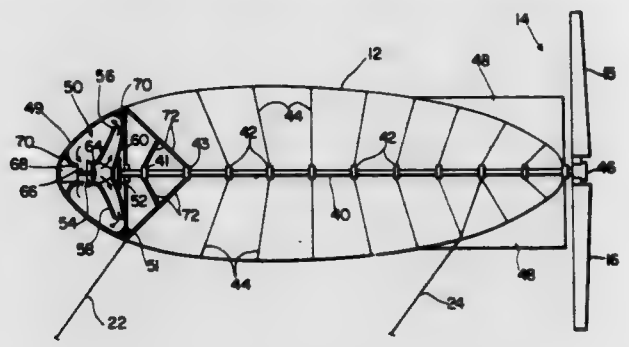
U.S. Cl. 290—55 **20 Claims**

1. Apparatus, which comprises:

a lighter than air structure including an enclosed gas-filled envelope;

means supported by said ligher than air structure for generating electricity, said means including a main rotor adapted to be rotated by the wind, a diffuser mounted

within said envelope and coupled to rotate with said main rotor, a turbine in fluid communication with said diffuser, and an electrical generator coupled to said turbine; and



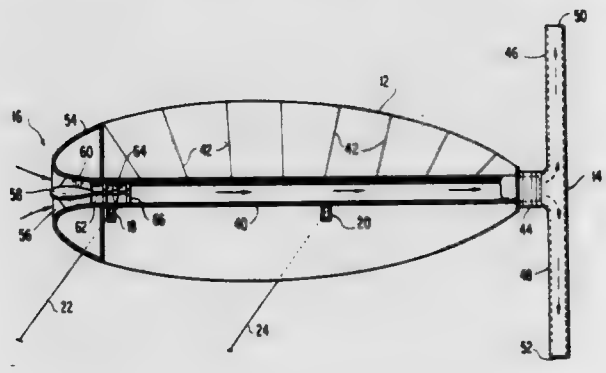
means connected between said ligher than air structure and the ground for tethering said structure and for delivering electricity from said generator.

4,350,897

LIGHTER THAN AIR WIND ENERGY CONVERSION SYSTEM

William R. Benoit, 11718 Whittier Rd., Mitchelville, Md. 20716

Filed Oct. 24, 1980, Ser. No. 200,104
Int. Cl.³ F03D 9/00
U.S. Cl. 290—55 17 Claims



1. Apparatus, which comprises:
a lighter than air structure;
means supported by said lighter than air structure for generating electricity, said means including a main rotor adapted to be rotated by the wind, a turbine in fluid communication with said main rotor, and an electrical generator coupled to said turbine; and
means connected between said lighter than air structure and the ground for tethering said structure and for delivering electricity from said generator.

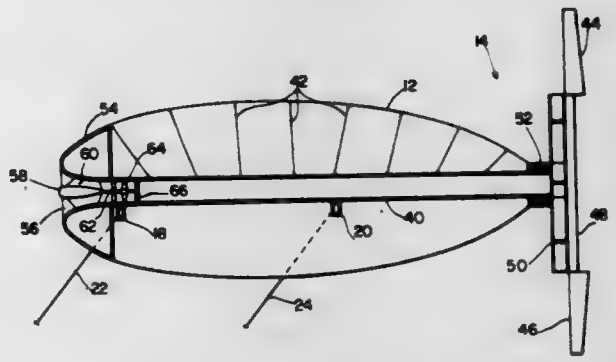
4,350,898

LIGHTER THAN AIR WIND ENERGY CONVERSION SYSTEM UTILIZING AN EXTERNAL RADIAL DISK DIFFUSER

William R. Benoit, 11718 Whittier Rd., Mitchelville, Md. 20716

Filed Oct. 24, 1980, Ser. No. 200,105
Int. Cl.³ F03D 9/00
U.S. Cl. 290—55 22 Claims

1. Apparatus, which comprises:
a lighter than air structure;
means supported by said lighter than air structure for generating electricity, said means including a main rotor adapted to be rotated by the wind, a diffuser coupled to rotate with said main rotor, a turbine in fluid communication with said diffuser, and an electrical generator coupled to said turbine; and



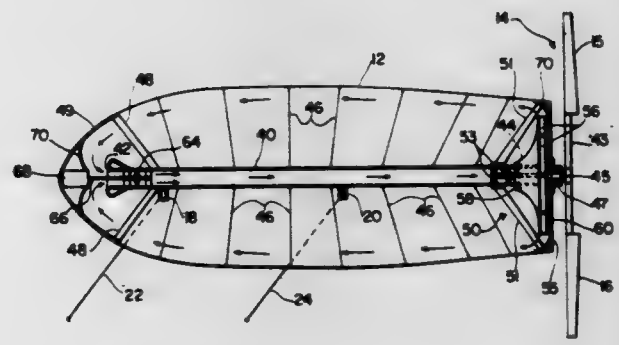
means connected between said lighter than air structure and the ground for tethering said structure and for delivering electricity from said generator.

4,350,899

LIGHTER THAN AIR WIND ENERGY CONVERSION SYSTEM UTILIZING A REARWARDLY MOUNTED INTERNAL RADIAL DISK DIFFUSER

William R. Benoit, 11718 Whittier Rd., Mitchelville, Md. 20716

Filed Oct. 24, 1980, Ser. No. 200,106
Int. Cl.³ F03D 9/00
U.S. Cl. 290—55 22 Claims



1. Apparatus, which comprises:
a lighter than air structure including an enclosed gas-filled envelope;
means supported by said lighter than air structure for generating electricity, said means including a main rotor adapted to be rotated by the wind, a diffuser mounted within said envelope and coupled to rotate with said main rotor, a hollow duct within said envelope and having an outlet end coupled to said diffuser, a turbine in fluid communication through said duct with said diffuser, and an electrical generator coupled to said turbine; and
means connected between said lighter than air structure and the ground for tethering said structure and for delivering electricity from said generator.

4,350,900

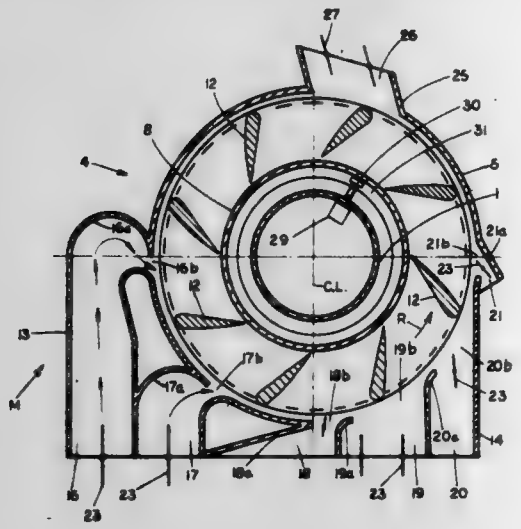
WIND ENERGY MACHINE

Harold E. Baughman, P.O. Box 6506, Santa Rosa, Calif. 95406

Filed Nov. 10, 1980, Ser. No. 205,428
Int. Cl.³ F03D 7/06
U.S. Cl. 290—55 5 Claims

1. A rotary machine driven by a flowstream comprising:
a housing having a semi-cylindrical back wall, horizontal top and bottom walls, and a plurality of intake ducts opening across the front thereof;
a cylindrical rotor in said housing;
a plurality of vertical vanes carried on and around said rotor to extend outward therefrom and spaced closely at their ends to said top and bottom walls;
those ducts opening into said housing on one side of a front

to back centerline of said rotor being formed and disposed to direct flow in a rotational direction generally along a chord of the front quadrant of said rotor on said one side, while those ducts on the other side are curved and disposed to bend the stream and direct flow back in said rotational direction generally along a chord of the front quadrant of said rotor on the other side of said centerline;



said vanes being of airfoil configuration and being disposed so that flow over said vanes as directed from said ducts creates aerodynamic forces in said direction of rotation; and

a plurality of vertical louvers in said ducts pivoted between said top and bottom walls.

4,350,901

CONTROL CIRCUIT FOR ELECTRONIC METER IN AN AUTOMOTIVE VEHICLE

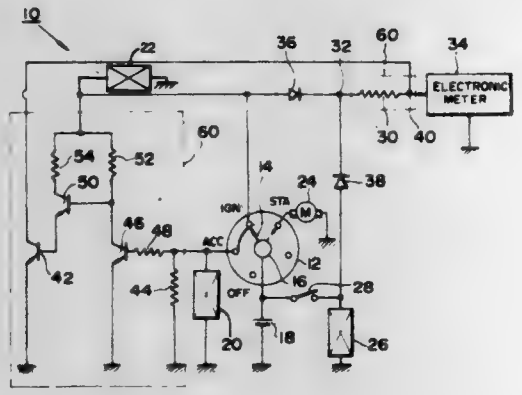
Kouichi Kogawa; Teruo Kawasaki, both of Yokohama, and Hiroyuki Nomura, Fujisawa, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Sep. 19, 1980, Ser. No. 188,856

Claims priority, application Japan, Sep. 25, 1979, 54-121968

Int. Cl.³ B60K *35/00*

U.S. Cl. 307—10 R **9 Claims**



1. A control circuit for an automotive vehicle electronic meter, comprising:

(a) first switching means for selectively supplying power to a first supply circuit;

(b) second switching means for selectively supplying power to a starter motor circuit;

(c) first supply means connected to said first switching means;

(d) cut off means connected to the first switching means and supplying to said meter power supplied independently by the first switching means, but adapted to cut off power from said first supply means when the second switching means supplied power to the starter motor circuit, said cut off means including a resistor connected between said electronic meter and the output of said first supply means; and

(e) means for grounding the junction between said meter and said resistor whenever said second switching means supplies power to said starter motor circuit.

4,350,902

INPUT STAGE FOR A MONOLITHICALLY INTEGRATED CHARGE TRANSFER DEVICE WHICH GENERATES TWO COMPLEMENTARY CHARGE PACKETS

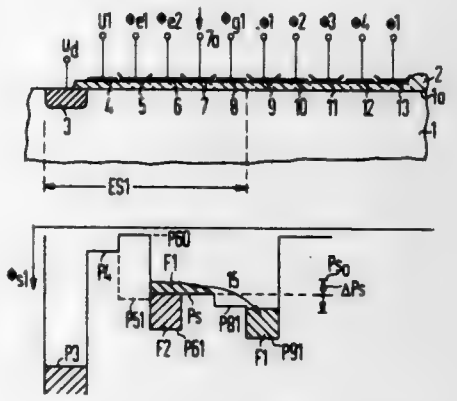
Karl Knauer, Kirchseeon, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 2, 1980, Ser. No. 165,249

Claims priority, application Fed. Rep. of Germany, Sep. 11, 1979, 2936682

Int. Cl.³ G11C *19/28;* H01L *29/78*

U.S. Cl. 307—221 D **4 Claims**



1. In an input stage for generating and supplying two complimentary charge packets to a charge transfer device monolithically integrated on a doped semiconductor body of one conductivity type having an opposite conductivity type (oppositely doped) region disposed in said input stage and covered at a boundary surface with an electrically insulating layer, said input stage having a first gate connected to a constant voltage and an input gate to which an input signal is supplied disposed on said insulating layer, said input stage further having at least two transfer gate electrodes disposed between said first gate and said input gate, and said charge transfer device having a plurality of transfer electrodes respectively connected to phase-displaced clock pulse voltages and disposed on said insulating layer above a transfer channel for said charge transfer device, the improvement of:

a second gate in said input stage disposed between said input gate and said charge transfer device transfer electrodes,

said oppositely doped region and said input stage transfer gate electrodes being connected to respective first clock pulse voltages having a clock frequency which is one half of the clock frequency of said phase-displaced clock voltages connected to said charge transfer device transfer gate electrodes.

4,350,903

ELECTRONIC LIGHT SWITCH

Bruce D. Jimerson, 6415 Corsini Pl., Rancho Palos Verdes, Calif. 90274, and Henry H. Nakasone, 1672 Camrose Way, Anaheim, Calif. 92802

Continuation-in-part of Ser. No. 768,544, Feb. 14, 1977, Pat. No. 4,152,608. This application Apr. 27, 1979, Ser. No. 33,864

The portion of the term of this patent subsequent to May 1, 1996, has been disclaimed.

Int. Cl.³ H03K *17/60;* G05F *1/00*

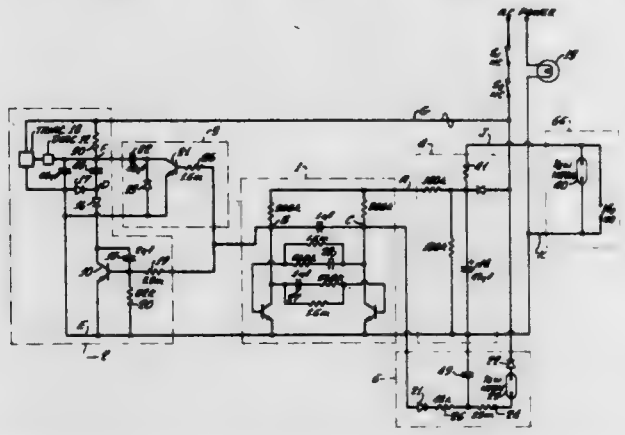
U.S. Cl. 307—252 B **8 Claims**

1. A switching apparatus for operating a load from an A-C power source comprising:

a bistable circuit having a first stable state and a second stable state;

a control device connected in series between the power source and load having a high impedance "off" state and a low impedance "on" state;

circuit means responsively connecting said control device in parallel with said bistable circuit for causing said control device to remain in the "off" state during the time said



bistable circuit is in a first state, and for causing said control device to periodically switch from the "off" state to the "on" state when said bistable circuit is in a second state;

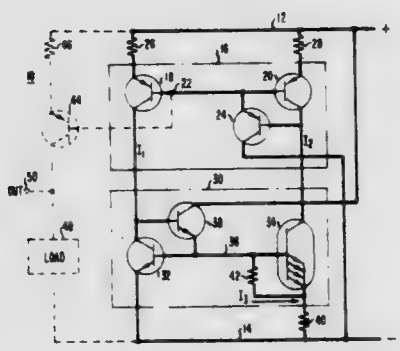
actuating means connected in series with the power source and the parallel combination of said control device and said bistable circuit for momentarily altering the voltage across said parallel combination to cause said bistable circuit to change from one stable state to the other stable state.

4,350,904

CURRENT SOURCE WITH MODIFIED TEMPERATURE COEFFICIENT

Robert R. Cordell, Tinton Falls, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 22, 1980, Ser. No. 189,045
Int. Cl.³ H03K *3/26, 17/60*
U.S. Cl. 307—310 **12 Claims**



1. An apparatus (10, 52, 54) for generating a controlled current, comprising:

a first current mirror (16) having first and second current transistors (18, 20) of a first junction polarity, each with a base, an emitter, a collector, and a conductive junction area, the emitters being connected through first and second emitter resistors (26, 28) to a first supply voltage means (12);

a second current mirror (30) having third and fourth current transistors (32, 34) of a second junction polarity, opposite to the first polarity, each with a base, an emitter, a collector, and a conductive junction area, the collectors of the first and second current transistors (18, 20) being connected to the collectors of the third and fourth current transistors (32, 34), respectively, to regeneratively couple the first and second current mirrors (16, 30) so that the conductive junction areas of the third and fourth current transistors (32, 34) have unequal current densities, the emitter of the third current transistor (32) being connected to a second supply voltage means (14); and

a current-setting resistor (40) connecting the emitter of the fourth current transistor (34) to the second supply voltage (14); characterized by

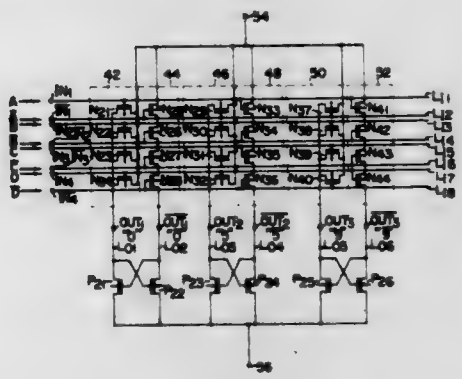
a modifying resistor (42, 53, 55) connecting together the base and emitter of one of the first (18), second (20), or fourth (34) current transistors and passing a temperature-dependent modifying current for modifying the temperature dependence of the collector current of the fourth current transistor (34).

4,350,905

COMPLEMENTARY MOS LOGIC DECODER CIRCUIT

Yasushi Sato, Oita, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Nov. 1, 1979, Ser. No. 90,421
Claims priority, application Japan, Jan. 19, 1979, 54-4936
Int. Cl.³ H03K *19/094, 19/173, 19/20, 13/00*
U.S. Cl. 307—451 **5 Claims**



1. a logic circuit to be used with first and second power sources comprising:

first logic means including a plurality of MOS transistors of a first channel type which receives a plurality of first logic input signals and produces a first logic output signal;

second logic means including a plurality of MOS transistors of the first channel type which receives second logic input signals the inverse of said first input signals and produces a second logic output signal, said second logic output signal being the inverse of said first logic output signal;

a first MOS transistor of a second channel type connected between the first power source and an output terminal for the first logic output signal of said first logic means; and

a second MOS transistor of the second channel type connected between the first power source and an output terminal for the second logic output of said second logic means, wherein the gate of said first MOS transistor is connected to the output terminal of said second logic means and the gate of said second MOS transistor is connected to the output terminal of said first logic means so as to form a flip-flop circuit and the first and second logic means being respectively connected between the output terminal and the second power source.

4,350,906

CIRCUIT WITH DUAL-PURPOSE TERMINAL

James E. Gillberg, North Plainfield, N.J., assignor to RCA Corporation, New York, N.Y.

Continuation of Ser. No. 918,653, Jun. 23, 1978, abandoned.
This application Dec. 11, 1979, Ser. No. 102,574
Int. Cl.³ H03K *19/094, 19/20, 19/003, 17/687*
U.S. Cl. 307—469 **6 Claims**

1. A circuit comprising:

a first dual-purpose terminal;

a first field effect transistor of a first conductivity type having gate and drain and source electrodes;

a second terminal for receiving a first supply potential, and

means connecting said second terminal to the gate electrode of said first field effect transistor;

a third terminal for receiving a second supply potential;

a second field effect transistor of a conductivity type complementary to said first transistor and having gate and source electrodes connected respectively to said second and said third terminals and having a drain electrode connected to the drain electrode of said first field effect transistor, said second field effect transistor conditioning said first field effect transistor for conduction between its source and drain electrodes;

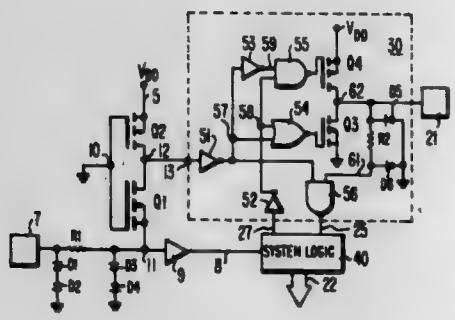
a fourth terminal connected to the interconnection of the drain electrodes of said first and second field effect transistors from which a control signal is available;

system logic circuitry having first and second inputs and an output and being of a type responsive to logic signals swinging over a range between said first and second supply potentials, which logic signals are applied to its inputs;

means capable of passing a logic signal swinging over a range between said first and second supply potentials, connecting said first terminal to the first input of said system logic circuitry;

means connecting said first terminal to the source electrode of said first field effect transistor which connecting means is capable of passing a potential of such polarity and amplitude to condition said first field effect transistor for conduction to generate said control signal;

a fifth, or other dual-purpose terminal, from which signals are selectively applied or received;



third and fourth field effect transistors respectively of the same conductivity types as said first and second field effect transistors and having respective gate and drain and source electrodes;

means connecting the drain electrodes of said third and fourth field effect transistors to said fifth terminal;

means connecting the source electrodes of said third and fourth field effect transistors to said second and third terminals respectively; and

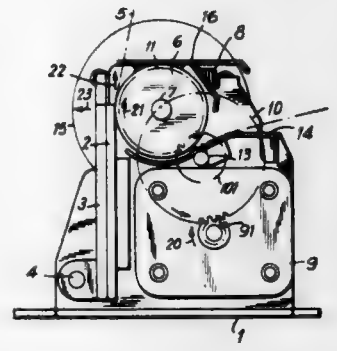
control logic circuitry having a control signal input terminal connected to said fourth terminal and having a plurality of signal paths respectively coupled between said fifth terminal and said second input of said system logic circuitry and said output of said system logic circuitry and the gate electrodes of said third and fourth field effect transistors, which signal paths are selectively conditioned to pass signal upon application of said control signal to said control signal input terminal, said control logic circuitry causing a logic signal developed at said output of said system logic circuitry to control the conduction of said third and fourth field effect transistors when said control signal has a first level, and said control logic circuitry causing a logic signal developed at said fifth terminal to control the logic signal developed at said second input of said system logic circuitry and simultaneously causing said third and fourth field effect transistors to be rendered non-conductive when said control signal has a second level.

4,350,907

THERMALLY SENSITIVE PRINTER

Takemasa Shindo; Yoshikazu Ito, and Kenichiro Arai, all of Shiojiri, Japan, assignors to Shinshu Seiki Kabushiki Kaisha and Kabushiki Kaisha Suwa Seikosha, both of Tokyo, Japan

Continuation of Ser. No. 847,351, Oct. 31, 1977, abandoned, which is a division of Ser. No. 708,953, Jul. 26, 1976, Pat. No. 4,088,214. This application May 27, 1980, Ser. No. 153,651
Claims priority, application Japan, Jul. 25, 1975, 50-91289
Int. Cl.³ H02K *33/00*
U.S. Cl. 310—37 **7 Claims**



1. A rotating drive assembly comprising in combination a permanent magnet rotor means adapted to be rotated from a first predetermined position, said rotor means having a rotor shaft and diametrically and magnetically opposed poles secured to said shaft, and stator means including a stator pole disposed proximate to at least one of said rotor poles when said rotor means is at said first predetermined rotary position, the attractive force between said stator pole and said rotor means normally positioning said rotor means in said first predetermined rotary position, coil means surrounding said stator pole for selectively referencing said stator pole to a magnetic polarity sufficient to effect, in opposition to said attractive force, a rotation less than 90 degrees of said rotor means from said first predetermined rotary position to a second predetermined rotary position, said rotor means being adapted to return to said first predetermined position by said attractive force between said rotor means and said stator pole when said coil means is deenergized, and thereby define the oscillatory rotation of said rotor means, and rotary conversion means for converting said oscillatory rotations of said rotor means into a one-way intermittent rotational motion, said rotary conversion means including a lever means fixedly secured to said rotor shaft for rotation therewith, said lever means having at least a first portion which extends from said rotor means, ratchet means rotatably supported on said rotor shaft, and pawl means pivotably supported on said first portion of said lever means, said pawl means being adapted to pivot into engagement with said ratchet means to advance said ratchet means when said lever means is driven in a first rotational direction in response to each rotation of said rotor means from said first predetermined rotary position, said ratchet means being adapted to remain in said advanced rotary position in response to a return of said rotor means and said lever means to said first predetermined rotary position.

4,350,908

COOLING SYSTEM FOR ROTOR OF A DYNAMOELECTRIC MACHINE

Delmar R. Riffe, Murrysville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 4, 1980, Ser. No. 213,694
Int. Cl.³ H02K *1/32*
U.S. Cl. 310—61 **6 Claims**

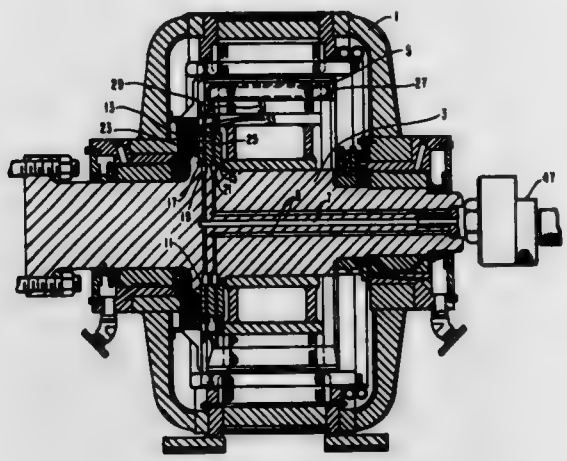
1. A cooling system for a rotor of a dynamoelectric machine, said cooling system comprising.

at least one duct for cooling fluid disposed in a central portion of said rotor;

a plurality of conduits for cooling fluid disposed in windings in peripheral portion of said rotor;

said rotor having a plurality of steps disposed on the central portion thereof;

a disc formed from electrical insulating material and having a central bore and a counterbore which has a diameter and depth that registers with one of said steps which has a riser;



a plurality of ports disposed in said disc and extending radially therethrough;

said ports being in fluid communication with said duct;

a plurality of tubular members in fluid communication with said ports and said conduits; and

sealing means disposed at the interface of said bore in said disc and said riser of said one step to form a cooling system for the rotor which electrically isolates the central portion of the rotor from the windings.

4,350,909

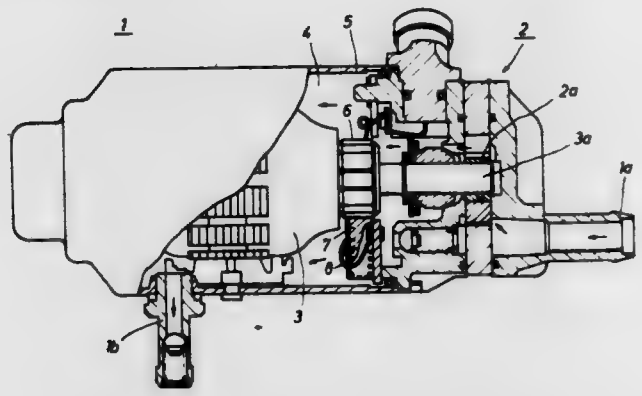
BRUSH LEAD STRUCTURE FOR MOTOR-IMMERSED FUEL PUMPS

Masahide Yamada, Azumamura, Japan, assignor to Mitsuba Electric Mfg. Co., Ltd., Gunma, Japan

Filed Mar. 17, 1980, Ser. No. 130,940

Int. Cl.³ H01R *39/36;* H02K *13/00*

U.S. Cl. 310—62 **8 Claims**



1. In a fuel pump in which a motor for driving the pump is completely immersed in the flow of fuel, the motor having a commutator, at least one sintered carbon brush in sliding contact with said commutator of said motor, and a lead wire connected to said brush, a portion of said lead wire being exposed to said fuel when said pump is in situ, the improvement wherein said exposed portion of said lead wire is composed of a material non-reactive with said fuel and the connection between said lead wire and said brush is formed by planting one end of said lead wire in said brush, said material non-reactive with said fuel being thick enough to resist the sintering temperature but thin enough to give flexibility such that the sliding contact between said brush and said commutator may be maintained even if said brush is gradually worn out.

4,350,910

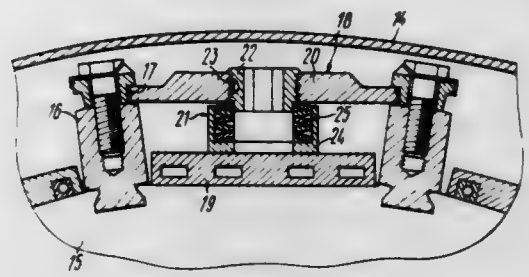
ELECTRICAL MACHINE STATOR

Garry M. Khutoretsky, ulitsa Altaiskaya, 20, kv. 5; Jury G. Tjurin, ulitsa Rudneva, 11, kv. 56; Larisa A. Drozdova, prospekt K. Marxa, 25, kv. 26, and Tamara N. Belova, ulitsa Budapeshtskava, 3, korpus 2, kv. 138, all of Leningrad, U.S.S.R.

Filed Aug. 27, 1981, Ser. No. 296,877

Int. Cl.³ H02K *9/00*

U.S. Cl. 310—64 **1 Claim**



1. An electrical machine stator comprising:

a core,

coolers,

detachable resilient fastening means adapted to attach said coolers to the outer lateral surface of said core,

each of said detachable resilient fastening means including a rigid member attached to said core, a resilient member mounted on said cooler, and an adjusting means movably connected with said rigid member and being in contact with said resilient member to provide continuous pressing of said resilient member to said cooler in a radial direction.

4,350,911

TANDEM CONNECTED SUBMERSIBLE OIL WELL PUMP MOTORS

Brown L. Wilson, and Joseph T. Carle, both of Tulsa, Okla., assignors to Oil Dynamics, Inc., Tulsa, Okla.

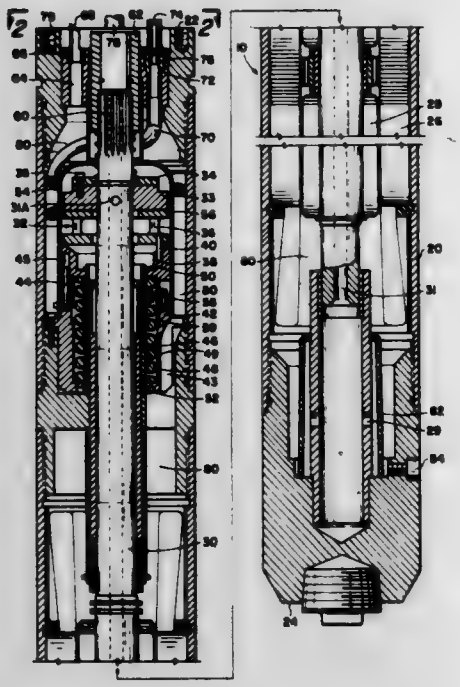
Filed Jun. 4, 1979, Ser. No. 45,312

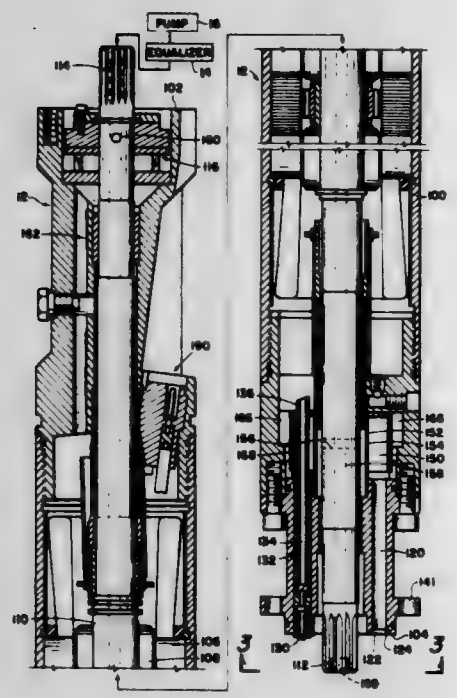
Int. Cl.³ F04D *13/08;* H02K *7/08*

U.S. Cl. 310—87 **20 Claims**

1. In a submersible motor assembly used to drive a pump for pumping fluids from wells having, tandemly arranged, a lower motor assembly and an upper motor assembly, each motor assembly having a longitudinal housing with top and bottom ends, an electric motor, rotor-driven longitudinal shaft, thrust bearings supporting the shaft, oil corridor means within the shaft, and housing to permit the circulation of oil contained within the housing caused by the rotation of the shaft, and internal electrical leads to the motor and splined connection for the shafts, the improvement characterized by:

seal means closing the bottom end of the upper motor assembly oil corridor, and





means, as the bottom end of the upper motor assembly is connected to the top end of the lower motor assembly, to open the seal and interconnect the corridor means.

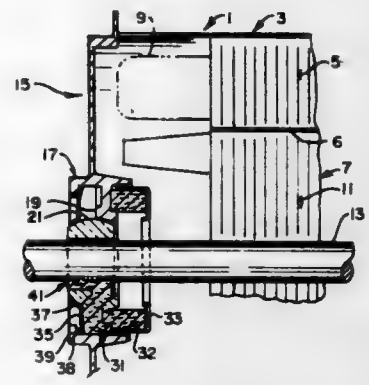
4,350,912

WICK LUBRICATION SYSTEM FOR SELF-ALIGNING BEARING

Stephen J. Burton, St. Louis, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Mar. 3, 1980, Ser. No. 126,992
Int. Cl.³ H02K *5/16*
U.S. Cl. 310—90 **5 Claims**

1. In a dynamoelectric machine having a stator, and a rotor, the latter having a rotor shaft, said stator including means for journalling said rotor shaft including a bearing support and a bearing for receiving said shaft and journalling said shaft with respect to said bearing support, said bearing having an outer surface engageable with said bearing support and an inner bore for reception of said shaft, said bearing support including a reservoir wick for holding a supply of lubricant, wherein the improvement comprises: a slot in said bearing, a first portion of said slot opening into said bore and extending longitudinally the length of said bearing, said bearing further having a bridge spaced radially outwardly from said bore joining the portions of said bearing on opposite sides of said slot, said bridge extending longitudinally of said bearing only a portion of the longitudinal dimension of said bearing with another portion of said slot extending radially through the bearing from said bore to said outer surface thereof, and a lubricant applying wick received within said slot, said lubricant applying wick having a first portion thereof disposed in said first portion of said slot, said first wick portion extending longitudinally from one end of said bearing to the other and being in lubricant applying



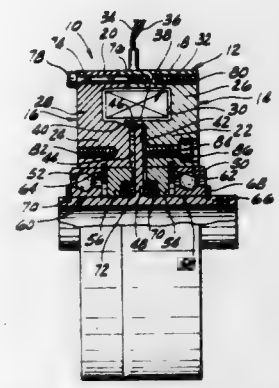
engagement with the entire length of said shaft received within said bearing bore, said lubricant applying wick further having a second portion disposed within said other portion of said slot and extending generally radially outwardly from said first portion, said lubricant applying wick being held captive between said bearing support and said bridge of said bearing, said lubricant applying wick being in lubricant transfer relation with said lubricant reservoir wick whereby lubricant from said lubricant reservoir wick is transferred to said lubricant applying wick for the continuous application of lubricant to the entire length of said shaft received within said bearing.

4,350,913

MAGNETIC PARTICLE DEVICES

Gerald R. Eddens, St. Louis County, Mo., assignor to W. J. Industries, Incorporated, Fenton, Mo.

Filed Aug. 13, 1980, Ser. No. 178,075
Int. Cl.³ H02K *49/00*
U.S. Cl. 310—103 **13 Claims**



1. A housing for a magnetic particle device comprising first and second housing members adapted to be assembled in side-by-side axial relation, at least one of said housing members having an annular cavity formed extending inwardly on the side thereof adjacent to the other housing member, an annular tapered surface formed on the side of one of said housing members at an intermediate location radially of the annular cavity, a sidewardly extending annular flange formed on the other housing member for engaging the annular tapered surface at an intermediate location thereon to divide the annular cavity into inner and outer cavity portions separated by the annular flange, and means connecting the first and second housing members including means to force the annular flange

to move axially against and be deformed by engagement with the annular tapered surface to form a seal between the cavity portions.

4,350,914

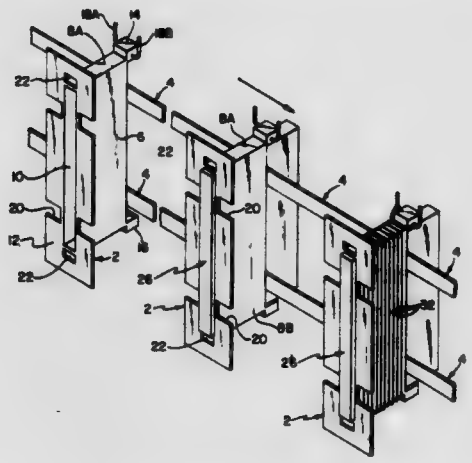
ELECTRIC MOTOR MANUFACTURE

Robert F. Searle, Amherst, N.H., assignor to Vibrac Corporation, Amherst, N.H.

Continuation of Ser. No. 972,780, Dec. 26, 1978, abandoned, which is a division of Ser. No. 825,207, Aug. 17, 1977, Pat. No. 4,182,026. This application Jun. 13, 1980, Ser. No. 159,134

Int. Cl.³ H02K *19/26*

U.S. Cl. 310—194 **31 Claims**



1. A stator assembly for an electric motor comprising:
a housing with a plurality of slots;
an array of pole pieces of magnetic material disposed within said housing in said slots;
a plurality of bobbins connected by integral stringer means, each bobbin surrounding one of said pole pieces;
a plurality of coils each surrounding one of said bobbins;
terminal means connected to said coils for coupling said coils to a source of electrical power; and
means for holding said pole pieces fixed to said housing;
said housing being adapted to provide a low reluctance path between said pole pieces.

4,350,915

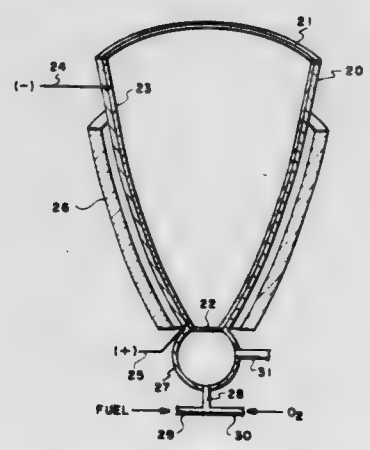
RADIANT ENERGY CONVERTER

William G. Wyatt, 8366 Garland Rd., Dallas, Tex. 75218, and Jack H. Shaw, 1715 Baylor, Richardson, Tex. 75081

Continuation of Ser. No. 727,124, Sep. 27, 1976, abandoned. This application Apr. 3, 1978, Ser. No. 892,686

Int. Cl.³ H01V *45/00*

U.S. Cl. 310—306 **12 Claims**



1. A radiant energy converter comprising
(a) means for collecting and concentrating radiant energy, said means comprising a hollow body with divergent reflective sides defining an entrance aperture and an exit aperture of limited area and adapted to collect and concentrate radiant energy and direct the concentrated radiant energy in a first direction through said exit aperture of limited area, and
(b) means for passing a fluid through said exit aperture in substantially the opposite direction whereby said radiant energy is at least partially absorbed by said fluid passing through said exit aperture.

4,350,916

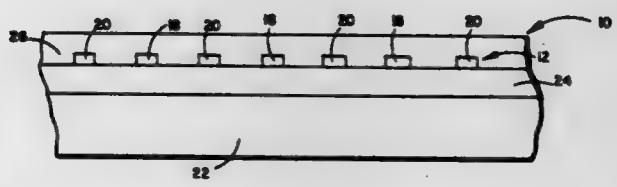
SURFACE ACOUSTIC WAVE DEVICE HAVING BURIED TRANSDUCER

Rudolf R. August, Laguna Beach; Dean B. Anderson, Whittier, and Shi-Kay Yao, Anaheim, all of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Jun. 27, 1980, Ser. No. 163,533

Int. Cl.³ H03H *9/32*

U.S. Cl. 310—313 B **18 Claims**



1. An acoustic wave device, comprising:
a substrate;
a first layer of piezoelectric material disposed on said substrate;
a first electrode for an interdigital acoustic wave transducer disposed on said first layer; and
a second layer of piezoelectric material disposed over said first layer of piezoelectric material and said first electrode,
whereby said first electrode is interposed between said first and second layers of piezoelectric material.

4,350,917

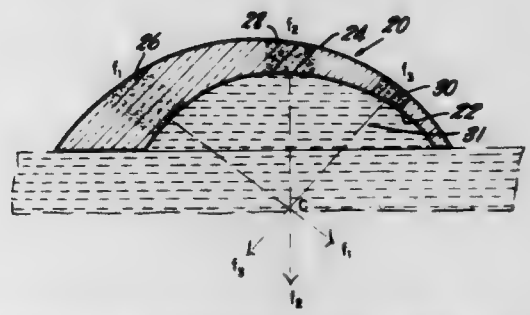
FREQUENCY-CONTROLLED SCANNING OF ULTRASONIC BEAMS

Frederic L. Lizzi, Teaneck, N.J., and Kurt W. Weil, New York, N.Y., assignors to Riverside Research Institute, New York, N.Y.

Filed Jun. 9, 1980, Ser. No. 157,417

Int. Cl.³ H03J *3/28*; H03H *9/40*; A61B *10/00*

U.S. Cl. 310—320 **27 Claims**

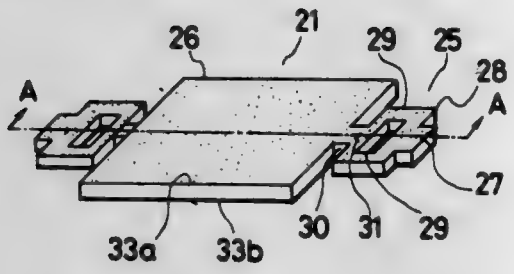


27. Apparatus for radiating acoustic signals, comprising a radiating aperture, resposive to acoustic signals of different frequencies, for radiating said signals into different directions in an unbounded region of space from said aperture, the direction of radiation being determined by the frequency of said signal, and means for supplying acoustic signals to said radiating aperture.

4,350,918
CONTOUR VIBRATION MODE PIEZOELECTRIC RESONATOR

Hirochika Sato, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Japan

Filed Oct. 24, 1979, Ser. No. 87,751
Claims priority, application Japan, Dec. 21, 1978, 53-160737; Dec. 22, 1978, 53-160571
Int. Cl.³ H01L *41/08*
U.S. Cl. 310—367 24 Claims



1. A contour vibration mode piezoelectric resonator comprising: a vibrating portion having opposed relatively short sides and opposed relatively long sides, at least one supporting portion, and at least one bridge portion connecting the vibrating and supporting portions; said vibrating, supporting and bridge portions all being integrally formed as a single piece; wherein the supporting portion comprises a resilient portion connected to substantially the center of one short side of the vibrating portion through said bridge portion, an attenuation portion connected to said resilient portion, and a fixing portion connected to or forming a part of the attenuation portion; and wherein the relationship between the width W of the short side of the vibrating portion, the width W_0 of the bridge portion, and the length L_1 and the width W_1 of the resilient portion is represented by:

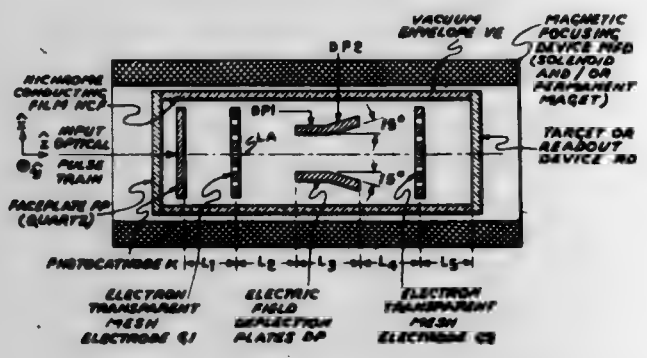
$$0.015 \leqq (W_0/W) \leqq 0.200, \text{ and}$$

$$5 \leqq (L_1/W_1) \leqq 25.$$

4,350,919
MAGNETICALLY FOCUSED STREAK TUBE

Charles B. Johnson, and Jimmy M. Abraham, both of Fort Wayne, Ind., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Continuation of Ser. No. 834,591, Sep. 19, 1977, abandoned, which is a continuation of Ser. No. 708,813, Jul. 26, 1976, abandoned. This application Oct. 5, 1978, Ser. No. 948,849
Int. Cl.³ H01J *40/04, 31/50*
U.S. Cl. 313—99 33 Claims



1. A magnetically focused streak tube arrangement comprising:

a vacuum envelope having a longitudinal axis and a light input faceplate disposed coaxially of said axis at one end of said envelope;

first means having a first given potential applied thereto disposed coaxial of said axis within said envelope adjacent said faceplate responsive to an optical pulse train to emit electrons into said envelope in a direct proportion to incident photon flux of said pulse train;

a first electron transparent mesh electrode having a second given potential greater than said first given potential applied thereto disposed within said envelope, coaxial of said axis and adjacent said first means to rapidly accelerate said emitted electrons away from said first means in a path parallel to said axis toward the other end of said envelope;

a second electron transparent mesh electrode having said second given potential applied thereto disposed within said envelope, coaxial of said axis and adjcent said other end of said envelope, said second given potential applied to said first and second mesh electrodes providing a region of constant potential between said first and second mesh electrodes to enable deflection of said electrons adjacent said path in said region, said electrons having a constant velocity in said region;

readout means having a third given potential greater than said second given potential applied thereto disposed in said other end of said envelope in said path adjacent said second mesh electrode, said readout means being capable of providing an output photoelectron streak image for said tube arrangement, said second given potential applied to said second mesh electrode and said third given potential cooperating to accelerate said electrons adjacent said path from said second mesh electrode to said readout means;

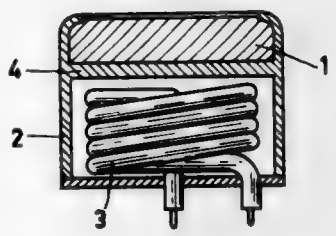
magnetic means disposed externally of said envelope coaxial of said axis to provide a magnetic field within said envelope substantially parallel to said path to focus said electrons on said readout means; and

a pair of deflection plates each disposed within said envelope equally spaced from said path between said first and second mesh electrodes in said region to produce an electric field substantially perpendicular to said magnetic field to deflect said focused electrons across said readout means to produce said output streak image on said readout means.

4,350,920
DISPENSER CATHODE

Theodorus C. J. M. Bertens, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 3, 1980, Ser. No. 165,893
Claims priority, application Netherlands, Jul. 17, 1979, 7905542
Int. Cl.³ H01J *1/14, 19/06;* H01K *1/04*
U.S. Cl. 313—346 R 4 Claims

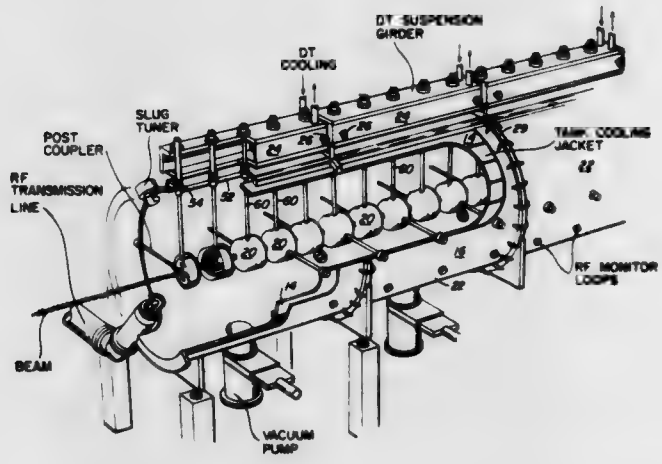


1. A dispenser cathode comprising a porous metal body and a heating element for heating the body, said body including an emissive surface and having a material in its pores for dispensing barium, barium oxide and scandium oxide when the cathode is heated, said material consisting essentially of $Ba_2Sc_2O_5$ constituting 1–15% by weight of the body, said material consisting essentially of 68–72% by weight of BaO and 32–28% by weight of Sc_2O_3.

4,350,921
DRIFT TUBE SUSPENSION FOR HIGH INTENSITY LINEAR ACCELERATORS

Donald J. Liska; Roger G. Schamaun; Donald C. Clark; R. Christopher Potter, and Joseph A. Frank, all of Los Alamos, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 11, 1980, Ser. No. 129,299
Int. Cl.[3] H05H *9/00*
U.S. Cl. 313—360.1 3 Claims



1. A drift tube suspension apparatus for linear accelerators housings comprising:

a plurality of inverted box-section suspension girders;

suspended from each of said girders, a plurality of drift tube stems having longitudinal axes of rotation, a drift tube being attached to one end of each of said stems and each of stems at its other end being supported by said girder;

means for rotating each of said stems about its longitudinal axis of rotation;

means for raising and lowering each of said stems in a first "Y" direction;

means for moving each of said tubes in second and third directions, "X" and "Z";

means comprising radiofrequency degradation resistant bellows disposed about each stem for vacuum sealing said apparatus to said accelerator housing; and

means for aligning said plurality of said girders on said housing.

4,350,922
MULTICOLOR CATHODE-RAY TUBE WITH QUADRUPOLAR FOCUSING COLOR-SELECTION STRUCTURE

Carmen A. Catanese, Rocky Hill, and Stanley Bloom, Bridgewater, both of N.J., assignors to RCA Corporation, New York, N.Y.

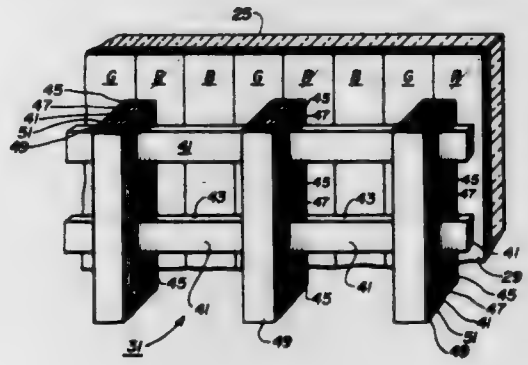
Filed Jun. 20, 1980, Ser. No. 161,603
Int. Cl.[3] H01J *29/07*
U.S. Cl. 313—402 10 Claims

1. In a cathode-ray tube including

(a) a target comprising an array of phosphor elements of different emission colors arranged in cyclic order in adjacent color groups, each group comprising an element of each of said different emission colors,

(b) means for producing a plurality of electron beams directed toward said target, and

(c) a color-selection structure positioned between said target and said beam-producing means, said color-selection structure having a plurality of means for transmitting portions of said beams to associated color groups of said target and means for focusing without deflecting said beam portions, said structure comprising (i) a metal masking plate having two opposed major surfaces and having therein an array of substantially rectangular windows, each window having associated therewith (ii) a pair of first conductors insulatingly spaced from one major surface of said masking plate and located adjacent opposite sides of said window, each window being associated with only one color group,

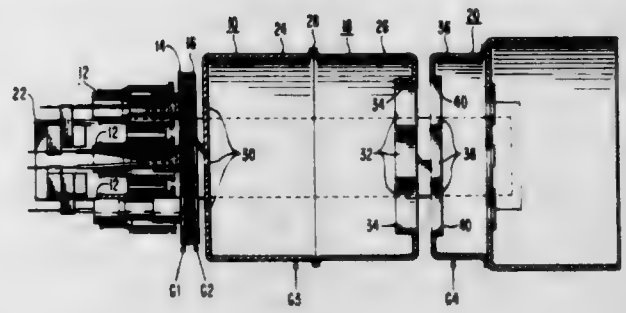


the improvement wherein said color-selection structure includes (iii) a pair of second conductors insulatingly spaced from the other major surface of said plate and located adjacent opposite sides of each of said windows.

4,350,923
ELECTRON GUN WITH BALANCED LENS LIPS TO REDUCE ASTIGMATISM

Richard H. Hughes, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 27, 1980, Ser. No. 134,641
Int. Cl.[3] H01J *29/50*
U.S. Cl. 313—414 4 Claims



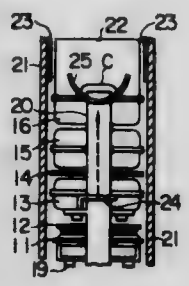
1. In an in-line electron gun for use with an astigmatic self-converging magnetic deflection yoke located beyond an output end of said gun, said gun including two lens electrodes, by which an astigmatic electrostatic focus field is established in operation of said gun, each of said electrodes, including an elongated tub with 3 in-line apertures in the floor thereof facing the other of said electrodes, with each of said apertures of each of said electrodes having a tubular lip extending from the periphery of the aperture in a direction away from the other of said electrodes, said electrodes by virtue of their elongated tub shape producing the astigmatism in said focus field, the astigmatism of said yoke causing vertical overconvergence and horizontal underconvergence of the electron beams at maximum deflection of the yoke, the improvement comprising

the lips of the lens electrode farthest from the output end of said gun having lengths that are less than half the diameter of their associated apertures and being longer than the corresponding lips of the other said lens electrode with the ratio of the lip length of the electrode nearest the output end of said gun to the lip length of the electrode farthest from said gun being in the range of 0.30 to 0.70 and being such as to make said astigmatism in said focus field of opposite polarity to that of said yoke to be of such value as to partially compensate for the yoke astigmatism at maximum beam deflection, and to produce electron beams at the output end of said gun which are vertically under-focused and horizontally over-focused.

4,350,924
COLOR PICTURE TUBE

Masayoshi Misono, Choseimura, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 16, 1979, Ser. No. 85,254
Int. Cl.[3] H01J *29/46*
U.S. Cl. 313—441 9 Claims

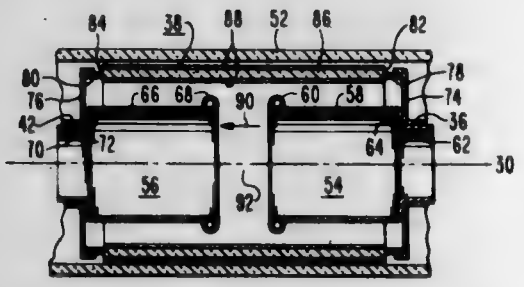


1. A color picture tube with an in-line multi-stage focusing type electron gun assembly including an envelope having a neck tube; a group of electrodes contained in the neck tube and having a successive arrangement including a cathode electrode, at least one grid electrode to which is applied a focusing voltage and at least one grid electrode to which is applied an anode voltage; bead glass means for supporting these electrodes at predetermined spacings; an inner graphite coating formed on the inner wall of the neck tube and to which is applied the anode voltage; a shield cup secured and electrically connected to said grid electrode to which is applied the anode voltage; and metallic shielding means for electrostatically shielding said inner graphite coating from the electrodes which are at potentials lower than the anode voltage, said metallic shielding means being at the anode voltage level and being located nearer to the base of said electron gun assembly as compared with the distance between said base and said inner graphite coating.

4,350,925
MAIN LENS ASSEMBLY FOR AN ELECTRON GUN

Frank D. Marschka, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Jul. 9, 1980, Ser. No. 167,050
Int. Cl.[3] H01J *29/06, 29/82, 29/62*
U.S. Cl. 313—451 4 Claims



1. In an electron gun including an electron beam source and at least two spaced apart successive electrodes having coaxially aligned apertures therein for passing an electron beam therethrough, the improvement comprising:

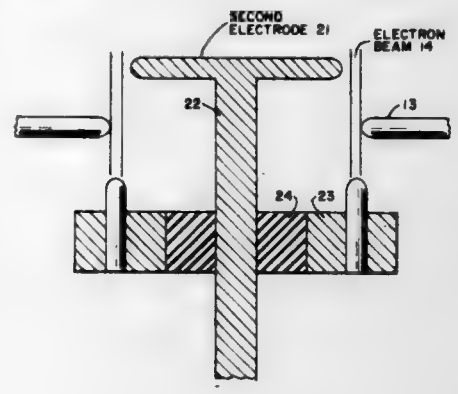
a ceramic cylinder having interior and exterior surfaces and oppositely disposed ends, said cylinder having a resistive coating uniformly disposed on at least said interior surface thereof, said resistive coating contacting each of said oppositely disposed ends, and

electrically conductive support means for attaching one of said successive electrodes to one of said oppositely disposed ends of said cylinder and another of said successive electrodes to another of said oppositely disposed ends, said support means being in contact with said resistive coating and said electrodes being spaced from, disposed concentric with and substantially within said ceramic cylinder.

4,350,926
HOLLOW BEAM ELECTRON SOURCE

Joe Shelton, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 28, 1980, Ser. No. 172,803
Int. Cl.[3] H01J *29/46, 29/56*
U.S. Cl. 313—455 2 Claims



1. A hollow beam electron source comprising a disk shaped field emitter; an emitting surface on said emitter which covers an entire area of one side of said emitter; an anode positioned spacially to said emitter and having a circular-shaped aperture therein positioned to the emitter such that a hollow beam electron flow will occur upon applying a predetermined potential of voltage between said emitter and said anode a further circular disc-shaped electrode positioned relative to said anode and said emitter such that it is positioned within the hollow beam emission and is farther from said emitter than said anode is from said emitter; and said further electrode is positioned such that when a predetermined voltage between said further electrode and emitter is present, emissions from the emitter will not be initiated but the hollow beam emissions initiated by the electrodes will be shaped by the potential applied to the further electrode; said emitter being a cold cathode field emitter which has over a million emitting sites in each square centimeter; and an electric field being formed by said emitter and said anode such that the field is concentrated about the outer edge of the emitter such that emitting sites towards the center of the emitter will not emit, while the sites toward the outer edge will emit.

4,350,927
MEANS FOR THE FOCUSING AND ACCELERATION OF PARALLEL BEAMS OF CHARGED PARTICLES

Alfred W. Maschke, East Moriches, N.Y., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Continuation-in-part of Ser. No. 152,461, May 23, 1980. This application Sep. 23, 1980, Ser. No. 189,990
Int. Cl.[3] H01J *25/10*
U.S. Cl. 315—5.41 10 Claims

1. Apparatus for electrostatically focusing a beam of charged particles, comprising:

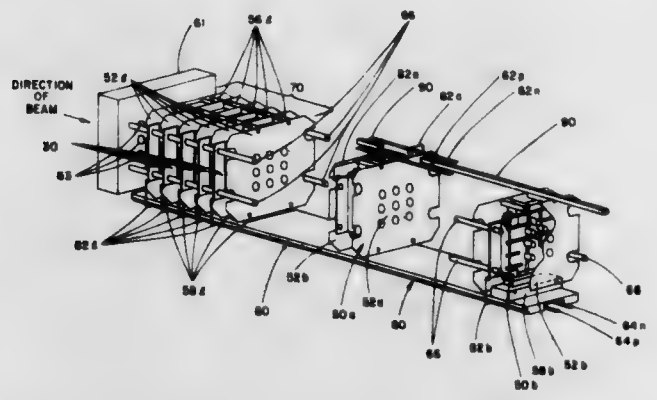
(a) a first support plate, the first plate including a first plurality of holes, and

(b) a first plurality of pairs of substantially identical projections to serve as electrostatic poles for focusing the beam located on one side of the first plate the poles of each of the pairs are on diametrically opposite sides of a corresponding one of the holes and spaced equidistant from the center of the hole, so that each hole corresponds with a single pair of poles.

9. A method for electrostatically focusing a plurality of parallel beams comprising the steps of:

(a) supplying a first conducting support plate having a plurality of conducting projections to serve as electrostatic focusing poles, the poles being located on one side of the plate, and being positioned in parallel rows spaced uni-

formly apart, the poles in the rows having the same spacing between poles as between rows, the plate having a hole centrally located between each pole in each row,
(b) supplying a second plate identical to the first,
(c) locating the plates parallel to one and other,
(d) orienting the rows on the first plate orthogonal with respect to those on the second,



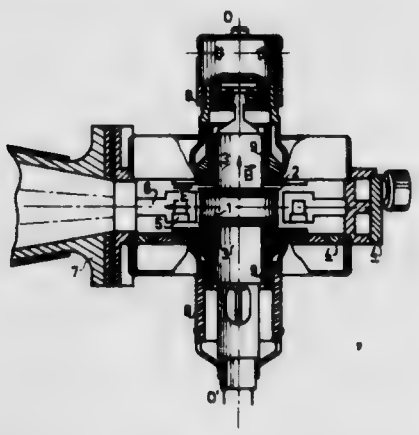
(e) aligning the centers of each pair of corresponding holes on opposite plates on an axis lying perpendicular to the plates,
(f) intermeshing the poles without making contact between the poles and the opposite plate and maintaining each of the hole pairs on the axis, and
(g) applying DC potential to the poles by way of supplying opposite polarity to the first and second plate to produce a focusing field on beams passing through the hole pairs.

4,350,928

CROSSED FIELD RE-ENTRANT BEAM AMPLIFIER

Pierre Couennault, and Lucien Teyssier, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Apr. 9, 1980, Ser. No. 138,503
Claims priority, application France, Apr. 13, 1979, 79 09490
Int. Cl.[3] H01J *25/34*
U.S. Cl. 315—39.3 6 Claims



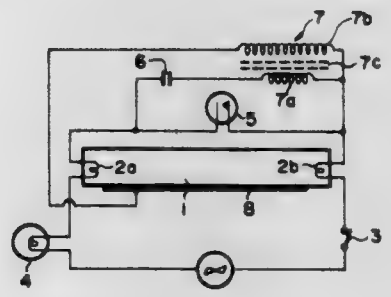
1. A crossed field, re-entrant beam amplifier comprising in a vacuum enclosure a substantially cylindrical cathode, provided with two supports, and a delay line which surrounds most of the cathode, a parasitic cavity resonator constituted by the vacuum enclosure, the cathode and its supports and the delay line means ensuring the reduction of the resonance ratio of the cavity resonator, said means being constituted by a material which absorbs microwaves which is applied to the walls of the cavity resonator level with at least one of the two supports of the cathode.

4,350,929

FLUORESCENT LIGHTING DEVICE

Masayuki Katoogi, Tokyo, Japan, assignor to Moriyama Sangyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 4, 1979, Ser. No. 100,001
Claims priority, application Japan, Dec. 6, 1978, 53-151800; Jan. 14, 1979, 54-3497; Mar. 13, 1979, 54-28860; Jul. 4, 1979, 54-84742
Int. Cl.[3] H01J *7/44, 13/46, 19/78, 29/96*
U.S. Cl. 315—49 15 Claims



1. A fluorescent lighting device, comprising:
(a) a fluorescent discharge tube having preheating electrodes and an outer wall including auxiliary electrode means adjacent thereto;
(b) resistive stabilizing means connected in series with said preheating electrodes;
(c) a bimetal glow bulb igniter coupled across the preheating electrodes of said discharge tube, a preheating current flowing through said preheating electrodes, resistive means and igniter to preheat said discharge tube;
(d) a capacitor, said capacitor minimizing propagation of electromagnetic noise radiated by said igniter into the environment surrounding said lighting device; and
(e) a pulse transformer having a low voltage primary coil and a high voltage secondary coil, the primary coil of said pulse transformer being connected in series with said capacitor and said secondary coil being connected to said auxiliary electrode means, said series-connected capacitor and primary coil being connected in parallel with said glow bulb igniter, the primary coil of said pulse transformer having a high frequency surge voltage induced therein upon termination of said preheating current and said secondary coil applying a stepped-up high voltage to said auxiliary electrode means thereby initiating a discharge within said discharge tube.

4,350,930

LIGHTING UNIT

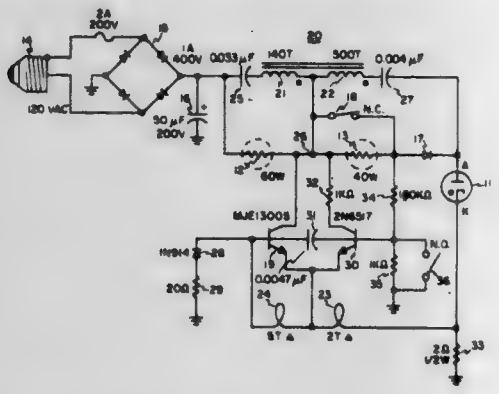
William Pell, North Syracuse, and Robert J. McFadyen, Syracuse, both of N.Y., assignors to General Electric Company, Syracuse, N.Y.

Continuation-in-part of Ser. No. 47,972, Jun. 13, 1979, abandoned. This application Jun. 4, 1980, Ser. No. 156,229
Int. Cl.[3] H01J *7/44, 17/34, 19/78, 29/96*
U.S. Cl. 315—49 44 Claims

1. A lighting unit comprising:
A. a dc power source having two output terminals, one a reference terminal,
B. a metal vapor arc discharge lamp requiring energization dependent on its electrical state, and
C. an operating network comprising:
(1) an incandescible resistive filament exhibiting a substantial resistance increase with applied voltage to provide standby light for said lamp,
(2) alternating electrical energy transforming means for coupling a stepped up output voltage to said lamp,
(3) switching means,
(4) interconnecting means for coupling current from said dc source
(a) in a dc form to said filament and said lamp in series for

energizing and ballasting said lamp, the dissipation in said filament being too low to produce useful light during normal running operation of said lamp, when said switching means is in a stable first condition, and

(b) in a periodic form to said resistive filament and switching means in series for producing useful light and in a periodic form to the input of said transforming means



for starting said lamp, when said switching means is in an astable, second condition, and

(5) means responsive to the electrical conditions of said lamp for maintaining said switching means in said first condition during warm-up and normal running operation of said lamp, and in said second condition during other operating states of said lamp.

4,350,931

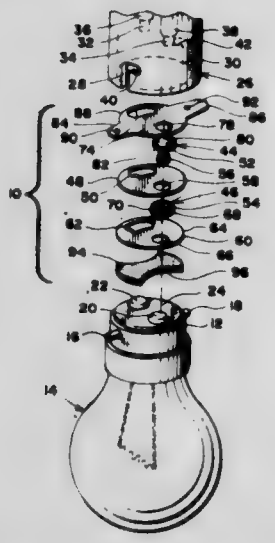
LIGHT SAVER DEVICE

Shale J. Niskin, 3415 Chase Ave., Miami Beach, Fla. 33140

Filed Jan. 8, 1981, Ser. No. 223,397

Int. Cl.³ H01J *7/44;* H05B *37/00*

U.S. Cl. 315—72 **5 Claims**



1. A light saving device for use with a bayonet-type lamp and electrical socket, said light saving device comprising:

first and second plate contacts;

a diode positioned between and being held by holding portions of said plate contacts to electrically couple together said plate contacts when said diode is in its conductive state;

three sheets of plastic insulating material, a first sheet, a second sheet, and a third sheet, being positioned on top of each other and being heat bonded to each other, with said first sheet being in the middle;

said first plate contact being immovable encased between said first sheet and said second sheet, said second plate contact being immovably encased between said first sheet and said third sheet;

at least one of said sheets having a pair of opposed tabs integrally formed therein, each tab having an aperture formed therein;

said second and third sheets each having a contact-receiving hole formed therein which is positioned to expose a portion of the adjacent said plate contact, said exposed portions of said plate contacts being spaced apart from said holding portions of said plate contacts, whereby said diode will be protected when said light saving device is in use;

each of said three sheets having an aligned hole formed therein, said three aligned holes being arranged to form a single cutout passing through said three sheets, said cutout being in spaced-apart relationship to said plate contacts.

4,350,932

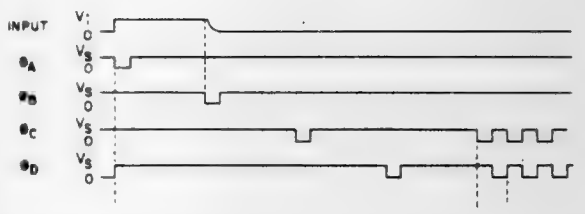
METHOD OF PLASMA PANEL DRIVE TO REDUCE FLASH AND CREATE DIMMING

William E. Coleman, and Stacy W. Hall, both of Colorado Springs, Colo., assignors to NCR Corporation, Dayton, Ohio

Filed Oct. 20, 1980, Ser. No. 198,562

Int. Cl.³ G09F *9/313;* H05B *41/00*

U.S. Cl. 315—169.2 **5 Claims**



1. A method for suppressing the visual flash associated with replacing patterns in a "plasma-charge-transfer" shift mechanism type AC plasma shift display panel, comprising the steps of:

reducing the phase voltage repetition rate during the load segment of the operating sequence until the time average luminous flux is substantially unperceivable in a room ambient light background; and

increasing the phase voltage repetition rate during the hold segment of the operating sequence until the time average luminous flux is visually perceivable in a room ambient light background.

4,350,933

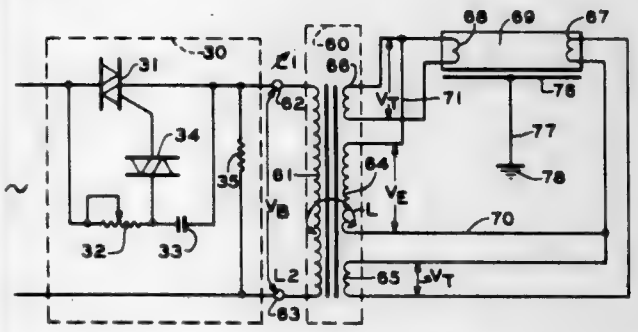
TWO-WIRE BALLAST FOR FLUORESCENT TUBE DIMMING

Poonam Agarwala, St. Paul, and Zoltan Zansky, Roseville, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Nov. 26, 1980, Ser. No. 210,649

Int. Cl.³ H05B *41/16, 41/39*

U.S. Cl. 315—278 **5 Claims**



1. A two-wire ballast for a fluorescent tube dimming arrangement comprising:

first and second terminals adapted to be connected to source of variable power;

a transformer having a primary winding connected across said first and second terminals said transformer further comprising,

first secondary winding having terminals connected across the filaments of a fluorescent tube,

second secondary winding having terminals connected across one of said fluorescent filaments,

third secondary winding having terminals connected across the other of said fluorescent filaments, and

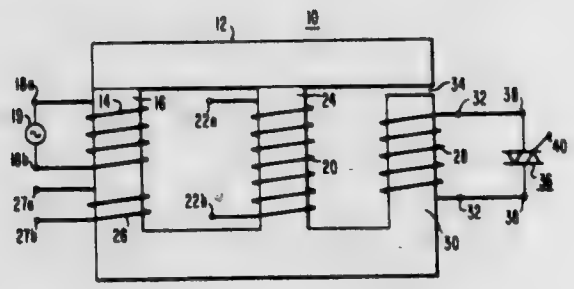
wherein said second and third secondary windings are disposed in predetermined spaced relation to said primary winding and said first secondary winding such that the leakage inductance ratios produced by the disposition of said second and third secondary windings causes the cathode heating voltage supplied to said fluorescent tube filaments to remain substantially constant during variation of the source power.

4,350,934

DISCHARGE DEVICE BALLAST COMPONENT WHICH PROVIDES BOTH VOLTAGE TRANSFORMATION AND VARIABLE INDUCTIVE REACTANCE

Robert J. Spreadbury, Murrysville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 23, 1980, Ser. No. 171,589
Int. Cl.³ H05B *41/16*
U.S. Cl. 315—282 **8 Claims**



1. A composite structure which provides the functions of AC line voltage transformation as well as inductive reactance which can be controllably shifted in value, said structure having utility as a part of ballasting apparatus for a high-intensity gas-discharge device, said structure comprising:

(a) a multileg magnetic core member of predetermined dimensions, a primary winding having a predetermined number of turns carried on a first leg portion of said core member, said primary winding having input terminals adapted to be connected to an energizing source of AC potential of predetermined magnitude and frequency;

(b) an output winding having output terminals adapted to be connected in series circuit with said device to be operated, said output winding having a predetermined total number of turns to provide a predetermined output voltage, and at least a substantial and predetermined proportion of said total turns of said output winding carried on a second leg portion of said core member;

(c) a control winding having a predetermined number of turns carried on a third leg portion of said core member, said control winding having input terminals and said control winding being unconnected to said primary winding or said output winding, non-magnetic gap means of predetermined dimensions provided in the magnetic path which includes said third leg portion, and said magnetic core member and said windings carried thereon having leakage flux paths of predetermined total permeance;

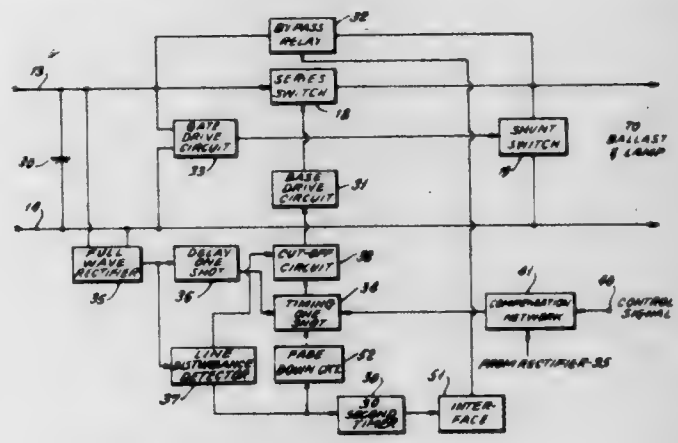
(d) bilateral switch means having output terminals and a control terminal, said bilateral switch means having an open non-conducting state and a closed conducting state, said control winding input terminals connect to the output terminals of said bilateral switch means, and during normal operation of said ballasted device said bilateral switch means is operable to be driven from an open non-conducting state to a closed conducting state at a variable but predetermined time in each half cycle of AC energizing potential; when said bilateral switch means is in an open non-conducting state, a first predetermined value of inductive reactance is effectively provided in series with said ballasted device as normally operating as determined by both the magnetic path through said third leg portion and the flux in said leakage flux paths in order to limit the current through said operating device to a first predetermined value; and when said bilateral switch means is in a closed conducting state, said third leg portion is effectively removed from circuit by virtue of the counter mmf generated therein with the flux in said leakage flux paths effectively providing a second predetermined value of inductive reactance in series with said ballasted device as normally operated to limit the current therethrough to a second predetermined value.

4,350,935

GAS DISCHARGE LAMP CONTROL

Joel S. Spira, Coopersburg; David G. Luchaco, Macungie, and Dennis Capewell, Easton, all of Pa., assignors to Lutron Electronics Co., Inc., Coopersburg, Pa.

Filed Mar. 28, 1980, Ser. No. 135,091
Int. Cl.³ H05B *41/392, 41/16*
U.S. Cl. 315—291 **84 Claims**



1. An illumination control system comprising:

a gas discharge lamp;

an a-c ballast means having a high power factor connected to said lamp and having a-c ballast input terminals;

a control circuit having input a-c terminals and output a-c terminals; said output a-c terminals connected to said a-c ballast input terminals;

said control circuit including circuit means for modifying the a-c wave shape of the voltage applied to said a-c ballast input terminals, whereby the current through said circuit means has at least one non-conductive region; said at least one non-conductive region disposed in each of the half waves of said a-c wave shape; said at least one region located between but not including adjacent zero magnitude crossovers of the voltage applied to said control circuit input a-c terminals; and

adjustment means for varying the duration of said non-conductive region and the ratio of non-conductive time to conductive time during any half-cycle in order to control the intensity of the illumination output of said gas discharge lamp.

4,350,936

CASCADED FIN WINDING MACHINE CONTROL AND METHOD

Dale E. Jackson, Clay, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Mar. 26, 1981, Ser. No. 247,965
Int. Cl.³ B65H *59/38*
U.S. Cl. 318—7 **12 Claims**

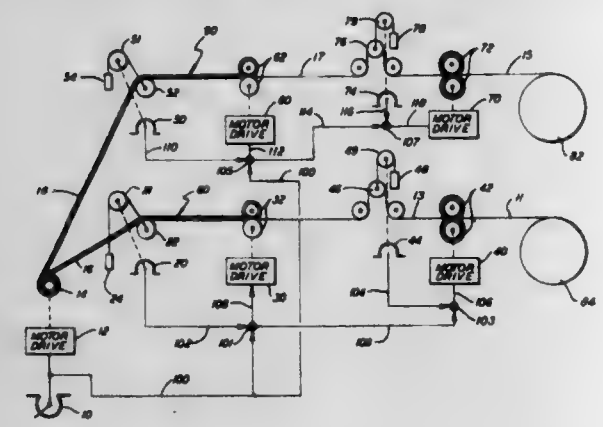
1. A method of controlling the tension in a fin strip which is slit by a pair of slitter wheels driven by a slitter motor, which is formed by a pair of forming wheels driven by a forming motor and which is wrapped about a tube rotated via a wrap-

ping motor and wherein each motor has a motor drive for regulating the speed of the motor which comprises the steps of:

setting a speed control to generate a master signal for controlling the operation of the wrapping motor;

generating a first signal in response to a condition of the fin strip between the tube and the forming wheels;

combining the master signal and the first signal to serve as an



input signal to the forming motor motor drive for regulating the speed of the forming motor;

generating a second signal in response to a condition of the fin strip between the forming wheels and the slitter wheels; and

combining the master signal, the first signal and the second signal to serve as an input signal to the slitter motor motor drive for regulating the speed of the slitter motor.

4,350,937

MOTOR SPEED CONTROL DEVICE FOR DC MOTOR

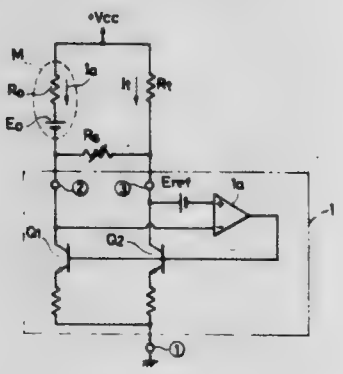
Kiyoshi Miyazaki, Komagane; Tsuneto Takeuchi; Jinichi Ito, both of Ina, and Hiroo Ashibe, Nagano, all of Japan, assignors to Kabushiki Kaisha Sankyo Seiki Seisakusho, Nagano, Japan

Filed Aug. 1, 1980, Ser. No. 174,429

Claims priority, application Japan, Aug. 4, 1979, 54/99620; Aug. 31, 1979, 54/120224[U]; Sep. 4, 1979, 54/122205[U]; Sep. 6, 1979, 54/123169[U]; Nov. 7, 1979, 54/154468[U]; Nov. 12, 1979, 54/156744[U]

Int. Cl.³ H02P *5/16*

U.S. Cl. 318—331 **12 Claims**



1. A speed control device for a DC motor comprising: a power supply having first and second power terminals, one terminal of said motor being coupled to said first power terminal; a first resistor having a first terminal coupled to said first power terminal; a voltage divider circuit coupled between a second terminal of said first resistor and a second terminal of said motor; and a motor control circuit having first, second, third and fourth control terminals, said fourth control terminal being coupled to said second power terminal which is a ground terminal, said second control terminal being connected to a voltage dividing point of said voltage divider circuit, said motor control circuit further including a reference voltage source, an error detecting circuit having first and second input terminals, said first input terminal being coupled through said reference voltage source to said first control terminal and said second input terminal being coupled to said second control terminal, drive transistor means coupled between said third control terminal and said fourth control terminal, and shunt transistor means coupled between said first control terminal and said fourth control terminal, said drive transistor means and said shunt transistor means being coupled to be driven by an output of said error detecting circuit wherein a current proportional to a load current flowing through said motor to said third control terminal flows to said first control terminal and a voltage proportional to a voltage between said first and third terminals is applied to said second control terminal the control being performed so that the voltage at said second control terminal becomes equal to the reference voltage.

4,350,938

TRAVEL LIMIT STOP DEVICE FOR A MOTOR-REDUCING UNIT INTENDED IN PARTICULAR FOR A WINDOW WIPER

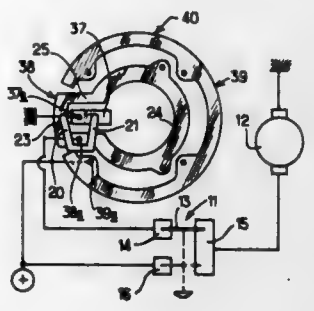
Auguste Ecole, Paris, France, assignor to Equipements Automobiles Marchal, Issy-les-Moulineaux, France

PCT No. PCT/FR80/00002, § 371 Date Sep. 4, 1981, § 102(e) Date Apr. 1, 1981, PCT Pub. No. WO81/01985, PCT Pub. Date Jul. 23, 1981

PCT Filed Jan. 4, 1980, Ser. No. 253,852

Int. Cl.³ H02P *1/04*

U.S. Cl. 318—443 **12 Claims**



1. In a travel limit stop device for a drive mechanism, especially for a motor vehicle window wiper, said mechanism comprising an electric motor which drives an output wheel housed in a casing which is closed by a cover disposed facing said wheel, the travel limit stop device comprising two sliding contacts capable of being moved relative to a circular connector, the co-operation of the sliding contacts and the connector providing either for an electrical supply source to the motor or for short-circuiting of the armature member of the motor to cause the motor to come to an abrupt halt, the improvement whereby the sliding contacts are carried by the output wheel and are electrically connected to each other and the connector is fixed on the cover of the casing and comprises three conductor sectors which are electrically insulated from each other, the three sectors defining two concentric circular tracks over each of which a sliding contact can be moved, a first conductor sector for connection to a first terminal of the supply source for the motor being in the form of an open ring, a second conductor sector for connection to the armature member of the motor being in the form of a closed ring which is disposed concentrically with respect to said open ring and a third conductor sector being for connection to a second terminal of the motor supply source.

4,350,939

SPINDLE ORIENT DEVICE

Celestino Rodriguez, Westland, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Oct. 3, 1980, Ser. No. 193,674

Int. Cl.³ G05B *11/18*

U.S. Cl. 318—592 **10 Claims**

1. A reorientation system for a machine tool having a normal and an orientation mode of operation, comprising:

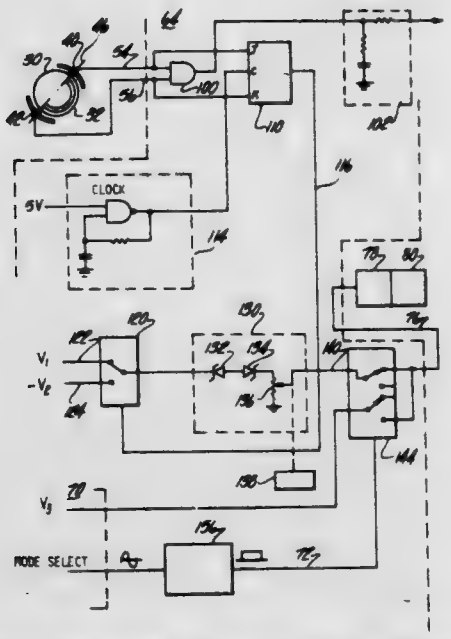
spindle means, including a spindle for rotating relative to a

stationary portion of the machine tool in response to electrical signals input thereto, said spindle means including a first reference indicator located on said spindle and situated perpendicular to the axis of rotation of said spindle, and a stationary second reference indicator located upon said stationary portion wherein when said first reference indicator is colinear with said second reference indicator, when said spindle has achieved a reoriented or reference position;

signal generating means comprising:

a half-pound magnet attached to said spindle and mounted relative to the first reference indicator such that the ends of said half-round magnet are aligned to the first reference indicator;

a pair of opposingly mounted magnetic switches magnetically coupled to said magnet and mounted to said stationary portion and aligned relative to the second reference indicator for generating a first signal when said



first magnetic switch is activated by said magnet, and a second signal when said second magnetic switch is activated by said magnet;

gating means, responsive to said first and second signals for generating an orient signal wherein said orient signal has a first level during a first interval of time corresponding to the presence of said first signal, a second level during a second interval of time corresponding to the presence of said second signal and oscillates between said first and said second levels during a third interval of time corresponding to the simultaneous occurrence of said first and said second signals;

controller means for supplying to said spindle means driving signals during the normal mode of operation to cause said spindle means to rotate at a predetermined speed in a predetermined direction and for supplying to said spindle means during the orientation mode said orient signals to cause said spindle means to be aligned to the reference orientation.

4,350,940

SYSTEM FOR SERVOCONTROLLING A SEPARATELY EXCITED DC MOTOR

Jean Dupont, La Haye les Roses, France, assignor to Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme), Paris, France

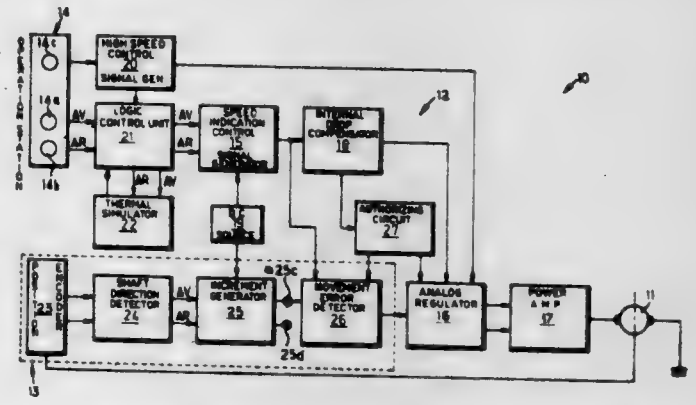
Filed Oct. 3, 1978, Ser. No. 948,298

Claims priority, application France, Oct. 5, 1977, 77 29996

Int. Cl.³ G05B *1/02, 1/03*

U.S. Cl. 318—603 **25 Claims**

1. A servocontrol system for a separately excited DC motor comprising an analog servocontrol chain including; a feed forward generator for deriving a control signal for the speed required from the motor, an analog regulator responsive to the speed control signal for deriving a control signal for the motor, and a power amplifier responsive to the motor control signal for adjusting the speed of the motor; a chain for continuously digitally correcting errors between the motor actual position and the desired position including: encoding means coupled to the motor for deriving a first pulsed signal representing the actual motor position, and means for comparing the actual



position signal with a desired position signal derived from the required speed signal to derive an error signal to be supplied to the analog regulator, the comparison means including an integrating means having an input terminal connected to one of the output terminals of the increment generator, and to an output terminal of the control signal generator in the analog servocontrol chain.

4,350,941

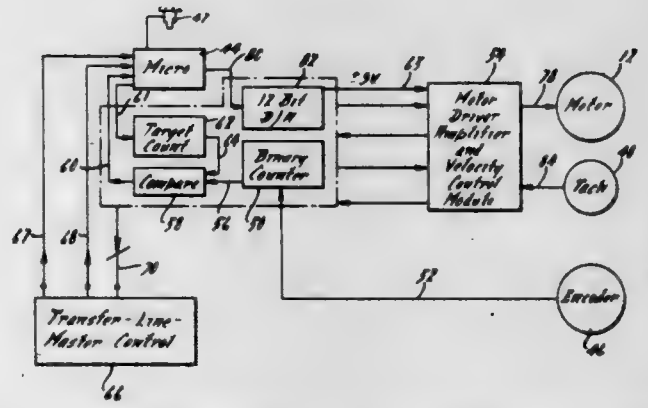
CONTROL FOR AUTOMATIC MACHINE TOOL DRIVE

George W. McClure, Saline, and Veljko Milenkovic, Birmingham, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Sep. 19, 1980, Ser. No. 188,449

Int. Cl.³ G05B *19/28*

U.S. Cl. 318—603 **6 Claims**



1. In a drive system wherein a variable speed electric motor produces cyclical movement of a slide along a path, a control system adapted for connection to the motor power supply comprising:

encoder means producing a constant number of electrical pulses during each revolution of the motor shaft;

means for determining a reference position for the slide and for initializing the control system;

a memory wherein predetermined paired values of slide velocity and position representing ideal such values for the slide at multiple incremental target positions along its path are stored;

data processing means comprising a binary counter for counting and registering encoder pulses following initialization, the count representing the actual position of the slide with respect to the reference position a microprocessor adapted to recall from said memory the slide velocity-position pair that corresponds to a slide target position and adapted to produce a digital signal representing the slide

velocity corresponding to the slide target position; and a comparator receiving input signals representing a slide target position and the actual slide position, producing an output signal when said input signals are identical, whereby the signal representing the slide velocity corresponding to the slide target position is produced by the microprocessor if the output signal is received from said comparator; and

means for converting the output signal of said processing means to an analog voltage whose magnitude determines the velocity of the slide and whose polarity determines the sense of direction of the slide.

4,350,942

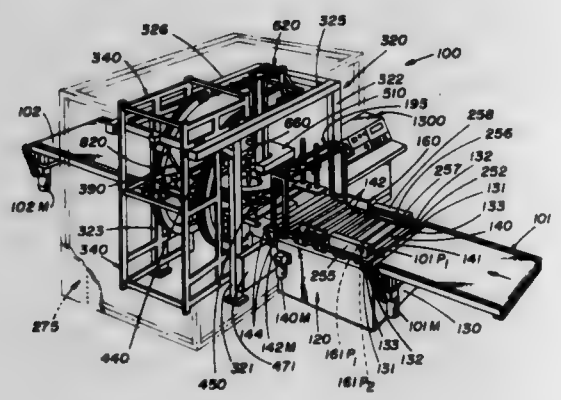
TIRE INSPECTION SYSTEM

Donald N. Heisner, Euclid, and Charles R. Bentivegna, Mayfield Heights, both of Ohio, assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 884,541, Mar. 8, 1978, Pat. No. 4,207,470, which is a division of Ser. No. 495,377, Aug. 7, 1974, Pat. No. 4,088,936. This application Nov. 30, 1979, Ser. No. 99,150

Int. Cl.³ G05G *5/00*

U.S. Cl. 318—626 **8 Claims**



1. In a tire inspection apparatus of the type having drive apparatus for delivering and positioning a tire at an inspection station, an inspection apparatus for producing signals representing the internal structure of portions of a tire positioned at said inspection station, each of said drive and inspection apparatuses including a plurality of components movable along respective travel paths and having separate motive structures attached thereto to effect said motion, sensor apparatus connected to a plurality of said movable components for producing signals indicating the positions of said movable components along their respective travel paths, and a control apparatus connected to said sensor apparatus and said motive structure for generating signals for automatically moving said movable components in accordance with a predetermined operational sequence to effect said delivery, positioning and inspection, the improvement of an interrupt system, comprising:

(a) circuitry for enabling manual control of movements of said components of said tire inspection apparatus;

(b) interrupt circuitry connected to said control apparatus for terminating said automatic movement and actuating said manual control enabling circuitry for enabling manual control of said movable components.

4,350,943

AMPLIFIER FOR INDUCTIVE LOADS WITH CORRECTIVE CURRENT SENSING

Eric K. Pritchard, 1702 Plymouth Ct., Bowie, Md. 20716

Filed Apr. 4, 1980, Ser. No. 137,301

Int. Cl.³ G05B *19/40*

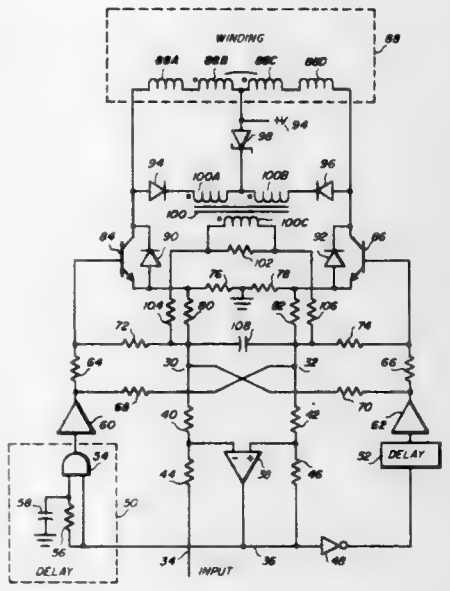
U.S. Cl. 318—696 **26 Claims**

1. A switching amplifier for inductive loads and having an input consisting of:

a. A switching means and a diode means connected across said switching means for conducting the current in said load;

b. A first sensing means for sensing the current in said switching means and said diode means;

c. A current path whose current makes the current in said first sensor differ from the current in said inductive load;



d. A second sensing means for sensing the current in said current path;

e. A comparator means responsive to said first sensing means, said second sensing means, and said input for controlling said switching means.

4,350,944

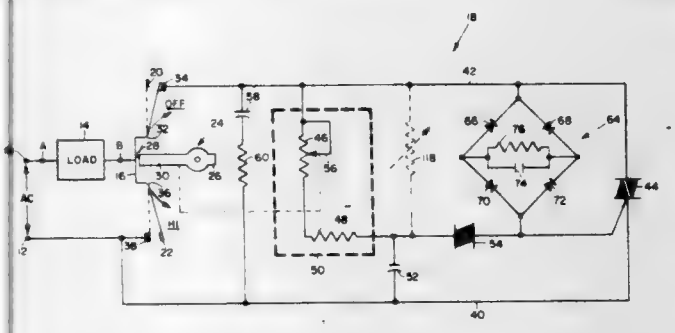
VARIABLE CONTROL CIRCUIT HAVING A TIMED BYPASS

George E. Strauch, Jr., San Antonio, Tex., assignor to Power Controls Corporation, San Antonio, Tex.

Filed Oct. 24, 1980, Ser. No. 200,377

Int. Cl.³ H02P *5/40*

U.S. Cl. 318—779 **5 Claims**



1. A variable speed control system for fans having spring loaded mechanical louvers comprising:

AC voltage source;

fan blades mounted adjacent to said spring loaded mechanical louvers;

a spring connected to said mechanical louvers for urging said mechanical louver to an open position but having insufficient strength to hold said mechanical louvers in an open position;

AC motor connected to said fan blades for turning said fan blades upon turning said motor by said AC voltage source;

control circuit located between a first side of said AC voltage source and said AC motor, a second side of said AC voltage source being connected to said AC motor, said control circuit further comprising:

single armature means actuated by an uppermost and a lowermost movement of a toggle lever for a positive ON and a positive OFF, respectively, through contacts on said single armature means;

switching means connected between one of said contacts of said single armature and said AC voltage source, said switch means having a gate;

first variable resistance means and first capacitor means in series across said switching means and having gating means connected therebetween to said gate;

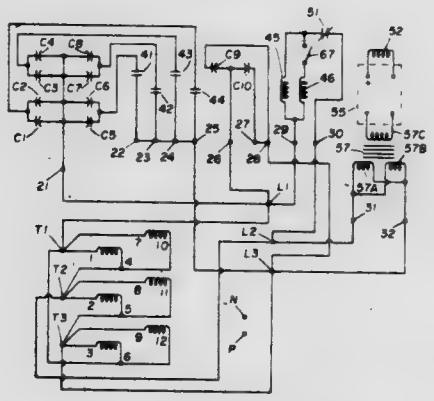
bridge means connected between one side of said switching means to said gate to shunt said gating means for a predetermined time interval, said bridge means having an RC network thereacross to set said predetermined time interval of sufficient duration to bring said fan blades to near full speed to open said louvers before slowing said AC motor for intermediate positions of said toggle lever by eliminating said shunt.

4,350,945

PHASE CONVERTER CONTROLLED BY D-C POWER

Horace B. Ford, 715 Nassau Bay II, Granbury, Tex. 76048

Filed Feb. 9, 1981, Ser. No. 232,694
Int. Cl.³ H02P 1/44
U.S. Cl. 318—795 **3 Claims**



1. A system for converting a three phase motor to one phase operation, the motor having three phase windings with two windings being adapted to be coupled to single phase A-C power, said system comprising:

a first pair of terminals adapted to be coupled to a pair of windings of the motor,

starting capacitor means coupled to said first pair of terminals by way of normally open contact means,

a second pair of terminals adapted to be coupled to said pair of windings of the motor,

running capacitor means coupled to said second pair of terminals,

a third pair of terminals having normally closed relay contacts and electrical coil means coupled thereto,

said electrical coil means closing said contact means when said electrical coil means is energized,

a fourth pair of terminals having the primary of a transformer coupled thereto,

said fourth pair of terminals having one terminal adapted to be coupled to the windings of the motor for applying A-C power from the motor to said primary of said transformer,

rectifier means coupled to the secondary of said transformer for converting A-C power to D-C power,

a relay coil coupled to the output of said rectifier means for opening said relay contacts when a predetermined level of D-C voltage is applied to said relay coil,

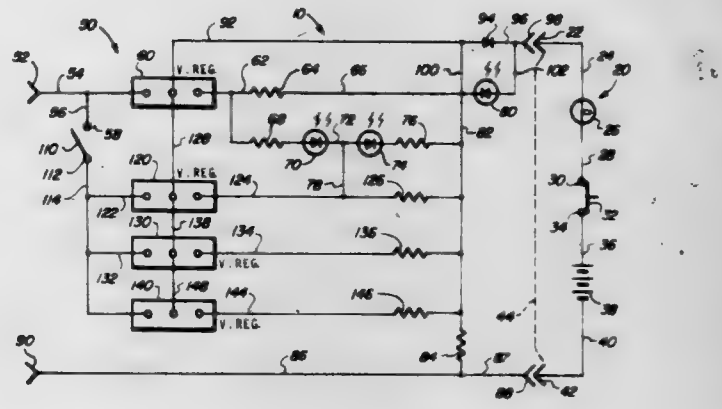
said third pair of terminals being adapted to be coupled to A-C power for energizing said electrical coil means for closing said contact means such that when single phase A-C power is applied to said pair of windings of the motor, said starting capacitor means applies a starting phase shift to the windings of the motor until the D-C voltage applied to said relay coil builds up to said predetermined level, at which time said relay coil opens said relay contacts, de-energizing said electrical coil means and disconnecting said starting capacitor means from said windings of the motor.

4,350,946

MULTIPLE CONSTANT CURRENT BATTERY CHARGING APPARATUS

Onno M. Prinsze, 4528 N. Pima Rd., Scottsdale, Ariz. 85261

Filed Dec. 17, 1979, Ser. No. 104,311
Int. Cl.³ H02J 7/04
U.S. Cl. 320—22 **6 Claims**



1. Multiple constant current charging apparatus for charging a rechargeable battery, comprising, in combination:

voltage means for providing a direct current voltage source;

first constant current means connected to the voltage means for providing a first substantially constant charging current, including a first voltage regulator for providing a substantially constant voltage from the voltage means and a first resistor in series with the first voltage regulator for providing the first substantially constant charging current;

second constant current means for providing a second substantially constant charging current;

conductor means for connecting the first constant current means and the second constant current means to a battery for charging; and

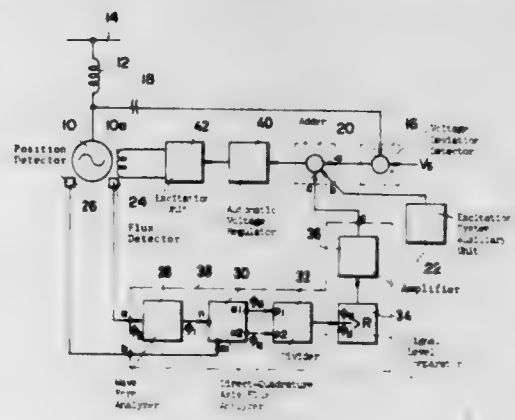
switch means comprising a single switch for selectively connecting and disconnecting as desired the voltage means to the second constant current means for providing either the first substantially constant current for charging the battery or the first and second substantially constant currents for charging the battery.

4,350,947

SYSTEM FOR PREDICTING DESYNCHRONIZATION OF A SYNCHRONOUS MACHINE

Chikasa Uenosono; Takao Okada; Junya Matsuki, all of Kyoto; Tadashi Naito; Shinichiro Inoue, both of Kawasaki, all of Japan, and Masaki Takahashi, No. 1-13-18, Higashi-Toyonaka, Toyonaka-shi, Osaka-fu, Japan, assignors to Fuji Electric Co. Ltd., Kanagawa and Masaki Takahashi, Toyonaka, both of, Japan

Filed Feb. 25, 1980, Ser. No. 123,964
Int. Cl.³ H02P 9/14; G01R 33/02
U.S. Cl. 322—17 **8 Claims**



1. A method for predicting desynchronization of a synchronous machine, comprising the steps of detecting at least one of

(a) the functional values of the direct axis flux and (b) the quadrature axis flux in the gap of the synchronous machine, and determining the variance of said values from predetermined levels.

4,350,948

VOLTAGE-STEP-DOWN CIRCUIT WITH CHOPPING TRANSISTOR FOR D-C POWER SUPPLY

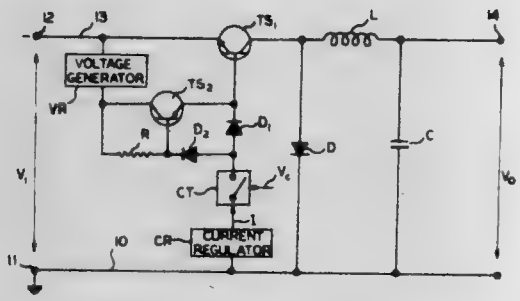
Umberto Meroni, Novate Milanese, Italy, assignor to Societa Italiana Telecomunicazioni Stemens S.p.A., Milan, Italy

Filed Mar. 19, 1980, Ser. No. 131,705

Claims priority, application Italy, Mar. 20, 1979, 21130 A/79

Int. Cl.³ G05F *1/56*

U.S. Cl. 323—282 **4 Claims**



1. A step-down circuit for deriving a reduced output voltage from the voltage of a d-c supply connected across a pair of conductors, comprising:

a chopping transistor connected in series with one of said conductors between an input end and an output end thereof, said transistor being provided with a control electrode;

voltage-smoothing filter means including a shunt capacitance connected across said conductors downstream of said transistor;

a control loop including in series an electronic switch, a first resistor and an ancillary source of d-c voltage substantially lower than the supply voltage, said first resistor being part of a voltage divider also including a second resistor, said first resistor being inserted between said control electrode and the other of said conductors while being galvanically separated from said control electrode by said second resistor and by a coupling capacitor interposed between said voltage divider and said control electrode, said second resistor lying outside said loop; and

pulse-generating means connected to said electronic switch for alternately opening and closing same in a predetermined rhythm whereby said series resistor is traversed by a pulsating current rendering said resistor intermittently conductive.

4,350,949

BIDIRECTIONAL SWITCHING CIRCUIT WITH CONTROL TERMINAL

Shinichi Fujita, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Nov. 25, 1980, Ser. No. 210,255

Claims priority, application Japan, Dec. 4, 1979, 54-157046

Int. Cl.³ G05F *1/20*

U.S. Cl. 323—284 **13 Claims**

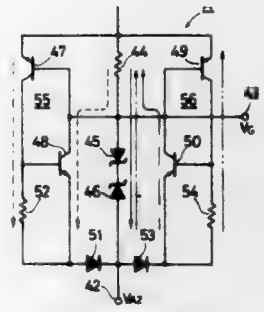
1. A bidirectional switching circuit having a first terminal, a second terminal and a controlling terminal, comprising:

a first resistor means connected between said first terminal and said controlling terminal;

a threshold circuit connected between said controlling terminal and said second terminal for allowing an electric current to flow between these two terminals with a bidirectional characteristic when an absolute value of a voltage applied across said controlling terminal and said second terminal exceeds a predetermined level;

a first circuit means connected between said first terminal and said second terminal for establishing conduction between said first terminal toward said second terminal when a voltage exceeding a first predetermined voltage is applied between the first terminal and controlling terminal, and for self-holding the condition of said conduction;

a second circuit means connected between said first terminal and said second terminal for establishing conduction between said second terminal and said first terminal in a direction from said second terminal toward said first terminal when a voltage exceeding a second predetermined



voltage is applied between the first terminal and the controlling terminal, and for self-holding the condition of said conduction;

said first circuit means having a first control terminal connected to said controlling terminal;

said second circuit means having a second control terminal connected to said controlling terminal; and

said first and second predetermined voltages being equal in magnitude and opposite in polarity to each other.

4,350,950

FREQUENCY MEASURING METHOD AND APPARATUS

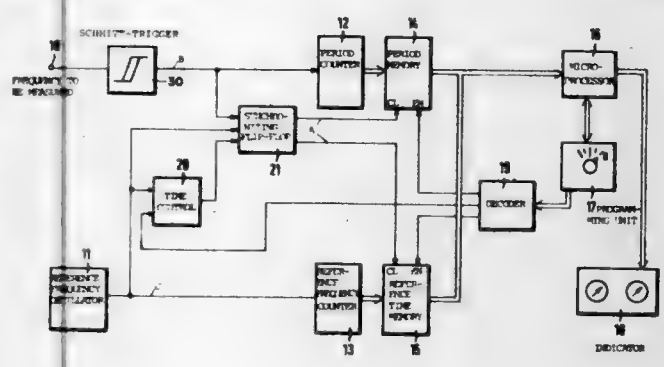
Dieter Waldmann, Karben, and Bernd Ohnesorge, Maintal, both of Fed. Rep. of Germany, assignors to Nord-Micro Elektronik Feinmechanik AG, Frankfurt, Fed. Rep. of Germany

Filed May 27, 1980, Ser. No. 153,569

Claims priority, application Fed. Rep. of Germany, May 30, 1979, 2921899

Int. Cl.³ G01R *23/02*

U.S. Cl. 324—78 D **8 Claims**



1. A circuit arrangement for measuring a frequency, comprising continuously running period counter means (12) having a counting input for receiving a signal having said measuring frequency, and a period counter output for providing counted periods of said measuring frequency, period memory means (14) operatively connected to said period counter output for storing a number of periods counted by said period counter means (12), reference frequency generating means (11), continuously running time counter means (13) operatively connected to said reference frequency generating means (11) for providing time duration measurements, time memory means (15) operatively connected to said time counter means (13) for storing said time duration measurements of said time counter means (13), synchronizing means (21) connected to said period and time memory means for controlling the transfer of counts from said period and time counter means (12, 13) into the respective period and time memory means (14, 15), and control

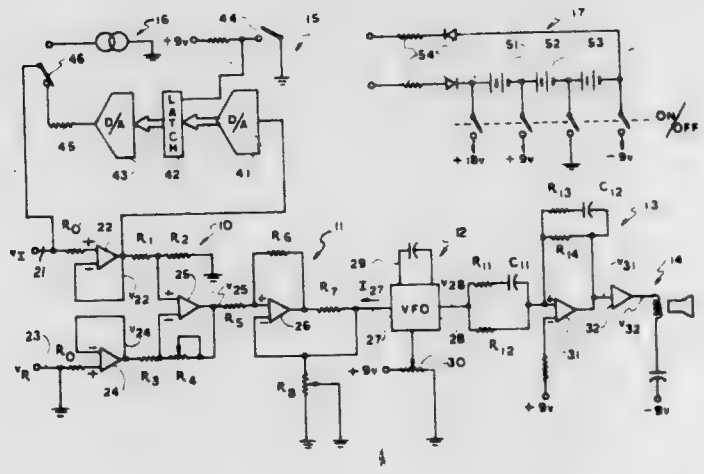
means (17, 19, 20) operatively connected to said synchronizing means (21) and to said period and time memory means for determining the operation of said period and time memory means, and computer means (16) operatively connected to said period and time memory means (14, 15) and to said control means for calculating the quotient of the number of periods counted by said period counter means and the time duration measurements from said time counter means, whereby the difference between two successively stored counts in the period memory means (14) provides the numerator and whereby the difference between two successively stored counts in the time memory means (15) provides the denominator of said quotient.

4,350,951

AUDIO ANALOG VOLTMETER

William J. Jasper, Escondido, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Dec. 26, 1979, Ser. No. 106,473
Int. Cl.³ G01R *19/00, 19/165*
U.S. Cl. 324—133 **8 Claims**



1. An electrical instrument for measuring any input voltage level through the sense of hearing, said instrument being comprised of:

means for amplifying said input voltage with a manually selectable gain to form a first signal that is an analog of said input voltage and determines the range over which said input voltage is measured;

means for generating a second signal having a component proportional to said first signal and having another component of a manually selectable constant magnitude that determines the audible tone corresponding to any single voltage in said range, said generating means including means for manually selecting said constant magnitude;

means for converting said second signal into an audible tone with a frequency that is the analog of the magnitude of said second signal.

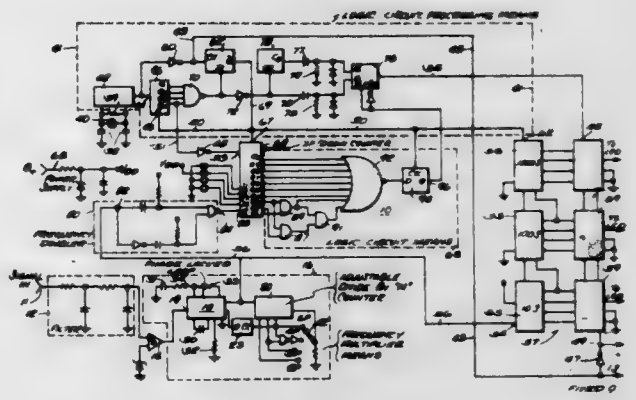
4,350,952

DIGITAL READ-OUT METER CIRCUIT AND TACHOMETER WITH VARIABLE METER UPDATE RATE USING AN UP/DOWN COUNTER MEANS

James L. Holt, Bristol, Wis., and Robert P. Otka, Gurnee, Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Nov. 5, 1979, Ser. No. 90,984
Int. Cl.³ G01P *3/48, 3/54;* G01R *23/02;* G06G *7/00*
U.S. Cl. 324—166 **24 Claims**

1. A digital read-out meter circuit having a variable meter data update rate, said circuit comprising a digital read-out meter having counters with an input for receiving signal pulses having a frequency representative of a parameter value to be displayed by said meter, and having a counter reset terminal and a data update strobe terminal, up/down counter means having an input for receiving a series of pulses having a frequency representative of the parameter value to be displayed, and operative for providing an output representative of the rate of change of the parameter value to be displayed, and logic circuit means subject to said up/down counter means output



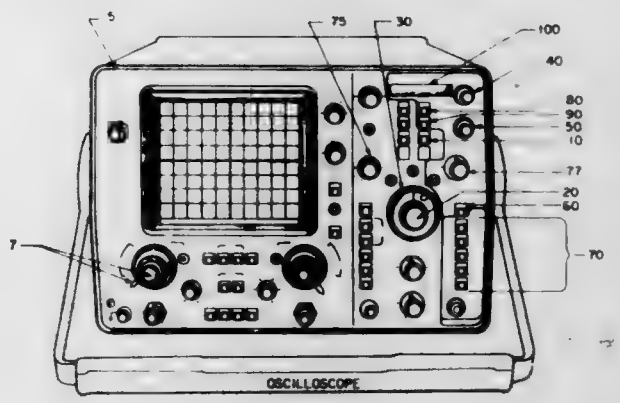
for controlling selective application of different frequency data update pulses to said data update strobe terminal to provide said meter with a variable data update rate.

4,350,953

TIME INTERVAL MEASUREMENT APPARATUS

Allan I. Best; Thomas K. Bohley, and Ronald C. Westlund, all of Colorado Springs, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 20, 1978, Ser. No. 888,094
Int. Cl.³ G04F *8/00*
U.S. Cl. 324—183 **9 Claims**



1. Electronic circuit apparatus comprising:

trigger means for providing first, second and third trigger signals;

main generator means coupled to said trigger means for producing a time varying sweep signal in response to the first trigger signal;

deflection means for providing a deflection signal;

display means coupled to said deflection means and to said main generator means for generating a display in response to the sweep signal and the deflection signal;

clock means for generating periodic clock signals;

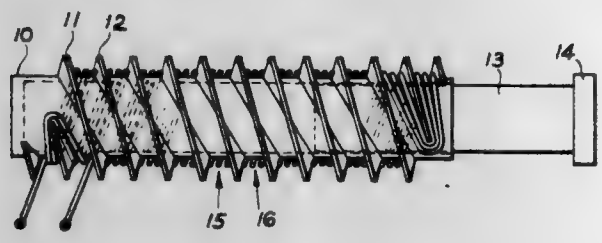
processing means coupled to said clock means and to said trigger means for determining a difference count representing the difference between the number of periodic clock signals occurring during a time interval between occurrences of the first and second trigger signals and the number of periodic clock signals occurring during a time interval between occurrences of the first and third trigger signals; and

digital display means coupled to said processing means for providing a digital display responsive to the difference count.

4,350,954
INDUCTIVE TYPE DISPLACEMENT TRANSDUCERS

Alec H. Seilly, North Wembley, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Sep. 12, 1979, Ser. No. 75,194
Claims priority, application United Kingdom, Sep. 28, 1978, 38586/78
Int. Cl.³ H01F *21/06*; G01B *7/14*; G01R *33/00*
U.S. Cl. 324—208 4 Claims

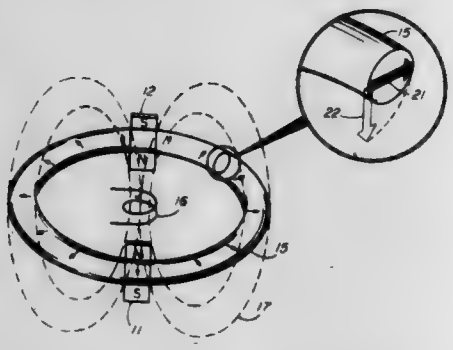


1. A displacement transducer comprising a former of non-magnetic and non-conductive material, winding means carried on said former, a core member slidable within said former, said core member in use being connected to or forming part of a member the displacement of which is to be measured, said core member being formed from electrically conductive non-magnetisable material and said winding means comprising first and second interengaged helical windings each having at least three conductors with the conductors in side by side relationship and interconnected such that the current flow in one winding is opposite to that in the other winding, said windings in use forming the frequency control component of an oscillator and having alternating current flowing therein, said alternating current including eddy currents in the portion of the core member which lies within the former, the inductance of the winding means and frequency of the oscillator being dependent due to the eddy currents, on the position of the core member within the former.

4,350,955
MAGNETIC RESONANCE APPARATUS

Jasper A. Jackson, and Richard K. Cooper, both of Los Alamos, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 10, 1980, Ser. No. 195,968
Int. Cl.³ G01N *27/00*
U.S. Cl. 324—303 13 Claims

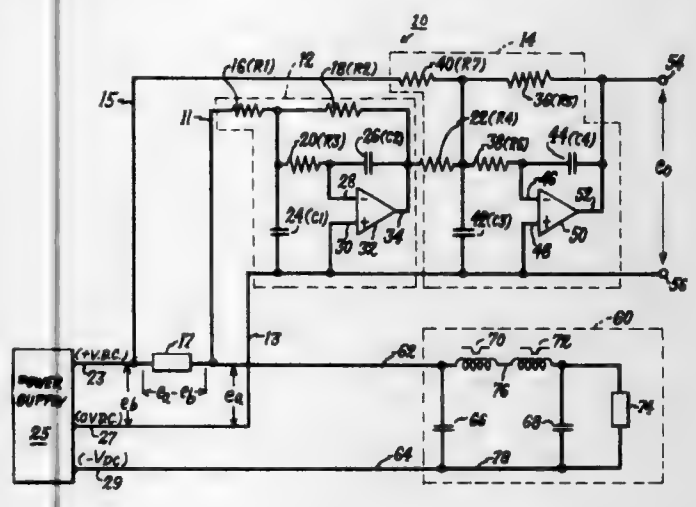


1. Nuclear magnetic resonance equipment comprising:
means for producing a toroidal region of homgeneous radial magnetic field;
transmitting means for transmitting a radio frequency pulse into said toroidal region of homogeneous radial magnetic field to excite nuclei therein, and
receiving means for receiving nuclear magnetic resonance signals from said nuclei in said toroidal region of homogeneous radial magnetic field.

4,350,956
LEVEL SHIFTING AND FILTERING CIRCUIT

Robert P. DePuy, Cherry Hill, N.J., assignor to General Electric Company, Philadelphia, Pa.

Filed Oct. 20, 1980, Ser. No. 198,891
Int. Cl.³ H03K *13/32*; H03F *3/45*
U.S. Cl. 328—167 5 Claims



1. A level shifting and filtering circuit for developing a D.C. output signal having a level which is representative of the difference between the D.C. voltage levels of a first and a second voltage signal each containing D.C. and A.C. components, said first voltage signal being present between a first and second terminal and said second voltage signal being present between a third and fourth terminal, said second and fourth terminals being coupled to each other, said circuit filtering the A.C. voltage component of said first and said second voltage signals in the development of said D.C. output signal, said circuit filtering the A.C. voltage component of said first voltage signal being performed to an extent which is substantially greater than the filtering being performed on said second voltage signal, said circuit comprising:
a first network having a first plurality of resistive and capacitive elements and further having a first differential means having a first and a second input for developing an output signal representative of the voltage difference applied between said first and said second inputs, said first input being coupled to said first terminal by a first portion of said first plurality of resistive and capacitive elements, said second input being coupled to said second terminal, said output signal of said first differential means being fedback to said first input by a second portion of said first plurality of resistive and capacitive elements, said first plurality of resistive and capacitive elements having preselected values that determine the closed-loop response of said first network and reduce the A.C. voltage component existing in said output signal of said first differential means by a predetermined amount,
a second network having a second plurality of resistive and capacitive elements and further having a second differential means having a first and a second input for developing an output signal representative of the voltage difference applied between said first and said second inputs, said first input being coupled to said third terminal by a first portion of said second plurality of resistive and capacitive elements, said first input also being coupled to said output signal of said first differential means by a second portion of said second plurality of resistive and capacitive elements, said second input being coupled to said fourth terminal, said output signal of said second differential means being fed-back to said first input by a third portion of said second plurality of resistive and capacitive elements, said second plurality of resistive and capacitive elements having preselected values that determine the closed-loop response of said second network and reduce the A.C. voltage component existing in said output signal of said second differential means by a

predetermined amount, said output D.C. signal of said second differential means being representative of the voltage difference between the D.C. voltage levels of said first and said second voltage signals.

4,350,957

PULSE COUNTER-TYPE FM DETECTOR

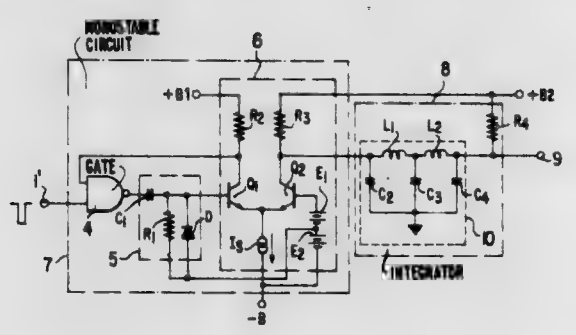
Yukihiko Miyamoto, Tokyo, Japan, assignor to Trio Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 16, 1980, Ser. No. 140,821

Claims priority, application Japan, Apr. 20, 1979, 54-53969[U]

Int. Cl.³ H03D *3/04*; H03K *3/284*; H04B *1/16*

U.S. Cl. 329—107 **6 Claims**



1. In a pulse counter-type FM detector circuit for obtaining audio signals at an output terminal by detecting FM signals in the following order through a limiter circuit, a trigger pulse generating circuit, a monostable circuit and an integrator connected to the output terminal where the monostable circuit comprises a gate circuit having at least two inputs where trigger pulses from said trigger pulse generating circuit are applied to a first one of the two inputs and a feedback signal to the other input, a differentiating circuit responsive to the output from the gate circuit, a differential inverter having a power supply and where said integrator includes an LC type low pass filter connected to the output side of said differential inverter circuit, the improvement comprising

a terminal resistor connected between the power supply and the output terminal so that a part of the current flowing in the said differential inverter circuit is diverted through said terminal resistor.

4,350,958

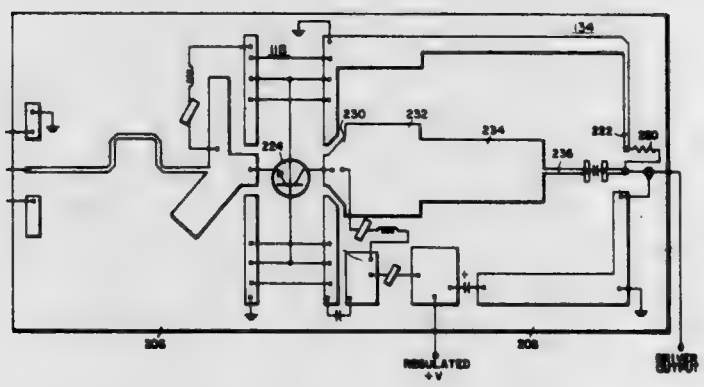
IMPEDANCE MATCHING CIRCUITRY FOR RADIO FREQUENCY SIGNAL POWER AMPLIFIERS

Antonio Pagnamenta, Schaumburg, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 17, 1980, Ser. No. 112,765

Int. Cl.³ H03F *3/04*

U.S. Cl. 330—286 **6 Claims**



1. Impedance matching circuitry for radio frequency (RF) signal amplifying means having an input and an output, comprising:

substrate means having first and second surfaces for receiving plated circuitry thereon, said second surface of the substrate means being plated with a conductive substance for providing a ground plane; and

a plurality of microstrip transmission line means being disposed on the first surface of the substrate means and coupled in series with one another, said series coupled plurality of microstrip transmission line means further being coupled to the output of said amplifying means for matching the output of said amplifying means to a predetermined output impedance, each of said microstrip transmission line means having different predetermined characteristic impedances whose magnitudes are less than the magnitude of the predetermined output impedance, and each microstrip transmission line means being successively coupled in series to the output of said amplifying means, having a length that is less than one-fourth wavelength of the RF signal and having a greater predetermined characteristic impedance and a longer length than the previously coupled microstrip transmission line means.

4,350,959

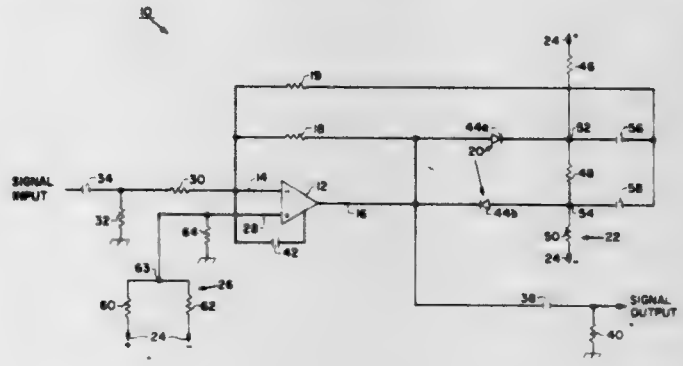
FEEDBACK SIGNAL AMPLIFIER

Erik Rosenbaum, Woodbine, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 14, 1980, Ser. No. 140,034

Int. Cl.³ H03F *1/34*

U.S. Cl. 330—110 **7 Claims**



1. A circuit comprising:

a power supply;

an operational amplifier having first and second inputs and an output,

a signal coupling circuit connected to said first input of said operational amplifier;

a first feedback resistor connected to said first input and to the output of said operational amplifier,

a second feedback resistor connected to said first input of said operational amplifier and connected to said output via a pair of capacitors and a pair of diode switches, the diodes being in circuit in opposite polarity and each diode being connected in series with one of said capacitors;

a first bias network connecting said power supply with said pair of diodes to determine the operation potential of each diode; and

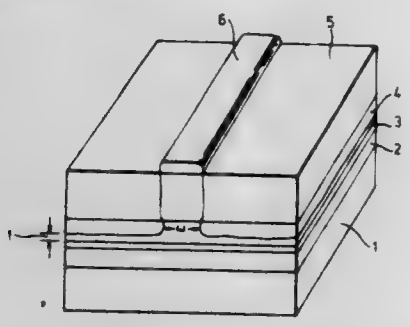
a second bias network connected between said power supply and said second input, whereby the gain of said operational amplifier is varied between two values as determined by said first and second feedback resistors and is unaffected by variations in the output of said power supply.

4,350,960

SELF SATURATING SEMICONDUCTOR LASERS

Michael R. Matthews; David H. Newman; David R. Smith, and Alan G. Steventon, all of Woodbridge, England, assignors to The Post Office, London, England

Continuation of Ser. No. 918,563, Jun. 23, 1978, abandoned.
This application Jul. 14, 1980, Ser. No. 168,107
Claims priority, application United Kingdom, Jul. 1, 1977, 27666/77
Int. Cl.[3] H01S 3/19
U.S. Cl. 372—46 11 Claims



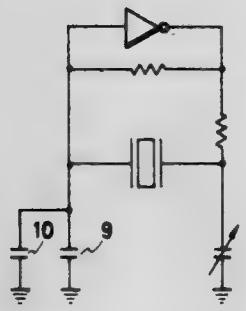
1. In an optical communications system including at least a laser and an optical fiber coupled to said laser, the improvement including: said laser having means for providing a substantially constant incremental efficiency in a predetermined operating range above its lasing threshold and a decreasing incremental efficiency when operated above said predetermined range so that the lasing flux has self saturating properties.

4,350,961

ELECTRONIC TIMEPIECE

Ryo Toyokuni, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Japan

Filed Oct. 30, 1979, Ser. No. 89,462
Claims priority, application Japan, Nov. 10, 1978, 53-138564
Int. Cl.[3] H03F 1/30
U.S. Cl. 331—158 14 Claims



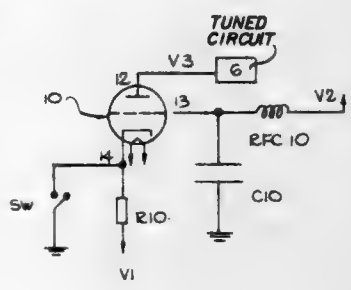
1. An oscillator circuit comprising: an X-cut quartz crystal resonator having a negative secondary temperature coefficient; an amplifer for driving said crystal resonator to oscillate; and a plurality of temperature compensating capacitors connected for compensating for temperature variations, said plurality of temperature compensating capacitors each comprising a ferroelectric material and each of said temperature compensating capacitors having different respective Curie Point temperatures, and the respective peak capacitance values of each of said temperature compensating capacitors and the Curie Point temperatures being selected to achieve a frequency-temperature characeristic curve of the oscillator circuit having a minimized rate of change of frequency per degree of temperature change.

4,350,962

R.F. SWITCHED AMPLIFIER AND A.M. MODULATOR

Ian L. Hill, Turramurra, Australia, assignor to T.B.C. Pty. Limited, Thornleigh, Australia

Filed Sep. 4, 1980, Ser. No. 183,875
Claims priority, application Australia, Sep. 25, 1979, PE0649
Int. Cl.[3] H03C 1/16; H03F 3/24, 5/00
U.S. Cl. 332—60 10 Claims



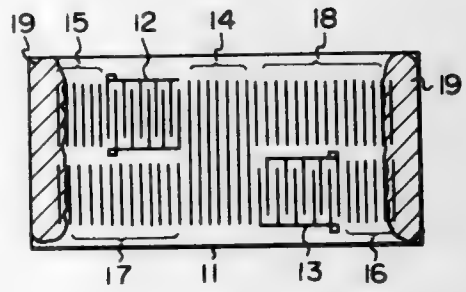
1. An amplifier circuit comprising an electron tube having an anode, a cathode and a grid; the cathode being supplied with a first D.C. potential, the grid being supplied with a second D.C. potential and the anode being supplied with a third D.C. potential; said third potential being greater than said first potential, said first potential being greater than said second potential and said grid being A.C. coupled to ground; wherein said cathode is connected via switch means to a further potential less than said second potential, said switch means being operable at a rate determined by the desired frequency of the output of said anode.

4,350,963

SURFACE ACOUSTIC WAVE DEVICE

Hisao Iwamoto, and Noboru Wakatsuki, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 24, 1980, Ser. No. 219,948
Claims priority, application Japan, Dec. 27, 1979, 54-169190
Int. Cl.[3] H03H 9/145, 9/25, 9/42, 9/64
U.S. Cl. 333—151 17 Claims



1. A surface acoustic wave device comprising:
a piezoelectric substrate;
input and output transducers formed on said substrate and arranged diagonally opposite each other, said input and output transducers individually including a pair of comb-like electrodes;
a multistrip coupler formed on said substrate and interposed between said input and output transducers, said coupler including a plurality of filamentary conductors;
dummy transducers formed on said substrate and arranged to extend from the outer ends of said input and output transducers toward the ends of said substrate, respectively, said dummy transducers individually including a plurality of electrodes spaced at substantially the same pitch as the electrode pitch in the respective input and output transducers; and
dummy transducers formed on said substrate and arranged to extend from the opposite ends of said multistrip coupler toward the ends of said substrate, respectively, said dummy transducers individually including a plurality of electrodes

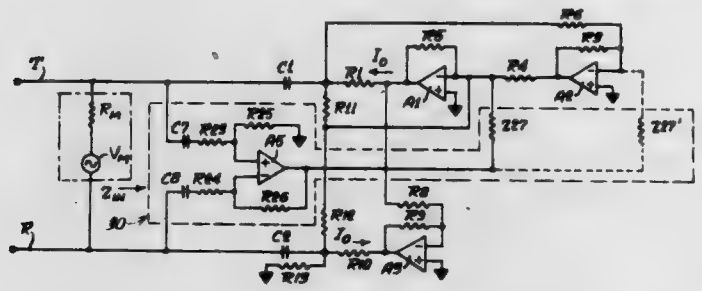
spaced at substantially the same pitch as the conductor pitch in said multistrip coupler.

4,350,964

IMPEDANCE GENERATOR CIRCUIT

Charles W. Chambers, Jr., Downers Grove, Ill., assignor to Tellabs, Inc., Lisle, Ill.

Division of Ser. No. 45,274, Jun. 4, 1979, Pat. No. 4,283,604.
This application Jun. 30, 1980, Ser. No. 164,308
Int. Cl.³ H03H *11/46*
U.S. Cl. 333—213 16 Claims



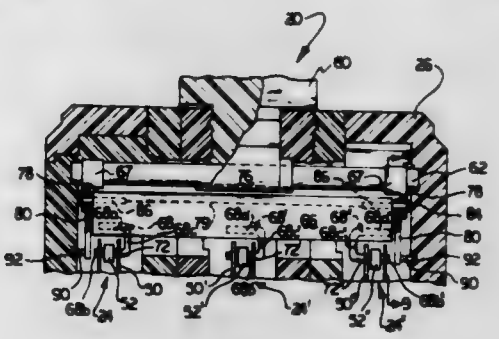
1. An impedance generator for interfacing with a two-wire transmission system, for example with the tip and ring leads of a telephone pair, for generating a controlled current flow through the system which generates a selected impedance across the wires and for providing common mode rejection to longitudinal voltages on the system, said impedance generator having first and second outputs each for connection with a separate one of the wires and comprising first and second voltage amplifier means each having an input, an output and an output impedance connected between the amplifier means output and a separate one of said impedance generator outputs, said first voltage amplifier means output being connected through its output impedance with said impedance generator first output; means for connecting said first amplifier means output with said second amplifier means input so that voltage signals at said first amplifier means input control the voltages generated at each of said amplifier means outputs; feedback means coupled between said impedance generator first output and said first amplifier means input; and circuit means coupled between said impedance generator outputs and said first amplifier means input, said feedback means and said circuit means coupling signals at said impedance generator outputs from the wires of the transmission system to said first amplifier means input, said feedback means and said circuit means in response to equal longitudinal voltages on the wires coupling to said first voltage amplifier means input signals which cancel to zero at said first voltage amplifier means input so that said first and second voltage amplifier means do not generate voltages at their outputs in response to equal longitudinal voltages on the wires, whereby said impedance generator has common mode rejection to equal longitudinal voltages on the wires, wherein said first and second amplifier means each generate zero volts or reference potential at their outputs in response to equal longitudinal voltages on the wires and substantially equal value and opposite direction current flows through their output impedances, and therefore at said impedance generator outputs, in response to and having a value in accordance with noncancelling signals at said first amplifier means input, and wherein the two-wire transmission system is of the type having a metallic voltage across the wires, said impedance generator including means connected with the outputs from said impedance generator for sensing the metallic voltage thereacross and therefore across the wires and for generating at an output therefrom a control voltage having a value in accordance therewith; and means for coupling said sensing means output with said first voltage amplifier means input for controlling operation of said first and second amplifier means to generate at said impedance generator outputs a current flow equal to that which would flow through the selected impedance if the metallic voltage were impressed across the impedance, whereby said impedance generator exhibits the selected impedance at its outputs and across the wires.

4,350,965

MULTI-POLE CIRCUIT BREAKERS

Alexander R. Norden, New York, N.Y., assignor to Federal Pacific Electric Company, Newark, N.J.

Filed Apr. 17, 1981, Ser. No. 255,154
Int. Cl.³ H01H *75/00, 77/00, 83/00*
U.S. Cl. 337—47 13 Claims



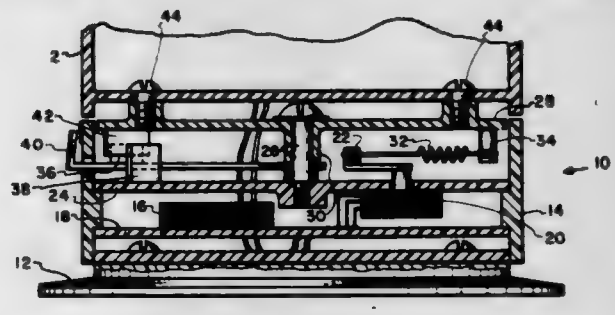
1. A multi-pole circuit breaker including in combination a pair of separable contacts in each of a plurality of adjacent poles, a common manually operable handle for all said poles, each said pair of contacts having a latching contact linkage connected to said common operable handle to engage and disengage each said pair of contacts manually, each said latching linkage including a current-responsive release means for releasing the said latching linkage upon occurrence of a predetermined current level therethrough, said latching linkage including additional release means for releasing each said pair of contacts when any one of said current-responsive release means detects the predetermined current level, each said latching linkage providing latching of said pair of contacts in engagement when said linkage is moved overcenter, and a rotatable shaft spaced from said latching linkages, said manually operable handle fixedly secured to said shaft for rotating said shaft, a pair of oppositely disposed depending arms fixedly secured to said shaft, link means journalled within aligned apertures in said pair of arms, and bar means for interconnecting the latching linkages, said bar means supported by said link means, whereby rotational motion of said bar means relative to said link means is prevented and overcenter movement of said linkage is minimized.

4,350,966

THERMOSTAT ASSEMBLY

Marvin D. Nelson, St. Louis Park, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Apr. 28, 1981, Ser. No. 258,333
Int. Cl.³ H01H *37/02;* F23N *5/20*
U.S. Cl. 337—302 10 Claims



1. An adapter for converting a conventional thermostat to a time-controlled setback thermostat, said thermostat including a tilt responsive switch which is tilted in response to temperature changes, said adapter comprising:

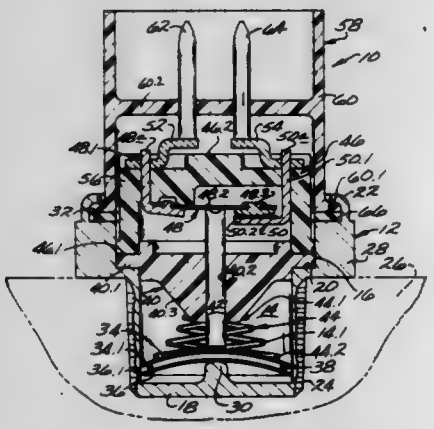
a housing body member,
means for mounting said body member on a fixed supporting structure;
a clock-controller means,
support means for supporting said clock-controller on said body member;
a driving means mounted on said support means and electrically connected to an output from said clock-controller to be actuated by said clock-controller means between a first and a second position;
a movable mounting plate supported for limited rotational motion between a first and a second direction on said support means;
coupling means connected between said driving means and said movable mounting plate for moving said mounting plate whenever said driving means is actuated; and
means for mounting said conventional thermostat on said movable mounting plate.

4,350,967

TWO-TEMPERATURE THERMALLY RESPONSIVE FAST IDLE CONTROL SWITCH

John Doherty, Jr., Assonet, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 90,210, Nov. 1, 1979. This application Dec. 15, 1980, Ser. No. 216,708
Int. Cl.³ H01H *37/54*
U.S. Cl. 337—343 **7 Claims**



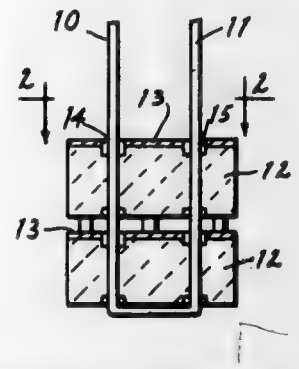
1. A thermally responsive electrical switch comprising
a thermally conducting housing having a well with an open end and a closed end and having flange means around the open well end,
thermally responsive means disposed in the well in heat-transfer relation to the housing to move in the well in response to changes in housing temperature, and
switch means having first and complementary contact means thereon positioned in the open well so that the first contact means are engaged at one side of the switch means by the thermally responsive means to be moved between an open circuit position spaced from the complementary contact means and a closed circuit position engaging the complementary contact means as the thermally responsive means move in response to said changes in housing temperature
characterized in that resilient conductors are electrically connected to the respective contact means at an opposite side of the switch means to bear resiliently against the switch means,
the housing has locating surfaces in the well facing the open well end,
the switch means are disposed in the well resting against said locating surfaces to be positioned in a selected location in the well to assure reliable movement of the first contact means in response to movement of the thermally responsive means when selected changes in housing temperature occur, and
a terminal member having an insulating body with flange means and having a pair of rigid conductive terminals is mounted on the body, the housing flange means being folded over the terminal member flange means securing the member to the housing with the rigid terminals bearing against the resilient conductors for electrically connecting the terminals to the respective contact means and for resiliently holding the switch means in said selected location in the housing well.

4,350,968

LIQUID LEVEL DETECTOR

Richard D. Tokarz, West Richland, Wash., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 29, 1981, Ser. No. 229,422
Int. Cl.³ H01C *7/00*
U.S. Cl. 338—13 **5 Claims**



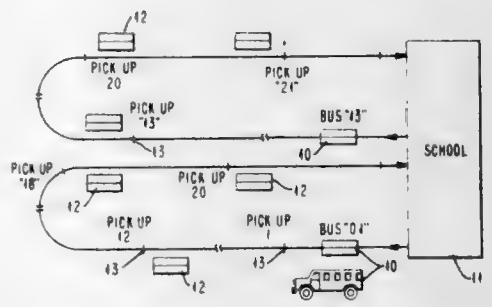
1. A liquid level detector, comprising:
a first upright electrical conductor;
a second upright electrical conductor;
electrical insulating means fixedly spacing the first and second conductors relative to one another across a first resistance path of relatively high electrical resistance;
and electrically conductive means between the first and second conductors at a discrete location along their respective lengths for creating an interruptible second resistance path between them which includes a liquid accessible gap between said electrically conductive means and at least one of said conductors; the gap width being such that the electrical resistance across the second resistance path when the gap is filled with liquid is detectably less than when the gap is emptied.

4,350,969

VEHICLE IDENTIFICATION AND POSITION SIGNALLING SYSTEM IN A PUBLIC TRANSPORTATION SYSTEM

William H. Greer, Daheim Rd., Millbrook, N.Y. 12545

Filed Mar. 31, 1980, Ser. No. 135,470
Int. Cl.³ G08G *1/12*; G08C *21/00*
U.S. Cl. 340—23 **7 Claims**



1. A system for notifying prospective passengers of a transportation system of the approach of a particular vehicle, at a predetermined pickup point, comprising:
transmitter means mounted in each of the vehicles for transmitting selectably different detectable signals, including operator control switch means, selectively actuated by an operator to cause transmission of said detectable signals, one of said detectable signals including a particular vehi-

cle identification code, and another of said detectable signals including a changing sequence of vehicle position codes;

receiver means, remote from any pickup point and in the possession of a prospective passenger, having a plurality of signal detectors including switch means, manipulated by a passenger, to select a signal detector responsive to a selected one of said detectable signals providing a particular vehicle identification code and a particular vehicle position code; and

indicator means associated with said receiver means, and connected to said signal detectors, for providing a position indication in response to correspondence between said selected signal detector and the particular ones of said detectable signals from said transmitter means.

4,350,970
METHOD FOR TRAFFIC DETERMINATION IN A ROUTING AND INFORMATION SYSTEM FOR INDIVIDUAL MOTOR VEHICLE TRAFFIC

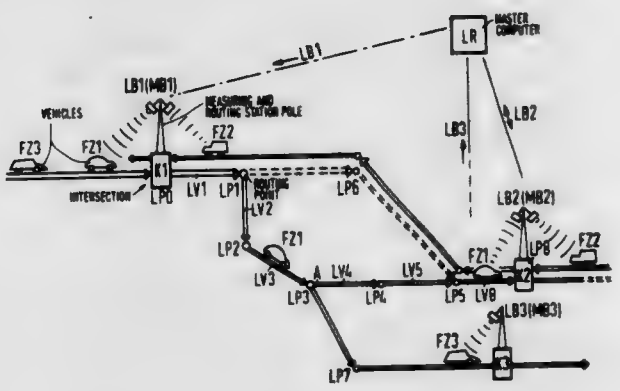
Romuald von Tomkewitsch, Ebenhausen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Oct. 29, 1980, Ser. No. 201,697

Claims priority, application Fed. Rep. of Germany, Nov. 13, 1979, 2945852

Int. Cl.³ G08G *1/09*

U.S. Cl. 340—23 **9 Claims**



1. In a method for traffic management in a routing and information system for motor vehicle traffic having a network of stationary routing stations each located in the vicinity of a roadway, in which the routing stations transmit route information and local information concerning their positions to passing vehicles, and in which a trip destination is input into a device onboard a vehicle and transmitted therefrom to a routing station for evaluation so that specific route recommendations may be selected, the improvement therein comprising:

transmitting, from a first routing station to a passing vehicle, a message including suggested route data constituting a vector chain, the address of the first routing station and a start command;

receiving the message from the routing station in the device onboard the vehicle, storing the route data in the onboard device, and activating a travel time measuring device in the vehicle with the received start command; and

transmitting, after traveling to a second routing station along the path suggested by the route data, the address of the first routing station, the route data, and the elapsed travel time to the second routing station.

4,350,971
CIRCUIT FOR USE IN THE DETECTION OF THE CONDITION OF AN ISOLATED SWITCH CONTACT

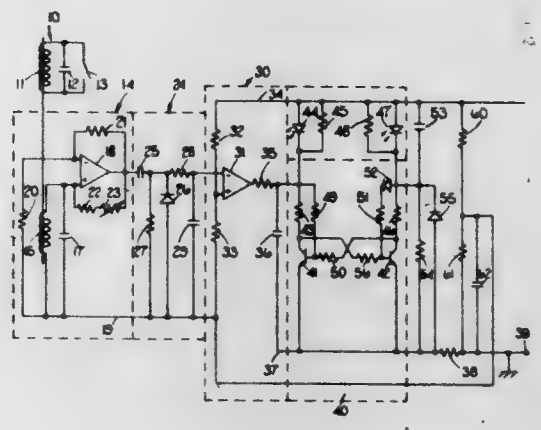
John S. Forrester; David F. Swindell, both of West Midlands, and Michael A. Wildsmith, Birmingham, all of England, assignors to Lucas Industries Limited, Birmingham, England

Filed Aug. 26, 1980, Ser. No. 181,353

Claims priority, application United Kingdom, Sep. 13, 1979, 7931818

Int. Cl.³ B60C *23/02*; G08B *21/00*

U.S. Cl. 340—52 R **18 Claims**



1. A circuit for detecting the condition of an isolated switch contact comprising:

a first tuned circuit having a resonant frequency and including a first inductor, said switch contact being connected in parallel with said first tuned circuit; and

an oscillator circuit including means for continuously providing an oscillatory output when said switch contact is closed and inhibiting said oscillatory output when said switch contact is open, said means comprising an amplifier having a resistive negative feedback path and a positive feedback path shunted to "earth" by a further tuned circuit tuned to said resonant frequency and including a further inductor and a capacitor connected in parallel, and means for absorbing oscillations of the oscillator circuit in said first tuned circuit when said switch contact is open by at least intermittently magnetically coupling said first and further inductors.

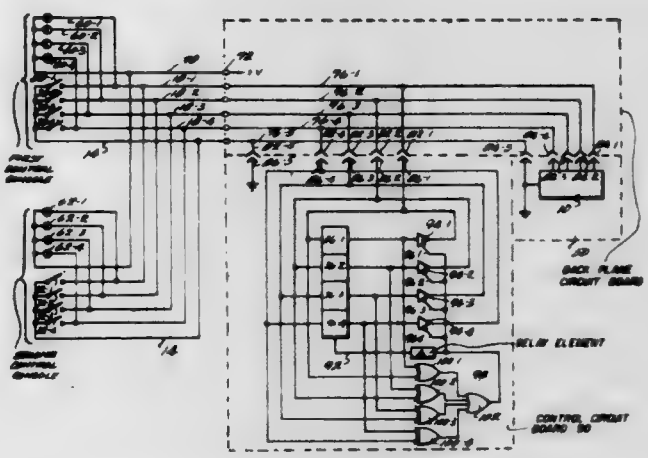
4,350,972
MULTIPLE CONSOLE CONTROL SYSTEM

Fred G. Perry, Lynchburg, Va., assignor to General Electric Company, Lynchburg, Va.

Filed May 23, 1980, Ser. No. 152,824

Int. Cl.³ H04Q *9/00*

U.S. Cl. 340—825 **27 Claims**



1. A control system for selectively controlling a device, said device comprising a control common line and at least one switch line, said control system comprising:

a momentary action switch coupling said control common line to said switch line;

a memory element including an input coupled to said switch line and including an output, said memory element comprising a control input selectively operable to load information from said switch line to store information previously loaded;

means for selectively coupling said output of said memory element to said input; and

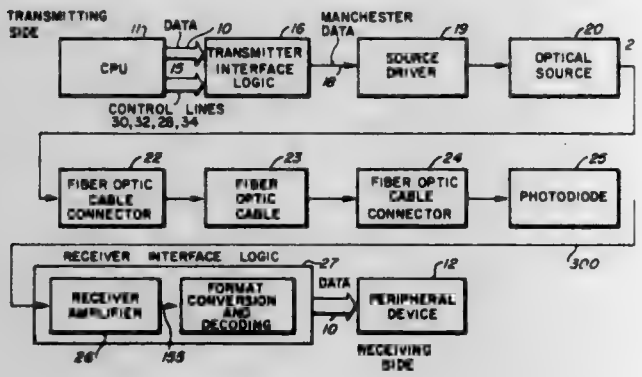
control means for causing said memory element to load information from said switch line while causing said means for selectively coupling to decouple said output of said memory element from the input thereof whenever the information at said input and output of said memory element are different, and for causing said memory element to store while causing said means for selectively coupling to couple said output of said memory element to said input thereof whenever the information at said input and output of said memory element are the same.

4,350,973

RECEIVER APPARATUS FOR CONVERTING OPTICALLY ENCODED BINARY DATA TO ELECTRICAL SIGNALS

Edward M. Petryk, Jr., Phoenix, Ariz., assignor to Honeywell Information Systems Inc., Phoenix, Ariz.

Filed Jul. 23, 1979, Ser. No. 59,879
Int. Cl.³ H03K *13/00*
U.S. Cl. 340—347 DD 2 Claims



1. A receiver apparatus for receiving optically transmitted binary data encoded in Manchester Code in serial format and preceded by a header signal and for decoding said data and converting it to parallel format digital data signals comprising:

(a) a photodiode means for converting light signals carrying said binary data to electrical signals encoded in Manchester Code as the Received Manchester Data signal;

(b) an amplifier means for amplifying said Received Manchester Data signal and for converting it to a digital Amplified Manchester Data signal;

(c) a clock generator means for generating a Recovered Clock signal from said Amplified Manchester Data signal and for generating a Manchester Data Delayed signal and an SR Data signal comprising:

(1) a first means for exclusive-ORing said Amplified Manchester Data signal with itself delayed a predetermined time such that a pulse is generated at the time of each transition in said Manchester encoded Amplified Manchester Data signal and having a duration equal to the delay imposed upon said Amplified Manchester Data signal and having a delayed output for outputting a delayed version of said Amplified Manchester Data signal;

(2) a second means having two stable binary states for receiving said pulses from said first means and having a Q output toggling from one said state to the other at each occurrence of said pulses and having an inverted output for generating a signal of the opposite binary state from that of the Q output, and having a reset input coupled through a first means for delay to said inverted output to reset said second means a predetermined time after said Q output assumes the logical one state;

(3) a second means for delay coupled to said delayed version of said Amplified Manchester Data signal for outputting a Manchester Data Delayed signal which is said delayed version of said Amplified Manchester Data signal delayed by a first predetermined delay, and for outputting an SR Data signal which is said Manchester Data Delayed signal delayed by a second predetermined delay;

(d) a header detector means for monitoring said Manchester Data Delayed signal to sense when a header signal appears therein signaling the commencement of data transmission, and for gating said Recovered Clock signal through said header detector means upon receipt of said header signal as a Data Clock output signal, and said header detector means for counting the number of Manchester encoded data bits received following said header signal and for generating a Data Latch signal when a predetermined number of said data bits has been received;

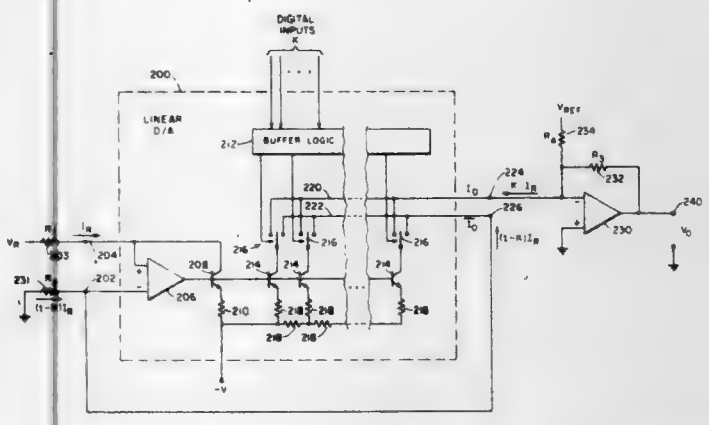
(e) a shift register means responsive to said SR Data and said Data Clock signals for receiving the Manchester encoded data bits in said SR Data signal serially at the rate of one data bit for every clock period of said Data Clock signal, and for gating said data in said shift register into a plurality of data latch storage buffers upon receipt of said Data Latch signal, said data latch storage buffers having parallel access output lines such that an external user device can read the data in said data latch storage buffers in parallel format.

4,350,974

LOGARITHMIC ANALOG-TO-DIGITAL CONVERTER

Bernard M. Gordon, Magnolia, and Hans J. Weedon, Salem, both of Mass., assignors to Analogic Corporation, Wakefield, Mass.

Continuation of Ser. No. 836,158, Sep. 23, 1977. This application Apr. 15, 1980, Ser. No. 140,662
Int. Cl.³ H03K *13/02*
U.S. Cl. 340—347 DA 3 Claims



1. A logarithmic digital-to-analog converter for receiving a digital input signal and for providing as an output an analog signal representative of the anti-logarithm of the digital input signal comprising:

a first reference source to produce a first reference input signal;

a linear digital-to-analog converter having a digital input to receive a digital input signal, a reference input to receive a first reference input signal, an output terminal providing an output signal proportional to said digital input signal and said first reference input signal, a complement output terminal providing a complement output signal inversely proportional to said digital input signal and proportional to said first reference input signal wherein a sum of said output signal and said complement output signal is proportional only to said reference input signal, said complement output being connected to said first input source wherein

said complement output signal affects said first reference input signal;

a second reference source to produce a second reference input signal;

a summing amplifier means having an input to receive said first output signal and said second reference signal and to produce at an output a logarithmic analog output signal, said logarithmic analog output signal related to said first reference input signal and logarithmically related to said digital input signal;

wherein said complement output signal comprises a complement current;

said reference input further comprises a normally grounded input responsive to a feedback voltage and a forced input terminal operable by said summing amplifier to be maintained at a voltage substantially equal to said normally grounded input feedback voltage; and

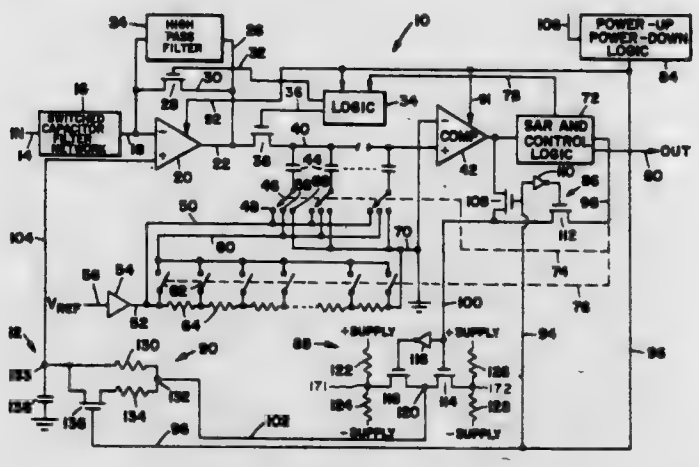
said first reference source further comprises a first reference voltage, a first resistor connecting said first reference voltage and said forced input, a second resistor connecting common ground to said complement output signal and said normally grounded input thereat forming said feedback voltage.

4,350,975

DUAL BANDWIDTH AUTOZERO LOOP FOR A VOICE FREQUENCY CODEC

Yusuf A. Haque, Santa Clara, and Richard W. Blasco, Campbell, both of Calif., assignors to American Microsystems, Inc., Santa Clara, Calif.

Filed Jul. 18, 1980, Ser. No. 170,041
Int. Cl.³ H03K *13/08*
U.S. Cl. 340—347 CC **4 Claims**



1. An analog to digital converter circuit means for providing a digital representation of an analog input signal, said digital representation including an output sign bit indicating the polarity of said analog input signal, said converter means containing an operational amplifier having a first and a second input lead, and an autozero loop, said first input lead being connected to receive an analog input signal to be converted, said analog to digital converter capable of operating in either a power-up mode or a normal analog to digital conversion mode, said analog to digital converter comprising:

a power-up/power-down logic circuit for providing output signals characteristic of the present operating mode of said analog to digital converter;

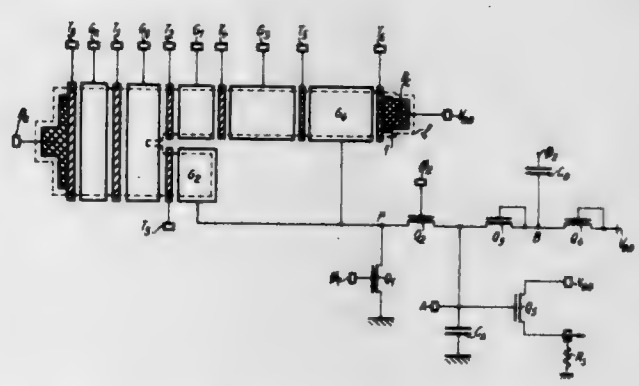
a dual-bandwidth sub-circuit means controlled by said power-up/power-down logic circuit for providing a feedback signal to said second operational amplifier input lead to null any D.C. offsets created by said analog to digital converter circuit, wherein said dual-bandwidth subcircuit operates with a relatively small time constant sufficient to cancel circuit offsets during a short power-up interval, and a relatively large time constant to continuously cancel variable circuit offsets during said normal analog to digital conversion mode of said analog to digital converter circuit without requiring interruption of the normal operation of the analog to digital converter circuit, wherein said feedback signal is obtained by said dual-bandwidth subcircuit integrating over time a selected voltage corresponding to the value of said output sign bit.

4,350,976

CHARGE-TRANSFER CODED-VOLTAGE GENERATOR FOR USE IN ANALOG-DIGITAL CODERS AND DECODERS

Roger Benoit-Gonin; Jean L. Berger, and Jean L. Coutures, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Dec. 10, 1980, Ser. No. 215,134
Claims priority, application France, Dec. 27, 1979, 79 31801
Int. Cl.³ H03K *13/02*
U.S. Cl. 340—347 DA **9 Claims**



1. A charge-transfer coded-voltage generator for generating the voltages

$$V_R, V_{R1}=a_0V_R+a_1\cdot V_R/2+a_2\cdot V_R/2^2+\ldots +a_{i-1}\cdot V_R/2^{i-1}+V_R/2^i,$$

where V_R is a reference voltage and where $i=1 \ldots n$ and in which said voltages make it possible by comparison with a voltage V_x to determine by successive approximations the coefficients $a_o \ldots a_n$ which are equal to 0 or to 1 and such that $V_x=a_0V_R+a_1\cdot V_R/2+a_2\cdot V_R/2^2 \ldots +a_iV_R/2^i+\ldots +a_n\cdot V_R/2^n$ or alternatively for generating the voltage $V_x=a_0V_R+a_1\cdot V_R/2+a_2\cdot V_R/2^2+\ldots +a_i\cdot V_R/2^i+\ldots +a_n\cdot V_R/2^n$ in the event that the coefficients $a_o \ldots a_n$ are known, wherein said generator is constituted by a charge-transfer device comprising an alternate arrangement of storage gates and transfer gates together with:

a diode D_e placed at one end of the active region in which transfer and storage of charges take place, the function of said diode being to inject a reference quantity of charges $2Q_R$ at the beginning of processing of each sample V_x or of each series $a_o \ldots a_n$ as well as to effect removal of surplus charges during the processing operation;

an insulating diffusion which divides into two equal parts the charges originating from a storage gate G_o located near the diode D_e and which divides the active region into two parallel channels downstream of the gate G_o;

in one channel, a storage gate G_2 beneath which the quantities of charges Q_R, $Q_R/2 \ldots Q_R/2^i \ldots$ are stored by successive two-trip traversals between gates G_o and G_2;

in the other channel, three storage gates G_1, G_3 and G_4, the quantity of charges $Q_R/2^i$ stored beneath gate G_1 and originating from gate G_o being transferred beneath said gate G_o and then removed beneath the diode D_e when a_i is zero in respect of $i=0 \ldots n$ and being transferred beneath gate G_3 when a_i is equal to 1;

when the coefficients $a_o \ldots a_n$ are unknown, a charge-reading device connected to gates G_2 and G_4 and adapted to generate the reference voltage V_R at the time of transfer of the quantity of charges Q_R beneath gate G_2, thus permitting determination of a_o by comparison of the voltage V_R with the voltage V_x, then to generate $V_{R1}=a_oV_R+V_R/2$ at the time of transfer of the quantity

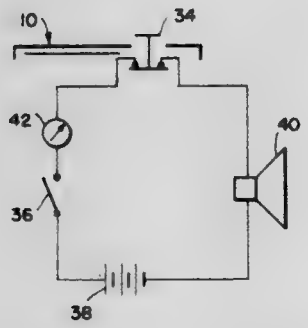
$Q_R/2$ beneath gate G_2 and, if $a_o=1$, at the time of any subsequent transfer of Q_R from gate G_3 to gate G_4, thus permitting determination of a_1 by comparison of the voltage V_{R1} with the voltage V_x, and so on until generation of V_{Rn} and determination of a_n or, when the coefficients a_o . . . a_n are known, a charge-reading device connected to the gate G_4 for generating the voltage V_x by transfer of charges from gate G_3 to gate G_4 when the n coefficients of V_x have been processed.

4,350,977

ADAPTER FOR BURGLAR ALARM SWITCH

Coy M. Dykes, P.O. Box 572, LaFayette, Ga. 30728

Filed Sep. 28, 1981, Ser. No. 306,388
Int. Cl.³ G08B *13/08*
U.S. Cl. 340—545 **6 Claims**



1. A device for use in a doorway in conjunction with a make and break switch of the spring-loaded, push-button type, the push-button switch forming part of a wired perimeter burglar alarm system, said device comprising:

a plate member;

mounting means, secured in a position for cooperation with the push-button switch, for providing a vertical trackway for sliding movement of said plate member between a first position for engaging the push-button switch when the door is closed to hold the push-button in a depressed condition and a second position where said plate member does not engage the push-button switch when the door is closed;

retaining means for selectively holding said plate member at said first position when the door is open; and,

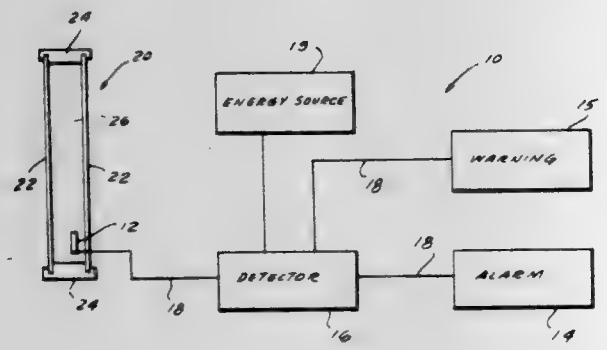
means for manually releasing said retaining means while the door is closed so that, upon opening the door, said plate moves to said second position.

4,350,978

HUMIDITY-SENSITIVE BROKEN PANEL ALARM

Paul J. Riccobono, 180 Grant Ave., Cresskill, N.J. 07626

Filed Apr. 24, 1981, Ser. No. 257,000
Int. Cl.³ G08B *13/20*
U.S. Cl. 340—550 **14 Claims**



1. A burglar alarm system to detect the breaking of a pane of a humidity sealed multiple pane panel, comprising

(A) a humidity sensor, the status of said sensor being responsive to the humidity intermediate the panes of the humidity sealed multiple pane panel;

(B) alarm means; and

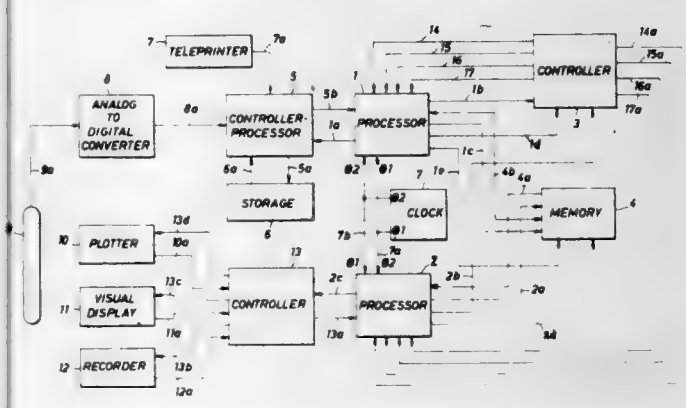
(C) detector means operably connected to said sensor and said alarm means and adapted to actuate said alarm means in response to a predetermined status of said sensor, said detector means being capable of discriminating between a gradual and a sharp rate of increase in the humidity indicated by the status of said sensor, said detector means initiating a first action in response to a sharp rate and a second action in response to a gradual rate.

4,350,979

SYSTEM AND METHOD FOR WELL-LOGGING

Valery D. Eberwein, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 949,592, Oct. 10, 1978. This application Apr. 13, 1979, Ser. No. 30,056
Int. Cl.³ G01V *1/40*
U.S. Cl. 340—861 **20 Claims**



1. A system for processing well logging measurements and the like, comprising:

input means for providing electrical data signals to be processed,

terminal means for receiving processed electrical data signals,

pulse generating means for providing first and second electrical enabling pulse trains, said first pulse train being substantially 180 degrees out of phase from said second pulse train,

memory means for receiving and delivering electrical data signals,

first processing means interconnected with said input and memory means,

second processing means interconnected with said memory and terminal means, and

control means for generating and delivering command signals to said first and second processing means, wherein

said first processing means receives and delivers data signals in response to said first pulse train and selected ones of said command signals and processes said received data signals in response to other different selected ones of said command signals and said second pulse train, and

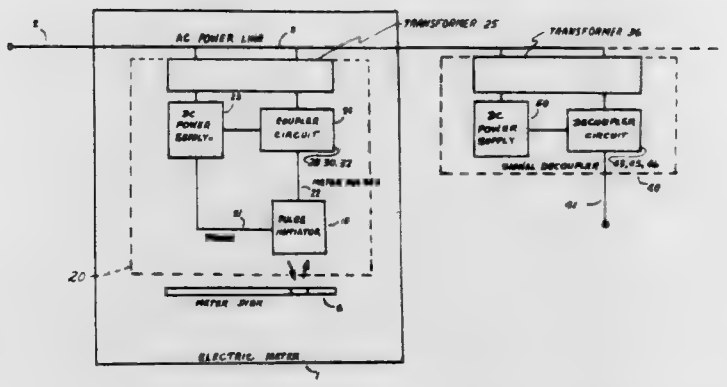
said second processing means receives and delivers data in response to said second pulse train and said selected one of said command signals and processes said received data in response to said other different selected ones of said command signals.

4,350,980

ELECTRIC METER CONSUMPTION AND DEMAND COMMUNICATOR

Steven M. Ward, El Paso, Tex., assignor to Energy Optics, Inc., Las Cruces, N. Mex.

Filed Feb. 21, 1980, Ser. No. 123,216
Int. Cl.³ G08C 9/06; H04Q 9/10
U.S. Cl. 340—870.02 13 Claims



1. An electric meter comsumption and demand communicator system for use with a Watt hour utility meter of the rotational disc type, for metering an AC power line, said communicator system comprising in combination:

power line encoder-coupler circuit means for extracting power from the AC power line within the meter or adjacent thereto to establish a DC power source and including non-contact power consumption and demand monitoring means deriving current from said meter disc and pulse initiator means effective to generate electronic digital pulses in a predetermined relationship to the number of rotations of the disc, signal generator means electrically connected to said pulse initiator means for producing high frequency coded electric signals corresponding to said digital pulses and connecting to the AC power line of the meter system for inducing said signals upon said power line;

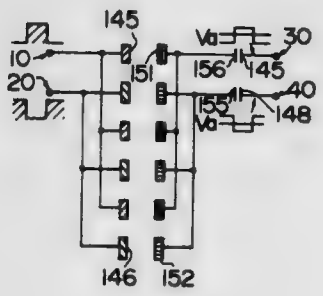
and power line decoder-decoupler circuit means connecting to said AC power line for extracting said high frequency electric signals and restoring said electric signals into digital pulses.

4,350,981

CAPACITIVE ROTATIONAL POSITION DETECTOR

Hiroaki Tanaka, and Sigeyuki Akita, both of Okazaki, Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Jun. 16, 1980, Ser. No. 159,855
Claims priority, application Japan, Jul. 2, 1979, 54-84288
Int. Cl.³ G08C 19/10
U.S. Cl. 340—870.37 3 Claims



1. A rotational position detecting apparatus comprising:

a first plate made of insulating material which has on one surface thereof first and second electrodes of metal film alternately and circumferentially arranged at equal intervals in a radial direction thereof and electrically insulated from each other;

a second plate made of insulating material which has on one surface thereof electrodes of metal film which are circumferentially arranged at equal intervals in a radial direction thereof to oppose the first and second electrodes of the first plate and which are electrically connected to a first and a second circular electrode;

a rotation detecting circuit for detecting relative rotation of the first and second plates in accordance with the static capacitance change occuring between the electrodes of the first and second plates as one of the plates rotates;

a plurality of apertures provided in at least one of the plates and corresponding to the first and second electrodes which are alternately arranged on the one surface of one of the plates; and

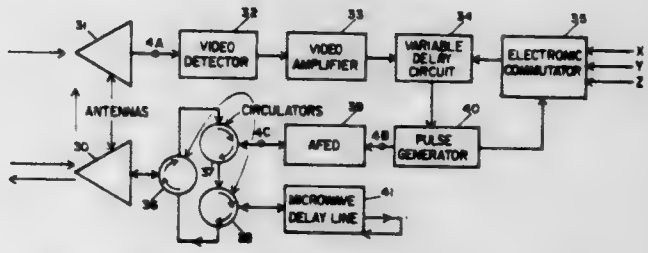
connecting metal films provided on the other surface of the first plate at which the apertures are bored, said connecting metal films electrically and alternately connecting the first and second electrodes through the apertures, in order to reduce a static capacitance formed between the electrodes of said first plate and those of said second plate.

4,350,982

FREQUENCY-AGILE TRANSPONDER

Frederick C. Alpers, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 3, 1974, Ser. No. 476,164
Int. Cl.³ G01S 13/80
U.S. Cl. 343—6.8 R 6 Claims



1. A transponder comprising;

input means adapted to receive a microwave pulse;

said input means comprising a first antenna;

repeater means adapted to repeat backwards after a short and controllable delay a microwave pulse fed to it coupled to said input means;

triggering means coupled to said repeater means for causing said repeater means to output backwards a microwave pulse fed to it;

another antenna for receiving microwave pulses therefrom;

detector means coupled to said another antenna and having an output;

variable delay means operatively coupled to the output of such detector means and having an output therefrom;

said variable delay means output being coupled as an input to said triggering means;

isolation means operatively coupled between said first antenna and said repeater means; and

a microwave delay line operatively coupled to said isolation means so that outputs from the microwave delay line are periodically coupled back as an additional input to the repeater means so that a predetermined series of response pulses are emitted from said antenna.

4,350,983

NAVIGATION METHOD FOR PRECISELY STEERING A FLYING OBJECT

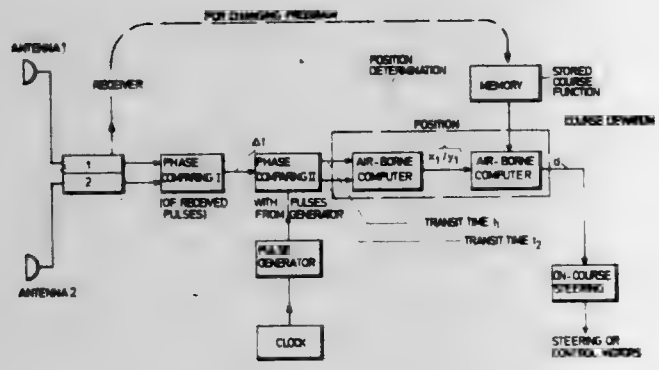
Alfred Blaha, Haar, and Hans-Juergen Schwärzler, Taufkirchen, both of Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Munich, Fed. Rep. of Germany

Filed Mar. 16, 1979, Ser. No. 21,023

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1978, 2813189

Int. Cl.³ G01S *1/24*

U.S. Cl. 343—103 6 Claims



1. A method for navigating a flying object, comprising the steps of establishing at least two ground based pulse transmitter stations at a given distance from each other, providing the flying object with airborne pulse receiver means, providing each of said ground based pulse transmitter stations and said airborne pulse receiver means of said flying object with a respective high precision clock, said high precision clocks having a common time base for said ground based transmitter stations and for said airborne pulse receiver means of said flying object, transmitting simultaneously and at predetermined points of time as controlled by said high precision clocks in the ground based pulse transmitter stations, pairs of pulse signals from said ground stations to said airborne pulse receiver means in such a manner that one pulse signal of a received pulse pair is transmitted by one ground based pulse transmitter station while the other pulse signal of the same received pulse pair is transmitted by the other ground based pulse transmitter station, said airborne high precision clock making said predetermined transmitting time points available in said flying object in the form of time base signals, measuring the time difference (Δt) between the receipts of two pulses forming said received pulse pair of pulse signals by ascertaining in a first comparing step (Phase Comparing I) the phase difference between the pulse signals forming said received pulse pair, measuring the absolute transit times (t_1 and t_2) of the pulse signals of a received pulse pair from said ground based transmitter stations to said airborne pulse receiver means by performing a second comparing step (Phase Comparing II) in which said time difference (Δt) between the pulses of a received pulse pair is compared with said time base signals from said airborne high precision clock, trigonometrically calculating from said absolute transit times (t_1 and t_2) and from said time difference (Δt) the instantaneous distances of said flying object from each of said ground based stations, determining from said distances the instantaneous position coordinates of said flying object, comparing in a third comparing step said instantaneous position coordinates with a rated course function stored in respective memory means in said flying object to produce a course deviation signal (d), and supplying said course deviation signal (d) to airborne autopilot means.

4,350,984

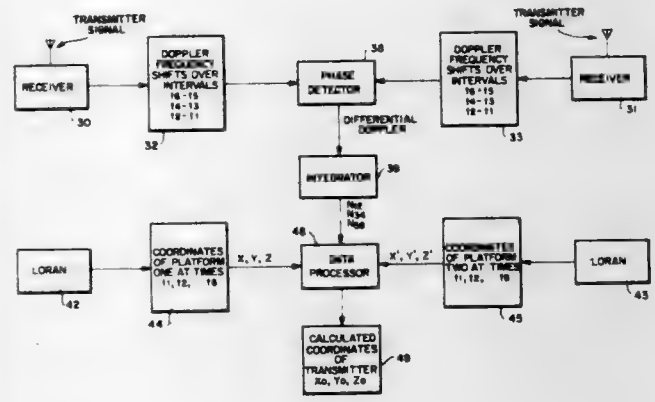
METHOD OF POSITION FIXING ACTIVE SOURCES UTILIZING DIFFERENTIAL DOPPLER

Robert H. Fisher, Bowie, Md., assignor to The United States of America as represented by the Director of the National Security Agency, Washington, D.C.

Filed Jun. 5, 1969, Ser. No. 831,279

Int. Cl.³ G01S *3/02*

U.S. Cl. 343—112 R 9 Claims



1. A method of position fixing an active transmitter source comprising:

moving at least two passive receivers along a given measurement path of receiver movement;

obtaining navigational information during selected measurement intervals along the measurement path of movement, the navigational information indicating the positions of the receivers during the selected intervals;

receiving doppler frequency shifts of the active source transmitter frequency, at the passive receivers during the selected intervals;

obtaining the difference of the doppler frequency shifts received during the selected intervals, the differential doppler being a constant for each point of measurement during the selected intervals; and

processing the obtained navigational and the received differential doppler frequency shifts to obtain the position of the active source.

4,350,985

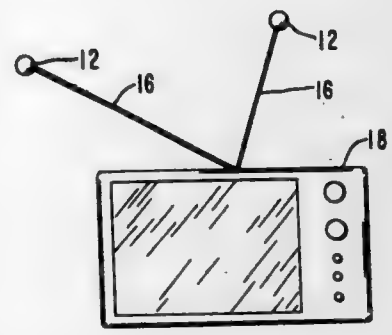
EYE PROTECTOR FOR TELEVISION SET ROD ANTENNA

Edward A. Arrigoni, 712 Kamuela Ave., Honolulu, Hi. 96816

Continuation of Ser. No. 844,005, Oct. 20, 1977, abandoned, which is a continuation-in-part of Ser. No. 797,719, May 17, 1977, abandoned, which is a continuation-in-part of Ser. No. 776,148, Mar. 10, 1977, abandoned. This application Mar. 3, 1980, Ser. No. 126,767

Int. Cl.³ H01Q *1/24*

U.S. Cl. 343—702 1 Claim



1. An eye protector for the antenna shaft of a television set comprising: a body of resilient, foam plastic material, the body having a passage extending into the same from the outer periphery thereof, the passage having a fastener extending thereinto, the fastener adapted to be mounted on the antenna shaft

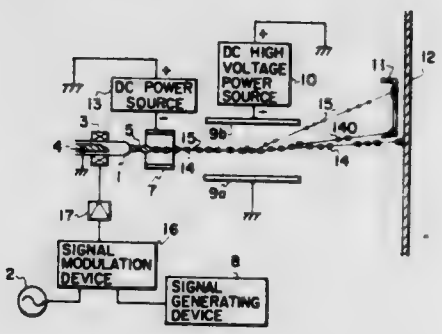
and provided with an expandable end movable laterally and into the body for frictional engagement therewith, the fastener being tubular and having a first slit extending along the length of the fastener and a second slit extending only partially along the length of the fastener, there being recess means at one end to define a pair of separable parts, the parts being separated when engaged by a projection on the outer end of the antenna shaft as the fastener moves along and outwardly of the antenna shaft and when it is disposed within the passage of said body.

4,350,986

INK JET PRINTER

Takahiro Yamada, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 746,157, Nov. 30, 1976, Pat. No. 4,068,241. This application Sep. 7, 1977, Ser. No. 831,142
Claims priority, application Japan, Sep. 11, 1976, 51-109220
The portion of the term of this patent subsequent to Jan. 10, 1995, has been disclaimed.
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—75 **7 Claims**



1. An ink jet printer, comprising:

nozzle means for emitting pressurized ink in a stream towards a recording surface,

vibration exciting means connected to said nozzle means for applying to the ink mechanical vibrations of a magnitude at which said ink stream severs alternately into large-diameter ink droplets and small-diameter ink droplets at a fore end part thereof,

means for generating a recording electric signal,

control means for varying the vibration exciting intensity of said vibration exciting means on the basis of said recording electric signal, so as to control the relative flight velocities of the large-diameter ink droplets and the small-diameter ink droplets and thereby to control the position of possible union of said small-diameter ink droplets with said large-diameter ink droplets,

deflection means acting on the ink droplet flight paths so that said large-diameter ink droplets, said small-diameter ink droplets and united ink droplets formed by said large- and small-diameter ink droplets uniting may proceed along respectively different flight paths, and

shield means for intercepting the flight path of either of said large-diameter ink droplets and the united ink droplets and the flight path of said small-diameter ink droplets,

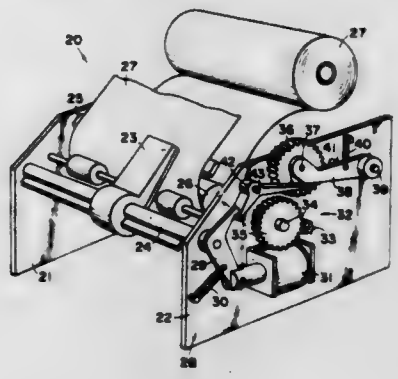
said control means including means for varying the vibration exciting intensity in response to the recording electric signal so that the ink droplets corresponding to recording dots may avoid said shield means and reach the recording surface.

4,350,987

PRINTING DEVICE

Takayoshi Hanagata, and Atsushi Noda, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 21, 1980, Ser. No. 180,102
Claims priority, application Japan, Aug. 31, 1979, 54-111273
Int. Cl.³ G01D *15/10*
U.S. Cl. 346—76 PH **3 Claims**



1. A printing device comprising:

a print head for performing printing on a recording paper;

urging means for causing said print head to rotate towards and be urged into contact with said recording paper;

paper forwarding means having a manual paper forwarding function and, at the time of the manual paper forwarding operation and under the action of a force derived from the manual paper forwarding function, for causing said print head to rotate away from said recording paper against the force exerted by said urging means toward the recording paper, wherein said paper forwarding means comprises:

a paper forwarding rotary member with a paper forwarding power transmission wheel fixedly provided at one end of a rotational shaft thereof;

a manual paper forwarding rotary member urged away from said power transmission wheel by a spring and movable to engage with said power transmission wheel against the force of said spring to thereby impart a paper forwarding force; and

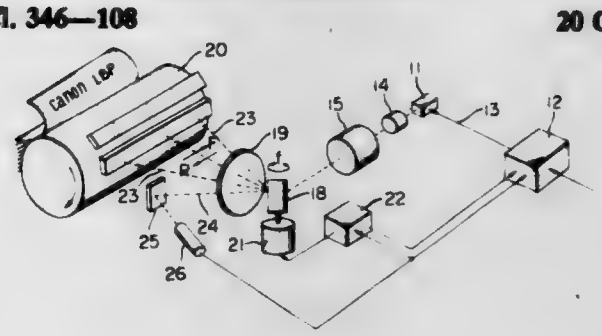
a transmission member engagable with said urging means when said manual member moves into engagement with said power transmission wheel to thereby cause said print head to rotate away from said recording paper.

4,350,988

RECORDING APPARATUS FOR EFFECTING RECORDING BY A BEAM

Koichi Masegi, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 943,740, Sep. 19, 1978, abandoned. This application Apr. 28, 1980, Ser. No. 144,218
Claims priority, application Japan, Sep. 27, 1977, 52-115861
Int. Cl.³ G01D *15/14*
U.S. Cl. 346—108 **20 Claims**



1. A recording apparatus for effecting recording by a beam, comprising:

beam formation means for forming a beam modulated by a modulation signal;

deflector means having a deflecting member for deflecting the beam;

a recording medium located within the deflection range of said deflector means and adapted to be irradiated with the beam when deflected in one direction and on which the irradiation track of the beam is recorded;

beam detecting means provided within the deflection range of said deflector means but outside the area defined by said recording medium, said detecting means being upstream of said recording medium with respect to said one direction of deflection, said deflector means deflecting the beam to scan first said beam detecting means and then said recording medium during one scanning stroke;

velocity signal formation means for forming, in response to the beam, deflected by said deflecting member sweeping said beam detecting means, a signal representing the velocity of the beam; and

control means for controlling, in accordance with the signal formed by said velocity signal formation means during one scanning stroke, the velocity of the beam when scanning said recording medium during the same scanning stroke.

4,350,989

INK-JET PRINTING APPARATUS

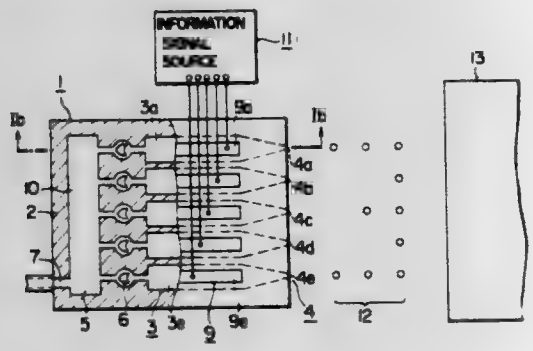
Syoji Sagae, Hitachiota; Yasumasa Matsuda, Hitachi; Masatoshi Kasahara, Hitachi, and Masayoshi Suzuki, Hitachi, all of Japan, assignors to Hitachi, Ltd. and Hitachi Koki Co., Ltd., both of Tokyo, Japan

Filed Mar. 13, 1980, Ser. No. 130,188

Claims priority, application Japan, Mar. 19, 1979, 54/31133

Int. Cl.³ G01D *15/16*

U.S. Cl. 346—140 R **4 Claims**



1. An ink-jet printing apparatus which is arranged such that a plurality of nozzles for projecting ink droplets are provided and the ink droplets projected therefrom are selectively deposited on a recording medium in accordance with an information signal so as to form a desired printed pattern, said ink-jet printing apparatus comprising:

a plurality of ink chambers defining pressure chambers;

orifices communicating with said ink chambers;

electromechanical transducers provided opposing to said ink chambers;

a common power source connected to said electromechanical transducers through respective switching means which are individually rendered conductive or non-conductive by said information signal, the volumes of said ink chambers being changed respectively by application of electrical signals to said electromechanical transducers, thereby causing ink droplets of desired size to project from the ink chambers, said switching means serving to selectively supply the output of said power source to each of said electromechanical transducers; and

an impedance element connected in parallel with each of said switching means between said common power source and each of said electromechanical transducers and having an impedance value equal to or larger than the impedance of the associated electromechanical transducer, so as to supply an electrical signal of low voltage to each electromechanical transducer when the associated switching means is non-conductive without causing ink droplets to be generated at that time.

4,350,990

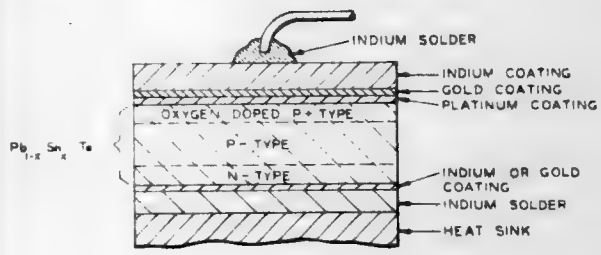
ELECTRODE FOR LEAD-SALT DIODES

Wayne Lo, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 15,946, Feb. 28, 1979, abandoned. This application May 16, 1980, Ser. No. 150,248

Int. Cl.³ H01L *29/161, 29/205, 29/225*

U.S. Cl. 357—16 **15 Claims**



1. In a lead-salt semiconductor diode having a P type region at one surface and a nonrectifying laminated contact on said surface of a noble metal and indium, the improvement wherein the region has an oxygen doping adjacent said surface that reduces contact resistance at said surface, said surface has successive adherent layers of platinum and gold thereon over said oxygen doped region effective to substantially block indium diffusion from an overlying layer into said oxygen doped region, which diffusion increases said contact resistance, said successive layer are in sequence effective to initially provide a low resistance electrical connection with said surface, and the indium layer overlies said successive platinum and gold layers.

4,350,991

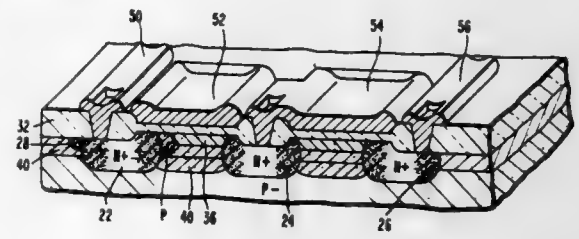
NARROW CHANNEL LENGTH MOS FIELD EFFECT TRANSISTOR WITH FIELD PROTECTION REGION FOR REDUCED SOURCE-TO-SUBSTRATE CAPACITANCE

William S. Johnson, Scotsdale, Ariz., and Ronald W. Knepper, LaGrangeville, N.Y., assignors to International Business Machines Corp., Armonk, N.Y.

Continuation of Ser. No. 867,559, Jan. 6, 1978, abandoned, which is a division of Ser. No. 711,947, Aug. 5, 1976, Pat. No. 4,078,947. This application Jun. 22, 1979, Ser. No. 51,465

Int. Cl.³ H01L *29/78*

U.S. Cl. 357—23 **4 Claims**



1. In a metal-oxide-semiconductor field-effect transistor comprising

a semiconductor body of a first conductivity type and having a relatively light first dopant concentration,

a pair of mutually-spaced source and drain regions of opposite conductivity type and formed within said body adjacent the surface thereof,

means to make electrical contact to said source and drain regions,

an enhancement channel region of said first conductivity type and having a relatively heavy dopant concentration higher than said first concentration,

a depletion channel region of said opposite conductivity type,

conrol means adjacent said depletion channel region,

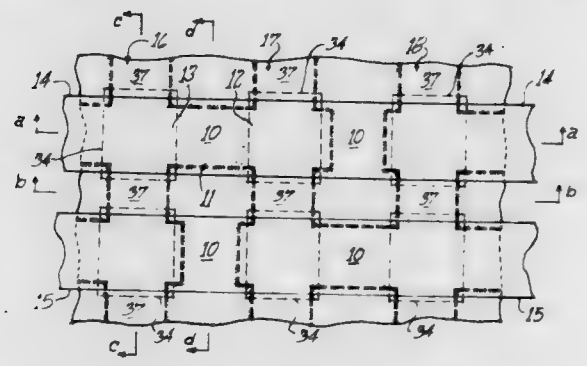
said enhancement channel region extending from said source region in a direction toward said drain region,
said depletion channel region extending from said enhancement channel region to said drain region,
the improvement wherein:
a field protection region of said first conductivity type and having a dopant concentration higher than said first concentration extends between said pair of mutually-spaced source and drain regions beneath said depletion channel region, and
said source region is formed within said enhancement channel region and extends to a greater depth than the latter and into said semiconductor body so that a portion of the peripheral area of the source region is adjacent to and forms a junction with said semiconductor body,
whereby the source-to-substrate capacitance of the device is determined primarily by the relatively light dopant concentration of said body instead of the relatively heavy dopant concentration of said enhancement channel region, thereby providing substantially increased speed of operation.

4,350,992

N-CHANNEL SILICON GATE VIRTUAL GROUND ROM

Graham S. Tubbs, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 5, 1979, Ser. No. 82,247
Int. Cl.³ H01L *27/10*; G11C *11/40*
U.S. Cl. 357—23 **10 Claims**



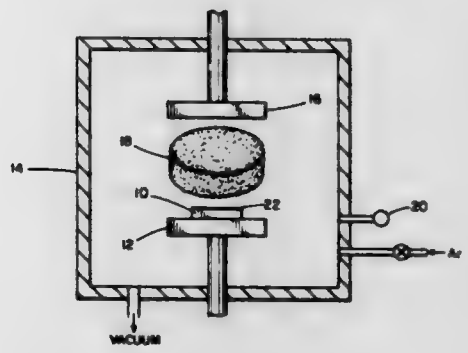
1. A read only memory array comprising:
a plurality of memory cells formed at a face of a silicon body in an array of rows and columns;
each memory cell including an insulated gate field effect transistor having a source, a drain and a polysilicon gate, the gate being insulated from the silicon by a thin gate insulator for selected ones of the memory cells; and
interconnections to the sources and drains formed by column lines partially underlying row lines on the face, the row lines being polysilicon strips generally perpendicular to the column lines and forming said gates, thick field oxide underlying the gate for remaining memory cells other than said selected ones of the memory cells to alter substantially the threshold of the transistors of such remaining cells compared to the transistors of said selected ones of the memory cells, the thick field oxide extending into said face to a depth greater than that of said thin gate insulator, said column lines including diffused regions self-alligned with the row lines and heavily doped implanted regions underlying the row lines and extending out from beneath the row lines to spaces between the rows lines, the diffused regions and the implanted regions together creating continuous conductive paths to form the column lines, the thick field oxide being formed in said face between the column lines but not overlying the column lines.

4,350,993

HETEROJUNCTION AND SCHOTTKY BARRIER EBS TARGETS

Herman H. Wieder, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 16, 1980, Ser. No. 160,034
Int. Cl.³ H01L *27/14*
U.S. Cl. 357—29 **20 Claims**



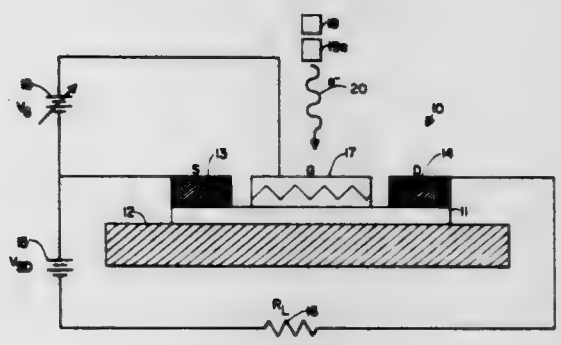
1. In an apparatus for modulating the current flow between a source electrode and a drain electrode in a metal field effect transistor at rates up to and including microwave frequencies, an improvement therefor is provided; comprising:
an electron transparent gate mounted on the metal field effect transistor and coupled to an electric field source for changing the current flow between the source electrode and drain electrode by the electric field, the electron transparent gate is dimensioned and fabricated from a material having the property of being substantially transparent to the passage of electrons and
means disposed adjacent the electron transparent gate for directing modulating electrons therethrough and into the metal field effect transistor to further modulate the current flow between the source electrode and drain electrode in response to the electron beam at said rates up to and including microwave frequencies.

4,350,994

SEMICONDUCTOR DEVICE HAVING AN AMORPHOUS METAL LAYER CONTACT

John H. Perepezko, and John D. Wiley, both of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Oct. 4, 1979, Ser. No. 81,859
Int. Cl.³ H01L *23/48, 29/46, 29/62*
U.S. Cl. 357—67 **10 Claims**



1. A semiconductor device for high temperature use comprising a semiconductor as a base and a layer strongly bonded to the surface of the base consisting essentially of an alloy in the amorphous non-crystalline state of a metal selected from the group consisting of a transition metal, transition metal/normal metal alloy, refractory metal and refractory metal/normal metal alloy, in which the amorphous metal layer has a crystallization temperature and stable microstructure at temperatures

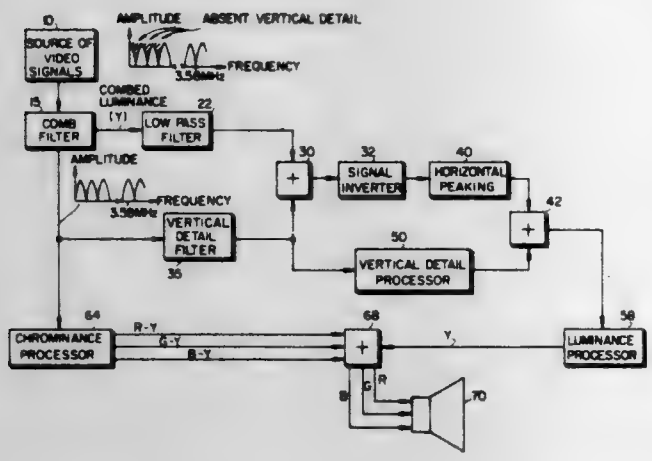
above 500° C., said amorphous metal layer being resistant to interdiffusion with the base.

4,350,995

SELF-LIMITING VIDEO SIGNAL PEAKING CIRCUIT

Wayne E. Harlan, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 20, 1981, Ser. No. 255,982
Int. Cl.³ H04N 5/14
U.S. Cl. 358—37 **7 Claims**



1. A video signal peaking network exhibiting a given amplitude versus frequency response including a frequency at which maximum signal peaking is produced, comprising:

a source of video signals to be peaked including periodic and aperiodic amplitude transitions of varying magnitudes occupying a given range of transition magnitudes;

a signal delay network with an input coupled to said source of video signals and an output, said delay network being terminated to operate in a reflective mode and exhibiting a signal delay for determining said maximum signal peaking frequency;

a differential amplifier with a first input coupled to said delay network input and a second input coupled to said delay network output, for developing a peaking component at an output;

a combining network for combining delayed signals from said delay network output with said peaking component from said differential amplifier output, for providing a peaked video signal; and wherein

said differential amplifier (1) exhibits a linear response for aperiodic transitions of magnitudes throughout said range, and (2) exhibits a non-linear response for periodic transitions recurring at said maximum peaking frequency and having a magnitude greater than half the maximum transition magnitude of said range, such that said differential amplifier develops an amplitude limited peaking component at said amplifier output in response to said periodic transitions of said maximum peaking frequency.

4,350,996

SCREENED IMAGE REPRODUCTION

Gideon Rosenfeld, Tel-Aviv, Israel, assignor to Scitex Corporation Ltd., Herzlia, Israel

Filed Apr. 14, 1980, Ser. No. 139,705
Int. Cl.³ H04N 1/46
U.S. Cl. 358—75 **18 Claims**

1. The method of producing a screened color separation having any screen angle (A) comprising the steps of

A. scanning a color original pixel by pixel and line by line to produce a set of picture values, the adjacent scan lines having a selected step (SS) between them,

B. digitizing and storing said picture values,

C. scanning and exposing a reproduction member resolution element by resolution element and line by line in response to exposure signals, the adjacent exposure scan lines having a selected step (ES) between them,

D. generating screen values representing the grey-tone values in a complete period in the orthogonal directions (m and n) of a periodic half-tone screen, said screen period being in the form of a grid defined by orthogonal m and n rulings, the distance between adjacent rulings having a value (CS) less than (ES), the different screen values being assigned to different locations in the grid,

E. storing the screen values in a memory matrix at locations having memory addresses corresponding to the locations of the screen values in the grid,

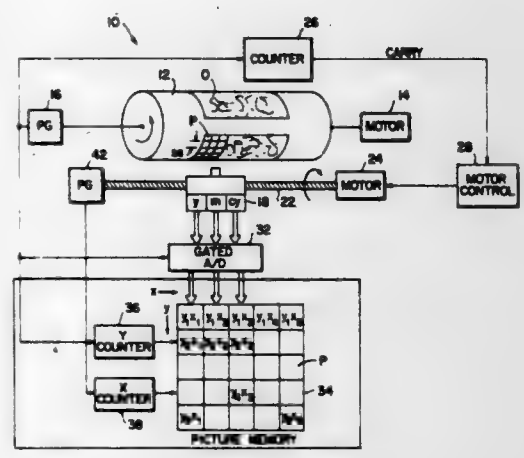
F. recalling the screen values from the memory matrix by

(1) computing the memory address components corresponding to each memory location in accordance with the following equations:

$$M^* = M + S \sin A \bmod m$$

$$N^* = N + S \cos A \bmod n$$

$$M_{st^*} = M_{st} + S \cos A \bmod m$$



$$N_{st^*} = N_{st} - S \sin A \bmod n$$

wherein:

M and N are the components of the present address in the memory matrix,

S is the ratio of the exposing step (ES) to the screen cell step (CS),

M_{st} and N_{st} are the components of the address in the memory matrix used to expose the first resolution element in the present line, and

mod m and mod n signify the address calculations using modulo m and n arithmetic, and

(2) rounding off each computed memory address component M^*, N^*, M_{st^*}, N_{st^*} to a whole number corresponding to an actual memory address before addressing the memory matrix,

G. recalling the picture values in the order in which the picture was scanned, and

H. comparing the recalled screen values with the recalled picture values to produce said exposure signals for exposing the reproduction member.

4,350,997

LAY-OUT RECORDING METHOD IN A PICTURE SCANNING RECORDING SYSTEM

Mitsuhiko Yamada, Kyoto, Japan, assignor to Dainippon Screen Seizo Kabushiki Kaisha, Kyoto, Japan

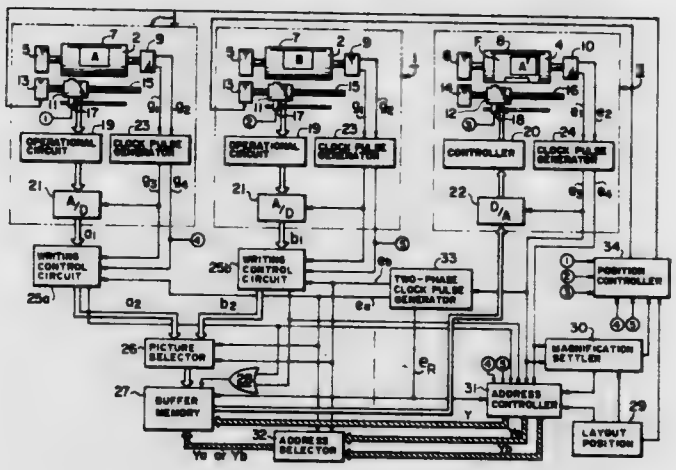
Filed Oct. 21, 1980, Ser. No. 199,341
Claims priority, application Japan, Oct. 23, 1979, 54-135879
Int. Cl.³ H04N 1/46; G03F 3/00
U.S. Cl. 358—78 **15 Claims**

1. A lay-out recording method in a picture scanning recording device, comprising the steps of:

obtaining picture signals concurrently from a plurality of original pictures with corresponding photoelectrical pick-up heads,

storing the picture signals, for subsequent extracting of said signals serially

writing the time series picture signals into specific addresses of a memory device, and



recording a plurality of reproduced pictures from the original pictures on a photo-sensitive film each at a desired magnification factor while selecting the addresses of the memory device from which the picture signals are to be recorded and the speed of each of the pick-up heads relative to the speed of a recording head when reading out the picture signal from the memory device in a consecutive manner.

4,350,998

DEVICE FOR DIFFERENTIAL IMAGE DETERMINATION

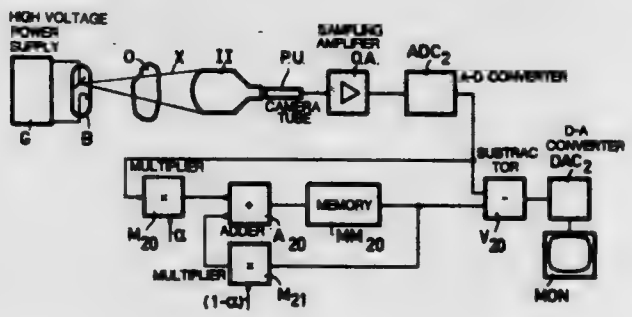
Leonardus A. J. Verhoeven, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 2, 1980, Ser. No. 165,174

Claims priority, application Netherlands, Jul. 19, 1979, 7905611

Int. Cl.³ H04N *7/18*

U.S. Cl. 358—111 5 Claims



1. In a device for processing images which have been separated into image elements of the type which comprises a memory for storing the image elements and subtraction means for subtracting corresponding image elements in a current image and in a previously determined image; the improvement comprising:

multiplying and addition circuits connected with the memory to form recursive filter means which function to multiply information received from the current image by a factor α, to multiply image information received from an output of the memory by a factor $(1-\alpha)$, where $0 \leqq \alpha \leqq 1$, to add the resulting products on an elemental basis, and to supply the resulting sum to an input of the memory.

4,350,999

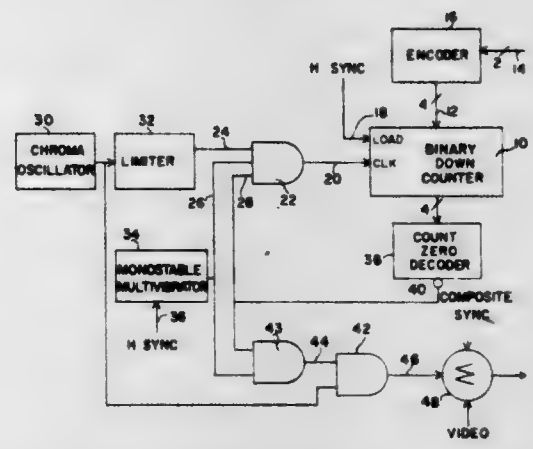
VIDEO FORMATTED DIGITAL DATA TRANSMISSION METHOD AND APPARATUS

Thomas J. Mortimer, Amherst, N.H., assignor to Sanders Associates, Inc., Nashua, N.H.

Filed Mar. 4, 1980, Ser. No. 127,165

Int. Cl.³ H04N *9/46*

U.S. Cl. 358—147 13 Claims



1. Apparatus for transmitting digital information in conjunction with standard television signals, comprising:

a chroma oscillator for providing cycles of color burst signal;

means coupled to said chroma oscillator for limiting the number of cycles of color burst signal to be transmitted to a predetermined number which varies in accordance with the digital information to be transmitted; and

means for combining said predetermined number of cycles of color burst signal with synchronization and video signals.

4,351,000

CLOCK GENERATOR IN PCM SIGNAL REPRODUCING APPARATUS

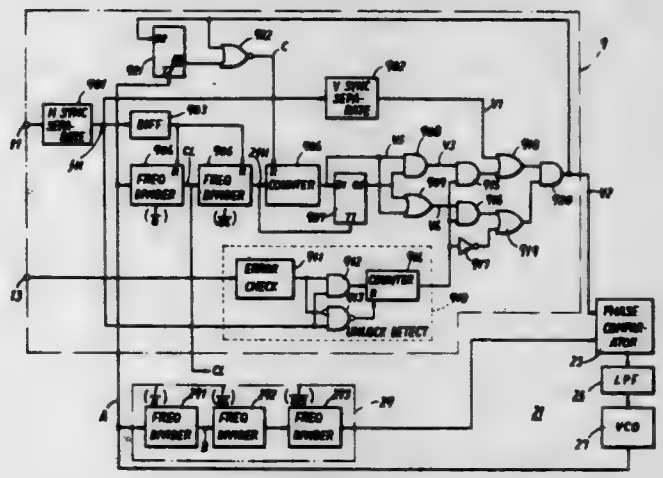
Hiromu Tokumatsu, Osaka, Japan, assignor to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed Dec. 10, 1980, Ser. No. 214,873

Claims priority, application Japan, Dec. 14, 1979, 54-173825[U]

Int. Cl.³ H03B *3/04*; H04N *5/05, 5/78*

U.S. Cl. 358—158 10 Claims



1. A clock generator for generating clock signal for reproducing PCM signal inclusive of synchronizing signal, comprising:

synchronizing signal separating means for separating said synchronizing signal from said PCM signal,

variable-frequency oscillator means,

first frequency dividing means for frequency dividing an oscillation output signal from said variable-frequency oscillator means,

phase comparing means for phase comparison between the output of said synchronizing signal separating means and the output of said frequency dividing means,

oscillation frequency controlling means responsive to the output of said phase comparing means for controlling the oscillation frequency of said variable-frequency oscillator means,

first signal generating means including first counter means for excuting counting operation in response to the oscillation output of said variable-frequency oscillator means for generating a first signal having at least a period of time corresponding to the interval of said synchronizing signal,

inhibiting means responsive to said first signal obtained from said first signal generating means for inhibiting the output of said synchronizing signal separating means from being supplied to said phase comparing means, and

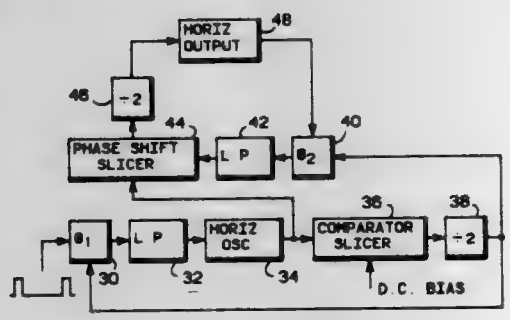
clock signal generating means responsive to the output of said variable-frequency oscillator means for generating said clock signal.

4,351,001

HORIZONTAL PHASE LOCK LOOP FOR TELEVISION

Michael McGinn, Tempe, and Gerald K. Lunn, Scottsdale, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 29, 1980, Ser. No. 220,608
Int. Cl.[3] H04N *5/04*
U.S. Cl. 358—158 13 Claims



1. A horizontal phase lock loop for use in a television receiver of the type which receives horizontal synchronization pulses at the picture line frequency and which includes a horizontal output stage for generating flyback pulses, comprising:

an oscillator for generating a signal at a frequency substantially equal to twice said line frequency;

a first loop which includes said oscillator for locking said oscillator to said horizontal synchronization pulses and for generating a switching waveform, said first loop also including:

a first phase detector having a first input coupled to receive said synchronization pulses, a second input coupled to said switching waveform and an output coupled to said oscillator, said first phase detector generating a first control signal for altering the frequency of said oscillator; and

a first divide by two circuit having an input coupled to the output of said oscillator for producing said switching waveform; and

a second loop coupled to said oscillator and driven by said switching waveform for locking said flyback pulses to said switching waveform, said second loop also including:

a second phase detector having a first input coupled to said switching waveform and a second input coupled to receive said flyback pulses for generating a second control signal;

first means having a first input coupled to said signal and second input coupled to said second phase detector for slicing said signal in accordance with said second control signal and producing a second signal having a frequency substantially equal to said signal; and

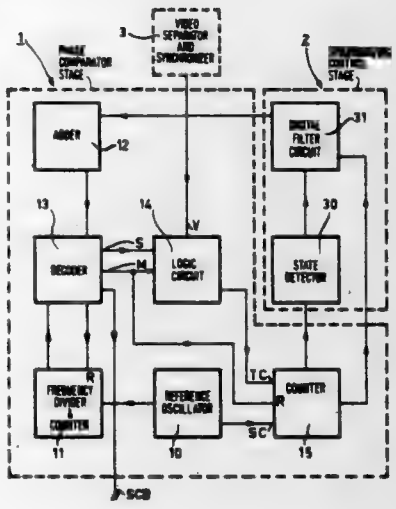
a second divide by two circuit having an input coupled to the output of said first means and an output coupled to said horizontal output stage for producing a fifty percent duty cycle drive wave form having a frequency substantially equal to said line frequency.

4,351,002

CIRCUIT FOR CORRECTING PHASE DEVIATIONS BETWEEN THE LINE DEFLECTION DRIVE SIGNALS AND THE LINE SYNCHRONIZING SIGNALS IN A TELEVISION RECEIVER

Alain Decraemer, Garches, and Jean-Michel Pernot, Fontenay-aux-Roses, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 21, 1981, Ser. No. 227,040
Claims priority, application France, Jan. 25, 1980, 80 01643
Int. Cl.[3] H04N *5/04*
U.S. Cl. 358—158 7 Claims



1. A circuit for corresponding phase deviations between the line deflection drive signals and the line synchronising signals in a television receiver, comprising:

a digital phase comparison stage including a reference oscillator producing periodic pulses of a frequency which is higher than the line frequency, a frequency divider provided at the output of said oscillator for producing line deflection drive signals and a phase comparator which receives at a first input the output signals of the frequency divider and at a second input the line synchronising signals received by the receiver and which produces from the phase deviation detected between said received signals from a digital signal, the value and the sign of which are related to the value and the sign of the phase deviation; and

a digital synchronising control stage to which the output signal of the phase comparator is applied and which includes a synchronisation or desynchronisation state detector for detecting the synchronized state in which the phase deviation detected is lower than a predetermined limit value, or the unsynchronised state, in which the phase deviation detected is higher than the said limit value, and a correction signal generator for adjusting the division ratio of the frequency divider either to maintain the synchronised state of the receiver when the detector has detected the existence of this state, or to try to obtain this state when the detector has detected the opposite state, the unsynchronised state, of the receiver.

4,351,003

AUTOMATIC VIDEO SIGNAL PEAKING CONTROL

Wayne E. Harlan, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

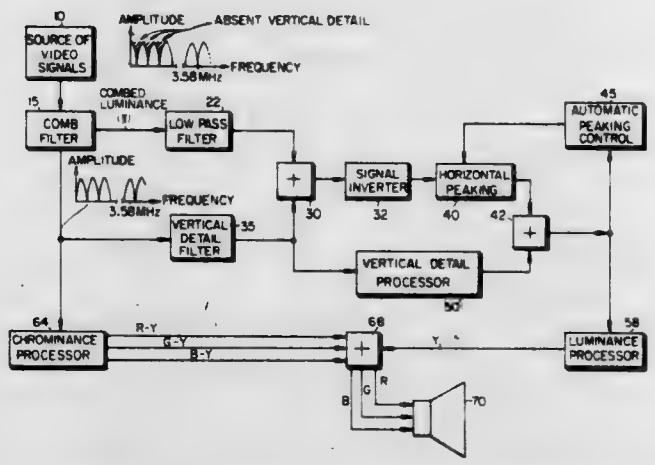
Filed Apr. 20, 1981, Ser. No. 255,609
Int. Cl.[3] H04N *5/14*
U.S. Cl. 358—166 17 Claims

1. In a video signal processing system including a source of video signals with image representative luminance and chrominance signal components, said system including means for

separating said luminance signal component from said video signal; apparatus for automatically controlling the high frequency peaking content of said luminance signal, comprising:

signal peaking means responsive to said luminance signal for generating a peaking signal component;

means for combining said peaking component with said luminance signal to produce a peaked luminance signal with accentuated high frequency components;



means responsive to said peaked luminance signal for developing a control signal in accordance with the magnitude of high frequency components of said peaked luminance signal; and

means coupled to said peaking means and responsive to said control signal for controlling the magnitude of said peaking component and thereby the magnitude of accentuated high frequency luminance components in accordance with the level of said control signal.

4,351,004

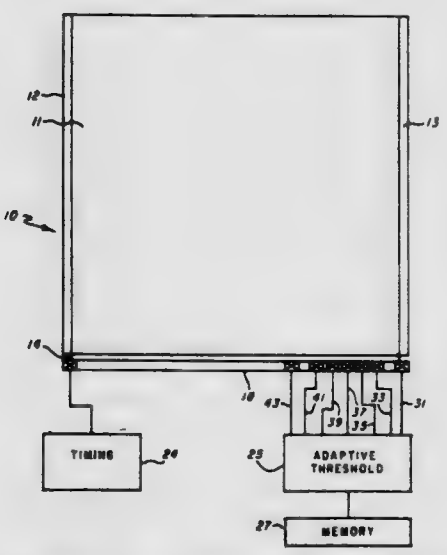
CCD IMAGER

William C. Choate, Dallas, and David S. Ho, Garland, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 31, 1980, Ser. No. 117,178

Int. Cl.³ H04N *3/14*

U.S. Cl. 358—213 **12 Claims**



1. A CCD imager, said imager having a plurality of CCD's arranged into columns and rows, each CCD representing a pixel in said imager, each of said CCD pixels capturing an analogue signal, means for reading the analogue signal in each CCD pixel, and means for providing an adaptive threshold for the analogue signal captured by each CCD pixel, including means responsive to said adaptive threshold means for converting the analogue signal in each CCD pixel into a digital signal, wherein said adaptive threshold means includes means for sensing the analogue signal in a predetermined CCD pixel, means for sensing the analogue of at least one closely adjacent CCD pixel, means for comparing the amplitude of analogue signal from said predetermined CCD pixel and a predetermined percentage of the amplitude of the analogue signal from said closely adjacent CCD pixel, and means for converting said analogue signal from said predetermined CCD pixel into a digital signal as a result of said comparison.

4,351,005

RECORDING APPARATUS

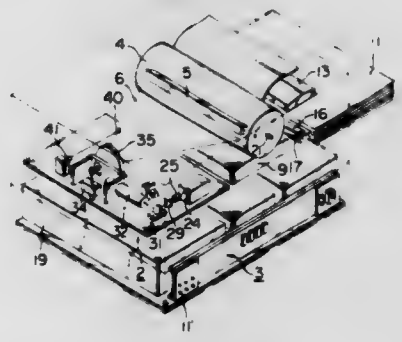
Nobuhiro Imai; Kimio Kono; Kazuo Hoshito, all of Kawasaki; Takehiko Kiyohara, Zama, and Hideaki Sato, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 915,079, Jun. 13, 1978, abandoned. This application Aug. 18, 1980, Ser. No. 179,174

Claims priority, application Japan, Jun. 21, 1977, 52-74225; Jul. 1, 1977, 52-79313; Aug. 3, 1977, 52-93500

Int. Cl.³ H04N *1/30*

U.S. Cl. 358—300 **31 Claims**



1. A recording apparatus comprising:

a beam generating means for generating a beam modulated by a modulating signal supplied thereto;

a deflecting means for reciprocatingly deflecting the beam generated by said beam generating means repeatedly in two directions;

a recording member for receiving said beam deflected by said deflecting means and recording the trajectory of irradiation of said beam;

a recording information storage means for storing information to be recorded on said recording member, the recording information read from said information storage means being supplied to said beam generating means as said modulating signal;

a beam detecting means provided along the path of the deflected beam on only one side of said recording member for releasing a beam detection signal upon detecting the arrival of said deflected beam at said detecting means; and

a signal forming means for selecting one of a plurality of consecutive beam detection signals released from said beam detecting means during one reciprocation of the beam for forming a reference signal for instructing the initiation of the readout from said recording information storage means.

4,351,006

METHOD OF AND APPARATUS FOR STORING DATA SIGNALS

Peter Clough, Warrington, England, and Donald C. B. Walker, deceased, late of Lymm, England (by Eileen F. Walker, Administratrix), assignors to United Kingdom Atomic Energy Authority, London, England

Filed Mar. 6, 1980, Ser. No. 127,911

Claims priority, application United Kingdom, Mar. 19, 1979, 7909588

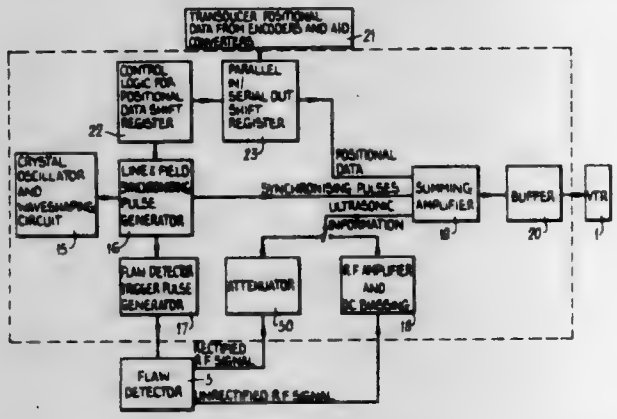
Int. Cl.³ H04N *5/79, 5/795*; G01D *5/12*

U.S. Cl. 360—9 **7 Claims**

1. A method of storing data signals from an ultrasonic transducer for subsequent reproduction, comprising receiving radio frequency data signals transmitted from the ultrasonic trans-

ducer and positional data signals from a source associated with the transducer and converting said radio frequency data signals and said positional data signals into a format in which they can be recorded on tape by a video recorder which has a head servo driven by field synchronising pulses, said converting being effected by generating modified line synchronising pulses, selecting a first group of the modified line synchronising pulses and transmitting said radio frequency data signals to the video recorder when said first group of modified line synchronising pulses occurs, and selecting a second different group of the modified line synchronising pulses interleaved wtih said first group of modified line synchronising pulses and transmitting said positional data signals to the video recorder when said second group of modified line synchronising pulses occurs, whereby said radio frequency data signals and said positional data signals are interleaved on the tape.

3. Apparatus for storing radio frequency data signals transmitted from an ultrasonic transducer and positional data signals



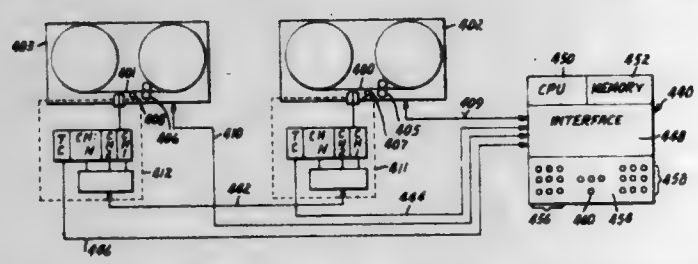
from a source associated with the transducer, the apparatus comprising a video recorder which has a head servo driven by field synchronising pulses, a first interface unit for receiving and converting said radio frequency data signals and said positional data signals into a format in which they can be recorded on tape by said video recorder; said first interface unit comprising means for generating modified line synchronising pulses, means for selecting a first group of said modified line synchronising pulses and transmitting said radio frequency data signals to the video recorder when said first group of modified line synchronising pulses occurs, and means for selecting a second different group of modified line synchronising pulses interleaved with said first group of modified line synchronising pulses and for transmitting said positional data signals to the video recorder when said second group of modified line synchronising pulses occurs, whereby said radio frequency ultrasonic data signals and said positional data signals are interleaved on the tape.

4,351,007

EDITOR FOR COMBINING DIGITALLY RECORDED AUDIO SIGNALS

Robert J. Youngquist, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Continuation-in-part of Ser. No. 68,070, Aug. 1, 1979. This application Jan. 21, 1981, Ser. No. 226,616
Int. Cl.³ G11B *27/02*
U.S. Cl. 360—13 **16 Claims**



1. A method for editing and combining selected portions of digitally encoded audio signals recorded on at least one record medium to form a composite digitally encoded audio signal, comprising the steps of

(a) reproducing signals digitally recorded on said at least one record medium to present audible displays of audio signals recorded on said at least one medium,

(b) operating in response to said audible displays to designate tentative entry and exit edit point words defining the spatial locations of selected portions of said reproduced signals to be joined in sequence to form said composite signal,

(c) storing the tentative edit point words defining said spatial locations,

(d) presenting audible displays of selected portions of the audio signals which are proximate to said spatial locations defined by said tentative edit point words,

(e) iteratively refining said spatial locations defined by said edit point words in steps of discrete time intervals of decreasing duration by operating in response to repeated audible displays of the selected portions of the audio signals to establish increasingly refined entry and exit edit points,

(f) storing the refined edit point words, and

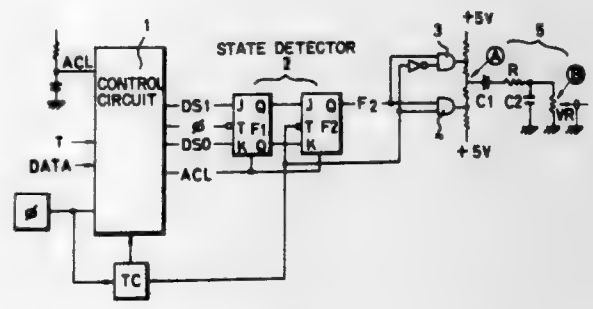
(g) switching between audio signals located on said at least one medium at spatial locations defined by said refined edit point words to sequentially join selected portions of said signals at the thus defined spatial locations to thereby form said composite digitally encoded audio signal.

4,351,008

MODULATOR FOR USE IN AN INTERFACE BETWEEN A DIGITAL SIGNAL PROCESSING APPARATUS AND AN AUDIO TAPE DECK

Daisuke Mochizuki, and Shigeru Kitano, both of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jan. 24, 1980, Ser. No. 114,745
Claims priority, application Japan, Jan. 25, 1979, 54-7836
Int. Cl.³ G11B *5/09*
U.S. Cl. 360—40 **4 Claims**



1. A modulator comprising:

control means for reading data words and for producing a digital output signal synchronized to a carrier signal in response to a data transmission instruction, said control means adding a start bit and a stop bit to each of said data words when producing said digital output signal;

an output line; and

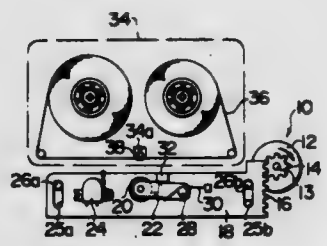
state detector means for receiving said digital output signal from said control means and for passing said carrier signal to said output line when said digital output signal is in a first state and inhibiting the passage of said carrier signal to said output line when said digital output signal is in a second state.

4,351,009

APPARATUS FOR MOVING THE PINCH ROLLER AND THE MAGNETIC HEAD OF A TAPE RECORDER

Hajime Osada; Akiteru Kimura, both of Fuchu; Tokuo Shimizu; Goro Kitajima, both of Hachioji; Yoshio Tomizawa, Tama; Makoto Kondo, Fuchu; Kazuyasu Motoyama, and Masaaki Daigaku, both of Hachioji, all of Japan, assignors to Olympus Optical Co., Ltd., Japan

Filed May 8, 1980, Ser. No. 147,712
Claims priority, application Japan, Jun. 19, 1979, 54-77139
Int. Cl.³ G11B *21/02*
U.S. Cl. 360—105 4 Claims



1. An apparatus for moving a pinch roller and a tape head located in a tape recorder relative to a capstan of said tape recorder, said apparatus comprising:

(A) a capstan located in said tape recorder;

(B) a movable member carrying a pinch roller and a tape head, said member being movable between a first position wherein said pinch roller abuts said capstan and said tape head is in an operative position and a second position wherein said pinch roller is spaced from said capstan and said tape head is away from said operative position; and

(C) a drive mechanism for moving said movable member between said first and second positions, said drive mechanism including:

(1) a drive member;

(2) a driven member directly connected to said drive member and directly connected to the movable member; and

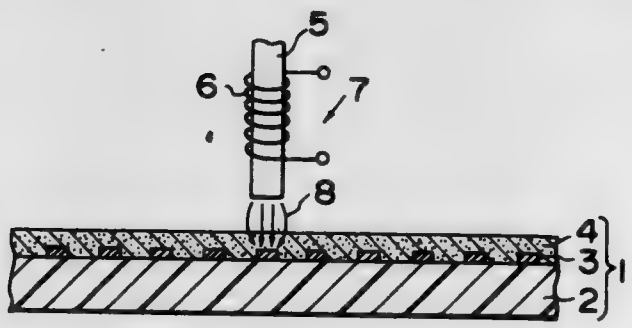
(3) a motor having an output shaft to which said drive member is directly fixed for imparting a drive force to said drive and driven members, said drive member directly driving said driven member to move said movable member between said first and second positions responsive to said driving force.

4,351,010

MAGNETIC RECORDING MEDIUM HAVING A VERTICAL AXIS OF EASY MAGNETIZATION

Yoshihiro Arai, Asaka, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Mar. 14, 1980, Ser. No. 130,386
Claims priority, application Japan, Mar. 16, 1979, 54-30724
Int. Cl.³ G11B *5/68, 23/00*
U.S. Cl. 360—131 6 Claims



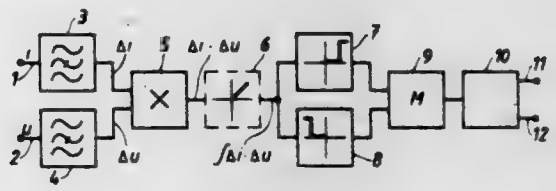
1. In a magnetic recording medium for use in vertical magnetic recording, comprising a substrate of a non-magnetic material, and a magnetic recording layer of a magnetic material provided thereon having an axis of easy magnetization vertical with respect to said magnetic recording layer, wherein the improvement comprises a magnetic flux converging element of linear shape and having a high permeability material provided between said substrate and said magnetic recording layer, said magnetic flux converging element converging a diverging magnetic flux from a magnetic head located above said magnetic recording medium, and further comprising a non-magnetic material provided in said magnetic flux converging element.

4,351,011

DIRECTIONAL WAVE DETECTOR APPARATUS

Salomon Liberman, Ra'anana, Israel, assignor to ASEA Aktiebolag, Vasteras, Sweden

Continuation of Ser. No. 26,366, Apr. 2, 1979, abandoned. This application May 1, 1981, Ser. No. 259,719
Claims priority, application Sweden, Apr. 6, 1978, 7803868
Int. Cl.³ G01R *31/08;* H02H *3/38*
U.S. Cl. 361—82 8 Claims



1. Directional wave detector apparatus in electrical power line relay protection devices for determining the direction to a fault from the direction of movement of travelling waves generated by a fault and passing through a measuring point in said electrical power lines, comprising:

means for multiplying or dividing the current and voltage of at least a portion of the travelling waves to determine the sign of the product or quotient signal;

means for recording the sign of the first appearing product or quotient; and

means for emitting a tripping or blocking signal dependent on whether the sign of the product or quotient obtained upon multiplication or division indicates that the fault lies within or outside the range of protection of the relay, respectively.

4,351,012

CIRCUIT INTERRUPTER WITH DIGITAL TRIP UNIT AND MEANS TO ENTER TRIP SETTINGS

Robert T. Elms; Joseph C. Engel, both of Monroeville; Bernard J. Mercier, Pittsburgh; Gary F. Saletta, Irwin, and John T. Wilson, Beaver, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 15, 1980, Ser. No. 140,553
Int. Cl.³ H02H *3/093*
U.S. Cl. 361—96 4 Claims

1. Circuit interrupter apparatus, comprising:

interrupter means for conducting current flow through an associated circuit and for operating to interrupt said current flow on command;

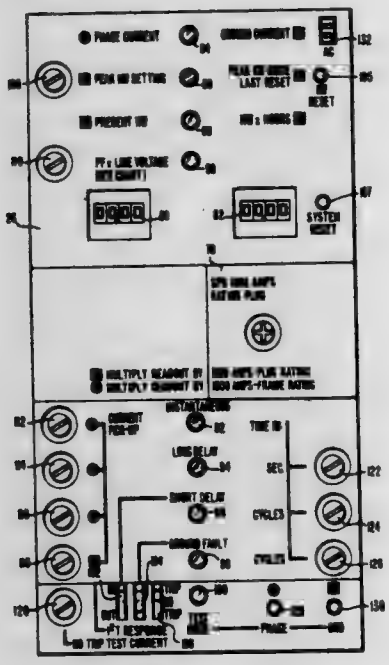
sensing means for sensing current flow through said interrupter means;

a trip unit connected to said sensing means and said actuating means for comparing current flow through said interrupter means to a time-current trip characteristic and for operating said interrupter means when current flow therethrough exceeds said time-current trip characteristic, said trip unit comprising memory means for storing a plurality of parameter values defining said time-current trip characteristic;

entry means for supplying operator-entered values of parameters defining said time-current trip characteristic to said memory means;

a housing enclosing said interrupter means, said sensing means, said trip unit, and said entry means; and

display means attached to an exterior surface of said housing means and connected to said memory means for supplying a substantially real-time numeric display of said parameter value stored in said memory means, whereby the operator



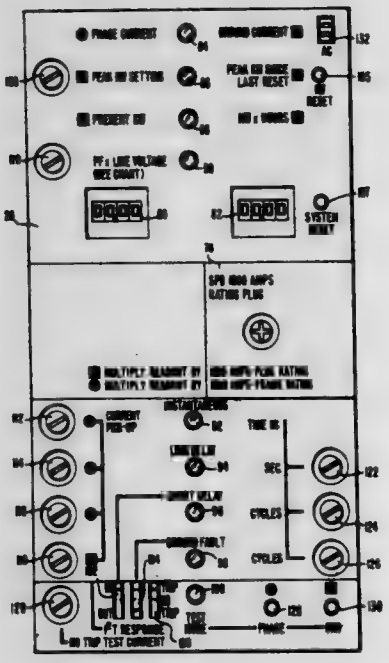
obtains confirmation that said operator-entered parameter values are the values which will be utilized by said trip unit to perform said comparison between said curret flow and said trip characteristic.

4,351,013

CIRCUIT INTERRUPTER WITH MULTIPLE DISPLAY AND PARAMETER ENTRY MEANS

Joseph J. Matsko; John A. Wafer, both of Beaver; Joseph C. Engel, Monroeville, and Bernard J. Mercier, Pittsburgh, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 15, 1980, Ser. No. 140,557
Int. Cl.³ H02H *3/093*
U.S. Cl. 361—96 **13 Claims**



1. Circuit interrupter apparatus, comprising:

interrupter means for conducting current flow through an associated electrical circuit and for operating to interrupt current flow therethrough upon command;

sensing means for sensing current flow through said interrupter means;

display means for displaying numeric quantities;

a plurality of designating means for identifying a parameter;

a plurality of light-emitting indicator members positionally associated with said designating means; and

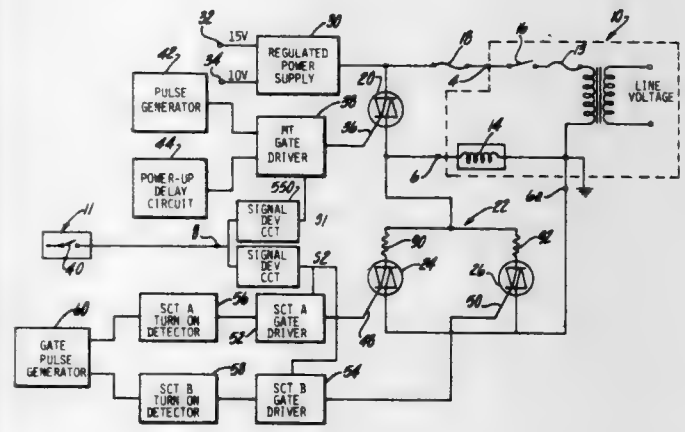
trip unit means connected between said interrupter means and said sensing means for operating said interrupter means when current flow therethrough exceeds a predetermined time-current trip characteristic defined by limit value parameters, for generating numeric quantities representing electrical parameters of an associated circuit and limit value parameters defining said time-current trip characteristic, for sequentially presenting a series of said numeric quantities to said display device, and for individually energizing said light-emitting indicator members in a sequence corresponding to the sequence of said numeric quantity presentations, whereby each numeric quantity so displayed is identified as a value of a specific parameter.

4,351,014

SOLID STATE SELF-CHECKING RELAY

George L. Schofield, Jr., Romona, Calif., assignor to Xenex Corporation, Birmingham, Mich.

Filed Jul. 18, 1980, Ser. No. 170,323
Int. Cl.³ H02H *3/00*
U.S. Cl. 361—100 **17 Claims**



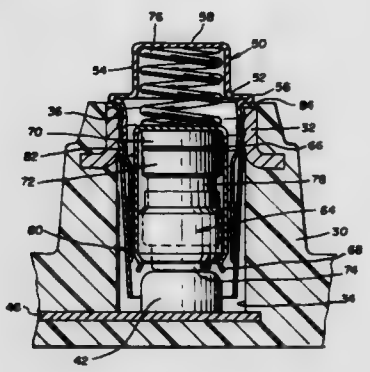
1. A relay circuit for switching an electrical load comprising a main triac having a pair of main terminals and a gate terminal, said main terminals being adapted to be connected in series with the load and an electric power source, a secondary triac having a pair of main terminals and a gate terminal, the main terminals of the secondary triac being adapted to be connected in parallel with said load, a current responsive circuit breaker connected in series with the main triac, a control circuit including a control switch for selectively producing a relay closing signal or a relay opening signal, first signal developing means operatively coupled between the control switch and the gate terminal of the main triac for turning on said main triac in response to a relay closing signal and for turning it off in response to a relay opening signal, a main triac gate driver coupled between said first signal developing means and the gate terminal of said main triac, a signal pulse generator, said gate driver having first logic means with a first input coupled with said first signal developing means and having a second input coupled with said pulse generator for producing a main triac turn-on signal in response to a relay closing signal and main triac turn-off signal in response to a relay opening signal, and a second signal developing means operatively coupled between the control switch and the gate terminal of the secondary triac for turning off the secondary triac in response to a relay closing signal and for turning the secondary triac on in response to a relay opening signal whereby the load will be deenergized by short-circuiting through the secondary triac and opening of said circuit breaker in the event that said main triac fails to turn off in response to a relay opening signal.

4,351,015

SHORTING CAGE FOR PROTECTOR WELLS

Thomas J. Smith, Bay Shore, N.Y., assignor to TII Industries, Inc., Copaigue, N.Y.

Filed Sep. 21, 1981, Ser. No. 303,835
Int. Cl.³ H02H *1/04*
U.S. Cl. 361—119 9 Claims



1. An overvoltage surge arrester apparatus for protecting communication lines and equipment connected thereto from voltage surges comprising:

(a) a housing of insulating material having at least one well-type aperture disposed therein, said well-type aperture being provided with a first electrode adapted to be connected to earth ground and disposed at the closed end thereof having an upwardly extending portion and a second electrode disposed about the periphery of the open end of said well-type aperture, said second electrode being adapted to be connected to one of said communication lines;

(b) a hollow, electrically conductive shorting cage adapted to be received into said well-type aperture, said shorting cage being in continuous intimate electrical contact with said second electrode and having at least one inwardly extending finger portion adapted to be in electrically conductive contact with said upwardly extending portion of said first electrode; and

(c) a protector cartridge including an electrically conductive shell adapted to be received into said hollow shorting cage and be in electrically conductive contact at the upper portion thereof providing electrically conductive contact with a protective device disposed within said shell, one terminal of said protective device extending downwardly beyond said shell and being adapted to be in electrical contact with said upwardly extending portion of said first electrode when in position in said shorting cage, said protector cartridge shell displacing the inwardly extending finger portion of said shorting cage causing it to be out of electrically conductive contact with said upwardly extending portion of said first electrode when in position in the well-type aperture.

4,351,016

DEVICE FOR ARRESTING THE MOTION OF A MOTOR DRIVEN PANEL

Willy Felbinger, Altdorf, Fed. Rep. of Germany, assignor to Saint Gobain Vitrage, Aubervilliers, France

Filed Oct. 1, 1980, Ser. No. 192,889
Claims priority, application Fed. Rep. of Germany, Oct. 2, 1979, 2939942
Int. Cl.³ H01H *47/12;* E05F *15/02*
U.S. Cl. 361—181 14 Claims

1. Apparatus for arresting the motion of a motor driven panel when an object comes in contact with a leading edge of said panel comprising:

(a) an electrical conductor along said leading edge of said panel;

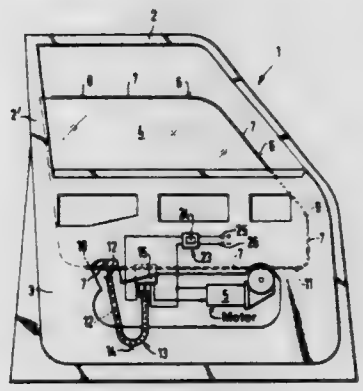
(b) means for sensing the presence of an object in contact with said electrical conductor;

(c) a switching means responsive to said sensing means for disconnecting or reversing power to said motor when an object is in contact with said conductor;

(d) a means for reversing polarity of the power supplied to said motor to reverse its direction, thus moving said panel either toward a first position or toward a second position;

(e) a conducting surface which contacts said panel when said panel is in said second position;

(f) an extension of said electrical conductor along the edge of said panel to a point where said conductor contacts said conducting surface when said panel moves to said second



position, thereby actuating said sensing circuit and removing power from said motor;

(g) means for providing power of the proper polarity to said sensing means and said switching means when power of either polarity is selected; and

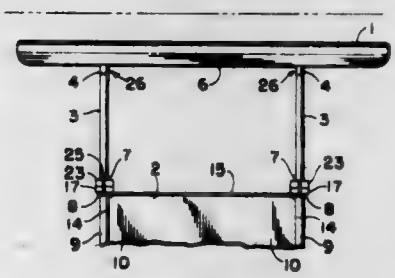
(h) means for preventing said switching means from operating to disconnect power to said motor for a period of time after an application of power to said motor when said panel is in said second position, whereby said motor is actuated for a time interval sufficient to allow said panel to move from said second position.

4,351,017

AMBIENT LIGHT

Douglas C. Ball, Quebec, Canada, assignor to Hauserman Ltd., Waterloo, Canada

Filed Oct. 1, 1979, Ser. No. 80,385
Int. Cl.³ F21S *1/02*
U.S. Cl. 362—147 10 Claims



1. A space dividing wall panel and lighting fixture combination comprising:

at least one planar, vertically oriented, space dividing wall panel having an upper edge portion and two vertical edge portions,

a vertical panel support member bordering, and hingedly secured to each vertical edge portion and including upper end connecting means,

an elongated lighting fixture having spaced engaging means on the underside thereof, said fixture being above and overlying at least in part said upper edge portion of said vertical panel support member, a pair of lighting fixture support means, said lighting fixture support means each including lower connecting means at the lower end thereof constructed and arranged to rigidly connect with said upper end connecting means, and, complimentary

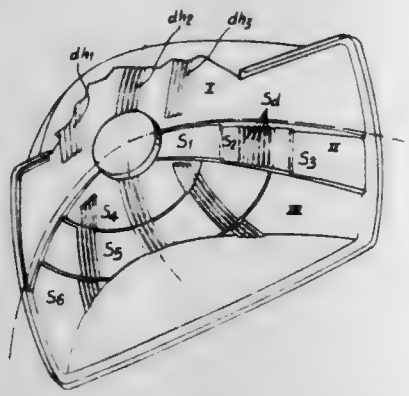
engaging means at the upper end thereof constructed and arranged to engage with one of said spaced engaging means on the underside of said elongated lighting fixture at any one of a plurality of different positions longitudinally along said elongated lighting fixture.

4,351,018

LAMP WITH STEPPED REFLECTOR SURFACE CONTAINING VERTICAL RIBS

Hector Fratty, Boulogne, France, assignor to Cibie Projecteurs, Bobigny, France

Filed Jun. 24, 1980, Ser. No. 162,503
Claims priority, application France, Jun. 29, 1979, 79 16926
Int. Cl.³ F21M *3/08*
U.S. Cl. 362—215 **12 Claims**



1. A motor vehicle headlamp, comprising:

a generally parabolic reflector having a generally concave reflecting surface, the general shape of the reflector having a focus,

a lens in front of the reflecting surface and cooperating with the reflector to define an enclosure, and

a light source within the enclosure for emitting light which is directed in a generally forward direction by the reflecting surface,

the reflecting surface of the reflector having a modified portion which is of generally parabolic shape, the focus of the modified portion being spaced from the focus of the general shape of the reflector, and

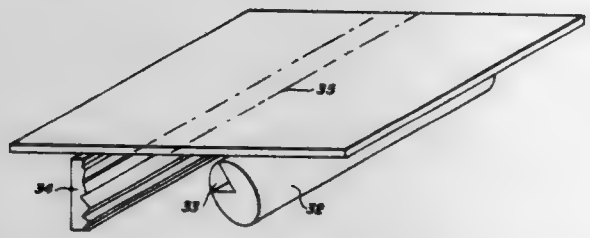
the modified portion of the reflecting surface having a generally vertical reflecting rib, the transverse cross-sectional shape of the rib being convex.

4,351,019

FACETTED REFLECTOR

Stephen T. Avery, Rochester; John A. Durbin; William L. Lama, both of Webster, and Paul H. Stelbitz, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 54,357, Jul. 2, 1979, abandoned. This application Jun. 29, 1981, Ser. No. 278,537
Int. Cl.³ F21V *7/05*
U.S. Cl. 362—298 **1 Claim**



1. An illumination system for illuminating a scan strip on an object surface, including:

a linear light source disposed adjacent to and on one side of said scan strip said light source having an aperture defined through a portion thereof,

a reflector located on the opposite side of said scan strip with its reflective surface facing said light source aperture,

said light source providing two components of light to said scan strip, one component being directly transmitted through said aperture to said scan strip and the second component being reflected from said reflector to said scan strip,

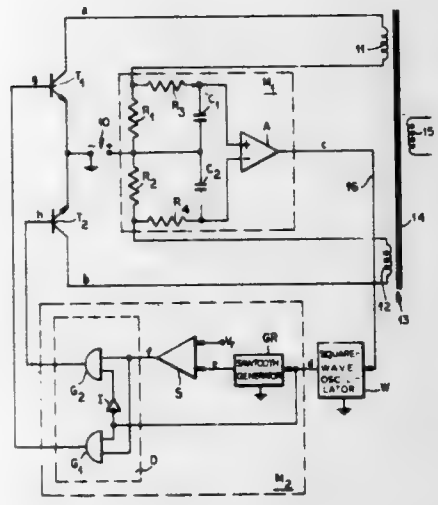
said reflector comprising a plurality of plane mirror facets, each facet having an individual surface length and disposed at an individual angle to a plane normal to said object surface such that the entire aperture of said illumination source is visible at said scan strip.

4,351,020

CIRCUIT ARRANGEMENT FOR EQUALIZING WAVEFORMS OF PUSH-PULL POWER SUPPLY

Andrea Leti, Sesto S. Giovanni, and Enrico Valacca, Pavia, both of Italy, assignors to Italtel Societa Italiana Telecomunicazioni S.p.A., Milan, Italy

Filed Mar. 26, 1981, Ser. No. 247,643
Claims priority, application Italy, Mar. 28, 1980, 20996 A/80
Int. Cl.³ H02P *13/20*
U.S. Cl. 363—26 **7 Claims**



1. A circuit arrangement for generating two alternating sets of load-energizing pulses of equal power, comprising:

two substantially identical transistors each having two main electrodes and a control electrode, one main electrode of each transistor being connected to a first terminal of a source of direct current having a second terminal connected by way of respective circuit branches to the other main electrode of each transistor, each of said circuit branches including a primary winding forming part of transformer means provided with at least one secondary winding for energizing a load;

pulse-generating circuitry with a pair of output leads connected to the control electrodes of said transistors for respectively delivering thereto two interleaved trains of first and second driving pulses of substantially constant recurrence frequency and of a width less than a half-cycle of said recurrence frequency whereby said transistors alternately conduct and energize said primary windings fractions of respective half-cycles;

sensing means for producing a pair of measuring variables respectively proportional to the mean current flow through said primary windings, said sensing means including two capacitors each connected in series with a respective resistor across at least part of one of said circuit branches; and

comparison means with inputs connected to said capacitors for emitting on error signal representative in sign and magnitude to any difference between said measuring variables, said pulse-generating circuitry having a control input connected to said comparison means for varying the relative width of said first and second driving pulses in a

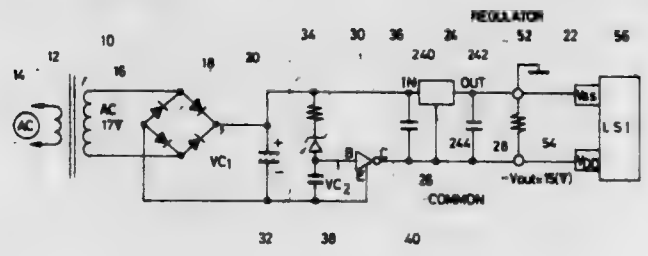
sense tending to reduce said error signal to substantially zero, said pulse-generating circuitry including a square-wave oscillator having a control input connected to said comparison means for producing an unsymmetrical waveform in response to said error signal.

4,351,021

POWER SUPPLY/AUTO-CLEAR CIRCUIT

Mitsuo Morihisa, Nara, and Tadao Inoue, Kawachinagano, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 18, 1981, Ser. No. 235,633
Claims priority, application Japan, Feb. 18, 1980, 55-19522
Int. Cl.³ H02M *7/02*
U.S. Cl. 363—49 **8 Claims**



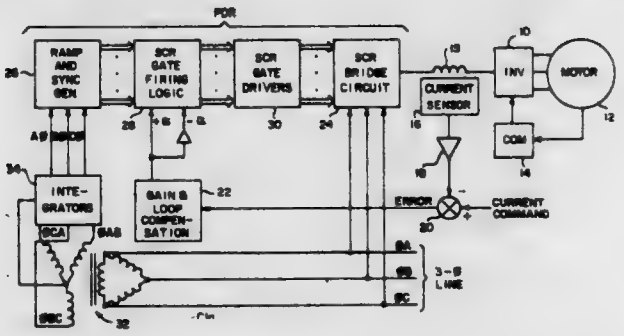
1. A power supply circuit comprising:
rectifying means for converting an alternating voltage to a DC voltage;
output terminal means for providing the DC voltage to a load;
switching means for selectively connecting said output terminal means to said rectifying means; and
control means for actuating said switching means when the DC voltage derived from said rectifying means reaches a preselected level after application of said alternating voltage to said rectifying means.

4,351,022

COMBINATIONAL LOGIC FOR GENERATING GATE DRIVE SIGNALS FOR PHASE CONTROL RECTIFIERS

Alan M. Lovelace, Administrator of the National Aeronautics and space Administration, with respect to an invention of; Carlisle R. Dolland, Torrance, and Daniel W. Trimble, La Habra, both of Calif.

Filed Jun. 30, 1981, Ser. No. 280,154
Int. Cl.³ H02P *13/26*
U.S. Cl. 363—87 **12 Claims**



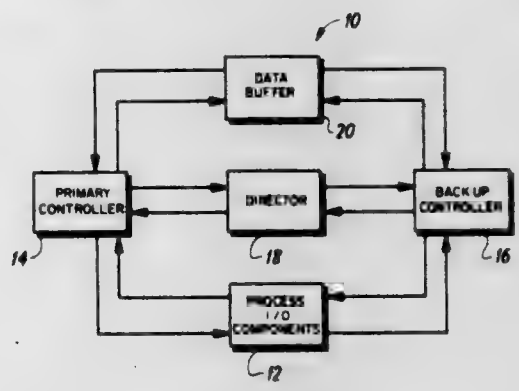
1. In a phase-delay rectifier (PDR) having a silicon controlled rectifier (SCR) bridge circuit to transfer 3-phase line power to a dc link, wherein actual current in said link is compared with a current command for generating a firing angle control signal, α, applied to the PDR to produce a firing angle in a range from 0° to 180°, wherein the output voltage of the PDR is proportional to the cosine of the firing angle, and a cosine ramp signal for a given SCR relating to a given phase is used to generate the gate firing pulse for the SCR by comparing the difference signal, α-control, to said cosine ramp to determine the correct time for firing each SCR, an improvement comprising means responsive to said control signal, cosine ramp signals and phase signals of said 3-phase line power transformed into 90° phase delayed line neutral phase signals Aϕ, Bϕ and Cϕ for producing firing control signals, for SCR switches in said bridge circuit, said means comprising
means for comparing said phase signals Aϕ, Bϕ and Cϕ with each other in pairs for producing squarewave signals +Aϕ SYNC, +Bϕ SYNC and +Cϕ SYNC indicative of the 120° phase relationship of the separate lines of said 3-phase power,
means for generating said cosine ramp signals,
comparator means for comparing said α-control signal with each of said cosine ramp signals for generating a square-wave COMP signal from each of said cosine ramp signals that is high when said cosine ramp signals exceed said α-control signal, and
combinational logic responsive to said COMP signals and said SYNC signals for producing said SCR firing control signals.

4,351,023

PROCESS CONTROL SYSTEM WITH IMPROVED SYSTEM SECURITY FEATURES

Donald K. Richer, Mansfield, Mass., assignor to The Foxboro Company, Foxboro, Mass.

Filed Apr. 11, 1980, Ser. No. 139,495
Int. Cl.³ G06F *15/46, 11/16*
U.S. Cl. 364—187 **10 Claims**



6. A method of providing enhanced control security within an industrial process control system comprising the steps of:
selecting one of at least two controllers to be on control and the other to be on backup;
providing a periodic transfer of the data base of said one controller into a separate buffer memory that is serially connected between said controllers such that each shares access to said buffer memory so as to isolate individual data storage means in each of said controllers;
transferring said data base from said buffer memory to data storage means within the other controller within the interim between said periodic transfer, whereby said other controller is given a delayed copy of said data base;
tracking said one controller with said other controller while said other controller is on backup; and
initiating a switchover of control to said other controller in the event of failure of said one controller.

4,351,024

SWITCH SYSTEM BASE MECHANISM

John J. Bradley, Garches, France, and Benjamin S. Franklin, Cambridge, Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

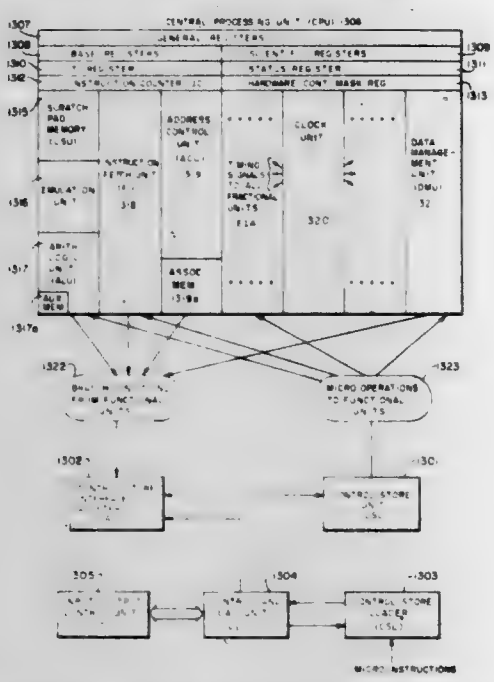
Filed Apr. 21, 1975, Ser. No. 570,331
Int. Cl.³ G06F *9/18*
U.S. Cl. 364—200 **6 Claims**

1. In a multiprogramming computer system having a main memory, a central processing unit (CPU) coupled to said main memory, said (CPU) controlling the state of a plurality of groups of processes being in a running, ready, wait or suspended state, said computer system also having scratchpad

registers being accessible to an operating system for controlling said multiprogramming computer system, a data structure for storing coded signals for communicating between said processes and said operating system, and said scratchpad registers, said data structure comprising:

(a) first means in said data structure and communicating with said operating system for storing coded signals indictive of an address for a selected one of said processes;

(b) second means in said first means for storing coded signals indicating priority of said selected one of said processes in



relation to others of said processes for obtaining control of said CPU when ready;

(c) third means in said data structure and communicating with said operating system, for storing coded signals indicative of an address for a selected one of said plurality of groups of processes, and,

(d) fourth means coupled to said data structure and said scratchpad registers, for generating signals causing the changing of information in said data structure and said scratchpad registers.

4,351,025

PARALLEL DIGITAL COMPUTER ARCHITECTURE

William B. Hall, Jr., 3817 Reinwood Dr., Dayton, Ohio 45414

Continuation of Ser. No. 55,424, Jul. 6, 1979, abandoned. This application Sep. 21, 1981, Ser. No. 304,125

Int. Cl.³ G06F *9/16*

U.S. Cl. 364—200 **12 Claims**

1. A digital data processing apparatus for executing real-time analog format functions comprising:

(a) a plurality of elemental computers, each of which is a complete digital data processor having its own central processing unit, memory, input/output means, cycle clock, external interrupt capacity, and stored program;

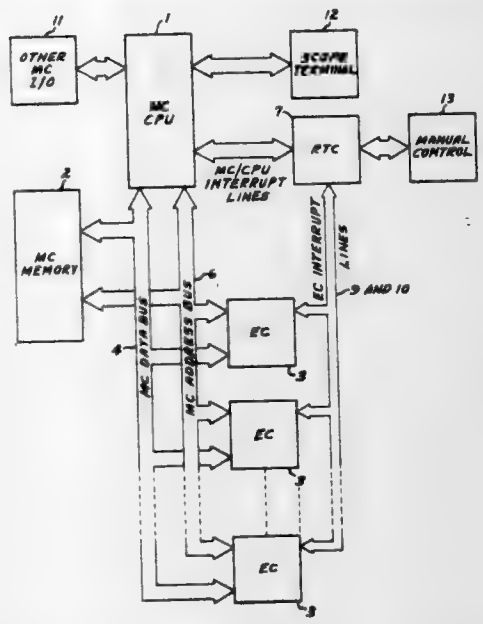
(b) a master controller with a master cycle clock and an external interrupt capacity for regulating the transfer of data between elemental computers in conformity to an ordered sequence;

(c) an MC memory;

(d) master bus means comprising a data bus and an address bus, both coupled to the master controller, to the MC memory, and to the input/output means of the elemental computers;

(e) a real-time clock operating at a rate commensurate with the upper frequencies of a simulation but at a substantially lower frequency than said cycle clocks, an MC interrupt line coupling said real-time clock to the master controller, and two MC interrupt lines which are an integrator interrupt line and a non-integrator interrupt line, with each elemental computer coupled to said real-time clock via at least one of said two EC interrupt lines; wherein said real-time clock generates timing comprising repetitive frames with alternating EC time slots and MC time slots in each frame, the EC time slots being divided into a plurality of non-integration time slots and one integration time slot each frame, the number of EC time slots per frame being determined by the maximum number of interchanges of data required by the program for non-integrating functions between integrating functions;

(f) wherein for any given simulation program some of the elemental computers are assigned non-integrating functions and are enabled via said non-integrator interrupt line during non-integration time slots, and other of the elemental computers are assigned integrating functions and are enabled via said integration interrupt line during integration time slots,



each said function corresponding to the function of one computing element of an analog computer, each elemental computer making one pass of its program to perform its assigned function digitally upon receiving an interrupt signal;

(g) the master controller being enabled via said MC interrupt line during MC time slots to transfer data via said master bus means among the elemental computers, so as to be means functionally equivalent to patchcord interconnections of computing elements of an analog computer; and

(h) wherein said input/output means comprises registers addressable from either the master controller via said master bus means or from the respective elemental computers.

4,351,026

PROJECTILE LOCATING APPARATUS FOR USE IN TARGET SHOOTING

Robert B. Phillips, Walton on Thames, England, assignor to Australasian Training Aids (Pty.) Limited, Albury, Australia

Continuation-in-part of Ser. No. 131,086, Mar. 17, 1980, abandoned. This application May 9, 1980, Ser. No. 148,570

Claims priority, application United Kingdom, May 10, 1979, 7916217

Int. Cl.³ F41J *5/12*; G06F *15/20*

U.S. Cl. 364—423 **59 Claims**

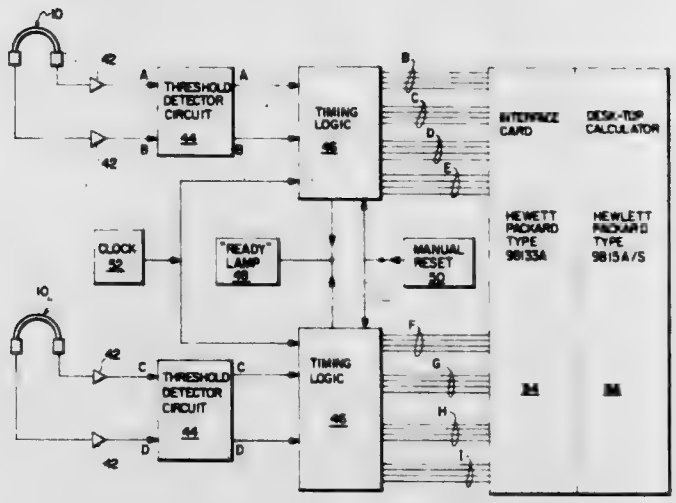
25. Apparatus for determining the location of a point on a reference plane through which the trajectory of a supersonic projectile passes, comprising:

first and second vibration transmitting means located at respective spaced locations, each said virbration transmitting means having a surface defining an arc in the plane and having two ends, and each said vibration transmitting means transmitting vibrations caused by an airborne shock or preasure wave of the supersonic projectile to the two ends thereof;

first and second signal producing means operatively coupled to the respective ends of said first vibration transmitting means and third and fourth signal producing means opera-

tively coupled to the respective ends of said second vibration transmitting means, said first, second, third and fourth signal producing means generating respective output signals in response to the transmitted vibrations;

timing circuit means responsive to said output signals for producing a first signal representing a time difference between the output signals of the first and second signal



producing means and a second signal representing a time difference between the output signals of the third and fourth signal producing means; and

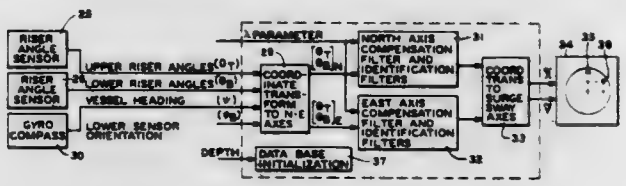
computing means operative to calculate the location of said point on the reference plane through which the trajectory of the supersonic projectile passes, from the first and second time difference signals and from the locations of said first and second transmitting means.

4,351,027

ADAPTIVE RISER ANGLE POSITION REFERENCE SYSTEM

Tom A. Gay, Houston, Tex.; Gary L. Hartman, Fridley, and Gunter Stein, New Brighton, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 13, 1980, Ser. No. 177,667
Int. Cl.³ G06F *15/20*; B63H *15/00*
U.S. Cl. 364—432 **15 Claims**



1. An adaptive riser angle position reference system for determining the horizontal position of a marine vessel supporting a riser which extends between the vessel and a subsea wellhead, comprising:

a first vertical angle sensor for producing a lower angle signal indicative of deviation from vertical of the lower riser at a point proximate the wellhead;

a second vertical angle sensor for producing an upper angle signal indicative of deviation from vertical of the upper riser at a point proximate the marine vessel;

compensation filter means having filter characteristics which are variable in accordance with filter coefficients supplied thereto;

riser parameter identification means connected to receive the lower and upper angle signals and operable to determine a riser model whose response approximates that of the riser and to supply corresponding filter coefficients to said compensation filter means;

first transfer means for receiving the lower and upper angle signals and supplying corresponding signals to said compensation filter means, whereby the output of said compensation filter means is indicative of vessel position;

utilization means; and

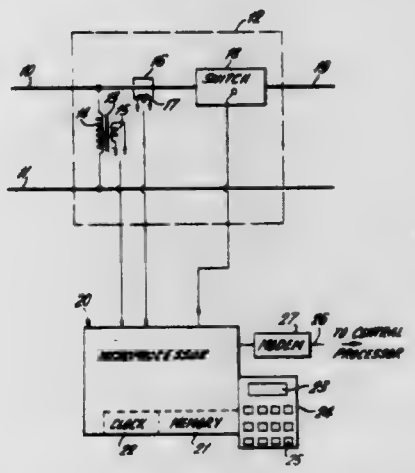
second transfer means for receiving the output of said compensation filter means and supplying corresponding position information to said utilization means, whereby said utilization means is operable to indicate horizontal vessel position relative to the wellhead.

4,351,028

METERS FOR MEASURING ELECTRICAL ENERGY CONSUMPTION

Robert A. Peddie, Reigate, and John S. Fielden, Ottery St. Mary, both of England, assignors to South Eastern Electricity Board, England

Filed Feb. 19, 1980, Ser. No. 122,166
Claims priority, application United Kingdom, Feb. 21, 1979, 7906212
Int. Cl.³ G01R *11/63*; G06F *15/20*
U.S. Cl. 364—483 **15 Claims**



1. A meter for measuring electrical power consumption by a load circuit of a consumer comprising sensing means for sensing the voltage applied to that circuit and the current flowing in the circuit, digital data processing means responsive to the sensed voltage and current from said sensing means and including a programmable memory and operative to compute from the values of the sensed voltage and current and from data in the programmable memory, the charges in monetary units for energy consumed, means for periodically including in the computed charges a time-dependent component, and means for indicating the total accumulated credit or debit information in monetary terms.

4,351,029

TOOL LIFE MONITORING AND TRACKING APPARATUS

Robert E. L. Maxey, North Huntington, and James N. Brecker, Pittsburgh, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 5, 1979, Ser. No. 100,674
Int. Cl.³ G06F *15/46*; G01N *19/02*
U.S. Cl. 364—511 **7 Claims**

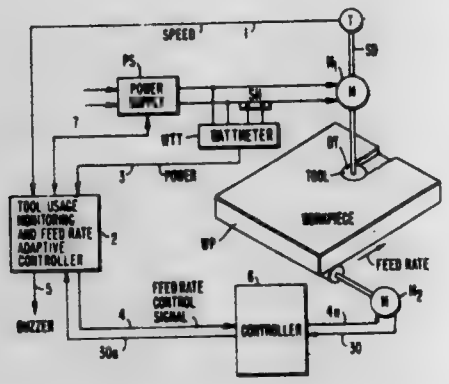
1. A system for monitoring tool life on a machine tool having at least one operative tool thereon, comprising:

means for instantaneously and recurrently deriving a measuring signal characteristic of power consumed by said machine tool for the purpose of relative motion between said workpiece and said tool;

said measuring signal deriving means being operable in one of an idle position mode and a working position mode of said tool relative to said workpiece;

means for combining an idle position measuring signal and a working position measuring signal for deriving a signal indicative of net power consumed by said tool;

means for integrating said indicative signal as a function of time for obtaining a past history characteristic signal;



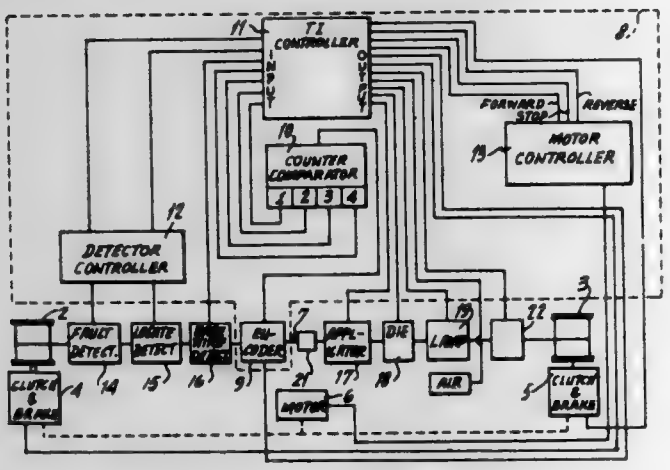
means responsive to said integrating means for comparing said characteristic signal with a reference signal representative of the life expectancy of said tool.

4,351,030

AUTOMATIC REPAIR APPARATUS AND METHOD FOR INSULATED WIRE

Gregory Astfalk, Bristol Township, Bucks County, Pa.; Lawrence A. Fowler, Washington Township, Mercer County, N.J.; Chauncey Herring, Jr., Ewing Township, Mercer County, N.J., and Thaddeus J. Szymczak, Edison, N.J., assignors to Western Electric Company, Inc., New York, N.Y.

Filed Sep. 8, 1980, Ser. No. 185,067
Int. Cl.³ G01R *31/14*
U.S. Cl. 364—552 **16 Claims**



1. A machine for detecting and repairing faults in the insulation of insulated wire comprises:

a wire supply reel and a wire take-up reel spaced therefrom;

means for conveying the wire through the machine from the supply reel to the take-up reel;

a first fault detector through which the wire passes for sensing the presence of a fault;

a second fault detector, spaced from the first fault detector for specifically locating a detected fault in the insulation;

a sequence of spaced fault repair means serially activated after location of the fault and located at fixed distances from the second fault detector said repair means including means for applying a curable repair coating over the fault and means for curing the coating;

control means responsive to the detection of a fault for causing the wire to stop and controlling the direction and speed of movement of the wire as it progresses through the machine; and

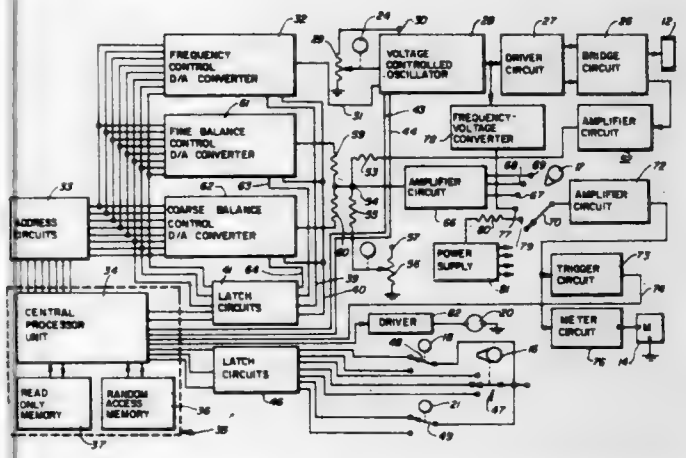
process control means for automatically activating and deactivating the control means and the respective sequential repair means at predetermined distances of movement from the second fault detector of the insulated wire to be repaired.

4,351,031

NONDESTRUCTIVE TESTING SYSTEM HAVING AUTOMATIC SET-UP MEANS

John J. Flaherty, Elk Grove Village; Eric J. Strauts, Park Ridge; Helmut F. Wagerer, Des Plaines, and Timothy C. Loose, Chicago, all of Ill., assignors to Magnaflux Corporation, Chicago, Ill.

Filed Nov. 7, 1980, Ser. No. 204,946
Int. Cl.³ G01R *33/00*
U.S. Cl. 364—580 **14 Claims**



1. In a nondestructive testing system including measuring means for developing an output signal corresponding to characteristics of a structure under test, said measuring means including adjustable means for controlling the value of a test parameter over a certain range, and set-up means for adjusting said adjustable means, said set-up means comprising: memory means for storage of the value of said output signal and the concurrent value of said test parameter, program means for control of said adjustable means and said memory means, said program means being operable under each of a plurality of different set-up test conditions for adjusting the value of said test parameter over said certain range and for simultaneously storing a set of output signal values and concurrent test parameter values, and comparison means associated with said memory means for comparing said sets of stored output signal and test parameter values and for developing and storing an optimum parameter value at which a predetermined correspondence between output signals is obtained during said plurality of different set-up test conditions, and means operative upon storage of said optimum parameter value for then adjusting said adjustable means to obtain said optimum test parameter value during subsequent operation of the said system in testing structures of unknown characteristics.

4,351,032

FREQUENCY SENSING CIRCUIT

Richard F. Challen, Lynchburg, Va., assignor to General Electric Company, Lynchburg, Va.

Continuation-in-part of Ser. No. 965,897, Dec. 4, 1978, abandoned. This application Jun. 20, 1980, Ser. No. 161,563
Int. Cl.³ G06F *7/38*
U.S. Cl. 364—724 **49 Claims**

1. A frequency sensing circuit comprising:

means for sampling an input signal;

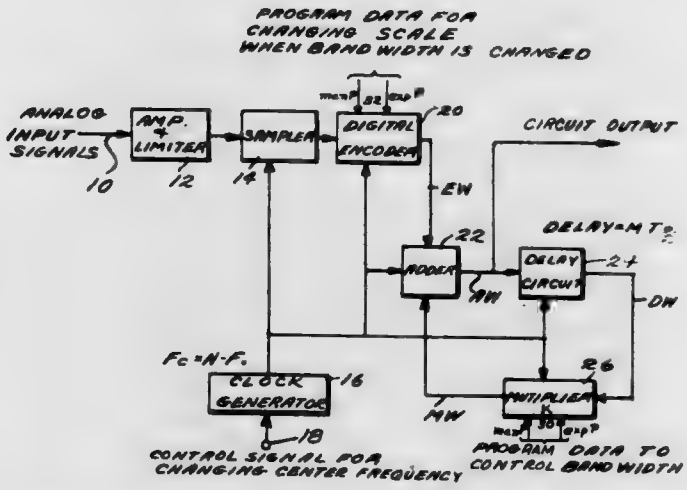
means coupled to said means for sampling, for encoding each sample as a digital signal at an output thereof;

an adder having a first input coupled to the output of said means for encoding and having a second input and an output;

delay means having an input coupled to the output of said adder for delaying signals applied thereto by an amount that is approximately an integral multiple of one-half the time period of the frequency to be sensed, said delayed signals being provided at an output;

a multiplier having an input coupled to the output of said delay means and having an output coupled to said second input of said adder;

means for clocking said multiplier at a rate of two or more times the desired frequency to be sensed; and



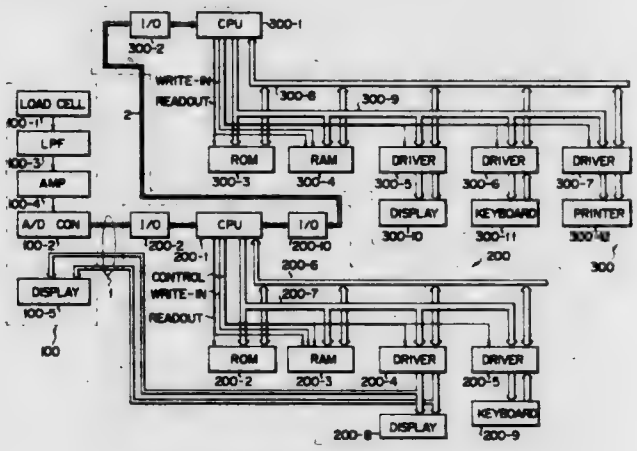
means coupled to said frequency sensing circuit for deriving an output signal therefrom having a magnitude indicative of the presence of the frequency to be sensed in said input signal.

4,351,033

POSTAL CHARGE PROCESSING SYSTEM WHEREIN POSTAL CONDITION DATA IS SAVED AND REUSED FOR THE NEXT POSTAL PARCEL

Mitsuo Uchimura, Numazu; Masao Oana, and Yoshiharu Nishimura, both of Mishima, all of Japan, assignors to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Feb. 25, 1980, Ser. No. 124,603
Claims priority, application Japan, Mar. 7, 1979, 54-26463
Int. Cl.³ G06F *15/20*; G01G *19/04*
U.S. Cl. 364—900 **4 Claims**



1. A postal charge processing system comprising:

weight measuring means for measuring the weight of a postal item and producing weight data corresponding to the measured weight of said postal item;

first switching means for selectively setting postal conditions including the way of mail and region of destination;

first memory means for storing postal condition data produced in accordance with the operation of said first switching means;

second memory means;

second switching means;

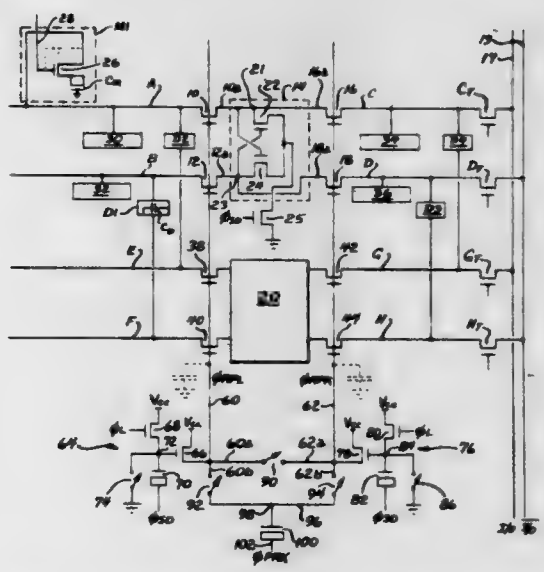
data processing means coupled to said first and second switching means and also to said first and second memory means for calculating the postal charge based on the contents stored in said first and second memory means and weight data supplied from said weight measuring means, said data processing means including means for causing the data in said first memory means to be written into said second memory means and then cleared when detecting that weight data indicating 0 grams is supplied from said measuring means and including means for detecting operation of said first and second switching means for causing the data in said second memory means to be written into said first memory means when detecting that said second switching means is operated before said first switching means is operated.

4,351,034

FOLDED BIT LINE-SHARED SENSE AMPLIFIERS

Sargent S. Eaton, Jr., and David R. Wooten, both of Colorado Springs, Colo., assignors to Inmos Corporation, Colorado Springs, Colo.

Filed Oct. 10, 1980, Ser. No. 195,728
Int. Cl.³ C11C *13/00*
U.S. Cl. 365—189 **10 Claims**



1. In an MOS memory having a plurality of memory cells each having a memory cell capacitor adapted to be charged so as to reflect the logic state of its memory cell, having a plurality of bit lines with associated isolation transistors and word lines for accessing a particular memory cell, and having a plurality of input/output buss lines for reading the logic state of the accessed memory cell, a folded bit line-shared sense amplifier arrangement for sensing the state of an accessed memory cell, comprising:

a shared sense amplifier positioned between and coupled to first and second bit lines via first and second isolation transistors and positioned between and coupled to third and fourth bit lines via third and fourth isolation transistors, said first and said third bit lines being adjacent each other and said second and said fourth bit lines being adjacent each other;

decoding means for selectively activating said first and third isolation transistors to couple said first and third bit lines to said shared sense amplifier; and

means for enabling said shared sense amplifier to latch in a state indicative of the difference in voltage between said first bit line and said third bit line, said difference representing the logic state of the accessed memory cell,

said decoding means selectively conditioning said second and fourth isolation transistors to couple said latched state of said shared sense amplifier to the input/output buss lines via said second and fourth bit lines so as to read the voltage state of the accessed memory cell;

4,351,035

METHOD OF AND APPARATUS FOR LOCATING DISTURBANCES IN A MINERAL SEAM

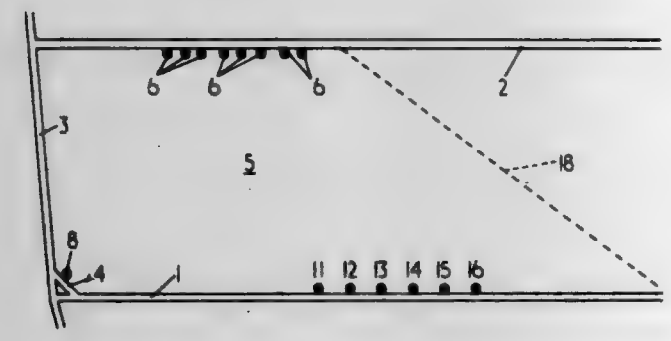
David J. Buchanan, Burton-on-Trent, and Iain M. Mason, Oxford, both of England, assignors to Coal Industry (Patents) Limited, London, England

Filed Oct. 19, 1979, Ser. No. 86,628

Claims priority, application United Kingdom, Oct. 20, 1978, 41420/78

Int. Cl.[3] G01V *1/00*

U.S. Cl. 367—14 20 Claims



20. Apparatus for locating disturbances in a mineral seam comprising a source of seismic waves, an array of detectors for detecting the waves and processing electrical signals generated by the detectors when waves are detected, the processing means including means for recompressing the signals and further means arranged to produce a holograph of the seam from the recompressed signals.

4,351,036

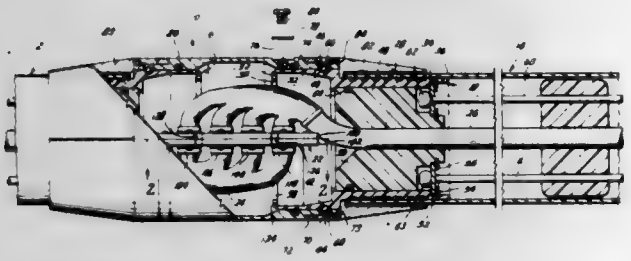
SUBMARINE CABLE CONNECTOR LINK

John C. Mollere, Nassau Bay, Tex., assignor to Western Geophysical Co. of America, Houston, Tex.

Continuation-in-part of Ser. No. 69,208, Aug. 23, 1979, Pat. No. 4,260,211. This application Sep. 25, 1980, Ser. No. 190,674

Int. Cl.[3] H01R *13/62*

U.S. Cl. 367—20 5 Claims



1. A hermaphroditic submarine cable connector link for coupling together a pair of adjacent elongated seismic streamer cable sections, the sections including at least one stress member, a plurality of hydrophones, a plurality of wires for transmitting hydrophone signals and an outer jacket, comprising:

identical end fittings fastened to the ends of the pair of adjacent cable sections for receiving the plurality of wires;

identical connector plates at the ends of the adjacent cable sections for mounting a plurality of multicontact connector plugs to which said plurality of wires are connected;

means for mating the connector plates of the pair of adjacent cable sections;

means for linking the mated connector plates to the end fittings of said adjacent cable sections;

an outer barrel for engaging and rigidly locking together the end fittings of said adjacent cable sections;

an internal lip around an internal circumference of an exposed portion of said end fittings;

a pair of diametrically opposed slots in said lip; and

a pair of notches near each end of the mated connector plates for engaging the lips of said end fittings after insertion of said mated connector plates through said slots.

4,351,037

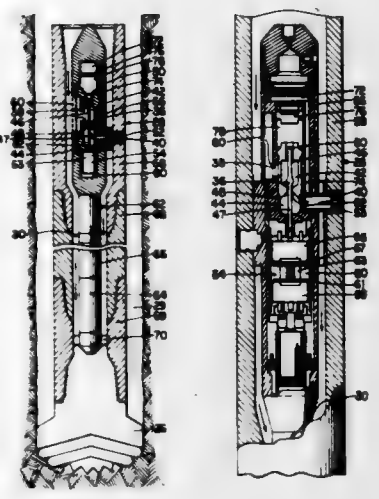
SYSTEMS, APPARATUS AND METHODS FOR MEASURING WHILE DRILLING

Serge A. Scherbatskoy, P.O. Box 1936, Fort Worth, Tex. 76101

Division of Ser. No. 857,677, Dec. 5, 1977. This application Jan. 10, 1980, Ser. No. 110,848

Int. Cl.[3] G01V *1/40, 1/02*

U.S. Cl. 367—85 29 Claims



1. For use in a system for conducting drilling operations employing a string of drill pipe extending from the earth's surface having a drilling means at the lower end, a pump by which drilling fluid is forced downwardly through the drill string interior and drilling means to flow back to the surface through the well annulus, the drilling means imposing a restriction to the drilling fluid flow forming a high pressure zone in the interior of the drill string and a low pressure zone in the well annulus, a telemetering system comprising a drilling fluid bypass above the drilling means providing fluid communication between the interior of the drill string and the well annulus, the bypass having an inlet portion within said drill string and being defined in part by a valve seat having an inlet and outlet, a valve stem moveable to and away from the inlet end of said valve seat and in a linear path within said drill string forming a valve in said bypass, the bypass having an outlet portion extending from the outlet end of said valve seat to said annulus, a means for detecting the magnitude of a downhole parameter and for producing an electrical signal comprising a succession of electrical pulses which are arranged in a sequence having a time distribution representing said magnitude, an electrical energy source, means responsive to each said electrical pulse for supplying a relatively large amount of electrical power to initiate opening said valve, and substantially less power when the valve is open or closed, to generate pressure pulses in the drilling fluid, and means at the earth's surface to detect such pressure pulses and to provide a measure of the magnitude of said parameter.

4,351,038

ULTRASONIC EXAMINATION AND IMAGING

Pierre Alais, Dampierre, France, assignor to Agence Nationale de Valorisation de la Recherche (ANVAR), Dampierre, France

Filed Dec. 30, 1980, Ser. No. 221,421

Claims priority, application France, Dec. 31, 1979, 79 32097

Int. Cl.[3] G01S *15/89*

U.S. Cl. 367—105 15 Claims

1. A device for ultrasonic imaging, comprising:

n elementary transducers distributed at equal intervals along a predetermined line,

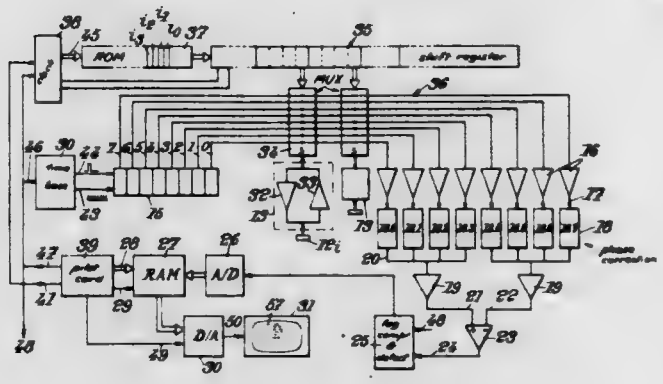
a generator of electrical pulses,

time delay means operatively associated with said generator for delivering, in response to each electrical pulse from said generator, a plurality a of a low level control pulses

delayed by different fixed time delays on different channels, a being an integer,

means for storing a distribution of said a time delays between said n transducers corresponding to focusing of transmitted ultrasonic energy at a point located at a predetermined distance from said line,

a plurality of amplifiers each associated with an individual one of said transducers for delivering an energizing pulse to the associated transducer in response to one of said low level pulses appearing on an associated channel selected by said storing means,



a plurality of analog multiplexers each associated with a corresponding one of said amplifiers,

and a bus operatively associated with said time delay means and having a plurality a of individual lines each arranged to receive a different one of said low level pulses and to control at least one said amplifier connected thereto through means of the associated multiplexer, the said associated multiplexer being controlled in turn by switching means for achieving said distribution.

4,351,039

TIMEPIECE WITH A DETECTOR AND CONTROL CIRCUIT FOR A STEPPING MOTOR

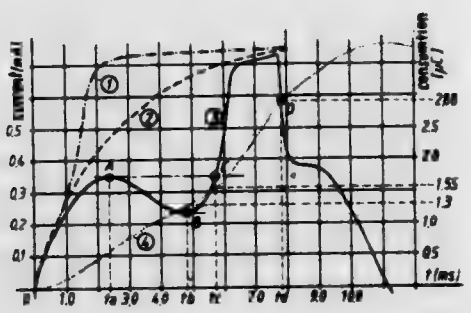
Jean-Claude Berney, Chemin du Bois de Menton, 1066 Epalinges, Switzerland, assignor to Jean-Claude Berney, Epalinges, Switzerland

Filed Sep. 8, 1980, Ser. No. 184,870

Claims priority, application Switzerland, Sep. 10, 1979, 137/79

Int. Cl.³ G04B *19/00*; C04C *19/00*

U.S. Cl. 368—76 **14 Claims**



1. Timepiece comprising a frequency divider, a former of driving pulses, a stepping motor, detector means of the current of said motor and a power source, said timepiece further comprising an amplifier including at least a MOS transistor receiving on a first terminal a voltage representative of the current in the driving coil of said motor, a second terminal of said transistor being joined up to a condenser connected to one of the poles of said power source, means for charging said condenser, and means for discharging said condenser, said amplifier delivering signals representative of the current in said condenser and, means for controlling the driving pulses, said driving pulses controlling means being connected to said amplifier and to said former of driving pulses.

4,351,040

QUARTZ CRYSTAL WRISTWATCH

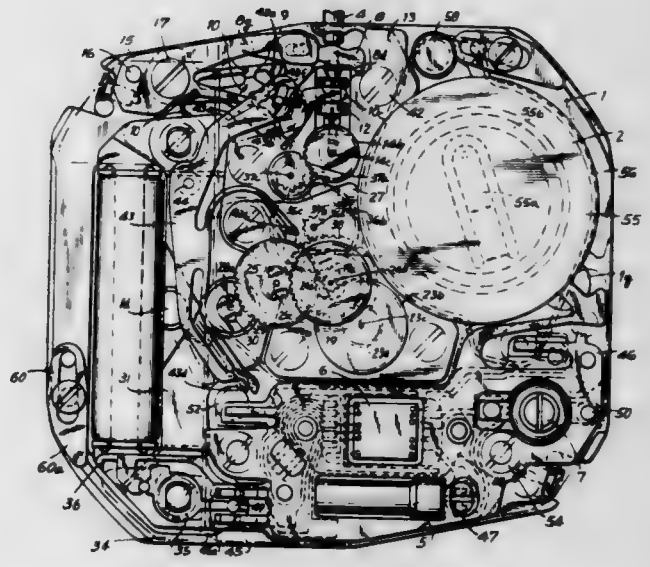
Shigeru Aoki, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed May 15, 1980, Ser. No. 150,262

Claims priority, application Japan, May 16, 1979, 54-59949

Int. Cl.³ G04C *23/02*; G04B *19/02*

U.S. Cl. 368—88 **21 Claims**



1. An analog display quartz crystal wristwatch comprising:

a quartz crystal time standard oscillator means for providing a high frequency time standard signal;

circuit means including a driving circuit for providing a low frequency time standard signal in response to said time standard signal oscillator means;

driving motor means including a driving coil and a stepping motor driven in response to said low frequency time standard signal applied by said driving circuit;

battery power means coupled to said oscillator means, circuit means and driving coil for energizing these elements;

a main movement support plate;

time display gear train means operatively coupled to said stepping motor for displaying time in analog fashion;

a winding stem selectively operably engagable with said time display gear train means for adjusting said time display gear train means;

a center wheel bridge spaced apart from and mounted on said support plate; and

a pillar-shaped center wheel shaft having a tubular region and a perpendicular disc-shaped region with a central opening, said pillar-shaped center wheel shaft mounted to said center wheel bridge for supporting a cannon pinion about the tubular region, said cannon pinion penetrating the support plate;

said time display gear train means including a center wheel having a center wheel gear and a center wheel pinion disposed between said support plate and said center wheel bridge;

an hour wheel disposed on the opposite side of said support plate as said center wheel;

said support plate having a minute wheel opening;

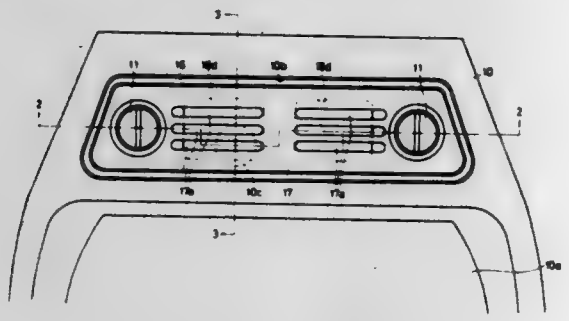
a minute wheel in said minute wheel opening and having a minute wheel gear engaged with said center wheel pinion, a minute wheel pinion engaged with said hour wheel and a connecting member therebetween, said minute wheel pinion being smaller than said minute wheel opening and said minute wheel gear being larger than said minute wheel opening, said connection member secured in said minute wheel opening.

4,351,041

ACOUSTIC ALARM DEVICE FOR WATCHES

Satoru Fukutome; Hideo Hatanaka, and Motoyuki Saito, all of Tanashi, Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Jun. 30, 1980, Ser. No. 164,769
Claims priority, application Japan, Jun. 30, 1979, 54-89820[U]; Jun. 30, 1979, 54-89821[U]; Jun. 30, 1979, 54-89822[U]
Int. Cl.³ G04C 23/02, 21/16
U.S. Cl. 368—88 11 Claims



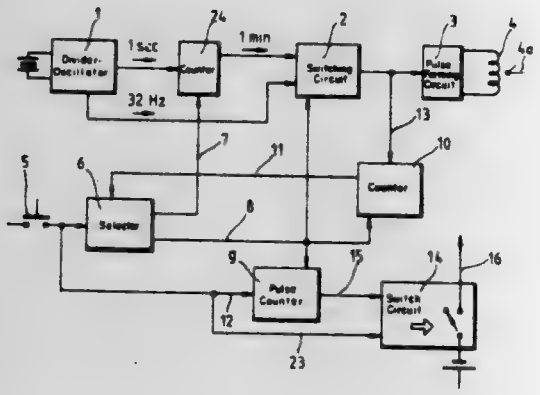
1. An alarm device for a watch having a watch case, comprising a recess provided in an upper portion of the body of said watch case, a watertight sealing member provided in said recess, a vibration plate engaged with said watertight sealing member and adjacent to the bottom of said recess, cover means for said vibration plate, said cover means having at least one sound emanating opening, and means for securing said vibration plate and said cover means to said recess, whereby the entirety of said alarm device is embedded in said recess, said securing means being a screw provided with a watertight sealing means therefor and said cover means comprising a frame member which is secured to said recess by said screw, together with said vibration plate, and a cover which is secured to said frame member by frictional engagement.

4,351,042

TIMEPIECE INCLUDING A STORAGE ARRANGEMENT

Pierre Ginalski, St-Maurice, and Pierre-Luc Gagnebin, Bienne, both of Switzerland, assignors to Societe Suisse pour l'Industrie Horlogere Management Services S.A., Bienne, Switzerland

Filed Oct. 28, 1980, Ser. No. 201,673
Claims priority, application France, Nov. 5, 1979, 79 27619
Int. Cl.³ G04C 9/00
U.S. Cl. 368—188 7 Claims



1. Electronic timepiece comprising:

a time-base means including an oscillator and a frequency divider for providing time-keeping pulses;

a time-display means including at least an hour indicator and a minute indicator actuated by a stepping motor;

a manually actuable electric switch movable between first and second positions;

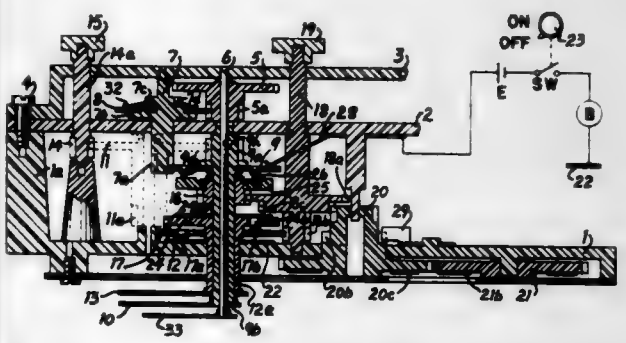
a pulse transmission-and-modification means coupled between said time-base means and said time-display means, and connected to said manual switch, for normally applying time-keeping pulses, at a time-keeping frequency, to said time-display means with said manual switch in said first position, but: in response to said manual switch being moved briefly from said first position to said second position, applying a pulse signal to said time-display means for advancing the minute indicator through a step of one minute; in response to said switch being moved from said first position to said second position and held there for a longer duration, applying pulses at a higher frequency to said time-display means to advance the minutes hand through an increment of one hour at an increased speed; and while said minute indicator is moving at said increased speed in response to said manual switch being actuated from said second position to said first position and back to said second position, stopping further movement of said minutes indicator to place the timepiece into a state of minimum energy consumption for storage purposes; and in response to a further actuation of said switch when said timepiece is in said state of minimum energy consumption, restarting movement of said minutes hand.

4,351,043

TIME DETECTING SWITCH FOR AN ALARM CLOCK

Masuo Ogihara; Kozo Chimura, and Nobuo Shinozaki, all of Yotsukaido, Japan, assignors to Seiko Koki Kabushiki Kaisha, Japan

Continuation of Ser. No. 908,560, May 22, 1978, abandoned. This application Oct. 14, 1980, Ser. No. 196,292
Claims priority, application Japan, May 26, 1977, 52-67946[U]
Int. Cl.³ G04C 21/16
U.S. Cl. 368—252 5 Claims



1. In an alarm clock of the type having at least one rotationally driven rotatable time wheel, at least one rotatable detecting wheel rotatable relative to the time wheel to phases corresponding to alarm signaling times by an alarm signaling time setting wheel, and a time detecting switch having one switching state when the time wheel is out of phase with the detecting wheel and switchable to another switching state when the time wheel rotates into phase with the detecting wheel to thereby enable the sounding of an alarm at preselected alarm signaling times, the improvement wherein said time detecting switch comprises a slide switch comprising one of said time wheel and detecting wheel being comprised of a one-piece structure composed of electrically conductive material and having a gear teeth portion for meshing with another gear to effect rotational driving of the time wheel and further having a first set of projections which define the contact points of the slide switch, and the other of said time wheel and detecting wheel being at least partly composed of electrically insulating material and having a switch plate connected thereto having a contact portion for making sliding electrical contact with the first set of projections.

4,351,044
RECORDING SYSTEM USING DISK-SHAPED RECORDING MEDIUM

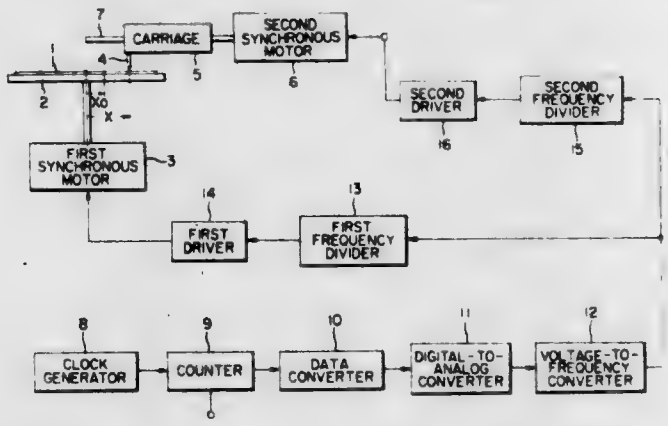
Ryoichi Imanaka, and Seizou Tsuji, both of Hirakata, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 4, 1980, Ser. No. 109,493

Claims priority, application Japan, Jan. 9, 1979, 54-1202; Oct. 23, 1979, 54-137481

Int. Cl.[3] G11B *17/00*

U.S. Cl. 369—43 3 Claims



1. A recording system of the type in which a disk-shaped recording medium is rotated by a first driver means at an angular speed corresponding to the frequency of a first drive signal applied thereto, and inscribed with a helical recording path bearing the signal by means of a recording head which is gradually displaced in the radial direction by a second driver means, comprising:

a frequency generating means for producing output pulses at a normally constant frequency;

a counter means for starting counting of the output pulses from said frequency generating means from the time when said recording head has started the recording of a signal on said recording medium, and for generating a digital output representative of the result of the counting;

a data converter for processing the output from said counter means to generate a digital signal in a predetermined format;

a digital-to-analog converter for converting the digital output from said data converter into a DC voltage;

a voltage-to-frequency converter for generating an AC signal having a frequency corresponding to the output from said digital-to-analog converter;

first frequency divider means for frequency dividing the output from said voltage-to-frequency converter to provide a first drive signal, and for delivering said first drive signal to said first driver means to rotate said recording medium; and

second frequency divider means for frequency dividing the output from said voltage-to-frequency converter to provide a second drive signal, and for delivering said second drive signal to said second driver means to drive said recording head in the radial direction, whereby synchronized operation of said first and second driver means is provided.

4,351,045
TRACKING ERROR MEASUREMENT

James M. Townshend, 32 Mayo Rd., Walton-on-Thames, Surrey, England

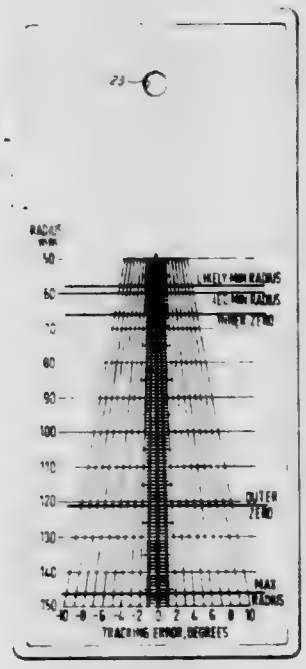
Filed Jul. 7, 1980, Ser. No. 166,447

Claims priority, application United Kingdom, Jul. 5, 1979, 7923545

Int. Cl.[3] G11B *3/10*

U.S. Cl. 369—55 14 Claims

1. Apparatus for use in obtaining a measure of or relating to lateral tracking error at each of a plurality of predetermined radial distances from the spindle axis of turntable equipment that includes a spindle, a platter rotatable about the spindle axis, and a pivotally mounted tonearm, said apparatus comprising an alignment protractor in the form of a marked planar member apertured to fit on or over the spindle such as to overlie and/or rest on the platter, the member's markings defining a primary line to extend radially of the spindle axis and be indicative of zero value of said measure, a plurality of angularly spaced secondary lines to extend radially of the spindle axis to each side of the primary line and be indicative of different non-zero values of said measure respectively, and a plurality of mutually parallel transverse lines directed at right angles to said primary line for extension across the primary line and all said secondary lines, said transverse lines being indicative of said predetermined radial distances, and further comprising a device having mounting means whereby the device may be secured to the tonearm in place of the usual cartridge, said device incorporating a marked transparent planar surface to overlie and/or rest on the alignment protractor, the surface markings defining a scale comprising a main line which, when the device is secured to the tonearm as aforesaid, is directed to the tonearm at the offset angle for overyling colinear alignment with a selected one of the alignment protractor's transverse lines, the scale further comprising a plurality of equispaced distance marks directed transversely of said main line,



said distance marks defining stylus points of which any one can be selected to correspond to the particular tip of the stylus of the cartridge that has been replaced by the device.

8. A method of obtaining a measure of or relating to laterial tracking error at a predetermined radial distance from the spindle axis of turntable equipment that includes a spindle, a platter rotatable about the spindle axis, and a pivotally mounted tonearm to which a cartridge is usually secured, wherein said method comprises the steps of:

(a) mounting on the tonearm, in place of the usual cartridge, a device incorporating a marked transparent planar surface to overlie said platter, said markings defining a scale comprising a main line to be directed to the tonearm at the offset angle and further comprising a plurality of equispaced distance marks directed transversely of said main line to define stylus points of which any one may be selected to correspond to the tip of the stylus of the cartridge replaced by the device,

(b) placing on the platter an alignment protractor in the form of a marked planar member having an aperture whereby the member is fitted on or over said spindle such as to overlie the platter and extend beneath the marked planar surface of said device, the member's markings defining a primary line to extend radially of the spindle axis and be indicative of zero value of said measure, a plurality of angularly spaced secondary lines to extend radially of the

spindle axis to each side of the primary line and be indicative of different non-zero values of said measure respectively, and a plurality of mutually parallel transverse lines directed at right angles to said primary line for extension across the primary line and all said secondary lines, said transverse lines being indicative of said predetermined radial distances,

(c) pivoting the tonearm about its vertical pivot axis and arcuately moving the member about the spindle axis until the alignment protractor's particular transverse line corresponding to said predetermined radial distance is directed to the tonearm at the offset angle,

(d) determining which particular one of the alignment protractor's radial lines is coincident with the stylus point along said particular transverse line, and reading the value of the said measure indicated by that particular one of said radial lines.

14. Apparatus for use in obtaining a measure of audio distortion due to lateral tracking error at each of a plurality of predetermined radial distances from the spindle axis of turntable equipment that includes a spindle, a platter rotatable about the spindle axis, and a pivotally mounted tone arm, said apparatus comprising an alignment protractor in the form of a marked planar member apertured to fit on or over the spindle such as to overlie and/or rest on the platter, wherein the member's markings define

(a) a primary line to extend radially of the spindle axis and be indicative of zero value of said measure,

(b) a plurality of angularly spaced curved secondary lines to radiate progressively outwardly as they extend away from the spindle axis to each side of the primary line and be indicative of different non-zero values of said measure respectively, and

(c) a plurality of mutually parallel transverse lines directed at right angles to said primary line for extension across the primary line and all said curved secondary lines, said transverse lines being indicative of said predetermined radial distances, and said primary line and secondary lines being indicative of said values of said measure, said values being proportional to the level of audio distortion due to tracking error.

4,351,046

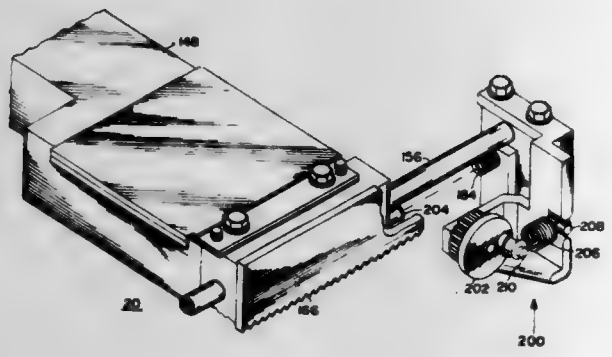
VIDEO DISC PLAYER HAVING CARRIAGE DETENT MECHANISM

Charles A. Elliott, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Feb. 25, 1981, Ser. No. 237,873

Int. Cl.³ G11B *3/36*

U.S. Cl. 369—233 **7 Claims**



1. In a player for recovering prerecorded signals from a disc record by means of a signal pickup housed in a translatable carriage; said player being equipped with a stop to limit the travel of said carriage in a first direction; a detent apparatus comprising:

means subject to engagement with said carriage during motion of said carriage toward said limit stop; and

yieldable means responsive to said engagement for storing energy; said yieldable energy storing means exerting a force on said engagement means in a direction such that said carriage is urged toward said limit stop when said carriage is disposed within a given distance from said stop.

4,351,047

CENTERING OF A DISC-SHAPED RECORD CARRIER ON A TURNTABLE

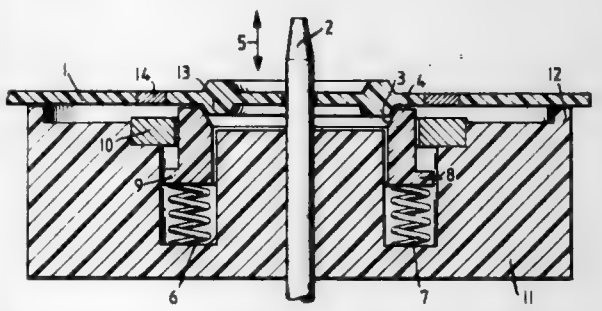
Horst Redlich, Berlin; Heinz Borchard, Nortorf, and Rainer Ihlenburg, Berlin, all of Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 2, 1980, Ser. No. 193,388

Claims priority, application Fed. Rep. of Germany, Oct. 2, 1979, 2939865

Int. Cl.³ G11B *3/60;* G01B *25/04*

U.S. Cl. 369—270 **11 Claims**



1. In a device for centering a record disc with respect to a turntable, in which the disc is successively radially centered and axially positioned relative to the turntable, which device includes a centering shaft engageable with the disc to effect preliminary radial centering thereof, the improvement comprising: further radial centering means spaced from the shaft and mounted to engage a disc a location other than the center hole of the disc after the disc has engaged the shaft and to undergo yieldable movement relative to the turntable in the axial direction of the disc under the influence of its engagement with the disc for effecting final radial centering of the disc; and magnetic attracting means operatively associated with the disc and the turntable for axially positioning the disc after it has been finally radially centered.

4,351,048

HIGH DENSITY INFORMATION DISC LUBRICANTS

David A. Berry, Columbus, Ohio, assignor to RCA Corporation, New York, N.Y.

Filed Aug. 27, 1981, Ser. No. 297,053

Int. Cl.³ G11B *3/70;* C07F *7/18*

U.S. Cl. 369—288 **3 Claims**

1. In a high density information record adapted for use with a playback stylus to effect recovery of signals occupying a bandwidth of at least several megahertz when relative motion at a desired rate is established between said record and said stylus, said record compising a disc of a conductive material containing an information track constituted by a surface relief pattern in said track to accommodate recovery of signals of said bandwidth upon establishment of relative motion at said rate, said record coated with a lubricant, the improvement comprising employing as said lubricant a silyl quaternary ammonium salt lubricant having the formula

$$R-\underset{\displaystyle OSi(R_3)_3}{\overset{\displaystyle OSi(R_3)_3}{\overset{|}{\underset{|}{Si}}}}-CH_2CH_2CH_2-{}^{+}N-(R_4)_3.X^{-}$$

wherein R is a lower alkyl group of 1–5 carbon atoms; R_3 is methyl or ethyl; R_4 is an alkyl group of 1–12 carbon atoms and X is $-OSO_2-(CH_2)_nCH_3$ wherein n is an integer of 5–12.

4,351,049
CIRCUIT ARRANGEMENT FOR USER STATIONS IN A COMMUNICATIONS NETWORK

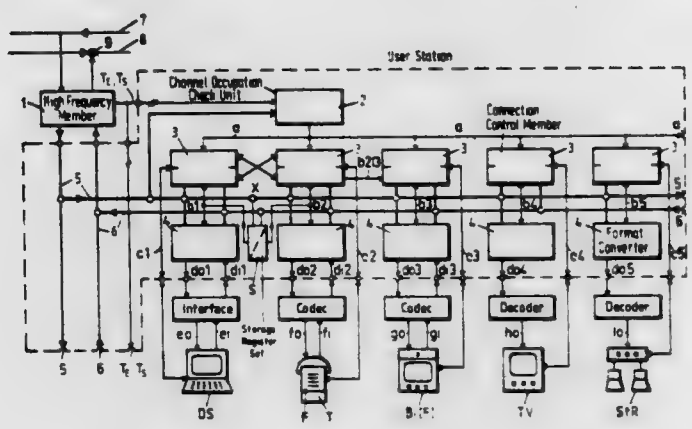
Rolf Nobis, Berlin, Fed. Rep. of Germany, assignor to Heinrich-Hertz-Institut für Nachrichtentechnik Berlin GmbH, Berlin, Fed. Rep. of Germany

Filed Nov. 8, 1979, Ser. No. 92,928

Claims priority, application Fed. Rep. of Germany, Nov. 8, 1978, 2848931

Int. Cl.³ H04J *3/16, 6/02;* H04Q *11/04*

U.S. Cl. 370—62 3 Claims



1. In a digital, time-multiplex communications network operating simultaneously for a plurality of different kinds of user instruments and having a decentralized exchange and a plurality of user stations, with each user station being associated with at least one user instrument of at least one kind of user instruments and being provided with separate signal conducting lines for the conduction of signals in the transmitted and received directions, respectively, of the respective station, the network further having autonomous units including identical channel occupation check units each connected in a respective station and identical groups of devices each composed of a connection control member and a format converter, with each said group being connected to a respective user instrument and being connected to the channel occupation check unit in the user station of its respective user instrument, the improvement comprising: in each said user station, at least one set of devices composed of an additional connection control member connected to said channel occupation check unit associated with said station, and a storage register set connected to said separate signal conducting lines in said respective user station for the conduction of signals in the transmitted and received directions, respectively, said storage register set of each said station being further connected to said additional connection control member of the same station as well as to said connection control member of one said group of devices connected to a respective user instrument of said same station for control; and, in each said user station, a switching unit attached and connected to said user instrument which is connected to said one group of devices.

4,351,050
FAIL-SAFE CONTROL COMPUTER

Kazuhiro Higashiyama, Atsugi, Japan, assignor to Nissan Motor Company, Limited, Kanagawa, Japan

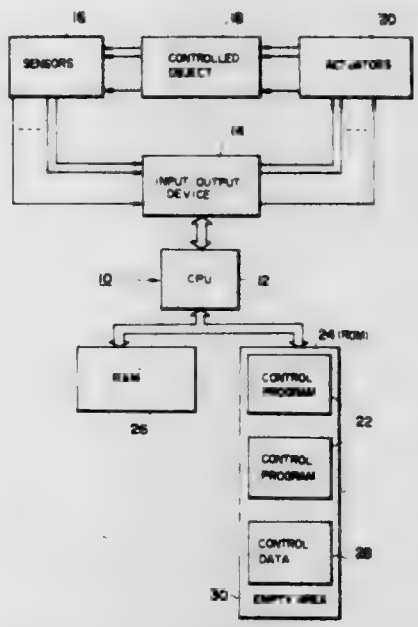
Filed Mar. 21, 1980, Ser. No. 132,423

Claims priority, application Japan, Mar. 23, 1979, 54-33884

Int. Cl.³ G06F *11/00*

U.S. Cl. 371—12 9 Claims

1. A method of operating a stored-program control computer system including a CPU and a ROM containing a control program and a memory area not directly used for the control program, said non-control-program area being loaded with instructions such that transfer of program control to substantially any one of these instructions eventually leads program control to a correction routine which is part of the control program, the program control having a tendency inadvertently to be at one of the instructions, comprising in response to the program control being inadvertently at one of the instructions



leading the program control to the correction which is part of the control program.

4,351,051
SEMICONDUCTOR LASER DEVICE WITH AN ASSEMBLY BLOCK

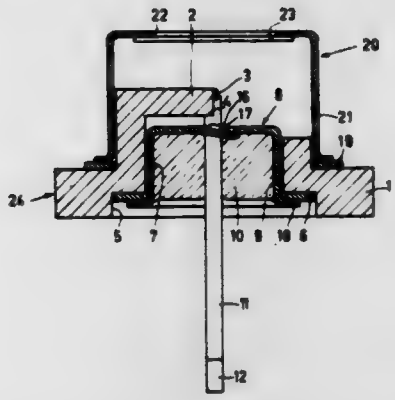
Antonius A. M. van Alem; Johan C. J. Finck, both of Eindhoven, and Peter W. M. van de Water, Nijmegen, all of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 30, 1980, Ser. No. 164,200

Claims priority, application Netherlands, Jun. 26, 1979, 7904954

Int. Cl.³ H01S *3/19*

U.S. Cl. 372—36 5 Claims



1. A semiconductor laser device comprising a support, a semiconductor laser element mounted on the support, and a cap over said laser element which is provided with a light-transmitting window and is secured to the support, the support comprising a substantially annular assembly block of a metal having a good thermal conductivity, which assembly block comprises positioning means on its outer circumference for accurately locating the optical axis of said laser element and a sector-shaped supporting part which extends towards the axis through the center of the annular assembly block and which forms a connection and mounting area for the laser element which extends through said axis and is accurately located with respect to said positioning means, and a base having a supporting part on its lower side, mutually-insulated electrical conductors and a photodiode mounted on its upper side, said base being secured on the lower side of the assembly block remote from the supporting part, the cap having the light-transmitting window being secured at the upper side of the assembly block

and said window being located above said laser element and said photodiode.

4,351,052

COAXIAL TYPE GAS-FLOW LASER DEVICE

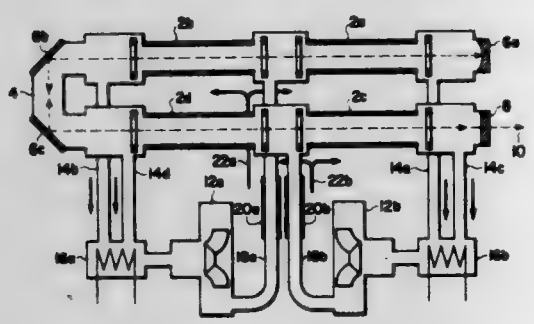
Kouji Sasaki; Hiroyuki Sugawara; Kouji Kuwabara, all of Hitachi; Toshiharu Shirakura, Tokai; Satoshi Takemori, Hitachi, and Norio Ikemoto, Tokai, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 7, 1980, Ser. No. 119,316

Claims priority, application Japan, Feb. 21, 1979, 54-19393

Int. Cl.[3] H01S *3/05*

U.S. Cl. 372—58 4 Claims



1. In a coaxial type gas-flow laser device having

an optical resonator which is constructed of an electric discharge portion filled with an active laser gas, a total-reflection mirror disposed at one end of said electric discharge portion and an output mirror disposed at the other end of said electric discharge portion,

heat exchanger means for cooling said laser gas heated by electric discharge, and

blower means for circulating said laser gas, a laser beam axis, an electric discharge axis and a gas flow axis being coincident, the improvement comprising said blower means being provided as at least one turbo-centrifugal blower and means for operating said blower at a rotational speed which is higher than 5000 r.p.m.

4,351,053

GAS DISCHARGE LASER

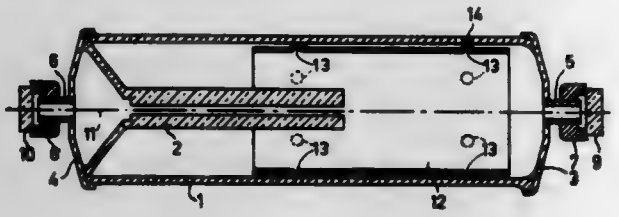
Hans G. van den Brink, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 3, 1979, Ser. No. 99,294

Claims priority, application Netherlands, Dec. 19, 1978, 7812287

Int. Cl.[3] H01S *3/03*

U.S. Cl. 372—61 15 Claims



1. In a gas discharge laser including a tubular glass envelope having at least one wall and enclosing a discharge space containing an active lasing gas, means defining a resonant cavity within the glass envelope, means including first and second spaced apart electrodes within the glass envelope for producing an electric discharge in the discharge space, and means for abstracting energy from within the glass envelope, the improvement comprising wherein at least one of said electrodes comprises a rolled metal foil resiliently urged towards said wall of the glass envelope, and spacing means positioned at predetermined locations so that the metal foil engages the glass envelope only at said spacing means whereby the remainder of the metal foil is circumferentially substantially uniformly spaced apart from the wall of the glass envelope thereby producing a circumferentially symmetrical uniform heat transfer between the metal foil electrode and the glass envelope.

4,351,054

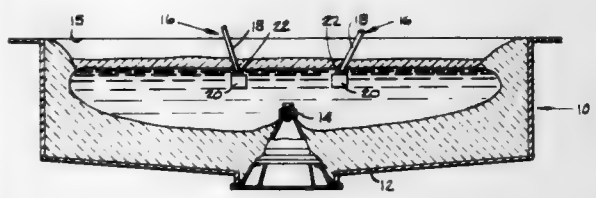
OPTIMIZED MIXING AND MELTING ELECTRIC FURNACE

Leonard E. Olds, Castle Rock, Colo., assignor to Manville Service Corporation, Denver, Colo.

Filed Mar. 4, 1981, Ser. No. 240,514

Int. Cl.[3] C03B *5/027*

U.S. Cl. 373—38 8 Claims



1. An electric furnace for melting batch material and mixing molten material comprising:

an open-topped vessel for containing molten material and unmelted, non-homogeneous batch on the surface of said molten material, said vessel having a bottom wall with an outlet formed therein for discharging said molten material;

at least three electrodes which are laterally spaced from each other, each of said electrodes having a tip that is immersed in said molten material for conducting electrical current therethrough, each of said electrode tips having a substantially round lateral cross section and each of said electrode tips being positioned above said bottom wall outlet;

individual support arms which mount each of said electrodes, a plurality of elongated vertically extending frame members, vertical carriages supporting each of the support arms on said vertical frame members for movement therealong, first drive means for adjusting the position of each vertical carriage upon its vertical frame member, which drive means, in turn, adjusts the vertical positions of the electrode tips in the molten material;

a plurality of horizontally extending frame members supporting the vertical frame members by means of horizontal carriages for movement along said horizontal frame members, second drive means for adjusting the horizontal position of each horizontal carriage, its vertical frame member, its support arm and its electrode tip along its horizontal frame member, said second drive means being separately and independently operable from said first drive means during furnace operation.

4,351,055

WATER COOLED WALL ELEMENT FORMED OF TUBES FOR MELTING FURNACES

Klaus Bick, Paderborn; Lothar Harmsen, Lingen; Jürgen Zieschang, Lingen, and Friedhelm Vennmann, Lingen, all of Fed. Rep. of Germany, assignors to Benteler Werke AG, Paderborn, Fed. Rep. of Germany

Filed Mar. 24, 1980, Ser. No. 133,139

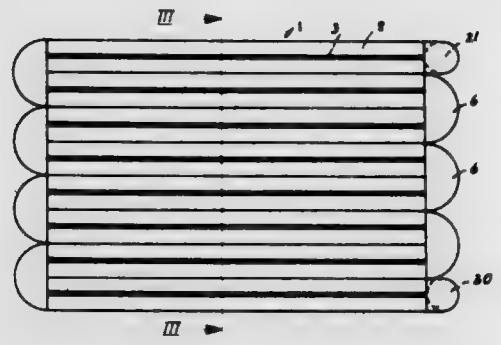
Claims priority, application Fed. Rep. of Germany, Aug. 16, 1979, 2913092

Int. Cl.[3] F27D *1/12*

U.S. Cl. 373—76 11 Claims

1. A water cooled wall element for at least partly replacing the casing of refractory material in melting furnaces, especially arc furnaces for melting steel, above the bath of molten material in the furnace, said water cooled wall element consisting of a plurality of parallel, horizontally extending superimposed fin tubes engaging each other in such a manner that the fins thereon form horizontally extending uninterrupted protrusions, with one of the fins on each tube projecting toward the

interior of the furnace especially to improve adhesion of slag thereon and the other fin on each tube projecting toward the exterior of said furnace, said superimposed tubes including an



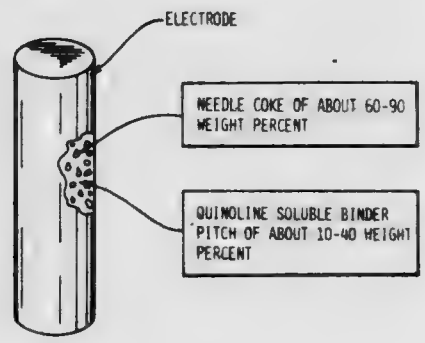
uppermost end tube and a lowermost end tube; cooling water inlet means connected to one end tube; cooling water outlet means connected to the other end tube; and return bends connecting the ends of approximal tubes to each other.

4,351,056

CARBON ELECTRODES HAVING A LOW COEFFICIENT OF THERMAL EXPANSION

Oliver A. Klikka, Willoughby, and Donald R. Day, Garfield Heights, both of Ohio, assignors to Standard Oil Company, Cleveland, Ohio

Filed Dec. 24, 1980, Ser. No. 219,888
Int. Cl.³ H05B *7/085*
U.S. Cl. 373—88 **2 Claims**



1. An improved carbon electrode having a coefficient of thermal expansion less than 3.5×10^{-7} comprising:

needle coke in an amount of from about 60 to 90 weight percent and having a coefficient of thermal expansion of up to about 8×10^{-7}; and

a quinoline soluble binder pitch in an amount of from about 10 to 40 weight percent, prior to baking and graphitization, said binder pitch having a ring and ball softening point of from about 94° to 150° C. consisting of a highly aromatic condensation product of a distilled cycle oil extract with an extractant selected from the group consisting of furfural, phenol, B,B'-dichloro diethyl ether, nitrobenzene and sulfur dioxide.

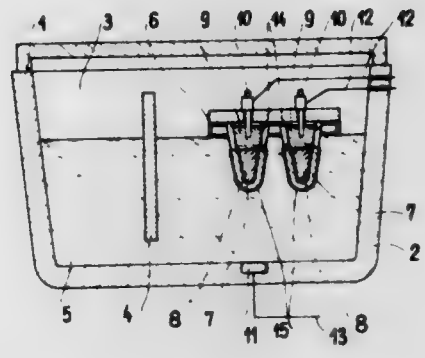
4,351,057

ELECTRIC INSTALLATION FOR HEATING OF MOLTEN METALS AND/OR SALTS AND SOLUTIONS

Felicjan Biolik; Adam Lukasik; Zygmunt Morys; Stanislaw Walawender, all of Katowice, and Szczepan Galazka, Mysłowice, all of Poland, assignors to Biuro Projektow Przemysłu Metali Niezelaznych "BIPROMET", Katowice, Poland

Filed Jun. 9, 1980, Ser. No. 157,829
Int. Cl.³ H05B *3/60, 3/03*
U.S. Cl. 373—117 **26 Claims**

1. Electric installation for direct heating of a charge, such as a bath of metals and/or salts in melted state and solutions, comprising: at least one heating element for heating the charge, each heating element being in the form of a vessel or partition made of at least two parts of different physico-chemical properties, said parts being firmly joined to each other and having a portion immersed in the heated bath, contact materials being in contact with a first surface of said heating element, a first electrode dipped at least partially into said contact materials,



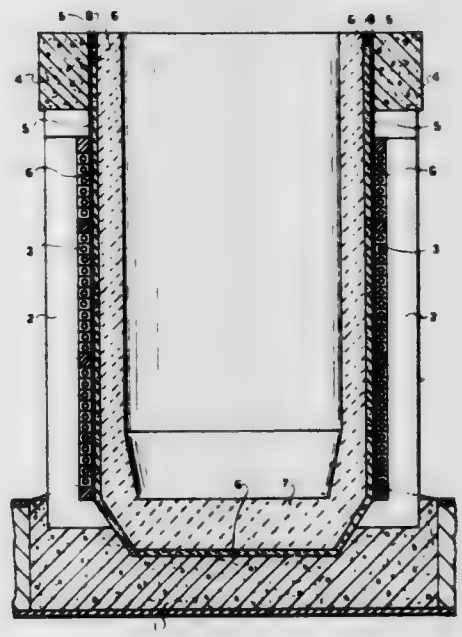
means for applying an electric potential difference between said electrode and a second electrode located at least partially in the bath, an electric circuit connected to said heating element and including current supply means to said electrodes, said bath being in contact with a second surface of said heating element, said contact materials being included in said electric circuit of said heating element.

4,351,058

INDUCTION CRUCIBLE FURNACE AND METHOD FOR ITS PREPARATION

Rudolf Florian, Mossenberg 34, D-4933 Blomberg, and Albert Herrmann, Bokelfeanerstrasse 24, D-4815 Stukenbrock, both of Fed. Rep. of Germany

Filed Feb. 19, 1980, Ser. No. 122,715
Claims priority, application Fed. Rep. of Germany, Feb. 22, 1979, 2906815
Int. Cl.³ F27B *14/10*; F27D *1/10*; H05B *5/16*
U.S. Cl. 373—155 **5 Claims**



1. An induction crucible furnace, comprising a housing including a bottom wall and side walls to define a furnace cage having an interior; a prefabricated crucible made of mixture of dry ramming material, sintering agent and cold-curing binder without application of elevated temperature and thereby without sintering the crucible, said crucible being positioned in said cage and having an outer peripheral surface; a plurality of induction coils surrounding said crucible and mounted on said side walls, said prefabricated crucible being positioned within the interior of said cage so that a peripheral boundary region is provided between the interior of said cage and said outer peripheral surface of said crucible; and a layer of non-sintering

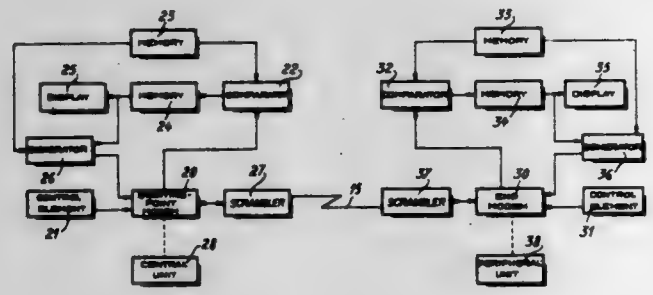
granular material disposed in said region, said layer being closed at the top thereof to secure the layer within the furnace.

4,351,059

METHOD FOR TESTING A DIGITAL DATA TRANSMISSION LINE BETWEEN TWO MODEMS AND A DEVICE FOR THE APPLICATION OF SAID METHOD

Michel Gregoire, and Jean C. Vuillemin, both of Conflans Ste Honorine, France, assignors to Lignes Telegraphiques et Telephoniques, Conflans Ste Honorine, France

Filed Sep. 16, 1980, Ser. No. 187,771
Claims priority, application France, Sep. 18, 1979, 79 23241
Int. Cl.[3] H04L *1/14, 1/16;* H04B *3/46*
U.S. Cl. 375—10 **12 Claims**



1. A method of testing a line for the transmission of digital data between two modems, wherein said method comprises the following steps:

transmission of a predefined test message from the first modem selected as a starting-point of the test to the second modem located at the other end of the line to be tested;

reception of said predefined test message by the end modem;

comparison of the message received with the test message for determining information representing the existence or non-existence of transmission errors in the direction considered from starting-point modem to end modem or so-called forward-transmission error information;

transmission by the end modem of the test message and of a second message containing the forward-transmission error information;

reception of the two messages by the starting-point modem;

comparison of the received test message with the test message itself, thus providing information representing the existence or non-existence of transmission errors in the direction considered from end modem to starting-point modem or so-called return-transmission error information;

recognition of the forward-transmission error information starting from that portion of the messages received which corresponds to the second message.

4,351,060

AUTOMATIC, DIGITALLY SYNTHESIZED MATCHING LINE TERMINATING IMPEDANCE

Robert Treiber, Fairfield, Conn., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Oct. 23, 1980, Ser. No. 199,904
Int. Cl.[3] H03H *17/02;* H04B *3/20*
U.S. Cl. 375—12 **15 Claims**

1. A circuit for automatically digitally synthesizing an output matching line terminating impedance comprising:

analog to digital conversion means for converting negative feedback analog communication signals occurring at circuit output terminals to negative feedback digital signals;

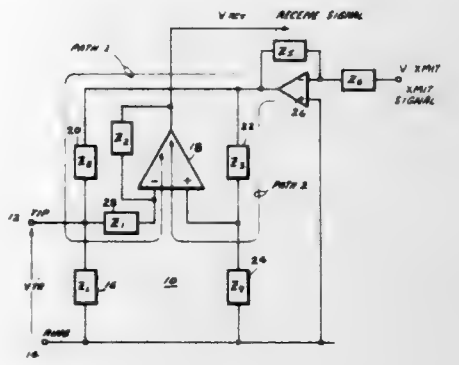
means for summing said negative feedback digital signals with input digital communication signals providing a composite digital signal input;

digital filter means having said composite digital signal input coupled thereto for directly establishing a predetermined output impedance characteristic, said digital filter having filter coefficients, and having a digital signal output;

means for selectively altering said filter coefficients;

digital to analog conversion means for converting said digital signal output to an analog voltage signal; and

means for converting said analog voltage signal to an analog current having a high output impedance characteristic



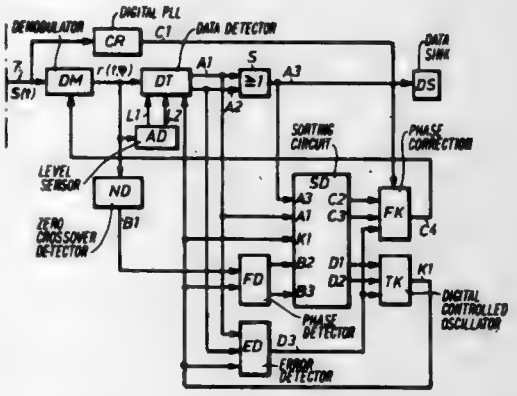
compared to the matched line and to the synthesized impedance such that said analog current is coupled to said circuit output terminals and to said analog to digital conversion means.

4,351,061

METHOD OF PHASE SYNCHRONIZATION IN A SYNCHRONOUS DATA TRANSMISSION SYSTEM, AND APPARATUS FOR CARRYING OUT THE METHOD

Jan S. Hedin, Tumba, and Göran A. Jarnestedt, Johanneshov, both of Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

PCT No. PCT/SE79/00204, § 371 Date Jun. 13, 1980, § 102(e) Date May 30, 1980, PCT Pub. No. WO80/00903, PCT Pub. Date May 1, 1980
PCT Filed Oct. 12, 1979, Ser. No. 195,420
Claims priority, application Sweden, Oct. 13, 1978, 7810735
Int. Cl.[3] H04L *25/49*
U.S. Cl. 375—20 **8 Claims**



1. In a synchronous data transmission system having a transmitter which emits a single side band carrier of a first frequency amplitude-modulated by a signal derived from a binary pulse train of pulses of the Partial Response Class 4 type coding whereby a binary pulse train of a second frequency is transmitted and a receiver which demodulates the signal transmitted thereto to a base band signal with the aid of a first signal having the first frequency and detecting the binary signals therefrom with the aid of a clock signal of the second frequency derived from the base band signal, a method phase synchronizing the receiver to the transmitter comprising the steps of:

(a) detecting, in the base band signal, a given multibit binary sequence;

(b) zero-crossing detecting the base band signal at the receiver; and

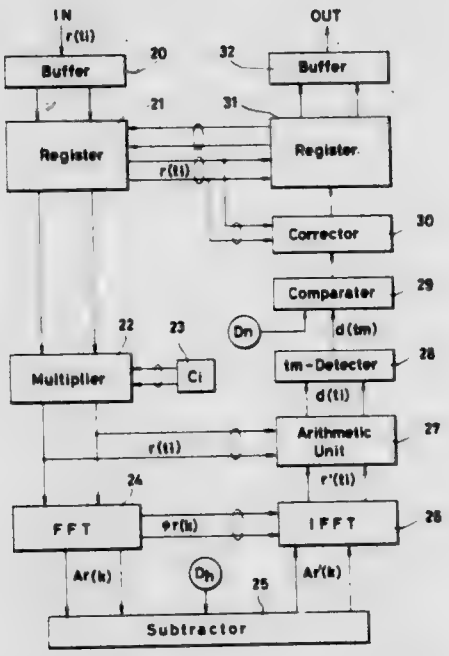
(c) phase comprising each generated zero-crossing signal with the clock signal derived from the base band signal to increase the frequency of the clock signal when the zero crossing signal leads the clock signal in phase and to decrease the frequency of the clock signal when the zero

crossing signal lags the clock signal only when there is detected the given multibit binary sequence.

4,351,062
METHOD AND APPARATUS FOR SUPPRESSING DIGITAL ERROR NOISE IN DIGITAL COMMUNICATION

Kiyosumi Yoshiya, Kodaira, Japan, assignor to Radio Research Laboratories, Ministry of Posts and Telecommunications, Tokyo, Japan

Filed Oct. 8, 1980, Ser. No. 195,336
Claims priority, application Japan, Jan. 29, 1980, 50-008285
Int. Cl.³ H03K *5/01*
U.S. Cl. 375—99 **8 Claims**



1. A method for the suppression of digital error noise in received sampled signals in digital telecommunication, which method comprises the steps of:

subjecting said received sampled signals to Fourier transform to extract a frequency spectrum composed of an amplitude spectrum and a phase spectrum;

subtracting from said amplitude spectrum a flat spectrum determined by the maximum level of said sampled signals to obtain a subtracted amplitude spectrum;

synthesizing said subtracted amplitude spectrum and said phase spectrum to produce spectrum-subtracted signals;

extracting the difference between each of said sampled signals and each of said spectrum-subtracted signals to obtain a differential signal waveform;

detecting a particular signal having a conspicuously large amplitude occuring in said differential signal waveform;

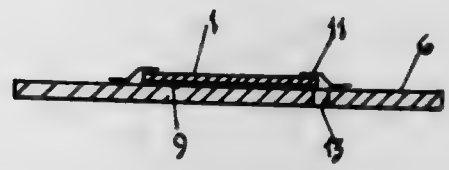
comparing said large amplitude with a fixed threshold value; and

correcting the particular signal of said large amplitude, when the amplitude is greater than said threshold value, by use of interpolation with respect to the preceding and following sets each of several sampled signals between which said particular signal having the large amplitude is interposed.

4,351,063
X-RAY DIFFRACTION APPARATUS

Colin Dineen, Buckinghamshire, and Christopher A. Wallace, London, both of England, assignors to Elliott Brothers (London) Limited, Chelmsford, England

Filed Aug. 27, 1980, Ser. No. 181,851
Claims priority, application United Kingdom, Aug. 28, 1979, 7929729
Int. Cl.³ G01M *23/20*
U.S. Cl. 378—79 **3 Claims**



1. X-ray diffraction apparatus comprising:

(A) an X-ray source,

(B) a crystal mounting plate transparent to X-rays,

(C) means for imposing a curvature on the mounting plate of such form that, for a crystal slice clamped to the mounting plate the angle of incidence of X-rays diverging from said X-ray source to the crystal slice is substantially constant over the surface of the crystal slice, and

(D) pneumatic pressure clamping means for clamping the crystal slice to the mounting plate, said clamping means including

(i) a sheet of flexible material transparent to X-rays arranged to overlie the crystal slice and mounting plate so that a peripheral chamber is formed between the edge of the crystal slice and the sheet of material,

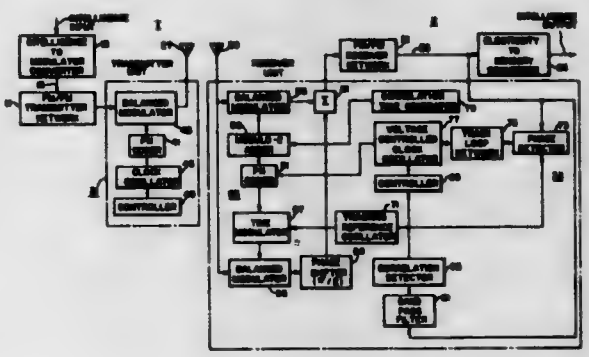
(ii) said peripheral chamber being evacuated in operation,

(iii) X-ray topographs of said crystal slice being thereby obtainable both by transmission and reflection.

4,351,064
COMMUNICATION

Walter Ewanus, Ellicott City, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 86,999, Oct. 30, 1970, which is a continuation of Ser. No. 754,375, Aug. 21, 1968, abandoned. This application Jan. 31, 1973, Ser. No. 328,213
Int. Cl.³ H04B *1/10*; H04K *1/00*
U.S. Cl. 455—29 **6 Claims**



1. Communication apparatus for communicating intelligence including a transmitter unit having

(a) a transmitter network for producing a carrier,

(b) input means, connected to said network, for modulating said carrier with an input signal containing intelligence to be communicated, and

(c) modulator means, connected to said network, for impressing on said carrier a pseudo-noise code,

(d) a receiver unit having a receiver network for receiving the output of said transmitter including said intelligence and conditioning said output to be converted into intelligence perceptable form said receiver network being of the

type including means for demodulating a modulated carrier, the said demodulating means including a limiter;

(e) an auto-correlation network including a first correlation branch conducting the modulated carrier and a second correlation branch conducting the modulated carrier;

(f) means connected to said correlation network, for dephasing the output of one of said branches with respect to the output of the other of said branches to produce a signal, dependant on the sum of the outputs of said branches, capable of being passed by said limiter;

(g) means connected to said first and second branches for impressing said sum-dependent signal on said receiver network, and

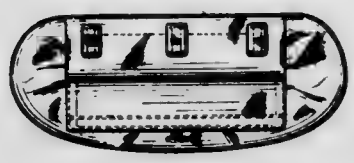
(h) means, connected to said receiver network and to said correlation network, for impressing on said sum-dependant signal a tracking signal manifested by a variation of the phase of the sum-dependant signal impressed on said receiver network and capable of being passed by said limiter said tracking signal cooperating with said sum-dependant signal to actuate said auto-correlation network to auto-correlate said code; and communication means between said transmitter network and said receiver network.

DESIGNS

SEPTEMBER 21, 1982

266,200
BELT MOUNTED ACCESSORY BAG OR THE LIKE
Charles Berman, 6025 Shore Blvd., South No. 614, Gulfport, Fla. 33707

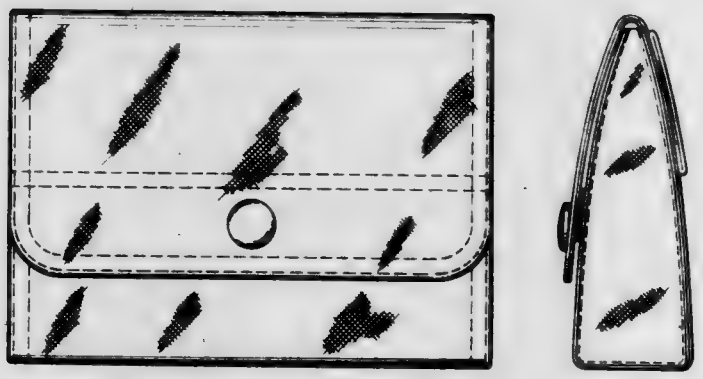
Filed May 15, 1980, Ser. No. 150,162
Term of patent 14 years
Int. Cl. D02—99
U.S. Cl. D2—400





266,201
BELT MOUNTED MAKE-UP CASE OR THE LIKE
Charles Berman, 6025 Shore Blvd., South No. 614, Gulfport, Fla. 33707

Filed May 15, 1980, Ser. No. 150,163
Term of patent 14 years
Int. Cl. D02—99
U.S. Cl. D2—400



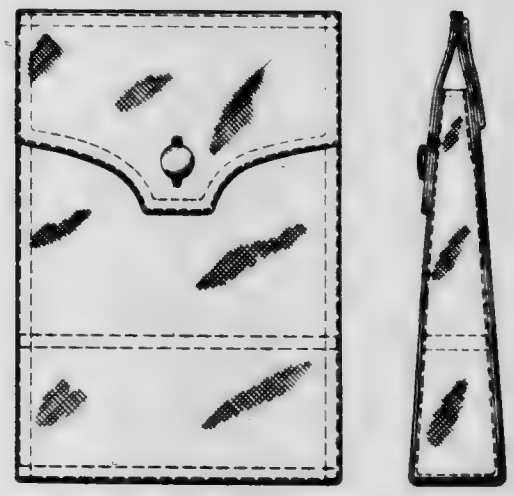
266,202
BELT MOUNTED BAG OR THE LIKE
Charles Berman, 6025 Shore Blvd., South No. 614, Gulfport, Fla. 33707

Filed May 15, 1980, Ser. No. 150,164
Term of patent 14 years
Int. Cl. D02—99
U.S. Cl. D2—400

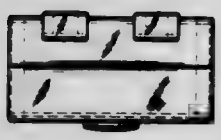


266,203
BELT MOUNTED ACCESSORY BAG OR THE LIKE
Charles Berman, 6025 Shore Blvd., South No. 614, Gulfport, Fla. 33707

Filed May 15, 1980, Ser. No. 150,165
Term of patent 14 years
Int. Cl. D02—99
U.S. Cl. D2—400

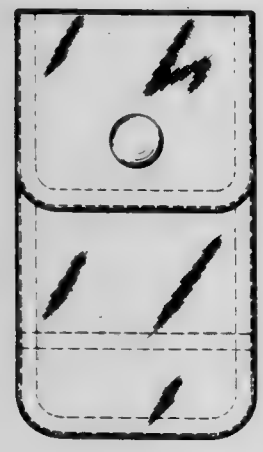


266,204
BELT MOUNTED CIGARETTE CASE OR THE LIKE
Charles Berman, 6025 Shore Blvd., South No. 614, Gulfport, Fla. 33707
Filed May 15, 1980, Ser. No. 150,166
Term of patent 14 years
Int. Cl. D02—*99*
U.S. Cl. D2—400





266,205
BELT MOUNTED EYEGLASS CASE OR THE LIKE
Charles Berman, 6025 Shore Blvd., South No. 614, Gulfport, Fla. 33707
Filed May 15, 1980, Ser. No. 150,167
Term of patent 14 years
Int. Cl. D2—*99*; D3—*02*
U.S. Cl. D3—34

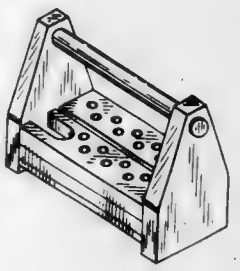




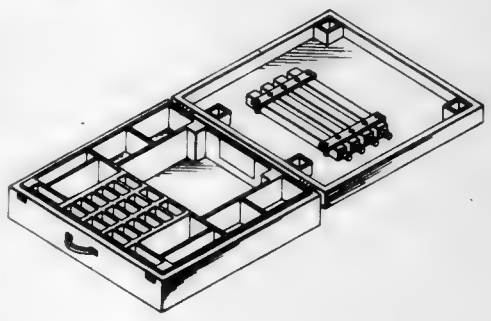
266,206
LUGGAGE
Ted Stark, Montclair, N.J., assignor to M & M Luggage Co., Inc., Jersey City, N.J.
Filed Dec. 6, 1979, Ser. No. 100,812
Term of patent 14 years
Int. Cl. D3—*61*
U.S. Cl. D3—71



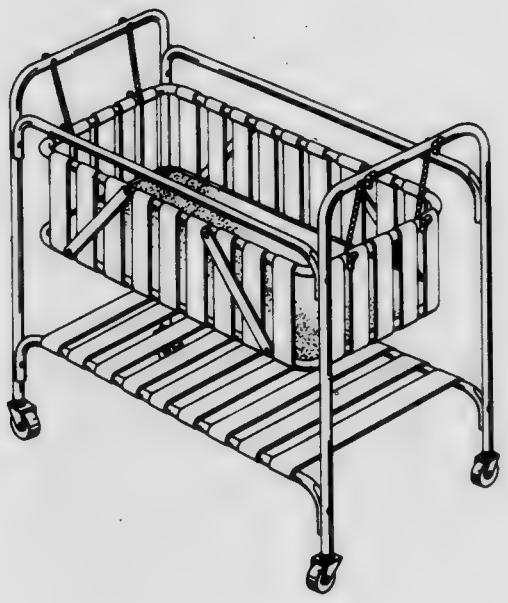
266,207
CRAYON TOTE
Gary D. Kirchberger, and Maria K. Kirchberger, both of 2200 SW. 195th, Aloha, Oreg. 97006
Filed Oct. 1, 1979, Ser. No. 80,319
Term of patent 7 years
Int. Cl. D3—*02*
U.S. Cl. D3—30.1



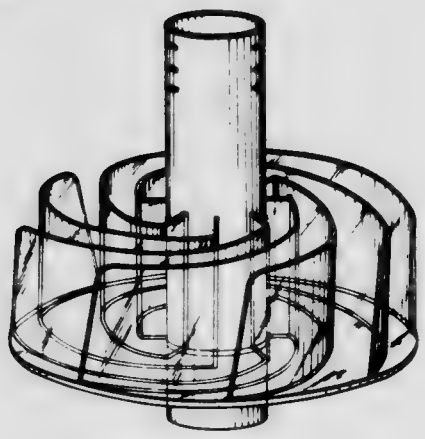
266,208
VIDEO GAME TOTE CASE
Gary L. Cannon, 3066 La Mantia Dr., and Ronald B. Wilkins, 1590 Hooper Rd., both of Yuba City, Calif. 95991
Filed Jun. 25, 1979, Ser. No. 51,739
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—74



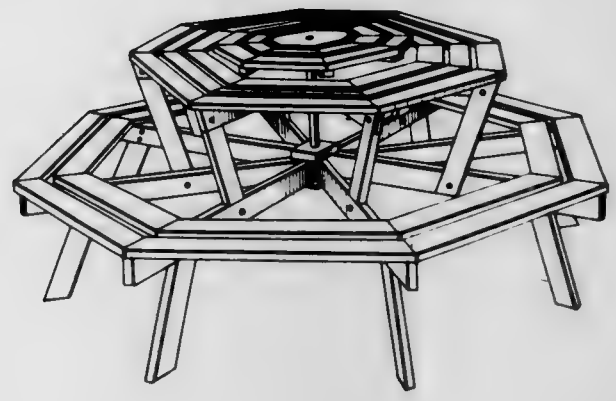
266,209
SWINGING CRADLE
Elizabeth F. Rogers, 3638 Mohave Way, Scottsdale, Ariz. 85251
Filed Sep. 24, 1979, Ser. No. 78,483
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—15



266,210
DISPLAY RACK MODULE
Wolf-Dietrich Hannecke, Rischenau Weg 6, 3410 Northeim, Fed. Rep. of Germany
Filed May 14, 1979, Ser. No. 38,723
Claims priority, application Fed. Rep. of Germany, Feb. 2, 1979, 11 MR 47
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D6—25



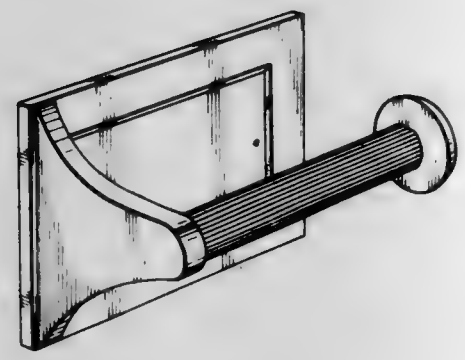
266,211
COMBINED TABLE AND SEATING UNIT
Howard L. Thom; Leslie A. Thom, and Linda D. Padilla, all of Rte. 1 South, Box 327, Laurel, Mont. 59044
Filed Sep. 23, 1980, Ser. No. 189,746
Term of patent 14 years
Int. Cl. D6—*05*
U.S. Cl. D6—45



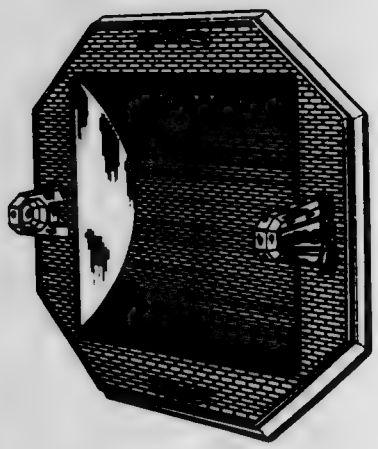
266,212
WALL RAIL FOR HAND SHOWERS
Andreas Haug, Altensteig, Fed. Rep. of Germany, assignor to Hans Grohe GmbH & Co. KG, Fed. Rep. of Germany
Filed May 13, 1980, Ser. No. 149,373
Claims priority, application Fed. Rep. of Germany, Nov. 15, 1979, MR 980 0B
Term of patent 14 years
Int. Cl. D06—*06*
U.S. Cl. D6—86



266,213
TOILET TISSUE ROLL HOLDER
John Heil, Dayton, Ohio, assignor to Allcraft Plastic Company, Inc., Dayton, Ohio
Filed Mar. 13, 1981, Ser. No. 243,524
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D6—*97*



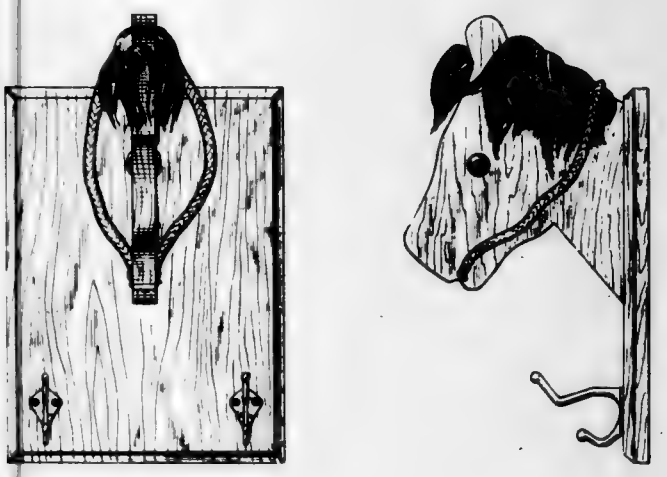
266,214
BATHROOM ACCESSORY HOUSING
Reg Littlefield, Toronto, Canada, assignor to Aqualine Products Limited, Mississauga, Canada
Filed Jul. 17, 1981, Ser. No. 284,174
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D6—*97*



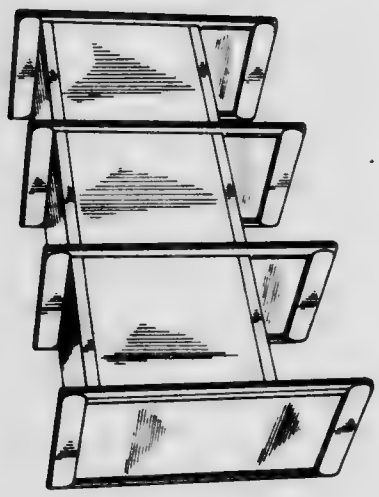
266,215
SUSPENDIBLE WINE RACK
Harry S. Bratton, P.O. Box 20408, Tallahasse, Fla. 32304
Filed Dec. 21, 1979, Ser. No. 106,249
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—113



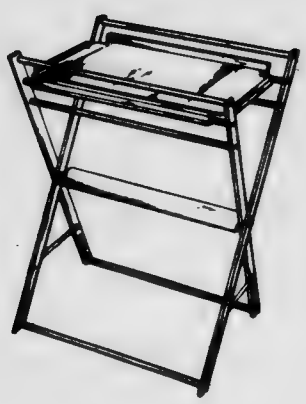
266,216
COAT RACK
Lawrence P. Markin, and Marsha A. Markin, both of R.R. #1, Box 110, Moline, Ill. 61265
Filed Dec. 8, 1980, Ser. No. 214,435
Term of patent 14 years
Int. Cl. D6—*06*; D11—*02*
U.S. Cl. D6—116



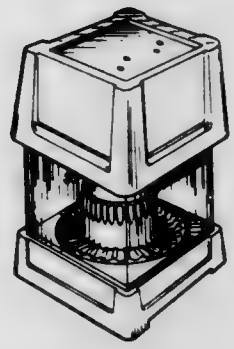
266,217
MODULAR CABINET UNIT
Gerd Lange, Kapsweyer, Fed. Rep. of Germany, assignor to Schlapp Moebel GmbH & Co KG, Neu-Anspach, Fed. Rep. of Germany
Filed Mar. 20, 1979, Ser. No. 22,155
Claims priority, application Fed. Rep. of Germany, Sep. 22, 1978, 59
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—168



266,218
COLLAPSIBLE TEA TABLE OR SIMILAR ARTICLE
Hollis C. Hodson, P.O. Box 114, Amo, Ind. 46103
Filed Dec. 18, 1979, Ser. No. 104,872
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—178



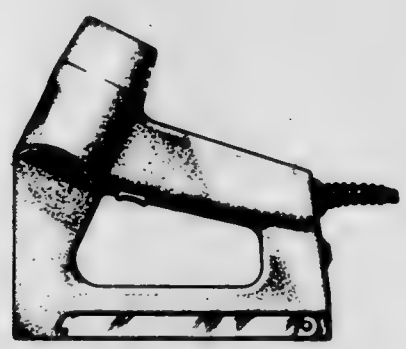
266,219
DISPLAY CASE
Frank W. Brittner, 2719 Edison St., Pittsburgh, Pa. 15212
Filed Sep. 14, 1979, Ser. No. 75,825
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—172



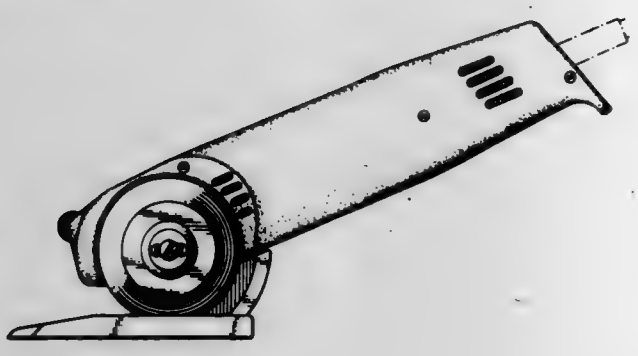
266,220
DINNER PLATE OR SIMILAR ARTICLE
Frank A. Warren, Denville, N.J., assignor to Syracuse China Corporation, Syracuse, N.Y.
Filed Sep. 22, 1980, Ser. No. 189,792
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—35



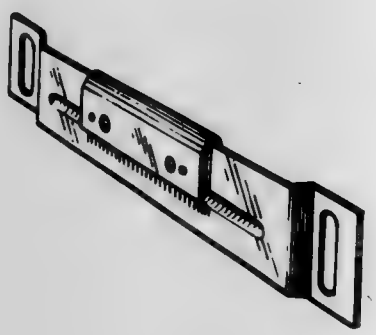
266,221
ELECTRIC STAPLER
John F. Ewig, Worcester, Mass., assignor to Parker Manufacturing Company, Worcester, Mass.
Filed May 12, 1980, Ser. No. 148,719
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—49



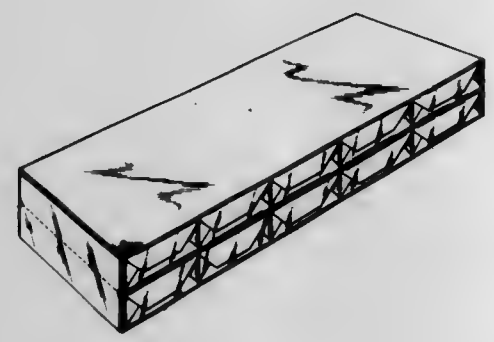
266,222
ROTARY SHEAR FOR USE IN CUTTING CLOTH AND THE LIKE
John H. Buscher, East Amherst, N.Y., assignor to Eastman Machine Company, Buffalo, N.Y.
Filed Jun. 23, 1980, Ser. No. 161,903
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—61



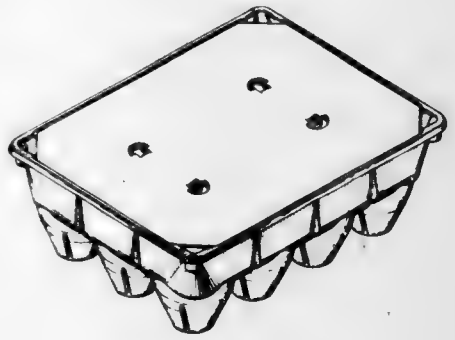
266,223
PICTURE HANGING BRACKET
Dorian J. Swartz, 4802 Brookway Ave., Yorba Linda, Calif. 92686
Filed Aug. 8, 1980, Ser. No. 176,391
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—373



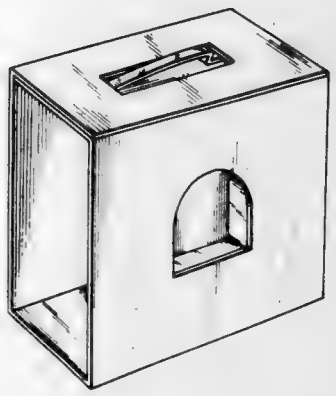
266,224
MULTI-PACK CIGARETTE PACKAGE
Wilhelm B. Bronander, Jr., 117 Bellevue Ave., Upper Montclair, N.J. 07043
Filed Jun. 4, 1979, Ser. No. 45,542
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—337



266,225
COMBINED EGG BOX AND COVER
Alain Villotte, Paris, France, assignor to Societe Europeenne pour la Transformation des Produits de Synthese Seprosy, Paris, France
Filed Aug. 1, 1980, Ser. No. 174,529
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—345



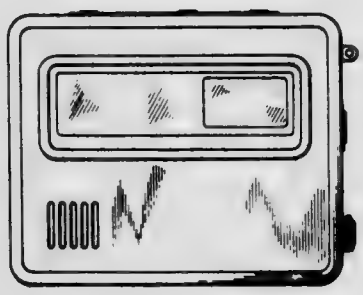
266,226
PACKAGING CONTAINER
Robert C. Zdarsky, Westchester, and Russell J. Lyons, Franklin Park, both of Ill., assignors to Champion International Corporation, Stamford, Conn.
Filed Oct. 19, 1979, Ser. No. 86,409
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—418



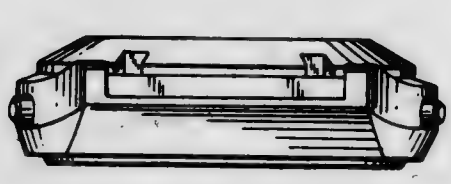
266,227
CONTAINER FOR A PLURALITY OF CAPACITORS
A. Franklin LaBarbara, 6 Northcreek Rd., Eatons Neck, N.Y. 11768
Filed Aug. 28, 1980, Ser. No. 182,066
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—424



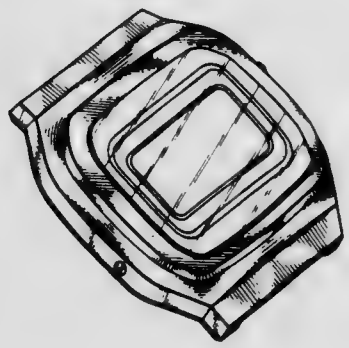
266,228
POCKET CLOCK
Yasuo Inora, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed Feb. 27, 1980, Ser. No. 125,252
Claims priority, application Japan, Aug. 28, 1979, 54-35822
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—15



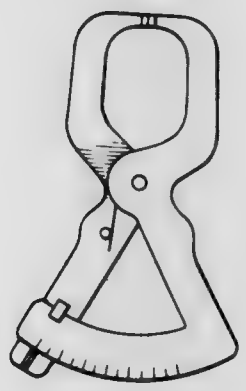
266,229
WATCH
Tetsuo Okaya, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan
Filed Feb. 29, 1980, Ser. No. 125,820
Claims priority, application Japan, Sep. 5, 1979, 54-37175
Term of patent 3½ years
Int. Cl. D10—*02*
U.S. Cl. D10—38



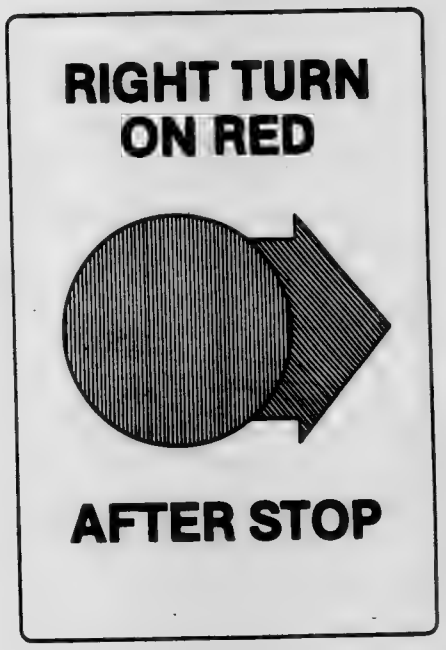
266,230
WRIST WATCH OR THE LIKE
Kaoru Tsukahard, Higashimurayama, Japan, assignor to Casio Computer Co. Ltd., Tokyo, Japan
Filed Mar. 10, 1980, Ser. No. 128,373
Claims priority, application Japan, Oct. 22, 1979, 54-44374
Term of patent 14 years
Int. Cl. D10—*02*
U.S. Cl. D10—38



266,231
SKINFOLD CALIPER
Dennis D. Windscheffel, 1604 Siwanoy Dr., Alhambra, Calif. 91803
Filed Sep. 22, 1980, Ser. No. 189,700
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—73



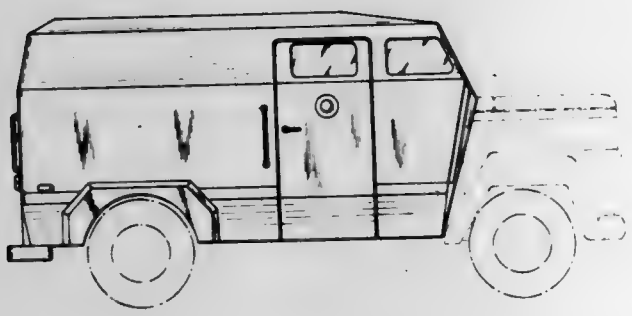
266,232
TRAFFIC SIGN
Peter Van Gel, 20 Vernon Rd., Natick, Mass. 01760
Filed Feb. 5, 1980, Ser. No. 118,785
Term of patent 14 years
Int. Cl. D10—*06*
U.S. Cl. D10—109



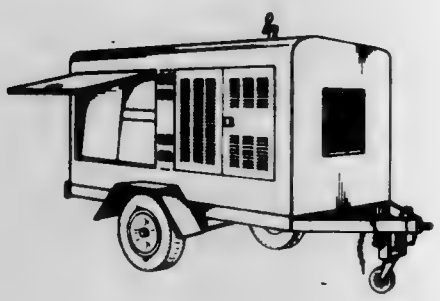
266,233
JEWELRY FINDING
Richard Governali, 1040 Sanford Ave., Irvington, N.J. 07111
Filed Aug. 18, 1980, Ser. No. 177,260
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—1



266,234
BODY OF AN ARMORED LAND VEHICLE
Walter R. Colwell, 414 Via Alegre, San Clemente, Calif. 92672
Filed May 12, 1980, Ser. No. 148,705
Term of patent 14 years
Int. Cl. D12—*13*
U.S. Cl. D12—12



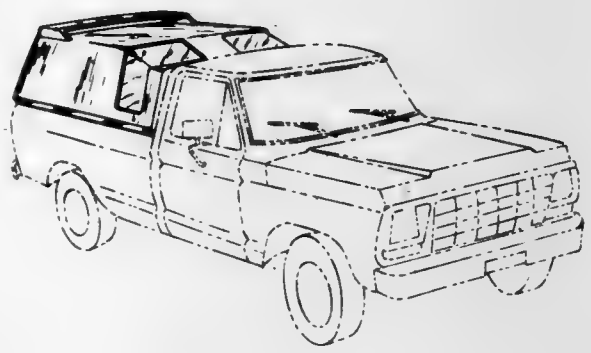
266,235
COMBINED PIPE AND HYDRANT THAWING AND ELECTRIC GENERATOR TRAILER
Douglas B. Hughes, Rideau Ferry, Ontario, Canada (K0G 1W0)
Filed Dec. 5, 1979, Ser. No. 100,363
Claims priority, application Canada, Jun. 12, 1979, 12-06-79-2
Term of patent 14 years
Int. Cl. D12—*10*
U.S. Cl. D12—101



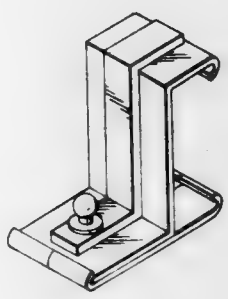
266,236
COMBINED BABY STROLLER AND BASKET
Shiaroku Nakao, Yokohama, and Kouichi Kobayashi, Tokyo, both of Japan, assignors to Combi Co., Ltd., Tokyo, Japan
Filed Dec. 3, 1980, Ser. No. 215,884
Term of patent 14 years
Int. Cl. D12—*12*
U.S. Cl. D12—129



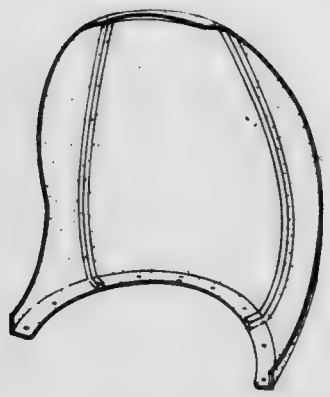
266,237
PICK-UP TRUCK BED ENCLOSURE
Wilbert L. Skidmore, Benzonia, Mich., assignor to Glas-Tek, Inc., Benzonia, Mich.
Filed Oct. 1, 1979, Ser. No. 80,438
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—156



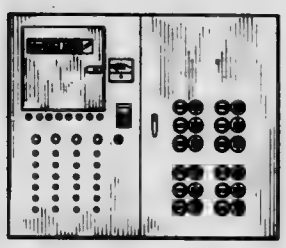
266,238
DETACHABLE FRONT BUMPER HITCH
Lawrence M. Miller, 407 - 4th St. West, Lemmon, S. Dak. 57638
Filed Jan. 4, 1980, Ser. No. 109,571
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—162



266,239
TRAILER WIND DEFLECTOR
Frederick R. Faust, New Braunfels, Tex., assignor to Thomas O. Hudson and Patricia Ann Hudson, both of Ada, Okla.
Filed Feb. 13, 1981, Ser. No. 234,160
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—181



266,240
MULTI-ZONE ENERGY SUPPLY CONTROL
Thomas L. Garver, Kannapolis, N.C., assignor to W. A. Brown & Son, Inc., Salisbury, N.C.
Filed Feb. 13, 1980, Ser. No. 121,228
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—12



266,241
COMBINED RADIO RECEIVER AND TAPE RECORDER
Manao Nakamura, Ikoma, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Sep. 30, 1980, Ser. No. 192,585
Term of patent 14 years
Int. Cl. D14—*01, 03*
U.S. Cl. D14—5

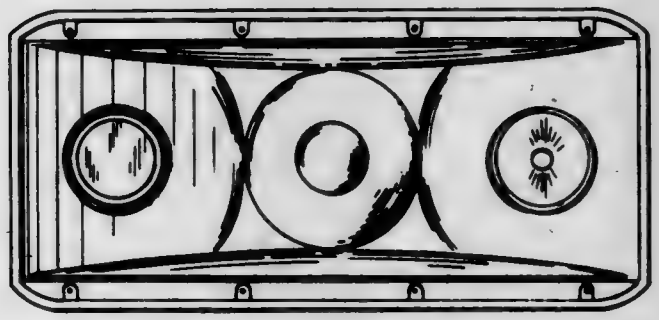


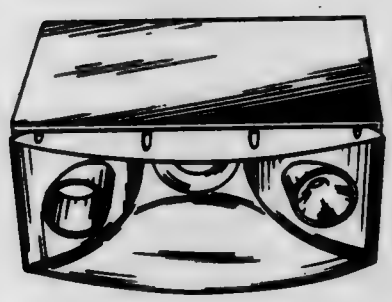
266,242
MICROPHONE HOUSING
William Radzelovage, Londonderry, N.H., assignor to Gentex Corporation, Carbondale, Pa.
Filed Apr. 14, 1980, Ser. No. 139,967
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—12



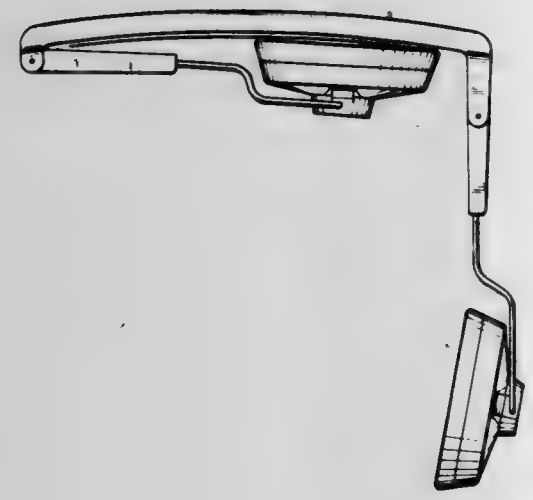


266,243
LOUDSPEAKER
John T. Gollehon, Grand Rapids, Mich., assignor to Gollehon Industries, Inc., Grand Rapids, Mich.
Filed Jun. 2, 1980, Ser. No. 155,226
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—34

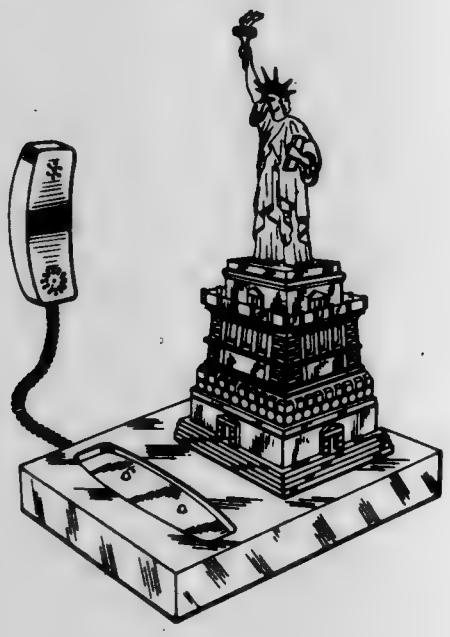




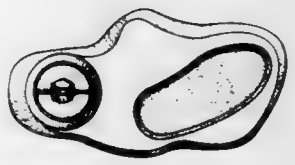
266,244
COLLAPSIBLE HEADSET
Alan Hofer, Wantaugh, and Frank Frielingsdorf, Port Jefferson, both of N.Y., assignors to Pickering & Company, Inc., Plainview, N.Y.
Filed May 30, 1979, Ser. No. 43,663
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—36



266,245
TELEPHONE
Wesley L. Thomas, 109 S. Catalina St., Los Angeles, Calif. 90004
Filed Jul. 23, 1979, Ser. No. 59,572
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—53

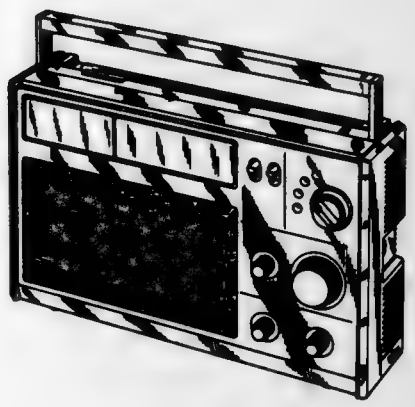


266,246
COMBINED TELEPHONE STAND AND LAMP THEREFOR
Nathaniel Sheppard, Jr., 8686 Elmtree St., Cincinnati, Ohio 45231
Filed Jun. 16, 1980, Ser. No. 160,070
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—60





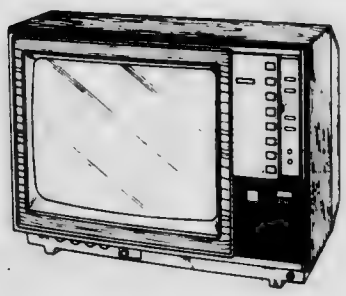
266,247
RADIO RECEIVER
Peter H. J. van de Ven, Valkenswaard, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Jun. 27, 1980, Ser. No. 163,765
Claims priority, application United Kingdom, Jan. 3, 1980, 993032
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—70



266,248
TELEVISION RECEIVER

Masahide Aoki, Tokyo; Takeichi Obata, Hino, and Takashi Fujii, Musashino, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

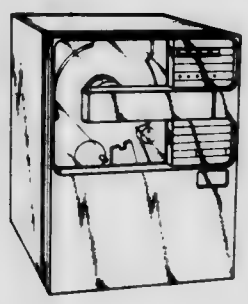
Filed Aug. 4, 1980, Ser. No. 174,904
Claims priority, application Japan, Feb. 29, 1980, 55-7326
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—80



266,249
MAGNETIC TAPE DRIVE UNIT FOR A COMPUTER SYSTEM

Yoshiaki Tsuchihashi, Kokubunji, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

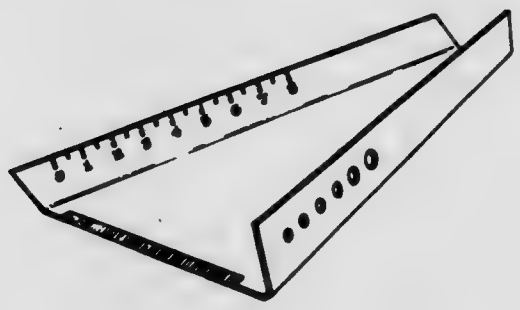
Filed May 7, 1980, Ser. No. 147,478
Claims priority, application Japan, Feb. 1, 1980, 55-2790
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—108



266,250
FUNNEL TRAY

John D. Gallagher, R.R. #1, Ingelwood, Ontario, Canada

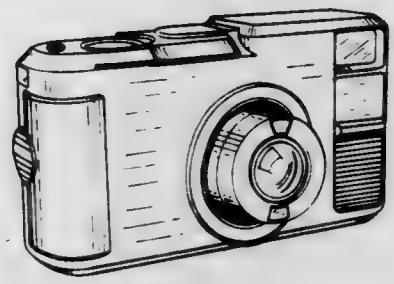
Filed Sep. 23, 1980, Ser. No. 190,180
Claims priority, application Canada, Apr. 14, 1980, 14-04-80-5
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D15—140



266,251
PHOTOGRAPHIC CAMERA

Herbert Schultes, Fürstenfeldbruck, and Karl-Heinz Rubner, Munich, both of Fed. Rep. of Germany, assignors to AGFA-Gevaert AG, Leverkusen, Fed. Rep. of Germany

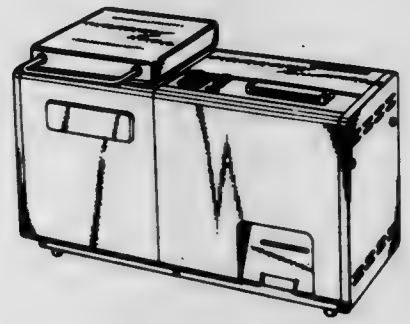
Filed Jul. 31, 1980, Ser. No. 175,190
Term of patent 14 years
Int. Cl. D16—*01*
U.S. Cl. D16—1



266,252
MICRO FICHE DUPLICATOR

Shigeo Sumi, Hasuda, and Hideaki Nagata, Tokyo, both of Japan, assignors to Somar Manufacturing Co., Ltd., Tokyo, Japan

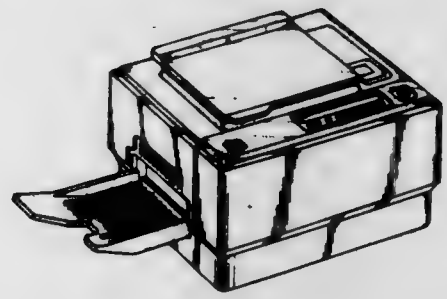
Filed Apr. 25, 1980, Ser. No. 143,679
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D16—27



266,253
PHOTOCOPYING MACHINE

Shuzo Horikoshi, Kawanishi; Yoshihiko Sugiyama, Nara; Ken Kawamura, Ibaragi; Yoshihiko Kawakami, Takatsuki; Teruo Kuriyagawa, Osaka; Makoto Matsumura, Hirakata; Shoichi Kobayashi, Osaka, and Keiko Akai, Shijonawate, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

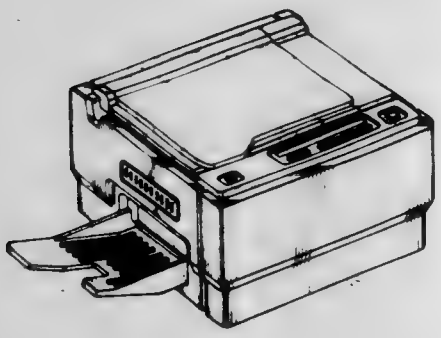
Filed Jan. 4, 1980, Ser. No. 109,616
Claims priority, application Japan, Jul. 13, 1979, 54-29355
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D16—31



266,254
PHOTOCOPYING MACHINE

Shuzo Horikoshi, Kawanishi; Yoshihiko Sugiyama, Nara; Ken Kawamura, Iberagi; Yoshihiko Kawakami, Takatsuki; Teruo Kuriyagawa, Osaka; Makoto Matsumura, Hirakata; Shoichi Kobayashi, Osaka, and Keiko Akai, Shijonawate, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

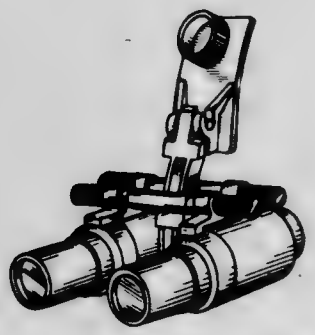
Filed Jan. 4, 1980, Ser. No. 109,617
Claims priority, application Japan, Jul. 13, 1979, 54-29354
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D16—31

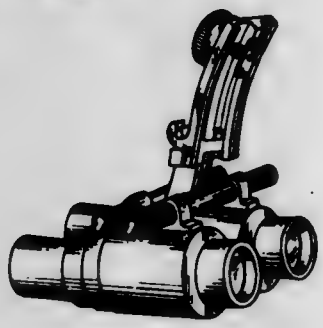


266,255
AVIATOR NIGHT VISION IMAGING APPARATUS OR SIMILAR ARTICLE

James H. Barbo; Louis P. Hartman, both of Roanoke, Va.; Douglas M. Spranger, New York, N.Y.; Malcolm J. Brookes, New York, N.Y., and Paul J. Mulhauser, New York, N.Y., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Jul. 22, 1980, Ser. No. 171,077
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D16—133

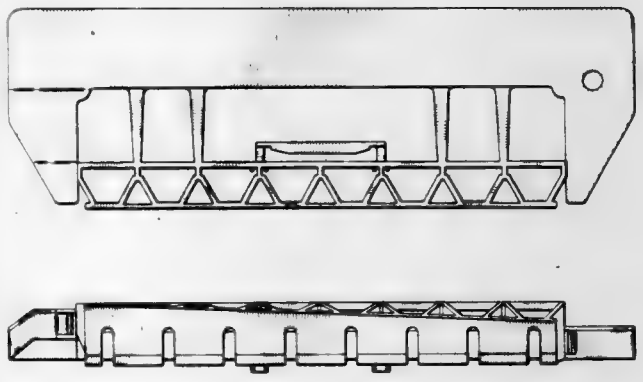




266,256
RIBBON CASSETTE OR SIMILAR ARTICLE

Michael O. Grey, Ithaca, N.Y., assignor to NCR Corporation, Dayton, Ohio

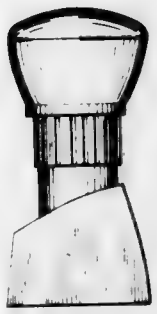
Filed Feb. 11, 1980, Ser. No. 120,167
Term of patent 14 years
Int. Cl. D18—*99*
U.S. Cl. D18—12



266,257
HAND OPERATED INK STAMP

Robert H. Ahrens, Janesville, Wis., assignor to Schwaab, Inc., Milwaukee, Wis.

Filed Jul. 18, 1980, Ser. No. 170,039
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D18—15



266,258
FOUNTAIN PEN

Arnold G. Lockwood, Warwick; William E. Tucker, Harmony, and Robert L. Harris, North Scituate, all of R.I., assignors to A. T. Cross Company, Lincoln, R.I.

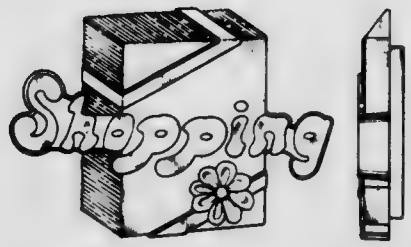
Filed Apr. 9, 1980, Ser. No. 138,601
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—49



266,259
FOUNTAIN PEN REFILL INK CARTRIDGE
William E. Tucker, Harmony, and George W. Graham, North Kingstown, both of R.I., assignors to A. T. Cross Company, Lincoln, R.I.
Filed Apr. 22, 1980, Ser. No. 142,700
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—54



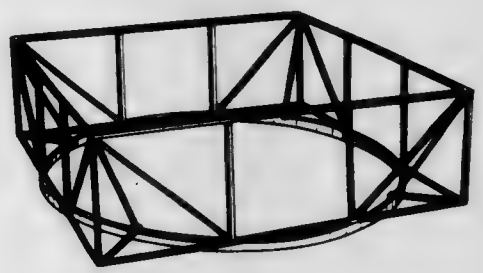
266,260
MAGNETIC MEMO HOLDER
Ruediger Einhorn, Katonah, and Lee R. Chasen, Port Chester, both of N.Y., assignors to Coats & Clark, Inc., Stamford, Conn.
Filed Nov. 12, 1980, Ser. No. 206,043
Term of patent 14 years
Int. Cl. D19—*99*
U.S. Cl. D19—91



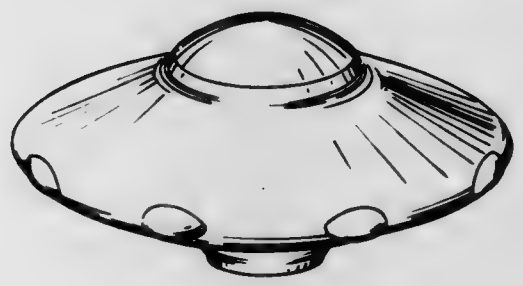
266,261
MAGNETIC MEMO HOLDER
Ruediger Einhorn, Katonah, and Lee R. Chasen, Port Chester, both of N.Y., assignors to Coats & Clark, Inc., Stamford, Conn.
Filed Nov. 12, 1980, Ser. No. 206,044
Term of patent 14 years
Int. Cl. D19—*99*
U.S. Cl. D19—91



266,262
WATER TOWER SIGN FRAME
Davis W. Pennington, 9336 W. Washington Blvd., Culver City, Calif. 90230
Filed May 19, 1981, Ser. No. 264,607
Term of patent 14 years
Int. Cl. D20—*03*
U.S. Cl. D20—10



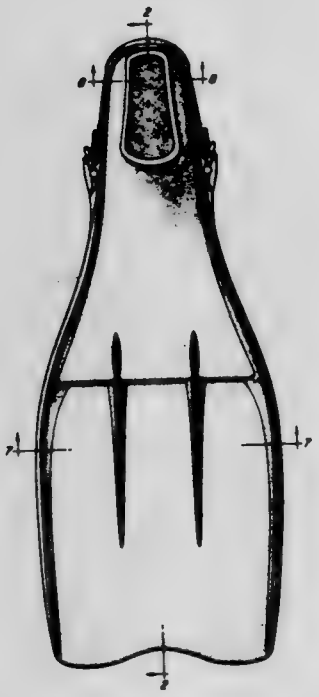
266,263
TOY SPACESHIP
Barbara Zachar, 324 Warburton Ave., Hastings-on-Hudson, N.Y. 10706
Filed Jun. 17, 1980, Ser. No. 160,208
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—86



266,264
GOLF BALL RETRIEVER
Wilfred H. West, 6520 Lucas Ave., Oakland, Calif. 94611
Filed Jan. 31, 1980, Ser. No. 117,093
Term of patent 7 years
Int. Cl. D21—*02*
U.S. Cl. D21—206



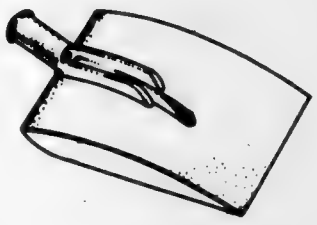
266,265
SWIM FIN
William A. Bowden, Glenview, Ill., assignor to Dacor Corporation, Northfield, Ill.
Filed Oct. 17, 1978, Ser. No. 952,072
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—239



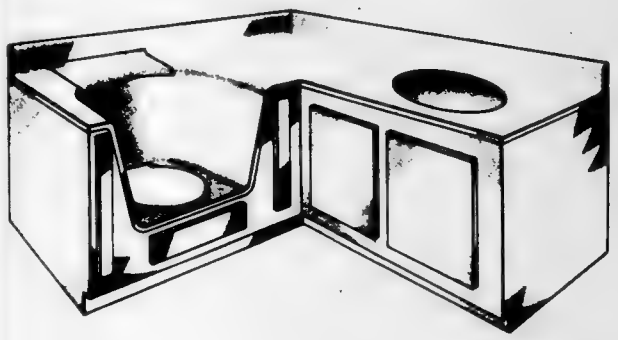
266,266
JIGGING LURE
Joseph A. Plamondon, Campbell River, Canada, assignor to Jerry Hardy and James Hoarce Darken, both of Campbell River, Canada
Filed Jul. 14, 1980, Ser. No. 168,814
Claims priority, application Canada, Feb. 1, 1980, 01-02-80-3
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—27



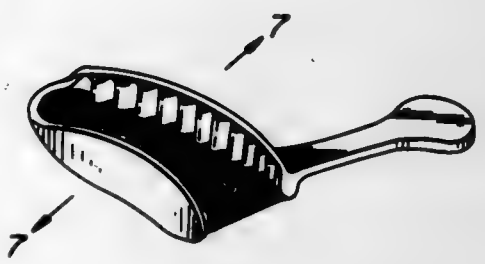
266,267
FISHING LURE
Ernest J. Ross, 1654 - 127th St., Surrey, British Columbia, Canada (V4A 3S1)
Filed Sep. 15, 1980, Ser. No. 187,208
Claims priority, application Canada, Mar. 31, 1980, 31-03-80-7
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—27



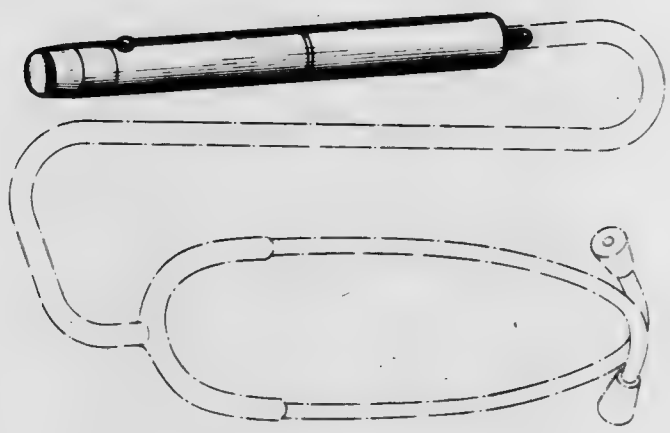
266,268
COMBINED WATER CLOSET COVER AND BATHROOM CABINET
Michael Adamcik, 357 Lakeview Dr., North Fort Myers, Fla. 33903
Division of Ser. No. 927,899, Jul. 25, 1978, abandoned. This application Jan. 22, 1980, Ser. No. 114,308
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—69



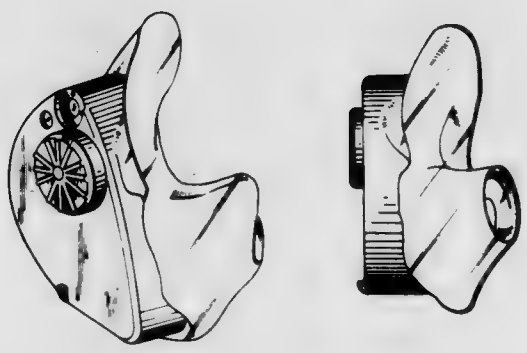
266,269
DENTAL BITE TRAY
Samuel R. Werrin, Pittsburgh, Pa., assignor to Premier Dental Products Company, Norristown, Pa.
Filed Jul. 9, 1980, Ser. No. 167,114
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—10



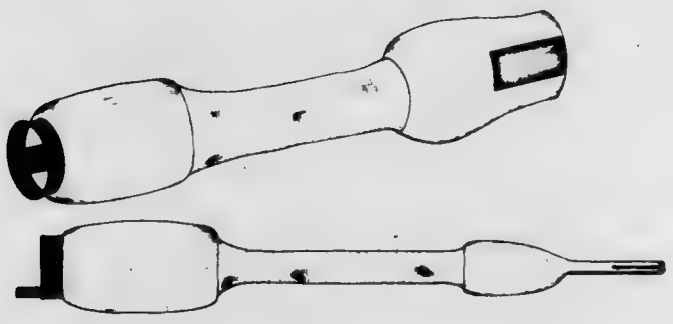
266,270
FETUS PULSE AND BLOOD FLOW DETECTOR
Masuo Sugawara, Tokorozawa, and Hiroji Matsumoto, Kawasaki, both of Japan, assignors to Hayashi Denki Company Ltd., Kanagawa, Japan
Filed Mar. 5, 1979, Ser. No. 17,340
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—17



266,271
HEARING AID
Donald L. Johanson, Wayland, and Thomas S. Chan, Somerville, both of Mass., assignors to Audivox, Inc., Newton, Mass.
Filed Jan. 29, 1979, Ser. No. 7,190
Term of patent 14 years
Int. Cl. D24—*99*
U.S. Cl. D24—35



266,272
THERMAL ICE POUCH
Harvey E. Christensen, 508 6th St. NE., Conover, N.C. 28613; Charles H. Moretz, and John M. Moretz, both of P.O. Box 551, Newton, N.C. 28658
Filed May 5, 1980, Ser. No. 146,236
Term of patent 14 years
Int. Cl. D24—*04*; D7—*99*
U.S. Cl. D24—43



266,273
INFANT BOTTLE HOLDING DEVICE
Wayne E. Bass, 8839 Keremeos Way, San Diego, Calif. 92126
Filed Jun. 9, 1980, Ser. No. 157,816
Term of patent 3½ years
Int. Cl. D24—*04*
U.S. Cl. D24—48



266,274
SAWBUCK
Gale A. Arns, 403 E. 6th St., Newberg, Oreg. 97132
Filed Aug. 25, 1980, Ser. No. 180,648
Term of patent 14 years
Int. Cl. D25—*99*
U.S. Cl. D25—67



266,275

FRAME MEMBER FOR WINDOWS OR THE LIKE

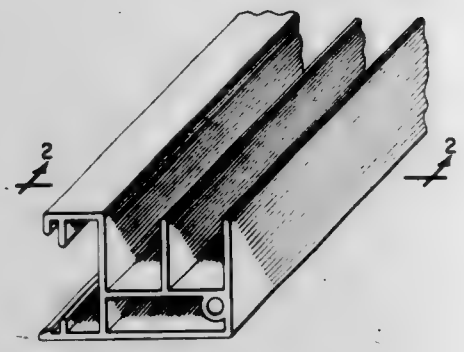
Dietrich F. Schmidt, Camp Hill, Pa., assignor to Capitol Products Corporation, Mechanicsburg, Pa.

Filed Sep. 11, 1980, Ser. No. 186,726

Term of patent 14 years

Int. Cl. D25—*01*

U.S. Cl. D25—74



266,276

MOTORCYCLE LIGHT AND THE LIKE

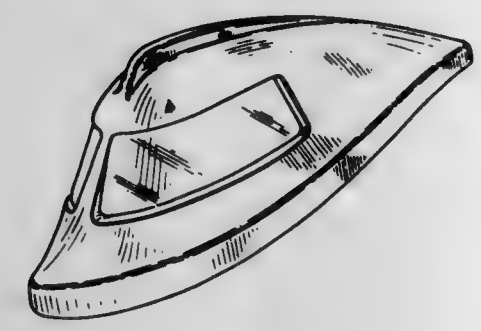
James M. Preisler, Bloomington, Minn., assignor to Thomas H. Rudd, Wayzata, Minn.

Filed Feb. 4, 1980, Ser. No. 117,916

Term of patent 14 years

Int. Cl. D26—*06*

U.S. Cl. D26—28



266,277

ELECTROLIER

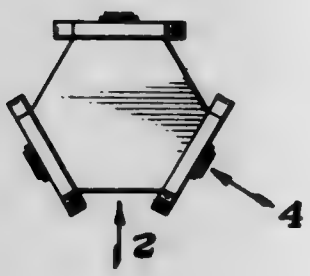
Gregory P. Tobias, 8937 S. Dalton Ave., Los Angeles, Calif. 90047

Filed Jun. 6, 1980, Ser. No. 157,142

Term of patent 14 years

Int. Cl. D26—*05*

U.S. Cl. D26—111



266,278

HAIR STYLING IMPLEMENT OR SIMILAR ARTICLE

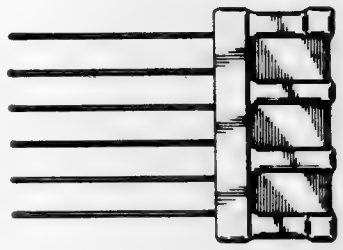
Anthony L. Daddona, Jr., 1540 Scalp Ave., Johnstown, Cambria County, Pa. 15904

Filed Jul. 7, 1980, Ser. No. 166,603

Term of patent 14 years

Int. Cl. D28—*03*

U.S. Cl. D28—21



266,279

DENTAL FLOSS HOLDER

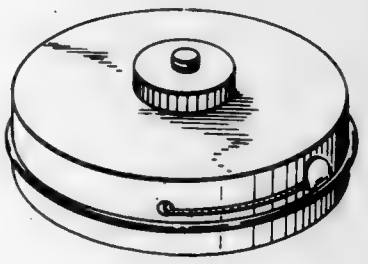
John Strother, 175 W. 137th St., New York, N.Y. 10030

Filed May 2, 1979, Ser. No. 35,293

Term of patent 14 years

Int. Cl. D28—*99*

U.S. Cl. D28—64



266,280

BACK SCRATCHER

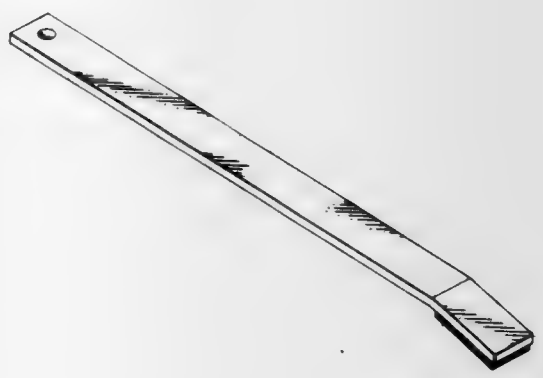
James Toyama, 1980 Cedar Ave., Long Beach, Calif. 90806

Filed Feb. 12, 1980, Ser. No. 120,972

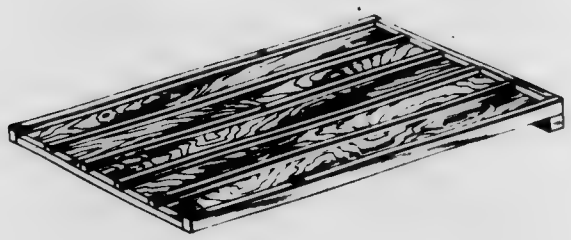
Term of patent 14 years

Int. Cl. D28—*99*

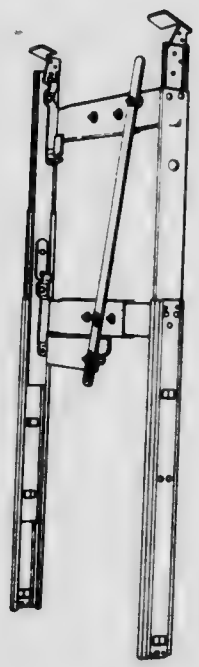
U.S. Cl. D28—99



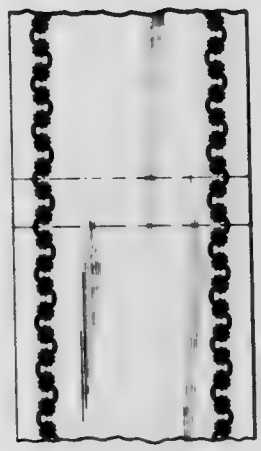
266,281
KITCHEN DRAINBOARD
William H. Ellis, 107 University Pl., New York, N.Y. 10003, and Donald L. Clay, 34 W. 10th St., New York, N.Y. 10011
Filed Mar. 31, 1980, Ser. No. 136,000
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D32—56



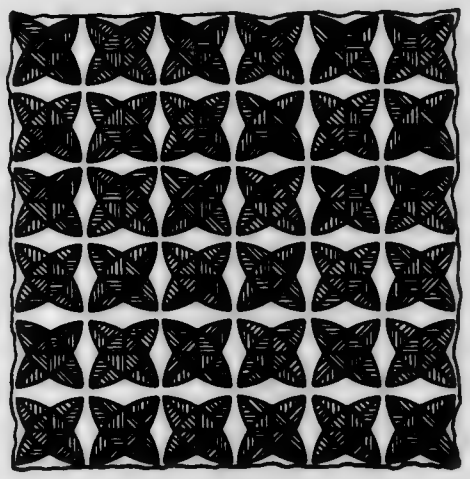
266,282
FRAME FOR IRONING BOARD PROVIDED WITH A CATCH
Dan A. B. Pettersson, Hillerstorp, Sweden, assignor to AB Jarnarmatur, Hillerstorp, Sweden
Filed May 29, 1979, Ser. No. 42,906
Claims priority, application Sweden, Dec. 1, 1978, 78-2817
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D32—66



266,283
CONTINUOUS SHEET MATERIAL OR THE LIKE
Donald T. Appleman, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed Jun. 23, 1980, Ser. No. 162,467
Term of patent 14 years
Int. Cl. D5—*06*
U.S. Cl. D59—2 B



266,284
FABRIC SHEET OR SIMILAR ARTICLE
William O. Nixon, 31170 Concord, Madison Heights, Mich. 48071
Division of Ser. No. 29,995, Apr. 16, 1979. This application Sep. 30, 1980, Ser. No. 192,462
Term of patent 14 years
Int. Cl. D5—*05*
U.S. Cl. D92—1 Q



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 21ST DAY OF SEPTEMBER, 1982

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

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AB Volvo: *See*—
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Abe, Takeshi. Substance with fibrinolytic activity and method of manufacturing the same. 4,350,625, Cl. 260-112.00R.

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Wright, John T. M.; and Acosta, George M., 4,350,492, Cl. 8-94.110.

Adams, John Q., IV. Beehive improvements. 4,349,927, Cl. 6-1.000.

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Alexandrov, Vyacheslav S.; Guschin, Alexandr E.; Zavodov, Rudolf V.; Zhukova, Elena I.; Ivanov, Alexandr A.; Fofanova, Tatyana S.; Mikhailov, Evgeny I.; Dianov, Ivan M.; Luzin, Pavel M.; Sergeev, Igor A.; Pankratova, Lidia A.; Krylova, Vera E.; and Leibenzon, Semen A. Apparatus for production of fibrous sheet material. 4,350,482, Cl. 425-83.100.

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Allen, Ralph A.; and Zylkowski, John T., to Kortech Engineering, Inc. Detachable electrical connector assembly having improved means for aligning connector parts. 4,350,401, Cl. 339-65.000.

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Frantom, Richard L.; Stephenson, Robert L.; and Thomas, Rudy V., 4,350,368, Cl. 280-804.000.
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Baldi, Alfonso L., 4,350,719, Cl. 427-253.000.

Alpers, Frederick C., to United States of America, Navy. Frequency-agile transponder. 4,350,982, Cl. 343-6.80R.

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Andersson, Sven O. S.; Ottertun, Harald D.; and Reinhardt, Hans, to MX-Processor Reinhardt & Co AB. Extraction of copper from an ammoniacal copper solution. 4,350,667, Cl. 423-24.000.
Ando, Narumi: *See*—
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Aoki, Shigeru, to Kabushiki Kaisha Suwa Seikosha. Quartz crystal wristwatch. 4,351,040, Cl. 368-88.000.
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Scheidegger, Hans; Flensberg, Hermann; and Bauhofer, Roland, 4,350,494, Cl. 8-636.000.

Baum, Karl F., to North American Philips Corporation. Laser trimmable resistor coating. 4,350,784, Cl. 524-759.000.

Baumann, Hans-Peter, to Sandoz Ltd. Carrier composition for disperse dyes. 4,350,493, Cl. 8-617.000.

Baus, Heinz G. Evaporation air-humidifier. 4,350,646, Cl. 261-29.000.

Baxter, John D.; Fettes, Ivy; and Shine, John, to University of California, The Regents of the. Microbiological synthesis of beta endorphin. 4,350,764, Cl. 435-69.000.

Baxter Travenol Laboratories, Inc.: *See*—
Wicnienski, Michael F., 4,350,441, Cl. 356-40.000.

Bayer Aktiengesellschaft: *See*—
Beck, Gunther; Heitzer, Helmut; and Lurssen, Klaus, 4,350,520, Cl. 71-92.000.
Blank, Heinz U.; Klag, Gunther; and Schnegg, Peter, 4,350,566, Cl. 162-72.000.
Fuchs, Rainer; Maurer, Fritz; Priesnitz, Uwe; and Riebel, Hans-Jochem, 4,350,640, Cl. 260-465.00D.
Henrichs, Paul; Haas, Peter; Hoppe, Hans-Georg; and Grimm, Wolfgang, 4,350,777, Cl. 521-110.000.
Kritzler, Helmuth; Bohm, Walter; Kappler, Ulrich; and Winkelmann, Hans D., 4,350,573, Cl. 203-86.000.
Rasshofer, Werner; Grogler, Gerhard; and Meyborg, Holger, 4,350,781, Cl. 521-149.000.
Riebel, Hans-Jochem; Maurer, Fritz; and Priesnitz, Uwe, 4,350,824, Cl. 560-124.000.
Schmidt, Manfred; and Reinking, Klaus, 4,350,793, Cl. 525-133.000.

Bayer, Horst O.; and Swithenbank, Colin, to Rohm and Haas Company. Herbicidal 4-trifluoromethyl-4'-nitrodiphenyl ethers. 4,350,522, Cl. 71-111.000.

BBC Brown, Boveri & Company, Limited: *See*—
Klein, Erwin, 4,350,026, Cl. 62-333.000.

Bear, Michael L. Apparatus for playing a competitive game. 4,350,344, Cl. 273-333.000.

Beck, Gunther; Heitzer, Helmut; and Lurssen, Klaus, to Bayer Aktiengesellschaft. Plant growth regulant compositions. 4,350,520, Cl. 71-92.000.

Beckman Instruments, Inc.: *See*—
Leonian, Armen L., 4,350,283, Cl. 233-26.000.

Beckwith, John R., to Stanford Associates, Inc. Hot water heating system. 4,350,144, Cl. 126-427.000.

Becton, Dickinson and Company: *See*—
Kessler, Stephen B., 4,350,593, Cl. 210-516.000.

Beecham Group Limited: *See*—
Baggaley, Keith H., 4,350,702, Cl. 424-270.000.
Dickinson, Kay H.; Smale, Terence C.; and Southgate, Robert, 4,350,703, Cl. 424-274.000.
Hadley, Michael S.; and Blaney, Frank E., 4,350,691, Cl. 424-244.000.

Begin, David L.: *See*—
Stephenson, George M.; Begin, David L.; Casavant, Roger; Bornemeier, Stephen; and Colucci, William J., 4,350,299, Cl. 239-337.000.

Behrens, Gerhard: *See*—
Heberling, Walter; Muller, Wolfgang; Langenberg, Werner; Behrens, Gerhard; and Saul, Alfred, 4,350,393, Cl. 299-50.000.

Beitner, Shlomo, to Bipol Ltd. Device and process for effecting refrigeration. 4,350,016, Cl. 62-3.000.

Bell Telephone Laboratories, Incorporated: *See*—
Clark, William C.; and Winings, Clifford L., 4,350,404, Cl. 339-97.00R.
Cordell, Robert R., 4,350,904, Cl. 307-310.000.

Belohlawek, Lothar; and Weber, Wolfgang, to Dimalt Aktiengesellschaft. Process for the production of a fine grained multiple lactate and its use as a baking agent. 4,350,716, Cl. 426-626.000.

Belova, Tamara N.: *See*—
Khutoretsky, Garry M.; Tjurin, Jury G.; Drozdova, Larisa A.; and Belova, Tamara N., 4,350,910, Cl. 310-64.000.

Ben-Dor, Yaron. Agricultural implement for the extraction and shredding of stalks and roots. 4,350,207, Cl. 171-58.000.

Bendix Corporation, The: *See*—
Casey, Gary L.; Harvey, Bruce J.; Hebert, Kenneth A.; and Eddy, William C., 4,350,135, Cl. 123-564.000.
Erwin, Louis R.; and Hurlong, Granville W., Jr., 4,350,301, Cl. 239-453.000.
Rodriguez, Celestino, 4,350,939, Cl. 318-592.000.

Benedek, George B.: *See*—
von Schulthess, Gustav K.; Cohen, Richard J.; and Benedek, George B., 4,350,677, Cl. 424-12.000.

Bennes Marrel S.A.: *See*—
Corompt, Antoine, 4,350,469, Cl. 414-420.000.

Benoit-Gonin, Roger; Berger, Jean L.; and Coutures, Jean L., to Thomson-CSF. Charge-transfer coded-voltage generator for use in analog-digital coders and decoders. 4,350,976, Cl. 340-347.0DA.

Benoit, William R. Lighter than air wind energy conversion system utilizing an internal radial disk diffuser. 4,350,896, Cl. 290-55.000.

Benoit, William R. Lighter than air wind energy conversion system. 4,350,897, Cl. 290-55.000.

Benoit, William R. Lighter than air wind energy conversion system utilizing an external radial disk diffuser. 4,350,898, Cl. 290-55.000.

Benoit, William R. Lighter than air wind energy conversion system utilizing a rearwardly mounted internal radial disk diffuser. 4,350,899, Cl. 290-55.000.

Benteler Werke AG: *See*—
Bick, Klaus; Harmsen, Lothar; Zieschang, Jurgen; and Vennmann, Friedhelm, 4,351,055, Cl. 373-76.000.

Bentivegna, Charles R.: *See*—
Heisner, Donald N.; and Bentivegna, Charles R., 4,350,942, Cl. 318-626.000.

Bentley Laboratories: *See*—
Hoffa, Jack, 4,350,157, Cl. 128-214.00R.

Berg, Lennart G. Quick coupling device for pressurized fluid conduits. 4,350,321, Cl. 251-149.600.

Berger, Artur: *See*—
Heinemann, Otto; Schmits, Heinz-Herbert; Philipp, Rainer; and Berger, Artur, 4,350,244, Cl. 198-773.000.

Berger, Jean L.: *See*—
Benoit-Gonin, Roger; Berger, Jean L.; and Coutures, Jean L., 4,350,976, Cl. 340-347.0DA.

Berney, Jean-Claude, to Berney, Jean-Claude. Timepiece with a detector and control circuit for a stepping motor. 4,351,039, Cl. 368-76.000.

Bernier, Edward J., Jr.: *See*—
Hall, Richard A.; and Bernier, Edward J., Jr., 4,350,742, Cl. 428-520.000.

Berry, David A., to RCA Corporation. High density information disc lubricants. 4,351,048, Cl. 369-288.000.

Berry, French J., Jr. Protective pad for backpacks. 4,350,726, Cl. 428-95.000.

Bertens, Theodorus C. J. M., to U.S. Philips Corporation. Dispenser cathode. 4,350,920, Cl. 313-346.00R.

Berton, Marcello; and Bertozzi, Dino, to Ing. C. Olivetti & C., S.p.A. Furniture with space saving door. 4,350,399, Cl. 312-138.00R.

Bertozzi, Dino: *See*—
Berton, Marcello; and Bertozzi, Dino, 4,350,399, Cl. 312-138.00R.

Best, Allan I.; Bohley, Thomas K.; and Westlund, Ronald C., to Hewlett-Packard Company. Time interval measurement apparatus. 4,350,953, Cl. 324-183.000.

Bethlehem Steel Corporation: *See*—
Allegra, Louis K.; Townsend, Herbert E.; and Borzillo, Angelo R., 4,350,540, Cl. 148-31.500.
Torok, Theodore E.; Shin, Paik W.; and Borzillo, Angelo R., 4,350,539, Cl. 148-31.500.

Beyer, Charles L.; and Fox, Billy E. Fireplace damper indicator. 4,350,142, Cl. 126-288.000.

Bianchini, Giuliano, to Societa Italiana Brevetti. Solar collector for heating purposes. 4,350,145, Cl. 126-434.000.

Biax Fiberfilm: *See*—
Hoge, William H., 4,350,655, Cl. 264-145.000.

BICC Limited: *See*—
Seddon, Alan E., 4,350,851, Cl. 191-39.000.

Bick, Klaus; Harmsen, Lothar; Zieschang, Jurgen; and Vennmann, Friedhelm, to Benteler Werke AG. Water cooled wall element formed of tubes for melting furnaces. 4,351,055, Cl. 373-76.000.

Bigot, Bernard; and Gielly, Jean-Francois, to Rhone-Poulenc Industries. Method of preparing phosphoric acid by a wet process. 4,350,671, Cl. 423-320.000.

Binks Manufacturing Company: *See*—
Hetherington, Robert D.; and Goelz, David W., 4,350,266, Cl. 222-40.000.

Binz GmbH & Co.: *See*—
Lehmann, J. C. Ludwig, 4,350,471, Cl. 414-463.000.

Biolik, Felicjan; Lukasik, Adam; Morys, Zagmunt; Walawender, Stanislaw; and Galazka, Szczepan, to Biuro Projektow Przemyslu Metali Niezelaznych "BIPROMET". Electric installation for heating of molten metals and/or salts and solutions. 4,351,057, Cl. 373-117.000.

Bipol Ltd.: *See*—
Beitner, Shlomo, 4,350,016, Cl. 62-3.000.

Bison-Werke Bahre und Greten GmbH & Co. KG: *See*—
Seeger, Gunter; and Wiemann, Dieter, 4,350,484, Cl. 425-140.000.

Bittar, Joseph: *See*—
Sheehy, George E.; and Bittar, Joseph, 4,350,226, Cl. 187-29.00R.

Bittle, L. Gordon. Automatic feeder for animals. 4,350,120, Cl. 119-51.130.

Bittner, Wilfried: *See*—
Engelsmann, Dieter; Nicko, Reinhard; Bittner, Wilfried; and Karl, Horst, 4,350,423, Cl. 354-173.000.

Biuro Projektow Przemyslu Metali Niezelaznych "BIPROMET": *See*—
Biolik, Felicjan; Lukasik, Adam; Morys, Zagmunt; Walawender, Stanislaw; and Galazka, Szczepan, 4,351,057, Cl. 373-117.000.

Bizerba-Werke Wilhelm Kraut KG: *See*—
Kuhnle, Ernst; and Schwarz, Josef, 4,350,217, Cl. 177-246.000.

Bjorklund, Robert B.: *See*—
Cronauer, Donald C.; and Bjorklund, Robert B., 4,350,609, Cl. 252-465.000.

Blackwell, Jennings P.; and Towers, Richard R., to Phillips Petroleum Company. Organosilane antistatic agents for glass-filled polyarylene sulfides. 4,350,786, Cl. 524-263.000.

Blaha, Alfred; and Schwarzler, Hans-Juergen, to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung. Navigation method for precisely steering a flying object. 4,350,983, Cl. 343-103.000.

Blakeley, James, to International Telephone and Telegraph Corporation. Self-compensation gasket for grooved end pipe couplings. 4,350,350, Cl. 277-207.00A.

Blanch, Paul S.: *See*—
Kovacik, James W.; Kovacik, James D.; Blanch, Thomas J.; and Blanch, Paul S., 4,350,850, Cl. 191-12.20R.

Blanch, Thomas J.: *See*—
Kovacik, James W.; Kovacik, James D.; Blanch, Thomas J.; and Blanch, Paul S., 4,350,850, Cl. 191-12.20R.

Blaney, Frank E.: *See*—
Hadley, Michael S.; and Blaney, Frank E., 4,350,691, Cl. 424-244.000.

Blank, Heinz U.; Klag, Gunther; and Schnegg, Peter, to Bayer Aktiengesellschaft. Process for the delignification of lignocellulose materials with dinitroanthraquinones. 4,350,566, Cl. 162-72.000.

Blasco, Richard W.: *See*—
Haque, Yusuf A.; and Blasco, Richard W., 4,350,975, Cl. 340-347.0CC.

Blase, Helmut; Hogemann, Arend; and Schulze, Dieter, to Harnischfeger GmbH. Telescoping mobile crane. 4,350,255, Cl. 212-268.000.

Blasius, John R.: *See*—
Galer, Richard E.; Blasius, John R.; and Webb, Paul C., 4,350,533, Cl. 106-89.000.

Bloom, Stanley: *See*—
Catanese, Carmen A.; and Bloom, Stanley, 4,350,922, Cl. 313-402.000.

Blount, David H. Process for the production of alkali metal silicate-organic plastics. 4,350,775, Cl. 521-100.000.

Blythe, Robert J.: *See*—
Bond, Robert; and Blythe, Robert J., 4,350,621, Cl. 525-237.000.

Bobb, Clifford F.; and Graeff, Norwood C., to AMP Incorporated. Electrical switch assembly. 4,350,855, Cl. 200-292.000.

Bobowski, George: *See*—
Hoefle, Milton L.; and Bobowski, George, 4,350,704, Cl. 424-274.000.

Bocognano, Rene J. Process for concentrating fluids. 4,350,565, Cl. 159-47.00R.

Bodenseewerk Perkin-Elmer & Co. GmbH: *See*—
Huber, Bernhard, 4,350,718, Cl. 427-181.000.

Boehlke, Klaus: *See*—
Theysohn, Rainer; Boehlke, Klaus; Seiler, Erhard; and Welz, Martin, 4,350,652, Cl. 264-104.000.

Boehringer Ingelheim GmbH: *See*—
Gupte, Arun R.; Kladders, Heinrich; and Struth, Helmut, 4,350,049, Cl. 73-864.510.

Boeing Company, The: *See*—
Michaelson, Gary L., 4,350,351, Cl. 156-245.000.

Bohley, Thomas K.: *See*—
Best, Allan I.; Bohley, Thomas K.; and Westlund, Ronald C., 4,350,953, Cl. 324-183.000.

Bohm, Georg G. A.; Hamed, Gary R.; and Vescelius, Lee E., to Firestone Tire & Rubber Company, The. Thermoplastic elastomer blends. 4,350,795, Cl. 525-194.000.

Bohm, Heinrich: *See*—
Rieber, Norbert; Bohm, Heinrich; Platz, Rolf; and Fuchs, Werner, 4,350,819, Cl. 548-375.000.

Bohm, Walter: *See*—
Kritzler, Helmuth; Bohm, Walter; Kappler, Ulrich; and Winkelmann, Hans D., 4,350,573, Cl. 203-86.000.

Bohn & Dawson: *See*—
Knoche, Raymond E., 4,350,227, Cl. 188-2.00F.

Bohner, Beat; and Rempfler, Hermann, to Ciba-Geigy Corporation. Herbicidal α-[4-(3',5'-dichloropyrid-2'-yl)-oxy]-phenoxy-propionic acid γ-butyrolactone ester and thioester. 4,350,521, Cl. 71-94.000.

Boiko, Vitaly T.: *See*—
Antipov, Georgy A.; Gelfand, Mikhail L.; Tsipenjuk, Yakov I.; Goldshtein, Boris G.; Lavnikov, Nikolai S.; Teres, Leonid N.; Urazhdin, Ivan I.; Yakubovsky, Petr S.; Boiko, Vitaly T.; Kalmykov, Anatoly M.; Minyashkin, Dmitry P.; and Stepanov, Mikhail M., 4,350,213, Cl. 173-93.600.

Bolsing, Friedrich. Process for even division of substances and mixtures of substances in the course of manufacturing of pulverulent preparations by chemical reaction. 4,350,598, Cl. 210-751.000.

Bolten, Michael; and Carpenter, Henry L., to Woma Corporation. Plant for cleaning castings and the like. 4,350,174, Cl. 134-104.000.

Bond, Robert; and Blythe, Robert J., to Dunlop Limited. Elastomer compositions for tire tread. 4,350,621, Cl. 525-237.000.

Bonnet, Alain, to Saint Gobain Industries. Apparatus for the continuous production of building elements having cellular cores. 4,350,483, Cl. 425-115.000.

Bonu, Bonu, to Siemens Aktiengesellschaft. Method of etching semiconductor wafers on one side. 4,350,562, Cl. 156-639.000.

Borchard, Heinz: *See*—
Redlich, Horst; Borchard, Heinz; and Ihlenburg, Rainer, 4,351,047, Cl. 369-270.000.

Borchert, Werner: *See*—
Schulz, Adalbert; and Borchert, Werner, 4,350,202, Cl. 165-95.000.

Borg, David G.: *See*—
Bowman, Arthur F.; and Borg, David G., 4,350,097, Cl. 102-275.200.

Borg-Warner Corporation: *See*—
Miller, Alan L.; and Ivey, John S., 4,350,058, Cl. 74-866.000.

Bornemeier, Stephen: *See*—
Stephenson, George M.; Begin, David L.; Casavant, Roger; Bornemeier, Stephen; and Colucci, William J., 4,350,299, Cl. 239-337.000.

Borschneck, Anthony G. Splint for use with a human leg. 4,350,153, Cl. 128-84.00C.

Borzillo, Angelo R.: *See*—
Allegra, Louis K.; Townsend, Herbert E.; and Borzillo, Angelo R., 4,350,540, Cl. 148-31.500.
Torok, Theodore E.; Shin, Paik W.; and Borzillo, Angelo R., 4,350,539, Cl. 148-31.500.

Bottka, Nicholas; and Lessoff, Howard, to United States of America, Navy. Multi-color tunable filter. 4,350,413, Cl. 350-356.000.

Boudot, Bernard; and Nury, Georges, to Rhone-Poulenc Industries. Process for the manufacture of polycrystalline garnet and corresponding monocrystals. 4,350,558, Cl. 156-617.0SP.

Boudot, Bernard; and Nury, Georges, to Rhone-Poulenc Industries. Process for the manufacture of polycrystalline garnet and corresponding monocrystal. 4,350,559, Cl. 156-617.0SP.

Boudy, Jean-Pierre, to Renault Sport. Fuel flow control supercharged engine. 4,350,128, Cl. 123-369.000.

Bourdeau, Romeo G.: *See*—
Layden, George K., Jr.; Bourdeau, Romeo G.; and Pike, Roscoe A., 4,350,672, Cl. 423-445.000.

Bourgy, Gerard: *See*—
Pardon, Pierre; Lantier, Frederic; Marly, Jose; and Bourgy, Gerard, 4,350,684, Cl. 424-92.000.

Bourke, Patrick T. Method and apparatus for cutting stone panels. 4,350,552, Cl. 156-254.000.

Boussert, Anne S., to Dow Chemical Company, The. Method of making catalysts for the production of ethylene oxide. 4,350,616, Cl. 252-463.000.

Bowden, Donald R., to Solar Unlimited, Inc. Heat exchanger and method of making. 4,349,950, Cl. 29-157.3AH.

Bowen, Kenneth S., to Bowens Sales and Service Limited. Front projection photographic apparatus. 4,350,419, Cl. 354-110.000.

Bowen, Robert F.: *See*—
Dudley, Kenneth W.; Teich, Wesley W.; and Bowen, Robert F., 4,350,859, Cl. 219-10.55F.

Bowens Sales and Service Limited: *See*—
Bowen, Kenneth S., 4,350,419, Cl. 354-110.000.

Bowman, Arthur F.; and Borg, David G., to Atlas Powder Company. Nonelectric delay detonator with tubular connecting arrangement. 4,350,097, Cl. 102-275.200.

Bowyer, William H.: *See*—
Knight, Lindsay C.; Phillips, Robert B.; Bowyer, William H.; and Moxley, Bruce, 4,350,881, Cl. 235-400.000.

Boyce, William D., II. Laterally and vertically controllable underwater towed vehicle. 4,350,111, Cl. 114-245.000.

Bradley, John J.; and Franklin, Benjamin S., to Honeywell Information Systems Inc. Switch system base mechanism. 4,351,024, Cl. 364-200.000.

Brain, Sally A.: *See*—
Robinson, Joseph G.; and Brain, Sally A., 4,350,623, Cl. 524-391.000.

Brand, Uwe: *See*—
Fuchs, Hugo; Brand, Uwe; Deuker, Ernst; and Frommer, Elmar, 4,350,630, Cl. 260-239.30A.

Branson Ultrasonics Corporation: *See*—
Summo, Arthur M., 4,350,649, Cl. 264-23.000.

Braun, Oskar, to Josef Willmes GmbH. Fruit juice press. 4,350,089, Cl. 100-116.000.

Brecker, James N.: *See*—
Maxey, Robert E. L.; and Brecker, James N., 4,351,029, Cl. 364-511.000.

Breidbach, Josef: *See*—
Hermann, Joerg; Baier, Werner; and Breidbach, Josef, 4,350,288, Cl. 237-12.30C.

Bremer, Noel J.: *See*—
Lemanski, Michael F.; Bremer, Noel J.; and Milberger, Ernest C., 4,350,611, Cl. 252-435.000.
Milberger, Ernest C.; Bremer, Noel J.; and Dria, Dennis E., 4,350,639, Cl. 549-259.000.

Brewer, John C., to Garbalizer Corp. of America. Shredding machine and components thereof. 4,350,308, Cl. 241-294.000.

Bricaud, Herve: *See*—
Seytre, Bruno; and Bricaud, Herve, 4,350,403, Cl. 339-91.00R.

Bridgestone Tire Company Limited: *See*—
Matsuda, Akira; Havakawa, Yoshihiro; Yasuda, Shigeo; Iwasaki, Motoaki; and Nishino, Hiroshi, 4,350,854, Cl. 200-61.250.
Bristol Myers Company: *See*—
Tihon, Claude; and Curry, M. E., 4,350,768, Cl. 435-241.000.
British Aerospace: *See*—
Thomas, Ernest D. R., 4,350,316, Cl. 244-63.000.
Brodribb, Antony G.: *See*—
Brodribb, Marcus T.; and Brodribb, Antony G., 4,349,977, Cl. 43-15.000.
Brodribb, Marcus T.; and Brodribb, Antony G., to King Reel Proprietary Limited. Automatic fishing apparatus. 4,349,977, Cl. 43-15.000.
Brollo, Aurelio, to Industrie Pirelli S.p.A. Header for solar-panels and a device for connecting header to panel. 4,350,374, Cl. 285-132.000.
Bromley, Robert L., to Samsonite Corporation. Luggage case resettable sequential combination lock. 4,350,030, Cl. 70-70.000.
Broshear, John H.: *See*—
Kneip, George D.; Broshear, John H.; and Anderson, Marvin H., 4,350,017, Cl. 62-50.000.
Brother Kogyo Kabushiki Kaisha: *See*—
Hirose, Noboru, 4,350,212, Cl. 173-6.000.
Brothers, Richard L. Anchor bolt for concrete. 4,350,464, Cl. 411-180.000.
Broutman, Lawrence J.; Rozhansky, Boris; and Zlatkevich, Lev. Chemiluminescence apparatus and method for determining the oxidative stability of polymers. 4,350,495, Cl. 23-230.0PC.
Brouwer, Marius S.; and Grosscurt, Arnoldus C., to Duphar International Research B.V. Urea and thiourea compounds and insecticidal compositions. 4,350,706, Cl. 424-322.000.
Brown, Charles K. Bag unit feeder. 4,350,330, Cl. 271-12.000.
Brown, Richard C.: *See*—
Greenough, George K.; and Brown, Richard C., 4,350,507, Cl. 55-270.000.
Brown, William L., to Kline, Larry Harold. Universal golf bag. 4,350,194, Cl. 150-1.50C.
Brownett, Robert L., to Dunlop Limited. Anti-reversal device. 4,350,235, Cl. 192-45.000.
Bruce, Walter J., Jr.; and Bruce, Wayne M., to Bruce's Splicing & Rigging Co., Inc. Shellfish dredge chafing gear. 4,349,972, Cl. 37-55.000.
Bruce, Wayne M.: *See*—
Bruce, Walter J., Jr.; and Bruce, Wayne M., 4,349,972, Cl. 37-55.000.
Bruce's Splicing & Rigging Co., Inc.: *See*—
Bruce, Walter J., Jr.; and Bruce, Wayne M., 4,349,972, Cl. 37-55.000.
Bruguera, Ramon, to Patentes Y Novedades, S.A. Urea/formaldehyde adhesives. 4,350,543, Cl. 156-62.800.
Brunner, Josef: *See*—
Rock, Erich; and Brunner, Josef, 4,349,941, Cl. 16-288.000.
Bryant, Peter E. Structural members. 4,350,459, Cl. 403-263.000.
Buchanan, David J.; and Mason, Iain M., to Coal Industry (Patents) Limited. Method of and apparatus for locating disturbances in a mineral seam. 4,351,035, Cl. 367-14.000.
Buckley, William H., to United States of America, Navy. Structural damper for eliminating wind induced vibrations. 4,350,233, Cl. 188-378.000.
Buffalo Color Corporation: *See*—
Demler, Walter R.; and Odin, Eugene, 4,350,827, Cl. 562-475.000.
Bunker Ramo Corporation: *See*—
Kato, Matsuo; Ohtsuki, Tomonari; Igarashi, Yoshiaki; Saito, Tsukasa; and Suzuki, Toshiaki, 4,350,409, Cl. 339-186.00M.
Bunn, Stuart E.; and Owsley, Herbert B. Valve assembly with relief groove. 4,350,179, Cl. 137-540.000.
Burch, Jeremy R.; and Murray, David E., to Vickers Limited. Processing of radiation sensitive plates. 4,350,756, Cl. 430-331.000.
Burnett, Archibald L: *See*—
Jones, David N.; Burnett, Archibald L; and Miller, John C., 4,350,657, Cl. 264-349.000.
Burnett, Edward L.; and Stack, Eugene V., to Dow Chemical Company, The. Method for the extrusion of tetrafluoroethylene polymer tubes. 4,350,653, Cl. 264-127.000.
Burns, Derek K.: *See*—
Robinson, Grenville A.; Kember, Peter N.; and Burns, Derek K., 4,350,660, Cl. 422-90.000.
Burns, Marion C.: *See*—
Davis, Raymond K., Sr.; and Burns, Marion C., 4,350,871, Cl. 219-343.000.
Burroughs Corporation: *See*—
Jasper, William J., 4,350,951, Cl. 324-133.000.
Burton, Stephen J., to Emerson Electric Co. Wick lubrication system for self-aligning bearing. 4,350,912, Cl. 310-90.000.
Busche, Alan C.; and Simonsen, Karlo B., to Northern Telecom Limited. Acoustic mounting and coupler for a telephone handset. 4,350,846, Cl. 179-1.00C.
Buschmann, Ernst: *See*—
Sauter, Hubert; Zeeh, Bernd; Buschmann, Ernst; and Jung, Johann, 4,350,518, Cl. 71-88.000.
Bush, Charles J., to New York City Transit Authority. Resilient rail fastener assembly for curved track. 4,350,290, Cl. 238-17.000.
Busse, Vernon E.; and Schockman, Robert L., to Minster Machine Company, The. Motorized and micro feed length adjustment for a press feed. 4,350,090, Cl. 100-216.000.
C. Uyemura & Co., Ltd.: *See*—
Araki, Ken; Sakai, Hiromitsu; and Sugiura, Yutaka, 4,350,717, Cl. 427-8.000.
Caldwell, Joseph M. Axially-split archery bow limb. 4,350,138, Cl. 124-24.00R.
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Feher, Kamilo, 4,350,879, Cl. 235-92.0EC.
Cannavo, Christian G.; Cousin, Georges; Espagnacq, Andre; Fraysaac, Jacques X.; Laine, Loic Y.; Midrouillet, Daniel J.; Pintenat, Andre M.; and Reboux, Jean B., to Etat Francais represente par le Delegation General pour l'Armement. Electric device for the ignition by magnetic induction of a pyrotechnic substance. 4,350,096, Cl. 102-209.000.
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Hanagata, Takayoshi; and Noda, Atsushi, 4,350,448, Cl. 400-120.000.
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Imai, Nobuhiro; Kono, Kimio; Hoshito, Kazuo; Kiyohara, Takehiko; and Sato, Hideaki, 4,351,005, Cl. 358-300.000.
Iwashita, Tomonori; and Fukushima, Tadahide, 4,350,424, Cl. 354-173.000.
Masegi, Koichi, 4,350,988, Cl. 346-108.000.
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Seto, Susumu; Tokuhara, Mitsuhiro; Takemura, Yukio; Yamada, Yu; and Kuwayama, Takeshi, 4,350,433, Cl. 355-8.000.
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Yagasaki, Toshiaki; Masuda, Shunichi; Shimizu, Katsuichi; and Sakamaki, Hisashi, 4,350,436, Cl. 355-14.0SH.
Cantrell, Mark: *See*—
Hopkins, Grant; and Cantrell, Mark, 4,350,252, Cl. 211-40.000.
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Tada, Tetsuya, 4,350,298, Cl. 239-333.000.
Capewell, Dennis: *See*—
Spira, Joel S.; Luchaco, David G.; and Capewell, Dennis, 4,350,935, Cl. 315-291.000.
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Carman, Vincent E., to Advanced Energy Systems Inc. Automotive drive system. 4,350,220, Cl. 180-165.000.
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Carnahan, G. E. Golf ball washer and club cleaner. 4,350,457, Cl. 401-11.000.
Carpenter, Henry L.: *See*—
Bolten, Michael; and Carpenter, Henry L., 4,350,174, Cl. 134-104.000.
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Jarrell, Donald, 4,350,587, Cl. 210-151.000.
Carrens, Donald E., to Dresser Industries, Inc. Pump piston having ring lubrication means. 4,350,082, Cl. 92-159.000.
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Jackson, Dale E., 4,350,936, Cl. 318-7.000.
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Wald, Stephen A.; and Carter, Robert W., 4,350,727, Cl. 428-102.000.
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Stephenson, George M.; Begin, David L.; Casavant, Roger; Bornemeier, Stephen; and Colucci, William J., 4,350,299, Cl. 239-337.000.
Casey, Gary L.; Harvey, Bruce J.; Hebert, Kenneth A.; and Eddy, William C., to Bendix Corporation, The. Supercharging system for an internal combustion engine. 4,350,135, Cl. 123-564.000.
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Ostrowski, John S.; Grunewalder, John F.; and Castellucci, Nicholas T., 4,350,804, Cl. 525-327.300.
Caston, Alfred W. H. Visual filing system for gems, jewelry items, small parts and the like. 4,350,249, Cl. 206-566.000.
Catanese, Carmen A.; and Bloom, Stanley, to RCA Corporation. Multicolor cathode-ray tube with quadrupolar focusing color-selection structure. 4,350,922, Cl. 313-402.000.
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King, Dennis M., 4,350,127, Cl. 123-364.000.
Waddell, Bennett N.; Warren, Larry G.; and Wilson, Eugene M., 4,350,363, Cl. 280-481.000.
Central Quality Industries, Inc.: *See*—
McCambridge, James; and Hettinga, Siebolt, 4,350,193, Cl. 144-286.00R.
Centro Ricerche Fiat S.p.A.: *See*—
Dotti, Giulio; and Masoero, Renzo, 4,350,354, Cl. 280-6.00H.
Century 21 Pollution Control, Inc.: *See*—
Diachuk, Wolodymyr, 4,350,504, Cl. 55-217.000.

Cereghini, Giuseppe, to Euro-Linea S.n.c. di Colombo & C. Method for admixing at least two liquids and feeding them to a shaping mould. 4,350,650, Cl. 264-39.000.
Chable, Yves A.; Lacroix, Serge; and Rault, Philippe M., to Societe Anonyme de Telecommunications. Hyperthermic treatment device. 4,350,168, Cl. 128-736.000.
Chalberg, Philip E. Jet nozzle assembly for therapy baths. 4,349,923, Cl. 4-542.000.
Challen, Richard F., to General Electric Company. Frequency sensing circuit. 4,351,032, Cl. 364-724.000.
Chambers, Carlon C. Measuring the aromatic reactivity of a hydrocarbon composition. 4,350,496, Cl. 23-230.00M.
Chambers, Charles W., Jr., to Tellabs, Inc. Impedance generator circuit. 4,350,964, Cl. 333-213.000.
Chambers, Kenneth R. Auxiliary power source for starting a motor vehicle. 4,350,746, Cl. 429-121.000.
Chan, David C. K.; and Whipp, Arthur A., to Chevron Research Company. Miticidal and mite ovicidal, compounds. 4,350,831, Cl. 564-80.000.
Chane Hwa Manufacturing Co. Ltd.: *See*—
Tong, George K. K., 4,350,407, Cl. 339-113.00L.
Charles, Joel M.; and Toscano, Robert J., to Etat Francais as represented by the Delegue General pour l'Armement. Device for recovery of a cable for handling a submerged load. 4,350,323, Cl. 254-273.000.
Chartier, Carl P.: *See*—
Helgeland, Walter; Teverovsky, Alex; Kerwin, Kenneth H., II; and Chartier, Carl P., 4,350,560, Cl. 156-617.0SP.
Chattha, Mohinder S., to Ford Motor Company. Composition with latent reactive catalyst. 4,350,790, Cl. 525-110.000.
Chausse, Bernard: *See*—
Pouillange, Jean P.; Gaydon, Jean P.; and Chausse, Bernard, 4,350,861, Cl. 219-10.61R.
Chavis, Thurston L., Jr.: *See*—
Watkins, William L., III; Chavis, Thurston L., Jr.; and Fuchsluger, George L., 4,350,648, Cl. 261-120.000.
Chenoweth, Vaughn C.: *See*—
Faulkner, Duane H.; and Chenoweth, Vaughn C., 4,350,516, Cl. 65-327.000.
Chester, Arthur W.; and Chu, Yung F., to Mobil Oil Corporation. Process for converting ethane to aromatics over gallium-activated zeolite. 4,350,835, Cl. 585-415.000.
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Chan, David C. K.; and Whipp, Arthur A., 4,350,831, Cl. 564-80.000.
Rosenthal, Joel W.; Dahlberg, Arthur J.; and Kuehler, Christopher W., 4,350,582, Cl. 208-8.0LE.
Chiba, Toshiyuki: *See*—
Takaya, Takao; Takasugi, Hisashi; Chiba, Toshiyuki; and Tozuka, Zenzaburo, 4,350,693, Cl. 424-246.000.
Chibata, Ichiro; Kato, Jyoji; and Wada, Mitsuru, to Tanabe Seiyaku Co., Ltd. Method for producing ethanol with immobilized microorganism. 4,350,765, Cl. 435-161.000.
Chika, John J. Vehicle occupant restraining devices. 4,350,369, Cl. 280-804.000.
Childress, David L.; Hayes, William V.; and Poppe, Richard L., to Dow Chemical Co., The. Method for making acrylic acid from acrolein. 4,350,830, Cl. 562-535.000.
Chimura, Kozo: *See*—
Ogihara, Masuo; Chimura, Kozo; and Shinozaki, Nobuo, 4,351,043, Cl. 368-252.000.
Choate, William C.; and Ho, David S., to Texas Instruments Incorporated. CCD Imager. 4,351,004, Cl. 358-213.000.
Chocas, William, to W. R. Grace & Co. Gas expansion/compression train. 4,350,019, Cl. 62-87.000.
Chow, Chao-Kong; Liu, Chao-Ning; and Wang, Sherman S., to International Business Machines Corporation. Apparatus and method for characterizing an acoustic field. 4,350,045, Cl. 73-607.000.
Chowdhury, Ajit K., to Sterling Drug Inc. Process for treatment of caustic waste liquors. 4,350,599, Cl. 210-761.000.
Christensen, Burton G.; and Shih, David H., to Merck & Co., Inc. 6- and 4-Substituted-1-azabicyclo[3.2.0]heptan-3,7-dione-2-carboxylates. 4,350,631, Cl. 260-245.20T.
Chu, Yung F.: *See*—
Chester, Arthur W.; and Chu, Yung F., 4,350,835, Cl. 585-415.000.
Chubb, Wayne L. Key attachment. 4,349,975, Cl. 40-330.000.
Ciba-Geigy Corporation: *See*—
Bohner, Beat; and Rempfler, Hermann, 4,350,521, Cl. 71-94.000.
Durr, Dieter, 4,350,519, Cl. 71-88.000.
Scheidegger, Hans; Flensberg, Hermann; and Baubofer, Roland, 4,350,494, Cl. 8-636.000.
Cibie Projecteurs: *See*—
Fratty, Hector, 4,351,018, Cl. 362-215.000.
Cinderella AB: *See*—
Moll, Thorleif, 4,350,024, Cl. 62-238.600.
Citizen Watch Co., Ltd.: *See*—
Fukutome, Satoru; Hatanaka, Hideo; and Saito, Motoyuki, 4,351,041, Cl. 368-88.000.
Clarion Company, Ltd.: *See*—
Kariya, Masatane; and Tomizawa, Akimori, 4,350,848, Cl. 179-2.0DP.
Clark, Donald C.: *See*—
Liska, Donald J.; Schamaun, Roger G.; Clark, Donald C.; Potter, R. Christopher; and Frank, Joseph A., 4,350,921, Cl. 313-360.100.
Clark, Stephan R. Spectrovoltaic solar energy conversion system. 4,350,837, Cl. 136-246.000.
Clark, William C.; and Winings, Clifford L., to Bell Telephone Laboratories, Incorporated. Electrical connector construction. 4,350,404, Cl. 339-97.00R.
Clement, Carl J.: *See*—
Schwartz, Henry D.; Krull, Irwin H.; Clement, Carl J.; Stengel, Frederick H.; and Haylett, David D., 4,350,579, Cl. 204-195.00R.
Clements-Jewery, Stephen; Westwood, Robert; and Hairsine, Peter W., to Roussel Uclaf. Antidepressant and neuroleptic benzothiopyrano [2,3-c]-pyridines. 4,350,697, Cl. 424-256.000.
Cleveland Clinic Foundation: *See*—
Sivak, Michael V., Jr.; and Skipper, George J., 4,350,148, Cl. 128-4.000.
Clough, Peter; and Walker, Donald C. B., deceased (by Walker, Eileen F., Administratrix), to United Kingdom Atomic Energy Authority. Method of and apparatus for storing data signals. 4,351,006, Cl. 360-9.000.
Coal Industry (Patents) Limited: *See*—
Buchanan, David J.; and Mason, Iain M., 4,351,035, Cl. 367-14.000.
Robinson, Joseph G.; and Brain, Sally A., 4,350,623, Cl. 524-391.000.
Cohen, Richard J.: *See*—
von Schulthess, Gustav K.; Cohen, Richard J.; and Benedek, George B., 4,350,677, Cl. 424-12.000.
Colamco, Inc.: *See*—
Hammond, James A., 4,350,734, Cl. 428-308.400.
Cole, Herbert S., Jr.: *See*—
Aftergut, Siegfried; and Cole, Herbert S., Jr., 4,350,603, Cl. 252-299.100.
Cole, John L.: *See*—
Scholl, Richard A.; and Cole, John L., 4,350,557, Cl. 156-601.000.
Coleman, David L., to Deere & Company. Fail-safe brake linkage. 4,350,237, Cl. 192-116.500.
Coleman, William E.; and Hall, Stacy W., to NCR Corporation. Method of plasma panel drive to reduce flash and create dimming. 4,350,932, Cl. 315-169.200.
Colgate-Palmolive Company: *See*—
Harvey, Kenneth; Hayes, Harry; and Morton, Anthony J., 4,350,680, Cl. 424-52.000.
Colortex S.A.: *See*—
van Hoorn, Jacques J. B., 4,350,305, Cl. 241-46.00B.
Colortronic Reinhard & Co. KG: *See*—
Hellmann, Wolf D., 4,350,381, Cl. 294-88.000.
Colucci, William J.: *See*—
Stephenson, George M.; Begin, David L.; Casavant, Roger; Bornemeier, Stephen; and Colucci, William J., 4,350,299, Cl. 239-337.000.
Compagnie Electro-Mecanique: *See*—
Pouillange, Jean P.; Gaydon, Jean P.; and Chausse, Bernard, 4,350,861, Cl. 219-10.61R.
Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme): *See*—
Dupont, Jean, 4,350,940, Cl. 318-603.000.
Lazzari, Jean-Pierre, 4,350,743, Cl. 428-622.000.
Compak Systems, Inc.: *See*—
Penick, Ib; and Volkert, John K., 4,349,973, Cl. 40-124.100.
Concordia Fluidtechnik GmbH: *See*—
Stahle, Kurt, 4,350,320, Cl. 251-129.000.
Condon, Charles E., Jr.: *See*—
Corniah, Paul M.; and Condon, Charles E., Jr., 4,350,397, Cl. 308-212.000.
Conlon, Ralph D.; Miles, Stanley F.; and Paradis, Roland C., to Perkin-Elmer Corporation, The. Apparatus useful with a chromatography column. 4,350,586, Cl. 210-149.000.
Conometer Corporation: *See*—
Holben, Eugene F., 4,350,285, Cl. 236-1.00R.
Conrad, Lawrence H., to Minnesota Mining & Manufacturing Company. Auxiliary lens system for overhead projectors. 4,350,415, Cl. 350-422.000.
Continental Group, Inc., The: *See*—
Roth, Donald J., 4,350,261, Cl. 220-270.000.
Contois, Lawrence E., to Eastman Kodak Company. High resolution heterogeneous photoconductive compositions and method of preparing. 4,350,751, Cl. 430-135.000.
Cook, Albert N., to Singer Company, The. Sewing machine motor mount. 4,350,104, Cl. 112-220.000.
Cook, Gregory E., to Windpowered Machines Ltd. Wind turbine and method for power generation. 4,350,895, Cl. 290-55.000.
Cooper, Richard K.: *See*—
Jackson, Jasper A.; and Cooper, Richard K., 4,350,955, Cl. 324-303.000.
Coran, Aubert Y.; and Patel, Raman, to Monsanto Company. Modified olefin polymers. 4,350,740, Cl. 428-461.000.
Cordell, Robert R., to Bell Telephone Laboratories, Incorporated. Current source with modified temperature coefficient. 4,350,904, Cl. 307-310.000.
Corea, Emanuel R.: *See*—
Corea, John E.; Corea, Emanuel R.; and Tashlick, Irving, 4,350,481, Cl. 425-73.000.
Corea, John E.; Corea, Emanuel R.; and Tashlick, Irving. Apparatus for centrifugal casting of thermosetting plastics. 4,350,481, Cl. 425-73.000.
Corning Glass Works: *See*—
Riceberg, Louis J., 4,350,659, Cl. 422-61.000.

Cornish, Paul M.; and Condon, Charles E., Jr., to Torrington Company, The. Low strength material housing bearing. 4,350,397, Cl. 308-212.000.
Corompt, Antoine, to Bennes Marrel S.A. Handling device mounted on a vehicle to carry out the handling of loads such as skips and containers. 4,350,469, Cl. 414-420.000.
Cosmos Company Limited: *See*—
Tsuiki, Tadanobu, 4,350,239, Cl. 194-1.00G.
Coucoulas, Alexander; and Spainhour, Carroll D., to Western Electric Company, Inc. Method and apparatus for extruding glass tubes. 4,350,513, Cl. 65-29.000.
Couennault, Pierre; and Teyssier, Lucien, to Thomson-CSF. Crossed field re-entrant beam amplifier. 4,350,928, Cl. 315-39.300.
Coufal, Edward J. Adjustable pattern cultivator. 4,350,211, Cl. 172-311.000.
Coulter Electronics, Inc.: *See*—
Gilbert, Ian D.; Halloran, Michael T.; and Roos, Ermi, 4,350,292, Cl. 239-7.000.
Countryman, Gerald P.; and Findlay, Ronald G., to International Business Machines Corporation. Resistive ribbon printing apparatus and method. 4,350,449, Cl. 400-120.000.
Cousin, Georges: *See*—
Cannavo, Christian G.; Cousin, Georges; Espagnacq, Andre; Fraysaac, Jacques X.; Laine, Loic Y.; Midrouillet, Daniel J.; Pintenat, Andre M.; and Reboux, Jean B., 4,350,096, Cl. 102-209.000.
Coutures, Jean L.: *See*—
Benoit-Gonin, Roger; Berger, Jean L.; and Coutures, Jean L., 4,350,976, Cl. 340-347.0DA.
Covert, William J., to Garvey Corporation. Carton inspecting and conveying apparatus. 4,349,998, Cl. 53-53.000.
Cox, Nigel B., to Halifax Tool Company Limited. Sealing of telescopically related elements. 4,350,348, Cl. 277-199.000.
Coyle, Peter J.: *See*—
Crouthamel, Marvin S.; and Coyle, Peter J., 4,350,836, Cl. 136-244.000.
Craft, Inc.: *See*—
Roy, Leo T., 4,349,942, Cl. 16-376.000.
Crain, Philip W.: *See*—
Kilroy, Eugene J.; Kelley, William J.; and Crain, Philip W., 4,349,983, Cl. 46-12.000.
Crastes de Paulet, Andre: *See*—
Nicolas, Jean-Claude; Terouanne, Beatrice; Descomps, Bernard; and Crastes de Paulet, Andre, 4,350,760, Cl. 435-7.000.
Crepaco, Inc.: *See*—
Kristapovich, Paul J.; and Knapp, Milton E., 4,350,022, Cl. 62-174.000.
Cressington Investments Ltd.: *See*—
Kumana, Cyrus R., 4,350,690, Cl. 424-243.000.
Crittenden, Odell D. Tension control system. 4,350,180, Cl. 137-596.170.
Cronauer, Donald C.; and Bjorklund, Robert B., to Gulf Research & Development Company. Process for producing a catalyst by depositing molybdenum removed from a waste catalyst. 4,350,609, Cl. 252-465.000.
Croseck, Hans-Henning; and Jung, Rolf, to Laeis-Werke AG. Press for ceramic moldings. 4,350,486, Cl. 425-412.000.
Cross, Peter E.; and Dickinson, Roger P., to Pfizer Inc. Imidazole derivatives, process for their preparation and pharmaceutical compositions thereof. 4,350,696, Cl. 424-251.000.
Crossman, Richard L.; and Kirk, Richard L., to Goodyear Aerospace Corporation. Friction wear pad and method and means for fastening said pad to a disk core member. 4,350,231, Cl. 188-218.0XL.
Crothers, William R. Cart. 4,350,356, Cl. 280-47.260.
Crouthamel, Marvin S.; and Coyle, Peter J., to United States of America, Energy. Solar array construction. 4,350,836, Cl. 136-244.000.
CSR Limited: *See*—
Moorehead, David R.; and Davis, Michael, 4,350,567, Cl. 162-145.000.
Cuisia, Dionisio G.; and Hwa, Chih M., to Dearborn Chemical Company. Composition and method for inhibiting corrosion. 4,350,606, Cl. 252-392.000.
Curiger, Karl: *See*—
Gasser, Hermann; Curiger, Karl; and Novak, Peter, 4,350,007, Cl. 57-304.000.
Curry, M. E.: *See*—
Tihon, Claude; and Curry, M. E., 4,350,768, Cl. 435-241.000.
Cyr, Stephen J.; Schubert, John C.; and Dehlinger, John, to Standard Oil Company (Indiana). Plastic laminate. 4,350,730, Cl. 428-215.000.
Czenkusz, Bernard: *See*—
Richardson, Roy; and Czenkusz, Bernard, 4,350,044, Cl. 73-600.000.
d'Achon, Herve. Machine for converting thermal energy into work. 4,350,015, Cl. 60-675.000.
Dahlberg, Arthur J.: *See*—
Rosenthal, Joel W.; Dahlberg, Arthur J.; and Kuehler, Christopher W., 4,350,582, Cl. 208-8.0LE.
Daigaku, Masaaki: *See*—
Osada, Hajime; Kimura, Akiteru; Shimizu, Tokuo; Kitajima, Goro; Tomizawa, Yoshio; Kondo, Makoto; Motoyama, Kazuyasu; and Daigaku, Masaaki, 4,351,009, Cl. 360-105.000.
Daimaru, Akimasa: *See*—
Ban, Keisuke; and Daimaru, Akimasa, 4,350,056, Cl. 74-579.00E.
Daimler-Benz Aktiengesellschaft: *See*—
Holzapfel, Immanuel, 4,350,009, Cl. 60-39.230.
Vester, Ewald; Grussaber, Rolf; Kupper, Wolfgang; and Glatzhofer, Horst, 4,349,964, Cl. 33-264.000.
Dainippon Printing Company Ltd.: *See*—
Hayasaka, Yoshiyuki; Ikeuchi, Ichiro; Matsumoto, Hajime; and Shikaya, Yukihiro, 4,349,997, Cl. 53-51.000.
Dainippon Screen Seizo Kabushiki Kaisha: *See*—
Yamada, Mitsuhiko, 4,350,997, Cl. 358-78.000.
Dakin, James T., to General Electric Company. Liquid cooled counter flow turbine bucket. 4,350,473, Cl. 416-1.000.
Dalupan, Romulo V. High efficiency water distillation apparatus. 4,350,568, Cl. 202-180.000.
Darley, Kenneth S.: *See*—
Dyson, David V.; Lees, David H.; Fenn, Michael A. F.; and Darley, Kenneth S., 4,350,713, Cl. 426-243.000.
Darnell, William R.: *See*—
Jackson, Winston J., Jr.; and Darnell, William R., 4,350,805, Cl. 528-271.000.
Davis, Laurance B. Dental pulp tester. 4,350,488, Cl. 433-32.000.
Davis, Michael, to Airway Industries, Inc. Method of making a cover for a luggage case. 4,350,546, Cl. 156-93.000.
Davis, Michael: *See*—
Moorehead, David R.; and Davis, Michael, 4,350,567, Cl. 162-145.000.
Davis, Raymond K., Sr.; and Burns, Marion C. Horizontal passively cooled heater. 4,350,871, Cl. 219-343.000.
Davis, Richard C., Jr. Indwelling urethral catheter and method. 4,350,161, Cl. 128-349.0BV.
Davis, Steven J.; and Rapagnani, Nazareno L., to United States of America, Air Force. Method and apparatus for analyzing supersonic flow fields by laser induced fluorescence. 4,350,661, Cl. 422-98.000.
Davitz, Daniel. Gold-colored, acid and corrosion resistant alloy. 4,350,527, Cl. 75-173.00C.
Day, Donald R.: *See*—
Kiikka, Oliver A.; and Day, Donald R., 4,351,056, Cl. 373-88.000.
De La Rue Giori S.A.: *See*—
Quinton, Brian M., 4,350,334, Cl. 271-274.000.
De La Rue Systems Limited: *See*—
Middleditch, Stanley W., 4,350,331, Cl. 271-95.000.
de la Cruz, Exequiel, to Respiratory Care, Inc. Permanent adapter for a medical humidifier. 4,350,647, Cl. 261-65.000.
Dearborn Chemical Company: *See*—
Cuisia, Dionisio G.; and Hwa, Chih M., 4,350,606, Cl. 252-392.000.
de Castiglione, Roberto; Faoro, Fiorenzo; Perseo, Giuseppe; Piani, Silvano; and Santangelo, Francesco, to Farmitalia Carlo Erba S.p.A. Biologically active peptides. 4,350,627, Cl. 260-112.50E.
Decker, Elmer L.; and Moon, James, to Quadco Alaska, Inc. Apparatus and method for field conversion of corroded pivotal couplings to non-corrodable couplings. 4,349,952, Cl. 29-402.060.
Decraemer, Alain; and Pernot, Jean-Michel, to U.S. Philips Corporation. Circuit for correcting phase deviations between the line deflection drive signals and the line synchronizing signals in a television receiver. 4,351,002, Cl. 358-158.000.
Deere & Company: *See*—
Coleman, David L., 4,350,237, Cl. 192-116.500.
Nelson, Roger J., 4,350,050, Cl. 73-861.540.
Degner, Dieter; Pander, Hans J.; and Siegel, Hardo, to BASF Aktiengesellschaft. 4-Tert.-butoxyphenylglycinonitrile and the preparation of D-(−)- and L-(+)-4-hydroxyphenylglycine. 4,350,641, Cl. 260-465.00E.
Dehlinger, John: *See*—
Cyr, Stephen J.; Schubert, John C.; and Dehlinger, John, 4,350,730, Cl. 428-215.000.
Delta, Inc.: *See*—
Groth, Hugh F.; and Duncan, L. Scot, 4,350,257, Cl. 220-4.00F.
De Luca, Ugo; and Zoppi, Francesco, to ELVI S.p.A. Aminopyrine improved Trinder's reagent and dosing process for hydrogen peroxide from enzymatic oxidation of metabolic substrata with the same. 4,350,762, Cl. 435-10.000.
DeMarco, Joseph H. Folding umbrella. 4,350,175, Cl. 135-33.00C.
Demler, Walter R.; and Odin, Eugene, to Buffalo Color Corporation. Method for recovering pure metahydroxybenzoic acid. 4,350,827, Cl. 562-475.000.
Dent, Thomas. Wood splitting device. 4,350,192, Cl. 144-193.00C.
DePuy, Robert P., to General Electric Company. Level shifting and filtering circuit. 4,350,956, Cl. 328-167.000.
Descomps, Bernard: *See*—
Nicolas, Jean-Claude; Terouanne, Beatrice; Descomps, Bernard; and Crastes de Paulet, Andre, 4,350,760, Cl. 435-7.000.
Deuker, Ernst: *See*—
Fuchs, Hugo; Brand, Uwe; Deuker, Ernst; and Frommer, Elmar, 4,350,630, Cl. 260-239.30A.
Deutsch, Ralph, to Kawai Musical Instrument Mfg. Co., Ltd. Reentrant reverberation generator for an electronic musical instrument. 4,350,072, Cl. 84-1.240.
Dev Tec Resources, Inc.: *See*—
Johnson, Ronald M., 4,350,430, Cl. 354-330.000.
DeVigili, Walter J.; and Hough, Louis E., to Emprie Automotive, Inc. Ski braking device. 4,350,365, Cl. 280-605.000.
Dewey, Clarence F., Jr.; and Wiklund, David E., to Fisher Controls Company, Inc. Vortex-shedding flowmeter having two bluff bodies. 4,350,047, Cl. 73-861.220.
Dewey, George G., to Illinois Tool Works Inc. Twist-lock connection and tool utilizing same. 4,349,929, Cl. 7-158.000.
Diachuk, Wolodymyr, to Century 21 Pollution Control, Inc. Air cleaning system. 4,350,504, Cl. 55-217.000.

Dials, Edward N.; and Kightlinger, Drew A., to International Business Machines Corporation. Ribbon loading system for a typewriter or the like using a sidemounted ribbon cartridge having a detachable ribbon guide. 4,350,452, Cl. 400-208.000.
Diamond Shamrock Corporation: *See*—
Gestaut, Lawrence J., 4,350,608, Cl. 252-425.300.
Dianov, Ivan M.: *See*—
Alexandrov, Vyacheslav S.; Guschin, Alexandr E.; Zavodov, Rudolf V.; Zhukova, Elena I.; Ivanov, Alexandr A.; Fofanova, Tatyana S.; Mikhailov, Evgeny I.; Dianov, Ivan M.; Luzin, Pavel M.; Sergeev, Igor A.; Pankratova, Lidia A.; Krylova, Vera E.; and Leibenzon, Semen A., 4,350,482, Cl. 425-83.100.
Dickinson, Kay H.; Smale, Terence C.; and Southgate, Robert, to Beecham Group Limited. β-Lactam antibacterial agents. 4,350,703, Cl. 424-274.000.
Dickinson, Roger P.: *See*—
Cross, Peter E.; and Dickinson, Roger P., 4,350,696, Cl. 424-251.000.
Die-Craft Metal Products, Inc.: *See*—
Hofbauer, John, 4,350,556, Cl. 156-541.000.
Diesel Kiki Company, Ltd.: *See*—
Sutoh, Shinji; Harada, Takeshi; and Kaneko, Shinichi, 4,350,286, Cl. 236-44.00A.
Diesel Kiki Kabushiki Kaisha: *See*—
Kubota, Yutaka; and Sugimoto, Hitoshi, 4,350,876, Cl. 219-497.000.
Diesner, Ferdinand: *See*—
Muller, Jakob; and Diesner, Ferdinand, 4,350,184, Cl. 139-448.000.
Dietz, Peter W.: *See*—
Jones, Thomas B.; Morgan, Morris H.; and Dietz, Peter W., 4,349,967, Cl. 34-1.000.
Dimalt Aktiengesellschaft: *See*—
Belohlawek, Lothar; and Weber, Wolfgang, 4,350,716, Cl. 426-626.000.
Dineen, Colin; and Wallace, Christopher A., to Elliott Brothers (London) Limited. X-Ray diffraction apparatus. 4,351,063, Cl. 378-79.000.
Dineen, John J.: *See*—
Folsom, Lawrence R.; and Dineen, John J., 4,350,012, Cl. 60-520.000.
Dingler, Geoffrey L.; Jarvis, Wilbur W.; and Spiegel, Raymond W., to Whirlpool Corporation. Chopper for dishwasher soil separator. 4,350,306, Cl. 241-46.150.
Distler, Harry; Widder, Rudi; and Uhl, Guenter, to BASF Aktiengesellschaft. Printing pastes with foam inhibitors. 4,350,531, Cl. 106-19.000.
Dlask, Jiri: *See*—
Farr, Garth M.; McCoy, Terence D.; and Dlask, Jiri, 4,350,062, Cl. 81-57.180.
Dobson, George D., to Pandrol Limited. Railway rail-fastening clip and a railway rail-and-fastening assembly. 4,350,291, Cl. 238-349.000.
Dr. H. Schmittmann GmbH: *See*—
Schmittmann, Hans B., 4,350,688, Cl. 424-182.000.
Doherty, John, Jr., to Texas Instruments Incorporated. Two-temperature thermally responsive fast idle control switch. 4,350,967, Cl. 337-343.000.
Dolland, Carlisle R.: *See*—
United States of America, National Aeronautics and Space Administration; Dolland, Carlisle R.; and Trimble, Daniel W., 4,351,022, Cl. 363-87.000.
Dominguez, Richard J. G.; Rice, Doris M.; and Zimmerman, Robert L., to Texaco Inc. Method for making RIM polyurethane elastomers using as the catalyst system a hydroxyalkylamine, dibutyltin dilaurate and an alkyltin mercaptide. 4,350,778, Cl. 521-118.000.
Dominguez, Richard J. G.; and McCoy, David R., to Texaco Inc. Method for making RIM polyurethane elastomers using as the catalyst system methyldiethanolamine, dibutyltin dilaurate and an alkyltin mercaptide. 4,350,779, Cl. 521-126.000.
Donaldson Company, Inc.: *See*—
Alseth, Steven M.; and Sullivan, Bruce M., 4,350,509, Cl. 55-337.000.
Dudrey, Denis J.; and Herman, John T., 4,350,282, Cl. 233-7.000.
Donaldson, Morris L.: *See*—
Firchau, John C.; and Donaldson, Morris L., 4,350,177, Cl. 137-370.000.
Donington, Jerrold H. Garden sieve. 4,350,584, Cl. 209-352.000.
Dooley, Carol A.: *See*—
Geelhood, Bruce D.; Mastny, Gary F.; Solomon, Jerry E.; Wesley, Edward J.; Lindner, Elek; Dooley, Carol A.; and Lane, Sandra M., 4,350,890, Cl. 250-372.000.
Dorma-Baubeschlag GmbH & Co. KG: *See*—
Tillmann, Horst, 4,349,939, Cl. 16-53.000.
Dornbusch, Arthur H.; and Smith, Raymond D., to Procter & Gamble Company, The. One-piece shipping container with cut-case protection. 4,350,281, Cl. 229-38.000.
Doshi, Mahendra F.: *See*—
Gruber, Martin V.; and Doshi, Mahendra F., 4,350,302, Cl. 239-500.000.
Dotti, Giulio; and Masoero, Renzo, to Centro Ricerche Fiat S.p.A. Self-levelling suspension system for motor-vehicles. 4,350,354, Cl. 280-6.00H.
Douty, George H.; Landis, John M.; and Ritchie, Leon T., to AMP Incorporated. Board mount zero insertion force connector. 4,350,402, Cl. 339-74.00R.
Dow Chemical Company, The: *See*—
Boussert, Anne S., 4,350,616, Cl. 252-463.000.
Burnett, Edward L.; and Stack, Eugene V., 4,350,653, Cl. 264-127.000.
Childress, David L.; Hayes, William V.; and Poppe, Richard L., 4,350,830, Cl. 562-535.000.
Mosier, Benjamin; McCrary, Jack L.; and Guilbeau, Karl G., 4,350,601, Cl. 252-8.55R.
Dowgul, Ronald W.; and Noble, Glendle W., to United States of America, Navy. Carbon dioxide absorbent canister with breathing gas temperature and flow control. 4,350,662, Cl. 422-122.000.
Dowler, Danny E.; and Oldaker, Herman F., to Dowler, Danny E.; and Oldaker, Herman F. Interlocking panel and panel track system. 4,349,995, Cl. 52-241.000.
Dragerwerk AG: *See*—
Pasternack, Adalbert, 4,350,115, Cl. 116-70.000.
Drahtmuller, Hans-Dieter, to Linde Aktiengesellschaft. Fluid motor. 4,350,079, Cl. 91-499.000.
Drake, Cyril F., to International Standard Electric Corporation. Controlled release glass. 4,350,675, Cl. 424-1.000.
Dresser Industries, Inc.: *See*—
Carrens, Donald E., 4,350,082, Cl. 92-159.000.
Eberwein, Valery D., 4,350,979, Cl. 340-861.000.
Dria, Dennis E.: *See*—
Milberger, Ernest C.; Bremer, Noel J.; and Dria, Dennis E., 4,350,639, Cl. 549-259.000.
Drozdova, Larisa A.: *See*—
Khutoretsky, Garry M.; Tjurin, Jury G.; Drozdova, Larisa A.; and Belova, Tamara N., 4,350,910, Cl. 310-64.000.
Duchesne, Ghislain, to Lar Machinerie Inc. Apparatus and method for debranching felled trees. 4,350,189, Cl. 144-2.00Z.
Dudley, Kenneth W.; Teich, Wesley W.; and Bowen, Robert F., to Raytheon Company. Microwave oven feed system. 4,350,859, Cl. 219-10.55F.
Dudrey, Denis J.; and Herman, John T., to Donaldson Company, Inc. Self-purging centrifuge. 4,350,282, Cl. 233-7.000.
Dueker, David K.: *See*—
Ford, Norman C., Jr.; and Dueker, David K., 4,350,163, Cl. 128-633.000.
Duffy, John J.: *See*—
Gitlin, Harvey S.; and Duffy, John J., 4,350,240, Cl. 194-92.000.
Duke University: *See*—
Porter, Ned A.; Ziegler, Carl B., Jr.; and Roberts, David H., 4,350,834, Cl. 568-568.000.
Duncan, L. Scot: *See*—
Groth, Hugh F.; and Duncan, L. Scot, 4,350,257, Cl. 220-4.00F.
Dunlop Limited: *See*—
Bond, Robert; and Blythe, Robert J., 4,350,621, Cl. 525-237.000.
Brownett, Robert L., 4,350,235, Cl. 192-45.000.
Duphar International Research B.V.: *See*—
Brouwer, Marius S.; and Grosscurt, Arnoldus C., 4,350,706, Cl. 424-322.000.
Du Pont de Nemours, E. I., and Company: *See*—
Johnson, Robert C., 4,350,446, Cl. 374-13.000.
Dupont, Jean, to Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme). System for servocontrolling a separately excited DC motor. 4,350,940, Cl. 318-603.000.
Duracell Inc.: *See*—
Parsen, Frank E.; and Yatabe, Thomas T., 4,350,745, Cl. 429-57.000.
Durbin, John A.: *See*—
Avery, Stephen T.; Durbin, John A.; Lama, William L.; and Steibitz, Paul H., 4,351,019, Cl. 362-298.000.
Duro-Test Corporation: *See*—
Trutner, Donald G.; and Thorington, Luke, 4,350,722, Cl. 428-35.000.
Durr, Dieter, to Ciba-Geigy Corporation. Herbicidally active 2-nitro-5-phenoxyphenyloxazoles and -oxazolines. 4,350,519, Cl. 71-88.000.
Durr, Heinrich; Richter, Hermann; Weber, Wendelin; Goerke, Burkhard; and Engler, Peter, to U.S. Philips Corporation. Stylus printing head comprising electromagnets on resilient supports. 4,350,450, Cl. 400-124.000.
Dutcher, Robert G.; and Upton, James E., to Medtronic, Inc. Flexible tip stiffening stylet for use with body implantable lead. 4,350,169, Cl. 128-783.000.
Duvall, Leroy F., to Quaker Oats Company, The. Corn bran expanded cereal. 4,350,714, Cl. 426-559.000.
Duve, Gunther: *See*—
Kuchler, Manfred; Duve, Gunther; and Ebigt, Joachim, 4,350,782, Cl. 523-334.000.
Dykes, Coy M. Adapter for burglar alarm switch. 4,350,977, Cl. 340-545.000.
Dyson, David V.; Lees, David H.; Fenn, Michael A. F.; and Darley, Kenneth S., to Griffith Laboratories, Limited, The. Production of sponge cake. 4,350,713, Cl. 426-243.000.
E. R. Squibb & Sons, Inc.: *See*—
Hauck, Frederic P.; and Fox, Rita T., 4,350,812, Cl. 544-79.000.
Eapen, Kuttikandathil E.: *See*—
Kahn, Marvin L.; and Eapen, Kuttikandathil E., 4,350,711, Cl. 426-102.000.
Eastman Kodak Company: *See*—
Contois, Lawrence E., 4,350,751, Cl. 430-135.000.
Fiske, John M.; and Velzen, Richard, 4,350,435, Cl. 355-14.00C.
Holzhauser, Ronald C.; McGlen, James A.; and Russel, Matthew J., 4,350,329, Cl. 271-9.000.
Jackson, Winston J., Jr.; and Darnell, William R., 4,350,805, Cl. 528-271.000.
McConnell, Richard L.; Trotter, Jimmy R.; and Jones, Glenn C., 4,350,807, Cl. 528-302.000.

McConnell, Richard L.; Trotter, Jimmy R.; and Jones, Glenn C., 4,350,808, Cl. 528-302.000.
Reczek, James A.; and Welter, Thomas R., 4,350,752, Cl. 430-219.000.

Eaton, Sargent S., Jr.; and Wooten, David R., to Inmos Corporation. Folded bit line-shared sense amplifiers. 4,351,034, Cl. 365-189.000.

Eberwein, Valery D., to Dresser Industries, Inc. System and method for well-logging. 4,350,979, Cl. 340-861.000.

Ebigt, Joachim: *See*—
Kuchler, Manfred; Duve, Gunther; and Ebigt, Joachim, 4,350,782, Cl. 523-334.000.

Eckenhoff, James B., to Alza Corporation. Water absorbing fluid dispenser. 4,350,271, Cl. 222-386.500.

Ecole, Auguste, to Equipements Automobiles Marchal. Travel limit stop device for a motor-reducing unit intended in particular for a window wiper. 4,350,938, Cl. 318-443.000.

Eddens, Gerald R., to W. J. Industries, Incorporated. Magnetic particle devices. 4,350,913, Cl. 310-103.000.

Eddy, William C.: *See*—
Casey, Gary L.; Harvey, Bruce J.; Hebert, Kenneth A.; and Eddy, William C., 4,350,135, Cl. 123-564.000.

Edwards, Philip N.; and McMenim, Michael E., to Imperial Chemical Industries Limited. Process for preparing p-hydroxy phenylglycine. 4,350,826, Cl. 562-444.000.

Eisai Co., Ltd.: *See*—
Hamano, Sachiyuki; Kitamura, Shinichi; Igarashi, Toshiji; and Nakajima, Yoshikage, 4,350,705, Cl. 424-278.000.
Mizuno, Yasuhiko; and Kayano, Masanori, 4,350,679, Cl. 424-38.000.

Elders, Gerald W. Roof support pin. 4,350,462, Cl. 405-259.000.

Electric Power Research Institute, Inc.: *See*—
Harrold, Ronald T., 4,350,838, Cl. 174-15.00R.

Electro Materials Corp. of America: *See*—
Hilson, David G.; Johnson, Gary W.; and Schoonejongen, Ronald J., 4,350,618, Cl. 252-514.000.

Eller, J. David. Hydraulic motor system for driving a submersible impeller pump in which hydraulic surge at start-up and shut-down is cushioned. 4,350,476, Cl. 417-304.000.

Elliott Brothers (London) Limited: *See*—
Dineen, Colin; and Wallace, Christopher A., 4,351,063, Cl. 378-79.000.

Elliott, Charles A., to RCA Corporation. Video disc player having carriage detent mechanism. 4,351,046, Cl. 369-233.000.

Elliott, Gary S.: *See*—
Yargus, Lloyd A.; Switzer, Lester W., Sr.; Allen, Gary N.; Elliott, Gary S.; Yargus, Larry D.; Lowry, William D.; Gosnell, Jeffrey M.; and Spires, Darrell J., 4,350,444, Cl. 366-141.000.

Elms, Robert T.; Engel, Joseph C.; Mercier, Bernard J.; Saletta, Gary F.; and Wilson, John T., to Westinghouse Electric Corp. Circuit interrupter with digital trip unit and means to enter trip settings. 4,351,012, Cl. 361-96.000.

Elstner, Hans. Medical kit for the protective storage of teat swabs. 4,350,245, Cl. 206-207.000.

ELVI S.p.A.: *See*—
De Luca, Ugo; and Zoppi, Francesco, 4,350,762, Cl. 435-10.000.

Emerson Electric Co.: *See*—
Burton, Stephen J., 4,350,912, Cl. 310-90.000.

EMI Limited: *See*—
Robinson, Grenville A.; Kember, Peter N.; and Burns, Derek K., 4,350,660, Cl. 422-90.000.

Emmerich, Heinz: *See*—
Kossek, Gunter; and Emmerich, Heinz, 4,350,123, Cl. 123-2.000.

Emprie Automotive, Inc.: *See*—
DeVigili, Walter J.; and Hough, Louis E., 4,350,365, Cl. 280-605.000.

Energy Optics, Inc.: *See*—
Ward, Steven M., 4,350,980, Cl. 340-870.020.

Engel, Joseph C.: *See*—
Elms, Robert T.; Engel, Joseph C.; Mercier, Bernard J.; Saletta, Gary F.; and Wilson, John T., 4,351,012, Cl. 361-96.000.
Matako, Joseph J.; Wafer, John A.; Engel, Joseph C.; and Mercier, Bernard J., 4,351,013, Cl. 361-96.000.

Engelbrecht & Lemmerbrock GmbH & Co.: *See*—
Julke, Bernhard, 4,350,468, Cl. 414-325.000.

Engelsmann, Dieter; Maas, Dieter; Zattler, Kurt; and Schultes, Herbert, to AGFA-Gevaert Aktiengesellschaft. Camera with flash unit. 4,350,420, Cl. 354-145.000.

Engelsmann, Dieter; Nicko, Reinhard; Bittner, Wilfried; and Karl, Horst, to Agfa-Gevaert Aktiengesellschaft. Still camera with a retractable objective. 4,350,423, Cl. 354-173.000.

Engle, Edgar W., to TRW Inc. Method for diffusion bonding workpieces and article fabricated by same. 4,350,528, Cl. 75-203.000.

Engler, Peter: *See*—
Durr, Heinrich; Richter, Hermann; Weber, Wendelin; Goerke, Burkhard; and Engler, Peter, 4,350,450, Cl. 400-124.000.

Equipements Automobiles Marchal: *See*—
Ecole, Auguste, 4,350,938, Cl. 318-443.000.

Equipment Systems & Devices, Inc.: *See*—
Gitlin, Harvey S.; and Duffy, John J., 4,350,240, Cl. 194-92.000.

Erickson, Donald C. Absorption heat pump augmented thermal separation process. 4,350,571, Cl. 203-21.000.

Erwin, Louis R.; and Hurlong, Granville W., Jr., to Bendix Corporation, The. Flow controlled pressure regulating device. 4,350,301, Cl. 239-453.000.

Escande, Henri. Process and apparatus for drying material. 4,349,968, Cl. 34-13.000.

Espagnacq, Andre: *See*—
Cannavo, Christian G.; Cousin, Georges; Espagnacq, Andre; Fraysaac, Jacques X.; Laine, Loic Y.; Midrouillet, Daniel J.; Pintenat, Andre M.; and Reboux, Jean B., 4,350,096, Cl. 102-209.000.

Esselink, Abraham J., to Ingeniersbureau "Essex" B.V. Process and apparatus for separating gaseous component from a mixture. 4,350,500, Cl. 55-26.000.

Essex Group, Inc.: *See*—
Saunders, Hollis S.; Carmer, Richard V.; and Payette, Lionel J., 4,350,737, Cl. 428-383.000.
Saunders, Hollis S.; Carmer, Richard V.; and Payette, Lionel J., 4,350,738, Cl. 428-383.000.

Estel Hoogovens B.V.: *See*—
Kramer, Petrus J. A., 4,350,324, Cl. 266-44.000.

Etat Francais as represented by the Delegue General pour l'Armement: *See*—
Charles, Joel M.; and Toscano, Robert J., 4,350,323, Cl. 254-273.000.

Etat Francais represente par le Delegation General pour l'Armement: *See*—
Cannavo, Christian G.; Cousin, Georges; Espagnacq, Andre; Fraysaac, Jacques X.; Laine, Loic Y.; Midrouillet, Daniel J.; Pintenat, Andre M.; and Reboux, Jean B., 4,350,096, Cl. 102-209.000.

Ets Francois Salomon & Fils: *See*—
Salomon, Georges P. J., 4,350,364, Cl. 280-605.000.

Euro-Linea S.n.c. di Colombo & C.: *See*—
Cereghini, Giuseppe, 4,350,650, Cl. 264-39.000.

Everest, David C., III, to Lange International S.A. Forward lean adjuster for ski boots. 4,349,971, Cl. 36-121.000.

Ewanus, Walter, to Westinghouse Electric Corp. Communication. 4,351,064, Cl. 455-29.000.

Exxon Research & Engineering Co.: *See*—
Huang, I-Der, 4,350,825, Cl. 562-406.000.

Fahley, Jerome A.: *See*—
van Dyke, Martin J.; and Fahley, Jerome A., 4,350,039, Cl. 73-304.00C.

Fahmy, Mohamed A. H.; Fukuto, Tetsuo R.; and Jojima, Teruomi, to University of California, The Regents of the. Pyridylalkoxysulfinyl derivatives of carbamate esters. 4,350,699, Cl. 424-263.000.

Faoro, Fiorenzo: *See*—
de Castiglione, Roberto; Faoro, Fiorenzo; Perseo, Giuseppe; Piani, Silvano; and Santangelo, Francesco, 4,350,627, Cl. 260-112.50E.

Farmitalia Carlo Erba S.p.A.: *See*—
de Castiglione, Roberto; Faoro, Fiorenzo; Perseo, Giuseppe; Piani, Silvano; and Santangelo, Francesco, 4,350,627, Cl. 260-112.50E.

Farnam Companies, Inc.: *See*—
Shotwell, Thomas K., 4,350,122, Cl. 119-106.000.

Farr, Garth M.; McCoy, Terence D.; and Dlask, Jiri, to Farr Oil Tool, Inc. Power tong. 4,350,062, Cl. 81-57.180.

Farr Oil Tool, Inc.: *See*—
Farr, Garth M.; McCoy, Terence D.; and Dlask, Jiri, 4,350,062, Cl. 81-57.180.

Fasching, George E.; and Utt, Carroll E., to United States of America, Energy. Capacitance-level/density monitor for fluidized-bed combustor. 4,350,040, Cl. 73-304.00C.

Faulkner, Duane H.; and Chenoweth, Vaughn C., to Guardian Industries Corporation. Outlet for a glass melting furnace. 4,350,516, Cl. 65-327.000.

Fechner, Wolf D.; Kranz, Joachim; and Polster, Rudolf, to BASF Aktiengesellschaft. Fluid, stable formulations of copper phthalocyanine or indanthrone. 4,350,534, Cl. 106-288.00Q.

Federal Pacific Electric Company: *See*—
Norden, Alexander R., 4,350,965, Cl. 337-47.000.

Fedotov, Vladimir M.: *See*—
Kolesov, Evgeny V.; Smirnov, Boris A.; Fedotov, Vladimir M.; and Lipovsky, Iosif L., 4,350,160, Cl. 128-334.00R.

Feher, Kamilo, to Canadian Patents & Dev. Limited. Time jitter determining apparatus. 4,350,879, Cl. 235-92.0EC.

Felbinger, Willy, to Saint Gobain Vitrage. Device for arresting the motion of a motor driven panel. 4,351,016, Cl. 361-181.000.

Feldbau, Elliot V. Teeth protecting device. 4,350,154, Cl. 128-136.000.

Fenn, Michael A. F.: *See*—
Dyson, David V.; Lees, David H.; Fenn, Michael A. F.; and Darley, Kenneth S., 4,350,713, Cl. 426-243.000.

Ferris, Tom E. Auxiliary load-carrying apparatus. 4,350,358, Cl. 280-81.00R.

Ferrofluidics Corporation: *See*—
Helgeland, Walter; Teverovsky, Alex; Kerwin, Kenneth H., II; and Chartier, Carl P., 4,350,560, Cl. 156-617.0SP.
Scholl, Richard A.; and Cole, John L., 4,350,557, Cl. 156-601.000.

Fettes, Ivy: *See*—
Baxter, John D.; Fettes, Ivy; and Shine, John, 4,350,764, Cl. 435-69.000.

Fickes, Edward L., to AMP Incorporated. Wire insertion tool. 4,349,944, Cl. 29-566.400.

Field, Thomas R.; Jagodzinski, Peter F.; King, James F.; and Schaefer, John O., to International Business Machines Corporation. Cartridge for correction media or tacky tape with a wrap spring. 4,350,453, Cl. 400-208.000.

Fielden, John S.: *See*—
Peddie, Robert A.; and Fielden, John S., 4,351,028, Cl. 364-483.000.

Fillus, Gary C.; and Long, Eric L., to Allen-Bradley Company. Illuminated industrial membrane switch. 4,350,857, Cl. 200-314.000.

Finck, Johan C. J.: *See*—
van Alem, Antonius A. M.; Finck, Johan C. J.; and van de Water, Peter W. M., 4,351,051, Cl. 372-36.000.
Findlay, Ronald G.: *See*—
Countryman, Gerald P.; and Findlay, Ronald G., 4,350,449, Cl. 400-120.000.
Firchau, John C.; and Donaldson, Morris L. Utility box support. 4,350,177, Cl. 137-370.000.
Firestone Tire & Rubber Company, The: *See*—
Bohm, Georg G. A.; Hamed, Gary R.; and Vescelius, Lee E., 4,350,795, Cl. 525-194.000.
Fischer, Hannes; and Plum, Helmut, to Hoechst Aktiengesellschaft. Process for the preparation of copolymers containing hydroxyl groups. 4,350,809, Cl. 528-361.000.
Fischer, Hermann, to M.A.N.-ROLAND Druckmaschinen Aktiengesellschaft. Ink transfer apparatus for rotary offset printing machines. 4,350,094, Cl. 101-350.000.
Fishburn, Charles E., to National Printing Plate Company, Inc. Apparatus and method for producing images of various sizes on photosensitive film. 4,350,437, Cl. 355-52.000.
Fisher Controls Company, Inc.: *See*—
Dewey, Clarence F., Jr.; and Wiklund, David E., 4,350,047, Cl. 73-861.220.
Fisher, Robert H., to United States of America, National Security Agency. Method of position fixing active sources utilizing differential doppler. 4,350,984, Cl. 343-112.00R.
Fiske, John M.; and Velzen, Richard, to Eastman Kodak Company. Copy contrast and density control. 4,350,435, Cl. 355-14.00C.
Fitzgerald, Maurice J.; and Platt, Thomas E., to Polaroid Corporation. Allyl amine polymeric binders for photographic emulsions. 4,350,759, Cl. 430-630.000.
Flaherty, John J.; Strauts, Eric J.; Wagerer, Helmut F.; and Loose, Timothy C., to Magnaflux Corporation. Nondestructive testing system having automatic set-up means. 4,351,031, Cl. 364-580.000.
Fleischer, Henry. Coupling device. 4,350,373, Cl. 285-55.000.
Fleischmann, Gary A.; and Klessig, Clarence E., to Kohler Co. Faucet handle assembly. 4,349,940, Cl. 16-110.00R.
Flensberg, Hermann: *See*—
Scheidegger, Hans; Flensberg, Hermann; and Bauhofer, Roland, 4,350,494, Cl. 8-636.000.
Florian, Rudolf; and Herrmann, Albert. Induction crucible furnace and method for its preparation. 4,351,058, Cl. 373-155.000.
FMC Corporation: *See*—
Lochte, Glen E.; and Allen, Jackie R., 4,350,371, Cl. 285-18.000.
Skoli, Sigmund P.; Kemp, David M.; and Mojonnier, Harry G., 4,350,503, Cl. 55-165.000.
Focke & Co.: *See*—
Focke, Heinz H., 4,350,002, Cl. 53-449.000.
Focke, Heinz H., to Focke & Co. Process and apparatus for packing individual articles, in particular bottles, one into each package. 4,350,002, Cl. 53-449.000.
Fofanova, Tatyana S.: *See*—
Alexandrov, Vyacheslav S.; Guschin, Alexandr E.; Zavodov, Rudolf V.; Zhukova, Elena I.; Ivanov, Alexandr A.; Fofanova, Tatyana S.; Mikhailov, Evgeny I.; Dianov, Ivan M.; Luzin, Pavel M.; Sergeev, Igor A.; Pankratova, Lidia A.; Krylova, Vera E.; and Leibenzon, Semen A., 4,350,482, Cl. 425-83.100.
Folger, Philip M., to General Electric Company. Fluid pressure actuating device. 4,350,053, Cl. 74-2.000.
Folsom, Lawrence R.; and Dineen, John J., to Mechanical Technology Incorporated. Diaphragm coupling between the displacer and power piston. 4,350,012, Cl. 60-520.000.
Fontana, Frank J., to Stewart-Warner Corporation. Caster assembly with swivel lock and brake. 4,349,937, Cl. 16-35.00R.
Fontana, Frank J., to Stewart-Warner Corporation. Caster assembly with swivel lock. 4,349,938, Cl. 16-35.00R.
Forbes, Martin J.: *See*—
Yannas, Ioannis V.; and Forbes, Martin J., 4,350,629, Cl. 260-123.700.
Forch, Karl, to Thyssen Aktiengesellschaft. Magnetic suspension railroad parts. 4,350,525, Cl. 75-124.000.
Ford Aerospace & Communications Corp.: *See*—
Stahlhuth, Paul H., 4,350,236, Cl. 192-84.00C.
Ford, Horace B. Phase converter controlled by D-C power. 4,350,945, Cl. 318-795.000.
Ford Motor Company: *See*—
Bachrach, Benjamin I., 4,350,865, Cl. 219-69.00M.
Chattha, Mohinder S., 4,350,790, Cl. 525-110.000.
McClure, George W.; and Milenkovic, Veljko, 4,350,941, Cl. 318-603.000.
Shulman, Michael A., 4,350,130, Cl. 123-440.000.
Ford, Norman C., Jr.; and Dueker, David K. Method and apparatus for analyzing contaminants in aqueous humor. 4,350,163, Cl. 128-633.000.
Forrester, John S.; Swindell, David F.; and Wildsmith, Michael A., to Lucas Industries Limited. Circuit for use in the detection of the condition of an isolated switch contact. 4,350,971, Cl. 340-52.00R.
Forschungsinstitut Berghof GmbH: *See*—
Schmoldt, Harm; Kock, Klaus; and Strathmann, Heinrich, 4,350,581, Cl. 204-301.000.
Foss Manufacturing Company, Inc.: *See*—
Goodwin, Robert F., 4,350,732, Cl. 428-246.000.
Foster Wheeler Energy Corporation: *See*—
Stewart, Robert D.; and Gamble, Robert L., 4,349,969, Cl. 34-57.00A.
Fouser, W. Thomas: *See*—
Schmelzer, Lynn A.; and Fouser, W. Thomas, 4,350,460, Cl. 404-117.000.
Fowler, John H., to Smith International, Inc. Heat resistant seal. 4,350,346, Cl. 277-26.000.
Fowler, Lawrence A.: *See*—
Astfalk, Gregory; Fowler, Lawrence A.; Herring, Chauncey, Jr.; and Szymczak, Thaddeus J., 4,351,030, Cl. 364-552.000.
Fox, Anthony. Multi-purpose power tool. 4,349,945, Cl. 29-27.00A.
Fox, Billy E.: *See*—
Beyer, Charles L.; and Fox, Billy E., 4,350,142, Cl. 126-288.000.
Fox, Rita T.: *See*—
Hauck, Frederic P.; and Fox, Rita T., 4,350,812, Cl. 544-79.000.
Foxboro Company, The: *See*—
Richer, Donald K., 4,351,023, Cl. 364-187.000.
Frank, Anton: *See*—
Rogner, Thomas; and Frank, Anton, 4,350,011, Cl. 60-337.000.
Frank, Joseph A.: *See*—
Liska, Donald J.; Schamaun, Roger G.; Clark, Donald C.; Potter, R. Christopher; and Frank, Joseph A., 4,350,921, Cl. 313-360.100.
Frank, Karl; and Marnette, Ewald, to Kohlensaure-Werke Rud. Buse GmbH & Co. Gas recovery system. 4,350,018, Cl. 62-54.000.
Franke, Walter: *See*—
Paulus, Rudolf; Schankat, Norbert; Weinzierl, Manfred; and Franke, Walter, 4,350,434, Cl. 355-14.0SH.
Franklin, Benjamin S.: *See*—
Bradley, John J.; and Franklin, Benjamin S., 4,351,024, Cl. 364-200.000.
Frantom, Richard L.; Stephenson, Robert L.; and Thomas, Rudy V., to Allied Corporation. Passive seat belt system for three occupant seat. 4,350,368, Cl. 280-804.000.
Fratty, Hector, to Cibie Projecteurs. Lamp with stepped reflector surface containing vertical ribs. 4,351,018, Cl. 362-215.000.
Frayssac, Jacques X.: *See*—
Cannavo, Christian G.; Cousin, Georges; Espagnacq, Andre; Frayssac, Jacques X.; Laine, Loic Y.; Midrouillet, Daniel J.; Pintenat, Andre M.; and Reboux, Jean B., 4,350,096, Cl. 102-209.000.
Freeman, Robert S., to Strong Electric Corporation. Apparatus to control light intensity from arc lamp. 4,350,417, Cl. 353-90.000.
Frehner, Roland. Method and apparatus for the production of hollow bodies by winding. 4,350,549, Cl. 156-161.000.
Fresnel, Jean-Marie: *See*—
Porta, Augusto; Fresnel, Jean-Marie; and Kulhanek, Antonin, 4,350,575, Cl. 204-84.000.
Friedline, Ernest J., to Kennametal Inc. Arrangement for mounting a cutter. 4,350,463, Cl. 409-234.000.
Frieser, Rudolf G.; Ma, William H.; Ozols, Gunars M.; and Zingerman, Bryant N., to International Business Machines Corporation. Cathode for etching. 4,350,578, Cl. 204-192.00R.
Frito-Lay, Inc.: *See*—
Merck, Howard W., 4,350,251, Cl. 209-642.000.
Fritz Eichenauer, Firma: *See*—
Meywald, Klaus; and Ohnmacht, Helmut, 4,350,872, Cl. 219-376.000.
Frohling, Peter; Schulz, Franz F.; and Wiedemer, Karl. Apparatus for braking travelling strip material. 4,350,310, Cl. 242-75.200.
Frommer, Elmar: *See*—
Fuchs, Hugo; Brand, Uwe; Deuker, Ernst; and Frommer, Elmar, 4,350,630, Cl. 260-239.30A.
Frutiger, Peter: *See*—
Sturzinger, Oskar E.; and Frutiger, Peter, 4,350,844, Cl. 178-22.180.
Fry, Jeremy J.; and Warnett, Christopher, to Rotork Controls Limited. Fail-safe device for actuators. 4,350,081, Cl. 92-128.000.
Fuchs, Hugo; Brand, Uwe; Deuker, Ernst; and Frommer, Elmar, to BASF Aktiengesellschaft. Continuous extraction of caprolactam from an aqueous solution containing caprolactam and its oligomers. 4,350,630, Cl. 260-239.30A.
Fuchs, Rainer; Maurer, Fritz; Priesnitz, Uwe; and Riebel, Hans-Jochem, to Bayer Aktiengesellschaft. Preparation of substituted (cyclo)alkanecarboxylic acid α-cyano-3-phenoxy-benzyl esters. 4,350,640, Cl. 260-465.00D.
Fuchs, Werner: *See*—
Rieber, Norbert; Bohm, Heinrich; Platz, Rolf; and Fuchs, Werner, 4,350,819, Cl. 548-375.000.
Fuchsluger, George L.: *See*—
Watkins, William L., III; Chavis, Thurston L., Jr.; and Fuchsluger, George L., 4,350,648, Cl. 261-120.000.
Fuderer, Andrija, to Union Carbide Corporation. Isobaric process for separating normal paraffins from hydrocarbon mixtures. 4,350,583, Cl. 208-310.00Z.
Fuji Electric Co. Ltd.: *See*—
Uenosono, Chikasa; Okada, Takao; Matsuki, Junya; Naito, Tadashi; Inoue, Shinichiro; and Takahashi, Masaki, 4,350,947, Cl. 322-17.000.
Fuji Photo Film Co., Ltd.: *See*—
Arai, Yoshihiro, 4,351,010, Cl. 360-131.000.
Takahashi, Kenji; and Miyahara, Junji, 4,350,893, Cl. 250-484.100.
Fujii, Chiaki. Load carrying platform for a bicycle. 4,350,361, Cl. 280-289.00A.
Fujii, Hiroo; Tanaka, Kiyoaki; Nakamura, Masashi; Okuno, Ryuzo; Hashizume, Shigeyuki; Katayama, Hideo; and Fujita, Tsutomu, to Kawasaki Jukogyo Kabushiki Kaisha; and Kawasaki Steel Corporation. Apparatus for heat recovery from molten slag. 4,350,326, Cl. 266-201.000.

Fujimura, Hajime; Hiramatsu, Yasuzo; Yabuuchi, Takahiro; Hisaki, Masakatu; Takikawa, Katsuo; Honma, Takaji; Miyake, Hidekazu; and Kajitani, Makoto, to Taiho Pharmaceutical Company, Limited. Pharmaceutical composition containing 1,3,5-substituted biuret compound. 4,350,700, Cl. 424-263.000.

Fujisawa Pharmaceutical Co., Ltd.: *See*—
Hashimoto, Misashi; Hemmi, Keiji; Aratari, Matsuhiko; Takeno, Hidekazu; and Hagiwara, Daijiro, 4,350,694, Cl. 424-248.540.
Kamiya, Takashi; and Teraji, Tsutomu, 4,350,692, Cl. 424-246.000.
Takaya, Takao; Takasugi, Hisashi; Chiba, Toshiyuki; and Tozuka, Zenzaburo, 4,350,693, Cl. 424-246.000.

Fujita, Shinichi, to Nippon Gakki Seizo Kabushiki Kaisha. Bidirectional switching circuit with control terminal. 4,350,949, Cl. 323-284.000.

Fujita, Tsutomu: *See*—
Fujii, Hiroo; Tanaka, Kiyoaki; Nakamura, Masashi; Okuno, Ryuzo; Hashizume, Shigeyuki; Katayama, Hideo; and Fujita, Tsutomu, 4,350,326, Cl. 266-201.000.

Fujitsu Limited: *See*—
Iwamoto, Hisao; and Wakatsuki, Noboru, 4,350,963, Cl. 333-151.000.
Nakano, Motoo; and Ogawa, Tsutomu, 4,350,536, Cl. 148-1.500.
Shiratori, Takahisa; Tamura, Masaru; and Hanada, Kouji, 4,350,856, Cl. 200-306.000.
Takada, Tadakazu; Tokitomo, Kazuo; and Hoshino, Hitoshi, 4,350,563, Cl. 156-643.000.
Zasio, John J.; and Samuels, Michael W., 4,350,866, Cl. 219-121.0EM.

Fukaya, Shigeo: *See*—
Masuko, Tatsuo; Fukaya, Shigeo; Murai, Nobuyuki; and Noma, Jun, 4,350,829, Cl. 562-531.000.

Fukuda, Masataro: *See*—
Yamashita, Toshio; Gamo, Takaharu; Moriwaki, Yoshio; and Fukuda, Masataro, 4,350,673, Cl. 423-644.000.

Fukumori, Katuaki: *See*—
Shimokawa, Wataru; Ito, Yoshiaki; Kobayashi, Koichi; Fukumori, Katuaki; and Iwase, Nobukazu, 4,350,788, Cl. 524-309.000.

Fukuroi, Takeo, to Yoshida Kogyo Kabushiki Kaisha. Method of manufacturing slide fastener coupling elements. 4,349,953, Cl. 29-410.000.

Fukushima, Tadahide: *See*—
Iwashita, Tomonori; and Fukushima, Tadahide, 4,350,424, Cl. 354-173.000.

Fukuto, Tetsuo R.: *See*—
Fahmy, Mohamed A. H.; Fukuto, Tetsuo R.; and Jojima, Teruomi, 4,350,699, Cl. 424-263.000.

Fukutome, Satoru; Hatanaka, Hideo; and Saito, Motoyuki, to Citizen Watch Co., Ltd. Acoustic alarm device for watches. 4,351,041, Cl. 368-88.000.

Fulton, James E., Jr., to A.H.C. Pharmacal, Inc. Stabilized benzoyl peroxide compositions. 4,350,681, Cl. 424-53.000.

Furr, Danny L., to Phillips Petroleum Company. Fractional distillation column control. 4,350,569, Cl. 203-2.000.

Furrow, Edward D., to General Electric Company. Slidably positionable cartridge having skewed ribbon feed. 4,350,451, Cl. 400-208.000.

Furuya, Takashi: *See*—
Imai, Ichiro; Furuya, Takashi; Ando, Narumi; and Kitajima, Satoyuki, 4,350,538, Cl. 148-12.00D.

Gagnebin, Pierre-Luc: *See*—
Ginalski, Pierre; and Gagnebin, Pierre-Luc, 4,351,042, Cl. 368-188.000.

Galazka, Szczepan: *See*—
Biolik, Felicjan; Lukasik, Adam; Morys, Zagmunt; Walawender, Stanislaw; and Galazka, Szczepan, 4,351,057, Cl. 373-117.000.

Galer, Richard E.; Blasius, John R.; and Webb, Paul C., to United States Gypsum Company. High early strength cement. 4,350,533, Cl. 106-89.000.

Galfre, Giovanni; Milstein, Cesar; and Wright, Bruce W., to National Research Development Corporation. Antibody production from hybrid cell line. 4,350,683, Cl. 424-85.000.

Gallis, Anthony J., to Harsco Corporation. Tie plate. 4,350,318, Cl. 249-40.000.

Gamble, Robert L.: *See*—
Stewart, Robert D.; and Gamble, Robert L., 4,349,969, Cl. 34-57.00A.

Gambro AB: *See*—
Hakansson, Hakan B.; Persson, Lennart P. E.; and Wall, Berth-Ove G., 4,349,958, Cl. 29-612.000.

Gambro Dialysatoren KG: *See*—
Rosemeier, Friedrich; and Kerber, Helmut, 4,350,284, Cl. 233-27.000.

Gamo, Takaharu: *See*—
Yamashita, Toshio; Gamo, Takaharu; Moriwaki, Yoshio; and Fukuda, Masataro, 4,350,673, Cl. 423-644.000.

Gannaway, Edwin L., to Tecumseh Products Company. Heat barrier for refrigeration compressor piston. 4,350,083, Cl. 92-238.000.

Ganyard, Floyd P., to United States of America, Energy. Alarm toe switch. 4,350,853, Cl. 200-52.00R.

Garabedian, Armen. Method of laminating plastic sheets. 4,350,545, Cl. 156-87.000.

Garagnani, Enea: *See*—
Marzola, Roberto; Garagnani, Enea; and Moro, Alessandro, 4,350,797, Cl. 525-293.000.

Garbalizer Corp. of America: *See*—
Brewer, John C., 4,350,308, Cl. 241-294.000.

Garner, Daniels S.: *See*—
Greenawalt, Eddie L.; Ray, Steve C.; and Garner, Daniels S., 4,350,003, Cl. 53-548.000.

Garrod, Norman J. Covers for cassette boxes. 4,350,247, Cl. 206-387.000.

Garvey Corporation: *See*—
Covert, William J., 4,349,998, Cl. 53-53.000.

Gaspard, Martin. Spray cultivator for spraying weeds under crops of varying heights growing on level and non-level fields. 4,350,294, Cl. 239-169.000.

Gasser, Hermann; Curiger, Karl; and Novak, Peter, to Luwa AG. Spinning frame. 4,350,007, Cl. 57-304.000.

Gay, Tom A.; Hartman, Gary L.; and Stein, Gunter, to Honeywell Inc. Adaptive riser angle position reference system. 4,351,027, Cl. 364-432.000.

Gaydon, Jean P.: *See*—
Pouillange, Jean P.; Gaydon, Jean P.; and Chausse, Bernard, 4,350,861, Cl. 219-10.61R.

Gaynor, Edwin S. Connector for circular fluorescent lamp. 4,350,400, Cl. 339-50.00C.

Gaysert, Gerhard, to J. Eberspacher. Catalytic converter for treatment of the exhaust gases of internal combustion engines. 4,350,664, Cl. 422-179.000.

Gdovin, David P., to Singer Company, The. Dome field of view scene extenders. 4,350,489, Cl. 434-40.000.

Geelhood, Bruce D.; Mastny, Gary F.; Solomon, Jerry E.; Wesley, Edward J.; Lindner, Elek; Dooley, Carol A.; and Lane, Sandra M., to United States of America, Navy. Apparatus for monitoring low level light emission in underwater environment. 4,350,890, Cl. 250-372.000.

Geiser, Joseph F.: *See*—
Hopper, Roger J.; Sturm, Budd H.; and Geiser, Joseph F., 4,350,818, Cl. 548-166.000.

Geiss, Karl-Heinz: *See*—
Kastner, Gerhard; Siegel, Hardo; and Geiss, Karl-Heinz, 4,350,636, Cl. 549-435.000.

Geist, Wayne R.: *See*—
Bahr, Melford J.; and Geist, Wayne R., 4,350,466, Cl. 414-128.000.

Gelfand, Mikhail L.: *See*—
Antipov, Georgy A.; Gelfand, Mikhail L.; Tsipenjuk, Yakov I.; Goldshtein, Boris G.; Lavnikov, Nikolai S.; Teres, Leonid N.; Urazhdin, Ivan I.; Yakubovsky, Petr S.; Boiko, Vitaly T.; Kalmykov, Anatoly M.; Minyashkin, Dmitry P.; and Stepanov, Mikhail M., 4,350,213, Cl. 173-93.600.

General Battery Corporation: *See*—
Urban, Todd A., 4,349,959, Cl. 29-730.000.

General Electric Company: *See*—
Aftergut, Siegfried; and Cole, Herbert S., Jr., 4,350,603, Cl. 252-299.100.
Challen, Richard F., 4,351,032, Cl. 364-724.000.
Dakin, James T., 4,350,473, Cl. 416-1.000.
DePuy, Robert P., 4,350,956, Cl. 328-167.000.
Folger, Philip M., 4,350,053, Cl. 74-2.000.
Furrow, Edward D., 4,350,451, Cl. 400-208.000.
Goldbach, William R., 4,350,406, Cl. 339-111.000.
Jones, Thomas B.; Morgan, Morris H.; and Dietz, Peter W., 4,349,967, Cl. 34-1.000.
Kalan, Gary L.; and Ipsen, Peter G., 4,350,345, Cl. 277-3.000.
Koenig, Fredrick, 4,349,956, Cl. 29-596.000.
Peil, William; and McFadyen, Robert J., 4,350,930, Cl. 315-49.000.
Peroutky, Donald C., 4,350,379, Cl. 294-65.500.
Perry, Fred G., 4,350,972, Cl. 340-825.000.
Talbot, Dean W., 4,350,783, Cl. 523-505.000.
Wei, Ching-Yeu, 4,350,564, Cl. 156-659.100.

General Motors Corporation: *See*—
Lo, Wayne, 4,350,990, Cl. 357-16.000.

Geney, Christian, to SMH-Adrex. Parallel-wheel printers. 4,350,092, Cl. 101-99.000.

George, David B.: *See*—
Knoepke, John R.; and George, David B., 4,350,524, Cl. 75-63.000.

Georgia Tech Research Institute: *See*—
Steenblik, Richard A.; and Ho, Dar-Veig, 4,350,412, Cl. 350-292.000.

Geschka, Hugo W., to LUK Lamellen und Kupplungsbau GmbH. Automatic towel dispenser. 4,350,028, Cl. 68-13.00R.

Gestaut, Lawrence J., to Diamond Shamrock Corporation. Oxygen cathode for alkali-halide electrolysis and method of making same. 4,350,608, Cl. 252-425.300.

Gewerkschaft Eisenhutte Westfalia: *See*—
Heberling, Walter; Muller, Wolfgang; Langenberg, Werner; Behrens, Gerhard; and Saul, Alfred, 4,350,393, Cl. 299-50.000.

Gheen, Lyndle G., to Pierce Corporation. Linear move developments. 4,350,295, Cl. 239-178.000.

Gielly, Jean-Francois: *See*—
Bigot, Bernard; and Gielly, Jean-Francois, 4,350,671, Cl. 423-320.000.

Gilbert, Ian D.; Halloran, Michael T.; and Roos, Ermi, to Coulter Electronics, Inc. Centrifugal feeder. 4,350,292, Cl. 239-7.000.

Gillberg, James E., to RCA Corporation. Circuit with dual-purpose terminal. 4,350,906, Cl. 307-469.000.

Ginalski, Pierre; and Gagnebin, Pierre-Luc, to Societe Suisse pour l'Industrie Horlogere Management Services S.A. Timepiece including a storage arrangement. 4,351,042, Cl. 368-188.000.

Girardin, Roger: *See*—
Janicke, Johann; and Girardin, Roger, 4,350,864, Cl. 219-69.00W.

Girling Limited: *See*—
Ingram, Brian; Harries, David A.; and Natarajan, Ramamurthy, 4,350,230, Cl. 188-79.000.

Gitlin, Harvey S.; and Duffy, John J., to Equipment Systems & Devices, Inc. Coin slide with interchangeable cores. 4,350,240, Cl. 194-92.000.

Glatzhoefer, Horst: *See*—
Vester, Ewald; Grussaber, Rolf; Kupper, Wolfgang; and Glatzhoefer, Horst, 4,349,964, Cl. 33-264.000.

Gleason, John G.; and Hill, David T., to SmithKline Corporation. Antiallergic imidosulfamides. 4,350,698, Cl. 424-258.000.

Gleason, John G.: *See*—
Ali, Faida E.; and Gleason, John G., 4,350,685, Cl. 424-45.000.

Go-Jo Industries, Inc.: *See*—
Potter, Charles, 4,350,268, Cl. 222-214.000.

Godek, James L.; and Gowman, Lawrence P., to Wayne Chemical Products Company. Metal drawing compound composition and method of use. 4,350,034, Cl. 72-42.000.

Goelz, David W.: *See*—
Hetherington, Robert D.; and Goelz, David W., 4,350,266, Cl. 222-40.000.

Goerke, Burkhard: *See*—
Durr, Heinrich; Richter, Hermann; Weber, Wendelin; Goerke, Burkhard; and Engler, Peter, 4,350,450, Cl. 400-124.000.

Golda, Eugene: *See*—
Shelnut, James; Golda, Eugene; Wilkes, Alan; and Shimazu, Kenichi, 4,350,753, Cl. 430-190.000.

Goldbach, William R., to General Electric Company. Separable electrical connector module. 4,350,406, Cl. 339-111.000.

Goldfarb, Adolph E.; and Goldfarb, Anita J., to Goldfarb, Adolph E. Preschool assembly toy. 4,349,984, Cl. 46-17.000.

Goldfarb, Anita J.: *See*—
Goldfarb, Adolph E.; and Goldfarb, Anita J., 4,349,984, Cl. 46-17.000.

Goldschild, Pierre H.; and Robert, Christian C., to Schlumberger Technology Corporation. Work over methods and apparatus. 4,350,205, Cl. 166-375.000.

Goldshtein, Boris G.: *See*—
Antipov, Georgy A.; Gelfand, Mikhail L.; Tsipenjuk, Yakov I.; Goldshtein, Boris G.; Lavnikov, Nikolai S.; Teres, Leonid N.; Urazhdin, Ivan I.; Yakubovsky, Petr S.; Boiko, Vitaly T.; Kalmykov, Anatoly M.; Minyashkin, Dmitry P.; and Stepanov, Mikhail M., 4,350,213, Cl. 173-93.600.

Goodman Manufacturing Corporation: *See*—
Zur, Henry C., 4,349,924, Cl. 5-68.000.

Goodwin, Robert F., to Foss Manufacturing Company, Inc. Reinforcing laminate. 4,350,732, Cl. 428-246.000.

Goodyear Aerospace Corporation: *See*—
Crossman, Richard L.; and Kirk, Richard L., 4,350,231, Cl. 188-218.0XL.

Goodyear Tire & Rubber Company, The: *See*—
Hampshire, William J., 4,350,196, Cl. 152-5.000.
Hopper, Roger J.; Sturm, Budd H.; and Geiser, Joseph F., 4,350,818, Cl. 548-166.000.

Gordon, Bernard M.; and Weedon, Hans J., to Analogic Corporation. Logarithmic analog-to-digital converter. 4,350,974, Cl. 340-347.0DA.

Gosnell, Jeffrey M.: *See*—
Yargus, Lloyd A.; Switzer, Lester W., Sr.; Allen, Gary N.; Elliott, Gary S.; Yargus, Larry D.; Lowry, William D.; Gosnell, Jeffrey M.; and Spires, Darrell J., 4,350,444, Cl. 366-141.000.

Goswami, Jagadish C.; and Parikh, Shridhar V., to Stauffer Chemical Company. Blend of internally plasticized vinyl chloride copolymer and polyurethane elastomer. 4,350,792, Cl. 525-129.000.

Gottling, Helmut; and Moller, Rudolf, to WABCO Steuerungstechnik GmbH & Co. Operating equipment for gate valves (passage valves). 4,350,182, Cl. 137-625.270.

Gouda, Kasim I. Frame for stereotactic surgery. 4,350,159, Cl. 128-303.00B.

Gowman, Lawrence P.: *See*—
Godek, James L.; and Gowman, Lawrence P., 4,350,034, Cl. 72-42.000.

Graeff, Norwood C.: *See*—
Bobb, Clifford F.; and Graeff, Norwood C., 4,350,855, Cl. 200-292.000.

Granda, Edward J.: *See*—
Klemarczyk, Philip T.; Sanders, James M.; Vock, Manfred H.; Vinals, Joaquin F.; Schmitt, Frederick L.; and Granda, Edward J., 4,350,823, Cl. 560-120.000.

Grandia, Johannes; McChesney, William G.; Santini, Hugo A. E.; and Turk, Harold L., to International Business Machines Corporation. Holder for liquid phase epitaxial growth. 4,350,116, Cl. 118-500.000.

Grapha-Holding AG: *See*—
Muller, Hans, 4,350,327, Cl. 270-54.000.

Grasshoff, Michael J., to Polaroid Corporation. Process for preparing polymeric oximes. 4,350,801, Cl. 526-93.000.

Greco, Carl C.; and Triplett, Kelly B., to Stauffer Chemical Company. Method for preparing a magnesium halide support for catalysts. 4,350,612, Cl. 252-441.000.

Greenawalt, Eddie L.; Ray, Steve C.; and Garner, Daniels S., to Package Machinery Company. Sealing head. 4,350,003, Cl. 53-548.000.

Greenough, George K.; and Brown, Richard C., to National Research Development Corporation. Respirable particle sampling instruments. 4,350,507, Cl. 55-270.000.

Greer, William H. Vehicle identification and position signalling system in a public transportation system. 4,350,969, Cl. 340-23.000.

Gregoire, Michel; and Vuillemin, Jean C., to Lignes Telegraphiques et Telephoniques. Method for testing a digital data transmission line between two modems and a device for the application of said method. 4,351,059, Cl. 375-10.000.

Greiner, Leonard. Cold start characteristics of ethanol as an automobile fuel. 4,350,133, Cl. 123-550.000.

Griffith Laboratories, Limited, The: *See*—
Dyson, David V.; Lees, David H.; Fenn, Michael A. F.; and Darley, Kenneth S., 4,350,713, Cl. 426-243.000.

Griffiths, Ronald S.; and Searles, John E., to A.G. (Patents) Limited. Liquid dispenser meter. 4,350,265, Cl. 222-38.000.

Grimm, Wolfgang: *See*—
Henrichs, Paul; Haas, Peter; Hoppe, Hans-Georg; and Grimm, Wolfgang, 4,350,777, Cl. 521-110.000.

Grogler, Gerhard: *See*—
Rasshofer, Werner; Grogler, Gerhard; and Meyborg, Holger, 4,350,781, Cl. 521-149.000.

Grosscurt, Arnoldus C.: *See*—
Brouwer, Marius S.; and Grosscurt, Arnoldus C., 4,350,706, Cl. 424-322.000.

Groth, Hugh F.; and Duncan, L. Scot, to Delta, Inc. Kit for assembling toolbox adapted for installation in back of pickup truck and method of assembling the toolbox. 4,350,257, Cl. 220-4.00F.

Grove Truseal Valve Company: *See*—
Mueller, John H., 4,350,322, Cl. 251-229.000.

Gruber, Martin V.; and Doshi, Mahendra F., to Zurn Industries, Inc. Liquid spray nozzle. 4,350,302, Cl. 239-500.000.

Grunewalder, John F.: *See*—
Ostrowski, John S.; Grunewalder, John F.; and Castellucci, Nicholas T., 4,350,804, Cl. 525-327.300.

Grussaber, Rolf: *See*—
Vester, Ewald; Grussaber, Rolf; Kupper, Wolfgang; and Glatzhoefer, Horst, 4,349,964, Cl. 33-264.000.

GTE Laboratories Incorporated: *See*—
Smith, J. Thomas, 4,350,771, Cl. 501-97.000.

Guardian Industries Corporation: *See*—
Faulkner, Duane H.; and Chenoweth, Vaughn C., 4,350,516, Cl. 65-327.000.

Guilbeau, Karl G.: *See*—
Mosier, Benjamin; McCrary, Jack L.; and Guilbeau, Karl G., 4,350,601, Cl. 252-8.55R.

Gulf Research & Development Company: *See*—
Cronauer, Donald C.; and Bjorklund, Robert B., 4,350,609, Cl. 252-465.000.

Gunkel, Werner, to Merck Patent Gesellschaft mit Beschrankter Haftung. Separation column for liquid chromatography and sealing arrangement therefor. 4,350,595, Cl. 210-656.000.

Gupte, Arun R.; Kladders, Heinrich; and Struth, Helmut, to Boehringer Ingelheim GmbH. Device and process for drawing off very small quantities of powder. 4,350,049, Cl. 73-864.510.

Guschin, Alexandr E.: *See*—
Alexandrov, Vyacheslav S.; Guschin, Alexandr E.; Zavodov, Rudolf V.; Zhukova, Elena I.; Ivanov, Alexandr A.; Fofanova, Tatyana S.; Mikhailov, Evgeny I.; Dianov, Ivan M.; Luzin, Pavel M.; Sergeev, Igor A.; Pankratova, Lidia A.; Krylova, Vera E.; and Leibenzon, Semen A., 4,350,482, Cl. 425-83.100.

Gustafson, John A., Jr.: *See*—
Trusselle, William H.; and Gustafson, John A., Jr., 4,350,187, Cl. 141-90.000.

Guthrie, James. Tobacco stripper. 4,350,172, Cl. 131-322.000.

H. P. Hood, Inc.: *See*—
Hoffman, Louis S., 4,350,263, Cl. 220-359.000.

Haas, Peter: *See*—
Henrichs, Paul; Haas, Peter; Hoppe, Hans-Georg; and Grimm, Wolfgang, 4,350,777, Cl. 521-110.000.

Habib, Wagdi W., to Hollister Incorporated. Silica-containing protective adhesive paste for use with ostomy appliances. 4,350,785, Cl. 524-55.000.

Hackenberg, Hubert, to AGFA-Gevaert Aktiengesellschaft. Film transport arrangement for a camera. 4,350,425, Cl. 354-207.000.

Hacker, Josef. Free stall construction. 4,350,117, Cl. 119-27.000.

Hadley, Michael S.; and Blaney, Frank E., to Beecham Group Limited. Certain azabicyclocarboxamides and compositions containing same. 4,350,691, Cl. 424-244.000.

Haggar Company: *See*—
Off, Joseph W. A., 4,349,920, Cl. 2-247.000.

Hagiwara, Daijiro: *See*—
Hashimoto, Misashi; Hemmi, Keiji; Aratari, Matsuhiko; Takeno, Hidekazu; and Hagiwara, Daijiro, 4,350,694, Cl. 424-248.540.

Haire, Donal: *See*—
Richards, Kennith E., 4,350,287, Cl. 237-12.30A.

Hairsine, Peter W.: *See*—
Clements-Jewery, Stephen; Westwood, Robert; and Hairsine, Peter W., 4,350,697, Cl. 424-256.000.

Hakansson, Hakan B.; Persson, Lennart P. E.; and Wall, Berth-Ove G., to Gambro AB. Device for temperature measurement and a method for the manufacture of such a device. 4,349,958, Cl. 29-612.000.

Haley, Norman S. Batten setter. 4,350,279, Cl. 227-156.000.

Halifax Tool Company Limited: *See*—
Cox, Nigel B., 4,350,348, Cl. 277-199.000.

Hall, Alfred E., to Sigalos & Levine, P.C. Electronic logic game method and apparatus. 4,350,340, Cl. 273-153.00R.

Hall, Richard A.; and Bernier, Edward J., Jr., to Standard Oil Company (Indiana). Method to adhere acrylic films to styrenic polymers. 4,350,742, Cl. 428-520.000.

Hall, Stacy W.: *See*—
Coleman, William E.; and Hall, Stacy W., 4,350,932, Cl. 315-169.200.

Hall, William B., Jr. Parallel digital computer architecture. 4,351,025, Cl. 364-200.000.
Hall, William H.; and Saul, John R., to Micmix Audio Products, Inc. Reverberation apparatus. 4,350,845, Cl. 179-1.00J.
Haller, Berthold. Shutter blind assembly. 4,350,197, Cl. 160-166.00A.
Halliburton Company: *See*—
Peelman, Harold E., 4,350,888, Cl. 250-270.000.
Halloran, Michael T.: *See*—
Gilbert, Ian D.; Halloran, Michael T.; and Roos, Ermi, 4,350,292, Cl. 239-7.000.
Hamada, Hideo: *See*—
Suga, Masaaki; and Hamada, Hideo, 4,350,234, Cl. 192-4.00A.
Hamada, Isao; Nakayama, Hiroshi; Kawakami, Nobuyoshi; Azami, Hirotaka; Ikeda, Tadasu; Yukawa, Yasumasa; Mitani, Hiroshi; Ohmori, Takashi; Kimura, Masanobu; and Seno, Kohichi, to Hirachi, Ltd.; and Nippon Mining Co., Ltd. Centrifugal separator. 4,350,510, Cl. 55-349.000.
Hamano, Sachiyuki; Kitamura, Shinichi; Igarashi, Toshiji; and Nakajima, Yoshikage, to Eisai Co., Ltd. Cyclohexane derivatives, process for preparation thereof and medicines containing these cyclohexane derivatives. 4,350,705, Cl. 424-278.000.
Hamed, Gary R.: *See*—
Bohm, Georg G. A.; Hamed, Gary R.; and Vescelius, Lee E., 4,350,795, Cl. 525-194.000.
Hamilton, Bert, Jr., to Jet-It-Done, Inc. Cooking apparatus. 4,350,140, Cl. 126-276.000.
Hamilton, Joel A.: *See*—
Mahaffy, Reid A.; and Hamilton, Joel A., 4,349,999, Cl. 53-128.000.
Hammond, James A., to Colamco, Inc. Integral composite foam product and method. 4,350,734, Cl. 428-308.400.
Hampshire, William J., to Goodyear Tire & Rubber Company, The. Non-pneumatic structurally resilient integrated wheel-tire. 4,350,196, Cl. 152-5.000.
Hanacek, Josef: *See*—
Janirek, Ladislav; Hlavinka, Jaroslav; Hanacek, Josef; and Miculka, Zdenek, 4,350,029, Cl. 69-1.000.
Hanada, Kouji: *See*—
Shiratori, Takahisa; Tamura, Masaru; and Hanada, Kouji, 4,350,856, Cl. 200-306.000.
Hanada, Yoshihiro; and Tottori, Takafumi, to Minolta Camera Kabushiki Kaisha. Toner dispensing device. 4,350,269, Cl. 222-227.000.
Hanagata, Takayoshi; and Noda, Atsushi, to Canon Kabushiki Kaisha. Printing head mounting device. 4,350,448, Cl. 400-120.000.
Hanagata, Takayoshi; and Noda, Atsushi, to Canon Kabushiki Kaisha. Printing device. 4,350,987, Cl. 346-76.0PH.
Hanaoka, Keishiro: *See*—
Taguchi, Kazumasa; Isako, Hiroshi; Ikeda, Koichi; Honda, Keisuke; Kanemoto, Masaru; and Hanaoka, Keishiro, 4,350,523, Cl. 75-0.50R.
Hanford, Norris E. Exercise treadmill shock-absorbing improvement. 4,350,336, Cl. 272-69.000.
Hannan, Garnet M. U. Wheel means for container handling. 4,350,355, Cl. 280-28.500.
Hansen, James E.: *See*—
Oldershaw, Paul V.; Hansen, James E.; and Hinds, Walter E., 4,350,478, Cl. 417-417.000.
Hanula, Richard M.; and Kulieke, Fred C., Jr., to Midland-Ross Corporation. Rotary coupler with a specially configured pinhole. 4,350,256, Cl. 213-69.000.
Haque, Yusuf A.; and Blasco, Richard W., to American Microsystems, Inc. Dual bandwidth autozero loop for a voice frequency CODEC. 4,350,975, Cl. 340-347.0CC.
Hara, Takeshi: *See*—
Masuho, Yasuhiko; and Hara, Takeshi, 4,350,626, Cl. 260-112.50R.
Harada, Takeshi: *See*—
Sutoh, Shinji; Harada, Takeshi; and Kaneko, Shinichi, 4,350,286, Cl. 236-44.00A.
Harada, Tetsuya: *See*—
Koitabashi, Takeo; Matsuzaka, Syozi; Iijima, Toshifumi; and Harada, Tetsuya, 4,350,758, Cl. 430-567.000.
Harlan, Wayne E., to RCA Corporation. Self-limiting video signal peaking circuit. 4,350,995, Cl. 358-37.000.
Harlan, Wayne E., to RCA Corporation. Automatic video signal peaking control. 4,351,003, Cl. 358-166.000.
Harmsen, Lothar: *See*—
Bick, Klaus; Harmsen, Lothar; Zieschang, Jurgen; and Vennmann, Friedhelm, 4,351,055, Cl. 373-76.000.
Harnischfeger GmbH: *See*—
Blase, Helmut; Hogemann, Arend; and Schulze, Dieter, 4,350,255, Cl. 212-268.000.
Harries, David A.: *See*—
Ingram, Brian; Harries, David A.; and Natarajan, Ramamurthy, 4,350,230, Cl. 188-79.000.
Harrold, Ronald T., to Electric Power Research Institute, Inc. Ultrasonic fluid-atomizing cooled power transformer. 4,350,838, Cl. 174-15.00R.
Harsch, Klaus; and Schulzke, Peter, to Robert Bosch GmbH. Apparatus for driving electromagnetic devices, particularly electromagnetic injection valves in internal combustion engines. 4,350,132, Cl. 123-490.000.
Harsco Corporation: *See*—
Gallis, Anthony J., 4,350,318, Cl. 249-40.000.
Hartford Corporation, The: *See*—
Mayer, Nathan, 4,350,246, Cl. 206-210.000.
Hartinger, Edmund; Julke, Elias; and Sandmann, Harald, to Maschinenfabrik Meyer AG. Process for filtering and encapsulating radioactive particles. 4,350,620, Cl. 252-628.000.
Hartman, Gary L.: *See*—
Gay, Tom A.; Hartman, Gary L.; and Stein, Gunter, 4,351,027, Cl. 364-432.000.
Harvey, Bruce J.: *See*—
Casey, Gary L.; Harvey, Bruce J.; Hebert, Kenneth A.; and Eddy, William C., 4,350,135, Cl. 123-564.000.
Harvey, Kenneth; Hayes, Harry; and Morton, Anthony J., to Colgate-Palmolive Company. Dentifrice. 4,350,680, Cl. 424-52.000.
Hasegawa, Yo; Yasuda, Shigeru; and Kojima, Kunio, to Matsushita Electric Industrial Co., Ltd. Resistor elements. 4,350,741, Cl. 428-473.500.
Hash, Juel T., to Jorges, Shirley M., a part interest. Tufted pile fabric. 4,350,106, Cl. 112-410.000.
Hashimoto, Kinro: *See*—
Oyama, Motofumi; and Hashimoto, Kinro, 4,350,796, Cl. 525-233.000.
Hashimoto, Makoto: *See*—
Suzuki, Shigeru; Suzuki, Minoru; Suzuki, Koichi; Omi, Kyoji; Nagahara, Yasumori; Kagari, Yoshiharu; Hashimoto, Makoto; and Mori, Goro, 4,350,750, Cl. 430-125.000.
Hashimoto, Misashi; Hemmi, Keiji; Aratari, Matsuhiko; Takeno, Hidekazu; and Hagiwara, Daijiro, to Fujisawa Pharmaceutical Co., Ltd. Cephalosporin analogues and antimicrobial compositions. 4,350,694, Cl. 424-248.540.
Hashimoto, Noboru; and Akatsu, Mitsu, to JGC Corporation. Catalytic reactor. 4,350,665, Cl. 422-191.000.
Hashizúme, Shigeyuki: *See*—
Fujii, Hiroo; Tanaka, Kiyoaki; Nakamura, Masashi; Okuno, Ryuzo; Hashizume, Shigeyuki; Katayama, Hideo; and Fujita, Tsutomu, 4,350,326, Cl. 266-201.000.
Hatanaka, Hideo: *See*—
Fukutome, Satoru; Hatanaka, Hideo; and Saito, Motoyuki, 4,351,041, Cl. 368-88.000.
Hattori, Kyo: *See*—
Kawata, Shoji; Hattori, Kyo; and Sakurai, Kazuhiro, 4,350,319, Cl. 251-65.000.
Hauck, Frederic P.; and Fox, Rita T., to E. R. Squibb & Sons, Inc. Antiarrhythmic tetrahydronaphthalene derivatives. 4,350,812, Cl. 544-79.000.
Hauni-Werke Korber & Co. K.G.: *See*—
Baier, Anton, 4,350,170, Cl. 131-84.00R.
Hauserman Ltd.: *See*—
Ball, Douglas C., 4,351,017, Cl. 362-147.000.
Havakawa, Yoshihiro: *See*—
Matsuda, Akira; Havakawa, Yoshihiro; Yasuda, Shigeo; Iwasaki, Motoaki; and Nishino, Hiroshi, 4,350,854, Cl. 200-61.250.
Hayasaka, Yoshiyuki; Ikeuchi, Ichiro; Matsumoto, Hajime; and Shikaya, Yukihiro, to Mitsubishi Jukogyo Kabushiki Kaisha; and Dainippon Printing Company Ltd. Device for enabling registry of operations in an apparatus for continuously forming containers filled with material. 4,349,997, Cl. 53-51.000.
Hayashi, Shigeki; and Kusakabe, Mitsuo, to Nusco Kabushiki Kaisha; and Kusakabe Denki Kabushiki Kaisha. Reciprocating travelling shear. 4,350,065, Cl. 83-287.000.
Hayashi, Yoshimasa: *See*—
Nakajima, Yasuo; Hayashi, Yoshimasa; Nagumo, Shin-ichi; and Yoshimura, Tooru, 4,350,129, Cl. 123-440.000.
Hayashi, Yukio: *See*—
Ishijima, Shizuo; Kiritani, Takeshi; and Hayashi, Yukio, 4,350,535, Cl. 106-308.00Q.
Hayes, Harry: *See*—
Harvey, Kenneth; Hayes, Harry; and Morton, Anthony J., 4,350,680, Cl. 424-52.000.
Hayes, William V.: *See*—
Childress, David L.; Hayes, William V.; and Poppe, Richard L., 4,350,830, Cl. 562-535.000.
Hays, Bill J. Electrical pin connector. 4,350,408, Cl. 339-149.00S.
Hayslett, David D.: *See*—
Schwartz, Henry D.; Krull, Irwin H.; Clement, Carl J.; Stengel, Frederick H.; and Hayslett, David D., 4,350,579, Cl. 204-195.00R.
Heberling, Walter; Muller, Wolfgang; Langenberg, Werner; Behrens, Gerhard; and Saul, Alfred, to Gewerkschaft Eisenhutte Westfalia. Plough transmission. 4,350,393, Cl. 299-50.000.
Hebert, Kenneth A.: *See*—
Casey, Gary L.; Harvey, Bruce J.; Hebert, Kenneth A.; and Eddy, William C., 4,350,135, Cl. 123-564.000.
Hedin, Jan S.; and Jarnestedt, Goran A., to Telefonaktiebolaget L M Ericsson. Method of phase synchronization in a synchronous data transmission system, and apparatus for carrying out the method. 4,351,061, Cl. 375-20.000.
Hedlund, Kenneth G.: *See*—
Johansson, Anne S.; Hogman, Claes F.; and Hedlund, Kenneth G., 4,350,585, Cl. 210-94.000.
Heimlich, Henry J. Respiratory exerciser. 4,350,167, Cl. 128-727.000.
Heinemann, Otto; Schmits, Heinz-Herbert; Philipp, Rainer; and Berger, Artur, to Krupp Polysius AG. Push grid. 4,350,244, Cl. 198-773.000.
Heinrich-Hertz-Institut fur Nachrichtentechnik Berlin GmbH: *See*—
Nobis, Rolf, 4,351,049, Cl. 370-62.000.
Heinrich, Richard, to Kaco GmbH & Co. Radial-shaft sealing rings with heat dissipation segments. 4,350,347, Cl. 277-153.000.
Heisner, Donald N.; and Bentivegna, Charles R., to Monsanto Company. Tire inspection system. 4,350,942, Cl. 318-626.000.

Heitzer, Helmut: *See*—
Beck, Gunther; Heitzer, Helmut; and Lurssen, Klaus, 4,350,520, Cl. 71-92.000.
Helgeland, Walter; Teverovsky, Alex; Kerwin, Kenneth H., II; and Chartier, Carl P., to Ferrofluidics Corporation. Apparatus for and method of handling crystals from crystal-growing furnaces. 4,350,560, Cl. 156-617.0SP.
Heller, Donald F., to Allied Corporation. Electronically induced multiphoton absorption. 4,350,577, Cl. 204-157.10R.
Hellmann, Wolf D., to Colortronic Reinhard & Co. KG. Gripper with serially pivoted fingers. 4,350,381, Cl. 294-88.000.
Helms, Harold R. Manually propelled lawn and garden cart. 4,350,366, Cl. 280-655.000.
Hemingway, Bruce: *See*—
Shah, Hasmukh R.; Jones, Thaddeus M.; and Hemingway, Bruce, 4,350,238, Cl. 194-1.00N.
Hemmi, Keiji: *See*—
Hashimoto, Misashi; Hemmi, Keiji; Aratari, Matsuhiko; Takeno, Hidekazu; and Hagiwara, Daijiro, 4,350,694, Cl. 424-248.540.
Henderlong, Dennis B.: *See*—
Kesling, Peter C.; and Henderlong, Dennis B., 4,350,487, Cl. 433-14.000.
Henocq, Emile: *See*—
Relyveld, Edgar R.; and Henocq, Emile, 4,350,686, Cl. 424-88.000.
Henricha, Paul; Haas, Peter; Hoppe, Hans-Georg; and Grimm, Wolfgang, to Bayer Aktiengesellschaft. Impermeable molded articles of cellular polyurethane elastomers produced with organofunctional polysiloxane-derivatives and their use as spring elements. 4,350,777, Cl. 521-110.000.
Hensel, Reiner: *See*—
Albrecht, Ernst; Hensel, Reiner; Keller, Karl-Heinz; and Stahlschmitt, Horst, 4,350,105, Cl. 112-256.000.
Herman, John T.: *See*—
Dudrey, Denis J.; and Herman, John T., 4,350,282, Cl. 233-7.000.
Hermann, Joerg; Baier, Werner; and Breidbach, Josef, to Webasto-Werk W. Baier GmbH and Co. Fluid fuel heating system. 4,350,288, Cl. 237-12.30C.
Hermosin, Antonio: *See*—
Morell, Antoinette; and Hermosin, Antonio, 4,350,651, Cl. 264-65.000.
Herring, Chauncey, Jr.: *See*—
Astfalk, Gregory; Fowler, Lawrence A.; Herring, Chauncey, Jr.; and Szymczak, Thaddeus J., 4,351,030, Cl. 364-552.000.
Herrmann, Albert: *See*—
Florian, Rudolf; and Herrmann, Albert, 4,351,058, Cl. 373-155.000.
Herubel, Jean-Frederic, to N. Schlumberger & Cie. Method for recovering meat proteins remaining attached to the bones after the boning operation. 4,350,624, Cl. 260-112.00R.
Hesse, Wolfgang; Landauer, Franz; and Schmiedel, Klaus, to Hoechst Aktiengesellschaft. Process for the preparation of synthetic resins based on resorcinol compounds. 4,350,800, Cl. 525-480.000.
Hetherington, Robert D.; and Goelz, David W., to Binks Manufacturing Company. Pumping system for unstable fluids. 4,350,266, Cl. 222-40.000.
Hettinga, Siebolt: *See*—
McCambridge, James; and Hettinga, Siebolt, 4,350,193, Cl. 144-286.00R.
Hewlett-Packard Company: *See*—
Best, Allan I.; Bohley, Thomas K.; and Westlund, Ronald C., 4,350,953, Cl. 324-183.000.
Higashiyama, Kazuhiro, to Nissan Motor Company, Limited. Fail-safe control computer. 4,351,050, Cl. 371-12.000.
Higham, Peter, to Perkin-Elmer Limited. Personal gas monitor. 4,350,037, Cl. 73-23.000.
Hikasa, Tadashi: *See*—
Baba, Kazuo; Wakatsuki, Kizuku; and Hikasa, Tadashi, 4,350,802, Cl. 526-142.000.
Hilgemann, Marvin E.: *See*—
Kotula, Frank T.; and Hilgemann, Marvin E., 4,349,988, Cl. 47-1.500.
Hill, David T.: *See*—
Gleason, John G.; and Hill, David T., 4,350,698, Cl. 424-258.000.
Hill, Ian L., to T.B.C. Pty. Limited. R.F. switched amplifier and A.M. modulator. 4,350,962, Cl. 332-60.000.
Hill, Loren G. Apparatus for locating an aquatic environment with a pH preferred by Largemouth and Striped Bass fish. 4,349,976, Cl. 43-4.000.
Hilson, David G.; Johnson, Gary W.; and Schoonejongen, Ronald J., to Electro Materials Corp. of America. Thick film conductors for use in microelectronic packaging. 4,350,618, Cl. 252-514.000.
Hinchcliffe, Dennis; Starkey, Stanley V.; and Stone, William A., to Molins Limited. Conveyor systems for cigarettes and similar rod-like articles. 4,350,242, Cl. 198-605.000.
Hinds, Walter E.: *See*—
Oldershaw, Paul V.; Hansen, James E.; and Hinds, Walter E., 4,350,478, Cl. 417-417.000.
Hirachi, Ltd.: *See*—
Hamada, Isao; Nakayama, Hiroshi; Kawakami, Nobuyoshi; Azami, Hirotaka; Ikeda, Tadasu; Yukawa, Yasumasa; Mitani, Hiroshi; Ohmori, Takashi; Kimura, Masanobu; and Seno, Kohichi, 4,350,510, Cl. 55-349.000.
Hirahara, Hiroshi: *See*—
Tsujimoto, Eiichi; Hirahara, Hiroshi; and Matsumoto, Makoto, 4,350,004, Cl. 53-570.000.
Hiramatsu, Yasuzo: *See*—
Fujimura, Hajime; Hiramatsu, Yasuzo; Yabuuchi, Takahiro; Hisaki, Masakatu; Takikawa, Katsuo; Honna, Takaji; Miyake, Hidekazu; and Kajitani, Makoto, 4,350,700, Cl. 424-263.000.
Hirayama, Masao: *See*—
Zenbayashi, Katsuaki; Morinaga, Akio; Hirayama, Masao; and Morita, Akira, 4,350,548, Cl. 156-156.000.
Hirose, Noboru, to Brother Kogyo Kabushiki Kaisha. Step feed drilling machine. 4,350,212, Cl. 173-6.000.
Hirsig, Alan R.: *See*—
Worrell, G. Richard; and Hirsig, Alan R., 4,350,828, Cl. 562-486.000.
Hisaki, Masakatu: *See*—
Fujimura, Hajime; Hiramatsu, Yasuzo; Yabuuchi, Takahiro; Hisaki, Masakatu; Takikawa, Katsuo; Honna, Takaji; Miyake, Hidekazu; and Kajitani, Makoto, 4,350,700, Cl. 424-263.000.
Hisaki, Tomoko: *See*—
Mizushima, Yoshihiko; Takeda, Akitsu; Yoshikawa, Akira; Ochi, Osamu; and Hisaki, Tomoko, 4,350,541, Cl. 148-188.000.
Hishinuma, Yukio: *See*—
Matsuda, Shimpei; Kato, Akira; Mori, Toshikatsu; Kumagai, Teruo; Hishinuma, Yukio; Akimoto, Hidetoshi; and Nakajima, Fumito, 4,350,670, Cl. 423-244.000.
Hitachi Koki Co., Ltd.: *See*—
Sagae, Syoji; Matsuda, Yasumasa; Kasahara, Masatoshi; and Suzuki, Masayoshi, 4,350,989, Cl. 346-140.00R.
Hitachi, Ltd.: *See*—
Akiyama, Masatoshi; Kitamura, Shigeki; Tetsu, Junichi; and Nakazato, Koichi, 4,350,514, Cl. 65-36.000.
Matsuda, Shimpei; Kato, Akira; Mori, Toshikatsu; Kumagai, Teruo; Hishinuma, Yukio; Akimoto, Hidetoshi; and Nakajima, Fumito, 4,350,670, Cl. 423-244.000.
Misono, Masayoshi, 4,350,924, Cl. 313-441.000.
Sagae, Syoji; Matsuda, Yasumasa; Kasahara, Masatoshi; and Suzuki, Masayoshi, 4,350,989, Cl. 346-140.00R.
Sakata, Kazuhiro; Yuminaka, Takeo; Nakazato, Masao; Yoneda, Kenji; Kuzunuki, Soshiro; and Katayama, Yasunori, 4,350,225, Cl. 187-29.00R.
Sasaki, Kouji; Sugawara, Hiroyuki; Kuwabara, Kouji; Shirakura, Toshiharu; Takemori, Satoshi; and Ikemoto, Norio, 4,351,052, Cl. 372-58.000.
Tojo, Kenji; Ikegawa, Masato; Shiibayashi, Masao; and Imai, Masaya, 4,350,479, Cl. 418-55.000.
Yamada, Takahiro, 4,350,986, Cl. 346-75.000.
Yanagisawa, Syozo, 4,350,136, Cl. 123-568.000.
Hiyoshi, Kazuhiko; Matsuura, Norio; Matsugichi, Michiharu; Onofusa, Norio; and Nishikage, Tadao, to Asahi-Dow Limited. Aqueous dispersions of vinylidene chloride resins. 4,350,622, Cl. 524-831.000.
Hlavinka, Jaroslav: *See*—
Janirek, Ladislav; Hlavinka, Jaroslav; Hanacek, Josef; and Miculka, Zdenek, 4,350,029, Cl. 69-1.000.
Ho, Dar-Veig: *See*—
Steenblik, Richard A.; and Ho, Dar-Veig, 4,350,412, Cl. 350-292.000.
Ho, David S.: *See*—
Choate, William C.; and Ho, David S., 4,351,004, Cl. 358-213.000.
Hoadley, Arthur W., to Western Michigan University, The Board of Trustees of. Wing mounted stall condition detector. 4,350,314, Cl. 244-1.00R.
Hochtemperatur-Reaktorbau GmbH: *See*—
Schwiers, Hans-Georg; and Schoening, Josef, 4,349,991, Cl. 52-21.000.
Hoechst Aktiengesellschaft: *See*—
Fischer, Hannes; and Plum, Helmut, 4,350,809, Cl. 528-361.000.
Hesse, Wolfgang; Landauer, Franz; and Schmiedel, Klaus, 4,350,800, Cl. 525-480.000.
Hoffmann, Bernd; Jung, Siegfried; and Semmler, Hans-Joachim, 4,350,206, Cl. 169-47.000.
Kuchler, Manfred; Duve, Gunther; and Ebigt, Joachim, 4,350,782, Cl. 523-334.000.
Lind, Erwin, 4,350,748, Cl. 430-49.000.
Molter, Michael; and Kloss, Gerhard, 4,350,674, Cl. 424-1.000.
Schornig, Eberhard, 4,349,932, Cl. 15-77.000.
Schroter, Herbert, 4,350,438, Cl. 355-68.000.
Springer, Hartmut, 4,350,632, Cl. 260-314.500.
Hoefle, Milton L.; and Bobowski, George, to Warner-Lambert Company. Substituted acyl derivatives of octahydro-1H-indole-2-carboxylic acids. 4,350,704, Cl. 424-274.000.
Hofbauer, John, to Die-Craft Metal Products, Inc. Component retaping machine with tooth engaging means. 4,350,556, Cl. 156-541.000.
Hoffa, Jack, to Bentley Laboratories. Atraumatic blood access device valve. 4,350,157, Cl. 128-214.00R.
Hoffman, Louis S., to H. P. Hood, Inc. Package having sealed closing means. 4,350,263, Cl. 220-359.000.
Hoffmann, Bernd; Jung, Siegfried; and Semmler, Hans-Joachim, to Hoechst Aktiengesellschaft. Fire extinguishing foam concentrate and its application. 4,350,206, Cl. 169-47.000.
Hoge, William H., to Biax Fiberfilm. Process for producing highly porous thermoplastic films. 4,350,655, Cl. 264-145.000.
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Blase, Helmut; Hogemann, Arend; and Schulze, Dieter, 4,350,255, Cl. 212-268.000.
Hogman, Claes F.: *See*—
Johansson, Anne S.; Hogman, Claes F.; and Hedlund, Kenneth G., 4,350,585, Cl. 210-94.000.

Holben, Eugene F., to Conometer Corporation. Viscosity regulating apparatus and method. 4,350,285, Cl. 236-1.00R.
Holland, David; and Milner, David J., to Imperial Chemical Industries Limited. Chiral sugar complexes. 4,350,811, Cl. 536-18.000.
Hollister Incorporated: *See*—
Habib, Wagdi W., 4,350,785, Cl. 524-55.000.
Holmes, Arthur S.; and Ryan, James M., to Koch Process Systems, Inc. Distillative separation of carbon dioxide from light hydrocarbons. 4,350,511, Cl. 62-17.000.
Holmes, James C., to Raychem Corporation. Heat-recoverable pipeline termination plug. 4,350,183, Cl. 138-89.000.
Holt, James L.; and Otka, Robert P., to Outboard Marine Corporation. Digital read-out meter circuit and tachometer with variable meter update rate using an up/down counter means. 4,350,952, Cl. 324-166.000.
Holzapfel, Immanuel, to Daimler-Benz Aktiengesellschaft. Combustion chamber for a gas turbine. 4,350,009, Cl. 60-39.230.
Holzhauser, Ronald C.; McGlen, James A.; and Russel, Matthew J., to Eastman Kodak Company. Sheet feeding apparatus. 4,350,329, Cl. 271-9.000.
Hombak Maschinenfabrik GmbH u. Conkg: *See*—
Riedl, Reinhold, 4,350,191, Cl. 144-172.000.
Honda Giken Kogyo Kabushiki Kaisha: *See*—
Ban, Keisuke; and Daimaru, Akimasa, 4,350,056, Cl. 74-579.00E.
Honda, Shoichi, 4,350,126, Cl. 123-315.000.
Honda, Katsuhisa: *See*—
Shirono, Junkichi; and Honda, Katsuhisa, 4,350,098, Cl. 108-6.000.
Honda, Keisuke: *See*—
Taguchi, Kazumasa; Isako, Hiroshi; Ikeda, Koichi; Honda, Keisuke; Kanemoto, Masaru; and Hanaoka, Keishiro, 4,350,523, Cl. 75-0.50R.
Honda, Shoichi, to Honda Giken Kogyo Kabushiki Kaisha. Internal combustion engine. 4,350,126, Cl. 123-315.000.
Honeywell Inc.: *See*—
Agarwala, Poonam; and Zansky, Zoltan, 4,350,933, Cl. 315-278.000.
Gay, Tom A.; Hartman, Gary L.; and Stein, Gunter, 4,351,027, Cl. 364-432.000.
Mobarry, John W., 4,350,166, Cl. 128-664.000.
Nelson, Marvin D., 4,350,966, Cl. 337-302.000.
van Dyke, Martin J.; and Fahley, Jerome A., 4,350,039, Cl. 73-304.00C.
Honeywell Information Systems Inc.: *See*—
Bradley, John J.; and Franklin, Benjamin S., 4,351,024, Cl. 364-200.000.
Petryk, Edward M., Jr., 4,350,973, Cl. 340-347.0DD.
Honna, Takaji: *See*—
Fujimura, Hajime; Hiramatsu, Yasuzo; Yabuuchi, Takahiro; Hisaki, Masakatu; Takikawa, Katsuo; Honna, Takaji; Miyake, Hidekazu; and Kajitani, Makoto, 4,350,700, Cl. 424-263.000.
Hoover Company, The: *See*—
Lorson, Emmett D.; and Minton, Keith G., 4,349,936, Cl. 15-366.000.
Hopkins, Grant; and Cantrell, Mark. Display rack. 4,350,252, Cl. 211-40.000.
Hoppe, Hans-Georg: *See*—
Henrichs, Paul; Haas, Peter; Hoppe, Hans-Georg; and Grimm, Wolfgang, 4,350,777, Cl. 521-110.000.
Hopper, Roger J.; Sturm, Budd H.; and Geiser, Joseph F., to Goodyear Tire & Rubber Company, The. Preparation of 2-(isopropylsulfinyl)-benzothiazole. 4,350,818, Cl. 548-166.000.
Hornauer, Klaus-Peter: *See*—
Kopp, Reiner; and Hornauer, Klaus-Peter, 4,350,035, Cl. 72-53.000.
Horton, Gary B. Reamer. 4,350,204, Cl. 166-175.000.
Hoshino, Hitoshi: *See*—
Takada, Tadakazu; Tokitomo, Kazuo; and Hoshino, Hitoshi, 4,350,563, Cl. 156-643.000.
Hoshito, Kazuo: *See*—
Imai, Nobuhiro; Kono, Kimio; Hoshito, Kazuo; Kiyohara, Takehiko; and Sato, Hideaki, 4,351,005, Cl. 358-300.000.
Hosokawa, Motoyuki: *See*—
Isogai, Nobuo; Okawa, Takashi; Hosokawa, Motoyuki; Watanabe, Toshiyasu; and Wakui, Natsuko, 4,350,668, Cl. 423-139.000.
Hough, Louis E.: *See*—
DeVigili, Walter J.; and Hough, Louis E., 4,350,365, Cl. 280-605.000.
Howard, Frank H.: *See*—
Rowe, Eugene H.; and Howard, Frank H., 4,350,789, Cl. 525-31.000.
Howard, Jerry W.: *See*—
Shadden, Oliver W.; and Howard, Jerry W., 4,350,210, Cl. 172-143.000.
Howell, Stephen L., to Kimball International, Inc. Automatic bass generator for electronic organ. 4,350,069, Cl. 84-1.030.
Hoya Lens Corporation: *See*—
Yanagisawa, Yasuo; and Mitsui, Yoshiaki, 4,350,877, Cl. 235-70.00A.
Huang, I-Der, to Exxon Research & Engineering Co. Process for the manufacture of styrene. 4,350,825, Cl. 562-406.000.
Huang, Shih L.; McQuillen, Edward J.; and Richey, Robert J., Jr., to United States of America, Navy. Cross reinforcement in a graphite-epoxy laminate. 4,350,728, Cl. 428-105.000.
Huber, Bernhard, to Bodenseewerk Perkin-Elmer & Co. GmbH. Method of fabricating graphite tube. 4,350,718, Cl. 427-181.000.
Hudson, Raymond A. Pulsating spray nozzle. 4,350,158, Cl. 128-224.000.
Hughes, Richard H., to RCA Corporation. Electron gun with balanced lens lips to reduce astigmatism. 4,350,923, Cl. 313-414.000.
Hughett, Paul D., to Peterson/Puritan, Inc. Water-in-oil emulsions. 4,350,605, Cl. 252-305.000.
Hurlong, Granville W., Jr.: *See*—
Erwin, Louis R.; and Hurlong, Granville W., Jr., 4,350,301, Cl. 239-453.000.
Hwa, Chih M.: *See*—
Cuisia, Dionisio G.; and Hwa, Chih M., 4,350,606, Cl. 252-392.000.
Hyster Company: *See*—
Schmelzer, Lynn A.; and Fouser, W. Thomas, 4,350,460, Cl. 404-117.000.
IBM Patent Operations: *See*—
Schoenlein, William J., 4,350,454, Cl. 400-234.000.
Ichimura, Kunihiro. Terephthaldialdehyde monoacetal and method for manufacture thereof. 4,350,833, Cl. 568-433.000.
ICI Americas Inc.: *See*—
Shapiro, Howard S., 4,350,814, Cl. 546-84.000.
Ide, Yuuichi: *See*—
Kuwabara, Eiji; Sakata, Takayoshi; Kawauchi, Noboru; Ide, Yuuichi; and Matsuo, Takeshi, 4,350,023, Cl. 62-176.00E.
Ideal Industries, Inc.: *See*—
Isham, Leonard E.; Peplow, Marvin J.; Sandy, Julius W.; and ViPond, Clyde M., 4,350,061, Cl. 81-9.510.
Michaels, Leonard H., 4,350,840, Cl. 174-65.0SS.
Scott, William J., 4,350,841, Cl. 174-87.000.
Igarashi, Toshiji: *See*—
Hamano, Sachiyuki; Kitamura, Shinichi; Igarashi, Toshiji; and Nakajima, Yoshikage, 4,350,705, Cl. 424-278.000.
Igarashi, Yoshiaki: *See*—
Kato, Matsuo; Ohtsuki, Tomonari; Igarashi, Yoshiaki; Saito, Tsukasa; and Suzuki, Toshiaki, 4,350,409, Cl. 339-186.00M.
Igashira, Toshihiko: *See*—
Yoshinaga, Toru; Igashira, Toshihiko; Mori, Kouichi; Kawai, Hisasi; and Morino, Seiji, 4,350,137, Cl. 123-617.000.
Iguchi, Chojiro H.: *See*—
Nagai, Shosuke; Kato, Toshio; Iguchi, Chojiro H.; Kawashima, Nobuyuki; Mita, Ryuichi; Yamaguchi, Akihiro; and Takano, Takao, 4,350,643, Cl. 260-465.700.
Ihlenburg, Rainer: *See*—
Redlich, Horst; Borchard, Heinz; and Ihlenburg, Rainer, 4,351,047, Cl. 369-270.000.
Iijima, Toshifumi: *See*—
Koitabashi, Takeo; Matsuzaka, Syozi; Iijima, Toshifumi; and Harada, Tetsuya, 4,350,758, Cl. 430-567.000.
Ikeda, Koichi: *See*—
Taguchi, Kazumasa; Isako, Hiroshi; Ikeda, Koichi; Honda, Keisuke; Kanemoto, Masaru; and Hanaoka, Keishiro, 4,350,523, Cl. 75-0.50R.
Ikeda, Tadasu: *See*—
Hamada, Isao; Nakayama, Hiroshi; Kawakami, Nobuyoshi; Azami, Hirotaka; Ikeda, Tadasu; Yukawa, Yasumasa; Mitani, Hiroshi; Ohmori, Takashi; Kimura, Masanobu; and Seno, Kohichi, 4,350,510, Cl. 55-349.000.
Ikegawa, Masato: *See*—
Tojo, Kenji; Ikegawa, Masato; Shiibayashi, Masao; and Imai, Masaya, 4,350,479, Cl. 418-55.000.
Ikemoto, Norio: *See*—
Sasaki, Kouji; Sugawara, Hiroyuki; Kuwabara, Kouji; Shirakura, Toshiharu; Takemori, Satoshi; and Ikemoto, Norio, 4,351,052, Cl. 372-58.000.
Ikeuchi, Ichiro: *See*—
Hayasaka, Yoshiyuki; Ikeuchi, Ichiro; Matsumoto, Hajime; and Shikaya, Yukihiro, 4,349,997, Cl. 53-51.000.
Illinois Tool Works Inc.: *See*—
Dewey, George G., 4,349,929, Cl. 7-158.000.
Patia, Bruce L., 4,350,885, Cl. 250-231.00R.
Peterson, Francis C., 4,349,963, Cl. 30-347.000.
Imai, Ichiro; Furuya, Takashi; Ando, Narumi; and Kitajima, Satoyuki, to Nippon Steel Corporation. Method for producing steel strip for tin plate and tin-free steel plate in various temper grades. 4,350,538, Cl. 148-12.00D.
Imai, Masaya: *See*—
Tojo, Kenji; Ikegawa, Masato; Shiibayashi, Masao; and Imai, Masaya, 4,350,479, Cl. 418-55.000.
Imai, Nobuhiro; Kono, Kimio; Hoshito, Kazuo; Kiyohara, Takehiko; and Sato, Hideaki, to Canon Kabushiki Kaisha. Recording apparatus. 4,351,005, Cl. 358-300.000.
Imanaka, Ryoichi; and Tsuji, Seizou, to Matsushita Electric Industrial Co., Ltd. Recording system using disk-shaped recording medium. 4,351,044, Cl. 369-43.000.
Imanishi Flexible Tube Mfg. Co., Ltd.: *See*—
Nishikawa, Hideo, 4,350,874, Cl. 219-400.000.
Imbert, Leon A. Combined dice and card game apparatus. 4,350,339, Cl. 273-148.00A.
Imperial Chemical Industries Limited: *See*—
Edwards, Philip N.; and McMenim, Michael E., 4,350,826, Cl. 562-444.000.
Holland, David; and Milner, David J., 4,350,811, Cl. 536-18.000.
Imphy S.A.: *See*—
Lagarde, Pierre, 4,350,883, Cl. 235-435.000.
Industrial Fasteners Corp.: *See*—
Lovisek, Louis J., 4,350,465, Cl. 411-186.000.
Industrie Pirelli S.p.A.: *See*—
Brollo, Aurelio, 4,350,374, Cl. 285-132.000.

Ing. C. Olivetti & C., S.p.A.: *See*—
Berton, Marcello; and Bertozzi, Dino, 4,350,399, Cl. 312-138.00R.
Ing. h.c.F. Porsche Aktiengesellschaft: *See*—
Kolb, Eugen; and Srock, Rainer, 4,350,367, Cl. 280-756.000.
Ingenieursbureau "Essex" B.V.: *See*—
Esselink, Abraham J., 4,350,500, Cl. 55-26.000.
Ingram, Brian; Harries, David A.; and Natarajan, Ramamurthy, to Girling Limited. Drum brakes for vehicles. 4,350,230, Cl. 188-79.000.
Inmos Corporation: *See*—
Eaton, Sargent S., Jr.; and Wooten, David R., 4,351,034, Cl. 365-189.000.
Inoshita, Yasushi: *See*—
Shimada, Yukio; Suzuki, Naoyoshi; Ohashi, Toshio; and Inoshita, Yasushi, 4,350,289, Cl. 237-12.30A.
Inoue-Japax Research Incorporated: *See*—
Inoue, Kiyoshi, 4,350,863, Cl. 219-69.00P.
Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. High-frequency power feeder circuitry and supply for electrical discharge machining. 4,350,863, Cl. 219-69.00P.
Inoue, Shinichiro: *See*—
Uenosono, Chikasa; Okada, Takao; Matsuki, Junya; Naito, Tadashi; Inoue, Shinichiro; and Takahashi, Masaki, 4,350,947, Cl. 322-17.000.
Inoue, Tadao: *See*—
Morihisa, Mitsuo; and Inoue, Tadao, 4,351,021, Cl. 363-49.000.
Inoue, Tokuta: *See*—
Kanda, Mutsumi; Nakanishi, Kiyoshi; and Inoue, Tokuta, 4,350,125, Cl. 123-261.000.
Institut Francais du Petrole: *See*—
Rojey, Alexandre, 4,350,020, Cl. 62-93.000.
Institut National de la Recherche Agronomique: *See*—
Pardon, Pierre; Lantier, Frederic; Marly, Jose; and Bourgy, Gerard, 4,350,684, Cl. 424-92.000.
Institut National de la Sante et de la Recherche Medicale: *See*—
Nicolas, Jean-Claude; Terouanne, Beatrice; Descomps, Bernard; and Crastes de Paulet, Andre, 4,350,760, Cl. 435-7.000.
Institut Pasteur: *See*—
Relyveld, Edgar R.; and Henocq, Emile, 4,350,686, Cl. 424-88.000.
International Business Machines Corporation: *See*—
Chow, Chao-Kong; Liu, Chao-Ning; and Wang, Sherman S., 4,350,045, Cl. 73-607.000.
Countryman, Gerald P.; and Findlay, Ronald G., 4,350,449, Cl. 400-120.000.
Dials, Edward N.; and Kightlinger, Drew A., 4,350,452, Cl. 400-208.000.
Field, Thomas R.; Jagodzinski, Peter F.; King, James F.; and Schaefer, John O., 4,350,453, Cl. 400-208.000.
Frieser, Rudolf G.; Ma, William H.; Ozols, Gunars M.; and Zingerman, Bryant N., 4,350,578, Cl. 204-192.00R.
Grandia, Johannes; McCheaney, William G.; Santini, Hugo A. E.; and Turk, Harold L., 4,350,116, Cl. 118-500.000.
Johnson, William S.; and Knepper, Ronald W., 4,350,991, Cl. 357-23.000.
Moore, Daniel J.; and Pascoe, Robert A., 4,350,455, Cl. 400-279.000.
Richard, Maurice E.; and Winarski, Daniel J., 4,350,309, Cl. 242-68.300.
International Flavors & Fragrances Inc.: *See*—
Kiwala, Jacob; Tokarzewski, Richard J.; Schmitt, Frederick L.; and Sprecker, Mark A., 4,350,733, Cl. 428-290.000.
Klemarczyk, Philip T.; Sanders, James M.; Vock, Manfred H.; Vinals, Joaquin F.; Schmitt, Frederick L.; and Granda, Edward J., 4,350,823, Cl. 560-120.000.
International Paper Company: *See*—
Lisnyansky, Khaim, 4,350,889, Cl. 378-46.000.
International Standard Electric Corporation: *See*—
Drake, Cyril F., 4,350,675, Cl. 424-1.000.
Parfree, Colin S.; and Worthington, Peter, 4,350,046, Cl. 73-768.000.
International Telephone and Telegraph Corporation: *See*—
Blakeley, James, 4,350,350, Cl. 277-207.00A.
Johnson, Charles B.; and Abraham, Jimmy M., 4,350,919, Cl. 313-99.000.
Meece, Meredith W.; and Paget, Win W., 4,350,475, Cl. 417-238.000.
Mohiuddin, Gulam, 4,350,739, Cl. 428-425.100.
Treiber, Robert, 4,351,060, Cl. 375-12.000.
Internationale Octrooi Maatschappij "Octropa" B.V.: *See*—
Rek, Johannes H. M., 4,350,715, Cl. 426-570.000.
Inuzuka, Tsuneki: *See*—
Tanioka, Hiroshi; Ishida, Masato; and Inuzuka, Tsuneki, 4,350,439, Cl. 355-14.0SH.
Ipsen, Peter G.: *See*—
Kalan, Gary L.; and Ipsen, Peter G., 4,350,345, Cl. 277-3.000.
Isako, Hiroshi: *See*—
Taguchi, Kazumasa; Isako, Hiroshi; Ikeda, Koichi; Honda, Keisuke; Kanemoto, Masaru; and Hanaoka, Keishiro, 4,350,523, Cl. 75-0.50R.
Isham, Leonard E.; Peplow, Marvin J.; Sandy, Julius W.; and ViPond, Clyde M., to Ideal Industries, Inc. Wire stripping mechanism. 4,350,061, Cl. 81-9.510.
Ishida, Masato: *See*—
Tanioka, Hiroshi; Ishida, Masato; and Inuzuka, Tsuneki, 4,350,439, Cl. 355-14.0SH.
Ishiguro, Jiro: *See*—
Watanabe, Nobuatsu; Kondo, Teruhisa; and Ishiguro, Jiro, 4,350,576, Cl. 204-101.000.
Ishihara, Masamitsu. Method and mechanism for constant-measure feed of rod materials. 4,350,033, Cl. 72-24.000.
Ishii, Koji, to Ryobi Ltd. Image position adjusting device for printing machine. 4,350,093, Cl. 101-217.000.
Ishijima, Shizuo; Kiritani, Takeshi; and Hayashi, Yukio, to Asahi Kasei Kogyo Kabushiki Kaisha. Water-dispersible paste composition of metal powder. 4,350,535, Cl. 106-308.00Q.
Ishima, Takaharu, to Yamaha Hatsudoki Kabushiki Kaisha. Snowmobile frame with corner-mounted dampers. 4,350,221, Cl. 180-190.000.
Ishiyama, Shozo, to Konishiroku Photo Industry Co., Ltd. Compact zoom lens. 4,350,416, Cl. 350-427.000.
Isogai, Nobuo; Okawa, Takashi; Hosokawa, Motoyuki; Watanabe, Toshiyasu; and Wakui, Natsuko, to Mitsubishi Gas Chemical Company, Inc. Recovery of cobalt component from 3-pentenoic ester synthesis. 4,350,668, Cl. 423-139.000.
Itagaki, Hidehiko; and Suzuki, Yuji, to Komatsu Zenoah Co. Cutting down machine. 4,349,962, Cl. 30-276.000.
Itagaki, Takaharu; and Ouchi, Hidenaga, to Mitsubishi Chemical Industries, Limited. Weakly acidic cation exchange resin and process for producing same. 4,350,773, Cl. 521-31.000.
Italtel Societa Italiana Telecomunicazioni S.p.A.: *See*—
Leti, Andrea; and Valacca, Enrico, 4,351,020, Cl. 363-26.000.
Ito, Hiroshi; and Saito, Kazuo, to Tokico Ltd. Disc brake having a slidably supported caliper. 4,350,229, Cl. 188-73.450.
Ito, Jinichi: *See*—
Miyazaki, Kiyoshi; Takeuchi, Tsuneto; Ito, Jinichi; and Ashibe, Hiroo, 4,350,937, Cl. 318-331.000.
Ito, Yoshiaki: *See*—
Shimokawa, Wataru; Ito, Yoshiaki; Kobayashi, Koichi; Fukumori, Katuaki; and Iwase, Nobukazu, 4,350,788, Cl. 524-309.000.
Ito, Yoshikazu: *See*—
Shindo, Takemasa; Ito, Yoshikazu; and Arai, Kenichiro, 4,350,907, Cl. 310-37.000.
ITT Industries, Inc.: *See*—
Luepertz, Hans-Henning, 4,350,228, Cl. 188-71.900.
Lupertz, Hans-Henning, 4,350,395, Cl. 303-6.00C.
Thiel, Rudolf, 4,350,076, Cl. 91-369.00A.
Young, John M.; and Scovell, Peter D., 4,350,537, Cl. 148-1.500.
Ivanov, Alexandr A.: *See*—
Alexandrov, Vyacheslav S.; Guschin, Alexandr E.; Zavodov, Rudolf V.; Zhukova, Elena I.; Ivanov, Alexandr A.; Fofanova, Tatyana S.; Mikhailov, Evgeny I.; Dianov, Ivan M.; Luzin, Pavel M.; Sergeev, Igor A.; Pankratova, Lidia A.; Krylova, Vera E.; and Leibenzon, Semen A., 4,350,482, Cl. 425-83.100.
Ivey, John S.: *See*—
Miller, Alan L.; and Ivey, John S., 4,350,058, Cl. 74-866.000.
Iwamoto, Hisao; and Wakatsuki, Noboru, to Fujitsu Limited. Surface acoustic wave device. 4,350,963, Cl. 333-151.000.
Iwasaki, Motoaki: *See*—
Matsuda, Akira; Havakawa, Yoshihiro; Yasuda, Shigeo; Iwasaki, Motoaki; and Nishino, Hiroshi, 4,350,854, Cl. 200-61.250.
Iwase, Nobukazu: *See*—
Shimokawa, Wataru; Ito, Yoshiaki; Kobayashi, Koichi; Fukumori, Katuaki; and Iwase, Nobukazu, 4,350,788, Cl. 524-309.000.
Iwashita, Tomonori; and Fukushima, Tadahide, to Canon Kabushiki Kaisha. Camera assembly with automatic winding mechanism. 4,350,424, Cl. 354-173.000.
Izumi, Jun; and Murakami, Nobuaki, to Mitsubishi Jukogyo Kabushiki Kaisha. Process for controlling nitrogen oxides in exhaust gases. 4,350,669, Cl. 423-235.000.
Izumi, Masao, to Nissan Motor Company, Limited. Refrigerant evaporator. 4,350,025, Cl. 62-285.000.
J. E. Myles, Inc.: *See*—
Myles, J. Edgar, 4,350,091, Cl. 100-271.000.
J. Eberspacher: *See*—
Gaysert, Gerhard, 4,350,664, Cl. 422-179.000.
J. M. Ney Company, The: *See*—
Schaffer, Stephen P., 4,350,526, Cl. 75-134.00B.
Jackes-Evans Manufacturing Company: *See*—
Miller, Joseph N., 4,350,141, Cl. 126-287.000.
Jackson, Dale E., to Carrier Corporation. Cascaded fin winding machine control and method. 4,350,936, Cl. 318-7.000.
Jackson, Jasper A.; and Cooper, Richard K., to United States of America, Energy. Magnetic resonance apparatus. 4,350,955, Cl. 324-303.000.
Jackson, Winston J., Jr.; and Darnell, William R., to Eastman Kodak Company. Process for the preparation of poly(ester-carbonates). 4,350,805, Cl. 528-271.000.
Jagodzinski, Peter F.: *See*—
Field, Thomas R.; Jagodzinski, Peter F.; King, James F.; and Schaefer, John O., 4,350,453, Cl. 400-208.000.
James Howden Australia Pty. Limited: *See*—
Stephenson, Robert G., 4,350,100, Cl. 110-203.000.
Janicke, Johann; and Girardin, Roger, to Ateliers des Charmilles, S.A. Traveling wire EDM apparatus with automatic wire rethreading mechanism. 4,350,864, Cl. 219-69.00W.
Janirek, Ladislav; Hlavinka, Jaroslav; Hanacek, Josef; and Miculka, Zdenek, to Strojosvit. Apparatus for de-fleshing skins or hides. 4,350,029, Cl. 69-1.000.
Japan Foundation for Artificial Organs: *See*—
Malchesky, Paul S.; and Nose, Yukihiko, 4,350,156, Cl. 128-214.00R.

Jarnestedt, Goran A.: *See*—
Hedin, Jan S.; and Jarnestedt, Goran A., 4,351,061, Cl. 375-20.000.
Jarrell, Donald, to Jarrell, Donald; Logan, John G.; and Carpenter, Richard H., a part interest. Sewage treatment system. 4,350,587, Cl. 210-151.000.
Jarvis, Wilbur W.: *See*—
Dingler, Geoffrey L.; Jarvis, Wilbur W.; and Spiegel, Raymond W., 4,350,306, Cl. 241-46.150.
Jasper, William J., to Burroughs Corporation. Audio analog voltmeter. 4,350,951, Cl. 324-133.000.
Jayaraman, Anantharaman: *See*—
Vidal, Frederick D.; and Jayaraman, Anantharaman, 4,350,709, Cl. 426-319.000.
Jenkins, Jesse F.: *See*—
Zenner, Dennis W.; and Jenkins, Jesse F., 4,350,357, Cl. 280-79.300.
Jensen, Dal H.: *See*—
Barnard, Ralston W.; and Jensen, Dal H., 4,350,887, Cl. 250-265.000.
Jet-It-Done, Inc.: *See*—
Hamilton, Bert, Jr., 4,350,140, Cl. 126-276.000.
JGC Corporation: *See*—
Hashimoto, Noboru; and Akatsu, Mitsu, 4,350,665, Cl. 422-191.000.
Jimerson, Bruce D.; and Nakasone, Henry H. Electronic light switch. 4,350,903, Cl. 307-252.00B.
Jochum, Friedrich; Landsberg, Ernst; and Zachernack, Plano, to Walther & Cie Aktiengesellschaft. Rescue system on high rise buildings for evacuating persons in the case of fire. 4,350,224, Cl. 182-82.000.
Johansson, Anne S.; Hogman, Claes F.; and Hedlund, Kenneth G. Device for blood separation. 4,350,585, Cl. 210-94.000.
Johnson, Charles B.; and Abraham, Jimmy M., to International Telephone and Telegraph Corporation. Magnetically focused streak tube. 4,350,919, Cl. 313-99.000.
Johnson, Gary W.: *See*—
Hilson, David G.; Johnson, Gary W.; and Schoonejongen, Ronald J., 4,350,618, Cl. 252-514.000.
Johnson, Robert C., to Du Pont de Nemours, E. I., and Company. Method and apparatus for calorimetric differential thermal analysis. 4,350,446, Cl. 374-13.000.
Johnson, Ronald M., to Dev Tec Resources, Inc. Motor drive design. 4,350,430, Cl. 354-330.000.
Johnson, William S.; and Knepper, Ronald W., to International Business Machines Corp. Narrow channel length MOS field effect transistor with field protection region for reduced source-to-substrate capacitance. 4,350,991, Cl. 357-23.000.
Johnston, John W.: *See*—
Knutson, Richard K.; Webster, Bruce L.; Johnston, John W.; and Rispin, Peter P., 4,350,110, Cl. 114-243.000.
Jojima, Teruomi: *See*—
Fahmy, Mohamed A. H.; Fukuto, Tetsuo R.; and Jojima, Teruomi, 4,350,699, Cl. 424-263.000.
Jones, Carmen B., to United States of America, Air Force. Airfoil vibration test apparatus. 4,350,043, Cl. 73-579.000.
Jones, David N.; Burnett, Archibald L; and Miller, John C., to Union Carbide Corporation. Low-energy extruder-pump system. 4,350,657, Cl. 264-349.000.
Jones, Glenn C.: *See*—
McConnell, Richard L.; Trotter, Jimmy R.; and Jones, Glenn C., 4,350,807, Cl. 528-302.000.
McConnell, Richard L.; Trotter, Jimmy R.; and Jones, Glenn C., 4,350,808, Cl. 528-302.000.
Jones, Thaddeus M.: *See*—
Shah, Hasmukh R.; Jones, Thaddeus M.; and Hemingway, Bruce, 4,350,238, Cl. 194-1.00N.
Jones, Thomas B.; Morgan, Morris H.; and Dietz, Peter W., to General Electric Company. Magnetic field coupled spouted bed system. 4,349,967, Cl. 34-1.000.
Jorges, Shirley M.: *See*—
Hash, Juel T., 4,350,106, Cl. 112-410.000.
Josef Willmes GmbH: *See*—
Braun, Oskar, 4,350,089, Cl. 100-116.000.
Julius Blum Gesellschaft m.b.H.: *See*—
Rock, Erich; and Brunner, Josef, 4,349,941, Cl. 16-288.000.
Julke, Bernhard, to Engelbrecht & Lemmerbrock GmbH & Co. High-rise silos. 4,350,468, Cl. 414-325.000.
Julke, Elias: *See*—
Hartinger, Edmund; Julke, Elias; and Sandmann, Harald, 4,350,620, Cl. 252-628.000.
Junek, Hans; and Thierrichter, Burkhard, to Lonza Ltd. Process for the production of 4,6-diamino-5-cyano-3-aryl-isoxazolo [5,4-b] pyridines. 4,350,815, Cl. 546-115.000.
Junek, Hans; and Thierrichter, Burkhard, to Lonza Ltd. Process for the production of 4-amino-6-hydroxy-3-phenyl isoxazolo [5,4-b] pyridine-5-carbonitriles. 4,350,816, Cl. 546-116.000.
Jung, Johann: *See*—
Santer, Hubert; Zeeh, Bernd; Buschmann, Ernst; and Jung, Johann, 4,350,518, Cl. 71-88.000.
Jung, Margarete; and Winsel, August, to Varta Batterie Aktiengesellschaft. Hydrophobic catalyst for recombiners. 4,350,610, Cl. 252-429.00R.
Jung, Rolf: *See*—
Croseck, Hans-Henning; and Jung, Rolf, 4,350,486, Cl. 425-412.000.
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Hoffmann, Bernd; Jung, Siegfried; and Semmler, Hans-Joachim, 4,350,206, Cl. 169-47.000.
Kabushiki Kaisha Daini Seikosha: *See*—
Sato, Hirochika, 4,350,918, Cl. 310-367.000.
Toyokuni, Ryo, 4,350,961, Cl. 331-158.000.
Kabushiki Kaisha Kawai Gakki Seisakusho: *See*—
Kondo, Nobuaki, 4,350,071, Cl. 84-1.030.
Kabushiki Kaisha Kobe Seiko Sho: *See*—
Taguchi, Kazumasa; Isako, Hiroshi; Ikeda, Koichi; Honda, Keisuke; Kanemoto, Masaru; and Hanaoka, Keishiro, 4,350,523, Cl. 75-0.50R.
Kabushiki Kaisha Sankyo Seiki Seisakusho: *See*—
Miyazaki, Kiyoshi; Takeuchi, Tsuneto; Ito, Jinichi; and Ashibe, Hiroo, 4,350,937, Cl. 318-331.000.
Kabushiki Kaisha Suwa Seikosha: *See*—
Aoki, Shigeru, 4,351,040, Cl. 368-88.000.
Shindo, Takemasa; Ito, Yoshikazu; and Arai, Kenichiro, 4,350,907, Cl. 310-37.000.
Kaco GmbH & Co.: *See*—
Heinrich, Richard, 4,350,347, Cl. 277-153.000.
Kadija, Igor V., to Olin Corporation. Current distributors for reticulate electrodes. 4,350,580, Cl. 204-279.000.
Kagari, Yoshiharu: *See*—
Suzuki, Shigeru; Suzuki, Minoru; Suzuki, Koichi; Omi, Kyoji; Nagahara, Yasumori; Kagari, Yoshiharu; Hashimoto, Makoto; and Mori, Goro, 4,350,750, Cl. 430-125.000.
Kahn, Marvin L.; and Eapen, Kuttikandathil E., to Rich Products Corporation. Methods of infusing fruits. 4,350,711, Cl. 426-102.000.
Kajitani, Makoto: *See*—
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Kalan, Gary L.; and Ipsen, Peter G., to General Electric Company. Air-sealed oil deflector. 4,350,345, Cl. 277-3.000.
Kalmykov, Anatoly M.: *See*—
Antipov, Georgy A.; Gelfand, Mikhail L.; Tsipenjuk, Yakov I.; Goldshtein, Boris G.; Lavnikov, Nikolai S.; Teres, Leonid N.; Urazhdin, Ivan I.; Yakubovsky, Petr S.; Boiko, Vitaly T.; Kalmykov, Anatoly M.; Minyashkin, Dmitry P.; and Stepanov, Mikhail M., 4,350,213, Cl. 173-93.600.
Kamekawa, Kunio: *See*—
Kitano, Akihiro; and Kamekawa, Kunio, 4,350,124, Cl. 123-198.00R.
Kamioka, Nobuo, to Akebono Brake Industry Co., Ltd. Sintered alloy for friction materials. 4,350,530, Cl. 75-231.000.
Kamiya, Takashi; and Teraji, Tsutomu, to Fujisawa Pharmaceutical Co., Ltd. 3,7-Disubstituted-3-cephem-4-carboxylic acids. 4,350,692, Cl. 424-246.000.
Kanao, Shiro. Flexible hose. 4,350,547, Cl. 156-143.000.
Kanda, Mutsumi; Nakanishi, Kiyoshi; and Inoue, Tokuta, to Toyota Jidosha Kogyo Kabushiki Kaisha. Fuel injection type internal combustion engine. 4,350,125, Cl. 123-261.000.
Kaneko, Makoto: *See*—
Suzuki, Hideo; and Kaneko, Makoto, 4,350,068, Cl. 84-1.010.
Kaneko, Shinichi: *See*—
Sutoh, Shinji; Harada, Takeshi; and Kaneko, Shinichi, 4,350,286, Cl. 236-44.00A.
Kaneko, Shunji, to Toyo Seikan Kaisha, Ltd. Easy-open can cap with a ring pull tab. 4,350,262, Cl. 220-273.000.
Kanemoto, Masaru: *See*—
Taguchi, Kazumasa; Isako, Hiroshi; Ikeda, Koichi; Honda, Keisuke; Kanemoto, Masaru; and Hanaoka, Keishiro, 4,350,523, Cl. 75-0.50R.
Kang, Kenneth S.; and Veeder, George T., to Merck & Co., Inc. *Klebsiella pneumoniae*, ATCC 31488. 4,350,769, Cl. 435-243.000.
Kao Soap Co., Ltd.: *See*—
Kuroasaki, Tomihiro; and Manbe, Akio, 4,350,645, Cl. 260-978.000.
Kaplienko, Igor P.: *See*—
Pokhodnya, Igor K.; Shlepakov, Valery N.; Alter, Vladimir F.; Ovcharenko, Nikolai T.; Kaplienko, Igor P.; and Rak, Petr I., 4,350,311, Cl. 242-83.000.
Kappler, Ulrich: *See*—
Kritzler, Helmuth; Bohm, Walter; Kappler, Ulrich; and Winkelmann, Hans D., 4,350,573, Cl. 203-86.000.
Kariya, Masatane; and Tomizawa, Akimori, to Clarion Company, Ltd. Data transmission system. 4,350,848, Cl. 179-2.0DP.
Karl, Horst: *See*—
Engelsmann, Dieter; Nicko, Reinhard; Bittner, Wilfried; and Karl, Horst, 4,350,423, Cl. 354-173.000.
Karube, Isao: *See*—
Suzuki, Shuichi; and Karube, Isao, 4,350,763, Cl. 435-29.000.
Kasahara, Masatoshi: *See*—
Sagae, Syoji; Matsuda, Yasumasa; Kasahara, Masatoshi; and Suzuki, Masayoshi, 4,350,989, Cl. 346-140.00R.
Kastner, Gerhard; Siegel, Hardo; and Geiss, Karl-Heinz, to BASF Aktiengesellschaft. Preparation of phenylacetonitriles carrying basic substituents. 4,350,636, Cl. 549-435.000.
Kasui, Toshikatsu: *See*—
Takahashi, Yosuke; Akasaka, Hideki; Kasui, Toshikatsu; and Niwa, Tatsuo, 4,350,414, Cl. 350-357.000.
Katakura, Hiroshi; and Nagoshi, Mitsuru, to Konishiroku Photo Industry Co., Ltd. Sheet feeding apparatus. 4,350,328, Cl. 271-22.000.
Katayama, Hideo: *See*—
Fujii, Hiroo; Tanaka, Kiyoaki; Nakamura, Masashi; Okuno, Ryuzo; Hashizume, Shigeyuki; Katayama, Hideo; and Fujita, Tsutomu, 4,350,326, Cl. 266-201.000.
Katayama, Yasunori: *See*—
Sakata, Kazuhiro; Yuminaka, Takeo; Nakazato, Masao; Yoneda, Kenji; Kuzunuki, Soshiro; and Katayama, Yasunori, 4,350,225, Cl. 187-29.00R.

Kato, Akira: *See*—
Matsuda, Shimpei; Kato, Akira; Mori, Toshikatsu; Kumagai, Teruo; Hishinuma, Yukio; Akimoto, Hidetoshi; and Nakajima, Fumito, 4,350,670, Cl. 423-244.000.
Kato, Jyoji: *See*—
Chibata, Ichiro; Kato, Jyoji; and Wada, Mitsuru, 4,350,765, Cl. 435-161.000.
Kato, Matsuo; Ohtsuki, Tomonari; Igarashi, Yoshiaki; Saito, Tsukasa; and Suzuki, Toshiaki, to Bunker Ramo Corporation. Connector keying device. 4,350,409, Cl. 339-186.00M.
Kato, Shogo: *See*—
Kitai, Kiyoshi; Morino, Yukio; Kato, Shogo; and Watanabe, Masanori, 4,350,427, Cl. 354-238.000.
Kato, Toshio: *See*—
Nagai, Shosuke; Kato, Toshio; Iguchi, Chojiro H.; Kawashima, Nobuyuki; Mita, Ryuichi; Yamaguchi, Akihiro; and Takano, Takao, 4,350,643, Cl. 260-465.700.
Katoogi, Masayuki, to Moriyama Sangyo Kabushiki Kaisha. Fluorescent lighting device. 4,350,929, Cl. 315-49.000.
Kawai, Hisasi: *See*—
Yoshinaga, Toru; Igashira, Toshihiko; Mori, Kouichi; Kawai, Hisasi; and Morino, Seiji, 4,350,137, Cl. 123-617.000.
Kawai Musical Instrument Mfg. Co., Ltd.: *See*—
Deutsch, Ralph, 4,350,072, Cl. 84-1.240.
Kawai, Syuji; Yamane, Tadayuki; Abe, Michio; Ono, Toshihiko; and Yamauchi, Shuji, to Kuraray Co., Ltd.; and Kawasumi Laboratories, Inc. Blood purification using plural ultrafiltration stages. 4,350,594, Cl. 210-637.000.
Kawakami, Nobuyoshi: *See*—
Hamada, Isao; Nakayama, Hiroshi; Kawakami, Nobuyoshi; Azami, Hirotaka; Ikeda, Tadasu; Yukawa, Yasumasa; Mitani, Hiroshi; Ohmori, Takashi; Kimura, Masanobu; and Seno, Kohichi, 4,350,510, Cl. 55-349.000.
Kawasaki Jukogyo Kabushiki Kaisha: *See*—
Fujii, Hiroo; Tanaka, Kiyoaki; Nakamura, Masashi; Okuno, Ryuzo; Hashizume, Shigeyuki; Katayama, Hideo; and Fujita, Tsutomu, 4,350,326, Cl. 266-201.000.
Kawasaki Steel Corporation: *See*—
Fujii, Hiroo; Tanaka, Kiyoaki; Nakamura, Masashi; Okuno, Ryuzo; Hashizume, Shigeyuki; Katayama, Hideo; and Fujita, Tsutomu, 4,350,326, Cl. 266-201.000.
Tsujimoto, Eiichi; Hirahara, Hiroshi; and Matsumoto, Makoto, 4,350,004, Cl. 53-570.000.
Kawasaki, Teruo: *See*—
Kogawa, Kouichi; Kawasaki, Teruo; and Nomura, Hiroyuki, 4,350,901, Cl. 307-10.00R.
Kawashima, Nobuyuki: *See*—
Nagai, Shosuke; Kato, Toshio; Iguchi, Chojiro H.; Kawashima, Nobuyuki; Mita, Ryuichi; Yamaguchi, Akihiro; and Takano, Takao, 4,350,643, Cl. 260-465.700.
Kawasumi Laboratories, Inc.: *See*—
Kawai, Syuji; Yamane, Tadayuki; Abe, Michio; Ono, Toshihiko; and Yamauchi, Shuji, 4,350,594, Cl. 210-637.000.
Kawata, Shoji; Hattori, Kyo; and Sakurai, Kazuhiro, to Aisin Seiki Kabushiki Kaisha; and Toyota Jidosha Kogyo Kabushiki Kaisha. Control for an electromagnetic solenoid valve. 4,350,319, Cl. 251-65.000.
Kawauchi, Noboru: *See*—
Kuwabara, Eiji; Sakata, Takayoshi; Kawauchi, Noboru; Ide, Yuuichi; and Matsuo, Takeshi, 4,350,023, Cl. 62-176.00E.
Kay, David B.; and Wheeless, Leon L., Jr., to Research Corporation. X'-, Y'-, Z'-axis multidimensional slit-scan flow system. 4,350,892, Cl. 250-461.200.
Kayano, Masanori: *See*—
Mizuno, Yasuhiko; and Kayano, Masanori, 4,350,679, Cl. 424-38.000.
Kearton, Gloria M.; and Kearton, Malcolm C. Women's brassiers and other similar dress. 4,350,162, Cl. 128-477.000.
Kearton, Malcolm C.: *See*—
Kearton, Gloria M.; and Kearton, Malcolm C., 4,350,162, Cl. 128-477.000.
Keen, Ralph O., to Taper Line, Inc. Method of locking a male member to a female member. 4,349,955, Cl. 29-526.00R.
Keith, Alec D.; and Snipes, Wallace, to Research Corporation. Inactivation of lipid containing viruses with butylated hydroxytoluene. 4,350,707, Cl. 424-346.000.
Keller, Karl-Heinz: *See*—
Albrecht, Ernst; Hensel, Reiner; Keller, Karl-Heinz; and Stahlschmitt, Horst, 4,350,105, Cl. 112-256.000.
Kelley, William J.: *See*—
Kilroy, Eugene J.; Kelley, William J.; and Crain, Philip W., 4,349,983, Cl. 46-12.000.
Kember, Peter N.: *See*—
Robinson, Grenville A.; Kember, Peter N.; and Burns, Derek K., 4,350,660, Cl. 422-90.000.
Kemmel, Alexander. Arrangement for holding cigarettes. 4,350,171, Cl. 131-234.000.
Kemp, David M.: *See*—
Skoli, Sigmund P.; Kemp, David M.; and Mojonnier, Harry G., 4,350,503, Cl. 55-165.000.
Kendall, Elizabeth Virginia: *See*—
Kendall, Robert W., 4,350,052, Cl. 73-863.860.
Kendall, Robert W., to Kendall, Elizabeth Virginia. Apparatus and method for tapping and extracting oil samples from an underground high pressure pipe-type transmission cable system. 4,350,052, Cl. 73-863.860.
Kennametal Inc.: *See*—
Friedline, Ernest J., 4,350,463, Cl. 409-234.000.
Kennecott Corporation: *See*—
Knoepke, John R.; and George, David B., 4,350,524, Cl. 75-63.000.
Kennedy, Alvin B., Jr. Method and apparatus for recovering waste oil. 4,350,596, Cl. 210-708.000.
Kepner, Nancy: *See*—
Lipton, Allan; and Kepner, Nancy, 4,350,687, Cl. 424-177.000.
Kerber, Helmut: *See*—
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Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung: *See*—
Zimmermann, Ulrich; Saleemuddin, Mohammed; and Pilwat, Gunter, 4,350,767, Cl. 435-183.000.
Kernforschungszentrum Karlsruhe Gesellschaft mit beschrankter Haftung: *See*—
Vollath, Dieter, 4,350,884, Cl. 250-204.000.
Kerwin, Kenneth H., II: *See*—
Helgeland, Walter; Teverovsky, Alex; Kerwin, Kenneth H., II; and Chartier, Carl P., 4,350,560, Cl. 156-617.0SP.
Kesling, Peter C.; and Henderlong, Dennis B., to TP Laboratories, Inc. Lock pin. 4,350,487, Cl. 433-14.000.
Kessler, Stephen B., to Becton, Dickinson and Company. Assembly, compositions and method for separating blood. 4,350,593, Cl. 210-516.000.
Keuffel & Esser Company: *See*—
Popoff, Andrew, 4,350,555, Cl. 156-540.000.
Khutoretsky, Garry M.; Tjurin, Jury G.; Drozdova, Larisa A.; and Belova, Tamara N. Electrical machine stator. 4,350,910, Cl. 310-64.000.
Kiefer, Joseph H., to United States of America, Energy. Method of automatically welding with a non-consumable electrode. 4,350,869, Cl. 219-137.00R.
Kightlinger, Drew A.: *See*—
Dials, Edward N.; and Kightlinger, Drew A., 4,350,452, Cl. 400-208.000.
Kikka, Oliver A.; and Day, Donald R., to Standard Oil Company. Carbon electrodes having a low coefficient of thermal expansion. 4,351,056, Cl. 373-88.000.
Kikuta, Masaaki, to Nissan Motor Co., Ltd. Instrument board mounting structure. 4,350,383, Cl. 296-72.000.
Kilo-Wattch-Dog, Inc.: *See*—
Knauer, Joseph; and Moskowitz, Howard, 4,350,337, Cl. 273-43.00A.
Kilroy, Eugene J.; Kelley, William J.; and Crain, Philip W., to Mattel, Inc. Playset for toy vehicles. 4,349,983, Cl. 46-12.000.
Kim, Dong H.; and McCaully, Ronald J., to American Home Products Corporation. N-(2-Substituted-1-oxoalkyl)-2,3-dihydro-1H-indole-2-carboxylic acid derivatives. 4,350,633, Cl. 260-326.11R.
Kimball International, Inc.: *See*—
Howell, Stephen L., 4,350,069, Cl. 84-1.030.
Kimpel, Gunter, to Staedtler, J. S. Thermoplastic eraser. 4,350,787, Cl. 524-302.000.
Kimura, Akiteru: *See*—
Osada, Hajime; Kimura, Akiteru; Shimizu, Tokuo; Kitajima, Goro; Tomizawa, Yoshio; Kondo, Makoto; Motoyama, Kazuyasu; and Daigaku, Masaaki, 4,351,009, Cl. 360-105.000.
Kimura, Kunio: *See*—
Nishino, Atsushi; Kimura, Kunio; Sonetaka, Kazunori; and Takeuchi, Yasuhiro, 4,350,613, Cl. 252-455.00R.
Kimura, Masanobu: *See*—
Hamada, Isao; Nakayama, Hiroshi; Kawakami, Nobuyoshi; Azami, Hirotaka; Ikeda, Tadasu; Yukawa, Yasumasa; Mitani, Hiroshi; Ohmori, Takashi; Kimura, Masanobu; and Seno, Kohichi, 4,350,510, Cl. 55-349.000.
Kincaid, John F.; and Reed, Russell, Jr., to United States of America, Navy. Bonding agent for HMX (cyclotetramethylenetetranitramine). 4,350,542, Cl. 149-11.000.
King, Dennis M., to Caterpillar Tractor Co. Torque spring adjustment mechanism. 4,350,127, Cl. 123-364.000.
King, James F.: *See*—
Field, Thomas R.; Jagodzinski, Peter F.; King, James F.; and Schaefer, John O., 4,350,453, Cl. 400-208.000.
King Reel Proprietary Limited: *See*—
Brodribb, Marcus T.; and Brodribb, Antony G., 4,349,977, Cl. 43-15.000.
Kinoshita, Kyoichi; and Kobayashi, Morio, to Nippon Telegraph & Telephone Public Corporation. Fusion splicing of multi-layer optical fiber bundles. 4,350,867, Cl. 219-121.0LC.
Kiritani, Takeshi: *See*—
Ishijima, Shizuo; Kiritani, Takeshi; and Hayashi, Yukio, 4,350,535, Cl. 106-308.00Q.
Kirk, Richard L.: *See*—
Crossman, Richard L.; and Kirk, Richard L., 4,350,231, Cl. 188-218.0XL.
Kishi, Norimasa; and Suzuki, Tadashi, to Nissan Motor Co., Ltd. Shift control system for a vehicle automatic transmission. 4,350,057, Cl. 74-866.000.
Kitai, Kiyoshi; Morino, Yukio; Kato, Shogo; and Watanabe, Masanori, to Seiko Koki Kabushiki Kaisha. Electromagnetic shutter release device for cameras. 4,350,427, Cl. 354-238.000.
Kitajima, Goro: *See*—
Osada, Hajime; Kimura, Akiteru; Shimizu, Tokuo; Kitajima, Goro; Tomizawa, Yoshio; Kondo, Makoto; Motoyama, Kazuyasu; and Daigaku, Masaaki, 4,351,009, Cl. 360-105.000.

Kitajima, Satoyuki: *See*—
Imai, Ichiro; Furuya, Takashi; Ando, Narumi; and Kitajima, Satoyuki, 4,350,538, Cl. 148-12.00D.

Kitamura, Shigeki: *See*—
Akiyama, Masatoshi; Kitamura, Shigeki; Tetsu, Junichi; and Nakazato, Koichi, 4,350,514, Cl. 65-36.000.

Kitamura, Shinichi: *See*—
Hamano, Sachiyuki; Kitamura, Shinichi; Igarashi, Toshiji; and Nakajima, Yoshikage, 4,350,705, Cl. 424-278.000.

Kitano, Akihiro; and Kamekawa, Kunio, to Yamaha Hatsudoki Kabushiki Kaisha. Overflow device for vehicular carburetor. 4,350,124, Cl. 123-198.00R.

Kitano, Shigeru: *See*—
Mochizuki, Daisuke; and Kitano, Shigeru, 4,351,008, Cl. 360-40.000.

Kiuchi, Hideo; and Kobayashi, Nobuyuki, to Toyota Jidosha Kogyo Kabushiki Kaisha. Fuel injection device of an internal combustion engine. 4,350,131, Cl. 123-453.000.

Kiwala, Jacob; Tokarzewski, Richard J.; Schmitt, Frederick L.; and Sprecker, Mark A., to International Flavors & Fragrances Inc. Cyclobexyl phenethylether and uses thereof in combatting tobacoo beetles and in augmenting or enhancing the aroma of perfumes, colognes and perfumed articles. 4,350,733, Cl. 428-290.000.

Kiyohara, Takehiko: *See*—
Imai, Nobuhiro; Kono, Kimio; Hoshito, Kazuo; Kiyohara, Takehiko; and Sato, Hideaki, 4,351,005, Cl. 358-300.000.

Kladders, Heinrich: *See*—
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Klag, Gunther: *See*—
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Klar, Erhard: *See*—
Ro, David H.; Klar, Erhard; and Whitman, Charles I., 4,350,529, Cl. 75-228.000.

Kleiber & Schulz, Inc.: *See*—
Schulz, Adalbert; and Borchert, Werner, 4,350,202, Cl. 165-95.000.

Klein, Erwin, to BBC Brown, Boveri & Company, Limited. Cooling device for electrical and/or electronic component elements producing lost heat and a procedure for operating such. 4,350,026, Cl. 62-333.000.

Klemarczyk, Philip T.; Sanders, James M.; Vock, Manfred H.; Vinals, Joaquin F.; Schmitt, Frederick L.; and Granda, Edward J., to International Flavors & Fragrances Inc. Carbomethoxy methyl norbornanes. 4,350,823, Cl. 560-120.000.

Klessig, Clarence E.: *See*—
Fleischmann, Gary A.; and Klessig, Clarence E., 4,349,940, Cl. 16-110.00R.

Kline, Larry Harold: *See*—
Brown, William L., 4,350,194, Cl. 150-1.50C.

Kloss, Gerhard: *See*—
Molter, Michael; and Kloss, Gerhard, 4,350,674, Cl. 424-1.000.

Klutts, James H. Apparatus for dispensing a chemical into a fluid. 4,350,666, Cl. 422-263.000.

Knapp, Milton E.: *See*—
Kristapovich, Paul J.; and Knapp, Milton E., 4,350,022, Cl. 62-174.000.

Knauer, Joseph; and Moskowitz, Howard, to Kilo-Wattch-Dog, Inc. Energy saving arrangement for bowling apparatus. 4,350,337, Cl. 273-43.00A.

Knauer, Karl, to Siemens Aktiengesellschaft. Input stage for a monolithically integrated charge transfer device which generates two complementary charge packets. 4,350,902, Cl. 307-221.00D.

Kneip, George D.; Brosbear, John H.; and Anderson, Marvin H., to Varian Associates, Inc. Cryostat structure. 4,350,017, Cl. 62-50.000.

Knepper, Ronald W.: *See*—
Johnson, William S.; and Knepper, Ronald W., 4,350,991, Cl. 357-23.000.

Knestele, Leopold. Rug and carpet cleaning apparatus. 4,349,935, Cl. 15-320.000.

Knight, Clifford, to Xerox Corporation. Sheet handling apparatus. 4,350,332, Cl. 271-188.000.

Knight, Lindsay C.; Phillips, Robert B.; Bowyer, William H.; and Moxley, Bruce, to Australasian Training Aids, Pty., Ltd. Projectile position detection apparatus. 4,350,881, Cl. 235-400.000.

Knoche, Raymond E., to Bohn & Dawson. Wheelchair brake assembly. 4,350,227, Cl. 188-2.00F.

Knoepke, John R.; and George, David B., to Kennecott Corporation. Process for removal of base metal impurities from molten silver with sulfur hexafluoride. 4,350,524, Cl. 75-63.000.

Knowlton, Floyd M. Interim preservation of surface coating applicators. 4,350,658, Cl. 422-40.000.

Knutson, Richard K.; Webster, Bruce L.; Johnston, John W.; and Rispin, Peter P., to United States of America, Navy. Integrated faired towline with integral locking feature. 4,350,110, Cl. 114-243.000.

Kobayashi, Koichi: *See*—
Shimokawa, Wataru; Ito, Yoshiaki; Kobayashi, Koichi; Fukumori, Katsuaki; and Iwase, Nobukazu, 4,350,788, Cl. 524-309.000.

Kobayashi, Morio: *See*—
Kinoshita, Kyoichi; and Kobayashi, Morio, 4,350,867, Cl. 219-121.0LC.

Kobayashi, Nobuyuki: *See*—
Kiuchi, Hideo; and Kobayashi, Nobuyuki, 4,350,131, Cl. 123-453.000.

Koch Process Systems, Inc.: *See*—
Holmes, Arthur S.; and Ryan, James M., 4,350,511, Cl. 62-17.000.

Kochackis, Donald G. Vending machine lock security cover. 4,350,032, Cl. 70-427.000.

Kocharian, Alfred; and Spector, George. Frozen beverage stick including retractable cup. 4,350,712, Cl. 426-134.000.

Kock, Klaus: *See*—
Schmoldt, Harm; Kock, Klaus; and Strathmann, Heinrich, 4,350,581, Cl. 204-301.000.

Kockums Industri AB: *See*—
Adolfsson, Bertil, 4,350,188, Cl. 144-2.00Z.

Kodaka, Tatsuya. Steam pressure-propelled toy. 4,349,985, Cl. 46-95.000.

Koehler, Robert L. Adjustable wrench. 4,350,063, Cl. 81-64.000.

Koenig, Fredrick, to General Electric Company. Methods and apparatus for feeding and handling electrical phase insulators for dynamoelectric machines. 4,349,956, Cl. 29-596.000.

Kogawa, Kouichi; Kawasaki, Teruo; and Nomura, Hiroyuki, to Nissan Motor Company, Limited. Control circuit for electronic meter in an automotive vehicle. 4,350,901, Cl. 307-10.00R.

Kohlensaure-Werke Rud. Buse GmbH & Co.: *See*—
Frank, Karl; and Marnette, Ewald, 4,350,018, Cl. 62-54.000.

Kohler Co.: *See*—
Fleischmann, Gary A.; and Klessig, Clarence E., 4,349,940, Cl. 16-110.00R.

Koitabashi, Takeo; Matsuzaka, Syozi; Iijima, Toshifumi; and Harada, Tetsuya, to Konishiroku Photo Industry Co., Ltd. Photographic emulsion containing copper halide host crystals. 4,350,758, Cl. 430-567.000.

Kojima, Kunio: *See*—
Hasegawa, Yo; Yasuda, Shigeru; and Kojima, Kunio, 4,350,741, Cl. 428-473.500.

Kolarik, Oldrich S., to Mack Trucks, Inc. Piston ring and groove assemblies. 4,350,352, Cl. 277-216.000.

Kolb, Eugen; and Srock, Rainer, to Ing. h.c.F. Porsche Aktiengesellschaft. Roll bar for vehicles, especially motor vehicles. 4,350,367, Cl. 280-756.000.

Kolesov, Evgeny V.; Smirnov, Boris A.; Fedotov, Vladimir M.; and Lipovsky, Iosif L. Instrument for establishing vascular anastomoses. 4,350,160, Cl. 128-334.00R.

Kollmann, Bernd: *See*—
Muller, Erwin; Kollmann, Bernd; Sonnabend, Ferdinand; Petzolt, Gert; Balz, Josef; Walloschek, Bernhard; and Risse, Friedrich, 4,349,948, Cl. 29-157.10R.

Komatsu Zenoah Co.: *See*—
Itagaki, Hidehiko; and Suzuki, Yuji, 4,349,962, Cl. 30-276.000.

Kondo, Makoto: *See*—
Osada, Hajime; Kimura, Akiteru; Shimizu, Tokuo; Kitajima, Goro; Tomizawa, Yoshio; Kondo, Makoto; Motoyama, Kazuyasu; and Daigaku, Masaaki, 4,351,009, Cl. 360-105.000.

Kondo, Nobuaki, to Kabushiki Kaisha Kawai Gakki Seisakusho. Automatic accompaniment circuit. 4,350,071, Cl. 84-1.030.

Kondo, Teruhisa: *See*—
Watanabe, Nobuatsu; Kondo, Teruhisa; and Ishiguro, Jiro, 4,350,576, Cl. 204-101.000.

Kondoh, Shiroh, to Ricoh Company Ltd. Development apparatus for developing latent electrostatic images. 4,350,432, Cl. 355-3.0DD.

Koneke, Johannes: *See*—
Schulz, Horst-Hermann; and Koneke, Johannes, 4,350,398, Cl. 308-216.000.

Konishiroku Photo Industry Co., Ltd.: *See*—
Ishiyama, Shozo, 4,350,416, Cl. 350-427.000.
Katakura, Hiroshi; and Nagoshi, Mitsuru, 4,350,328, Cl. 271-22.000.
Koitabashi, Takeo; Matsuzaka, Syozi; Iijima, Toshifumi; and Harada, Tetsuya, 4,350,758, Cl. 430-567.000.

Kono, Kimio: *See*—
Imai, Nobuhiro; Kono, Kimio; Hoshito, Kazuo; Kiyohara, Takehiko; and Sato, Hideaki, 4,351,005, Cl. 358-300.000.

Kopp, Reiner; and Hornauer, Klaus-Peter. Method of shaping objects by means of a solid-particle blast applied to one side thereof. 4,350,035, Cl. 72-53.000.

Kortech Engineering, Inc.: *See*—
Allen, Ralph A.; and Zylkowski, John T., 4,350,401, Cl. 339-65.000.

Kosack, Gunter; and Emmerich, Heinz, to Solo Kleinmotoren GmbH. Hand-held power tool with a combustion motor. 4,350,123, Cl. 123-2.000.

Kotobuki Seihan Printing Co., Ltd.: *See*—
Saitoh, Joichi, 4,350,735, Cl. 428-328.000.

Kotula, Frank T.; and Hilgemann, Marvin E. Herbicide dispensing apparatus. 4,349,988, Cl. 47-1.500.

Kovacik, James D.: *See*—
Kovacik, James W.; Kovacik, James D.; Blanch, Thomas J.; and Blanch, Paul S., 4,350,850, Cl. 191-12.20R.

Kovacik, James W.; Kovacik, James D.; Blanch, Thomas J.; and Blanch, Paul S., to Alert Stamping & Manufacturing Company, Inc. Self-switching electric cord reel. 4,350,850, Cl. 191-12.20R.

Kovacs, Sandor, to Vasipari Kutato Intezet. Measuring journal for the conversion of force to electric signal. 4,350,048, Cl. 73-862.540.

Koyata, Kenji: *See*—
Kubota, Tetsumaru; and Koyata, Kenji, 4,350,150, Cl. 128-6.000.

Kramer, Petrus J. A., to Estel Hoogovens B.V. Method of removal of slag deposits from the bottom of a furnace. 4,350,324, Cl. 266-44.000.

Kranz, Joachim: *See*—
Fechner, Wolf D.; Kranz, Joachim; and Polster, Rudolf, 4,350,534, Cl. 106-288.00Q.

Kreder, Hans; and Weislogel, Horst. Arrangement for aligning a material web, particularly a veneer web. 4,350,276, Cl. 226-16.000.

Kreeley, Bruce K., to Singer Company, The. Valve coupling member. 4,350,181, Cl. 137-614.000.
Kristapovich, Paul J.; and Knapp, Milton E., to Crepaco, Inc. Refrigerant transfer system. 4,350,022, Cl. 62-174.000.
Kritzer, Richard W. Method of making heat exchangers. 4,349,949, Cl. 29-157.30A.
Kritzler, Helmuth; Bohm, Walter; Kappler, Ulrich; and Winkelmann, Hans D., to Bayer Aktiengesellschaft. Halogenated aromatic amines which are stable in color, and a process for their preparation. 4,350,573, Cl. 203-86.000.
Kronsbein, Dirk G. Cartridge filter. 4,350,592, Cl. 210-450.000.
Krull, Irwin H.: *See*—
Schwartz, Henry D.; Krull, Irwin H.; Clement, Carl J.; Stengel, Frederick H.; and Hayslett, David D., 4,350,579, Cl. 204-195.00R.
Krumwiede, John F., to PPG Industries, Inc. Glass melting method using cullet as heat recovery and particulate collection medium. 4,350,512, Cl. 65-27.000.
Krupp Polysius AG: *See*—
Heinemann, Otto; Schmits, Heinz-Herbert; Philipp, Rainer; and Berger, Artur, 4,350,244, Cl. 198-773.000.
Kruse, Stanley K. Smoke exhaust apparatus for a rotary welder. 4,350,280, Cl. 228-29.000.
Krylova, Vera E.: *See*—
Alexandrov, Vyacheslav S.; Guschin, Alexandr E.; Zavodov, Rudolf V.; Zhukova, Elena I.; Ivanov, Alexandr A.; Fofanova, Tatyana S.; Mikhailov, Evgeny I.; Dianov, Ivan M.; Luzin, Pavel M.; Sergeev, Igor A.; Pankratova, Lidia A.; Krylova, Vera E.; and Leibenzon, Semen A., 4,350,482, Cl. 425-83.100.
Kubota, Tetsumaru; and Koyata, Kenji, to Olympus Optical Co., Ltd. Structure of a light-receiving end portion of an endoscope light guide. 4,350,150, Cl. 128-6.000.
Kubota, Yutaka; and Sugimoto, Hitoshi, to Diesel Kiki Kabushiki Kaisha. Control circuit for a glow plug assembly serving as an engine preheating means. 4,350,876, Cl. 219-497.000.
Kuchler, Manfred; Duve, Gunther; and Ebigt, Joachim, to Hoechst Aktiengesellschaft. Aqueous plastic dispersion, a process for its preparation, its use and a sheet prepared from the plastic dispersion. 4,350,782, Cl. 523-334.000.
Kuehler, Christopher W.: *See*—
Rosenthal, Joel W.; Dahlberg, Arthur J.; and Kuehler, Christopher W., 4,350,582, Cl. 208-8.0LE.
Kuhlman, Ora F.; and Tobey, Samuel, to Technical Irrigation Products, Inc. Access sleeve for drip irrigation emitters. 4,350,296, Cl. 239-201.000.
Kuhn, William T., to Kuhn, William T.; Rose, Paul F.; and Rose, Thomas H., a part interest. Method and apparatus for controlling the speed of a traveling web. 4,350,275, Cl. 226-14.000.
Kuhnle, Ernst; and Schwarz, Josef, to Bizerba-Werke Wilhelm Kraut KG. Balance arm for flat weighing machines. 4,350,217, Cl. 177-246.000.
Kulhanek, Antonin: *See*—
Porta, Augusto; Fresnel, Jean-Marie; and Kulhanek, Antonin, 4,350,575, Cl. 204-84.000.
Kulieke, Fred C., Jr.: *See*—
Hanula, Richard M.; and Kulieke, Fred C., Jr., 4,350,256, Cl. 213-69.000.
Kumagai, Teruo: *See*—
Matsuda, Shimpei; Kato, Akira; Mori, Toshikatsu; Kumagai, Teruo; Hishinuma, Yukio; Akimoto, Hidetoshi; and Nakajima, Fumito, 4,350,670, Cl. 423-244.000.
Kumana, Cyrus R., to Cressington Investments Ltd. Steroid composition. 4,350,690, Cl. 424-243.000.
Kummer, Rudolf; Taglieber, Volker; Weis, Franz-Josef; and Schneider, Heinz-Walter, to BASF Aktiengesellschaft. Purification of carboxylic acid esters containing aldehydes and/or acetals. 4,350,572, Cl. 203-35.000.
Kuntz, J. David. Intervertebral disc prosthesis. 4,349,921, Cl. 3-1.000.
Kupper, Wolfgang: *See*—
Vester, Ewald; Grussaber, Rolf; Kupper, Wolfgang; and Glatzhoefer, Horst, 4,349,964, Cl. 33-264.000.
Kuraray Co., Ltd.: *See*—
Kawai, Syuji; Yamane, Tadayuki; Abe, Michio; Ono, Toshihiko; and Yamauchi, Shuji, 4,350,594, Cl. 210-637.000.
Kurosaki, Tomihiro; and Manba, Akio, to Kao Soap Co., Ltd. Method for producing a phosphoric monoester. 4,350,645, Cl. 260-978.000.
Kusakabe Denki Kabushiki Kaisha: *See*—
Hayashi, Shigeki; and Kusakabe, Mitsuo, 4,350,065, Cl. 83-287.000.
Kusakabe, Mitsuo: *See*—
Hayashi, Shigeki; and Kusakabe, Mitsuo, 4,350,065, Cl. 83-287.000.
Kuwabara, Eiji; Sakata, Takayoshi; Kawauchi, Noboru; Ide, Yuuichi; and Matsuo, Takeshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Air conditioning apparatus. 4,350,023, Cl. 62-176.00E.
Kuwabara, Kouji: *See*—
Sasaki, Kouji; Sugawara, Hiroyuki; Kuwabara, Kouji; Shirakura, Toshiharu; Takemori, Satoshi; and Ikemoto, Norio, 4,351,052, Cl. 372-58.000.
Kuwayama, Takeshi: *See*—
Seto, Susumu; Tokuhara, Mitsuhiro; Takemura, Yukio; Yamada, Yu; and Kuwayama, Takeshi, 4,350,433, Cl. 355-8.000.
Kuzunuki, Soshiro: *See*—
Sakata, Kazuhiro; Yuminaka, Takeo; Nakazato, Masao; Yoneda, Kenji; Kuzunuki, Soshiro; and Katayama, Yasunori, 4,350,225, Cl. 187-29.00R.
Kwasniak, Wesley. Raft knife. 4,349,960, Cl. 30-153.000.
LaBate, Micheal D. Prefabricated multiple density blast furnace runner. 4,350,325, Cl. 266-196.000.
Lace, Donald A. Check valve structure. 4,350,176, Cl. 137-242.000.
Lacrex Brevetti S.A.: *See*—
Pasbrig, Max, 4,350,335, Cl. 272-67.000.
Lacroix, Serge: *See*—
Chable, Yves A.; Lacroix, Serge; and Rault, Philippe M., 4,350,168, Cl. 128-736.000.
Laeis-Werke AG: *See*—
Croseck, Hans-Henning; and Jung, Rolf, 4,350,486, Cl. 425-412.000.
Lagarde, Pierre, to Imphy S.A. Method of marking and of identifying objects marked by electrically conducting elements. 4,350,883, Cl. 235-435.000.
Laine, Loic Y.: *See*—
Cannavo, Christian G.; Cousin, Georges; Espagnacq, Andre; Frayssac, Jacques X.; Laine, Loic Y.; Midrouillet, Daniel J.; Pintenat, Andre M.; and Reboux, Jean B., 4,350,096, Cl. 102-209.000.
Laing, Ingeborg: *See*—
Laing, Nikolaus; Laing, Ingeborg; and Laing, Oliver, 4,350,143, Cl. 126-415.000.
Laing, Nikolaus; Laing, Ingeborg; and Laing, Oliver. Solar power station having groups of solar collectors. 4,350,143, Cl. 126-415.000.
Laing, Oliver: *See*—
Laing, Nikolaus; Laing, Ingeborg; and Laing, Oliver, 4,350,143, Cl. 126-415.000.
Lama, William L.: *See*—
Avery, Stephen T.; Durbin, John A.; Lama, William L.; and Steibitz, Paul H., 4,351,019, Cl. 362-298.000.
Landa, Benzion, to Savin Corporation. Large-capacity sheet-stacking apparatus. 4,350,333, Cl. 271-217.000.
Landa, Benzion, to Savin Corporation. Synchronizing system for rapid-fire gun in a microballistic printer or the like. 4,350,447, Cl. 400-118.000.
Landaeus, Kjell G., to Lund Hydromaskin AB. Ram block. 4,350,214, Cl. 173-126.000.
Landauer, Franz: *See*—
Hesse, Wolfgang; Landauer, Franz; and Schmiedel, Klaus, 4,350,800, Cl. 525-480.000.
Landers, Donald F., to PSI Mobile Products, Inc. Self-centering trailer hitch. 4,350,362, Cl. 280-478.00A.
Landis, John M.: *See*—
Douty, George H.; Landis, John M.; and Ritchie, Leon T., 4,350,402, Cl. 339-74.00R.
Landsberg, Ernst: *See*—
Jochum, Friedrich; Landsberg, Ernst; and Zachernack, Plano, 4,350,224, Cl. 182-82.000.
Lane, Sandra M.: *See*—
Geelhood, Bruce D.; Mastny, Gary F.; Solomon, Jerry E.; Wesley, Edward J.; Lindner, Elek; Dooley, Carol A.; and Lane, Sandra M., 4,350,890, Cl. 250-372.000.
Lang, Siegfried: *See*—
Straub, Ferdinand; Lang, Siegfried; and Roake, Eckhard, 4,350,791, Cl. 525-123.000.
Lange International S.A.: *See*—
Everest, David C., III, 4,349,971, Cl. 36-121.000.
Langenberg, Werner: *See*—
Heberling, Walter; Muller, Wolfgang; Langenberg, Werner; Behrens, Gerhard; and Saul, Alfred, 4,350,393, Cl. 299-50.000.
Lantier, Frederic: *See*—
Pardon, Pierre; Lantier, Frederic; Marly, Jose; and Bourgy, Gerard, 4,350,684, Cl. 424-92.000.
Lar Machinerie Inc.: *See*—
Duchesne, Ghislain, 4,350,189, Cl. 144-2.00Z.
Larribe, Andre, to Societe Nationale Industrielle Aerospatiale. Device for moulding cylindrical pieces. 4,350,485, Cl. 425-389.000.
Lass, John L., to Square D Company. Cable lock for electrical outlet box. 4,350,839, Cl. 174-65.00G.
Laties, Alan M.; and Stone, Richard A. Ophthalmic use of carboxyfluorescein. 4,350,676, Cl. 424-7.000.
Lautensleger, Richard W.; Shepard, Richard D.; and Seaburg, Paul A., to Armco Inc. Integrated roof system. 4,349,996, Cl. 52-655.000.
Lavnikov, Nikolai S.: *See*—
Antipov, Georgy A.; Gelfand, Mikhail L.; Tsipenjuk, Yakov I.; Goldshtein, Boris G.; Lavnikov, Nikolai S.; Terea, Leonid N.; Urazhdin, Ivan I.; Yakubovsky, Petr S.; Boiko, Vitaly T.; Kalmykov, Anatoly M.; Minyashkin, Dmitry P.; and Stepanov, Mikhail M., 4,350,213, Cl. 173-93.600.
Layden, George K., Jr.; Bourdeau, Romeo G.; and Pike, Roscoe A., to United Technologies Corporation. Binderless carbon or graphite articles. 4,350,672, Cl. 423-445.000.
Layne, Richard C. Bumper seal. 4,349,992, Cl. 52-173.0DS.
Lazzari, Jean-Pierre, to Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme). Structure for multilayer circuits. 4,350,743, Cl. 428-622.000.
Lee, Joseph E. Drilling mud cleaning apparatus. 4,350,591, Cl. 210-384.000.
Lee, Kuo-Hsiung, to Research Corporation. Bruceolides. 4,350,638, Cl. 549-275.000.
Lees, David H.: *See*—
Dyson, David V.; Lees, David H.; Fenn, Michael A. F.; and Darley, Kenneth S., 4,350,713, Cl. 426-243.000.
Lehmann, J. C. Ludwig, to Binz GmbH & Co. Roof rack in particular for cross country vehicles, ambulances and the like. 4,350,471, Cl. 414-463.000.

Lehtinen, John G. Sectional wheel with relatively rotatable sections. 4,350,394, Cl. 301-38.00R.
Leibenzon, Semen A.: *See*—
Alexandrov, Vyacheslav S.; Guschin, Alexandr E.; Zavodov, Rudolf V.; Zhukova, Elena I.; Ivanov, Alexandr A.; Fofanova, Tatyana S.; Mikhailov, Evgeny I.; Dianov, Ivan M.; Luzin, Pavel M.; Sergeev, Igor A.; Pankratova, Lidia A.; Krylova, Vera E.; and Leibenzon, Semen A., 4,350,482, Cl. 425-83.100.
Lemanski, Michael F.; Bremer, Noel J.; and Milberger, Ernest C., to Standard Oil Company, The. Preparation of vanadium phosphorus catalysts using olefinic halogenated organic reaction media. 4,350,611, Cl. 252-435.000.
Lemin, Norman P. Animal handling apparatus. 4,350,121, Cl. 119-103.000.
Leon, Harry I. Threading die couple. 4,349,931, Cl. 10-123.00P.
Leonian, Armen L., to Beckman Instruments, Inc. Centrifugal elutriator rotor. 4,350,283, Cl. 233-26.000.
Lescarden Ltd.: *See*—
Balassa, Leslie L., 4,350,682, Cl. 424-64.000.
Lessoff, Howard: *See*—
Bottka, Nicholas; and Lessoff, Howard, 4,350,413, Cl. 350-356.000.
Lestradet, Maurice C. J. Vehicle equipped with a liquid spreader device. 4,350,293, Cl. 239-155.000.
Leti, Andrea; and Valacca, Enrico, to Italtel Societa Italiana Telecomunicazioni S.p.A. Circuit arrangement for equalizing waveforms of push-pull power supply. 4,351,020, Cl. 363-26.000.
Liberman, Salomon, to ASEA Aktiebolag. Directional wave detector apparatus. 4,351,011, Cl. 361-82.000.
Liberty Vinyl Corporation: *See*—
Winther, Howard A., 4,349,926, Cl. 5-452.000.
Licentia Patent-Verwaltungs-G.m.b.H.: *See*—
Redlich, Horst; Borchard, Heinz; and Ihlenburg, Rainer, 4,351,047, Cl. 369-270.000.
Lignes Telegraphiques et Telephoniques: *See*—
Gregoire, Michel; and Vuillemin, Jean C., 4,351,059, Cl. 375-10.000.
Lind, Erwin, to Hoechst Aktiengesellschaft. Electrophotographic process for the manufacture of printing forms or printed circuits including transfer of photoconductive coating from temporary support. 4,350,748, Cl. 430-49.000.
Linde Aktiengesellschaft: *See*—
Drahtmuller, Hans-Dieter, 4,350,079, Cl. 91-499.000.
Lindner, Elek: *See*—
Geelhood, Bruce D.; Mastny, Gary F.; Solomon, Jerry E.; Wesley, Edward J.; Lindner, Elek; Dooley, Carol A.; and Lane, Sandra M., 4,350,890, Cl. 250-372.000.
Lion Corporation: *See*—
Nakamura, Masayoshi; Magari, Teruo; Abe, Seiji; and Yazaki, Mitsuyoshi, 4,350,619, Cl. 252-537.000.
Lipovsky, Iosif L.: *See*—
Kolesov, Evgeny V.; Smirnov, Boris A.; Fedotov, Vladimir M.; and Lipovsky, Iosif L., 4,350,160, Cl. 128-334.00R.
Lipton, Allan; and Kepner, Nancy, to Research Corporation. Platelet derived cell growth factor. 4,350,687, Cl. 424-177.000.
Liquid Control Incorporated: *See*—
Penn, Laurence R., 4,350,803, Cl. 528-10.000.
Lis, Ricardo B. Air conditioning apparatus for farming and animal husbandry activities industrial facilities and well-being in general. 4,350,085, Cl. 98-33.00A.
Liska, Donald J.; Schamaun, Roger G.; Clark, Donald C.; Potter, R. Christopher; and Frank, Joseph A., to United States of America, Energy. Drift tube suspension for high intensity linear accelerators. 4,350,921, Cl. 313-360.100.
Lisnyansky, Khaim, to International Paper Company. X-Ray fluorescent analysis with matrix compensation. 4,350,889, Cl. 378-46.000.
Little, Roger G., to Spire Corporation. Single crystal processes and products. 4,350,561, Cl. 156-624.000.
Liu, Chao-Ning: *See*—
Chow, Chao-Kong; Liu, Chao-Ning; and Wang, Sherman S., 4,350,045, Cl. 73-607.000.
Lizzi, Frederic L.; and Weil, Kurt W., to Riverside Research Institute. Frequency-controlled scanning of ultrasonic beams. 4,350,917, Cl. 310-320.000.
Lo, Wayne, to General Motors Corporation. Electrode for lead-salt diodes. 4,350,990, Cl. 357-16.000.
Lochte, Glen E.; and Allen, Jackie R., to FMC Corporation. Subsea pipe connector. 4,350,371, Cl. 285-18.000.
Loffland Brothers Company: *See*—
Mallory, Harvey E.; and Ward, James W., 4,350,505, Cl. 55-227.000.
Logan, John G.: *See*—
Jarrell, Donald, 4,350,587, Cl. 210-151.000.
Logadon, Duane D. Expansion coupling for large diameter plastic pipes. 4,350,372, Cl. 285-45.000.
Loker, Aleck; and Archibald, Richard, to United States of America, Navy. System and method for measurement of dynamic angular or linear displacement. 4,350,041, Cl. 73-432.00R.
Lone Star Medical Products, Inc.: *See*—
Scott, F. Brantley, 4,350,151, Cl. 128-17.000.
Long, Eric L.: *See*—
Fillus, Gary C.; and Long, Eric L., 4,350,857, Cl. 200-314.000.
Longoni, Angelo: *See*—
Palvarini, Attilio; Lorusso, Simone; and Longoni, Angelo, 4,350,678, Cl. 424-27.000.
Lonza Ltd.: *See*—
Junek, Hans; and Thierrichter, Burkhard, 4,350,815, Cl. 546-115.000.
Junek, Hans; and Thierrichter, Burkhard, 4,350,816, Cl. 546-116.000.
Loose, Timothy C.: *See*—
Flaherty, John J.; Strauts, Eric J.; Wagerer, Helmut F.; and Loose, Timothy C., 4,351,031, Cl. 364-580.000.
Lord Corporation: *See*—
Schwemmer, Leonard J., 4,350,000, Cl. 53-287.000.
Lorntson, John M.: *See*—
Meguerian, Garbis H.; Lorntson, John M.; and Vasalos, Iacovos A., 4,350,615, Cl. 252-455.00Z.
Lorson, Emmett D.; and Minton, Keith G., to Hoover Company, The. Agitator for a cleaner or the like. 4,349,936, Cl. 15-366.000.
Lorusso, Simone: *See*—
Palvarini, Attilio; Lorusso, Simone; and Longoni, Angelo, 4,350,678, Cl. 424-27.000.
Lovisek, Louis J., to Industrial Fasteners Corp. Spider washer head screw. 4,350,465, Cl. 411-186.000.
Lowry, William D.: *See*—
Yargus, Lloyd A.; Switzer, Lester W., Sr.; Allen, Gary N.; Elliott, Gary S.; Yargus, Larry D.; Lowry, William D.; Gosnell, Jeffrey M.; and Spires, Darrell J., 4,350,444, Cl. 366-141.000.
Lucas Industries Limited: *See*—
Forrester, John S.; Swindell, David F.; and Wildsmith, Michael A., 4,350,971, Cl. 340-52.00R.
Mortimer, Ivan, 4,350,396, Cl. 303-115.000.
Seilly, Alec H., 4,350,954, Cl. 324-208.000.
Luchaco, David G.: *See*—
Spira, Joel S.; Luchaco, David G.; and Capewell, Dennis, 4,350,935, Cl. 315-291.000.
Luepertz, Hans-Henning, to ITT Industries, Inc. Mechanical actuating device for a spot-type disc brake. 4,350,228, Cl. 188-71.900.
LUK Lamellen und Kupplungsbau GmbH: *See*—
Geschka, Hugo W., 4,350,028, Cl. 68-13.00R.
Lukasik, Adam: *See*—
Biolik, Felicjan; Lukasik, Adam; Morys, Zagmunt; Walawender, Stanislaw; and Galazka, Szczepan, 4,351,057, Cl. 373-117.000.
Lund Hydromaskin AB: *See*—
Landaeus, Kjell G., 4,350,214, Cl. 173-126.000.
Lund Lures, Inc.: *See*—
Strantz, Ralph M., 4,349,979, Cl. 43-44.800.
Lundgren, Rolf B., to Sunds Defibrator Aktiebolag. Vapor separating method and apparatus. 4,350,499, Cl. 55-1.000.
Lundin, Robert S., to Superior Electric Company, The. Method of making a bobbin wound stepping motor. 4,349,957, Cl. 29-596.000.
Lundstrom, Gustaf B., to AB Volvo. Device for preventing icing in an air conditioning unit for motor vehicles. 4,350,021, Cl. 62-150.000.
Lunn, Gerald K.: *See*—
McGinn, Michael; and Lunn, Gerald K., 4,351,001, Cl. 358-158.000.
Lupertz, Hans-Henning, to ITT Industries, Inc. Pressure control unit. 4,350,395, Cl. 303-6.00C.
Lurssen, Klaus: *See*—
Beck, Gunther; Heitzer, Helmut; and Lurssen, Klaus, 4,350,520, Cl. 71-92.000.
Lutron Electronics Co., Inc.: *See*—
Spira, Joel S.; Luchaco, David G.; and Capewell, Dennis, 4,350,935, Cl. 315-291.000.
Lutteke, Gordon M.: *See*—
Lutteke, Martin T.; and Lutteke, Gordon M., 4,350,222, Cl. 180-209.000.
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Gasser, Hermann; Curiger, Karl; and Novak, Peter, 4,350,007, Cl. 57-304.000.
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Alexandrov, Vyacheslav S.; Guschin, Alexandr E.; Zavodov, Rudolf V.; Zhukova, Elena I.; Ivanov, Alexandr A.; Fofanova, Tatyana S.; Mikhailov, Evgeny I.; Dianov, Ivan M.; Luzin, Pavel M.; Sergeev, Igor A.; Pankratova, Lidia A.; Krylova, Vera E.; and Leibenzon, Semen A., 4,350,482, Cl. 425-83.100.
Lydall, Inc.: *See*—
Wald, Stephen A.; and Carter, Robert W., 4,350,727, Cl. 428-102.000.
M.A.N.-ROLAND Druckmaschinen Aktiengesellschaft: *See*—
Fischer, Hermann, 4,350,094, Cl. 101-350.000.
Simeth, Claus, 4,350,095, Cl. 101-365.000.
Ma, William H.: *See*—
Frieser, Rudolf G.; Ma, William H.; Ozols, Gunars M.; and Zingerman, Bryant N., 4,350,578, Cl. 204-192.00R.
Mass, Dieter: *See*—
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MacGregor, Douglas. Time-depth integrator. 4,350,042, Cl. 73-432.00R.
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Kolarik, Oldrich S., 4,350,352, Cl. 277-216.000.
Mackey, Thomas E.: *See*—
Richards, Kennith E., 4,350,287, Cl. 237-12.30A.
Macomber, James K., to Macomber, James K. Physiological pillow. 4,349,925, Cl. 5-431.000.
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Yamashita, Nobuo; and Maeda, Miwako, 4,350,149, Cl. 128-6.000.

Maekawa, Tadashi, to Aisin Seiki Kabushiki Kaisha. Weather strip assembly for vehicle window. 4,349,994, Cl. 52-208.000.

Magari, Teruo: *See*—
Nakamura, Masayoshi; Magari, Teruo; Abe, Seiji; and Yazaki, Mitsuyoshi, 4,350,619, Cl. 252-537.000.

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Montag, Bernhard; Mages, Gert; and Opitz, Heinrich, 4,350,757, Cl. 430-422.000.

Magnaflux Corporation: *See*—
Flaherty, John J.; Strauts, Eric J.; Wagerer, Helmut F.; and Loose, Timothy C., 4,351,031, Cl. 364-580.000.

Mahaffy & Harder Engineering Co.: *See*—
Mahaffy, Reid A.; and Hamilton, Joel A., 4,349,999, Cl. 53-128.000.

Mahaffy, Reid A.; and Hamilton, Joel A., to Mahaffy & Harder Engineering Co. Packaging techniques for semi-rigid packages. 4,349,999, Cl. 53-178.000.

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Maisotsenko, Valery S.; Tsimerman, Alexandr B.; and Zexer, Mikhail G. Water desalination method. 4,350,570, Cl. 203-10.000.

Malchesky, Paul S.; and Nose, Yukihiko, to Japan Foundation for Artificial Organs. Method and apparatus for on-line filtration removal of macromolecules from a physiological fluid. 4,350,156, Cl. 128-214.00R.

Mallory, Harvey E.; and Ward, James W., to Loffland Brothers Company. Device for reduction of oxygen content in drilling fluid. 4,350,505, Cl. 55-227.000.

Manba, Akio: *See*—
Kurosaki, Tomihiro; and Manba, Akio, 4,350,645, Cl. 260-978.000.

Mannesmann Demag, A.G.: *See*—
Wenzel, Jurgen-Michael, 4,350,241, Cl. 198-311.000.

Manville Service Corporation: *See*—
Olds, Leonard E., 4,351,054, Cl. 373-38.000.

Mappes, Celia J.: *See*—
Rentzea, Costin; Zeeh, Bernd; Pommer, Ernst-Heinrich; and Mappes, Celia J., 4,350,701, Cl. 424-269.000.

Margittai, Thomas. Doctoring knife for drum dryers and flakers. 4,349,934, Cl. 15-256.510.

Marino, Michael J.; and Marino, Michael R. Cutting guide and measuring device. 4,349,966, Cl. 33-489.000.

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Markle, James R. Auxiliary tool kit for a socket wrench set. 4,350,064, Cl. 81-437.000.

Marly, Jose: *See*—
Pardon, Pierre; Lantier, Frederic; Marly, Jose; and Bourgy, Gerard, 4,350,684, Cl. 424-92.000.

Marnette, Ewald: *See*—
Frank, Karl; and Marnette, Ewald, 4,350,018, Cl. 62-54.000.

Marrs, Ralph E. Acoustic energy systems. 4,350,724, Cl. 428-69.000.

Marschka, Frank D., to RCA Corporation. Main lens assembly for an electron gun. 4,350,925, Cl. 313-451.000.

Martel, Jacques; Tessier, Jean; and Teche, Andre, to Roussel Uclaf. Substituted lactones of amino acids. 4,350,637, Cl. 549-304.000.

Martin, A. Eugene. Manhole joint gasket assembly and joint formed therewith. 4,350,351, Cl. 277-207.00A.

Martin, Frank. Swivelling exhaust nozzles for rocket motors. 4,350,297, Cl. 239-265.350.

Marzola, Roberto; Garagnani, Enea; and Moro, Alessandro, to Montedison S.p.A. Process for promoting the adhesion of polyolefins to metals, glass sheets, cement, asbestos or polar polymers. 4,350,797, Cl. 525-293.000.

Maschinenfabrik Meyer AG: *See*—
Hartinger, Edmund; Julke, Elias; and Sandmann, Harald, 4,350,620, Cl. 252-628.000.

Maschke, Alfred W., to United States of America, Energy. Means for the focusing and acceleration of parallel beams of charged particles. 4,350,927, Cl. 315-5.410.

Masclet, Jean. Fishing reel. 4,350,312, Cl. 242-84.20G.

Masegi, Koichi, to Canon Kabushiki Kaisha. Recording apparatus for effecting recording by a beam. 4,350,988, Cl. 346-108.000.

Masoero, Renzo: *See*—
Dotti, Giulio; and Masoero, Renzo, 4,350,354, Cl. 280-6.00H.

Mason, Iain M.: *See*—
Buchanan, David J.; and Mason, Iain M., 4,351,035, Cl. 367-14.000.

Massachusetts Institute of Technology: *See*—
von Schulthess, Gustav K.; Cohen, Richard J.; and Benedek, George B., 4,350,677, Cl. 424-12.000.
Yannas, Ioannis V.; and Forbes, Martin J., 4,350,629, Cl. 260-123.700.

Mastny, Gary F.: *See*—
Geelhood, Bruce D.; Mastny, Gary F.; Solomon, Jerry E.; Wesley, Edward J.; Lindner, Elek; Dooley, Carol A.; and Lane, Sandra M., 4,350,890, Cl. 250-372.000.

Masuda, Shunichi: *See*—
Yagasaki, Toshiaki; Masuda, Shunichi; Shimizu, Katsuichi; and Sakamaki, Hisashi, 4,350,436, Cl. 355-14.0SH.

Masuho, Yasuhiko; and Hara, Takeshi, to Teijin Limited. Antitumor hybrid and process for the preparation thereof. 4,350,626, Cl. 260-112.50R.

Masuko, Tatsuo; Fukaya, Shigeo; Murai, Nobuyuki; and Noma, Jun, to Mitsubishi Chemical Industries, Limited. Process for preparing isobutyric acid. 4,350,829, Cl. 562-531.000.

Matsko, Joseph J.; Wafer, John A.; Engel, Joseph C.; and Mercier, Bernard J., to Westinghouse Electric Corp. Circuit interrupter with multiple display and parameter entry means. 4,351,013, Cl. 361-96.000.

Matsuda, Akira; Havakawa, Yoshihiro; Yasuda, Shigeo; Iwasaki, Motoaki; and Nishino, Hiroshi, to Bridgestone Tire Company Limited; and Mitaka Instrument Company Limited. Pressure-sensitive switch unit in resonator assembly of tire pressure drop detecting apparatus. 4,350,854, Cl. 200-61.250.

Matsuda, Shimpei; Kato, Akira; Mori, Toshikatsu; Kumagai, Teruo; Hishinuma, Yukio; Akimoto, Hidetoshi; and Nakajima, Fumito, to Hitachi, Ltd.; and Babcock-Hitachi Kabushiki Kaisha. Process for treating flue gas. 4,350,670, Cl. 423-244.000.

Matsuda, Yasumasa: *See*—
Sagae, Syoji; Matsuda, Yasumasa; Kasahara, Masatoshi; and Suzuki, Masayoshi, 4,350,989, Cl. 346-140.00R.

Matsugichi, Michiharu: *See*—
Hiyoshi, Kazuhiko; Matsuura, Norio; Matsugichi, Michiharu; Onofusa, Norio; and Nishikage, Tadao, 4,350,622, Cl. 524-831.000.

Matsui, Yoshiya: *See*—
Mochizuki, Noritaka; Minami, Setsuo; Matsui, Yoshiya; Tsunoda, Atsuo; Midorikawa, Koyo; Murase, Hidetoshi; Suzuta, Mikio; and Moriwaki, Masazumi, 4,350,431, Cl. 355-1.000.

Matsuki, Junya: *See*—
Uenosono, Chikasa; Okada, Takao; Matsuki, Junya; Naito, Tadashi; Inoue, Shinichiro; and Takahashi, Masaki, 4,350,947, Cl. 322-17.000.

Matsumoto, Hajime: *See*—
Hayasaka, Yoshiyuki; Ikeuchi, Ichiro; Matsumoto, Hajime; and Shikaya, Yukihiro, 4,349,997, Cl. 53-51.000.

Matsumoto, Hiroshi: *See*—
Ogata, Masaru; and Matsumoto, Hiroshi, 4,350,635, Cl. 260-326.470.

Matsumoto, Makoto: *See*—
Tsujimoto, Eiichi; Hirahara, Hiroshi; and Matsumoto, Makoto, 4,350,004, Cl. 53-570.000.

Matsunaga, Kazu: *See*—
Awazu, Kenzo; and Matsunaga, Kazu, 4,350,604, Cl. 252-301.40R.

Matsuno, Yoshio, to Nissan Motor Co., Ltd. Method of manufacturing a padded panel. 4,350,544, Cl. 156-79.000.

Matsuo, Takeshi: *See*—
Kuwabara, Eiji; Sakata, Takayoshi; Kawauchi, Noboru; Ide, Yuuichi; and Matsuo, Takeshi, 4,350,023, Cl. 62-176.00E.

Matsushita Electric Industrial Co., Ltd.: *See*—
Hasegawa, Yo; Yasuda, Shigeru; and Kojima, Kunio, 4,350,741, Cl. 428-473.500.
Imanaka, Ryoichi; and Tsuji, Seizou, 4,351,044, Cl. 369-43.000.
Nishino, Atsushi; Kimura, Kunio; Sonetaka, Kazunori; and Takeuchi, Yasuhiro, 4,350,613, Cl. 252-455.00R.
Takagi, Masaharu; and Nishida, Yoshinori, 4,350,868, Cl. 219-137.00R.
Ueda, Shigeki, 4,350,860, Cl. 219-10.55B.
Yamashita, Toshio; Gamo, Takaharu; Moriwaki, Yoshio; and Fukuda, Masataro, 4,350,673, Cl. 423-644.000.

Matsuura, Norio: *See*—
Hiyoshi, Kazuhiko; Matsuura, Norio; Matsugichi, Michiharu; Onofusa, Norio; and Nishikage, Tadao, 4,350,622, Cl. 524-831.000.

Matsuzaka, Syozi: *See*—
Koitabashi, Takeo; Matsuzaka, Syozi; Iijima, Toshifumi; and Harada, Tetsuya, 4,350,758, Cl. 430-567.000.

Mattel, Inc.: *See*—
Kilroy, Eugene J.; Kelley, William J.; and Crain, Philip W., 4,349,983, Cl. 46-12.000.

Matthews, Michael R.; Newman, David H.; Smith, David R.; and Steventon, Alan G., to Post Office, The. Self saturating semiconductor lasers. 4,350,960, Cl. 372-46.000.

Mattox, Darryl F. Air cushion vehicle. 4,350,107, Cl. 114-67.00A.

Maurer, Fritz: *See*—
Fuchs, Rainer; Maurer, Fritz; Priesnitz, Uwe; and Riebel, Hans-Jochem, 4,350,640, Cl. 260-465.00D.
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Mavretic, Anton, to Avitar, Inc. Weighing devices using electronic circuitry. 4,350,216, Cl. 177-164.000.

Maxey, Robert E. L.; and Brecker, James N., to Westinghouse Electric Corp. Tool life monitoring and tracking apparatus. 4,351,029, Cl. 364-511.000.

May, Randall L. Football practice aid. 4,350,338, Cl. 273-55.00B.

Mayer, Nathan, to Hartford Corporation, The. Releasable surgical products and process of formation thereof. 4,350,246, Cl. 206-210.000.

Mazal, Charles N. Pneumatic pulsatile fluid pump. 4,350,477, Cl. 417-384.000.

McAlister, Roy E. Extrusion apparatus for making stabilized polyester. 4,350,663, Cl. 422-137.000.

McCambridge, James; and Hettinga, Siebolt, to Central Quality Industries, Inc. Power tool accessory table. 4,350,193, Cl. 144-286.00R.

McCarthy, Thomas D. Lock device and method for securing window sashes in a fixed relative position. 4,350,377, Cl. 292-288.000.

McCaully, Ronald J.: *See*—
Kim, Dong H.; and McCaully, Ronald J., 4,350,633, Cl. 260-326.11R.

McChesney, William G.: *See*—
Grandia, Johannes; McChesney, William G.; Santini, Hugo A. E.; and Turk, Harold L., 4,350,116, Cl. 118-500.000.

McClure, George W.; and Milenkovic, Veljko, to Ford Motor Company. Control for automatic machine tool drive. 4,350,941, Cl. 318-603.000.
McColl, Bruce J., to Owens-Illinois, Inc. Self propelled, off road vehicle. 4,350,190, Cl. 144-3.00D.
McConnell, Richard L.; Trotter, Jimmy R.; and Jones, Glenn C., to Eastman Kodak Company. Copolyester compositions. 4,350,807, Cl. 528-302.000.
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McCoy, David R.: *See*—
Dominguez, Richard J. G.; and McCoy, David R., 4,350,779, Cl. 521-126.000.
McCoy, Terence D.: *See*—
Farr, Garth M.; McCoy, Terence D.; and Dlask, Jiri, 4,350,062, Cl. 81-57.180.
McCrary, Jack L.: *See*—
Mosier, Benjamin; McCrary, Jack L.; and Guilbeau, Karl G., 4,350,601, Cl. 252-8.55R.
McDonald, Glen E., to United States of America, National Aeronautics and Space Administration. Method for depositing an oxide coating. 4,350,574, Cl. 204-56.00R.
McElwain, John A. Solar energy collector and system. 4,350,200, Cl. 165-48.00S.
McFadyen, Robert J.: *See*—
Peil, William; and McFadyen, Robert J., 4,350,930, Cl. 315-49.000.
McGinn, Michael; and Lunn, Gerald K., to Motorola, Inc. Horizontal phase lock loop for television. 4,351,001, Cl. 358-158.000.
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Holzhauser, Ronald C.; McGlen, James A.; and Russel, Matthew J., 4,350,329, Cl. 271-9.000.
McKee, James E. Rodent exterminating apparatus. 4,349,980, Cl. 43-81.000.
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Edwards, Philip N.; and McMenim, Michael E., 4,350,826, Cl. 562-444.000.
McMurtry, David R. Tool connecting mechanism. 4,349,946, Cl. 29-57.000.
McQuillen, Edward J.: *See*—
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McTavish, James C., to Robertson, Harry A., Jr. Rod packing. 4,350,349, Cl. 277-199.000.
McWilliams, Joseph A., to Micropore International Ltd. Radiant heating elements for smooth top cookers. 4,350,875, Cl. 219-449.000.
Mechanical Technology Incorporated: *See*—
Folsom, Lawrence R.; and Dineen, John J., 4,350,012, Cl. 60-520.000.
Medtronic, Inc.: *See*—
Dutcher, Robert G.; and Upton, James E., 4,350,169, Cl. 128-783.000.
Thompson, Howard J., 4,350,155, Cl. 128-213.00R.
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Meguerian, Garbis H.; Lorntson, John M.; and Vasalos, Iacovos A., to Standard Oil Company (Indiana). Catalytic cracking with reduced emission of noxious gas. 4,350,615, Cl. 252-455.00Z.
Mehlberg, Robert L., to Purdue Research Foundation. Pentose syrup production from hemicellulose. 4,350,766, Cl. 435-161.000.
Mendes, Paul V. Acid bath apparatus. 4,350,553, Cl. 156-345.000.
Mercier, Bernard J.: *See*—
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Christensen, Burton G.; and Shih, David H., 4,350,631, Cl. 260-245.20T.
Kang, Kenneth S.; and Veeder, George T., 4,350,769, Cl. 435-243.000.
Merck, Howard W., to Frito-Lay, Inc. Apparatus and method for selectively ejecting malformed articles. 4,350,251, Cl. 209-642.000.
Merck Patent Gesellschaft mit Beschrankter Haftung: *See*—
Gunkel, Werner, 4,350,595, Cl. 210-656.000.
Meroni, Umberto, to Societa Italiana Telecomunicazioni Stemens S.p.A. Voltage-step-down circuit with chopping transistor for D-C power supply. 4,350,948, Cl. 323-282.000.
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Blaha, Alfred; and Schwarzler, Hans-Juergen, 4,350,983, Cl. 343-103.000.
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Rasshofer, Werner; Grogler, Gerhard; and Meyborg, Holger, 4,350,781, Cl. 521-149.000.
Meywald, Klaus; and Ohnmacht, Helmut, to Fritz Eichenauer, Firma. Electrical heating element for fluid media and method for producing same. 4,350,872, Cl. 219-376.000.
MGS Machine Corporation: *See*—
Bahr, Melford J.; and Geist, Wayne R., 4,350,466, Cl. 414-128.000.
Miano, Henry: *See*—
Santoro, Dario S.; Schultz, Garry; and Miano, Henry, 4,350,508, Cl. 55-275.000.
Michaels, Leonard H., to Ideal Industries, Inc. Cord grip. 4,350,840, Cl. 174-65.0SS.
Michaelson, Gary L., to Boeing Company, The. Fluid slip sheet and method. 4,350,551, Cl. 156-245.000.
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Hall, William H.; and Saul, John R., 4,350,845, Cl. 179-1.00J.
Micropore International Ltd.: *See*—
McWilliams, Joseph A., 4,350,875, Cl. 219-449.000.
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Middleditch, Stanley W., to De La Rue Systems Limited. Sheet counting apparatus. 4,350,331, Cl. 271-95.000.
Midland-Ross Corporation: *See*—
Hanula, Richard M.; and Kulieke, Fred C., Jr., 4,350,256, Cl. 213-69.000.
Midorikawa, Koyo: *See*—
Mochizuki, Noritaka; Minami, Setsuo; Matsui, Yoshiya; Tsunoda, Atsuo; Midorikawa, Koyo; Murase, Hidetoshi; Suzuta, Mikio; and Moriwaki, Masazumi, 4,350,431, Cl. 355-1.000.
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Cannavo, Christian G.; Cousin, Georges; Espagnacq, Andre; Frayssac, Jacques X.; Laine, Loic Y.; Midrouillet, Daniel J.; Pintenat, Andre M.; and Reboux, Jean B., 4,350,096, Cl. 102-209.000.
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Alexandrov, Vyacheslav S.; Guschin, Alexandr E.; Zavodov, Rudolf V.; Zhukova, Elena I.; Ivanov, Alexandr A.; Fofanova, Tatyana S.; Mikhailov, Evgeny I.; Dianov, Ivan M.; Luzin, Pavel M.; Sergeev, Igor A.; Pankratova, Lidia A.; Krylova, Vera E.; and Leibenzon, Semen A., 4,350,482, Cl. 425-83.100.
Milberger, Ernest C.; Bremer, Noel J.; and Dria, Dennis E., to Standard Oil Company, The. Preparation of maleic anhydride. 4,350,639, Cl. 549-259.000.
Milberger, Ernest C.: *See*—
Lemanski, Michael F.; Bremer, Noel J.; and Milberger, Ernest C., 4,350,611, Cl. 252-435.000.
Milenkovic, Veljko: *See*—
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Conlon, Ralph D.; Miles, Stanley F.; and Paradis, Roland C., 4,350,586, Cl. 210-149.000.
Miller, Alan L.; and Ivey, John S., to Borg-Warner Corporation. Transmission control system for multi-ratio gear arrangement. 4,350,058, Cl. 74-866.000.
Miller, John C.: *See*—
Jones, David N.; Burnett, Archibald L; and Miller, John C., 4,350,657, Cl. 264-349.000.
Miller, Joseph N., to Jackes-Evans Manufacturing Company. Blow back prevention apparatus for a wood-burning stove. 4,350,141, Cl. 126-287.000.
Milner, David J.: *See*—
Holland, David; and Milner, David J., 4,350,811, Cl. 536-18.000.
Milstein, Cesar: *See*—
Galfre, Giovanni; Milstein, Cesar; and Wright, Bruce W., 4,350,683, Cl. 424-85.000.
Minami, Setsuo: *See*—
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Miner, Thomas G.: *See*—
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Minnesota Mining & Manufacturing Company: *See*—
Conrad, Lawrence H., 4,350,415, Cl. 350-422.000.
Randklev, Ronald M., 4,350,532, Cl. 106-30.000.
Stevens, John; and Newman, Stephen, 4,350,644, Cl. 260-501.150.
Youngquist, Robert J., 4,351,007, Cl. 360-13.000.
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Hanada, Yoshihiro; and Tottori, Takafumi, 4,350,269, Cl. 222-227.000.
Ueda, Hiroshi; and Oyokota, Shigeru, 4,350,421, Cl. 354-152.000.
Minott, Peter O., to United States of America, National Aeronautics and Space Administration. Multiprism collimator. 4,350,410, Cl. 350-170.000.
Minster Machine Company, The: *See*—
Busse, Vernon E.; and Schockman, Robert L., 4,350,090, Cl. 100-216.000.
Minton, Keith G.: *See*—
Lorson, Emmett D.; and Minton, Keith G., 4,349,936, Cl. 15-366.000.
Minyashkin, Dmitry P.: *See*—
Antipov, Georgy A.; Gelfand, Mikhail L.; Tsipenjuk, Yakov I.; Goldshtein, Boris G.; Lavnikov, Nikolai S.; Teres, Leonid N.; Urazhdin, Ivan I.; Yakubovsky, Petr S.; Boiko, Vitaly T.; Kalmykov, Anatoly M.; Minyashkin, Dmitry P.; and Stepanov, Mikhail M., 4,350,213, Cl. 173-93.600.
Misono, Masayoshi, to Hitachi, Ltd. Color picture tube. 4,350,924, Cl. 313-441.000.
Mita, Ryuichi: *See*—
Nagai, Shosuke; Kato, Toshio; Iguchi, Chojiro H.; Kawashima, Nobuyuki; Mita, Ryuichi; Yamaguchi, Akihiro; and Takano, Takao, 4,350,643, Cl. 260-465.700.
Mitaka Instrument Company Limited: *See*—
Matsuda, Akira; Havakawa, Yoshihiro; Yasuda, Shigeo; Iwasaki, Motoaki; and Nishino, Hiroshi, 4,350,854, Cl. 200-61.250.

Mitani, Hiroshi: *See*—
Hamada, Isao; Nakayama, Hiroshi; Kawakami, Nobuyoshi; Azami, Hirotaka; Ikeda, Tadasu; Yukawa, Yasumasa; Mitani, Hiroshi; Ohmori, Takashi; Kimura, Masanobu; and Seno, Kohichi, 4,350,510, Cl. 55-349.000.

Mitsuba Electric Mfg. Co., Ltd.: *See*—
Yamada, Masahide, 4,350,909, Cl. 310-62.000.

Mitsubishi Chemical Industries, Limited: *See*—
Itagaki, Takaharu; and Ouchi, Hidenaga, 4,350,773, Cl. 521-31.000.
Masuko, Tatsuo; Fukaya, Shigeo; Murai, Nobuyuki; and Noma, Jun, 4,350,829, Cl. 562-531.000.

Mitsubishi Denki Kabushiki Kaisha: *See*—
Awazu, Kenzo; and Matsunaga, Kazu, 4,350,604, Cl. 252-301.40R.

Mitsubishi Gas Chemical Company, Inc.: *See*—
Isogai, Nobuo; Okawa, Takashi; Hosokawa, Motoyuki; Watanabe, Toshiyasu; and Wakui, Natsuko, 4,350,668, Cl. 423-139.000.

Mitsubishi Jukogyo Kabushiki Kaisha: *See*—
Hayasaka, Yoshiyuki; Ikeuchi, Ichiro; Matsumoto, Hajime; and Shikaya, Yukihiro, 4,349,997, Cl. 53-51.000.
Izumi, Jun; and Murakami, Nobuaki, 4,350,669, Cl. 423-235.000.

Mitsui Petrochemical Industries, Ltd.: *See*—
Ogawa, Hiroshi, 4,350,390, Cl. 297-452.000.

Mitsui Toatsu Chemicals, Inc.: *See*—
Nagai, Shosuke; Kato, Toshio; Iguchi, Chojiro H.; Kawashima, Nobuyuki; Mita, Ryuichi; Yamaguchi, Akihiro; and Takano, Takao, 4,350,643, Cl. 260-465.700.

Mitsui, Yoshiaki: *See*—
Yanagisawa, Yasuo; and Mitsui, Yoshiaki, 4,350,877, Cl. 235-70.00A.

Miyahara, Junji: *See*—
Takahashi, Kenji; and Miyahara, Junji, 4,350,893, Cl. 250-484.100.

Miyakawa, Seiichi: *See*—
Ohnuma, Teruyuki; Miyakawa, Seiichi; and Oyama, Hajime, 4,350,749, Cl. 430-100.000.

Miyake, Hidekazu: *See*—
Fujimura, Hajime; Hiramatsu, Yasuzo; Yabuuchi, Takahiro; Hisaki, Masakatu; Takikawa, Katsuo; Honna, Takaji; Miyake, Hidekazu; and Kajitani, Makoto, 4,350,700, Cl. 424-263.000.

Miyamoto, Yukihiko, to Trio Kabushiki Kaisha. Pulse counter-type FM detector. 4,350,957, Cl. 329-107.000.

Miyazaki, Kiyoshi; Takeuchi, Tsuneto; Ito, Jinichi; and Ashibe, Hiroo, to Kabushiki Kaisha Sankyo Seiki Seisakusho. Motor speed control device for DC motor. 4,350,937, Cl. 318-331.000.

Mizuno, Yasuhiko; and Kayano, Masanori, to Eisai Co., Ltd. Soft capsule coated with a film of carnauba wax and process for the preparation of the same. 4,350,679, Cl. 424-38.000.

Mizushima, Yoshihiko; Takeda, Akitsu; Yoshikawa, Akira; Ochi, Osamu; and Hisaki, Tomoko, to Nippon Telegraph & Telephone Public Corp. Doping from a photoresist layer. 4,350,541, Cl. 148-188.000.

Mlikotin, Alexander T. Multi-purpose plumbing tool. 4,349,928, Cl. 7-157.000.

Mobarry, John W., to Honeywell Inc. Apnea detector. 4,350,166, Cl. 128-664.000.

Mobay Chemical Corporation: *See*—
Schmelzer, Hans G.; Schmidt, Manfred; and Yeater, Robert P., 4,350,799, Cl. 525-453.000.

Mobil Oil Company: *See*—
Yan, Tsoung-Yuan, 4,350,391, Cl. 299-4.000.

Mobil Oil Corporation: *See*—
Chester, Arthur W.; and Chu, Yung F., 4,350,835, Cl. 585-415.000.
Schwartz, Albert B., 4,350,614, Cl. 252-455.00Z.

Mochizuki, Daisuke; and Kitano, Shigeru, to Sharp Kabushiki Kaisha. Modulator for use in an interface between a digital signal processing apparatus and an audio tape deck. 4,351,008, Cl. 360-40.000.

Mochizuki, Noritaka; Minami, Setsuo; Matsui, Yoshiya; Tsunoda, Atsuo; Midorikawa, Koyo; Murase, Hidetoshi; Suzuta, Mikio; and Moriwaki, Masazumi, to Canon Kabushiki Kaisha. Projecting device. 4,350,431, Cl. 355-1.000.

Moertel, George B., to Talon, Inc. Slide fastener stringer elements with tongues and grooved heads. 4,349,943, Cl. 24-205.13R.

Moertel, George B., to Talon, Inc. Method and apparatus for continuous molding of articles. 4,350,656, Cl. 264-166.000.

Mohiuddin, Gulam, to International Telephone and Telegraph Corporation. Molded plastic part. 4,350,739, Cl. 428-425.100.

Mojonnier, Harry G.: *See*—
Skoli, Sigmund P.; Kemp, David M.; and Mojonnier, Harry G., 4,350,503, Cl. 55-165.000.

Molins Limited: *See*—
Hinchcliffe, Dennis; Starkey, Stanley V.; and Stone, William A., 4,350,242, Cl. 198-605.000.

Moll, Thorleif, to Cinderella AB. Heating system. 4,350,024, Cl. 62-238.600.

Moller, Rudolf: *See*—
Gottling, Helmut; and Moller, Rudolf, 4,350,182, Cl. 137-625.270.

Mollere, John C., to Western Geophysical Co. of America. Submarine cable connector link. 4,351,036, Cl. 367-20.000.

Molter, Michael; and Kloss, Gerhard, to Hoechst Aktiengesellschaft. Substituted acetanilidoiminodiacetic acid compounds, diagnostic agents containing such compounds labeled with technetium-99m, and methods for making and using such compounds and agents. 4,350,674, Cl. 424-1.000.

Monarch Marking Systems, Inc.: *See*—
Pabodie, Robert M., 4,350,554, Cl. 156-384.000.

Moncur, Marlowe V., to Monsanto Company. High-impact polyamide molding and extrusion resin compositions. 4,350,794, Cl. 525-183.000.

Monsanto Company: *See*—
Coran, Aubert Y.; and Patel, Raman, 4,350,740, Cl. 428-461.000.
Heisner, Donald N.; and Bentivegna, Charles R., 4,350,942, Cl. 318-626.000.
Moncur, Marlowe V., 4,350,794, Cl. 525-183.000.

Montag, Bernhard; Mages, Gert; and Opitz, Heinrich, to Siemens Aktiengesellschaft. Method for making visible residual moisture distributions in photographic wet film layers subjected to an oncoming flow. 4,350,757, Cl. 430-422.000.

Montedison S.p.A.: *See*—
Marzola, Roberto; Garagnani, Enea; and Moro, Alessandro, 4,350,797, Cl. 525-293.000.
Palvarini, Attilio; Lorusso, Simone; and Longoni, Angelo, 4,350,678, Cl. 424-27.000.

Moon, James: *See*—
Decker, Elmer L.; and Moon, James, 4,349,952, Cl. 29-402.060.

Moore, Daniel J.; and Pascoe, Robert A., to International Business Machines Corp. High speed basic and condensed tab racks. 4,350,455, Cl. 400-279.000.

Moorehead, David R.; and Davis, Michael, to CSR Limited. Method of producing a building element. 4,350,567, Cl. 162-145.000.

Moreau, Roland; and Potvin, Robert. Motorized floatboard. 4,350,113, Cl. 114-270.000.

Morell, Antoinette; and Hermosin, Antonio, to Thomson-CSF. Process for the rapid sintering of ceramic components and a kiln for carrying out said process. 4,350,651, Cl. 264-65.000.

Morgan, Morris H.: *See*—
Jones, Thomas B.; Morgan, Morris H.; and Dietz, Peter W., 4,349,967, Cl. 34-1.000.

Morgan, Richard T. Portable bag for pet supplies. 4,350,274, Cl. 224-205.000.

Mori, Goro: *See*—
Suzuki, Shigeru; Suzuki, Minoru; Suzuki, Koichi; Omi, Kyoji; Nagahara, Yasumori; Kagari, Yoshiharu; Hashimoto, Makoto; and Mori, Goro, 4,350,750, Cl. 430-125.000.

Mori, Kouichi: *See*—
Yoshinaga, Toru; Igashira, Toshihiko; Mori, Kouichi; Kawai, Hisasi; and Morino, Seiji, 4,350,137, Cl. 123-617.000.

Mori, Toshikatsu: *See*—
Matsuda, Shimpei; Kato, Akira; Mori, Toshikatsu; Kumagai, Teruo; Hishinuma, Yukio; Akimoto, Hidetoshi; and Nakajima, Fumito, 4,350,670, Cl. 423-244.000.

Morihisa, Mitsuo; and Inoue, Tadao, to Sharp Kabushiki Kaisha. Power supply/auto-clear circuit. 4,351,021, Cl. 363-49.000.

Morimoto, Masao, to Sanyo Electric Co., Ltd. Electric fan apparatus. 4,350,472, Cl. 415-125.000.

Morinaga, Akio: *See*—
Zenbayashi, Katsuaki; Morinaga, Akio; Hirayama, Masao; and Morita, Akira, 4,350,548, Cl. 156-156.000.

Morino, Seiji: *See*—
Yoshinaga, Toru; Igashira, Toshihiko; Mori, Kouichi; Kawai, Hisasi; and Morino, Seiji, 4,350,137, Cl. 123-617.000.

Morino, Yukio: *See*—
Kitai, Kiyoshi; Morino, Yukio; Kato, Shogo; and Watanabe, Masanori, 4,350,427, Cl. 354-238.000.

Morishita, Teru: *See*—
Sugiyama, Matsuyoshi; Morishita, Teru; and Suzuki, Toshikazu, 4,350,304, Cl. 239-703.000.

Morita, Akira: *See*—
Zenbayashi, Katsuaki; Morinaga, Akio; Hirayama, Masao; and Morita, Akira, 4,350,548, Cl. 156-156.000.

Moriwaki, Masazumi: *See*—
Mochizuki, Noritaka; Minami, Setsuo; Matsui, Yoshiya; Tsunoda, Atsuo; Midorikawa, Koyo; Murase, Hidetoshi; Suzuta, Mikio; and Moriwaki, Masazumi, 4,350,431, Cl. 355-1.000.

Moriwaki, Yoshio: *See*—
Yamashita, Toshio; Gamo, Takaharu; Moriwaki, Yoshio; and Fukuda, Masataro, 4,350,673, Cl. 423-644.000.

Moriyama Sangyo Kabushiki Kaisha: *See*—
Katoogi, Masayuki, 4,350,929, Cl. 315-49.000.

Moro, Alessandro: *See*—
Marzola, Roberto; Garagnani, Enea; and Moro, Alessandro, 4,350,797, Cl. 525-293.000.

Mortimer, Ivan, to Lucas Industries Limited. Modulator assemblies for vehicle anti-skid braking systems. 4,350,396, Cl. 303-115.000.

Mortimer, Thomas J., to Sanders Associates, Inc. Video formatted digital data transmission method and apparatus. 4,350,999, Cl. 358-147.000.

Morton, Anthony J.: *See*—
Harvey, Kenneth; Hayes, Harry; and Morton, Anthony J., 4,350,680, Cl. 424-52.000.

Morys, Zagmunt: *See*—
Biolik, Felicjan; Lukasik, Adam; Morys, Zagmunt; Walawender, Stanislaw; and Galazka, Szczepan, 4,351,057, Cl. 373-117.000.

Mosier, Benjamin; McCrary, Jack L.; and Guilbeau, Karl G., to Dow Chemical Co., The. Preparation of viscosifiers for zinc salt workover and completion brines. 4,350,601, Cl. 252-8.55R.

Moskowitz, Howard: *See*—
Knauer, Joseph; and Moskowitz, Howard, 4,350,337, Cl. 273-43.00A.

Motorola, Inc.: *See*—
McGinn, Michael; and Lunn, Gerald K., 4,351,001, Cl. 358-158.000.
Pagnamenta, Antonio, 4,350,958, Cl. 330-286.000.

Motoyama, Kazuyasu: *See*—
Osada, Hajime; Kimura, Akiteru; Shimizu, Tokuo; Kitajima, Goro; Tomizawa, Yoshio; Kondo, Makoto; Motoyama, Kazuyasu; and Daigaku, Masaaki, 4,351,009, Cl. 360-105.000.

Moxley, Bruce: *See*—
Knight, Lindsay C.; Phillips, Robert B.; Bowyer, William H.; and Moxley, Bruce, 4,350,881, Cl. 235-400.000.

Mueller, John H., to Grove Truseal Valve Company. High torque plug valve actuator. 4,350,322, Cl. 251-229.000.

Muller, Alois. Vending machine for flat sheet articles. 4,350,264, Cl. 221-67.000.

Muller, Erwin; Kollmann, Bernd; Sonnabend, Ferdinand; Petzolt, Gert; Balz, Josef; Walloschek, Bernhard; and Risse, Friedrich, to Thyssen Industrie AG. Method for manufacturing metal casings for accessories and particularly gate valves. 4,349,948, Cl. 29-157.10R.

Muller, Hans, to Grapha-Holding AG. Apparatus for removing successive sheets from a stack of overlapping sheets. 4,350,327, Cl. 270-54.000.

Muller, Jakob; and Diesner, Ferdinand. Shuttleless weaving machine. 4,350,184, Cl. 139-448.000.

Muller, Wolfgang: *See*—
Heberling, Walter; Muller, Wolfgang; Langenberg, Werner; Behrens, Gerhard; and Saul, Alfred, 4,350,393, Cl. 299-50.000.

Murahara, Koichi; and Yasunaga, Teibun, to Pilot Man-Nen-Hitsu Kabushiki Kaisha. Fountain pen with battery operated supply detector and ink pressurizing device. 4,350,458, Cl. 401-145.000.

Murai, Nobuyuki: *See*—
Masuko, Tatsuo; Fukaya, Shigeo; Murai, Nobuyuki; and Noma, Jun, 4,350,829, Cl. 562-531.000.

Murakami, Nobuaki: *See*—
Izumi, Jun; and Murakami, Nobuaki, 4,350,669, Cl. 423-235.000.

Murase, Hidetoshi: *See*—
Mochizuki, Noritaka; Minami, Setsuo; Matsui, Yoshiya; Tsunoda, Atsuo; Midorikawa, Koyo; Murase, Hidetoshi; Suzuta, Mikio; and Moriwaki, Masazumi, 4,350,431, Cl. 355-1.000.

Murdoch, Robert: *See*—
Westwood, Robert; Tully, Wilfred R.; and Murdoch, Robert, 4,350,695, Cl. 424-251.000.

Murillo, Hernando. Wheel truck. 4,350,470, Cl. 414-430.000.

Murphy, James T. Tide following wave power machine. 4,350,474, Cl. 416-7.000.

Murray, David E.: *See*—
Burch, Jeremy R.; and Murray, David E., 4,350,756, Cl. 430-331.000.

MX-Processor Reinhardt & Co AB: *See*—
Andersson, Sven O. S.; Ottertun, Harald D.; and Reinhardt, Hans, 4,350,667, Cl. 423-24.000.

Myles, J. Edgar, to J. E. Myles, Inc. Crank press with hydraulic transmission. 4,350,091, Cl. 100-271.000.

N. Schlumberger & Cie: *See*—
Herubel, Jean-Frederic, 4,350,624, Cl. 260-112.00R.

Naegeli, Werner. Animal gate, training membranes and method of training the animal to use such gate. 4,350,198, Cl. 160-179.000.

Nagahara, Yasumori: *See*—
Suzuki, Shigeru; Suzuki, Minoru; Suzuki, Koichi; Omi, Kyoji; Nagahara, Yasumori; Kagari, Yoshiharu; Hashimoto, Makoto; and Mori, Goro, 4,350,750, Cl. 430-125.000.

Nagai, Shosuke; Kato, Toshio; Iguchi, Chojiro H.; Kawashima, Nobuyuki; Mita, Ryuichi; Yamaguchi, Akihiro; and Takano, Takao, to Mitsui Toatsu Chemicals, Inc. Process for producing 2,3-dihalopropionitrile. 4,350,643, Cl. 260-465.700.

Nagase, Jiro, to Nagase Rubber Co., Ltd. Collapsible indoor sports mats. 4,350,721, Cl. 428-33.000.

Nagase Rubber Co., Ltd.: *See*—
Nagase, Jiro, 4,350,721, Cl. 428-33.000.

Nagoshi, Mitsuru: *See*—
Katakura, Hiroshi; and Nagoshi, Mitsuru, 4,350,328, Cl. 271-22.000.

Nagumo, Shin-ichi: *See*—
Nakajima, Yasuo; Hayashi, Yoshimasa; Nagumo, Shin-ichi; and Yoshimura, Tooru, 4,350,129, Cl. 123-440.000.

Naito, Tadashi: *See*—
Uenosono, Chikasa; Okada, Takao; Matsuki, Junya; Naito, Tadashi; Inoue, Shinichiro; and Takahashi, Masaki, 4,350,947, Cl. 322-17.000.

Nakajima, Fumito: *See*—
Matsuda, Shimpei; Kato, Akira; Mori, Toshikatsu; Kumagai, Teruo; Hishinuma, Yukio; Akimoto, Hidetoshi; and Nakajima, Fumito, 4,350,670, Cl. 423-244.000.

Nakajima, Yasuo; Hayashi, Yoshimasa; Nagumo, Shin-ichi; and Yoshimura, Tooru, to Nissan Motor Company, Limited. Spark-ignition internal combustion engine capable of preventing noxious gas emissions. 4,350,129, Cl. 123-440.000.

Nakajima, Yoshikage: *See*—
Hamano, Sachiyuki; Kitamura, Shinichi; Igarashi, Toshiji; and Nakajima, Yoshikage, 4,350,705, Cl. 424-278.000.

Nakamura, Masashi: *See*—
Fujii, Hiroo; Tanaka, Kiyoaki; Nakamura, Masashi; Okuno, Ryuzo; Hashizume, Shigeyuki; Katayama, Hideo; and Fujita, Tsutomu, 4,350,326, Cl. 266-201.000.

Nakamura, Masayoshi; Magari, Teruo; Abe, Seiji; and Yazaki, Mitsuyoshi, to Lion Corporation. Granular detergent containing zeolite, silicate, LAS and olefin sulfonate. 4,350,619, Cl. 252-537.000.

Nakanishi, Kiyoshi: *See*—
Kanda, Mutsumi; Nakanishi, Kiyoshi; and Inoue, Tokuta, 4,350,125, Cl. 123-261.000.

Nakano, Hirotaka; and Yano, Kensaku, to Tokyo Shibaura Denki Kabushiki Kaisha. Patterned layer article and manufacturing method therefor. 4,350,729, Cl. 428-209.000.

Nakano, Motoo; and Ogawa, Tsutomu, to Fujitsu Limited. Method of producing dynamic random-access memory cells. 4,350,536, Cl. 148-1.500.

Nakasone, Henry H.: *See*—
Jimerson, Bruce D.; and Nakasone, Henry H., 4,350,903, Cl. 307-252.00B.

Nakayama, Hiroshi: *See*—
Hamada, Isao; Nakayama, Hiroshi; Kawakami, Nobuyoshi; Azami, Hirotaka; Ikeda, Tadasu; Yukawa, Yasumasa; Mitani, Hiroshi; Ohmori, Takashi; Kimura, Masanobu; and Seno, Kohichi, 4,350,510, Cl. 55-349.000.

Nakayama, Shigeru; and Takizawa, Tastuo, to Olympus Optical Company Ltd. Temperature sensor for sheet-shaped heating element. 4,350,870, Cl. 219-216.000.

Nakazato, Koichi: *See*—
Akiyama, Masatoshi; Kitamura, Shigeki; Tetsu, Junichi; and Nakazato, Koichi, 4,350,514, Cl. 65-36.000.

Nakazato, Masao: *See*—
Sakata, Kazuhiro; Yuminaka, Takeo; Nakazato, Masao; Yoneda, Kenji; Kuzunuki, Soshiro; and Katayama, Yasunori, 4,350,225, Cl. 187-29.00R.

Natarajan, Ramamurthy: *See*—
Ingram, Brian; Harries, David A.; and Natarajan, Ramamurthy, 4,350,230, Cl. 188-79.000.

National Printing Plate Company, Inc.: *See*—
Fishburn, Charles E., 4,350,437, Cl. 355-52.000.

National Research Development Corporation: *See*—
Galfre, Giovanni; Milstein, Cesar; and Wright, Bruce W., 4,350,683, Cl. 424-85.000.
Greenough, George K.; and Brown, Richard C., 4,350,507, Cl. 55-270.000.

NCR Corporation: *See*—
Coleman, William E.; and Hall, Stacy W., 4,350,932, Cl. 315-169.200.

Nelson, Marvin D., to Honeywell Inc. Thermostat assembly. 4,350,966, Cl. 337-302.000.

Nelson, Merritt J.; and Nelson, Merritt S. Ball cock assembly. 4,350,178, Cl. 137-444.000.

Nelson, Merritt S.: *See*—
Nelson, Merritt J.; and Nelson, Merritt S., 4,350,178, Cl. 137-444.000.

Nelson, Richard E.; and Starr, Thomas J. Portable modular beverage dispenser. 4,350,267, Cl. 222-131.000.

Nelson, Roger J., to Deere & Company. Flow transducer. 4,350,050, Cl. 73-861.540.

New York City Transit Authority: *See*—
Bush, Charles J., 4,350,290, Cl. 238-17.000.

Newman, David H.: *See*—
Matthews, Michael R.; Newman, David H.; Smith, David R.; and Steventon, Alan G., 4,350,960, Cl. 372-46.000.

Newman, Stephen: *See*—
Stevens, John; and Newman, Stephen, 4,350,644, Cl. 260-501.150.

Neyret, Guy, to Sodex-Magister, Societe d'Exploitation des Brevets Neiman. Bi-stable mechanism and anti-theft device for a motor vehicle comprising such mechanism. 4,350,852, Cl. 200-42.00A.

Nezworski, James E., to Perlick Company, Inc., The. Portable keg tapping coupler with vent. 4,350,270, Cl. 222-336.000.

Nezworski, James E.; and Strobel, John M., to Perlick Company, Inc., The. Portable keg tapping coupler. 4,350,273, Cl. 222-400.800.

Nichols, Edward L., III: *See*—
Campbell, Paul K.; and Nichols, Edward L., III, 4,350,843, Cl. 174-94.00R.

Nicko, Reinhard: *See*—
Engelsmann, Dieter; Nicko, Reinhard; Bittner, Wilfried; and Karl, Horst, 4,350,423, Cl. 354-173.000.

Nicolas, Jean-Claude; Terouanne, Beatrice; Descomps, Bernard; and Crastes de Paulet, Andre, to Institut National de la Sante et de la Recherche Medicale. Method for the separation of a protein substance from a solution containing the same by affinity filtration and application of said method to enzymatic assays. 4,350,760, Cl. 435-7.000.

Nifco Inc.: *See*—
Tanaka, Toshie; and Yuda, Takuo, 4,349,993, Cl. 52-206.000.

Nilsson, Sten E.: *See*—
Parsson, Nils O.; and Nilsson, Sten E., 4,350,389, Cl. 297-410.000.

Nilssuns Industriemballage AB: *See*—
Persson, Nils G. W., 4,350,099, Cl. 108-56.100.

Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Fujita, Shinichi, 4,350,949, Cl. 323-284.000.
Suzuki, Hideo; and Kaneko, Makoto, 4,350,068, Cl. 84-1.010.

Nippon Gohsei Kagaku Kogyo Kabushiki Kaisha: *See*—
Shimokawa, Wataru; Ito, Yoshiaki; Kobayashi, Koichi; Fukumori, Katuaki; and Iwase, Nobukazu, 4,350,788, Cl. 524-309.000.

Nippon Kayaku Kabushiki Kaisha: *See*—
Takei, Yukio; Yoshida, Masao; and Nishizawa, Rinzo, 4,350,813, Cl. 544-237.000.

Nippon Kogaku K. K.: *See*—
Takahashi, Yosuke; Akasaka, Hideki; Kasui, Toshikatsu; and Niwa, Tatsuo, 4,350,414, Cl. 350-357.000.

Nippon Kogaku K.K.: *See*—
Maida, Osamu, 4,350,422, Cl. 354-173.000.

Nippon Mining Co., Ltd.: *See—*
Hamada, Isao; Nakayama, Hiroshi; Kawakami, Nobuyoshi; Azami, Hirotaka; Ikeda, Tadasu; Yukawa, Yasumasa; Mitani, Hiroshi; Ohmori, Takashi; Kimura, Masanobu; and Seno, Kohichi, 4,350,510, Cl. 55-349.000.
Nippon Soken, Inc.: *See—*
Tanaka, Hiroaki; and Akita, Sigeyuki, 4,350,981, Cl. 340-870.370.
Yoshinaga, Toru; Igashira, Toshihiko; Mori, Kouichi; Kawai, Hisasi; and Morino, Seiji, 4,350,137, Cl. 123-617.000.
Nippon Steel Corporation: *See—*
Imai, Ichiro; Furuya, Takashi; Ando, Narumi; and Kitajima, Satoyuki, 4,350,538, Cl. 148-12.00D.
Nippon Telegraph & Telephone Public Corporation: *See—*
Kinoshita, Kyoichi; and Kobayashi, Morio, 4,350,867, Cl. 219-121.0LC.
Mizushima, Yoshihiko; Takeda, Akitsu; Yoshikawa, Akira; Ochi, Osamu; and Hisaki, Tomoko, 4,350,541, Cl. 148-188.000.
Nippon Zeon Co. Ltd.: *See—*
Oyama, Motofumi; and Hashimoto, Kinro, 4,350,796, Cl. 525-233.000.
Sugimura, Takaaki; Ozawa, Yutaka; and Takahashi, Mari, 4,350,723, Cl. 428-42.000.
Nishida, Yoshinori: *See—*
Takagi, Masaharu; and Nishida, Yoshinori, 4,350,868, Cl. 219-137.00R.
Nishikage, Tadao: *See—*
Hiyoshi, Kazuhiko; Matsuura, Norio; Matsugichi, Michiharu; Onofusa, Norio; and Nishikage, Tadao, 4,350,622, Cl. 524-831.000.
Nishikawa, Hideo, to Imanishi Flexible Tube Mfg. Co., Ltd. Hot air supply type electric oven. 4,350,874, Cl. 219-400.000.
Nishimura, Yoshiharu: *See—*
Uchimura, Mitsuo; Oana, Masao; and Nishimura, Yoshiharu, 4,351,033, Cl. 364-900.000.
Nishino, Atsushi; Kimura, Kunio; Sonetaka, Kazunori; and Takeuchi, Yasuhiro, to Matsushita Electric Industrial Company, Limited. Catalyst for purifying exhaust gases and method for manufacturing same. 4,350,613, Cl. 252-455.00R.
Nishino, Hiroshi: *See—*
Matsuda, Akira; Havakawa, Yoshihiro; Yasuda, Shigeo; Iwasaki, Motoaki; and Nishino, Hiroshi, 4,350,854, Cl. 200-61.250.
Nishizawa, Rinzo: *See—*
Takei, Yukio; Yoshida, Masao; and Nishizawa, Rinzo, 4,350,813, Cl. 544-237.000.
Niskin, Shale J. Light saver device. 4,350,931, Cl. 315-72.000.
Nissan Motor Company, Limited: *See—*
Higashiyama, Kazuhiro, 4,351,050, Cl. 371-12.000.
Izumi, Masao, 4,350,025, Cl. 62-285.000.
Kikuta, Masaaki, 4,350,383, Cl. 296-72.000.
Kishi, Norimasa; and Suzuki, Tadashi, 4,350,057, Cl. 74-866.000.
Kogawa, Kouichi; Kawasaki, Teruo; and Nomura, Hiroyuki, 4,350,901, Cl. 307-10.00R.
Matsuno, Yoshio, 4,350,544, Cl. 156-79.000.
Nakajima, Yasuo; Hayashi, Yoshimasa; Nagumo, Shin-ichi; and Yoshimura, Tooru, 4,350,129, Cl. 123-440.000.
Shimada, Yukio; Suzuki, Naoyoshi; Ohashi, Toshio; and Inoshita, Yasushi, 4,350,289, Cl. 237-12.30A.
Suga, Masaaki; and Hamada, Hideo, 4,350,234, Cl. 192-4.00A.
Takei, Hirofumi, 4,350,223, Cl. 181-229.000.
Yasuda, Akira, 4,350,384, Cl. 296-146.000.
Yoshiba, Yasutaka, 4,350,013, Cl. 60-605.000.
Nissin Kogyo Kabushiki Kaisha: *See—*
Takeuchi, Hiroo, 4,350,077, Cl. 91-376.00R.
Niwa, Tatsuo: *See—*
Takahashi, Yosuke; Akasaka, Hideki; Kasui, Toshikatsu; and Niwa, Tatsuo, 4,350,414, Cl. 350-357.000.
NL Industries Inc.: *See—*
Radtke, Robert P., 4,350,215, Cl. 175-329.000.
Nobis, Rolf, to Heinrich-Hertz-Institut fur Nachrichtentechnik Berlin GmbH. Circuit arrangement for user stations in a communications network. 4,351,049, Cl. 370-62.000.
Noble, Glendle W.: *See—*
Dowgul, Ronald W.; and Noble, Glendle W., 4,350,662, Cl. 422-122.000.
Noda, Atsushi, to Canon Kabushiki Kaisha. Printer provided with a margin setting mechanism. 4,350,456, Cl. 400-344.000.
Noda, Atsushi: *See—*
Hanagata, Takayoshi; and Noda, Atsushi, 4,350,448, Cl. 400-120.000.
Hanagata, Takayoshi; and Noda, Atsushi, 4,350,987, Cl. 346-76.0PH.
Nolf, Jean-Marie E., to N.V. Raychem S.A. Cable sleeve outlet for splice case. 4,350,842, Cl. 174-92.000.
Noltac Corp.: *See—*
Slavin, James A., 4,350,429, Cl. 354-299.000.
Noly, Jean, to Potain. Container handling and lifting equipment, such as a crane or a gantry. 4,350,254, Cl. 212-153.000.
Noma, Jun: *See—*
Masuko, Tatsuo; Fukaya, Shigeo; Murai, Nobuyuki; and Noma, Jun, 4,350,829, Cl. 562-531.000.
Nomura, Hiroyuki: *See—*
Kogawa, Kouichi; Kawasaki, Teruo; and Nomura, Hiroyuki, 4,350,901, Cl. 307-10.00R.
Nord-Micro Elektronik Feinmechanik AG: *See—*
Waldmann, Dieter; and Ohnesorge, Bernd, 4,350,950, Cl. 324-78.00D.
Norddeutsche Faserwerke GmbH: *See—*
Pfluger, Helmut C., 4,350,725, Cl. 428-95.000.
Norden, Alexander R., to Federal Pacific Electric Company. Multipole circuit breakers. 4,350,965, Cl. 337-47.000.
Nordson Corporation: *See—*
Rood, Alvin A., 4,349,947, Cl. 29-157.00C.
North American Philips Corporation: *See—*
Baum, Karl F., 4,350,784, Cl. 524-759.000.
Northern Telecom Limited: *See—*
Busche, Alan C.; and Simonsen, Karlo B., 4,350,846, Cl. 179-1.00C.
Norton Company: *See—*
Zimmer, William F., 4,350,498, Cl. 51-298.000.
Nose, Yukihiko: *See—*
Malchesky, Paul S.; and Nose, Yukihiko, 4,350,156, Cl. 128-214.00R.
Novak, Peter: *See—*
Gasser, Hermann; Curiger, Karl; and Novak, Peter, 4,350,007, Cl. 57-304.000.
Nukushina, Yasuhiko: *See—*
Okamoto, Miyoshi; Watanabe, Koji; Nukushina, Yasuhiko; and Aizawa, Tsuneo, 4,350,006, Cl. 57-250.000.
Nury, Georges: *See—*
Boudot, Bernard; and Nury, Georges, 4,350,558, Cl. 156-617.0SP.
Boudot, Bernard; and Nury, Georges, 4,350,559, Cl. 156-617.0SP.
Nusco Kabushiki Kaisha: *See—*
Hayashi, Shigeki; and Kusakabe, Mitsuo, 4,350,065, Cl. 83-287.000.
N.V. Raychem S.A.: *See—*
Nolf, Jean-Marie E., 4,350,842, Cl. 174-92.000.
Oana, Masao: *See—*
Uchimura, Mitsuo; Oana, Masao; and Nishimura, Yoshiharu, 4,351,033, Cl. 364-900.000.
Ochi, Osamu: *See—*
Mizushima, Yoshihiko; Takeda, Akitsu; Yoshikawa, Akira; Ochi, Osamu; and Hisaki, Tomoko, 4,350,541, Cl. 148-188.000.
O'Connor, John W., to Allis-Chalmers Corporation. Hydraulic draft control valve. 4,350,209, Cl. 172-7.000.
Odin, Eugene: *See—*
Demler, Walter R.; and Odin, Eugene, 4,350,827, Cl. 562-475.000.
Off, Joseph W. A., to Haggar Company. Pocket construction. 4,349,920, Cl. 2-247.000.
Ogata, Masaru; and Matsumoto, Hiroshi, to Shionogi & Co., Ltd. N(2-Pyrrolidinylmethyl)meta-sulfonamido-benzamides. 4,350,635, Cl. 260-326.470.
Ogawa, Hiroshi, to Mitsui Petrochemical Industries, Ltd. Seat. 4,350,390, Cl. 297-452.000.
Ogawa, Masahiko: *See—*
Taguchi, Tetsuya; Tamura, Shuichi; Tokuda, Ryuji; and Ogawa, Masahiko, 4,350,418, Cl. 354-25.000.
Ogawa, Tsutomu: *See—*
Nakano, Motoo; and Ogawa, Tsutomu, 4,350,536, Cl. 148-1.500.
Ogihara, Masuo; Chimura, Kozo; and Shinozaki, Nobuo, to Seiko Koki Kabushiki Kaisha. Time detecting switch for an alarm clock. 4,351,043, Cl. 368-252.000.
Ogman, Abraham. Reinforced grinding device. 4,350,497, Cl. 51-296.000.
Ohashi, Toshio: *See—*
Shimada, Yukio; Suzuki, Naoyoshi; Ohashi, Toshio; and Inoshita, Yasushi, 4,350,289, Cl. 237-12.30A.
Ohmori, Takashi: *See—*
Hamada, Isao; Nakayama, Hiroshi; Kawakami, Nobuyoshi; Azami, Hirotaka; Ikeda, Tadasu; Yukawa, Yasumasa; Mitani, Hiroshi; Ohmori, Takashi; Kimura, Masanobu; and Seno, Kohichi, 4,350,510, Cl. 55-349.000.
Ohnesorge, Bernd: *See—*
Waldmann, Dieter; and Ohnesorge, Bernd, 4,350,950, Cl. 324-78.00D.
Ohnmacht, Helmut: *See—*
Meywald, Klaus; and Ohnmacht, Helmut, 4,350,872, Cl. 219-376.000.
Ohnuma, Teruyuki; Miyakawa, Seiichi; and Oyama, Hajime, to Ricoh Company Ltd. Reverse development method. 4,350,749, Cl. 430-100.000.
Ohtsuki, Tomonari: *See—*
Kato, Matsuo; Ohtsuki, Tomonari; Igarashi, Yoshiaki; Saito, Tsukasa; and Suzuki, Toshiaki, 4,350,409, Cl. 339-186.00M.
Oil Dynamics, Inc.: *See—*
Wilson, Brown L.; and Carle, Joseph T., 4,350,911, Cl. 310-87.000.
Okada, Takao: *See—*
Uenosono, Chikasa; Okada, Takao; Matsuki, Junya; Naito, Tadashi; Inoue, Shinichiro; and Takahashi, Masaki, 4,350,947, Cl. 322-17.000.
Okamoto, Miyoshi; Watanabe, Koji; Nukushina, Yasuhiko; and Aizawa, Tsuneo, to Toray Industries, Inc. Synthetic filaments and the like. 4,350,006, Cl. 57-250.000.
Okawa, Takashi: *See—*
Isogai, Nobuo; Okawa, Takashi; Hosokawa, Motoyuki; Watanabe, Toshiyasu; and Wakui, Natsuko, 4,350,668, Cl. 423-139.000.
Okuno, Ryuzo: *See—*
Fujii, Hiroo; Tanaka, Kiyoaki; Nakamura, Masashi; Okuno, Ryuzo; Hashizume, Shigeyuki; Katayama, Hideo; and Fujita, Tsutomu, 4,350,326, Cl. 266-201.000.
Olbrich, Gottfried; and Pfeffer, Peter, to Robert Bosch GmbH. Battery powered electric motor vehicle. 4,350,219, Cl. 180-65.00R.
Oldaker, Herman F.: *See—*
Dowler, Danny E.; and Oldaker, Herman F., 4,349,995, Cl. 52-241.000.

Oldershaw, Paul V.; Hansen, James E.; and Hinds, Walter E. Bottom hole oil well pump. 4,350,478, Cl. 417-417.000.
Olds, Leonard E., to Manville Service Corporation. Optimized mixing and melting electric furnace. 4,351,054, Cl. 373-38.000.
Olin Corporation: *See*—
Kadija, Igor V., 4,350,580, Cl. 204-279.000.
Olofsson, Bertil R., to Akermans Verkstad AB. Apparatus for restricting the velocity of a hydraulic piston in its end positions. 4,350,078, Cl. 91-388.000.
Olson, Gerald R. Two-sided magnetized diverting plate for hammermill. 4,350,307, Cl. 241-81.000.
Olsson, Jan G.; and Samuelsson, Lars E. Assembly of prefabricated bicycle components. 4,350,360, Cl. 280-279.000.
Olsson, Sven O. Paddle. 4,350,445, Cl. 366-343.000.
Olympic Power Winches Limited: *See*—
Tattersall, John C., 4,350,109, Cl. 114-105.000.
Olympus Optical Co., Ltd.: *See*—
Kubota, Tetsumaru; and Koyata, Kenji, 4,350,150, Cl. 128-6.000.
Nakayama, Shigeru; and Takizawa, Tastuo, 4,350,870, Cl. 219-216.000.
Osada, Hajime; Kimura, Akiteru; Shimizu, Tokuo; Kitajima, Goro; Tomizawa, Yoshio; Kondo, Makoto; Motoyama, Kazuyasu; and Daigaku, Masaaki, 4,351,009, Cl. 360-105.000.
Yamashita, Nobuo; and Maeda, Miwako, 4,350,149, Cl. 128-6.000.
Omi, Kyoji: *See*—
Suzuki, Shigeru; Suzuki, Minoru; Suzuki, Koichi; Omi, Kyoji; Nagahara, Yasumori; Kagari, Yoshiharu; Hashimoto, Makoto; and Mori, Goro, 4,350,750, Cl. 430-125.000.
Ono, Toshihiko: *See*—
Kawai, Syuji; Yamane, Tadayuki; Abe, Michio; Ono, Toshihiko; and Yamauchi, Shuji, 4,350,594, Cl. 210-637.000.
Onofusa, Norio: *See*—
Hiyoshi, Kazuhiko; Matsuura, Norio; Matsugichi, Michiharu; Onofusa, Norio; and Nishikage, Tadao, 4,350,622, Cl. 524-831.000.
Opitz, Heinrich: *See*—
Montag, Bernhard; Mages, Gert; and Opitz, Heinrich, 4,350,757, Cl. 430-422.000.
Opprecht, Paul: *See*—
Stieger, Othmar, 4,350,862, Cl. 219-64.000.
Optimetrix Corporation: *See*—
Phillips, Edward H., 4,350,428, Cl. 354-254.000.
Osada, Hajime; Kimura, Akiteru; Shimizu, Tokuo; Kitajima, Goro; Tomizawa, Yoshio; Kondo, Makoto; Motoyama, Kazuyasu; and Daigaku, Masaaki, to Olympus Optical Co., Ltd. Apparatus for moving the pinch roller and the magnetic head of a tape recorder. 4,351,009, Cl. 360-105.000.
Ostler, Earl W., to Agri-Systems. Automatic feeding apparatus. 4,350,118, Cl. 119-51.00R.
Ostler, Earl W., to Agri-Systems. Animal feeding apparatus. 4,350,119, Cl. 119-51.00R.
Ostrowski, John S.; Grunewalder, John F.; and Castellucci, Nicholas T., to PPG Industries, Inc. Curable compositions comprising an azole-functional resin and a metal-ligand complex. 4,350,804, Cl. 525-327.300.
Otis Elevator Company: *See*—
Sheehy, George E.; and Bittar, Joseph, 4,350,226, Cl. 187-29.00R.
Otka, Robert P.: *See*—
Holt, James L.; and Otka, Robert P., 4,350,952, Cl. 324-166.000.
Ottertun, Harald D.: *See*—
Andersson, Sven O. S.; Ottertun, Harald D.; and Reinhardt, Hans, 4,350,667, Cl. 423-24.000.
Otto Durr Anlagenbau GmbH: *See*—
Otto, Eberhard, 4,350,506, Cl. 55-241.000.
Otto, Eberhard, to Otto Durr Anlagenbau GmbH. Washing device. 4,350,506, Cl. 55-241.000.
Ouchi, Hidenaga: *See*—
Itagaki, Takaharu; and Ouchi, Hidenaga, 4,350,773, Cl. 521-31.000.
Outboard Marine Corporation: *See*—
Holt, James L.; and Otka, Robert P., 4,350,952, Cl. 324-166.000.
Ovcharenko, Nikolai T.: *See*—
Pokhodnya, Igor K.; Shlepakov, Valery N.; Alter, Vladimir F.; Ovcharenko, Nikolai T.; Kaplienko, Igor P.; and Rak, Petr I., 4,350,311, Cl. 242-83.000.
Owens-Illinois, Inc.: *See*—
McColl, Bruce J., 4,350,190, Cl. 144-3.00D.
Owsley, Herbert B.: *See*—
Bunn, Stuart E.; and Owsley, Herbert B., 4,350,179, Cl. 137-540.000.
Oyama, Hajime: *See*—
Ohnuma, Teruyuki; Miyakawa, Seiichi; and Oyama, Hajime, 4,350,749, Cl. 430-100.000.
Oyama, Motofumi; and Hashimoto, Kinro, to Nippon Zeon Co. Ltd. Oil-resistant rubber composition. 4,350,796, Cl. 525-233.000.
Oyokota, Shigeru: *See*—
Ueda, Hiroshi; and Oyokota, Shigeru, 4,350,421, Cl. 354-152.000.
Ozawa, Yutaka: *See*—
Sugimura, Takaaki; Ozawa, Yutaka; and Takahashi, Mari, 4,350,723, Cl. 428-42.000.
Ozols, Gunars M.: *See*—
Frieser, Rudolf G.; Ma, William H.; Ozols, Gunars M.; and Zingerman, Bryant N., 4,350,578, Cl. 204-192.00R.
P.I.V. Antrieb Werner Reimers GmbH & Co. KG: *See*—
Steuer, Herbert, 4,350,491, Cl. 474-12.000.
Pabodie, Robert M., to Monarch Marking Systems, Inc. Label printing and applying apparatus. 4,350,554, Cl. 156-384.000.
Pabst, Manfred: *See*—
Van Wersch, Kurt; and Pabst, Manfred, 4,349,930, Cl. 8-151.000.
Pacific Scientific Company: *See*—
Yang, Elmer C., 4,350,232, Cl. 188-378.000.
Package Machinery Company: *See*—
Greenawalt, Eddie L.; Ray, Steve C.; and Garner, Daniels S., 4,350,003, Cl. 53-548.000.
Page, Edward H.: *See*—
Scotti, Frank; and Page, Edward H., 4,350,774, Cl. 521-95.000.
Page, John S., Jr. Apparatus to pump multiple wells. 4,350,080, Cl. 91-520.000.
Paget, Win W.: *See*—
Meece, Meredith W.; and Paget, Win W., 4,350,475, Cl. 417-238.000.
Pagnamenta, Antonio, to Motorola, Inc. Impedance matching circuitry for radio frequency signal power amplifiers. 4,350,958, Cl. 330-286.000.
Pako Corporation: *See*—
Anderson, Richard D.; and Wedel, John A., 4,350,277, Cl. 226-190.000.
Palvarini, Attilio; Lorusso, Simone; and Longoni, Angelo, to Montedison S.p.A. Pesticide-containing plastic coverings for agricultural cultivations. 4,350,678, Cl. 424-27.000.
Pander, Hans J.: *See*—
Degner, Dieter; Pander, Hans J.; and Siegel, Hardo, 4,350,641, Cl. 260-465.00E.
Pandrol Limited: *See*—
Dobson, George D., 4,350,291, Cl. 238-349.000.
Pankratova, Lidia A.: *See*—
Alexandrov, Vyacheslav S.; Guschin, Alexandr E.; Zavodov, Rudolf V.; Zhukova, Elena I.; Ivanov, Alexandr A.; Fofanova, Tatyana S.; Mikhailov, Evgeny I.; Dianov, Ivan M.; Luzin, Pavel M.; Sergeev, Igor A.; Pankratova, Lidia A.; Krylova, Vera E.; and Leibenzon, Semen A., 4,350,482, Cl. 425-83.100.
Panlmatic Company: *See*—
Rusteberg, Robert K., 4,350,253, Cl. 211-74.000.
Paradis, Roland C.: *See*—
Conlon, Ralph D.; Miles, Stanley F.; and Paradis, Roland C., 4,350,586, Cl. 210-149.000.
Pardon, Pierre; Lantier, Frederic; Marly, Jose; and Bourgy, Gerard, to Institut National de la Recherche Agronomique. Preparation of *Salmonella abortus ovis* strains and vaccine compositions containing them. 4,350,684, Cl. 424-92.000.
Parfree, Colin S.; and Worthington, Peter, to International Standard Electric Corporation. Cable strain monitoring. 4,350,046, Cl. 73-768.000.
Parikh, Shridhar V.: *See*—
Goswami, Jagadish C.; and Parikh, Shridhar V., 4,350,792, Cl. 525-129.000.
Parker, Richard G., to B. F. Goodrich Company, The. Chlorination of poly(vinyl chloride) in liquid chlorine, and chlorinated poly(vinyl chloride) composition. 4,350,798, Cl. 525-331.600.
Parma Corporation; *See*—
Rogers, Walter C., Jr., 4,350,386, Cl. 297-85.000.
Rogers, Walter C., Jr., 4,350,387, Cl. 297-85.000.
Parsen, Frank E.; and Yatabe, Thomas T., to Duracell Inc. Electrochemical cells having hydrogen gas absorbing agent. 4,350,745, Cl. 429-57.000.
Parsson, Nils O.; and Nilsson, Sten E., to Saab-Scania Aktiebolag. Safety headrest for a vehicle seat. 4,350,389, Cl. 297-410.000.
Pasbrig, Max, to Lacrex Brevetti S.A. Appliance for use in finger exercises. 4,350,335, Cl. 272-67.000.
Pascoe, Robert A.: *See*—
Moore, Daniel J.; and Pascoe, Robert A., 4,350,455, Cl. 400-279.000.
Pasternack, Adalbert, to Dragerwerk AG. Warning signal device for respirators. 4,350,115, Cl. 116-70.000.
Patel, Raman: *See*—
Coran, Aubert Y.; and Patel, Raman, 4,350,740, Cl. 428-461.000.
Patentes Y Novedades, S.A.: *See*—
Bruguera, Ramon, 4,350,543, Cl. 156-62.800.
Patis, Bruce L., to Illinois Tool Works Inc. Battery hydrometer with analog output. 4,350,885, Cl. 250-231.00R.
Paulus, Rudolf; Schankat, Norbert; Weinzierl, Manfred; and Franke, Walter, to Agfa-Gevaert Aktiengesellschaft. Electrophotographic copying machine. 4,350,434, Cl. 355-14.0SH.
Payette, Lionel J.: *See*—
Saunders, Hollis S.; Carmer, Richard V.; and Payette, Lionel J., 4,350,737, Cl. 428-383.000.
Saunders, Hollis S.; Carmer, Richard V.; and Payette, Lionel J., 4,350,738, Cl. 428-383.000.
Peddie, Robert A.; and Fielden, John S., to South Eastern Electricity Board. Meters for measuring electrical energy consumption. 4,351,028, Cl. 364-483.000.
Peelman, Harold E., to Halliburton Company. Method and system for determining thermal neutron lifetime of earth formations. 4,350,888, Cl. 250-270.000.
Peil, William; and McFadyen, Robert J., to General Electric Company. Lighting unit. 4,350,930, Cl. 315-49.000.
Pendleton, Harlan C. Removable chisel blade. 4,349,961, Cl. 30-168.000.
Penick, Ib; and Volkert, John K., to Compak Systems, Inc. Pop-ups and methods of making. 4,349,973, Cl. 40-124.100.
Penn, Laurence R., to Liquid Control Incorporated. Reaction arrestment mixer head and mixing process. 4,350,803, Cl. 528-10.000.

Pennwalt Corporation: *See*—
Vidal, Frederick D.; and Jayaraman, Anantharaman, 4,350,709, Cl. 426-319.000.
Wuerflein, Don E., 4,350,891, Cl. 378-110.000.

Peplow, Marvin J.: *See*—
Isham, Leonard E.; Peplow, Marvin J.; Sandy, Julius W.; and ViPond, Clyde M., 4,350,061, Cl. 81-9.510.

Perepezko, John H.; and Wiley, John D., to Wisconsin Alumni Research Foundation. Semiconductor device having an amorphous metal layer contact. 4,350,994, Cl. 357-67.000.

Perfluktiv-Consult AG: *See*—
Sundermann, Erich, 4,350,710. Cl. 426-19.000.

Perkin-Elmer Corporation, The: *See*—
Conlon, Ralph D.; Miles, Stanley F.; and Paradis, Roland C., 4,350,586, Cl. 210-149.000.

Perkin-Elmer Limited: *See*—
Higham, Peter, 4,350,037, Cl. 73-23.000.

Perlick Company, Inc., The: *See*—
Nezworski, James E., 4,350,270, Cl. 222-336.000.
Nezworski, James E.; and Strobel, John M., 4,350,273, Cl. 222-400.800.

Pernot, Jean-Michel: *See*—
Decraemer, Alain; and Pernot, Jean-Michel, 4,351,002, Cl. 358-158.000.

Peroutky, Donald C., to General Electric Company. Universal lifting magnet. 4,350,379, Cl. 294-65.500.

Perry, Fred G., to General Electric Company. Multiple console control system. 4,350,972, Cl. 340-825.000.

Perseo, Giuseppe: *See*—
de Castiglione, Roberto; Faoro, Fiorenzo; Perseo, Giuseppe; Piani, Silvano; and Santangelo, Francesco, 4,350,627, Cl. 260-112.50E.

Persson, Christer: *See*—
Rosengren, Bengt; and Persson, Christer, 4,350,146, Cl. 126-447.000.

Persson, Lennart P. E.: *See*—
Hakansson, Hakan B.; Persson, Lennart P. E.; and Wall, Berth-Ove G., 4,349,958, Cl. 29-612.000.

Persson, Nils G. W., to Nilssuns Industriemballage AB. Cargo pallet. 4,350,099, Cl. 108-56.100.

Peters, Carl H., to Platmanufaktur AB. Composite packing. 4,350,250, Cl. 206-605.000.

Peterson, Francis C., to Illinois Tool Works Inc. Rotary cutting wheel and method of making. 4,349,963, Cl. 30-347.000.

Peterson/Puritan, Inc.: *See*—
Hughett, Paul D., 4,350,605, Cl. 252-305.000.

Peterson, Richard H. Hybrid pipe organ with electronic tonal augmentation. 4,350,073, Cl. 84-1.250.

Petryk, Edward M., Jr., to Honeywell Information Systems Inc. Receiver apparatus for converting optically encoded binary data to electrical signals. 4,350,973, Cl. 340-347.0DD.

Petterson, Tor H. Product isolated aerosol container and method of manufacture. 4,350,272, Cl. 222-386.500.

Petty, Walter L., to Shell Oil Company. Process for preparation of a pesticidal phenylacetate enantiomer pair. 4,350,642, Cl. 260-465.00D.

Petzolt, Gert: *See*—
Muller, Erwin; Kollmann, Bernd; Sonnabend, Ferdinand; Petzolt, Gert; Balz, Josef; Walloschek, Bernhard; and Risse, Friedrich, 4,349,948, Cl. 29-157.10R.

Pfaff Industriemaschinen GmbH: *See*—
Albrecht, Ernst; Hensel, Reiner; Keller, Karl-Heinz; and Stahlschmitt, Horst, 4,350,105, Cl. 112-256.000.

Pfeffer, Peter: *See*—
Olbrich, Gottfried; and Pfeffer, Peter, 4,350,219, Cl. 180-65.00R.

Pfizer Inc.: *See*—
Cross, Peter E.; and Dickinson, Roger P., 4,350,696, Cl. 424-251.000.

Pfluger, Helmut C., to Norddeutsche Faserwerke GmbH. Fabric and garment of circular weft-knit or circular warp-knit material. 4,350,725, Cl. 428-95.000.

Philip, Charles R. Motorized fishing apparatus. 4,349,978, Cl. 43-19.200.

Philip Morris, Incorporated: *See*—
Van Auken, Thomas V., 4,350,832, Cl. 564-123.000.

Philipp, Rainer: *See*—
Heinemann, Otto; Schmits, Heinz-Herbert; Philipp, Rainer; and Berger, Artur, 4,350,244, Cl. 198-773.000.

Phillips, Edward H., to Optimetrix Corporation. Shutter mechanism. 4,350,428, Cl. 354-254.000.

Phillips Petroleum Company: *See*—
Blackwell, Jennings P.; and Towers, Richard R., 4,350,786, Cl. 524-263.000.
Furr, Danny L., 4,350,569, Cl. 203-2.000.
Tieszen, Dale O.; and Scoggins, Lacey E., 4,350,810, Cl. 528-388.000.

Phillips, Robert B., to Australasian Training Aids, Pty., Ltd. Hit detection and richochet discrimination in target apparatus. 4,350,882, Cl. 235-400.000.

Phillips, Robert B., to Australasian Training Aids (Pty.) Limited. Projectile locating apparatus for use in target shooting. 4,351,026, Cl. 364-423.000.

Phillips, Robert B.: *See*—
Knight, Lindsay C.; Phillips, Robert B.; Bowyer, William H.; and Moxley, Bruce, 4,350,881, Cl. 235-400.000.

Piani, Silvano: *See*—
de Castiglione, Roberto; Faoro, Fiorenzo; Perseo, Giuseppe; Piani, Silvano; and Santangelo, Francesco, 4,350,627, Cl. 260-112.50E.

Picard, George E. Chain saw support apparatus. 4,350,067, Cl. 83-796.000.

Pierce Corporation: *See*—
Gheen, Lyndle G., 4,350,295, Cl. 239-178.000.

Pike, Roscoe A.: *See*—
Layden, George K., Jr.; Bourdeau, Romeo G.; and Pike, Roscoe A., 4,350,672, Cl. 423-445.000.

Pilkington P.E. Limited: *See*—
Rogers, Philip J., 4,350,411, Cl. 350-174.000.

Pilot Man-Nen-Hitsu Kabushiki Kaisha: *See*—
Murahara, Koichi; and Yasunaga, Teibun, 4,350,458, Cl. 401-145.000.

Pilwat, Gunter: *See*—
Zimmermann, Ulrich; Saleemuddin, Mohammed; and Pilwat, Gunter, 4,350,767, Cl. 435-183.000.

Pino, Isidro. Quick closing gate. 4,350,199, Cl. 160-201.000.

Pinomaki, Sakari. Lever operated control apparatus. 4,350,055, Cl. 74-471.0XY.

Pintenat, Andre M.: *See*—
Cannavo, Christian G.; Cousin, Georges; Espagnacq, Andre; Frayssac, Jacques X.; Laine, Loic Y.; Midrouillet, Daniel J.; Pintenat, Andre M.; and Reboux, Jean B., 4,350,096, Cl. 102-209.000.

Platmanufaktur AB: *See*—
Peters, Carl H., 4,350,250, Cl. 206-605.000.

Platt, Thomas E.: *See*—
Fitzgerald, Maurice J.; and Platt, Thomas E., 4,350,759, Cl. 430-630.000.

Platz, Rolf: *See*—
Rieber, Norbert; Bohm, Heinrich; Platz, Rolf; and Fuchs, Werner, 4,350,819, Cl. 548-375.000.

Plum, Helmut: *See*—
Fischer, Hannes; and Plum, Helmut, 4,350,809, Cl. 528-361.000.

Pneumatic Scale Corporation: *See*—
Trusselle, William H.; and Gustafson, John A., Jr., 4,350,187, Cl. 141-90.000.

Pochet, Roger: *See*—
Yapoudjian, Claude; and Pochet, Roger, 4,350,405, Cl. 339-97.00P.

Pokhodnya, Igor K.; Shlepakov, Valery N.; Alter, Vladimir F.; Ovcharenko, Nikolai T.; Kaplienko, Igor P.; and Rak, Petr I. Wire coiling machine. 4,350,311, Cl. 242-83.000.

Polaroid Corporation: *See*—
Bartels-Keith, James R.; and Puttick, Anthony J., 4,350,754, Cl. 430-219.000.
Fitzgerald, Maurice J.; and Platt, Thomas E., 4,350,759, Cl. 430-630.000.
Grasshoff, Michael J., 4,350,801, Cl. 526-93.000.

Polk Audio, Inc.: *See*—
Polk, Matthew S., 4,350,847, Cl. 179-1.0GA.

Polk, Matthew S., to Polk Audio, Inc. Subwoofer system using a passive radiator. 4,350,847, Cl. 179-1.0GA.

Poll, Ian, to Shell Oil Company. Method and apparatus for the combustion of solid fuel. 4,350,103, Cl. 110-264.000.

Pollin, Irvin, to United States of America, Army. Device to de-spin objects with very high spin. 4,350,315, Cl. 244-3.230.

Polster, Rudolf: *See*—
Fechner, Wolf D.; Kranz, Joachim; and Polster, Rudolf, 4,350,534, Cl. 106-288.00Q.

Polychrome Corporation: *See*—
Shelnut, James; Golda, Eugene; Wilkes, Alan; and Shimazu, Kenichi, 4,350,753, Cl. 430-190.000.

Pommer, Ernst-Heinrich: *See*—
Rentzea, Costin; Zeeh, Bernd; Pommer, Ernst-Heinrich; and Mappes, Celia J., 4,350,701, Cl. 424-269.000.

Pommerrenig, Dieter H., to Rockwell International Corporation. Multi-element imager device. 4,350,886, Cl. 250-239.000.

Popoff, Andrew, to Keuffel & Esser Company. Precision laminating press. 4,350,555, Cl. 156-540.000.

Poppe, Richard L.: *See*—
Childress, David L.; Hayes, William V.; and Poppe, Richard L., 4,350,830, Cl. 562-535.000.

Porta, Augusto; Fresnel, Jean-Marie; and Kulhanek, Antonin, to Battelle Memorial Institute. Method for preparing an aqueous treatment solution containing at least hydrogen peroxide ions and hydroxyl ions in predetermined concentrations. 4,350,575, Cl. 204-84.000.

Porter, Ned A.; Ziegler, Carl B., Jr.; and Roberts, David H., to Duke University. Vinyl cyclopropyl compounds as precursors to fatty acid oxidation products. 4,350,834, Cl. 568-568.000.

Post, Martin F. M.; and Schaper, Lambert, to Shell Oil Company. Process for the preparation of hydrocarbons from synthesis gas. 4,350,772, Cl. 518-714.000.

Post Office, The: *See*—
Matthews, Michael R.; Newman, David H.; Smith, David R.; and Steventon, Alan G., 4,350,960, Cl. 372-46.000.

Potain: *See*—
Noly, Jean, 4,350,254, Cl. 212-153.000.

Potter, Charles, to Go-Jo Industries, Inc. Manually operated dispensing pump. 4,350,268, Cl. 222-214.000.

Potter, R. Christopher: *See*—
Liska, Donald J.; Schamaun, Roger G.; Clark, Donald C.; Potter, R. Christopher; and Frank, Joseph A., 4,350,921, Cl. 313-360.100.

Potvin, Robert: *See*—
Moreau, Roland; and Potvin, Robert, 4,350,113, Cl. 114-270.000.

Pouillange, Jean P.; Gaydon, Jean P.; and Chausse, Bernard, to Compagnie Electro-Mecanique. Apparatus for heating strip elements in a

continuous pass process by electromagnetic induction. 4,350,861, Cl. 219-10.61R.
Power Controls Corporation: *See—*
Strauch, George E., Jr., 4,350,944, Cl. 318-779.000.
PPG Industries, Inc.: *See—*
Krumwiede, John F., 4,350,512, Cl. 65-27.000.
Ostrowski, John S.; Grunewalder, John F.; and Castellucci, Nicholas T., 4,350,804, Cl. 525-327.300.
Stewart, John L., 4,350,515, Cl. 65-40.000.
Presto Lock, Inc.: *See—*
Bako, Lazlo, 4,350,375, Cl. 292-24.000.
Priesnitz, Uwe: *See—*
Fuchs, Rainer; Maurer, Fritz; Priesnitz, Uwe; and Riebel, Hans-Jochem, 4,350,640, Cl. 260-465.00D.
Riebel, Hans-Jochem; Maurer, Fritz; and Priesnitz, Uwe, 4,350,824, Cl. 560-124.000.
Prinsze, Onno M. Multiple constant current battery charging apparatus. 4,350,946, Cl. 320-22.000.
Pritchard, Eric K. Amplifier for inductive loads with corrective current sensing. 4,350,943, Cl. 318-696.000.
Procter & Gamble Company, The: *See—*
Dornbusch, Arthur H.; and Smith, Raymond D., 4,350,281, Cl. 229-38.000.
Prudhon, Francois; and Scicluna, Augustin, to Rhone-Poulenc Industries. Device for treating substances in different phases, such as the treatment of substances in liquid, semi-liquid or paste form, by another notably gaseous phase. 4,350,101, Cl. 110-238.000.
Prueher, Andrew B. Lid for drinking containers. 4,350,260, Cl. 220-254.000.
PSI Mobile Products, Inc.: *See—*
Landers, Donald F., 4,350,362, Cl. 280-478.00A.
Purdue Research Foundation: *See—*
Mehlberg, Robert L., 4,350,766, Cl. 435-161.000.
Puttick, Anthony J.: *See—*
Bartels-Keith, James R.; and Puttick, Anthony J., 4,350,754, Cl. 430-219.000.
Quadco Alaska, Inc.: *See—*
Decker, Elmer L.; and Moon, James, 4,349,952, Cl. 29-402.060.
Quaker Oats Company, The: *See—*
Duvall, Leroy F., 4,350,714, Cl. 426-559.000.
Quintilian, Bartholomew F. Automatic fuel-cost monitoring system. 4,350,880, Cl. 235-96.000.
Quinton, Brian M., to De La Rue Giori S.A. Conveyor device for transferring sheets between two printing units of a combined printing machine. 4,350,334, Cl. 271-274.000.
Quist, Kaj, to AB Tudor. Liquid replenishment system for accumulator cells. 4,350,185, Cl. 141-35.000.
Radio Research Laboratories, Ministry of Posts and Telecommunications: *See—*
Yoshiya, Kiyosumi, 4,351,062, Cl. 375-99.000.
Radtke, Robert P., to NL Industries Inc. Drill bit and method of manufacture. 4,350,215, Cl. 175-329.000.
Rak, Petr I.: *See—*
Pokhodnya, Igor K.; Shlepakov, Valery N.; Alter, Vladimir F.; Ovcharenko, Nikolai T.; Kaplienko, Igor P.; and Rak, Petr I., 4,350,311, Cl. 242-83.000.
Ramirez, Justo D. Juicer having improved balance. 4,350,087, Cl. 99-511.000.
Randklev, Ronald M., to Minnesota Mining and Manufacturing Company. Glass composition and articles. 4,350,532, Cl. 106-30.000.
Ransburg Corporation: *See—*
Scharfenberger, James A., 4,350,720, Cl. 427-401.000.
Rapagnani, Nazareno L.: *See—*
Davis, Steven J.; and Rapagnani, Nazareno L., 4,350,661, Cl. 422-98.000.
Rapayelian, Christian, to Societe Brio, Societe Anonyme. Assembly for mounting a picture to be displayed. 4,349,974, Cl. 40-156.000.
Rasshofer, Werner; Grogler, Gerhard; and Meyborg, Holger, to Bayer Aktiengesellschaft. Process for the preparation of polymer precursors containing oxazolin-2-one rings. 4,350,781, Cl. 521-149.000.
Rault, Philippe M.: *See—*
Chable, Yves A.; Lacroix, Serge; and Rault, Philippe M., 4,350,168, Cl. 128-736.000.
Ray, Steve C.: *See—*
Greenawalt, Eddie L.; Ray, Steve C.; and Garner, Daniels S., 4,350,003, Cl. 53-548.000.
Raychem Corporation: *See—*
Holmes, James C., 4,350,183, Cl. 138-89.000.
Raytheon Company: *See—*
Dudley, Kenneth W.; Teich, Wesley W.; and Bowen, Robert F., 4,350,859, Cl. 219-10.55F.
RCA Corporation: *See—*
Berry, David A., 4,351,048, Cl. 369-288.000.
Catanese, Carmen A.; and Bloom, Stanley, 4,350,922, Cl. 313-402.000.
Elliott, Charles A., 4,351,046, Cl. 369-233.000.
Gillberg, James E., 4,350,906, Cl. 307-469.000.
Harlan, Wayne E., 4,350,995, Cl. 358-37.000.
Harlan, Wayne E., 4,351,003, Cl. 358-166.000.
Hughes, Richard H., 4,350,923, Cl. 313-414.000.
Marschka, Frank D., 4,350,925, Cl. 313-451.000.
Reboux, Jean B.: *See—*
Cannavo, Christian G.; Cousin, Georges; Espagnacq, Andre; Frayssac, Jacques X.; Laine, Loic Y.; Midrouillet, Daniel J.; Pintenat, Andre M.; and Reboux, Jean B., 4,350,096, Cl. 102-209.000.
Reczek, James A.; and Welter, Thomas R., to Eastman Kodak Company. Photographic elements and film units containing imidomethyl blocked photographic reagents. 4,350,752, Cl. 430-219.000.
Redlich, Horst; Borchard, Heinz; and Ihlenburg, Rainer, to Licentia Patent-Verwaltungs-G.m.b.H. Centering of a disc-shaped record carrier on a turntable. 4,351,047, Cl. 369-270.000.
Reed, Russell, Jr.: *See—*
Kincaid, John F.; and Reed, Russell, Jr., 4,350,542, Cl. 149-11.000.
Regie Nationale des Usines Renault: *See—*
Bascou, Jacques, 4,350,376, Cl. 292-263.000.
Reily, William S., to United States Gypsum Company. Wear and water resistant plaster articles. 4,350,736, Cl. 428-341.000.
Reinhardt, Hans: *See—*
Andersson, Sven O. S.; Ottertun, Harald D.; and Reinhardt, Hans, 4,350,667, Cl. 423-24.000.
Reinking, Klaus: *See—*
Schmidt, Manfred; and Reinking, Klaus, 4,350,793, Cl. 525-133.000.
Rek, Johannes H. M., to Internationale Octrooi Maatschappij "Octropa" B.V. Plastic fat based material and products therefrom. 4,350,715, Cl. 426-570.000.
Relyveld, Edgar R.; and Henocq, Emile, to Institut Pasteur. Allergen composition and method for preparation thereof. 4,350,686, Cl. 424-88.000.
Rempfler, Hermann: *See—*
Bohner, Beat; and Rempfler, Hermann, 4,350,521, Cl. 71-94.000.
Renault Sport: *See—*
Boudy, Jean-Pierre, 4,350,128, Cl. 123-369.000.
Rentzea, Costin; Zeeh, Bernd; Pommer, Ernst-Heinrich; and Mappes, Celia J., to BASF Aktiengesellschaft. 1-(Trihalomethyl-sulfenyl)-4-aryl-1,2,4-triazolin-5-ones, and process for controlling fungi. 4,350,701, Cl. 424-269.000.
Repa Feinstanzwerk GmbH: *See—*
Adomeit, Heinz D., 4,350,313, Cl. 242-107.40C.
Research Corporation: *See—*
Kay, David B.; and Wheeless, Leon L., Jr., 4,350,892, Cl. 250-461.200.
Keith, Alec D.; and Snipes, Wallace, 4,350,707, Cl. 424-346.000.
Lee, Kuo-Hsiung, 4,350,638, Cl. 549-275.000.
Lipton, Allan; and Kepner, Nancy, 4,350,687, Cl. 424-177.000.
Stammer, Charles H., 4,350,628, Cl. 260-112.50R.
Respiratory Care, Inc.: *See—*
de la Cruz, Exequiel, 4,350,647, Cl. 261-65.000.
Retallick, William B.; and Smithson, Harold R. Cylindrical metal honeycomb catalyst supports, and method for forming them. 4,350,617, Cl. 252-477.00R.
Rhone-Poulenc Industries: *See—*
Bigot, Bernard; and Gielly, Jean-Francois, 4,350,671, Cl. 423-320.000.
Boudot, Bernard; and Nury, Georges, 4,350,558, Cl. 156-617.0SP.
Boudot, Bernard; and Nury, Georges, 4,350,559, Cl. 156-617.0SP.
Prudhon, Francois; and Scicluna, Augustin, 4,350,101, Cl. 110-238.000.
Riccobono, Paul J. Humidity-sensitive broken panel alarm. 4,350,978, Cl. 340-550.000.
Rice, Doris M.: *See—*
Dominguez, Richard J. G.; Rice, Doris M.; and Zimmerman, Robert L., 4,350,778, Cl. 521-118.000.
Riceberg, Louis J., to Corning Glass Works. Stabilization of sensitive biologically active intermediate metabolites such as folic acid derivatives. 4,350,659, Cl. 422-61.000.
Rich Products Corporation: *See—*
Kahn, Marvin L.; and Eapen, Kuttikandathil E., 4,350,711, Cl. 426-102.000.
Richard, Maurice E.; and Winarski, Daniel J., to International Business Machines Corporation. Tape reel hub including a cantilever beam section to reduce tape tenting. 4,350,309, Cl. 242-68.300.
Richards, Kennith E., to Mackey, Thomas E.; and Haire, Donal. Remote control car heater. 4,350,287, Cl. 237-12.30A.
Richardson, Roy; and Czenkusz, Bernard, to Yorkshire Electricity Board. Method of and apparatus for testing wooden poles. 4,350,044, Cl. 73-600.000.
Richer, Donald K., to Foxboro Company, The. Process control system with improved system security features. 4,351,023, Cl. 364-187.000.
Richey, Robert J., Jr.: *See—*
Huang, Shih L.; McQuillen, Edward J.; and Richey, Robert J., Jr., 4,350,728, Cl. 428-105.000.
Richter, Hermann: *See—*
Durr, Heinrich; Richter, Hermann; Weber, Wendelin; Goerke, Burkhard; and Engler, Peter, 4,350,450, Cl. 400-124.000.
Ricoh Company Ltd.: *See—*
Kondoh, Shiroh, 4,350,432, Cl. 355-3.0DD.
Ohnuma, Teruyuki; Miyakawa, Seiichi; and Oyama, Hajime, 4,350,749, Cl. 430-100.000.
Suzuki, Shigeru; Suzuki, Minoru; Suzuki, Koichi; Omi, Kyoji; Nagahara, Yasumori; Kagari, Yoshiharu; Hashimoto, Makoto; and Mori, Goro, 4,350,750, Cl. 430-125.000.
Riebel, Hans-Jochem; Maurer, Fritz; and Priesnitz, Uwe, to Bayer Aktiengesellschaft. Process for the preparation of 1,1-dichloroalkenes. 4,350,824, Cl. 560-124.000.
Riebel, Hans-Jochem: *See—*
Fuchs, Rainer; Maurer, Fritz; Priesnitz, Uwe; and Riebel, Hans-Jochem, 4,350,640, Cl. 260-465.00D.
Rieber, Norbert; Bohm, Heinrich; Platz, Rolf; and Fuchs, Werner, to BASF Aktiengesellschaft. 1-Hydroxypyrazole. 4,350,819, Cl. 548-375.000.

Riedl, Reinhold, to Hombak Maschinenfabrik GmbH u. Conkg. Arrangement for cutting wood into chips. 4,350,191, Cl. 144-172.000.
Riffe, Delmar R., to Westinghouse Electric Corp. Cooling system for rotor of a dynamoelectric machine. 4,350,908, Cl. 310-61.000.
Rispin, Peter P.: *See*—
Knutson, Richard K.; Webster, Bruce L.; Johnston, John W.; and Rispin, Peter P., 4,350,110, Cl. 114-243.000.
Risse, Friedrich: *See*—
Muller, Erwin; Kollmann, Bernd; Sonnabend, Ferdinand; Petzolt, Gert; Balz, Josef; Walloschek, Bernhard; and Risse, Friedrich, 4,349,948, Cl. 29-157.10R.
Ritchie, Leon T.: *See*—
Douty, George H.; Landis, John M.; and Ritchie, Leon T., 4,350,402, Cl. 339-74.00R.
Riverside Research Institute: *See*—
Lizzi, Frederic L.; and Weil, Kurt W., 4,350,917, Cl. 310-320.000.
Ro, David H.; Klar, Erhard; and Whitman, Charles I., to SCM Corporation. Corrosion-resistant powder-metallurgy stainless steel powders and compacts therefrom. 4,350,529, Cl. 75-228.000.
Robert Bosch GmbH: *See*—
Harsch, Klaus; and Schulzke, Peter, 4,350,132, Cl. 123-490.000.
Olbrich, Gottfried; and Pfeffer, Peter, 4,350,219, Cl. 180-65.00R.
Robert, Christian C.: *See*—
Goldschild, Pierre H.; and Robert, Christian C., 4,350,205, Cl. 166-375.000.
Roberts, David H.: *See*—
Porter, Ned A.; Ziegler, Carl B., Jr.; and Roberts, David H., 4,350,834, Cl. 568-568.000.
Roberts, Marvin A. Demand drive component. 4,350,278, Cl. 226-190.000.
Robertson, Harry A., Jr.: *See*—
McTavish, James C., 4,350,349, Cl. 277-199.000.
Robichaud, John F. Solid fuel heater with improved primary/secondary air control system. 4,350,139, Cl. 126-77.000.
Robinson, Grenville A.; Kember, Peter N.; and Burns, Derek K., to EMI Limited. Ammonia gas sensors. 4,350,660, Cl. 422-90.000.
Robinson, Joseph G.; and Brain, Sally A., to Coal Industry (Patents) Limited. Phenolated naphthalene formaldehyde resin varnish. 4,350,623, Cl. 524-391.000.
Robinson, Norman R. Filtration system. 4,350,590, Cl. 210-243.000.
Rock, Erich; and Brunner, Josef, to Julius Blum Gesellschaft m.b.H. Multi-pintle hinge with sliding spring closing mechanism. 4,349,941, Cl. 16-288.000.
Rockwell International Corporation: *See*—
August, Rudolf R.; Anderson, Dean B.; and Yao, Shi-Kay, 4,350,916, Cl. 310-313.00B.
Pommerrenig, Dieter H., 4,350,886, Cl. 250-239.000.
Rodriguez, Celestino, to Bendix Corporation, The. Spindle orient device. 4,350,939, Cl. 318-592.000.
Rogers, Philip J., to Pilkington P.E. Limited. Transfer lens and head-down display using the same. 4,350,411, Cl. 350-174.000.
Rogers, R. Barry, to White-McKee Inc. Tank-baffle system. 4,350,258, Cl. 220-22.000.
Rogers, Walter C., Jr., to Parma Corporation. Reclining chair with improved actuation. 4,350,386, Cl. 297-85.000.
Rogers, Walter C., Jr., to Parma Corporation. Reclining chair with improved actuation. 4,350,387, Cl. 297-85.000.
Rogner, Thomas; and Frank, Anton, to Voith Turbo GmbH & Co. KG. Pumping apparatus for fluid. 4,350,011, Cl. 60-337.000.
Rohm and Haas Company: *See*—
Bayer, Horst O.; and Swithenbank, Colin, 4,350,522, Cl. 71-111.000.
Rojey, Alexandre, to Institut Francais du Petrole. Process for producing heat by means of a heat pump operated with a fluid mixture as working agent and air as heat source. 4,350,020, Cl. 62-93.000.
Rood, Alvin A., to Nordson Corporation. Method for manufacturing an airless spray nozzle. 4,349,947, Cl. 29-157.00C.
Roos, Ermi: *See*—
Gilbert, Ian D.; Halloran, Michael T.; and Roos, Ermi, 4,350,292, Cl. 239-7.000.
Rose, Paul F.: *See*—
Kuhn, William T., 4,350,275, Cl. 226-14.000.
Rose, Thomas H.: *See*—
Kuhn, William T., 4,350,275, Cl. 226-14.000.
Rosemeier, Friedrich; and Kerber, Helmut, to Gambro Dialysatoren KG. Transferring means for use in a device for separating liquids. 4,350,284, Cl. 233-27.000.
Rosenbaum, Erik, to United States of America, Navy. Feedback signal amplifier. 4,350,959, Cl. 330-110.000.
Rosenfeld, Gideon, to Scitex Corporation Ltd. Screened image reproduction. 4,350,996, Cl. 358-75.000.
Rosengren, Bengt; and Persson, Christer. Solar collector. 4,350,146, Cl. 126-447.000.
Rosenthal, Joel W.; Dahlberg, Arthur J.; and Kuehler, Christopher W., to Chevron Research Company. Two-stage coal liquefaction process with process-derived solvent. 4,350,582, Cl. 208-8.0LE.
Roske, Eckhard: *See*—
Straub, Ferdinand; Lang, Siegfried; and Roske, Eckhard, 4,350,791, Cl. 525-123.000.
Rosso, John R.: *See*—
Valiga, Richard E.; and Rosso, John R., 4,350,461, Cl. 405-128.000.
Roth, Donald J., to Continental Group, Inc., The. Closure having opening means. 4,350,261, Cl. 220-270.000.
Rotork Controls Limited: *See*—
Fry, Jeremy J.; and Warnett, Christopher, 4,350,081, Cl. 92-128.000.
Rouget, Jean P.; and Roustant, Edmond, to Thomson-Brandt. Mechanical and electrical coupling device for charges, particularly military charges. 4,350,074, Cl. 89-1.50D.
Roussel Uclaf: *See*—
Clements-Jewery, Stephen; Westwood, Robert; and Hairsine, Peter W., 4,350,697, Cl. 424-256.000.
Martel, Jacques; Tessier, Jean; and Teche, Andre, 4,350,637, Cl. 549-304.000.
Westwood, Robert; Tully, Wilfred R.; and Murdoch, Robert, 4,350,695, Cl. 424-251.000.
Roustant, Edmond: *See*—
Rouget, Jean P.; and Roustant, Edmond, 4,350,074, Cl. 89-1.50D.
Rowe, Eugene H.; and Howard, Frank H., to B. F. Goodrich Company, The. Polyester resins toughened with vinyl terminated liquid polymers. 4,350,789, Cl. 525-31.000.
Roy, Leo T., to Craft, Inc. Easel hinge construction. 4,349,942, Cl. 16-376.000.
Rozhansky, Boris: *See*—
Broutman, Lawrence J.; Rozhansky, Boris; and Zlatkevich, Lev, 4,350,495, Cl. 23-230.0PC.
Rubio, Jose V., Jr. Coconut shredder and cutter appliance. 4,350,088, Cl. 99-538.000.
Ruegg, Hans, to Von Roll AG. Combined combustion and melting furnace for solid, pasty and liquid waste materials. 4,350,102, Cl. 110-246.000.
Ruhr Kohle AG: *See*—
Wild, Heinz W., 4,350,392, Cl. 299-13.000.
Ruiz de Palacios, Jose I., to Sistemas Naturales Internacionales, S.A., Sinatin, S.A. Natural oak aroma for accelerating aging of alcoholic beverages. 4,350,708, Cl. 426-11.000.
Russel, Matthew J.: *See*—
Holzhauser, Ronald C.; McGlen, James A.; and Russel, Matthew J., 4,350,329, Cl. 271-9.000.
Rusteberg, Robert K., to Panlmatic Company. Bottle storage rack. 4,350,253, Cl. 211-74.000.
Ryan, James M.: *See*—
Holmes, Arthur S.; and Ryan, James M., 4,350,511, Cl. 62-17.000.
Ryobi Ltd.: *See*—
Ishii, Koji, 4,350,093, Cl. 101-217.000.
S.E.G. Resistor A.B.: *See*—
Soderholm, Arne, 4,350,218, Cl. 177-255.000.
Saab-Scania Aktiebolag: *See*—
Parsson, Nils O.; and Nilsson, Sten E., 4,350,389, Cl. 297-410.000.
Sable Freres International: *See*—
Aondetto, Bernard, 4,350,317, Cl. 248-588.000.
Sagae, Syoji; Matsuda, Yasumasa; Kasahara, Masatoshi; and Suzuki, Masayoshi, to Hitachi, Ltd.; and Hitachi Koki Co., Ltd. Ink-jet printing apparatus. 4,350,989, Cl. 346-140.00R.
Saiag S.p.A. Industria Articoli Gomma: *See*—
Azzola, Roberto, 4,350,084, Cl. 98-2.000.
St. Denis, Joseph F. Support for grinding thread cutting tools. 4,349,990, Cl. 51-220.000.
Saint Gobain Industries: *See*—
Bonnet, Alain, 4,350,483, Cl. 425-115.000.
Saint Gobain Vitrage: *See*—
Felbinger, Willy, 4,351,016, Cl. 361-181.000.
Saito, Kazuo: *See*—
Ito, Hiroshi; and Saito, Kazuo, 4,350,229, Cl. 188-73.450.
Saito, Motoyuki: *See*—
Fukutome, Satoru; Hatanaka, Hideo; and Saito, Motoyuki, 4,351,041, Cl. 368-88.000.
Saito, Tsukasa: *See*—
Kato, Matsuo; Ohtsuki, Tomonari; Igarashi, Yoshiaki; Saito, Tsukasa; and Suzuki, Toshiaki, 4,350,409, Cl. 339-186.00M.
Saitoh, Joichi, to Kotobuki Seihan Printing Co., Ltd. Blanket for offset printing. 4,350,735, Cl. 428-328.000.
Sakai, Hiromitsu: *See*—
Araki, Ken; Sakai, Hiromitsu; and Sugiura, Yutaka, 4,350,717, Cl. 427-8.000.
Sakamaki, Hisashi: *See*—
Yagasaki, Toshiaki; Masuda, Shunichi; Shimizu, Katsuichi; and Sakamaki, Hisashi, 4,350,436, Cl. 355-14.0SH.
Sakata, Kazuhiro; Yuminaka, Takeo; Nakazato, Masao; Yoneda, Kenji; Kuzunuki, Soshiro; and Katayama, Yasunori, to Hitachi, Ltd. Elevator control system. 4,350,225, Cl. 187-29.00R.
Sakata, Takayoshi: *See*—
Kuwabara, Eiji; Sakata, Takayoshi; Kawauchi, Noboru; Ide, Yuuichi; and Matsuo, Takeshi, 4,350,023, Cl. 62-176.00E.
Sakurai, Kazuhiro: *See*—
Kawata, Shoji; Hattori, Kyo; and Sakurai, Kazuhiro, 4,350,319, Cl. 251-65.000.
Salazar, Jorge. Soccer board game. 4,350,343, Cl. 273-247.000.
Saleemuddin, Mohammed: *See*—
Zimmermann, Ulrich; Saleemuddin, Mohammed; and Pilwat, Gunter, 4,350,767, Cl. 435-183.000.
Saletta, Gary F.: *See*—
Elms, Robert T.; Engel, Joseph C.; Mercier, Bernard J.; Saletta, Gary F.; and Wilson, John T., 4,351,012, Cl. 361-96.000.
Salomon, Georges P. J., to Ets Francois Salomon & Fils. Ski brake. 4,350,364, Cl. 280-605.000.
Samsonite Corporation: *See*—
Bromley, Robert L., 4,350,030, Cl. 70-70.000.
Samuels, Michael W.: *See*—
Zasio, John J.; and Samuels, Michael W., 4,350,866, Cl. 219-121.0EM.

Samuelsson, Lars E.: *See*—
Olsson, Jan G.; and Samuelsson, Lars E., 4,350,360, Cl. 280-279.000.

Sanchez, Pierre; and Vitalis, Andre, to Societe Anonyme dite: Sea Tank Co. Platform for utilization of the thermal energy of the sea. 4,350,014, Cl. 60-641.700.

Sandegard, Jan D. Device for use when training the appropriate handling of a dislocated injury on a part of a body. 4,350,490, Cl. 434-274.000.

Sanders Associates, Inc.: *See*—
Mortimer, Thomas J., 4,350,999, Cl. 358-147.000.

Sanders, James M.: *See*—
Klemarczyk, Philip T.; Sanders, James M.; Vock, Manfred H.; Vinals, Joaquin F.; Schmitt, Frederick L.; and Granda, Edward J., 4,350,823, Cl. 560-120.000.

Sandmann, Harald: *See*—
Hartinger, Edmund; Julke, Elias; and Sandmann, Harald, 4,350,620, Cl. 252-628.000.

Sandoz Ltd.: *See*—
Baumann, Hans-Peter, 4,350,493, Cl. 8-617.000.
Stadler, Paul; and Troxler, Franz, 4,350,634, Cl. 260-326.13B.

Sandy, Julius W.: *See*—
Isham, Leonard E.; Peplow, Marvin J.; Sandy, Julius W.; and ViPond, Clyde M., 4,350,061, Cl. 81-9.510.

Sanshin Kogyo Kabushiki Kaisha: *See*—
Yukishima, Susumu, 4,350,010, Cl. 60-310.000.

Santangelo, Francesco: *See*—
de Castiglione, Roberto; Faoro, Fiorenzo; Perseo, Giuseppe; Piani, Silvano; and Santangelo, Francesco, 4,350,627, Cl. 260-112.50E.

Santilli, Arthur A.: *See*—
Scotese, Anthony C.; and Santilli, Arthur A., 4,350,817, Cl. 546-122.000.

Santini, Hugo A. E.: *See*—
Grandia, Johannes; McChesney, William G.; Santini, Hugo A. E.; and Turk, Harold L., 4,350,116, Cl. 118-500.000.

Santoro, Dario S.; Schultz, Garry; and Miano, Henry. Desiccant cap. 4,350,508, Cl. 55-275.000.

Sanyo Electric Co., Ltd.: *See*—
Morimoto, Masao, 4,350,472, Cl. 415-125.000.
Tokumatsu, Hiromu, 4,351,000, Cl. 358-158.000.
Yoshida, Masahiko, 4,350,858, Cl. 219-10.55B.

Sarrine, Robert J., to Transidyne General Corporation. Endoscope. 4,350,147, Cl. 128-4.000.

Sasaki, Kouji; Sugawara, Hiroyuki; Kuwabara, Kouji; Shirakura, Toshiharu; Takemori, Satoshi; and Ikemoto, Norio, to Hitachi, Ltd. Coaxial type gas-flow laser device. 4,351,052, Cl. 372-58.000.

Sato, Hideaki: *See*—
Imai, Nobuhiro; Kono, Kimio; Hoshito, Kazuo; Kiyohara, Takehiko; and Sato, Hideaki, 4,351,005, Cl. 358-300.000.

Sato, Hirochika, to Kabushiki Kaisha Daini Seikosha. Contour vibration mode piezoelectric resonator. 4,350,918, Cl. 310-367.000.

Sato, Yasushi, to Tokyo Shibaura Denki Kabushiki Kaisha. Complementary MOS logic decoder circuit. 4,350,905, Cl. 307-451.000.

Saul, Alfred: *See*—
Heberling, Walter; Muller, Wolfgang; Langenberg, Werner; Behrens, Gerhard; and Saul, Alfred, 4,350,393, Cl. 299-50.000.

Saul, John R.: *See*—
Hall, William H.; and Saul, John R., 4,350,845, Cl. 179-1.00J.

Saunders, Hollis S.; Carmer, Richard V.; and Payette, Lionel J., to Essex Group, Inc. Power insertable nylon coated magnet wire. 4,350,737, Cl. 428-383.000.

Saunders, Hollis S.; Carmer, Richard V.; and Payette, Lionel J., to Essex Group, Inc. Power insertable polyamide-imide coated magnet wire. 4,350,738, Cl. 428-383.000.

Sauter, Hubert; Zeeh, Bernd; Buschmann, Ernst; and Jung, Johann, to BASF Aktiengesellschaft. Plant growth regulating substituted alkylammonium salts. 4,350,518, Cl. 71-88.000.

Savin Corporation: *See*—
Landa, Benzion, 4,350,333, Cl. 271-217.000.
Landa, Benzion, 4,350,447, Cl. 400-118.000.

Schaefer, John O.: *See*—
Field, Thomas R.; Jagodzinski, Peter F.; King, James F.; and Schaefer, John O., 4,350,453, Cl. 400-208.000.

Schaffer, Stephen P., to J. M. Ney Company, The. Palladium/silver alloy for use with dental procelains. 4,350,526, Cl. 75-134.00B.

Schalkowsky, Samuel; and Whitley, Donald, to Spinal Systems Inc. Gravimetric diluter. 4,350,186, Cl. 141-83.000.

Schamaun, Roger G.: *See*—
Liska, Donald J.; Schamaun, Roger G.; Clark, Donald C.; Potter, R. Christopher; and Frank, Joseph A., 4,350,921, Cl. 313-360.100.

Schankat, Norbert: *See*—
Paulus, Rudolf; Schankat, Norbert; Weinzierl, Manfred; and Franke, Walter, 4,350,434, Cl. 355-14.0SH.

Schaper, Lambert: *See*—
Post, Martin F. M.; and Schaper, Lambert, 4,350,772, Cl. 518-714.000.

Scharfenberger, James A., to Ransburg Corporation. Uncontaminated purge solvent recovery system. 4,350,720, Cl. 427-401.000.

Schatzler, Walter, to Webasto-Werk W. Baier GmbH & Co. Sliding roof for vehicles. 4,350,385, Cl. 296-222.000.

Scheidegger, Hans; Flensberg, Hermann; and Bauhofer, Roland, to Ciba-Geigy Corporation. Process for the dyeing of textile material and apparatus for carrying out the process. 4,350,494, Cl. 8-636.000.

Scherbatskoy, Serge A. Systems, apparatus and methods for measuring while drilling. 4,351,037, Cl. 367-85.000.

Schiller, Harold. Fusing fluid for solder-plated circuit boards. 4,350,602, Cl. 252-75.000.

Schirtzinger, Joseph F., to Sea-Log Corporation. Semi-submersible tanker with directional ice cutters. 4,350,114, Cl. 114-339.000.

Schlumberger Technology Corporation: *See*—
Goldschild, Pierre H.; and Robert, Christian C., 4,350,205, Cl. 166-375.000.

Schmelzer, Hans G.; Schmidt, Manfred; and Yeater, Robert P., to Mobay Chemical Corporation. Thermoplastic ternary molding composition of polyurethane polyphosphonates and polycarbonate resins. 4,350,799, Cl. 525-453.000.

Schmelzer, Lynn A.; and Fouser, W. Thomas, to Hyster Company. Vibratory compaction system. 4,350,460, Cl. 404-117.000.

Schmidt, Manfred; and Reinking, Klaus, to Bayer Aktiengesellschaft. Flame-retardant composition of polyphenylene ether, polystyrene resin and polyphosphonate. 4,350,793, Cl. 525-133.000.

Schmidt, Manfred: *See*—
Schmelzer, Hans G.; Schmidt, Manfred; and Yeater, Robert P., 4,350,799, Cl. 525-453.000.

Schmiedel, Klaus: *See*—
Hesse, Wolfgang; Landauer, Franz; and Schmiedel, Klaus, 4,350,800, Cl. 525-480.000.

Schmits, Heinz-Herbert: *See*—
Heinemann, Otto; Schmits, Heinz-Herbert; Philipp, Rainer; and Berger, Artur, 4,350,244, Cl. 198-773.000.

Schmitt, Frederick L.: *See*—
Kiwala, Jacob; Tokarzewski, Richard J.; Schmitt, Frederick L.; and Sprecker, Mark A., 4,350,733, Cl. 428-290.000.
Klemarczyk, Philip T.; Sanders, James M.; Vock, Manfred H.; Vinals, Joaquin F.; Schmitt, Frederick L.; and Granda, Edward J., 4,350,823, Cl. 560-120.000.

Schmittmann, Hans B., to Dr. H. Schmittmann GmbH. Procedure for manufacturing saponine extract. 4,350,688, Cl. 424-182.000.

Schmoldt, Harm; Kock, Klaus; and Strathmann, Heinrich, to Forschungsinstitut Berghof GmbH. Electrodialysis-cell assembly. 4,350,581, Cl. 204-301.000.

Schnegg, Peter: *See*—
Blank, Heinz U.; Klag, Gunther; and Schnegg, Peter, 4,350,566, Cl. 162-72.000.

Schneider, Heinz-Walter: *See*—
Kummer, Rudolf; Taglieber, Volker; Weis, Franz-Josef; and Schneider, Heinz-Walter, 4,350,572, Cl. 203-35.000.

Schockman, Robert L.: *See*—
Busse, Vernon E.; and Schockman, Robert L., 4,350,090, Cl. 100-216.000.

Schoening, Josef: *See*—
Schwiers, Hans-Georg; and Schoening, Josef, 4,349,991, Cl. 52-21.000.

Schoenlein, William J., to IBM Patent Operations. Ribbon cartridge including hub brake. 4,350,454, Cl. 400-234.000.

Schofield, George L., Jr., to Xenex Corporation. Solid state self-checking relay. 4,351,014, Cl. 361-100.000.

Scholl, Richard A.; and Cole, John L., to Ferrofluidics Corporation. Method for circumferential dimension measuring and control in crystal rod pulling. 4,350,557, Cl. 156-601.000.

Schoonejongen, Ronald J.: *See*—
Hilson, David G.; Johnson, Gary W.; and Schoonejongen, Ronald J., 4,350,618, Cl. 252-514.000.

Schornig, Eberhard, to Hoechst Aktiengesellschaft. Device for uniformly pressing on and releasing the pressure from rub-out bars. 4,349,932, Cl. 15-77.000.

Schrijver, Gerrit J.; and Wijtsma, Jorrit, to U.S. Philips Corporation. Irradiation apparatus. 4,350,894, Cl. 250-504.00R.

Schroter, Herbert, to Hoechst Aktiengesellschaft. Light dosing device. 4,350,438, Cl. 355-68.000.

Schubert, John C.: *See*—
Cyr, Stephen J.; Schubert, John C.; and Dehlinger, John, 4,350,730, Cl. 428-215.000.

Schultes, Herbert: *See*—
Engelsmann, Dieter; Maas, Dieter; Zattler, Kurt; and Schultes, Herbert, 4,350,420, Cl. 354-145.000.

Schultz, Garry: *See*—
Santoro, Dario S.; Schultz, Garry; and Miano, Henry, 4,350,508, Cl. 55-275.000.

Schulz, Adalbert; and Borchert, Werner, to Kleiber & Schulz, Inc. Extractor for recirculating cleaning bodies in a fluid-circulation system. 4,350,202, Cl. 165-95.000.

Schulz, Franz F.: *See*—
Frohling, Peter; Schulz, Franz F.; and Wiedemer, Karl, 4,350,310, Cl. 242-75.200.

Schulz, Horst-Hermann; and Koneke, Johannes, to SKF Kugellagerfabriken GmbH. Rolling bearing having separate flange ring with saw-tooth-shaped flange. 4,350,398, Cl. 308-216.000.

Schulze, Dieter: *See*—
Blase, Helmut; Hogemann, Arend; and Schulze, Dieter, 4,350,255, Cl. 212-268.000.

Schulzke, Peter: *See*—
Harach, Klaus; and Schulzke, Peter, 4,350,132, Cl. 123-490.000.

Schwartz, Albert B., to Mobil Oil Corporation. Catalytic cracking catalyst. 4,350,614, Cl. 252-455.00Z.

Schwartz, Henry D.; Krull, Irwin H.; Clement, Carl J.; Stengel, Frederick H.; and Hayslett, David D., to Applied Medical Technology, Inc. Testing apparatus for measuring ions in fluids. 4,350,579, Cl. 204-195.00R.

Schwarz, Ingrid: *See*—
Schwarz, Karl H.; and Schwarz, Ingrid, 4,350,878, Cl. 235-78.0RC.

Schwarz, Josef: *See*—
Kuhnle, Ernst; and Schwarz, Josef, 4,350,217, Cl. 177-246.000.
Schwarz, Karl H.; and Schwarz, Ingrid. Conception control calendar. 4,350,878, Cl. 235-78.0RC.
Schwarzler, Hans-Juergen: *See*—
Blaha, Alfred; and Schwarzler, Hans-Juergen, 4,350,983, Cl. 343-103.000.
Schwemmer, Leonard J., to Lord Corporation. Crowner noise shield. 4,350,000, Cl. 53-287.000.
Schwiers, Hans-Georg; and Schoening, Josef, to Hochtemperatur-Reaktorbau GmbH. Closing device for large passages in a prestressed pressure vessel. 4,349,991, Cl. 52-21.000.
Scicluna, Augustin: *See*—
Prudhon, Francois; and Scicluna, Augustin, 4,350,101, Cl. 110-238.000.
Scitex Corporation Ltd.: *See*—
Rosenfeld, Gideon, 4,350,996, Cl. 358-75.000.
SCM Corporation: *See*—
Ro, David H.; Klar, Erhard; and Whitman, Charles I., 4,350,529, Cl. 75-228.000.
Scoggins, Lacey E.: *See*—
Tieszen, Dale O.; and Scoggins, Lacey E., 4,350,810, Cl. 528-388.000.
Scotese, Anthony C.; and Santilli, Arthur A., to American Home Products Corporation. 4-Cl, Br or I-3-Carboxy or cyano-1,2-dihydro-2-oxo-1,8-naphthyridine derivatives. 4,350,817, Cl. 546-122.000.
Scott, F. Brantley, to Lone Star Medical Products, Inc. Expanding dilator. 4,350,151, Cl. 128-17.000.
Scott, William J., to Ideal Industries, Inc. Electrical connector. 4,350,841, Cl. 174-87.000.
Scotti, Frank; and Page, Edward H. Polymeric foam caulking compositions. 4,350,774, Cl. 521-95.000.
Scovell, Peter D.: *See*—
Young, John M.; and Scovell, Peter D., 4,350,537, Cl. 148-1.500.
Sea-Log Corporation: *See*—
Schirtzinger, Joseph F., 4,350,114, Cl. 114-339.000.
Seaburg, Paul A.: *See*—
Lautensleger, Richard W.; Shepard, Richard D.; and Seaburg, Paul A., 4,349,996, Cl. 52-655.000.
Searle, Robert F., to Vibrac Corporation. Electric motor manufacture. 4,350,914, Cl. 310-194.000.
Searles, John E.: *See*—
Griffiths, Ronald S.; and Searles, John E., 4,350,265, Cl. 222-38.000.
Security Trust Company of Rochester: *See*—
Alsina, Pierre A., 4,349,965, Cl. 33-288.000.
Seddon, Alan E., to BICC Limited. Overhead electric traction systems. 4,350,851, Cl. 191-39.000.
Seeger, Gunter; and Wiemann, Dieter, to Bison-Werke Bahre und Greten GmbH & Co. KG. Forming line for use in the manufacture of particle boards. 4,350,484, Cl. 425-140.000.
Seiko Koki Kabushiki Kaisha: *See*—
Kitai, Kiyoshi; Morino, Yukio; Kato, Shogo; and Watanabe, Masanori, 4,350,427, Cl. 354-238.000.
Ogihara, Masuo; Chimura, Kozo; and Shinozaki, Nobuo, 4,351,043, Cl. 368-252.000.
Seiler, Erhard: *See*—
Theysohn, Rainer; Boehlke, Klaus; Seiler, Erhard; and Welz, Martin, 4,350,652, Cl. 264-104.000.
Seilly, Alec H., to Lucas Industries Limited. Inductive type displacement transducers. 4,350,954, Cl. 324-208.000.
Selm, Robert P.; and Shepard, Leland M., to Wilson & Company. Apparatus and process for treatment of sludge. 4,350,597, Cl. 210-710.000.
Semmler, Hans-Joachim: *See*—
Hoffmann, Bernd; Jung, Siegfried; and Semmler, Hans-Joachim, 4,350,206, Cl. 169-47.000.
Seno, Kohichi: *See*—
Hamada, Isao; Nakayama, Hiroshi; Kawakami, Nobuyoshi; Azami, Hirotaka; Ikeda, Tadasu; Yukawa, Yasumasa; Mitani, Hiroshi; Ohmori, Takashi; Kimura, Masanobu; and Seno, Kohichi, 4,350,510, Cl. 55-349.000.
Sergeev, Igor A.: *See*—
Alexandrov, Vyacheslav S.; Guschin, Alexandr E.; Zavodov, Rudolf V.; Zhukova, Elena I.; Ivanov, Alexandr A.; Fofanova, Tatyana S.; Mikhailov, Evgeny I.; Dianov, Ivan M.; Luzin, Pavel M.; Sergeev, Igor A.; Pankratova, Lidia A.; Krylova, Vera E.; and Leibenzon, Semen A., 4,350,482, Cl. 425-83.100.
Seto, Susumu; Tokuhara, Mitsuhiro; Takemura, Yukio; Yamada, Yu; and Kuwayama, Takeshi, to Canon Kabushiki Kaisha. Scanning illuminator. 4,350,433, Cl. 355-8.000.
Seytre, Bruno; and Bricaud, Herve, to Socapex. Connecting-strip for plug-in cards and a connector fitted with connecting-strips of this type. 4,350,403, Cl. 339-91.00R.
Shadden, Oliver W.; and Howard, Jerry W. Diker, apparatus, system and process of operation. 4,350,210, Cl. 172-143.000.
Shah, Hasmukh R.; Jones, Thaddeus M.; and Hemingway, Bruce, to UMC Industries, Inc. Data acquisition unit. 4,350,238, Cl. 194-1.00N.
Shapiro, Howard S., to ICI Americas Inc. Pyrrolo [3,4-c]quinoline compounds. 4,350,814, Cl. 546-84.000.
Sharp Kabushiki Kaisha: *See*—
Mochizuki, Daisuke; and Kitano, Shigeru, 4,351,008, Cl. 360-40.000.
Morihisa, Mitsuo; and Inoue, Tadao, 4,351,021, Cl. 363-49.000.
Sharp, Shelby P.; and Yarborough, Lyman, to Standard Oil Company (Indiana). Method and composition for inhibiting corrosion in high temperature, high pressure gas wells. 4,350,600, Cl. 252-8.55E.
Shaw, Jack H.: *See*—
Wyatt, William G.; and Shaw, Jack H., 4,350,915, Cl. 310-306.000.
Sheehy, George E.; and Bittar, Joseph, to Otis Elevator Company. Elevator floor stop look-ahead. 4,350,226, Cl. 187-29.00R.
Shell Oil Company: *See*—
Bannon, Robert P., 4,350,501, Cl. 55-26.000.
Petty, Walter L., 4,350,642, Cl. 260-465.00D.
Poll, Ian, 4,350,103, Cl. 110-264.000.
Post, Martin F. M.; and Schaper, Lambert, 4,350,772, Cl. 518-714.000.
Syrier, Johannes L. M., 4,350,820, Cl. 549-545.000.
Syrier, Johannes L. M., 4,350,821, Cl. 549-545.000.
Shelnut, James; Golda, Eugene; Wilkes, Alan; and Shimazu, Ken-ichi, to Polychrome Corporation. Positive acting composition yielding pre-development high visibility image after radiation exposure comprising radiation sensitive diazo oxide and haloalkyl-s-triazine with novolak and dyestuff. 4,350,753, Cl. 430-190.000.
Shelton, Joe, to United States of America, Army. Hollow beam electron source. 4,350,926, Cl. 313-455.000.
Shepard, Leland M.: *See*—
Selm, Robert P.; and Shepard, Leland M., 4,350,597, Cl. 210-710.000.
Shepard, Richard D.: *See*—
Lautensleger, Richard W.; Shepard, Richard D.; and Seaburg, Paul A., 4,349,996, Cl. 52-655.000.
Shepherd, Robert G.: *See*—
Albright, Jay D.; Miner, Thomas G.; and Shepherd, Robert G., 4,350,822, Cl. 560-45.000.
Sherman, Daniel. Refillable rodent bait station container. 4,349,982, Cl. 43-131.000.
Sherman, Daniel S. Contact poison delivery device. 4,349,981, Cl. 43-131.000.
Shih, David H.: *See*—
Christensen, Burton G.; and Shih, David H., 4,350,631, Cl. 260-245.20T.
Shiibayashi, Masao: *See*—
Tojo, Kenji; Ikegawa, Masato; Shiibayashi, Masao; and Imai, Masaya, 4,350,479, Cl. 418-55.000.
Shikaya, Yukihiro: *See*—
Hayasaka, Yoshiyuki; Ikeuchi, Ichiro; Matsumoto, Hajime; and Shikaya, Yukihiro, 4,349,997, Cl. 53-51.000.
Shimada, Yukio; Suzuki, Naoyoshi; Ohashi, Toshio; and Inoshita, Yasushi, to Nissan Motor Co., Ltd. Selectively controlled air conditioner outlet system of a vehicle. 4,350,289, Cl. 237-12.30A.
Shimazu, Ken-ichi: *See*—
Shelnut, James; Golda, Eugene; Wilkes, Alan; and Shimazu, Ken-ichi, 4,350,753, Cl. 430-190.000.
Shimizu, Katsuichi: *See*—
Yagasaki, Toshiaki; Masuda, Shunichi; Shimizu, Katsuichi; and Sakamaki, Hisashi, 4,350,436, Cl. 355-14.0SH.
Shimizu, Tokuo: *See*—
Osada, Hajime; Kimura, Akiteru; Shimizu, Tokuo; Kitajima, Goro; Tomizawa, Yoshio; Kondo, Makoto; Motoyama, Kazuyasu; and Daigaku, Masaaki, 4,351,009, Cl. 360-105.000.
Shimokawa, Wataru; Ito, Yoshiaki; Kobayashi, Koichi; Fukumori, Katuaki; and Iwase, Nobukazu, to Nippon Gohsei Kagaku Kogyo Kabushiki Kaisha. Synthetic resin emulsion and its uses. 4,350,788, Cl. 524-309.000.
Shimono, Junichi. Pushbutton operated door locks. 4,350,031, Cl. 70-315.000.
Shin, Paik W.: *See*—
Torok, Theodore E.; Shin, Paik W.; and Borzillo, Angelo R., 4,350,539, Cl. 148-31.500.
Shindo, Takemasa; Ito, Yoshikazu; and Arai, Kenichiro, to Shinshu Seiki Kabushiki Kaisha; and Kabushiki Kaisha Suwa Seikosha. Thermally sensitive printer. 4,350,907, Cl. 310-37.000.
Shine, John: *See*—
Baxter, John D.; Fettes, Ivy; and Shine, John, 4,350,764, Cl. 435-69.000.
Shinozaki, Nobuo: *See*—
Ogihara, Masuo; Chimura, Kozo; and Shinozaki, Nobuo, 4,351,043, Cl. 368-252.000.
Shinshu Seiki Kabushiki Kaisha: *See*—
Shindo, Takemasa; Ito, Yoshikazu; and Arai, Kenichiro, 4,350,907, Cl. 310-37.000.
Shionogi & Co., Ltd.: *See*—
Ogata, Masaru; and Matsumoto, Hiroshi, 4,350,635, Cl. 260-326.470.
Shirakura, Toshiharu: *See*—
Sasaki, Kouji; Sugawara, Hiroyuki; Kuwabara, Kouji; Shirakura, Toshiharu; Takemori, Satoshi; and Ikemoto, Norio, 4,351,052, Cl. 372-58.000.
Shiratori, Takahisa; Tamura, Masaru; and Hanada, Kouji, to Fujitsu Limited. Relay for printed circuit board. 4,350,856, Cl. 200-306.000.
Shirono, Junkichi; and Honda, Katsuhisa, to Anritsu Electric Company Limited. Test rack for electronic equipment. 4,350,098, Cl. 108-6.000.
Shishoo, Roshan, to Tex Innovation AB. Method for treating insulating fiber. 4,350,001, Cl. 53-431.000.
Shlepakov, Valery N.: *See*—
Pokhodnya, Igor K.; Shlepakov, Valery N.; Alter, Vladimir F.; Ovcharenko, Nikolai T.; Kaplienko, Igor P.; and Rak, Petr I., 4,350,311, Cl. 242-83.000.
Shotwell, Thomas K., to Farnam Companies, Inc. Insect trapping collar. 4,350,122, Cl. 119-106.000.
Shulman, Michael A., to Ford Motor Company. Air fuel mixture control system and method. 4,350,130, Cl. 123-440.000.

Siegel, Hardo: *See—*
Degner, Dieter; Pander, Hans J.; and Siegel, Hardo, 4,350,641, Cl. 260-465.00E.
Kastner, Gerhard; Siegel, Hardo; and Geiss, Karl-Heinz, 4,350,636, Cl. 549-435.000.
Siemens Aktiengesellschaft: *See—*
Bonu, Bonu, 4,350,562, Cl. 156-639.000.
Knauer, Karl, 4,350,902, Cl. 307-221.00D.
Montag, Bernhard; Mages, Gert; and Opitz, Heinrich, 4,350,757, Cl. 430-422.000.
von Tomkewitsch, Romuald, 4,350,970, Cl. 340-23.000.
Sigalos & Levine, P.C.: *See—*
Hall, Alfred E., 4,350,340, Cl. 273-153.00R.
Silver, Samuel. Shoe. 4,349,970, Cl. 36-3.00B.
Simeth, Claus, to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. Ink fountain on inking units of printing presses. 4,350,095, Cl. 101-365.000.
Simonsen, Karlo B.: *See—*
Busche, Alan C.; and Simonsen, Karlo B., 4,350,846, Cl. 179-1.00C.
Simroth, Donald W.: *See—*
Van Cleve, Russell; Armstrong, George H.; and Simroth, Donald W., 4,350,780, Cl. 521-137.000.
Singer Company, The: *See—*
Cook, Albert N., 4,350,104, Cl. 112-220.000.
Gdovin, David P., 4,350,489, Cl. 434-40.000.
Kreeley, Bruce K., 4,350,181, Cl. 137-614.000.
Siracusano, Elizabeth, to Albany International Corp. Novel yarn and fabric formed therefrom. 4,350,731, Cl. 428-234.000.
Siren, Matti J. Filter material. 4,350,173, Cl. 131-332.000.
Sistemas Naturales Internacionales, S.A., Sinatin, S.A.: *See—*
Ruiz de Palacios, Jose I., 4,350,708, Cl. 426-11.000.
Sivak, Michael V., Jr.; and Skipper, George J., to Cleveland Clinic Foundation. Esophageal varices injector. 4,350,148, Cl. 128-4.000.
SKF Kugellagerfabriken GmbH: *See—*
Schulz, Horst-Hermann; and Koneke, Johannes, 4,350,398, Cl. 308-216.000.
Skipper, George J.: *See—*
Sivak, Michael V., Jr.; and Skipper, George J., 4,350,148, Cl. 128-4.000.
Skoli, Sigmund P.; Kemp, David M.; and Mojonnier, Harry G., to FMC Corporation. Fluid flow metering device. 4,350,503, Cl. 55-165.000.
Slavin, James A., to Noltac Corp. Material processing apparatus. 4,350,429, Cl. 354-299.000.
Sloboda, Adolph E., to American Cyanamid Company. Combinations of agents which give enhanced anti-inflammatory activity. 4,350,689, Cl. 424-232.000.
Smale, Terence C.: *See—*
Dickinson, Kay H.; Smale, Terence C.; and Southgate, Robert, 4,350,703, Cl. 424-274.000.
SMH-Adrex: *See—*
Geney, Christian, 4,350,092, Cl. 101-99.000.
Smirnov, Boris A.: *See—*
Kolesov, Evgeny V.; Smirnov, Boris A.; Fedotov, Vladimir M.; and Lipovsky, Iosif L., 4,350,160, Cl. 128-334.00R.
Smith, David R.: *See—*
Matthews, Michael R.; Newman, David H.; Smith, David R.; and Steventon, Alan G., 4,350,960, Cl. 372-46.000.
Smith International, Inc.: *See—*
Fowler, John H., 4,350,346, Cl. 277-26.000.
Vezirian, Edward, 4,350,060, Cl. 76-108.00A.
Smith, J. Thomas, to GTE Laboratories Incorporated. Oxidation resistant silicon nitride containing rare earth oxide. 4,350,771, Cl. 501-97.000.
Smith, Raymond D.: *See—*
Dornbusch, Arthur H.; and Smith, Raymond D., 4,350,281, Cl. 229-38.000.
Smith, Stuart B., to Thermoset AG. Method of making a low-friability, thermosetting foam. 4,350,776, Cl. 521-110.000.
Smith, Thomas J., to TII Industries, Inc. Shorting cage for protector wells. 4,351,015, Cl. 361-119.000.
Smith, Thomas V., to United States of America, Army. Omni pull percussion firing mechanism. 4,350,075, Cl. 89-27.00R.
SmithKline Corporation: *See—*
Ali, Faida E.; and Gleason, John G., 4,350,685, Cl. 424-45.000.
Gleason, John G.; and Hill, David T., 4,350,698, Cl. 424-258.000.
Smithson, Harold R.: *See—*
Retallick, William B.; and Smithson, Harold R., 4,350,617, Cl. 252-477.00R.
Snider, H. Dean, Jr. Fence guard. 4,349,989, Cl. 47-33.000.
Snipes, Wallace: *See—*
Keith, Alec D.; and Snipes, Wallace, 4,350,707, Cl. 424-346.000.
Snitzer, Elias; and Bacon, James F., to United Technologies Corporation. Metallic solder composite bonding. 4,350,744, Cl. 428-630.000.
Socapex: *See—*
Seytre, Bruno; and Bricaud, Herve, 4,350,403, Cl. 339-91.00R.
Societa Italiana Brevetti: *See—*
Bianchini, Giuliano, 4,350,145, Cl. 126-434.000.
Societa Italiana Telecomunicazioni Stemens S.p.A.: *See—*
Meroni, Umberto, 4,350,948, Cl. 323-282.000.
Societe Anonyme de Telecommunications: *See—*
Chable, Yves A.; Lacroix, Serge; and Rault, Philippe M., 4,350,168, Cl. 128-736.000.
Societe Anonyme dite: MARS-ACTEL: *See—*
Yapoudjian, Claude; and Pochet, Roger, 4,350,405, Cl. 339-97.00P.
Societe Anonyme dite: Sea Tank Co.: *See—*
Sanchez, Pierre; and Vitalis, Andre, 4,350,014, Cl. 60-641.700.
Societe Brio, Societe Anonyme: *See—*
Rapayelian, Christian, 4,349,974, Cl. 40-156.000.
Societe Nationale Industrielle Aerospatiale: *See—*
Larribe, Andre, 4,350,485, Cl. 425-389.000.
Societe Suisse pour l'Industrie Horlogere Management Services S.A.: *See—*
Ginalski, Pierre; and Gagnebin, Pierre-Luc, 4,351,042, Cl. 368-188.000.
Soderholm, Arne, to S.E.G. Resistor A.B. Weigh-platform, resting on load measuring support points. 4,350,218, Cl. 177-255.000.
Sodex-Magister, Societe d'Exploitation des Brevets Neiman: *See—*
Neyret, Guy, 4,350,852, Cl. 200-42.00A.
Solar Unlimited, Inc.: *See—*
Bowden, Donald R., 4,349,950, Cl. 29-157.3AH.
Solo Kleinmotoren GmbH: *See—*
Kossek, Gunter; and Emmerich, Heinz, 4,350,123, Cl. 123-2.000.
Solomon, Jerry E.: *See—*
Geelhood, Bruce D.; Mastny, Gary F.; Solomon, Jerry E.; Wesley, Edward J.; Lindner, Elek; Dooley, Carol A.; and Lane, Sandra M., 4,350,890, Cl. 250-372.000.
Soncrant, Donald T., to Stellhorn Company, The. Fluidic type leak testing machine. 4,350,038, Cl. 73-49.200.
Sonetaka, Kazunori: *See—*
Nishino, Atsushi; Kimura, Kunio; Sonetaka, Kazunori; and Takeuchi, Yasuhiro, 4,350,613, Cl. 252-455.00R.
Sonnabend, Ferdinand: *See—*
Muller, Erwin; Kollmann, Bernd; Sonnabend, Ferdinand; Petzolt, Gert; Balz, Josef; Walloschek, Bernhard; and Risse, Friedrich, 4,349,948, Cl. 29-157.10R.
Sony Corporation: *See—*
Yoshida, Akihiro, 4,350,654, Cl. 264-129.000.
Soros, Paul. Self-unloading cargo vessel. 4,350,467, Cl. 414-144.000.
South Eastern Electricity Board: *See—*
Peddie, Robert A.; and Fielden, John S., 4,351,028, Cl. 364-483.000.
Southgate, Robert: *See—*
Dickinson, Kay H.; Smale, Terence C.; and Southgate, Robert, 4,350,703, Cl. 424-274.000.
Spainhour, Carroll D.: *See—*
Coucoulas, Alexander; and Spainhour, Carroll D., 4,350,513, Cl. 65-29.000.
Sparks, William D. Method and apparatus for producing an air/fuel vapor mixture. 4,350,134, Cl. 123-557.000.
Spatola, Joseph A. Method and apparatus for decontaminating gas vented from land fill and fugitive sources. 4,350,502, Cl. 55-74.000.
Spector, George: *See—*
Kocharian, Alfred; and Spector, George, 4,350,712, Cl. 426-134.000.
Spiegel, Raymond W.: *See—*
Dingler, Geoffrey L.; Jarvis, Wilbur W.; and Spiegel, Raymond W., 4,350,306, Cl. 241-46.150.
Spina-Trac AB: *See—*
Weiner, Hans, 4,350,388, Cl. 297-284.000.
Spinal Systems Inc.: *See—*
Schalkowsky, Samuel; and Whitley, Donald, 4,350,186, Cl. 141-83.000.
Spira, Joel S.; Luchaco, David G.; and Capewell, Dennis, to Lutron Electronics Co., Inc. Gas discharge lamp control. 4,350,935, Cl. 315-291.000.
Spire Corporation: *See—*
Little, Roger G., 4,350,561, Cl. 156-624.000.
Spires, Darrell J.: *See—*
Yargus, Lloyd A.; Switzer, Lester W., Sr.; Allen, Gary N.; Elliott, Gary S.; Yargus, Larry D.; Lowry, William D.; Gosnell, Jeffrey M.; and Spires, Darrell J., 4,350,444, Cl. 366-141.000.
Spraker, Philip W., to Sybron Corporation. Microbiological process for removing oleaginous material from wastewater and microbiological combination capable of same. 4,350,770, Cl. 435-253.000.
Spreadbury, Robert J., to Westinghouse Electric Corp. Discharge device ballast component which provides both voltage transformation and variable inductive reactance. 4,350,934, Cl. 315-282.000.
Sprecker, Mark A.: *See—*
Kiwala, Jacob; Tokarzewski, Richard J.; Schmitt, Frederick L.; and Sprecker, Mark A., 4,350,733, Cl. 428-290.000.
Springer, Hartmut, to Hoechst Aktiengesellschaft. Water-soluble phthalocyanine compounds. 4,350,632, Cl. 260-314.500.
Spronck, Emmanuel S. M. Balancing device and foldable platform sideboard. 4,350,382, Cl. 296-38.000.
Square D Company: *See—*
Campbell, Paul K.; and Nichols, Edward L., III, 4,350,843, Cl. 174-94.00R.
Lass, John L., 4,350,839, Cl. 174-65.00G.
Srock, Rainer: *See—*
Kolb, Eugen; and Srock, Rainer, 4,350,367, Cl. 280-756.000.
Stabatrol Corporation: *See—*
Valiga, Richard E.; and Rosso, John R., 4,350,461, Cl. 405-128.000.
Stack, Eugene V.: *See—*
Burnett, Edward L.; and Stack, Eugene V., 4,350,653, Cl. 264-127.000.
Stadler, Paul; and Troxler, Franz, to Sandoz Ltd. N-Benzoyl-N'-3-indolyl-N'alkyl-1,3-diaminopropanes. 4,350,634, Cl. 260-326.13B.
Staedtler, J. S.: *See—*
Kimpel, Gunter, 4,350,787, Cl. 524-302.000.
Stahle, Kurt, to Concordia Fluidtechnik GmbH. Valve, especially a solenoid valve. 4,350,320, Cl. 251-129.000.
Stahlhuth, Paul H., to Ford Aerospace & Communications Corp. Electromagnetic clutch assembly. 4,350,236, Cl. 192-84.00C.

Stahlschmitt, Horst: *See*—
Albrecht, Ernst; Hensel, Reiner; Keller, Karl-Heinz; and Stahlschmitt, Horst, 4,350,105, Cl. 112-256.000.
Stammer, Charles H., to Research Corporation. Preparation of dehydropeptides. 4,350,628, Cl. 260-112.50R.
Standard Oil Company: *See*—
Kiikka, Oliver A.; and Day, Donald R., 4,351,056, Cl. 373-88.000.
Lemanski, Michael F.; Bremer, Noel J.; and Milberger, Ernest C., 4,350,611, Cl. 252-435.000.
Milberger, Ernest C.; Bremer, Noel J.; and Dria, Dennis E., 4,350,639, Cl. 549-259.000.
Standard Oil Company (Indiana): *See*—
Cyr, Stephen J.; Schubert, John C.; and Dehlinger, John, 4,350,730, Cl. 428-215.000.
Hall, Richard A.; and Bernier, Edward J., Jr., 4,350,742, Cl. 428-520.000.
Meguerian, Garbis H.; Lorntson, John M.; and Vasalos, Iacovos A., 4,350,615, Cl. 252-455.00Z.
Sharp, Shelby P.; and Yarborough, Lyman, 4,350,600, Cl. 252-8.55E.
Stanford Associates, Inc.: *See*—
Beckwith, John R., 4,350,144, Cl. 126-427.000.
Starkey, Stanley V.: *See*—
Hinchcliffe, Dennis; Starkey, Stanley V.; and Stone, William A., 4,350,242, Cl. 198-605.000.
Starr, Thomas J.: *See*—
Nelson, Richard E.; and Starr, Thomas J., 4,350,267, Cl. 222-131.000.
Stauffer Chemical Company: *See*—
Goswami, Jagadish C.; and Parikh, Shridhar V., 4,350,792, Cl. 525-129.000.
Greco, Carl C.; and Triplett, Kelly B., 4,350,612, Cl. 252-441.000.
Teach, Eugene G., 4,350,517, Cl. 71-88.000.
Steenblik, Richard A.; and Ho, Dar-Veig, to Georgia Tech Research Institute. Fresnel spiral reflector and method for making same. 4,350,412, Cl. 350-292.000.
Steibitz, Paul H.: *See*—
Avery, Stephen T.; Durbin, John A.; Lama, William L.; and Steibitz, Paul H., 4,351,019, Cl. 362-298.000.
Stein, Gunter: *See*—
Gay, Tom A.; Hartman, Gary L.; and Stein, Gunter, 4,351,027, Cl. 364-432.000.
Steineman, Robert J., to United Aircraft Products, Inc. Self fixturing heat exchanger. 4,350,201, Cl. 165-76.000.
Stellhorn Company, The: *See*—
Soncrant, Donald T., 4,350,038, Cl. 73-49.200.
Stengel, Frederick H.: *See*—
Schwartz, Henry D.; Krull, Irwin H.; Clement, Carl J.; Stengel, Frederick H.; and Hayslett, David D., 4,350,579, Cl. 204-195.00R.
Stepanov, Mikhail M.: *See*—
Antipov, Georgy A.; Gelfand, Mikhail L.; Tsipenjuk, Yakov I.; Goldshtein, Boris G.; Lavnikov, Nikolai S.; Teres, Leonid N.; Urazhdin, Ivan I.; Yakubovsky, Petr S.; Boiko, Vitaly T.; Kalmykov, Anatoly M.; Minyashkin, Dmitry P.; and Stepanov, Mikhail M., 4,350,213, Cl. 173-93.600.
Stephenson, George M.; Begin, David L.; Casavant, Roger; Bornemeier, Stephen; and Colucci, William J., to Stephenson, George M. Remote delivery nozzle and pressurized container assembly. 4,350,299, Cl. 239-337.000.
Stephenson, Robert G., to James Howden Australia Pty. Limited. Air infiltration and mixing device. 4,350,100, Cl. 110-203.000.
Stephenson, Robert L.: *See*—
Frantom, Richard L.; Stephenson, Robert L.; and Thomas, Rudy V., 4,350,368, Cl. 280-804.000.
Sterling Drug Inc.: *See*—
Chowdhury, Ajit K., 4,350,599, Cl. 210-761.000.
Steuer, Herbert, to P.I.V. Antrieb Werner Reimers GmbH & Co. KG. Cone-pulley belt-type transmission. 4,350,491, Cl. 474-12.000.
Stevens, John; and Newman, Stephen, to Minnesota Mining and Manufacturing Company. Isopropylbenzene derivatives. 4,350,644, Cl. 260-501.150.
Steventon, Alan G.: *See*—
Matthews, Michael R.; Newman, David H.; Smith, David R.; and Steventon, Alan G., 4,350,960, Cl. 372-46.000.
Stewart, John L., to PPG Industries, Inc. Method of producing glass edge multiple glazed units. 4,350,515, Cl. 65-40.000.
Stewart, Robert D.; and Gamble, Robert L., to Foster Wheeler Energy Corporation. Fluidized bed reactor utilizing zonal fluidization and anti-mounding pipes. 4,349,969, Cl. 34-57.00A.
Stewart-Warner Corporation: *See*—
Fontana, Frank J., 4,349,937, Cl. 16-35.00R.
Fontana, Frank J., 4,349,938, Cl. 16-35.00R.
Stieger, Othmar, to Opprecht, Paul. Feeding device in a welding machine for feeding can bodies to electrode rolls. 4,350,862, Cl. 219-64.000.
Stinson Manufacturing Company: *See*—
Zenner, Dennis W.; and Jenkins, Jesse F., 4,350,357, Cl. 280-79.300.
Stog, Wilhelm, to WSW Stahl- und Wasserbau GmbH. Floating jet aerator. 4,350,589, Cl. 210-220.000.
Stone, Richard A.: *See*—
Laties, Alan M.; and Stone, Richard A., 4,350,676, Cl. 424-7.000.
Stone, William A.: *See*—
Hinchcliffe, Dennis; Starkey, Stanley V.; and Stone, William A., 4,350,242, Cl. 198-605.000.
Strakowski, Joseph. Back massage board. 4,350,152, Cl. 128-24.00R.
Strantz, Ralph M., to Lund Lures, Inc. Bait fish holder. 4,349,979, Cl. 43-44.800.
Strathmann, Heinrich: *See*—
Schmoldt, Harm; Kock, Klaus; and Strathmann, Heinrich, 4,350,581, Cl. 204-301.000.
Straub, Ferdinand; Lang, Siegfried; and Roske, Eckhard, to BASF Aktiengesellschaft. Vinylpyrrolidone polymers, their preparation, their use in the preparation of plasma substitutes, and the substitutes thus obtained. 4,350,791, Cl. 525-123.000.
Strauch, George E., Jr., to Power Controls Corporation. Variable control circuit having a timed bypass. 4,350,944, Cl. 318-779.000.
Strauts, Eric J.: *See*—
Flaherty, John J.; Strauts, Eric J.; Wagerer, Helmut F.; and Loose, Timothy C., 4,351,031, Cl. 364-580.000.
Striese, Jim G., to TRW Inc. Medical electrode assembly. 4,350,165, Cl. 128-640.000.
Strobel, John M.: *See*—
Nezworski, James E.; and Strobel, John M., 4,350,273, Cl. 222-400.800.
Strojosvit: *See*—
Janirek, Ladislav; Hlavinka, Jaroslav; Hanacek, Josef; and Miculka, Zdenek, 4,350,029, Cl. 69-1.000.
Strong Electric Corporation: *See*—
Freeman, Robert S., 4,350,417, Cl. 353-90.000.
Struth, Helmut: *See*—
Gupte, Arun R.; Kladders, Heinrich; and Struth, Helmut, 4,350,049, Cl. 73-864.510.
Sturm, Budd H.: *See*—
Hopper, Roger J.; Sturm, Budd H.; and Geiser, Joseph F., 4,350,818, Cl. 548-166.000.
Sturzinger, Oskar E.; and Frutiger, Peter, to Anstalt Europaische Handelsgesellschaft. Encipering- and deciphering apparatus in the form of a typewriter. 4,350,844, Cl. 178-22.180.
Suga, Masaaki; and Hamada, Hideo, to Nissan Motor Co., Ltd. Automatic transmission system provided with a function of engine brake. 4,350,234, Cl. 192-4.00A.
Sugawara, Hiroyuki: *See*—
Sasaki, Kouji; Sugawara, Hiroyuki; Kuwabara, Kouji; Shirakura, Toshiharu; Takemori, Satoshi; and Ikemoto, Norio, 4,351,052, Cl. 372-58.000.
Sugimoto, Hitoshi: *See*—
Kubota, Yutaka; and Sugimoto, Hitoshi, 4,350,876, Cl. 219-497.000.
Sugimura, Takaaki; Ozawa, Yutaka; and Takahashi, Mari, to Nippon Zeon Co. Ltd. Peel-up type adhesives. 4,350,723, Cl. 428-42.000.
Sugiura, Yutaka: *See*—
Araki, Ken; Sakai, Hiromitsu; and Sugiura, Yutaka, 4,350,717, Cl. 427-8.000.
Sugiyama, Matsuyoshi; Morishita, Teru; and Suzuki, Toshikazu, to Toyota Jidosha Kogyo Kabushiki Kaisha. Rotary type electrostatic spray painting device. 4,350,304, Cl. 239-703.000.
Sullivan, Bruce M.: *See*—
Alseth, Steven M.; and Sullivan, Bruce M., 4,350,509, Cl. 55-337.000.
Sumitomo Chemical Company, Limited: *See*—
Baba, Kazuo; Wakatsuki, Kizuku; and Hikasa, Tadashi, 4,350,802, Cl. 526-142.000.
Summo, Arthur M., to Branson Ultrasonics Corporation. Method for closing an end of a thermoplastic tube using ultrasonic energy. 4,350,649, Cl. 264-23.000.
Sundermann, Erich, to Perfluktiv-Consult AG. Method and an apparatus for the manufacture of baked products, especially bread. 4,350,710, Cl. 426-19.000.
Sunds Defibrator Aktiebolag: *See*—
Lundgren, Rolf B., 4,350,499, Cl. 55-1.000.
Superior Electric Company, The: *See*—
Lundin, Robert S., 4,349,957, Cl. 29-596.000.
Sutoh, Shinji; Harada, Takeshi; and Kaneko, Shinichi, to Diesel Kiki Company, Ltd. Humidity control apparatus. 4,350,286, Cl. 236-44.00A.
Suzuki, Hideo; and Kaneko, Makoto, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instrument with tone production channel groups. 4,350,068, Cl. 84-1.010.
Suzuki, Koichi: *See*—
Suzuki, Shigeru; Suzuki, Minoru; Suzuki, Koichi; Omi, Kyoji; Nagahara, Yasumori; Kagari, Yoshiharu; Hashimoto, Makoto; and Mori, Goro, 4,350,750, Cl. 430-125.000.
Suzuki, Masayoshi: *See*—
Sagae, Syoji; Matsuda, Yasumasa; Kasahara, Masatoshi; and Suzuki, Masayoshi, 4,350,989, Cl. 346-140.00R.
Suzuki, Minoru: *See*—
Suzuki, Shigeru; Suzuki, Minoru; Suzuki, Koichi; Omi, Kyoji; Nagahara, Yasumori; Kagari, Yoshiharu; Hashimoto, Makoto; and Mori, Goro, 4,350,750, Cl. 430-125.000.
Suzuki, Naoyoshi: *See*—
Shimada, Yukio; Suzuki, Naoyoshi; Ohashi, Toshio; and Inoshita, Yasushi, 4,350,289, Cl. 237-12.30A.
Suzuki, Shigeru; Suzuki, Minoru; Suzuki, Koichi; Omi, Kyoji; Nagahara, Yasumori; Kagari, Yoshiharu; Hashimoto, Makoto; and Mori, Goro, to Ricoh Company, Ltd. Electrophotographic process. 4,350,750, Cl. 430-125.000.
Suzuki, Shuichi; and Karube, Isao, to Ajinomoto Company, Inc. Method for determining biochemical oxygen demand. 4,350,763, Cl. 435-29.000.
Suzuki, Tadashi: *See*—
Kishi, Norimasa; and Suzuki, Tadashi, 4,350,057, Cl. 74-866.000.

Suzuki, Toshiaki: *See*—
Kato, Matsuo; Ohtsuki, Tomonari; Igarashi, Yoshiaki; Saito, Tsukasa; and Suzuki, Toshiaki, 4,350,409, Cl. 339-186.00M.
Suzuki, Toshikazu: *See*—
Sugiyama, Matsuyoshi; Morishita, Teru; and Suzuki, Toshikazu, 4,350,304, Cl. 239-703.000.
Suzuki, Yuji: *See*—
Itagaki, Hidehiko; and Suzuki, Yuji, 4,349,962, Cl. 30-276.000.
Suzuta, Mikio: *See*—
Mochizuki, Noritaka; Minami, Setsuo; Matsui, Yoshiya; Tsunoda, Atsuo; Midorikawa, Koyo; Murase, Hidetoshi; Suzuta, Mikio; and Moriwaki, Masazumi, 4,350,431, Cl. 355-1.000.
Swindell, David F.: *See*—
Forrester, John S.; Swindell, David F.; and Wildsmith, Michael A., 4,350,971, Cl. 340-52.00R.
Swithenbank, Colin: *See*—
Bayer, Horst O.; and Swithenbank, Colin, 4,350,522, Cl. 71-111.000.
Switzer, Lester W., Sr.: *See*—
Yargus, Lloyd A.; Switzer, Lester W., Sr.; Allen, Gary N.; Elliott, Gary S.; Yargus, Larry D.; Lowry, William D.; Gosnell, Jeffrey M.; and Spires, Darrell J., 4,350,444, Cl. 366-141.000.
Sybron Corporation: *See*—
Spraker, Philip W., 4,350,770, Cl. 435-253.000.
Syrier, Johannes L. M., to Shell Oil Company. 3,6,6-Trimethylbicyclo[3.1.0]hexane derivatives as pyrethroid intermediates. 4,350,820, Cl. 549-545.000.
Syrier, Johannes L. M., to Shell Oil Company. 3,6,6-Trimethylbicyclo[3.1.0]hexane derivatives as pyrethroid intermediates. 4,350,821, Cl. 549-545.000.
Szymczak, Thaddeus J.: *See*—
Astfalk, Gregory; Fowler, Lawrence A.; Herring, Chauncey, Jr.; and Szymczak, Thaddeus J., 4,351,030, Cl. 364-552.000.
T.B.C. Pty. Limited: *See*—
Hill, Ian L., 4,350,962, Cl. 332-60.000.
Tada, Tetsuya, to Canyon Corporation. Foam dispenser. 4,350,298, Cl. 239-333.000.
Taglieber, Volker: *See*—
Kummer, Rudolf; Taglieber, Volker; Weis, Franz-Josef; and Schneider, Heinz-Walter, 4,350,572, Cl. 203-35.000.
Taguchi, Kazumasa; Isako, Hiroshi; Ikeda, Koichi; Honda, Keisuke; Kanemoto, Masaru; and Hanaoka, Keishiro, to Kabushiki Kaisha Kobe Seiko Sho. Porous iron ore pellets. 4,350,523, Cl. 75-0.50R.
Taguchi, Tetsuya; Tamura, Shuichi; Tokuda, Ryuji; and Ogawa, Masahiko, to Canon Kabushiki Kaisha. Camera provided with automatic focus adjusting device. 4,350,418, Cl. 354-25.000.
Taiho Pharmaceutical Company, Limited: *See*—
Fujimura, Hajime; Hiramatsu, Yasuzo; Yabuuchi, Takahiro; Hisaki, Masakatu; Takikawa, Katsuo; Honna, Takaji; Miyake, Hidekazu; and Kajitani, Makoto, 4,350,700, Cl. 424-263.000.
Takada, Juichiro. Belt shifting mechanism for a passive vehicle restraint belt system. 4,350,370, Cl. 280-804.000.
Takada, Tadakazu; Tokitomo, Kazuo; and Hoshino, Hitoshi, to Fujitsu Limited. Dry etching of metal film. 4,350,563, Cl. 156-643.000.
Takagi, Masaharu; and Nishida, Yoshinori, to Matsushita Electric Industrial Co., Ltd. Follow-up control apparatus for controlling the movement of a welding weaving device. 4,350,868, Cl. 219-137.00R.
Takahashi, Kenji; and Miyahara, Junji, to Fuji Photo Film Co., Ltd. Radiation image storage panel. 4,350,893, Cl. 250-484.100.
Takahashi, Mari: *See*—
Sugimura, Takaaki; Ozawa, Yutaka; and Takahashi, Mari, 4,350,723, Cl. 428-42.000.
Takahashi, Masaki: *See*—
Uenosono, Chikasa; Okada, Takao; Matsuki, Junya; Naito, Tadashi; Inoue, Shinichiro; and Takahashi, Masaki, 4,350,947, Cl. 322-17.000.
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Takano, Takao: *See*—
Nagai, Shosuke; Kato, Toshio; Iguchi, Chojiro H.; Kawashima, Nobuyuki; Mita, Ryuichi; Yamaguchi, Akihiro; and Takano, Takao, 4,350,643, Cl. 260-465.700.
Takasugi, Hisashi: *See*—
Takaya, Takao; Takasugi, Hisashi; Chiba, Toshiyuki; and Tozuka, Zenzaburo, 4,350,693, Cl. 424-246.000.
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Takeda, Akitsu: *See*—
Mizushima, Yoshihiko; Takeda, Akitsu; Yoshikawa, Akira; Ochi, Osamu; and Hisaki, Tomoko, 4,350,541, Cl. 148-188.000.
Takei, Hirofumi, to Nissan Motor Co., Ltd. Silencer. 4,350,223, Cl. 181-229.000.
Takei, Yukio; Yoshida, Masao; and Nishizawa, Rinzo, to Nippon Kayaku Kabushiki Kaisha. Process for producing 7-alkoxycarbonyl-6,8-dimethyl-4-hydroxymethyl-1-phthalazone and its intermediates. 4,350,813, Cl. 544-237.000.
Takemori, Satoshi: *See*—
Sasaki, Kouji; Sugawara, Hiroyuki; Kuwabara, Kouji; Shirakura, Toshiharu; Takemori, Satoshi; and Ikemoto, Norio, 4,351,052, Cl. 372-58.000.
Takemura, Yukio: *See*—
Seto, Susumu; Tokuhara, Mitsuhiro; Takemura, Yukio; Yamada, Yu; and Kuwayama, Takeshi, 4,350,433, Cl. 355-8.000.
Takeno, Hidekazu: *See*—
Hashimoto, Misashi; Hemmi, Keiji; Aratari, Matsuhiko; Takeno, Hidekazu; and Hagiwara, Daijiro, 4,350,694, Cl. 424-248.540.
Takeuchi, Hiroo, to Nissin Kogyo Kabushiki Kaisha. Differential pressure operated servo boosters. 4,350,077, Cl. 91-376.00R.
Takeuchi, Tsuneto: *See*—
Miyazaki, Kiyoshi; Takeuchi, Tsuneto; Ito, Jinichi; and Ashibe, Hiroo, 4,350,937, Cl. 318-331.000.
Takeuchi, Yasuhiro: *See*—
Nishino, Atsushi; Kimura, Kunio; Sonetaka, Kazunori; and Takeuchi, Yasuhiro, 4,350,613, Cl. 252-455.00R.
Takikawa, Katsuo: *See*—
Fujimura, Hajime; Hiramatsu, Yasuzo; Yabuuchi, Takahiro; Hisaki, Masakatu; Takikawa, Katsuo; Honna, Takaji; Miyake, Hidekazu; and Kajitani, Makoto, 4,350,700, Cl. 424-263.000.
Takizawa, Tastuo: *See*—
Nakayama, Shigeru; and Takizawa, Tastuo, 4,350,870, Cl. 219-216.000.
Talbot, Dean W., to General Electric Company. Mine bolt composition. 4,350,783, Cl. 523-505.000.
Talon, Inc.: *See*—
Moertel, George B., 4,349,943, Cl. 24-205.13R.
Moertel, George B., 4,350,656, Cl. 264-166.000.
Tamura, Masaru: *See*—
Shiratori, Takahisa; Tamura, Masaru; and Hanada, Kouji, 4,350,856, Cl. 200-306.000.
Tamura, Shuichi: *See*—
Taguchi, Tetsuya; Tamura, Shuichi; Tokuda, Ryuji; and Ogawa, Masahiko, 4,350,418, Cl. 354-25.000.
Tanabe Seiyaku Co., Ltd.: *See*—
Chibata, Ichiro; Kato, Jyoji; and Wada, Mitsuru, 4,350,765, Cl. 435-161.000.
Tanaka, Hiroaki; and Akita, Sigeyuki, to Nippon Soken, Inc. Capacitive rotational position detector. 4,350,981, Cl. 340-870.370.
Tanaka, Kiyoaki: *See*—
Fujii, Hiroo; Tanaka, Kiyoaki; Nakamura, Masashi; Okuno, Ryuzo; Hashizume, Shigeyuki; Katayama, Hideo; and Fujita, Tsutomu, 4,350,326, Cl. 266-201.000.
Tanaka, Toshie; and Yuda, Takuo, to Nifco Inc. Molding clip assemblage. 4,349,993, Cl. 52-208.000.
Tanioka, Hiroshi; Ishida, Masato; and Inuzuka, Tsuneki, to Canon Kabushiki Kaisha. Copying apparatus. 4,350,439, Cl. 355-14.0SH.
Taper Line, Inc.: *See*—
Keen, Ralph O., 4,349,955, Cl. 29-526.00R.
Tashlick, Irving: *See*—
Corea, John E.; Corea, Emanuel R.; and Tashlick, Irving, 4,350,481, Cl. 425-73.000.
Tattersall, John C., to Olympic Power Winches Limited. Winding arrangements. 4,350,109, Cl. 114-105.000.
Teach, Eugene G., to Stauffer Chemical Company. Hydroxyacetyl oxaxolidine herbicidal antidotes. 4,350,517, Cl. 71-88.000.
Teche, Andre: *See*—
Martel, Jacques; Tessier, Jean; and Teche, Andre, 4,350,637, Cl. 549-304.000.
Technical Irrigation Products, Inc.: *See*—
Kuhlman, Ora F.; and Tobey, Samuel, 4,350,296, Cl. 239-201.000.
Tecumseh Products Company: *See*—
Gannaway, Edwin L., 4,350,083, Cl. 92-238.000.
Teich, Wesley W.: *See*—
Dudley, Kenneth W.; Teich, Wesley W.; and Bowen, Robert F., 4,350,859, Cl. 219-10.55F.
Teijin Limited: *See*—
Masuho, Yasuhiko; and Hara, Takeshi, 4,350,626, Cl. 260-112.50R.
Telefonaktiebolaget L M Ericsson: *See*—
Hedin, Jan S.; and Jarnestedt, Goran A., 4,351,061, Cl. 375-20.000.
Tellabs, Inc.: *See*—
Chambers, Charles W., Jr., 4,350,964, Cl. 333-213.000.
Teraji, Tsutomu: *See*—
Kamiya, Takashi; and Teraji, Tsutomu, 4,350,692, Cl. 424-246.000.
Teres, Leonid N.: *See*—
Antipov, Georgy A.; Gelfand, Mikhail L.; Tsipenjuk, Yakov I.; Goldshtein, Boris G.; Lavnikov, Nikolai S.; Teres, Leonid N.; Urazhdin, Ivan I.; Yakubovsky, Petr S.; Boiko, Vitaly T.; Kalmykov, Anatoly M.; Minyashkin, Dmitry P.; and Stepanov, Mikhail M., 4,350,213, Cl. 173-93.600.
Terouanne, Beatrice: *See*—
Nicolas, Jean-Claude; Terouanne, Beatrice; Descomps, Bernard; and Crastes de Paulet, Andre, 4,350,760, Cl. 435-7.000.
Tessier, Jean: *See*—
Martel, Jacques; Tessier, Jean; and Teche, Andre, 4,350,637, Cl. 549-304.000.
Tetsu, Junichi: *See*—
Akiyama, Masatoshi; Kitamura, Shigeki; Tetsu, Junichi; and Nakazato, Koichi, 4,350,514, Cl. 65-36.000.
Teverovsky, Alex: *See*—
Helgeland, Walter; Teverovsky, Alex; Kerwin, Kenneth H., II; and Chartier, Carl P., 4,350,560, Cl. 156-617.0SP.
Tex Innovation AB: *See*—
Shiahoo, Roshan, 4,350,001, Cl. 53-431.000.
Texaco Inc.: *See*—
Dominguez, Richard J. G.; Rice, Doris M.; and Zimmerman, Robert L., 4,350,778, Cl. 521-118.000.
Dominguez, Richard J. G.; and McCoy, David R., 4,350,779, Cl. 521-126.000.
Widmyer, Richard H., 4,350,203, Cl. 166-51.000.

Texas Instruments Incorporated: *See—*
Choate, William C.; and Ho, David S., 4,351,004, Cl. 358-213.000.
Doherty, John, Jr., 4,350,967, Cl. 337-343.000.
Tubbs, Graham S., 4,350,992, Cl. 357-23.000.
Teyssier, Lucien: *See—*
Couennault, Pierre; and Teyssier, Lucien, 4,350,928, Cl. 315-39.300.
Thermoset AG: *See—*
Smith, Stuart B., 4,350,776, Cl. 521-110.000.
Theysohn, Rainer; Boehlke, Klaus; Seiler, Erhard; and Welz, Martin, to BASF Aktiengesellschaft. Manufacture of electrically conductive polyolefin moldings, and their use. 4,350,652, Cl. 264-104.000.
Thiel, Rudolf, to ITT Industries, Inc. Vacuum brake booster. 4,350,076, Cl. 91-369.00A.
Thierrichter, Burkhard: *See—*
Junek, Hans; and Thierrichter, Burkhard, 4,350,815, Cl. 546-115.000.
Junek, Hans; and Thierrichter, Burkhard, 4,350,816, Cl. 546-116.000.
Thomas, Ernest D. R., to British Aerospace. Ramp for aircraft take-off. 4,350,316, Cl. 244-63.000.
Thomas, Rudy V.: *See—*
Frantom, Richard L.; Stephenson, Robert L.; and Thomas, Rudy V., 4,350,368, Cl. 280-804.000.
Thompson, Albert N. Curling push-broom. 4,349,933, Cl. 15-118.000.
Thompson, C. Keith. Interstitial gas probe. 4,350,051, Cl. 73-864.740.
Thompson, Howard J., to Medtronic, Inc. Body implantable medical infusion system. 4,350,155, Cl. 128-213.00R.
Thomson-Brandt: *See—*
Rouget, Jean P.; and Roustant, Edmond, 4,350,074, Cl. 89-1.50D.
Thomson-CSF: *See—*
Benoit-Gonin, Roger; Berger, Jean L.; and Coutures, Jean L., 4,350,976, Cl. 340-347.0DA.
Couennault, Pierre; and Teyssier, Lucien, 4,350,928, Cl. 315-39.300.
Morell, Antoinette; and Hermosin, Antonio, 4,350,651, Cl. 264-65.000.
Thorington, Luke: *See—*
Trutner, Donald G.; and Thorington, Luke, 4,350,722, Cl. 428-35.000.
Thyssen Aktiengesellschaft: *See—*
Forch, Karl, 4,350,525, Cl. 75-124.000.
Thyssen Industrie AG: *See—*
Muller, Erwin; Kollmann, Bernd; Sonnabend, Ferdinand; Petzolt, Gert; Balz, Josef; Walloschek, Bernhard; and Risse, Friedrich, 4,349,948, Cl. 29-157.10R.
Tieszen, Dale O.; and Scoggins, Lacey E., to Phillips Petroleum Company. Preparation of branched chain arylene sulfide polymer. 4,350,810, Cl. 528-388.000.
Tihon, Claude; and Curry, M. E., to Bristol Myers Company. Method for preparing single cell suspension. 4,350,768, Cl. 435-241.000.
TII Industries Inc.: *See—*
Ahuja, Omprakash G., 4,350,849, Cl. 179-175.000.
Smith, Thomas J., 4,351,015, Cl. 361-119.000.
Tillmann, Horst, to Dorma-Baubeschlag GmbH & Co. KG. Automatic door closer. 4,349,939, Cl. 16-53.000.
Tjurin, Jury G.: *See—*
Khutoretsky, Garry M.; Tjurin, Jury G.; Drozdova, Larisa A.; and Belova, Tamara N., 4,350,910, Cl. 310-64.000.
Tobey, Samuel: *See—*
Kuhlman, Ora F.; and Tobey, Samuel, 4,350,296, Cl. 239-201.000.
Tojo, Kenji; Ikegawa, Masato; Shiibayashi, Masao; and Imai, Masaya, to Hitachi, Ltd. Scrool-type fluid machine with liquid-filled force-balanced pockets. 4,350,479, Cl. 418-55.000.
Tokarz, Richard D., to United States of America, Energy. Liquid level detector. 4,350,968, Cl. 338-13.000.
Tokarzewski, Richard J.: *See—*
Kiwala, Jacob; Tokarzewski, Richard J.; Schmitt, Frederick L.; and Sprecker, Mark A., 4,350,733, Cl. 428-290.000.
Tokico Ltd.: *See—*
Ito, Hiroshi; and Saito, Kazuo, 4,350,229, Cl. 188-73.450.
Tokitomo, Kazuo: *See—*
Takada, Tadakazu; Tokitomo, Kazuo; and Hoshino, Hitoshi, 4,350,563, Cl. 156-643.000.
Tokuda, Ryuji: *See—*
Taguchi, Tetsuya; Tamura, Shuichi; Tokuda, Ryuji; and Ogawa, Masahiko, 4,350,418, Cl. 354-25.000.
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Tokumatsu, Hiromu, to Sanyo Electric Co., Ltd. Clock generator in PCM signal reproducing apparatus. 4,351,000, Cl. 358-158.000.
Tokyo Electric Co., Ltd.: *See—*
Uchimura, Mitsuo; Oana, Masao; and Nishimura, Yoshiharu, 4,351,033, Cl. 364-900.000.
Tokyo Gas Co., Ltd.: *See—*
Zenbayashi, Katsuaki; Morinaga, Akio; Hirayama, Masao; and Morita, Akira, 4,350,548, Cl. 156-156.000.
Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Kuwabara, Eiji; Sakata, Takayoshi; Kawauchi, Noboru; Ide, Yuuichi; and Matsuo, Takeshi, 4,350,023, Cl. 62-176.00E.
Nakano, Hirotaka; and Yano, Kensaku, 4,350,729, Cl. 428-209.000.
Sato, Yasushi, 4,350,905, Cl. 307-451.000.
Tomizawa, Akimori: *See—*
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Tomizawa, Yoshio: *See—*
Osada, Hajime; Kimura, Akiteru; Shimizu, Tokuo; Kitajima, Goro; Tomizawa, Yoshio; Kondo, Makoto; Motoyama, Kazuyasu; and Daigaku, Masaaki, 4,351,009, Cl. 360-105.000.
Tong, George K. K., to Tung Ming Electrical Co. Ltd.; and Chane Hwa Manufacturing Co. Ltd. Safety lamp plug. 4,350,407, Cl. 339-113.00L.
Tony Industries, Inc.: *See—*
Okamoto, Miyoshi; Watanabe, Koji; Nukushina, Yasuhiko; and Aizawa, Tsuneo, 4,350,006, Cl. 57-250.000.
Torok, Theodore E.; Shin, Paik W.; and Borzillo, Angelo R., to Bethlehem Steel Corporation. Method of improving the ductility of the coating of an aluminum-zinc alloy coated ferrous product. 4,350,539, Cl. 148-31.500.
Torrington Company, The: *See—*
Cornish, Paul M.; and Condon, Charles E., Jr., 4,350,397, Cl. 308-212.000.
Toscano, Robert J.: *See—*
Charles, Joel M.; and Toscano, Robert J., 4,350,323, Cl. 254-273.000.
Tottori, Takafumi: *See—*
Hanada, Yoshihiro; and Tottori, Takafumi, 4,350,269, Cl. 222-227.000.
Towers, Richard R.: *See—*
Blackwell, Jennings P.; and Towers, Richard R., 4,350,786, Cl. 524-263.000.
Townsend, Herbert E.: *See—*
Allegra, Louis K.; Townsend, Herbert E.; and Borzillo, Angelo R., 4,350,540, Cl. 148-31.500.
Townshend, James M. Tracking error measurement. 4,351,045, Cl. 369-55.000.
Toyo Seikan Kaisha, Ltd.: *See—*
Kaneko, Shunji, 4,350,262, Cl. 220-273.000.
Toyo Tanso Co., Ltd.: *See—*
Watanabe, Nobuatsu; Kondo, Teruhisa; and Ishiguro, Jiro, 4,350,576, Cl. 204-101.000.
Toyokuni, Ryo, to Kabushiki Kaisha Daini Seikosha. Electronic timepiece. 4,350,961, Cl. 331-158.000.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Kanda, Mutsumi; Nakanishi, Kiyoshi; and Inoue, Tokuta, 4,350,125, Cl. 123-261.000.
Kawata, Shoji; Hattori, Kyo; and Sakurai, Kazuhiro, 4,350,319, Cl. 251-65.000.
Kiuchi, Hideo; and Kobayashi, Nobuyuki, 4,350,131, Cl. 123-453.000.
Sugiyama, Matsuyoshi; Morishita, Teru; and Suzuki, Toshikazu, 4,350,304, Cl. 239-703.000.
Tozuka, Zenzaburo: *See—*
Takaya, Takao; Takasugi, Hisashi; Chiba, Toshiyuki; and Tozuka, Zenzaburo, 4,350,693, Cl. 424-246.000.
TP Laboratories, Inc.: *See—*
Kesling, Peter C.; and Henderlong, Dennis B., 4,350,487, Cl. 433-14.000.
Tran, Thanh G. Fruit picker. 4,350,005, Cl. 56-340.000.
Transidyne General Corporation: *See—*
Sarrine, Robert J., 4,350,147, Cl. 128-4.000.
Treiber, Robert, to International Telephone and Telegraph Corporation. Automatic, digitally synthesized matching line terminating impedance. 4,351,060, Cl. 375-12.000.
Trimble, Daniel W.: *See—*
United States of America, National Aeronautics and Space Administration; Dolland, Carlisle R.; and Trimble, Daniel W., 4,351,022, Cl. 363-87.000.
Trio Kabushiki Kaisha: *See—*
Miyamoto, Yukihiko, 4,350,957, Cl. 329-107.000.
Triplett, Kelly B.: *See—*
Greco, Carl C.; and Triplett, Kelly B., 4,350,612, Cl. 252-441.000.
Trotter, Jimmy R.: *See—*
McConnell, Richard L.; Trotter, Jimmy R.; and Jones, Glenn C., 4,350,807, Cl. 528-302.000.
McConnell, Richard L.; Trotter, Jimmy R.; and Jones, Glenn C., 4,350,808, Cl. 528-302.000.
Troxler, Franz: *See—*
Stadler, Paul; and Troxler, Franz, 4,350,634, Cl. 260-326.13B.
Trusselle, William H.; and Gustafson, John A., Jr., to Pneumatic Scale Corporation. Filling machine. 4,350,187, Cl. 141-90.000.
Trutner, Donald G.; and Thorington, Luke, to Duro-Test Corporation. Hollow glass article with improved optical finish. 4,350,722, Cl. 428-35.000.
TRW Inc.: *See—*
Engle, Edgar W., 4,350,528, Cl. 75-203.000.
Striese, Jim G., 4,350,165, Cl. 128-640.000.
Tsimerman, Alexandr B.: *See—*
Maisotsenko, Valery S.; Tsimerman, Alexandr B.; and Zexer, Mikhail G., 4,350,570, Cl. 203-10.000.
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Antipov, Georgy A.; Gelfand, Mikhail L.; Tsipenjuk, Yakov I.; Goldshtein, Boris G.; Lavnikov, Nikolai S.; Teres, Leonid N.; Urazhdin, Ivan I.; Yakubovsky, Petr S.; Boiko, Vitaly T.; Kalmykov, Anatoly M.; Minyashkin, Dmitry P.; and Stepanov, Mikhail M., 4,350,213, Cl. 173-93.600.
Tsubota, Junjiro. Biological fermentation device. 4,350,588, Cl. 210-208.000.
Tsuiki, Tadanobu, to Cosmos Company Limited. Coin assorting device for a vending machine. 4,350,239, Cl. 194-1.00G.

Tsuji, Seizou: *See*—
Imanaka, Ryoichi; and Tsuji, Seizou, 4,351,044, Cl. 369-43.000.
Tsujimoto, Eiichi; Hirahara, Hiroshi; and Matsumoto, Makoto, to Kawasaki Steel Corporation. Merchandise delivery conveyor for automatic bagging apparatus. 4,350,004, Cl. 53-570.000.
Tsukuda Co., Ltd.: *See*—
Tsukuda, Mitsuo, 4,349,986, Cl. 46-254.000.
Tsukuda, Mitsuo, to Tsukuda Co., Ltd. Radio-controlled toys. 4,349,986, Cl. 46-254.000.
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Mochizuki, Noritaka; Minami, Setsuo; Matsui, Yoshiya; Tsunoda, Atsuo; Midorikawa, Koyo; Murase, Hidetoshi; Suzuta, Mikio; and Moriwaki, Masazumi, 4,350,431, Cl. 355-1.000.
Tubba, Graham S., to Texas Instruments Incorporated. N-Channel silicon gate virtual ground ROM. 4,350,992, Cl. 357-23.000.
Tully, Wilfred R.: *See*—
Westwood, Robert; Tully, Wilfred R.; and Murdoch, Robert, 4,350,695, Cl. 424-251.000.
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Tong, George K. K., 4,350,407, Cl. 339-113.00L.
Turk, Harold L.: *See*—
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Tyree, Lewis, Jr. Cryogenic refrigeration apparatus. 4,350,027, Cl. 62-374.000.
Uchimura, Mitsuo; Oana, Masao; and Nishimura, Yoshiharu, to Tokyo Electric Co., Ltd. Postal charge processing system wherein postal condition data is saved and reused for the next postal parcel. 4,351,033, Cl. 364-900.000.
Ueda, Hiroshi; and Oyokota, Shigeru, to Minolta Camera Kabushiki Kaisha. Camera with a built-in winder. 4,350,421, Cl. 354-152.000.
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Uenosono, Chikasa; Okada, Takao; Matsuki, Junya; Naito, Tadashi; Inoue, Shinichiro; and Takahashi, Masaki, to Fuji Electric Co. Ltd.; and Takahashi, Masaki. System for predicting desynchronization of a synchronous machine. 4,350,947, Cl. 322-17.000.
Uhl, Guenter: *See*—
Distler, Harry; Widder, Rudi; and Uhl, Guenter, 4,350,531, Cl. 106-19.000.
UMC Industries, Inc.: *See*—
Shah, Hasmukh R.; Jones, Thaddeus M.; and Hemingway, Bruce, 4,350,238, Cl. 194-1.00N.
Union Carbide Corporation: *See*—
Alberto, Vicente S. D., 4,350,747, Cl. 429-184.000.
Fuderer, Andrija, 4,350,583, Cl. 208-310.00Z.
Jones, David N.; Burnett, Archibald L; and Miller, John C., 4,350,657, Cl. 264-349.000.
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Steineman, Robert J., 4,350,201, Cl. 165-76.000.
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Clough, Peter; and Walker, Donald C. B., deceased, 4,351,006, Cl. 360-9.000.
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Galer, Richard E.; Blasius, John R.; and Webb, Paul C., 4,350,533, Cl. 106-89.000.
Reily, William S., 4,350,736, Cl. 428-341.000.
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Davis, Steven J.; and Rapagnani, Nazareno L., 4,350,661, Cl. 422-98.000.
Jones, Carmen B., 4,350,043, Cl. 73-579.000.
Williamson, Tommy L., 4,350,443, Cl. 356-358.000.
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Pollin, Irvin, 4,350,315, Cl. 244-3.230.
Shelton, Joe, 4,350,926, Cl. 313-455.000.
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Barnard, Ralston W.; and Jensen, Dal H., 4,350,887, Cl. 250-265.000.
Crouthamel, Marvin S.; and Coyle, Peter J., 4,350,836, Cl. 136-244.000.
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Minott, Peter O., 4,350,410, Cl. 350-170.000.
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Fisher, Robert H., 4,350,984, Cl. 343-112.00R.
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Alpers, Frederick C., 4,350,982, Cl. 343-6.80R.
Bottka, Nicholas; and Lesoff, Howard, 4,350,413, Cl. 350-356.000.
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Dowgul, Ronald W.; and Noble, Glendle W., 4,350,662, Cl. 422-122.000.
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Huang, Shih L.; McQuillen, Edward J.; and Richey, Robert J., Jr., 4,350,728, Cl. 428-105.000.
Kincaid, John F.; and Reed, Russell, Jr., 4,350,542, Cl. 149-11.000.
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Loker, Aleck; and Archibald, Richard, 4,350,041, Cl. 73-432.00R.
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Bertens, Theodorus C. J. M., 4,350,920, Cl. 313-346.00R.
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Baxter, John D.; Fettes, Ivy; and Shine, John, 4,350,764, Cl. 435-69.000.
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Antipov, Georgy A.; Gelfand, Mikhail L.; Taipenjuk, Yakov I.; Goldshtein, Boris G.; Lavnikov, Nikolai S.; Teres, Leonid N.; Urazhdin, Ivan I.; Yakubovsky, Petr S.; Boiko, Vitaly T.; Kalmykov, Anatoly M.; Minyashkin, Dmitry P.; and Stepanov, Mikhail M., 4,350,213, Cl. 173-93.600.
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Van Auken, Thomas V., to Philip Morris, Incorporated. Synthesis of N-t-butyl-p-menthane-3-carboxamide. 4,350,832, Cl. 564-123.000.
Van Cleve, Russell; Armstrong, George H.; and Simroth, Donald W., to Union Carbide Corporation. Polyurethanes made with polymer/-polyols prepared via preformed stabilizers. 4,350,780, Cl. 521-137.000.
van den Brink, Hans G., to U.S. Philips Corporation. Gas discharge laser. 4,351,053, Cl. 372-61.000.
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Van Gompel, James J. Side car attachment for a motorcycle. 4,350,359, Cl. 280-203.000.
van Hoorn, Jacques J. B., to Colortex S.A. Micro-mill-mixer. 4,350,305, Cl. 241-46.00B.
Van Manen, Dick T., to Voplex Corporation. Method of decorating contrasting regions of a molded resin panel. 4,350,550, Cl. 156-237.000.

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Kneip, George D.; Broshear, John H.; and Anderson, Marvin H., 4,350,017, Cl. 62-50.000.

Varta Batterie Aktiengesellschaft: *See*—
Jung, Margarete; and Winsel, August, 4,350,610, Cl. 252-429.00R.

Vasalos, Iacovos A.: *See*—
Meguerian, Garbis H.; Lorntson, John M.; and Vasalos, Iacovos A., 4,350,615, Cl. 252-455.00Z.

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Veeder, George T.: *See*—
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Velzen, Richard: *See*—
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Vikre, Merle A. Irrigation system and constant volume sprinkler head therefor. 4,350,300, Cl. 239-396.000.

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Klemarczyk, Philip T.; Sanders, James M.; Vock, Manfred H.; Vinals, Joaquin F.; Schmitt, Frederick L.; and Granda, Edward J., 4,350,823, Cl. 560-120.000.

ViPond, Clyde M.: *See*—
Isham, Leonard E.; Peplow, Marvin J.; Sandy, Julius W.; and ViPond, Clyde M., 4,350,061, Cl. 81-9.510.

Vitalis, Andre: *See*—
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Von Roll AG: *See*—
Ruegg, Hans, 4,350,102, Cl. 110-246.000.

von Schulthess, Gustav K.; Cohen, Richard J.; and Benedek, George B., to Massachusetts Institute of Technology. Reagent for optimizing agglutination. 4,350,677, Cl. 424-12.000.

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Wagener, Kenneth B., to Akzona Incorporated. Biocompatible copolymers. 4,350,806, Cl. 528-289.000.

Wagerer, Helmut F.: *See*—
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Walker, Eileen F., Administratrix: *See*—
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Wall, Berth-Ove G.: *See*—
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Wallace, Christopher A.: *See*—
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Walloschek, Bernhard: *See*—
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Wang, Chia-Gee. Auger microlithography. 4,350,755, Cl. 430-264.000.

Wang, Sherman S.: *See*—
Chow, Chao-Kong; Liu, Chao-Ning; and Wang, Sherman S., 4,350,045, Cl. 73-607.000.

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Warnett, Christopher: *See*—
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Warren, Larry G.: *See*—
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Watanabe, Masanori: *See*—
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Hermann, Joerg; Baier, Werner; and Breidbach, Josef, 4,350,288, Cl. 237-12.30C.
Schatzler, Walter, 4,350,385, Cl. 296-222.000.

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Weedon, Hans J.: *See*—
Gordon, Bernard M.; and Weedon, Hans J., 4,350,974, Cl. 340-347.0DA.
Wefler, Michael W. Method of making a key ring bob. 4,349,951, Cl. 29-401.100.
Wei, Ching-Yeu, to General Electric Company. Method of etching metallic materials including a major percentage of chromium. 4,350,564, Cl. 156-659.100.
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Western Michigan University, The Board of Trustees of: *See*—
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Williams, William C. Load carrying slings. 4,350,380, Cl. 294-74.000.
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Wilson, John T.: *See*—
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Knight, Clifford, 4,350,332, Cl. 271-188.000.
Yabuuchi, Takahiro: *See*—
Fujimura, Hajime; Hiramatsu, Yasuzo; Yabuuchi, Takahiro; Hisaki, Masakatu; Takikawa, Katsuo; Honna, Takaji; Miyake, Hidekazu; and Kajitani, Makoto, 4,350,700, Cl. 424-263.000.

Yagasaki, Toshiaki; Masuda, Shunichi; Shimizu, Katsuichi; and Sakamaki, Hisashi, to Canon Kabushiki Kaisha. Feed control device. 4,350,436, Cl. 355-14.0SH.

Yakubovsky, Petr S.: *See*—
Antipov, Georgy A.; Gelfand, Mikhail L.; Tsipenjuk, Yakov I.; Goldshtein, Boris G.; Lavnikov, Nikolai S.; Teres, Leonid N.; Urazhdin, Ivan I.; Yakubovsky, Petr S.; Boiko, Vitaly T.; Kalmykov, Anatoly M.; Minyashkin, Dmitry P.; and Stepanov, Mikhail M., 4,350,213, Cl. 173-93.600.

Yamada, Masahide, to Mitsuba Electric Mfg. Co., Ltd. Brush lead structure for motor-immersed fuel pumps. 4,350,909, Cl. 310-62.000.

Yamada, Mitsuhiko, to Dainippon Screen Seizo Kabushiki Kaisha. Lay-out recording method in a picture scanning recording system. 4,350,997, Cl. 358-78.000.

Yamada, Takahiro, to Hitachi, Ltd. Ink jet printer. 4,350,986, Cl. 346-75.000.

Yamada, Yu: *See*—
Seto, Susumu; Tokuhara, Mitsuhiro; Takemura, Yukio; Yamada, Yu; and Kuwayama, Takeshi, 4,350,433, Cl. 355-8.000.

Yamaguchi, Akihiro: *See*—
Nagai, Shosuke; Kato, Toshio; Iguchi, Chojiro H.; Kawashima, Nobuyuki; Mita, Ryuichi; Yamaguchi, Akihiro; and Takano, Takao, 4,350,643, Cl. 260-465.700.

Yamaha Hatsudoki Kabushiki Kaisha: *See*—
Ishima, Takaharu, 4,350,221, Cl. 180-190.000.
Kitano, Akihiro; and Kamekawa, Kunio, 4,350,124, Cl. 123-198.00R.
Yukishima, Susumu, 4,350,010, Cl. 60-310.000.

Yamamoto, Itaru, to Yamasu Shoyu Kabushiki Kaisha. Method of and reagents for quantitative analysis of cyclic nucleotides. 4,350,761, Cl. 435-7.000.

Yamane, Tadayuki: *See*—
Kawai, Syuji; Yamane, Tadayuki; Abe, Michio; Ono, Toshihiko; and Yamauchi, Shuji, 4,350,594, Cl. 210-637.000.

Yamashita, Nobuo; and Maeda, Miwako, to Olympus Optical Co., Ltd. Endoscope and illumination optical system therefor. 4,350,149, Cl. 128-6.000.

Yamashita, Toshio; Gamo, Takaharu; Moriwaki, Yoshio; and Fukuda, Masataro, to Matsushita Electric Industrial Company, Limited. Method of storing hydrogen. 4,350,673, Cl. 423-644.000.

Yamasu Shoyu Kabushiki Kaisha: *See*—
Yamamoto, Itaru, 4,350,761, Cl. 435-7.000.

Yamauchi, Shuji: *See*—
Kawai, Syuji; Yamane, Tadayuki; Abe, Michio; Ono, Toshihiko; and Yamauchi, Shuji, 4,350,594, Cl. 210-637.000.

Yan, Tsoung-Yuan, to Mobil Oil Company. In situ leaching process. 4,350,391, Cl. 299-4.000.

Yanagisawa, Syozo, to Hitachi, Ltd. Exhaust gas recirculation valve. 4,350,136, Cl. 123-568.000.

Yanagisawa, Yasuo; and Mitsui, Yoshiaki, to Hoya Lens Corporation. Calculating rule useful for making eyeglasses. 4,350,877, Cl. 235-70.00A.

Yang, Elmer C., to Pacific Scientific Company. Mechanical shock arrestor. 4,350,232, Cl. 188-378.000.

Yannas, Ioannis V.; and Forbes, Martin J., to Massachusetts Institute of Technology. Procedures for preparing composite materials from collagen and glycosaminoglycan. 4,350,629, Cl. 260-123.700.

Yano, Kensaku: *See*—
Nakano, Hirotaka; and Yano, Kensaku, 4,350,729, Cl. 428-209.000.

Yao, Shi-Kay: *See*—
August, Rudolf R.; Anderson, Dean B.; and Yao, Shi-Kay, 4,350,916, Cl. 310-313.00B.

Yapoudjian, Claude; and Pochet, Roger, to Societe Anonyme dite: MARS-ACTEL. Connector for insulated electric conductors. 4,350,405, Cl. 339-97.00P.

Yarborough, Lyman: *See*—
Sharp, Shelby P.; and Yarborough, Lyman, 4,350,600, Cl. 252-8.55E.

Yargus, Larry D.: *See*—
Yargus, Lloyd A.; Switzer, Lester W., Sr.; Allen, Gary N.; Elliott, Gary S.; Yargus, Larry D.; Lowry, William D.; Gosnell, Jeffrey M.; and Spires, Darrell J., 4,350,444, Cl. 366-141.000.

Yargus, Lloyd A.; Switzer, Lester W., Sr.; Allen, Gary N.; Elliott, Gary S.; Yargus, Larry D.; Lowry, William D.; Gosnell, Jeffrey M.; and Spires, Darrell J., to Yargus, Lloyd A.; and Yargus, Larry D. Apparatus for mixing materials such as fertilizer components. 4,350,444, Cl. 366-141.000.

Yasuda, Akira, to Nissan Motor Co., Ltd. Device for opening a back door of an automotive vehicle. 4,350,384, Cl. 296-146.000.

Yasuda, Shigeo: *See*—
Matsuda, Akira; Havakawa, Yoshihiro; Yasuda, Shigeo; Iwasaki, Motoaki; and Nishino, Hiroshi, 4,350,854, Cl. 200-61.250.

Yasuda, Shigeru: *See*—
Hasegawa, Yo; Yasuda, Shigeru; and Kojima, Kunio, 4,350,741, Cl. 428-473.500.

Yasunaga, Teibun: *See*—
Murahara, Koichi; and Yasunaga, Teibun, 4,350,458, Cl. 401-145.000.

Yatabe, Thomas T.: *See*—
Parsen, Frank E.; and Yatabe, Thomas T., 4,350,745, Cl. 429-57.000.

Yazaki, Mitsuyoshi: *See*—
Nakamura, Masayoshi; Magari, Teruo; Abe, Seiji; and Yazaki, Mitsuyoshi, 4,350,619, Cl. 252-537.000.

Yeater, Robert P.: *See*—
Schmelzer, Hans G.; Schmidt, Manfred; and Yeater, Robert P., 4,350,799, Cl. 525-453.000.

Yoneda, Kenji: *See*—
Sakata, Kazuhiro; Yuminaka, Takeo; Nakazato, Masao; Yoneda, Kenji; Kuzunuki, Soshiro; and Katayama, Yasunori, 4,350,225, Cl. 187-29.00R.

Yorkshire Electricity Board: *See*—
Richardson, Roy; and Czenkusz, Bernard, 4,350,044, Cl. 73-600.000.

Yoshiba, Yasutaka, to Nissan Motor Company, Limited. Exhaust gas recirculation system. 4,350,013, Cl. 60-605.000.

Yoshida, Akihiro, to Sony Corporation. Method of providing display on molded base. 4,350,654, Cl. 264-129.000.

Yoshida Kogyo Kabushiki Kaisha: *See*—
Fukuroi, Takeo, 4,349,953, Cl. 29-410.000.

Yoshida, Masahiko, to Sanyo Electric Co., Ltd. Apparatus and method for controlling electronic controlled cooking apparatus. 4,350,858, Cl. 219-10.55B.

Yoshida, Masao: *See*—
Takei, Yukio; Yoshida, Masao; and Nishizawa, Rinzo, 4,350,813, Cl. 544-237.000.

Yoshikawa, Akira: *See*—
Mizushima, Yoshihiko; Takeda, Akitsu; Yoshikawa, Akira; Ochi, Osamu; and Hisaki, Tomoko, 4,350,541, Cl. 148-188.000.

Yoshimura, Tooru: *See*—
Nakajima, Yasuo; Hayashi, Yoshimasa; Nagumo, Shin-ichi; and Yoshimura, Tooru, 4,350,129, Cl. 123-440.000.

Yoshinaga, Toru; Igashira, Toshihiko; Mori, Kouichi; Kawai, Hisasi; and Morino, Seiji, to Nippon Soken, Inc. Ignition system for internal combustion engines. 4,350,137, Cl. 123-617.000.

Yoshiya, Kiyosumi, to Radio Research Laboratories, Ministry of Posts and Telecommunications. Method and apparatus for suppressing digital error noise in digital communication. 4,351,062, Cl. 375-99.000.

Young, John M.; and Scovell, Peter D., to ITT Industries Inc. Semiconductor annealing by pulsed heating. 4,350,537, Cl. 148-1.500.

Youngquist, Robert J., to Minnesota Mining and Manufacturing Company. Editor for combining digitally recorded audio signals. 4,351,007, Cl. 360-13.000.

Yuda, Takuo: *See*—
Tanaka, Toshie; and Yuda, Takuo, 4,349,993, Cl. 52-208.000.

Yukawa, Yasumasa: *See*—
Hamada, Isao; Nakayama, Hiroshi; Kawakami, Nobuyoshi; Azami, Hirotaka; Ikeda, Tadasu; Yukawa, Yasumasa; Mitani, Hiroshi; Ohmori, Takashi; Kimura, Masanobu; and Seno, Kohichi, 4,350,510, Cl. 55-349.000.

Yukishima, Susumu, to Yamaha Hatsudoki Kabushiki Kaisha; and Sanshin Kogyo Kabushiki Kaisha. Exhaust system for an outboard engine. 4,350,010, Cl. 60-310.000.

Yuminaka, Takeo: *See*—
Sakata, Kazuhiro; Yuminaka, Takeo; Nakazato, Masao; Yoneda, Kenji; Kuzunuki, Soshiro; and Katayama, Yasunori, 4,350,225, Cl. 187-29.00R.

Zansky, Zoltan: *See*—
Agarwala, Poonam; and Zansky, Zoltan, 4,350,933, Cl. 315-278.000.

Zasio, John J.; and Samuels, Michael W., to Fujitsu Limited. Discharge device and method for use in processing semiconductor devices. 4,350,866, Cl. 219-121.0EM.

Zattler, Kurt: *See*—
Engelsmann, Dieter; Maas, Dieter; Zattler, Kurt; and Schultes, Herbert, 4,350,420, Cl. 354-145.000.

Zavodov, Rudolf V.: *See*—
Alexandrov, Vyacheslav S.; Guschin, Alexandr E.; Zavodov, Rudolf V.; Zhukova, Elena I.; Ivanov, Alexandr A.; Fofanova, Tatyana S.; Mikhailov, Evgeny I.; Dianov, Ivan M.; Luzin, Pavel M.; Sergeev, Igor A.; Pankratova, Lidia A.; Krylova, Vera E.; and Leibenzon, Semen A., 4,350,482, Cl. 425-83.100.

Zeeh, Bernd: *See*—
Rentzea, Costin; Zeeh, Bernd; Pommer, Ernst-Heinrich; and Mappes, Celia J., 4,350,701, Cl. 424-269.000.
Sauter, Hubert; Zeeh, Bernd; Buschmann, Ernst; and Jung, Johann, 4,350,518, Cl. 71-88.000.

Zenbayashi, Katsuaki; Morinaga, Akio; Hirayama, Masao; and Morita, Akira, to Tokyo Gas Co., Ltd.; and Ashimori Industry, Co., Ltd. Method and apparatus for providing the inner surface of a pipe line with a lining. 4,350,548, Cl. 156-156.000.

Zenner, Dennis W.; and Jenkins, Jesse F., to Stinson Manufacturing Company. Shipping and display cart. 4,350,357, Cl. 280-79.300.

Zexer, Mikhail G.: *See*—
Maisotsenko, Valery S.; Tsimerman, Alexandr B.; and Zexer, Mikhail G., 4,350,570, Cl. 203-10.000.

Zhukova, Elena I.: *See*—
Alexandrov, Vyacheslav S.; Guschin, Alexandr E.; Zavodov, Rudolf V.; Zhukova, Elena I.; Ivanov, Alexandr A.; Fofanova, Tatyana S.; Mikhailov, Evgeny I.; Dianov, Ivan M.; Luzin, Pavel M.; Sergeev, Igor A.; Pankratova, Lidia A.; Krylova, Vera E.; and Leibenzon, Semen A., 4,350,482, Cl. 425-83.100.

Zickwolf, Herbert C., Jr., to United Technologies Corporation. Method of starting turbine engines. 4,350,008, Cl. 60-39.14R.

Ziegler, Carl B., Jr.: *See*—
Porter, Ned A.; Ziegler, Carl B., Jr.; and Roberts, David H., 4,350,834, Cl. 568-568.000.

Zieschang, Jurgen: *See*—
Bick, Klaus; Harmsen, Lothar; Zieschang, Jurgen; and Vennmann, Friedhelm, 4,351,055, Cl. 373-76.000.

Zimmer, William F., to Norton Company. Dampening agent for resin bonded grinding wheels. 4,350,498, Cl. 51-298.000.

Zimmerman, Robert L.: *See*—
Dominguez, Richard J. G.; Rice, Doris M.; and Zimmerman, Robert L., 4,350,778, Cl. 521-118.000.

Zimmermann, Ulrich; Saleemuddin, Mohammed; and Pilwat, Gunter, to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung. Method for isolating and purifying enzymes from a crude enzyme solution. 4,350,767, Cl. 435-183.000.

Zingerman, Bryant N.: *See*—
Frieser, Rudolf G.; Ma, William H.; Ozols, Gunars M.; and Zingerman, Bryant N., 4,350,578, Cl. 204-192.00R.

Zlatkevich, Lev: *See*—
Broutman, Lawrence J.; Rozhansky, Boris; and Zlatkevich, Lev, 4,350,495, Cl. 23-230.0PC.

Zoppi, Francesco: *See*—
De Luca, Ugo; and Zoppi, Francesco, 4,350,762, Cl. 435-10.000.

Zschernack, Plano: *See*—
Jochum, Friedrich; Landsberg, Ernst; and Zschernack, Plano, 4,350,224, Cl. 182-82.000.

Zur, Henry C., to Goodman Manufacturing Corporation. Adjustable body supporting assemblies with forward inclining head support. 4,349,924, Cl. 5-68.000.

Zurn Industries, Inc.: *See*—
Gruber, Martin V.; and Doshi, Mahendra F., 4,350,302, Cl. 239-500.000.

Zylkowski, John T.: *See*—
Allen, Ralph A.; and Zylkowski, John T., 4,350,401, Cl. 339-65.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 21ST DAY OF SEPTEMBER, 1982

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Biber, Conrad H.; Johnson, Bruce K.; and Whiteside, George D., to Polaroid Corporation. Range synchronized flash photographic apparatus and method for achieving optimum flash exposure. Re. 31,034, Cl. 354-27.000.

Chiyoda Chemical Engineering and Construction Co., Ltd.: *See*—
Inooka, Masayoshi; Wakabayashi, Motoyoshi; Matsuda, Masatoshi; Kasuya, Masaaki; Nakamura, Munekazu; and Morimoto, Tatsuo, Re. 31,036, Cl. 252-456.000.
Inooka, Masayoshi; Wakabayashi, Motoyoshi; and Matsuda, Masatoshi, Re. 31,037, Cl. 252-457.000.
Inooka, Masayoshi; and Wakabayashi, Motoyoshi, Re. 31,038, Cl. 252-457.000.
Inooka, Masayoshi; Ohguchi, Yoshihiro; Matsuda, Masatoshi; Kasuya, Masaaki; Nakamura, Munekazu; and Morimoto, Tatsuo, Re. 31,039, Cl. 252-457.000.

French, Roger F., to Suntime, Inc. Solar water heater. Re. 31,032, Cl. 126-433.000.

Hancock Laboratories, Inc.: *See*—
Hancock, Warren D.; and Sattler, Frederick P., Re. 31,035, Cl. 8-94.110.

Hancock, Warren D.; and Sattler, Frederick P., to Hancock Laboratories, Inc. Arrangement for preparing natural tissue for implantation. Re. 31,035, Cl. 8-94.110.

Inooka, Masayoshi; Wakabayashi, Motoyoshi; Matsuda, Masatoshi; Kasuya, Masaaki; Nakamura, Munekazu; and Morimoto, Tatsuo, to Chiyoda Chemical Engineering and Construction Co., Ltd. Catalysts for demetallization treatment of hydrocarbons supported on sepiolite. Re. 31,036, Cl. 252-456.000.

Inooka, Masayoshi; Wakabayashi, Motoyoshi; and Matsuda, Masatoshi, to Chiyoda Chemical Engineering & Construction Co., Ltd. Catalysts for demetallization treatment of hydrocarbons supported on sepiolite. Re. 31,037, Cl. 252-457.000.

Inooka, Masayoshi; and Wakabayashi, Motoyoshi, to Chiyoda Chemical Engineering & Construction Co., Ltd. Catalysts for demetallization treatment of hydrocarbons supported on sepiolite. Re. 31,038, Cl. 252-457.000.

Inooka, Masayoshi; Ohguchi, Yoshihiro; Matsuda, Masatoshi; Kasuya, Masaaki; Nakamura, Munekazu; and Morimoto, Tatsuo, to Chiyoda Chemical Engineering & Construction Co., Ltd. Catalysts for demetallization treatment of hydrocarbons supported on sepiolite. Re. 31,039, Cl. 252-457.000.

Johnson, Bruce K.: *See*—
Biber, Conrad H.; Johnson, Bruce K.; and Whiteside, George D., Re. 31,034, Cl. 354-27.000.

Kasuya, Masaaki: *See*—
Inooka, Masayoshi; Wakabayashi, Motoyoshi; Matsuda, Masatoshi; Kasuya, Masaaki; Nakamura, Munekazu; and Morimoto, Tatsuo, Re. 31,036, Cl. 252-456.000.
Inooka, Masayoshi; Ohguchi, Yoshihiro; Matsuda, Masatoshi; Kasuya, Masaaki; Nakamura, Munekazu; and Morimoto, Tatsuo, Re. 31,039, Cl. 252-457.000.

Machcinski, Stephen A.: *See*—
Wilson, Lester E., Jr.; and Machcinski, Stephen A., Re. 31,033, Cl. 339-192.00R.

Matsuda, Masatoshi: *See*—
Inooka, Masayoshi; Wakabayashi, Motoyoshi; Matsuda, Masatoshi; Kasuya, Masaaki; Nakamura, Munekazu; and Morimoto, Tatsuo, Re. 31,036, Cl. 252-456.000.
Inooka, Masayoshi; Wakabayashi, Motoyoshi; and Matsuda, Masatoshi, Re. 31,037, Cl. 252-457.000.
Inooka, Masayoshi; Ohguchi, Yoshihiro; Matsuda, Masatoshi; Kasuya, Masaaki; Nakamura, Munekazu; and Morimoto, Tatsuo, Re. 31,039, Cl. 252-457.000.

Morimoto, Tatsuo: *See*—
Inooka, Masayoshi; Wakabayashi, Motoyoshi; Matsuda, Masatoshi; Kasuya, Masaaki; Nakamura, Munekazu; and Morimoto, Tatsuo, Re. 31,036, Cl. 252-456.000.
Inooka, Masayoshi; Ohguchi, Yoshihiro; Matsuda, Masatoshi; Kasuya, Masaaki; Nakamura, Munekazu; and Morimoto, Tatsuo, Re. 31,039, Cl. 252-457.000.

Nakamura, Munekazu: *See*—
Inooka, Masayoshi; Wakabayashi, Motoyoshi; Matsuda, Masatoshi; Kasuya, Masaaki; Nakamura, Munekazu; and Morimoto, Tatsuo, Re. 31,036, Cl. 252-456.000.
Inooka, Masayoshi; Ohguchi, Yoshihiro; Matsuda, Masatoshi; Kasuya, Masaaki; Nakamura, Munekazu; and Morimoto, Tatsuo, Re. 31,039, Cl. 252-457.000.

Ohguchi, Yoshihiro: *See*—
Inooka, Masayoshi; Ohguchi, Yoshihiro; Matsuda, Masatoshi; Kasuya, Masaaki; Nakamura, Munekazu; and Morimoto, Tatsuo, Re. 31,039, Cl. 252-457.000.

Polaroid Corporation: *See*—
Biber, Conrad H.; Johnson, Bruce K.; and Whiteside, George D., Re. 31,034, Cl. 354-27.000.

Sattler, Frederick P.: *See*—
Hancock, Warren D.; and Sattler, Frederick P., Re. 31,035, Cl. 8-94.110.

Suntime, Inc.: *See*—
French, Roger F., Re. 31,032, Cl. 126-433.000.

Wakabayashi, Motoyoshi: *See*—
Inooka, Masayoshi; Wakabayashi, Motoyoshi; Matsuda, Masatoshi; Kasuya, Masaaki; Nakamura, Munekazu; and Morimoto, Tatsuo, Re. 31,036, Cl. 252-456.000.
Inooka, Masayoshi; Wakabayashi, Motoyoshi; and Matsuda, Masatoshi, Re. 31,037, Cl. 252-457.000.
Inooka, Masayoshi; and Wakabayashi, Motoyoshi, Re. 31,038, Cl. 252-457.000.

Whiteside, George D.: *See*—
Biber, Conrad H.; Johnson, Bruce K.; and Whiteside, George D., Re. 31,034, Cl. 354-27.000.

Wilson, Lester E., Jr.; and Machcinski, Stephen A. Electrical power distribution assembly. Re. 31,033, Cl. 339-192.00R.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Brown, Peter William, to Girling Limited. Disc brakes and mounting structure therefor. B1 Re. 29,582, Cl. 188—73.

Girling Limited: *See*—
Brown, Peter William. B1 Re. 29,582, Cl. 188—73.

Parks, Earl R. Row crop planter. B1 4,148,414, Cl. 221—278.

Swarbrick, Peter; Green, William John; and Maillefer, Charles, to BICC Limited and Establissements Maillefer SA. Manufacture of extruded products. B1 4,117,195, Cl. 428—379.

BICC Limited and Establissements Maillefer SA: *See*—
Swarbrick, Peter; Green, William John; and Maillefer, Charles. B1 4,117,195, Cl. 428—379.

LIST OF DESIGN PATENTEES

A. T. Cross Company: *See*—
Lockwood, Arnold G.; Tucker, William E.; and Harris, Robert L., 266,258, Cl. D19-49.000.
Tucker, William E.; and Graham, George W., 266,259, Cl. D19-54.000.

AB Jarnarmatur: *See*—
Petterson, Dan A. B., 266,282, Cl. D32-66.000.

Adamcik, Michael. Combined water closet cover and bathroom cabinet. 266,268, 9-21-82, Cl. D23-69.000.

AGFA-Gevaert AG: *See*—
Schultes, Herbert; and Rubner, Karl-Heinz, 266,251, Cl. D16-1.000.

Ahrens, Robert H., to Schwaab, Inc. Hand operated ink stamp. 266,257, 9-21-82, Cl. D18-15.000.

Horikoshi, Shuzo; Sugiyama, Yoshihiko; Kawamura, Ken; Kawakami, Yoshihiko; Kuriyagawa, Teruo; Matsumura, Makoto; Kobayashi, Shoichi; and Akai, Keiko, 266,254, Cl. D16-31.000.

Akai, Keiko: *See*—
Horikoshi, Shuzo; Sugiyama, Yoshihiko; Kawamura, Ken; Kawakami, Yoshihiko; Kuriyagawa, Teruo; Matsumura, Makoto; Kobayashi, Shoichi; and Akai, Keiko, 266,253, Cl. D16-31.000.

Allcraft Plastic Company, Inc.: *See*—
Heil, John, 266,213, Cl. D6-97.000.

Aoki, Masahide; Obata, Takeichi; and Fujii, Takashi, to Hitachi, Ltd. Television receiver. 266,248, 9-21-82, Cl. D14-80.000.

Appleman, Donald T., to Procter & Gamble Company, The. Continuous sheet material or the like. 266,283, 9-21-82, Cl. D59-2.00B.

Aqualine Products Limited: *See*—
Littlefield, Reg, 266,214, Cl. D6-97.000.

Arns, Gale A. Sawbuck. 266,274, 9-21-82, Cl. D25-67.000.

Audivox, Inc.: *See*—
Johanson, Donald L.; and Chan, Thomas S., 266,271, Cl. D24-35.000.

Bass, Wayne E. Infant bottle holding device. 266,273, 9-21-82, Cl. D24-48.000.

Berman, Charles. Belt mounted accessory bag or the like. 266,200, 9-21-82, Cl. D2-400.000.

Berman, Charles. Belt mounted make-up case or the like. 266,201, 9-21-82, Cl. D2-400.000.

Berman, Charles. Belt mounted bag or the like. 266,202, 9-21-82, Cl. D2-400.000.

Berman, Charles. Belt mounted accessory bag or the like. 266,203, 9-21-82, Cl. D2-400.000.

Berman, Charles. Belt mounted cigarette case or the like. 266,204, 9-21-82, Cl. D2-400.000.

Berman, Charles. Belt mounted eyeglass case or the like. 266,205, 9-21-82, Cl. D3-34.000.

Bowden, William A., to Dacor Corporation. Swim fin. 266,265, 9-21-82, Cl. D21-239.000.

Bratton, Harry S. Suspendible wine rack. 266,215, 9-21-82, Cl. D6-113.000.

Brittner, Frank W. Display case. 266,219, 9-21-82, Cl. D6-172.000.

Bronander, Wilhelm B., Jr. Multi-pack cigarette package. 266,224, 9-21-82, Cl. D9-337.000.

Brookes, Malcolm J.: *See*—
Burbo, James H.; Hartman, Louis P.; Spranger, Douglas M.; Brookes, Malcolm J.; and Mulhauser, Paul J., 266,255, Cl. D16-133.000.

Burbo, James H.; Hartman, Louis P.; Spranger, Douglas M.; Brookes, Malcolm J.; and Mulhauser, Paul J., to International Telephone and Telegraph Corporation. Aviator night vision imaging apparatus or similar article. 266,255, 9-21-82, Cl. D16-133.000.

Büscher, John H., to Eastman Machine Company. Rotary shear for use in cutting cloth and the like. 266,222, 9-21-82, Cl. D8-61.000.

Cannon, Gary L.; and Wilkins, Ronald B. Video game tote case. 266,208, 9-21-82, Cl. D3-74.000.

Capitol Products Corporation: *See*—
Schmidt, Dietrich F., 266,275, Cl. D25-74.000.

Casio Computer Co. Ltd.: *See*—
Tsukahard, Kaoru, 266,230, Cl. D10-38.000.

Champion International Corporation: *See*—
Zdarsky, Robert C.; and Lyons, Russell J., 266,226, Cl. D9-418.000.

Chan, Thomas S.: *See*—
Johanson, Donald L.; and Chan, Thomas S., 266,271, Cl. D24-35.000.

Chasen, Lee R.: *See*—
Einhorn, Ruediger; and Chasen, Lee R., 266,260, Cl. D19-91.000.
Einhorn, Ruediger; and Chasen, Lee R., 266,261, Cl. D19-91.000.

Christensen, Harvey E.; Moretz, Charles H.; and Moretz, John M. Thermal ice pouch. 266,272, 9-21-82, Cl. D24-43.000.

Clay, Donald L.: *See*—
Ellis, William H.; and Clay, Donald L., 266,281, Cl. D32-56.000.

Coats & Clark, Inc.: *See*—
Einhorn, Ruediger; and Chasen, Lee R., 266,260, Cl. D19-91.000.
Einhorn, Ruediger; and Chasen, Lee R., 266,261, Cl. D19-91.000.

Colwell, Walter R. Body of an armored land vehicle. 266,234, 9-21-82, Cl. D12-12.000.

Combi Co., Ltd.: *See*—
Nakao, Shinroku; and Kobayashi, Kouichi, 266,236, Cl. D12-129.000.

Dacor Corporation: *See*—
Bowden, William A., 266,265, Cl. D21-239.000.

Daddona, Anthony L., Jr. Hair styling implement or similar article. 266,278, 9-21-82, Cl. D28-21.000.

Darken, James Hoarce: *See*—
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365 4,350,095

CLASS 102

209 4,350,096
275.2 4,350,097

CLASS 106

19 4,350,531
30 4,350,532
89 4,350,533
288 Q 4,350,534
308 Q 4,350,535

CLASS 108

6 4,350,098
56.1 4,350,099

CLASS 110

203 4,350,100
238 4,350,101
246 4,350,102
264 4,350,103

CLASS 112

220 4,350,104
256 4,350,105
410 4,350,106

CLASS 114

67 A 4,350,107
102 4,350,108
105 4,350,109
243 4,350,110
245 4,350,111
260 4,350,112
270 4,350,113
339 4,350,114

CLASS 116

70 4,350,115

CLASS 118

500 4,350,116

CLASS 119

27 4,350,117
51 R 4,350,118
4,350,119
51.13 4,350,120
103 4,350,121
106 4,350,122

CLASS 123

2 4,350,123
198 R 4,350,124
261 4,350,125
315 4,350,126
364 4,350,127
369 4,350,128
440 4,350,129
4,350,130
453 4,350,131
490 4,350,132
550 4,350,133
557 4,350,134
564 4,350,135
568 4,350,136
617 4,350,137

CLASS 124

24 R 4,350,138

CLASS 126

77 4,350,139
276 4,350,140
287 4,350,141
288 4,350,142
415 4,350,143
427 4,350,144
433 Re.31,032
434 4,350,145
447 4,350,146

CLASS 128

4 4,350,147
4,350,148
6 4,350,149
4,350,150
17 4,350,151
24 R 4,350,152
84 C 4,350,153
136 4,350,154
213 R 4,350,155
214 R 4,350,156
4,350,157
224 4,350,158
303 B 4,350,159
334 R 4,350,160
349 BV 4,350,161
477 4,350,162
633 4,350,163
639 4,350,164
640 4,350,165
664 4,350,166
727 4,350,167
736 4,350,168
783 4,350,169

CLASS 131

84 R 4,350,170
234 4,350,171
322 4,350,172
332 4,350,173

CLASS 134

104 4,350,174

CLASS 135

33 C 4,350,175

CLASS 136

244 4,350,836
246 4,350,837

CLASS 137

242 4,350,176
370 4,350,177
444 4,350,178
540 4,350,179
596.17 4,350,180
614 4,350,181
625.27 4,350,182

CLASS 138

89 4,350,183

CLASS 139

448 4,350,184

CLASS 141

35 4,350,185
83 4,350,186
90 4,350,187

CLASS 144

2 Z 4,350,188
4,350,189
3 D 4,350,190
172 4,350,191
193 C 4,350,192
286 R 4,350,193

CLASS 148

1.5 4,350,536
4,350,537
12 D 4,350,538
31.5 4,350,539
4,350,540
188 4,350,541

CLASS 149

11 4,350,542

CLASS 150

1.5 C 4,350,194
39 4,350,195

CLASS 182

5 4,350,196

CLASS 156

62.1 4,350,543
79 4,350,544
87 4,350,545
93 4,350,546
143 4,350,547
156 4,350,548
161 4,350,549
237 4,350,550
245 4,350,551
254 4,350,552
345 4,350,553
384 4,350,554
540 4,350,555
541 4,350,556
601 4,350,557
617 SP 4,350,558
4,350,559
4,350,560
624 4,350,561
639 4,350,562
643 4,350,563
659.1 4,350,564

CLASS 159

47 R 4,350,565

CLASS 160

166 A 4,350,197
179 4,350,198
201 4,350,199

CLASS 162

72 4,350,566
145 4,350,567

CLASS 168

48 S 4,350,200
76 4,350,201
95 4,350,202

CLASS 166

51 4,350,203
175 4,350,204
375 4,350,205

CLASS 169

47 4,350,206

CLASS 171

58 4,350,207

CLASS 172

1 4,350,208
7 4,350,209
143 4,350,210
311 4,350,211

CLASS 173

6 4,350,212
93.6 4,350,213
126 4,350,214

CLASS 174

15 R 4,350,838
65 G 4,350,839
65 SS 4,350,840
87 4,350,841
92 4,350,842
94 R 4,350,843

CLASS 175

329 4,350,215

CLASS 177

164 4,350,216
246 4,350,217
255 4,350,218

CLASS 178

22.18 4,350,844

CLASS 179

1 C 4,350,846

1 GA 4,350,847
1 J 4,350,845
2 DP 4,350,848
175 4,350,849

CLASS 180

65 R 4,350,219
165 4,350,220
190 4,350,221
209 4,350,222

CLASS 181

229 4,350,223

CLASS 182

82 4,350,224

CLASS 187

29 R 4,350,225
4,350,226

CLASS 188

2 F 4,350,227
71.9 4,350,228
73 B1 Re. 29,582
73.45 4,350,229
79 4,350,230
218 XL 4,350,231
378 4,350,232
4,350,233

CLASS 191

12.2 R 4,350,850
39 4,350,851

CLASS 192

4 A 4,350,234
45 4,350,235
84 C 4,350,236
116.5 4,350,237

CLASS 194

1 G 4,350,239
1 N 4,350,238
92 4,350,240

CLASS 198

311 4,350,241
605 4,350,242
769 4,350,243
773 4,350,244

CLASS 200

42 A 4,350,852
52 R 4,350,853
61.25 4,350,854
292 4,350,855
306 4,350,856
314 4,350,857

CLASS 202

180 4,350,568

CLASS 203

2 4,350,569
10 4,350,570
21 4,350,571
35 4,350,572
86 4,350,573

CLASS 204

56 R 4,350,574
84 4,350,575
101 4,350,576
157.1 R 4,350,577
192 R 4,350,578
195 R 4,350,579
279 4,350,580
301 4,350,581

CLASS 206

207 4,350,245
210 4,350,246
387 4,350,247
455 4,350,248
566 4,350,249
605 4,350,250

CLASS 208

8 LE 4,350,582
310 Z 4,350,583

CLASS 209

352 4,350,584
642 4,350,251

CLASS 210

94 4,350,585
149 4,350,586
151 4,350,587
208 4,350,588
220 4,350,589
243 4,350,590
384 4,350,591
450 4,350,592
516 4,350,593
637 4,350,594
656 4,350,595
708 4,350,596
710 4,350,597
751 4,350,598
761 4,350,599

CLASS 211

40 4,350,252
74 4,350,253

CLASS 212

153 4,350,254
268 4,350,255

CLASS 213

69 4,350,256

CLASS 219

10.55 B 4,350,858
4,350,860
10.55 F 4,350,859
10.61 R 4,350,861
64 4,350,862
69 M 4,350,865
69 P 4,350,863
69 W 4,350,864
121 EM 4,350,866
121 LC 4,350,867
137 R 4,350,868
4,350,869
216 4,350,870
343 4,350,871
376 4,350,872
388 4,350,873
400 4,350,874
449 4,350,875
497 4,350,876

CLASS 220

4 F 4,350,257
22 4,350,258
66 4,350,259
254 4,350,260
270 4,350,261
273 4,350,262
359 4,350,263

CLASS 221

67 4,350,264
278 B1 4,148,414

CLASS 222

38 4,350,265
40 4,350,266
131 4,350,267
214 4,350,268
227 4,350,269
336 4,350,270
386.5 4,350,271
4,350,272
400.8 4,350,273

CLASS 224

205 4,350,274

CLASS 226

14 4,350,275
16 4,350,276
190 4,350,277
4,350,278

CLASS 227

156 4,350,279

CLASS 228

29 4,350,280

CLASS 229

38 4,350,281

CLASS 233

7 4,350,282
26 4,350,283
27 4,350,284

CLASS 235

70 A 4,350,877
78 RC 4,350,878
92 EC 4,350,879
96 4,350,880
400 4,350,881
4,350,882
435 4,350,883

CLASS 236

1 R 4,350,285
44 A 4,350,286

CLASS 237

12.3 A 4,350,287
4,350,289
12.3 C 4,350,288

CLASS 238

17 4,350,290
349 4,350,291

CLASS 239

7 4,350,292
155 4,350,293
169 4,350,294
178 4,350,295
201 4,350,296
265.35 4,350,297
333 4,350,298
337 4,350,299
396 4,350,300
453 4,350,301
500 4,350,302
673 4,350,303
703 4,350,304

CLASS 241

46 B 4,350,305
46.15 4,350,306
81 4,350,307
294 4,350,308

CLASS 242

68.3 4,350,309
75.2 4,350,310
83 4,350,311
84.2 G 4,350,312
107.4 C 4,350,313

CLASS 244

1 R 4,350,314
3.23 4,350,315
63 4,350,316

CLASS 248

588 4,350,317

CLASS 249

40 4,350,318

CLASS 250

204 4,350,884
231 R 4,350,885
239 4,350,886
265 4,350,887
270 4,350,888
372 4,350,890
461.2 4,350,892
484.1 4,350,893
504 R 4,350,894

CLASS 251

65 4,350,319
129 4,350,320
149.6 4,350,321
229 4,350,322

CLASS 252

8.55 E 4,350,600
8.55 R 4,350,601
75 4,350,602
299.1 4,350,603
301.4 R 4,350,604
305 4,350,605
392 4,350,606
408 4,350,607
425.3 4,350,608
429 R 4,350,610
435 4,350,611
441 4,350,612
455 R 4,350,613
455 Z 4,350,614
4,350,615
456 Re.31,036
457 Re.31,037
Re.31,038
Re.31,039
463 4,350,616
465 4,350,609
477 R 4,350,617
514 4,350,618
537 4,350,619
628 4,350,620

CLASS 254

273 4,350,323

CLASS 260

112 R 4,350,624
4,350,625
112.5 E 4,350,627
112.5 R 4,350,626
4,350,628
123.7 4,350,629
239.3 A 4,350,630
245.2 T 4,350,631
314.5 4,350,632
326.11 R 4,350,633
326.13 B 4,350,634
326.47 4,350,635
465 D 4,350,640
4,350,642
465 E 4,350,641
465.7 4,350,643
501.15 4,350,644
978 4,350,645

CLASS 261

29 4,350,646
65 4,350,647
120 4,350,648

CLASS 264

23 4,350,649
39 4,350,650
65 4,350,651
104 4,350,652
127 4,350,653
129 4,350,654
145 4,350,655
166 4,350,656
349 4,350,657

CLASS 266

44 4,350,324
196 4,350,325
201 4,350,326

CLASS 270

54 4,350,327

CLASS 271

9 4,350,329
12 4,350,330
22 4,350,328
95 4,350,331
188 4,350,332
217 4,350,333
274 4,350,334

CLASS 272

67 4,350,335
69 4,350,336

CLASS 273

43 A 4,350,337
55 B 4,350,338
148 A 4,350,339
153 R 4,350,340
157 R 4,350,341
240 4,350,342
247 4,350,343
333 4,350,344

CLASS 277

3 4,350,345
26 4,350,346
153 4,350,347
199 4,350,348
4,350,349
207 A 4,350,350
4,350,351
216 4,350,352

CLASS 280

5 C 4,350,353
6 H 4,350,354
28.5 4,350,355
47.26 4,350,356
79.3 4,350,357
81 R 4,350,358
203 4,350,359
279 4,350,360
289 A 4,350,361
478 A 4,350,362
481 4,350,363
605 4,350,364
4,350,365
655 4,350,366
756 4,350,367
804 4,350,368
4,350,369
4,350,370

CLASS 285

18 4,350,371
45 4,350,372
55 4,350,373
132 4,350,374

CLASS 290

55 4,350,895
4,350,896
4,350,897
4,350,898
4,350,899
4,350,900

CLASS 292

24 4,350,375
263 4,350,376
288 4,350,377

CLASS 293

120 4,350,378

CLASS 294

65.5 4,350,379
74 4,350,380
88 4,350,381

CLASS 296

38 4,350,382
72 4,350,383
146 4,350,384
222 4,350,385

CLASS 297

85 4,350,386
4,350,387
284 4,350,388
410 4,350,389
452 4,350,390

CLASS 299

4 4,350,391
13 4,350,392
50 4,350,393

CLASS 301

38 R 4,350,394

CLASS 303

6 C 4,350,395
115 4,350,396

CLASS 307

10 R 4,350,901
221 D 4,350,902
252 B 4,350,903
310 4,350,904
451 4,350,905
469 4,350,906

CLASS 308

212 4,350,397
216 4,350,398

CLASS 310

37 4,350,907
61 4,350,908
62 4,350,909
64 4,350,910
87 4,350,911
90 4,350,912
103 4,350,913
194 4,350,914
306 4,350,915
313 B 4,350,916
320 4,350,917
367 4,350,918

CLASS 312

138 R 4,350,399

CLASS 313

99 4,350,919
346 R 4,350,920
360.1 4,350,921
402 4,350,922
414 4,350,923
441 4,350,924
451 4,350,925
455 4,350,926

CLASS 315

5.41 4,350,927
39.3 4,350,928
49 4,350,929
4,350,930
72 4,350,931
169.2 4,350,932
278 4,350,933
282 4,350,934
291 4,350,935

CLASS 318

7 4,350,936
331 4,350,937
443 4,350,938
592 4,350,939
603 4,350,940
4,350,941
626 4,350,942
696 4,350,943
779 4,350,944
795 4,350,945

CLASS 320

22 4,350,946

CLASS 322

17 4,350,947

CLASS 323

282 4,350,948
284 4,350,949

CLASS 324

78 D 4,350,950
133 4,350,951
166 4,350,952
183 4,350,953
208 4,350,954
303 4,350,955

CLASS 328

167 4,350,956

CLASS 329

107 4,350,957

CLASS 330

110 4,350,959
286 4,350,958

CLASS 331

158 4,350,961

CLASS 332

60 4,350,962

CLASS 333

151 4,350,963
213 4,350,964

CLASS 337

47 4,350,965
302 4,350,966
343 4,350,967

CLASS 338

13 4,350,968

CLASS 339

50 C 4,350,400
65 4,350,401
74 R 4,350,402
91 R 4,350,403
97 P 4,350,405
97 R 4,350,404
111 4,350,406
113 L 4,350,407
149 S 4,350,408
186 M 4,350,409
192 R Re.31,033

CLASS 340

23 4,350,969
4,350,970
52 R 4,350,971
347 CC 4,350,975
347 DA 4,350,974
4,350,976
347 DD 4,350,973
545 4,350,977
550 4,350,978
825 4,350,972
861 4,350,979
870.02 4,350,980
870.37 4,350,981

CLASS 343

6.8 R 4,350,982
103 4,350,983
112 R 4,350,984
702 4,350,985

CLASS 346

75 4,350,986
76 PH 4,350,987
108 4,350,988
140 R 4,350,989

CLASS 350

170 4,350,410
174 4,350,411
292 4,350,412
356 4,350,413
357 4,350,414
422 4,350,415
427 4,350,416

CLASS 353

90 4,350,417

CLASS 354

25 4,350,418
27 Re.31,034
110 4,350,419
145 4,350,420
152 4,350,421
173 4,350,422
4,350,423
4,350,424
207 4,350,425
234 4,350,426
238 4,350,427
254 4,350,428
299 4,350,429
330 4,350,430

CLASS 355

1 4,350,431
3 DD 4,350,432
4,350,440
8 4,350,433
14 C 4,350,435
14 SH 4,350,434
4,350,436
4,350,439
52 4,350,437
68 4,350,438

CLASS 356

40 4,350,441
51 4,350,442
358 4,350,443

CLASS 357

16 4,350,990
23 4,350,991
4,350,992
29 4,350,993
67 4,350,994

CLASS 358

37 4,350,995
75 4,350,996

78 4,350,997
111 4,350,998
147 4,350,999
158 4,351,000
4,351,001
4,351,002
166 4,351,003
213 4,351,004
300 4,351,005

CLASS 360

9 4,351,006
13 4,351,007
40 4,351,008
105 4,351,009
131 4,351,010

CLASS 361

82 4,351,011
96 4,351,012
4,351,013
100 4,351,014
119 4,351,015
181 4,351,016

CLASS 362

147 4,351,017
215 4,351,018
298 4,351,019

CLASS 363

26 4,351,020
49 4,351,021
87 4,351,022

CLASS 364

187 4,351,023
200 4,351,024
4,351,025
423 4,351,026
432 4,351,027
483 4,351,028
511 4,351,029
552 4,351,030
580 4,351,031
724 4,351,032
900 4,351,033

CLASS 365

189 4,351,034

CLASS 366

141 4,350,444
343 4,350,445

CLASS 367

14 4,351,035
20 4,351,036
85 4,351,037
105 4,351,038

CLASS 368

76 4,351,039
88 4,351,040
4,351,041
188 4,351,042
252 4,351,043

CLASS 369

43 4,351,044
55 4,351,045
233 4,351,046
270 4,351,047
288 4,351,048

CLASS 370

62 4,351,049

CLASS 371

12 4,351,050

CLASS 372

36 4,351,051
46 4,350,960
58 4,351,052
61 4,351,053

CLASS 373

38 4,351,054
76 4,351,055
88 4,351,056
117 4,351,057
155 4,351,058

CLASS 374

13 4,350,446

CLASS 375

10 4,351,059
12 4,351,060
20 4,351,061
99 4,351,062

CLASS 378

46 4,350,889
79 4,351,063
110 4,350,891

CLASS 400

118 4,350,447
120 4,350,448
4,350,449
124 4,350,450
208 4,350,451
4,350,452
4,350,453
234 4,350,454
279 4,350,455
344 4,350,456

CLASS 401

11 4,350,457
145 4,350,458

CLASS 403

263 4,350,459

CLASS 404

117 4,350,460

CLASS 405

128 4,350,461
259 4,350,462

CLASS 409

234 4,350,463

CLASS 411

180 4,350,464
186 4,350,465

CLASS 414

128 4,350,466
144 4,350,467
325 4,350,468
420 4,350,469
430 4,350,470
463 4,350,471

CLASS 415

125 4,350,472

CLASS 416

1 4,350,473
7 4,350,474

CLASS 417

238 4,350,475
304 4,350,476
384 4,350,477
417 4,350,478

CLASS 418

55 4,350,479
201 4,350,480

CLASS 422

40 4,350,658
61 4,350,659
90 4,350,660
98 4,350,661
122 4,350,662
137 4,350,663
179 4,350,664
191 4,350,665
263 4,350,666

CLASS 423

24 4,350,667
139 4,350,668
235 4,350,669
244 4,350,670
320 4,350,671
445 4,350,672
644 4,350,673

CLASS 424

1 4,350,674
4,350,675
7 4,350,676
12 4,350,677
27 4,350,678
38 4,350,679
45 4,350,685
52 4,350,680
53 4,350,681
64 4,350,682
85 4,350,683
88 4,350,686
92 4,350,684
177 4,350,687
182 4,350,688
232 4,350,689
243 4,350,690
244 4,350,691
246 4,350,692
4,350,693
248.54 4,350,694
251 4,350,695
4,350,696
256 4,350,697
258 4,350,698
263 4,350,699
4,350,700
269 4,350,701
270 4,350,702
274 4,350,703
4,350,704
278 4,350,705
322 4,350,706
346 4,350,707

CLASS 425

73 4,350,481
83.1 4,350,482
115 4,350,483
140 4,350,484
389 4,350,485
412 4,350,486

CLASS 426

11 4,350,708
19 4,350,710
102 4,350,711
134 4,350,712
243 4,350,713
319 4,350,709
559 4,350,714
570 4,350,715
626 4,350,716

CLASS 427

8 4,350,717
181 4,350,718
253 4,350,719
401 4,350,720

CLASS 428

33 4,350,721
35 4,350,722
42 4,350,723
69 4,350,724
95 4,350,725
4,350,726
102 4,350,727
105 4,350,728
209 4,350,729
215 4,350,730
234 4,350,731
246 4,350,732
290 4,350,733
308.4 4,350,734
328 4,350,735
341 4,350,736
379 B1 4,117,195
383 4,350,737
4,350,738
425.1 4,350,739
461 4,350,740
473.5 4,350,741
520 4,350,742
622 4,350,743
630 4,350,744

CLASS 429

57 4,350,745
121 4,350,746
184 4,350,747

CLASS 430

49 4,350,748
100 4,350,749
125 4,350,750
135 4,350,751
190 4,350,753
219 4,350,752
4,350,754
264 4,350,755
331 4,350,756
422 4,350,757
567 4,350,758
630 4,350,759

CLASS 433

14 4,350,487
32 4,350,488

CLASS 434

40 4,350,489
274 4,350,490

CLASS 435

7 4,350,760
4,350,761
10 4,350,762
29 4,350,763
69 4,350,764
161 4,350,765
4,350,766
183 4,350,767
241 4,350,768
243 4,350,769
253 4,350,770

CLASS 455

29 4,351,064

CLASS 476

12 4,350,491

CLASS 501

97 4,350,771

CLASS 518

714 4,350,772

CLASS 521

31 4,350,773
95 4,350,774
100 4,350,775
110 4,350,776
4,350,777
118 4,350,778
126 4,350,779
137 4,350,780
149 4,350,781

CLASS 523

334 4,350,782
505 4,350,783

CLASS 524

55 4,350,785
263 4,350,786
302 4,350,787
309 4,350,788
391 4,350,623
759 4,350,784
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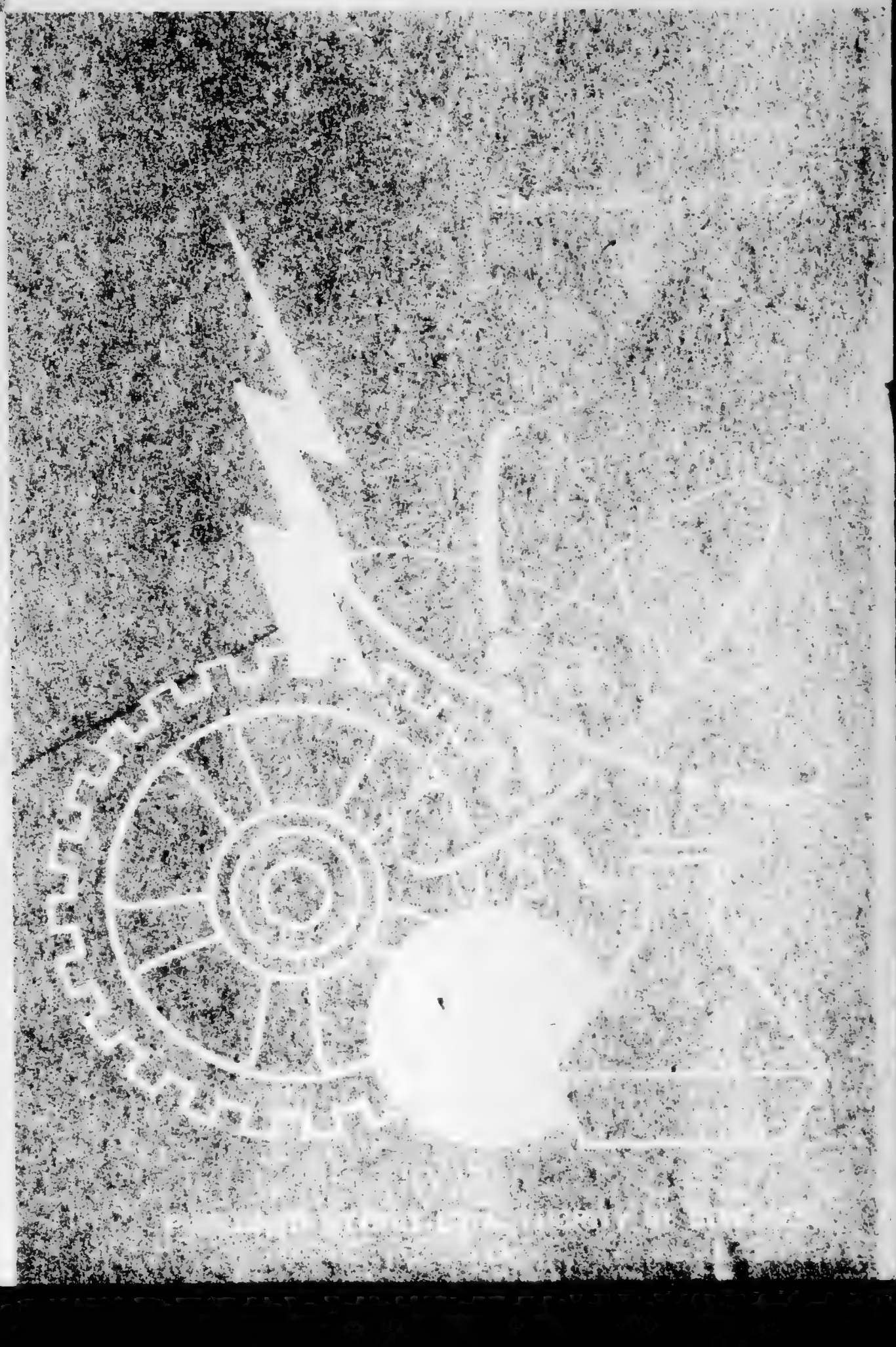
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UNITED STATES PATENT AND TRADEMARK OFFICE



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For information concerning the PCT member countries and the most recent PCT rule changes see the notices appearing in the Official Gazette at 1001 O.G. 14 on Dec. 9, 1980 and at 1012 O.G. 20 on Nov. 17, 1981.

Note that the international fees have been increased as of Jan. 1, 1982. The current schedule of fees is as follows:

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GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

Jan. 19, 1982.

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,645,835, Re. S.N. 398,605, Filed July 15, 1982, Cl. 428/195, MOISTURE-VAPOR-PERMEABLE PRESSURE-SENSITIVE ADHESIVE MATERIALS, Martin E. Hodson, Owner of Record: *T. J. Smith & Nephew Ltd., Yorkshire, England,* Attorney or Agent: Albert L. Jacobs, Jr., Ex. Gp.: 164

3,811,832, Re. S.N. 327,194, Filed Dec. 3, 1981, Cl. 008/94.26, TANNING IMPROVEMENTS, Philip Stanley Briggs, Owner of Record: *Inventor,* Attorney or Agent: Douglas B. Henderson, et al., Ex. Gp.: 144

4,119,005, Re. S.N. 328,261, Filed Dec. 7, 1981, Cl. 84/1.01, SYSTEM FOR GENERATING TONE SOURCE WAVESHAPES, Michio Kondo, et al., Owner of Record: *Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan,* Attorney or Agent: W. Robert Spensley, et al., Ex. Gp.: 217

4,256,104 Re. S.N. 397,791, Filed July 16, 1982, Cl. 128/214G, EQUIPMENT SETS AND SYSTEM FOR THE SEQUENTIAL ADMINISTRATION OF MEDICAL LIQUIDS AT DUAL FLOW RATES, Andrew J. Muetterties, et al., Owner of Record: *Abbott Laboratories, North Chicago, Ill.,* Attorney or Agent: Robert L. Niblack, Ex. Gp.: 335

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b).

Re. 28,576, Reexam. No. 90/000,246, Requested: Aug. 25, 1982, Cl. 523/336, PROCESS FOR RAPID DISSOLVING WATER-SOLUBLE VINYL ADDITION POLYMERS USING WATER-IN-OIL EMULSIONS, Donald R. Anderson, et al., Owner of Record: *Nalco Chemical Co., Chicago, Ill.,* Attorney or Agent: Hume, Clement, Brinks, Willian, Olds & Cook, Ltd., Ex. Gp.: 144, Requester: Lawrence Rosen, New York, N.Y.

4,294,815, Reexam. No. 90/000,247, Requested: Aug. 26, 1982, Cl. 423/478, PROCESS OF PRODUCING CHLORINE DIOXIDE AND, IF DESIRED, CHLORINE, Karl Lohrberg, et al., Owner of Record: *Metallgesellschaft Aktiengesellschaft, Frankfurt Am Main, Germany,* Attorney or Agent: Sprung, Felfe, Horn, Lynch & Kramer, Ex. Gp.: 110, Requester: Erco Industries, Ltd., Islington, Ontario, Canada

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COMMISSIONER ORDERED REEXAMINATION

Notice under 37 CFR 1.11(c). The orders for reexamination listed below are open to inspection by the general public in the indicated Examining Group. Copies of the Orders and other related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed. 37 CFR 1.248(a)(5) and 1.525(b).

4,332,282, Reexam. No. 90/000,248, ORDERED Aug. 30, 1982, Cl. 141/1, MEANS AND METHOD OF RECLAIMING CRANKCASE OIL, Roger W. Strange, Owner of Record: *Inventor,* Attorney or Agent: Charmasson, Branscomb & Holz, Ex. Gp.: 243

Board of Appeals Decisions Rendered in the Month of Aug. 1982

Affirmed	225
Affirmed in Part	18
Reversed	50
Total	293

Update of PCT Information

Topics covered in this update include:

I. European Patent Office Available As An International Searching Authority on Oct. 1, 1982.
II. Matters To Be Considered When Choosing An International Searching Authority.
III. PCT Fee Amounts.

I. European Patent Office Available as an International Searching Authority on Oct. 1, 1982.

The United States Patent and Trademark Office has informed the International Bureau that in addition to the United States Patent and Trademark Office, the European Patent Office is competent as an International Searching Authority for searching all kinds of international applications filed in the United States Receiving Office on and after Oct. 1, 1982. (PCT Article 16(2) and PCT Rule 35.2(a) (i)).

It should be noted that the European Patent Office will not search, by virtue of PCT Article 17(2) (a) (i), any international application to the extent that it considers that the international application relates to subject matter set forth in PCT Rule 39.1. Furthermore, the European Patent Office is not equipped to search computer programs.

The international search fee for the European Patent Office must be paid to the United States Patent and Trademark Office (USPTO) as a Receiving Office at the

time of filing the international application. The search fee for the European Patent Office is currently set under PCT Rule 16.1(b) at 710 United States dollars ($710.00). The search fee will change as costs and exchange rates require. If exchange rates fluctuate significantly, the fee may change frequently. Notice of changes will be published in the Official Gazette shortly before the effective date of any change.

If the European Patent Office as the International Searching Authority considers that the international application does not comply with the requirement of unity of invention as set forth in PCT Rule 13, the European Patent Office will invite applicants to timely pay *directly to it* an additional search fee of 1,700 Deutsche Mark for each additional invention.

A revised fee calculation sheet (form PCT/RO/101, Annex) having appropriate spaces to indicate the choice of International Searching Authority has been developed so that applicants may indicate which International Searching Authority is to make the search. The revised fee calculation sheet should be available by Oct. 1, 1982. However applicants may indicate the choice of International Searching Authority by placing the name of the desired international searching authority directly after "II SEARCH FEE" on the current fee calculation sheet (form PCT/RO/101, Annex).

II. Matters to be Considered when Choosing an International Searching Authority.

Choosing the European Patent Office (EPO) as an International Searching Authority could be an advantage to United States applicants who designate countries for European Regional patent protection in PCT International applications, for the following reasons:

(1) Claims may be amended according to EPO search results *before* entering the European Office as a designated Office.

(2) The EPO search fee need not be paid upon entering the European Office as a designated office.

(3) The EPO search results may be available for use in the U.S. priority application.

(4) The EPO international search may be obtained without the need for a European Professional Representative.

(5) The European Patent Office search could provide the U.S. applicant with the benefit of a European art search (which may be different from his own or the USPTO'S search) before it is necessary to enter the European Patent Office or other designated Offices and usually before amendments to the U.S. priority application are needed.

(6) Cost factors include the following:

When European countries are designated for European Regional patent protection in an international application, and the USPTO is selected as the International Searching Authority the minimum cost will be $250 for the International Search by the USPTO and about $568 ($710 fee minus a fee reduction of 20% or $142, depending on exchange rates) for the EPO search as a designated Office, making a total of $818. If the EPO is selected as the International Searching Authority, the cost will be $710 for the International Search with no additional fee for the EPO search in the designated Office phase.

In summary if the U.S. applicant enters the EPO as a designated Office after receiving an EPO International Search Report, he may save $108 under USPTO and EPO fees as of Oct. 1, 1982, given rebates and exchange rates, because the applicant will have already paid the EPO international search fee and will not need to pay an additional search fee to the EPO as a designated Office.

If the U.S. applicant selects the EPO as the International Searching Authority but does *not* enter the EPO as a designated Office, the additional cost for having the EPO conduct the PCT international search will be about $460 ($710 for EPO search vs. $250 for USPTO search).

It should be noted that Designated Offices other than the EPO do not appear to make any distinction in their search or examination fees or rebates, whether the PCT International Search report emanates from the USPTO or the EPO.

Some of the disadvantages that may occur due to the European Patent Office making the International Search are the following:

(1) Additional mailing time to and from the EPO Searching Authority may shorten the time for applicants to respond to various invitations from the EPO such as for comments on abstracts and payments of additional search fees as well as for PCT Article 19 amendments to the claims after issuance of the International Search Report.

(2) There may be more difficulty in solving any procedural problems between the applicant and the EPO than with the USPTO due to physical distance and time differences.

III. PCT Fee Amounts.

A. The fees which have been established by the Patent and Trademark Office and announced in the Federal Register on July 30, 1982 at 33066-33112 include fees established under the authority of 35 U.S.C. 376 for international applications filed on and after Oct 1, 1982 as follows:

(1) A transmittal fee (see 35 U.S.C. 361(d) and PCT Rule 14) – $125.00.

(2) A search fee where the USPTO is chosen as International Searching Authority (see 35 U.S.C. 361(d) and PCT Rule 16) and where:

(i)	No corresponding prior United States national application with fee has been filed	$500.00
(ii)	Corresponding prior United States national application with fee has been filed	$250.00

(3) A supplemental search fee when required by the USPTO as an International Searching Authority (see PCT Art. 17(3) (a) and PCT Rule 40.2) – $125.00 per additional invention.

(4) The national fee, that is, the amount set forth as the filing fee under 37 CFR 1.16(a) through (d) credited by an amount of $250 where an international search fee has been paid on the corresponding international application to the United States Patent and Trademark Office as an International Searching Authority. Where the amount of the credit is in excess of that required for the national fee, a request for a refund of the excess under 37 CFR 1.446(b) may be filed at the time of paying the national fee. Only one such credit is permitted based on a single international search fee.

The following fee remains unchanged:

(5) A special fee when required (see 35 U.S.C. 372(c)), per claim $10.00

(The fee for preparing a certified copy of the priority document is set forth in 37 CFR 1.19(a) (3) and (b) (1).)

B. The basic fee and designation fee portions of the international fee are prescribed in PCT Rule 15. The amounts of these fees are:

Basic Fee (first 30 pages)	$270.00
Basic Supplemental Fee (for each sheet over 30)	$ 6.00
Designation Fee (per national or regional office)	$ 65.00

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

Sept. 3, 1982.

Standardized Disclaimers

Beginning with the Nov. 9, 1982 issue of the *Official Gazette*, disclaimers in marks published for opposition

and in those registered on the Supplemental Register will be printed in a standardized form, regardless of the text submitted. Certificates of registration for marks issued on the Supplemental Register will also contain the standardized disclaimer as of that date. Certificates of registration for marks issued on the Principal Register will contain the uniform statement beginning Feb. 1, 1983. The disclaimed matter will be taken from the disclaimer of record and inserted into a standardized disclaimer for printing and data base purposes. The new disclaimer text will take the following form:

No claim is made to the exclusive right to use ——, apart from the mark as shown.

MARGARET M. LAURENCE,
Assistant Commissioner for Trademarks.

Aug. 30, 1982.

Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent and Trademark Office. Information tending to affect the eligibility of said applicants on moral, ethical, or other grounds, should be furnished the Commissioner of Patents and Trademarks on or before Oct. 15, 1982.

DONALD J. QUIGG,
Chairman, Committee on Enrollment.

Aug. 30, 1982.

Brandes, Karlheinz K., 1901 College View Dr., Bartlesville, Okla. 74003
Breitenstein, George T., 32 S. Shore Dr., New Port Richey, Fla. 33552
Clements, Gregory N., 8010 Orange Plank, Springfield, Va. 20513
Dubno, Herbert, c/o Karl F. Ross, 5676 Riverdale Ave., Riverdale, N.Y. 10471
Indyk, Eugene S., RFD #1, Box 474A, Jamesburg, N.J. 08831
Hamrock, William F., 1337 Julia Ave., McLean, Va. 22101
Kendall, Ralph S. C., 2505 Lakevale Dr., Vienna, Va. 22180
Kierans, Patrick E., 606 Cathcart St., Suite 440, Montreal, Quebec, Canada H3B 1K9
Konkol, Chris P., 6910 Allview Dr., Columbia, Md. 21046
Lang, Ernest U., 1510 Platt St., Niles, Mich. 49120
Loughnane, Michael D., 54 Grey Ave., Allendale, N.J. 07401
Meyer, William E., 35 Maple St., Stoneham, Mass. 02180
Spiegel, H. Jay, Sherman & Shalloway, 413 N. Washington St., Alexandria, Va. 22314
Tayon, Jeff, 23 Orchard Dr., Belle Ville, Ill. 62221

Patent Suits

Notices under 35 U.S.C 290; Patent Act of 1952

2,991,225, August Franciscus Harms, O-METHYL-BENZHYDRYL-B-DIMETHYLAMINOETHYL ETHER PROCESS AND COMPOSITION FOR SYMPTOMATIC RELIEF OF THE SYNDROME OF PARKINSONISM AND OF SPASTIC SKELETAL MUSCLE DISORDERS, **filed** Mar. 28, 1978, D.C. District of Columbia (Wash. D.C.), Doc. 78-0553, *Riker Laboratories, Inc.* v. *Gist-Brocades N.V.* Stipulation dismissing complaint and counterclaim with prejudice filed May 17, 1982.

3,173,694, Hamilton Kent Mfg. Co., Inc., GASKET, **filed** July 13, 1979, D.C., N.D. Ind. (Fort Wayne), Doc. F 79-134, *Hamilton Kent Mfg. Co., Inc.* v. *Pipe Gasket & Supply Co., Inc.* Case dismissed with prejudice on June 1, 1982.

3,228,202, Richard T. Cornelius, METHOD AND MEANS FOR MAKING CRACKED ICE AND THE LIKE, **filed** July 9, 1982, D.C. Minn. (St. Paul), Doc. 3-82-879, *Paul Keller* v. *McQuay-Perfex, Inc.* **Same, filed** July 12, 1982, D.C. Minn. (St. Paul), Doc. 3-82-881, *McQuay-Perfex, Inc.* v. *Paul Keller.*

3,230,798, Kubicek and Toth, DEBURRING TOOLS; **3,276,294,** Louis A. Kubicek, **same; 3,661,473,** Burr-Ban Tool Service Co., EXTENSION TOOL HOLDER; **3,761,104,** Burr-Ban Tool Service Co., EXTENSION TOOL HOLDER; **3,970,406,** Louis A. Kubicek, TOOL HOLDER WITH MISALIGNMENT COMPENSATING MEANS; **3,975,111,** Louis A. Kubicek, COMBINATION EXTENSION AND COMPRESSION TOOL HOLDER, **filed** June 14, 1982, D.C., E.D. Mich. (Ann Arbor), Doc. 82-60201, *Louis A. Kubicek & Burr-Ban Tool Service Co.* v. *Cogsdill Enterprises, Inc.*

3,273,171, Joe H. Lamb, CARRIER FOR FORWARD EDGE OF EXTENDIBLE AND RETRACTABLE FLEXIBLE SHEET, **filed** June 10, 1982, D.C., N.D. Calif. (San Francisco), Doc. C 82-2969RPA, *Automated Solar Covers, Inc., et al* v. *Aquamatic Pool Covers, Inc., et al.*

3,276,294. (See 3,230,798.)

3,282,483, Kenneth L. Babcock, BACK PACK, **filed** July 8, 1982, D.C., S.D. Calif. (San Diego), Doc. 82-0794-E(H), *Kenneth L. Babcock* v. *The Coleman Co., Inc., et al.*

3,355,825, Root Spring Scraper Co., BLADE POSITION LOCK AND RELEASE SYSTEM FOR ROAD SCRAPERS, **filed** Nov. 30, 1981, D.C., W.D. Mich. (Kalamazoo), Doc. K81-420CA8, *Root Spring Scraper Co.* v. *Inland Lake Machine, Inc.* Complaint and Counterclaim dismissed with prejudice and without costs to either party on July 13, 1982.

3,378,633, Albert Macovski, MONOCHROME PHOTOGRAPHY SYSTEM FOR COLOR TELEVISION; **Re. 27,491, same,** PHOTOGRAPHY USING SPATIAL FILTERING, **filed** July 19, 1982, D.C., N.D. Calif. (San Francisco), Doc. C82-3625 WWS, *S R I International* v. *Matsushita Corp. of America.*

3,386,955, American Cyanamid Co., SUBSTITUTED UREAS AS LOW TEMPERATURE EPOXY CURING AGENTS, **filed** Jan. 19, 1978, D.C. Del. (Wilmington), Doc. 78-22, *American Cyanamid Co.* v. *Minnesota Mining & Mfg. Co.* Dismissal of claims and counterclaims with prejudice filed June 3, 1982.

3,416,637, Societe Anonyme Francaise Du Ferodo, RADIALLY MOVABLE CLUTCH BEARING, **filed** July 28, 1982, D.C., S.D.N.Y., Doc. 82-Civ-4923 RJW, *Valeo, formerly Societe Anonyme Francaise Du Ferodo* v. *Mitsubishi International Corp.*

3,416,984, Sealed Air Corp., METHOD AND APPARATUS FOR MAKING CELLULAR MATERIAL FROM THERMOPLASTIC SHEETS, **filed** Feb. 11, 1980, D.C., S.D.N.Y., Doc. 80-Civ-828 TPG, *Sealed Air Corp.* v. *Bubble Protek, Inc.* Plaintiff is owner of Pat. No. 3,416,984 which is good and valid in law. Defendant is hereby enjoined and restrained from further infringing Plaintiff's patent. Filed July 2, 1982.

3,464,129, Thomas M. Bogenschuts, BLADE AND MOLDBOARD SUPPORTING AND ADJUSTING STRUCTURE FOR SNOWPLOWS; **3,604,131,** Bogenschutz and Farrell, MOLDBOARD SUPPORTING STRUCTURE, **filed** July 14, 1980, D.C., E.D. Pa. (Philadelphia), Doc. 80-2748, *Compro-Frink Corp.* v. *Valk Mfg. Co.* Pat. Nos. 3,464,129 and 3,604,131 are valid and enforceable. Order filed June 16, 1982.

3,485,797, Ashland Oil, Inc., PHENOLIC RESINS CONTAINING BENZYLIC ETHER LINKAGES AND UNSUBSTITUTED PARA POSITIONS, **filed** June 16, 1982, D.C., E.D. Mich. (Detroit), Doc. 82-72222, *Ashland Oil, Inc.* v. *Thomas C. Glenn.*

3,501,045, Asmus and Jecker, SEALED CONTAINER ASSEMBLY, **filed** July 27, 1982, D.C., N.D. Ohio (Cleveland), Doc. C82-1917, *Richard W. Asmus and Andrew E. Jecker* v. *Rini Supermarkets, Inc., et al.*

3,556,776, Armco Steel Corp., STAINLESS STEEL, **filed** June 22, 1982, D.C., W.D. Pa. (Pittsburgh), Doc. 82-1126, *Armco, Inc.* v. *Cyclops Corp.*

3,604,131. (See 3,464,129.)

3,605,054, Detroit Coil Co., ENCAPSULATED ALTERNATING CURRENT SOLENOID, **filed** July 19, 1982, D.C., N.D. Ill. (Chicago), Doc. 82 C 4465, *Detroit Coil Co.* v. *Guardian Electric Mfg. Co.*

3,644,023, Luciano Villani, SPRING LOADED SPECTACLE HINGE; **3,957,360, same,** SPECTACLE FRAMES WITH SPRING-LOADED HINGES, **filed** May 5, 1982, D.C., S.D.N.Y., Doc. 82-Civ-2883 (EW), *LN Industries, S.A.* v. *La Meccanoptica Leonardo S.p.A., et al.* **Same, filed** July 6, 1982, D.C.N.J. (Newark), Doc. 82-2178, *La Meccanoptica Leonardo S.p.A.* v. *Safilo S.p.A.*

3,647,983, San/Bar Electronics Corp., KEY SYSTEM LINE CARD CIRCUIT, **filed** July 2, 1982, D.C., C.D. Calif. (Los Angeles), Doc. CV-82 3300, *San/Bar Corp.* v. *Quality Communication Products, Ltd., et al.*

3,661,473. (See 3,230,798.)

3,666,311, Hastings Fiber Glass Products, Inc., SHOTGUN STICK, **filed** July 26, 1982, D.C., N.D. Ill. (Chicago), Doc. 82 C 4630, *Hastings Fiber Glass Products, Inc.* v. *A. B. Chance Co.*

3,744,557, Argus Engineering Co., Inc. APPARATUS FOR FUSING AND SEALING PLATINGS AND THE LIKE, **filed** June 26, 1981, D.C., W.D. Va. (Lynchburg), Doc. 81-0101-L, *Argus International* v. *International Circuit Technology, Inc.* **Same, filed** June 24, 1982, D.C. Minn. (Minneapolis), Doc. 4-82-Civil 887, *BGK Circuit Industry Systems, Inc.* v. *Argus International.*

3,761,104. (See 3,230,798.)

3,766,851, Sun Chemical Corp., CONTINUOUS CAN PRINTER AND HANDLING APPARATUS, **filed** Mar. 18, 1981, D.C., N.D. Ohio (Toledo), Doc. C81-146, *Sun Chemical Corp.* v. *Stroh Container, Inc.* Notice of dismissal filed Apr. 6, 1981.

3,791,043, Michael King Russell, INDICATING INSTRUMENTS, **filed,** July 14, 1982, D.C., C.D. Calif. (Los Angeles), Doc. 82 3452 IH, *AMF Scientific Drilling International* v. *Drilling Measurements, Inc., et al.*

3,806,852, The Stanley Works, SWITCH ACTIVATING HINGE, **filed** Dec. 4, 1979, D.C. Del. (Wilmington), Doc. 79-566, *The Stanley Works* v. *Rixson-Firemark, Inc.* Stipulation and Order dismissing action with prejudice filed July 12, 1982.

3,897,333, Allied Colloids Mfg. Co., Ltd., FLOCCULATING AGENTS, **filed** July 26, 1982, D.C. District of Columbia (Wash. D.C.), Doc. 82-2064, *Nalco Chemical Co.* v. *Allied Colloids, Ltd.*

3,953,062, John F. Maston, PADLOCK CLASP, **filed** Sept. 30, 1980, D.C, S.D. Calif. (San Diego), Doc. 80-1641G(M), *John F. Maston* v. *Holmes-Hally Industries, et al.* Pat. No. 3,953,062 which issued to plaintiff is valid. Judgment determined that defendant infringed plaintiff's patent. Filed July 20, 1982.

3,957,360. (See 3,644,023.)

3,970,406. (See 3,230,798.)

3,973,282, Marvin I. May, WATER BED LINER HOLDER, **filed** July 2, 1981, D.C., N.D. Tex. (Dallas), Doc. CA3-81-1083-D, *Marvin I. May* v. *Vinylex Corp.* Ordered that Vinylex's motion for summary judgment be denied and May's motion to dismiss be granted and this action hereby dismissed without prejudice. Filed June 23, 1982.

3,975,111. (See 3,230,798.)

4,106,628, Warkentin and Mills, SORTER FOR FRUIT AND THE LIKE, **filed** June 18, 1982, D.C., C.D. Calif. (Los Angeles), Doc. 82 3065, *Sunkist Growers, Inc.* v. *Pennwalt Corp.*

4,126,546, Rederiaktiebolaget Nordstjernan, METHOD FOR THE FILTRATION OF A SUSPENSION OR EMULSION; **4,197,201, same,** APPARATUS FOR THE FILTRATION OF A SUSPENSION OR EMULSION, **filed** July 6, 1982, D.C. District of Columbia (Wash. D.C.), Doc. 82-1877, *DMP Corp.* v. *Rederiaktiebolaget Nordstjernan.*

4,128,602, General Electric Co., POLYPHENYLENE ETHER COMPOSITIONS CONTAINING RUBBER MODIFIED POLYSTYRENE, **filed** July 22, 1982, D.C., S.D.N.Y., Doc. 82-Civ-4796 CLB, *General Electric Co.* v. *Asahi-Dow Ltd., et al.*

4,138,186, Everett/Charles, Inc., TEST APPARATUS, **filed** May 8, 1981, D.C., W.D. Va. (Harrisonburg), Doc. 81-0066 (H), *Everett/Charles, Inc., et al* v. *World Enterprises, Inc.* **Same, filed** Apr. 29, 1981, D.C., N.D. Calif. (San Francisco), Doc. C81-1696 SAW, *Everett/Charles, Inc.* v. *M-Rel, Inc.* Order on stipulation that action be dismissed with prejudice filed June 30, 1982.

4,176,921, Jan H. Matthias, EYEGLASSES HAVING REMOVABLE LENSES, **filed** July 23, 1982, D.C.N.J. (Camden), Doc. 82-2347, *Carrera International Corp.* v. *Mediq, Inc., doing business as Swank Optical Co.*

4,179,081, John C. Parry, APPARATUS FOR APPLICATION OF PLASTICS STRETCH FILMS; **4,248,392, same, filed** July 6, 1982, D.C.N.J. (Newark), Doc. 82-2176, *John C. Parry, doing business as J. C. Parry & Sons Co., Inc.* v. *Time SavRs Associates, et al.*

4,191,807, Teledyne Industries, Inc., AIRCRAFT BATTERY, **filed,** Feb. 4, 1982, D.C., C.D. Calif. (Los Angeles), Doc. 82-525-RMT, *Teledyne Industries, Inc.* v. *Concorde Battery Corp.*

4,197,201. (See 4,126,546.)

4,197,675, Edward Kelly, SENSING SYSTEM FOR AUTOMATICALLY OPENING GARAGE DOORS, **filed** June 29, 1982, D.C.N.J. (Newark), Doc. 82-2100, *Edward Kelly* v. *Stanley Works.*

4,204,225, Wisconsin Alumni Research Foundation, REAL-TIME DIGITAL X-RAY SUBTRACTION IMAGING; **4,204,226, same,** REAL-TIME DIGITAL X-RAY TIME INTERVAL DIFFERENCE IMAGING, **filed** July 1, 1982, D.C., N.D. Ill. (Chicago), Doc. 82 C 4100, *Wisconsin Alumni Research Foundation* v. *Adac Laboratories.*

4,204,226. (See 4,204,225.)

4,211,893, Mesa Engineering, Inc., DUAL MODE MUSIC INSTRUMENT AMPLIFIER, **filed** Dec. 22, 1981, D.C., S.D. Calif. (San Diego), Doc. 81-1307-E (H), *Mesa Engineering, Inc.* v. *Carvin Corp.* **Same, filed** July 2, 1982, D.C., C.D. Calif. (Los Angeles), Doc. CV82-3287-DWW (Tx), *Randall C. Smith* v. *Acoustic Control Corp.*

4,222,803, Armstrong Cork Co., METHOD OF MAKING FABRIC COVERED CEILING BOARD, **filed** July 28, 1982, D.C. Minn. (Minneapolis), Doc. 4-82 Civil 1063, *Conwed Corp.* v. *Armstrong World Industries, Inc.*

4,234,134, Helena Laboratories Corp., PAPER TENSIONING DEVICE, **filed** Jan. 8, 1982, D.C.N.J. (Camden), Doc. 82-47 *Medical Research & Product Development Corp.* v. *Helena Laboratories Corp.* **Same, filed** Nov. 4, 1981, D.C.N.J. (Camden), Doc. 81-3436, *Helena Laboratories Corp.* v. *United Medical Corp.* Action dismissed without prejudice on July 26, 1982.

4,235,070, Dynamex Corp., WIRE STRANDING MACHINE AND CONTROL MEANS THEREFOR, **filed** June 9, 1982, D.C., S.D.N.Y., Doc. 82-Civ-3784 EW, *Dynamex Corp.* v. *Watson Machine Co., et al.*

4,248,392. (See 4,179,081.)

4,272,466, Harrel, Inc., SYSTEM AND METHOD OF TEMPERATURE CONTROL FOR PLASTICS EXTRUDER, **filed** July 30, 1982, D.C. Del. (Wilmington), Doc. 82-501, *Eurotherm Corp.* v. *Harrel, Inc.*

4,287,993, Vito Licari, ADJUSTABLE RACK FOR HANGING ARTICLES, **filed** May 3, 1982, D.C., S.D.N.Y., Doc. 82-Civ-2808 TPG, *K-Del Industries, Inc.* v. *Basic Line, Inc., et al.* **Same, filed** June 28, 1982, D.C.N.J. (Newark), Doc. 82-2050, *K-Del Industries, Inc.* v. *Basic Line, Inc.*

Re. 27,491. (See 3,378,633.)

D. 233,135, Plough, Inc., SHIPPING CARTON FOR CONTAINER OR THE LIKE, **filed** Apr. 28, 1981, U.S. Court of Appeals (Sixth Circuit, Cincinnati), Doc. 81-5282, *Irvin W. Combs* v. *Plough, Inc., et al.* Ordered and adjudged that judgment of U.S. District Court for the Western District of Tennessee is affirmed. Filed June 23, 1982.

PP 3,283, M. C. van Staaveren, ALSTROEMERIA PLANT (CANARIA); **PP 3,284, same,** HYBRID ALSTROEMERIA PLANT; **PP 4,634, same,** ALSTROEMERIA PLANT NAMED KING CARDINAL; **PP 4,635, same,** ALSTROEMERIA NAMED RED SUNSET, filed June 25, 1982, D.C., S.D. Calif. (San Diego), Doc. 82-0751-K-H, *B. V. Handelskwekerij and M.C. van Staaveren* v. *Kiernan-Diggins, Ltd., et al.*

PP 3,284. (See PP 3,283.)

PP 4,634. (See PP 3,283.)

PP 4,635. (See PP 3,283.)

Status of PTO Services

The following is an update of the status of PTO services as of Sept. 2, 1982:

Service Item	FY 1982 Performance Goal (Calendar Days)	Actual	Comment
Internal Mail Processing & Delivery	4	4.5	
Filing Receipts:			
Patents	22	46	Reduction from 100 days in February.
Trademarks	30	35	
Patent Copies:			
Window Coupons	5	93% within 5 days 99% within 10 days	
Mail Coupons*	29	99% within 24 days	
Letter Orders*	34	95% within 34 days	
Certified Copies:			
Trademark Regs.	30	20	
Applications-As-Filed*	20	94% within 15 days	
File-Wrapper/Contents*		37% within 15 days 79% within 30 days	
Walk-up Certification	1	99% within 1 day	Service now includes applications-as-filed.
Trademark Search Room:			
Filing Drawings	21	48	
Filing Reg. Certificates	3	22	
Patent Assignments	15	94	Expect reduction in FY 1983.
Trademark Assignments	21	97	Expect reduction in FY 1983.
Patent Official Gazette	Issue Date	On Schedule	
Patent Grants	Issue Date	On Schedule	
Trademark Official Gazette	Issue Date	On Schedule	
Trademark Registrations	Issue Date	2 days late	

*Goal now includes mail processing and delivery time. A recent survey of mail delivery times for these services yielded the fact that the *average* amount of time required for one-way delivery is seven calendar days. Therefore the prior goal was increased by 14 days to reflect average time from mailing by requestors to receipt of copies.

Sept. 2, 1982.

THERESA A. BRELSFORD,
Acting Assistant Commissioner for Administration.

PATENT NOTICES

Certificates of Correction for the Week of Sept. 28, 1982

D. 254,583	4,306,250	4,329,091	4,339,037
D. 261,680	4,309,063	4,329,312	4,339,253
4,146,549	4,309,517	4,329,326	4,339,305
4,148,794	4,310,548	4,330,322	4,339,308
4,177,073	4,310,596	4,330,547	4,339,725
4,202,092	4,312,591	4,331,190	4,339,775
4,205,161	4,313,031	4,332,180	4,339,915
4,208,677	4,313,152	4,332,279	4,339,926
4,224,973	4,313,877	4,332,793	4,340,063
4,229,965	4,313,882	4,332,916	4,340,356
4,230,665	4,314,292	4,332,938	4,340,616
4,246,641	4,315,295	4,333,135	4,340,915
4,251,458	4,317,763	4,333,186	4,341,215
4,253,019	4,318,659	4,333,433	4,341,710
4,270,098	4,319,279	4,333,828	4,341,983
4,272,501	4,320,153	4,333,917	4,342,150
4,272,995	4,322,131	4,333,950	4,342,173
4,275,375	4,322,286	4,334,019	4,342,300
4,276,896	4,323,971	4,335,485	4,342,495
4,282,183	4,325,261	4,335,645	4,342,522
4,287,652	4,325,765	4,336,016	4,342,812
4,288,580	4,325,928	4,336,123	4,342,985
4,292,666	4,326,136	4,336,218	4,343,043
4,296,275	4,327,409	4,336,267	4,343,364
4,300,460	4,327,798	4,336,303	4,343,596
4,301,044	4,328,123	4,336,598	4,343,881
4,303,832	4,328,360	4,337,100	4,344,176
4,304,705	4,328,690	4,338,529	4,344,905
4,306,122	4,328,896	4,338,723	4,345,054

Disclaimers

3,563,399.—*Charles C. Shivers,* Corydon, Iowa. METHOD FOR CIRCULATING GRAIN STORED IN A CIRCULAR BIN. Patent dated Feb. 16, 1971. Disclaimer filed June 15, 1981, by the inventor.

Hereby enters this disclaimer to claim 3 of said patent.

4,144,730.—*Edward E. Judge, Jr.,* Lansing, Mich. PRODUCTION WORKPIECE STRAIGHTENING SYSTEM. Patent dated Mar. 20, 1979. Disclaimer filed Oct. 17, 1979, by the assignee, *Industrial Metal Products Corp.*

Hereby enters this disclaimer to claims 13, 17 and 18 of said patent.

4,192,733.—*Takashi Onodera; Kikuji Komine; Fumio Ohashi;* and *Tsutomu Naito,* Saitama-Ken, Japan. SOLVENT DEWAXING WAXY HYDROCARBON OILS USING DEWAXING AID. Patent dated Mar. 11, 1980. Disclaimer filed Oct. 15, 1981, by the assignee, *Toa Nenryo Kogyo Kabushiki Kaisha.*

Hereby enters this disclaimer to claims 1 to 16 of said patent.

Dedications

3,516,718.—*Erskine P. Garrison,* Long Beach and *John E. Tschirky,* Manhattan Beach, Calif. LOWER THRUST EQUALIZER FOR DRILLING TOOLS. Patent dated June 23, 1970. Dedication filed Aug. 25, 1980, by the assignee, *Smith International, Inc.*

Hereby dedicates to the Public the entire remaining term of said patent.

3,801,466.—*Jerry W. Denney,* Carmel, Ind. URIC ACID ASSAY AND REAGENTS THEREFOR. Patent dated Apr. 2, 1974. Dedication filed Feb. 25, 1982, by the assignee, *American Monitor Corp.*

Hereby dedicates to the Public the entire term of said patent.

Disclaimer and Dedication

3,484,237.—*Meredith D. Shattuck* and *Ulo Vahtra,* San Jose, Calif. ORGANIC PHOTOCONDUCTIVE COMPOSITIONS AND THEIR USE IN ELECTROPHOTOGRAPHIC PROCESSES. Patent dated Dec. 16, 1969. Disclaimer and Dedication filed Mar. 17, 1981, by the assignee, *International Business Machines Corp.*

Hereby disclaims and dedicates to the Public claims 1–8 of said patent.

OFFICIAL GAZETTE NOTICE

REVISION OF PATENT AND TRADEMARK FEES

The purpose of this notice is to remind the public of changes in patent and trademark fees, effective October 1, 1982, pursuant to Public Law 97-247, enacted August 27, 1982. A final rule on "Revision of Patent and Trademark Fees" was published on July 30, 1982, at 47 FR 33086-33112 with corrections in the printing thereof being published on August 4, 1982, at 47 FR 33688 and on August 5, 1982, at 47 FR 33959. The final rule was also published in the Patent and Trademark Office Official Gazette on August 10, 1982, at 1021 O.G. 19-94. In view of the enactment of Public Law 97-247, the "Alternative A - Rule Changes Under Only Public Law 96-517" relating to both patents and trademarks will not become effective. Instead, the "Rule Changes Common To Public Law 96-517 and H.R. 6260" and "Alternative B - Rule Changes Under H.R. 6260" will become effective for both patents and trademarks on October 1, 1982. H.R. 6260 is now Public Law 97-247.

The Patent and Trademark Office has received a number of questions regarding the implementation of the changes in fees. The final rule published in the Federal Register on July 30, 1982, and in the Official Gazette on August 10, 1982, contains implementing instructions which should be carefully read and followed. The final rule includes in the implementing instructions the following:

> "Any fee which is due and payable on or after October 1, 1982, must be paid in the amount and in accordance with the procedures contained in this rulemaking. For purposes of determining the amount of the fee to be paid, the date of mailing indicated on a proper Certificate of Mailing under §1.8 will be considered to be the date of receipt in the Office."

A "Certificate of Mailing under §1.8" is not "proper" for items which are specifically excluded from the provisions of §1.8. Section 1.8 of Title 37, Code of Federal Regulations, should be consulted for those items for which a Certificate of Mailing is not "proper." Such items include, inter alia, the filing of national and international applications for patent and the filing of trademark applications. Any application for patent or trademark filed, i.e., received in the Office, on or after October 1, 1982, must include the fees which are effective on October 1, 1982, since §1.8 does not apply to, and specifically excludes from its provisions, the filing of applications for patents and trademarks.

Date 9/14/82

Gerald J. Mossinghoff
Commissioner of Patents
and Trademarks

DEPARTMENT OF COMMERCE
Patent and Trademark Office
37 CFR Parts 1 and 2

[Docket No. 2714-129]

Revision of Patent and Trademark Fees Confirmation

AGENCY: Patent and Trademark Office, Commerce.

ACTION: Confirmation of rules.

SUMMARY: This document confirms certain rule changes for patent and trademark fees and fee-related procedures which take effect on October 1, 1982. These rule changes implement H.R. 6260 which was enacted as Public Law 97-247 on August 27, 1982.

EFFECTIVE DATE: October 1, 1982.

FOR FURTHER INFORMATION CONTACT:

As to the patent rules contact: R. Franklin Burnett, by telephone at (703) 557-3054 or by mail addressed to the Commissioner of Patents and Trademarks, Attention: R. Franklin Burnett, Room 3-11A13, Washington, D.C. 20231.

As to the trademark rules contact: Miss Maude Williams, by telephone at (703) 557-2222 or by mail addressed to the Commissioner of Patents and Trademarks, Attention: Miss Maude Williams, Room 3-11C17, Washington, D.C. 20231.

SUPPLEMENTARY INFORMATION: The Patent and Trademark Office is required by law to publish a notice in the Federal Register of its fees at least 60 days before the effective date thereof (35 U.S.C. 41(g)). Thus, on July 30, 1982 a final rule document was published at 47 FR 33086 setting forth rule changes for patent and trademark fees and procedures which take effect on October 1, 1982. The document was based on the public law in effect at that time, Public Law 96-517, and on H.R. 6260, which was then pending but is now Public Law 97-247. The final rule document published on July 30, 1982, in the Federal Register sets out--

(1) rules that are common to both Pub. L. 96-517 and H.R. 6260 (now Pub. L. 97-247);

(2) Alternative A which contains rule changes implementing Pub. L. 96-517 alone; and

(3) Alternative B which contains rule changes implementing H.R. 6260 (now Pub. L. 97-247).

H.R. 6260 was enacted as Public Law 97-247 on August 27, 1982, and the Patent and Trademark Office hereby confirms that the rule changes common to both Pub. L. 96-517 and H.R. 6260 and Alternative B are those which go into effect on October 1, 1982.

The rules under Alternative A are hereby withdrawn. Additional rule changes required by Public Law 97-247 will be made the subject of separate rulemakings.

List of Subjects in 37 CFR Parts 1 and 2

Administrative practice and procedure, Courts, Inventions and patents, Lawyers, Nonprofit organizations, Small businesses, Trademarks.

Amendment of Regulations

For the reasons set out in the preamble, 37 CFR Parts 1 and 2 are confirmed as being amended by the final rule published on July 30, 1982 at 47 FR 33086 as set forth below.

September 14, 1982
Date

Gerald J. Mossinghoff
Commissioner of Patents and Trademarks

1. The rule changes made in Alternative A relating to patents which begin at 47 FR 33107 and in Alternative A relating to trademarks which begin at 47 FR 33112 are hereby withdrawn.

2. Confirmed as effective October 1, 1982 are the rule changes published July 30, 1982 common to Public Law 96-517 and H.R. 6260 (now Public Law 97-247) and Alternatives B. The rule changes relating to patents common to Public Law 96-517 and H.R. 6260 (now Public Law 97-247) were published on July 30, 1982 at 47 FR 33099. The rule changes relating to patents under Alternative B were published at 47 FR 33108. The rule changes relating to trademarks common to Public Law 96-517 and H.R. 6260 (now Public Law 97-247) were published on July 30, 1982 at 47 FR 33111. The rule changes relating to trademarks under Alternative B were published at 47 FR 33112. Corrections to the July 30, 1982 publication were published on August 4 and 5, 1982 at 47 FR 33688 and 33959.

3. For the convenience of the user, the rule changes common to Public Law 96-517 and H.R. 6260 and Alternative B have been integrated into numerical order and are reprinted below:

For the reasons indicated above and pursuant to the authority given to the Commissioner of Patents and Trademarks by 35 U.S.C. 6, and under Sections 31 and 41 of the Trademark Act of July 5, 1946, 15 U.S.C. 1113, and 1123, Parts 1 and 2 of Title 37, Code of Federal Regulations, have been amended as set forth below.

PART 1 - RULES OF PRACTICE IN PATENT CASES

1. Section 1.11 is amended by revising paragraph (c) to read as follows:

§1.11 Files open to the public.

* * * * *

(c) All requests for reexamination for which the fee under §1.20(c) has been paid, will be announced in the Official Gazette. Any reexaminations at the initiative of the Commissioner pursuant to §1.520 will also be announced in the Official Gazette. The announcement shall include at least the date of the request, if any, the reexamination request control number or the Commissioner initiated order control number, patent number, title, class and subclass, name of the inventor, name of the patent owner of record, and the examining group to which the reexamination is assigned.

* * * * *

2. Section 1.12 is revised to read as follows:

§1.12 Assignment records open to public inspection.

(a) The assignment records, relating to original or reissue patents, including digests and indexes, and assignment records relating to pending or abandoned trademark applications and to trademark registrations, are open to public inspection and copies of any instrument recorded may be obtained upon request and payment of the fee set forth in §1.19(a)(5).

(b) Assignment records, digests, and indexes, relating to any pending or abandoned patent application are not available to the public. Copies of any such assignment records and information with respect thereto shall be obtainable only upon written authority of the applicant or applicant's assignee or attorney or agent or upon a showing that the person seeking such information is a bona fide prospective or actual purchaser, mortgagee, or licensee of such application, unless it shall be necessary to the proper conduct of business before the Office or as provided by these rules.

(c) Any request by a member of the public seeking copies of any assignment records of any pending or abandoned patent application preserved in secrecy under §1.14, or any information with respect thereto, must (1) be in the form of a petition accompanied by the petition fee set forth in §1.17(i) or (2) include written authority granting access to the member of the public to the particular assignment records from the applicant or applicant's assignee or attorney or agent of record.

(d) An order for a copy of an assignment should give the identification of the record. If identified only by the name of the patentee and number of the patent, or in the case of a trademark registration by the name of the registrant and number of the registration, or by name of the applicant and serial number or international application number of the application, an

extra charge as set forth in §1.21(f) will be made for the time consumed in making a search for such assignment.

3. Section 1.14 is amended by adding a new paragraph (e) to read as follows:

§1.14 Patent applications preserved in secrecy.

* * * * *

(e) Any request by a member of the public seeking access to, or copies of, any pending or abandoned application preserved in secrecy pursuant to paragraphs (a) and (b) of this section, or of any papers relating thereto, must (1) be in the form of a petition and be accompanied by the petition fee set forth in §1.17(i) or (2) include written authority granting access to the member of the public in that particular application from the applicant or the applicant's assignee or attorney or agent of record.

4. A new §1.16 is added which reads as follows:

§1.16 National application filing fees.

(a) Basic fee for filing each application for an original patent, except design or plant cases:

By a small entity (§1.9(f))	$150.00
By other than a small entity	$300.00

(b) In addition to the basic filing fee in an original application, for filing or later presentation of each independent claim in excess of 3:

By a small entity (§1.9(f))	$ 15.00
By other than a small entity	$ 30.00

(c) In addition to the basic filing fee in an original application, for filing or later presentation of each claim (whether independent or dependent) in excess of 20 (Note that §1.75(c) indicates how multiple dependent claims are considered for fee calculation purposes.):

By a small entity (§1.9(f))	$ 5.00
By other than a small entity	$ 10.00

(d) In addition to the basic filing fee in an original application, if the application contains, or is amended to contain, a multiple dependent claim(s), per application:

By a small entity (§1.9(f))---------- $ 50.00
By other than a small entity---------- $100.00

(If the additional fees required by paragraphs (b), (c) and (d) are not paid on filing or on later presentation of the claims for which the additional fees are due, they must be paid or the claims cancelled by amendment, prior to the expiration of the time period set for response by the Office in any notice of fee deficiency.)

(e) Surcharge for filing the basic filing fee or oath or declaration on a date later than the filing date of the application:

By a small entity (§1.9(f))---------- $ 50.00
By other than a small entity---------- $100.00

(f) For filing each design application:

By a small entity (§1.9(f))---------- $ 62.50
By other than a small entity---------- $125.00

(g) Basic fee for filing each plant application:

By a small entity (§1.9(f))---------- $100.00
By other than a small entity---------- $200.00

(h) Basic fee for filing each reissue application:

By a small entity (§1.9(f))---------- $150.00
By other than a small entity---------- $300.00

(i) In addition to the basic filing fee in a reissue application, for filing or later presentation of each independent claim which is in excess of the number of independent claims in the original patent:

By a small entity (§1.9(f))---------- $ 15.00
By other than a small entity---------- $ 30.00

(j) In addition to the basic filing fee in a reissue application, for filing or later presentation of each claim (whether independent or dependent) in excess of 20 and also in excess of the number of claims in the original patent, (Note that §1.75(c) indicates how multiple dependent claims are considered for fee purposes.):

By a small entity (§1.9(f))---------- $ 5.00
By other than a small entity---------- $ 10.00

(Note, see §1.445 for international application filing and processing fees.).

5. A new §1.17 is added which reads as follows:

§1.17 Patent application processing fees.

(a) Extension fee for response within first month pursuant to §1.136(a):

By a small entity (§1.9(f))---------- $ 25.00
By other than a small entity---------- $ 50.00

(b) Extension fee for response within second month pursuant to §1.136(a):

By a small entity (§1.9(f))---------- $ 75.00
By other than a small entity---------- $150.00

(c) Extension fee for response within third month pursuant to §1.136(a):

By a small entity (§1.9(f))---------- $175.00
By other than a small entity---------- $350.00

(d) Extension fee for response within fourth month pursuant to §1.136(a):

By a small entity (§1.9(f))---------- $275.00
By other than a small entity---------- $550.00

(e) For filing a notice of appeal from the examiner to the Board of Appeals:

By a small entity (§1.9(f))---------- $ 57.50
By other than a small entity---------- $115.00

(f) In addition to the fee for filing a notice of appeal, for filing a brief in support of an appeal:

By a small entity (§1.9(f))---------- $ 57.50
By other than a small entity---------- $115.00

(g) For filing a request for an oral hearing before the Board of Appeals:

By a small entity (§1.9(f))---------- $ 50.00
By other than a small entity---------- $100.00

(h) For filing a petition to the Commissioner under a section of this part listed below which refers to this paragraph----------$120.00

--§1.45 - for correction of inventorship
--§1.47 - for filing by other than all the inventors or a person not the inventor

--§1.182 - for decision on questions not specifically provided for
--§1.183 - to suspend the rules
--§1.268 - for late filing of interference settlement agreement

(i) For filing a petition to the Commissioner under a section of this part listed below which refers to this paragraph----------$ 60.00

--§1.12 - for access to an assignment record
--§1.14 - for access to an application
--§1.55 - for entry of late priority papers
--§1.102 - to make application special
--§1.103 - to suspend action in application
--§1.177 - for divisional reissues to issue separately
--§1.268 - for access to interference settlement agreement
--§1.312 - for amendment after payment of issue fee
--§1.313 - to withdraw an application from issue
--§1.314 - to defer issuance of a patent
--§1.334 - for patent to issue to assignee, assignment recorded late

(j) For filing a petition to institute a public use proceeding under §1.292----------$750.00

(k) For processing an application filed with a specification in a non-English language (§1.52(d))----------$ 20.00

(l) For filing a petition (1) for the revival of an abandoned application under 35 U.S.C. 133, or (2) for delayed payment of the issue fee under 35 U.S.C. 151:

By a small entity (§1.9(f))----------$ 25.00
By other than a small entity----------$ 50.00

(m) For filing a petition (1) for revival of an unintentionally abandoned application or (2) for the unintentionally delayed payment of the fee for issuing a patent:

By a small entity (§1.9(f))----------$250.00
By other than a small entity----------$500.00.

6. A new §1.18 is added which reads as follows:

§1.18 Patent issue fees.

(a) Issue fee for issuing each original or reissue patent, except a design or plant patent:

By a small entity (§1.9(f))---------- $250.00

By other than a small entity---------- $500.00

(b) Issue fee for issuing a design patent:

By a small entity (§1.9(f))---------- $ 87.50
By other than a small entity---------- $175.00

(c) Issue fee for issuing a plant patent:

By a small entity (§1.9(f))---------- $125.00
By other than a small entity---------- $250.00.

7. A new §1.19 is added which reads as follows:

§1.19 Document supply fees.

The Patent and Trademark Office will supply copies of the following documents upon payment of the fees indicated:

(a) Uncertified copies of Office documents:

(1) Printed copy of a patent, including a design patent, or defensive publication document, except color plant patent---------- $ 1.00

(2) Printed copy of a plant patent in color---------- $ 8.00

(3) Copy of patent application as filed, each 50 pages or fraction thereof---------- $18.00

(4) Copy of patent file wrapper and contents, each 100 pages or fraction thereof---------- $30.00

(5) Copy of Office records, except as provided in paragraphs (a)(1) through (4) of this section, per page---------- $ 0.30

(6) Microfiche copy of microfiche, per microfiche---------- $ 2.00

(b) Certified copies of Office documents:

(1) For certifying Office records, per certificate---------- $ 3.50

(2) For a search of assignment records, abstract of title and certification, per patent---------- $12.00

(3) For comparing copies not prepared by the Office with the original, prior to certification of the copies, per page---------- $ 0.10

(c) Subscription services:

(1) Subscription orders for printed copies of patents as issued, annual service charge for entry of order and one subclass	$ 4.00
(2) For annual subscription to each additional subclass in addition to the one covered by the fee under paragraph (c)(1) of this section, per subclass	$ 0.40

(d) Library service (35 U.S.C. 13):

For providing to libraries copies of all patents issued annually, per annum	$ 50.00

(e) Lists of patents in subclass:

(1) For list of all United States patents in a subclass, per 100 patent numbers or fraction thereof	$ 2.00
(2) For list of United States patents in a subclass limited by date or patent number, per 50 patent numbers or fraction thereof	$ 2.00.

8. A new §1.20 is added which reads as follows:

§1.20 Post-issuance fees.

(a) For providing a certificate of correction of applicant's mistake (§1.323)	$ 40.00
(b) Petition for correction of inventorship in patent (§1.324)	$ 120.00
(c) For filing a request for reexamination (§1.510(a))	$1,500.00
(d) For filing each statutory disclaimer (§1.321):	
By a small entity (§1.9(f))	$ 25.00
By other than a small entity	$ 50.00
(e) For maintaining an original or reissue patent, except a design patent, based on an application filed on or after December 12, 1980 and before August 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant	$ 200.00
(f) For maintaining an original or reissue patent, except a design patent, based	

on an application filed on or after December 12, 1980 and before August 27, 1982, in force beyond 8 years; the fee is due by seven years and six months after the original grant---------- $ 400.00

(g) For maintaining an original or reissue patent, except a design patent, based on an application filed on or after December 12, 1980 and before August 27, 1982, in force beyond 12 years; the fee is due by eleven years and six months after the original grant---------- $ 600.00

(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after August 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§1.9(f))---------- $ 200.00
By other than a small entity---------- $ 400.00

(i) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after August 27, 1982, in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§1.9(f))---------- $ 400.00
By other than a small entity---------- $ 800.00

(j) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after August 27, 1982, in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§1.9(f))---------- $ 600.00
By other than a small entity---------- $1200.00.

9. Section 1.21 is revised to read as follows:

§1.21 Miscellaneous fees and charges.

The Patent and Trademark Office has established the following fees for the services indicated:

(a) Registration of attorneys and agents:

(1) For admission to examination for

	registration to practice, fee payable upon application	$75.00
(2)	On registration to practice	$50.00
(3)	For reinstatement to practice	$25.00
(4)	For certificate of good standing as an attorney or agent	$10.00
(b)	Deposit accounts:	
(1)	For establishing or reinstating a deposit account	$10.00
(2)	Service charge for each month when the balance at the end of the month is below $40	$ 2.00
(c)	Disclosure document:	
	For filing a disclosure document	$10.00
(d)	Delivery box:	
	Local delivery box rental, per annum	$24.00
(e)	International-type search reports:	
	For preparing an international-type search report of an international-type search made at the time of the first action on the merits in a national patent application	$25.00
(f)	Search of Office records:	
	For searching Patent and Trademark Office records for purposes not otherwise specified, per one-half hour or fraction thereof	$10.00
(g)	Copy machine tokens:	
	Token for copying machine, each	$ 0.20
(h)	Recording of documents:	
	(1) For recording each assignment, agreement or other paper relating to the property in a patent or application	$20.00
	(2) Where a document to be recorded under paragraph (h)(1) of this section refers to more than one patent or application, for each additional patent or application	$ 5.00

(i) Publication in Official Gazette:

For publication in the Official Gazette of a notice of the availability of an application or a patent for licensing or sale, each application or patent---------- $ 6.00

(j) For a duplicate or replacement of a permanent Office user pass (There is no charge for the first permanent user pass).-------- $ 5.00

(k) For items and services, that the Commissioner finds may be supplied, for which fees are not specified by statute or by this section, such charges as may be determined by the Commissioner with respect to each such item or service---------- actual cost.

10. Section 1.24 is revised to read as follows:

§1.24 Coupons.

Coupons in denominations of forty cents and one dollar are sold by the Patent and Trademark Office for the convenience of regular purchasers of U.S. patents and trademark registrations; these coupons may not be used for any other purpose. The 40-cent coupons are sold individually and in books of 50 with stubs for record for $20. The one dollar coupons are sold individually and in books of 50 with stubs for record for $50. These coupons are good until used; they may be transferred but cannot be redeemed.

11. Section 1.25 is revised to read as follows:

§1.25 Deposit accounts.

(a) For the convenience of attorneys, agents, and the general public in paying any fees due, in ordering services offered by the Office, copies of records, etc., deposit accounts may be established in the Patent and Trademark Office upon payment of the fee for establishing a deposit account (§1.21(b)(1)). A minimum deposit of $50 or more, depending on the activity of the individual account, is required. At the close of each month's business, a statement will be rendered. A remittance must be made promptly upon receipt of the statement to cover the value of items or services charged to the account and thus restore the account to its established normal deposit value. An amount sufficient to cover all services, copies, etc., requested must always be on deposit. A service charge (§1.21(b)(2)) will be assessed for each month that the balance at the end of the month is below $40.

(b) Filing, issue, appeal, international-type search report, international application processing, petition, and post-issuance fees may be charged against these accounts. A general authorization to charge all fees, or only certain fees, set forth

in §§1.16 to 1.18 to a deposit account may be filed in an individual application, either for the entire pendency of the application or with respect to a particular paper filed. An authorization to charge to a deposit account the fee for a request for reexamination pursuant to §1.510 and any other fees required in a reexamination proceeding in a patent may also be filed with the request for reexamination.

12. Section 1.26 is revised to read as follows:

§1.26 Refunds.

(a) Money paid by actual mistake or in excess, such as a payment not required by law, will be refunded, but a mere change of purpose after the payment of money, as when a party desires to withdraw an application, an appeal, or a request for oral hearing, will not entitle a party to demand such a return. Amounts of one dollar or less will not be returned unless specifically demanded within a reasonable time, nor will the payer be notified of such amount; amounts over one dollar may be returned by check or, if requested, by credit to a deposit account.

(b) [Reserved]

(c) If the Commissioner decides not to institute a reexamination proceeding, a refund of $1,200.00 will be made to the requester of the proceeding. Reexamination requesters should indicate whether any refund should be made by check or by credit to a deposit account.

13. Section 1.45 is amended by revising paragraphs (b) and (c) to read as follows:

§1.45 Joint inventors.

* * * * *

(b) If an application for patent has been made through error and without any deceptive intention by two or more persons as joint inventors when they were not in fact joint inventors, the application may be amended to remove the names of those not inventors upon filing of a petition including a statement of the facts verified by all of the original applicants, the required fee (§1.17(h)), and an oath or declaration as required by §1.65 by the applicant who is the actual inventor, provided the amendment is diligently made. Such amendment must have the written consent of any assignee.

(c) If an application for patent has been made through error and without any deceptive intention by less than all the actual joint inventors, the application may be amended to include all the joint inventors upon filing of a petition including a statement of the facts verified by, and an oath or declaration as required by §1.65 executed by all the actual joint inventors, along with

the required fee (§1.17(h)), provided the amendment is diligently made. Such amendment must have the written consent of any assignee.

14. Section 1.47 is revised to read as follows:

§1.47 Filing when an inventor refuses to sign or cannot be reached.

(a) If a joint inventor refuses to join in an application for patent or cannot be found or reached after diligent effort, the application may be made by the other inventor on behalf of himself or herself and the omitted inventor. The oath or declaration in such an application must be accompanied by a petition including proof of the pertinent facts and by the required fee (§1.17(h)) and must state the last known address of the omitted inventor. The Patent and Trademark Office shall forward notice of the filing of the application to the omitted inventor at said address. Should such notice be returned to the Office undelivered, or should the address of the omitted inventor be unknown, notice of the filing of the application shall be published in the Official Gazette. The omitted inventor may subsequently join in the application on filing an oath or declaration of the character required by §1.65. A patent may be granted to the inventor making the application, upon a showing satisfactory to the Commissioner, subject to the same rights which the omitted inventor would have had if he or she had been joined.

(b) Whenever an inventor refuses to execute an application for patent, or cannot be found or reached after diligent effort, a person to whom the inventor has assigned or agreed in writing to assign the invention or who otherwise shows sufficient proprietary interest in the matter justifying such action may make application for patent on behalf of and as agent for the inventor. The oath or declaration in such an application must be accompanied by a petition including proof of the pertinent facts and a showing that such action is necessary to preserve the rights of the parties or to prevent irreparable damage, and by the required fee (§1.17(h)) and must state the last known address of the inventor. The assignment, written agreement to assign or other evidence of proprietary interest, or a verified copy thereof, must be filed in the Patent and Trademark Office. The Office shall forward notice of the filing of the application to the inventor at the address stated in the application. Should such notice be returned to the Office undelivered, or should the address of the inventor be unknown, notice of the filing of the application shall be published in the Official Gazette. The inventor may subsequently join in the application on filing an oath or declaration of the character required by §1.65. A patent may be granted to the inventor upon a showing satisfactory to the Commissioner.

15. Section 1.51 is amended by revising paragraph (a)(4) and by adding a new paragraph (c) to read as follows:

§1.51 General requisites of an application.

(a) * * *

(4) The prescribed filing fee, see §1.16.

* * * * *

(c) Applicants may desire and are permitted to file with, or in, the application an authorization to charge, at any time during the pendency of the application, any fees required under any of §§1.16 to 1.18 to a deposit account established and maintained in accordance with §1.25.

16. Section 1.52 is amended by revising paragraph (a) and by adding a new paragraph (d) to read as follows:

§1.52 Language, paper, writing, margins.

(a) The application, any amendments or corrections thereto, and the oath or declaration must be in the English language except as provided for in §1.69 and paragraph (d) of this section, or be accompanied by a verified translation of the application and a translation of any corrections or amendments into the English language. All papers which are to become a part of the permanent records of the Patent and Trademark Office must be legibly written, typed, or printed in permanent ink or its equivalent in quality. All of the application papers must be presented in a form having sufficient clarity and contrast between the paper and the writing, typing, or printing thereon to permit the direct reproduction of readily legible copies in any number by use of photographic, electrostatic, photo-offset, and microfilming processes. If the papers are not of the required quality, substitute typewritten or printed papers of suitable quality may be required.

* * * * *

(d) An application including a signed oath or declaration may be filed in a language other than English if it is accompanied by the fee set forth in §1.17(k). A verified English translation of the non-English language application is required to be filed with the application or within such time as may be set by the Office.

17. Section 1.55 is amended by revising paragraph (b) to read as follows:

§1.55 Serial number and filing date of application.

* * * * *

(b) An applicant may claim the benefit of the filing date of a prior foreign application under the conditions specified in 35 U.S.C. 119. The claim to priority need be in no special form and may be made by the attorney or agent if the foreign application

is referred to in the oath or declaration as required by §1.65. The claim for priority and the certified copy of the foreign application specified in the second paragraph of 35 U.S.C. 119 must be filed in the case of interference (§1.224); when necessary to overcome the date of a reference relied upon by the examiner; or when specifically required by the examiner; and in all other cases they must be filed not later than the date the issue fee is paid. If the papers filed are not in the English language, a translation need not be filed except in the three particular instances specified in the preceding sentence, in which event a sworn translation or a translation certified as accurate by a sworn or official translator must be filed. If the priority papers are submitted after the date the issue fee is paid, they must be accompanied by a petition requesting their entry and the fee set forth in §1.17(i).

* * * * *

18. Section 1.66 is revised to read as follows:

§1.66 Officers authorized to administer oaths.

(a) The oath or affirmation may be made before any person within the United States authorized by law to administer oaths . An oath made in a foreign country may be made before any diplomatic or consular officer of the United States authorized to administer oaths, or before any officer having an official seal and authorized to administer oaths in the foreign country in which the applicant may be, whose authority shall be proved by a certificate of a diplomatic or consular officer of the United States, or by an apostille of an official designated by a foreign country which, by treaty or convention, accords like effect to apostilles of designated officials in the United States. The oath shall be attested in all cases in this and other countries, by the proper official seal of the officer before whom the oath or affirmation is made. Such oath or affirmation shall be valid as to execution if it complies with the laws of the State or country where made. When the person before whom the oath or affirmation is made in this country is not provided with a seal, his official character shall be established by competent evidence, as by a certificate from a clerk of a court of record or other proper officer having a seal.

(b) When the oath is taken before an officer in a country foreign to the United States, any accompanying application papers, except the drawings, must be attached together with the oath and a ribbon passed one or more times through all the sheets of the application, except the drawings, and the ends of said ribbon brought together under the seal before the latter is affixed and impressed, or each sheet must be impressed with the official seal of the officer before whom the oath is taken. If the papers as filed are not properly ribboned or each sheet impressed with the seal, the case will be accepted for examination, but before it is allowed, duplicate papers, prepared in compliance with the foregoing sentence, must be filed.

19. Section 1.75 is amended by revising paragraph (c) to read as follows:

§1.75 Claim(s).

* * * * *

(c) One or more claims may be presented in dependent form, referring back to and further limiting another claim or claims in the same application. Any dependent claim which refers to more than one other claim ("multiple dependent claim") shall refer to such other claims in the alternative only. A multiple dependent claim shall not serve as a basis for any other multiple dependent claim. For fee calculation purposes under §1.16, a multiple dependent claim will be considered to be that number of claims to which direct reference is made therein. For fee calculation purposes, also, any claim depending from a multiple dependent claim will be considered to be that number of claims to which direct reference is made in that multiple dependent claim. In addition to the other filing fees, any original application which is filed with, or is amended to include, multiple dependent claims must have paid therein the fee set forth in §1.16(d). Claims in dependent form shall be construed to include all the limitations of the claim incorporated by reference into the dependent claim. A multiple dependent claim shall be construed to incorporate by reference all the limitations of each of the particular claims in relation to which it is being considered.

* * * * *

20. Section 1.85 is revised to read as follows:

§1.85 Informal drawings.

The requirements of §1.84 relating to drawings will be strictly enforced. A drawing not executed in conformity thereto, if suitable for reproduction, may be admitted but in such case the drawing must be corrected or a new one furnished, as required.

§1.86 [Removed]

21. Section 1.86 is removed.

22. Section 1.102 is amended by revising paragraph (a) and adding new paragraphs (c) and (d) to read as follows:

§1.102 Advancement of examination.

(a) Applications will not be advanced out of turn for examination or for further action except as provided by this part, or upon order of the Commissioner to expedite the business of the Office, or upon filing of a request under paragraph (b) of this section or upon filing a petition under paragraphs (c) or (d) of this section with a verified showing which, in the opinion of the Commissioner, will justify so advancing it.

* * * * *

(c) A petition to make an application special may be filed without a fee if the basis for the petition is the applicant's age or health or that the invention will materially enhance the quality of the environment or materially contribute to the development or conservation of energy resources.

(d) A petition to make an application special on grounds other than those referred to in paragraph (c) of this section must be accompanied by the petition fee set forth in §1.17(i).

23. Section 1.103 is amended by revising paragraphs (a) and (b) to read as follows:

§1.103 Suspension of action.

(a) Suspension of action by the Office will be granted for good and sufficient cause and for a reasonable time specified upon petition by the applicant and, if such cause is not the fault of the Office, the payment of the fee set forth in §1.17(i). Action will not be suspended when a response by the applicant to an Office action is required.

(b) If action by the Office on an application is suspended when not requested by the applicant, the applicant shall be notified of the reasons therefor.

* * * * *

24. Section 1.104 is amended by revising paragraph (d) to read as follows:

§1.104 Nature of examination; examiner's action.

* * * * *

(d) Any national application may also have an international-type search report prepared thereon at the time of the national examination on the merits, upon specific written request therefor and payment of the international-type search report fee. See §1.21(e) for amount of fee for preparation of international-type search report.

* * * * *

25. Section 1.134 is added and reads as follows:

§1.134 Time period for response to an Office action.

An Office action will notify the applicant of any non-statutory or shortened statutory time period set for response to an Office action. Unless the applicant is notified in writing that response is required in less than six months, a maximum period of six months is allowed.

26. Section 1.135 is amended by revising paragraphs (a), (b) and (c) to read as follows:

§1.135 Abandonment for failure to respond within time period.

(a) If an applicant of a patent application fails to respond within the time period provided under §§1.134 and 1.136, the application will become abandoned unless an Office action indicates otherwise.

(b) Prosecution of an application to save it from abandonment pursuant to paragraph (a) of this section must include such complete and proper action as the condition of the case may require. The admission of an amendment not responsive to the last Office action, or refusal to admit the same, and any proceedings relative thereto, shall not operate to save the application from abandonment.

(c) When action by the applicant is a bona fide attempt to respond and to advance the case to final action, and is substantially a complete response to the Office action, but consideration of some matter or compliance with some requirement has been inadvertently omitted, opportunity to explain and supply the omission may be given before the question of abandonment is considered.

* * * * *

27. Section 1.136 is revised to read as follows:

§1.136 Filing of timely responses with petition and fee for extension of time and extensions of time for cause.

(a) If an applicant is required to respond within a non-statutory or shortened statutory time period, applicant may respond up to four months after the time period set if a petition for an extension of time and the fee set in §1.17 are filed prior to or with the response, unless (1) applicant is notified otherwise in an Office action or (2) the application is involved in an interference declared pursuant to §1.207. The date on which the response, the petition, and the fee have been filed is the date of the response and also the date for purposes of determining the period of extension and the corresponding amount of the fee. The expiration of the time period is determined by the amount of the fee paid. In no case may an applicant respond later than the maximum time period set by statute, or be granted an extension of time under paragraph (b) of this section when the provisions of this paragraph are available.

(b) When a response with petition and fee for extension of time cannot be filed pursuant to paragraph (a) of this section, the time for response will be extended only for sufficient cause, and for a reasonable time specified. Any request for such extension must be filed on or before the day on which action by the applicant is due, but in no case will the mere filing of the

request effect any extension. In no case can any extension carry the date on which response to an Office action is due beyond the maximum time period set by statute or be granted when the provisions of paragraph (a) of this section are available. See §1.245 for extension of time in interference proceedings.

28. Section 1.137 is revised to read as follows:

§1.137 Revival of abandoned application.

(a) An application abandoned for failure to prosecute may be revived as a pending application if it is shown to the satisfaction of the Commissioner that the delay was unavoidable. A petition to revive an abandoned application must be promptly filed after the applicant is notified of, or otherwise becomes aware of, the abandonment, and must be accompanied by a showing of the causes of the delay, by the proposed response unless it has been previously filed, and by the petition fee set forth in §1.17(l). Such showing must be a verified showing if made by a person not registered to practice before the Patent and Trademark Office.

(b) An application unintentionally abandoned for failure to prosecute may be revived as a pending application if the delay was unintentional. A petition to revive an unintentionally abandoned application must be filed within one year of the date on which the application became abandoned or be filed within three months of the date of the first decision on a petition to revive under paragraph (a) of this section which was filed within one year of the date of abandonment of the application. A petition to revive an unintentionally abandoned application must be accompanied by (1) a statement that the abandonment was unintentional, (2) a proposed response unless it has been previously filed, and (3) a petition fee as set forth in §1.17(m). Such statement must be a verified statement if made by a person not registered to practice before the Patent and Trademark Office. The Commissioner may require additional information where there is a question whether the abandonment was unintentional. The three month period set forth in this paragraph may be extended under the provisions of §1.136(a), but no further extensions under §1.136(b) will be granted. Petitions to the Commissioner under §1.183 to waive any time periods for requesting revival of an unintentionally abandoned application will not be considered, but will be returned to the applicant.

(c) Any petition pursuant to paragraph (a) of this section not filed within six months of the date of abandonment must be accompanied by a terminal disclaimer with fee under §1.321 dedicating to the public a terminal part of the term of any patent granted thereon equivalent to the period of abandonment of the application.

29. Section 1.155 is revised to read as follows:

§1.155 Issue and term of design patents.

(a) If, on examination, it shall appear that the applicant is entitled to a design patent under the law, a notice of allowance will be sent to the applicant, or applicant's attorney or agent, calling for the payment of the issue fee (§1.18(b)). If this issue fee is not paid within 3 months of the date of the notice of allowance, the application shall be regarded as abandoned.

(b) The Commissioner may accept the payment of the issue fee later than three months after the mailing of the notice of allowance as though no abandonment had ever occurred if upon petition the delay in payment is shown to have been unavoidable. The petition to accept the delayed payment must be promptly filed after the applicant is notified of, or otherwise becomes aware of, the abandonment, and must be accompanied by (1) the issue fee, unless it has been previously submitted, (2) the fee for delayed payment (§1.17(l)), and (3) a showing that the delay was unavoidable. Such showing must be a verified showing if made by a person not registered to practice before the Patent and Trademark Office.

(c) The Commissioner may, upon petition, accept the payment of the issue fee later than three months after the mailing of the notice of allowance as though no abandonment had ever occurred if the delay in payment was unintentional. The petition to accept the delayed payment must be filed within one year of the date on which the application became abandoned or be filed within three months of the date of the first decision on a petition under paragraph (b) of this section which was filed within one year of the date of abandonment of the application. The petition to accept the delayed payment must be accompanied by (1) the issue fee, unless it has been previously submitted, (2) the fee for unintentionally delayed payment (§1.17(m)), and (3) a statement that the delay was unintentional. Such statement must be a verified statement if made by a person not registered to practice before the Patent and Trademark Office. The Commissioner may require additional information where there is a question whether the abandonment was unintentional. The three-month period from the date of the first decision referred to in this paragraph may be extended under the provisions of §1.136(a), but no further extensions under §1.136(b) will be granted. Petitions to the Commissioner under §1.183 to waive any time periods for requesting revival of an unintentionally abandoned application will not be considered, but will be returned to the applicant.

(d) Any petition pursuant to paragraph (b) of this section not filed within six months of the date of abandonment must be accompanied by a terminal disclaimer with fee under §1.321 dedicating to the public a terminal part of the term of any patent granted thereon equivalent to the period of abandonment of the application.

30. Section 1.165 is amended by revising paragraph (b) to read as follows:

§1.165 Drawings.

* * * * *

(b) The drawing may be in color and when color is a distinguishing characteristic of the new variety, the drawing must be in color. Two copies of color drawings must be submitted. Color drawings may be made either in permanent water color or oil, or in lieu thereof may be photographs made by color photography or properly colored on sensitized paper. Permanently mounted color photographs are acceptable. The paper in any case must correspond in size, weight and quality to the paper required for other drawings. See §1.84.

31. Section 1.171 is revised to read as follows:

§1.171 Application for reissue.

An application for reissue must contain the same parts required for an application for an original patent, complying with all the rules relating thereto except as otherwise provided, and in addition, must comply with the requirements of the rules relating to reissue applications. The application must be accompanied by a certified copy of an abstract of title or an order for a title report accompanied by the fee set forth in §1.19(b)(2), to be placed in the file, and by an offer to surrender the original patent (§1.178).

32. Section 1.177 is revised to read as follows:

§1.177 Reissue in divisions.

The Commissioner may, in his or her discretion, cause several patents to be issued for distinct and separate parts of the thing patented, upon demand of the applicant, and upon payment of the required fee for each division. Each division of a reissue constitutes the subject of a separate specification descriptive of the part or parts of the invention claimed in such division; and the drawing may represent only such part or parts, subject to the provisions of §§1.83 and 1.84. On filing divisional reissue applications, they shall be referred to the Commissioner. Unless otherwise ordered by the Commissioner upon petition and payment of the fee set forth in §1.17(i), all the divisions of a reissue will issue simultaneously; if there be any controversy as to one division, the others will be withheld from issue until the controversy is ended, unless the Commissioner shall otherwise order.

33. Section 1.181 is amended by revising paragraphs (d) and (g) to read as follows:

§1.181 Petition to the Commissioner.

* * * * *

(d) Where a fee is required for a petition to the Commissioner the appropriate section of this part will so indicate. If any

required fee does not accompany the petition, the petition will be dismissed.

* * * * *

(g) The Commissioner may delegate to appropriate Patent and Trademark Office officials the determination of petitions.

34. Section 1.182 is revised to read as follows:

§1.182 Questions not specifically provided for.

All cases not specifically provided for in the regulations of this part will be decided in accordance with the merits of each case by or under the authority of the Commissioner, and such decision will be communicated to the interested parties in writing. Any petition seeking a decision under this section must be accompanied by the petition fee set forth in §1.17(h).

35. Section 1.183 is revised to read as follows:

§1.183 Suspension of rules.

In an extraordinary situation, when justice requires, any requirement of the regulations in this part which is not a requirement of the statutes may be suspended or waived by the Commissioner or the Commissioner's designee, sua sponte, or on petition of the interested party, subject to such other requirements as may be imposed. Any petition under this section must be accompanied by the petition fee set forth in §1.17(h).

36. Section 1.191 is amended by revising paragraph (a) to read as follows:

§1.191 Appeal to Board of Appeals.

(a) Every applicant for a patent or for reissue of a patent, or every owner of a patent under reexamination, any of the claims of which have been twice rejected, or who has been given a final rejection (§1.113), may, upon the payment of the fee set forth in §1.17(e), appeal from the decision of the examiner to the Board of Appeals within the time allowed for response.

* * * * *

37. Section 1.192 is amended by revising paragraph (a) to read as follows:

§1.192 Appellant's brief.

(a) The appellant shall, within 2 months from the date of the notice of appeal under §1.191 in an application, reissue application, or patent under reexamination, or within the time allowed for response to the action appealed from, if such time is later, file a brief in triplicate. The brief must be accompanied

by the requisite fee set forth in §1.17(f) and must set forth the authorities and arguments on which the appellant will rely to maintain the appeal. The brief must include a concise explanation of the invention which should refer to the drawing by reference characters, and a copy of the claims involved. The time periods set forth herein are subject to the provisions of §1.136.

* * * * *

38. Section 1.194 is amended by revising paragraphs (b) and (c) to read as follows:

§1.194 Oral hearing.

* * * * *

(b) If appellant desires an oral hearing, appellant must file a written request for such hearing accompanied by the fee set forth in §1.17(g) within one month after the date of the examiner's answer. If appellant requests an oral hearing and submits therewith the fee set forth in §1.17(g), an oral argument may be presented by, or on behalf of, the primary examiner if considered desirable by either the primary examiner or the Board.

(c) If no request and fee for oral hearing have been timely filed by the appellant, the appeal will be assigned for consideration and decision. If the appellant has requested an oral hearing and has submitted the fee set forth in §1.17(g), a day of hearing will be set, and due notice thereof given to the appellant and to the primary examiner. Hearing will be held as stated in the notice, and oral argument will be limited to twenty minutes for the appellant and fifteen minutes for the primary examiner unless otherwise ordered before the hearing begins.

39. Section 1.197 is amended by revising paragraph (b) to read as follows:

§1.197 Action following decision.

* * * * *

(b) A single request for rehearing or reconsideration, or modification of the decision, may be made if filed within thirty days from the date of the original decision, unless that decision is so modified as to become, in effect, a new decision, and the Board of Appeals so states. Such time may be extended under the provisions of §1.136.

* * * * *

40. Section 1.231 is amended by revising paragraph (a)(1) to read as follows:

§1.231 Motions before the primary examiner.

(a) Within the period set in the notice of interference for filing motions any party to an interference may file a motion seeking:

(1) To dissolve as to one or more counts, except that such motion based on facts sought to be established by affidavits, declarations or evidence outside of official records and printed publications will not normally be considered. A motion to dissolve an interference in which a patentee is a party on the ground that the claims corresponding to the counts are unpatentable to the patentee over patents or printed publications will be considered through reexamination if it complies with the requirements of §1.510(b) and is accompanied by the fee for requesting reexamination set in §1.20(c). Otherwise, a motion to dissolve an interference in which a patentee is a party will not be considered if it would necessarily result in the conclusion that the claims of the patent which correspond to the counts are unpatentable to the patentee on a ground which is not ancillary to priority. Where a motion to dissolve is based on prior art, service on opposing parties must include copies of such prior art. A motion to dissolve on the ground that there is no interference in fact will not be considered unless the interference involves a design or plant patent or application or unless it relates to a count which differs from the corresponding claim of an involved patent or of one or more of the involved applications as provided in §§1.203(a) and 1.205(a).

* * * * *

41. Section 1.245 is revised to read as follows:

§1.245 Extension of time.

Extensions of time in any interference proceeding not otherwise provided for may be had by stipulation of the parties, subject to approval, or on motion duly brought, sufficient cause being shown for such extension. The provisions of §1.136 do not apply to time periods in interferences.

42. Section 1.246 is revised to read as follows:

§1.246 Late papers.

A motion or other paper belatedly filed will not normally be considered except upon a showing, under oath or in the form of a declaration (§1.68), of sufficient cause as to why such motion or paper was not timely presented. The provisions of §1.136 do not apply to time periods in interferences.

43. Section 1.263 is revised to read as follows:

§1.263 Statutory disclaimer by patentee.

The disclaimer referred to in §1.262, when made by a patentee in interference is not a disclaimer under 35 U.S.C. 253. If a

disclaimer under the statute and the fee set forth in §1.20(d) (see §1.321) cancelling claims involved in the interference from the patent, is made by the patentee, including all assignees as shown by the records of the Patent and Trademark Office, the interference will be dissolved pro forma as to such claims.

44. Section 1.268 is added to read as follows:

§1.268 Filing of interference settlement agreements.

(a) Any agreement or understanding between parties to an interference, including any collateral agreements referred to therein, made in connection with or in contemplation of the termination of the interference, must be in writing and a true copy thereof filed in the Patent and Trademark Office, directed to the Board of Patent Interferences, before the termination of the interference as between the said parties to the agreement or understanding.

(b) If any party filing the agreement or understanding pursuant to paragraph (a) of this section so requests, the copy will be kept separate from the file of the interference, and made available only to Government agencies on written request, or to any person upon petition accompanied by the fee set forth in §1.17(i) and on a showing of good cause.

(c) Failure to file the copy of the agreement or understanding pursuant to paragraph (a) of this section, will render permanently unenforceable such agreement or understanding and any patent of the parties involved in the interference or any patent subsequently issued on any application of the parties so involved. The Commissioner may, however, upon petition accompanied by the fee set forth in §1.17(h) and on a showing of good cause for failure to file within the time prescribed, permit the filing of the agreement or understanding during the six-month period subsequent to the termination of the interference as between the parties to the agreement or understanding.

45. Section 1.292 is amended by revising paragraph (a) to read as follows:

§1.292 Public use proceedings.

(a) When a petition for the institution of public use proceedings, supported by affidavits or declarations and the fee set forth in §1.17(j) is filed by one having information of the pendency of an application and is found, on reference to the primary examiner, to make a prima facie showing that the invention involved in an interference or claimed in an application believed to be on file had been in public use or on sale one year before the filing of the application, or before the date alleged by an interfering party in his or her preliminary statement or the date of invention established by such party, a hearing may be had before the Commissioner to determine whether a public use proceeding should be instituted. If instituted,

times may be set for taking testimony, which shall be taken as provided by §§1.271 to 1.286. The petitioner will be heard in the proceedings but after decision therein will not be heard further in the prosecution of the application for patent.

* * * * *

46. Section 1.304 is amended by revising paragraph (a) to read as follows:

§1.304 Time for appeal or civil action.

(a) The time for filing the notice and reasons of appeal to the U.S. Court of Appeals for the Federal Circuit (§1.302) or for commencing a civil action (§1.303) is sixty days from the date of the decision of the Board of Appeals or the Board of Patent Interferences. If a request for rehearing or reconsideration, or modification of the decision, is filed within the time provided pursuant to §1.197(b) or §1.256(b), the time for filing an appeal or commencing a civil action shall expire at the end of the sixty-day period or thirty days after action on the request, whichever is later. The time periods set forth herein are subject to the provisions of §1.136.

* * * * *

47. Section 1.311 is revised to read as follows:

§1.311 Notice of allowance.

(a) If, on examination, it shall appear that the applicant is entitled to a patent under the law, a notice of allowance will be sent to applicant at the correspondence address indicated in §1.33, calling for the payment of a specified sum constituting the issue fee (§1.18), which shall be paid within 3 months from the date of the mailing of the notice of allowance.

(b) An authorization to charge the issue fee (§1.18) to a deposit account may be filed in an individual application, either before or after mailing of the notice of allowance. Where an authorization to charge the issue fee to a deposit account has been filed before the mailing of the notice of allowance, the issue fee will be automatically charged to the deposit account at the time of mailing the notice of allowance.

48. Section 1.312 is revised to read as follows:

§1.312 Amendments after allowance.

(a) No amendment may be made as a matter of right in an application after the mailing of the notice of allowance. Any amendment pursuant to this paragraph filed before the payment of the issue fee may be entered on the recommendation of the primary examiner, approved by the Commissioner, without withdrawing the case from issue.

(b) Any amendment pursuant to paragraph (a) of this section filed after the date the issue fee is paid must be accompanied by a petition including the fee set forth in §1.17(i) and a showing of good and sufficient reasons why the amendment is necessary and was not earlier presented.

49. Section 1.313 is revised to read as follows:

§1.313 Withdrawal from issue.

(a) Applications may be withdrawn from issue for further action at the initiative of the Office or upon petition by the applicant. Any such petition by the applicant must include a showing of good and sufficient reasons why withdrawal of the application is necessary and, if the reason for the withdrawal is not the fault of the Office, must be accompanied by the fee set forth in §1.17(i). If the application is withdrawn from issue, a new notice of allowance will be sent if the application is again allowed. Any amendment accompanying a petition to withdraw an application from issue must comply with the requirements of §1.312.

(b) When the issue fee has been paid, and the patent to be issued has received its issue date and patent number, the application will not be withdrawn from issue for any reason except (1) mistake on the part of the Office, (2) a violation of §1.56 or illegality in the application, (3) unpatentability of one or more claims, or (4) for interference.

50. Section 1.314 is revised to read as follows:

§1.314 Issuance of patent.

If payment of the issue fee is timely made, the patent will issue in regular course unless (a) the application is withdrawn from issue (§1.313) or (b) issuance of the patent is deferred. Any petition by the applicant requesting deferral of the issuance of a patent must be accompanied by the fee set forth in §1.17(i) and must include a showing of good and sufficient reasons why it is necessary to defer issuance of the patent.

51. Section 1.316 is revised to read as follows:

§1.316 Application abandoned for failure to pay issue fee.

(a) If the issue fee is not paid within 3 months from the date of the notice of allowance, the application will be regarded as abandoned. Such an abandoned application will not be considered as pending before the Patent and Trademark Office.

(b) The Commissioner may accept the payment of the issue fee later than three months after the mailing of the notice of allowance as though no abandonment had ever occurred if upon petition the delay in payment is shown to have been unavoidable. The petition to accept the delayed payment must be promptly filed

after the applicant is notified of, or otherwise becomes aware of, the abandonment, and must be accompanied by (1) the issue fee, unless it has been previously submitted, (2) the fee for delayed payment (§1.17(l)), and (3) a showing that the delay was unavoidable. Such showing must be a verified showing if made by a person not registered to practice before the Patent and Trademark Office.

(c) The Commissioner may, upon petition, accept the payment of the issue fee later than three months after the mailing of the notice of allowance as though no abandonment had ever occurred if the delay in payment was unintentional. The petition to accept the delayed payment must be filed within one year of the date on which the application became abandoned or be filed within three months of the date of the first decision on a petition under paragraph (b) of this section which was filed within one year of the date of abandonment of the application. The petition to accept the delayed payment must be accompanied by (1) the issue fee, unless it has been previously submitted, (2) the fee for unintentionally delayed payment (§1.17(m)), and (3) a statement that the delay was unintentional. Such statement must be a verified statement if made by a person not registered to practice before the Patent and Trademark Office. The Commissioner may require additional information where there is a question whether the abandonment was unintentional. The three-month period from the date of the first decision referred to in this paragraph may be extended under the provisions of §1.136(a), but no further extensions under §1.136(b) will be granted. Petitions to the Commissioner under §1.183 to waive any time periods for requesting revival of an unintentionally abandoned application will not be considered, but will be returned to the applicant.

(d) Any petition pursuant to paragraph (b) of this section not filed within six months of the date of abandonment must be accompanied by a terminal disclaimer with fee under §1.321 dedicating to the public a terminal part of the term of any patent granted thereon equivalent to the period of abandonment of the application.

52. Section 1.317 is revised to read as follows:

§1.317 Lapsed patents; delayed payment of balance of issue fee.

(a) If the issue fee was paid prior to October 1, 1982, any remaining balance of the issue fee is to be paid within three months from the date of notice thereof and, if not paid, the patent will lapse at the termination of the three month period.

(b) The Commissioner may accept the payment of the remaining balance of the issue fee later than three months after the mailing of the notice thereof as though no lapse had ever occurred if upon petition the delay in payment is shown to have been unavoidable. The petition to accept the delayed payment must be promptly filed after the applicant is notified of, or otherwise becomes aware of, the lapse, and must be accompanied by

(1) the remaining balance of the issue fee, unless it has been previously submitted, (2) the fee for delayed payment (§1.17(l)), and (3) a showing that the delay was unavoidable. Such showing must be a verified showing if made by a person not registered to practice before the Patent and Trademark Office.

(c) The Commissioner may, upon petition, accept the payment of the remaining balance of the fee later than three months after the mailing of the notice thereof as though no lapse had ever occurred if the delay in payment was unintentional. The petition to accept the delayed payment must be filed within one year of the date on which the patent lapsed or be filed within three months of the date of the first decision on a petition under paragraph (b) of this section which was filed within one year of the date of lapse of the patent. The petition to accept the delayed payment must be accompanied by (1) the remaining balance of the issue fee, unless it has been previously submitted, (2) the fee for unintentionally delayed payment (§1.17(m)), and (3) a statement that the delay was unintentional. Such statement must be a verified statement if made by a person not registered to practice before the Patent and Trademark Office. The Commissioner may require additional information where there is a question whether the delay in payment was unintentional. The three-month period from the date of the first decision referred to in this paragraph may be extended under the provisions of §1.136(a), but no further extensions under §1.136(b) will be granted. Petitions to the Commissioner under §1.183 to waive any time periods for requesting acceptance of an unintentionally delayed payment will not be considered, but will be returned to the applicant.

(d) Any petition pursuant to paragraph (b) of this section not filed within six months of the date of lapse must be accompanied by a terminal disclaimer with fee under §1.321 dedicating to the public a terminal part of the term of the patent equivalent to the period of lapse of the patent.

53. Section 1.321 is revised to read as follows:

§1.321 Statutory disclaimer.

(a) A disclaimer under 35 U.S.C. 253 must be accompanied by the fee set forth in §1.20(d) and identify the patent and the claim or claims which are disclaimed, and be signed by the person making the disclaimer, who shall state therein the extent of his or her interest in the patent. A disclaimer which is not a disclaimer of a complete claim or claims may be refused recordation. A notice of the disclaimer is published in the Official Gazette and attached to the printed copies of the specification. In like manner any patentee or applicant may disclaim or dedicate to the public the entire term, or any terminal part of the term, of the patent granted or to be granted.

(b) A terminal disclaimer, when filed in an application to obviate a double patenting rejection, must be accompanied by the fee set forth in §1.20(d) and include a provision that any patent granted on that application shall be enforceable only for and during such period that said patent is commonly owned with the application or patent which formed the basis for the rejection.

54. Section 1.324 is revised to read as follows:

§1.324 Correction of inventorship in patent.

Whenever a patent is issued and it appears that there was a misjoinder or nonjoinder of inventors and that such misjoinder or omission occurred by error and without deceptive intention, the Commissioner may, on petition of all the parties and the assignees and satisfactory proof of the facts and payment of the fee set forth in §1.20(b), or on order of a court before which such matter is called in question, issue a certificate deleting the misjoined inventor from the patent or adding the non-joined inventor to the patent.

55. Section 1.331 is amended by revising paragraph (a) to read as follows:

§1.331 Recording of assignments.

(a) Assignments, including grants and conveyances, of patents, national applications, or international applications which designate the United States of America, will be recorded in the Patent and Trademark Office under 35 U.S.C. 261. Other instruments affecting title to a patent, a national application, or an international application which designates the United States of America, and licenses, even though the recording thereof may not serve as constructive notice under 35 U.S.C. 261, will be recorded as provided in this section or at the discretion of the Commissioner. Any instrument to be recorded, except those under Part 7 of this title, must be accompanied by the fee set forth in §1.21(h).

* * * * *

56. Section 1.332 is revised to read as follows:

§1.332 Receipt and recording.

Assignments are recorded in regular order as promptly as possible, and then transmitted with the date and identification of the record stamped thereon to the persons entitled to them. The date of the record is the date of the receipt of the assignment at the Office in proper form and accompanied by the fee set forth in §1.21(h).

57. Section 1.334 is revised to read as follows:

§1.334 Issue of patent to assignee.

(a) In case of an assignment of the entire interest in the invention and application, or of the entire interest in the patent to be granted, the patent will normally issue to the assignee. If the assignee should hold an undivided part interest, the patent will normally issue jointly to the inventor and the assignee. If it is desired that the patent so issue, the assignment in either case must first have been recorded, and at a day not later than the date payment is made of the issue fee.

(b) At the time of payment of the issue fee, a statement must be furnished indicating whether or not an assignment has been filed with the Patent and Trademark Office. In the event an assignment has been filed, such statement must include the name and address of the assignee and indicate whether or not an acknowledgement of a recorded assignment has been received from the Patent and Trademark Office.

(c) If the assignment is recorded after the date of payment of the issue fee, the assignee may petition that the patent issue to the assignee as recorded. Any such petition must be accompanied by the fee set forth in §1.17(i).

58. Section 1.341 is amended by revising paragraph (h) to read as follows:

§1.341 Registration of attorneys and agents.

* * * * *

(h) Oath and registration fee. Before his or her name may be entered on the register of attorneys or on the register of agents, every applicant for registration must, after his or her application is approved, subscribe and swear to an oath or make a declaration prescribed by the Commissioner of Patents and Trademarks and pay the prescribed registration fee. (See §1.21(a)(2).)

* * * * *

59. Section 1.347 is revised to read as follows:

§1.347 Removing names from registers.

Attorneys and agents, registered to practice before the Patent and Trademark Office, should notify the Office of any change of address for entry on the register, by letter separate from any notice of change of address filed in individual applications. The Office may address a letter to any person on the registers, at the address of which separate notice for the register was last received, for the purpose of ascertaining whether such person desires to remain on the register. The name of any person failing to reply and give the information requested within a time limit specified will be removed from the register, and the names

so removed published in the Official Gazette. Any name so removed may be reinstated, either on the register of attorneys or the register of agents, as may be appropriate. Any request for reinstatement must be accompanied by the fee set forth in §1.21(a)(3).

60. Section 1.445 is amended by revising paragraphs (a)(1) through (4) to read as follows:

§1.445 International application filing and processing fees.

(a) * * *

(1) A transmittal fee (see 35 U.S.C. 361(d) and PCT Rule 14) ---------- $125.00

(2) A search fee (see 35 U.S.C. 361(d) and PCT Rule 16) where:

(i) No corresponding prior United States national application with fee has been filed---------- $500.00

(ii) Corresponding prior United States national application with fee has been filed---------- $250.00.

(3) A supplemental search fee when required (see PCT Art. 17(3)(a) and PCT Rule 40.2)----$125.00 per additional invention.

(4) The national fee, that is, the amount set forth as the filing fee under §1.16(a) through (d) credited by an amount of $250 where an international search fee has been paid on the corresponding international application to the United States as an International Searching Authority. Where the amount of the credit is in excess of that required for the national fee, a request for a refund of the excess under §1.446(b) may be filed at the time of paying the national fee. Only one such credit is permitted based on a single international search fee.

* * * * *

61. Section 1.446 is amended by revising paragraph (b) to read as follows:

§1.446 Refund of international application filing and processing fees.

* * * * *

(b) Refund of a portion of the search fee may be made to the extent set forth in §1.445(a)(4) if requested at the time of paying the national fee.

* * * * *

62. Section 1.451 is amended by revising paragraph (b) to read as follows:

§1.451 The priority claim and priority document in an international application.

* * * * *

(b) Whenever the priority of an earlier United States national application is claimed in an international application, the applicant may request in a letter of transmittal accompanying the international application upon filing with the United States Receiving Office, that the Patent and Trademark Office prepare a certified copy of the national application for transmittal to the International Bureau (PCT Art. 8 and PCT Rule 17). The fee for preparing a certified copy is stated in §1.19(a)(4) and (b)(1).

* * * * *

63. Section 1.510 is amended by revising paragraph (a) to read as follows:

§1.510 Request for reexamination.

(a) Any person may, at any time during the period of enforceability of a patent, file a request for reexamination by the Patent and Trademark Office of any claim of the patent on the basis of prior art patents or printed publications cited under §1.501. The request must be accompanied by the fee for requesting reexamination set in §1.20(c).

* * * * *

PART 2 - RULES OF PRACTICE IN TRADEMARK CASES

64. Section 2.6 is revised to read as follows:

§2.6 Trademark fees.

The following fees and charges are established by the Patent and Trademark Office for trademark cases:

(a)	For filing an application, per class	$175.00
(b)	For filing an application for renewal of a registration, per class	300.00
(c)	For filing to publish a mark under §12(c), per class	100.00
(d)	For issuing a new certificate of registration upon request of assignee	100.00
(e)	For a certificate of correction	

	of registrant's error	100.00
(f)	For filing a disclaimer to a registration	100.00
(g)	For filing an amendment to a registration	100.00
(h)	For filing an affidavit under §8 of the Act, per class	100.00
(i)	For filing an affidavit under §15 of the Act, per class	100.00
(j)	For filing a combined affidavit under §§8 and 15 of the Act, per class	200.00
(k)	For petitions to the Commissioner	100.00
(l)	For filing petition to cancel or notice of opposition, per class	200.00
(m)	For ex parte appeal to the Trademark Trial and Appeal Board, per class	100.00
(n)	For printed copy of registered mark Copy only Copy showing title and/or status	 1.00 6.50
(o)	For certifying trademark records, per certificate	3.50
(p)	For photocopies or other reproductions of records, drawings, or printed material, per page of the material copied	.30
(q)	For recording trademark assignments, per document	100.00
	For each mark in addition to one assigned in the same document	20.00
(r)	For abstracts of title to each registration or application, including the search	12.00
(s)	For special service handling of late filed fees in connection with a renewal	100.00
(t)	For items and services that the Commissioner finds may be supplied, for which fees are not specified, such charges as may be determined by the Commissioner with respect to each such item or service	actual cost.

65. Section 2.85 is amended by revising paragraph (e) to read as follows:

§2.85 Classification schedules.

* * * * *

(e) Where the amount of the fee received on filing an appeal in connection with an application or on an application for renewal or in connection with a petition for cancellation is sufficient for at least one class of goods or services but is less than the required amount because multiple classes in an application or registration are involved, the appeal or renewal application or petition for cancellation will not be refused on the ground that the amount of the fee was insufficient if the required additional amount of the fee is received in the Patent and Trademark Office within the time limit set forth in the notification of this defect by the Office, or if action is sought only for the number of classes equal to the number of fees submitted.

* * * * *

66. Section 2.101 is amended by revising paragraph (c) to read as follows:

§2.101 Filing an opposition.

* * * * *

(c) If no fee, or a fee insufficient to cover at least one class, is filed within 30 days after publication of the mark to be opposed or within an extension of the time for filing an opposition, the opposition will not be refused if the required fee(s) (See §2.6) are filed in the Patent and Trademark Office within the time limit set forth in the notification of this defect by the Office.

* * * * *

67. Section 2.146 is amended by revising paragraph (b) to read as follows, and by removing paragraph (f):

§2.146 Petition to the Commissioner.

* * * * *

(b) Any such petition must contain a statement of the facts involved and the point or points to be reviewed and the action requested and the requisite fee (See §2.6). Any brief in support thereof should accompany or be embodied in the petition; in contested cases any brief in opposition shall be filed within fifteen days after service of the petition. Where facts are to be proved in ex parte cases (as in petition to revive an abandoned application), the proof in the form of affidavits or

declarations in accordance with §2.20 (and exhibits, if any) must accompany the petition.

* * * * *

68. Section 2.162 is amended by revising paragraph (d) to read as follows:

§2.162 Requirements for affidavit or declaration during sixth year.

* * * * *

(d) Include the required fee for each class to which the affidavit or declaration pertains in the registration. If no fee, or a fee insufficient to cover at least one class, is filed before the expiration of the sixth year following the date of registration or of publication under Section 12(c) of the Act, the affidavit or declaration will not be refused if the required fee(s) (See §2.6) are filed in the Patent and Trademark Office within the time limit set forth in the notification of this defect by the Office. If insufficient fees are included to cover all classes in the registration, the particular class or classes to which the affidavit or declaration pertains should be specified.

* * * * *

69. Section 2.167 is amended by adding a paragraph (g) as follows:

§2.167 Affidavit or declaration under Section 15.

* * * * *

(g) Include the required fee for each class to which the affidavit or declaration pertains in the registration. If no fee, or a fee insufficient to cover at least one class, is filed at an appropriate time, the affidavit or declaration will not be refused if the required fee(s) (See §2.6) are filed in the Patent and Trademark Office within the time limit set forth in the notification of this defect by the Office. If insufficient fees are included to cover all classes in the registration, the particular class or classes to which the affidavit or declaration pertains should be specified.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
California	Los Angeles Public Library	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware	(302) 738-2238
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4559
Illinois	Chicago Public Library	(312) 269-2865
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6552
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214, 215
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7814
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1321**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 226
South Carolina	Charleston: Medical University of South Carolina	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

**Call only between the hours of 10:00 a.m. and 5:00 p.m.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF July 24, 1982

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director ..... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	9-18-80
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director ..... Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	1-09-81
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director .... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	3-18-81
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director ..... Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	4-13-81
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director ..... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	4-09-81
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	8-20-80
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director ..... Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	9-18-80
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—EARL LEVY, Director ..... Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	6-20-80
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director ..... Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling; Shaft; Impellers; Rotary Fluid Motors.	4-09-80
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director ..... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	11-26-79
DESIGN, GROUP 290—KENNETH L. CAGE, Director ..... Industrial Arts; Household, Personal and Fine Arts.	7-07-80
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director ..... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	11-14-80
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director ... Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	10-27-80
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director ..... Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	2-13-80
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director ..... Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	5-24-82
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—A. L. SMITH, Director ..... Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	11-27-79

Expiration of patents: The patents within the range of numbers indicated below expire during July 1982, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,192,536 to 3,197,783, inclusive

Plant Patents ..... Numbers 2,543 to 2,545 inclusive

REEXAMINATIONS

SEPTEMBER 28, 1982

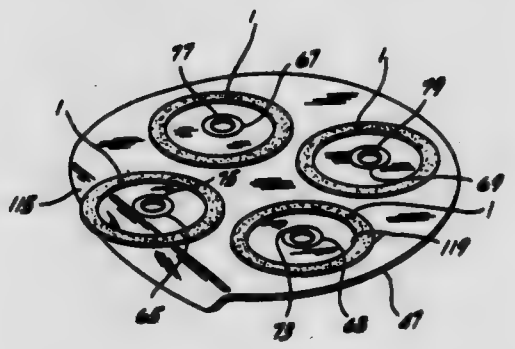
Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination

B1 4,219,004 (20th)

FLEXIBLE, SELF-SUPPORTING BLADE FOR CUTTING ELECTRONIC CRYSTALS AND SUBSTRATES OR THE LIKE

Robert C. Runyon, St. Louis County, Mo., assignor to Chemet Research, Inc., Fenton, Mo.

Reexamination Request No. 90/000,105, Nov. 10, 1981.
Reexamination Certificate for Patent No. 4,219,004, issued Aug. 26, 1980, Ser. No. 961,946, Nov. 20, 1978.
U.S. Cl. 125/15. Int. Cl. B28D *1/04*; B05D *3/05*.



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 2–18 is confirmed.

Claim 1 is determined to be patentable as amended:

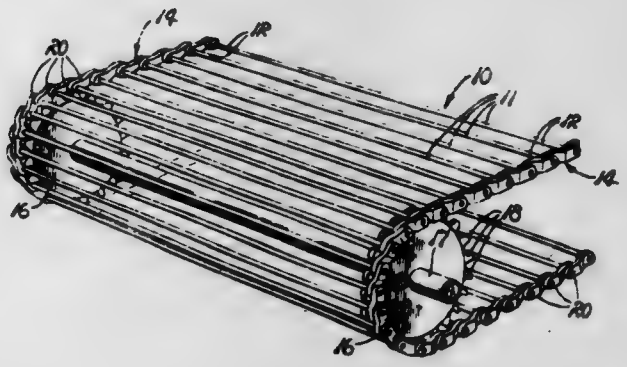
1. An extremely thin, flexible, [self-supporting] *free-standing* cutting blade *having* [of] a predetermined *annular,* disc-shaped form [having] *and* a thickness in the range of about 0.0006 inch to about 0.006 inch or more, the blade having fully exposed opposed lateral [sizes] *sides* and a fully exposed peripheral *portion, the outer portion of each lateral side and the peripheral portion forming a* cutting portion for dicing or sawing electronic crystal substrates, or the like, the blade throughout its *entirety* [thickness extending between the lateral sides thereof] comprising a metal matrix and diamond particle cutting elements disposed substantially throughout the matrix, *a portion of a substantial number of the diamond particle cutting elements being exposed throughout each lateral side of the blade,* [the inner portion of each of the exposed sides of] the blade being adapted to be engaged by mounting means *which are independent of the blade such* [in order] that the [outer peripheral] cutting portion remains exposed for *dicing or sawing* [cutting upon engagement of the blade by the mounting means], the blade being made by electrodeposition of a matrix of metal as an extremely thin layer of metal in the predetermined *annular,* disc-shaped form upon a surface of a flat, electrically conductive substrate immersed in a suspension having the diamond particle cutting elements dispersed within an electrolyte, the diamond particle cutting elements being codeposited in the matrix of metal during electrodeposition thereof *to an extent that the portion of the substantial number of diamond particle cutting elements are exposed throughout each lateral side of the blade,* the matrix *of metal and codeposited diamond particle cutting elements in the annular, disc-shaped form with the portion of the substantial number of diamond particle cutting elements exposed throughout each lateral side of the blade* being separated from the substrate [after formation of the metal matrix with the diamond particle cutting elements disposed therein], thereby providing the extremely thin, flexible [self-supporting], *free-standing* cutting blade *with the portion of the substantial number of diamond particle cutting elements exposed throughout each lateral side of the blade.*

B1 3,160,264 (21st)

CONVEYOR CHAIN

Delmar H. Raybould, R.F.D. 2, Box 214A, Rexburg, Idaho. 83440

Reexamination Request No. 90/000,028, Jul. 16, 1981.
Reexamination Certificate for Patent No. 3,160,264, issued Dec. 8, 1964, Ser. No. 251,887, Jan. 16, 1963.
U.S. Cl. 198/851. Int. Cl.[3] B65G 17/06.



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 1–4 having been determined to be unpatentable, are cancelled.

1. A conveyor chain comprising a plurality of substantially parallel flight rods having opposite end portions; a plurality of substantially identical elongated links interconnecting corresponding ends of the adjacent rods in an endless chain, each link having an outer end providing an inwardly disposed bearing surface, an inner end longitudinally spaced from said outer end providing an outwardly disposed bearing surface in a plane common to the inwardly disposed bearing surface of the outer end, a central portion integrally interconnecting the outer and inner ends and a pair of substantially parallel bores individually extended through the opposite ends of the links, the links having opposite ends journaled on corresponding ends of adjacent rods, the inner ends of the links being outwardly overlapped by the outer ends of adjacent links; and link restraining means mounted on the rods between the overlapped ends of the links.

REISSUES

SEPTEMBER 28, 1982

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

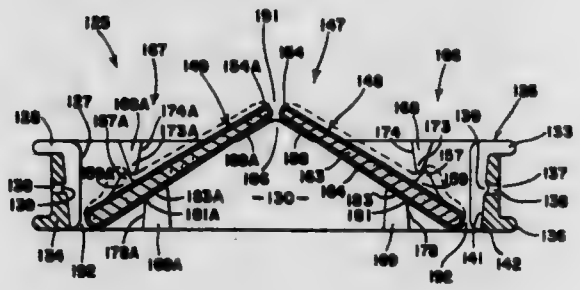
Re. 31,040
HEART VALVE PROSTHESIS

Zinon C. Possis, Edina, Minn., assignor to St. Jude Medical, Inc., St. Paul, Minn.

Original No. 4,078,268, dated Mar. 14, 1978, Ser. No. 720,776, Sep. 7, 1976. Continuation-in-part of Ser. No. 571,285, Apr. 24, 1975, abandoned. Application for reissue Feb. 15, 1980, Ser. No. 121,674

Int. Cl.[3] A61F *1/22*

U.S. Cl. 3—1.5 82 Claims



65. A heart valve prosthesis comprising: a base having an inside annular wall surrounding a passage for carrying blood through the base, means for connecting the base to heart tissue, valving means located in the passage operable to allow substantially unrestricted flow of blood in a first direction through the passage and to restrict the flow of blood in a second direction through the passage, said second direction being opposite the first direction, said valving means comprising a first valving member having a convex curved edge and a transverse edge, and a second valving member having a convex curved edge and a transverse edge, said first and second valving members when in their closed positions being obliquely inclined in opposite directions with respect to the longitudinal axis of the passage through the base, and said transverse edges being located adjacent each other, each valving member having an outer periphery having portions thereof spaced from the inside annular wall to allow limited flow of blood in the second direction between the valving members and the inside annular wall when the valving members are in their closed positions, first ear means on the first valving member, first pivot means pivotally connecting the first valving member to the base for movement about a first axis offset in one direction from the center of the passage, said first pivot means including said first ear means and first fulcrum portions on the base, said first ear means being engageable with the first fulcrum portions for controlling the movement of the first valving member between its open and closed positions, second ear means on the second valving member, and second pivot means pivotally connecting the second valving member to the base for movement about a second axis offset in a direction opposite the one direction from the center of the passage, said second pivot means including said second ear means and second fulcrum portions on the base, said second ear means being engageable with the second fulcrum portions for controlling the movement of the second valving member between its open and closed positions, said first and second axes being generally parallel to each other, said base including a first side member and a second side member, said first and second side members forming barriers adjacent opposite sides of the first and second valving members when the valving members are in their closed positions to minimize the flow of blood through the passage in the second direction, first stop means engageable with the first valving member and second valving member to hold the first valving member and second valving member in their closed positions to restrict the flow of blood in the second direction through the passage, and second stop means engageable with the first valving member and second valving member when the valving members are in their open positions to allow substantially free flow of blood through the passage in the first direction.

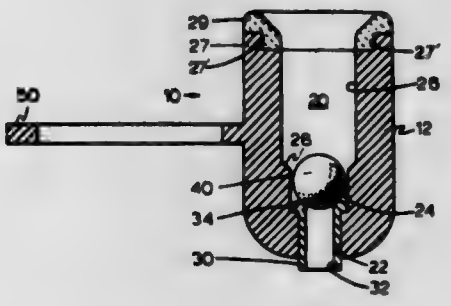
Re. 31,041
YARN TENSIONING DEVICE

Otto Zollinger, Spartanburg, S.C., assignor to Otto Zollinger, Inc., Spartanburg, S.C.

Original No. 3,874,613, dated Apr. 1, 1975, Ser. No. 381,979, Jul. 23, 1973. Continuation-in-part of Ser. No. 297,995, Oct. 16, 1972, Pat. No. 3,753,535. Application for reissue Oct. 19, 1978, Ser. No. 952,939

Int. Cl.[3] B65H *59/22*

U.S. Cl. 242—152.1 30 Claims



1. A tension device comprising:

a. a housing, said housing having a yarn passageway extending therethrough, said yarn passageway having a large diameter section and a small diameter section, an [outer] *upper* end of said large diameter section of passageway having rounded abrasion resistant corners;

b. *a first insert defining* an uninterrupted seat provided along said passageway at the junction of said large and small diameter sections and having an opening therethrough, said seat receiving a spherical element thereat and holding said spherical element out of contact with walls of said large diameter section of said passageway when no yarn is passing through said opening, said seat having surfaces around said opening with a radius of curvature opposite the curvature of said spherical element; and

c. a spherical element receivable in said large diameter section of said passageway, said spherical element having a diameter less than the length of said large diameter section and said large diameter section having a diameter adjacent said seat to prohibit substantial lateral movment of said spherical element received thereat *said passageway being smooth surfaced and substantially unrestricted upwardly from said seat for a distance sufficient to permit substantially unrestricted upward movement of said spherical element during tensioning of a yarn.*

Re. 31,042
LASER CUTTING HEAD ATTACHMENT FOR PUNCH PRESSES

Stephen C. Clark, East Amherst, and Victor T. Carbone, Cheektowaga, both of N.Y., assignors to Houdaille Industries, Inc., Ft. Lauderdale, Fla.

Original No. 4,201,905, dated May 6, 1980, Ser. No. 937,754, Aug. 29, 1978. Application for reissue Oct. 22, 1980, Ser. No. 199,631

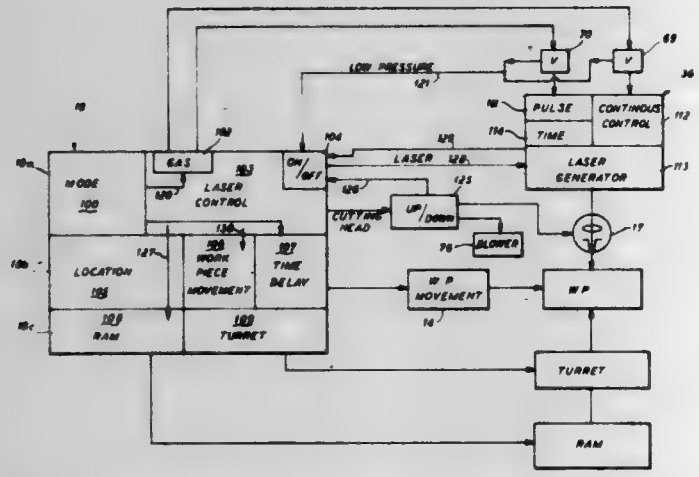
Int. Cl.[3] B23K *26/00*

U.S. Cl. 219—121 LG 11 Claims

1. In a machine tool punch press having a main frame, main frame carried upper and lower spaced rotatable turrets respectively carrying punch tools and die tools, a main frame carried

vertically reciprocatable punch ram stationed at a work station, a worktable extending outwardly from adjacent the lower turret at least to the sides and front thereof having at least a stationary portion adjacent the lower turret, the stationary portion aligned with the work station and spaced to a side thereof, a central automatic control controlling the turrets and punch ram and further controlling workpiece movement apparatus effective to move a workpiece with respect to at least the stationary portion of the worktable and the work station, the improvement of:

(a) a vertically movable laser cutting head carried by the main frame above the stationary portion of the worktable, the cutting head including a hollow tip assembly adjacent the bottom thereof and a beam focusing optical means adjustably fixably spaced from a bottom of the tip assembly and vertically movable with the cutting head,



(b) a laser beam generator, the laser beam generator being spaced from the machine tool punch press and main frame and being substantially isolated therefrom whereby vibration of the machine tool punch press is isolated from the beam generator,

(c) an optical beam pathway interconnecting the cutting head and the laser beam generator, the pathway including beam bending optics directing a laser beam through the tip, an opening through the stationary portion of the worktable aligned with the laser beam eminating from the hollow tip,

(d) a control means automatically alternatively controlling punching operation and laser operation from said central automatic control, said control means including means for vertically moving the cutting head in dependent relationship to selection of laser operation, said control means being a portion of said central control.

Re. 31,043

MASS SPECTROMETER BEAM MONITOR

Charles R. McKinney, Monrovia, Calif., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Original No. 4,099,052, dated Jul. 4, 1978, Ser. No. 748,298, Dec. 7, 1976. Application for reissue Mar. 13, 1979, Ser. No. 20,249

Int. Cl.³ B01D *59/44*

U.S. Cl. 250—283 **9 Claims**

12. An ion beam analyzer having an ion source for generating ions of a sample to be analyzed, comprising, in combination,

means for extracting said sample ions from said source,

means for focusing the extracted sample ions into a beam,

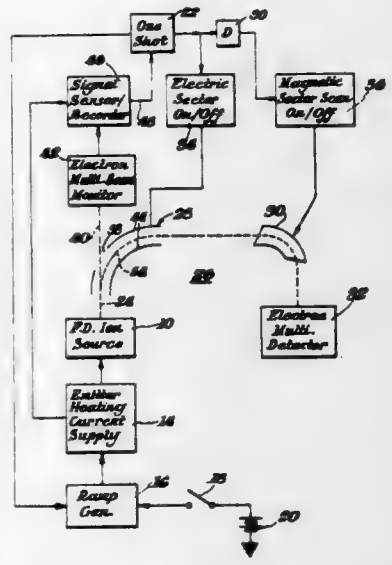
separation means capable of being energized or de-energized to selectively deflect or not to deflect species of extracted ions in said beam,

detecting means positioned for detecting the selected deflected species of ions,

means to energize or de-energize said separation means,

sensing means located along the ion beam for sensing said extracted sample ions prior to deflection, and

control means coupled between said sensing means and said means to energize or de-energize and responsive to said sensed



sample ions reaching a predetermined intensity level for energizing said separation means.

Re. 31,044

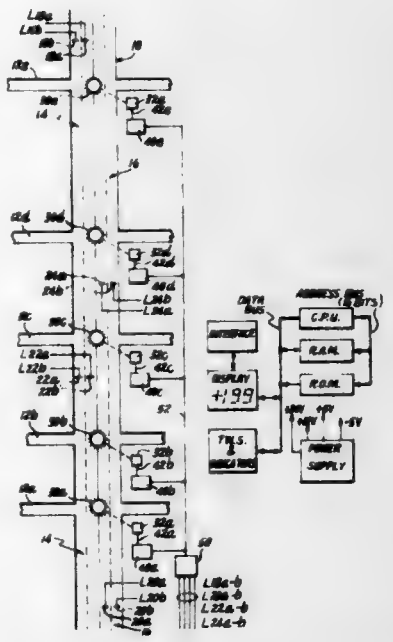
TRAFFIC COORDINATOR FOR ARTERIAL TRAFFIC SYSTEM

Marshall B. McReynolds, Arlington, Va.; Irving S. Oscar, Washington, D.C., and Jack Van Tilbury, Arlington, Va., assignors to TRAC, Inc., Alexandria, Va.

Original No. 4,167,785, dated Sep. 11, 1979, Ser. No. 843,729, Oct. 19, 1977. Application for reissue Sep. 9, 1980, Ser. No. 185,437

Int. Cl.³ G06F *15/48*; G08G *1/08*

U.S. Cl. 364—437 **130 Claims**



120. A coordinator for coordinating traffic at least along an artery having traffic lights at a plurality of intersections along said artery, said coordinator comprising:

(a) a digital computer means for calculating values corresponding to cycle length green times, said green time values calculated in real-time in response at least to traffic flowing along one intersection of said plurality of intersections of said artery,

(b) means connected to said calculating means for controlling traffic signals at said one intersection for implementing a green time value equal to at least said calculated green time value at said one intersection to thereby define a platoon of vehicles at said one intersection,

(c) means for setting a plurality of offset times, each offset time corresponding to the distance of each of the remainder of said

plurality of intersections from said one intersection, each offset time being a predetermined constant value in units of time, and

(d) means for controlling each of said plurality of traffic signals at the remainder of said plurality of intersections of said artery in a sequential and individual manner to implement an artery green time value equal to at least said calculated green time value, said green time value implemented at said fixed offset times at each of said remainder of intersections as platoons of vehicles approach said intersections to thereby coordinate traffic along said artery.

PLANT PATENTS

GRANTED SEPTEMBER 28, 1982

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,890

STRAWBERRY PLANT

Albert B. Cook, 320 N. Fifth St., Rockport, Ind. 47635

Filed Dec. 22, 1980, Ser. No. 218,732
Int. Cl.[3] A01H *5/03*
U.S. Cl. Plt.—48 1 Claim

1. A new and distinct variety of strawberry plant substantially as herein shown and described, characterized by its high productivity, its very vigorous growth, and its large fruit.

4,891

CHRYSANTHEMUM NAMED ORANGE WESTLAND

Jacques C. M. van der Knaap, De Lier, Netherlands, assignor to Pan-American Plant Company, Parrish, Fla.

Filed Oct. 2, 1980, Ser. No. 193,089
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—76 1 Claim

1. A new and distinct chrysanthemum cultivar, substantially as herein shown and described, characterized by its unique quill-shaped ray florets of a distinctive orange coloration.

PATENTS

GRANTED SEP. 28, 1982

ERRATA

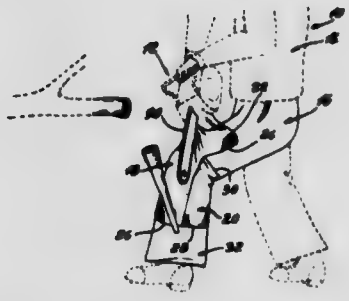
For CLASS	See PATENT NO.
464–024	4,351,167
464–064	4,351,168
126–197	4,351,288
524–008	4,351,750
524–375	4,351,751
523–401	4,351,752
524–445	4,351,754
524–555	4,351,755
524–314	4,351,756
524–169	4,351,757
524–227	4,351,758
524–100	4,351,759
548–567	4,351,770
549–361	4,351,771
549–331	4,351,772
549–259	4,351,773
204–159	4,351,884
378–018	4,352,020
378–012	4,352,021
378–144	4,352,041
378–029	4,352,185

PATENTS

GRANTED SEPTEMBER 28, 1982

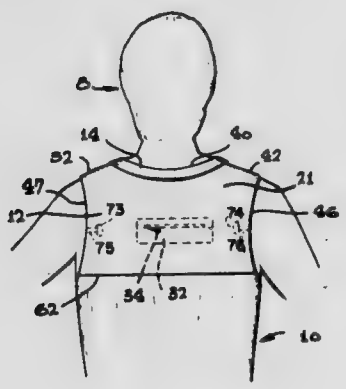
GENERAL AND MECHANICAL

4,351,065
PROTECTIVE GARMENT FOR THE USER OF A CHAIN SAW
Edgar Bouchard, Mitassini, Canada, assignor to Normand Bouchard, Quebec, Canada
Filed Feb. 25, 1981, Ser. No. 237,948
Int. Cl.[3] A41D *13/00*
U.S. Cl. 2—23 **11 Claims**



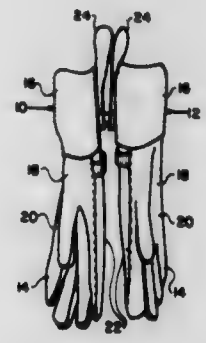
1. A garment for protecting the user of a chain saw wherein at least one section of the garment comprises: an outer layer of canvas material; a pad including a plurality of superposed plies of canvas material sewn together to said outer layer, and at least one additional layer of canvas material loosely attached in said pad so that said additional layer may be readily pulled out when seized accidently and entrained by the chain of the saw, to subsequently jam and stop the operation of the saw chain.

4,351,066
DUAL PURPOSE JACKET
Wally Pearsall, 110 E. 9th St., Los Angeles, Calif. 90015
Continuation-in-part of Ser. No. 93,377, Nov. 13, 1979. This application Mar. 11, 1980, Ser. No. 129,346
Int. Cl.[3] A41D *3/02*
U.S. Cl. 2—85 **5 Claims**



1. A foldable jacket or coat comprising:
(a) a conventional jacket including an upper back portion;
(b) a capelette extending over said upper back portion having its upper and side edges attached to said upper back portion by reinforcing means so as to form with said upper back portion, while attached to said upper back portion and folded back upon itself, a pouch into which the remainder of the coat can be inserted upon being folded;
(c) fastening means affixed to the jacket on each side thereof on the back and in between the capelette and the upper back portion; and
(d) strap means constructed and arranged to attach to said fastening means and to cooperate in length with the extent of the width of the folded jacket to encircle the body of the wearer.

4,351,067
WORK GLOVES WITH ATTACHMENT MECHANISM
Franklin D. Bartels, 495 E. Gail, Tulare, Calif. 93274
Filed Apr. 6, 1981, Ser. No. 251,349
Int. Cl.[3] A41D *19/00*
U.S. Cl. 2—160 **2 Claims**



1. A pair of gloves, comprising:
first and second hand receiving sheaths, each having a rearward wrist encircling portion having a front surface on the palm side and a rear surface on the back side;
a pair of strips made of a flexible material, each having a first end secured intermediate the rear surface of the wrist encircling portion of a corresponding one of the sheaths and extending rearwardly therefrom a distance sufficient to encircle a workman's belt, each strip further having a width at least one-third the width of the wrist encircling portion;
a first pair of mating hook weave connecting surfaces, one surface of the first pair being secured to the first end of a first one of the strips on the exposed first side of the first strip and the second one of the surfaces of the first pair being secured to the second end of the first strip on the first side thereof to permit mating connection of the first and second surfaces of the first pair when the first strip is folded away from the wrist encircling portion to which the first strip is secured to thereby form a loop;
a second pair of mating hook weave connecting surfaces, one surface of the second pair being secured to the first end of the second one of the strips on the exposed first side of the second strip and the second one of the surfaces of the second pair being secured to the second end of the second strip on the first side thereof to permit mating connection of the first and second surfaces of the second pair when the second strip is folded away from the wrist encircling portion to which it is secured to thereby form a loop; and
a third pair of mating hook weave connecting surfaces, one surface of the third pair being connected to the second end of the first strip on the second side thereof and the second surface of the third pair being connected to the second end of the second strip on the second side thereof;
whereby when the first pair of hook weave surfaces are connected and the second pair of hook weave surfaces are connected, the third pair of hook weave surfaces may be connected to removably hold the sheaths together.

4,351,068
PANTY HOSE GARMENTS
Dorothy L. Taylor, 25630 Southfield Rd., #201, Southfield, Mich. 48075
Filed Dec. 10, 1980, Ser. No. 215,013
Int. Cl.[3] A41B *11/04*
U.S. Cl. 2—409 **1 Claim**

1. A panty hose made of knitted fabric and comprising a lower trunk section and two leg sections, the fabric being

knitted in 55–70 gauze and containing yarns in the 10–35 denier range, the leg sections terminating at a point between the knee and the ankle of a wearer, the point of termination being elastically secured to the leg of a wearer by an elastic hand, and the elastic band being superimposed over said fabric, secured at the point of termination by two parallel and spaced apart chain



stick seams at the edges of said elastic band and two zigzag seams each covering said chainstitch seams to prevent raw edges of the fabric at said points of termination and said chain stiches from unravelling, both of said chainstitch and zigzag seams being simultaneously expandable and contractable with an expansion or contraction of said elastic band, respectively.

4,351,069

PROSTHETIC DEVICES HAVING SINTERED THERMOPLASTIC COATINGS WITH A POROSITY GRADIENT

Nicolaas J. Ballintyn, Somerville, and Michael J. Michno, Jr., Bridgewater, both of N.J., assignors to Union Carbide Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 53,192, Jun. 29, 1979, abandoned. This application Dec. 13, 1979, Ser. No. 103,399

Int. Cl.³ A61F *1/24, 5/04;* A61B *17/18;* A61C *13/20*

U.S. Cl. 3—1.912 **20 Claims**



1. A prosthetic device comprised of a load bearing functional component and, over at least a portion thereof, a porous coating of a bioengineering thermoplastic material which is compatible with, and conducive for, the ingrowth of bone spicules, said material being selected from the group consisting of polysulfones, polyphenylenesulfides, polyacetals, thermoplastic polyesters, polycarbonates, aromatic polyamides, aromatic polyamideimides, thermoplastic polyimides, polyaryletherketones, polyarylethernitriles and aromatic polyhydroxyethers, and having the following properties:

(a) a substantial portion of the coating having an average pore diameter of from about 90 to about 600 microns;

(b) pore interconnections having average diameters of greater than about 50 microns,

(c) a modulus of elasticity from about 250,000 to about 500,000 pounds per square inch for non-reinforced, solid non-porous thermoplastic material, and from about 500,000 to about 3,000,000 pounds per square inch for reinforced, solid non-porous thermoplastic material;

(d) a total porosity of greater than about 20 percent and distributed such that a porosity gradient exists across the coating with the smallest pores on the side of the coating which contacts said load bearing functional component and the largest pores on the outer surface of the coating, and

(e) a total creep strain of the non-reinforced, solid, non-porous thermoplastic material of less than one percent at a constant stress of 1,000 pounds per square inch at ambient temperature, all of the properties being sufficient to enable stresses applied on the musculoskeletal system to be transferred to bone spicules within the pores of the material and maintain sufficient load and pore stability to promote irreversible ossification.

4,351,070

ARTIFICIAL LEG WITH STABILIZED KNEE MECHANISM

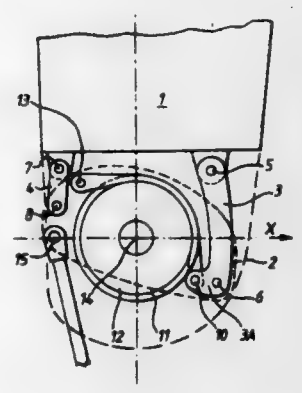
Brian G. Blatchford, Basingstoke, England, assignor to Chas. A. Blatchford & Sons Limited, Hampshire, England

Filed Sep. 4, 1980, Ser. No. 183,997

Claims priority, application United Kingdom, Sep. 7, 1979, 7931086

Int. Cl.³ A61F *1/04, 1/08*

U.S. Cl. 3—27 **6 Claims**



1. An artificial leg for a wearer with an above-knee amputation comprising: a device for restraining knee flexion; means in which motion is produced in response to the application of torque about the natural hip axis of the wearer; and mechanical means which is adapted to apply said motion to the restraining device so as either (i) to cause the restraining device to restrain knee flexion or (ii) to release or to assist in releasing restraint of knee flexion, said means in which motion is produced being an upper leg component which includes an upper part, a lower part movably connected to the upper part and connecting means connecting said upper and lower parts and permitting movement of said lower part in the anterior/posterior direction such that said lower part moves about an instantaneous center of rotation coincident with or close to the said natural hip axis, said connecting means including a link pivotally connected at its upper end to said upper part and pivotally connected at its lower end to said lower part.

4,351,071

WATER-SAVING DEVICE

Milton Clar, 9408 Linden Ave., Bethesda, Md. 20014

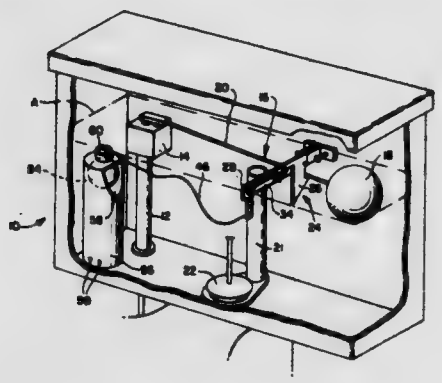
Filed Feb. 2, 1981, Ser. No. 230,538

Int. Cl.³ E03D *1/14, 3/12*

U.S. Cl. 4—324 **14 Claims**

1. A water-saving device for use in a flush toilet tank having a water inlet valve controlled by a float, the device comprising a latch member, mounting means for mounting the latch member in the tank in operative relation with the float, for movement between a float-engaging position and a float-disengaging position, the latch member when in the engaging position being adapted to support the float in an inlet valve closing condition in opposition to a flush cycle-initiated drop in the tank water level tending to lower the float, the latch member when in the disengaging position being adapted to release the float for lowering movement in the tank to open the inlet valve, and

latch member control means for retaining the latch member in the float-engaging position until the tank water level drops by



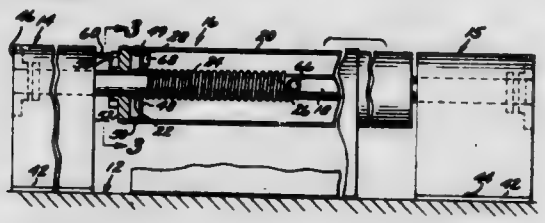
a predetermined amount and for then moving the latch member to the disengaging position.

4,351,072

SEMI-AUTOMATIC POOL COVER

Marc Smith, Compton, Calif., assignor to Automatic Solar Covers, Inc., Compton, Calif.

Filed Aug. 11, 1980, Ser. No. 177,181
Int. Cl.³ E04H *3/16, 3/18*
U.S. Cl. 4—503 **6 Claims**





1. A pool cover for placement over a pool of water surrounded by a rigid deck comprising:

mounting brackets spaced apart from each other and secured to said deck along the sides of said pool,

a tubular roller having an axle fixedly secured at both ends to said mounting brackets, a drum rotatably mounted on said axle, and a spring acting between said axle and said drum to bias said drum to a retracted position,

a flexible, laminar, tarpaulin secured at one edge to said drum for rolled storage thereon and having an opposite free edge for lateral extension for use when withdrawn from said roller and defining spaced apertures within its perimeter at the edges thereof which are not secured to said drum, whereby withdrawal of said free edge of said tarpaulin from said roller deflects said spring to increase the force of its bias,

a unidirectional racket and pawl interposed between at least one of said mounting brackets and said drum and manually movable to an engaged position opposing the bias of said spring and preventing retraction of said tarpaulin while allowing the free withdraw of said tarpaulin from said drum against the bias of said spring, and to a disengaged position to allow retraction of said tarpaulin onto said drum as well as free withdrawal of said tarpaulin from said drum, and

a plurality of fasteners each having a downwardly extending projection adapted for insertion into said apertures in said tarpaulin and an upwardly extending grip engageable by the fingers of a user, and

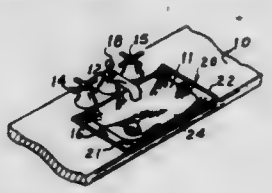
a plurality of anchors embedded in said deck at locations corresponding to the position of aperatures within the perimeter of said tarpaulin when said tarpaulin is extended from said drum, wherein said anchors are adapted to receive said downwardly extending projections in releasable latching engagement therewith and said fasteners are removable entirely from said anchors.

4,351,073

SAFETY NET FOR LAVATORY

Norman E. Elsas, Atlanta, Ga., assignor to Nemo Industries, Inc., Atlanta, Ga.

Filed Nov. 20, 1980, Ser. No. 208,689
Int. Cl.³ A47K *1/06;* A47L *19/02*
U.S. Cl. 4—654 **4 Claims**





1. In a lavatory including a bowl having a bottom, a water faucet, and controls for selectively causing water to flow through the water faucet and into said bowl, the combination therewith of a safety net receivable beneath said water faucet and above said bottom and extendable completely across said bowl from front to back thereof, said safety net further being extendable completely across said bowl from one side to the other, said safety net comprising flexible, porous material, and including generally rigid end members for retaining the said safety net in place, the arrangement being such that said flexible, porous material generally covers said bowl with said end members at the top of said bowl, said flexible, porous material extending into said bowl below said faucet to allow an object to be rinsed and above said bottom for allowing water flow through said flexible, porous material and into said bowl.

4,351,074

POLLEN TRAP

Charles H. Robson, 6241 S. 30th St., Phoenix, Ariz. 85040

Filed Feb. 23, 1981, Ser. No. 236,916
Int. Cl.³ A01K *47/06*
U.S. Cl. 6—1 **13 Claims**

1. Pollen trapping apparatus for placement at different levels in a segmented bee colony, said apparatus comprising:

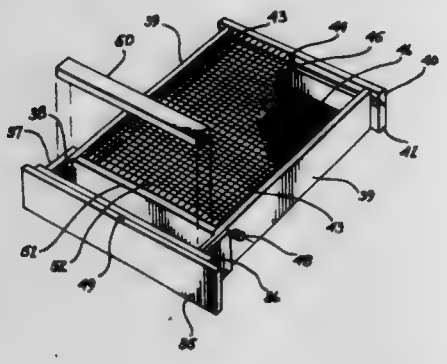
(a) a housing member having a front wall, opposing side walls and a back wall for insertion in a segmented bee colony, said housing being dimensioned to fit within the segmented colony;

(b) a drawer slidably mounted in said housing; and having a front member and opposing side members;

(c) a pollen trap contained within said drawer and being spaced from the front and back walls of said housing member to form first and second bee passageways respectively, said trap having a foraminous upper surface to permit the passage of pollen therethrough;

(d) scraper means movably mounted in said housing and being dimensioned to extend between the front and back

walls thereof, said means being spaced from adjacent portions of said front wall and positioned in overlying relationship to said drawer for removing the pollen from bees passing therethrough and being spaced from the upper surface of said pollen trap whereby pollen removed from the bees enters the pollen trap through the upper surface thereof, said scraper means being movable be-



tween first and second positions to control access to the second bee passageway, and

(e) means for receiving an entry blocking member in the front wall of said housing adjacent said scraper means to control the location of the bee entryway therein above and below said scraper means and permit non-trapping operation of said apparatus.

4,351,075

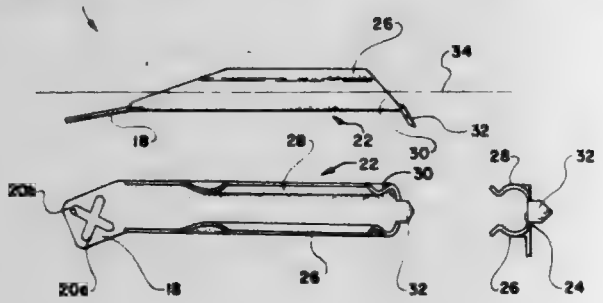
COMBINATION OIL PLUG WRENCH AND INTEGRAL OIL FILLER

Hal K. Pittard, Jr., 4201 Bland Rd., Raleigh, N.C. 27609

Filed Jun. 30, 1980, Ser. No. 164,672

Int. Cl.³ B25F *1/00*; B25B *13/48*

U.S. Cl. 7[illegible]138 **7 Claims**



1. A combination oil plug wrench and integral oil filler for tightening and disengaging an oil plug of the type provided with a lawn mower and including a cap having a top and upstanding projection turning means extending upwardly from said top and adapted to be engaged for turning said oil plug with said upstanding projection turning means being relatively thin compared to the top of said cap and including spaced apart opposed ends so as to define a relatively thin and elongated turning area between said opposed ends, and wherein said oil filler may be utilized to funnel or channel oil from a container into an opening normally occupied by said oil plug, said combination oil plug wrench and integral oil filler comprising: a wrench end having a relative flat surface with opening means formed therein for receiving and encasing said upstanding projection turning means extending upwardly from said oil cap and for turning the same as said wrench end is rotated, said opening means of said wrench end including an opening for receiving and encasing the relatively thin and elongated turning area between said opposed ends of said turning means; a combination wrench handle and an elongated U-shaped oil filler section integrally constructed with said wrench end and extending therefrom, said oil filler section including an open ended oil channeling surface, an oil exiting end, and side retaining means that extend about said oil channeling surface for constraining the oil to flow essentially down said oil channeling surface towards said oil exiting end, and wherein said oil channeling surface and said side retaining means thereof form an elongated, generally U-shaped and partially open trough structure; and an oil receiver section means interposed between the relatively flat surface of said wrench end having said opening means formed therein and said filler section for receiving oil poured therein that is directed through said U-shaped filler section towards said exiting end, and wherein said oil receiver section means includes a generally U-shaped cross section with side retaining means integrally extended to join said side retaining means of said filler section and wherein the side retaining means of said oil receiver section means are generally uniformly inclined upwardly from said flat wrench end towards said filler section so as to define a generally horizontal resting surface about the upper edges thereof for supporting said container when said combination oil plug wrench and oil filler section is disposed at an appropriate incline for filling purposes.

4,351,076

PROCESS FOR THE TREATMENT OF TEXTILES IN JET DYEING APPARATUSES

Hans-Ulrich von der Eltz, Frankfurt am Main, and Albert Reuther, Bad Soden am Taunus, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 121,825, Dec. 15, 1980, abandoned. This application Aug. 26, 1981, Ser. No. 296,494

Claims priority, application Fed. Rep. of Germany, Feb. 17, 1979, 2906161; Mar. 30, 1979, 2912768

Int. Cl.³ D06B *3/28*

U.S. Cl. 8—149.1 **12 Claims**

1. In a process for treating a textile material in rope form made of natural or synthetic fibers, or a mixture of such fibers, with a gaseous or liquid treating agent, or mixture of such agents, in a jet wet-processing apparatus, wherein the textile material rope to be treated is introduced into a vessel which can be tightly closed against the surrounding atmosphere and, in endless form, is circulated therein, at least for the duration of the treatment period, during which period the treating agent is circulated in the same direction, thereby effecting transportation of, and simultaneous action on, the textile material rope, the improvement which comprises,

instead of transporting the textile material rope, during all of said treatment period, by circulation of the liquid agent with which the textile material rope is in contact and in the process of exhausting,

transporting, at least in substantial part, the textile material rope into and through said apparatus and during at least part of said treatment period by means of tangential gas-impingement upon the rope in the direction of motion of the rope, said gas being heated and issuing under pressure from a nozzle or combination of nozzles in said apparatus and said gas, due to its temperature capacity and delivery, being capable of effecting affinity between the treating agent and textile material.

4,351,077

CLEANING APPARATUS FOR SUBMERGED SURFACES

Helmut J. Hofmann, 79 Juta St., Braamfontein, Johannesburg, Transvaal Province, South Africa

Filed Dec. 18, 1980, Ser. No. 217,604

Claims priority, application South Africa, Dec. 18, 1979, 79/6583

Int. Cl.³ E04H *3/20*

U.S. Cl. 15—1.7 **5 Claims**

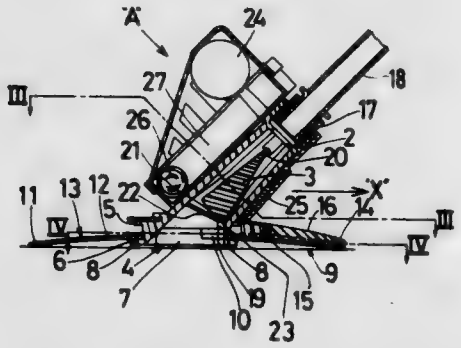
1. An apparatus for cleaning submerged surfaces, such as the bottoms and walls of swimming pools, comprising:

(a) a suction head (1) having an inlet and an outlet (2),

(b) an oscillatory flapper valve (3) disposed within the suction head between the inlet and outlet,

(c) an annular flexible disc (11) mounted proximate the inlet of the suction head,

(d) the inlet being defined by a central opening (7) disposed below the disc and at least one transverse opening (10) disposed above and adjacent the disc, the transverse opening being substantially symmetrical about a direction of movement (X) of the suction head and facing in the general direction of such movement,



(e) a substantially sector-shaped upper member (16) disposed above the transverse opening and extending over a substantial portion of the disc, and

(f) means (14) supporting the upper member in a spaced relationship relative to the disc, whereby liquid and dirt dislodged by the apparatus is guided and funnelled by and between the disc and upper member towards the transverse opening.

4,351,078

DRIVING ARRANGEMENTS FOR FLOOR MAINTENANCE MACHINES

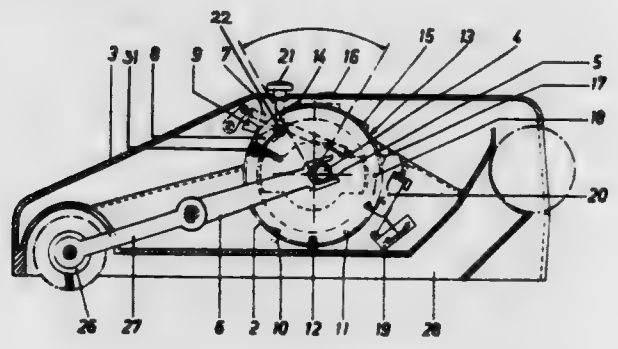
Kurt Sternberg, Wuppertal, Fed. Rep. of Germany, assignor to Vorwerk & Co. Interholding GmbH, Wuppertal, Fed. Rep. of Germany

Filed Apr. 29, 1981, Ser. No. 258,754

Claims priority, application Fed. Rep. of Germany, May 3, 1980, 3017072

Int. Cl.³ A47L *5/26, 11/14*

U.S. Cl. 15—49 C **12 Claims**



1. In a machine for treating surfaces, especially in a floor maintenance machine, a combination comprising a machine housing; means for supporting said machine housing in a predetermined position on the respective surface to be treated for displacement along the same; a treating tool; means for mounting said treating tool on said machine housing for treating movement and for positional adjustment toward and away from the respective surface as considered in said position of said machine housing; means for causing said treating tool to conduct said treating movement, including a motor having an output shaft rotatable about an axis, a motor housing mounted on said machine housing for angular displacement about said axis, and a transmission interposed between said output shaft and said treating tool; and means for adjusting the position of said treating tool relative to the respective surface, including a connecting element so connected to said motor housing as to orbit around said axis in dependence on the extent of said angular displacement of said motor housing during the operation of the machine and operatively connected to said mounting means for said treating tool for adjusting the position thereof.

4,351,079

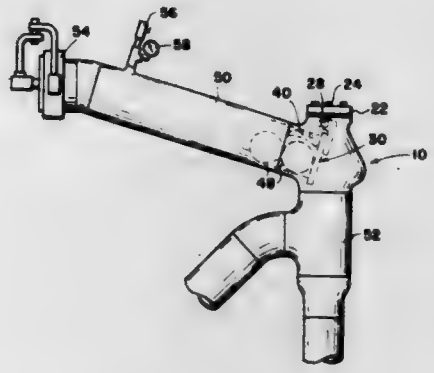
SPHERE LAUNCHING AND RECEIVING VALVE

John R. Fitzpatrick, Tulsa, Okla., assignor to Fitzpatrick Associates, Inc., Tulsa, Okla.

Filed Jun. 8, 1979, Ser. No. 46,863

Int. Cl.³ B08B *9/04*

U.S. Cl. 15—104.06 A **6 Claims**



1. Sphere launching and receiving valve comprising a valve body of substantially L-shaped configuration and having a first port and a second port in communication with the interior of the valve body, an access port in communication with the interior of the valve body, a removable cover member secured to said access port, a valve seat provided within the valve body in the proximity of one of said ports, valve closure means pivotally secured within said valve body and selectively engageable with the valve seat to provide open and closed positions for the valve, recess means provided in said valve body for receiving the closure means therein during an open position of the valve whereby an unrestricted passageway is provided between the first and second ports, one of said ports being an inlet port and the other of said ports being an outlet port during a sphere launching operation, and the ports providing a reverse function during a sphere receiving operation, and wherein a sphere receiving area is provided in the valve body in the closed position of the closure means, and including blocking bar means secured in the valve body in the proximity of the outer surface of said closure means during a sphere receiving operation to preclude accidental entry of a sphere into the sphere receiving area during a closed position of the valve.

4,351,080

TOOTHBRUSH WITH CURVED BRISTLES AND HANDLE

Milton Grossman, 206 Channel Dr., Monmouth Beach, N.J. 07750

Filed Jun. 30, 1980, Ser. No. 163,987

Int. Cl.³ A46B *9/04*

U.S. Cl. 15—167 R **4 Claims**

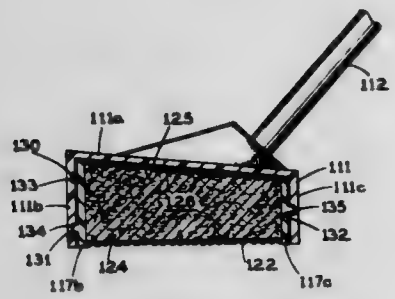


1. A toothbrush comprising a handle and brush head having bristles extending therefrom wherein said bristles are curved away from a longitudinal axis through said handle and said brush head, with the bristles near the front of the toothbrush distant from the handle end displaced a greater distance from the longitudinal axis then the bristles near the back end of the toothbrush near the handle.

4,351,081
ABSORBENT PAD AND HOLDER ASSEMBLY FOR CARPET CLEANING

Kevork W. Tarkinson, Boynton Beach, Fla., assignor to Ann W. Tarkinson, Boynton Beach, Fla.

Filed Apr. 10, 1981, Ser. No. 252,954
Int. Cl.[3] A47L *11/283, 13/10*
U.S. Cl. 15—210 R 13 Claims



1. For use with a carpet cleaning apparatus having a handle and a head at the lower end of the handle to be guided across the carpet being cleaned, the improvement which comprises:

an absorbent pad unit having a thin outer sheet of fiber-reinforced absorbent material, an inner sheet, and a core of soft absorbent material sandwiched between said outer and inner sheets for soaking up moisture passing through said outer sheet;

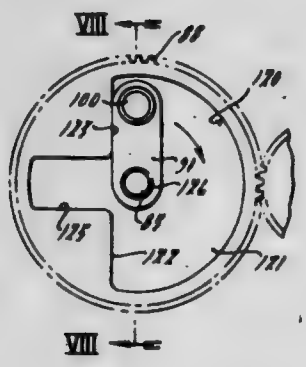
a coarse mesh screen covering said outer sheet of said absorbent pad unit;

and means for mounting said absorbent pad unit and screen on said head of the carpet cleaning apparatus to position said screen in rubbing engagement with the carpet.

4,351,082
OSCILLATING SOOT BLOWER MECHANISM

Dean C. Ackerman, and Don W. Smith, both of Lancaster, Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Apr. 20, 1981, Ser. No. 255,371
Int. Cl.[3] F23J *3/02*
U.S. Cl. 15—316 R 5 Claims

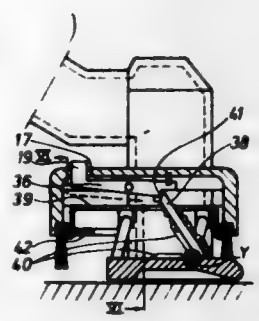


1. In a long travel soot blower or the like having a supporting beam, a carriage adapted to travel along the beam and including a housing forming an enclosure for the carriage, a lance secured to the carriage to travel therewith but rotatable about its longitudinal axis, longitudinal rack means carried by the beam, a motor operatively interconnected with the carriage, walking pinion means carried by the carriage and rotatable to drive the carriage and lance along the beam, transmission means for rotating the walking pinion means and for oscillating the lance about its longitudinal axis including a pair of interfitted independently rotatable shafts journaled in but projecting at their outer ends outside said housing of the carriage, the radially outer of said shafts being drivable by the motor and having gear means thereon within the carriage housing for driving said walking pinion means to actuate the carriage along the beam, a yoke driving gear on the projecting outer end of said radially outer shaft, the outer end of the radially inner shaft extending beyond the outer end of the radially outer shaft, an inner end of said radially inner shaft having a rotary driving connection to the lance within the carriage housing, a yoke driven gear on the outer end of the radially inner shaft, an accessory housing secured to the outside of the carriage housing and enclosing said two last-mentioned gears, a Scotch yoke in said accessory housing for oscillating the yoke driven gear and the radially inner shaft to oscillate the lance about its longitudinal axis during longitudinal travel thereof, and means for actuating the yoke comprising a crank, characterized by a lost motion driving connection between the yoke driving gear and the crank, whereby the yoke driven gear is continuously oscillated while the yoke driving gear is rotating in one direction, but oscillation of the driven gear is interrupted when the direction of rotation of the yoke driving gear is reversed, and recommences at a different longitudinal position of the lance after the lost motion is taken up during reversed rotation of the yoke driving gear.

4,351,083
VACUUM CLEANING NOZZLE

Sven B. Simonsson, Tyreso, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden

Continuation-in-part of Ser. No. 11,414, Feb. 12, 1979, abandoned. This application Oct. 28, 1980, Ser. No. 201,525
Claims priority, application Sweden, Feb. 15, 1978, 7801751
Int. Cl.[3] A47L *9/06*
U.S. Cl. 15—373 8 Claims



1. A vacuum cleaner nozzle provided with a housing adapted to be connected to a source of suction comprising two working members constituting a brush nozzle and a flat surface nozzle, each of said nozzles being connected to said suction source, means mounting said brush nozzle and flat surface nozzle in said housing, a movable member mounted on the upper surface of said flat surface nozzle, two openings through a surface of said housing, an actuating member operable externally of said vacuum cleaner nozzle housing through one of said openings which when depressed engages said movable member on said flat surface nozzle to thereby move said flat surface nozzle into contact with a working surface in which the plane of the front edge of said flat surface nozzle is below the plane of the front edge of said brush nozzle, as viewed in the working direction, said actuating member moving said flat surface nozzle from a non-working condition to a working condition when said actuating member is depressed, a blocking means positioned through said other opening and having an elongated lever part extending within said housing adjacent to the top thereof and having a free end with a notch therein, said blocking means when operative locking said flat surface nozzle into contact with said working surface, a first spring mounted at one end at the free end of said lever part and at the other end on the undersurface of the top of said vacuum cleaner nozzle housing, said brush nozzle being provided with a relatively large opening, a spring-loaded elongated tongue pivotally mounted on one end on said flat surface nozzle and being biased away from said flat surface nozzle and passing through said relatively large opening while the free end thereof engages the notch in said lever part when said flat surface nozzle is moved into contact with said working surface, a second spring mounted at one end of said flat surface nozzle and at the other

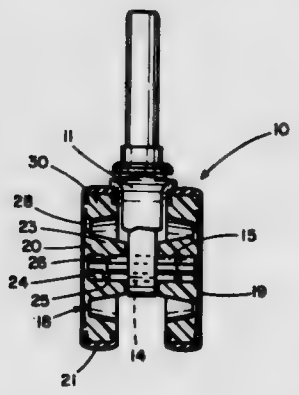
end on the undersurface of said top of the vacuum cleaner nozzle housing to bias said flat surface nozzle in an upper position in said brush nozzle, and said blocking means being depressed to thereby disengage the free end of said tongue from the notch on said lever part in order to return the flat surface nozzle to its non-working position by pivoting said tongue under spring force to effect said disengagement, and said flat surface nozzle is moved by said second spring to its non-working position.

4,351,084

SOFT TREAD CASTER WHEEL AND METHOD OF MAKING SAME

Frank J. Fontana, Stratford, Colo., assignor to Stewart-Warner Corporation, Chicago, Ill.

Filed Oct. 22, 1979, Ser. No. 86,819
Int. Cl.³ A47B *91/00*
U.S. Cl. 16—45 **14 Claims**



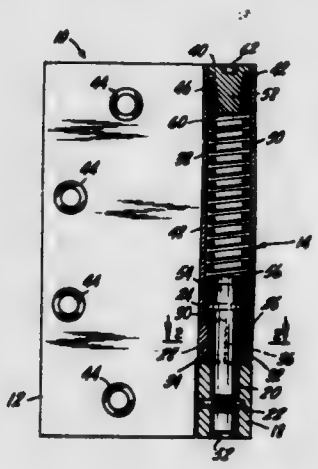
1. A caster wheel having a relatively soft tread surface comprising; a relatively rigid wheel member having a hub adapted to receive an axle, a plurality of annularly spaced outwardly extending projections positioned about the periphery of the hub, each of said projections having at least one axially extending recess therein, and a molded relatively soft tread surrounding the periphery of the wheel and extending the projections and into the recesses to fix the tread to the wheel.

4,351,085

NON-HANDED TWO KNUCKLE HINGE

Charles R. Suska, Roxbury, Conn., assignor to The Stanley Works, New Britain, Conn.

Filed May 15, 1978, Ser. No. 905,778
Int. Cl.³ E05D *7/02*; E05F *1/12*
U.S. Cl. 16—273 **30 Claims**



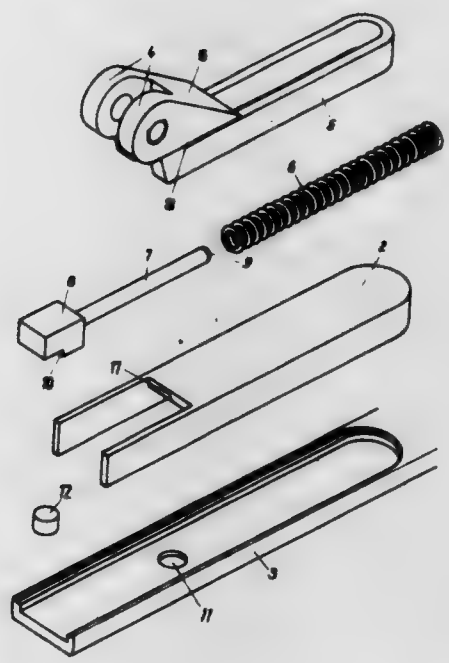
14. A non-handed two knuckle hinge comprising upper and lower axially aligned hinge knuckles formed respectively on adjacent edges of two hinge leaves, an axially extending bore in each said knuckle, attachment means for the leaves adapted to be used to attach them to a door and a jamb, one of the hinge leaves adapted to be attached to either of said door or jamb and the other of said hinge leaves adapted to be attached to the other of said door or jamb; a pintle, about which one of said hinge knuckles pivots, supported in the other of said hinge knuckles against axial movement; first bearing means formed between the hinge knuckles for acting as an axial thrust bearing in a direction of said one knuckle toward said other knuckle when a door is attached to the leaf associated with said upper hinge knuckle; and second bearing means formed in the bore of said one hinge knuckle for acting as an axial thrust bearing in a direction, opposite to said first bearing means, of said one knuckle away from said other knuckle when a door is attached to the leaf associated with said lower hinge knuckle, whereby said hinge may be used interchangeably in left-handed and right-handed door installations and inverted in either type of installation without affecting the operation of the hinge.

4,351,086

BIASED EYEGLASS HINGE

Günther Drlik, Pforzheim, Fed. Rep. of Germany, assignor to OBE-Werk Ohnmacht & Baumgartner GmbH & Co. K.G., Ispringen, Fed. Rep. of Germany

Filed Sep. 22, 1980, Ser. No. 189,037
Claims priority, application Fed. Rep. of Germany, Oct. 3, 1979, 2940055
Int. Cl.³ G02C *5/22*; E05D *7/06*
U.S. Cl. 16—228 **3 Claims**



1. In a spring hinge for use in an eyeglass frame having a frame center part and two bows, each of which having an inner end comprising a metal portion,

said spring hinge comprising,

a sub-assembly including a receptacle having an open end and adapted to be secured to one of said bows at said inner end thereof,

a first hinge member having an end portion extending into said receptacle,

a plunger rigid with said first hinge member and extending into said receptacle,

spring means urging said plunger into said receptacle, and

a second hinge member pivoted to said first hinge member and secured to said frame center part,

the improvement comprising,

said receptacle comprising a flat box embedded in said bow and secured to said metal portion so that said open end of said receptacle is disposed near said inner end of said bow,

said plunger comprising a U-shaped slider, which has a bight disposed in said receptacle and two legs axially guided in and extending out of said receptacle,

a rod disposed in said receptacle and extending between the legs of said slider,

a spring retainer disposed in said receptacle near the open

end thereof, between the legs of said slider, and axially rigid with said rod, and axially fixed to said metal portion,

said spring means comprising a coil spring, surrounding said rod, and disposed between the legs of said slider, and retained between said spring retainer and said bight, and urging said slider into said receptacle toward a position in which said rod is clear of said bight,

said slider movable into said receptacle against the force of said coil spring until rod engages said bight,

said first hinge member secured to said legs of said slider outside said receptacle, and comprising an overlapping portion which overlaps said receptacle on the outside thereof adjacent to said open end, and

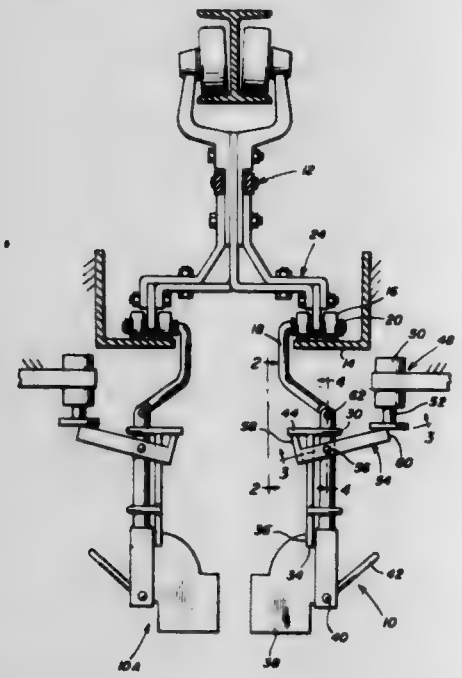
said first hinge member formed with a bevelled surface disposed outside said receptacle, between said overlapping portion and said slider, and facing said open end of said receptacle, whereby, when said hinge is retracted, said bevelled surface engages the outlet edge of said receptacle, at said open end thereof, so that there is no backlash during the movement of said bow from the inturned position to the normal open position.

4,351,087

LATCH RELEASE SYSTEM FOR POULTRY CARRIERS

William F. Altenpohl, 1315 Robin Hood Rd., and Paul J. Altenpohl, 704 N. Westchester Dr., both of, High Point, N.C. 27260

Filed Mar. 18, 1981, Ser. No. 245,214
Int. Cl.³ A22C *21/00*
U.S. Cl. 17—44.1 **10 Claims**



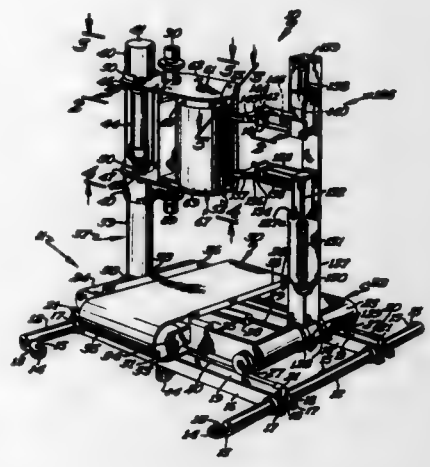
1. In combination with an article carrier having an elongated body pivotally suspended from a moving conveyor, a hook pivotally connected to the body adjacent a lower end thereof, and latch means slidable externally on the body for holding the hook in a latched position projecting laterally from the body in one direction, latch release means engageable with the latch means for exerting an upward latch releasing force thereon, comprising a force transmitting element connected to the body in spaced relation to the hook and engageable with the latch means in laterally spaced relation to the body, and signal controlled power means engageable with the element for exerting a downward operating force on the element laterally spaced from the body opposite the latch means.

4,351,088

METHOD AND APPARATUS FOR REMOVING SKIN FROM ANIMAL CARCASSES

Lyndon R. Leining; Nathan A. Fischer; Kent L. Simonson; Gordon G. White, and Oscar H. Lindstrom, all of Austin, Minn., assignors to Geo. A. Hormel & Company, Austin, Minn.

Continuation-in-part of Ser. No. 887,728, Mar. 17, 1978, abandoned. This application May 29, 1979, Ser. No. 43,041
Int. Cl.³ A22B *5/16*; A22C *17/12*
U.S. Cl. 17—50 **17 Claims**



1. An apparatus for removing the torso portion of the skin from the carcass of an animal such as a hog, comprising:

a revolvable cylindrical drum,

drive means drivingly connected with said drum for revolving the same,

a skinning blade positioned in close proximity to said drum,

a flap forming blade on said drum making a longitudinal cut in the torso portion of the skin of the carcass when the carcass is urged against said drum, gripping means on said drum engaging a longitudinal cut edge of the skin pulling a portion of the skin against the flap forming blade to form and grip the flap of the skin, whereby when said drum is revolved, the skinning blade will progressively remove the torso portion of the skin from the carcass,

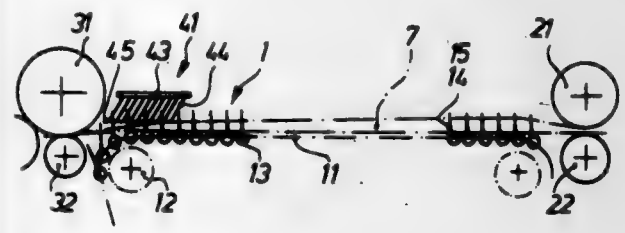
and shiftable carcass engaging means being shiftable towards and away from said drum, said carcass engaging means when shifted towards said drum and holding the carcass against the gripping means until a skin flap is gripped by the latter.

4,351,089

NEEDLE BAR DRAW FRAME

Joachim Jahnke, Lübeck; Günther Lehming, Pogeez; Helmut Kunig, Hamburg, and Jens Nagel, Mölln, all of Fed. Rep. of Germany, assignors to Nordischer Maschinenbau Rud. Baader, Lübeck, Fed. Rep. of Germany

Filed Jul. 17, 1980, Ser. No. 169,923
Int. Cl.³ D01G *19/00, 5/14*
U.S. Cl. 19—129 R **5 Claims**



1. Needle bar draw frame or gill box for slivers comprising needle field or gill area means of needle bars carried by chains for continuous uninterrupted movement and having spaced upstanding needles, entry roller means lying upstream of said needle field means, drawing roller means disposed downstream of said needle field means and controlling means for said slivers

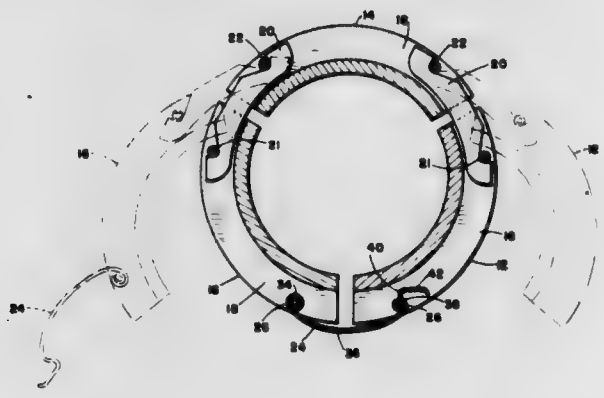
arranged above said needle field means and dipping in between the needles of said needle bars, wherein said controlling means includes at least one holding down device provided with a plurality of depending resiliently yielding bristles and mounted in a stationary position above said needle field means with said bristles projecting between said needles and being inclined in the direction of motion of said needle field means.

4,351,090

SPRING CLIP FOR WELLHEAD SLIPS

Gary B. Clements, Bixby, and Robert E. Ramsey, Owasso, both of Okla., assignors to Hinderliter Energy Equipment Corp., Tulsa, Okla.

Filed Oct. 31, 1980, Ser. No. 202,635
Int. Cl.³ E21B *43/00, 3/00*
U.S. Cl. 24—263 D **2 Claims**



1. A wellhead slip formed from a plurality of slip segments adapted to be arranged in a closed circular fashion around a tubular member so as to form a plurality of vertical gaps all but one of which are defined as hinge gaps, the remaining gap being defined as an opening gap, said slip segments being provided with aligned circumferential grooves consituting, in effect, a peripheral groove for the slip, a hinge yoke received in the circumferential grooves in the area of each hinge gap and spanning said hinge gap, each hinge yoke being provided with a notch adjacent each of its opposite ends and facing outwardly from said groove, a hinge pin passing through holes above and below said groove in the area of each notch whereby the notches are received inwardly behind said hinge pins and whereby all of the slip segments can be moved hingedly outwardly from the closed circular position by opening at the opening gap, an elongated spring clip received in the ends of the circumferential grooves of the adjacent segments in the area of the opening gap and having a vertical width slightly less than the width of the grooves, a pair of latch pins received in holes above and below said groove in said slip segments on opposite sides of said opening gap, said spring clip having a closed loop adapted to be received around one of said latch pins adjacent said opening gap and being provided with a resilient catch spaced from said closed loop for engagement around and inwardly behind the other of said latch pins adjacent said opening gap, a finge attached to said resilient catch to permit bending of said catch away from said other of said latch pins for releasing said catch to permit opening of said slip segments.

4,351,091

METHOD OF PRESERVING CORPSES

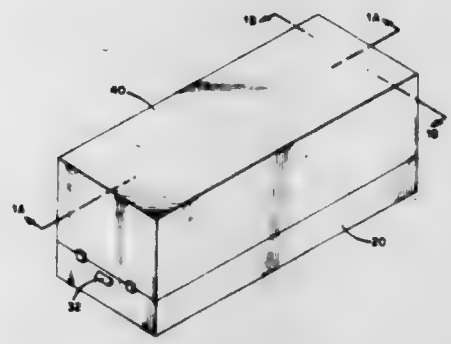
Richard P. Goodkin, 336 Singletary La., Framingham, Mass. 01701

Filed Jul. 21, 1980, Ser. No. 170,958
Int. Cl.³ A01N *1/00*
U.S. Cl. 27—22 R **13 Claims**

1. A method of preserving anatomical specimens including:

A. encasing the specimen in an air-tight container;

B. exchanging the atmospheric contents within the container surrounding the specimen with an inert gas; and



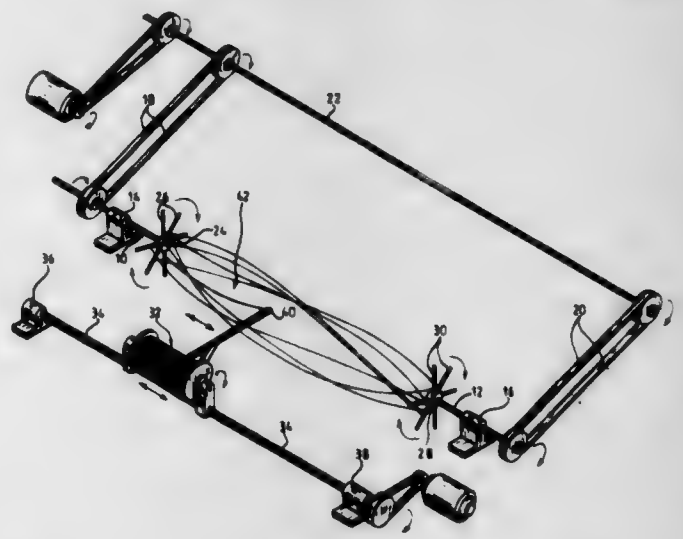
C. irradiating the specimen to destroy bacteria and microorganisms.

4,351,092

METHOD OF FABRICATION OF CORELESS HOLLOW FILAMENT SEPARATORY MODULE

Robert E. Sebring, Westwood, and Myron J. Coplan, Natick, both of Mass., assignors to Albany International Corp., Menands, N.Y.

Filed Jun. 28, 1979, Ser. No. 52,747
Int. Cl.³ B01D *13/04*; B65H *54/64*
U.S. Cl. 28—100 **3 Claims**



1. The method of fabricating a coreless holow filament bundle of interlaced hollow filaments to be used as the membrane elements in a separatory module comprising the steps of providing first and second axially spaced co-axially rotatable engagement members carrying filament receiving arms, concomitantly rotating said rotatable engagement members while alternately engaging filaments upon a respective filament receiving arm of one rotary member, causing said filament to traverse the space between said first rotary member and the second rotary member and engaging said filament upon a receiving arm of said second rotary member, and continuously feeding said filament between said receiving arms of said rotary membrs so as to provide a coreless bundle of filaments interlacing with one another in left and right hand helices at angles to the common axis of rotation of the two rotary members.

4,351,093

METHOD OF MAKING MODULAR YARNCRAFT

Bella Scharf, 7813 20th Ave., Brooklyn, N.Y. 11214

Filed Apr. 27, 1979, Ser. No. 33,993
Int. Cl.³ D04D *7/02*
U.S. Cl. 28—149 **4 Claims**

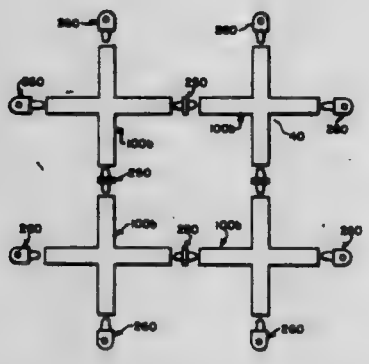
1. A method of creating an expandable Ojo-like wrapped fiber design comprising the steps of:

providing a first preformed central section having at least three pole portions extending radially outward from said provided central section and being disposed about said central section;

providing at least one mateable framework member having at least one pole member;

mateably connecting the framework member at its pole member to at least one of said pole portions of said first central section so as to provide a connection zone between the framework member and an adjacent pole portion for providing a continuous substantially flush modularly expandable framework comprising said framework pole member, said pole portions and said first central section;

continuously wrapping yarn around said modular substantially flush expandable framework in an Ojo-like arrangement;



providing a second preformed central section having a plurality of pole portions extending radially outward from said second central section at the periphery thereof, the cross-section thickness of said pole portions being substantially the same as the thickness of said second central section;

continuously wrapping yarn around said second central section and said pole portions in an Ojo-like arrangement for creating a substantially flush Ojo-like wrapped fiber design; and

mateably connecting one free end of one of said pole portions extending from said first central section to a free end of one of said pole portions extending from said second central section to form a composite Ojo-like fiber design;

whereby said design may be modularly expanded by modularly enlarging said framework to be continuously wrapped.

4,351,094

METHOD OF MANUFACTURING A SABOT PROJECTILE AND SABOT PROJECTILE PRODUCED THEREBY

Peter Häberli, Wallisellen, Switzerland, assignor to Werkzeugmaschinenfabrik Oerlikon-Bührle AG, Zürich, Switzerland

Filed Jul. 23, 1979, Ser. No. 60,050

Claims priority, application Switzerland, Aug. 8, 1978, 8404/78

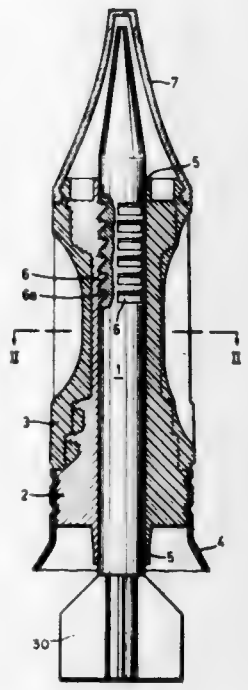
Int. Cl.³ B21K *21/06*

U.S. Cl. 29—1.2 **4 Claims**

1. A method of manufacturing a sabot projectile, especially an arrow projectile, containing a metallic projectile body, a sabot formed of a metal alloy and a plastic jacket, comprising the steps of:

directly molding, in a first mold, the metallic sabot at the metallic projectile body in a manner such that the metallic sabot is divided into segments by gaps;

forming holder means during molding of the metallic sabot at the metallic projectile body; and



molding in a second mold the plastic jacket at the projectile body and the sabot.

4,351,095

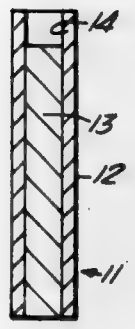
METHOD OF MAKING SPARK PLUGS

Michael J. Davies, Wantage, England, assignor to United Kingdom Atomic Energy Authority, London, England

Continuation of Ser. No. 859,396, Dec. 12, 1977, abandoned. This application Jun. 6, 1979, Ser. No. 45,974

Int. Cl.³ H01T *13/00*

U.S. Cl. 29—25.12 **12 Claims**



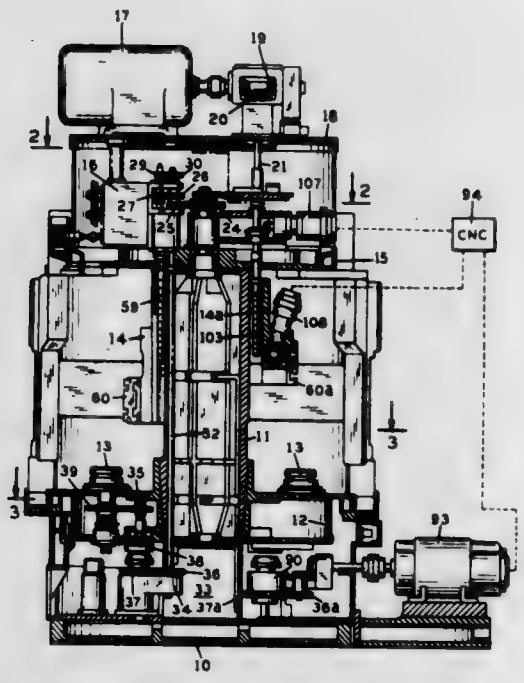
1. A method of manufacturing an electrode for a spark plug comprising the steps of, providing a tubular outer metal sheath, locating a core of thermally conductive metal coaxially in the bore of the sheath, working the sheath down onto the core, removing the core from a region at one end of the sheath to form a projecting sheath portion, holding the sheath substantially vertically with said one end of the sheath uppermost, melting over the projecting sheath portion at said region to form therefrom a molten pool of sheath metal over the end of the core and provide metal to metal contact between the molten pool, the core, and the outer sheath, and allowing the molten pool to cool and solidify and thereby provide a seal of sheath metal over the entire end of the core in contact therewith and fused to the outer sheath.

4,351,096

MULTIPLE SPINDLE ROTARY INDEXING MACHINE TOOL

Frank A. Depweg, Fairfield, and Edward A. Zakowski, Milford, both of Conn., assignors to White Consolidated Industries, Inc., Cleveland, Ohio

Filed Aug. 28, 1980, Ser. No. 182,212
Int. Cl.³ B23B 13/04, 9/12
U.S. Cl. 29—38 A 5 Claims



1. A multiple spindle, rotary indexing machine tool having a base, a central column upstanding from said base, a load-unload station, a plurality of machining stations each with a tool slide, a rotary worktable on said base and surrounding said column, work carrying spindles on said worktable at spaced work positions, and means for indexing said worktable to advance said work carrying spindles successively from the load-unload station through each of the machining stations in sequence and back to the load-unload station, characterized by

(a) a single primary drive motor,

(b) controllably engageable spindle drive mechanisms in said base at each of the machining stations,

(c) first sets of independent, changeable gear mechanisms for connecting said primary drive motor to the spindle drive mechanisms at each machining station except the final finish machining station,

(d) second sets of independent, changeable gear mechanisms for connecting said primary drive motor to each of the tool slides at the several machining stations having gear-connected spindle drives,

(e) independent X and Y axis positioning motors connected for moving the tool slide at said final machining station,

(f) an independent spindle drive motor connected for moving the spindle at said final machining station, and

(g) a CNC control unit coordinating the operations of said positioning motors and of said independent spindle drive motor.

4,351,097

HYDRAULIC PLIERS FOR SNAP RINGS

Seiichi Hashimoto, 51,4-Chome, Nagata-Higashi, Higashi-Osaka-Shi, Osaka-Fu, and Takaaki Aoki, Tamaebashi-Bldg., 3-36, 4-Chome, Nakanoshima, Kita-Ku, Osaka-Shi, both of Japan

Filed Jun. 24, 1980, Ser. No. 162,441
Claims priority, application Japan, Mar. 24, 1980, 55/37271
Int. Cl.³ B23P 19/04
U.S. Cl. 29—229 8 Claims

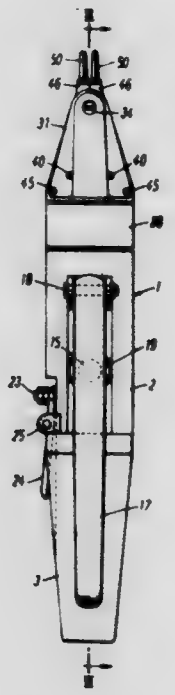
1. Hydraulic pliers for snap rings having ends comprising:

a hand-holdable main body having an end and a longitudinal axis;

hydraulic pump means housed in the main body including a piston extendable along the axis towards the end of the main body;

a cam head on the piston extending beyond the end of the main body;

a plier head on the end of the main body, the cam head being extendable into a bore in the plier head, and



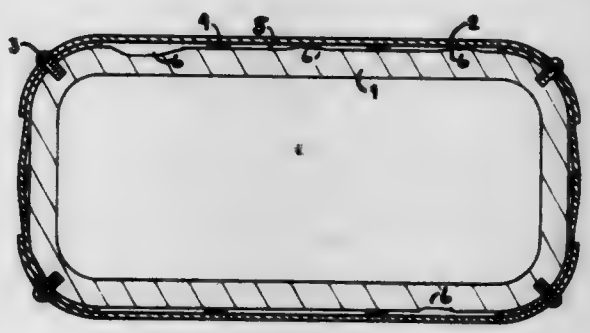
a pair of parallelogram link means pivotally, symmetrically mounted on the plier head and coacting with the cam head for linearly moving engaged ends of a snap ring without axial movement of the main body, each link means including a straight working-pin for engagement with the ends of the snap ring.

4,351,098

METHOD FOR REPAIRING AND REINFORCING CAST IRON MOLDS

Glenn W. Hanna, 1441 Wightman St., Pittsburgh, Pa. 15217

Filed Jun. 11, 1980, Ser. No. 158,409
Int. Cl.³ B23P 6/00
U.S. Cl. 29—402.15 10 Claims



1. A method for reinforcing and repairing cast iron molds, wherein a continuous band is used which is elevated from the mold wall by spacers to reduce heat conduction, which comprises:

(a) surrounding the mold with at least one closely fitted steel plate;

(b) connecting the ends of the steel plate or plates to form a continuous band;

(c) attaching the continuous band to the cast iron mold;

(d) locating a plurality of spacers on each face of the mold between the cast iron mold and the continuous band so as to elevate the band from the cast iron mold wall, limiting the transfer of heat to said band when the mold is heated, thereby preventing the plastic deformation of the band.

4,351,099

METHOD OF MAKING FET UTILIZING SHADOW MASKING AND DIFFUSION FROM A DOPED OXIDE

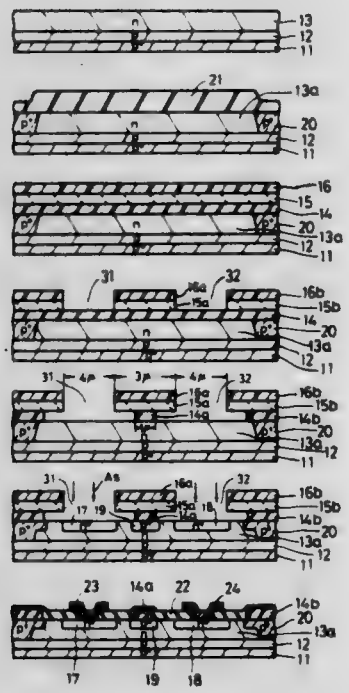
Hiromitsu Takagi, Shiga; Shotaro Umebachi, Kyoto; Gota Kano, Nagaokakyo, and Iwao Teramoto, Ibaraki, all of Japan, assignors to Matsushita Electronics Corporation, Kadoma, Japan

Filed May 12, 1980, Ser. No. 149,621

Claims priority, application Japan, May 18, 1979, 54-61857

Int. Cl.³ H01L *21/31, 21/265, 21/225*

U.S. Cl. 29—571 **6 Claims**



1. A method of making a field effect transistor comprising the steps of:

(a) forming a semiconductor layer of a first conductivity type to become a channel region on a semiconductor substrate of a second conductivity type opposite to said first conductivity type,

(b) forming selectively an isolation region of said second conductivity type in said semiconductor layer in a manner that the selectively formed isolation region penetrates into said semiconductor layer, reaching the surface of said semiconductor substrate and forming an isolated island region of said first conductivity type in said semiconductor layer,

(c) forming successively a doped oxide film, a polycrystalline silicon film and a silicon nitride film on the surfaces of said isolated island region and said isolation region, said doped oxide film containing an impurity to result in said second conductivity type,

(d) removing selectively said poly-crystalline silicon film and said silicon nitride film thereby retaining a predetermined pattern of a mask to be used as an etching mask for subsequent etching of said doped oxide film, the retained pattern having a length extending to a part above said isolation region,

(e) etching and side-etching said doped oxide film by use of the retained pattern as said etching mask thereby exposing the surface of said isolated island region at parts which are not covered by said etching mask and which surround said etching mask so that said doped oxide film becomes narrower than a width of said etching mask and has a length extending to reach above said isolation region,

(f) ion-implanting another impurity of said first conductivity type into said isolated island region by use of said etching mask as an implantation mask,

(g) carrying out a heat treatment to diffuse said second conductivity type impurity from said doped oxide film retained narrowed by said side-etching under said etching mask into a region to become said channel region in said isolated island region thereby to form a gate region, and also to drive said ion-implanted another impurity into said isolated island region thereby to respectively form a source region and a drain region on both sides of said etching mask,

(h) removing said etching mask followed by forming an oxide layer over the entire surface of said semiconductor layer,

(i) forming a source and a drain electrode at least at openings partly formed above said source and said drain regions, respectively, in such a manner that the openings for said source and said drain regions are formed on both sides of said gate region apart from each other with a distance larger than the shortest distance between said source and said drain regions with said gate region disposed therebetween.

4,351,100

METHOD FOR MANUFACTURE OF INTEGRATED SEMICONDUCTOR CIRCUITS, IN PARTICULAR CCD-CIRCUITS, WITH SELF-ADJUSTING, NONOVERLAPPING POLYSILICON ELECTRODES

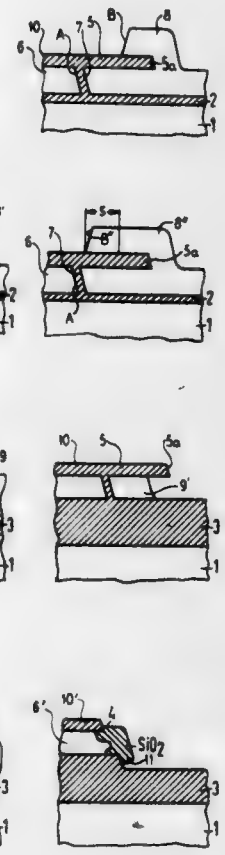
Dietrich Widmann, Unterhaching, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 16, 1980, Ser. No. 187,774

Claims priority, application Fed. Rep. of Germany, Sep. 28, 1979, 2939488

Int. Cl.³ H01L *21/20, 21/283*

U.S. Cl. 29—577 C **1 Claim**



1. In a method for manufacturing self-adjusted nonoverlapping polysilicon electrodes (poly-Si-1 and poly-Si-2) in integrated CCD semiconductor circuits wherein a polysilicon-1-electrode (6) is first formed with a masking layer thereon of SiO_2 or Si_3N_4, said method further comprising:

(a) etching the polysilicon-1-electrode (6) during the presence of said masking layer (5, 10) of SiO_2 or Si_3N_4 in covering relation thereto,

(b) carrying out the etching of the polysilicon-1-electrode (6) to such degree that lateral underetching occurs at an edge (5*a*) of the masking layer (5, 10) covering the polysilicon-1-electrode (6) to form an overhang (5) of the masking layer (10) with an edge (5*a*) of the overhang (5) of the

masking layer (10) having a spacing from the edge (A) of the etched polysilicon-1-electrode (6) corresponding to twice the amount of a maximally occurring edge position error (±s) which can arise in the superposition of a polysilicon-2-electrode with an edge (B) onto the polysilicon-1-electrode,

(c) carrying out a thermal oxidation step whereby the edge (A) of the polysilicon-1-electrode is covered with an SiO_2 layer (7), and

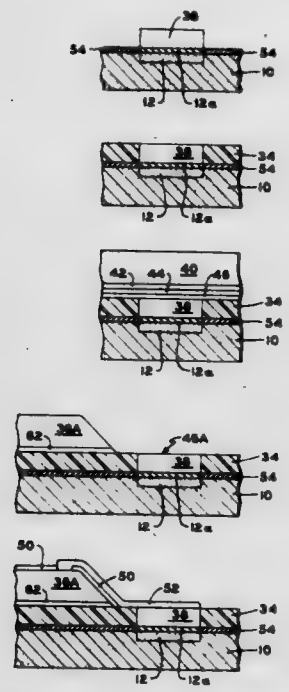
(d) applying a second polysilicon layer by means of a chemical vapor deposition step known per se, with the use of a mask, to generate the non-overlapping polysilicon-2-electrode (8) at a level above the level of the overhang (5) while also filling the hollow below the overhang with silicon.

4,351,101

SEMICONDUCTOR DEVICE PROCESSING FOR READILY AND RELIABLY FORMING ELECTRICAL INTERCONNECTS TO CONTACT PADS

Miriam F. Young, Dorchester, Mass., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 20, 1980, Ser. No. 198,319
Int. Cl.³ H01L *21/95*
U.S. Cl. 29—577 C **8 Claims**



1. An improved method of providing a semiconductor device having a semiconductor substrate containing solid state signal processing circuitry, the solid state signal processing circuitry comprising doped regions of predetermined resistivity within the semiconductor substrate, there being a passivation layer covering a surface of the semiconductor substrate but with electrical contacts to the solid state signal processing circuitry exposed through the passivation layer, the improvement comprising:

forming, on the electrical contacts, contact pads which have an upper surface devoid of a depressed center region, the contact pads extending above the passivation layer, there being free space between the contact pads above the passivation layer;

after the forming step, depositing an adhering insulator material of the type which is applied in substantially uncured form, the substantially uncured adhering insulator material being deposited so that the substantially uncured adhering insulator material substantially covers the contact pads and substantially fills the free space between the contact pads above the passivation layer;

mounting a semiconductor wafer onto the substrate above the contact pads to form an assembly;

applying pressure and heat to the assembly so that, prior to curing, adhering insulator material is squeezed out between the contact pads and a minimum thickness of adhering insulator material remains between the upper surface of the contact pads and the wafer;

allowing the adhering insulator material to cure;

removing portions of the wafer and adhering insulator material to expose the upper surface of predetermined contact pads; and

electrically interconnecting predetermined regions of the remaining semiconductor wafer with predetermined contact pads.

4,351,102

METHOD FOR WINDING THE STATOR IN A THREE PHASE AC MACHINE

Alfred Grozinger, Stuttgart; Manfred Frister, and Helmut Kreuzer, both of Schwieberdingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 30, 1978, Ser. No. 937,913
Claims priority, application Fed. Rep. of Germany, Nov. 9, 1977, 2750112
Int. Cl.³ H02K *15/085*
U.S. Cl. 29—596 **7 Claims**



1. A method for winding a first, second and third winding each having a winding start on a stator to constitute the first, second and third phase of a three phase AC machine said three phase AC machine having a plurality of poles and a stator having a predetermined number n grooves per pole and phase, said method comprising the combination of steps of

winding said first winding starting at a first groove and ending at a corresponding first end groove and creating a first winding end in operative proximity of said first end groove;

winding said second winding starting at a second groove adjacent to said first groove and ending at a second end groove adjacent to said first end groove, and creating a second winding end in operative proximity of said second end groove;

winding said third winding starting at a third groove adjacent to said second groove and ending at a third end groove adjacent to said second end groove, and creating a third windend in operative proximity of said third end groove, adjacent grooves being spaced from each other by a number of grooves equal to n; and

the step of electrically connecting either said start of said first and third winding to said second winding end or said first and third winding end to said start of said second winding to provide the star point of a Y-connected combined winding.

4,351,103

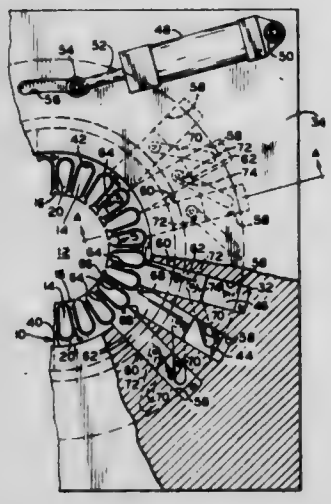
METHOD AND APPARATUS FOR SUPPORTING SLOT LINER CUFFS DURING COIL INSERTION

Philip G. Rodenbeck, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Filed Jul. 28, 1980, Ser. No. 173,053
Int. Cl.³ H02K *15/06*
U.S. Cl. 29—596 **4 Claims**

1. A method of inserting prewound coils of wire in the slots of a stator assembly including a core having two opposite faces and a plurality of slots extending through the core from one face to the other, and the stator assembly including slot liners in the slots of the core wherein the liners are longer than the slots and include cuffs which protrude beyond the faces of the

core, the method comprising: placing the stator in a stator holder having a plurality of cuff supports arranged about a centrally disposed opening, so that the stator bore is aligned with such opening, and so that the plurality of cuff supports are in abutment with one of the faces of the core; moving the cuff supports adjacent to and in close proximity to the cuffs of at least some of the slot liners; relatively moving the stator holder and stator carried thereby with respect to coil injection tooling



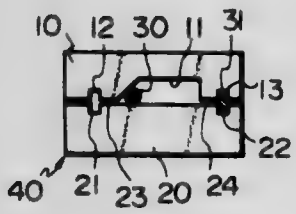
having previously wound wire coils supported thereon, and thereby interfitting such tooling with the bore of the stator through the centrally disposed stator holder opening; and pulling the coils of wire through the stator holder opening and into the slots of the stator core, over the cuffs of the liners and over the cuff supports, the coils contacting and being supported by the cuff supports as they are pulled over the respective cuffs and into the slots.

4,351,104

METHOD FOR MANUFACTURING MAGNETIC HEADS

Kiyoshi Kiagane, Funabashi, and Masao Kakizaki, Chiba, both of Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Nov. 10, 1980, Ser. No. 205,232
Claims priority, application Japan, Nov. 12, 1979, 54/146206
Int. Cl.³ G11B *5/42*
U.S. Cl. 29—603 **5 Claims**



1. A method for manufacturing annular portions of magnetic heads composed of two magnetic circuit elements consisting of ferromagnetic material and having confronting gap surfaces with an extremely small gap therebetween filled with nonmagnetic material bonding the circuit elements together, comprising the steps of:

grooving at least one ferromagnetic bodies to form said ferromagnetic circuit elements;

assembling said ferromagnetic circuit elements with each other in such a manner that at least one spacer is selectively located between the confronting gap surfaces so as to leave an effective gap for the magnetic material-filled gap;

placing a nonmagnetic bonding mass selected from the group consisting of glass and enamel in at least one of said grooves, outside of and adjacent to said effective gap;

placing said assembled ferromagnetic circuit elements in a furnace;

heating said assembled ferromagnetic circuit elements to a temperature which causes said nonmagnetic bonding mass to be flowable while applying a centrifugal force to said nonmagnetic bonding mass, thereby causing a forced flow of said nonmagnetic bonding mass into said effective gap;

cooling said heated ferromagnetic members; and;

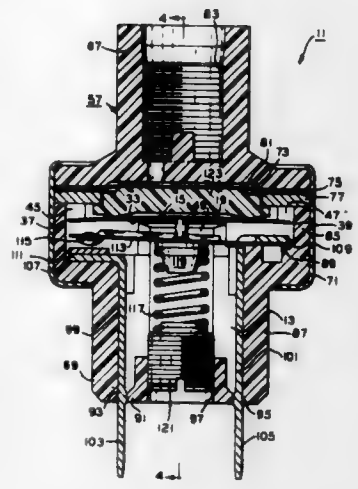
subsequently mechanically cutting the bonded ferromagnetic circuit elements into a number of portions of the magnetic heads having the requisite gap width.

4,351,105

METHOD OF MAKING A CONTROL DEVICE

Ronald W. Poling, Morrison, Ill., assignor to General Electric Company, Fort Wayne, Ind.

Division of Ser. No. 63,703, Aug. 6, 1979, Pat. No. 4,287,780, which is a division of Ser. No. 960,172, Nov. 13, 1978, Pat. No. 4,200,776. This application Apr. 6, 1981, Ser. No. 251,653
Int. Cl.³ H01H *11/00*
U.S. Cl. 29—622 **16 Claims**



1. A method of making a control device having a switch means movable therein between a pair of conductivity modes and also having a snap-action member operable generally from a stable configuration thereof toward an unstable configuration thereof to effect the movement of the switch means from one of its conductivity modes to the other thereof, the method comprising the steps of:

(a) forming the snap-action member in the stable configuration thereof from a metallic material having a directed grain orientation with at least one means for interlocking the snap-action member with the control device being integrally formed with the snap-action member so as to extend generally in the direction of the directed grain orientation in the metallic material of the snap-action member;

(b) providing in the control device at least a pair of means for abutment with the snap-action member only in the unstable configuration thereof and with the abutment means pair generally defining therebetween a channel means extending in a predetermined direction;

(c) mounting the switch means in the control device so that said switch means may be moved from the one conductivity mode to the other thereof when the switch means is operatively associated with the snap-action member;

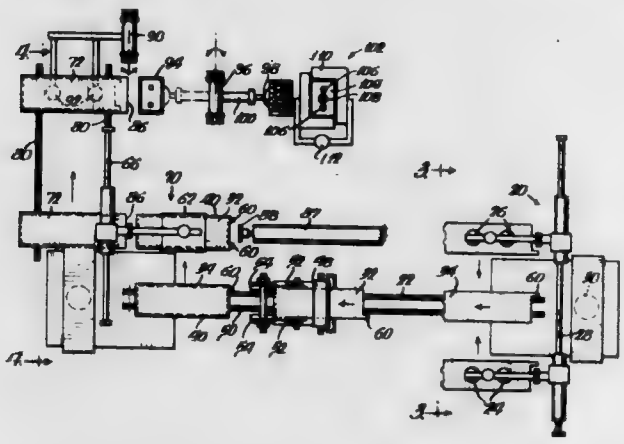
(d) seating the snap-action member in the control device in operative association with the switch means and engaging the interlocking means on the snap-action member with confronting parts of the control device so as to locate the snap-action member in a preselected assembly in the control device and also generally align the direction of the directed grain orientation of the snap-action member with the predetermined direction of the channel means between the abutment means pair.

4,351,106

BATTERY CELL ASSEMBLY SYSTEM AND METHOD

Allan O. Brady, 906 Bristol Rd., Yorkville, Ill. 60560

Filed Aug. 20, 1980, Ser. No. 179,649
Int. Cl.³ H01M *10/04*
U.S. Cl. 29—730 1 Claim



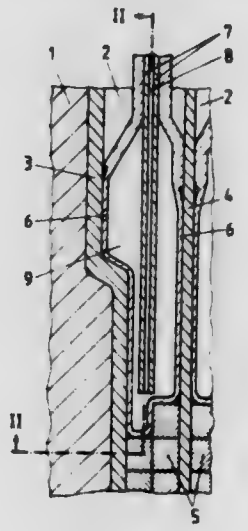
1. A system for assembling battery cells, comprising means for supplying generally rectangular negative and positive battery plates in alternate succession to a plate packaging station, each plate having a conductive lug extending from a side thereof, said means for supplying negative and positive plates to the packaging station comprising conveyor means and vacuum pickup means for alternately placing negative and positive plates from stacks thereof on said conveyor means for being transported to the packaging station; means at the packaging station for packaging each plate in separator material with the plate lug extending outwardly of the material, said means for packaging comprising means for extending a generally rectangular sheet of thermoplastic separator material across the path of travel of the plate on said conveyor means, so that a leading side edge of the plate engages one side of the sheet centrally thereof and deflects the sheet, folding rolls on an opposite side of the sheet centrally thereof for receiving the sheet and the plate between a nip thereof as the sheet is deflected by the plate and the plate is transported by said conveyor means, and for folding the sheet around the plate, said edge heat seal means along the path of travel of the plate and sheet beyond said folding rolls for heat sealing together the side edges of the separator material which are adjacent the fold to form a pouch of separator material around the plate, the plate being oriented so that the lug thereof extends through an open end of the pouch opposite from the fold, side edge trim means along the path of travel of the plate and sheet beyond said side edge heat seal means for trimming excess material from the side edges of the sheet outwardly of the heat sealed portions, and another side edge heat seal means for sealing the central portion of the open end of the pouch opposite from the fold to secure the plate in the pouch but to enable the plate lug to extend therefrom; means for placing a plurality of the packaged plates side by side in an open ended container to alternate plates of negative and positive polarity and to position the plate lugs toward the open end of the container, said means for placing the packaged plates in an open ended container comprising clamshell pickup means for removing the packaged plates from said conveyor means and for placing the packaged plates in a stack to alternate plates of positive and negative polarity, second conveyor means for transporting the container in horizontal position into alignment with the stack, such that bottom ends of the plates opposite from the lugs are aligned with the open end of the container, and piston means for pushing the stack of plates into the container such that the stack enters the container bottom end first through the open end of the container; means for electrically connecting the lugs of the negative plates in parallel and the lugs of the positive plates in parallel, said means for electrically connecting comprising second vacuum pickup means for transporting the container with battery plates therein to a casting station and, at said casting station, means for casting a first lead conductor across the lugs of all of the negative plates to connect the negative plates in parallel and a second lead conductor across the lugs of all of the positive plates to connect the positive plates in parallel when the plates are in the container, said means for casting including means for casting a pair of conductive lead posts, one each in electrical contact with each of the conductors; and means for placing a closure on the open end of the container to enclose the plates therein, wherein the container and the closure are of a thermoplastic material, and wherein said means for placing a closure on the container includes third vacuum pickup means for transporting the container with battery plates therein from said coating station to a container closing station, and means at said closing station for placing the closure over the open end of the container and for heat sealing the closure thereto, the closure having a pair of passages therethrough and said placing means placing the closure over the open end of the container to extend the posts through respective ones of the passages prior to heat sealing the closure on the container.

4,351,107

APPARATUS FOR COMPRESSING WINDING ELEMENTS IN AN ELECTRIC MACHINE

Willy Germann, Wurenlos, Switzerland, assignor to BBC Brown, Boveri & Company, Ltd., Baden, Switzerland

Continuation of Ser. No. 6,127, Jan. 24, 1979, abandoned. This application Sep. 8, 1980, Ser. No. 184,886
Claims priority, application Switzerland, Jan. 25, 1978, 790/78
Int. Cl.³ H02K *15/06*
U.S. Cl. 29—736 1 Claim



1. An apparatus for compressing winding elements in slots of the core of an electric machine comprising:

an inflatable elastic, rubber bellows for insertion in a slot of the electric machine; and

a rigid plate formed with at least one conduit leading to the interior of the elastic bellows and fastened to the elastic bellows for supplying a pressurized medium to the interior of the elastic bellows to compress windings in the core as the conductors are built up in the slot and through which the elastic bellows is depressurized for removal from the core.

4,351,108

PACKAGING SYSTEM FOR SEMICONDUCTOR BURN-IN

James E. Johnson, Katy, Tex., assignor to Reliability, Inc., Houston, Tex.

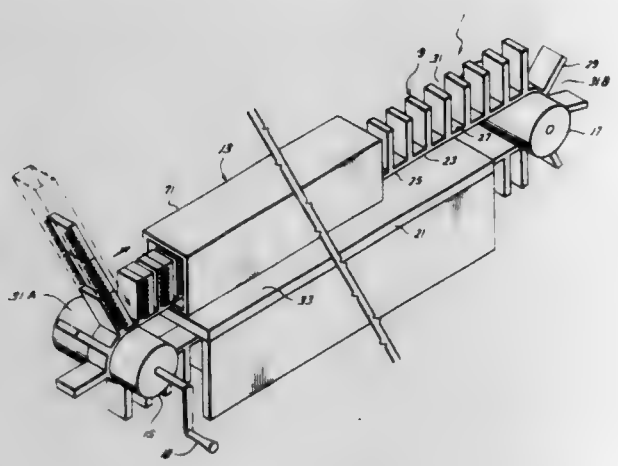
Filed Jul. 7, 1980, Ser. No. 165,969
Int. Cl.³ H05K *13/04*
U.S. Cl. 29—741 16 Claims

1. A system for temporarily packaging semiconductors comprising:

cartridge means for holding such semiconductors, said car-

tridge means including an elongate chamber and a plurality of electrical conduits within said chamber; and

loading means for sequentially loading such semiconductors into said chamber from one end of said chamber such that



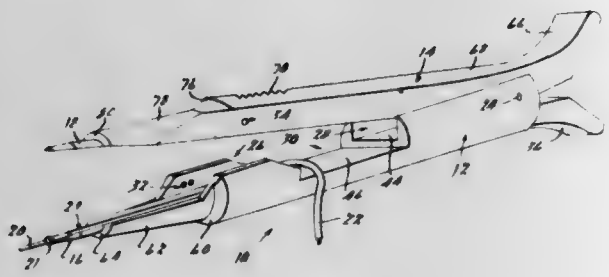
such semiconductors are in electrical communication with said electrical conduits, said holding means being actuated into engagement with such semiconductors upon such semiconductors entering said chamber from said one end.

4,351,109

CONTACT INSERTION/REMOVAL TOOL

William D. Kelly, Orlando, Fla., and Gregory J. Vella, Davisburg, Mich., assignors to Balmar Crimp Tool Corp., Orlando, Fla.

Filed Jun. 20, 1980, Ser. No. 161,276
Int. Cl.[3] H01R *43/00*
U.S. Cl. 29—747 **29 Claims**



1. A manually operable tool for handling electrical contacts in connectors, comprising:

a pair of longitudinally extending, generally opposed contact holders for releasably holding a contact or the like; and

means for pivotally and longitudinally slidably attaching one of said holders to the other of said holders, allowing therebetween generally transverse movement for insertion therebetween of a contact or the like and longitudinal movement between an insertion position and a removal position.

4,351,110

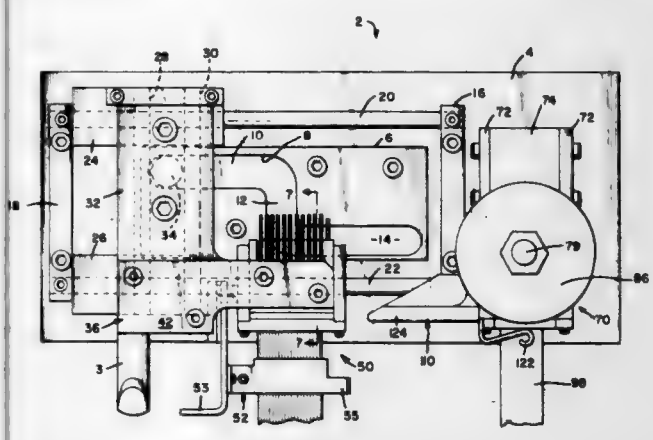
APPARATUS FOR TERMINATING RIBBON CABLE

Kenneth F. Folk, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Oct. 3, 1979, Ser. No. 81,409
Int. Cl.[3] H01R *43/04*
U.S. Cl. 29—749 **4 Claims**

1. An apparatus for terminating separated conductors at the free end of a multi-conductor ribbon cable, said apparatus comprising:

a conductor programming station having a pair of opposed comb members having a plurality of interdigitating teeth having means for engaging the conductors of said ribbon cable and driving adjacent conductors into two parallel spaced planes, alternate conductors being driven into the same plane;



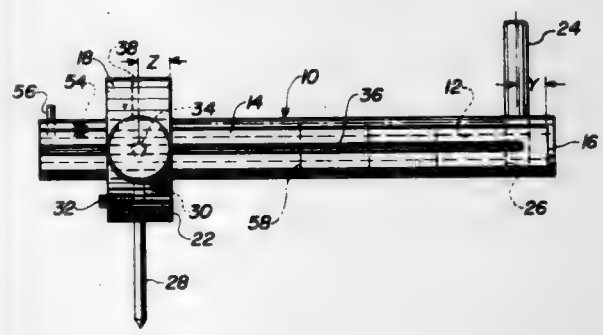
a wiping and terminating station having means for receiving said conductors and effecting termination thereof with respective terminals of a connector.

4,351,111

MACHINE TOOL FOR SCRIBING ARCS AND CIRCLES

John A. Carr, R.D. #5, Box 524, Hanover, Pa. 17331

Filed Mar. 6, 1981, Ser. No. 241,421
Int. Cl.[3] B26D *3/08*
U.S. Cl. 30—164.9 **7 Claims**



1. A machine tool for scribing arcs and circles on work pieces comprising in combination, an elongated arm having a smooth outer surface of uniform cross-sectional shape, a perpendicular stud fixed to said arm a short distance inwardly from one end thereof for supporting said arm in a chuck on a rotatable spindle of a machine tool, a slide having a bore closely complementary to the surface of said arm and slidable adjustably therealong, a stylus for scribing work pieces projecting perpendicularly from said slide, means carried by said slide and engageable with said arm to releasably clamp said slide and stylus thereon at a precise distance from the axis of said stud, the width of said slide in a direction parallel to said arm being greater than the diameter of said stud, said arm having a reference flange fixed to the stud end thereof outwardly from said stud and provided with a perpendicular face spaced precisely from the axis of said stud a distance equal to the distance between the face of said slide nearest said stud and the axis of the stylus carried by said slide, whereby guage blocks may be positioned along said arm between said faces of said flange and slide to permit precise radii to be established upon said tool for scribing arcs and circles therewith.

4,351,112

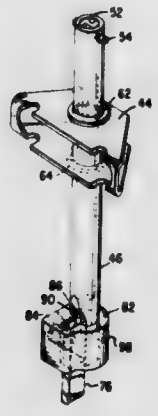
SABRE SAW BAR AND BLADE HOLDER

David J. Nalley, Liberty, S.C., assignor to The Singer Company, Stamford, Conn.

Filed Feb. 20, 1981, Ser. No. 236,417
Int. Cl.[3] B27B *19/02*
U.S. Cl. 30—392 **8 Claims**

1. In a motorized sabre saw for reciprocating an elongated saw blade, or the like, a saw bar and blade chuck combination wherein an end portion of the saw bar is of generally circular

cylindrical configuration having a longitudinally extending groove therein, said groove having a first wall spaced apart from a radius of the bar a distance substantially equal to one-half the thickness of the blade to be driven thereby and generally parallel such radius, and a second wall generally perpendicular said first wall extending from said first wall across such radius, said first and second walls defining therebetween a generally square shoulder whereby a blade clamped thereagainst will be generally bisected by such radius, together with a clamp block mounted with said saw bar over at least a portion of said groove, said clamp block having a first generally cylindrical aperture therethrough, a major portion of said



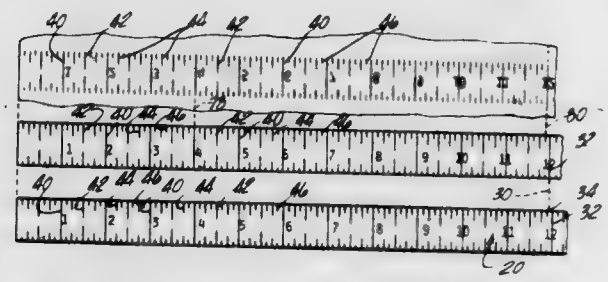
aperture being generally circular and complementary to said end portion of said saw bar, the remaining portion of said aperture comprising a generally rectangular groove, one wall of which is disposed in general alignment with said first wall of said saw bar, the opposite wall of said rectangular groove intersecting said second wall of said saw bar generally perpendicular thereto, said one wall and said other wall being spaced apart a distance at least the thickness of the blade shank, together with first and second fastening means, said first fastening means securing said clamp block with said saw bar and said second fastening means replaceably securing a saw blade, or the like, within said aperture.

4,351,113

PRESSURE SENSITIVE ADHESIVELY BACKED DISPOSABLE MEASURING TAPE AND METHOD OF MANUFACTURE

Claire C. Eggertsen, and John H. Eggertsen, both of 1308 Greenridge, Rochester, Mich. 48063

Filed Aug. 14, 1978, Ser. No. 933,461
Int. Cl.[3] G01B *3/02*
U.S. Cl. 33—137 R
3 Claims



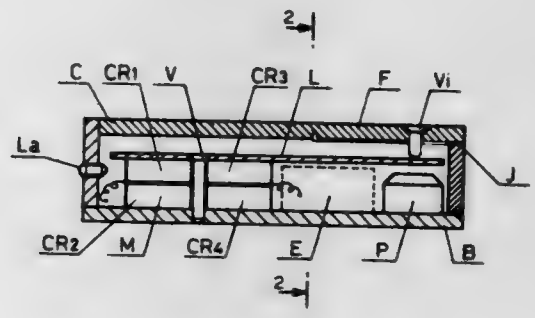
1. An adhesively backed tape having measurement indicia printed on a non-adhesive surface thereof and being constructed in the form of an elongate strip of fibrous organic material, creped over its entire length to permit highly localized stretching to conform to slight irregularities in a surface to which the tape may be attached, the strip material having a tensile strength of less than about 20 pounds to permit hand tearing, the adhesive backing having an adhesion strength of between 12 ounces and 24 ounces, and the strip being of such length as to repeat the measurement indicia and to permit rolling into a size which is convenient for manual handling.

4,351,114

PROCESS FOR MEASURING USING STANDARD BLOCKS AND A STANDARD MEASURING BLOCK

Hans Sigg, Charmettes 15, CH-2006 Neuchâtel; Robert Viret, 111, Ave. de Morges, CH-1004 Lausanne; Heinz Wegmann, Chemin des Perreuses 6c, CH-2013 Colombier, and Ernst Waser, Riedenstrasse 33, CH-6370 Stans, all of Switzerland

PCT No. PCT/CH78/00046, § 371 Date Aug. 6, 1979, § 102(e) Date Jul. 9, 1979, PCT Pub. No. WO79/00348, PCT Pub. Date Jun. 28, 1979
PCT Filed Dec. 6, 1978, Ser. No. 130,166
Claims priority, application Switzerland, Dec. 6, 1977, 14883/77
Int. Cl.[3] G01B *3/20*
U.S. Cl. 33—174 H
16 Claims



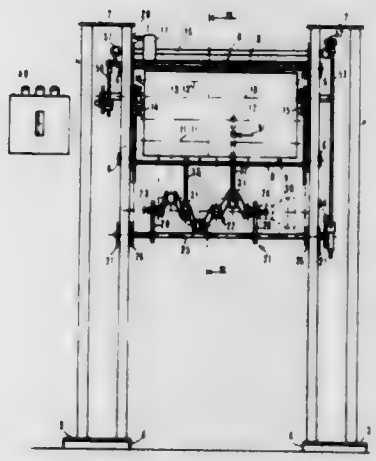
1. A standard measuring block comprising a parallelepiped, two parallel surfaces of which are set apart at a standard distance, having disposed therein an element maintained in vibration, a detector of the vibrations of the element and at least one signalling means announcing a change in the state of the vibrations caused by contact by an external object on one of said two parallel surfaces said vibrating element being constituted by a plate inside the standard block, said plate coming into contact with a flexible part of said surface contacted by said external object.

4,351,115

APPARATUS FOR CHECKING THE LINEAR DIMENSIONS OF SHAFTS

Mario Possati, Bologna, Italy, assignor to Finike Italiana Marposs, S.p.A., S. Marino di Bentivoglio, Italy

Filed Mar. 26, 1980, Ser. No. 134,084
Claims priority, application Italy, Apr. 5, 1979, 3368 A/79
Int. Cl.[3] G01B *7/12*
U.S. Cl. 33—178 D
15 Claims



1. An apparatus for checking linear dimensions of shafts, comprising: a frame; centering means connected to the frame to define a horizontal axis for supporting the shaft to be checked; measuring means having a mechanical reference device adapted to contact the shaft, sensing means mounted on said reference device adapted to cooperate with the shaft surface, transducer and detection means associated with the

sensing means to provide signals responsive to the linear dimensions; a supporting device for said measuring means fixed to the frame; connection means for connecting the measuring means to the supporting device; and control means; wherein the connection means include at least a pair of arms and constraint means, a first arm of the pair being rotatable, with respect to the supporting device, along a plane perpendicular to the horizontal axis, and the second arm of the pair being rotatable, with respect to the first arm, along the same plane, the constraint means being adapted to allow the rotations of the arms basically without elastic reactions, the control means including a movable member coupled to the frame for sustaining the connection means with the measuring means, the member being movable for performing a lowering movement and a lifting movement, the lowering movement causing the measuring means to move towards the horizontal axis, substantially from up to down, due to the force of gravity of the measuring means and connecting means, the lifting movement of the member causing a retraction movement of the measuring means away from the horizontal axis, and wherein the mechanical reference device defines reference surfaces adapted to contact the shaft at the end of said lowering movement, the contact forces between the reference surfaces and the shaft being determined substantially by said force of gravity.

4,351,116

APPARATUS FOR MAKING MULTIPLE ORIENTATION MEASUREMENTS IN A DRILL STRING

Floyd L. Scott, Jr., Houston, Tex., assignor to BJ-Hughes Inc., Long Beach, Calif.

Filed Sep. 12, 1980, Ser. No. 186,922
Int. Cl.³ E21B *47/022*
U.S. Cl. 33—307 **4 Claims**



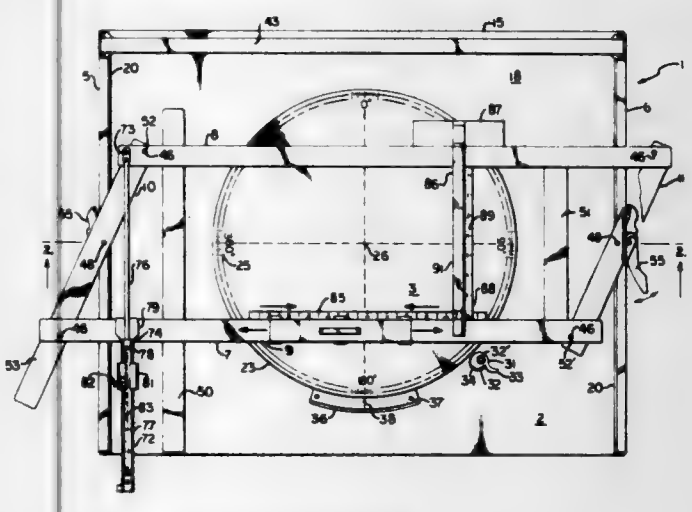
1. An apparatus for making orientation measurements in a drill string comprising:
a tubular housing adapted for insertion into the drill string;
an actuator rod mounted for generally axial movement in the housing;
first and second measuring devices in the housing;
first and second cams in the housing for coupling the actuator rod sequentially to the first and second measuring devices, resepctively, whereby components of the first and second measuring devices can be driven by the actuator rod;
the first measuring device including means responsive to being driven by the actuator rod for measuring a first orientation characteristic of the drill string;
the second measuring device including means responsive to being driven by the actuator rod for measuring a second orientation characteristic of the drill string;
signal generating means comprising means for generating a plurality of pulses responsive to the first and second measuring devices for generating a signal representative of the first and second orientation characteristics;
selection means in the housing for causing the signal generating means to respond sequentially to the first and second measuring means whereby the signal is sequentially representative of the first and second orientation characteristics; and
signal identification means for causing the signal from the signal generating means when the latter is responsive to the first measuring means to be different from the signal from the signal generating means when the latter is responding to the second measuring means whereby the signal indicates which of the first and second orientation characteristics is represented by the signal.

4,351,117

DRAWING BOARD APPARATUS

Earl R. Wade, 14912 E. Truman Rd., Independence, Mo. 64050

Filed Jan. 14, 1981, Ser. No. 224,888
Int. Cl.³ B43L *13/02*
U.S. Cl. 33—435 **9 Claims**



1. A drawing apparatus comprising:
(a) a base member having opposite side margins;
(b) a compass rose plate pivotally mounted to said base member between said side margins;
(c) a carriage frame having spaced guide members slidably mounted to said side margins; and
(d) a parallel rule structure having first and second drawing bars and links pivotally mounted thereto and forming an expansible and collapsible parallelogram generally positioned atop said compass rose plate, said links being pivotally mounted to said spaced guide members for sliding movement therewith over said compass rose plate.

4,351,118

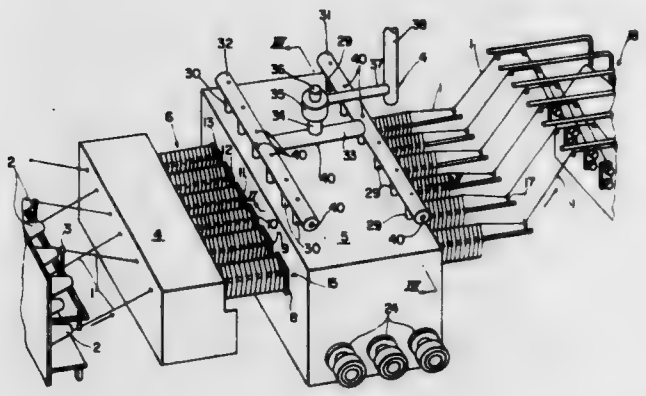
APPARATUS AND METHOD FOR CONTINUOUSLY TREATING YARN

George Y. Von Canon, 205 Red Riding Hood Trail, and Aubrey C. Hobbs, 1308 Cinderella Rd., both of Lookout Mountain, Tenn. 37350

Filed Feb. 27, 1981, Ser. No. 239,022
Int. Cl.³ D06B *3/06*
U.S. Cl. 34—24 **17 Claims**

13. A method for treating an indefinite length strand of yarn with steam, comprising:
coiling the strand yarn continuously on a support surface and moving the coiled strand yarn through a steam heated enclosure to drive off previously applied yarn working liquids as a vapor, withdrawing the coiled yarn from the enclosure and uncoiling the steam treated strand yarn;
depositing condensate of said vapor along with airborn strand and filament pieces of the yarn on the interior surfaces of the enclosure thereby forming a progressively increasing thickness mat on the interior surfaces;
periodically discontinuing said steps of coiling, uncoiling,

and applying steam, and removing all strand yarn from the enclosure, and thereafter spraying the interior surfaces of the enclosure that have the greatest buildup of the mat with a liquid solvent thereby substantially removing the



mat from the sprayed interior surfaces, without disassembling the sprayed interior surfaces;

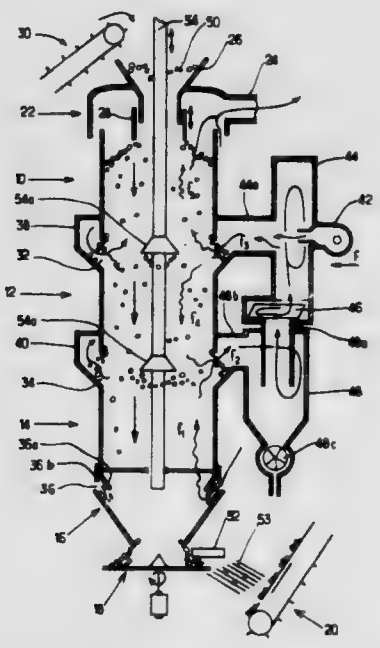
thereafter continuing said steps of coiling, uncoiling, and applying steam for further steam treatment of yarn.

4,351,119

APPARATUS AND METHOD FOR DRYING COMPACT, VITRIFIABLE MIXTURES

Georges Meunier, Boulogne, France, assignor to Isover Saint-Gobain, Neuilly sur Seine, France

Filed May 27, 1980, Ser. No. 153,789
Claims priority, application France, May 28, 1979, 79 13500
Int. Cl.³ F26B *3/14*
U.S. Cl. 34—28 **6 Claims**



1. A process of drying granular product including introducing product into a dryer at one end and moving said product toward the other end in an approximately vertical direction by the force of gravity through a plurality of regions, introducing a fluid for treating said product into said dryer at the other end, and subjecting said product successively, during movement, to a counter-current flow in an upper region; a co-current flow in a central region and a counter-current flow in a lower region, respectively, wherein said flows in said upper and central regions are at temperatures higher than the temperature of said product and said flow in said lower region is at a temperature lower than the temperature of said product, said flow of fluid for treating said product in said central region comprising a recycled portion of said flow which shall have first moved through said lower region, characterized in that said flow in said lower region when contacting said granular product is at a pressure which is equal to or slightly less than the atmospheric pressure.

4,351,120

REMOVABLE TRACTION SURFACES FOR FOOTWEAR

Melvin W. Dalebout, Salt Lake City, Utah, assignor to Engineered Sports Products, Inc., Salt Lake City, Utah

Continuation-in-part of Ser. No. 48,986, Jun. 15, 1979, Pat. No. 4,301,564, which is a division of Ser. No. 883,460, Mar. 6, 1978, Pat. No. 4,182,056, which is a continuation-in-part of Ser. No. 711,476, Aug. 4, 1976, Pat. No. 4,078,322. This application Jul. 14, 1980, Ser. No. 168,079
Int. Cl.³ A43B *5/04*
U.S. Cl. 36—117 **17 Claims**



1. In a ski boot having a rigid foot enclosure adapted for releasable mounting atop a ski, including a traction member detachable from said foot enclosure with an upper mating surface for attachment adjacent the bottom of said foot enclosure, the improvement comprising:

boss means carried by the bottom of said foot enclosure, including an inclined surface;

aperture means carried by said traction member and arranged to register with said boss means, including an inclined surface mutually adapted with the inclined surface of said boss means to lock the upper mating surface of the traction member against the bottom of said foot enclosure in a press fit engagement, said traction member including:

a sole portion carrying means for engagement by a ski toe binding apparatus; and

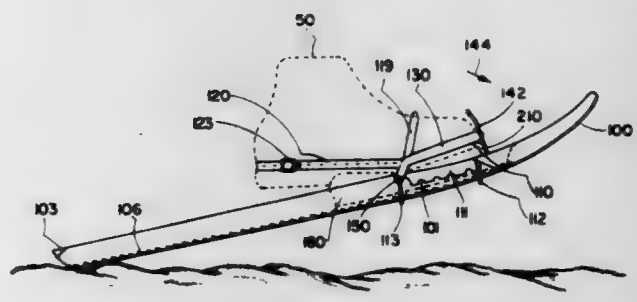
a heel portion carrying means for engagement by a ski heel binding apparatus.

4,351,121

SNOWSHOE

Robert E. Wallace, 12881 Foothill La., Saratoga, Calif. 95070

Filed May 13, 1980, Ser. No. 150,842
Int. Cl.³ A43B *5/04*
U.S. Cl. 36—125 **9 Claims**



1. Apparatus for attaching to a boot, or the like, said apparatus comprising:

first loop means for encircling a portion of a boot;

second means coupled to said first loop means for causing said first loop means to move and tighten about the encircled portion of said boot in response to the movement of said second means; and

locking means coupled to said second means for causing said first loop means to remain in a preselected relative position in response to the movement of said second means to a predetermined locking position.

4,351,122
SYSTEM FOR CONTROLLING THE POSITION OF THE DRAG PIPE OF A DREDGE

Christiaan A. Cornelis, Papendrecht, and Pieter van Prooijen, Nieuw-Lekkerland, both of Netherlands, assignors to IHC Holland N.V., Papendrecht, Netherlands

Filed Jan. 24, 1980, Ser. No. 118,631
Claims priority, application Netherlands, Jan. 25, 1979, 7900595
Int. Cl.[3] E02F *3/88*
U.S. Cl. 37—58 5 Claims

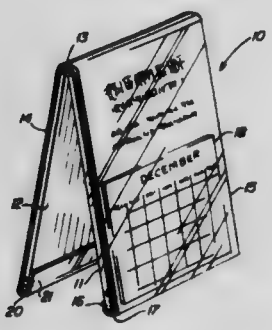


1. In a dredge having a drag pipe comprised by a number of pipe sections interconnected by hinged joints, drag lines connected to said hinged joints and to the front and rear end of the drag pipe, vertical guide elements on the side of the ship that rotatably and vertically movably support the front end of the drag pipe, a drag head on the rear end of the drag pipe, and means for moving the drag pipe outboard and inboard; the improvement comprising means for separately measuring the length of each drag line unwound from the associated said winch, an electronic control unit that controls the position of the drag pipe on the basis of said measured lengths, such that the angle between the hingedly joined drag pipe sections is maintained between predetermined limit values under all circumstances, and means to control the inclination of the rear section of the drag pipe during dredging to adapt the drag pipe to optimum output of material from the dredging operation dependent on the type of soil of the bottom to be dredged.

4,351,123
DISPLAY MOUNT AND METHOD

Carroll N. Cross, Rte. 2, Box 741, Maitland, Fla. 32751

Filed Jan. 22, 1981, Ser. No. 227,425
Int. Cl.[3] G09D *3/04*
U.S. Cl. 40—120 12 Claims



1. A display mount comprising in combination:

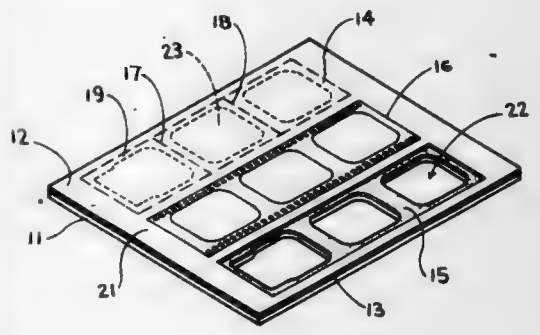
a plurality of casebound panels connected together along at least one edge of each panel to define at least one hinged area;

a transparent polymer material overlaying said casebinding material of at least a portion of two panels and extending over said hinged area to form at least two transparent pockets, whereby display material mounted in a pocket is held in place by bending one panel relative to a second on said hinged area having said polymer material extending thereover.

4,351,124
FILM MOUNT WITH PROTECTED FACE SHEET

Marvin L. Sivertsen, Milwaukee, and Valentine S. Sobolewski, Muskego, both of Wis., assignors to General Electric Company, Milwaukee, Wis.

Filed Jan. 14, 1981, Ser. No. 224,910
Int. Cl.[3] G09F *1/10*
U.S. Cl. 40—158 B 20 Claims

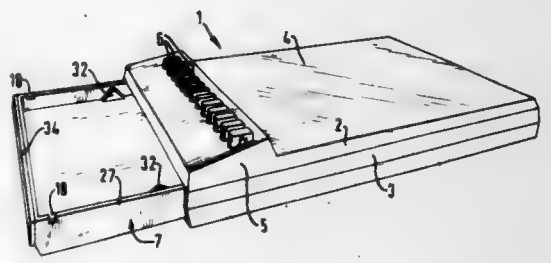


11. An improved radiographic film mounting frame of the type having face and backing sheets adhesively attached in a temporary manner such that at least a portion of the backing sheet can be removed to expose an adhesive remaining on the mount such that a film strip can be applied to the adhesive for retention and viewing, said face sheet having at least one aperture therethrough for allowing illumination of said radiographic film, wherein the improvement comprises a thin protective sheet disposed between said face sheet and said adhesive so that when the film strip is applied to the adhesive, it does not attach directly to said face sheet but rather to said protective sheet which will allow a subsequent removal and replacement of the film strip without any degradation in the integrity of the face sheet.

4,351,125
TELEPHONE INDEX

Se-kit Yuen, Kowloon, Hong Kong, assignor to John Manufacturing Limited, Kowloon, Hong Kong

Filed Apr. 7, 1981, Ser. No. 251,773
Claims priority, application United Kingdom, Apr. 9, 1980, 8011669
Int. Cl.[3] B42F *17/34*
U.S. Cl. 40—381 3 Claims



1. In a telephone index, comprising a stand on which a telephone may be placed and an index comprising a stack of cards, any selected one of which said cards can be presented for inspection upon pressing the respective one of a plurality of buttons, wherein said stand is in the form of a box, a drawer is slidable in said box and is spring-loaded for outward movement upon depression of any one of said plurality of buttons to present the particular one of said cards selected as the upper card in said drawer, any of said cards of said stack which are located at a position above said particular one of said cards selected being retained in said box and not moving outwardly with said drawer, the improvement comprising: a plurality of levers mounted in an upper part of said box, extending from the front toward the rear thereof, said levers being pivotally mounted about a common transverse and generally horizontal axis located at a position forwardly of said plurality of push buttons, each having an arm extending forwardly of the pivot

axis and an arm extending rearwardly of the pivot axis with a downwardly extending projection at its rear end and each cooperating with a respective one of said push buttons such that pressing any one of said push buttons depresses said rearwardly extending arm of the respective one of said levers to move said downwardly extending projection thereof downwardly into engagement with a fixed abutment surface within said box and raises said forwardly extending arm thereof against the bias of a spring to trip a drawer catch to allow said spring biased drawer to open, and each of said cards having at least one extension at a rear end thereof, said extensions having apertures therein through which selected ones of said downwardly extending projections can pass to secure said cards against outward movement with said drawer; said drawer having upstanding entraining projections at the sides thereof and said cards each having portions cut out to allow said cards to engage said entraining projections, thereby to entrain for movement with said drawer a selected one of said cards and all of said cards of said stack below said selected one of said cards; and wherein to reduce frictional drag tending to retain entrained ones of said cards in said box and to assist return of said extensions of said cards not retained in said box onto said abutment surface upon re-closing of said drawer, a rear portion of said deck of said drawer, on which said rear portion said cards lie, is provided with longitudinally extending alternating ribs and grooves, and a freely slidable intermediate member is provided having an upper surface of the same form as said rear portion of said deck and having an undersurface thereof grooved to receive said ribs on said rear portion of said deck, the front edge of said abutment surface and the front edge of said intermediate member having projecting tongues which lie in said grooves of said intermediate member and said grooves of said rear portion of said deck, respectively.

4,351,126

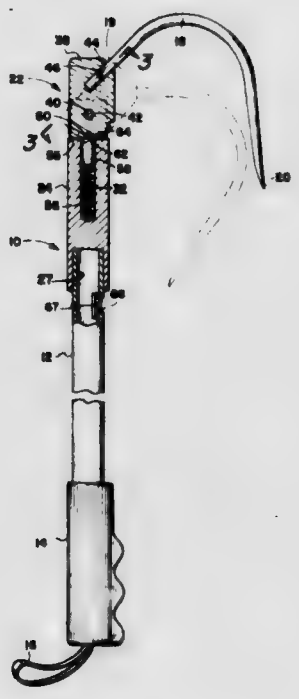
FOLDABLE GAFF HOOK

Theodore K. Simonson, 5 May Ct., West Hempstead, N.Y. 11552

Continuation of Ser. No. 99,404, Dec. 3, 1979, abandoned. This application Jan. 8, 1981, Ser. No. 223,243

Int. Cl.³ A01K *97/14*

U.S. Cl. 43—5 **4 Claims**



1. A foldable gaff comprising

an elongated shaft having a handle at a first end thereof;

a cam plate member pivotally secured to a second end of the shaft, a curved hook secured to the cam plate member, an arcuate shaped cam surface carried by the cam plate member and having first and second spaced notches therein;

an elongated longitudinal recess in the second end of the shaft, an elongated cam follower reciprocally carried in the recess, a compression spring carried in the recess for urging the cam follower outwardly against the cam surface of the cam plate member, said cam follower comprising a shaped protrusion at the outer end thereof for engaging the cam surface and complimentary with the spaced notches therein, said protrusion comprising a pair of intersecting plane surfaces, the planes defined by said plane surfaces being parallel to the pivotal axis of the cam plate member wherein in a fully open position said cam follower protrusion is seated in the first notch whereupon pressure applied to the hook toward a closed position causes the cam surface adjacent the first notch to press against one of the plane surfaces of the protrusion forcing said cam follower to retract within said recess to enable movement of the hook to a folded position wherein said cam follower protrusion is seated in the second notch, whereby an opening force applied to the hook causes the cam surface adjacent said second notch to bear against the second plane surface of the protrusion again causing the cam follower to retract within said recess.

4,351,127

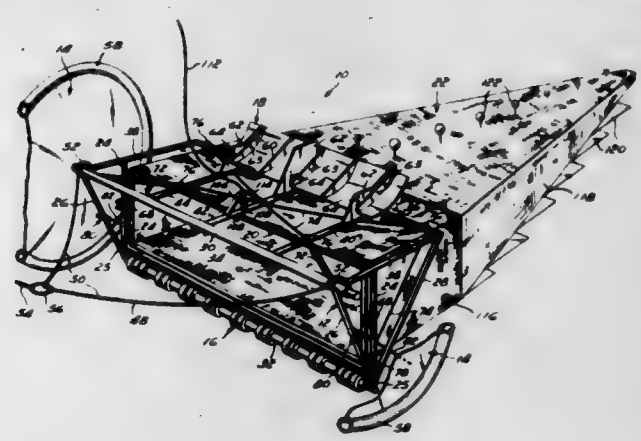
OCEAN BOTTOM SAMPLER

Charles T. Mitchell, 10771 Morada Dr., Orange, Calif. 92669

Continuation of Ser. No. 958,788, Nov. 8, 1978, abandoned. This application Oct. 16, 1980, Ser. No. 197,624

Int. Cl.³ A01K *73/02*

U.S. Cl. 43—9 **12 Claims**



1. An ocean bottom sampler, comprising:

a body defining an unobstructed, forwardly facing opening located near the ocean floor;

a pair of wheels each having a large diameter, one of said wheels attached to either side of said body, said wheels being capable of traveling over rough ocean bottom terrain;

a plurality of rollers considerably smaller in diameter than said wheels attached along the bottom of said body to provide means for permitting said sampler to traverse obstacles encountered between said wheels;

a frame for a net opening attached to said body so as to substantially occupy said unobstructed opening, said net frame being mounted on said body for rotation about an axis generally parallel to the axis of said wheels; and

a net defining an enclosure and having an opening attached to said net frame so that said opening is close to the ocean floor.

4,351,128

FISH LINE BOBBER/SINKER

John W. Sivertsen, Minneapolis, Minn., assignor to Carlton F. Peterson, Rush City, Minn., a part interest

Filed Feb. 12, 1981, Ser. No. 233,914

Int. Cl.³ A01K *95/00*

U.S. Cl. 43—44.91 **7 Claims**

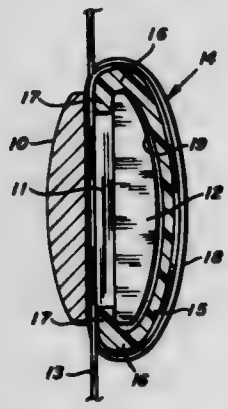
1. A fish line device comprising:

(A) an elongated generally barrel-shaped body having a central longitudinal opening extending therethrough,

(B) a longitudinally and radially extending slot open from the central opening to the outside of the body from one end of the central opening to the other,

(C) a fish line retaining clip having an ear pivotally mounted with respect to each end of the body central opening and having a longitudinally extending bow integrally connected between said ears,

(D) a fish line receiving channel outwardly positioned on each of said retaining clip ears, said fish line receiving channels extending in longitudinal alignment with the clip bow so as to be in radial alignment with the body slot and



being of shape and size to receive a fish line and to position it within said sinker body central opening when said clip is aligned with said body opposite said longitudinally extending body slot, and said fish line receiving channels in said retaining clip ears being of shape and size to confine the fish line within the body central opening when the retaining clip is aligned with the body slot, and

(E) a further longitudinally extending fish line receiving channel in the outer surface of the retaining clip bow and in communication with said ear channels, whereby the fish line may be looped around said clip and body.

4,351,129

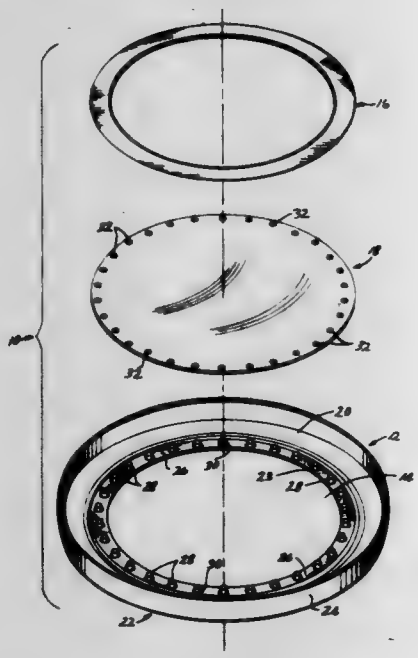
FLYING DISC WITH CENTRAL INSERT

Darle L. Kerkenbush; Jimmie L. Whittington, both of Diamond Bar, and Terry J. Sanchez, Pomona, all of Calif., assignors to Wham-O Mfg. Company, San Gabriel, Calif.

Filed Sep. 26, 1980, Ser. No. 191,073

Int. Cl.[3] A63H *27/00*

U.S. Cl. 46—74 D **59 Claims**



1. A circular flying disc comprising:

an annular section comprising an aperture through its center, an inner periphery and an outer periphery, a generally concave inner surface, a generally convex outer surface, and a rim extending around the outer periphery wherein one of the surfaces of the annular section comprises a plurality of spaced apart pegs positioned around the inner periphery;

an insert disposed across the aperture; and

a closed strip fusion bonded to the surface of the annular section comprising the spaced apart pegs, the fusion bond between the closed strip and such a surface of the annular section formed by heating a surface of the closed strip to melt such a strip surface and heating the surface of the annular section to melt such an annular section surface and then contacting the melted surface of the strip with the melted surface of the annular section so that the surfaces solidify together for forming the fusion bond between the closed strip and the pegs, said fusion bond permanently securing the insert in place across the aperture.

4,351,130

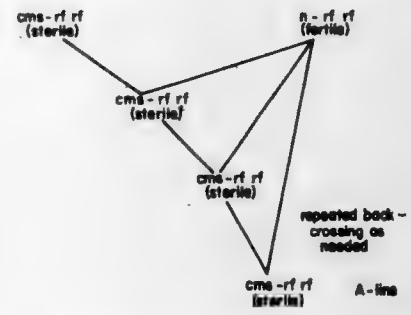
RECESSIVE TALL—A FOURTH GENETIC ELEMENT TO FACILITATE HYBRID CEREAL PRODUCTION

J. Neil Rutger, Davis, and Howard L. Carnahan, Biggs, both of Calif., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Jun. 16, 1981, Ser. No. 274,087

Int. Cl.[3] A01G *1/00*

U.S. Cl. 47—58 **10 Claims**



1. A method of producing hybrid seed, comprising:

growing together in pollinating proximity male pollinator plants which are characterized as recessively-inherited tall plant types having a recessive tall gene, and shorter female plants.

4,351,131

SLIDING WINDOW OR SLIDING DOOR

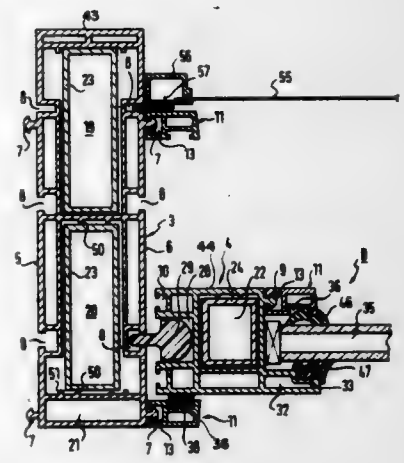
Hans Kubik, Blumenstrasse 5, D-8465 Bodenwohr, Fed. Rep. of Germany

Filed Apr. 28, 1980, Ser. No. 144,587

Claims priority, application Fed. Rep. of Germany, Mar. 27, 1980, 3011946

Int. Cl.[3] E06B *3/00*

U.S. Cl. 49—501 **17 Claims**



1. A glazed assembly comprising:

a frame assembly formed of at least four frame parts having identical and substantially rectangular cross-sectional shapes and the frame assembly being fastened to a structure; and

at least one sash assembly that is formed of at least four sash parts having identical cross-sectional shapes and a glazing, the sash assembly being mounted in said frame assembly and being slidable and lockable therein;

each of said frame parts having a pair of sides opposite one another with one side facing the sash assembly and the other side facing the structure, the pair of sides presenting engaging elements and guide grooves;

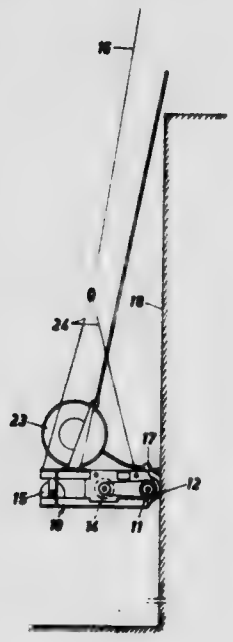
each of said sash parts presenting engaging elements and guide grooves; and

the engaging elements of the frame and sash parts having identical cross-sectional shapes and the guide grooves of the frame and sash parts having identical cross-sectional shapes and the engaging elements and guide grooves having intermating cross-sectional shapes.

4,351,132
MACHINE FOR CLEANING VERTICAL OR INCLINED SURFACES

Roland Molin, Gothenburg, Sweden, assignor to PR Processutveckling AB, Vastra Frolunda, Sweden

Filed Sep. 25, 1980, Ser. No. 190,567
Claims priority, application Sweden, Sep. 28, 1979, 7908048
Int. Cl.³ B24B *23/00*
U.S. Cl. 51—180 **8 Claims**

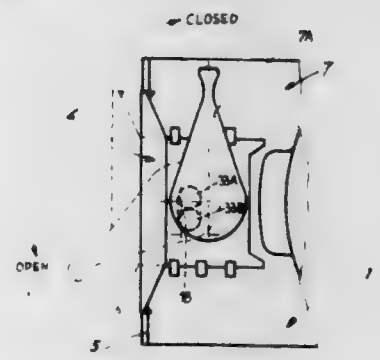


1. A machine for cleaning vertical or inclined walls, especially reactor cavity walls in a nuclear power plant, comprising at least one roller brush supported by a frame, said frame being freely suspended by at least one wire from a lifting device and which frame, at the side remote from the roller brush, is provided with a counterweight means, said roller brush comprising a plurality of soft grinding sheaves attached to a shaft, said grinding sheaves being axially compressible by a compressing means in order to change the density of the roller brush and the contact surface against the wall to be cleaned, said counterweight means being provided with means for increasing or decreasing its weight and changing the position of the center of gravity of the machine and thus changing the bearing pressure against the wall.

4,351,133
ABRASIVE PAPER CONNECTION FOR USE ON AN OSCILLATING GRINDER

Kurt Stoll, Lenzhalde 72, 7300 Esslingen am Neckar, and Dieter Tschacher, Hohenzollernstrasse 4, 7313 Reichenbach, both of Fed. Rep. of Germany

Filed Jul. 16, 1980, Ser. No. 169,322
Claims priority, application Fed. Rep. of Germany, Jul. 21, 1979, 2929618
Int. Cl.³ B24B *23/04*
U.S. Cl. 51—358 **11 Claims**



1. In an abrasive paper connection for use on an oscillating grinder having a table plate which has an end surface and can be moved by a drive mechanism, and having at least one tensioning device for securing an abrasive paper which is guided along the underside of the table plate, the improvement comprising wherein the tensioning device includes a clamping slide which is movably guided on the table plate and has an edge portion which can at least partially be applied against the end surface of the table plate, and includes a manually operable eccentric mechanism which controls movement of the clamping slide toward and away from the end surface, said eccentric mechanism including:

(a) a manually operable locking handle having a cylindrical guide surface thereon;

(b) a further guide surface on said clamping slide complementary to said guide surface on said locking handle and operatively associated therewith;

(c) an eccentric pin on said locking handle, the axis of which extends parallel and offset with respect to the axis of said guide surface on said locking handle;

(d) a slotted hole provided in the upper side of said table plate and extending transversely with respect to the direction of movement of said clamping slide, into which slotted hole extends said eccentric pin; and

(e) a device, which linearly guides said clamping slide.

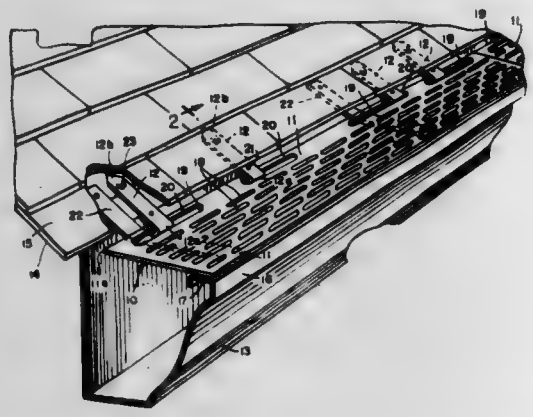
4,351,134
HINGED GUTTER GUARD

James A. Clarkson, 257 Jeffery La., Northfield, Ill. 60093

Filed Mar. 4, 1981, Ser. No. 240,376
Int. Cl.³ E04D *13/00*
U.S. Cl. 52—12 **8 Claims**

1. In combination with the sloping roof of a building having a generally horizontal open-topped gutter extending alongside a lower edge thereof, a gutter guard comprising a rigid perforated rectangular cover plate extending over a longitudinal segment of said gutter, said cover plate having a plurality of elongated slots arranged in serial alignment along one of the longitudinal edges thereof, hinge bar means extending along each of said slots, and a plurality of hinge straps each having a closed loop portion extending through one of said slots and about said hinge bar means, and having a tongue portion fixed

to the lower portion of said roof, for pivotally supporting said cover plate over said gutter, the loop portion of each of said



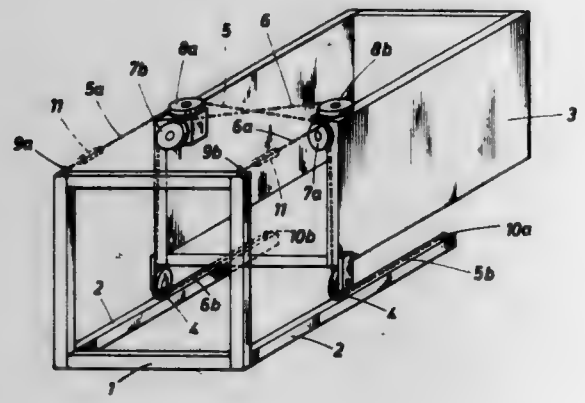
straps having a width substantially less than the length of the slot through which said loop portion extends.

4,351,135

LENGTH-ADJUSTABLE STRUCTURAL UNIT

Walter Freller, Wallernstrasse 20, A-4522 Sierning, Austria

Filed Jun. 24, 1980, Ser. No. 162,622
Claims priority, application Austria, Jun. 29, 1979, 4591/79
Int. Cl.³ E04B *1/343*
U.S. Cl. 52—67 **3 Claims**



1. In a length-adjustable structural unit including

a carrying part having a near end and a far end spaced apart in a first direction and a bearing surface extending in said first direction and in a second direction that is transverse to said first direction,

an extension part mounted on said carrying part in contact with said bearing surface and extensible and retractable relative to said carrying part generally in said first direction, and

constraining means comprises first and second tensile elements, each of which is supported by said carrying part at a first point near said near end and a second point near said far end, and a plurality of deflecting rollers, which are rotatably mounted on said extension part and around which said tensile elements are trained, said deflecting rollers for each of said tensile elements comprising first and second rollers that are nearest to said first and second points for the respective tensile elements, measured along the same, and are so designed and arranged that the respective tensile element extends substantially in said first direction from each of said first and second points to the first and second deflecting rollers, respectively at least two of said deflecting rollers for each of said tensile elements being spaced apart in a second direction, which is at right angles to said first and second directions,

corresponding portions of said tensile elements extending generally in said first direction being disposed on opposite sides of said extension part, whereby said constraining means hold said extension part against tilting transversely to said first and second directions even when said extension part is extended,

the improvement comprising:

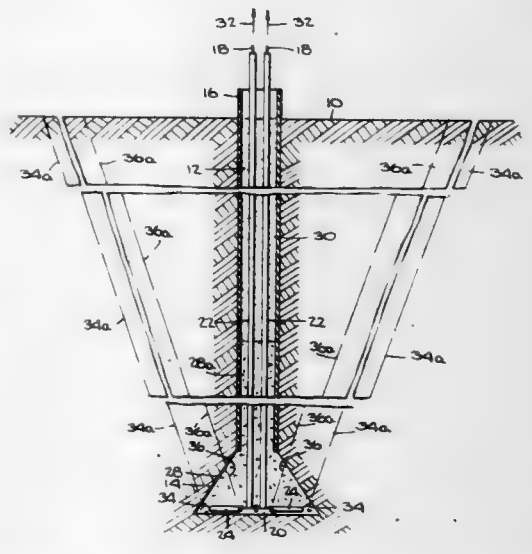
third deflecting rollers around which each of said tensile elements is trained, each of said third deflecting rollers being spaced from one of said deflecting rollers for the same tensile element in a direction which is parallel to said bearing surface and transverse to said first direction, so that said constraining means are arranged to hold said extension part against canting relative to said carrying part in said second direction.

4,351,136

GROUND ANCHOR INSTALLATION

Francis M. Fuller, Houston, Tex., assignor to Raymond International Builders, Inc., Houston, Tex.

Filed Jan. 14, 1980, Ser. No. 111,547
Int. Cl.³ E02D *5/76*
U.S. Cl. 52—155 **19 Claims**



1. A ground anchor for resisting uplift loads, said ground anchor comprising

an anchor plate positioned at the bottom of a hole in the earth, said hole having a substantially uniform diameter throughout its length with an enlarged portion of substantially larger diameter at the bottom of the hole, and said plate having a diameter slightly smaller than the diameter of the shaft portion of said hole,

a plurality of radially extending arms projecting outwardly from said anchor plate toward the outer periphery of said larger diameter portion of said hole,

a concrete base filling at least the enlarged bottom portion of said hole and covering said anchor plate and arms,

at least one tension member connected to said anchor plate and extending up through said concrete base and said hole to the surface of the earth, said tension member being insolated from gripping engagement by said base,

whereby uplift loads applied to said tension member are transferred therefrom only via said anchor plate and arms to said concrete base to subject said concrete base primarily to compressive forces and to produce a shear plane in said base extending upwardly and outwardly from the outer tips of said arms and continuing up through the overlying earth.

4,351,137

PLASTIC PANEL MOUNTING FRAME

Charles E. Enyart, and John E. Shoulis, both of Dallas, Tex., assignors to Baxt Industries, Inc., Addison, Tex.

Filed Jan. 21, 1980, Ser. No. 113,730
Int. Cl.³ E06B *3/28;* E04C *2/38, 2/54*
U.S. Cl. 52—202 **3 Claims**

1. In a panel mounting molding of the type comprising a base adhesively secured to a window frame and an interlocking

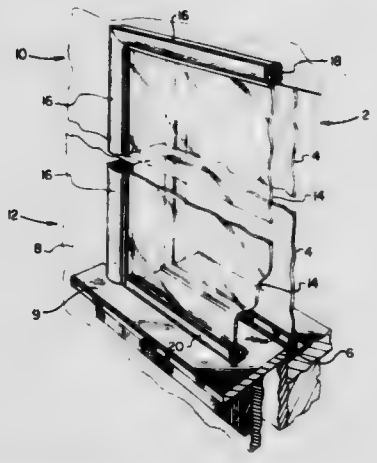
pane biasing strip for positively holding a glazing pane against said base, the improvement comprising:

a base having an elongated rectangular web having one surface for adhesive securement to a window frame, and a second surface carrying on a first edge, an upstanding pane supporting flange and, on a second edge, an upstanding boss, said upstanding boss comprising a pair of spaced jaws, said jaws having opposed faces defining a channel having an opening opposite said web, each of said faces carrying three ridges, with said ridges positioned in three opposing pairs, the peaks of the ridges of the outermost pair of said ridges being formed to define said opening of said channel,

a pane biasing strip comprising an elongated generally rectangular anchor for interlocking with said base, and a leaf extending obliquely from one edge of said anchor for holding a glazing pane against said pane supporting flange, said anchor having on each of two opposite surfaces thereof three opposing grooves corresponding to the three pairs of ridges carried by said jaws, and a leading edge of said anchor distal of the first of said pairs of said grooves having a maximum thickness less than the maximum thickness of the remaining portions of said anchor between the first and third of said pairs of said grooves whereby insertion of said anchor past said outermost pair of ridges into said channel is facilitated,

said base and said biasing strip being adapted for selective interlocking in at least first and second positions, said first position being the complete insertion of said anchor into said channel and resulting in mating of all three pairs of said ridges with all three pairs of said grooves, and said second position being the partial insertion of said anchor into said channel and the mating of two of said pairs of said ridges with two of said pairs of said grooves, said leaf including a continuously curved portion, and being aligned with said pane supporting flange so that said leaf and said pane supporting flange form a substantially continuous surface in at least one of said first and second positions, and

said leaf being positioned relative to said pane supporting flange to allow mounting of panes up to about ½ inch in thickness at said first interlocking position, and panes from about ⅛ to about ¼ inch in thickness at said second interlocking position.



4,351,138

ROOF CONSTRUCTION AND METHOD THEREOF

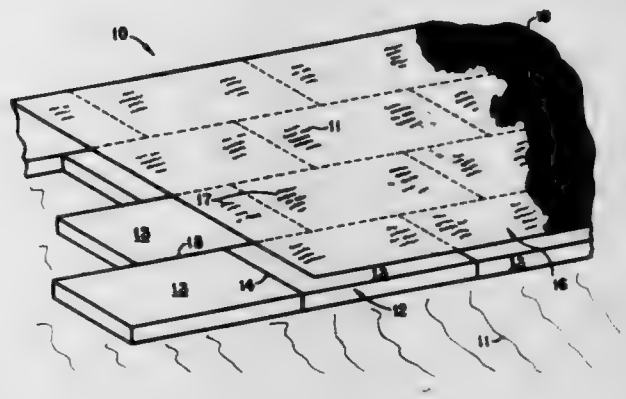
William J. McMillan, and Jerry L. Severson, both of Newark, Ohio, assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 39,462, May 16, 1979, abandoned. This application Jan. 15, 1981, Ser. No. 225,298

Int. Cl.³ E04B *7/00*

U.S. Cl. 52—309.4 **10 Claims**

1. A roof structure comprising a roof support means having a roof deck, the roof deck having an upper surface and a lower surface, the upper surface of the roof deck supporting a water impermeable membrane, the impermeable membrane having an upper face and a lower face, the lower face being generally adjacent the roof deck; a thermally insulating layer disposed adjacent the upper face of the water impermeable membrane, the thermally insulating layer comprising a plurality of closed cell water impermeable insulating members, the insulating



members defining fissures between adjacent members, a coherent water permeable fabric layer disposed over the insulating members, the coherent water permeable layer being affixed to the insulating members, whereby in the event of ponding, the insulating members will float and be generally uniformly displaced according to the amount of water in a particular area of the roof, and the insulating members generally will not displace relative to adjacent members.

4,351,139

CONNECTING ELEMENT FOR CONCRETE OR REINFORCED CONCRETE STRUCTURAL MEMBERS THAT ARE TO BE CAST ONE AFTER THE OTHER

Peter Gander, Thun-Gwatt, Switzerland, assignor to Arnex AG, Thun-Lerchenfeld, Switzerland

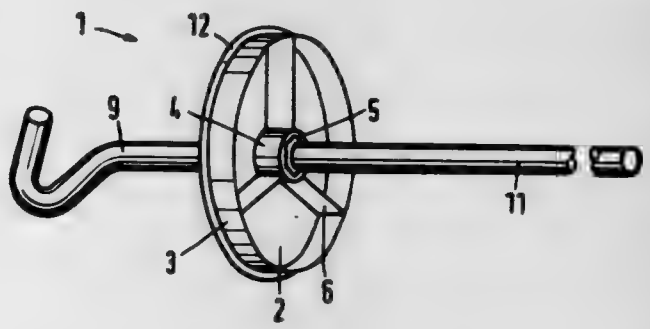
PCT No. PCT/CH79/00095, § 371 Date Jul. 14, 1980, § 102(e) Date Jul. 14, 1980, PCT Pub. No. WO80/01088, PCT Pub. Date May 29, 1980

PCT Filed Jun. 28, 1979, Ser. No. 224,285

Claims priority, application Switzerland, Nov. 20, 1978, 11853/78; Jun. 8, 1979, 5348/79

Int. Cl.³ E04B *1/41*

U.S. Cl. 52—378 **20 Claims**



1. A connecting element for concrete and reinforced concrete structural members, that are to be cast one after the other, comprising

a hollow body (1;21) having a base portion (2; 26) and a shell portion (3;27), said shell portion (3; 27) having an edge lying in a plane and encircling an opening;

a projection or sleeve (4; 30, 31) securely connected in said hollow body (1;21) and projecting from said base portion (3; 37) towards said plane and including a threaded hole (5; 34, 35) being accessible at both ends;

said hollow body (1; 21) having through-holes (7; 42) adapted to receive nails for releasable fastening the hollow body to a shuttering (8) and tightly butting said edge of the shell portion (3; 27) against the shuttering (8); and

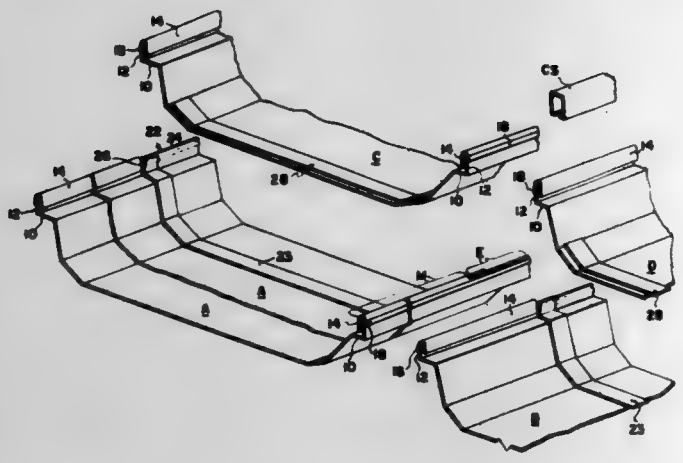
two reinforcing parts (9, 11; 22, 24; 23, 25) provided at one end with an external thread of which one (9; 22; 23) is to be screwed, for embedding into the structural member (10) that is to be cast first of all, into one half of said threaded hole (5; 34, 45) and the other of which (11; 24; 25) is to be screwed, after removal of the shuttering (8), into the other half of said threaded hole (5; 34, 35) and is to be embedded into the other structural member that is to be cast thereafter.

4,351,140

END LAP SEAM CONSTRUCTION FOR STANDING SEAM ROOF PANELS

Harold G. Simpson, Oklahoma City, Okla., assignor to The Wickes Corporation, San Diego, Calif.

Filed Sep. 19, 1980, Ser. No. 188,608
Int. Cl.[3] E04D *1/00*
U.S. Cl. 52—542 18 Claims



1. A generally rectangular standing seam roof panel having an upstanding seam member extending the entire length of at least one longitudinal side edge of said panel, said seam member including a longitudinally extending outer wall, a mastic waterproofing bead located on and extending the entire length of said wall at the outer side thereof, and means defining an endlap notch in said seam member at one end of said panel having a longitudinally extending notch edge located above said bead and below the top of said outer wall whereby two such panels may be disposed in overlapping end-to-end relationship with the outer side of the seam member wall of the overlapped panel nested in adjacent face-to-face relationship with the inner side of the wall of the underlapped panel in the region of said notch.

4,351,141

CARTON FILLING SYSTEM

Paul H. Glorfield, Caldwell; Spencer L. Bryant, Nampa, both of Id., and Vance L. Kirklin, Hermiston, Oreg., assignors to J. R. Simplot Company, Boise, Id.

Filed Aug. 25, 1980, Ser. No. 180,971
Int. Cl.[3] B65B *5/10, 1/06, 1/08*
U.S. Cl. 53—473 49 Claims

34. A method of filling cartons with a plurality of relatively small product strips, comprising the steps of:

conveying a plurality of upwardly open cartons in succession along a first path;

conveying a plurality of the product strips along a second path for intersection with the first path;

forming the plurality of product strips into substantially a common plane during movement along the second path;

orienting a majority of the product strips to extend substantially in longitudinal alignment with the second path during movement along the second path; and



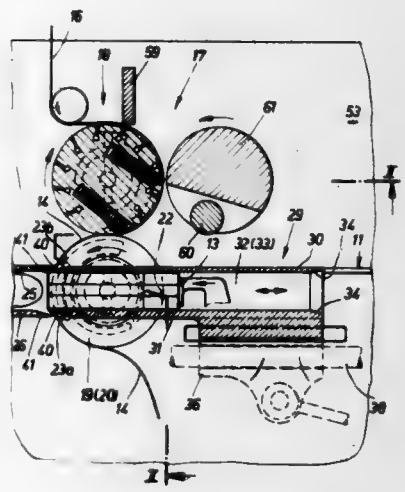
continuously guiding the oriented product strips in the common plane angularly downwardly and laterally over a guide ramp into the cartons conveyed along the first path.

4,351,142

APPARATUS FOR WRAPPING OBJECTS, IN PARTICULAR GROUPS OF CIGARETTES

Heinz H. Focke; Kurt Liedtke, both of Verden, and Hans J. Bretthauer, Bremen, all of Fed. Rep. of Germany, assignors to Focke and Company, Verden, Fed. Rep. of Germany

Filed Feb. 15, 1980, Ser. No. 121,856
Claims priority, application Fed. Rep. of Germany, Feb. 17, 1979, 2906204
Int. Cl.[3] B65B *19/24, 11/08*
U.S. Cl. 53—575 18 Claims



1. A wrapping apparatus for wrapping groups of unpackaged elongated stress-sensitive objects which are conveyed in a forward direction along a longitudinal path, said apparatus comprising:

feeding means for continuously feeding a sheet-like wrapping material downwardly into said path;

cutting means for continuously cutting said material into individual sheets;

said feeding means comprising rotary suction means on the lateral side of said path for gripping the portion of said sheet that is located above and below said longitudinal path before the groups contact the sheet by subjecting the longitudinal marginal portions thereof to frictional suction forces continuously to feed said sheets downwardly into said path, said suction means rotating about an axis perpendicular to said path;

a hollow elongated receiver for receiving each group of objects and disposed in said path, said receiver having an interior cross-section corresponding to that of said group, whereby the shape of said group is maintained;

means for continually conveying said groups through the receiver;

means for imparting longitudinally reciprocating movement to said receiver as said group of objects moves therethrough toward said sheet of wrapping material so that

the forward end of said receiver moves against said sheet of wrapping material before each group of objects reaches said forward end, and so that said forward end strips said sheet from said suction means before the forward end of said group reaches said sheet, whereby said sheet is folded in a U-shape around said group and in direct contact therewith as said group continues to move forward, without subjecting said group to the stress of removing said sheet from said suction means; and

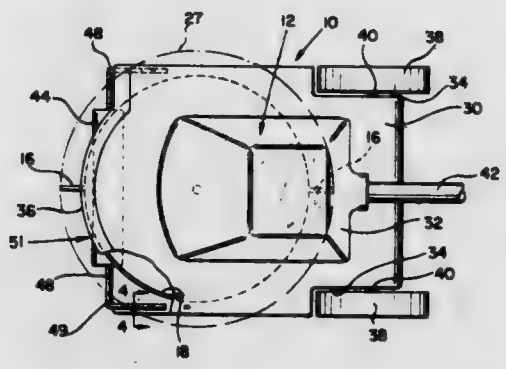
vent means, responsive to a predetermined rotational position of said rotary suction means, for venting the suction to release said portion of said wrapping material that is located above and below said path right after said receiver and objects move against said sheet and before said sheet is stripped from said suction means by said receiver.

4,351,143

GROUND SUPPORT SYSTEM FOR A GRASS CUTTING MACHINE

William R. Lessig, III, Cockeysville, Md., assignor to Black & Decker Inc., Newark, Del.

Filed Apr. 30, 1981, Ser. No. 259,485
Int. Cl.[3] A01D *35/26*
U.S. Cl. 56—17.5 6 Claims



1. A grass cutting machine having a motor powered cutting blade defining a cutting circle lying in a substantially horizontal plane, the machine comprising:

(a) a housing carrying the motor and to journal the cutting blade in a substantially vertical axis,

(b) the housing having a front, a rear, and opposed sides extending therebetween to terminate at right and left front corners and right and left rear corners,

(c) the front and opposed sides of the housing each having substantial portions thereof within the cutting circle,

(d) a pair of wheels journaled at opposite sides of the rear of the housing with their axes disposed above the plane of the cutting circle.

(e) a roller disposed below the plane of the cutting circle and within the cutting circle to extend longitudinally across the front of the housing, and

(f) support means journaling the roller, and extending therefrom within the cutting circle and below the cutting plane to intersect the cutting plane outside of the cutting circle adjacent the front corners for connection to the housing above the cutting plane.

4,351,144

COMMINUTING POWERED LAWN MOWER

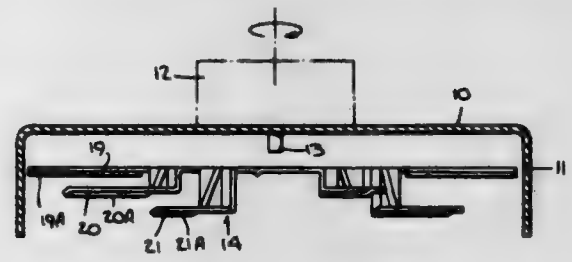
Salvatore Benenati, 77 Woodside Dr., Red Bank, N.J. 07701

Continuation-in-part of Ser. No. 51,025, Jun. 22, 1979, Pat. No. 4,262,476. This application Mar. 31, 1981, Ser. No. 249,450
The portion of the term of this patent subsequent to Apr. 21, 1998, has been disclaimed.
Int. Cl.[3] A01D *55/18*
U.S. Cl. 56—295 5 Claims

1. A powered lawn mower adapted to comminute grass to provide a mulch for a substantially planar grass lawn, said mower being provided with means to advance the mower in a horizontal path on said lawn toward unmown grass and comprising:

A. an inverted housing on which a motor is supported, the motor having a drive shaft extending into the housing at right angles to the plane of said lawn; and

B. a rotor secured to the shaft and disposed within the housing, said rotor being constituted by a hub from which radiate three sets of blades lying in respective planes substantially parallel to the plane of said lawn, the blades in each set being 90 degrees apart, the blades of the second set being displaced 30 degrees from the blades in the first set, and the blades in the third set being displaced 30 degrees from those in the second set, the blades in these



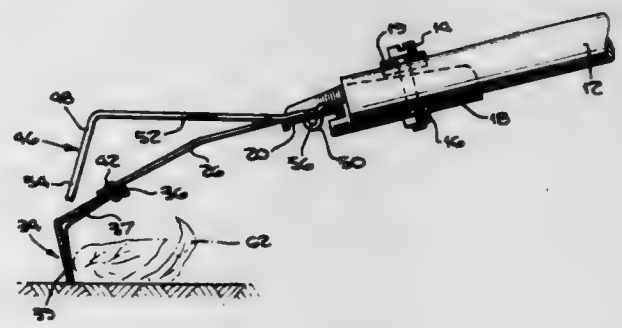
sets being at progressively decreased levels relative to the lawn, the blades in the first set having a length providing the longest reach, and the blades in the second and third sets having progressively reduced lengths, each blade having a leading edge defining a cutting edge which is pitched to form an air foil acting to create an updraft, whereby as the rotor rotates and the mower is advanced in said horizontal path toward unmown grass, the first set of blades having the longest reach act to cut pieces from the upper portions of the grass, this action being followed by the blades in the second set and then the blades in the third set, each acting to cut pieces from the grass at the level corresponding to the set level whereby each blade of grass is cut into as many pieces as there are sets.

4,351,145

COMBO HAND RAKE

Peter E. Farkas, La Puente, Calif., assignor to Laszlo Szentkiralyi and Istvan Csoke, both of Venice, Calif., a part interest to each

Filed Feb. 2, 1981, Ser. No. 230,865
Int. Cl.[3] A01D *7/00*
U.S. Cl. 56—400.16 10 Claims



1. A hand rake comprising:

a. an elongated handle;

b. an elongated head member removably attached at the central portion of its longitudinal axis to one end of and perpendicular to said elongated handle;

c. a first elongated connecting bar rigidly attached at one end to one lateral edge of said elongated head member;

d. a second elongated connecting bar rigidly attached at one end to the second lateral edge of said elongated head member;

e. a first row of teeth assembly consisting of a multiplicity of parallel teeth spaced apart from each other in a single row;

f. said first row of teeth assembly spaced apart from but

removably and rigidly attached adjacent its lateral edges to said elongated head member by said first and second connecting bars respectively, such that the multiplicity of teeth in said first row of teeth assembly do not move relative to said elongated head member and said handle;

g. a second row of teeth assembly consisting of a multiplicity of parallel elongated teeth spaced apart from each other;

h. said teeth in said second row of teeth assembly removably and movably attached to said head member such that the elongated teeth of the second row of teeth assembly lie in a plane above the teeth in the first row of teeth assembly and are capable of movement relative to said first row of teeth assembly such that the teeth in the second row of teeth assembly can be placed into operation in the spaces between the teeth in the first row of teeth assembly; and

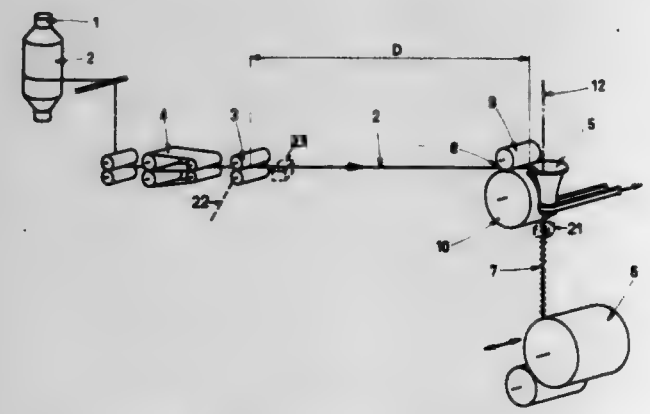
i. wherein a normal motion of the rake only allows the teeth in said first row of teeth assembly to come in contact with the object to be raked while a counterclockwise tilting force exerted on said handle causes the teeth of said second row of teeth assembly to come down in a plane parallel to the teeth of the first row of teeth assembly and within the spaces between the teeth of the first row of teeth assembly such that both rows of teeth can come in contact with the object to be raked.

4,351,146

PROCESS AND DEVICE FOR PRODUCING A YARN HAVING ALTERNATE TWISTS OF OPPOSITE DIRECTIONS

Jean-Louis Faure, Roanne, and Michel Vanhelle, Lille, both of France, assignors to ASA S.A., France

Filed Jul. 7, 1980, Ser. No. 166,331
Claims priority, application France, Sep. 7, 1979, 79 18173
Int. Cl.[3] D01H *5/28, 5/18;* D02G *3/22, 3/36*
U.S. Cl. 57—6 **15 Claims**



1. A process for the production of a yarn which possesses along its length alternate zones of S and Z twist, the process involving the steps of positively delivering a single yarn via a delivery device, imparting a false twist to the yarn by means of a false twister acting continuously on the yarn and located at a position spaced from the delivery device, intermittently varying the distance over which the twist extends back upstream of the false twister, such intermittent variation being achieved by means of a blocking device in the form of a positive delivery device acting intermittently on the yarn at an upstream point close to the false twister, the duration of action of the blocking device approximately corresponding to the time taken for a point on the yarn to travel from the delivery device to the false twister, and winding up the yarn so that the wound up yarn possesses, along its length, alternate zones of S and Z twist.

11. A device for the production of a yarn which possesses, along its length, alternate zones of S and Z twist, such device comprising in combination a first delivery device for delivering a single yarn, a false twister to act continuously on the yarn to impart a false twist to the yarn, and means intermittently to vary the distance which the twist extends back upstream from the false twister, such means including a blocking device in the form of a positive delivery device located at an upstream point close to the false twister, and means causing said blocking device to act intermittently on said yarn for a time corresponding to the time taken for a point on the yarn to travel from the yarn delivery device to the false twister, and means to wind up the yarn.

4,351,147

SPUN-LIKE YARN

Lawrence E. Blackmon, Foley, Ala.; Darrell A. Kelly, Milton, Fla.; Wayne T. Mowe, and Jing-peir Yu, both of Pensacola, Fla., assignors to Fiber Industries, Inc., Charlotte, N.C.

Continuation-in-part of Ser. No. 101,957, Dec. 10, 1979, abandoned, which is a continuation of Ser. No. 925,073, Jul. 17, 1978, abandoned. This application Oct. 17, 1980, Ser. No. 197,889
Int. Cl.[3] D02G *3/24, 1/18;* D01D *5/22*
U.S. Cl. 57—208 **5 Claims**



1. A textured yarn having a soft luxuriant hand and improved wicking, comprising:

a. a first plurality of filaments comprising alternating S-twisted and Z-twisted helically coiled regions connected by twist reversal regions, each of said first plurality of filaments having a cross-sectional area which varies from small values in thin regions to large values in thick regions along its length, said large values being at least 25% greater than said small values, said thick and thin regions being out of phase from filament to filament along the length of said yarn, and

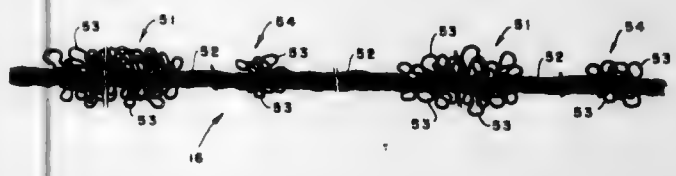
b. a second plurality of filaments comprising alternating S-twisted and Z-twisted helically coiled regions connected by twist reversal regions, each of said second plurality of filaments having a cross-section comprising a spiral and wherein the outer portion of said spiral lies at the inside of the coils of said helically coiled regions.

4,351,148

FALSE TWISTED SLUB YARN

Paul W. Eschenbach, Moore, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Division of Ser. No. 93,199, Nov. 13, 1979, Pat. No. 4,305,245. This application Jan. 8, 1981, Ser. No. 223,273
Int. Cl.[3] D02G *3/34*
U.S. Cl. 57—209 **4 Claims**



1. A novel slub yarn comprising: at least two commingled,

false twisted, multi-filament, continuous synthetic yarns having a plurality of slubs spaced along the length thereof and each of said slubs having a nub closely adjacent thereto, said nub having a length substantially less than the length of said slubs, said slub and said nub having substantially the same false twist therein.

4,351,149

SPINDLELESS SPINNING MACHINE

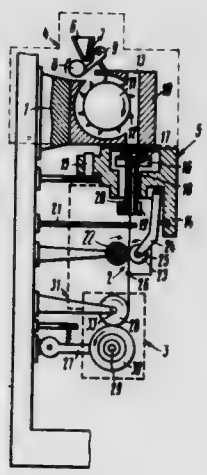
Abdurakhim Abduganiev, Chilanzar, D-20, 33, kv. 7, Tashkent; Timur P. Krjuk, prospekt Mira, 90, kv. 11, Moscow; Vitaly I. Zhestkov, Chilanzar, kvartal 19, 26, kv. 41, Tashkent; Valentin N. Tikhonov, ulitsa Sh.Rustaveli, 55, kv.28, Tashkent; Vladimir G. Glazov, Chilanzar, kvartal 19, 26, kv. 23, Tashkent; Mikhail M. Kletny, poselok Pirogovsky, ulitsa Sovetskaya, 7, kv. 70, Moskovskaya oblast; Gennady N. Shlykov, Chilanzar, kvartal 19, 31, kv. 3, Tashkent; Vladimir K. Afanasiev, Golyanovsky proezd, 4, kv. 129, Moscow; Vasily M. Dyachkov, zhiloi massiv Kuiljuk, 23, kv. 11, Tashkent; Gennady V. Zhigalov, ulitsa B. Khmelnitskogo, 68, korpus 2, kv. 68, Tashkent; Rafael A. Mangutov, ulitsa Sh.Rustaveli, 59, kv. 10, Tashkent, and Ernst I. Angarov, Serpukhovskoi val, 13a, kv. 4, Moscow, all of U.S.S.R.

PCT No. PCT/SU79/00013, § 371 Date Nov. 13, 1980, § 102(e) Date Oct. 22, 1980, PCT Pub. No. WO80/01925, PCT Pub. Date Sep. 18, 1980

PCT Filed Mar. 13, 1979, Ser. No. 197,981

Int. Cl.³ D01H *15/00*

U.S. Cl. 57—263 **6 Claims**



1. A spindleless spinning machine, having a framework whereon are disposed a rotation drive, spinning stations each of which comprises a fibres feed unit and a spinning chamber, having a housing which is installed on the framework so that it can be withdrawn from the fibres feed unit, and also a yarn withdrawal unit whose driving shaft is installed on the framework and pressing rollers are in operating position resiliently pressed to the driving shaft and mounted so that they can be withdrawn from said driving shaft, and yarn winding devices, each of which is mounted at a respective spinning station and comprises a bobbin carrier and a yarn spreader, characterized in that each pressing roller (23) is mounted on the housing (14) of a respective spinning chamber (5), and each yarn winding device (3) has an operative connection (31) with the housing (14) of the respective spinning chamber (5) to engage and disengage the rotation drive.

4,351,150

AUXILIARY AIR SYSTEM FOR GAS TURBINE ENGINE

Wallace M. Schulze, West Chester, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Feb. 25, 1980, Ser. No. 124,184

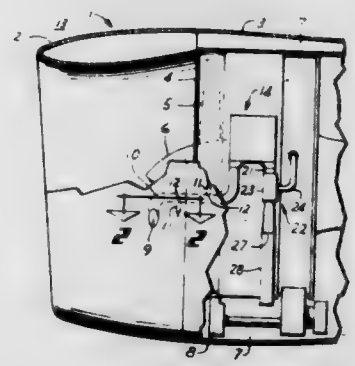
Int. Cl.³ F02K *3/04*; F02C *6/06, 7/20*

U.S. Cl. 60—226 R **4 Claims**

1. An auxiliary air system contained within the engine nacelle between the engine core and the engine cowling of a gas turbine engine and comprising:

(a) an air ducting pipe having one end communicating with an aperture in an external surface of said engine cowling, said aperture lying in a plane generally parallel to the airstream adjacent said aperture;

(b) at least one environmental sensor arranged to sense the condition of air within said pipe;



(c) a structure to be cooled connected to the other end of said air ducting pipe;

(d) an air flow device in communication with said structure to be cooled and effective to move air from the exterior of said cowling through said structure to be cooled, and to said air flow device; and

(e) means for directing air from said air flow device onto selected other engine components.

4,351,151

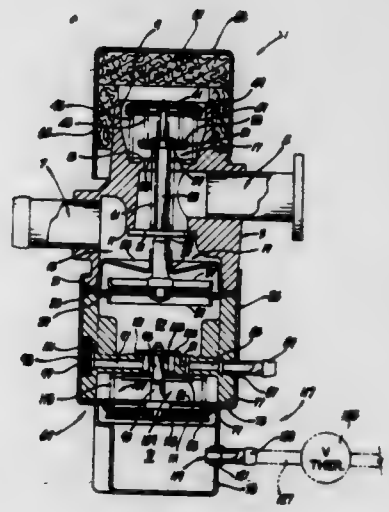
BY-PASS VALVE

James A. McNairy, and John B. Fitzgerald, both of St. Louis, Mo., assignors to ACF Industries, Inc., New York, N.Y.

Continuation of Ser. No. 972,964, Dec. 26, 1978, abandoned. This application Jun. 19, 1980, Ser. No. 161,110

Int. Cl.³ F01N *3/22*

U.S. Cl. 60—290 **3 Claims**



1. An improved by-pass valve for use in the exhaust system of an internal combustion engine comprising a main body in which is defined an air inlet, first and second air outlets, and air flow paths between the air inlet and the respective air outlets; a first valve normally closing the air flow path between the air inlet and the first air outlet and a second valve normally opening the air flow path between the air inlet and second air outlet; a valve body member located beneath the main body, the upper and lower portions of the main body and the upper and lower portions of the valve body member being hollow; means responsive to engine vacuum for simultaneously opening the first valve and closing the second valve, the vacuum responsive means including a first flexible diaphragm clamped between the main body and the valve body member whereby a first vacuum chamber exposable to engine vacuum is defined

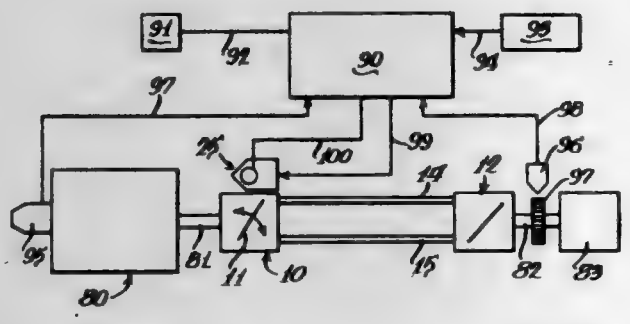
by the diaphragm and the hollow upper portion of the valve body member, a first shaft on which the first and second valves are commonly mounted, one end of the first shaft being secured to the diaphragm for movement therewith; control means responsive to engine vacuum for exposing the first vacuum chamber to engine vacuum, the control means being responsive to abrupt changes in engine vacuum such as occur during engine decelerations for spoiling the vacuum in the first vacuum chamber and causing the vacuum responsive means to reclose the first valve and reopen the second valve, the control means reestablishing the vacuum in the first vacuum chamber after a predetermined time interval and causing the vacuum responsive means to reopen the first valve and reclose the second valve, the control means including a housing fitting over the lower end of the valve body member, a second diaphragm clamped between the housing and the valve body member to define a second vacuum chamber exposable to engine vacuum whereby one side of the second diaphragm is exposed to engine vacuum, a first passage formed in the valve body member by which the hollow lower portion of the valve body member is exposed to engine vacuum, a bleed hole formed in the second diaphragm whereby the vacuum present on the one side of the second diaphragm is communicated to the second vacuum chamber, a second passage formed in the valve body member and extending between the upper and lower hollow portions of the valve body member whereby both the first and second vacuum chambers are simultaneously exposed to engine vacuum, a third passage formed in the valve body member and extending between the upper and lower hollow portions thereof, a second shaft movable within the third passage and having one end connected to the second diaphragm for movement therewith, an air passage formed in the valve body member and having an outlet communicating with the first vacuum chamber, a third valve mounted on one end of the second shaft for opening and closing the outlet of the air passage, a fourth valve mounted on the second shaft intermediate the ends thereof for closing one end of the first passage, and means biasing the second diaphragm to close the third valve and open the fourth valve, the second diaphragm overcoming operation of the bias means upon an abrupt change in engine vacuum to open the third valve and close the fourth valve whereby air is admitted into the first vacuum chamber to spoil the vacuum therein which results in the vacuum responsive means closing the first valve and opening the second valve thus to prevent engine backfires; and, means for overriding the operation of the control means when engine temperature reaches a predetermined value whereby the vacuum responsive means maintains the first valve open and the second valve closed.

4,351,152

ELECTRONIC CONSTANT SPEED CONTROL FOR A HYDROSTATIC TRANSMISSION

Richard W. Reynolds; Allen Myers, both of Ames, Iowa, and Daniel J. Foley, Westminster, Mass., assignors to Sundstrand Corporation, Rockford, Ill.

Filed Sep. 24, 1979, Ser. No. 78,022
Int. Cl.³ F16H *39/46*
U.S. Cl. 60—395 **16 Claims**



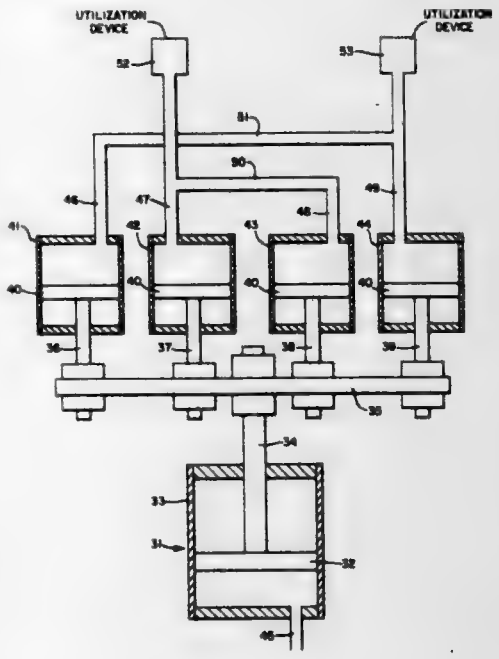
1. An electronic constant speed control in combination with a hydrostatic transmission having a variable displacement hydraulic pump with a displacement controlling member movable to various positions at either side of a neutral position and having an input shaft connectable to a prime mover and a hydraulic motor having an output shaft comprising, an electric controller for positioning said displacement controlling member, means for establishing a set constant speed signal representing a desired constant speed between zero and maximum speed in either direction of rotation for said output shaft, means for establishing a pump input shaft speed signal, means responsive to said constant speed and pump input shaft speed signals for generating a position control signal representing the required position of said displacement controlling member for the set speed, means for establishing an output shaft speed signal, means for comparing said output shaft speed signal with said set constant speed signal and integrating any error therebetween and generating a speed error control signal, and means for summing said position and speed error control signals to provide a control signal to said electric controller.

4,351,153

HYDRAULIC CONTROL DEVICE

Rupert M. Kosmala, 76, Sutton Rd., London N10 1HG, England

Continuation of Ser. No. 771,355, Feb. 23, 1977, abandoned.
This application Feb. 2, 1979, Ser. No. 8,768
Claims priority, application United Kingdom, Mar. 5, 1976, 9041/76
Int. Cl.³ F01B *7/00*; F15B *7/00, 15/18*
U.S. Cl. 60—581 **5 Claims**



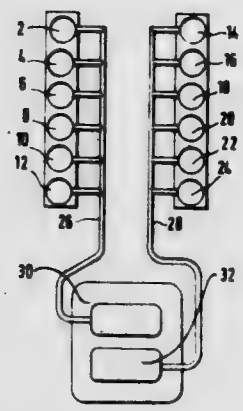
1. A hydraulic fluid dispensing arrangement for dispensing predetermined volumetric quantities of fluid comprising a plurality of pairs of associated pistons and cylinders, each cylinder having a single fluid outlet, means mechanically coupling the pistons together, means for actuating the coupling means to produce a similar degree of motion of the pistons in their respective cylinders, said actuating means comprising a further piston acting in a main cylinder, and means for applying pressurized fluid to the main cylinder to move said further piston, said coupling means including a coupling member secured by a driving rod to said further piston, each pair of associated pistons respectively being coupled to the coupling member in symmetrically balanced relationship with respect to the driving rod, each pair of associated cylinders respectively having their fluid outlets combined, each of said combined outlets being separate from any other combined outlets and applied to a separate utilization device, whereby the forces acting on the coupling member upon operation of the actuating means are symmetrically balanced with resepct to said driving rod.

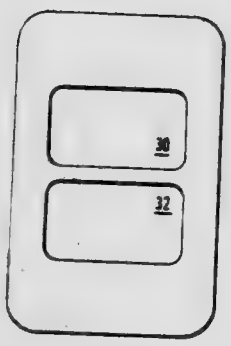
4,351,154

FEED OF THE EXHAUST GASES FROM AN INTERNAL-COMBUSTION ENGINE TO THE ROTOR OF A CENTRIPETAL TURBINE OF AN EXHAUST GAS TURBOCHARGER

Helmuth Richter, Celle-Boge, Fed. Rep. of Germany, assignor to Aktiengesellschaft Mühnle, Kopp & Kausch, Frankenthal, Fed. Rep. of Germany

Filed Nov. 8, 1979, Ser. No. 92,642
Claims priority, application Fed. Rep. of Germany, Nov. 17, 1978, 2849924
Int. Cl.³ F02B *37/00*; F01D *9/04*
U.S. Cl. 60—605 4 Claims





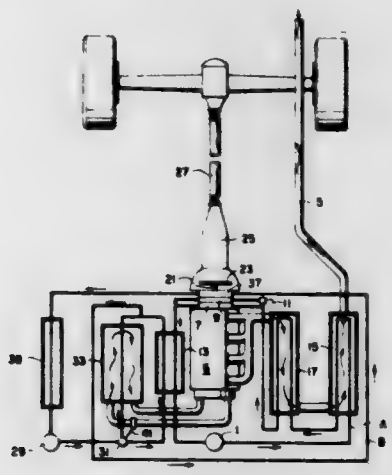
1. Feed for exhaust gases from multicylinder internal-combustion engine to a rotor of a centripetal turbine of an exhaust gas turbocharger, the turbine having a housing formed with three adjacent outlets radially leading to the rotor, and two inlets disposed above one another and extending in a direction perpendicular to the axis of the housing, two exhaust gas lines of the engine being connected to the two inlets, respectively, a first one of the exhaust gas lines being connected to substantially half of the cylinders of the engine, and a second one of the exhaust gas lines being connected to the other half substantially of the cylinders of the engine, comprising two branch lines branching from the second exhaust gas line; the first exhaust gas line being connected to the middle outlet of the three adjacent outlets, and said two branch lines being connected to the two outer outlets of said three adjacent outlets at the inlet to the rotor; said two branch lines and said two outlets connected thereto extending in direction of the axis of the rotor, at the inlet to the rotor, and being, respectively, disposed adjacent the first exhaust gas line and the middle outlet, respectively; said three adjacent outlets extending in common over the circumference of the rotor.

4,351,155

WASTE HEAT RECOVERY SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Forest L. Anderson, 12186 Melody Dr., #103, Denver, Colo. 80234, and Robert H. Nation, 13164 Elk Pl., Denver, Colo. 80239

Filed Nov. 7, 1980, Ser. No. 204,855
Int. Cl.³ F01K *23/10*
U.S. Cl. 60—618 22 Claims



1. A method primarily intended for recovering and utilizing waste heat from the exhaust and coolant of an internal combustion engine by using two separate and closed circuits of working fluid, said method comprising the steps of:

(a) pumping a liquified, first working fluid to a first location along a first closed circuit,

(b) vaporizing said first working fluid at said first location along said first circuit to a high side temperature and pressure by applying waste heat from said exhaust,

(c) expanding said vaporized first working fluid in said first circuit to produce work,

(d) condensing said expanded first working fluid to a liquid state by removing heat therefrom,

(e) repeating steps (a)–(d) while simultaneously,

(f) pumping a liquified, second working fluid along a second closed circuit,

(g) vaporizing said second working fluid at at least one location along said second circuit to a high side temperature and pressure less than the high side temperature and pressure of said first circuit by selectively applying waste heat from said coolant and the removed heat of step (d),

(h) expanding said vaporized working fluid in said second circuit to produce work,

(i) condensing said expanded second working fluid to a liquid state, and

(j) repeating steps (f)–(i).

4,351,156

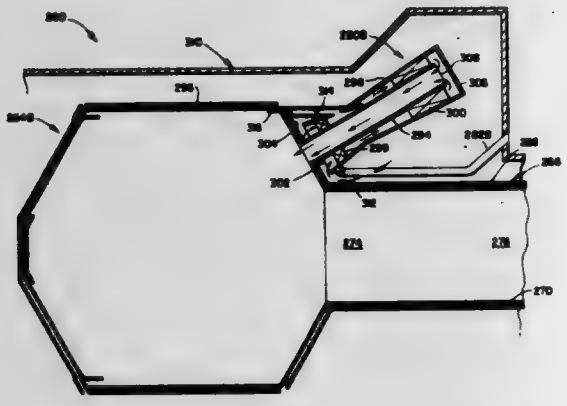
COMBUSTION SYSTEMS

David J. White, San Diego, and Peter B. Roberts, Encinitas, both of Calif., assignors to International Harvester Company, Chicago, Ill.

Division of Ser. No. 930,249, Aug. 2, 1978. This application Jan. 9, 1980, Ser. No. 110,784
Int. Cl.³ F02C *7/224*; F23R *3/32*
U.S. Cl. 60—737 7 Claims

1. Combustion apparatus of the premix/fuel lean type, comprising: means providing an annular array of primary combustion zones of circular cross section and independently activatable means for so introducing jets of a premixed combination of fuel and primary air having an equivalence ratio of less than unity into each of said primary combustion zones at intervals therearound and toward the axial centerline of the primary combustion zone at the upstream end thereof as to effect recirculation of fluid in the primary combustion zone at a volume rate exceeding that at which the fuel and air are introduced

into the primary combustion zone, whereby the temperature and the concentration of oxygen in said main primary combustion zone can be kept at levels that inhibit the formation of NO_x; and means providing an annular secondary combustion zone downstream from and communicating with all of said primary combustion zones, whereby the output of said apparatus can be varied to accommodate the load thereon by varying the number of primary combustion zones which are operational, the means providing said secondary combustion zone



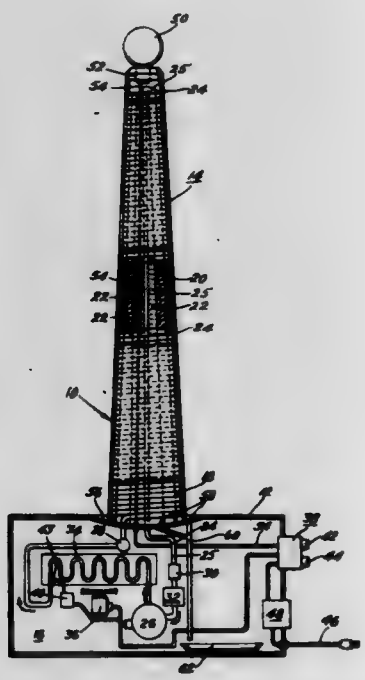
comprising concentric inner and outer liners and a closure means spanning said liners at the upstream end of said secondary combustion zone, said primary combustion zones being communicated with said secondary combustion zones through said closure means and the diameter of each said primary zone being greater than the radial dimension of the secondary combustion zone, whereby there is a step between each said primary zone and the secondary combustion zone at the location where those zones communicate with each other.

4,351,157

METHOD AND APPARATUS FOR FORMING ICE SCULPTURES OR THE LIKE

Andy W. Zeigler, Pine Acres, Milford, Pa. 18337

Continuation of Ser. No. 29,232, Apr. 11, 1979, abandoned. This application Feb. 25, 1981, Ser. No. 238,053
Int. Cl.[3] F25C *1/00*
U.S. Cl. 62—1 16 Claims



1. An apparatus for forming ice sculptures and the like, comprising:

a housing;

a helical stack of pipe coils forming a continuous composite surface of predetermined shape, disposed on said housing and fully exposed to the ambient atmosphere;

means disposed in said housing for refrigerating said helical stack of coils, said stack of coils also forming evaporator means for the refrigerating means; and,

a substantial layer of ice formed upon operation of the refrigerating means, from successive layers of frost on substantially all of said surface in said predetermined shape, the layer of ice formed only from moisture condensed from the ambient atmosphere.

2. An apparatus for forming ice sculptures and the like comprising:

a housing;

a helical stack of pipe coils forming a continuous composite surface of predetermined shape, disposed on said housing;

a sleeve member formed from highly thermally conductive material overfitting said helical stack of coils and in substantial surface contact therewith, said sleeve member providing an outer ice-forming surface fully exposed to the ambient atmosphere;

means disposed in said housing for refrigerating said helical stack of coils, said stack of coils also forming evaporator means for the refrigerating means;

said means for refrigerating further including a circulating refrigerating fluid which flows upwardly through the helical stack of pipe coils; and

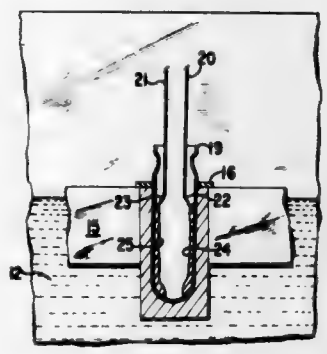
a substantial layer of ice formed upon operation of the refrigerating means, from successive layers of frost on substantially all of said sleeve member, the layer of ice formed only from moisture condensed from the ambient atmosphere.

4,351,158

METHOD OF PRODUCING MULTICOMPONENT LYOPHILIZED PRODUCT

Arthur Hurwitz; John Michelucci, both of Plattsburgh, N.Y., and John Krupey, Montreal, Canada, assignors to American Home Products Corporation, New York, N.Y.

Filed Jan. 22, 1980, Ser. No. 114,151
Int. Cl.[3] B65B *63/08*
U.S. Cl. 62—60 9 Claims



1. A process for obtaining a package containing a mass of dry matter comprising at least two immunologic reagent materials incompatible with each other in the presence of moisture which comprises the steps of simultaneously charging separate aqueous liquid compositions of each material into a container maintained at a temperature substantially below the freezing temperature of each of said first and second liquid compositions in such predetermined amounts that the separate charges of liquid compositions freeze on the wall of said container, and then simultaneously lyophilizing the frozen masses.

4,351,159

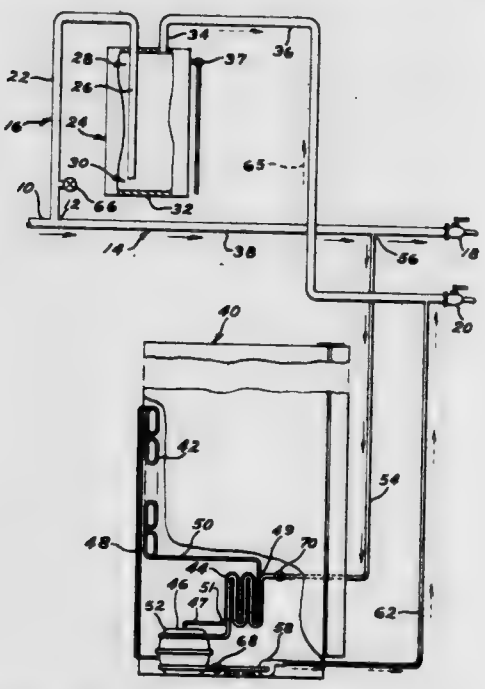
ENERGY RECOVERY SYSTEM

Frank A. Schumacher, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Mar. 5, 1981, Ser. No. 240,750
Int. Cl.[3] F25B *7/00, 27/02*
U.S. Cl. 62—79 5 Claims

1. A method of providing auxiliary hot water to a water system including:

(a) conducting water into the system from a water supply,
(b) dividing the incoming water at a junction into a cold water branch and a hot water branch said hot water branch including a hot water heating tank, each branch terminating downstream at a valve,
(c) introducing water to be heated into the bottom of the hot water heating tank and expelling hot water out the top thereof for delivery to the hot water branch valve,



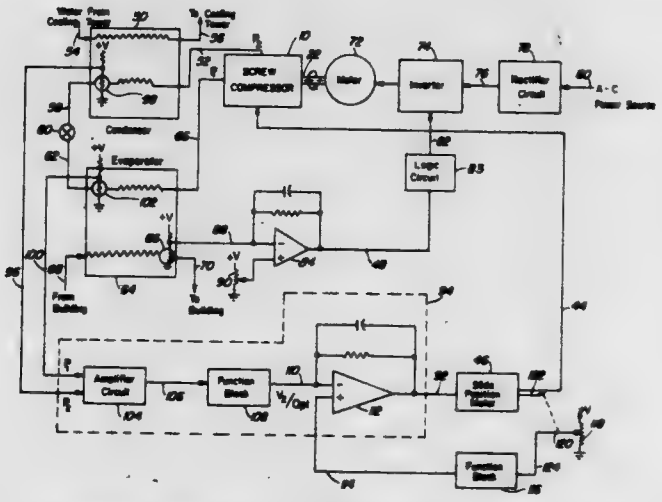
(d) conducting water from the cold water branch to refrigerating apparatus having a condenser, evaporator and compressor, constantly when the refrigerating apparatus is operating,
(e) circulating the water in heat transfer relationship with the condenser to heat the water, and
(f) pumping the heated water from the refrigerating apparatus into the hot water branch between the hot water heating tank and the hot water branch valve when the temperature of the heated water is above 110° F.

4,351,160

CAPACITY CONTROL SYSTEMS FOR SCREW COMPRESSOR BASED WATER CHILLERS

Kenneth J. Kountz, Palatine, Ill., and Richard A. Erth, York, Pa., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Jun. 16, 1980, Ser. No. 159,572
Int. Cl.³ F25D *17/02*
U.S. Cl. 62—201 **7 Claims**



1. A control system for a helical rotary screw compressor employed in a refrigeration apparatus having a condenser, an expansion device and an evaporator connected in a closed refrigeration circuit with the screw compressor, the refrigeration apparatus also including capacity varying means for varying the capacity of the screw compressor, comprising in combination:

said screw compressor compressing gas from a low pressure at suction to a high pressure at discharge and including a housing with a barrel portion having a pair of parallel intersecting bores, an inlet port and a discharge port, two intermeshed helical rotors disposed in said bores and forming variable volume compression chambers, an axially extending recess disposed within said barrel portion in open communication with said bores, and a slide valve member being axially slidable in said recess between a first position in which the discharge port is fully opened and a second position in which the discharge port is closed;

first circuit means connected to provide a control signal to the capacity varying means for regulating the capacity of said screw compressor;

a slide positioning motor mechanically coupled to drive said slide valve member;

second circuit means connected to provide a signal representing the optimal volume of gas trapped in the compression chamber prior to discharge as a function of the pressure ratio across said screw compressor; and

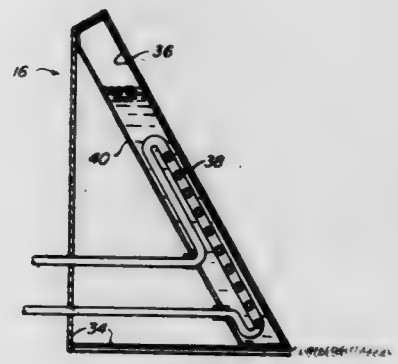
third circuit means, responsive to said second circuit means, connected to provide an error signal to said positioning motor for regulating the position of said slide valve member so as to adjust the actual volume of gas trapped in the compression chamber prior to discharge.

4,351,161

METHOD AND APPARATUS FOR USING SOLAR ENERGY TO AUGMENT A REFRIGERANT HEATING AND COOLING SYSTEM

Richard D. Jones, Denver, Colo., assignor to Solar Energy of Colorado, Inc., Denver, Colo.

Continuation-in-part of Ser. No. 359,283, Dec. 12, 1977, abandoned. This application Nov. 24, 1980, Ser. No. 209,981
Int. Cl.³ F25B *27/00*; G05D *23/00*
U.S. Cl. 62—235.1 **5 Claims**



1. An apparatus for supplying heat within a building, wherein the apparatus includes a heat exchanger in the building, a refrigerant circuit including a refrigerant gas compressor for delivering a relatively hot compressed refrigerant gas to the heat exchanger for circulation therethrough to transfer heat from the refrigerant gas for utilization within the building thereby cooling and condensing the gas to liquid refrigerant, a sub-ambient heat collector in said refrigerant circuit to exchange heat between radiant energy or ambient air and liquid refrigerant delivered to the collector for evaporation in the collector and return of relatively cold gas to said compressor, the improvement in said sub-ambient collector comprising:

a closed, free-standing uninsulated tank mounted in ambient air, said tank having first and second spaced sides interconnected by end walls, at least said first side wall being a collector plate for absorbing radiant heat and both of said side walls being exposed to the free flow of ambient air for absorbing heat by convection from the ambient air contacting substantially the entire outer surface of each of said side walls;

a refrigerant expansion coil in said tank connected in said

refrigerant circuit to transfer heat from said collector to the liquid refrigerant;

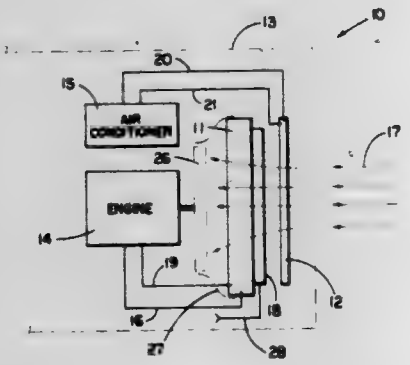
a mass of water and/or ice substantially filling the remaining space between said side walls and said coil to immerse said coil in said mass, said mass being in continuous surface contact with said collector plate and said second side wall to freely exchange heat with said collector plate and said second side wall and ambient air by conduction and to continuously transfer thermal energy by conduction through said mass to said refrigerant coil.

4,351,162

APPARATUS FOR ENGINE COOLING AND VEHICLE AIR CONDITIONING

Clifford S. L. Yee, Indianapolis, Ind., assignor to Wallace Murray Corp., Indianapolis, Ind.

Filed Oct. 1, 1980, Ser. No. 192,893
Int. Cl.³ B60H *3/04*
U.S. Cl. 62—239 **14 Claims**



1. An apparatus for cooling a vehicle engine and for air conditioning the vehicle, which comprises:

a planar liquid-coolant radiator mounted in the vehicle and operatively connected with the vehicle engine;

a planar condenser with the air conditioning unit of the vehicle, said radiator and said condenser being in substantially parallel, spaced apart relation;

a fan blade;

mounting means for mounting said fan blade between said radiator and said condenser and rotatable in a plane substantially parallel with said radiator and said condenser, said mounting means further being for mounting said fan blade such that rotation of said fan blade in a first direction draws air directly from and through one of said radiator and said condensor and pushes air directly to and through the other of said radiator and said condensor; and

rotation means for rotating said fan blade in the first direction to draw air directly from and through one of said radiator and condensor and to push air directly through the other of said radiator and said condenser.

4,351,163

AIR CONDUCTING MECHANISM

Donald L. Johannsen, 3742 W. Solar Dr., Phoenix, Ariz. 85021

Division of Ser. No. 168,655, Jul. 11, 1980, abandoned. This application Nov. 2, 1981, Ser. No. 317,463
Int. Cl.³ F28D *5/00*
U.S. Cl. 62—305 **5 Claims**

1. An air conditioning system comprising in combination:

(a) a refrigeration unit having an air outlet and a condenser coil;

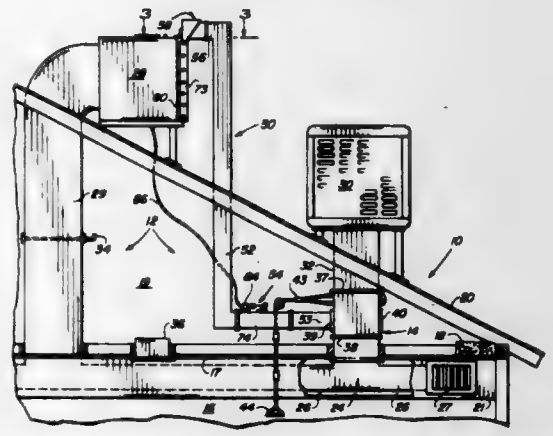
(b) an evaporative cooler having an air outlet;

(c) means connecting the air outlet of said refrigeration unit to a first point of use;

(d) an air diversion duct connecting the air outlet of said evaporative cooler to the first point of use and to a second point of use, said air diversion duct including damper means having a first position for directing evaporatively cooled air to the first point of use and a second position for directing that air to a second point of use; and

(e) an air conducting mechanism connected between said refrigeration unit and said air diversion duct for delivering evaporatively cooled air to the condenser coil of said refrigeration unit when the damper means of said air diversion duct is in its second position, said air conducting mechanism including,

I. a duct having an air inlet connected to said air diversion duct for receiving evaporatively cooled air when the damper means of said air diversion duct is in its second position, said duct having an air outlet,



II. an air distribution manifold connected to the air outlet of said duct for receiving the evaporatively cooled air therefrom, said air distribution manifold mounted adjacent the condenser coil of said refrigeration unit for distributing the evaporatively cooled air across the air inlet face of the condenser coil,

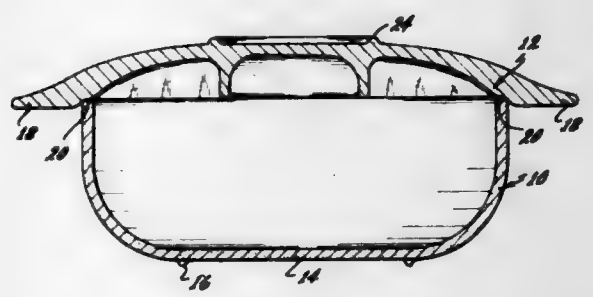
III. damper means in said duct and connected to be responsive to the operation of said refrigeration unit for delivering the evaporatively cooled air to said refrigeration unit when it is operating and venting the evaporatively cooled air to the second point of use when said refrigeration unit is inoperative.

4,351,164

POROUS SALAD BOWL INCLUDING RIBBED LID FOR COOLING

Peter Christiani, 145 S. Western Ave., Apt. 121, Anaheim, Calif. 92804

Continuation of Ser. No. 112,163, Jan. 14, 1980, abandoned. This application May 8, 1981, Ser. No. 261,907
Int. Cl.³ F25D *1/00*
U.S. Cl. 62—315 **1 Claim**



1. In a bowl of unglazed porous material that is sufficiently porous for cooling of foods contained therein by evaporation of liquid previously absorbed by said porous material when said porous material has been moistened and defining a cavity for receiving said foods, said bowl having a bottom and an upper rim and including a unitary dished lid of said porous material having a concave side and a convex side, the improvement comprising:

ribs integral with and extending upwardly from said concave side of said lid and dividing said concave side into a

plurality of serving compartments, said ribs also increasing the total surface area of said concave side relative to the surface area of said convex side to thereby increase the rate of evaporation of said liquid from said lid to thus improve the cooling of said foods, said convex side being of shallow curvature relative to said bowl cavity so that said lid may be inverted on said rim without substantially extending into said bowl cavity,

such that said lid may be inverted on said rim between a concave side down position and a concave side up position for selecting a higher or a lower rate of evaporative cooling of said covered foods, and when placed with said ribbed, concave side up said lid is also useful as a chilled serving tray while simultaneously covering and cooling the contents of said bowl.

4,351,165

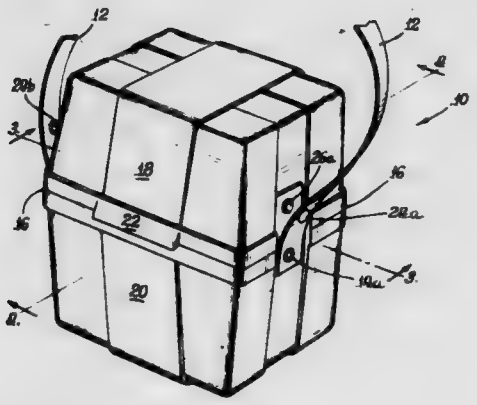
PORTABLE COOLER

Marten Gottsegen, 1212 Lake Shore Dr., Chicago, Ill. 60610; Fred F. Drucker, 205 Riverside La., Lincolnshire, Ill. 60015, and Henry Glass, 245 Dickens Rd., Northfield, Ill. 60093

Filed Jan. 7, 1981, Ser. No. 223,121

Int. Cl.³ F25D *3/08*

U.S. Cl. 62—371 **10 Claims**



1. A portable cooler, comprising in operative combination:

(a) a first, lower insulated container having an outer shell and an inner liner of insulating material, which container consists essentially of four adjoining walls and an integral base defining a volume for carrying items, and being substantially open on a sixth side;

(b) a second, upper insulated container having an outer shell and an inner liner of insulating material, which container consists essentially of four adjoining walls and an integral top defining a volume for carrying items, and being substantially open on a sixth side;

(c) a removable closure for said openings of said containers comprising a liquid container substantially coextensive with said openings;

(d) said insulated liner walls of both said insulated containers having a shoulder defined adjacent said open sixth side to receivingly engage said liquid container, said liquid container forming a closure for either of said insulated containers;

(e) said liquid container extends partially into the volume of each of said insulated containers and defines a separator between said two insulated containers when said insulated containers are inverted on each other with said liquid container therebetween to form a combined container having at least two substantially separate volumes for items, and said first insulated container forming the lower portion and said second container forming said upper portion when said containers are in the closed position;

(f) said liquid container providing an interlock of said two insulated container portions against relative lateral movement and providing lateral support;

(g) means for releasably securing said liquid container to said second, upper insulated container; and

(h) a carrying strap secured adjacent opposite ends thereof to opposite sides of said first, lower insulated container shell, and having means spaced from the secured ends for releasably attaching the strap to corresponding opposite sides of the second, upper insulated container shell, whereby the portions of the strap between the ends and said releasably attaching means hold the first and second insulated containers together.

4,351,166

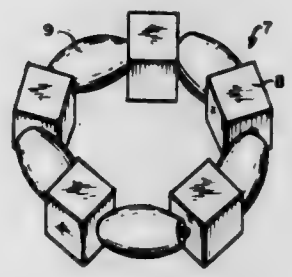
RING

Juliette Belin, 9040 Ft. Hamilton Pkwy., Brooklyn, N.Y. 11209

Filed Nov. 10, 1980, Ser. No. 205,841

Int. Cl.³ A44C *9/00*

U.S. Cl. 63—15 **4 Claims**



1. A finger ring comprising an elastic string which is a closed, circular loop, beads strung on the string so that the beads are disposed along substantially the entire circumference of the loop when the ring is off the finger and the elastic string is in the contracted condition, the loop being of a size such that the ring can be conveniently slipped onto the finger and when in place on the finger the elastic will be extended so that the ring grips the finger and tends to remain in place thereon, wherein at least some of the beads have rounded surfaces so that when the ring is in place on the finger other than the thumb, it will slide circumferentially without jerking when beads having said rounded surfaces are pumped circumferentially with the thumb and wherein one of the beads includes means for causing jerking to occur when said one bead is pumped, said means including square corners on said one bead projecting radially inward and outward of the ring beyond the peripheries of the beads adjacent to said one bead, thereby to engage the skin when said one bead is moved circumferentially.

4,351,167

ELASTIC COUPLING OF DISC CONSTRUCTION

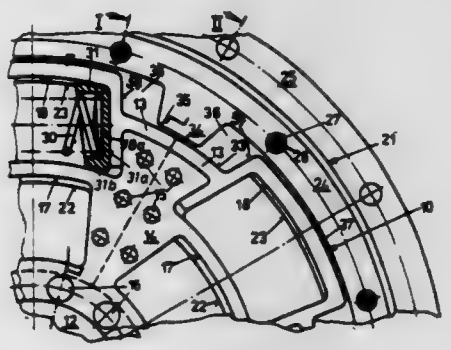
Wolfgang Hanke, and Manfred Schmitt, both of Heidenheim, Fed. Rep. of Germany, assignors to Voith Getriebe KG, Fed. Rep. of Germany

Filed Nov. 7, 1979, Ser. No. 92,208

Claims priority, application Fed. Rep. of Germany, Nov. 10, 1978, 2848748; Sep. 14, 1979, 2937237

Int. Cl.³ F16D *3/80, 3/14*

U.S. Cl. 464—24 **17 Claims**



1. An elastic coupling of disc construction comprising:

a first coupling half comprising a central disc rotatable about an axis;

a second coupling half comprising two side discs arranged on the opposite sides of said central disc; said side discs being connected to each other and being rotationally fixed; said side discs being rotatable with respect to said central disc about an axis; said side discs enclose said central disc at the outer circumference of said side discs, defining an enclosed inner chamber which can be filled with a fluid and which houses said central disc;

elastic coupling elements joining said first and said second coupling halves such that relative rotation of said coupling halves charges said elastic coupling elements, which thereby restrains such relative rotation;

in said inner chamber, a projection being arranged at the radially outer region of said inner chamber and extending generally radially inwardly from and being attached to said side discs; said projection having a first abutment surface thereon facing in one circumferential direction of said one coupling half; said central disc having a recess defined therein which opens generally radially outwardly and in which said projection is received; a second abutment surface being defined at a circumferential side wall of said recess; said first and said second abutment surfaces being shaped and positioned to be in opposition to each other, and at a maximum torsion angle of relative rotation of said coupling halves, said first and said second abutment surfaces being in substantially surface contact;

said discs being dimensioned so that said first and said second abutment surfaces define a radially extending displacement chamber between them, which said displacement chamber is also comprised by said side discs; the volume of said displacement chamber being adapted to vary as said coupling halves counter-rotate, which moves said first and said second abutment surfaces circumferentially with respect to each other;

said discs being shaped to together define a throttle opening for fluid in the vicinity of said projection and between said central disc and said side discs and said throttle opening being defined by said throttle opening defining surface and said radially outwardly facing wall surface; said throttle opening communicating between said displacement chamber and said inner chamber outside said displacement chamber and being shaped to restrict the flow of fluid through itself to retard relative movement between said central and said side discs.

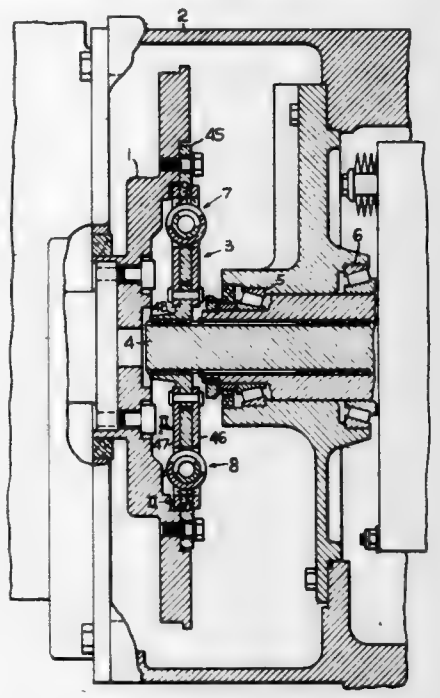
4,351,168

TORSION VIBRATION DAMPER

George T. Prince, West Allis, and Gerardus M. Ballendux, Waukesha, both of Wis., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Dec. 29, 1980, Ser. No. 220,520
Int. Cl.³ F16D 3/14
U.S. Cl. 464—64 10 Claims

1. A torque transmitting vibration damper comprising, a driving member and a driven member defining angularly spaced spring slots, spring assemblies including at least one spring in each of said slots, a spring seat on each end of said springs for transmitting torque from said driving member to said driven member through said spring assemblies, each of said spring seats having means extending axially within said



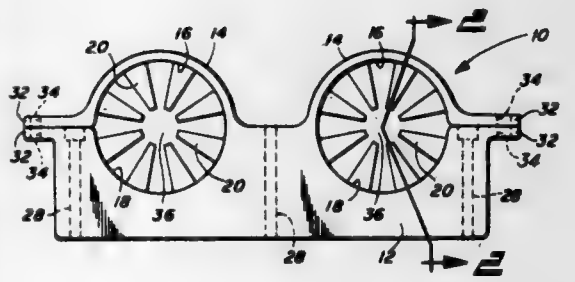
springs to form abutments limiting the maximum compressive force transmitted through said springs.

4,351,169

RESTRAINING DEVICE

Jay F. Plymale, 7437 Birkner Dr., Kent, Ohio 44240

Filed Sep. 24, 1980, Ser. No. 190,229
Int. Cl.³ E05B 75/00
U.S. Cl. 70—16 5 Claims



1. A device for restraining a person comprising a base member having a plurality of openings adjacent the top surface thereof, one or more arm members flexibly attached to said base member and having one or more openings adjacent the bottom surface thereof, said one or more openings in said one or more arm members being so positioned therein so as to be complementary to said plurality of openings in said base member to receive the wrists of the person being restrained, and tang members attached to and angularly directed away from the surfaces defining said plurality of openings in said base member and attached to and angularly directed away from the surfaces defining said one or more openings in said one or more arm members, said tang members being engageable with the surface of the wrists of the person being restrained and applying a force thereto.

4,351,170

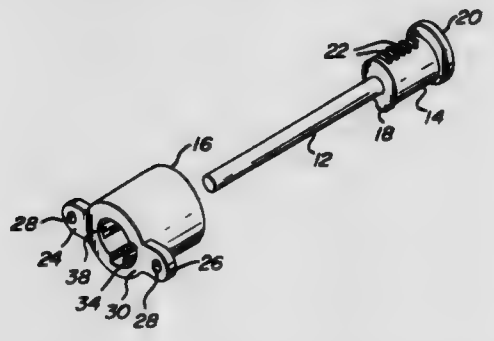
KEY ACTUATED LOCKING BOLT

I. Bertram Clompus, 111 Harvest La., Phoenixville, Pa. 19460

Filed Sep. 2, 1980, Ser. No. 183,528
Int. Cl.³ E05B 65/08
U.S. Cl. 70—90 8 Claims

1. A lock for use with first and second frame members of the window or door type having overlapping portions when in the closed position comprising:

(a) a bolt having a length sufficient to extend through the thickness of one of the overlapping frame members and enter a blind hole in the mating overlapping frame members;
(b) a plug fixedly connected to and coaxial with one end of said bolt and having a length substantially shorter than the length of the bolt, a locking lug projecting radially outwardly from the plug adjacent said one end;
(c) a discrete housing adapted to be bolted at one end to an interior side face of one overlapping frame member, said housing having a passage therethrough, said plug being insertable in said passage from the other end of said housing and rotatably supported in said housing passage for rotation between a locked position when the lug engages a mating



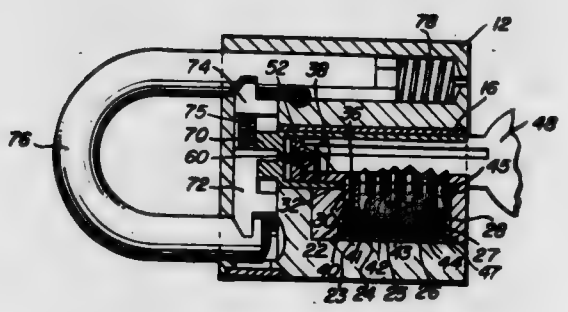
surface adjacent said one end on the housing for prevention of relative reciprocation between the housing and the plug and an unlocked position wherein the bolt and plug are bodily removable from said housing, said housing having a longitudinally extending groove on its inner periphery for accommodating said lug during removal of the plug and bolt from said housing, said plug having an axial length approximately equal to the axial length of said housing, said housing having mounting holes parallel to the axis of said passage; and
(d) key operated tumbler means associated with said plug for facilitating rotation of the plug and bolt relative to said housing between the locked and unlocked positions.

4,351,171

SEQUENTIAL LOCKING TWO KEY LOCK

Yaiman Tsui, Kowloon, Hong Kong, assignor to China National Light Industrial Products Import Export Corporation, Shantung Branch, Taingtao, China

Filed Jul. 1, 1980, Ser. No. 165,226
Int. Cl.³ E05B *35/12*
U.S. Cl. 70—339 **15 Claims**



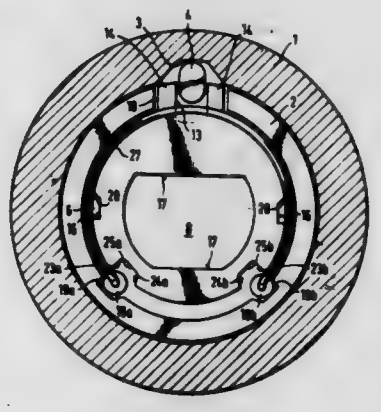
1. A locking apparatus requiring sequential actuation by two different keys for unlocking thereof, comprising:
an inner tubular member having a key slot formed therein;
an intermediate tubular member slidably receiving said inner tubular member;
an outer tubular member slidably receiving said intermediate tubular member;
a plurality of pins extending radially through said outer, intermediate and inner tubular members for contact with a key disposed in said key slot;
a cam member axially movably mounted within said intermediate tubular member;
cam surface means formed on said inner tubular member for causing axial movement of said cam member upon rotation of said inner tubular member;
a first axial slot formed in said intermediate tubular member;
a second axial slot formed in said outer tubular member, said first and second axial slots being registrable with each other; and
a pin extending from said cam member through said first and second axial slots, said pin being moved from a position within said slots to a position out of said slots upon axial movement of said cam member.

4,351,172

CYLINDER LOCK MECHANISM

Kaarlo Martikainen, Mastotie, Finland, assignor to Oy Wartsila AB, Helsinki, Finland

Filed Aug. 27, 1980, Ser. No. 181,803
Claims priority, application Finland, Sep. 7, 1979, 792797
Int. Cl.³ E05B *29/02*
U.S. Cl. 70—366 **22 Claims**



1. A key operated cylinder lock including a hollow stationary cylinder housing enclosing a turnable power transmission element and a locking bar having a position locking the turning movement of said power transmission element relative to said cylinder housing, further a set of discs including a number of locking discs turnable by means of combination surfaces on a key of said lock, said locking discs being turnable, by the turning movement of said key, from an initial key insertion position to a releasing position, in which said power transmission element is released from its locked connection to the cylinder housing, the key of the lock being arranged to directly transmit a turning force to a number of locking discs only in a direction from said initial position to said releasing position, the returning of these locking discs to their initial position being arranged to be carried out by means of a separate return bar, receiving turning power from said key through one or several members turning with the key, said lock comprising means for guiding said return bar and said guiding means including means for allowing said return bar to move in the circumferential as well as in the radial direction of said lock.

4,351,173

KEY HOLDER

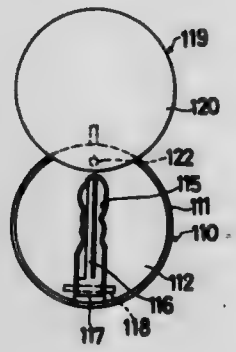
Minoru Toyoda, Nagoya, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Division of Ser. No. 68,568, Aug. 22, 1979. This application Dec. 5, 1980, Ser. No. 213,350
Claims priority, application Japan, Sep. 8, 1978, 53-110845; Feb. 6, 1979, 54-13025; Feb. 6, 1979, 54-13026; Feb. 6, 1979, 54-13027; Feb. 6, 1979, 54-13028; Feb. 6, 1979, 54-13029
Int. Cl.³ A47G *29/10*
U.S. Cl. 70—456 R **5 Claims**

1. A pendant type key holder comprising:
a body;
a key having serrations, said key being freely, pivotably

mounted on said body and movable between an operating position in which the key is disposed outside said body and a non-operating position in which the key is housed within said body; and

a cover pivotably mounted on said body, the body including a concave portion formed in a surface thereof within



which the key is housed when in the non-operating position, such that the key in the non-operating position is maintained by said cover, said concave portion being of an elongated shape closely corresponding to the outer edge configuration of said key, said concave portion including serrations at a part corresponding to said serrations of said key.

4,351,174

METHOD OF PRODUCING A PROFILE STRIP

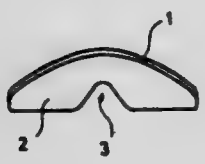
Herbert Bauer, Bad-Liebenzell, and Guenter Weik, Birkenfeld, both of Fed. Rep. of Germany, assignors to INOVAN - Stroebe G.m.b.H. and Co. KG, Birkenfeld, Fed. Rep. of Germany

Filed Nov. 5, 1980, Ser. No. 204,197

Claims priority, application Fed. Rep. of Germany, Nov. 5, 1979, 2944613

Int. Cl.³ B21D *5/00*

U.S. Cl. 72—47 6 Claims





1. A method of forming a metal strip for electrical contact members having a raised side uniformly plated with a layer of at least one metal different from the metal of which said strip consists, said method comprising the steps of: plating a flat metal strip on one of its flat sides with a uniform layer of at least one other metal; forming, in a first forming step, a central groove into said metal strip such that said groove extends lengthwise of said metal strip along its underside opposite said plated side and slightly bending said metal strip such that the plated side is slightly curved; and, in a second forming step, folding the flat metal strip together, lengthwise, with said layer on the outer side so as to close said groove and raise the plated side thereby obtaining the desired outside profile on the outside strip surface carrying said layer.

4,351,175

METHOD OF MANUFACTURING AN ARC-LIKE FORMED PRODUCT AND EQUIPMENT FOR CARRYING OUT THE METHOD

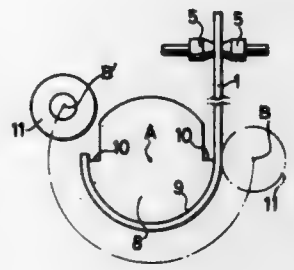
Shigeo Ichikawa; Motonobu Ito, and Makoto Aiba, all of Toyota, Japan, assignors to Taiho Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Sep. 16, 1980, Ser. No. 187,980

Claims priority, application Japan, Sep. 22, 1979, 54-122201

Int. Cl.³ B21D *53/10*

U.S. Cl. 72—203 8 Claims



1. A method of manufacturing an arc-like formed product comprising the steps of: introducing a plate-like metal strip piece in a tangential direction with respect to one end of a cylindrical forming surface on a forming die and moving a die roller along said cylindrical forming surface, said die roller having its center at a desired distance apart from the center of said forming surface of said forming die whereby said metal strip is rolled in a direction of thickness between said cylindrical forming surface and said die roller and is formed in an arc shape along said cylindrical forming surface of said forming die;

pressing said metal strip formed along said cylindrical forming surface of said forming die against said cylindrical forming surface in a range of at least 1/20 to ½ of the length of said forming surface along its peripheral surface measured from both ends of said cylindrical forming surface;

and cutting the metal strip by a cutter portion formed on at least one end of said cylindrical forming surface of said forming die and by a movable blade cooperating with said cutter portion so as to obtain a formed strip piece.

4,351,176

BENDING BRAKE HEMMER

Carl Anderson, 12 St. Stephens Pl., Staten Island, N.Y. 10306

Filed Apr. 24, 1980, Ser. No. 143,507

Int. Cl.³ B21D *5/04*

U.S. Cl. 72—322 6 Claims



1. In a portable bending brake having a workpiece bending door and clamping jaws gripping a bending attachment therein, said bending attachment being positioned in the bending brake adjacent the bending door for the additional bending of a previously partially bent sheet material workpiece, the improvement wherein said attachment is one piece, comprising

a horizontally oriented elongated base section for mounting in the jaws of the conventional portable brake and having a width extending between an elongated free edge and an opposing elongated proximal edge, and a workpiece hold-

ing section vertically upstanding from said base section, said workpiece holding section comprising two fixed elongated opposed parallel legs both substantially perpendicular to said base section and uniformly spaced apart by a dimension substantially less than the width of the base section and approximating the thickness of the workpiece, each of said legs having opposing elongated upper and lower edges, said legs being interconnected at their respective upper edges forming an apex such that said interconnected legs are formed of one continuous piece of sheet material, whereby said legs form a substantially inverted U-shape in cross section for loosely receiving a portion of the workpiece between the legs without clamping the workpiece, the lower edge of one of said legs being interconnected to said elongated proximal edge, with the other leg remaining free, wherein said base section is held in the jaws of the bending brake, so that the holding section extends beyond the grip of the clamping jaws, the holding section being positioned with respect to the bending door such that a portion of the workpiece can be inserted between the legs, and the rest of the workpiece can be bent against the outside of the free leg by the bending door.

4,351,177

APPARATUS FOR MAKING A BEVEL GEAR

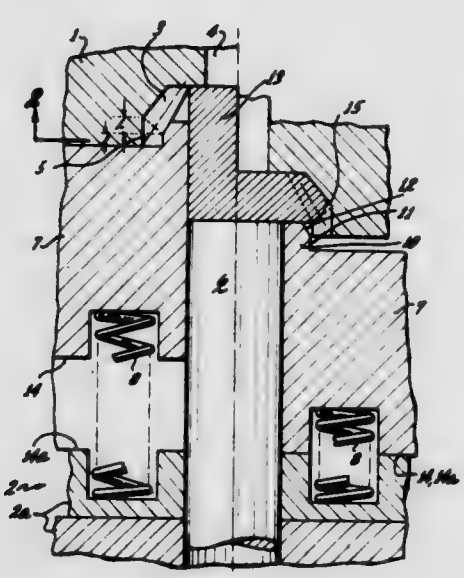
Herbert Leykamm, Lauf, and Siegfried Knabel, Nuremberg, both of Fed. Rep. of Germany, assignors to Kabel-und Metallwerke Gutehoffnungshütte Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed Jul. 3, 1980, Ser. No. 165,796

Claims priority, application Fed. Rep. of Germany, Jul. 5, 1979, 2927192

Int. Cl.³ B21K *1/30*

U.S. Cl. 72—354 **5 Claims**



1. Apparatus for making bevel gears by pressworking, including a die having a cavity contoured for making a bevel gear and including ridges for forming the grooves of the bevel gear; further including a punch and a counterpunch concentrical to and receiving the punch, the improvement comprising:

means defining an annular extension of the die cavity, resembling a hollow spline shaft including radially inwardly extending ridges which continue the the ridges of the bevel gear cavity;

an annular extension on a front end of the counterpunch, the extension including a cylindrical portion whose diameter is slightly smaller than a diameter defined by a circle along the spline shaft ridges; and

additional contour means on the extension for limiting and controlling material flow in the die cavity when the extension projects into the die cavity.

4,351,178

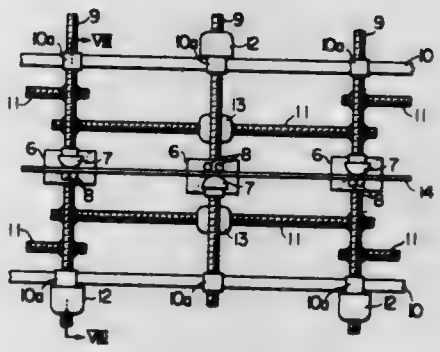
APPARATUS FOR BENDING A STRAIGHT TUBE INTO A SERPENTINE TUBE

Katuharu Uehara, and Izumi Ochiai, both of Ohiramachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 62,993, Aug. 2, 1979, abandoned. This application Nov. 3, 1981, Ser. No. 317,840

Int. Cl.³ B21D *7/02, 31/00*

U.S. Cl. 72—383 **1 Claim**



1. Apparatus for producing a serpentine tube for use with a heat exchanger or the like by bending a straight tube comprising:

bending head means movable both longitudinally and transversely for forming bends in the straight tube; and

drive means for moving said bending head means longitudinally and transversely;

motor means associated with said drive means to drive dies in the direction of a center axis of the straight tube and, at the same time, in a direction intersecting said axis at a different speed,

wherein the improvement resides in that said bending head means comprises

a fixed die provided with an arcuate surface for forming a bent portion of the serpentine tube by bending the straight tube, and

a pair of wings associated with said fixed die to hold the straight tube between the die and the two wings and push the tube to the arcuate surface of the die during a bending operation, said two wings moving symmetrically to right and left respectively from the apex of the arcuate surface to said die, and

means actuating both of said two wings to rotate 90° against and around the arcuate surface of each die for effecting bending of said serpentine tube without producing excess material by maintaining a dimensional relationship between the straight tube and the serpentine tube which satisfies following equation:

$$\overline{PQ} = \frac{L}{2} + \pi R\left(\frac{90 - \theta}{180}\right)$$

where:

$\overline{PQ}$: half length of straight tube portion during a bending operation of the tube;

L: length of straight portion on completion of bending operation;

R: the radius of bent portion of tube;

θ: bending angle of bent portion of tube.

4,351,179
MANUAL RIVETING TOOL

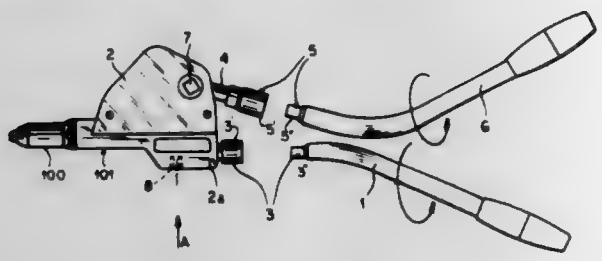
Josef Fiebiger, Dingolfing, Fed. Rep. of Germany, assignor to Gesipa Blindniettechnik Gesellschaft mit Beschränkter Haftung, Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 1, 1979, Ser. No. 62,615

Claims priority, application Fed. Rep. of Germany, Aug. 4, 1978, 7823317[U]; Aug. 4, 1978, 2834160

Int. Cl.[3] B21J *15/34*

U.S. Cl. 72—391 5 Claims



1. A manually operable riveter for the setting of blind rivets of the type in which a mandrel is drawn through the rivet, comprising:

a riveting head formed with a flat housing, a mandrel-engaging chuck extending from one end of said housing, a rotatable member operatively coupled to said chuck for displacing same, and a pair of actuating members at an opposite end of said housing and adapted to form a pair of tongs, one of said actuating members being connected to said rotatable member for driving same;

respective arms each removably connectable to a respective one of said actuating members to form said tongs therewith, each arm having a first element and each actuating member a second element of a respective two-element detachable joint;

and

means on said housing spaced from the other of said actuating members forming a second element of a detachable joint adapted to receive the first element of one of said arms.

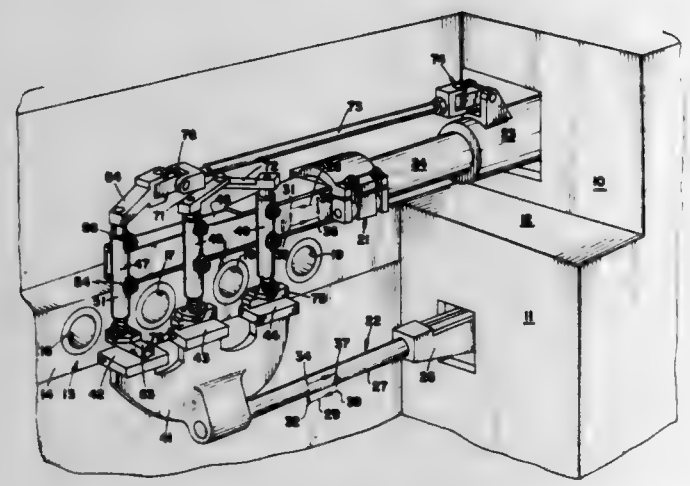
4,351,180
WORKPIECE TURNING TRANSFER

Gene E. Allebach, Tiffin, Ohio, assignor to The National Machinery Company, Tiffin, Ohio

Filed Jun. 30, 1980, Ser. No. 164,774

Int. Cl.[3] B21D *43/10*

U.S. Cl. 72—405 20 Claims



1. A forging machine transfer for transferring elongated workpieces between two work stations comprising a pair of grippers operable to close and grip a workpiece at one work station and to move in a transfer direction with a gripped workpiece to another work station, one of said grippers being pivoted to rotate said workpiece about an axis which is not parallel to the length of said gripped workpiece, and drive means connected to rotate said one gripper in response to movement in said transfer direction between said work stations, the other of said grippers being free of drive means and not permitting rotation thereof, said drive means providing a linkage including an arm on said one gripper and a drag link connected at one end to said arm and at its other end to a frame member fixed against movement in said transfer direction.

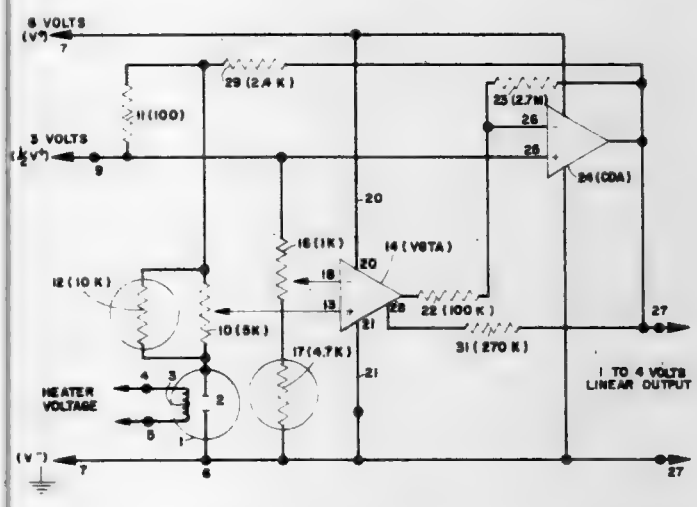
4,351,181
LINEAR, GAS TO VOLTAGE TRANSDUCER CIRCUIT

James H. Currans, 4089 W. Chenango Ave., Littleton, Colo. 80123

Filed Oct. 17, 1980, Ser. No. 198,117

Int. Cl.[3] G01N *27/12*

U.S. Cl. 73—23 10 Claims



1. In a gas detector circuit having a gas sensor of the semiconductor type, wherein the improvement in said circuit comprises:

(a) first direct current source having a common;

(b) second direct current source;

(c) semiconductor gas detector means disposed in gas communication with a gas constituent to be detected and having a sensor element means whose electrical resistance varies in accordance with the concentration of the gas constituent to be detected;

(d) first potentiometer resistor means connected in series with said sensor element means to form a voltage divider network therewith which is connected across the second direct current source and having an output wiper means upon which is established a first output signal which varies non-linearly in accordance with the concentration of the gas constituent to be detected;

(e) variable gain transconductance amplifier means (VGTA) having:

(1) a pair of operating current terminals for supplying operating current from the first direct current source through the VGTA,

(2) a non-inverting signal input terminal for receiving the first output signal from the wiper means of the first potentiometer resistor,

(3) an inverting signal input terminal for receiving an input signal from a second potentiometer resistor,

(4) a terminal for receiving a biasing current from the output voltage of a conventional differential amplifier (CDA) via a first feedback control resistor and thereby controlling the degree of amplification of said VGTA,

(5) an output terminal for impressing a second output signal emanating from the VGTA and going to the CDA via a first gain control resistor;

(f) first gain control resistor connected in series with a second feedback control resistor between the VGTA and the second feedback control resistor;

(g) second potentiometer resistor which is series connected between the second direct current source and the com-

mon and having a wiper connected to the inverting signal input terminal of the VGTA;

(h) conventional differential amplifier (CDA) means having:

(1) a pair of operating current terminals for supplying operating current from the first direct current source through the CDA,

(2) a non-inverting signal input terminal connected to the second direct current source,

(3) an inverting signal input terminal connected between the first gain control resistor and the second feedback control resistor,

(4) an output terminal for impressing a third output signal emanating from the CDA which subsequently drives an external operation performing component.

4,351,182

OXYGEN SENSOR FOR MONITORING EXHAUST GASES

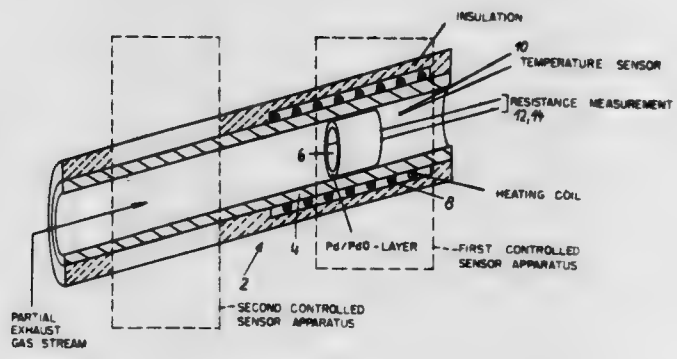
Rainer Schmidberger, Bermatingen, Fed. Rep. of Germany, assignor to Dornier System GmbH, Friedrichshafen, Fed. Rep. of Germany

Filed Mar. 26, 1980, Ser. No. 134,123

Claims priority, application Fed. Rep. of Germany, Apr. 21, 1979, 2916178

Int. Cl.³ G01N *27/12*

U.S. Cl. 73—27 R **12 Claims**



1. Sensing means for furnishing an output signal indicative of a predetermined partial pressure of oxygen in exhaust gases corresponding to an air number (λ) exceeding 1 ($\lambda > 1$), said sensing means comprising

a layer of metal changing state to the corresponding metal oxide or from said metal oxide to said metal at partial oxygen pressures varying in dependence on temperature for air numbers exceeding 1, said metal oxide having a low solubility in said metal, said change in state causing an abrupt change in electrical conductivity; and

means connected to said layer for furnishing said output signal in response to said change in electrical conductivity.

4,351,183

APPARATUS AND METHOD FOR DETERMINING THE OSMOLARITY/SPECIFIC GRAVITY OF A SOLUTION

Bill R. Egbert, Rte. 5, P.O. Box 338, Blackfoot, Id. 83221

Filed Oct. 31, 1980, Ser. No. 202,408

Int. Cl.³ G01N *9/00, 13/04*

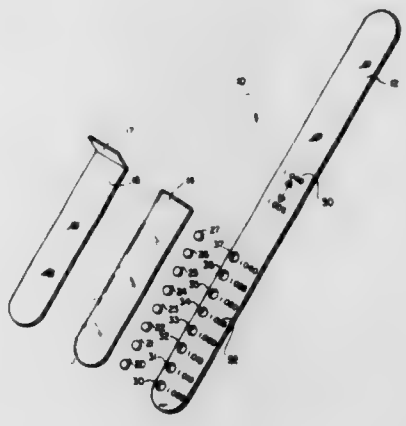
U.S. Cl. 73—32 R **10 Claims**

1. An apparatus for determining the specific gravity or osmolarity of a sample solution comprising:

support means;

a plurality of test solutions, each test solution having a known and predetermined specific gravity; and

semipermeable membrane means for sealingly enclosing each of the test solutions on the support means so that reaction of a test solution with a constituent of the sample solution in the area enclosed within the semipermeable



membrane indicates that osmotic diffusion has occurred through the semipermeable membrane.

4,351,184

SURFACE INSPECTION EQUIPMENT

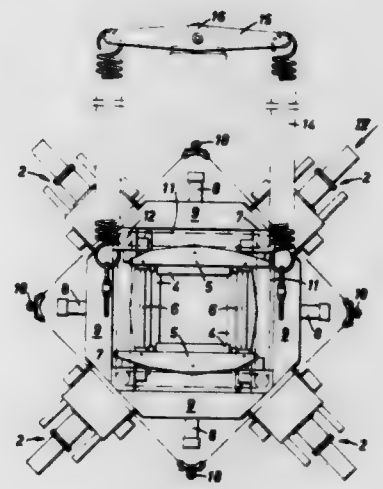
Henry C. Garner, Mexborough, and Jack Broadbent, Rotherham, both of England, assignors to British Steel Corporation, England

Filed Jan. 21, 1981, Ser. No. 226,639

Claims priority, application United Kingdom, Feb. 14, 1980, 8005034

Int. Cl.³ G01N *19/08*

U.S. Cl. 73—104 **9 Claims**



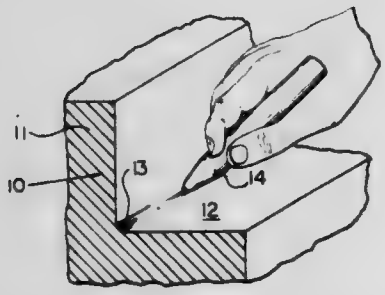
1. Apparatus for inspecting a corner surface of an elongate metallic object of generally rectangular or square cross-section comprising; a rigid assembly having an entry roller box, the entry roller box comprising several rollers movable collectively into contact with flat surfaces of an object to be inspected as it enters the entry roller box to locate the assembly positively with respect to the object; a scanning head having a surface inspection probe, said scanning head supported for movement about the path to be taken by the object under inspection such that, when said rollers are moved into contact with the flat surfaces of said object, a surface inspection probe of the scanning head is sited opposite a corner of the object; and, spring means suspendingly supporting the assembly so as to facilitate movement of the assembly about the path of the object under inspection.

4,351,185

HIGH TEMPERATURE PENETRANT SYSTEM

Vilma A. Garcia, Westchester, Ill., assignor to Magnaflux Corporation, Chicago, Ill.

Filed Jan. 26, 1981, Ser. No. 228,604
Int. Cl.[3] G01B 5/28; G01N 19/08
U.S. Cl. 73—104 7 Claims



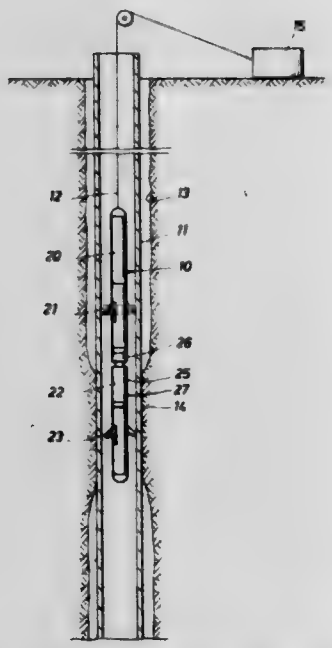
1. A method for the non-destructive testing of a workpiece for surface flaws at an elevated temperature which comprises marking areas of said workpiece with a crayon comprising a carrier which melts at a temperature below said elevated temperature having dissolved therein a dye which is liquid at said temperature and is contrastingly visible to said workpiece at said elevated temperature, and applying a developer at said elevated temperature to the marked areas to thereby draw up dye which has been lodged in surface flaws, and inspecting the workpiece.

4,351,186

APPARATUS FOR CONDUIT FREE-POINT DETECTION IN BOREHOLES

Pierre A. Moulin, Chaville, France, assignor to Schlumberger Technology Corporation, Houston, Tex.

Filed Apr. 27, 1981, Ser. No. 258,218
Claims priority, application France, Apr. 30, 1980, 80 09751
Int. Cl.[3] E21B 47/00
U.S. Cl. 73—151 14 Claims



1. In an apparatus for detecting the free point of a conduit in a borehole, the apparatus including a detector body adapted to be suspended from a cable and having at least two parts longitudinally and angularly movably mounted with respect to each other, and means for anchoring each of the parts inside the conduit under control from the surface, an improved detection means for respectively detecting the relative angular and longitudinal movements between the body parts when the conduit is deformed under torsion and tension stresses applied to it from the surface, said improved detection means comprising: a first transformer having a primary winding including a radial core attached to a first part of the detector body, said radial core having a radial axis perpendicular to the longitudinal axis of the detector body, and a secondary winding including two radial coils attached to the second part of the detector body and placed on opposite sides of the coil of the primary for furnishing a first electric signal representative of just the relative angular movement of said parts.

3. In an apparatus for detecting the free point of a conduit in a borehole, the apparatus including a detector body adapted to be suspended from a cable and having at least two parts longitudinally and angularly movably mounted with respect to each other, and means for anchoring each of the parts inside the conduit under control from the surface, an improved detection means for respectively detecting the relative angular and longitudinal movements between the body parts when the conduit is deformed under torsion and tension stresses applied to it from the surface, said improved detection means comprising:

(a) a first radial-coil transformer having a primary winding attached to a first part of the body member and a secondary winding attached to the second part of the body member for furnishing a first electric signal representative of just the relative angular movement of said parts, and

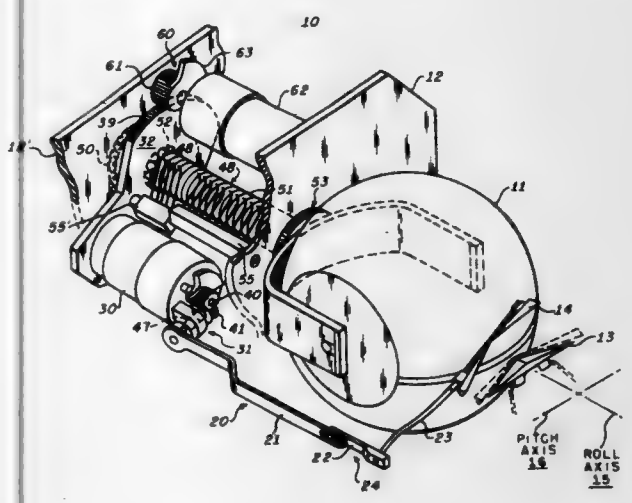
(b) a second axial-coil transformer having a primary winding attached to one part of the body member and a secondary winding attached to another part of the body member for furnishing a second electric signal representative of just the relative longitudinal movement of said parts.

4,351,187

SINGLE CUE DRIVE FOR FLIGHT DIRECTOR INDICATOR

Alan L. Foulks, and Gary O. Larson, both of Phoenix, Ariz., assignors to Sperry Corporation, New York, N.Y.

Filed Sep. 15, 1980, Ser. No. 187,118
Int. Cl.[3] G01C 21/00
U.S. Cl. 73—178 R 11 Claims



1. An indicating instrument for aircraft having a support housing and a single indicator element adapted to be displaced about roll and pitch command axes relative to a reference index in response to roll and pitch command signals comprising,

a sector gear means supported in said housing for rotation about said roll axis and a roll servomotor supported in said housing having an output for rotating said sector gear about said roll axis in response to said roll signals,

a pitch servomotor mounted on said sector gear having an output shaft extending therefrom in a direction substantially parallel to said roll axis and radially displaced therefrom and responsive to said pitch signals,

an elongated arm means supporting said indicator element, and

means for supporting said arm means on said pitch servomotor for pivotal movement about said pitch axis and includ-

ing right angle drive means coupled between said output shaft and said arm means.

4,351,188

METHOD AND APPARATUS FOR REMOTE MEASUREMENT OF WIND DIRECTION AND SPEED IN THE ATMOSPHERE

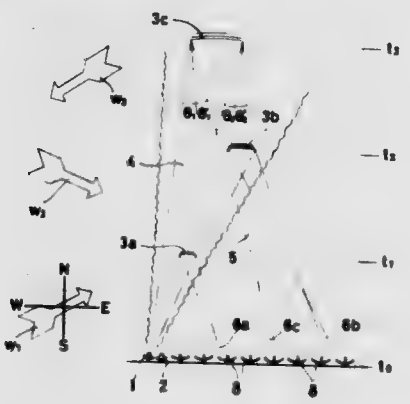
Madoka Fukushima, Tokyo; Kin-ichiro Akita, Sayama, and Yoshihisa Masuda, Musashino, all of Japan, assignors to Radio Research Laboratories, Ministry of Posts and Telecommunications, Koganei, Japan

Filed May 28, 1981, Ser. No. 268,107

Claims priority, application Japan, May 30, 1980, 55/71448

Int. Cl.³ G01W *1/02, 1/00;* G01S *13/00*

U.S. Cl. 73—189 **11 Claims**



1. A method for the measurement of wind direction and speed at high altitudes in the atmosphere, comprising the steps of transmitting vertically into the atmosphere a pulse of acoustic waves from an acoustic wave source installed on the ground thereby causing the pulse of acoustic wave to produce spherical wavefronts, transmitting continuous radio waves from a radio wave source installed on the ground toward the spherical wavefronts thereby enabling the radio waves to be reflected by the spherical wavefronts, detecting the position of the reflected radio waves formed as a focusing spot on the ground, tracing the time-course change of the positions of maximum intensity of the focusing spot of the reflected radio waves, and calculating the height distribution of wind direction and speed in the atmospheric region based on the time-course change of the position of the focusing spot.

4,351,189

DIFFERENTIAL FLOWMETERS

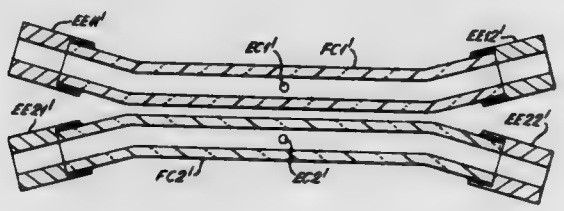
John O. Gray, Wilmslow, and Michael L. Sanderson, Stockport, both of England, assignors to National Research Development Corporation, London, England

Filed Aug. 12, 1980, Ser. No. 177,392

Claims priority, application United Kingdom, Aug. 17, 1979, 7928804

Int. Cl.³ G01F *1/58*

U.S. Cl. 73—196 **12 Claims**



1. An electromagnetic flowmeter head having a structure of separate liquid flow channels and measuring electrodes the head structure including in inert, non-magnetic insulating material two pairs of inlet and outlet ports linked by respective channel walls providing substantially identical liquid flow channels held close together with a path for magnetic flux across the channels, each of said inlet and outlet ports having an individual earthing electrode outside the flux path position and each of said channels having a single pick-up electrode of a substantially non-magnetic substance extending through the channel wall to the channel periphery, a pick-up electrode of a said channel providing a first electrode connection circuit terminal and the earthing electrodes of the inlet and outlet ports of the said channel providing in common a second electrode connection circuit terminal, whereby in operation an earth-loop free electrode connection circuit is available substantially identical for each channel.

4,351,190

ULTRASONIC NON-DESTRUCTIVE TESTING DEVICE FOR WELDING BEADS

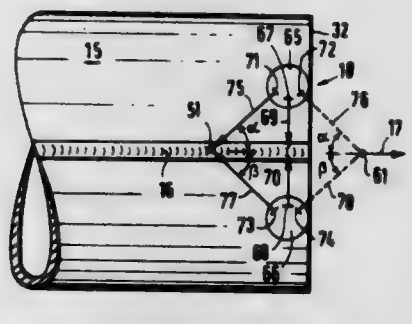
Wilfried Rehme, Brunnenweg 11, D-5200 Siegburg-Braschoss, Fed. Rep. of Germany; Anatoly Stipura, U1 Kirova 9; Victor Ripnyi, Pr Pravdi 113, both of Dnepropetrovsk, U.S.S.R.; Leonid Donskoi, U1 Argunovskaja 12, and Nikolai Schevtschenko, Pr Mira 188, both of Moscow, U.S.S.R.

PCT No. PCT/DE79/00105, § 371 Date May 13, 1980, § 102(e) Date May 13, 1980, PCT Pub. No. WO80/00616, PCT Pub. Date Apr. 3, 1980

PCT Filed Sep. 11, 1979, Ser. No. 231,134

Int. Cl.³ G01N *29/04*

U.S. Cl. 73—638 **6 Claims**



1. An ultrasonic non-destructive testing apparatus for welded seams on tubes comprising: a pair of test transducers for longitudinal defects; first and second pairs of test transducers for transverse defects, each said transverse defect transducer pair having a first element disposed on a first side of said welded seam and a second element disposed on a second side of said welded seam, said first transverse defect transducer pair directing ultrasonic rays at an acute angle to said welded seam intersecting said welded seam at a point on a first side of said longitudinal defect transducer pair, said second transverse defect transducer pair directing ultrasonic rays at an acute angle to said welded seam intersecting said welded seam at a point on a second side of said longitudinal defect transducer pair; and all transducer elements on said first side of said welded seam being mounted close together on a first testing aggregate and all transducer elements on said second side of said welded seam being mounted close together on a second testing aggregate.

4,351,191

PRESSURE SENSOR

Shinichiro Iwasaki, Auburn Heights, Mich., assignor to Aisin Seiki Company, Limited, Kariya, Japan

Filed Aug. 29, 1980, Ser. No. 182,700

Int. Cl.³ G01L *9/14*

U.S. Cl. 73—728 **8 Claims**

1. A pressure sensor comprising:

a casing defining an inner space;

a movable body which divides the inner space of said casing into a first space and a second space, a pneumatic pressure to be determined being introduced into the first space;

a spring for urging the movable body in a direction opposite to the pneumatic pressure;

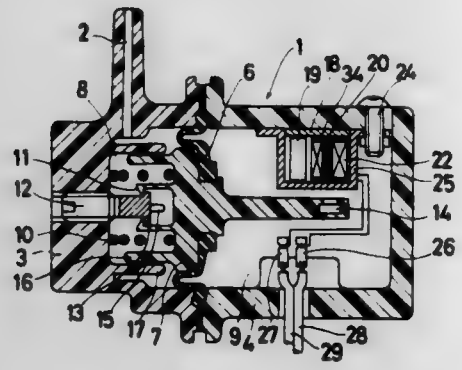
a ferromagnetic member coupled to the movable body;

a permanent magnet for producing a magnetic field;

core means of a magnetically soft material both disposed adjacent to a region of movement of the ferromagnetic member for forming a magnetic circuit therewith;

at least one electrical coil disposed on the core; and

detection means for detecting a change of intensity of magnetic flux produced in said core by the magnetic field of



said permanent magnet means in response to a displacement of said ferromagnetic member, comprising

means for applying a pulse voltage to said electrical coil, and

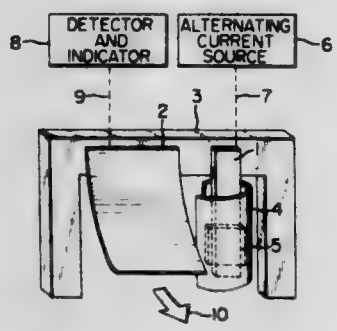
means for measuring the time delay occurring from the application of said pulse voltage until saturation of said core.

4,351,192

FLUID FLOW VELOCITY SENSOR USING A PIEZOELECTRIC ELEMENT

Minoru Toda, and Susumu Osaka, both of Machida, Japan, assignors to RCA Corporation, New York, N.Y.

Filed Dec. 10, 1980, Ser. No. 215,000
Int. Cl.³ G01F *1/28*
U.S. Cl. 73—861.18 **1 Claim**



1. In combination,

a first piezoelectric element driven from a source of alternating current to propagate an acoustic vibration of a frequency determined according to the frequency of said source,

a second piezoelectric element sensitive to said acoustic vibration to produce an electrical output signal according to the acoustic pressure thereon from said vibration,

means for mounting said elements in close proximity to one another with said second element mounted in a fluid flow to be measured and movable away from said first element according to the intensity of said fluid flow,

said second element being arranged to produce said output signal with decreasing magnitude as the intensity of said fluid flow increases thereby increasing the spacing between said elements, and

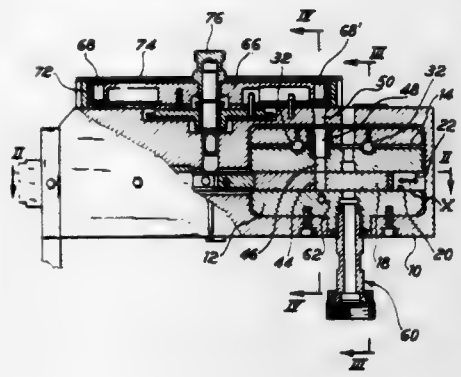
means for detecting said output signal and providing an indication of the magnitude of said output signal.

4,351,193

SAMPLER FOR ANALYTICAL DETECTION SYSTEMS

Bruno Colombo, Cologno Monzese, and Bruno Tosi, Carate Brianza, both of Italy, assignors to Carlo Erba Strumentazione S.p.A., Milan, Italy

Filed Jul. 28, 1980, Ser. No. 172,869
Claims priority, application Italy, Aug. 2, 1979, 24861 A/79
Int. Cl.³ G01N *1/28*
U.S. Cl. 73—864.82 **14 Claims**



1. A sampler for transferring samples to analytical detection systems, said sampler comprising a slidable support having a support sample receptacle for receiving a sample to be analyzed and seat means engaging said slidable support for preventing atmospheric contamination of said sample during transfer,

wherein said seat means has a first opening in contact with the atmosphere for passage of a sample into said support sample receptacle, said seat means has a second opening insulated from the atmosphere by said engagement for transfer of the sample from the support sample receptacle to the analytical system for analysis, and said seat means has at least one first inlet for introducing a protective gas,

wherein said slidable support is movable between a first position in which the support sample receptacle is aligned with said first opening and a second position in which the support sample receptacle is aligned with said second opening, and

wherein said slidable support and seat means define contact interfaces between the surfaces of said slidable support and said seat means having said openings and said support sample receptacle, and wherein said slidable support and seat means have at least one channel between each of said interfaces, said channels being in fluid communication with said first inlet, said channels being located so that they surround the support sample receptacle and said first and second openings when said slidable support is in both said first and second positions so as to provide means for the introduction of a fluid protective shield in the region between the engaging surfaces of said seat means and slidable support to avoid passage of air from the atmosphere between said engaging surfaces and thereby further prevent atmospheric contamination of said sample during transfer.

4,351,194

GYRO AUTOPHASE SYSTEM

Allen R. Taylor, Nutley, N.J., assignor to The Singer Company, Little Falls, N.J.

Filed May 1, 1980, Ser. No. 145,517
Int. Cl.³ G01C *19/10*
U.S. Cl. 74—5.37 **2 Claims**

1. A system for reducing gyro phase ambiguity due to two proximately located gyros in interferring vibrational communication with one another by positioning a reference point on the rotor of a gyro in a preselected fixed phase relation with the excitatio field of a gyro driving motor, the system comprising:

a gyro rotor;

pick-off means associated with the rotor for determining the phase of a reference point on the rotor;

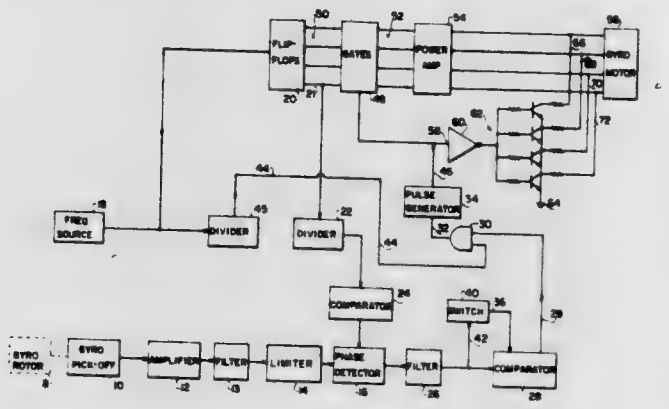
means for generating an excitation field for the motor;

detecting means connected in circuit, at its inputs, to the pick-off means and the generating means, for detecting the phase difference between the rotor reference point and the excitation field;

a window comparator connected at a first input thereof to the output of the detecting means;

switching means having an input thereof connected to the output of the detecting means;

a second input of the comparator connected to an output of the switching means for enabling the comparator when the output of the detecting means assumes a first polarity, the comparator being disabled by the switching means



when the output from the detecting means approaches a preselected phase range from an opposite polarity, thereby avoiding phase ambiguity between two proximately located gyros in interferring vibrational communication with one another; and

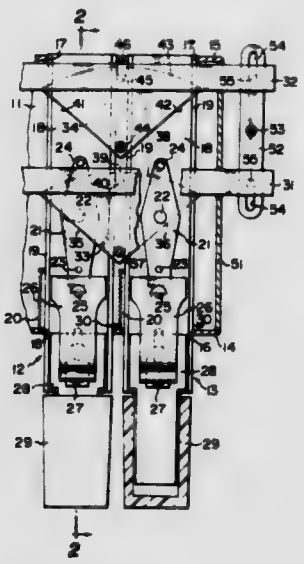
inhibit means connected between the output of the generating means and the gyro motor, the inhibit means having an input connected to the output of the comparator means for inhibiting power delivery from the excitation field generating means to the motor when the detected phase difference falls outside the preselected range, thereby causing the motor to slip until the detected phase difference falls within the preselected range.

4,351,195

PUSHBUTTON TUNER

Tamaki Ohashi, Tokyo, Japan, assignor to Nihon Technical Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 17, 1980, Ser. No. 140,445
Claims priority, application Japan, Apr. 18, 1979, 54-46602
Int. Cl.³ H03J 5/12; G05G 1/02
U.S. Cl. 74—10.33 5 Claims



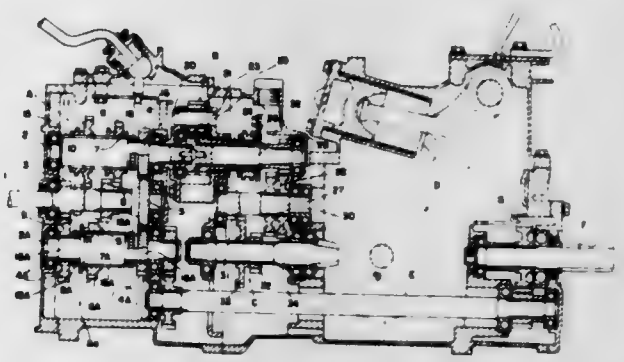
1. A pushbutton tuner including a support, tuning means mounted on the support so as to be movable to positions corresponding to preset tuning frequencies, and a plurality of pushbutton actuators which may be selectively preset to bring the tuning means to positions corresponding to the tuning frequencies, each pushbutton actuator including a slide member having its opposite ends carried by the support so as to be movable between inoperative and operative positions relative to the support in a direction perpendicular to the direction of movement of the tuning means, a lockable control member pivotally mounted on the slide member for controlling the movement of the tuning means, the control member extending lengthwise of the slide member and fixedly carrying upright pins on its opposite ends, the tuning means including a pair of movable members, a link assembly having its each end pivotally connected with one of the movable members to cause a movement of one of the movable members whenever the other movable member is driven in the opposite direction, and means for transmitting the movement of the control member to at least one of the movable members to cause a movement of the latter movable member in one direction when the slide member is moved to its operative position, said one movable member ceasing to move in said one direction when a movement of the other movable member in the opposite direction which occurs in response to the movement of said one member is constrained by the control member, the transmitting means including a first and a second cam member each having its one end pivotally mounted on the support, the other end of the first and the second cam member being pivotally connected with one and the other of the movable members, respectively, each of the first and the second cam member having a cam edge, one of the cam edges being effective to cause an angular movement of one of the cam members in one direction in response to its engagement with one of the upright pins to thereby cause a movement of the other movable member in the opposite direction from the movement of said one movable member, the other cam edge being brought into engagement with the other upright pin to block the angular movement of the other cam member.

4,351,196

MULTISTAGE CHANGE-SPEED APPARATUS FOR A TRACTOR

Jituo Yoshida, Izumi, and Kazuo Toyokuni, Sakai, both of Japan, assignors to Kubota, Ltd., Osaka, Japan

Filed Nov. 16, 1979, Ser. No. 95,187
Claims priority, application Japan, Dec. 28, 1978, 53-179382[U]
Int. Cl.³ F16H 37/00, 37/06
U.S. Cl. 74—15.4 3 Claims



1. A multi-stage change-speed apparatus for a tractor, comprising:

a main running-travel-system change-speed gearing apparatus (A) including an input shaft (1) and a first output shaft (2) disposed above said input shaft (1),

an intermediary transmission shaft (22) in axial alignment with said first output shaft (2),

a planetary gearing reduction apparatus (B) disposed between said first output shaft (2) and said intermediary transmission shaft (22) shiftable between super-reduction of speed from said first output shaft to said intermediary transmission shaft and for transmission without such reduction of speed,

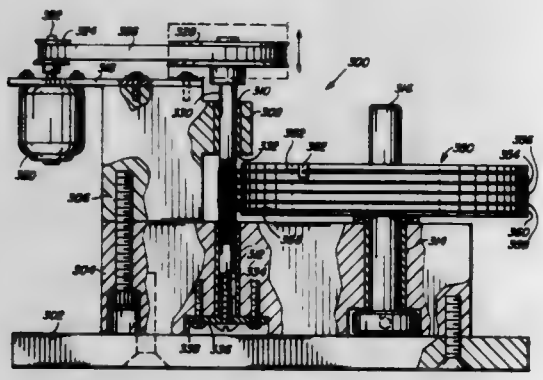
a bevel pinion shaft (34) disposed below said intermediary transmission shaft (22),
a differential (D) operatively connected to said bevel pinion shaft (34), and
a power takeoff line change-speed gearing apparatus (Aa) including said input shaft (1) and a second output shaft (2A) disposed below said input shaft (1) in axial alignment with said bevel pinion shaft (34),
characterized in that
said main running-travel-system change-speed gearing apparatus (A) includes a helical gear (3) for high speed transmission and a spur gear (5) both securely fixed to said input shaft (1), a second helical gear (4) loosely fitted on said first output shaft (2), in constant engagement with said helical gear (3) and a first speed shifter (8) including a spur gear (6) engageable with said spur gear (5) and an engagement lug (7) fitted on a spline shaft portion (15) of said first output shaft (2), said first speed shifter (8) being slidable to cause the engagement lug (7) to fit on a spline portion (18) of said second helical gear (4),
said spline portion (18) of said second helical gear (4) has an identical shape with said spline shaft portion (15) of said first output shaft (2),
said power takeoff line change-speed gearing apparatus (Aa) including said helical gear (3) for high speed transmission, said spur gear (5), a third helical gear (4A) loosely fitted on said second output shaft (2A), in constant engagement with said helical gear (3) and a third speed shifter (8A) including a spur gear (6A) engageable with said spur gear (5) and an engagement lug (7A) fitted on a spline shaft portion (15A) of said second output shaft (2A), said thid shifter (8A) being slidable to cause the engagement lug (7A) of said third shifter (8A) to fit also on a spline portion (18A) of said third helical gear (4A),
said spline portion (18A) of said third helical gear (4A) has an identical shape with spline shaft portion (15A) of second output shaft (2A),
a speed-reduction shaft (27) disposed below said intermediary transmission shaft (22) and above said bevel pinion shaft (34), said speed-reduction shaft (27) carrying a large gear (28) in engagement with a small gear (29) mounted on said intermediary transmission shaft (22), an auxiliary change-speed gearing apparatus (C) being disposed between said speed-reduction shaft (27) and said bevel pinion shaft (34), and
a transmission shaft (E) operatively connected to said second output shaft (2A) is disposed below bevel pinion shaft (34), and is also operatively connected to a power takeoff shaft F via a reduction gearing mechanism G.

4,351,197

PRECISION POSITIONING APPARATUS HAVING A ROTATING DRIVING ELEMENT AND A ROTATING DRIVEN ELEMENT

Donald G. Carson, 12108 Towner Ave., NE., Albuquerque, N. Mex. 87112

Filed Aug. 19, 1981, Ser. No. 294,225
Int. Cl.[3] F16H *27/02, 29/02*
U.S. Cl. 74—89.22 15 Claims



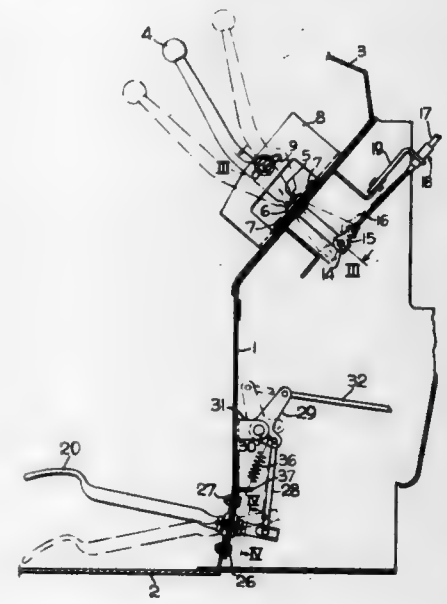
1. Positioning apparatus, comprising, in combination:
driven means to be positioned, including a drum journaled for rotation and having a plurality of grooves extending circumferentially about the drum;
drive means for moving the driven means, including
a screw,
a plurality of helical threads on the screw, the pitch of which is directly related to the spacing of the grooves on the drum, and
means for rotating the screw to position the drum; and
means for coupling the screw to the drum, including a cable having two ends secured to the drum and extending in the grooves of the drum and in the threads of the screw for rotating the drum in response to rotation of the screw.

4,351,198

HAND AND FOOT CONTROLLED THROTTLE

Kenneth N. Hansen, Waukesha, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Sep. 12, 1980, Ser. No. 186,573
Int. Cl.[3] G05G *11/00, 5/16;* F16C *11/06*
U.S. Cl. 74—482 20 Claims



1. A motion transmitting mechanism comprising, a wall, a throttle lever including a manually controlled arm, an actuator arm, a journaled portion intermediate said arms extending through said wall, a bearing mounted on said wall supporting said journaled portion of said lever providing a sealed bearing assembly, a pedal having a journaled portion mounted for extending through said wall, a link means connected to said lever for operating a throttle, a linkage in conjunction with said link means and connected to said pedal for operating said throttle.

4,351,199

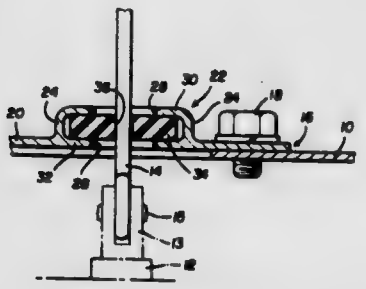
COVER PLATE ARRANGEMENT

Robert E. Mozingo, Burlington, Iowa, assignor to J. I. Case Company, Racine, Wis.

Filed Jul. 14, 1980, Ser. No. 167,903
Int. Cl.[3] G05G *1/00*
U.S. Cl. 74—566 1 Claim

1. In a hydraulic control panel that houses a series of manually operable valves which control a plurality of hydraulic cylinders associated with an implement, the improvement comprising:
a one-piece plastic cover plate assembly mounted to said control panel and including a horizontal base with a plurality of upstanding, spaced-apart integral formations along the longitudinal extent of the base through which a plurality of control handles are inserted for attachment to said valves, each cover plate formation being generally box-shaped including upper and lower horizontal walls, opposed ends which are integrally formed with said base and with said upper and lower walls, and other ends

which are open, the lower horizontal walls of the formations lying generally in the same plane as the base, the individual formations further including aligned openings in the upper and lower walls to permit the insertion of the control handles through the cover plate, a closed-cell, rectangular rubber block insert sandwiched within each



cover plate formation with an opening therethrough which is aligned with the upper and lower openings in an individual formation, said cover plate block inserts permitting movement of said control handles while maintaining a seal to prevent contaminants from entering the control panel and said inserts biasing said control handles towards a vertical neutral position.

4,351,200

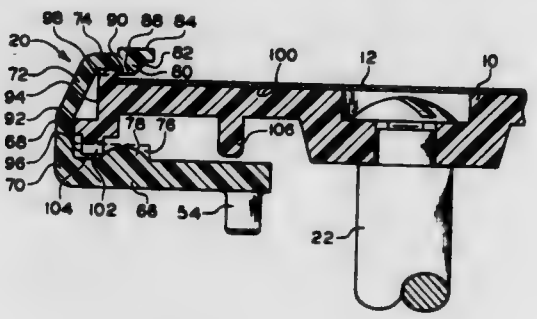
REMOVABLE SNAP-ON ACTUATORS FOR PROGRAM TIMER DIAL

Jerry W. McElroy, St. Louis, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Division of Ser. No. 34,449, Apr. 30, 1979, abandoned. This application Aug. 11, 1980, Ser. No. 176,862

Int. Cl.³ F16H *53/00*; H01H *43/10*

U.S. Cl. 74—568 T **1 Claim**



1. In a program timer,
a circular dial;
said dial having a top portion including a circular rib therein and a bottom portion including saw-tooth projections therein;
a plurality of actuators removably secured to said dial for operating a scheduled program;
each of said actuators having an upper portion secured to said top portion of said dial and a lower portion secured to said bottom portion of said dial;
means on said upper portion and lower portion of said each of said actuators for providing a snap-on securement thereof to said dial;
said upper portion of said each of said actuators including an arcuate projection which snaps over and bears against said circular rib in said top portion of said dial, and said lower portion of said each of said actuators including a triangular projection which enters one of said saw-tooth projections in said bottom portion of said dial and a spherical projection which snaps over and bears against said saw-tooth projections.

4,351,201

CRANKSHAFT ASSEMBLY

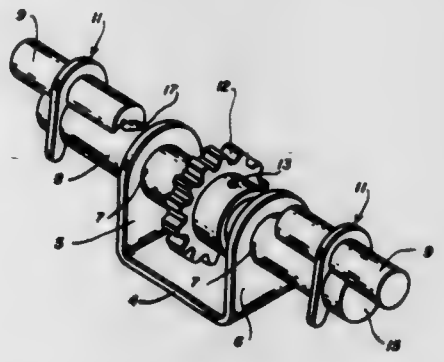
Manfred Link, Nuremberg, Fed. Rep. of Germany, assignor to Triumph-Adler A.G., Fed. Rep. of Germany

Filed Nov. 21, 1980, Ser. No. 209,044

Claims priority, application Fed. Rep. of Germany, Jun. 24, 1980, 3023473

Int. Cl.³ F16C *3/10*

U.S. Cl. 74—598 **3 Claims**



1. A crankshaft assembly comprising a bearing having spaced arms,
a shaft supported for rotation between said arms with its ends extending outwardly from said arms,
at least one of said shaft ends having a recess on its periphery axially extending back toward one of said arms and an annular groove intersecting said recess,
a crankpin mounted in said recess with its axis parallel to said shaft axis,
said crankpin having an annular groove in alignment with said annular groove in said shaft, and
clamp means mounted in said aligned grooves resiliently embracing said shaft and urging said crankpin against said recess.

4,351,202

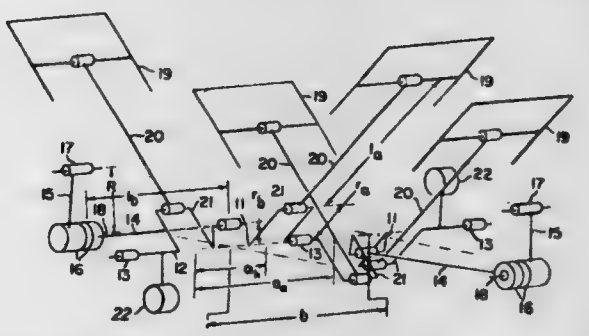
ENGINE

Robert F. Summers, 7945 Wellington St., Elmwood Park, Ill. 60635

Continuation of Ser. No. 879,439, Nov. 24, 1969, abandoned, Ser. No. 755,761, Aug. 8, 1968, abandoned, Ser. No. 694,024, Dec. 20, 1967, abandoned, Ser. No. 351,280, Mar. 9, 1964, abandoned, and Ser. No. 66,181, Oct. 31, 1960, abandoned, said Ser. No. 879,439, is a continuation-in-part of Ser. No. 755,761, , which is a continuation of Ser. No. 694,024, , which is a continuation-in-part of Ser. No. 351,280, , which is a continuation-in-part of Ser. No. 66,181,. This application Jun. 7, 1976, Ser. No. 694,049

Int. Cl.³ F16H *57/02*; F16C *3/04*; F02B *75/06*

U.S. Cl. 74—604 **18 Claims**



1. A balanced, V-type, four-cylinder, four-cycle internal-combustion engine comprising: two angularly separated banks of two cylinders each; a reciprocating element in each said cylinder for transmitting power; a crankshaft having four power crankpins for receiving power from said cylinders, two of said power crankpins angularly indexed with respect to the axis of said crankshaft to reach top center positions and said other two power crankpins angularly indexed to reach bottom

center positions simultaneously in reference to the respective cylinders, and two balance crankpins, the aforementioned engine elements developing primary and secondary inertia shaking forces and couples; a pair of balancing units each comprising a balance rod, a balance weight, and a balance rocker and a surrounding, static structure, said balancing units being driven by said balance crankpins, said two balance crankpins disposed toward opposite ends of said crankshaft and angularly indexed to approximately opposed positions, each of said balancing units arranged with said balance rod and balance rocker pivotally interconnected at adjacent ends to form a right angle in one instance of operation and with the other end of said balance rod rotatably connected to one of said balance crankpins and the other end of said balance rocker pivotally connected to said static structure, said balance weight consisting of an enlarged mass supported by said balance rod and said balance rocker, whereby each of said balance weights may describe an arcuate, oscillating motion on rotation of said crankshaft, said balance weights having a weight and oscillating motion with primary and secondary harmonic components in two directions of such amplitudes as to produce primary and secondary forces and couples which balance said inertia shaking forces and couples produced by said engine elements.

4,351,203

GEAR BOX BREATHER PLUG ASSEMBLY

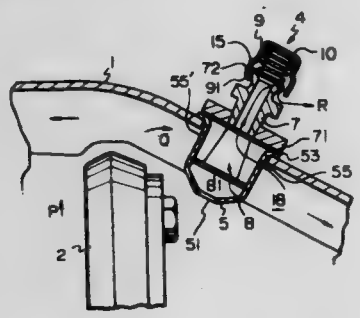
Koichi Fukunaga, Toyota, Japan, assignor to Toyota Jodosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Aug. 22, 1980, Ser. No. 180,418

Claims priority, application Japan, Aug. 30, 1979, 54-118450[U]

Int. Cl.³ F16H *57/02*; F16K *15/00*

U.S. Cl. 74—606 R **4 Claims**



1. A breather plug assembly for a gear box having a housing and a gear assembly, arranged in the housing, a lubricant oil being stored in the housing, a flow of lubricant being formed in the housing along the inner surface of the housing when the gear assembly is operated, said breather plug assembly comprising: a deflector member having a first open end fixedly connected to the housing a second open end located in the interior of the housing; and a cylindrical portion located between said two ends, the flow of lubricant transversly contacting with the cylindrical surface of said cylindrical portion; and valve means connected to said first end of said deflector member for providing, in response to the pressure in said housing, a fluid connection between the interior of said housing and the atmosphere, said deflector member being, at the cylindrical surface, provided with at least one hole which is located downstream of the flow of the lubricant along the inner surface of the housing.

4,351,204

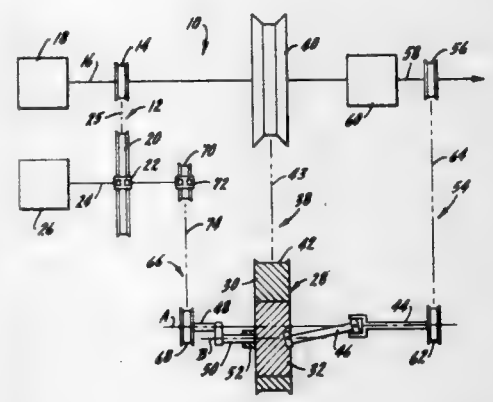
ACCESSORY DRIVE ASSEMBLY WITH COMPACT GEAR DIFFERENTIAL

Louis Ross, Addison, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Nov. 9, 1979, Ser. No. 92,885

Int. Cl.³ F16H *1/28, 37/08*

U.S. Cl. 74—804 **3 Claims**



1. In a vehicle having an engine with a crankshaft, a transmission with an output shaft, and associated accessories with a drive shaft, an accessory drive assembly comprising a first speed-reducing drive train adapted for driven engagement with said crankshaft and driving engagement with said drive shaft, said first drive train being constructed and arranged such that said drive shaft may overrun said first drive train, a differential including an outer ring gear rotatable on a first axis, an inner star gear orbital about said first axis and rotatable on a second axis, first and second members rotatable on said first axis, means connecting said star gear with said first member for transmitting rotational movement therebetween, and means connecting said star gear with said second member for translating orbital movement of said star gear into rotational movement of said second member, a second drive train adapted for driven engagement with said crankshaft and in driving engagement with said ring gear, a third drive train adapted for driven engagement with said output shaft and in driving engagement with said first member, and a fourth drive train in driven engagement with said second member and adapted for driving engagement with said drive shaft, said fourth drive train being constructed and arranged such that said drive shaft may overrun said fourth drive train.

4,351,205

APPARATUS FOR THE AUTOMATIC SHIFTING OF A STEPPED SPEED-CHANGE TRANSMISSION, ESPECIALLY FOR AUTOMOTIVE VEHICLES

Günter Fischer, Markdorf, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen, Friedrichshafen, Fed. Rep. of Germany

Filed Mar. 21, 1979, Ser. No. 22,475

Claims priority, application Fed. Rep. of Germany, Mar. 23, 1978, 2812742

Int. Cl.³ B60K *41/06, 41/28*

U.S. Cl. 74—866 **15 Claims**

1. In an automotive vehicle having a gear-type transmission for transferring rotary power from an engine to an output shaft, said transmission having a multiplicity of gears, an electronic device for automatically shifting said transmission, comprising:

first memory means for storing in coded form speed ranges for said gears under different loading conditions;

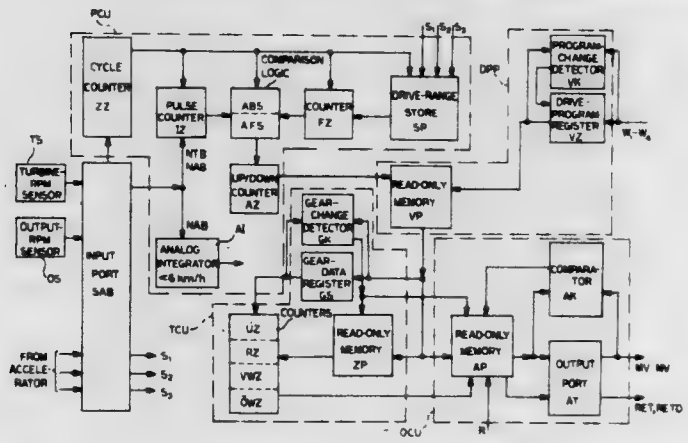
addressing means operatively linked to said memory means for feeding thereto address signals in accordance with engine load and engaged gear;

window-generating means responsive to signals from said memory means for emitting upshifting comparison pulses and downshifting comparison pulses with durations varying as functions of engine load and engaged gear;

sensor means juxtaposed to said output shaft for emitting a signal coding the instantaneous rotation rate thereof;

timing means responsive to the signal from said sensor means for generating during each operating cycle a first rotation-rate signal and a second rotation-rate signal each having a duration proportional to said instantaneous rotation rate, said timing means being operatively linked to said window-generating means for synchronizing the emission of said upshifting comparison pulse with said first rotation-rate signal and the emission of said downshifting comparison pulse with said second rotation-rate signal;

comparator means for comparing said instantaneous rotation rate with said speed ranges to control the shifting of said transmission, said comparator means including an upshifting flip-flop and a downshifting flip-flop, both of the D-type, with inputs connected to said window-generating means for receiving therefrom said upshifting comparison



pulses and said downshifting comparison pulses, respectively, and to said timing means for receiving therefrom said first rotation-rate signal and said second rotation-rate signal, respectively, said upshifting flip-flop generating an upshifting control signal upon an exceeding of an upper speed limit by said instantaneous rotation rate and said downshifting flip-flop generating a downshifting control signal upon an exceeding of said instantaneous rotation rate by a lower speed limit;

second memory means for storing in coded form the engaged gear of said transmission, said comparator means being operatively connected to said second memory means for updating the contents thereof in accordance with said upshifting control signal and said downshifting control signal; and

energization means operatively controlled by said second memory means for operating gear-shift actuators in said transmission.

4,351,206

ELECTRONIC AND HYDRAULIC CONTROL SYSTEM FOR AUTOMATIC GEAR CHANGE TRANSMISSION

George E. Lemieux, and Tom T. Tibbles, both of Livonia, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Apr. 28, 1980, Ser. No. 143,997
Int. Cl.³ F16H *3/74*; B60K *41/04*
U.S. Cl. 74—866 11 Claims

1. In a control system for an automatic gear change transmission adapted to deliver torque from a driving member to a driven member, having gear elements forming plural torque delivery paths between the driving and driven members and a plurality of clutch and brake means for controlling the relative motion of the gear elements to provide a plurality of forward and reverse speed ratios comprising:

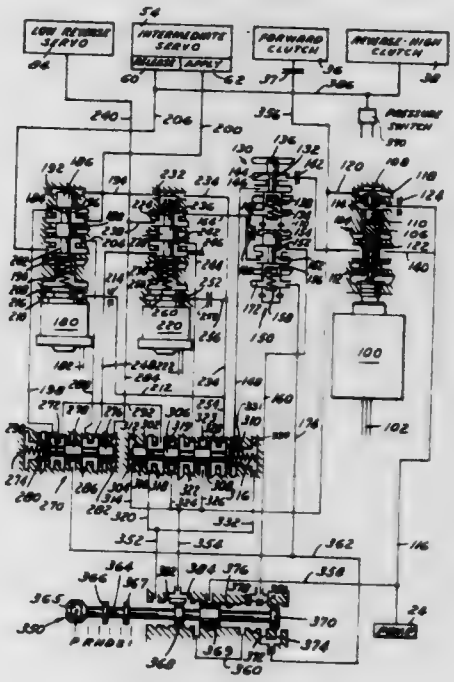
a fluid pump;

a manual selector valve moveable among a plurality of positions corresponding to the forward and reverse drive ranges and communicating with the discharge side of said pump;

first and second ON/OFF valves operating in response to the position of said manual valve for selectively pressurizing outlet chambers formed therein;

an electronic control adapted to provide electrical output signals to produce the selected speed ratio of operation;

first and second solenoid valves communciating with the outlet chambers of said first and second ON/OFF valves, adapted to produce automatic shifting among the forward drive ratios of the transmission by selectively pressurizing



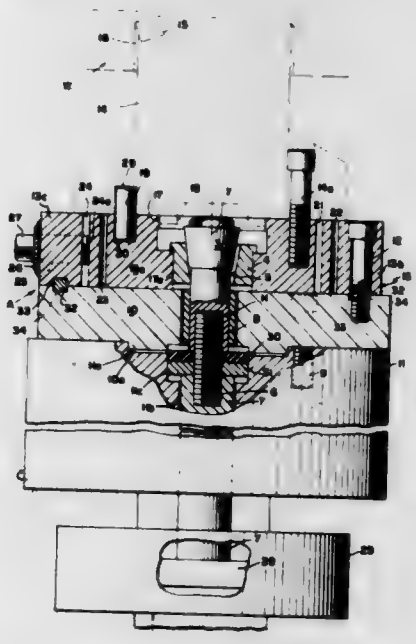
the clutch and brake means according to the electrical output signals received by said solenoid valves from said electronic control and the effect of pressure received from the outlet chambers of said first and second ON/OFF valves, whereby shifting among any of the drive ratios can occur if said electronic control produces no output signal by manually moving said manual valve to the desired drive range position.

4,351,207

MICROMETRICALLY ADJUSTED TOOL ARM ASSEMBLY

Carl H. Werth, Jr., Bridgeport, Mich., assignor to Werth Engineering, Inc., Bridgeport, Mich.

Filed Oct. 3, 1980, Ser. No. 193,431
Int. Cl.³ B23B *29/034, 29/18*
U.S. Cl. 82—36 R 12 Claims



1. In a micrometrically adjusted tool arm assembly for mounting on a spindle or a non-rotating support, having a

resilient tool arm with axially extending means thereon for generally centrally supporting an axially extending tool bar, and having its end sections only secured to a base support; deformable slot means extending axially through the tool arm to condition the central section for planar radial movement relative to the ends of the arm perpendicular to said axially extending tool bar supporting means; a micrometrically adjustable positioner engaging said central section in a position relative to said slot means to provide a rigid backup for said tool bar; said slot means including a pair of oppositely disposed, closely spaced slots extending laterally from opposite sides of the tool arm between each end section and the central section, each slot terminating short of the side opposite to the side from which it extends, said positioner comprising a radially adjustable abutment in the plane of the tool arm contacting the radially inner face of one of the outer slots at a position at least partly laterally offset from the inner slot of the pair.

9. In a micrometrically adjustable remotely controlled tool arm assembly for mounting on the tubular rotary spindle of a machine tool or a non-rotating support;

(a) a tool arm base;

(b) a resilient tool arm with means on one portion thereof for supporting a tool bar thereon;

(c) means for anchoring another portion of the tool arm to the base;

(d) slot means extending through the tool arm between said portions to provide deformable portions permitting radial movement of the tool bar supporting portion relative to said another portion;

(e) the tool bar supporting portion and base having axial openings provided therein;

(f) an actuator extending axially through the base and tool bar supporting portion;

(g) means for moving the actuator; and

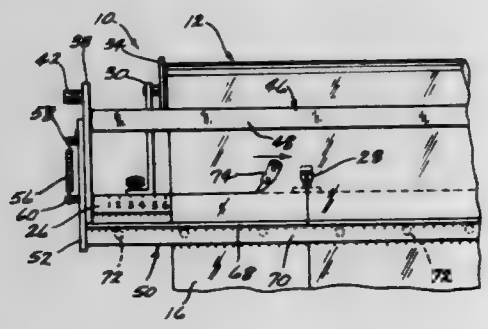
(h) means cooperating between said actuator and tool bar supporting portion for drawing the tool bar supporting portion axially down to lock it to the base when the actuator is moved and simultaneously moving the tool bar supporting portion radially.

4,351,208

FILM DISPENSER AND SLITTER

Wendall C. Cobleigh, and Donald L. Barmore, both of Lincoln, Nebr., assignors to Professional Marketing Associates, Lincoln, Nebr.

Filed Sep. 18, 1980, Ser. No. 188,531
Int. Cl.³ B26D *7/00*
U.S. Cl. 83—167 **5 Claims**



1. A film dispenser and slitter, comprising,

an upstanding support member having forward and rearward ends,

an elongated horizontally disposed support means mounted on the upper end of said support member and having opposite ends,

first and second roll support members mounted on said support means for supporting a roll of film therebetween above said support means,

at least one of said roll support members being selectively slidably mounted on said support means to permit rolls of various lengths to be supported therebetween,

first and second bracket members at the opposite ends of said support means and extending upwardly therefrom,

a first film support bar secured to said first and second bracket members and extending therebetween above said support means,

at least one film slitter selectively movably mounted on said support means for slitting film as a sheet of film is pulled downwardly from the roll of film positioned thereabove,

said support means having a horizontally dipsosed film cutting edge provided thereon below said film slitter for facilitating the cutting of the sheet of film to a predetermined length after it has been slit,

a film holding bar assembly operatively pivotally mounted on said first and second bracket members and including a film holding bar which is pivotally movable from an inoperative position generally above said first film support bar to an operative position wherein said film holding bar is closely positioned adjacent the forward end of said support means to yieldably selectively maintain a sheet of film therebetween at times while said sheet is being cut to its predetermined length and after said sheet has been so cut,

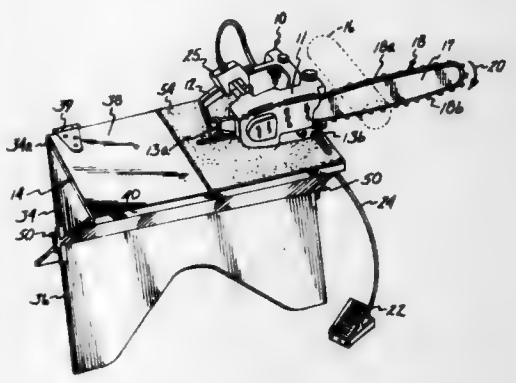
said first film support bar having a forwardly presented surface whereby the upper end of the sheet of film, after the sheet of film has been cut to the desired length, may be moved upwardly from said film cutting edge and secured thereto for facilitating the removal of backing material from said sheet of film, said film holding bar yieldably engaging said sheet of film as said sheet is moved upwardly for attachment to said film support bar.

4,351,209

REMOTE CONTROL BENCH MOUNTED CHAIN SAW APPARATUS

Steven D. Alford, 426 Birch Rd., Coon Lake Blvd., Wyoming, Minn. 55092

Filed Jun. 17, 1980, Ser. No. 160,146
Int. Cl.³ B27B *17/02*; B25H *1/04*
U.S. Cl. 83—788 **18 Claims**



1. Apparatus for cutting firewood in cooperation with a chain saw having a handle, trigger, body and bar and chain, the apparatus comprising:

a bench including:

a first support panel member having an interdigital slot;

a second support panel member having a cooperating interdigital slot for mating with said first support panel member to form a cross; and

a top member for supporting the chain saw in a position which permits cutting access to a top of the bar and chain, the top member being hingedly mounted on the first support panel member proximate an upper edge parallel to its slot in the first support panel member, the top member being provided with means to detachably engage the second support panel member proximate an upper edge parallel to its slot when the cross is formed to position the top member in a horizontal position;

means for holding the chain saw on the top members; and

remote control means operably connected to the chain saw and having an activator positioned remote from the chain

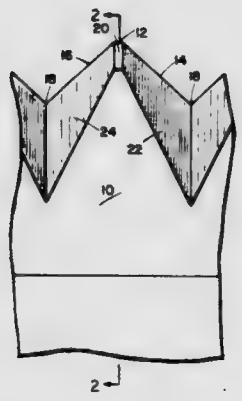
saw and the top member for control of the operation of the chain saw.

4,351,210

SHEAR CUT TOOTH

Thomas W. McKindary, Totowa, N.J., assignor to Zimmer Manufacturing Corp., Hawthorne, N.J.

Continuation-in-part of Ser. No. 962,421, Nov. 20, 1978, abandoned. This application Aug. 11, 1980, Ser. No. 176,809
Int. Cl.³ B62D *7/00*
U.S. Cl. 83—835 **6 Claims**



1. A cutting rule of a general type having an elongated flat body portion with teeth formed along at least one edge thereof and comprising:

a plurality of teeth spaced apart along at least one edge of said cutting rule, the rear side of said rule having a slightly beveled first surface;

each tooth having a tip with a straight edge for piercing stock material, said straight edge being about one-twelfth the space between adjacent tooth tips;

each tooth having first and second tooth edges diverging from one another and extending angularly from each side of said tip toward the body portion of said rule, said edges terminating at notches formed by the points of intersection with side edges of adjacent teeth;

said first and second edges of adjacent teeth intersecting a datum line at the same angle such that each tooth is symmetrical in shape, said notches being distant from an imaginary line along the longitudinal tip edge of said rule about one-half the distance between adjacent teeth;

said tooth tips having a second beveled surface, said second surface being beveled angularly from the front of said rule toward the rear of said rule such that said tips have a chisel-like structure; said rear side of each of said tooth tips each having a slightly beveled third surface, said third surface being beveled angularly from said tip straight edge downward towards the rear side of said rule.

4,351,211

METHOD AND APPARATUS FOR CUTTING BLANKS FROM FOAM MATERIAL

Georges P. Azzolini, Juziers, France, assignor to Sovra S.A., Juziers, France

Filed Oct. 14, 1980, Ser. No. 196,522
Claims priority, application France, Mar. 25, 1980, 80 06914
Int. Cl.³ B26D *7/08*
U.S. Cl. 83—861 **12 Claims**

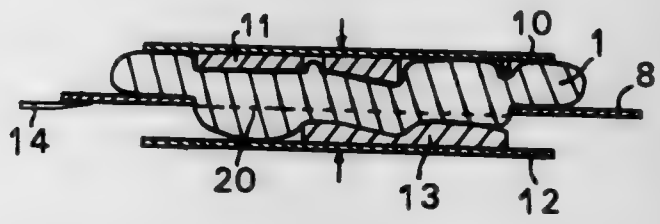
1. A method for cutting out pieces of plastic foam material into desired shapes, the pieces having a cavity with a bottom wall at different levels, said method comprising the steps of:

compressing a block of foam material between a first plate and a die having an aperture of suitable contour;

interposing between the first plate and the die a relief form member generally corresponding in shape to the cavity to be formed in resultant piece of foam material;

applying a back relief form member against part of the block of foam material caused to protrude through the (aperture in) die, the back relief form member having different levels corresponding to the different levels of the bottom wall of the cavity;

displacing a cutting blade relative to the die between the die and the back form member through the protruding part of the compressed block; and



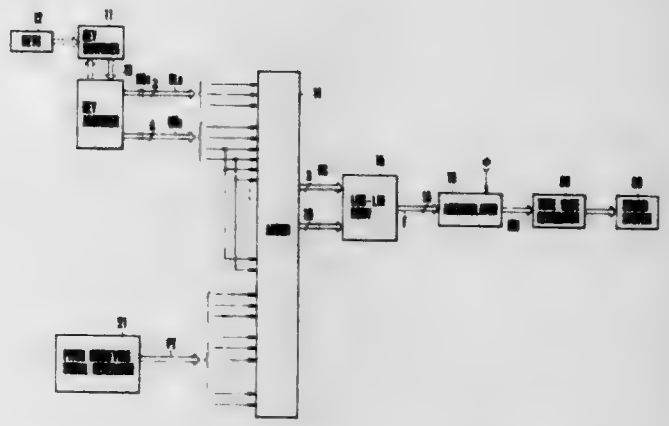
relieving the pressure applied to the block of foam material to separate and remove the pieces of the block of foam material thus cut.

4,351,212

ELECTRONIC MUSICAL INSTRUMENT WITH EQUALLY SPACED BINARY NOTE CODES

Shimaji Okamoto, and Yohei Nagai, both of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Japan

Filed Apr. 21, 1980, Ser. No. 141,826
Claims priority, application Japan, Apr. 23, 1979, 54-50012
Int. Cl.³ G10H *1/00*
U.S. Cl. 84—1.01 **10 Claims**



1. An electronic musical instrument comprising:

means for producing note codes respectively having n bits (n is a positive integer) representing juxtaposed notes aligned by a semitone interval step in a musical scale, said note codes producing means including a binary code table consisting of successively aligned binary values corresponding to an order of alignment of the notes in a musical scale, said binary code table omitting those binary values corresponding to either one of the largest and smallest values normally represented in a binary series by the lowest m bits of said n bits (where m is a positive integer smaller than n);

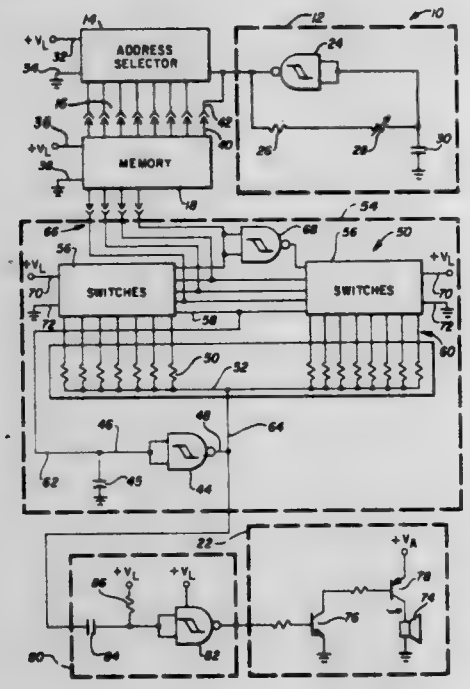
means coupled to said producing means for generating modified note codes from said note codes, said generating means including means for repetitively adding the lowest m bits of each of said note codes to further lower order bit positions within said means for adding, below the least significant bit of said each note code; and

means coupled to said generating means for producing musical tones having frequencies corresponding to said modified note codes.

4,351,213
PLAYER FOR DIGITALLY RECORDED MUSIC

Paul C. Brown, Arlington, Tex., assignor to Convey, Inc., Irving, Tex.

Filed Aug. 20, 1979, Ser. No. 67,783
Int. Cl.³ G10H *5/10*
U.S. Cl. 84—1.01 9 Claims



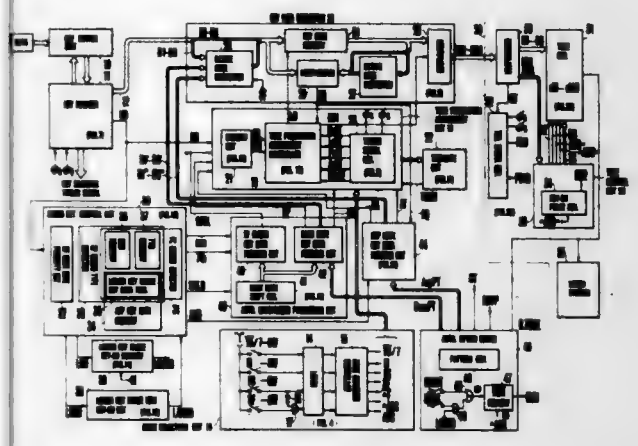
1. An apparatus for transforming digital data stored in an addressable memory into sounds, comprising in combination:
an oscillator;
an address selector driven by the oscillator for selecting an address in the memory;
an inverter having an input and an output;
a plurality of resistance means;
means for selectively connecting differing combinations of resistance means from the plurality wherein a particular combination of resistance means is electrically connected between the input and the output of the inverter responsive to the digital data stored in the memory at the address selected by the address selector whereby an analog electrical signal is generated at the output of the inverter wherein the analog electrical signal is determined by the digital data stored in the memory; and
means responsive to the inverter for producing sounds corresponding to the analog electrical signal.

4,351,214
ELECTRONIC MUSICAL INSTRUMENT WITH PERFORMANCE MODE SELECTION

Hideo Suzuki, Kamimura, and Makoto Kaneko, Hamakita, both of Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Jan. 27, 1981, Ser. No. 228,782
Claims priority, application Japan, Jan. 28, 1980, 55-8607
Int. Cl.³ G10H *1/36, 5/00, 7/00*
U.S. Cl. 84—1.03 23 Claims

1. An electronic musical instrument comprises:
a plurality of keys;
means for forming time division multiplex first key data determined by the depressed status of all keys;
means for generating key codes corresponding to all keys synchronized with said key data;
key code memory means having a plurality of channels less than the total number of keys and receiving outputs of said key code generating means;
tone generating means having a plurality of musical tone production channels corresponding to individual channels of said key code memory means;
means for selecting one of plural performance modes;
assign channel setting means for storing said key codes from said key code generating means in selecting subsets of the channels of said key code memory means in different

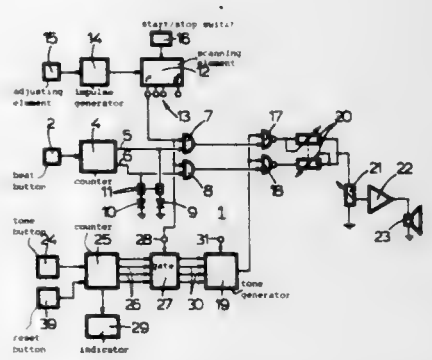


manners according to the selected performance mode and in response to supplied multiplex key data.

4,351,215
DEVICE FOR THE ACOUSTIC INDICATION OF THE BEATS OF A MUSICAL TIME

Hendrik D. van der Bruggen, Loggerstraat 34, 1503 KD Zaandam, Netherlands

Filed Jan. 7, 1981, Ser. No. 223,132
Claims priority, application Netherlands, Jan. 25, 1980, 8000494
Int. Cl.³ G09B *15/02;* G10H *1/40, 1/46*
U.S. Cl. 84—1.03 11 Claims

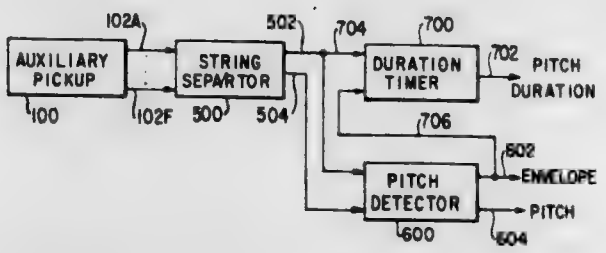


1. A device for the acoustic indication of a musical time, said musical time comprising a plurality of musical beats with musical properties comprising volume, pitch, tempo and reproduction period, said device comprising means for varying the musical properties of each beat separately, wherein said varying means comprises N switch elements each connected to an associated binary counter with two outputs, one output of which is connected to a first input of a first gate circuit and the other output of which is connected to a first input of a second gate circuit, a second input of each of the first and second gate circuits being connected to one of N outputs of a scanning element for the cyclic consecutive scanning of the N first and second gate circuits, wherein the N first gate circuits are connected by their outputs to a first input of a first switch circuit and the N second gate circuits are connected by their outputs to a first input of a second switch circuit, wherein a second input of the first and second switch circuits is connected to the output of a tone generator unit, the outputs of said first and second switch circuits being connected to a sound reproduction system.

4,351,216
ELECTRONIC PITCH DETECTION FOR MUSICAL INSTRUMENTS

Russell O. Hamm, 78 Horatio St., New York, N.Y. 10014

Filed Aug. 22, 1979, Ser. No. 68,689
Int. Cl.[3] G10H *3/00*; G01R *23/02*
U.S. Cl. 84—1.15 44 Claims



1. An auxiliary pick-up for use in a stringed musical instrument having an electromagnetic pick-up mounted thereon in addition to said electromagnetic pick-up, which electromagnetic pick-up includes a pole piece and at least one winding dedicated to each string of said instrument and mounted in spaced relationship therefrom, the auxiliary pick-up comprising:

a substantially planar substrate of non-conductive material adapted to be mounted intermediate said strings and said electromagnetic pick-up in spaced relationship from said strings;

a plurality of conductive, electrically isolated coils on said substrate, each coil positioned to be in alignment with a different pole piece when said substrate is in its mounted position, said coils sensing vibrations of said strings independently of said windings when said substrate is in its mounted position.

15. A transition detector responsive to an input signal having a time-variable envelope representing a sound produced by a musical instrument for generating a binary signal in which each cycle has a period that is substantially equal to that of the corresponding cycle in said input signal, said transition detector comprising:

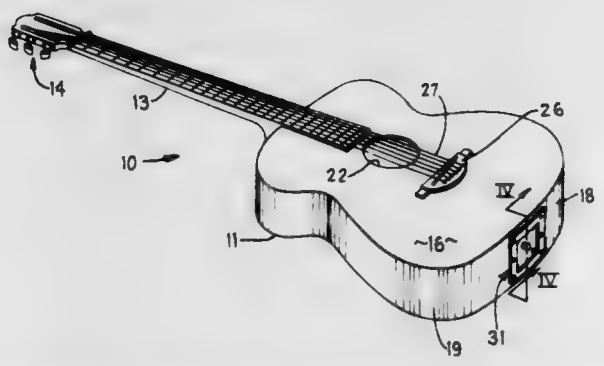
a source of an adaptive, time variable threshold voltage proportional to the envelope of said input signal and substantially lower in magnitude than the peak thereof; and

means for generating a binary signal having a triggering edge coincident with each crossing of said input signal through said threshold level in a predefined direction.

4,351,217
REMOVABLE TAILBLOCK

Abraham J. Wechter, 2131 Sheffield Dr., Kalamazoo, Mich. 49008

Filed Mar. 7, 1980, Ser. No. 128,004
Int. Cl.[3] G10D *1/08, 3/00*; G10H *3/18*
U.S. Cl. 84—1.16 10 Claims



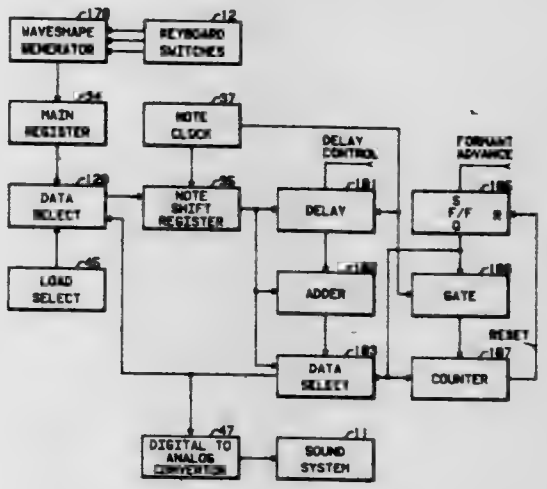
1. In a stringed instrument having a hollow main body forming a sound box, said hollow main body being defined by opposed top and bottom walls joined together by a side rim and having a head end and a tail end at opposed locations on said side rim, a long neck attached to said hollow main body adjacent said head end thereof and projecting outwardly therefrom in substantially parallel relationship with a longitudinal centerline which extends between said head end and said tail end of said hollow main body, a plurality of strings extending along said neck and having opposite ends thereof attached to said neck and said main body, and a tailblock fixed to said main body at said tail end thereof, said tailblock being substantially aligned with said longitudinal centerline, the improvement comprising:

a tailblock assembly associated with said main body for permitting convenient access into said hollow main body through an access opening formed in said rim and located at said tail end of said main body in substantial alignment with said longitudinal centerline, said tailblock assembly including said tailblock with the latter being of a ringlike configuration, said tailblock being fixed to said rim at said tail end of said main body in substantial alignment with said longitudinal centerline, said ringlike tailblock defining said access opening therethrough, said tailblock assembly also including an access plate removably positioned within said access opening for closing same, said ringlike tailblock and said access plate having means cooperating therebetween for fixedly stationarily positioning said access plate within said access opening, said latter means permitting said access plate to be selectively removed from said access opening.

4,351,218
RECURSIVE FORMANT GENERATOR FOR AN ELECTRONIC MUSICAL INSTRUMENT

Ralph Deutsch, Sherman Oaks, Calif., assignor to Kawai Musical Instrument Mfg. Co., Ltd., Hamamatsu, Japan

Filed Apr. 2, 1981, Ser. No. 250,474
Int. Cl.[3] G10H *1/08, 7/00*
U.S. Cl. 84—1.19 10 Claims



1. In combination with a musical instrument having a waveshape memory storing a plurality of waveshape data points corresponding to the amplitudes of a corresponding number of evenly spaced points defining a period of a musical signal and in which said data points are sequentially and repetitively read out of the waveshape memory and transferred to a digital-to-analog converter at a rate corresponding to the pitch of the musical note being generated, apparatus for producing a sliding formant effect comprising;

a note clock for generating timing signals corresponding to the pitch of said generated musical note,

addressing means responsive to said timing signals whereby data is sequentially and repetitively read out of said waveshape memory,

a delay means for storing data read out of said waveshape memory,

an adder means whereby data read out of said waveshape memory is summed with data stored in said delay means to form a summed data set,

a formant signal advance generator means for generating a formant advance signal,

a first data select means whereby said summed data set is selected in response to said formant advance signal and whereby said data read out of said waveshape memory is selected if said formant advance signal is not generated,

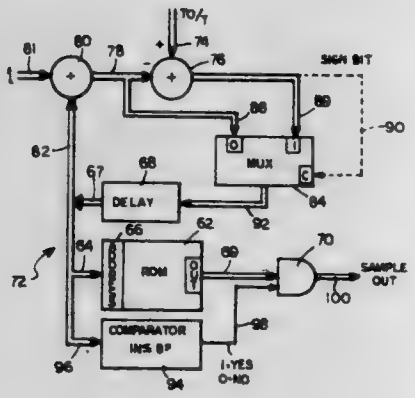
a second data select means whereby data selected by said first data select means is stored in said waveshape memory, and

conversion means wherein data selected by said first data select means is converted to said musical signal thereby producing said sliding formant effect.

4,351,219
DIGITAL TONE GENERATION SYSTEM UTILIZING FIXED DURATION TIME FUNCTIONS

Steven C. Bass, Stockwell, Ind., assignor to Kimball International, Inc., Jasper, Ind.

Filed Sep. 25, 1980, Ser. No. 190,631
Int. Cl.³ G10H *1/12, 7/00*
U.S. Cl. 84—1.21 **22 Claims**



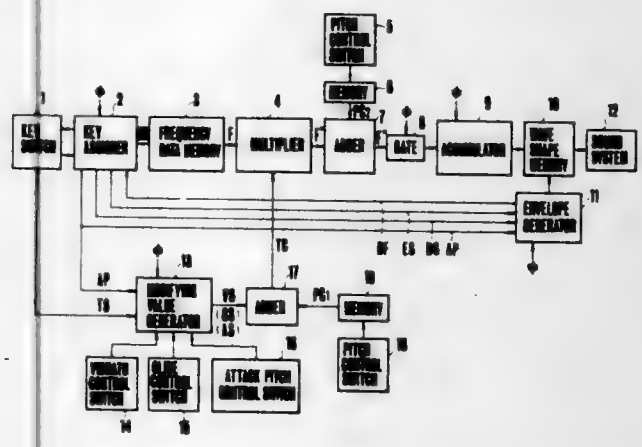
1. An electronic musical instrument comprising: player actuated tone frequency selection means, memory means for storing one cycle of a fixed width window function waveform, means responsive to the actuation of the tone selection means for reading said waveform out of said memory means at a fixed rate for each cycle thereof independent of the frequency selected and and in a repetitive fashion to produce a continuous signal wherein the period of time between each successive reading of a cycle of the waveform is selectively adjusted in response to the frequency selected by the tone selection means without changing the width of the read out waveform to thereby produce a continuous train of time sequential said window function waveforms having a frequency proportional to the period of time between each successive reading, and means responsive to the train of read out waveforms for filtering said train to produce a musical tone.

4,351,220
ELECTRONIC MUSICAL INSTRUMENT OF DIGITAL PROCESSING TYPE

Shigeru Yamada, Hamamatsu, and Kiyoshi Ichikawa, Hamakita, both of Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 880,094, Feb. 22, 1978, abandoned.
This application May 9, 1980, Ser. No. 148,504
Claims priority, application Japan, Feb. 26, 1977, 52-20444
Int. Cl.³ G10H *1/02*
U.S. Cl. 84—1.24 **1 Claim**

1. An electronic musical instrument comprising a plurality of keys, a first circuit for producing a numerical value corresponding to a frequency related to an operated key, a second circuit responsive to a modifying signal for modifying said numerical value to generate a modified signal, a third circuit for producing a musical tone having a frequency corresponding to said modified signal, a fourth circuit selectively operable for applying to said second circuit said modifying signal whose value increases gradually from a first value to a second value and thereafter maintained at said second value, said second circuit including a multiplier circuit for multiplying the signal value from said fourth circuit with said numerical value, and a control device containing an operating switch which operates and controls said fourth circuit in response to a key operation, said operating switch when closed maintaining the output of said fourth circuit at said first value whereas when open gradually varying the output of said fourth circuit toward said second value, said first value being assumed at an instant when a

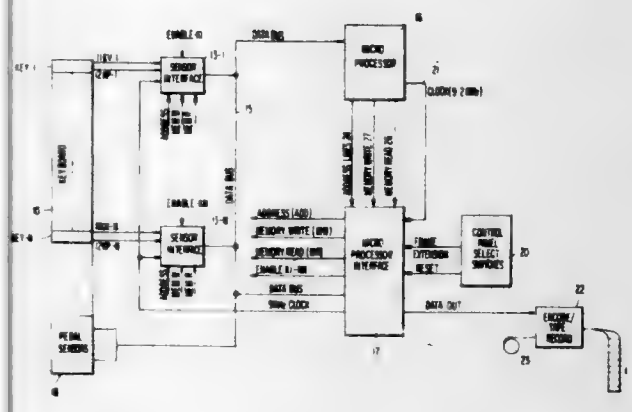


key is operated; and further comprising a circuit for generating a first constant value which is selectable but does not vary with time and a first adder for adding said first constant value and the value from said fourth circuit to send its output to said multiplier circuit; and a circuit for generating a second constant value which is selectable but does not vary with time; and a second adder arranged between said second and third circuits so that said second constant value is added to said first adder.

4,351,221
PLAYER PIANO RECORDING SYSTEM

Roger L. Starnes; Ernest D. Henson; Thomas J. Wilkes, all of Lewisburg, and James M. Sharp, Cornersville, all of Tenn., assignors to Teledyne Industries, Incorporated, Los Angeles, Calif.

Filed Jun. 15, 1979, Ser. No. 48,938
Int. Cl.³ G10H *3/03, 1/02;* G10G *3/04;* G10F *1/02*
U.S. Cl. 84—1.28 **15 Claims**



1. In a keyboard musical instrument having a plurality of keys arranged for manual manipulation by a musician, the improvement comprising

a plurality of key flags, one for each key on the keyboard,

means mounting each key flag on the underside of its associated key for substantially vertical movement therewith,

a plurality of photocell sensor means, there being at least one photocell sensor means for each flag,

each photocell sensor means having a light source for projecting light across a path and means on the opposite side of said flag from said light source for detecting flag movements in said path,

each flag having an opaque portion and a transparent portion, there being at least one straight line of demarcation between said opaque and non-opaque portions, said

straight line of demarcation being at an angle other than horizontal or vertical, and

means for supporting each said photocell for independent horizontal adjustment relative to the path of movement of said at least one straight line of demarcation on its corresponding flag to cause in effect a vertical adjustment of each key by a horizontal movement of its related sensor.

4,351,222

KEYBOARD MUSICAL INSTRUMENT WITH CASING COMPRISING TWO HALVES

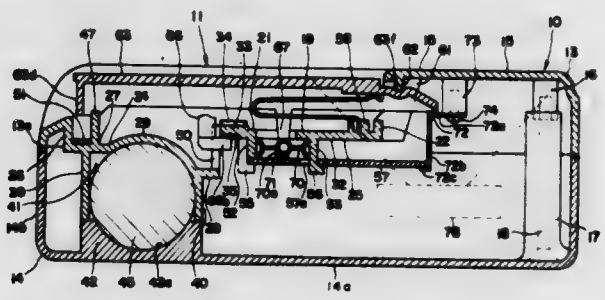
Shinji Kumano, Shizuoka, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Japan

Filed Jun. 9, 1981, Ser. No. 272,029

Claims priority, application Japan, Jul. 4, 1980, 55-94135[U]; Jul. 4, 1980, 55-94136[U]; Jul. 4, 1980, 55-94137[U]; Jul. 4, 1980, 55-94138[U]; Jul. 4, 1980, 55-94139[U]

Int. Cl.³ G10C *3/12, 3/04*

U.S. Cl. 84—423 R **12 Claims**



1. A keyboard musical instrument which comprises:

(a) a casing comprising molded upper and lower shells coupled together to form the casing;

(b) a plurality of keys mounted on said upper shell in juxtaposed relation; and

(c) means mounted on said upper shell for normally urging said keys into raised positions;

(d) said upper shell including fulcrum means formed integrally therewith which supports each key for pivotal movement thereabout between its raised and depressed positions, integral stop means for limiting the downward and upward movements of said keys, integral guide means for guiding the downward and upward movements of each key to prevent the lateral movement thereof, and integral mounting means for supporting a key switch structure, all of said stop means, said guide means and said mounting means being disposed in underlying relation to said juxtaposed keys.

4,351,223

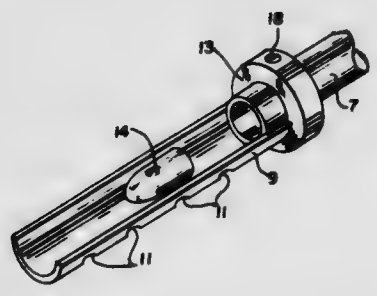
BURST FIRE COMPENSATOR

Edward M. Schmidt, Harford City, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 11, 1980, Ser. No. 177,031

Int. Cl.³ F41F *17/12*

U.S. Cl. 89—14 R **5 Claims**



1. A burst fire compensator adapted to be rotatably attached to the barrel of a gun, comprising; a tubular collar adapted to fit over said barrel of said gun near the muzzle thereof, an asymmetric channel integrally attached to said collar, said asymmetric channel comprising an approximately half cylindrical projection forming an extension of approximately one half of said barrel, a plurality of lateral holes in said asymmetric channel running from the interior thereof to the outside thereof, said lateral holes being offset from alignment with the radial generators of said half cylindrical projection, means to adapt said compensator for rotation around said barrel after each round is fired, said means comprising said lateral holes and a spring-loaded ball mounted in a radial hole in said tubular collar, said ball engaging an annular groove in the perphery of said barrel, and detent means comprising one or more detent holes disposed along said groove adapted to be engaged by said spring-loaded ball.

4,351,224

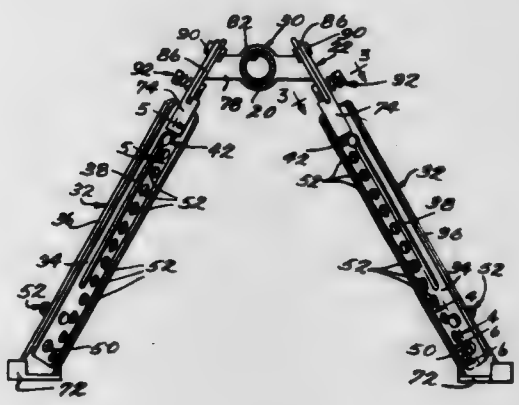
BIPOD MECHANISM FOR SMALL ARMS

George F. Curtis, Sanford, Me., assignor to Maremont Corporation, Carol Stream, Ill.

Filed Apr. 7, 1980, Ser. No. 137,780

Int. Cl.³ F41C *29/00*

U.S. Cl. 89—37 BA **11 Claims**



1. A bipod mechanism for a small arms weapon comprising a pair of individually telescopically adjustable leg assemblies and means connectable in supporting relation with the weapon mounting said pair of leg assemblies in a weapon supporting and firing position wherein said leg assemblies extend downwardly in outwardly converging relation with respect to the longitudinal extent of said weapon, the improvement which comprises:

each of said leg assemblies including an inner leg member of generally L-shaped cross-sectional configuration and an outer leg member of generally L-shaped cross-sectional configuration mounted in generally nested relation with said inner leg member;

pin and slot means between said inner and outer leg members mounting the same for relative longitudinally sliding movement with respect to one another while in said nested relation, said pin and slot means including a longitudinally extending slot in each of said leg members and a headed pin extending through the slot in each leg member and secured to the other leg member; and

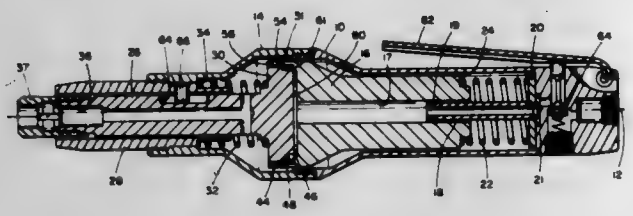
means for releasably securing said leg members in a plurality of different positions of relative longitudinal movement with respect to one another including a retracted position wherein said leg members are generally longitudinally coextensive.

4,351,225

VIBRATION ATTENUATION CONSTRUCTION FOR AN IMPACT AIR TOOL

Karl A. Brandenberg, Chehalis, Wash., and Wilbert G. Kautz, Bryan, Ohio, assignors to The Aro Corporation, Bryan, Ohio

Filed Jan. 17, 1980, Ser. No. 112,864
Int. Cl.³ F01L *21/02*; F01B *15/02*
U.S. Cl. 91—50 **9 Claims**



1. A vibration and noise attenuation construction in a fluid driven tool comprising, in combination:

a housing;

a working member and a balancing member mounted in opposed relation, both members being mounted for reciprocal movement in the housing toward and away from each other;

means for continuously imparting a force on both the working member and the balancing member to drive the members toward one another;

one of said working member and said balancing member defining a piston and the other of said working member and said balancing member defining a cylinder having a cylinder wall for slidable receipt of the piston, said piston being mounted for reciprocal movement in the cylinder, said piston and cylinder defining a closed cylinder chamber;

means for continuously directing pressurized fluid into the cylinder chamber;

and passage means through the cylinder wall for exhausting the chamber upon the expansion of the chamber beyond a predetermined extent, said working member and balancing member moving in a cyclical manner first by expanding the chamber as pressurized fluid is admitted to the chamber to cause the members to translate apart to increase the volume of the chamber and connect the chamber through the passage means to the outside of the chamber to thereby permit exhaustion of the chamber and reduction of pressure in the chamber, and thereafter by contracting the chamber as the members translate in the reverse direction toward one another due to the reduced pressure in the chamber, said reverse direction movement closing the passage means and permitting the fluid in the chamber to define a means for damping the movement of the piston and cylinder toward each other.

4,351,226

FLUID CONTROL SYSTEM

Luc P. Cyrot, Mission Viejo, Calif., assignor to Parker-Hannifin Corporation, Cleveland, Ohio

Filed May 27, 1980, Ser. No. 153,363
Int. Cl.³ F15B *13/16*
U.S. Cl. 91—387 **9 Claims**

1. A fluid control system that includes, a fluid motor, a control valve, and a control valve actuator, said control valve actuator comprising:

an actuator member;

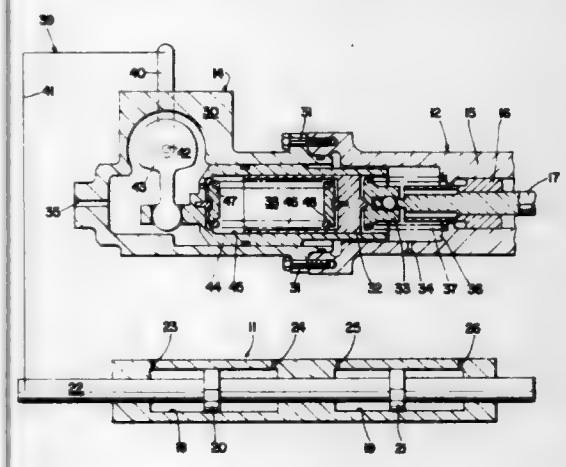
means on said actuator member responsive to a command signal for moving said actuator member with respect to an equilibrium position;

means for mechanically connecting said actuator member to said control valve;

a feedback member that slidably supports and carries said actuating member;

means for mechanically connecting said feedback member to said fluid motor; and

spring means acting between said actuator member and said feedback member and exerting a force on said actuator member whose magnitude varies with the distance between said actuator member and said feedback member,



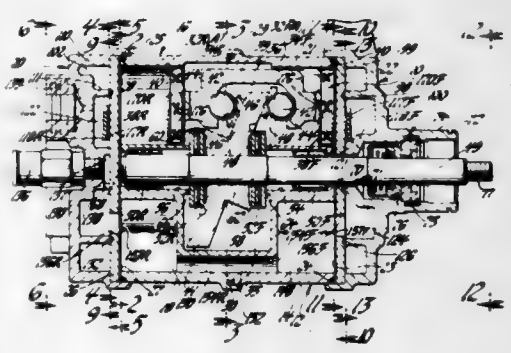
said spring means being responsive to the movement of said actuator member and to the movement of said feedback member to return the actuator member to its equilibrium position.

4,351,227

MULTICYLINDER SWASH PLATE COMPRESSOR PISTON RING ARRANGEMENT

Carl A. Copp, Jr., Vandalia; Richard T. Pandzik, and Marvin E. Gaines, both of Dayton, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed May 20, 1980, Ser. No. 151,707
Int. Cl.³ F04B *1/18*
U.S. Cl. 92—71 **3 Claims**



1. In a compact lightweight multicylinder swash plate compressor of the type having a metallic double-ended piston with piston heads reciprocated in aligned metallic cylinder bores wherein each piston head has a diametrical dimension substantially less than the diametrical dimension of its respective bore to provide a substantial annular space therebetween and wherein a solid seal-support ring of slippery material such as Teflon or the like is expanded over each piston head and contracts into a circumferential groove therein and is sufficiently thick that the memory recovery thereof after further contraction forced by a tool causes the ring to sealingly engage its respective bore immediately after assembly with its piston head therein as the sole support of the piston head with respect to the bore and whereafter the metal of the piston head on opposite sides of the groove is prevented thereby from touching the metal of its respective bore throughout its reciprocation in the bore: the improvement wherein each said groove is formed with a plurality of non-parallel projections which are circumferentially spaced about and project outward from the bottom thereof, said projections projecting sufficiently outward and being configured in non-parallel relationship so that they substantially bite or imbed themselves in the underside of the ring mounted thereover during assembly of the piston heads with the rings thereon in their respective bores whereafter during

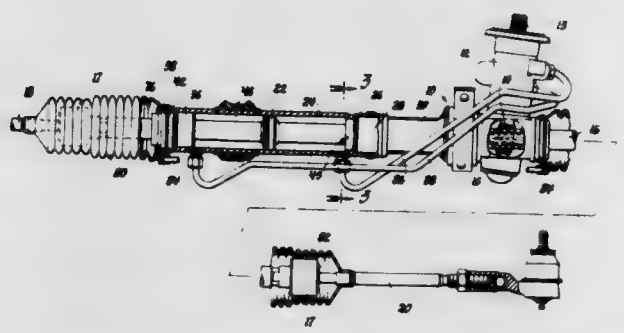
compressor operation the piston is thereby positively prevented from both rotary and longitudinal rubbing movement in its rings to thereby prevent the rings from wearing away the metal of the piston heads at the bottom and shoulders of their groove whereby both sealing and prevention of metal to metal contact between the piston heads and their respective bore is maintained by the rings.

4,351,228

POWER ASSIST RACK AND PINION STEERING GEAR

Raymond J. Schultz, Saginaw, and Michael E. Marr, Bridgeport, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jul. 2, 1980, Ser. No. 165,300
Int. Cl.³ F16J *15/18*; F01B *9/00*
U.S. Cl. 92—128 **6 Claims**



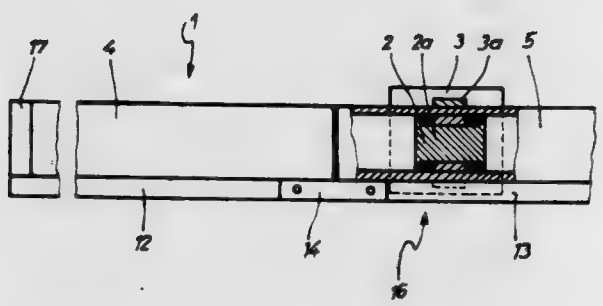
1. A method of installing an annular hydraulic seal of resilient material within a rigid cylindrical body having a predetermined internal diameter greater than the external diameter of said seal comprising the steps of restricting the internal diameter of the cylindrical body at a predetermined station along its length to form a localized internal seal seat having an internal diameter less than the outer diameter of said seal, installing the hydraulic seal on a rod member adjacent an annular piston fixed thereon which slidably fits into said cylindrical body, advancing said rod, piston and seal together in a first linear direction into said cylindrical body until said seal engages said seal seat, subsequently continuing the linear advancement of said rod, piston and said seal in said body so that said seat constricts said seal radially inwardly and securely holds said seal in a fixed position with respect to said body, axially moving said rod and said piston in an opposite linear direction and with respect to said seal to a predetermined location within said body.

4,351,229

FLUID POWER DRIVING UNIT

Kurt Stoll, Lenzhalde 72, 7300 Esslingen/N, Fed. Rep. of Germany

Filed Nov. 19, 1980, Ser. No. 208,455
Claims priority, application Fed. Rep. of Germany, Nov. 30, 1979, 2948204
Int. Cl.³ F16J *11/02, 1/00*
U.S. Cl. 92—128 **4 Claims**



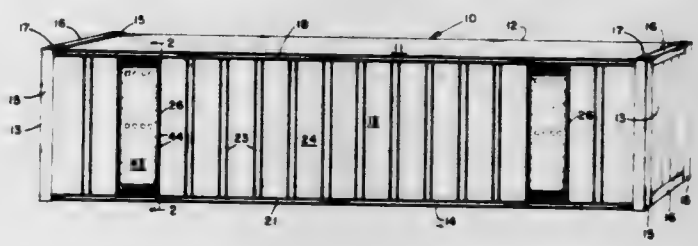
1. In a fluid power driving unit which includes an elongate, hollow cylinder made of a non-magnetic material, a piston supported within said cylinder for movement lengthwise thereof, first means for introducing to and removing from said cylinder a fluid in a manner effecting movement of said piston therein, a runner supported on said outer surface of said cylinder for movement lengthwise thereof, and magnetic means provided on and magnetically coupling said piston and said runner for effecting movement of said runner along said cylinder synchronously with and in response to movement of said piston along said cylinder, the improvement comprising wherein said cylinder includes a plurality of cylinder sections and second means for releasably interconnecting said cylinder sections in an end to end manner, the adjacent ends of respective said cylinder sections overlapping each other and said inner and said outer surfaces of said cylinder being substantially smooth and continuous in the regions of said overlapping ends of said cylinder sections, and including a reinforcing rail section supported on said outer surface of and extending axially along each said cylinder section and guiding said runner and third means for releasably interconnecting the adjacent ends of respective said reinforcing rail sections on adjacent said cylinder sections.

4,351,230

SELF-VENTING CARGO CONTAINER

Laurence R. Brickner, Marathon, N.Y.; David N. Moutner, Spotswood, N.J., and Barbara J. Pratt, Yorktown Heights, N.Y., assignors to Sea-Land Service, Inc., Elizabeth, N.J.

Filed Apr. 20, 1981, Ser. No. 255,421
Int. Cl.³ F24F *7/00*
U.S. Cl. 98—31 **4 Claims**

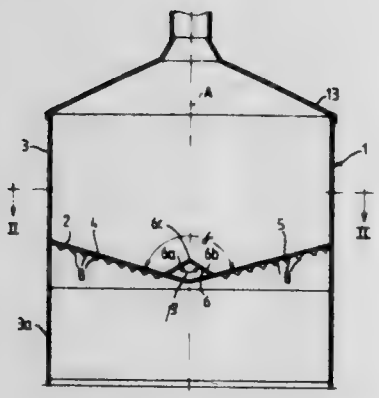


1. A self-venting cargo container for handling temperature and moisture sensitive cargo having bottom, top, side and end walls forming a tight enclosure for retaining bulk cargo therein, one of said end walls being openable for loading and unloading cargo, each of said side walls having at least one self-venting section for admitting and exhausting air into and out of said container, each of said sections having upper, intermediate and lower portions, said upper portion of each section having a series of openings and said intermediate portion having a series of openings for passage therethrough of water condensed from inside the container, baffle means secured to each section above said openings in said upper and intermediate portions to exclude downward water flow from entering said openings, a vent cover having upper, intermediate and lower sectors, said upper and lower sectors of said vent cover having a plurality of openings for air flow therethrough, each of said vent covers being secured in overlapping relation with each of self-venting sections forming a vertical chamber therebetween and a bottom drain opening whereby a chimney effect for induced draft occurs in said vertical chamber producing air circulation vertically in said chamber and into said container to modify the temperature gradient between the container interior and exterior to reduce condensation within the container.

4,351,231
MASH COPPER

Alfons Wolfseder, Freising, Fed. Rep. of Germany, assignor to Anton Steinecker Maschinenfabrik GmbH, Fed. Rep. of Germany

Filed Apr. 27, 1981, Ser. No. 255,210
Claims priority, application Fed. Rep. of Germany, Jun. 12, 1980, 3022050
Int. Cl.³ C12H *1/00*
U.S. Cl. 99—277.2 8 Claims

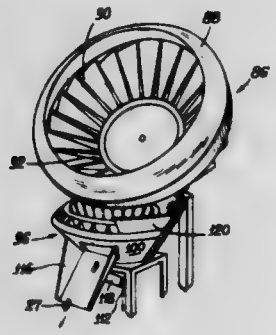


1. A mash copper construction having a body of circular cross-section and a tun bottom, said bottom having two planar bottom portions disposed in mirror-image manner with respect to a first vertical centre plane passing through the copper body and including therebetween an angle between about 140° and 156°; and two gusset portions disposed in mirror-image manner with respect to a second vertical centre plane passing through the copper body and offset by 90° with respect to said first plane and tapering from the periphery toward the centre of the copper bottom, said gusset portions having roof-like inclined surfaces enclosing an angle between about 90° and 130° and a ridge-like upper edge at an angle to the horizontal of between about 3° and 5°.

4,351,232
SYSTEM FOR PROCESSING POTATOES

Hans E. K. Kroenig, Narzissenweg 15, 4010 Hilden, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 109,289, Jan. 3, 1980, abandoned, which is a division of Ser. No. 13,463, Feb. 21, 1979, Pat. No. 4,251,555. This application Jul. 23, 1981, Ser. No. 286,151
Int. Cl.³ A23N *7/02, 15/04, 15/12*
U.S. Cl. 99—540 8 Claims



1. Apparatus for snipping the ends of raw potato sticks comprising, in combination:

a pair of cutting devices each of which defines an axis of rotation and each of which includes an inner bowl coaxial with and rotatable about its corresponding axis of rotation and an outer coaxially related stationary bowl, each inner and each outer bowl having a peripheral wall, the peripheral wall of each said inner rotatable bowls being spaced inwardly from the peripheral wall of the corresponding coaxially related stationary bowl;

means mounting said cutting devices so that the axis of rotation of a first of said devices is vertical and the other of said devices is overhead of the first and has its axis of rotation disposed at an inclined angle to vertical;

circumferentially spaced walls carried by and extending outwardly from the peripheral wall of each of said inner bowls to define a plurality of circumferentially adjacent rotatable cutting chambers having their outer sides closed by the peripheral wall of the corresponding outer stationary bowl;

a base on each of said outer bowls;

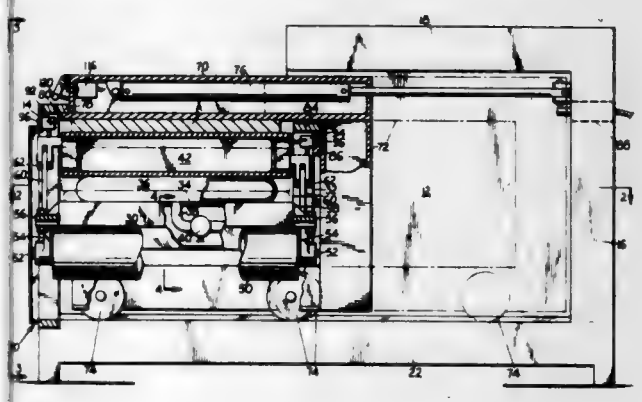
a stationary cutting knife mounted on each stationary bowl in spaced relation from the corresponding base thereof and extending inwardly from the internal surface of the corresponding peripheral wall so as to cut off the ends of potato sticks disposed within said cutting chambers as said inner bowls are caused to rotate relative to their corresponding outer bowls; and

means supporting the potato sticks on both sides of said cutting knife while the sticks are being passed over said cutting knife, thereby creating positive slicing throughout the cross-section of the cut sticks without bending the sticks, said support means including the trailing circumferentially spaced wall of each rotatable cutting chamber carrying sticks.

4,351,233
PRESS

Frank W. Leonard, 4501 Federal Way, Boise, Id. 83705

Continuation of Ser. No. 113,738, Jan. 21, 1980, abandoned. This application Nov. 5, 1981, Ser. No. 318,467
Int. Cl.³ B30B *15/16*
U.S. Cl. 100—48 9 Claims



1. A press construction for forming elongated articles comprising

(a) an upright frame having laterally elongated, vetically reinforced front and rear portions as well as side, top and bottom portions,

(b) first platen means having a laterally elongated pressing surface for supporting elongated articles in the press and having vertical powered movement in pressing operations,

(c) second platen means having front and rear portions and a laterally elongated pressing surface facing the pressing surface of said first platen means,

(d) and projection means on each of the front and rear portions of said second platen means and also on each of the reinforced front and rear frame portions,

(e) said projection means extending substantially the full lateral length of said second platen means and said frame,

(f) said second platen means being movable relative to said first platen means in a plane parallel with said pressing surface to move between an advanced pressing position in overlapping relation with said first platen means for pressing articles and a retracted position for loading and unloading articles on said first platen,

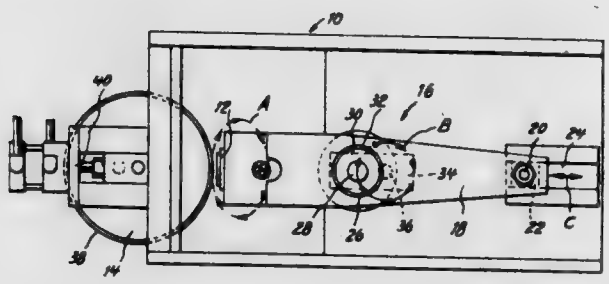
(g) both of said front and rear projection means on said second platen means in the retracted position of the latter being out of engagement with the projection means on said frame but being disposed in underneath engagement with said front and rear projection means of said frame respectively in the advanced pressing position of said second platen means whereby upward pressing forces of said lower platen means in pressing operations against the second platen means is transferred to said vertically reinforced frame portions.

4,351,234

MARKING APPARATUS WITH ORBITING MARKING HEAD

James E. Keehner, Salem; Samuel A. Linn, Silverton; Marvin L. Kahut, Woodburn; Bobby G. Forrester, Silverton, and Roy E. Bohanan, Salem, all of Oreg., assignors to General Foods Corporation, White Plains, N.Y.

Filed Jul. 7, 1980, Ser. No. 166,003
Int. Cl.³ B41F *17/24*
U.S. Cl. 101—10 4 Claims



1. A marking apparatus for marking a continuous succession of spaced-apart articles comprising heat sensitive material, said articles moving at a speed in excess of 1500 inches per minute and said marking being at least four characters in the direction of flow comprising:

an electrically-heated marking head;

backup means positioned opposite the marking head, said backup means comprising a wheel with a resilient surface;

and means for reciprocating the marking head between a withdrawn position and a marking position adjacent said backup means, including means for effecting an overall elliptical movement of the marking head, thereby permitting accurate marking and prolonged contact in the direction of flow between the articles moving continuously past the marking head and said marking head, said means including an orbiting arm, with the marking head mounted on one end thereof and with the opposite end thereof being pivotally connected to a slide adapted for reciprocal movement within a slide channel and a shaft eccentrically attached to a rotating drive means, said shaft being fitted in an aperture in said orbiting arm.

4,351,235

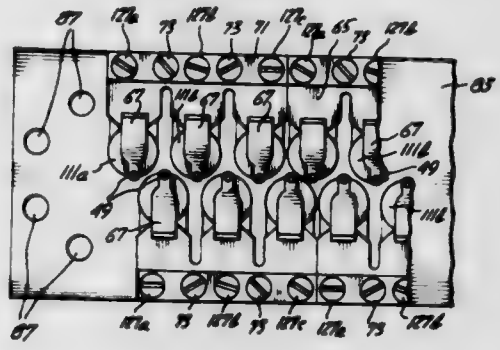
DOT PRINTING MECHANISM FOR DOT MATRIX LINE PRINTERS

Edward D. Bringhurst, Seattle, Wash., assignor to Mannesmann Tally Corporation, Kent, Wash.

Filed Sep. 11, 1980, Ser. No. 186,134
Int. Cl.³ B41J *3/12*
U.S. Cl. 101—93.04 20 Claims

12. In a dot matrix line printer wherein a line of dot printing elements are oscillated back and forth along a print line, the improvement comprising:

a plurality of print modules mounted side-by-side along said print line, each of said print modules including a print hammer assembly, each print hammer assembly including a plurality of hammer arms formed of a wide, flat piece of resilient material and a plurality of stiffeners formed of a relatively large bulky mass of magnetically permeable material, one of said stiffeners mounted on the outer end of each of said hammer arms, said stiffeners having anvils located on one face and near the outer ends thereof, said



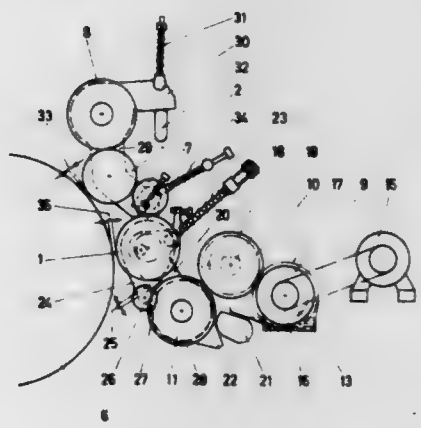
anvils located along said print line, said modules mounted on opposite sides of said print line such that said anvils are interleaved.

4,351,236

COMBINED DAMPENING-INKING UNIT FOR OFFSET PRINTING MACHINES

Hermann Beisel, Walldorf, and Hermann Kraft, Dossenheim, both of Fed. Rep. of Germany, assignors to Heidelberger Druckmaschinen Aktiengesellschaft, Heilderberg, Fed. Rep. of Germany

Filed Oct. 18, 1979, Ser. No. 86,139
Claims priority, application Fed. Rep. of Germany, Oct. 21, 1978, 2845932
Int. Cl.³ B41F *7/40, 31/34;* B41L *25/14*
U.S. Cl. 101—148 4 Claims



1. Combined dampening-inking unit for offset printing units having an inking unit section and a dampening unit section, the inking unit section being disposed adjacent a rotary plate cylinder and including a first inking roller and at least a second inking roller, as viewed in rotational direction of the plate cylinder, the first and the second inking rollers being engageable with the plate cylinder, means for adjustably mounting the first inking roller and the second inking roller independently of one another, the dampening unit section including a dipping roller, a dampening-medium distributor roller and a metering roller cooperatively engageable with the dipping roller and the dampening-medium distributor roller for supplying dampening medium to the dampening-medium distributor roller, the dampening-medium distributor roller being engageable with the first inking roller for predampening the inking unit and the plate cylinder, comprising an oleophilic roller intermediate the first and the second inking rollers, means for adjusting said intermediate roller independently of the first inking roller simultaneously together with the second inking roller, first means for shifting the first inking roller into a first control position wherein the first inking roller is spaced away from both the plate cylinder and the dampening-medium distributor roller and is connected by said intermediate roller to the inking unit, second means for shifting the first inking roller into a

second control position wherein the first inking roller engages said intermediate roller and is in engagement with the dampening-medium distributor roller for predampening the inking unit, and third means for shifting the first inking roller into a third control position for predampening the plate cylinder wherein the first inking roller engages the plate cylinder while maintaining engagement with the dampening-medium distributor roller and being out of contact with said intermediate roller.

4,351,237

DEVICE FOR PRINTING-PRESSURE CONTROL

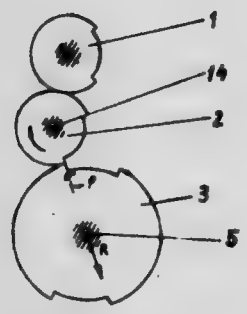
Hans-Jürgen Tappert, Coswig; Horst Schulz, Dresden; Hans Johne, Radebeul, and Albrecht Johne, Dresden, all of German Democratic Rep., assignors to Veb Kombinat Polygraph "Werner Lamberz" Leipzig, Leipzig, German Democratic Rep.

Filed Jun. 5, 1980, Ser. No. 129,886

Claims priority, application German Democratic Rep., Mar. 26, 1979, 211779

Int. Cl.³ B41F *13/34*

U.S. Cl. 101—216 **10 Claims**



1. In a printing press having a feeding roller, an offset roller and a printing roller, said offset roller being positioned in contact with said printing roller and with said feeding roller for printing on sheets being processed, each of said rollers being provided with a bearing, and feed-control means, a control arrangement for controlling printing pressure between two of said contacting rollers comprising a sensor for measuring a bearing pressure exerted within a first bearing of one of said rollers, said pressure varying in dependence upon the angle of rotation of said one roller, said sensor being positioned on said first bearing and extending in a plane passing through the central effective line of said force; a measured pressure value processor electrically connected to said sensor to receive a signal corresponding to the measured pressure value therefrom; an indicator of a desired pressure-value to generate a signal corresponding to said desired pressure value; means for comparing said signal of the measured pressure-value with the signal of the desired pressure-value; and positioning means electrically connected to said comparing means and to a second bearing of a second one of said contacting rollers, said positioning means being operative for receiving a compared signal from said comparing means and positioning said second bearing of said second roller in dependence upon the said angle of rotation and in response to said compared signal thereby adjusting the printing pressure between two rollers arranged in contact with each other.

4,351,238

METHOD FOR SCREEN PRINTING

Charles W. Harpold, 274 Greenbrier Dr., SE., Grand Rapids, Mich. 49506

Filed Sep. 25, 1980, Ser. No. 190,503

Int. Cl.³ B41C *1/14*

U.S. Cl. 101—128.4 **17 Claims**

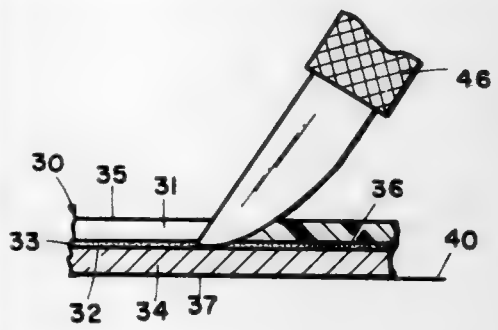
4. In a method for screen printing with a printer having a platen and a porous screen, the improvement comprising:

providing a sheet of masking, sized to cover said porous screen, and including an adhesive coating on a back side thereof with a cover sheet overlying and adhered to the same;

positioning said masking on a work surface cover side up;

scribing a selected pattern on said cover sheet with a pointed instrument so as to form a corresponding indentation in said masking which is visible from the front side of said masking; said pattern including at least one closed area;

positioning said masking front side up on said work surface;



cutting said masking along said indentation;

peeling said cover sheet off of said masking sheet, thereby removing the enclosed areas of said pattern from said masking to form apertures therethrough; and

pressing the adhesive side of said masking into abutment with one side of said screen to interconnect the same, whereby during printing, ink is forced through said apertures to print said pattern onto an article.

4,351,239

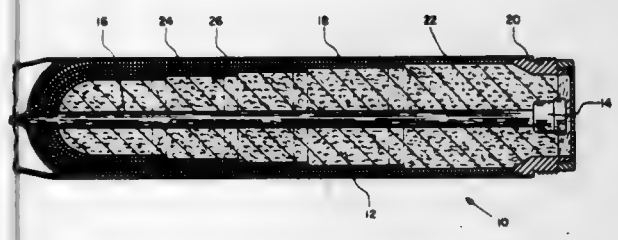
WARHEAD, INCENDIARY

Melvin J. McCubbin, and Clifford T. Johnson, both of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 28, 1975, Ser. No. 553,851

Int. Cl.³ F42B *11/24*

U.S. Cl. 102—364 **2 Claims**



1. In a fragmentation warhead including;

an explosive charge extending along a longitudinal axis,

a casing surrounding said explosive charge and extending concentrically therealong so as to contain the fragmentation warhead,

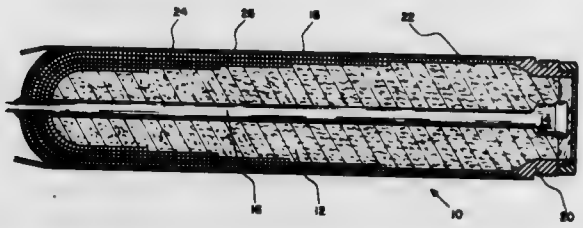
a plurality of generally cylindrical layers of fragmentation elements arranged between said explosive charge and said casing to extend outer surface thereof in a direction along the longitudinal axis of said explosive charge, each layer having a length different from other layers and arranged with the longest extending layer outermost and adjacent said casing and progressively shorter extending layers concentrically positioned within said longest extending layer with the shortest extending layer innermost, adjacent said explosive charge, the improvement comprising:

a plurality of rings of zirconium sponge material equal in number to the number of layers of fragmentation elements, each having the same thickness as the layer of fragmentation elements, each having a length along said longitudinal axis greater than a single element, and positioned at the end of each layer to form an extension thereof, whereby the explosive fragmentation of said warhead is accompanied by an incendiary dispersal of pyrophoric zirconium sponge material.

4,351,240
INCENDIARY FRAGMENTARY WARHEAD

Melvin J. McCubbin; Clifford T. Johnson, and Paul E. Cordle, all of China Lake, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 28, 1975, Ser. No. 553,852
Int. Cl.[3] F42B *11/24*
U.S. Cl. 102—364 2 Claims



1. A fragmentation-incendiary warhead comprising, in combination;

an explosive section having an axis of symmetry;

a plurality of rows of generally cubical ferrous metal fragments arranged in a patterned array around said explosive section; and

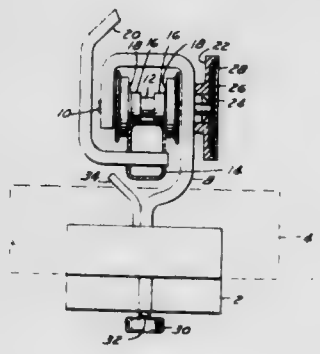
separate distinctly shaped pieces of solid zirconium of very nearly the same size and mass as said cubical steel fragments;

said pieces being intermixed with said cubical fragments for dispersal therewith when said explosive section is detonated.

4,351,241
WORKPIECE STORAGE SYSTEM

John H. Brems, and James T. Graham, both of Birmingham, Mich., assignors to F. Jos. Lamb Company, Warren, Mich., a part interest

Division of Ser. No. 908,941, May 24, 1978, abandoned. This application Aug. 8, 1980, Ser. No. 176,563
Int. Cl.[3] B61B *3/00*
U.S. Cl. 104—93 4 Claims



1. In a conveyor,

A. a body for carrying load pieces,

B. a downwardly sloping track means including a first portion to carry an unloaded body and a second portion to carry a loaded body,

C. two unpowered primary wheels of different diameters mounted on said body for selectively supporting and guiding said body on and with respect to said track means,

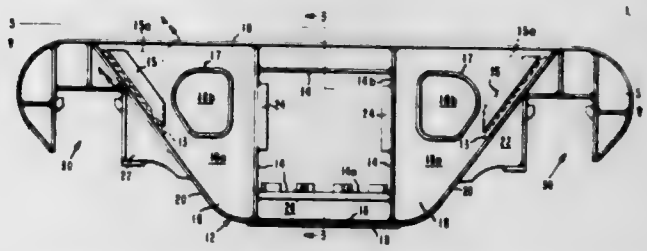
D. retarding means acting between said body and each of said primary wheels to generate a retarding torque substantially proportional to the angular velocity of a said primary wheel,

E. said first and second portions of said track means being spatially related relative to said primary wheels to cause the smaller diameter primary wheel to ride on said second portion of said track means when a body is loaded, and to cause the large diameter primary wheel to ride on said first portion of said track when a body is not loaded, thereby creating a different ratio of retarding force to body velocity for a body supported on one of said primary wheels than the ratio of retarding force to body velocity for a body supported on the other of said primary wheels.

4,351,242
RAILWAY CAR TRUCK SIDE FRAME

Howard D. Irwin, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 19, 1980, Ser. No. 122,726
Int. Cl.[3] B61F *5/00*
U.S. Cl. 105—206 A 1 Claim

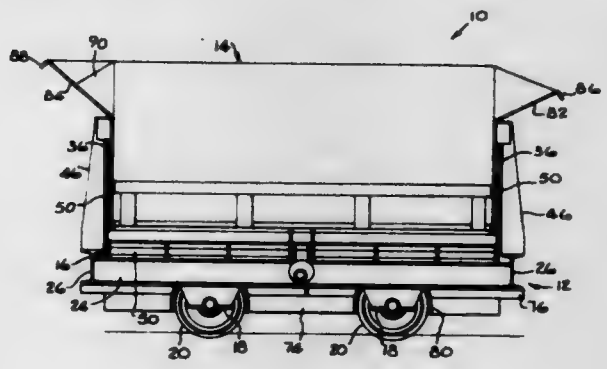


1. A railway car truck side frame comprising: a compression member horizontally extending the length of the side frame; a tension member substantially coextensive with said compression member and spaced therefrom, said tension member having an intermediate horizontal portion merging at opposite ends into diagonally and upwardly and outwardly extending portions; a rectangular bolster frame mounted between said members coextensive with said intermediate horizontal portion of said tension member; spaced apart shear webs welded between said compression member, said diagonally and upwardly and outwardly portions of said tension member and said bolster frame to form a box-beam as the primary structural unit for the side frame, said shear webs having aligned openings therethrough; a flange attached to the periphery of said openings and joining said shear webs, welds joining the main structural elements are so disposed to be stressed in shear rather than tension or compression; coextensive reinforcing members welded to said box along the diagonally and upwardly and outwardly extending portions of said tension member and the side plates; and separate stiffeners welded in a longitudinal array to the intermediate horizontal portion of the tension member.

4,351,243
PIVOTED RAILWAY HOPPER CAR DOOR LATCH

Cornelis Brouwer, Potchefstroom, South Africa, assignor to Rotaque (Proprietary) Limited, Potchefstroom, South Africa

Continuation of Ser. No. 903,300, May 5, 1978, abandoned. This application Sep. 18, 1980, Ser. No. 188,413
Int. Cl.[3] B61D *7/04, 7/18, 7/30*
U.S. Cl. 105—241.2 5 Claims



1. A bottom discharge hopper structure comprising

(a) a chassis frame;

(b) a body mounted on said chassis frame and bounded by two longitudinally extending side walls, said side walls

both sloping downwardly and inwardly so as to converge with one another to from a bottom discharge opening;

(c) a single door hung from pivot structures above said chassis frame and serving to close said opening, said door comprising two end plates, an elongated plate of arcuate cross-section joining said end plates, and a first abutment surface;

(d) a tipping arm pivotally mounted on said door and having a second abutment surface, said arm having a first position with respect to said door in which first position said abutment surfaces are spaced apart and a second position with respect to said door in which second position said abutment surfaces are in engagement;

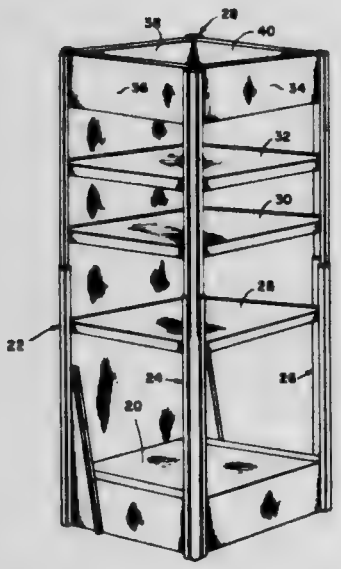
(e) a face on said arm being in engagement with said frame to latch said door while said arm is in its first position with respect to said door, to prevent pivotal movement of said arm and door about said mounting structures until said arm has been pivoted sufficiently about its mounting on said door towards said second position to take up at least some of the gap which exists between said abutment surfaces while said arm is in its first position, said elongated plate being generated about an axis offset with respect to the axis of said pivot structures in such manner that said elongated plate moves both downwardly and laterally with respect to said side walls, thereby to cause a gap of progressively increasing width to be created between said door and said walls during opening.

4,351,244

SHELVING SYSTEM

James M. Suttles, Elberton, Ga., assignor to The Mead Corporation, Atlanta, Ga.

Filed Jan. 29, 1980, Ser. No. 116,585
Int. Cl.[3] A47B 3/06
U.S. Cl. 108—107 16 Claims



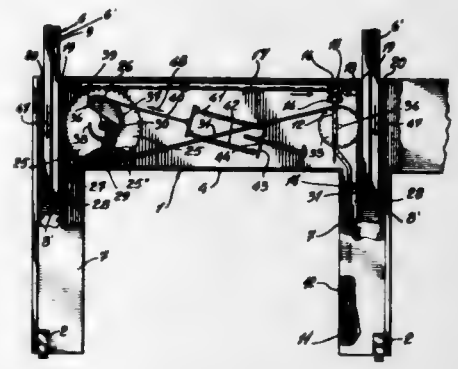
1. A system of shelving comprising a shelf, and an upright supporting post, said shelf having a hook comprising a sheet metal projection lying in a substantially vertical plane and having a downwardly open notch, and said post comprising a sheet metal element lying in a substantially vertical plane and having a slot for receiving said hook; in which the notch of the hook has a first oblique camming surface engageable and cooperable with an edge of the slot for urging the shelf in a first horizontal direction with respect to the post as the hook is moved downwardly with respect to the post, and in which the slot has a second oblique camming surface engageable and cooperable with an edge of the sheet metal projection of the hook for urging the shelf in a second and different horizontal direction with respect to the post, and in which the post and shelf also have mutually engageable means for limiting the relative movement of the post and shelf in both of said first and second directions, said mutually engageable means being positioned so that they first come into engagement while said edges are in engagement with intermediate portions of their cooperating camming surfaces, whereby, upon downward movement of the shelf, said mutually engageable means become tightly engaged, and the shelf and post are rigidly secured together.

4,351,245

COUNTERWEIGHT SYSTEM

Joseph L. Laporte, 420 E. Principale St., St.-Ambroise-de-Kildare, Quebec, Canada (J0K 1C0)

Filed Sep. 4, 1980, Ser. No. 184,039
Int. Cl.[3] A47B 9/02
U.S. Cl. 108—136 1 Claim



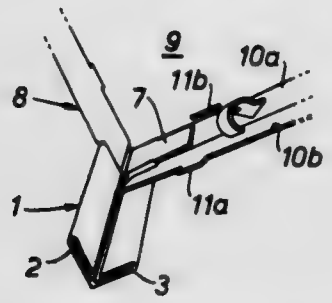
1. A drafting table comprising a frame of inverted U-shaped hollow construction having a top transverse bight member and two upright sides downwardly depending from the ends of said bight member; a leg assembly including first and second legs vertically displaceable within the respective sides of said U-shaped frame and upwardly protruding through said bight member; a table top mounted on the upper ends of said first and second legs and overlying said bight member; a horizontal pivot shaft extending transversely through said bight member and mounted therein adjacent said first leg; a first pulley having a cylindrical peripheral wall close to said first leg and a pair of spaced side walls mounted on said shaft; a cam member secured to one of said side walls of said pulley; said cam member having a spiral shaped cam surface progressively distant from the rotational axis of said pivot shaft; first and second flexible ties trained in the same direction around said pulley and each having one end portion extending through said peripheral wall and within said pulley and attached to the latter by a common removable tie pin extending through said side walls of said first pulley, the peripheral wall of said first pulley guiding said first flexible tie alongside said first leg, the other end of said first flexible tie being secured to the lower end of said first leg; said second flexible tie having its other end secured to the lower end of said second leg; said second flexible tie being trained around a second pulley rotatively and transversely mounted within said bight member, spaced from said pivot shaft and located adjacent said second leg; said second pulley guiding said second flexible tie alongside said second leg, said second flexible tie extending directly from said second pulley to said first pulley within said bight member; the points of tangential contact of said first and second flexible ties with the peripheral wall of said first pulley being angularly spaced from each other around said first pulley; a third flexible tie having one end trained around said cam surface and secured to said first pulley by said common tie pin; the other end of said third flexible tie being fastened to at least one tension coil spring which in turn is secured to said frame within said bight member at the opposite end of said tension spring, whereby the increasing force exerted by said tension spring on said member as it stretches is compensated by the decreasing lever arm of the point of tangential contact of said third flexible tie on said cam surface as said cam member rotates between two limit positions so as to counterbalance said table top and legs at any adjusted position of said table top; and tension adjustment means for said tension spring, said inverted U-shaped hollow frame defining a space between said upright sides which is completely free of any obstruction.

4,351,246

TEMPORARY DISPLAY STAND FOR MERCHANDIZING

Ferris L. Hutchins, Jr., Doraville, Ga., assignor to The Mead Corporation, Dayton, Ohio

Filed Aug. 25, 1980, Ser. No. 181,261
Int. Cl.[3] A47B 3/06
U.S. Cl. 108—156 7 Claims



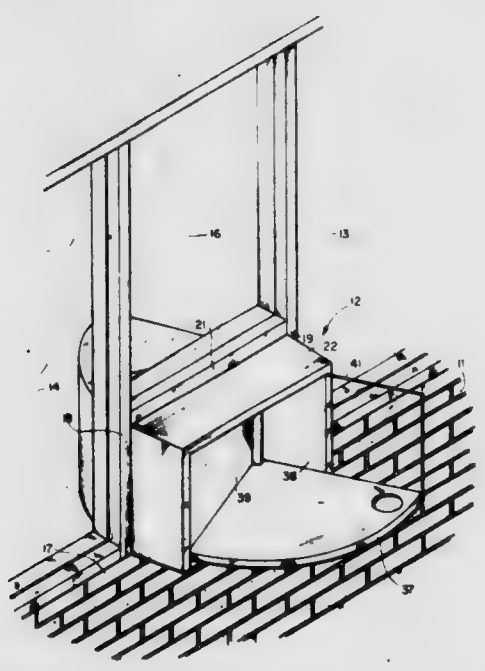
1. A display structure comprising the combination of a corner post unit and a shelf unit having a corner portion connected to said corner post unit, at least one of said units being formed from a foldable sheet material, and wherein the other of said units is provided with connecting means for attachment with cooperating means provided by said one unit, the connecting means comprising projecting arms and the cooperating means comprising a retaining sleeve to receive each of said arms, each retaining sleeve being formed by a portion of said one unit folded to provide a double ply thickness of material, said shelf unit being formed from a foldable sheet material and comprising a support surface and an integral peripheral skirt depending therefrom, said arms being provided on adjacent sides of said corner post unit and being received along the peripheral skirt of said shelf unit, said peripheral skirt having an outer skirt section and an overlapping inner skirt section folded over to provide said retaining sleeve, and a series of mating tabs and slot connector means provided by said shelf unit to retain said inner and outer wall sections in their overlapped relationship, the tabs of said connector means being integrally formed at spaced locations along said inner wall sections and the slots of said connector means being formed at correspondingly spaced locations in said support surface.

4,351,247

PASS-THROUGH FOR DRIVE-UP WINDOW

Larry G. Clark, 5532 Hollister Dr., Indianapolis, Ind. 46224

Filed Aug. 18, 1980, Ser. No. 178,780
Int. Cl.[3] E06B 7/32; E05G 7/00
U.S. Cl. 109—19 8 Claims



1. In a building wall, a through-the-wall transfer apparatus for transactions between a business employee on one side of the wall and a customer on the other side of the wall, the apparatus comprising:

a housing mounted in the building wall;

a shelf for swinging in a horizontal plane from a rear position where it is open to the employee's side of the building wall, through an intermediate position where it is normally disposed when not in use, to an open position where it is accessible to the customer at the customer's side of the building wall;

upstanding walls at two sides of the shelf to preclude direct access from the customer's side of the building wall to the employee's side of the building wall for any position of the shelf;

hinge means mounted in said housing and having a vertical pivot axis, said shelf being mounted to said hinge means;

a part-cylindrical wall in said housing and having its cylindrical axis colinear with said pivot axis, said part-cylindrical wall extending from the space outside the customer's side of the building wall to the space inside the employee's side of the building wall;

hinge pin receiver means in said housing and receiving said hinge means thereon;

stop wall means in said housing adjacent said hinge means;

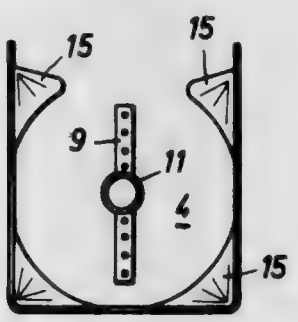
one of said upstanding walls being abuttingly engageable with said stop wall means when said shelf is swung inwardly through said rear position, to stop rotation of said shelf with the two upstanding walls facing the said inside space, and the other of said upstanding walls thereupon cooperating with said part-cylindrical wall and the top of the housing and said shelf to preclude customer access through said transfer apparatus from the customer side to employee side of the building wall.

4,351,248

HEATING BOILER FOR THE COMBUSTION OF BALED STRAW

Hans Viessmann, Im Hain, 3559 Battenberg, Fed. Rep. of Germany

Filed Sep. 2, 1981, Ser. No. 298,760
Claims priority, application Fed. Rep. of Germany, Sep. 13, 1980, 3034668; Jan. 9, 1981, 8100295[U]; Mar. 14, 1981, 3109910; Mar. 14, 1981, 3109915; Mar. 14, 1981, 3109917
Int. Cl.[3] F23J 1/06
U.S. Cl. 110—170 16 Claims



1. A heating boiler for the combustion of baled straw, comprising an enclosed straw feed channel, provided with conveyor means, communicating with a combustion chamber having a combustion zone adjacent the rear wall of the combustion chamber, a flue gas heat exchange chamber above the combustion chamber and in communication with a flue gas vent, an ash collecting pit below the combustion chamber, a horizontal floor disposed between the combustion chamber and the ash collecting pit and having a slot adjacent the rear wall of the combustion chamber for passage of ash from the combustion zone into the ash collecting pit and for intake of primary air into the combustion zone, an ash stripper assembly extending from the rear wall of the combustion chamber and movable in a vertical plane to strip ash from the surface of a

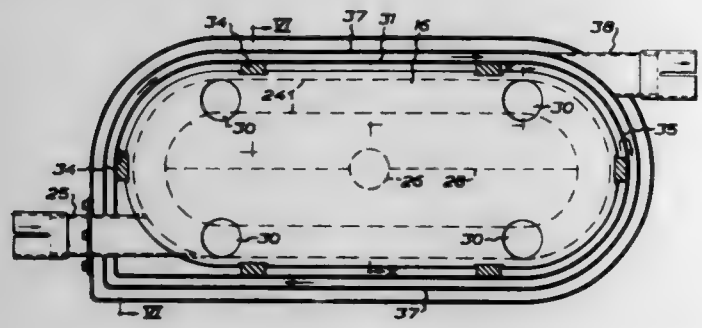
straw bale being combusted in the combustion zone, and at least one secondary air intake in the rear wall of the combustion chamber.

4,351,249

REACTOR

Allan Inovius, Building le Continental, Block A, Monte Carlo, Monaco

Division of Ser. No. 31,314, Apr. 19, 1979, Pat. No. 4,262,609.
This application Jan. 21, 1981, Ser. No. 226,641
Int. Cl.³ F23B *5/00*
U.S. Cl. 110—210 **4 Claims**



1. Reactor for catalytic oxidation of carbon monoxide and hydrocarbon compounds in hot combustion gases, comprising a box with side walls and end walls and a partition wall dividing the space between the end walls into two chambers, at least one of said walls containing a material catalyzing oxidation of carbon monoxide and hydrocarbon compounds, said partition wall containing an annular channel, an inlet for the hot combustion gases being connected to said channel, a central opening in said partition wall connecting said chambers, at least one slot in said partition wall connecting said central opening with said annular channel along at least part of the length of said channel, and said box being provided, at a distance from said central opening of said partition wall, with outlet means connected to said chambers.

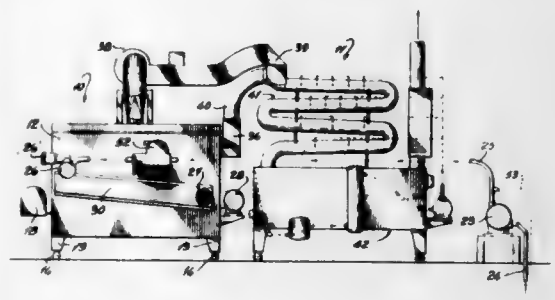
4,351,250

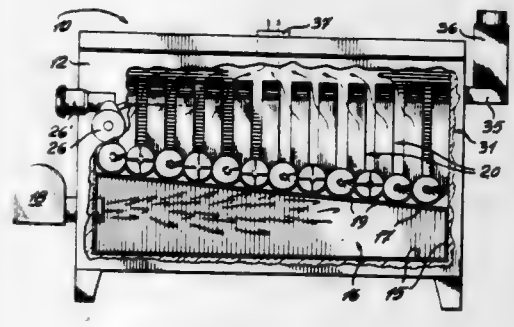
PROCESS AND APPARATUS FOR RECYCLING ORGANIC WASTES

Joseph A. Chartrand, St. Hugues, County of Bagot, St. Hugues, Canada (J0H 1N0), and Irénée Perreault, 1025 Lapierre St., St. Hyacinthe, Canada (J2T 3N6)

Filed May 4, 1981, Ser. No. 259,833
Int. Cl.³ F23G *5/04*
U.S. Cl. 110—227 **2 Claims**

1. An apparatus for treating organic wastes having a high liquid content to recuperate the solid contents thereof in dried condition, comprising a furnace defining an enclosed space, a series of troughs disposed side by side and mounted in the furnace and separating the interior of the furnace into an underlying combustion chamber and an overlying vaporization chamber, means to burn fuel in said combustion chamber, said troughs serially communicating one with another and containing the organic waste in the furnace in open communication with the overlying vaporization chamber, each trough, except the last trough of the series, having its downstream end in lateral communication with the upstream end of the next trough of the series, the last trough of the series having its downstream end opening outside said furnace for discharge of the dried solid content of the organic waste, means to discharge untreated solid waste in the first trough of the series, a conveyor system mounted in the trough and operatively conveying the organic waste in continuous flow for vaporization of fluidizing content and separation of the latter from the solid content, said conveyor system including a plurality of endless screw conveyors extending longitudinally into the troughs respectively, power means to drive the endless scrw conveyors to convey the organic waste from the upstream end to the downstream end of each trough, paddles fixed to the downstream end of each endless screw conveyor, except the endless screw conveyor in the last trough of the series, for pushing the organic waste from one trough to the next through said lateral communication, a heat exchanger ducting extending in the vaporization chamber over the organic waste in the troughs and including an inlet communicating with the combustion chamber, and an outlet located outside said furnace, whereby the hot combustion gases flow from said combustion chamber through said ducting prior to be discharged through said outlet





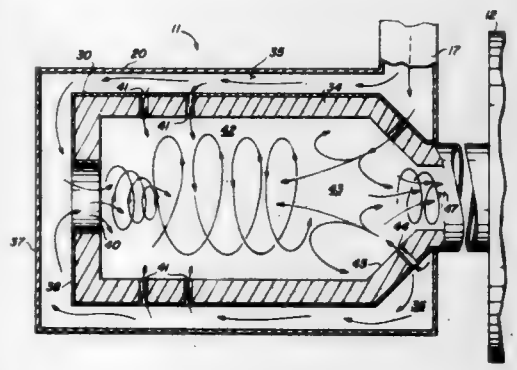
to provide additional heating of the vapors in the vaporization chamber, said furnace further having an outlet at the top of said vaporization chamber for the evacuation of vaporized fluidizing content, the troughs are horizontally disposed in their longitudinal direction, but are arranged at lowering levels relative to one another serially from an uppermost upstream trough to a lowermost upstream trough, the top of the side walls of said troughs being also arranged at lowering levels, whereby organic wastes in an obstructed trough can spill over laterally into an adjacent downstream trough.

4,351,251

COMBUSTION APPARATUS

David F. Brashears, Oviedo, Fla., assignor to Mechtron International Corp., Orlando, Fla.

Filed Jun. 29, 1981, Ser. No. 278,825
Int. Cl.³ F23D *1/02*; F23C *1/10*
U.S. Cl. 110—261 **9 Claims**



6. A combustion apparatus comprising in combination:
a burner having outer and inner walls spaced with spacing members in a predetermined spaced relationship to each other;
said inner wall forming a combustion chamber thereinside;
solid fuel input means passing through said burner outer and

inner walls for directing fuel into said combustion chamber;

a source of air directed into the space between said inner and outer walls;

a plurality of passageways through said inner walls for directing air from said source of air through said openings into said combustion chamber, said plurality of passageways including angled passageways, staggered in said inner wall and directed into the primary burn zone; and

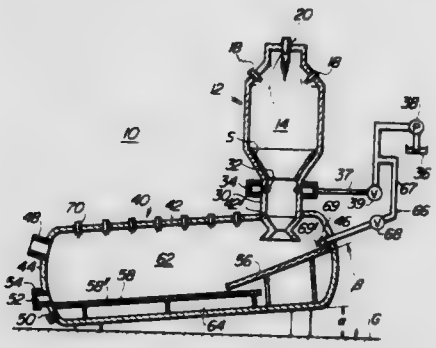
reverse air jets for directing air through one end of inner wall into an area of negative pressure generated by said staggered angled air jets in said combustion chamber.

4,351,252

METHOD FOR TREATING WATER SOLUTION OF WASTE MATERIAL CONTAINING SALT OF SMELT-WATER EXPLOSION CHARACTERISTIC

Mamoru Shindome; Takanori Yanagita; Takanori Nakamura, and Hiroyuki Otsuji, all of Nobeoka, Japan, assignors to Asahi Engineering Co. Ltd., Osaka, Japan

Division of Ser. No. 21,538, Mar. 19, 1979, Pat. No. 4,280,982.
This application Feb. 26, 1981, Ser. No. 238,326
Claims priority, application Japan, Mar. 23, 1978, 53-32302; Mar. 23, 1978, 53-32303
Int. Cl.³ F23G *5/12*
U.S. Cl. 110—346 **1 Claim**



1. An improved method of treating a water solution of a waste material containing a salt having smelt-water explosion characteristics, said method including the steps of spraying the waste solution into an open-bottomed incinerator, producing a combustion of a fuel in said incinerator to heat the spray of the waste solution to a temperature at which the water in the sprayed solution is vaporized and the salt contained in the sprayed solution is fused, causing at least a part of the fused salt to form a layer on the inner surface of said incinerator, allowing the fused salt in said layer to flow downwardly by gravity through the open bottom of said incinerator, and cooling the fused salt to a temperature at which no explosion occurs, wherein the improvement comprises:

establishing an inclined flow of cooling water which is disposed below said open bottom of said incinerator and intersects the vertical axis of said open bottom so that the fused salt falls down onto said inclined water flow and which is of a depth ranging from 05. to 5.0 mm, the angle of inclination of said water flow relative to the horizontal ranging from 5° to 60°.

4,351,253

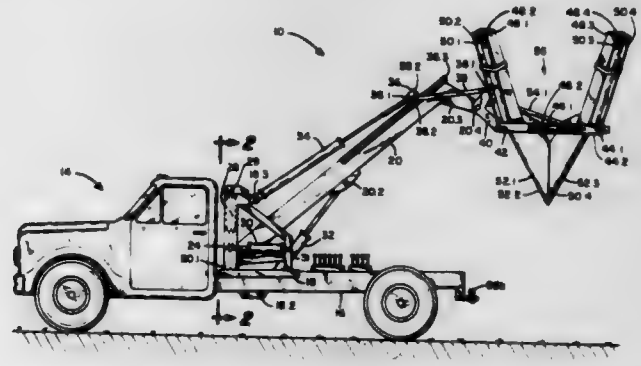
TREE PLANTER AND TRAILER

E. Arthur Dahlquist, 1404 E. Crystal Lake Rd., Burnsville, Minn. 55337

Filed May 1, 1980, Ser. No. 145,671
Int. Cl.³ A01G *23/02*
U.S. Cl. 111—2 **10 Claims**

1. Tree planting system for excavating, transporting and planting a plurality of trees or shrubs, said tree planting system comprising:

a. vehicular tree planting means including a frame, an engine mounted on said frame, two axles of wheels axially mounted on said frame, a transmission for one of said axles, said engine connected through said transmission to one axle of said wheels, hydraulic power means for providing pressure of hydraulic fluid connected to said engine, and hydraulic control means connected to said hydraulic power means for controlling hydraulic pressure, hoist frame means affixed to said frame, hoist frame means including a longitudinal boom including a rectangular cross section affixed at one end to a self-aligning bushing secured and positioned in a bottom position of said hoist frame means, a boom hoist hydraulic cylinder pivotally connected between said hoist frame means and a lower mid portion of said boom with self-aligning bushings at each end thereof, a forward-aft tilt hydraulic cylinder connected between said hoist frame means and a movable pivot point means at an other end of said boom on an upper portion of said boom with self-aligning bushings at each end, said pivot point means riding on opposing wheels on opposing rails positioned on, at and over a portion of said other end of said boom, a boom twist machine hydraulic cylinder and a boom sideswing hydraulic cylinder for providing vertical and horizontal motion to said boom respectively, said boom machine and sideswing cylinders connected by a bar linkage means between said hoist frame means and to said boom with self-aligning bushings between said linkage, said boom and said frame means, a digger frame means pivotally mounted to said other end of said boom and connected to said movable pivot point means by a bar linkage, said digger frame means including four hydraulic spade cylinders,



actuated spades spaced about said digger frame means and connected to said spade cylinders and two hydraulic gate cylinders connected between said digger frame means and gates positioned in said digger frame means and connected to said two cylinders for opening and closing said gates about a tree, said hydraulic cylinders of said boom, said forward-aft, said boom twist machine, said boom sideswing, said spade cylinders and said gate cylinders connected to said hydraulic control means for individual actuation of each cylinder by said hydraulic control means; and,

b. trailer including a longitudinal frame means, said frame means including tandem axially mounted wheels thereto, said trailer frame means pivotally coupled to said vehicular tree planter means, a plurality of cone-shaped continuous wall containers, each bottom of said containers truncated, each of said containers pivotally mounted on bearing means with horizontal bearing axes affixed to said trailer frame means for movement between a substantially vertical position to a substantially angular position when said vehicle means and said trailer are in vehicular motion, means on said trailer frame means for locking each of said containers into said angular position, said trailer including forward and rearward positioning support jacks respectively connected to said frame means whereby said spades excavate said trees and deposit said trees into said truncated cone-shaped containers, said means for locking said cone-shaped containers into said angular position during vehicular transport of said trees in said containers said trailer being disconnected from said vehicular tree plant-

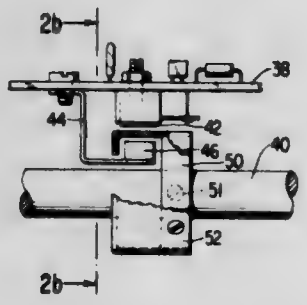
ing means and supported in a fixed position by said jacks during removal of a tree from one of said cone-shaped containers during removal and planting in ground, and said boom being raisable and movable to a height for depositing and removing said tree from above a top height of one of said truncated cone-shaped containers, said continuous wall of each container provides for securing the root ball of each tree and said truncated bottom provides an opening for drainage of water and dirt particles thereby providing transportation for a plurality of mature trees in said trailer by said vehicular tree planting means.

4,351,254

SEWING MACHINE NEEDLE POSITIONING

Jack Brown, Union, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Jun. 8, 1981, Ser. No. 271,445
Int. Cl.³ D05B *3/02, 69/22*
U.S. Cl. 112—158 E **5 Claims**



1. An electronically controlled sewing machine comprising a frame supporting an endwise reciprocatory and laterally oscillatable needle carrying needle bar, a feed system for feeding a work material through said sewing machine at a selected rate in a selected direction, means for urging said needle bar to selected lateral positions and for constraining said feed system to feed work material at a selected rate in a selected direction, means for actuating said needle bar into endwise reciprocatory motion and said feed system into feeding motion, a solid state memory means for retaining digital code words representative of needle stitch position and of feed increment from a previous stitch position in a sequence of stitches for a stitch pattern, an arm shaft position sensing means for sequentially releasing needle position and feed increment information from said memory to said urging and constraining means substantially at opposite extremes of said endwise reciprocatory motion of said needle bar for implementing said stitches to form a pattern, means for choosing one of a needle up and needle down position, means responsive to a signal from said choosing means for initiating slow speed operation of said actuating means, and means for fast stop braking of said actuating means in response to said arm shaft position sensing means sensing the position chosen by said choosing means.

4,351,255

ICE-BREAKING SHIP

Bengt Johansson, Calgary, Canada; Arno Keinonen, Kerava, and Eero Mäkinen, Espoo, both of Finland, assignors to Oy Wartsila AB, Helsinki, Finland

Continuation-in-part of Ser. No. 826,674, Aug. 22, 1977, abandoned, which is a continuation of Ser. No. 594,491, Jul. 9, 1975, abandoned. This application Dec. 27, 1978, Ser. No. 974,108
Int. Cl.³ B63B *35/08*
U.S. Cl. 114—41 **11 Claims**

1. A ship having efficient ice-breaking properties, a basically wedge-formed stem portion and a drive machinery driving a number of submerged propellers, the beam of said ship, at its design water line, being at least 10 m and the power of its drive machinery being adapted to the beam of the ship in accordance with the following formula:

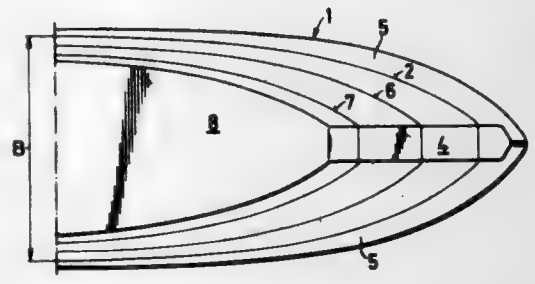
$$P \geqq 740 + 45(B-10)1.5,$$

wherein

P = the total maximum driving power output of said machinery, in kW, measured at the shafts of said propellers,

B = the maximum beam of the ship at its design water line, in meters;

the improvement comprising a modification of said basically wedge-formed stem portion including a truncation thereof, at least within an area between the design water line of the ship and half its draft, whereby a runner-like front portion is formed at a position suitable for striking and bending downwards level ice, said runner-like portion being a smooth surface and being



several times longer than it is broad when measured in its lengthwise direction and perpendicularly thereto, respectively, and being inclined forwards in a relatively small angle to the design water line plane of the ship, said runner-like portion also having a width of at the most one third of the beam B of the ship, as defined above, and being otherwise adapted to the general ice-breaking ability of the ship in accordance with the following formula:

$$W = (0.02 \text{ to } 0.08)(P/B)0.63,$$

wherein

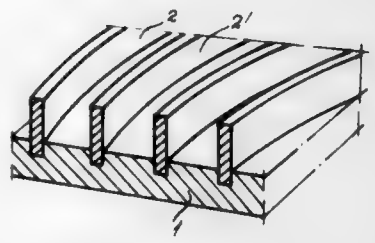
W = the width of said runner-like portion, in meters, and P and B are as defined above.

4,351,256

METHOD FOR MANUFACTURE OF A BOAT DECK HAVING A SURFACE OF ADJACENT STRIPS, AND A DECK MANUFACTURED ACCORDING TO THE METHOD

Sven A. Jönsson, Nykarlebygatan 49, Spanga, Sweden (S-163 26)

Filed Feb. 11, 1980, Ser. No. 120,350
Claims priority, application Sweden, Feb. 19, 1979, 7901461
Int. Cl.³ B63B *3/00, 5/00*
U.S. Cl. 114—85 **10 Claims**



1. A method for the manufacture of a boat deck having a surface of spaced deck strips, comprising providing a fixture having a base plate and spacing members thereon in spaced relationship for separating adjacent deck strips from each other, inserting said strips into the spaces between said spacing members and against said base plate, forming said strips into a longitudinally extending curved configuration corresponding to the desired longitudinally extending curved configuration of a fore-and-aft half of the deck surface to which the deck is intended to be attached, applying a bonding means to the free

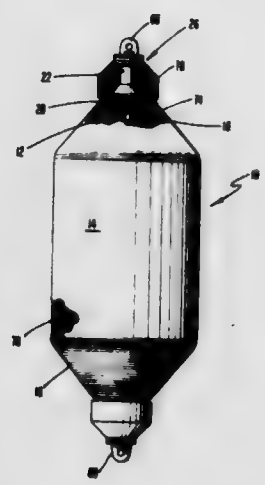
longitudinally extending surfaces of said strips opposite said base plate, and bonding a joining and supporting member to said free longitudinally extending surfaces of said strips.

4,351,257

MARINE FENDER

Louis S. Brown, Jr., Stephens City, Va., assignor to Seaward International, Inc., Falls Church, Va.

Filed Jan. 26, 1981, Ser. No. 228,355
Int. Cl.[3] B63B *59/02*
U.S. Cl. 114—219 20 Claims



1. A marine fender, comprising:

(a) a resilient core for absorbing energy upon repeated compression having a cylindrical central portion and opposed end portions each tapering to a truncated cone shape and having an axial bore;

(b) a fitting disposed at each said end portion including a tubular central member disposed coaxially with said axial bore, a truncated cone-shaped annular seat integral with said central member cooperating with the axially adjacent end portion to extend the cone shape of the adjacent end portion to said central member, and annular flange means secured to said central member;

(c) flexible strength means disposed in said axial bore and the bores of said opposed central members cooperating with said flange means of each said fitting for interconnecting said fittings and adjustably biasing said fittings axially toward each other;

(d) a flexible, elastomeric skin integrally encasing said core and the central member and seat of each said fitting; and

(e) an overlapping web of elongated reinforcing fibers embedded in said skin integrally encircling said core and the annular seat of each said fitting, said web distributing impact loads over the surface of said core and conducting forces of impact loads to said fittings.

4,351,258

METHOD AND APPARATUS FOR TENSION MOORING A FLOATING PLATFORM

Donald R. Ray, and Riddle E. Steddum, both of Houston, Tex., assignors to The Offshore Company, Houston, Tex.

Continuation-in-part of Ser. No. 96,075, Nov. 20, 1979, Pat. No. 4,281,613, which is a continuation of Ser. No. 827,145, Aug. 24, 1977, abandoned. This application Apr. 9, 1980, Ser. No. 138,478
Int. Cl.[3] B63B *21/50*
U.S. Cl. 114—230 17 Claims

1. A tension mooring system for a floating platform having an upper deck and a plurality of buoyancy columns extending downwardly from the deck, said mooring system comprising:

anchor means positioned upon the bed of a body of water;

permanent mooring lines secured to said anchor means and extending upwardly;

buoyancy means connected to the upper ends of said permanent mooring lines at a location below a zone of high corrosive, high oxygen content water adjacent to the surface of the body of water, said connecting location further being below the lowest portion of the floating platform, and said permanent mooring lines being dimensioned to maintain said buoyant means in a submerged posture below the lowest portion of the platform;

sacrifical mooring means connected to a submerged upper portion of said buoyancy means and extending upwardly therefrom and being connected to the platform, said sacrificial mooring means comprising,

a plurality of sacrificial mooring lines, each of said sacrificial mooring lines extending upwardly from said buoyancy means and longitudinally and slidably extending through a



corresponding interior column in a downwardly extending buoyancy column of the platform;

first means connected to one end of each of said sacrificial mooring lines for releasably connecting said one end of each of said sacrificial mooring lines to said buoyancy means; and

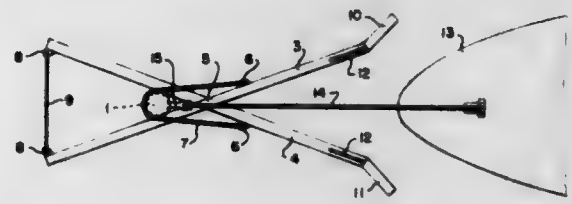
second means connected to the other end of each of said sacrificial mooring lines for releasably connecting the other end of each of said sacrificial mooring lines to the deck of the platform, such that, upon damage to a sacrificial mooring line, the line may be selectively released from the buoyancy means, drawn up through an interior column in a corresponding leg of the platform and replaced.

4,351,259

SINGLE POINT MOORING AND DIRECTIONAL FENDER

René Loire, Houston, Tex., assignor to Morrison-Knudsen Company, Inc., Boise, Id.

Filed May 5, 1980, Ser. No. 146,609
Int. Cl.[3] B63B *21/00*
U.S. Cl. 114—230 7 Claims



1. A single point mooring with a directional fender comprising a dolphin, a pair of buoyant fender bars floating in the water and crossing adjacent the dolphin, and extending beyond the dolphin on the side opposite to the point of crossing, said fender bars being in contact with the dolphin at least when a vessel is being restrained by the bars, said fender bars being freely rotatable relative to the dolphin and vertically movable with the tide relative to the dolphin, and resilient yielding means extending between the bars on the opposite side of the

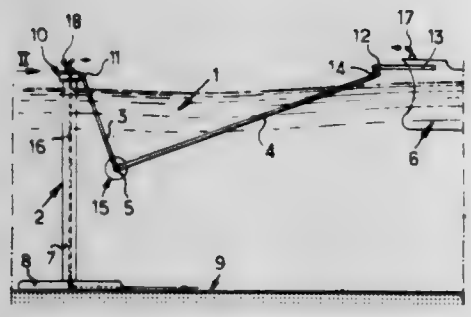
dolphin from the point of crossing and yieldingly resisting spreading apart of the points where the yielding means are attached to the fender bars.

4,351,260

ARRANGEMENT FOR MOORING A FLOATING BODY SUCH AS A SHIP

Samuel Tuson, Mesnil-le-Roi, and Robert Vilain, Maisons-Alfort, both of France, assignors to Entreprise d'Equipements Mecaniques et Hydrauliques, E.M.H., France

Continuation of Ser. No. 21,716, Mar. 19, 1979, abandoned. This application Apr. 24, 1981, Ser. No. 256,984
Claims priority, application France, Mar. 24, 1978, 78 08760
Int. Cl.³ B63B *21/00*
U.S. Cl. 114—230 **6 Claims**



1. A system for mooring a ship to a mooring device, the latter being constituted by a column on the top end of which a mooring head is rotatably mounted in coaxial relation thereto, comprising a pair of lever arm sets, each lever arm set being independent from and unconnected to the other lever arm set and including a first lever arm pivotally connected directly to the ship and a second lever arm pivotally connected to said rotatably mounted mooring head with said first and second lever arms being pivotally connected to each other, and wherein each of said lever arm sets is located on a respective side of the longitudinal axis of the ship; and first and second counterweights, each counterweight being secured to one of said first and second lever arms of a respective lever arm set at an end region thereof adjacent to the other lever arm, so that said counterweights are continuously submerged in the sea water to create a stable equilibrium position with a self-acting biasing force urging the system to the equilibrium position.

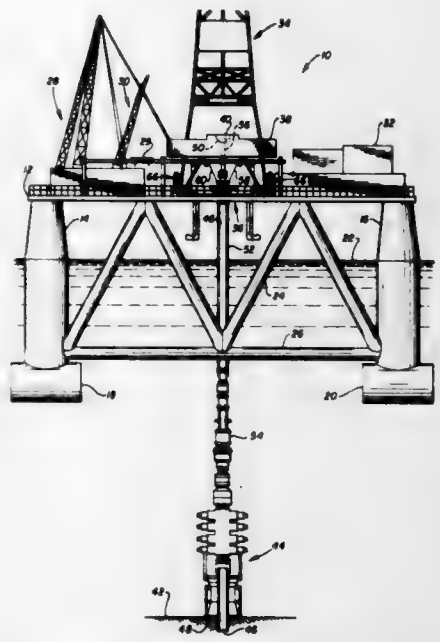
4,351,261

RISER RECOIL PREVENTER SYSTEM

Forrest E. Shanks, DeSoto, Tex., assignor to Sedco, Inc., Dallas, Tex.

Filed May 1, 1978, Ser. No. 901,520
Int. Cl.³ B63B *35/44*
U.S. Cl. 114—264 **5 Claims**

4. In a tensioner assembly for applying a tension load to a marine riser connected to well head equipment and extending to a floating platform in an offshore production site, the tensioner assembly being of the type including a hydraulic cylinder having a housing, a piston dividing the housing into a high pressure hydraulic chamber and a low pressure hydraulic chamber, and a rod attached to the piston for applying a tension load to the marine riser, the combination with the hydraulic cylinder of a reservoir of compressed gas and valve means connected intermediate the reservoir and low pressure chamber for selectively applying a pneumatic over hydraulic load to



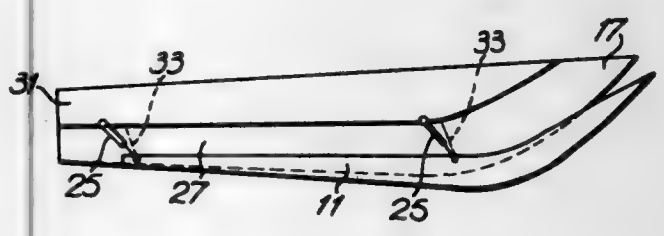
the piston in opposition to the hydraulic load when the riser is disconnected from the well head equipment.

4,351,262

BOAT HULL

Leslie N. Matthews, 9 Boscombe Ave., City Beach, W.A., Australia

Filed Feb. 15, 1980, Ser. No. 121,871
Int. Cl.³ B63B *1/22*
U.S. Cl. 114—284 **10 Claims**



1. A boat hull comprising a pair of substantially parallel hulls extending longitudinally from the bow to the stern of the boat hull, a bridge portion rigidly connecting said hulls together, an intermediate hull portion provided beneath the bridge portion and extending between said parallel hulls and over at least a part of the length thereof, and connecting means connecting the intermediate hull portion to the boat hull, comprising first movement means to positively raise and lower the intermediate hull portion relative to the bridge portion and second movement means to move the intermediate hull portion fore and aft relative to the bridge portion.

4,351,263

APPARATUS FOR SENSING BARE METAL ON A MOVING STRIP OF INSULATIVELY COATED CONDUCTIVE MATERIAL

Larry L. Rarig; Raymond A. Alleman, both of Lancaster, and Dennis L. Miller, Ephrata, all of Pa., assignors to RCA Corporation, New York, N.Y.

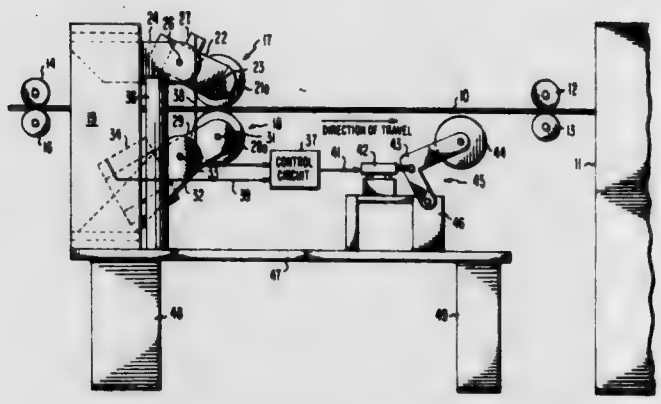
Filed Jun. 29, 1981, Ser. No. 278,450
Int. Cl.³ G01R *19/00*
U.S. Cl. 118—665 **12 Claims**

1. Apparatus for sensing bare metal on a moving strip of substantially insulated conductive material comprising:

first sensor means including a first plurality of electrical contacts arranged to rest against one side of said strip;

second sensor means including a second plurality of electri-

cal contacts arranged to rest against the other side of said strip, the contacts of said first and second sensors being electrically separated from one another by said strip when



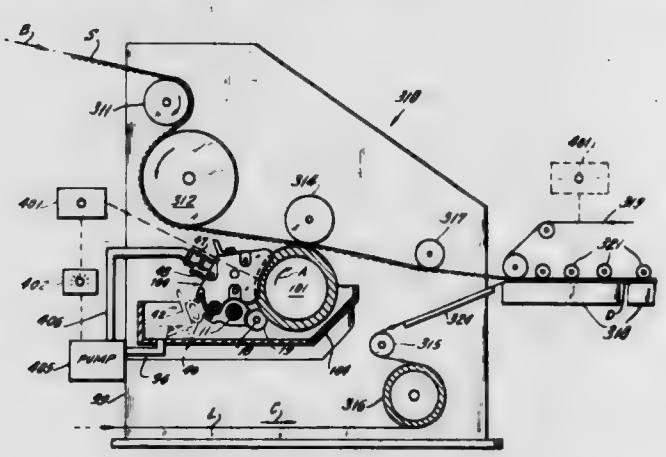
the insulating material on said strip is acceptable and at least some of the contacts of said sensors being electrically connected when said insulating material is unacceptable.

4,351,264

ADHESIVE METERING DEVICE

Stephen S. Flaum, Brooklyn, and Martin J. Leff, New York, both of N.Y., assignors to S&S Corrugated Paper Machinery Co., Inc., Brooklyn, N.Y.

Continuation of Ser. No. 22,141, Mar. 20, 1979, abandoned. This application Jan. 5, 1981, Ser. No. 222,754
Int. Cl.[3] B05C *1/08*
U.S. Cl. 118—203 17 Claims



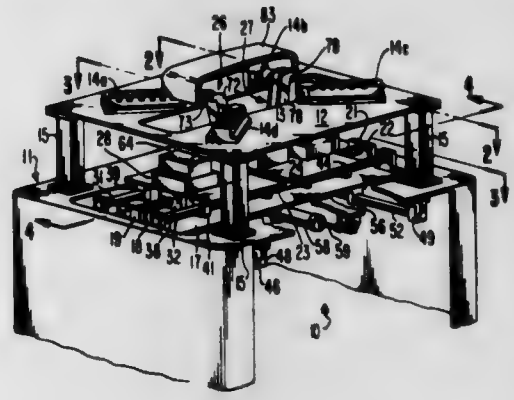
1. Fluid metering means including a fluid carrying cylinder for applying a fluid film to a workpiece element moving relative to said cylinder; said fluid carrying cylinder being mounted for rotation on its relatively stationary cylindrical axis; shoe means extending parallel to said cylindrical axis; said fluid carrying cylinder having an outer cylindrical surface and said shoe means having a side confronting a portion of said cylindrical surface; a fluid cavity extending generally parallel to said cylindrical axis; said fluid cavity being formed by a depression in said side of said shoe means and being partially bounded by a portion of said cylindrical surface; first means engaging said cylindrical surface while said cylinder rotates and sealing said fluid cavity along its upstream edge; a fluid distribution slot partially bounded by said cylindrical surface and positioned along the downstream edge of said fluid cavity; said slot providing the sole opening through which fluid exits from said cavity; means movably mounting said shoe means to permit said fluid distribution slot to vary in thickness; biasing means urging said fluid distribution slot to close; a supply of essentially incompressible fluid; delivery means to deliver fluid under pressure from said supply to said fluid cavity at a known rate which is substantially independent of pressure in said fluid cavity and thereby create pressure within said fluid cavity urging said fluid distribution slot to open; said shoe means assuming an equilibrium position, under the control of opposing forces generated by said biasing means and said delivery means, whereby fluid is forced from said cavity through said slot to form a controlled fluid film on said cylindrical surface of said fluid carrying cylinder with said fluid film, without doctoring, being of a character suitable for application in final usable form directly to a workpiece element; and means acting independently of fluid viscosity and pressure variations over substantial ranges to synchronize operation of said delivery means with rotational speed of said fluid carrying cylinder; said delivery means maintaining said fluid cavity filled with fluid whereby, independently of fluid viscosity and rotational speed variations over substantial ranges, fluid is forced from said cavity through said slot at a rate equal to the rate at which said delivery means delivers fluid to said cavity.

4,351,265

SYSTEM FOR APPLYING A LIQUID TO THE STUDS OF A COLOR KINESCOPE FACEPLATE PANEL

Merle E. Hertzler, Elverson, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Feb. 19, 1981, Ser. No. 235,973
Int. Cl.[3] B05C *1/02, 7/06*
U.S. Cl. 118—211 10 Claims



1. A system for automatically applying a liquid to at least one selected area on the inside surface of kinescope faceplates of various sizes comprising:

means for stationarily holding various sizes of kinescope faceplates;

at least one mounting member arranged for movement with respect to and parallel to the plane of said faceplate holding means, said mounting member including a reservoir of said liquid and a liquid applicator arranged in the proximity of said reservoir;

first means for moving said mounting member relative to said holding means and parallel to one axis of said faceplate; and

second means for moving said mounting member and said first means for moving perpendicular to said one axis.

4,351,266

APPARATUS FOR DIPPING PLATING

Masato Ando, Yokohama; Kenji Yamamoto, Komae, and Kazuhiro Taniguchi, Hiratsuka, all of Japan, assignors to Electroplating Engineers of Japan, Limited, Tokyo, Japan

Filed Apr. 17, 1980, Ser. No. 141,094
Claims priority, application Japan, Dec. 29, 1979, 54-172183
Int. Cl.[3] B05C *3/02;* B65G *49/04*
U.S. Cl. 118—425 19 Claims

1. An apparatus for dipping plating, comprising:

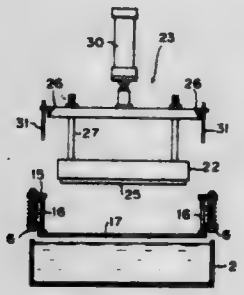
a dipping plating tank;

a pair of spaced, elongated rails supported above said plating tank;

a support carriage including a carrier base supported on said rails for movement therealong and a rack base suspended from and supported on said carrier base for upward and downward movement with respect to said carrier base in directions toward and away from said plating tank, said

rack base having first means for holding the objects to be plated;

pressure means disposed above said plating tank for effecting said movement of said rack base downwardly and upwardly toward and away from said plating tank, said pressure means including a fluid pressure operated piston and cylinder assembly having a downwardly extending piston rod, a pressure frame connected to the lower end of said piston rod, at least one downwardly extending pressure bar secured to said pressure frame and engageable with said rack base as said pressure frame is moved downwardly for pressing said rack base downwardly relative to said carrier base, and at least one suspension bar secured to and extending downwardly from said pressure frame; and



second holding means secured to the lower end of said suspension bar so as to be adjacent said objects to be plated on said rack base when said pressure bar is engaging said rack base for resisting disengagement of said objects from said first holding means on said rack base.

4,351,267

APPARATUS FOR CONTINUOUSLY DEPOSITING A LAYER OF A SOLID MATERIAL ON THE SURFACE OF A SUBSTRATE HEATED TO A HIGH TEMPERATURE

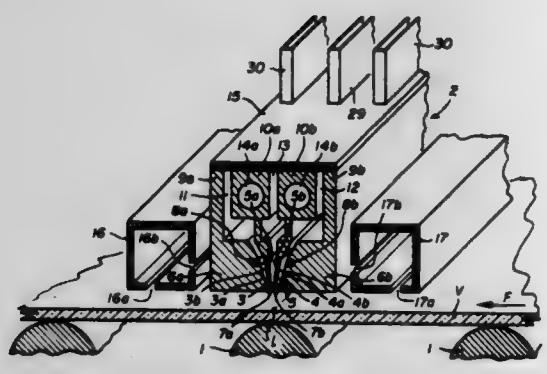
Reinhard Kalbskopf, Onex, and Otto Baumberger, Carouge, both of Switzerland, assignors to Societe Italiana Vetro-Siv-S.p.A., San Salvo, Italy

Division of Ser. No. 117,086, Jan. 31, 1980, Pat. No. 4,294,868. This application Feb. 18, 1981, Ser. No. 236,134

Claims priority, application Switzerland, Feb. 14, 1979, 1412/79

Int. Cl.³ B05B *7/00*; C23C *13/10*

U.S. Cl. 118—718 6 Claims



1. Apparatus for continuously depositing on the surface of a heated substrate a layer of solid material formed from the reaction of at least two reactants selected from gaseous reactants and reactants diluted in inert carrier gas, which apparatus comprises: a source of a first gaseous reactant or reactant diluted in a carrier gas, a source of a second gaseous reactant or reactant diluted in a carrier gas, a nozzle with three jet ducts each having an exhaust aperture constituted by a rectilinear slot and having lateral walls delimiting the longitudinal edges of each slot which walls converge towards a line common to all said jet ducts, a first of said jet ducts adjoining, with a first longitudinal edge of its exhaust aperture, a longitudinal exhaust aperture edge of a second said jet duct and, with the second longitudinal edge of its said aperture, a longitudinal edge of the exhaust aperture of the third jet duct, first and second deflecting surfaces, respectively extending over a predetermined length to each side of said jet ducts from the said second longitudinal edge of the exhaust aperture of the second and third jet duct respectively, said deflecting surfaces being coplanar with each other and with the said longitudinal edges of the exhaust apertures of the jet ducts of the nozzle and being kinematically integral with this nozzle, a first distributor network connecting the source of the first reactant with the first jet duct of the nozzle, a second distributor network connecting the source of the second reactant with the second and third jet ducts of the nozzle, means for effecting relative movement of the substrate and the nozzle in a direction substantially perpendicular to said imaginary common line, means for maintaining constant in the course of said relative movement the distance separating the plane containing said exhaust apertures and said deflecting surfaces from the said surface of the substrate, and maintaining this distance substantially equal to that between the jet ducts of the nozzle and the said imaginary line, and at least one device for evacuating the reaction gases evolving in the space between the said deflecting surfaces and the surface of the substrate, from the extremities of this space most remote from the said apertures of said nozzle.

4,351,268

ROTATABLE FISH CAGE

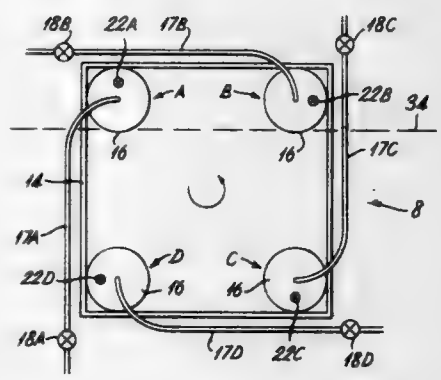
Albert Blair, and Patrick T. Grant, both of Aberdeen, Scotland, assignors to National Research Development Corporation, London, England

Filed Feb. 19, 1980, Ser. No. 122,490

Claims priority, application United Kingdom, Feb. 21, 1979, 7906044

Int. Cl.³ A01K *61/00*

U.S. Cl. 119—3 8 Claims



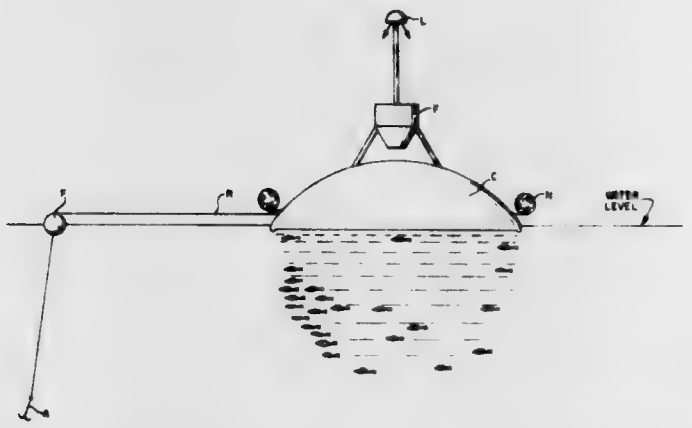
1. A fish cage comprising perforated walls for the flow into or out of the cage of ambient water in which the cage will be located in use, a plurality of water-tight control devices secured relative to said walls with at least one said control device being wholly immersed in said ambient water at any given moment, each said control device including first, inlet and outlet, rotation valves for use in rotating the cage and second, inlet and outlet, buoyancy valves for use in controlling the buoyancy of the cage, said control devices having external walls which are apertured to allow the ingress or egress of ambient water and each device including a water-tight and inflatable core member, the interior volume of each said core member communicating both with said respective rotation valve and said buoyancy valve.

4,351,269

METHOD OF AND APPARATUS FOR UNCONFINED FISH FARMING AND THE LIKE

Robert H. Rines, and Albert H. Knowles, both of 13 Spaulding St., Concord, N.H. 03301

Filed Aug. 27, 1980, Ser. No. 181,832
Int. Cl.[3] A01K *61/00*
U.S. Cl. 119—3 14 Claims



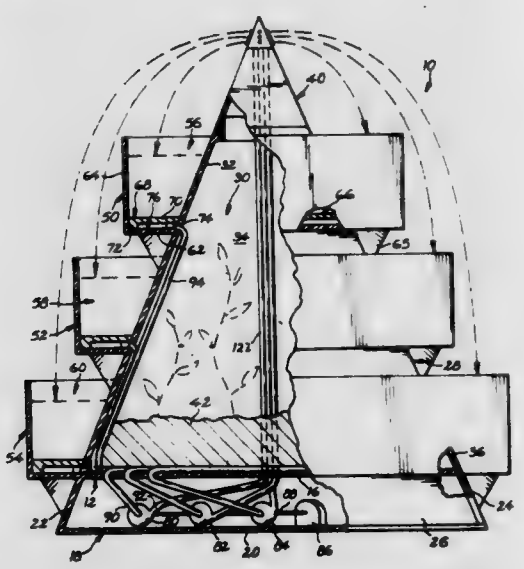
1. In a method of fish farming, the steps including confining fish under a water-contacting light-blocking cover disposed in a body of water, by providing lateral confinement means extending around and downwardly of the cover, moving the cover and confinement means through the water so as to transfer the fish from one location to another, then removing the confinement means and supplying feed to the fish externally of the cover during continued growth of the fish.

4,351,270

TERRARIUM/AQUARIUM

Darrell L. Sabin, 1822 NE. 47th, Portland, Oreg. 97213

Filed Sep. 29, 1980, Ser. No. 192,414
Int. Cl.[3] A01K *64/00*
U.S. Cl. 119—5 2 Claims



1. Terrarium/aquarium apparatus comprising in operative condition,

a bottom support,

a light-transmissive shell mounted on said support, forming therewith a substantially moisture-tight enclosure, said shell having a detachable crown,

a plant growth medium contained within said enclosure,

a pair of vertically spaced, light-transmissive jackets mounted on said shell, providing therewith surfaces defining a pair of water-bearing chambers for raising fish, and

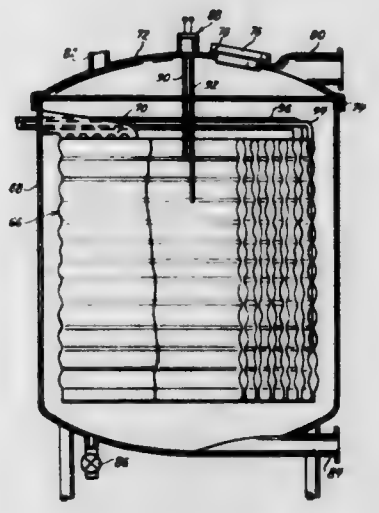
for each chamber, water circulating means including a pump, conduit means connecting said pump and the associated chamber, and extending through said medium in heat-exchange relationship therewith, and nozzle means mounted on said shell above the associated chamber for directing water into the same.

4,351,271

REFRIGERATED RECEIVER

Paul Mueller; Daniel C. Manna, and Ray A. Prine, all of Springfield, Mo., assignors to Paul Mueller Company, Springfield, Mo.

Filed Sep. 4, 1980, Ser. No. 184,128
Int. Cl.[3] A01J *9/04*
U.S. Cl. 119—14.09 29 Claims



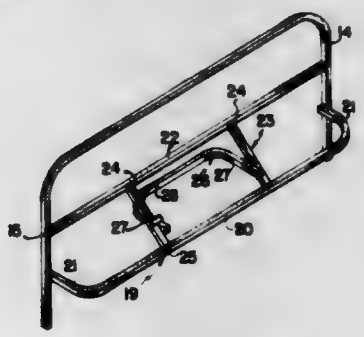
1. A refrigerated receiver for cooling milk and separating it from vacuum in an automatic milking line, said receiver being substantially cylindrically shaped with a heat exchanger disposed therein, said heat exchanger comprising a coiled plate having multiple turns, a warm milk inlet at the top of the receiver and positioned to direct the flow of the milk directly onto the coiled plate, a vacuum outlet, a cool milk outlet at the bottom of the receiver, means to operate the heat exchanger in a heating mode during a cleaning cycle to heat a cleaning fluid as it is circulated through the receiver, and means to agitate the cleaning fluid in said receiver as it is being circulated therethrough.

4,351,272

ANTI-CRUSHING BAR ASSEMBLY FOR PIG FARROWING CRATES

Richard McDonald, General Delivery, Gunton, Manitoba, Canada (R0C 1H0)

Filed Mar. 16, 1981, Ser. No. 244,005
Int. Cl.[3] A01K *1/02*
U.S. Cl. 119—20 6 Claims



1. In a pig farrowing crate which includes a horizontally situated lower comfort bar extending outwardly from the vertical side frame of the crate and a further horizontal bar thereabove in spaced and parallel relationship with said comfort bar but spaced inwardly therefrom and in the plane of said vertical side frame; an anti-crushing bar assembly, said anti-crushing bar assembly including support means secured to said crate and an inwardly extending anti-crushing bar pivotally secured by the ends thereof to said support means said support

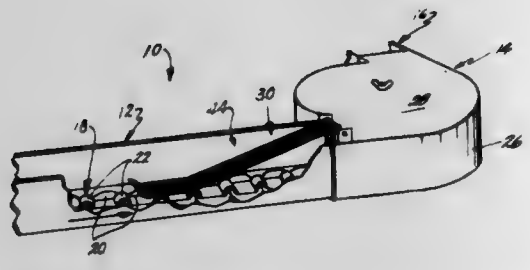
means including a pair of support bars secured to and including upwardly and inwardly between each comfort bar and said further horizontal bar thereabove, said support bars being perpendicular to the comfort bars and said further bars and in spaced and parallel relationship to one another and means cooperating between said support means and said anti-crushing bar normally maintaining said anti-crushing bar substantially horizontally but allowing same to pivot upwardly from the horizontal position.

4,351,273

MOVABLE CHICK GUARD

Eddie L. Holland, Cumming; Charles K. Stallings, Lilburn, and Jack Parker, Roswell, all of Ga., assignors to U.S. Industries, Inc., New York, N.Y.

Filed Jan. 21, 1981, Ser. No. 226,914
Int. Cl.³ A01K *39/01*
U.S. Cl. 119—51 R **7 Claims**



1. A guard for a conveyor feeder of the type having a conveying chain movable in a feed trough and into a housing, said guard comprising:

a bracket;

an elongated kicker member having an upturned forward end, a rearwardly extending elongated portion which is angled with respect to said forward portion and a rear end; and

means for movably connecting said kicker member at its rear end to said bracket so that said bracket may be attached to a conveyor corner housing and the kicker member will ride on a feed conveyor to kick small chicks off the feed conveying chain and the kicker member may be moved rearwardly until it lies on the housing to keep more mature chickens from sitting on the housing, said kicker member comprising a plurality of elongated parallel wire members interconnected by a plurality of transversely extending wire members, each of said elongated parallel wire members including an intermediate portion, a rearwardly extending portion intersecting said intermediate portion at an angle "a" greater than 90° and a forward portion intersecting said intermediate portion at an angle "b" less than 90°, and wherein said intermediate portion of each of said elongated parallel wire members has a length l_1 at least equal to the longitudinal dimension of a link of the conveying chain.

4,351,274

LIVESTOCK FEEDER WITH ADJUSTABLE FEED GATE

Steven R. Pannier, P.O. Box 72, McLean, Ill. 61754

Filed Nov. 4, 1980, Ser. No. 203,986
Int. Cl.³ A01K *5/00*
U.S. Cl. 119—53.5 **13 Claims**

1. An animal feed apparatus comprising:

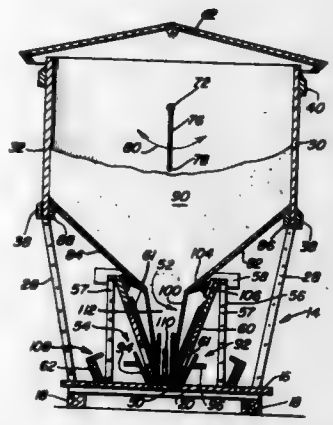
a storage bin for storing animal feed;

a feeding section means having a passage for feed to flow from the bin to at least one animal feeding trough including a snuffle bar with a lip inwardly directed over the at least one animal feeding trough for retaining said animal feed therewithin and the feeding section means including divider means associated with said storage bin to which animal feed stored in said storage bin is directed;

feed opening means associated with said feeding section means feeding section means and said at least one animal feeding trough;

said feeding section means including an inwardly inclined panel spaced from said snuffle bar;

feed opening adjustment means including an adjustable meter board slidably positioned within the passage of the feeding section means and supported by said inclined panel, means for the movement of the meter board to cause a change in size of the feed opening means, the feed opening adjustment means including means connected with the meter board for adjusting said feed opening means to thereby control a rate of flow of feed from said



feeding section means through said feed opening means; and

agitator means having one end thereof positioned within said feeding section means and the other end thereof positioned within said feeding trough and terminating in a livestock nose engaging means, said agitator means being floatingly attached by chain link means at the one end thereof to an upper portion of said inwardly inclined panel of said at least one animal feeding section means and including means effectively biasing the movement of the agitator means operable to agitate said animal feed to facilitate the movement thereof to said feed opening means.

4,351,275

SOLIDS QUENCH BOILER AND PROCESS

Arju H. Bhojwani, Chelmsford; Robert J. Gartside, Auburndale, both of Mass., and Herman N. Woebcke, Stamford, Conn., assignors to Stone & Webster Engineering Corp., Boston, Mass.

Filed Oct. 5, 1979, Ser. No. 82,162
Int. Cl.³ F28C *3/16;* F22D *1/00*
U.S. Cl. 122—7 R **14 Claims**

1. An apparatus for quenching effluent comprising:

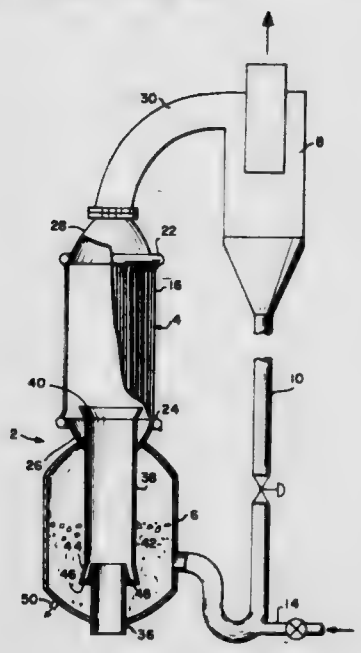
a. a fluidized bed of particulate solids;

b. a reactor effluent outlet tube extending into the fluidized bed;

c. a riser tube having an inside diameter larger than the outside diameter of the reactor outlet tube aligned with the reactor outlet tube, which riser tube surrounds the reactor outer tube and depends into the fluidized bed below the top of the reactor outlet tube;

d. an opening defined by the outside of the reactor outlet tube and the inside of the riser tube which opening pro-

vides communication between the fluidized bed and the interior of the riser tube; and



e. an indirect heat exchanger, wherein the riser tube terminates at the entry of the hot side of the indirect heat exchanger.

4,351,276

HEAT RECOVERY DEVICE FOR BOILERS

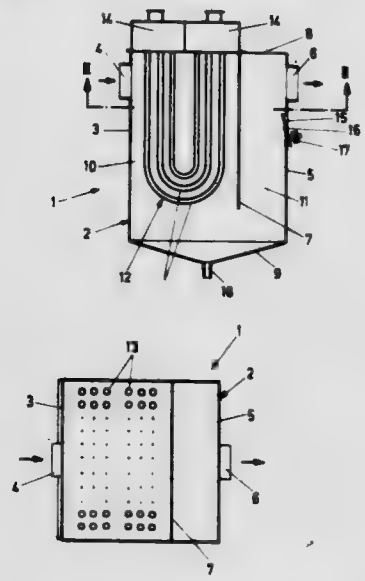
Robert Kremer, Masshofstr. 22, 5090 Leverkusen 3, Fed. Rep. of Germany

Filed Mar. 9, 1981, Ser. No. 241,680

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1980, 3010847

Int. Cl.³ F22B *33/00*

U.S. Cl. 122—20 B **10 Claims**



1. A heat recovery device for boilers, in particular for boilers with a blower-type burner, having a heat exchanger which is located in the stack gas stream and through which is passed a medium which is to be heated up, which comprises a pot-shaped vessel (**2**) which can be inserted in the stack gas duct and is closed on all sides, a stack gas inlet (**4**) leading into the upper zone of the vessel (**2**), at least one stack gas outlet (**6**, or **30** or **31**) leading out of the upper zone of the vessel (**2**) at a distance from the inlet, a substantially vertical partition wall (**7**; **21**) which is located in the vessel (**2**), extends downwards from the cover (**8**) of the vessel (**2**), ends at a distance from the bottom (**9**) of the vessel and interrupts the direct stack gas path from the inlet (**4**) to the outlet (**6**) in such a way that a siphon-type stack gas path with an inlet chamber (**10**; **26**) and an outlet chamber (**11**; **27**) is formed, and a draft-interruption damper (**15**; **32**) fitted in the outer vessel wall in the zone of the outlet chamber (**11**; **27**).

4,351,277

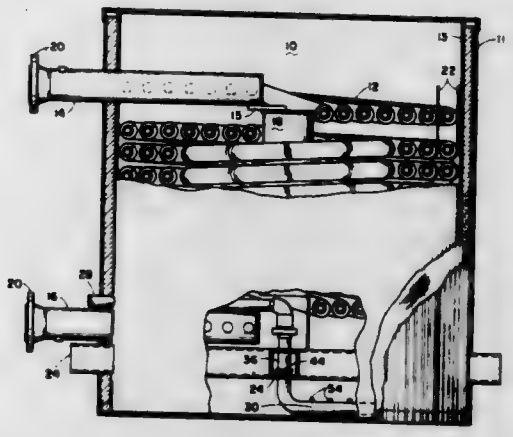
SOOTBLOWER FOR ECONOMIZER

Jerry E. Ryan, and Edward E. Grove, both of Tulsa, Okla., assignors to Tranter, Inc., Tulsa, Okla.

Filed Jan. 23, 1981, Ser. No. 227,812

Int. Cl.³ F22B *37/52*

U.S. Cl. 122—390 **2 Claims**

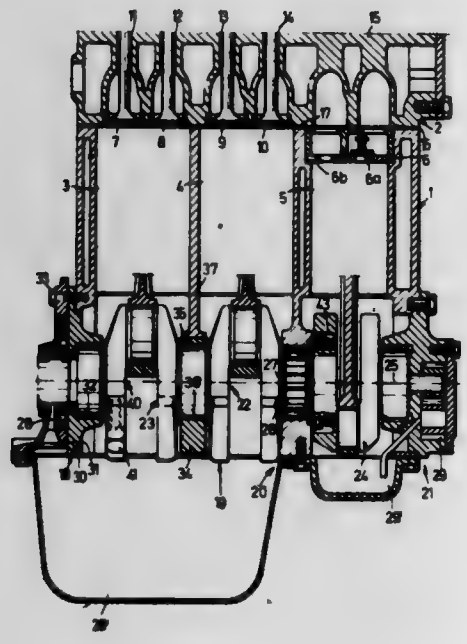


1. In an economizer of the type having a vertically extending cylindrical casing, a plurality of spirally arranged coils parallel to each other in concentric relation with respect to the central vertical axis of the cylindrical casing, said spiral coils being in the form of finned tubes, the coils being arranged in closely spaced relation but providing clearance between the fins on adjacent coils, means for passing a heat exchange fluid through the spiral coils whereby the coils can extract heat from exhaust gases passing upwardly through the economizer from a boiler; a sootblower mounted in said casing below said spiral coils and including a pair of horizontally disposed structural tubular members arranged across the casing adjacent the bottom thereof, a vertically extending connecting pipe passing through one of said tubular members in concentric relation with respect to said casing and having an upper end and a lower end, a steamline extending horizontally into the interior of said casing below said coils and terminating in an interior ball joint elbow, the steamline having an outer end adapted to be connected to a source of steam, the upper end of the vertical connecting pipe being provided with an enlarged ball opening which is received within the ball joint elbow forming a fluid-tight fit with the ball but allowing a 360° movement of the vertical connecting pipe, a horizontal arm extending outwardly from the lower end of said vertical connecting pipe, a plurality of nozzles on the upper surface of said arm for directing jets of steam into the spaces between adjacent coils, a first sprocket received on said vertical connecting pipe within said one structural tubular member and rotatable with said vertical connecting pipe, a right angle drive having a vertical output shaft and a horizontal input shaft and mounted exterior of said casing on the outer end of said one structural tubular member, a second sprocket in horizontal alignment with said first sprocket and attached to the output shaft of said right angle drive, a first roller chain disposed within said one structural tubular member and passing around said first and second sprockets whereby said first and second sprockets are in driving relation with respect to each other, a third sprocket connected to the input shaft of the right angle drive, and a second chain passing around said third sprocket for permitting remote operation of the right angle drive, whereby, upon actuation of said second chain and upon introduction of steam to said steamline, said arm will rotate beneath said spiral coils and direct jets of steam between said spiral coils to remove soot therefrom.

4,351,278
DRIVE AGGREGATE FOR A HEAT PUMP

Erich Gaschler, and Cornelia Schwarz, both of Wolfsburg, Fed. Rep. of Germany, assignors to Volkswagenwerk AG, Wolfsburg, Fed. Rep. of Germany

Filed Feb. 28, 1980, Ser. No. 125,536
Claims priority, application Fed. Rep. of Germany, Mar. 5, 1979, 2908434
Int. Cl.³ F02B *35/00*
U.S. Cl. 123—195 R 3 Claims

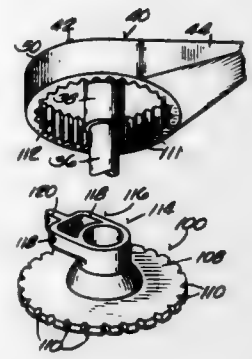


1. In a drive aggregate for a heat pump including a compressor and an internal combustion engine driving the compressor; a common cylinder block including at least one engine cylinder and at least one compressor cylinder; a plurality of bearings mounted in and supported by the cylinder block; a crankshaft supported by the bearings and serving both the engine and the compressor; the crankshaft being formed of an engine-side crankshaft part and a compressor-side crankshaft part; one of the crankshaft parts being a first crankshaft part and the other of the crankshaft parts being a second crankshaft part and having a common longitudinal axis; two of said bearings being first and second end bearings; said second end bearing supporting adjoining end portions of both said first and second crankshaft parts; said first end bearing being situated remote from said second end bearing and supporting said first crankshaft part; said first crankshaft part having a terminal crank arm adjacent said first end bearing; said crankshaft parts being mutually relatively non-rotatably secured to one another at said adjoining end portions; at least one further one of said bearings being an intermediate bearing having an axis and being situated between said first and second end bearings; said intermediate bearing having a split structure formed of first and second bearing parts for a lateral installation on said first crankshaft part; the improvement wherein said terminal crank arm has a removable portion; the improvement further comprising first means for detachably mounting said first and second bearing parts of said intermediate bearing to one another and to said cylinder block at a location of installation to permit said first crankshaft part to be movable to and from said location of installation in a direction substantially transverse to said longitudinal axis of said first crankshaft part; said first and second bearing parts having, in a released state of said first means, a freedom of motion to and from said location of installation in a direction transverse to said axis of said intermediate bearing and second means for detachably securing the removable terminal crank arm portion to said first crankshaft part.

4,351,279
AIR VANE GOVERNOR FOR INTERNAL COMBUSTION ENGINE

Gerald H. Wick, Galesburg, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Jun. 9, 1980, Ser. No. 157,305
Int. Cl.³ F02D *11/02*
U.S. Cl. 123—391 9 Claims



1. An internal combustion engine comprising a carburetor having a throat, a pivotal throttle member disposed in said throat and pivotable between an open position and a fluid flow restricting position, a movable air vane including a body comprising an annular wall extending axially from said body and having an inner surface, a rotatable shaft carrying said throttle member and connected to said air vane for moving said throttle member in response to movement of said air vane, means for impelling air against said air vane to move said air vane and urge said throttle member toward a flow restricting position in response to engine rotation, a torsion spring encircling said shaft, having a first end connected to said shaft for biasing said throttle member toward the open position, and having a second end, and adjustment means connected to said spring for adjusting the biasing force of said spring on said throttle member, said adjustment means including a control member connected to said second end of said spring and mounted remotely from said shaft for movement which is solely reciprocatory in a direction transversely of the rotational axis of said shaft between a first spring force level position and a second spring force level position, a collar surrounding said shaft and connected to said first end of said spring, and interlocking means on said air vane and on said collar for effecting common rotation of said air vane and said collar and for releasably permitting rotation of said collar relative to said air vane so as to adjust the biasing force of said spring on said throttle member, said interlocking means including a plurality of circumferentially spaced indentations on said inner surface of said wall, a detent element on said collar for lockingly engaging said indentations, and biasing means for biasing said detent element into releasable locking engagement with said indentations.

4,351,280
PROCESSES AND DEVICES FOR AUTOMATIC CONTROL TO IGNITION ADVANCE

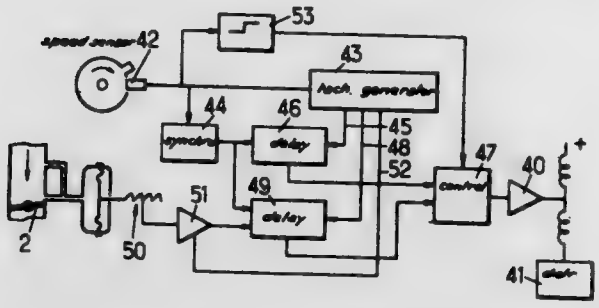
Gaston Arnaud, Paris, France, assignor to Societe Industrielle de Brevets et d'Etudes SIBE, Neuilly-sur-Seine, France

Filed Apr. 8, 1980, Ser. No. 138,432
Claims priority, application France, Apr. 13, 1979, 79 09528
Int. Cl.³ F02P *5/10*
U.S. Cl. 123—415 1 Claim

1. In a spark ignition engine having an intake pipe an operator operable throttle member in said intake pipe and a turbine-compressor unit whose compressor is located in said intake pipe upstream of said throttle member, a device for automatically adjusting the ignition advance, comprising:

tachometric generator means operatively connected to said engine and constructed to supply an electric synchronization signal for each ignition of the engine and a control signal whose value is an increasing function of the engine speed,

pressure sensing means, having a chamber connected to a point of said intake pipe which passes from upstream to downstream of said throttle member upon opening of the latter from its minimum opening position and to a point of said intake pipe which is continuously located upstream of said throttle member and arranged to deliver an electric signal representative of the pressure in said chamber,



a variable gain amplifier connected to receive said pressure responsive signal and to deliver an output signal amplified in a ratio determined by the value of the control signal from said tachometric generator means,

and programmable delay means connected to receive a delay control signal from said amplifier and said synchronisation signal and to deliver an output signal causing engine ignition.

4,351,281

METHOD AND SYSTEM FOR OPERATION OF A SPARK-IGNITED INTERNAL COMBUSTION ENGINE

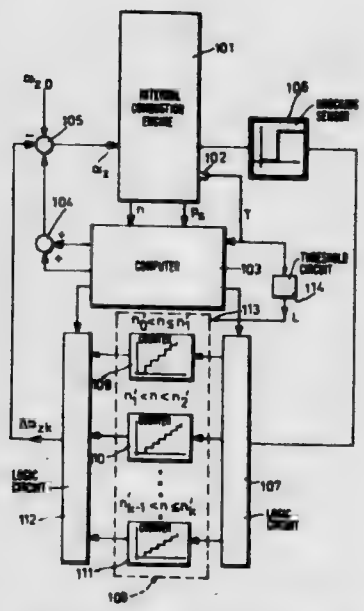
Istvan Geiger; Heinz Theuerkauf, both of Brunswick, and Klaus Stamm, Wolfsburg, all of Fed. Rep. of Germany, assignors to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 170,766, Jul. 21, 1980. This application Mar. 18, 1981, Ser. No. 244,868

Claims priority, application Fed. Rep. of Germany, Jul. 27, 1979, 2930540; Mar. 25, 1980, 3011332; Jul. 19, 1980, 3027532

Int. Cl.³ F02P *5/04, 5/14, 11/02;* **F02B** *3/00*

U.S. Cl. 123—425 **16 Claims**



1. In a method for operating a spark ignited internal combustion engine, wherein an engine timing adjustment signal is generated as a function of engine operating conditions, and wherein a timing correction signal is generated for each of a plurality of engine speed ranges in response to engine knocking, said correction signal being combined with said adjustment signal to prevent engine knocking, the improvement wherein said correction signal for a first selected speed range is generated in response to the onset of engine knocking and said correction signals for the remaining speed ranges are derived from said correction signal for said first selected speed range.

4,351,282

IGNITION TIMING CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE

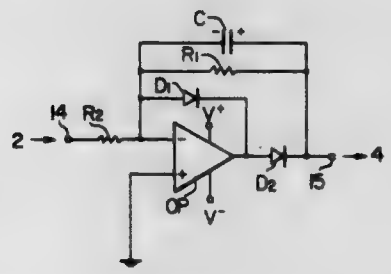
Hiroo Utsumi, Kariya; Yukio Sakakibara, Anjo; Teruyoshi Ito, Kariya; Toshiharu Iwata, Aichi, and Takashi Yamada, Nishio, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jul. 20, 1981, Ser. No. 284,944

Claims priority, application Japan, Jul. 22, 1980, 55/104342[U]

Int. Cl.³ F02B *3/00;* **F02P** *5/00*

U.S. Cl. 123—425 **4 Claims**



1. In an ignition timing control system for an internal combustion engine including a knocking sensor for detecting knocking elements such as vibrations and noises caused by the knocking of the internal combustion engine, a knocking decision circuit for making a decision on a knocking by comparing an output of said knocking sensor with a knocking decision level, and an ignition timing control circuit for controlling the ignition timing in accordance with the output of said knocking decision circuit, the improvement comprising a knocking decision level generator circuit including:

an operational amplifier with an inverting input thereof supplied with an output of said knocking sensor;

a rectifier element serially connected between the output of said operational amplifier and said knocking decision circuit; and

a feedback circuit including a parallel circuit having a capacitor and a resistor, said feedback circuit being inserted between the output of said rectifier element and the inverting input of said operational amplifier, said parallel circuit having a time constant sufficiently longer than the period corresponding to the knock frequency, whereby the output of said knocking sensor being half-wave rectified, integrated and amplified thereby to apply a DC output of said rectifier element to said knocking decision circuit as said knocking decision level.

4,351,283

DIESEL FUEL INJECTION PUMP SECONDARY FUEL METERING CONTROL SYSTEM

Frank Ament, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

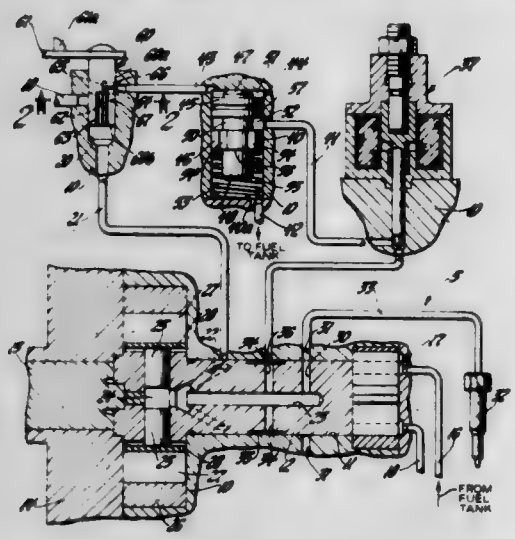
Filed May 1, 1981, Ser. No. 259,589

Int. Cl.³ F02M *39/00*

U.S. Cl. 123—458 **3 Claims**

1. In an engine driven, solenoid valve controlled spill-inject-spill type fuel injection pump having a housing means with an injection pump means therein for sequentially supplying pressurized fuel via discharge passage means to a plurality of injectors, a spill passage means in the housing means in communication at one end with the discharge passage means and having at least one solenoid valve operatively associated therewith for normally controlling the spill-inject-spill flow from the discharge passage means, and a supply pump for supplying fuel via an inlet passage means to the injection pump means, the improvement comprising: a drain passage means connected to

the spill passage means downstream of the solenoid valve, said drain passage means including a cylindeer that is connectable at one end to a reservoir for fuel at low pressure; a control passage interconnecting the inlet passage means intermediate its ends to the opposite end of said cylinder; a metering valve operatively positioned in the inlet passage means whereby to control fuel flow to the injection pump means and to said control passage; a spring biased isolation valve operatively positioned in said cylinder for controlling spill flow through



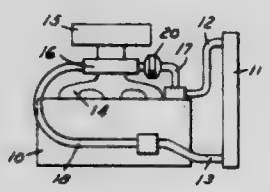
the spill passage means; and an actuator means including an operator actuated accelerator lever means and an electrical actuator operatively connected to said metering valve and being operative when said solenoid valve is functionally operative to move said metering valve to a position permitting full fuel flow to the injection pump means and, when the solenoid valve is functionally inoperative to move said metering valve to positions for metering fuel flow to the injection pump means.

4,351,284

INTERNAL COMBUSTION ENGINE WITH WATER HEATED INTAKE MANIFOLD

George C. Ludwig, Florence, S.C., assignor to Tom McGuane Industries, Inc., Madison Heights, Mich.

Filed Dec. 28, 1979, Ser. No. 108,006
Int. Cl.[3] F02M *31/00*
U.S. Cl. 123—545 3 Claims





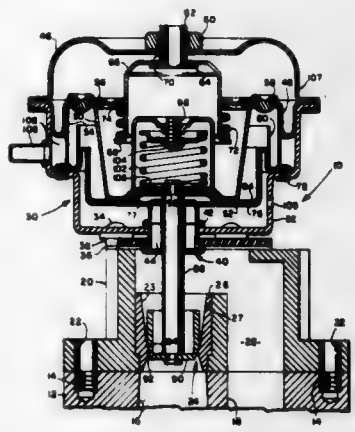
1. An internal combustion engine system comprising
a liquid cooled internal combustion engine including a water heated plenum associated with the intake manifold thereof,
an outlet water line and a return water line extending from said engine to said water cooled manifold,
a temperature controlled normally open plenum valve in one of said lines,
said valve comprising a body having an inlet and an outlet connected to its respective line,
a bi-metallic disc in said body,
a seal associated with said disc,
said disc normally being out of engagement with said seal such that when the coolant is below a predetermined temperature, the coolant flows, and when the coolant reaches a predetermined value, the disc seals against said seal,
said valve including an orifice permitting flow of coolant between opposite sides of said disc when said disc is in sealing engagement in said seal such that said disc will sense the temperature of coolant in said plenum and modulate between predetermined values.

4,351,285

EXHAUST GAS RECYCLING MODULATOR VALVE ASSEMBLY

Cyril E. Bradshaw, Kalamazoo, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Division of Ser. No. 50,281, Jun. 19, 1979, Pat. No. 4,256,076.
This application Sep. 2, 1980, Ser. No. 183,594
Int. Cl.[3] F02M *25/06*
U.S. Cl. 123—568 14 Claims



1. A valve assemby for controlling the recirculation of exhaust gases in an internal combustion engine in response to the magnitude of the engine manifold pressure and engine exhaust gas backpressure, said valve comprising:
(a) housing means, said housing means including
(i) a lower housing portion defining an exhaust gas inlet and an exhaust gas outlet,
(ii) an upper housing portion defining a cavity;
(b) a first pressure responsive means disposed within said cavity and connected to said upper housing portion;
(c) a second pressure responsive means disposed within said cavity and connected to said upper housing portion, said first and second pressure responsive means defining a first control chamber therebetween;
(d) first valve means for controlling exhaust gas flow between said inlet and said outlet, said first valve means including a member operably connected to said second pressure responsive means and movable therewith;
(e) said upper housing portion including means for communicating engine intake manifold absolute pressure to said first control chamber;
(f) a movable pressure transducer assembly operably connected to said second pressure responsive means, said pressure transducer assemby including
(i) housing shell means,
(ii) a third pressure responsive means defining with said housing shell means an air bleed chamber and a second control chamber,
(g) means for communicating exhaust gas from said inlet to said second control chamber;
(h) said pressure transducer assembly further including sec-

ond valve means having a member operably connected to said third pressure responsive means and movable therewith in response to said exhaust pressure in said second control chamber rising above a predetermined value for permitting a controlled amount of atmospheric air to flow from said first air bleed chamber to said control chamber, thereby increasing the absolute pressure therein; and

(i) wherein, at control chamber pressures between first and second predetermined values, said first and second pressure responsive means are movable between a first position in which said first valve means blocks flow through said inlet and a second position in which said first valve means permits flow through said inlet to said outlet, and wherein at control chamber pressures greater than said second value, said second pressure responsive means is movable between said second position and said first position.

4,351,286

COIL ASSEMBLY FOR AN IGNITION SYSTEM

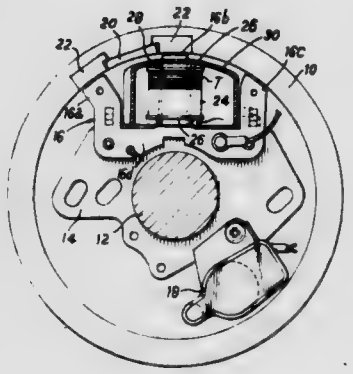
John Aylott, Milton Keynes, England, assignor to WIPAC Development Limited, Buckingham, England

Filed Sep. 22, 1980, Ser. No. 189,407

Claims priority, application United Kingdom, Oct. 4, 1979, 7934440

Int. Cl.³ F02P *3/06*; F02D *3/06*; F02P *3/08, 1/00*

U.S. Cl. 123—601 **6 Claims**



1. A method of advancing or retarding the spark for an internal combustion engine having a spark plug, a nonmagnetic first member supported for rotation about an axis, and a nonmagnetic second member supported adjacent said first member and fixed against rotation therewith, comprising the steps of:

providing on said first member a pair of angularly spaced magnets of opposite polarity;

providing on said second member a core having at least two legs extending approximately radially of said axis, the free ends of each said leg being located adjacent said first member;

winding a charge coil around a said leg of said core;

winding a trigger coil around a said leg of said core;

electrically connecting a capacitive discharge circuit to said charge coil, said trigger coil and said spark plug;

storing energy from said charge coil in said circuit and, in response to a periodic signal from said trigger coil, periodically discharging said stored energy to said spark plug to periodically produce a spark which is synchronized in time with the rotation of said first member; and

selecting the position of said trigger coil on said associated core leg to provide a desired amount of angular advancement or retardation in the timing of said spark in response to an increase in the speed of said engine, the degree of change in said spark timing for a given increase in engine speed being proportional to the distance of said trigger coil from said first member, said spark timing being advanced when said trigger coil is positioned adjacent said first member and being retarded when said trigger coil is positioned remote from said first said member.

4,351,287

PROCESS OF CONTROLLING THE CURRENT FLOWING PERIOD OF AN IGNITION COIL

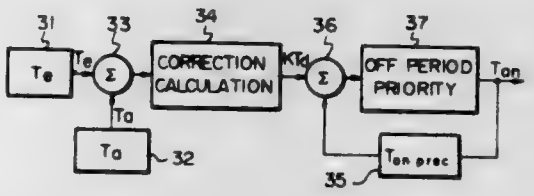
Shinji Shirasaki, Kariya; Takashi Yamada, Anjo, and Mamoru Shimamoto, Nagoya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Aug. 5, 1980, Ser. No. 175,414

Claims priority, application Japan, Aug. 6, 1979, 54/99412

Int. Cl.³ F02P *1/00*

U.S. Cl. 123—609 **5 Claims**



1. A process of controlling the current flowing period of an ignition coil in an ignition system of an internal combustion engine which system includes a rotation sensor for sensing the rotation of the engine, a variables sensor for sensing variables other than the rate of rotation of the engine, a calculation device for calculating the current flowing period from the data supplied from said rotation sensor, said variables sensor and an igniter circuit, an igniter circuit for amplifying the output signal of said calculation device to energize an ignition coil and, when the value of the primary current of said ignition coil becomes a predetermined value, to produce a constant current signal, an ignition coil energized by said igniter circuit and a spark plug, characterized in that said process comprises the steps of:

calculating a command of the constant current period of said ignition coil;

comparing said command with a measured value of the constant current period of said ignition coil for the preceding ignition cycle;

calculating a correction value of the constant current period of said ignition coil for the present ignition cycle;

obtaining a corrected value of the constant current period of said ignition coil for the present ignition cycle, and;

maintaining with priority a predetermined OFF period of the primary current of said ignition coil.

4,351,288

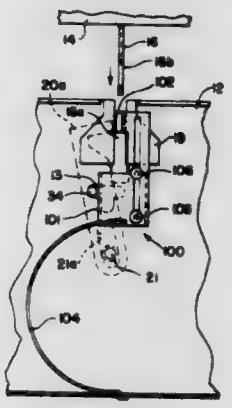
OVEN DOOR LATCH

Joseph L. Gasloli, Kentwood, Mich., assignor to White Consolidated Industries, Inc., Cleveland, Ohio

Filed Jun. 17, 1981, Ser. No. 274,525

Int. Cl.³ E05B *63/20*

U.S. Cl. 126—197 **2 Claims**



1. A mechanism for inhibiting the locking movement of a hooklike oven door latch member engageable with a keeper fixed to an associated oven door, the latch member being movable toward the keeper and lockably engageable with it only when the oven door is closed to a predetermined degree, the inhibiting mechanism comprising:

a stop member movable between two positions; and

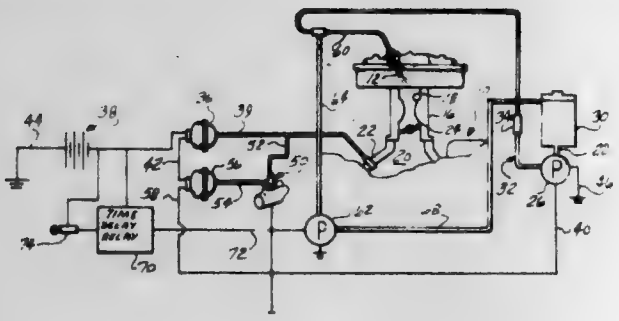
a biasing means for maintaining the stop member at one position, the stop member at said one position blocking and interfering with the movement of the latch member toward the location of the keeper at its closed oven door position, the keeper engaging with the stop member and moving it against the force of said biasing means toward said other position into a non-blocking and non-interfering position relative to the latch member movement when the keeper is at said location, the latch member then being free to move toward and lockably engage the keeper, the stop member being generally linearly movable between said positions and a portion of the latch member being generally linearly movable toward the keeper, said linear movement of the latch member portion being along a line perpendicular to the line along which the stop member linearly moves, the stop member being slidably mounted to a frame means supporting the latch member, the frame means including a slot having a portion extending toward said location of the keeper, said latch member portion including a pin riding in said slot, the stop member at said one end position blocking said slot to retain the pin at the end of said slot portion farthest from said location of the keeper.

4,351,289

WATER INJECTION SYSTEM FOR INTERNAL COMBUSTION ENGINES

Vince A. Renda, 6325 Winthrop, Detroit, Mich. 48228

Filed Aug. 6, 1980, Ser. No. 175,608
Int. Cl.[3] F02D *19/00*; F02M *25/02*
U.S. Cl. 123—25 A 10 Claims



1. A water injection system for an internal combustion engine having an air induction system including a carburetor having an intake and an air cleaner mounted upstream of said carburetor comprising:

water reservoir means for storing a quantity of water;

injection nozzle means for directing water into said air induction system and comprising a water spray nozzle mounted in said air cleaner directing water spray towards said carburetor intake;

pumping means controllably activated to pressurize water from said reservoir means;

passage means connecting said pumping means and said nozzle means enabling water flow to said nozzle means only when said pumping means is activated to cause said water spray into said air induction system;

control means responsive to levels of torque demand from said internal combustion engine to enable activation of said pumping means only when torque demand is above a predetermined level, whereby said water injection occurs only above said predetermined torque demand level;

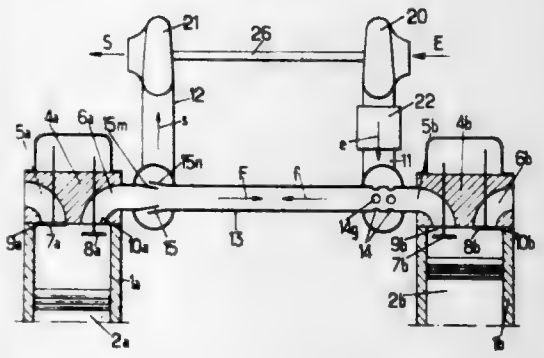
purge means comprising a purge pump connected upstream of said injection nozzle means intermediately of said pump means, said purge pump having an inlet and an outlet, said inlet of said purge pump means connected to said passage means and said outlet of said purge pump connected to said water reservoir means; and means for activating said purge pump means during periods of nonuse of said injection system.

4,351,290

INTERNAL COMBUSTION ENGINE WITH IMPROVED EFFICIENCY AND FILLING BY RECOVERY OF PART OF THE ENERGY OF THE BLASTS WHICH ARE PRODUCED DURING THE OPENING OF THE EXHAUST PORTS

Jean Melchior, 66, Boulevard Maurice Barres, 92200 Neuilly-sur-Seine, France

Filed Nov. 8, 1979, Ser. No. 92,626
Claims priority, application France, Nov. 9, 1978, 78 31730
Int. Cl.[3] F02B *33/44*
U.S. Cl. 123—59 BM 9 Claims



1. In a supercharged internal combustion engine, comprising:

a number n of work chambers, particularly n cylinders, n being an integer at least equal to two, with n intake pipes, for the intake of at least air under pressure into each work chamber, means for providing fuel to each of said work chambers, and n exhaust pipes for discharge of burnt gases outside each work chamber and an associated blast wave produced by a combustion explosion occurring therein,

a common intake manifold for the n work chambers of the engine for admitting air under pressure in said engine, and

a common exhaust manifold for the n work chambers of the engine for discharging the burnt gases outside the engine,

a turbine receiving the burnt gases from said common exhaust manifold and,

a compressor driven by said turbine fed by atmospheric air and delivering air under pressure to said common intake manifold,

the improvement consisting in providing said engine with a number n of transfer conduits,

each conduit connecting directly an associated one of said exhaust pipes to an associated one of said intake pipes, each one of said n exhaust pipes being connected to one of said n intake pipes of a different work chamber, and the volume of each one of said n transfer conduits being at least equal to that of the associated work chambers connected thereto, and including n pairs of passages, each pair of passages putting in permanent communication each of said n transfer conduits with each of said intake and exhaust manifolds such that an exhaust passage of each pair is disposed in vicinity of an associated one of said exhaust pipes and an intake passage of each pair is disposed in vicinity of an associated one of said intake pipes, flow permeability from the intake manifold to the exhaust manifold being successively in series through each of said intake passages, the corresponding transfer conduit and the corresponding exhaust passage allowing in operation the substantially complete discharge towards the exhaust manifold of the burnt gases produced during a preceding cycle in the work chamber associated with said last mentioned exhaust passage and forced into said last mentioned transfer conduit from the exhaust pipe of such associated chamber and the replacement of these gases by at least air under pressure coming from the intake manifold during a period of the engine operating cycle during which said exhaust pipe of such associated chamber and said intake pipe of such associated chamber are each substantially isolated from such associated chamber

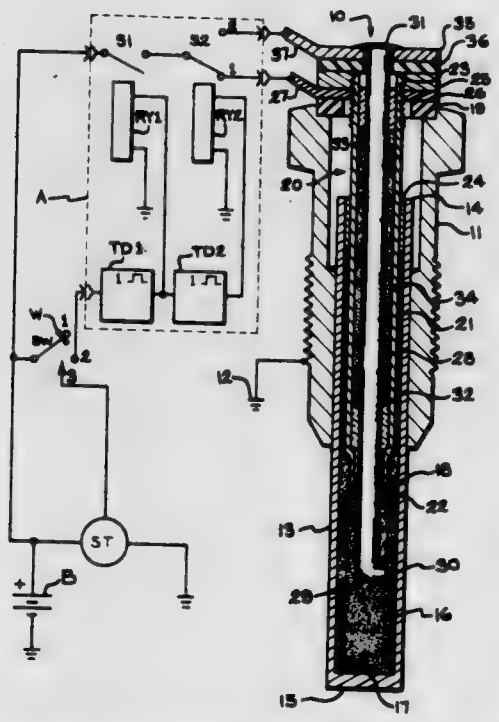
wherein said passages are designed to reduce to a minimum the radiation, towards the intake and exhaust manifolds, of the blast wave which appears during the opening of the exhaust valve of said chamber and follows said transfer conduit, and wherein said respective passages comprise opening means communicating an inside of such associated conduits with an inside of the corresponding manifold through which said associated conduit passes, the opening means of said exhaust passages having a section less than that of the opening means of said intake passages.

4,351,291

GLOW PLUG

Robert A. Mahaney, Graytown, Ohio, assignor to Champion Spark Plug Company, Toledo, Ohio

Filed Oct. 2, 1980, Ser. No. 193,377
Int. Cl.³ H05B 3/00; F23Q 7/00
U.S. Cl. 123—145 A **2 Claims**



1. A glow plug comprising a shell releasibly engageable with a diesel engine, an electrically conducting heater carried by said shell, said heater having a metallic tubular body with an open end within and electrically connected to said shell and an opposed closed end extending longitudinally from said shell, an open coiled heating filament disposed within said tubular body adjacent said closed end and electrically insulated from said tubular body, said heating filament having a first end electrically connected to said closed end of said tubular body and having a second end, said filament heating to a predetermined design temperature when a predetermined voltage is applied thereto, an insulator carried by said shell, and a terminal assembly carried by said insulator, said terminal assembly having a heater terminal, a heater-connecting means electrically connecting said heater terminal to said second end of said heating filament, a preheat terminal, and preheat-connecting means electrically connecting said preheat terminal to a coil of said heating filament intermediate to said first and second ends.

4,351,292

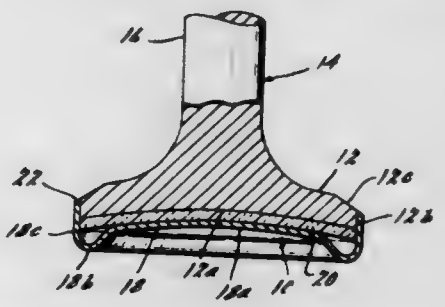
POPPET VALVE SHIELD

Roger P. Worthen, Farmington Hills, and Jay M. Larson, Marshall, both of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Oct. 3, 1980, Ser. No. 193,679
Int. Cl.³ F01L 3/20
U.S. Cl. 123—188 AA **6 Claims**

1. An insulated poppet valve of the type including a mushroom head having a circular face portion normally exposed to combusting gases in a combustion chamber of an expansible chamber engine, a sheet metal member spaced from and extending over said face portion,

an annular fold formed continuously around the periphery of said member terminating in a skirt portion welded to the periphery of said head, said face portion, said sheet metal member, annular fold and skirt portion defining an evacu-



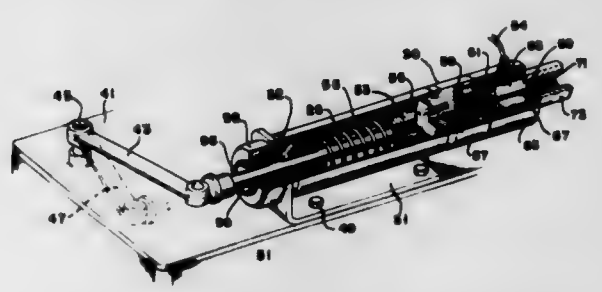
ated chamber which provides a heat-conduction barrier for insulating the valve face portion from combusting gases, said annular fold providing an annular expansion joint for relieving stresses in the sheet metal member due to thermal expansion differences between the member and the valve head.

4,351,293

DIESEL VEHICLE SPEED CONTROL SYSTEM

John T. Hewitt, 129 Sheldon St., El Segundo, Calif. 90245

Filed Jun. 4, 1979, Ser. No. 45,140
Int. Cl.³ F02D 1/04; F02B 77/08
U.S. Cl. 123—198 DB **14 Claims**



1. In a vehicle having a diesel engine having multiple cylinders and fuel supply means including multiple metering valves and injectors, one set for each of said cylinders, fuel control means mechanically coupled to all said metering valves to control the volume of fuel delivered therefrom to said injectors, the improvement which comprises:

a fluid pressure responsive actuator having a variably positionable actuator arm engageable with said fuel control means to effect movement thereof in a fuel limiting direction, said arm being movable in said fuel limiting direction in response to fluid pressure applied to said actuator, said actuator including bias means for biasing said arm for travel in an opposite, non-fuel limiting direction upon removal of fluid pressure from said actuator;

pneumatic pressure fluid supply means including a source of air under superatmospheric pressure;

conduit means connecting said fluid supply means and said actuator, and including solenoid valve means having an open position for applying said air to said actuator, and a closed position for venting air from said actuator to atmosphere;

a speed sensing element responsive to one of vehicle or engine speed to generate a sensed signal responsive to sensed speed;

system control means to receive said sensed signal, compare said signal to a preset signal level corresponding to a maximum permissible speed, and generate an electrical control signal when said sensed signal deviates from said preset signal level;

means interconnecting said system control means to said valve means to actuate said valve means between said open and closed positions, according to the character of said electrical control signal; and

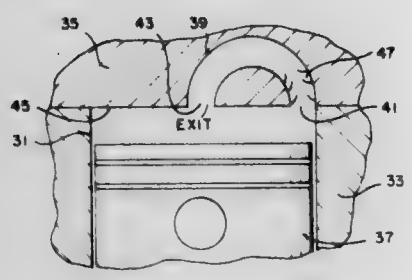
air pressure restrictor means interposed between said pressure fluid supply means and said actuator, in the path of air applied to said actuator, to impede air flow to said actuator to slow extension of said arm in said fuel limiting direction, whereby said fuel is gradually restricted, permitting the speed of said vehicle to react to said reduced fuel flow during travel of said arm in said fuel limiting direction, and said restrictor means being out of the path of air venting to atmosphere from said actuator, whereby said arm is enabled to move relatively rapidly under the bias of said bias means in said non-fuel limiting direction, said restrictor means comprising a porous plug of limited permeability.

4,351,294

FLUIDIC DIODE COMBUSTION CHAMBER

Edward H. Giddings, 1811 Woodrow Ave., Wichita Falls, Tex. 76301

Filed Jul. 17, 1980, Ser. No. 169,773
Int. Cl.³ F22B *17/10*
U.S. Cl. 123—291 **14 Claims**



1. In an internal combustion engine having a cylindrical chamber formed in its block and a piston supported to reciprocate in the cylindrical chamber and wherein the cylindrical chamber has a wall formed by the head of the engine which the face of the piston moves toward and away from during the compression and expansion stroke respectively of the piston, the improvement comprising:

a passageway having an entrance and an exit in fluid communication with the cylindrical chamber,

said passageway being characterized such that during the compression stroke, the flow of working fluid from the cylindrical chamber is predominantly into said entrance of said passageway and during the expansion stroke, the flow of working fluid from said passageway to the cylindrical chamber is predominantly out of said exit of said passageway, and

means for injecting fuel into said passageway for forming a fuel-air mixture for ignition.

4,351,295

FUEL INJECTION METHOD

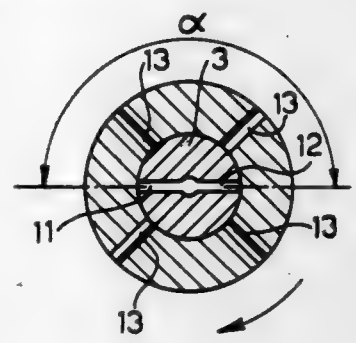
Cesare Bassoli; Giorgio Cornetti, and Francesco Lovisolo, all of Turin, Italy, assignors to Centro Ricerche Fiat S.p.A., Turin, Italy

Division of Ser. No. 9,619, Feb. 6, 1979, Pat. No. 4,294,210. This application Jun. 1, 1981, Ser. No. 269,189
Claims priority, application Italy, Feb. 15, 1978, 67315 A/78
Int. Cl.³ F02M *45/02*
U.S. Cl. 123—300 **2 Claims**

1. A method for injecting fuel in the cylinders of a multi-cylinder compression-ignition internal combustion engine for the direct-injection type, said method comprising the steps of

providing a fuel injection pump having a pump body with an internal compression chamber and piston means slidable within the body for compressing fuel in said compression chamber,

connecting, when the engine rotational speed is greater than a threshold value, said compression chamber, during each fuel compression stroke of said piston means, with two different cylinders of the engine so as to deliver to each cylinder of the engine in each cycle thereof a principal injection of fuel, substantially at the end of the compression stroke in said cylinders, preceded by a pre-injection of fuel, and



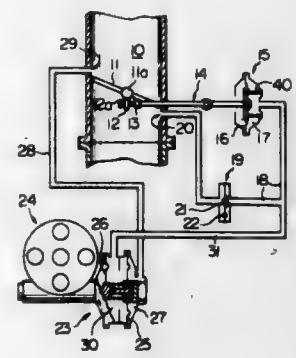
connecting when the engine rotational speed is lower than said threshold value, said compression chamber, during each fuel compression stroke of said piston means, with only one cylinder of the engine, so as to deliver only the said principal injection of fuel to each cylinder of the engine in each cycle thereof.

4,351,296

APPARATUS FOR CONTROLLING DECELERATION OF AN INTERNAL COMBUSTION ENGINE

Nobuaki Kayanuma, Susono, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed May 16, 1980, Ser. No. 150,629
Claims priority, application Japan, May 30, 1979, 54-71747[U]
Int. Cl.³ F02P *5/04*
U.S. Cl. 123—328 **3 Claims**



1. An apparatus for controlling deceleration of an internal combustion engine having an intake passage and a throttle valve disposed in said intake passage, said apparatus comprising:

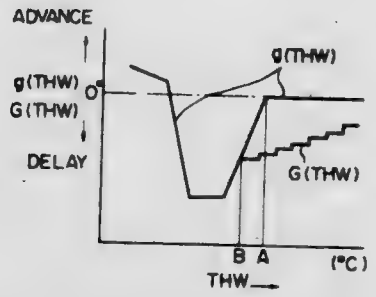
a throttle positioning means for maintaining the opening degree of said throttle valve during deceleration at a predetermined degree larger than the degree of the opening at idling and

a vacuum advance means responsive to a vacuum level in said intake passage downstream from said throttle valve for advancing the ignition timing of said engine, said vacuum advance means operating only when said engine is at a specific operating condition where the degree of the opening of said throttle valve is less than said predetermined degree, and said vacuum advance means being disabled when said throttle positioning means is actuated to keep said throttle valve open at said predetermined degree.

4,351,297
METHOD AND APPARATUS FOR CONTROLLING THE IGNITION TIMING OF AN INTERNAL COMBUSTION ENGINE

Toshio Suematsu, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Nov. 14, 1980, Ser. No. 207,085
Claims priority, application Japan, Nov. 15, 1979, 54/147013
Int. Cl.³ F02P 5/04
U.S. Cl. 123—421 8 Claims



5. Apparatus for controlling the ignition timing of an internal combustion engine, said apparatus comprising:

means for detecting the coolant temperature of the engine and producing an electrical signal indicative of said detected coolant temperature;

means for calculating an ignition timing correction value from said produced temperature signal, by using a function describing a desired relationship between the coolant temperature and the ignition timing correction value, when the detected coolant temperature is lower than or equal to a first predetermined temperature which is lower than a second predetermined temperature of the completely warmed-up engine;

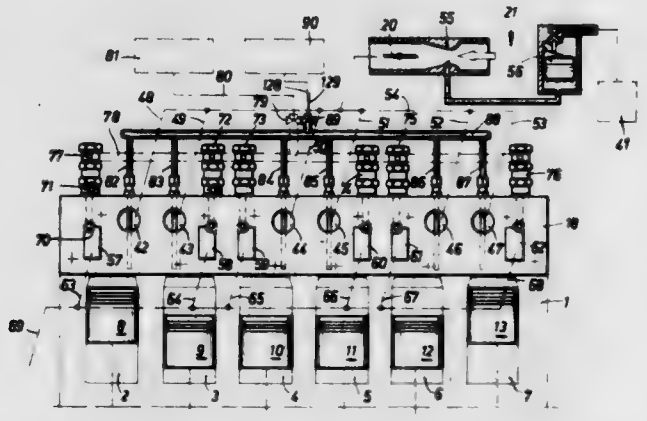
means for gradually reducing the ignition timing correction value to zero, over a predetermined period of time after the detected coolant temperature exceeds said first predetermined temperature, from the value calculated by the above calculating step when the detected coolant temperature is equal to said first predetermined value; and

means for delaying the ignition timing of the engine in accordance with said ignition timing correction value.

4,351,298
INTERNAL COMBUSTION ENGINE AND INTERMEDIATE FLANGE MEMBER FOR SUCH AN ENGINE

Walter Franke, Hittfelder Kirchweg 22, 2105 Seevetal 3, Fed. Rep. of Germany

Filed Jul. 5, 1979, Ser. No. 55,074
Claims priority, application Fed. Rep. of Germany, Jul. 19, 1978, 2831694
Int. Cl.³ F01N 3/10; F02M 25/06
U.S. Cl. 123—432 10 Claims

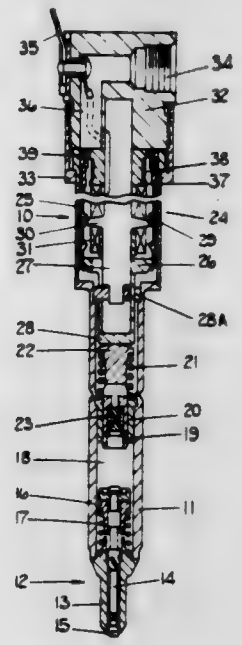


1. In an internal combustion engine at least one cylinder, a piston reciprocal within said cylinder, a cylinder head, inlet and exhaust valves located in said cylinder head, a valve seat in said cylinder head for each of said inlet and exhaust valves, one of an ignition and an injection device mounted in said cylinder head, an inlet conduit opening to and extending upstream of said inlet valve, an exhaust conduit opening from and extending downstream of said exhaust valve, a feed line communicating with and located within the inlet conduit upstream of the inlet valve, said feed line having an outlet orifice in said inlet conduit and disposed in the immediate vicinity of said valve seat of said inlet valve at a location which with respect to said valve seat is as remote as possible from the one of said ignition and injection device, control means at the opposite end of said feed line from said outlet connecting said feed line to the atmosphere, and said control means arranged to limit the amount of air drawn in through said feed line to not more than 5% of the swept volume of said cylinder.

4,351,299
FUEL INJECTION SYSTEM

Christopher Costello, London, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Apr. 21, 1980, Ser. No. 141,970
Claims priority, application United Kingdom, Feb. 19, 1980, 8005553
Int. Cl.³ F02D 35/00; F02P 5/04; F02D 5/00; F02M 51/00
U.S. Cl. 123—472 4 Claims

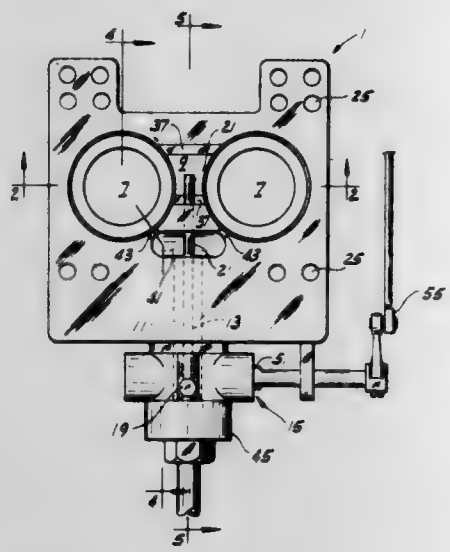


1. A fuel injection system for supplying fuel to an internal combustion engine, the system being of the kind comprising a pumping plunger slidable in a bore, an outlet from one end of the bore, a valve controlled fuel inlet to said one end of the bore, electromagnetic means which is supplied with electric current to cause movement of the plunger towards said one end of the bore, resilient means operable when the supply of electric current is halted to effect movement of the plunger away from said one end of the bore, transducer means for providing a signal indicative of the position of the plunger within the bore, first electronic means operable to effect energisation of said electromagnetic means, second electronic means operable to effect de-energisation of said electromagnetic means, third electronic means for supplying a required fuel signal to said second electronic means, said second electronic means also receiving the signal from said transducer whereby the supply of electric current to the electromagnetic means is cut off after a predetermined movement of the plunger thereby allowing the plunger to return to its initial position under the action of the resilient means.

4,351,300
LP GAS CARBURETOR

Richard H. Selvidge, Box 299 Rte. 9, Poplar Bluff, Mo. 63901, and Dewey Clark, Box 65A Rte. 2, Broseley, Mo. 63932

Filed Feb. 6, 1980, Ser. No. 119,143
Int. Cl.[3] F02M *21/02*
U.S. Cl. 123—527 20 Claims



1. An LP gas carburetor comprising:

a body adapted to be mounted on an engine, the body having a passage therethrough for flow of an air-fuel mixture through the carburetor, and a main and an auxiliary inlet port in communication with the passage for the flow of LP gas to the passage;

a tube projecting into and terminating within the passage, the axial passage in the tube being in communication with the auxiliary inlet port;

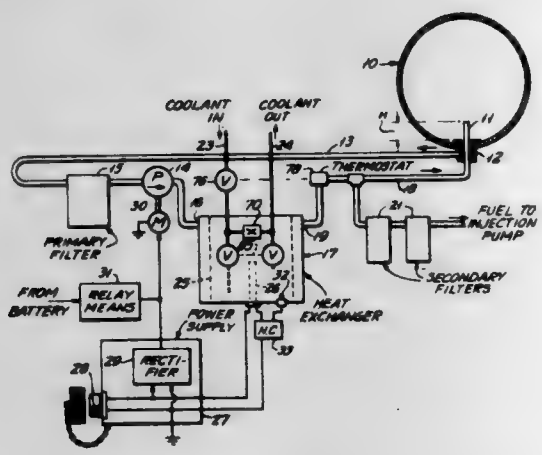
a main valve for controlling the flow of LP gas from a source thereof through the main inlet port to the passage; and

an auxiliary valve for controlling the flow of LP gas from the source through the auxiliary inlet port to the passage for the idling of the engine.

4,351,301
FUEL SUPPLY FOR A DIESEL ENGINE

Walter E. Allen, Prospect, Conn., assignor to Transamerica DeLaval, Inc., Princeton, N.J.

Filed Apr. 30, 1980, Ser. No. 145,347
Int. Cl.[3] F02M *31/00, 31/12*
U.S. Cl. 123—557 18 Claims

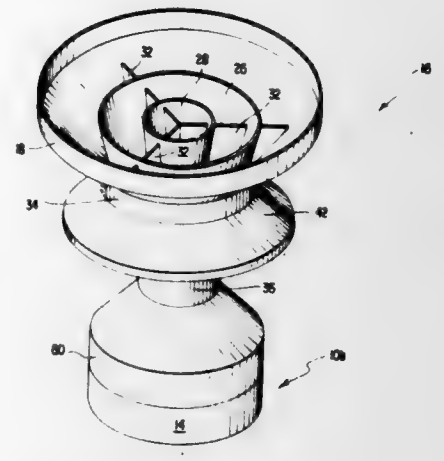


1. A diesel-engine fuel-supply system comprising a fuel tank, an external fuel-circulation line including a circulation pump and having fuel-in and fuel-out connection to said tank, a fuel heater series-connected in said circulation line between said pump and the fuel-in connection to said tank, engine-operated first means for driving said pump and for supplying heat to said heater during periods of engine operation, externally powered second means for driving said pump and for supplying heat to said heater during periods in which the engine is not operating, and an output fuel-supply line connection to said circulation line between said fuel heater and the fuel-in connection to said tank, whereby said output-line connection may deliver heated fuel from said circulation line to the injection system of the engine, not only during periods of engine operation but also when starting the engine after a period of operation of said second means.

4,351,302
METHOD AND APPARATUS FOR REDUCING AUTOMOTIVE POLLUTION

David H. Brettler, Riverdale, N.Y., assignor to Brett Enterprises, Inc., Silver Spring, Md.

Filed Sep. 11, 1981, Ser. No. 301,272
Int. Cl.[3] F23L *17/02*
U.S. Cl. 123—566 3 Claims



1. A concentrator which comprises:

(a) a plurality of concentric imperforate frustoconical sections of approximately the same height and having substantially the same projected apex,

(b) baffles between and supporting the frustoconical sections,

(c) an inlet end,

(d) an outlet end,

(e) an inversely-tapered immperforate frustoconical section and

(f) an outlet tube,

the concentric frustoconical sections having wider and narrower bases, the wider bases comprising the inlet end and lying substantially in one plane and the narrower bases comprising the outlet end and lying substantially in another plane parallel thereto;

the baffles being spaced from each other and perpendicular to the frustoconical sections they support;

the inversely-tapered section surrounding and being substantially concentric with the outlet tube and having its narrower end at the outlet end; and

the outlet tube having an inlet at or immediately downstream of the projected apex.

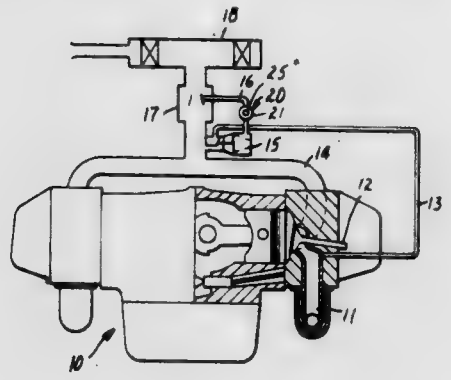
4,351,303
MANUALLY ADJUSTABLE VALVE MEANS FOR AN EXHAUST GAS RECIRCULATION SYSTEM

Raymond J. Tierney, 1911 Longview Dr., New Brighton, Minn. 55112

Filed Sep. 22, 1980, Ser. No. 189,376
Int. Cl.[3] F02M *25/06*
U.S. Cl. 123—568 5 Claims

1. In an exhaust gas recirculation system for an internal combustion engine, wherein said exhaust gas recirculation system contains a negative pressure line from a carburetor communicating with valve means to control the amount of exhaust gas recycled to an intake manifold in accordance with

the pressure variation in said negative pressure line, the improvement comprising a manually adjustable valve means inserted in said negative pressure line, said manually adjustable



valve means having an inlet port open to the atmosphere and at least one outlet port open to said negative pressure line, and manual adjusting means to control the size of said inlet port.

4,351,304

FUEL INJECTION VALVE

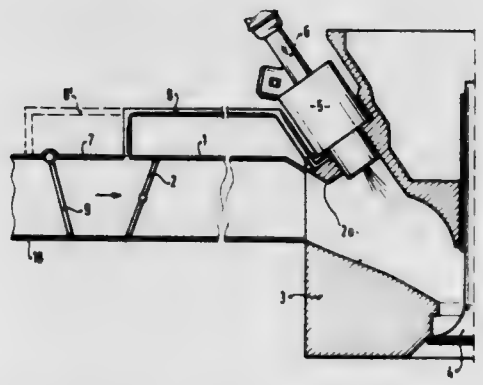
Kurt Schweizer, Ingersheim, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 30, 1981, Ser. No. 248,750

Claims priority, application Fed. Rep. of Germany, Apr. 3, 1980, 3013086

Int. Cl.³ F02M *51/00*

U.S. Cl. 123—585 **4 Claims**



1. A fuel injection valve wherein preparation of a fuel injected into a intake passage in a cylinder of an internal combustion engine downstream of a throttle device is effected by a gaseous medium, in which said fuel injection valve includes a nozzle valve that injects fuel when the nozzle valve is opened, a mixture guidance conduit relative to said nozzle valve into which fuel is injected, said guidance conduit including a mouth, an intake tube connected with said mixture guidance conduit at a position directly opposite that at which fuel is injected, a throttle valve upstream of said intake tube connection with said mixture guidance conduit and an annular conduit surrounding said mixture guidance conduit, a fluid line connected at one end to said annular conduit, said annular conduit including an end opening through which fluid from said fluid line discharges into said intake passage whereby fluid admitted through said conduit surrounds the injected fuel discharged from said mixture guidance conduit.

4,351,305

FUEL INJECTION APPARATUS FOR AN INTERNAL COMBUSTION ENGINE

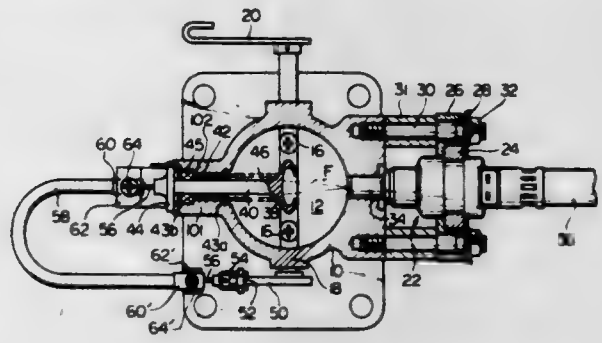
Kiyoshi Isogai, Toyota, and Kazuyoshi Sugaya, Kariya, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jun. 6, 1980, Ser. No. 157,241

Claims priority, application Japan, Aug. 3, 1979, 54-98610

Int. Cl.³ F02M *29/04*

U.S. Cl. 123—590 **5 Claims**



1. Fuel injection apparatus for a multi-cylinder internal combustion engine which includes a tubular body through which intake air passes and a butterfly throttle valve arranged in the body for controlling the amount of the flow of air passing therethrough, comprising:

fuel injection nozzle means secured to the body upstream of the throttle valve for providing a single flow of fuel into the interior of the body substantially transverse to the axis thereof and to the axis of rotational movement of the valve;

guide means in the body opposed to said nozzle means for intercepting the flow of fuel therefrom and directing said flow with a 90° change of direction toward the valve and parallel to the axis of the body, said guide means being mounted for linear movement transverse of the axis of the body toward and away from said nozzle means; and

drive means connected to said guide member and to the valve and responsive to movements of the latter for moving said guide means so that the air-fuel ratio of the air-fuel mixture passing by the valve on one side of its said axis is substantially equal to the air-fuel ratio of the air-fuel mixture passing by the valve on the other side of its said axis irrespective of the degree of opening of the valve.

4,351,306

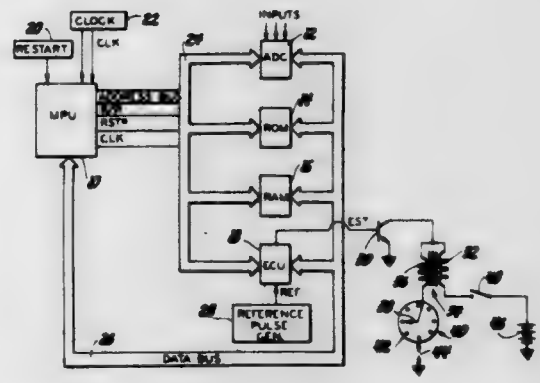
ELECTRONIC IGNITION SYSTEM

James E. Luckman, Anderson; William P. Winstead, Alexandria, and John L. Kastura, Kokomo, all of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed May 26, 1981, Ser. No. 267,269

Int. Cl.³ F02P *3/04*

U.S. Cl. 123—609 **4 Claims**



1. Apparatus for generating dwell and ignition timing values in an electronic spark control system for an internal combus-

tion engine, the electronic spark control system including an ignition coil and being characterized in that ignition dwell and spark timing are provided in response to dwell and ignition timing values and an estimated period between reference pulses provided at a predetermined engine crank shaft angle relative to each top dead-center position and further characterized in that the spark timing error introduced by the error between the actual and estimated period between reference pulses resulting from engine acceleration is minimized by shortening the dwell period, the apparatus comprising:

means responsive to engine operating parameters including engine speed effective to provide the spark timing value representing a spark ignition interval of time relative to the reference pulses producing a desired ignition angle at the current engine speed; and

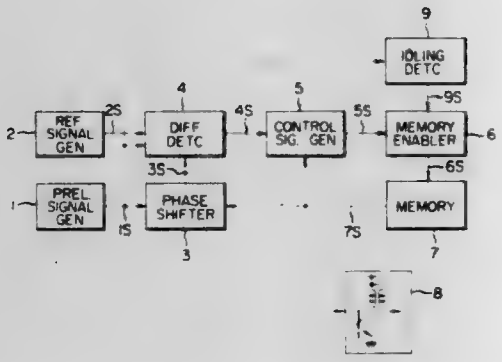
means effective to provide the dwell value representing a dwell period for energizing the ignition coil, the last mentioned means including means effective to generate a static dwell value representing a desired dwell period, means effective to sense engine acceleration, means responsive to a sensed engine acceleration effective to generate a dynamic dwell value representing at least the time that the dwell period may be shortened to minimize spark timing error, and means effective to sum the static and dynamic dwell values to produce the dwell value, whereby during steady state engine speeds, the dwell period is equal to the static dwell value to minimize power dissipation in the electronic spark control system and is the sum of the static and dynamic dwell values during engine acceleration to ensure that the desired dwell period is provided during engine acceleration where ignition timing error is minimized by shortening the dwell period.

4,351,307

IGNITION TIMING CONTROLLER FOR AN INTERNAL COMBUSTION ENGINE

Satoshi Komurasaki, and Atsushi Ueda, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 22, 1980, Ser. No. 181,395
Claims priority, application Japan, Aug. 22, 1979, 54-107433
Int. Cl.³ F02P *5/04*
U.S. Cl. 123—618 **4 Claims**



1. An ignition timing controller for an internal combustion engine comprising, in combination:

means for generating reference timing signals at fixed rotational angles in a cycle of said internal combustion engine,

means for generating preliminary timing signals at advanced rotational angles in the cycle of said internal combustion engine which are advanced by a fixed predetermined angle with respect to said fixed rotational angles when said internal combustion engine is in a predetermined operational state and which are further advanced depending on an operating parameter of said internal combustion engine, which is indicative of a operational state of said internal combustion engine, initial value of said fixed predetermined angle being greater in magnitude than a variation of said advanced rotational angles due to accidental causes including aging of a system including said ignition timing controller and said internal combustion engine,

means for retarding said preliminary timing signals by a controlled angle in the cycle of said internal cobustion engine, said retarded preliminary timing signals being applied to an ignition voltage generator of said internal combustion engine, thereby causing ignition voltage for said internal combustion engine to be generated,

means for detecting an advance angle by which said retarded preliminary timing signals are advanced with respect to said reference timing signals in the cycle of said internal combustion engine,

means for generating a control signal which is proportional in magnitude to an algebraic sum of said controlled angle and said advance angle,

memory means, and

means for causing said control signal to be memorized in said memory means when said internal combustion engine is in said predetermined state,

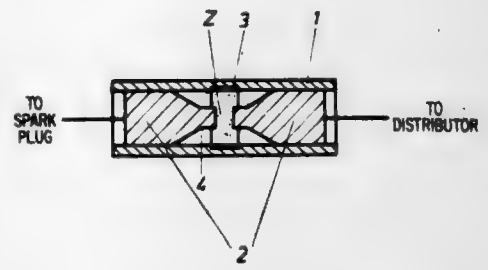
said memory means applying said memorized control signal to said retarding means, thereby controlling said controlled angle so that said advance angle by which said preliminary advanced timing signals are advanced with respect to said reference timing signals become substantially zero, when said internal combustion engine is in said predetermined state.

4,351,308

PHOTOACTIVE IONIZATION HIGH-TENSION PULSATOR OF CARBURETOR MOTOR IGNITION SYSTEM

Esref Halilovic, D. Tucovica 141, and Branko Radisic, Lole Ribara 2, both of 11000 Belgrade, Yugoslavia

Filed Dec. 5, 1979, Ser. No. 100,552
Claims priority, application Yugoslavia, Dec. 7, 1978, 2862/78
Int. Cl.³ F02P *15/00*
U.S. Cl. 123—627 **1 Claim**



1. Photoactive ionisation high-tension pulsator of a carburetor motor ignition system having a distributor and a spark plug providing a high voltage, comprising:

a tubular housing having an inner wall,

electrodes disposed in said tubular housing and spaced apart by a gap, there being an inside space between the electrodes and the tubular housing, said inside space being filled with an ionisable gas, and

a ring positioned on the inside wall of the tubular housing, said ring being positioned within the inside space filled with the ionisable gas and being separated from the electrodes;

wherein said pulsator is connected to and between said distributor and said spark plug, said high voltage resulting in breakdown across said electrodes, and said ring comprising a photoactive material in surrounding relationship to the gap and responsive to said breakdown for causing ionisation of said gas, whereby to provide high-frequency current in said motor ignition system.

4,351,309

SAFETY GAP FOR AN IGNITION SYSTEM IN AN INTERNAL COMBUSTION ENGINE

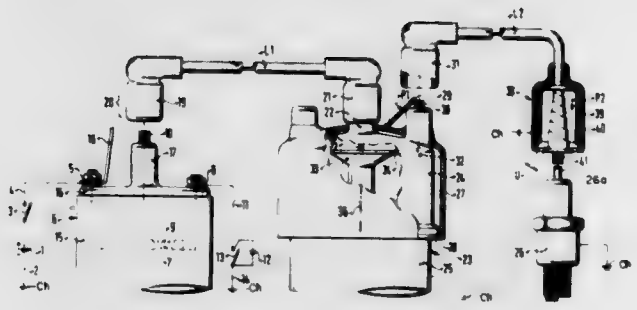
Richard Schleupen, Ingersheim; Reinhold Kaufmann, Oberriexingen, and Dieter Raff, Schwieberdingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 3, 1980, Ser. No. 165,557

Claims priority, application Fed. Rep. of Germany, Jul. 28, 1979, 2930771

Int. Cl.[3] B60R *25/04;* F02B *77/00;* F02P *1/00*

U.S. Cl. 123—630 9 Claims



1. Ignition system having

an ignition coil (6) having a housing (15);

a terminal (5) on the housing;

circuit means (1, 3, 4) connecting said terminal to a ground, chassis or reference potential (Ch);

and a coil high voltage terminal (10) on the housing, insulated with respect thereto;

at least one spark plug (26) having a shell connectible to the ground, chassis or reference potential (Ch) and a spark plug high voltage terminal (*26a*);

connection means (L1, L2) removably connectible and electrically interconnecting the coil high voltage terminal (10) and a spark plug high voltage (*26a*);

and a safety means to prevent occurrence of excessive high voltages when the connection means is removed from at least one of said terminals

comprising, in accordance with the invention the combination of

electrically conducting terminal means (18, 29, 40) connectible to the ground, chassis or reference potential (Ch) and positioned adjacent at least one of the high voltage terminals (10, *26a*), and forming a ground connection therefore which is effective at the voltage difference between the respective high voltage terminal and the electrically conductive terminal means of substantially less than spark plug sparking voltage

with

insulator means (19, 20; 31; 39) on said connection means which is positioned, upon connection of the connection means to the respective high voltage terminal for interposition between the electrically conductive terminal means in the respective high voltage terminals, to place a zone of insulating material between said terminal means and the respective high voltage terminal, and thus increase the voltage difference required between the respective high voltage terminal and said terminal means for spark breakdown to a value substantially above that of the spark plug sparking voltage.

4,351,310

IGNITION COIL WITH OVERVOLTAGE PROTECTION CONNECTED TO THE SECONDARY WINDING OF THE IGNITION COIL

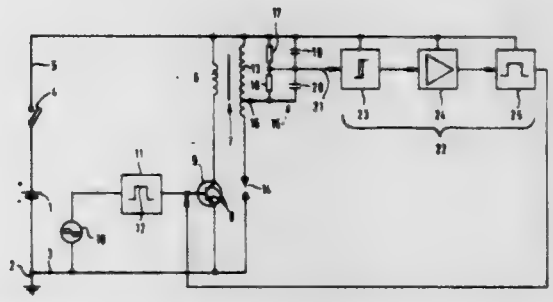
Karl-Heinz Adler, Leonberg; Georg Pfaff, Asperg; Reinhard Leussink, Bremen; Gerhard Söhner, Remshalden; Gerd Höhne, Ludwigsburg; Thomas Jökh, Korntal-Münchingen, and Heinz Decker, Vaihingen Enz-Riet, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 1, 1980, Ser. No. 193,186

Claims priority, application Fed. Rep. of Germany, Oct. 3, 1979, 2940070

Int. Cl.[3] F02P *11/00, 1/00*

U.S. Cl. 123—644 10 Claims



1. In an ignition system having an ignition coil (7) having a primary winding (6) and a secondary winding (13), and means (9) for interrupting the current through said primary winding at an ignition time, the improvement comprising

an overvoltage protection circuit (15) directly, galvanically connected to the secondary winding (13) of the ignition coil (7);

and wherein said overvoltage protection circuit has an input circuit (17–20) solely connected directly in parallel across at least a part of said secondary winding.

4,351,311

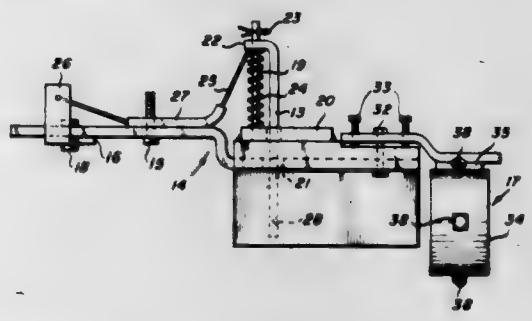
PULLED BOW ARROW HOLDER

Gary L. Phares, 118 Chestnut St., Elkins, W. Va. 26241

Filed Jul. 16, 1981, Ser. No. 283,935

Int. Cl.[3] F41B *5/00*

U.S. Cl. 124—41 A 9 Claims

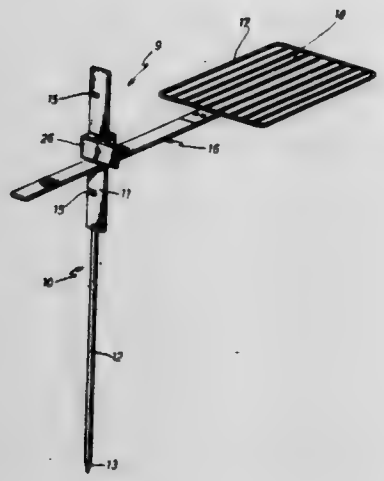


1. Apparatus for holding an arrow in a pulled bow and which releases an arrow when a bow is pulled slightly beyond the position in which an arrow is held, comprising a support adapted to be attached to a bow where the same is gripped by an archer, an arrow-holding bar having an arrow point-receiving indentation, said bar being movably mounted on said support to extend from an arrow-holding position in front of the point of an arrow in a pulled bow to a second position out of the path of an in place arrow, trigger means carried by said support immediately forward of a bow to move said bar into the path of an arrow so that the point of an arrow can be placed in said indentation to hold an arrow until it is pulled, and means biasing said bar out of the path of an arrow so that said bar will be removed from the path of an arrow when the point of an arrow is pulled out of said indentation.

4,351,312
PORTABLE CAMPFIRE GRILL ASSEMBLY

James R. Ivy, 9001 Glacier, #138, Texas City, Tex. 77590

Filed Feb. 2, 1981, Ser. No. 230,544
Int. Cl.³ F24B *3/00*; A47G *29/00*; F16B *00/00*
U.S. Cl. 126—30 4 Claims

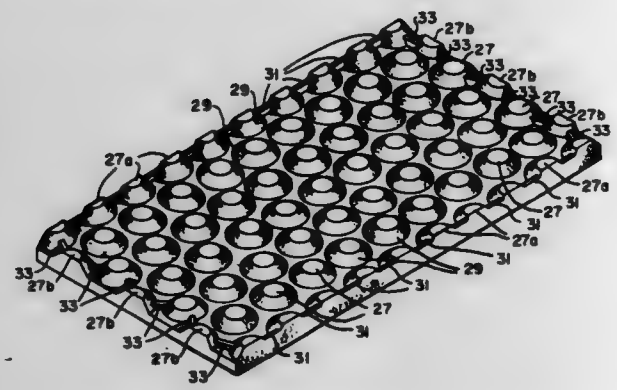


1. A portable campfire grill apparatus comprising: an elongated support having a substantially flat bracket section at its upper end, said bracket section having at least one slot formed in the side thereof; a handle adapted to be attached to a grill, said handle being substantially flat and having an upstanding bight formed intermediate its ends, said bight having a slot formed in the upper wall thereof that is arranged to interfit with the slot in said bracket section; and lock means adapted to be slipped over the top of said bracket section and fitted around said bight to secure said handle to said bracket section.

4,351,313
BARBECUE GRILL SLAB WITH MOLD AS SHIPPING CONTAINER

Eugene F. Kern, 12115 Lake Meade Ct., Creve Coeur, Mo. 63141

Division of Ser. No. 30,532, Apr. 16, 1979, Pat. No. 4,276,869. This application May 1, 1980, Ser. No. 137,907
The portion of the term of this patent subsequent to Jul. 7, 1998, has been disclaimed.
Int. Cl.³ F24C *3/00*
U.S. Cl. 126—39 J 5 Claims

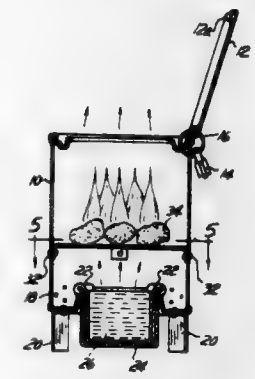


1. A transportable article comprising a mold for a refractory slab for positioning in a barbecue grill between the burner unit and the food-supporting grate having first molding means for defining fluid retaining means for containing grease and rendered meat juices on the slab and preventing such fluids from dripping off the slab, said first molding means including second means for molding a plurality of uniformly spaced bosses simulating coals projecting upwardly from the slab top surface, and third molding means for molding integral dam means connecting adjacent bosses nearest the periphery of the slab to form an upstanding continuous peripheral parapet around the slab periphery to contain grease and rendered meat juices on top of the slab and prevent such fluids from dripping off the sides of the slab, said mold being hollow and having a body of unfired refractory material filling said mold and conforming closely to the interior surface thereof forming said slab and said fluid retaining means whereby said mold protects said refractory material body during transportation, said refractory material body being removable from said mold after transportation to permit firing of said refractory material body in service.

4,351,314
PORTABLE HEATER

David C. Morton, 3152 Curtis Dr., Flint, Mich. 48507

Filed Mar. 16, 1981, Ser. No. 244,274
Int. Cl.³ F24C *1/16*
U.S. Cl. 126—59 6 Claims



1. A portable heater operable in relatively high and relatively low heat output conditions comprising:
a cylindrical body portion;
a grate for dividing said body portion into an upper and a lower portion;
said upper portion adapted to receive and hold solid fuel on the upper surface of said grate;
said lower portion having an opening in its base and operable to receive and hold in resilient gripping relationship a receptacle for semi-solid fuel;
a plurality of openings provided around the lower periphery of said lower portion of said heater; and
a lid pivotally mounted at the upper end of said body portion for movement between a raised heating position and a lowered snuffing position of the heater.

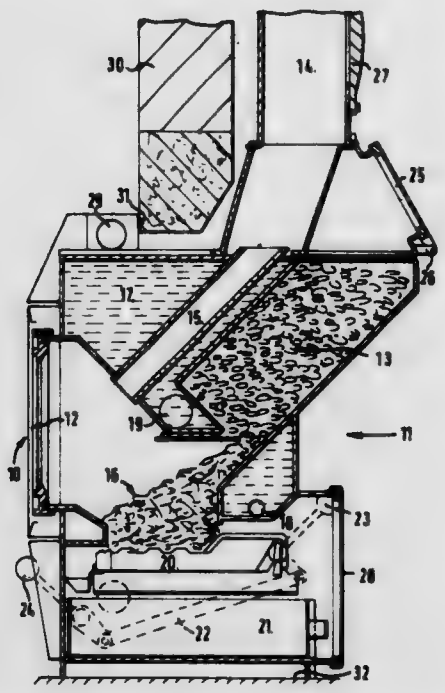
4,351,315
BOILERS

Thomas A. Babbage, Walton-on-Thames, England, assignor to Trianco Redfyre Limited, Sheffield, England

Filed Sep. 29, 1980, Ser. No. 192,334
Claims priority, application United Kingdom, Sep. 27, 1979, 7933548
Int. Cl.³ F24B *3/04*
U.S. Cl. 126—73 9 Claims

1. A solid fuel domestic appliance comprising a framework having a front portion and a rear portion and adapted for fixing in an aperture of a partition wall so that simultaneous access to said front and rear portions is prevented, means defining a combustion chamber in the front portion, a flue outlet for communication with a chimney and a fuel hopper mounted in said rear portion so as to be accessible only from behind said partition wall, means supporting a firebed beneath said fuel hopper at the base of the combustion chamber, a discharge throat of restricted size at the base of said fuel hopper so that fuel flows forwardly and downwardly from said hopper to said firebed to maintain a natural angle of repose therein, a transparent facia mounted in the front portion of the appliance to display the burning firebed, and a relatively narrow flue-way

leading from said combustion chamber obliquely rearwards and upwards to said flue outlet, and an access door in the flue

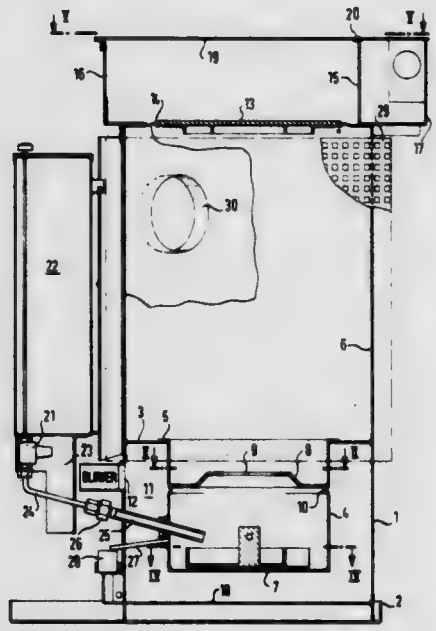


outlet to enable the flue-way to be cleaned and the chimney to be swept.

4,351,316
COMBUSTION APPARATUS FOR BURNING WASTE OILS

Walter Kroll, 42 Burgstaller Strasse, 7141 Kirchberg, Fed. Rep. of Germany

Filed Oct. 9, 1979, Ser. No. 82,860
Int. Cl.³ F24C 5/00
U.S. Cl. 126—93 28 Claims

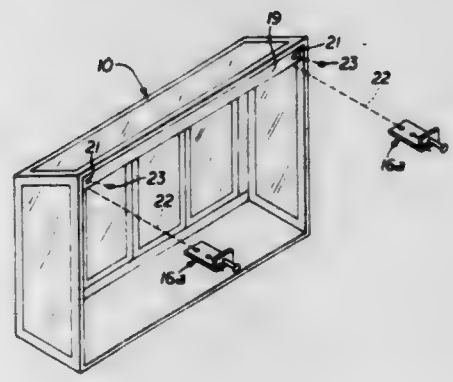


1. Combustion apparatus for burning waste oils, comprising: a primary combustion chamber; a secondary combustion chamber located above said primary combustion chamber; an outer housing; said primary combustion chamber having a sidewall, a top edge and a base and being located in said outer housing to define therebetween a plenum chamber; wall means sealing said plenum chamber relative to said secondary combustion chamber; an air blower mounted outside said plenum chamber and capable of maintaining said plenum chamber at an elevated pressure; air inlet openings in said sidewall for admitting air from said plenum chamber to said primary combustion chamber; a burner bowl contained in said primary combustion chamber adjacent the base thereof; a burner ring; means positioning said burner ring above said burner bowl and below said top edge; an oil supply tank, an oil supply duct leading from said tank to said burner bowl, a motor driven positive displacement pump in said oil supply duct for metering the flow of oil to said burner bowl, and an oil overflow protection device for draining excess oil from the primary combustion chamber; said burner ring having a substantially central aperture and at least an outer ring of orifices and an inner ring of orifices substantially concentrically arranged relative thereto, the orifices of said inner ring being of smaller area than the orifices of said outer ring, and said air inlet openings comprise a first set of air inlet orifices arranged below said burner ring for supplying combustion air to the burner bowl and beneath said burner ring, and a second set of air inlet orifices disposed above said burner ring adjacent said top edge.

4,351,317
APPARATUS FOR ATTACHING A FIRESCREEN TO A FIREPLACE

Ralph E. Matthews, P.O. Box 428, Decatur, Ala. 35602

Filed Aug. 11, 1980, Ser. No. 177,179
Int. Cl.³ F24C 15/12
U.S. Cl. 126—139 10 Claims



1. In a firescreen assembly disposed to surround the front side of the front wall of a fireplace adjacent the opening therein and having a transverse member adapted to span the front side of the front wall of the fireplace above the opening for the fireplace, the improvement which comprises:

(a) at least one generally L-shaped bracket having a vertical leg adapted to extend upwardly in rearwardly spaced relation to said front side of said front wall and a forwardly extending horizontal leg,

(b) there being at least one opening in said horizontal leg,

(c) there being an opening through said transverse member above the opening for the fireplace,

(d) a cable-like member having one end thereof extending through said opening in said transverse member with the other end thereof passing through said opening in said horizontal leg,

(e) means carried by said one end of said cable-like member limiting movement of said one end relative to said transverse member,

(f) means detachably connecting said other end of said cable-like member to said vertical leg of said bracket,

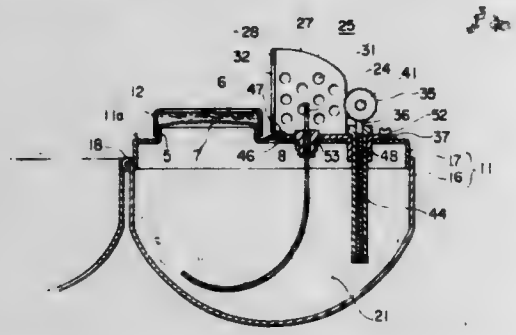
(g) an abutment carried by said fireplace intermediate said vertical leg and said front side of said front wall of the fireplace, and

(h) an actuator member adjustably connected to said vertical leg and adapted to engage said abutment and move said bracket rearwardly away from said transverse member to thereby apply tension to said cable-like member and urge said transverse member both rearwardly and downwardly to secure said firescreen to said fireplace.

4,351,318
POCKET BODY WARMER WITH A CIGARETTE LIGHTER

Shin Ojima, Yao, and Yoshiaki Neriki, Nara, both of Japan, assignors to Hosiden Electronics Co., Ltd., Osaka, Japan

Filed Jun. 9, 1980, Ser. No. 158,027
Int. Cl.[3] A61F 7/08; F23Q 1/02; F23D 3/18, 3/40
U.S. Cl. 126—208 5 Claims



1. A pocket body warmer with an integrated cigarette lighter, comprising:

a case for containing a liquid fuel;

a fuel impregnant housed in the case for soaking up the liquid fuel poured into the case;

a heating unit mounted on one end face of the case, said heating unit covering an opening formed in said end face and having housed therein a platinized catalyst for burning evaporated fuel to generate heat;

a burner located on said end face of said case adjacent said heating unit, said burner comprising a wick mounted on said case and having one end portion which projects outwardly from said end face of the case and an opposite end portion which is inserted into the case to extend into contact with the fuel impregnant to draw up therefrom the fuel, the projecting end portion of said wick being adapted to be ignited to emit a lighter flame;

a firing structure located on said end face of said case, on the opposite side of said end face from the heating unit with respect to the wick, for generating sparks to ignite said wick;

a substantially tubular windshield located on said end face of the case in surrounding relation to said wick, said windshield having a plurality of small air holes therein, said windshield also defining a first opening having a size larger than that of any of said air holes and located on the side of said windshield facing said heater unit for selectively directing the lighter flame produced by said burner toward said heating unit when said case is turned through an angle such that said heating unit is located above said windshield, and said windshield also defining a second opening on the side of said windshield opposite to said first opening and facing said firing structure for directing the sparks from the firing structure to the wick; and

a lid for removably covering the heating unit, the burner, the firing structure and the windshield;

said firing structure and windshield being integrated with one another in a unitary assembly which is attached as a unit to said end face of said case, said unitary assembly being adapted to be detached as a unit from said end face of said case and removed from the vicinity of said wick with said wick remaining mounted on said case.

4,351,319
RADIANT ENERGY TRACKER

Roland W. Robbins, Jr., 1020 Cheryl Ct., Ridgecrest, Calif. 93555

Filed Aug. 17, 1979, Ser. No. 67,283
Int. Cl.[3] F24J 3/02
U.S. Cl. 126—425 3 Claims

1. Apparatus for tracking relative movement between a source of radiant energy and a distant object comprising:

a relatively fixed portion;

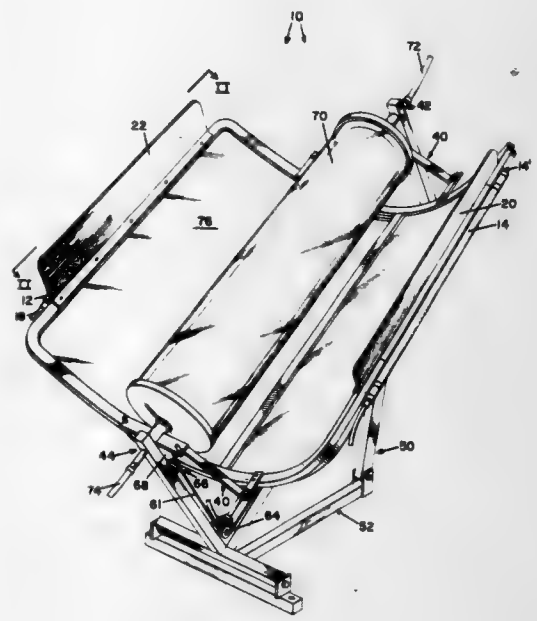
a relatively movable portion;

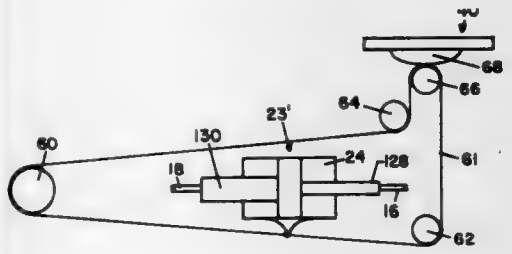
at least two spaced apart radiant energy sensing elements on said movable portion capable of power output relative to the amount of said radiant energy received;

baffle means associated with said sensing elements for interposition between said elements and said radiant energy source, depending upon position of said apparatus with respect to said source; so that

when said apparatus is in a desired position with respect to said source, said elements receive substantially equal radiation from said source and, when said apparatus is not in said desired position, equal radiation is not received by said elements;

means receiving the relative power output respectively of said elements and responsive to any power differential to position said movable portion relative to said fixed portion of said apparatus and to maintain a desired position between said movable portion and said source;





said means responsive to power differential including;

a hollow cylinder having integral end closures;

a piston in said cylinder;

first and second piston rods each attached by an inner end to a respective side of said piston and passing through said end closures;

said cylinder being connected on each side of said piston for fluid communication with one or the other of said sensing elements;

said piston rods being integrally fastened to one portion of said apparatus and said cylinder being mechanically linked to the other said portion; and

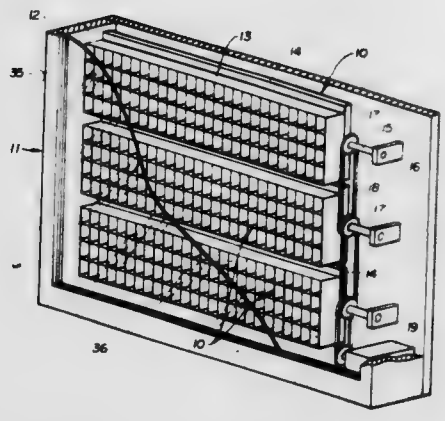
said piston rods being of different diameters to provide a means effective to move said relatively movable portion to a predetermined position with respect to said relatively fixed portion when radiation from said source is completely shaded from said elements.

4,351,320

SOLAR ENERGY HEATING PANEL FOR A BUILDING

Jack E. Tetirick, 105 Indian Springs Dr., Columbus, Ohio 43214

Filed Nov. 13, 1979, Ser. No. 93,411
Int. Cl.³ F24J 3/02
U.S. Cl. 126—425 18 Claims



1. A solar energy heating unit comprising

a supporting structure adapted for positioning in a building wall and defining a generally vertically extending chamber for channeling air vertically therethrough, said supporting structure including a front panel and a rear panel of predetermined horizontal and vertical extent spaced a predetermined distance apart and a vertically extending end panel at each side thereof and interconnecting with said front and rear panels, said front panel having a predetermined area thereof formed from a solar radiation transmitting material,

a plurality of elongated solar energy heating panels positioned within the chamber defined by said supporting structure with each heating panel extending horizontally across the chamber in spaced parallel, vertically stacked relationship to each other heating panel and pivotably mounted on said supporting structure for revolution thereof about parallel axes extending transversely across the chamber, each of said solar energy heating panels being of a width and depth relative to the spacing of the front and rear panels of said supporting structure to permit revolution through at least 180 degrees and including

(A) an elongated heat-transfer controlling panel having first and second surfaces at opposite respective sides thereof, and

(B) a cellular unit for absorption and conversion of solar radiation to heat energy mounted on said controlling panel at a first one of said surfaces, said cellular unit including a plurality of relatively spaced apart longitudinal walls and a plurality of relatively spaced apart transverse walls each secured to said controlling panel in upstanding relationship to said first surface thereof, said longitudinal and transverse walls disposed in angularly oriented relationship to each other and cooperatively defining a plurality of cells which are open at an end remote to said controlling panel to permit entrance of solar radiation into incident relationship to interior surfaces thereof, each of said longitudinal walls having a plurality of apertures formed therein to permit airflow transversely through each cell,

and

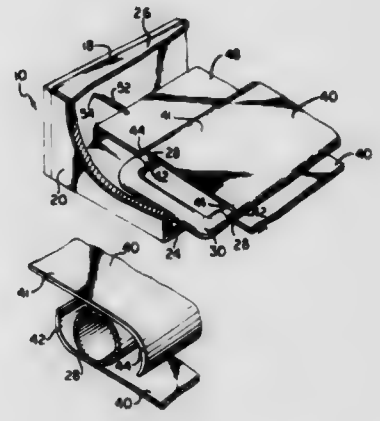
selectively operable pivot means cooperatively interengageable with each of said solar energy heating panels for revolving of said heating panels about their respective transverse axes to a selected position.

4,351,321

SOLAR COLLECTOR PANEL

Ben E. Johnson, 1321 S. Main, Carthage, Mo. 64836

Filed Nov. 3, 1980, Ser. No. 203,115
Int. Cl.³ F24J 3/02
U.S. Cl. 126—446 9 Claims



1. In a solar collector unit having a frame assembly for supporting at least three spaced and generally parallel solar collector pipes used in conveying a solar heat absorbent fluid therethrough, the improvement comprising:

(a) a heat absorbent panel positioned in a heat transfer relationship between each associated pair of adjacent pipes of said collector pipes and forming a panel array; each of said panels being non-integral with said pipes and with each of the other panels;

(b) a pair of hook members on each panel; each hook member contacting in a heat transfer relationship a portion of a respective pipe of said associated pair of pipes; adjacent hook members of adjacent panels cooperating with each other to wrap around opposite sides of a common one of said associated pair of pipes in clamping relationship; said panels including first and second end panels respectively positioned on opposite sides of said panel array; and

(c) spring tensioning means having a biasing position connecting between said first and second of said end panels and said frame and producing forces along said panels generally perpendicular to said pipes so as to provide a clenching interface between said cooperating hook members of adjacent panels and said common collector pipe, whereby said solar collector pipes are urged into a suspended relationship relative to said frame; said biasing means being selectively removable from said spring tensioning position such that the hook members of adjacent panels are not held in clenching interface with each other and each of said panels is easily disengaged from the remaining panels and from said pipes.

4,351,322

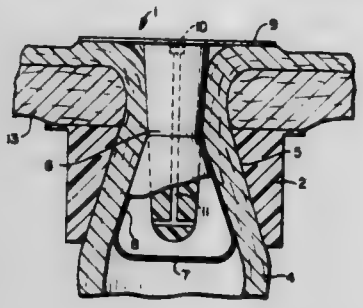
STOMA CONTROL DEVICE AND METHOD

Elliot D. Prager, 1685 E. Valley Rd., Santa Barbara, Calif. 93108

Filed Oct. 10, 1980, Ser. No. 195,944
Int. Cl.³ A61M 19/00
U.S. Cl. 128—1 R 23 Claims

1. A stoma control device comprising, in combination, support means for surgical implantation in the body beneath the abdominal wall and at least substantially around the emerging bowel of a stoma, said support means being adapted to be fastened securely to the abdominal wall and to extend a predetermined distance along said bowel, and said support means including an at least substantially continuous inner wall means having an inner surface which is positioned adjacent said bowel on implantation and which is tapered outwardly along at least most of the length of said support means, and said support means having an end surface for positioning adjacent the abdominal wall, and plug means adapted to be received in said stoma and within said bowel, said plug means including

outwardly directed flange means adjacent one end for cooperation with the outer surface of the body about the stoma and expandable means adjacent the other end, said expandable means, on expansion, presenting an outer surface which is outwardly tapered with a shape which complements the outwardly tapered inner surface of said support means over at least most of the length of said support means whereby during



control of the stoma with said device a relatively large surface of the bowel may be gently compressed between the respective tapered surfaces of the plug means and the support means so as to minimize pressure and tissue destruction and to produce a wedging action of the plug means within the bowel and support means to close the stoma and to prevent expulsion of the plug means from pressure within the bowel.

4,351,323

CURVABLE PIPE ASSEMBLY IN ENDOSCOPE

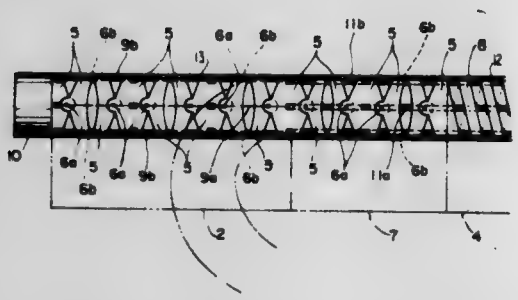
Teruo Ouchi, Kami-Fukuoka, and Hirohisa Ueda, Tokyo, both of Japan, assignors to Kabushiki Kaisha Medos Kenkyusho, Tokyo, Japan

Filed Oct. 10, 1980, Ser. No. 195,735

Claims priority, application Japan, Oct. 20, 1979, 54/145299[U]

Int. Cl.³ A61B *1/00*

U.S. Cl. 128—4 **3 Claims**



1. A curvable pipe assembly for an endoscope comprising:
a first curvable section having a top end adapted to be coupled to a tip end part of said endoscope;
a second curvable section arranged in succession with said first curvable section and having a free end;
each of said first and second curvable sections comprising a plurality of articulation rings juxtaposed by pivotally supporting adjacent articulation rings at points so that said first and second curvable sections are bendable in four directions,
the free end of said second curvable section being adapted to be connected to a flexible tube of said endoscope;
two pairs of stay coils located in said second curvable section and having ends fastened to the connecting point of said first and second curvable sections;
two pairs of pull strings disposed in said two pairs of stay coils, said pull strings having first ends fastened to the top end of said first curvable section and said pull strings adapted to extend through said flexible tube to a manual operation unit of said endoscope, movement of said pull strings effecting movement of said first curvable section in said four directions;
said stay coils preventing said movement of said pull strings from moving said second curvable section in any of said four directions.

4,351,324

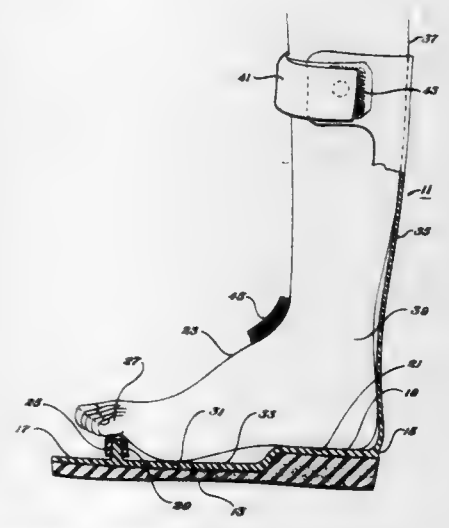
THERAPEUTIC WALKING DEVICE

Arie J. Bronkhorst, Abilene, Tex., assignor to David L. Buhrmann, Abilene, Tex.

Filed Mar. 12, 1981, Ser. No. 243,182

Int. Cl.³ A61F *3/00*

U.S. Cl. 128—80 J **3 Claims**



1. A therapeutic walking device, comprising:
a platform having a lower surface that is generally flat;
the platform having an upper surface that includes a toe section having the shape of a berm protruding upwardly from the platform near the forward end of the platform and extending transversely across the platform for supporting the toes of the user;
the platform having a heel section protruding upwardly from the platform at the rearward end for supporting the heel of the user, the forward end of the heel section being spaced from the rearward end of the toe section, defining a recessed section between the toe section and heel section for reducing pressure on the user's sole between the toes and heel while standing;
a channel shaped leg section extending upwardly from the rearward end of the heel section for positioning against the rearward side of the calf of the user; and
securing means for removably securing the device to the foot and calf of the user.

4,351,325

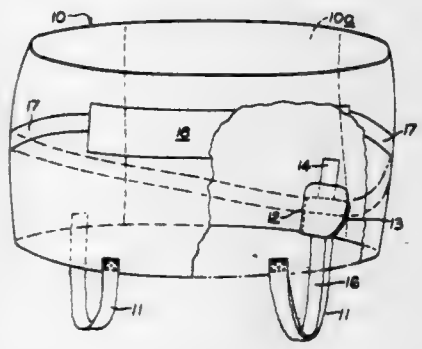
HERNIA SUPPORT

Trevor E. Walker, Con Amore, St. Georges Rd., Donnington, Shropshire, England

Filed Jan. 5, 1981, Ser. No. 222,551

Int. Cl.³ A61F *5/24*

U.S. Cl. 128—96 **7 Claims**



1. A herina support including a belt for securely encircling the wearer's body including an area comprising and substan-

tially surrounding the hernia in use, a pad within the belt having an inner face shaped to bear evenly on the whole of said area and having a strap extending from a lower edge portion of the pad to pass between the wearer's legs in use and secured to the belt in the region of the wearer's back, and a substantially rigid stay member located between the pad and the belt inner face with a first flexible connection between its upper edge and a transverse upper region of the outer face of the pad and a second flexible connection between its lower edge and the belt inner face, whereby movement tending to displace the belt upwards and/or outwardly from said area is accompanied by angling of the stay in reaction to the pull of said strap thereby urging the pad away from the belt inner face to maintain or increase operative even pressure of the pad on the whole of said area.

4,351,326

COPPER WIRE FOR INTRAUTERINA CONTRACEPTIVE DEVICES AND A METHOD FOR MANUFACTURING THE SAME

Ahti A. Kosonen, Pori, Finland, assignor to Outokumpu Oy, Helsinki, Finland

Filed Oct. 3, 1980, Ser. No. 193,484

Claims priority, application Finland, Apr. 2, 1980, 801073

Int. Cl.³ B22F *3/00;* A61F *5/46*

U.S. Cl. 128—130 **1 Claim**

1. A method for preventing conception comprising placing in the uterus an intrauterine contraceptive device having a wire form a corrosion-resistant core wire of some ductile metal nobler than copper and a coating of copper fixed onto the core wire by means of a thin diffusion layer.

4,351,327

DEVICE FOR CONNECTION TO A RESPIRATORY GAS LINE

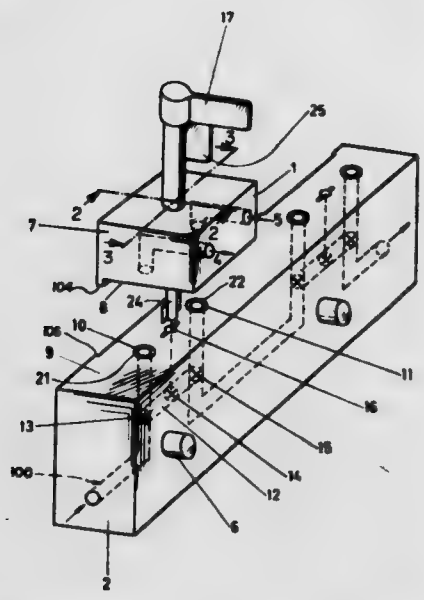
Gerhart Rinne, Stockelsdorf, and Ulrich Heim, Reinfeld, both of Fed. Rep. of Germany, assignors to Drägerwerk Aktiengesellschaft, Fed. Rep. of Germany

Filed Jan. 16, 1981, Ser. No. 225,538

Claims priority, application Fed. Rep. of Germany, Feb. 2, 1980, 3007755

Int. Cl.³ A61M *16/00*

U.S. Cl. 128—200.14 **14 Claims**



1. A device for connection to a respiratory gas line comprising:

a terminal board having a first engagement surface thereon and a respiratory gas line defined therein with a first pair of connecting lines extending from the respiratory gas line to the first engagement surface and a recess opening;

an equipment unit connectable to the respiratory gas line for receiving gas therefrom, treating the gas received and returning treated gas to the respiratory gas line, said unit having an adapter with a second engagement surface and a second pair of connecting lines extending to the second engagement surface for receiving and returning gas to and from said unit;

alignment means on said adapter and terminal board for aligning said first pair of connecting lines with said second pair of connecting lines when said first engagement surface is engaged with said second engagement surface;

a valve element movable in said terminal board from an "on" position for establishing flow in said first pair of connecting lines between said respirator gas line and said first engagement surface, and to an "off" position for establishing communication between said first pair of connecting lines and blocking communication of said first pair of connecting lines to said first engagement surface; and

a control lever movably mounted in said adapter extendible through said recess opening into engagement with said valve element when said first and second engagement surfaces are engaged with each other to move said valve element.

4,351,328

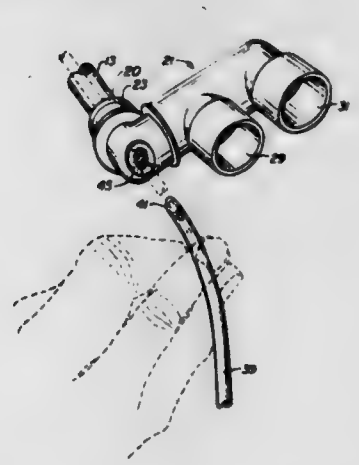
SIMULTANEOUS RESPIRATION AND ENDOTRACHEAL SUCTIONING OF A CRITICALLY ILL PATIENT

Balazs, I. Bodai, Sacramento, Calif., assignor to Sontek Industries, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 134,528, Mar. 27, 1980, abandoned. This application Nov. 7, 1980, Ser. No. 204,841

Int. Cl.³ A61H *31/00;* A61M *25/00*

U.S. Cl. 128—202.16 **24 Claims**



1. A ventilator system, comprising:

a conduit adapted to be connected between a trachea tube and a respirator and having an opening in a side wall of said conduit near the trachea tube,

a length of bendable suction tubing having a valve located a distance from a free end of the tube, said valve being actuatable between positions opened and closed to fluid flow therethrough, and

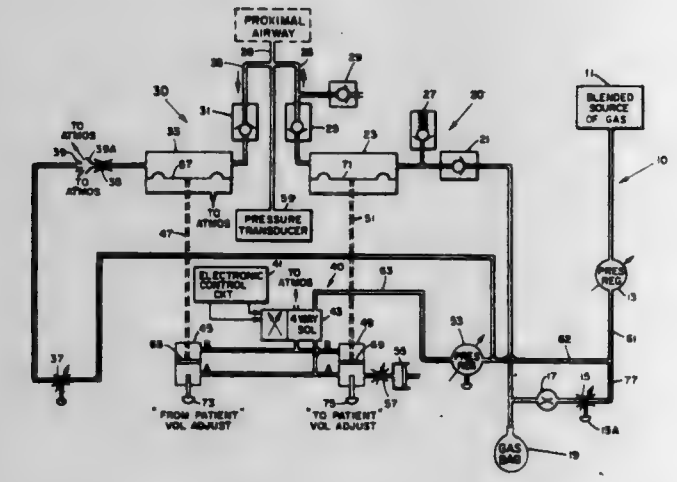
means installed in said opening for receiving said free end of the suction tube therethrough for passage through said conduit into the trachea tube, said receiving means being characterized by substantially sealing said opening in the absence of the suction tube being positioned therein, by permitting insertion of the tube therethrough by pushing along its length in a manner to form a substantial seal between the tube and conduit without any further manipulation, and by permitting withdrawl of the suctioning tube therefrom by hand with a resulting substantial resealing of said opening upon withdrawl of the tube without any further manipulation,

whereby endotracheal suctioning may be periodically accomplished through the ventilator conduit without having to disconnect the patient from the respirator.

4,351,329
HIGH FREQUENCY BREATH PUMP

Raymond A. Ellestad, Rialto, and Harold U. Bartels, Riverside, both of Calif., assignors to Bear Medical Systems, Inc., Riverside, Calif.

Filed Nov. 6, 1980, Ser. No. 204,435
Int. Cl.[3] A61M *16/00*
U.S. Cl. 128—204.21 6 Claims



1. Apparatus for pumping breathable gas from a pressurized source into and out of the proximal airway of a patient, comprising:

conduit means adapted for fluid connection to said proximal airway;

inhalation means, fluidly connected between said source and said conduit means, for alternately (a) receiving a first selected volume of gas from said source during an expiratory phase of the respiratory cycle of said patient, and (b) delivering said first selected volume of gas to said conduit means during the subsequent inspiratory phase of the respiratory cycle;

exhalation means, fluidly connected to said conduit means, for alternately (a) withdrawing a second selected volume of gas from said conduit means during an expiratory phase of said respiratory cycle, and (b) venting said second selected volume of gas to atmosphere during the next inspiratory phase of said respiratory cycle;

driving means for driving in synchronism both of said inhalation and exhalation means alternately forcing gas therefrom during a corresponding inspiratory phase and drawing gas thereto during a corresponding expiratory phase; and

volume adjustment means for independently adjusting said first and second selected volumes.

4,351,330
EMERGENCY INTERNAL DEFIBRILLATION

Eugene N. Scarberry, 2834 Durban, Houston, Tex. 77043

Continuation-in-part of Ser. No. 873,517, Jan. 30, 1978, Pat. No. 4,231,365. This application Sep. 12, 1980, Ser. No. 186,412
Int. Cl.[3] A61M *25/00*
U.S. Cl. 128—207.15 17 Claims

1. Emergency medical apparatus, comprising:

a first electrode means adapted for positioning internally of a patient at a location above a heart,

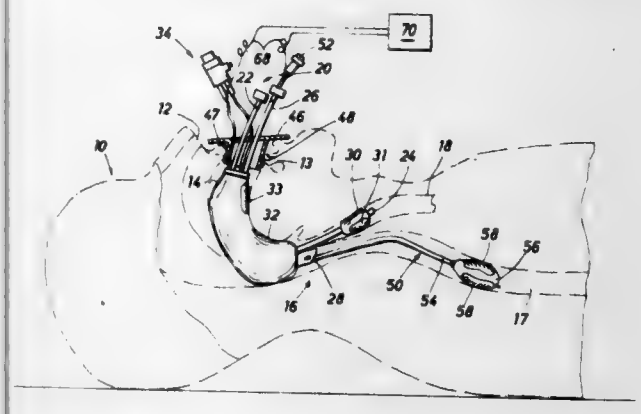
first means for urging said first electrode means into electrical contact with an adjacent body portion of said patient,

a second electrode means adapted for positioning within an esophagus at a location below said heart,

second means for urging said second electrode means into electrical contact with said esophagus,

defibrillating means for energizing said first and second electrode means, and

said first and second electrode means being relatively positionable to obtain electrical current from said defibrillating

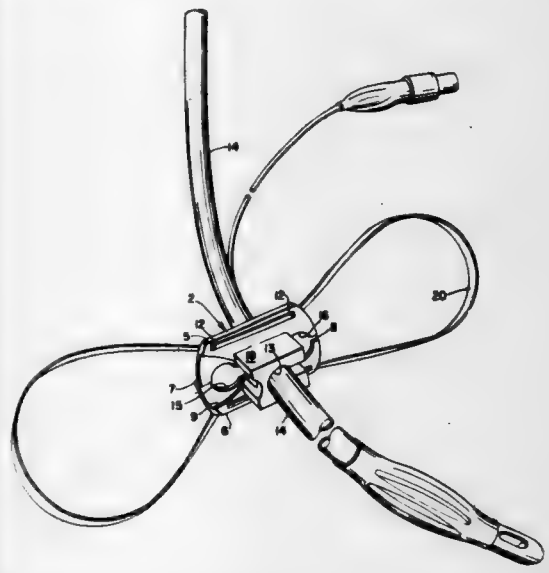


means and within said heart effective to terminate fibrillation of said heart.

4,351,331
ENDOTRACHEAL TUBE HOLDER AND BITE BLOCK

Gordon A. Gereg, 557-A Blue Church Rd., Coopersburg, Pa. 18036

Filed Oct. 31, 1980, Ser. No. 202,696
Int. Cl.[3] A61M *25/02*
U.S. Cl. 128—207.17 9 Claims



1. A tube holder for use with an endotracheal tube adapted to be inserted through the mouth of a patient, said holder being made as a one-piece structure of resilient material and capable of being moved from a locked position to an unlocked position, said holder comprising a tubular member having an outwardly projecting flange at one end thereof, said tubular member and flange having a bore extending therethrough for receiving said tube, said tube member being split axially along its entire length on one side, said flange having a first split extending from said bore to its peripheral edge and being continuous with said split in said tubular member, said flange also having a second split opposite said first split extending from said tubular member side opposite said one side defining a pivot for said tubular member to its peripheral edge, said first and second split defining alignable abutting surfaces, said tubular member and flange, and connection means for fixing said tube holder on a a patient, whereby said tube holder is unlocked by twisting said flange on either side of said second split and moving said abutting surfaces out of alignment and rotating said flange and tubular member about said pivot thereby causing said abutting surfaces defined by said first split to separate to permit insertion or removal of said tube into or from said bore and said holder is locked by pivoting said tubular member and flange in the opposite direction thereby causing said abutting surfaces defined by said second split to align.

4,351,332

SPLIT NUT FOR INJECTOR

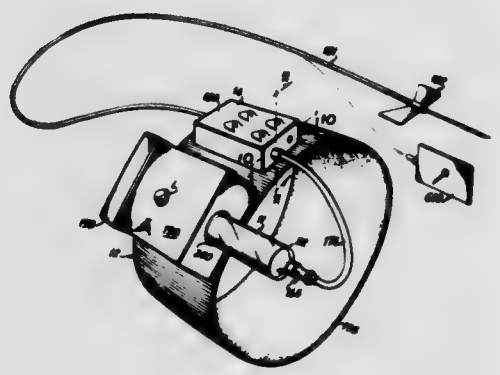
Douglass G. Whitney, 2518 W. Wesley Rd., and John K. Martin, III, 2837 Ridge Wood Cir., both of Atlanta, Ga. 30327

Division of Ser. No. 1,091, Jan. 8, 1979, Pat. No. 4,273,122, which is a continuation-in-part of Ser. No. 741,528, Nov. 12, 1976, Pat. No. 4,150,672, and Ser. No. 964,953, Nov. 30, 1978, Pat. No. 4,235,235. This application Mar. 27, 1981, Ser. No. 248,567

Int. Cl.[3] A61M 5/20

U.S. Cl. 128—214 F

5 Claims



1. Apparatus for injecting fluid into a patient at an average prescribed rate over a prolonged period of time comprising:

a housing;

carriage means defining a fluid chamber therein carrying fluid to be dispensed and an outlet from said fluid chamber connected to the patient, said carriage means defining a nut receiving opening thereon having a prescribed size and shape and including a piston slidably mounted in said fluid chamber for forcing fluid from said outlet as said piston is moved toward said outlet;

connection means for removably attaching said carriage means to said housing;

an externally threaded drive member defining an outboard end thereon adapted to engage said piston;

an internally threaded split nut unit mounted on said housing and selectively movable between a closed position threadedly engaging said externally threaded drive member and an open position threadedly disengaging said externally threaded drive member, said internally threaded split nut unit having an external size and shape and located with respect to said connection means such that, when said split nut unit is in its closed position threadedly engaging said drive member, said nut receiving opening in said carriage means will just be received over said split nut unit and said connection means maintains said carriage means over said split nut unit while said carriage means is attached to said housing to keep said split nut unit in its closed position;

driving means operatively connected to said externally threaded drive member for selectively rotating said drive member with respect to said split nut unit to cause said drive member to axially move with respect to said split nut unit and to cause the outboard end of said drive member to engage and move said piston toward said outlet and force fluid out of said outlet.

4,351,333

PERITONEAL FLUID TREATMENT APPARATUS, PACKAGE AND METHOD

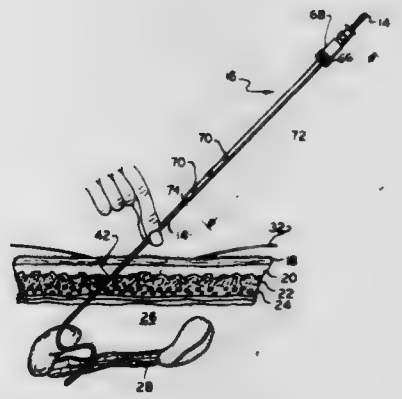
Harrison Lazarus, 1474 Penrose Dr., Salt Lake City, Utah 84103, and James A. Nelson, 1708 Forest Hills Dr., Salt Lake City, Utah 84106, assignors to Harrison Lazarus and James A. Nelson, both of Salt Lake City, Utah

Continuation of Ser. No. 945,525, Sep. 25, 1978, abandoned, which is a division of Ser. No. 722,752, Sep. 13, 1976, Pat. No. 4,128,173, which is a continuation of Ser. No. 626,323, Oct. 28, 1975, abandoned. This application Aug. 22, 1980, Ser. No. 181,219

Int. Cl.[3] A61M 5/00

U.S. Cl. 128—214.4

2 Claims



1. A method for peritoneal fluid treatment in which:

a portion of the skin surface about the peritoneum is sterilized using skin preparation means;

a local anesthetic is administered to said sterilized skin surface;

a nick-type incision is made in the area of said sterilized skin using incision means;

a hollow first cannula is placed through said incision and just slightly into the peritoneal cavity;

flexible guide means is inserted into the peritoneal cavity through said first cannula well into said cavity, said guide means being from about 20 to 50 centimeters in length and from about 0.5 millimeters to about 2 millimeters in diameter for insertion into the peritoneal cavity through said first cannula, said guide means being sized in cross-section to fit within said first cannula and in length to be substantially longer than said first cannula, said guide means having a first end which is blunt for insertion into the peritoneal cavity, and said guide means being a stainless steel piano-wire-like wire made of a refractory metal having substantial flexibility from its first end to a point from about one-third to one-half the length of said guide means measured from said first end and thereafter said guide means has less flexibility along its length to its second end;

said first cannula is removed leaving said guide means inserted;

a second cannula which is elongated and flexible is inserted into the peritoneal cavity over said guide means, said second cannula being a flexible plastic-like tube having a plurality of spaced apart apertures formed in it from its second end to a point about one-third to one-half along its length;

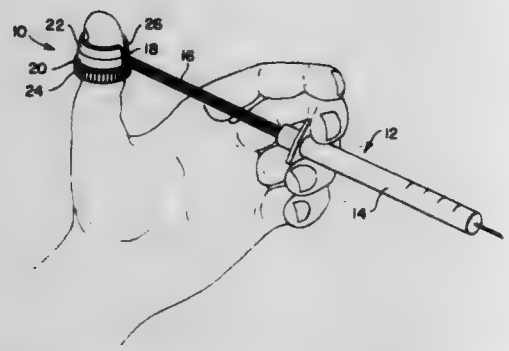
said guide means is removed; and

fluid operation means is connected to said second cannula by connector means adapted to one end of said cannula to effect fluid treatment operations.

4,351,334
SAFETY DEVICE FOR SECURING THUMB OR FINGER TO A SYRINGE

Joseph T. Inglefield, Jr., 210 E. Broad St., Falls Church, Va. 22046; Joseph T. Inglefield III, 4923 Arbor Ridge, San Antonio, Tex. 78228; Effie J. Heulitt, 343A Ogden Ave., Jersey City, N.J. 07307; David L. Inglefield, 6329 Linway Terr., McLean, Va. 22102

Filed Dec. 17, 1980, Ser. No. 217,563
Int. Cl.[3] A61M *5/00*
U.S. Cl. 128—218 PA 15 Claims



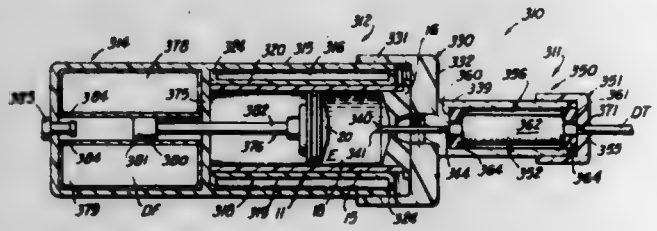
1. A digital device for attachment to a syringe having a barrel, a plunger having a first end positioned in the barrel for reciprocation therein and a second end external to the barrel and having a head connected thereto, said digital device comprising:

a unitary tubular member adapted to receive a thumb or finger of a user and having first and second open ends and a slot defined in the wall by said tubular member for receiving the plunger, said slot extending from a closed terminus intermediate the first and second ends of said tubular member to an open terminus at the second end of said tubular member.

4,351,335
INJECTION DEVICE AND METHOD

Douglass G. Whitney, 2518 W. Wesley Rd., and John K. Martin, III, 2837 Ridge Wood Cir., both of Atlanta, Ga. 30327

Division of Ser. No. 30,277, Apr. 16, 1979, Pat. No. 4,267,836, which is a division of Ser. No. 741,528, Nov. 12, 1976, Pat. No. 4,150,672. This application Mar. 23, 1981, Ser. No. 246,213
Int. Cl.[3] A61M *5/20*
U.S. Cl. 128—218 A 4 Claims



1. An injector to inject treatment fluid into a patient comprising:

carriage means defining a fluid chamber therein carrying the treatment fluid to be injected into the patient and an injection outlet from said fluid chamber connected to the patient;

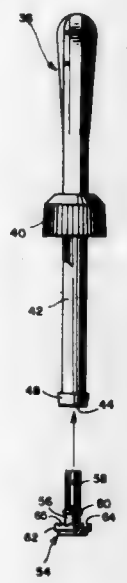
an injection piston slidably mounted in said fluid chamber for forcing treatment fluid from said injection outlet into the patient as said injection piston is moved toward said injection outlet; and

drive means on said carriage means for moving said injection piston toward said outlet, said drive means including a reservoir; a drive fluid under pressure in said reservoir; a drive cylinder; a drive piston slidably mounted in said drive cylinder, and a piston rod connected to said drive piston projecting from said drive cylinder to engage said injection piston to urge said injection piston toward said injection outlet when said drive piston extends said piston rod from said drive cylinder, said drive cylinder defining a drive fluid inlet port there in communicating with the drive fluid in said reservoir and through which the drive fluid is introduced into said drive cylinder to urge said drive piston so as to extend said piston rod into engagement with injection piston and move said injection piston toward said injection outlet, said inlet port arranged so that said drive piston blocks said inlet port when said piston rod is retracted to prevent the drive fluid from extending said piston rod; and manually engagable displacement means for displacing said drive piston off of said inlet port to admit the drive fluid into said drive cylinder and extend said piston rod to move said injection piston toward said injection outlet.

4,351,336
TWIST BOTTLE DISPENSER

Vincent R. Sneider, 3422 Hallcrest Dr., NE., Atlanta, Ga. 30319

Filed Aug. 4, 1980, Ser. No. 174,806
Int. Cl.[3] A61M *1/00*
U.S. Cl. 128—232 10 Claims



1. A syringe or like dispensing apparatus characterized as having an axially movable nozzle with a contoured exterior end with discharge means, this nozzle having a tubular stem portion with an interior axial bore, this tubular portion having a finished inner end and providing therewith a sealing end portion, and a cap member associated with said nozzle and having a retaining aperture sized to be slidable along the tubular stem portion of the nozzle, said cap member having a tubular collar member portion extending from the retaining aperture and for a determined distance and on the end of this tubular collar portion finished so as to provide a stop end substantially normal to the axis of the collar member, and with said cap member having means for securing the cap member and nozzle to a fluid container for the discharge of a fluid in said container, the syringe having a valve construction selectively actuatable for the discharge of the fluid contents of the container, the valve construction including:

(a) a valve plug having a stem portion slidable within said axial bore of the tubular stem portion of the nozzle, the stem portion of the valve plug having longitudinal fluid passageways formed along and in the exterior surface of said stem portion, these passageways providing means for conducting fluid from the container to the interior of the nozzle when these passageways are exposed to the fluid within the container;

(b) a first seal means on said valve plug and disposed circumferentially around said valve plug and below said longitudinal passageways, this seal means adapted to engage the interior bore of the tubular portion of the nozzle and slide therealong and therein;

(c) a second seal means formed on said valve plug and at a determined distance from said first seal means and substantially at the end opposite the stem portion, this seal means extending outwardly and having surface means

disposed to engage the finished stop end on the nozzle to effect a fluid seal;

(d) an annular flange portion formed on said valve plug and outwardly of said second seal means and sized and disposed to engage the stop end of the collar member of the cap, and

(e) cooperating means formed on the stop end of the collar and the annular flange of the valve plug, said cooperating means providing a fluid pathway from the container to the exterior of the valve plug, and the first and second seal means is effective when the valve plug is fully inserted and there is no fluid flow through the cooperative means to the interior of the nozzle, outward partial movement of the nozzle makes the second seal means ineffective while the first seal prevents fluid flow into the fluid passageways and further outward movement of the nozzle renders the first seal means ineffective and no longer inhibits fluid flow as and when the first seal means is moved from in way of the interior bore of the tubular portion of the nozzle and fluid flows into the longitudinal fluid passageways formed in the stem of the valve plug and into the interior of the nozzle for discharge therefrom.

4,351,337

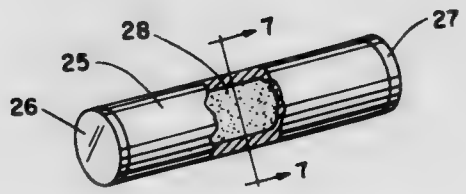
BIODEGRADABLE, IMPLANTABLE DRUG DELIVERY DEVICE, AND PROCESS FOR PREPARING AND USING THE SAME

Kenneth R. Sidman, Wayland, Mass., assignor to Arthur D. Little, Inc., Cambridge, Mass.

Continuation of Ser. No. 596,444, Jul. 16, 1975, abandoned, which is a continuation-in-part of Ser. No. 361,182, May 17, 1973, abandoned. This application Sep. 11, 1980, Ser. No. 186,152

Int. Cl.³ A61K 9/00

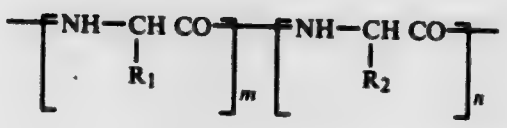
U.S. Cl. 128—260 **38 Claims**

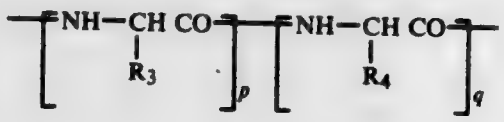


1. An implant device for the controllable release of at least one substance into a living host into which it is implanted, comprising

(a) a substance to be released within a living host; and

(b) a matrix material prepared from a block copolymer of the formula

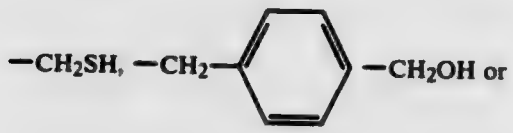




where R_1, R_2, R_3 and R_4 are

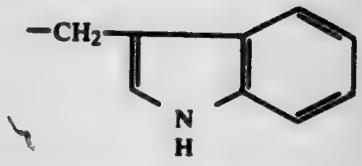
—H, —CH_3, —CH_2COOH, —CH_2CH_2COOH,

—$CH_2C(CH_3)CH_3$, —$CH_2CH_2CH_2CH_2NH_2$, —$CH_2CH_2SCH_3$,

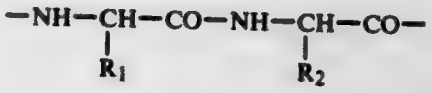


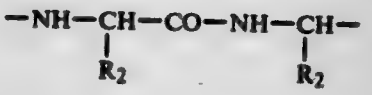
—CH_2SH, —CH_2— —CH_2OH or

-continued



and m, n, p and q range between 1 and 100, or a copolymer of two or more α-amino acids distributed at random along the chain of the formula





wherein R_1 and R_2 are defined above, which is biocompatible and biodegradable within the host environment into which it is implanted; does not form covalent bonds with said substance to be released; has an average molecular weight of 20,000 to 1,000,000; and is essentially free of any carrier of said substance, said substance being distributed within said matrix to provide a controlled rate of release for systemic utilization within said host by diffusion, hydrolysis or a combination thereof of said matrix material said implant device being shaped as an injectable configuration.

4,351,338

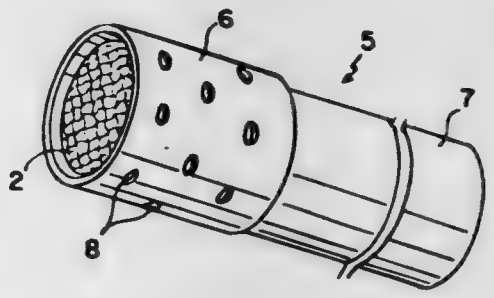
VAGINAL TAMPON

Pierre Langlois, 24, rue de Clichy, 75009 Paris, and Marc Mollet, 38, rue des Chevaliers de Saint Jean, 91100 Corbeil, both of France

Filed May 21, 1980, Ser. No. 151,893

Int. Cl.³ A61F 13/20

U.S. Cl. 128—285 **15 Claims**



1. A vaginal contraceptive tampon, comprising a synthetic sponge member made of a cellular material having semi-open cells and impregnated with a compound of a spermicidal composition and of a delaying medium having gelifying properties when moistened;

the semi-open cells providing only sinuous intricate internal communication paths among the cells and to exterior, thereby lowering emission of the compound when gelified and acting to delay releasing action of the delaying medium and due to which the sponge member, if compressed in a not-moistened condition remains more durably compressed yet rapidly swells when moistened, all in comparison with the same sponge member if made of open cell foam.

4,351,339
TAMPON WITH A PROTECTIVE ACCORDION-STYLE COVER

Vincent R. Sneider, 3422 Hallcrest Dr., Atlanta, Ga. 30319

Filed Apr. 14, 1981, Ser. No. 254,102
Int. Cl.[3] A61F *13/20*
U.S. Cl. 128—285 7 Claims



1. A tampon assembly adapted for use in and with a body opening, said tampon assembly including:

(a) a helically-wound absorbent member providing a body portion with said absorbent member being close-wound with the side portions thereof substantially parallel and in an assembled condition providing a substantially continuous and contiguous outer surface, said member having sufficient memory to withstand insertion manipulation;

(b) a withdrawal string attached at one end to that end on the helically-wound absorbent member that is disposed to face said body opening;

(c) a permeable cover having a closed end contoured and prepared for entry into said body opening, said cover disposed adjacent to the absorbent member and enclosing and retaining said withdrawal string, the cover having a plurality of pleated or accordion folds providing overlays arranged so that in an inserting condition the pleats or folds in the cover are disposed to remain in their overlaid condition and remain so during use, and with this cover closed sufficiently at a second end so as to snugly capture the withdrawal string to prevent unwanted exiting of the absorbent material through said closure, and

(d) means for inserting the tampon into a body opening and when the tampon is to be withdrawn from said body opening the withdrawal string is grasped and pulled to commence withdrawal of the tampon whereat the helically-wound absorption member is sufficiently uncoiled to at least partially collapse said member into a smaller diameter with the attached string also engaging and withdrawing the pleated cover in which the pleats unfold as the overlaid cover is moved outwardly to bring said cover into a substantially straightened condition and causing the coiled absorbent material to be at least partially straightened out thus removal from the body opening is comfortably achieved due to a reduction of diameter of the tampon.

4,351,340
PANTY LINER CONSTRUCTION

Syble A. McLeod, Box 64, Iron City, Ga. 31759

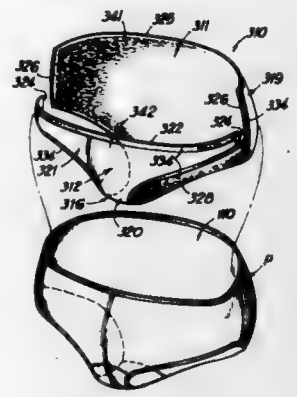
Division of Ser. No. 914,593, Jun. 12, 1978, Pat. No. 4,227,531, which is a continuation-in-part of Ser. No. 825,578, Aug. 18, 1977, abandoned. This application Oct. 7, 1980, Ser. No. 194,875
Int. Cl.[3] A61F *13/16;* A41B *9/04*
U.S. Cl. 128—288 4 Claims

1. A panty liner for use in a panty having a fabric layer, and defining a waist opening at its top, and a pair of leg openings at its bottom comprising:

a non-stretchable panel assembly including a front section, a back section and a crotch section joining the front and back sections; said panel assembly adapted to fit inside and conform generally to the shape of the panty defining a pair of leg cutouts therein to conform to a portion of the leg openings in the panty when the panty liner is installed in the panty, said front section defining opposed front side edges thereon and a front upper edge thereon extending between said front side edges; and said back section defining opposed rear side edges thereon and a rear upper edge thereon extending between said rear side edges, said panel assembly sized so that when said panel assembly is positioned inside the panty, said leg cutouts conform to a portion of the leg openings in the panty, said front and rear side edges extend upwardly from the top of the leg openings in the panty toward the waist opening with said front and rear side edges over each leg opening in the panty spaced from each other, and said front upper edge spaced below and generally parallel to the waist opening above the tops of the leg openings in the panty; said panel assembly including:

an interior liquid absorbent layer; and

an exterior liquid impermeable layer between and separating the fabric layer of the panty from said interior absorbent layer to prevent liquids absorbed by said interior absorbent layer from penetrating the fabric layer of the panty; and

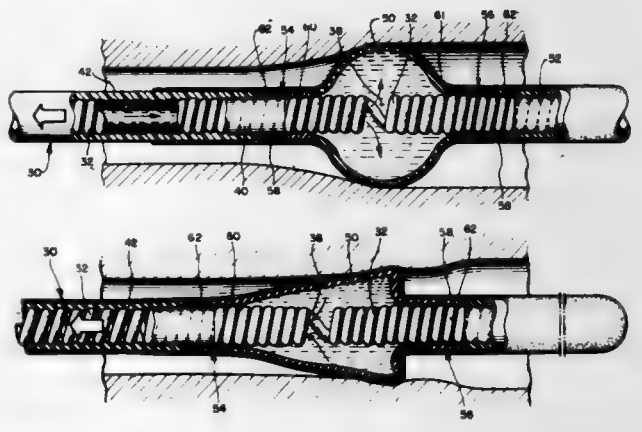


adhesive strip means extending along said front and rear side edges and said front and rear upper edges on the exterior of said panel assembly to stick said panel assembly to the fabric layer of the panty and thus removably attach said panel assembly to the fabric layer of the panty so that said panel assembly is supported on and conforms to the fabric layer whereby relative movement between said front and back side edges of said front and back sections of said panel assembly over the leg openings is permitted to allow the panty liner to conform to different wearer body configurations in the same size range and relative movement of said upper edge on said front section with respect to the waist opening in the panty is permitted to permit the panty liner to adjust to different abdomen configurations in the same size range.

4,351,341
BALLOON CATHETER

Edward M. Goldberg, Glencoe, and Seymour Bazell, Skokie, both of Ill., assignors to UreSil Company, Morton Grove, Ill.

Filed Aug. 15, 1980, Ser. No. 178,305
Int. Cl.[3] A61M *25/00*
U.S. Cl. 128—348 25 Claims



1. An embolectomy catheter for insertion in a vascular passage, said catheter adapted to be pulled through said vascular

passage to remove material therefrom, said catheter comprising:

an inflatable balloon sized to fit within the body passage;

an elongated support member having a diameter sized to fit within the body passage; and

means for securely mounting the balloon to the support member;

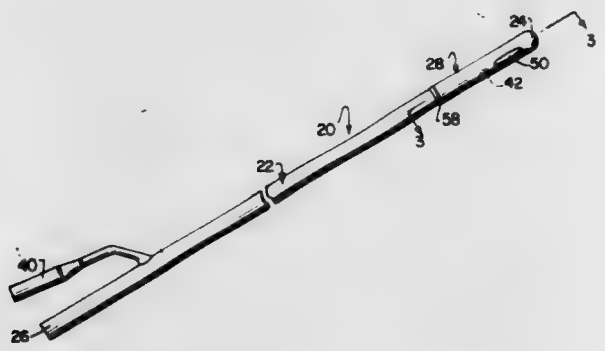
said support member having means included therein for permitting the support member to perceptibly elongate in response to an applied stretching force greater than a first value while exhibiting substantially no perceptible elongation in response to an applied stretching force less than a second value, no greater than the first value, said second value chosen to allow the catheter to be pulled through the vascular passage without perceptibly elongating the support member such that the support member does not perceptibly elongate in use when safe stretching forces are applied to the support member in pulling the balloon through the vascular passage, said first value chosen such that the support member perceptibly elongates when an excessive stretching force is applied to the support member in pulling the balloon through the vascular passage, thereby providing a tactile indication to a user that an excessive force is being applied.

4,351,342

BALLOON CATHETER

Bruce E. Wiita, Box 3669, Jupiter, Fla. 33458, and J. Michael Teets, 12104 Gardenway G-7, Palm Beach Gardens, Fla. 33410

Filed Jun. 10, 1981, Ser. No. 272,127
Int. Cl.³ A61M *25/00*
U.S. Cl. 128—349 B **20 Claims**



1. A catheter, comprising:

an elongated tube having a wall defining a main lumen therein, a distal end insertable into a body and a proximal end;

at least one port extending through said wall providing fluid communication between said main lumen and the exterior of said tube, said port being defined by edges and being located adjacent said distal end;

an inflatable balloon having a tubular portion, one closed end and one open end, said balloon being mounted on and enveloping said tube distal end, and being adhered to said tube on the side of said port remote from said distal end about said open end;

at least one opening extending through said tubular portion of said balloon and aligned with said port and being defined by a periphery, said periphery of said opening being completely adhered to said edges of said port; and

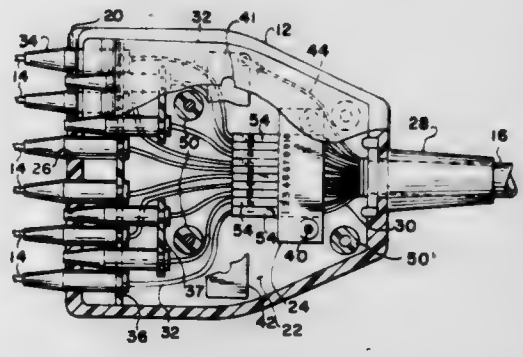
an inflation lumen in said tube for conducting fluid pressure to and from said balloon.

4,351,343

ECG PATIENT MONITORING LEAD ASSEMBLY

Michael R. Parrillo, Endwell, N.Y., and John C. Colwell, Hoffman Estates, Ill., assignors to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Sep. 2, 1980, Ser. No. 183,137
Int. Cl.³ A61B *5/00*
U.S. Cl. 128—695 **18 Claims**



1. An ECG patient monitoring lead assembly comprising:

a plurality of individually replaceable patient monitoring leads;

a junction box for receiving a plurality of ECG leads and said plurality of patient monitoring leads;

connection means in said junction box for electrically interconnecting corresponding ones of said monitoring leads and said ECG leads; and

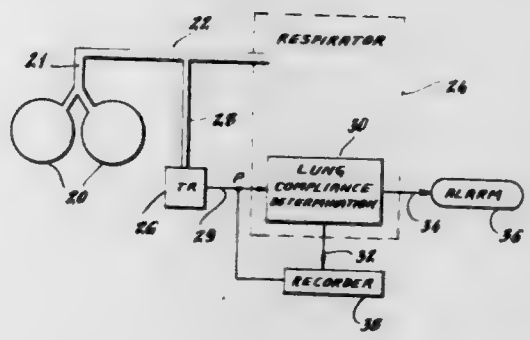
strain relief means independent of said connection means for isolating said connection means from forces transmitted by said patient monitoring leads.

4,351,344

METHOD AND APPARATUS FOR MONITORING LUNG COMPLIANCE

Alex Stenzler, Syosset, N.Y., assignor to Bio-Med Devices, Inc., Stamford, Conn.

Filed Nov. 13, 1980, Ser. No. 206,393
Int. Cl.³ A61B *5/08*
U.S. Cl. 128—720 **19 Claims**



1. A device for deriving an indication of the compliance of a patient's lungs while a respirator provides a supply of gas to the patient and with the use of a pressure sensor operatively coupled to the patient's airway to produce a pressure signal represenatative of the patient's airway pressure as a function of time during the inspiratory phase of the breathing cycle and wherein a slope of the pressure signal during the inspiratory phase is representative of the compliance of the patient's lungs, comprising:

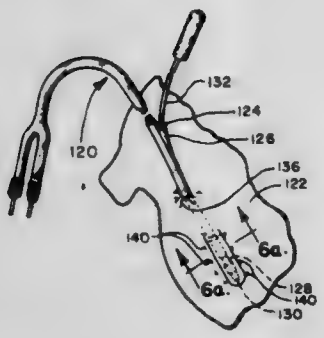
means responsive to the pressure signal for periodically effectively measuring said slope for respectively different breathing cycles and generating pressure wave index signals representative thereof as indicative of the compliance of the patient's lungs; and

means responsive to said pressure wave index signals to register an indication thereof.

4,351,345
METHODS OF SECURING ELECTRODES TO THE HEART

Andrew L. Carney, 222 Forest Ave., Oak Park, Ill. 60302

Continuation-in-part of Ser. No. 949,661, Oct. 10, 1978, abandoned. This application Dec. 19, 1979, Ser. No. 105,410
Int. Cl.[3] A61N *1/04*
U.S. Cl. 128—786 8 Claims



1. A method for securing cardiac leads to a heart which includes a ventricle which is in fluid communication with an associated atrium via a valve, said method comprising the following steps:

providing an atrial-ventricular pulse generator having an atrial lead and a ventricular lead;

gaining access to the atrium;

securing the atrial lead to the atrium to provide electrical contact between the pulse generator and the atrium via the atrial lead;

sugically creating an opening in the atrium;

passing the ventricular lead through the surgically created opening into the atrium, through the valve and into the ventricle to provide electrical contact between the ventricle and the pulse generator via the ventricular lead; and

closing the surgically created opening around the ventricular lead to secure the ventricular lead in place and to substantially prevent the leakage of blood out of the atrium around the ventricular lead.

4,351,346
PROCESS FOR THE PREPARATION OF AROMATIC SUBSTANCES

Ursula Brummer, Halstenbek, and Volker Heeman, Reinbek, both of Fed. Rep. of Germany, assignors to B.A.T. Cigaretten-Fabriken GmbH, Hamburg, Fed. Rep. of Germany

Filed Mar. 5, 1981, Ser. No. 240,853
Claims priority, application Fed. Rep. of Germany, Mar. 8, 1980, 3009031
Int. Cl.[3] A24B *3/12, 15/22, 15/24, 15/28*
U.S. Cl. 131—276 20 Claims

1. A process for the preparation of aromatic substances from an alcoholic chlorophyll and carotenoid containing extract from tobacco plant material comprising the steps of:

(a) removing the waxy diterpene components present on the surface of the tobacco plant,

(b) Extracting the diterpene free tobacco plant with alcohol;

(c) removing the chlorophyll from said extract, and

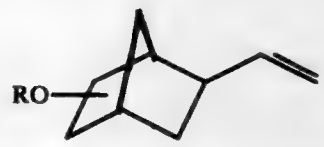
(d) exposing said extract to a source of ultraviolet light and to a source of oxygen.

4,351,347
ORGANOLEPTIC USES OF NORBORNYL ETHERS AND ESTERS

Mark A. Sprecker, Sea Bright, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 247,321, Mar. 25, 1981, Pat. No. 4,315,945, which is a continuation-in-part of Ser. No. 200,012, Oct. 23, 1980, Pat. No. 4,311,861. This application Oct. 13, 1981, Ser. No. 311,145
Int. Cl.[3] A24B *3/12, 15/30*
U.S. Cl. 131—276 3 Claims

1. A process for augmenting or enhancing the aroma or taste of a smoking tobacco comprising the step of adding to a smoking tobacco an aroma augmenting or enhancing quantity of a mixture of compounds represented by the structure:

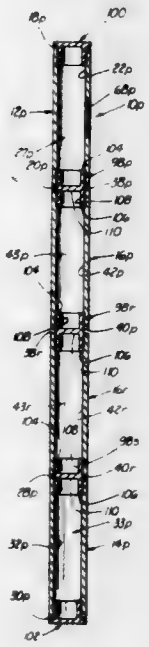


wherein in one of the molecules of the mixture the "OR" moiety exists at the "5" position on the norbornyl ring structure, and in the other of the molecules of the mixture the "OR" moiety exists at the "6" position on the norbornyl ring structure; and wherein R represents a moiety selected from the group consisting of acetyl, propionyl and allyl; and wherein in the mixture the R moieties are identical.

4,351,348
SURVIVAL STICK

Hoyt W. Axton, P.O. Box 614, Tahoe City, Calif. 95730

Filed Jan. 4, 1980, Ser. No. 109,570
Int. Cl.[3] A45B *7/00*
U.S. Cl. 135—66 2 Claims



1. A survival stick adapted for storing items comprising:

an upper section having an upper end, a lower end and an opening extending through the upper end and the lower end thereof and extending a distance therethrough, the opening being shaped and disposed to form a compartment in the upper section adapted for storing items;

a lower section having an upper end, a lower end and an opening extending through the upper end and the lower end thereof and extending a distance therethrough, the opening being shaped and disposed to form a compartment in the lower section adapted for storing items;

at least one intermediate section, each intermediate section having an upper end, a lower end and an opening extending through the upper end and the lower end thereof and extending a distance therethrough, the opening being shaped and disposed to form a compartment in the inter-

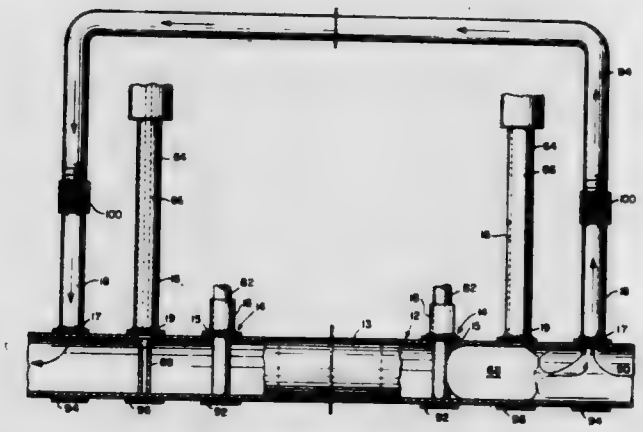
mediate section generally between the upper and the lower ends, the compartment being adapted for storing items, the upper end of one of the intermediate sections being removably connectable to the lower end of the upper section and the lower end of one of the intermediate sections being removably connectable to the upper end of the lower section and the upper end of the remaining intermediate sections being removably connectable to the lower end of the remaining intermediate sections for removably connecting the upper section, the intermediate section and the lower section to form a survival stick; and at least two collars, each having a base, one collar being insertable within a portion of the opening in the upper sections generally near the lower end of the upper section for connecting the collar to the upper sections and insertable within a portion of the opening in one of the intermediate sections generally near the upper end of the intermediate section for connecting the collar to the intermediate section thereby connecting the upper section to one of the intermediate sections, and one of the collars being insertable within a portion of the opening in the lower section generally near the upper end of the lower section for connecting the collar to the lower section and insertable with the opening in one of the intermediate sections generally near the lower end of the intermediate section for connecting the collar to the intermediate section and for connecting the lower section to one of the intermediate sections.

4,351,349

PIPE REPAIR KIT APPARATUS AND METHOD

Peter L. Minotti, R.D. 1, Box 75, Easton, Pa. 18042

Filed Nov. 10, 1980, Ser. No. 205,199
Int. Cl.³ F16L *55/10, 55/18;* F16K *43/00*
U.S. Cl. 137—15 **16 Claims**



14. A method for isolating a portion of a pipe requiring repair, comprising the steps of:

(a) securing a pair of first releasable reclosable gripping means about said pipe exterior at positions respectively upstream and downstream of said repair portion;

(b) boring first holes in said pipe at said respective first gripping means;

(c) inserting shafts across said pipe interior through said respective bored first holes;

(d) securing a pair of second releasable reclosable gripping means about said pipe exterior at positions respectively further upstream and downstream of said respective first gripping means;

(e) boring second holes in said pipe at said respective second gripping means;

(f) connecting said respective second holes with a bypass conduit for flow of said fluid around said pipe portion requiring repair;

(g) securing a pair of third releasable reclosable gripping means about said pipe exterior at positions respectively upstream and downstream of said repair portion, each of said third gripping means being between said respective first and second gripping means upstream and downstream of said repair portion;

(h) boring third holes in said pipe at said respective third gripping means;

(i) inserting inflatable bladder means into said pipe interior through said third holes; and

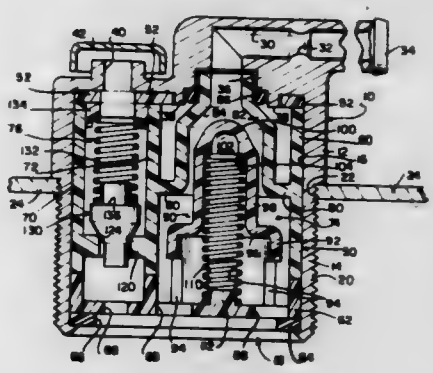
(j) inflating said respective bladder means until said respective bladder means contact said respective proximate shafts and occupy the cross sectional area of said pipe thereby blocking flow of fluid through said pipe portion requiring repair and causing flow of fluid through said bypass conduit.

4,351,350

VALVING ASSEMBLY FOR A LIQUID-CONTAINING TANK

Billy G. Crute, Connersville, Ind., assignor to Stant Inc., Connersville, Ind.

Filed Jan. 16, 1981, Ser. No. 225,848
Int. Cl.³ F16K *17/36*
U.S. Cl. 137—39 **14 Claims**



1. A valving assembly for a liquid-containing tank, comprising a housing generally divided into first and second axially extending passageways providing separate paths of communication between the inside and outside of the tank, the housing being formed to provide a first inwardly facing valve seat in the first passageway and a second axially outwardly facing valve seat in the second passageway, a first valve member positioned in the first passageway, a first spring for supporting the first valve member out of engagement with the first valve seat normally to open the first passageways when the tank is in an upright orientation, the first spring being calibrated to urge the first valve member into engagement with the first valve seat to close the first passageway when the tank is tilted downwardly to a predetermined angle relative to a horizontal plane, a second valve member positioned in the second passageway, and a second spring for yieldably urging the second valve member into engagement with the second valve seat normally to close the second passageway, the second spring being calibrated to provide movement of the second valve means out of engagement with the second valve seat when the pressure in the tank exceeds a predetermined superatmospheric level.

4,351,351

BREAKAWAY PIPE COUPLING WITH AUTOMATICALLY CLOSED VALVES

John F. Flory, Morris Township, Morris County, and Steven P. Woehleke, Convent Station, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Aug. 7, 1980, Ser. No. 175,946
Int. Cl.³ F16K *13/04*
U.S. Cl. 137—68 R **12 Claims**

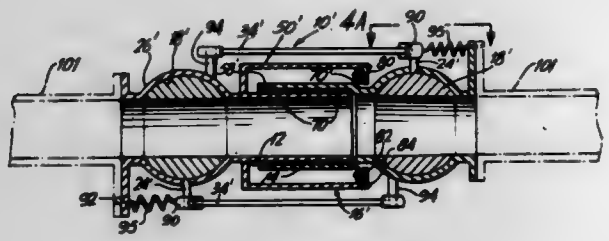
1. A breakaway pipe coupling comprising:

(a) first and second pipe sections, said first pipe section coaxially joining with said second pipe section in a sealed relationship;

(b) valve means situated within at least one of said pipe sections for regulating fluid flow therethrough;

(c) retaining means associated with said valve means for holding said valve means in an opened position when said first and second sections are joined together; and

(d) load control means extending between said first and second pipe sections for securing said sections together, said load control means including a cylindrical housing secured to one of said pipe sections and extending axially over the other of said pipe sections, a radially extending cutting collar formed at one end of said cylindrical housing, said cutting collar engaging an exterior portion of the



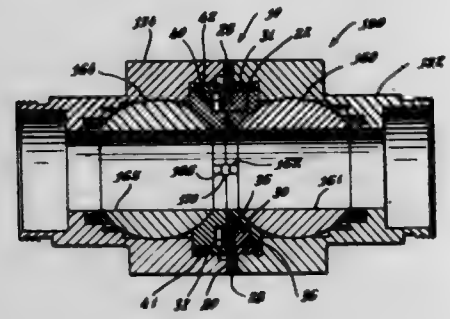
other of said pipe sections and cutting thereinto when said pipe sections separate, said load control means adapted to yield in response to a sustained tensile load exceeding a predetermined limit, thereby allowing said pipe sections to separate at a rate dependent on the magnitude and rate of said tensile loading and whereby said retaining means are disengaged and said valve means are permitted to shut, thereby terminating flow through said pipe sections at a rate proportional to the rate at which said sections separate.

4,351,352

FRANGIBLE CONNECTORS WITH INDEPENDENTLY SELECTABLE BENDING AND TENSION SEPARATION LOADS

Daniel T. Meisenheimer, Jr., 404 Longmeadow Rd., Orange, Conn. 06477

Division of Ser. No. 900,329, Apr. 26, 1978, Pat. No. 4,232,697.
This application Jul. 28, 1980, Ser. No. 172,530
Int. Cl.[3] F16K *13/04*
U.S. Cl. 137—68 R 3 Claims



1. A self-closing breakaway valve assembly comprising:

(A) a first valve housing having a first rotatable valve member rotatably mounted therein, said first valve housing and first rotatable valve member each having a bore formed therethrough, said bores being aligned when said first rotatable valve member is in an open position to provide a passage through said first valve housing, said first rotatable member spring biased to rotate to a closed position wherein the bores of said first rotatable valve member and said first valve housing are misaligned to block passage through said first valve housing;

(B) a second valve housing having a second rotatable valve member rotatably mounted therein, said second valve housing and said second rotatable valve member each having a bore formed therethrough, said bores being aligned when said second rotatable valve member is in an open position to provide a passage through said second valve housing, said second rotatable valve member spring biased to rotate to a closed position wherein the bores of said second rotatable valve member and said second valve housing are misaligned to block the passage through said second valve housing;

(C) a moment arm ring having axially-disposed inside and outside cylindrical surfaces, said moment arm ring closely received in an annular groove having mating cylindrical surfaces defined by said first valve housing thereby establishing an axially disposed interface therebetween, said first valve housing secured to said moment arm ring by tension-mode frangible means extending from the exterior surface of the first valve housing across at least the outer of the axially-disposed interface between said first housing and the moment arm ring, the moment arm ring also having a radially disposed surface;

(D) bending-mode releasable means connecting said second valve housing to said moment arm ring with a radially disposed surface of said second valve housing interfaced with the radially disposed surface of the moment arm ring; and

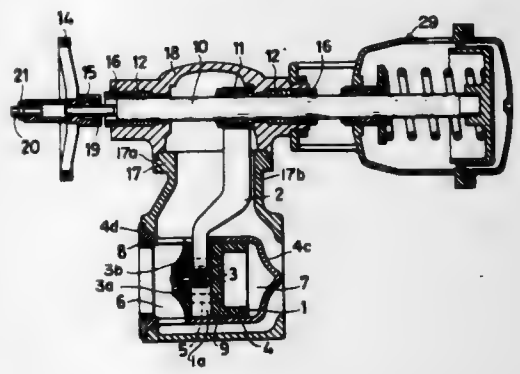
(E) trigger means holding said first and second rotatable valve members in their open positions when said first and second valve housings are secured together and releasing to permit said first and second rotatable valve members to rotate to their closed positions when said first and second valve housings are separated; whereby application of a tension load of sufficient magnitude causes the tension-mode frangible means to sever permitting the first and second valve housings to separate and the first and second rotatable valve members to close, and whereby application of a bending load of sufficient magnitude causes the bending-mode releasable means to sever and permit the first and second rotatable valve members to separate and the first and second rotatable valve members to close, wherein the magnitude of the tension load and bending load necessary to separate the first and second valve housings is independently selectable.

4,351,353

BALANCED-SPOTTER VALVE

Roberto Filidoro, Palese, and Nicola Di Sciascio, Bari, both of Italy, assignors to Nuovo Pignone S.p.A., Florence, Italy

Filed Jul. 24, 1980, Ser. No. 172,017
Claims priority, application Italy, Sep. 17, 1979, 25762 A/79
Int. Cl.[3] F16K *1/12*
U.S. Cl. 137—219 9 Claims



1. A control valve having ports through which fluid flows, comprising

plug means and an operating stem within the valve, wherein said stem is displaced from said plug and is adapted to move said plug means parallel thereto, and wherein said plug means is movable coaxially to the direction of fluid flow for uncovering and covering the ports in the valve to control the flow of fluid therethrough, and wherein said plug means includes bore means therethrough for balancing fluid pressure on its opposing ends and an intermediate radial cavity therein,

a lever between said stem and plug means fixedly connected to said steam and extending into said radial cavity of said plug means for transferring the movement of said stem to

said plug means, wherein said lever is flexible for adjusting and maintaining the parallel movement between said stem and plug means, and

point contact means in said radial cavity for connecting said lever to said plug means, wherein said point contact means further ensures the proper movement of said plug means.

4,351,354

SUPPLY CONTROL APPARATUS FOR A MIXING CHAMBER

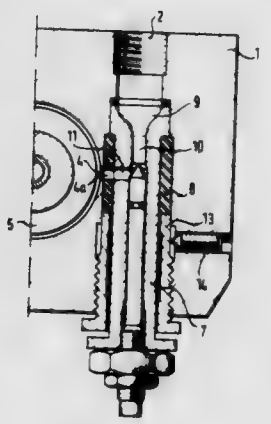
Karl-Heinz Hilterhaus, Georgsmarienhütte, and Reinhard Möser, Beim, both of Fed. Rep. of Germany, assignors to Chemie-Anlagenbau Bischofsheim GmbH, Osnabruck, Fed. Rep. of Germany

Filed Jul. 27, 1979, Ser. No. 61,424

Claims priority, application Fed. Rep. of Germany, Jun. 27, 1978, 2832901; Jun. 27, 1978, 2853783

Int. Cl.³ B08B *3/04*; F16K *19/00*

U.S. Cl. 137—240 **5 Claims**



1. A valve device for alternately supplying a chemical reactant to a mixing chamber associated therewith and a liquid for flushing the chamber to remove reactant and reaction products thereof from the mixing chamber, said valve device comprising a housing having a wall which encloses a substantially cylindrical bore, a first inlet through the housing into the bore for flow of chemical reactant, a first outlet in the housing spaced circumferentially from the first inlet for flow of reactant from said first inlet connected to said mixing chamber for transfer of said reactant to the mixing chamber through a conduit free from zones which create an area of quiesence where solid dispersed in the liquid flowing therethrough tends to settle out of the liquid and accumulate in the quiescent area, a second inlet through the housing for permitting a flow of flushing medium into said bore and a second outlet circumferentially spaced from the first inlet, recirculation of said reactant from the first inlet, and a valve core disposed in said bore, said valve core having a surface which is concentric with the said wall of the housing which encloses said bore, said walls of the valve core and housing disposed with an interface therebetween, said valve core being rotatable about its axis in the bore and having a first duct free from areas of quiescence which when said core is rotated to one position in the bore connects said first inlet with said first outlet for flow of reactant to said mixing chamber while blocking said second inlet and when the valve core is rotated to a second position connects said first inlet with said second outlet for recirculating said reactant between said first inlet and said second outlet, said valve core having a second duct disposed for connecting said second inlet with said first outlet for permitting the flow of flushing medium to the mixing chamber, and means for sealing said interface.

4,351,355

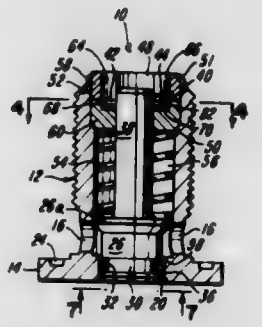
DRAIN VALVE

Floyd G. Koller, and Ralph H. Drew, Jr., both of Dayton, Ohio, assignors to Auto-Valve, Inc., Dayton, Ohio

Filed Jun. 12, 1980, Ser. No. 158,787

Int. Cl.³ F16K *31/528*, *43/00*

U.S. Cl. 137—329.06 **13 Claims**



11. A drain valve, comprising:

a housing having a drain port at its lower end;

a valve member;

a seal on said valve member;

said valve member being movable along the axis of said port from a first position wherein it closes said port to a second position above said port so that liquid may pass through said port, and to a third position wherein it is extended through said port to permit replacement of said seal;

an axially extending stem connected at one end to said valve member;

a pin adjacent the other end of said stem and having at least one end projecting from said stem in a direction generally perpendicular to the axis of said stem;

a retainer assembly mounted in said housing in fixed relation to said port and having an axial through-bore for receiving said stem and having passage means extending from the top of said retainer assembly to the bottom of said retainer assembly;

said passage means comprising means forming a first slot extending along and opening to a first portion of said through-bore and also opening to the top of said retainer assembly for receiving said pin and a second slot extending along and opening to a second portion of said through-bore and also opening to the bottom of said retainer assembly for receiving said pin, said first slot being circumferentially spaced from said second slot, and means forming passageway portions intermediate the top and bottom of said retainer assembly connecting said first slot to said second slot;

a spring trapped between said retainer assembly and said valve member for biasing said valve member downwardly;

said retainer assembly having abutment surfaces confronting said first slot to support said valve member in said first position; and

said valve member being manipulable against the bias of said spring to open said port with said pin projecting into said first slot and said valve member being further manipulable by rotation to pass said pin through said passageway portions into alignment with said second slot to enable lowering of said valve member to expose said seal.

4,351,356

PRESSURE CONTROL VALVE

Hideshi Koiwai, Toda; Shizuo Matsumura, Konosu, and Haruhiko Kawasaki, Sagamihara, all of Japan, assignors to Kayaba Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 26, 1980, Ser. No. 163,130

Claims priority, application Japan, Jul. 25, 1979, 54-94502

Int. Cl.³ F16K *17/18*

U.S. Cl. 137—491 **6 Claims**

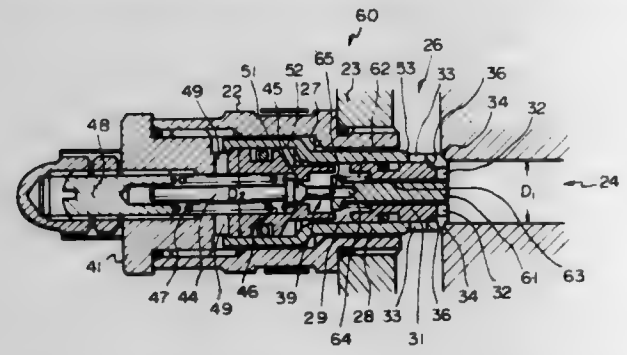
1. A pressure control valve including:

a housing defining a pressure port, a relief port and a back pressure chamber;

a relief poppet biased to block communication between the pressure port and the relief port, a first end of the relief poppet communicating with the pressure port and a second end of the relief poppet communicating with the back pressure chamber;

a piston poppet slidably extending through the relief poppet, a radial clearance being provided between the piston poppet and the relief poppet enabling restricted communication between the pressure port and the back pressure chamber therethrough;

a pilot poppet biased to block communication between the back pressure chamber and the relief port, the pilot poppet



being moved when a pressure in the back pressure chamber is above a biasing force to unblock communication between the back pressure chamber and the relief port, the relief poppet being moved by said pressure difference to unblock communication between the pressure port and the relief port, adjacent ends of the pilot poppet and the piston poppet being maintained in constant engagement with each other;

said adjacent end of the pilot poppet being formed with a coaxial conical projection, said adjacent end of the piston poppet being formed with a coaxial recess conjugate to the conical projection; and

biasing means for urging the piston poppet into engagement with the pilot poppet;

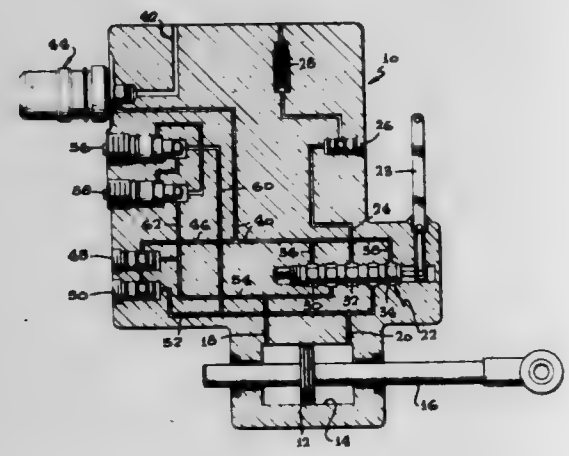
the biasing means comprising a spring.

4,351,357

FAIL SAFE COMPENSATOR USED IN A HYDRAULIC SERVO CONTROL SYSTEM

Myrl E. Orme, Canoga Park, Calif., assignor to The Bendix Corporation, North Hollywood, Calif.

Filed Mar. 27, 1981, Ser. No. 248,611
Int. Cl.³ F15B *1/02*
U.S. Cl. 137—446 **9 Claims**



1. A hydraulic system for controlling the position of a member including a hydraulic cylinder with a piston movable therein connected to said member, a control valve connected to a source of hydraulic fluid under high pressure and to a low pressure source and fluid conduits connecting said control valve to said sources and to both sides of said piston in said cylinder, and

a compensator valve connected in a fluid conduit between said control valve and said low pressure source, said compensator valve including a housing, a piston in said housing urged in a first direction by the fluid return pressure on the low pressure side of said control valve, resilient means urging said piston in a second direction, a check valve in said housing, second resilient means urging said check valve in a position to close said fluid conduit, and means movable with said piston in response to a desired level of said fluid return pressure operable to contact said check valve and open said fluid conduit,

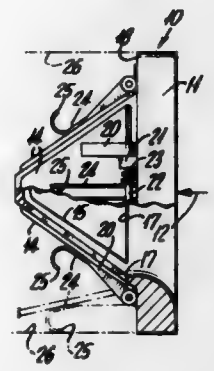
characterized in that said check valve comprises a seat forming part of said fluid conduit and a poppet closing on said seat, the diameter of said seat being significantly less than the diameter of said poppet, a working area of said poppet between its outside diameter and the diameter of said seat being exposed to fluid return pressure such that, were said piston to stick in said housing, said fluid return pressure will increase to a value sufficient to force said poppet open against the force of said second resilient means.

4,351,358

CHECK-VALVE CONSTRUCTION

Francis H. Ogle, Jr., Chardon, Ohio, assignor to Transamerica DeLaval Inc., Princeton, N.J.

Filed Oct. 10, 1979, Ser. No. 83,539
Int. Cl.³ F16K *15/03*
U.S. Cl. 137—512.1 **4 Claims**

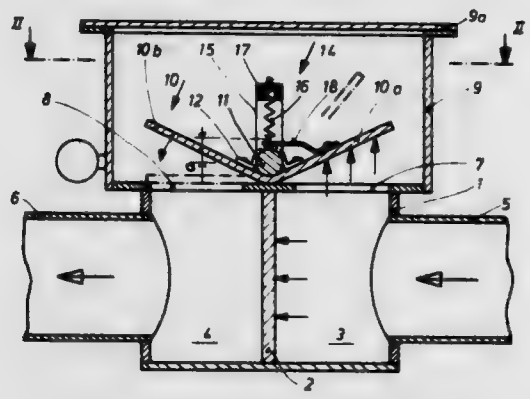


1. A check-valve assembly, comprising an annular valve body with a fluid-flow passage bore extending therethrough between upstream and downstream ends of said body, valve-seat formations including at least three seat-post legs of length exceeding the bore radius, said legs being connected to said body at angularly spaced locations and being connected to each other at a location on the downstream side of said body, whereby adjacent pairs of said legs define generally triangular seat openings to share flow via said passage, hinge means carried by said body at the base of each of said seat openings, separate valve members independently hinged to said body via the hinge means associated with each seat opening, said valve members having a valve-closing position in coaction with said seat formations for blocking fluid flow in the upstream direction and said valve members having a valve-open position for passage of fluid flow in the downstream direction, said legs being connected to the downstream end of said body and the downstream end of said body extending chordally between adjacent leg connections thereto, said hinge means at each opening comprising a hinge post extending downstream from the associated chordally extending portion of said body, spaced hinge arms on the associated valve member straddling the hinge post, and a pintel through said arms and hinge post.

4,351,359
FAST CLOSING VALVE FOR GASEOUS AND LIQUID MEDIA

Manfred Scherwarth, Fichtenweg 31, Sulzbach/Saar, Fed. Rep. of Germany (6603)

PCT No. PCT/DE79/00040, § 371 Date Dec. 17, 1979, § 102(e) Date Dec. 17, 1979, PCT Pub. No. WO79/00935, PCT Pub. Date Nov. 15, 1979
PCT Filed Apr. 14, 1979, Ser. No. 177,770
Claims priority, application Fed. Rep. of Germany, Apr. 15, 1978, 2816373
Int. Cl.³ F16K *17/26;* A62B *13/00*
U.S. Cl. 137—521 10 Claims



1. A rapid acting valve for a fluid media which closes in response to a sudden pressure difference in a fluid flow line, said valve comprising:

a valve housing having a fluid passage therethrough;

a baffle plate positioned in said housing transverse to the flow of fluid media and dividing said housing into two antechambers;

a common valve chamber in fluid communication with each of said antechambers, each antechamber opening into said common valve chamber through a separate diverting orifice;

an angular valve disk rotatably mounted in said common valve chamber with the axis of rotation of said valve disk lying in the plane formed by said baffle plate and between the diverting orifices;

said valve disk including at least two leg portions, at least one leg portion being inclined with respect to the other and having a configuration which conforms to and closes an associated diverting orifice;

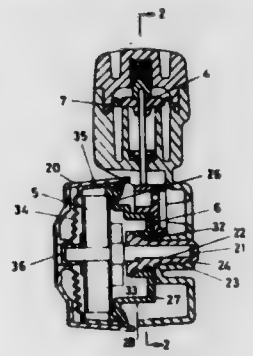
means for spring biasing said valve disk in a rotationally stable open position with both of said leg portions being inclined with respect to the plane passing through the associated diverting orifices whereby a pressure pulse resulting from pressure differences within the line is intercepted by said baffle plate thereby reducing the resulting pressure increase which impacts one of said inclined legs through an associated diverting orifice to rotate said disk against the force of said spring bias means thus closing said valve.

4,351,360
FLUID TIMER

Donald N. Smyth, South Plympton, Australia, assignor to Sabco Limited, Albert Park, Australia

Filed Dec. 8, 1980, Ser. No. 214,007
Int. Cl.³ F16K *31/48*
U.S. Cl. 137—624.12 4 Claims

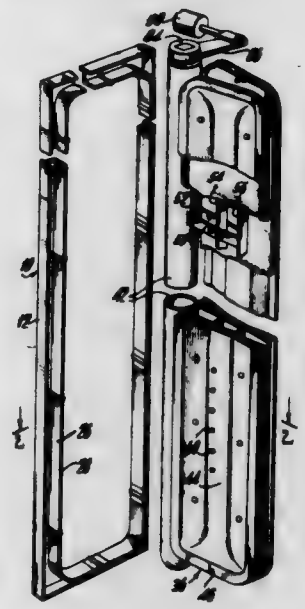
1. A fluid timer for controlling the flow of a fluid, said fluid timer having a body, an inlet passage connected to an annular valve seat, an outlet passage leading from the valve seat, a valve member adapted to seal on said seat under the influence of a spring, a timer mechanism, a cam member driven by said timer mechanism, and a push rod operated by said cam member to move said spring to allow said valve member to open by fluid pressure in the inlet characterized by said timer mechanism being mounted in and drivingly connected to a housing having an opening, and a cap closing said opening, said housing forming said cam chamber, and there being a sealing diaphragm sealed between said housing and cap and with said housing forming a sealed compartment for said timer mechanism.



4,351,361
VALVE WITH SPRING GATE

Arthur C. Worley, Mendham, N.J., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 726,488, Sep. 24, 1976, abandoned, which is a continuation of Ser. No. 559,314, Mar. 17, 1975, abandoned. This application Feb. 27, 1978, Ser. No. 881,557
Int. Cl.³ F16K *1/18, 11/02*
U.S. Cl. 137—625.44 6 Claims



1. A valve comprising endless valve seat means having an outer fastening region adapted to be fastened to the surface of a duct through which a fluid is adapted to flow in a predetermined direction and an inner seat region situated inwardly of said outer fastening region and terminating in an endless seating surface located in a predetermined plane generally perpendicular to the direction of fluid flow through the duct, so that said seating surface defines an opening through which the fluid is adapted to flow, valve closure means having a closed position engaging said seating surface and closing said opening defined thereby, said valve closure means including a dished member of springy sheet material having a hollow interior directed toward said opening defined by said seating surface in the closed position of said closure means, said dished springy member having a central region situated upstream of said plane and a springy endless peripheral region situated in said plane in engagement with said seating surface when said closure means is in said closed position thereof, said springy endless peripheral region being situated, in the unstressed condition of said springy sheet material, in a plane located at a given distance from the central region of said dished member, seat means being formed at least in the region of said seating surface with

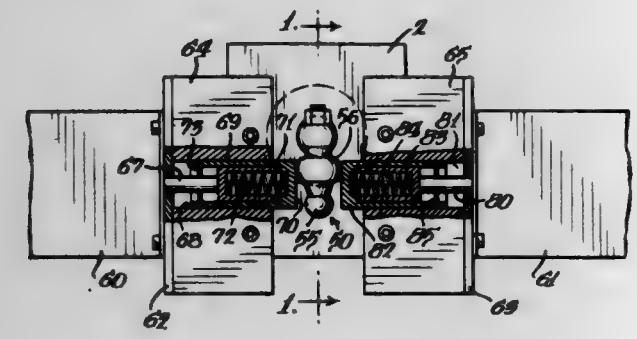
a plurality of slits distributed along and extending inwardly from said seating surface so that said seat means is free to contract and expand at said slits, and a plurality of covering sheet members fixed to said seat means and bridging said slits thereof with said covering sheet members having curved portions extending across said slits to accommodate expansion and contraction of said seat means, and moving means operatively connected to said dished member of springy sheet material for moving the latter from an open position displaced away from said opening to a closed position where said peripheral region engages said seating surface and is located closer to said central region than said given distance so that said springy peripheral region presses against said seating surface in the closed position of said closure means.

4,351,362

ROTARY VALVE

James C. Solie, and Samuel B. McClocklin, both of Owatonna, Minn., assignors to Owatonna Tool Company, Owatonna, Minn.

Filed Oct. 3, 1980, Ser. No. 193,753
Int. Cl.³ F15B *13/044*; F16K *31/02*
U.S. Cl. 137—625.65 **4 Claims**



3. A rotary directional control valve operable by a solenoid of medium force and moderate length stroke comprising, a valve body, a valve member rotatably mounted in said valve body, a two-stage operating lever operatively connected to said valve member providing a relatively long lever arm and an intermediate shorter lever arm, a pair of actuator members positioned at opposite sides of said operating lever and each movable along a line, spring means associated with said members establishing a neutral position of said members and operating lever wherein said operating lever extends normal to said line, said actuator members engaging with the shorter lever arm when said operating lever is extending normal to said line or at a small angle to either side of said last-mentioned position, and a pair of normally energized solenoids associated one with each member, deenergization of a solenoid permitting the associated member and operating lever to move by force exerted by the other member with the associated member in engagement with the relatively long lever arm.

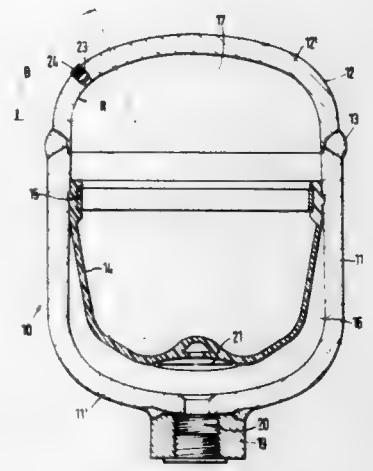
4,351,363

HYDRO-PNEUMATIC PRESSURE VESSEL

Gerhard Haug, Sachsenheim, and Heinz Siegel, Stuttgart, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 12, 1980, Ser. No. 130,091
Claims priority, application Fed. Rep. of Germany, Mar. 21, 1979, 2911022
Int. Cl.³ F16L *55/04*
U.S. Cl. 138—30 **4 Claims**

1. A pressure vessel, comprising a housing having a chamber surrounded by external walls; a flexible partition subdividing said chamber into a gas compartment and a liquid compartment and being flexed within said housing under pressure of liquid medium contained in said liquid compartment, said liquid compartment having an opening to receive said liquid medium, said external walls including an upper wall being formed with curved lines of radii of different lengths; an inlet formed in said upper wall surrounding said gas compartment to receive a gas medium therein; and a locking element located in said inlet, said upper wall having an area formed with a graded



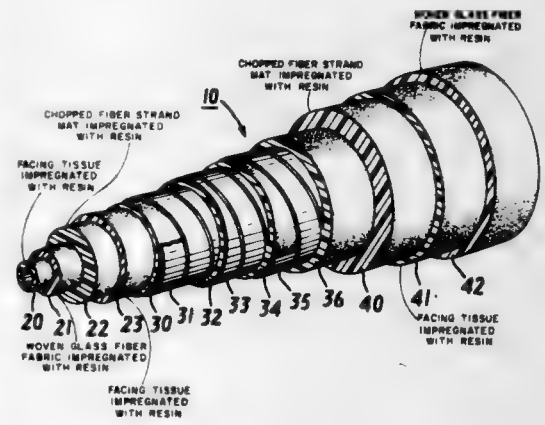
curve, said inlet being positioned in said area where said upper wall is formed with a curve of a minimum radius so that the gas medium filled in said gas compartment causes minimal deformations of said wall under gas pressure.

4,351,364

STEEL REINFORCED PIPE

Philip J. Cocks, Nuneaton, England, assignor to Dunlop Limited, England

Filed Nov. 5, 1979, Ser. No. 91,581
Int. Cl.³ F16L *11/08*
U.S. Cl. 138—133 **18 Claims**

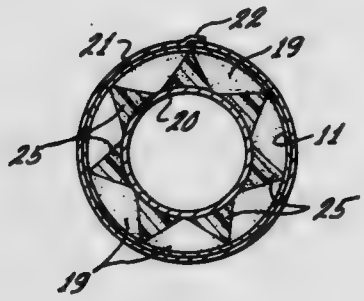


1. A steel reinforced pipe comprising: an inner lining of tubular configuration comprised of distinct, successively wound layers of glass or other fibers impregnated with resin; a structural wall section of tubular configuration built up on said inner lining and comprised of at least three structural steel reinforcing strips each coated with a structural resin and each having a thickness between 0.25 mm and 0.75 mm, the structural steel reinforcing strips being helically wound in the form of helical convolutions one over the other about the longitudinal axis of the pipe with the convolutions of each strip being axially spaced from adjacent convolutions of that strip by the structural resin and being radially spaced from adjacent convolutions of the other strips by the structural resin; and an outer lining comprised of distinct, successively wound layers of glass or other fibers impregnated with resin built up on said structural wall section.

4,351,365
THERMALLY INSULATED TUBE

Klaus Bauermeister, Seelze; Gerhard Ziemek, Langenhagen, and Bernd Eilhardt, Hanover, all of Fed. Rep. of Germany, assignors to Kabel-und Metallwerke Gutehoffnungshütte Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed Aug. 13, 1979, Ser. No. 65,997
Claims priority, application Fed. Rep. of Germany, Aug. 24, 1978, 2836957
Int. Cl.³ F16L 9/14
U.S. Cl. 138—149 5 Claims



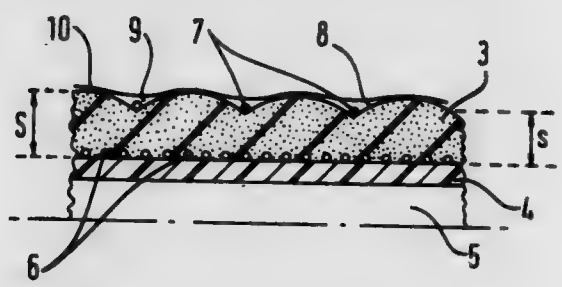
1. Thermally insulated conduit system, comprising an inner tube, an outer tube arranged concentrically to the inner tube, and a spacer construction disposed in the space between the inner and outer tubes, the improvement for the spacer construction comprising:

a high tensile strength ribbon, carrying outwardly tapering elements to define V-shaped notches between adjacent ones of the elements, the ribbon with elements being helically disposed in said space, the elements being made of a rigid foam of a polymer, the V-shaped notches being at least approximately aligned in axial direction to establish channels, the channels being also filled with foam.

4,351,366
HEAT-INSULATED CONDUIT

Attilio Angioletti, Milan, Italy, assignor to Industrie Pirelli S.p.A., Milan, Italy

Filed Sep. 30, 1980, Ser. No. 192,558
Claims priority, application Italy, Oct. 24, 1979, 26735 A/79
Int. Cl.³ F16L 9/14
U.S. Cl. 138—149 11 Claims

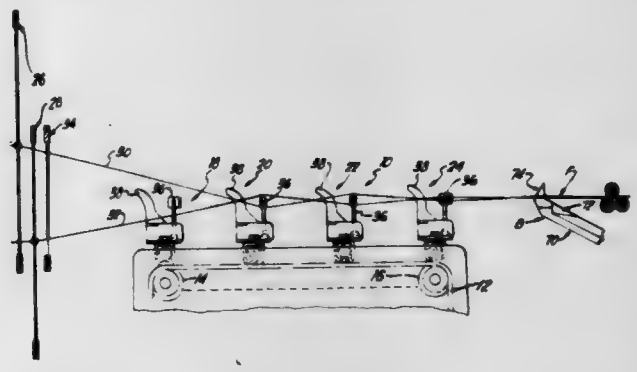


1. A conduit for conveying a fluid under pressure comprising a tube having a wall substantially impervious to fluids for flow of the fluid through the conduit, a layer of closed cell distortable cellular polyurethene resin surrounding the tube and insulating the tube against temperature change of the fluid, and a strand wound about the resulting insulated tube compressing the cellular polyurethene resin between convolutions of the wire and said tube thereby forming an undulated radially outward surface on the said resin layer with longitudinally spaced rings of compressed cellular polyurethene resin and wavelike intermediate convolutions of cellular resin bulging radially outwardly from adjacent convolutions of the wire, and an air impervious polymeric sheath having substantially smooth radially outer and inner surfaces surrounding the cellular polyurethene layer with the said inner surface disposed against the peaks of said wave-like convolutions and spaced radially outwardly of said rings enclosing space between the rings and sheath, said space being filled with static inert gas.

4,351,367
BEAT-UP SYSTEM

Thomas F. McGinley, Phillipsburg, N.J., assignor to McGinley Mills, Inc., Phillipsburg, N.J., a part interest

Filed May 13, 1980, Ser. No. 149,479
Int. Cl.³ D03D 41/00
U.S. Cl. 139—11 28 Claims



1. Apparatus for weaving employing warp threads and weft threads, comprising:

means for separating the warp threads into different planes to form warp sheds;

means for retaining said warp sheds;

means for moving said warp sheds and said shed-retaining means in the direction of said warp threads toward the fell of the fabric;

means for inserting weft thread through said moving warp sheds;

means for advancing said inserted weft threads to a beat-up position adjacent the fell of the fabric;

spacer means movable into and out of position between said warp threads for maintaining the spacing between said warp threads;

beat-up means cooperating with and movable relative to said spacer means, said beat-up means being movable into and out of position between said warp threads for beating up said weft threads from said beat-up position into the fell of the fabric and maintaining the spacing of said warp threads when said spacer means are withdrawn from said warp threads; and

said spacer means and said beat-up means being disposed on only one side of said warp threads.

4,351,368
DOBBY

Joseph Palau, Duingt, France, assignor to S.A. des Etablissements Staubli, Fauerges, France

Filed May 28, 1980, Ser. No. 153,794
Claims priority, application France, Jun. 22, 1979, 79 16669
Int. Cl.³ D03D 51/00
U.S. Cl. 139—324 3 Claims

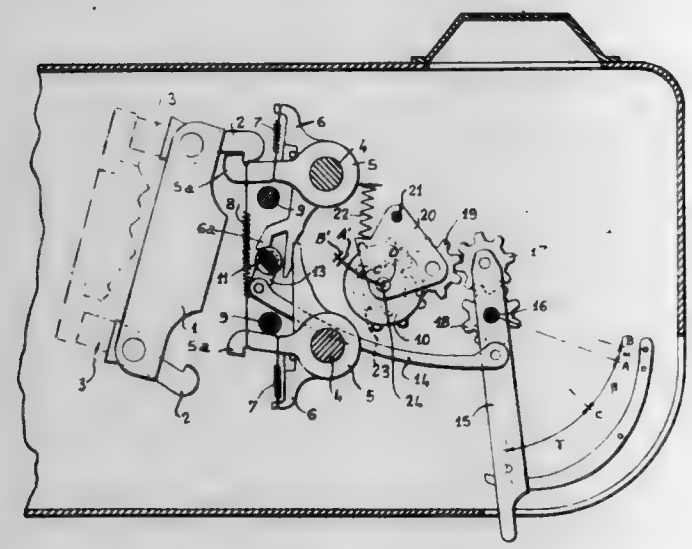
1. An improved reading device for a loom dobby having a housing containing double swinging levers, and having hooks pivotable about fixed pivot bars, and having rotating pattern discs with pegs extending therefrom to contact adjacent elements of the hooks and displace the contacted hooks into engagement with the pivot bars, and having a drive shaft for driving the pattern discs, the improvements comprising:

actuating lever means supporting said discs for rotation about a support shaft, the lever means being carried by the dobby housing and moveable to move the discs and supporting shafts between operative positions wherein the pegs engage the hook elements, and retracted inoperative positions;

a transverse cam member rotatably mounted in the housing

and extending across the hook elements parallel to their pivot bars;

heel members mounted on some of the hook elements and extending toward the cam member, the cam member being pivotable between a position in which it engages the heel members and displaces the associated hooks to engage the pivot bars, and inoperative positions out of engagement with the heel members; and



arm and connecting rod means connected to rotate the cam member and to displace the actuating lever means between selectible different arm positions in which the cam member and discs are both in inoperative positions, in which the lever means moves the discs into said operative position and the cam member into an inoperative position, and in which the cam member is in heel-member engaging position and the lever means and discs are in inoperative position.

4,351,369

FLUID SUPPLY APPARATUS IN SHUTTLELESS LOOM

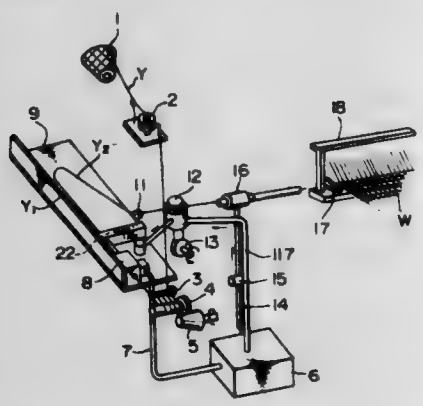
Hiroshi Arakawa, Kariya, Japan, assignor to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi, Japan

Filed Dec. 5, 1979, Ser. No. 100,288

Claims priority, application Japan, Dec. 12, 1978, 53/15417; Dec. 12, 1978, 53/15418; Dec. 12, 1978, 53/171681[U]

Int. Cl.³ D03D *47/30*

U.S. Cl. 139—435 **16 Claims**



1. A fluid supply apparatus in a shuttleless loom provided with a gripper which repeats the gripping and releasing of a weft in synchronism with the weft inserting operation, comprising a compressed fluid source, a valve mechanism having a fluid entrance and at least one fluid discharge exit, said gripper having a movable member which forms a part of said valve mechanism, a pipe means connecting said compressed fluid source to said fluid entrance of the valve mechanism, at least one nozzle disposed at a position apart from said gripper in the loom, a connecting means connecting said nozzle to said fluid discharge exit, and actuating means for actuating said valve mechanism in synchronism with the gripping and releasing operation of the gripper.

4,351,370

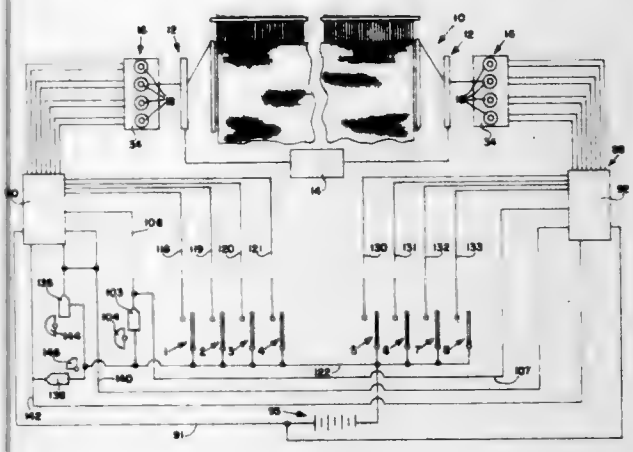
YARN BRAKE FOR A TEXTILE MACHINE

David A. Guy, Matthews, and Philip A. Nims, Charlotte, both of N.C., assignors to Crompton & Knowles Corporation, New York, N.Y.

Filed May 5, 1980, Ser. No. 146,879

Int. Cl.³ D03D *47/30*

U.S. Cl. 139—450 **16 Claims**



1. A weft yarn braking system in a loom having means for selectively inserting a plurality of diverse yarns from each side of the loom, said loom having a pattern mechanism, weft yarn inserting mechanism, weft yarn selecting and presenting mechanism at each side of the loom and operatively connected to the pattern mechanism for presenting a selected weft yarn to the weft yarn inserting mechanism, said weft yarn braking system comprising:

(a) a brake for each weft yarn at each side of the loom, each brake comprising:

(1) a stationary clamping plate;

(2) a movable clamping plate mounted for movement toward and away from the stationary clamping plate, wherein the weft yarn associated with said brake extends between said plates;

(3) first biasing means for biasing the movable clamping plate against the stationary clamping plate;

(4) second biasing means for biasing the movable clamping plate against the stationary clamping plate;

(5) electro-magnetic disengaging means for receiving a first actuation and a second actuation, and operable from a normally inactive neutral position to a first active position upon receiving said first actuation and to a second active position upon receiving said second actuation, said disengaging means being effective in said first active position to disengage the first biasing means from the movable clamping plate to remove part of the braking pressure from said associated weft yarn, and effective in said second position to disengage the first and second biasing means to remove all braking pressure from said associated weft yarn;

(b) control means operatively connected to each brake and operating in timed relation to the loom for providing a second actuation to the electro-magnetic disengaging means of the brake associated with the selected weft yarn for disengaging the first and second biasing means of said associated brake during the initial major portion of the insertion of said selected weft yarn, and for providing a first actuation to the electro-magnetic disengaging means of said associated brake during the latter minor portion of the insertion of said selected weft yarn, whereby all braking pressure is removed from said selected weft yarn during said major portion and a portion of the braking pressure is removed from said selected weft yarn during said minor portion.

4,351,371
APPARATUS FOR PRODUCING COILS

Friedrich Mann, Nuertingen, and Guido Negro, Neuffen, both of Fed. Rep. of Germany, assignors to Bielomatik Leuze GmbH + Co., Fed. Rep. of Germany

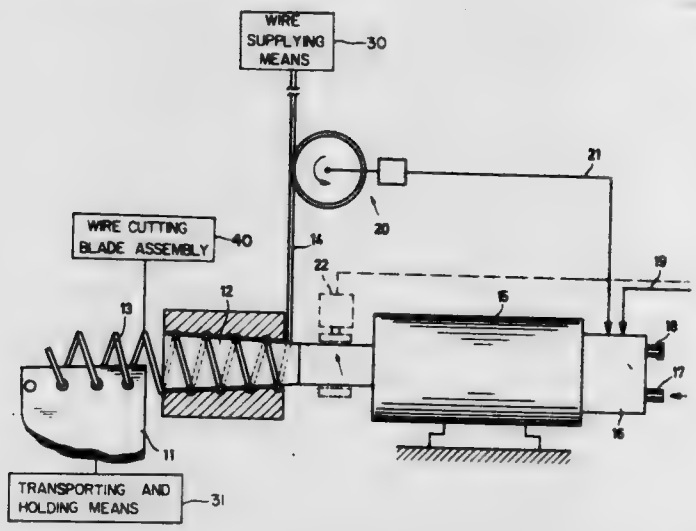
Continuation of Ser. No. 69,457, Aug. 24, 1979, abandoned. This application May 4, 1981, Ser. No. 260,310

Claims priority, application Fed. Rep. of Germany, Aug. 31, 1978, 2837918

Int. Cl.³ B21F *3/02*

U.S. Cl. 140—92.3

6 Claims



1. An improved apparatus for the production of wire coils for binding packs of sheets, the apparatus having a winding spindle for forming the coils, means for supplying the wire to the winding spindle, means for metering lengths of the wire, a pneumatic motor having a shaft for intermittently driving the winding spindle, means for transporting perforated packs of sheets to and from a position operationally adjacent the winding spindle, and means for holding the perforated packs of sheets in the operationally adjacent position during insertion of the wire coil, wherein the improvement comprises:

means for stopping the pneumatic motor in response to the metering means; and,

a direct connection between the driving shaft and the winding spindle, without any intervening transmission or switch coupling, notwithstanding the intermittent operation, whereby a resulting low momentum drive arrangement takes advantage of elastic properties of the wire to provide a small angle through which the motor can begin rotating without experiencing the full load due to bending and transporting the wire, and the pneumatic motor is braked by the load due to mechanical resistance of the winding spindle after the motor is stopped.

4,351,372
LIQUIFIED GAS PUMPING AND CYLINDER RE-FILL SYSTEM

Manuel O. Delgado, Jr., 1618 King Dr., New Orleans, La. 70122

Filed Oct. 11, 1979, Ser. No. 83,825

Int. Cl.³ B65B *3/04*

U.S. Cl. 141—2

8 Claims

1. A pumping system for filling relatively high pressure, liquified gas cylinders with a liquified gas, comprising:

a low pressure, enclosed source tank of liquified gas;

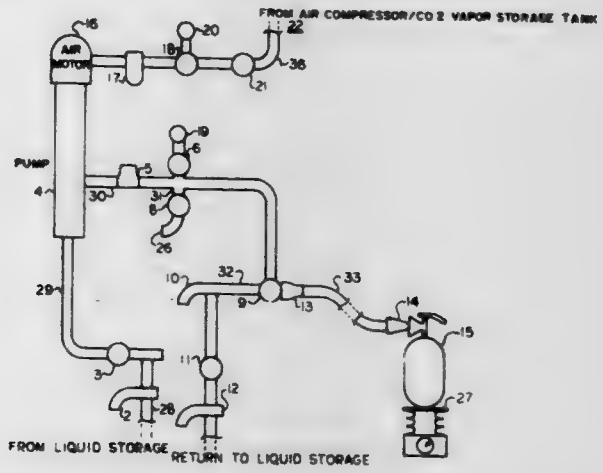
reciprocally driven, plunger-type pumping means for generating sufficient hydraulic pressure on the liquified gas from said tank source at the pressures required to rapidly fill high pressure cylinders;

pneumatic drive means connected to the plunger of said pumping means for reciprocally driving said pumping means;

source line means connecting said source and said pumping means together to supply liquified gas to said pump means;

cylinder connect means for connecting the cylinder to be filled to said pumping means; and

cylinder line means connecting said connect means and said pumping means together to supply liquid gas under high pressure to said cylinder connect means and to any cylinder connected thereto;



multi-way valving means connected to at least one of said cylinder line means and said cylinder connect means; and

return line means connecting said multi-way valving means and the source tank directly together for returning the liquified gas to the source tank when a cylinder is not being filled.

4,351,373
SYSTEM OF APPARATUS FOR FILLING BAGS WITH DRY POWDER

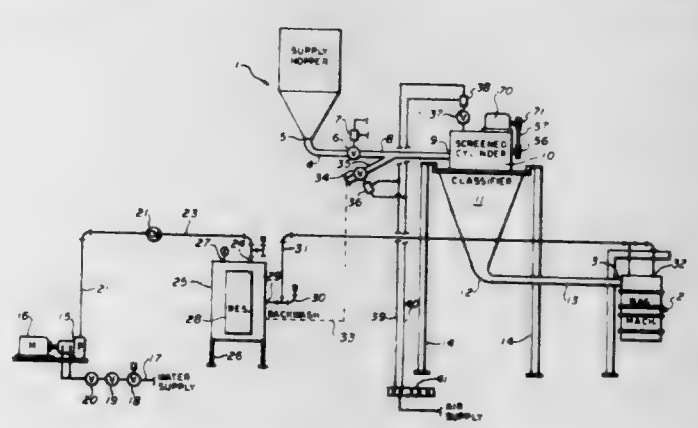
Emmanuel Mechalas, 2830 Townway, Danville, Ill. 61832

Filed Jun. 9, 1980, Ser. No. 157,350

Int. Cl.³ B65B *1/16, 31/02;* B01F *7/04*

U.S. Cl. 141—51

18 Claims



1. A system of apparatus for filling bags with dry powdered material and separating foreign matter therefrom comprising

an air tight enclosure for receiving a bag for filling with a dry powder,

vacuum producing means connected to said enclosure for evacuating the same,

means for storing and supplying a dry powder to said enclosure,

a classifier operatively connected to said storage means to receive powder therefrom and operatively connected to said enclosure to supply powder thereto with foreign matter separated therefrom,

said classifier, comprising a screen separator positioned to receive said dry powder and separate foreign matter of a size greater than the powder,

means connecting said vacuum producing means to said classifier to maintain the same under vacuum during operation, and

means connecting said vacuum producing means to said classifier in a reversed relation and operable to backflush

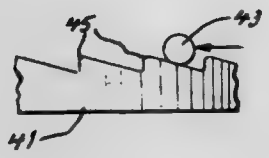
said screen separator to remove particulate matter collected thereon.

4,351,374

POUCH FILLING MACHINE

C. G. Peter Oldershaw, Avon, N.Y., assignor to General Foods Corporation, White Plains, N.Y.

Filed Dec. 5, 1980, Ser. No. 213,430
Int. Cl.³ B65B *1/08, 43/60*
U.S. Cl. 141—71 9 Claims



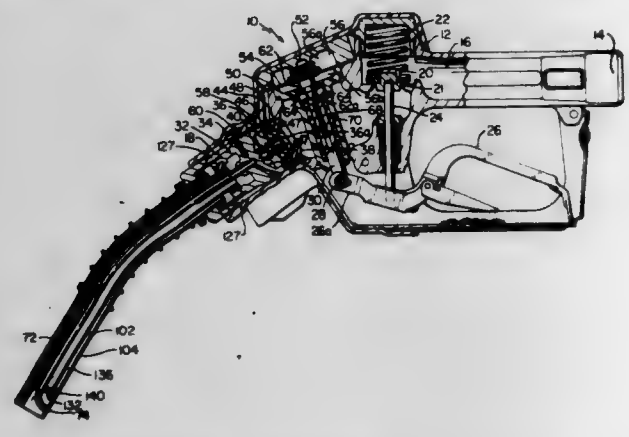
1. In an apparatus for serially filling each of a succession of individual open top containers with a predetermined amount of particulate material flowable under the influence of gravity and dischargeable from a bulk supply thereof in a free flowing stream at a uniform predetermined rate of flow, said apparatus including a continuously rotating turret member having means for supporting said containers through a predetermined arc of rotation, a turntable mounted above said turret member and rotatable in unison therewith, said turntable including material distributing means arranged circumferentially thereon and disposed to intercept said stream during rotation of said turret for separation and collection thereof individually in said predetermined amounts, said material distributing means including open-ended tray members mounted for tilting motion when traversing said predetermined arc of rotation for individually collecting said predetermined amounts of material, said trays when tilted discharging said predetermined amounts of material into a respective one of said container, cam means operable for controlling the gradual discharge of said collected individual amounts of material into a respective one of said containers during said predetermined arc of rotation of said turntable, and said turntable including a member disposed beneath said tray members and formed with individual fill funnels disposed to receive product discharged from the open-end of said tray members when in the tilted position, said funnels being effective for directing said discharge product into a respective one of said containers carried by said turret member.

4,351,375

DUAL SPOUT DISPENSING NOZZLE

Charles L. Polson, Cincinnati, Ohio, assignor to Dover Corporation, Cincinnati, Ohio

Filed May 27, 1980, Ser. No. 153,884
Int. Cl.³ B65B *3/18*
U.S. Cl. 141—98 21 Claims



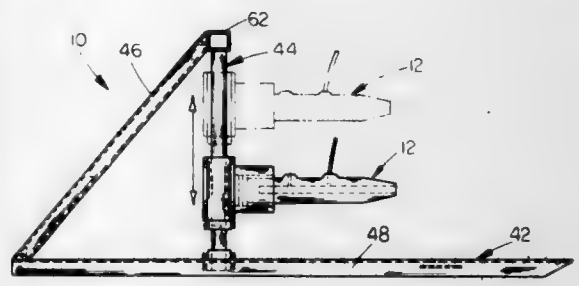
1. A dispensing nozzle, comprising:
(a) a nozzle body having an inlet and an outlet with a flow passage therebetween;
(b) an adapter securely fitted in the outlet of the nozzle body;
(c) a pair of rigid concentric spouts extending from the nozzle body outlet including an inner spout disposed with an outer spout, an end portion of the inner spout being sealingly received by the adapter for selective fluid communication with the nozzle body inlet;
(d) a locating element attached to both the adapter and the outer spout, the locating element being operative to prevent relative rotational movement between the outer spout and the adapter; and
(e) retaining means releasably secured to the nozzle body for securing the outer spout relative to the nozzle body.

4,351,376

LOG SPLITTING BLASTING WEDGE AND ANCHOR SYSTEM

Albert F. Vosika, Rte. 2, Crete, Nebr. 68333

Filed Oct. 2, 1981, Ser. No. 307,782
Int. Cl.³ B27L *7/00*
U.S. Cl. 144—193 G 17 Claims



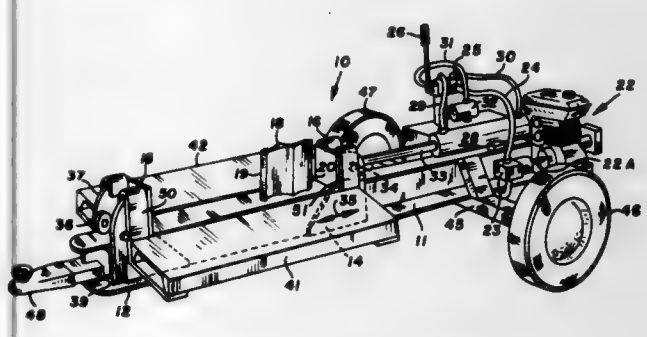
1. A log blasting wedge, including
an elongated body having a forwardly tapered forward end portion, a middle portion and a rearward end portion,
said forward and middle portions having an axial bore therethrough, said bore having an open forward end and a closed rearward end terminating at the rearward end of said middle portion,
a first wick hole through said middle portion in communication with said bore, said first wick hole being positioned in longitudinally spaced relation from said forward and rearward portions, and
a second wick hole through one of said forward and middle portions in communication with said bore, said second wick hole being spaced longitudinally forwardly of said first wick hole.

4,351,377

LOG SPLITTER

Daniel L. Hamel, 3250 Twin Lake Rd., St. Paul, Minn. 55110

Filed Dec. 8, 1980, Ser. No. 214,342
Int. Cl.³ B27L *7/00*
U.S. Cl. 144—193 A 2 Claims



1. A log splitter comprising, in combination:
(a) a frame including an elongated flanged rail;
(b) an elongated bed reciprocable along said rail through a range of travel and having pusher faces at its ends extending away from said rail and spaced by a distance greater than the travel of said bed on said rail, said bed including

roller means carried at the ends thereof, for engaging the top of said rail to support said bed thereon, and guide means extending the full length of said bed for cooperating with the flanges of said rail to limit the motion of the bed to travel longitudinal of the rail;

(c) a pair of log support cradles removably carried by the ends of said bed and extending therebetween, said cradles projecting laterally beyond said rail on opposite sides thereof;

(d) a double edged splitting wedge removably secured to said rail between said pusher faces of said bed, the length of said bed between said pusher faces being no less than the sum of the longitudinal dimension of said wedge added to the length of a log to be split, and the travel of said bed being no less than the length of a log to be split; and

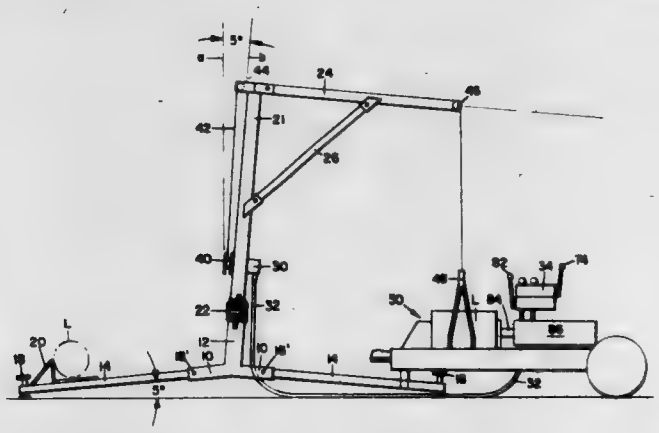
(e) reversable power means connected to said rail and said bed and operable to apply force to said bed along a line passing longitudinally through said wedge and said pusher faces.

4,351,378

HYDRAULIC LOGSPLITTER ASSEMBLY

Harvey A. Smith, Hampden, Mass., assignor to Sigma Development Corp., Hampden, Mass.

Filed Jan. 23, 1981, Ser. No. 227,805
Int. Cl.³ B27L *7/00*
U.S. Cl. 144—193 A **6 Claims**



1. A hydraulic logsplitter assembly including a log splitting mechanism and comprising means for transporting and delivering logs thereto consisting of:

a horizontally-swingable boom,

a support mechanism supporting the boom upwardly and disposed at an angle from the vertical centerline for facilitating the free swinging of the boom at an angle on an inclined plane under the weight of a load between charging and discharging positions,

a base for rotatively supporting the support mechanism,

a torsion spring interconnecting the base and support mechanism for the swinging returnably of the boom from discharging to charging position,

a cable supported by the boom, and

a grapple unit mounted at the free end of the cable.

4,351,379

METHOD OF REELING AND UNREELING A REINFORCED VENEER SHEET

Katsuji Hasegawa, Ohbu, Japan, assignor to Meinan Machinery Works, Inc., Ohbu, Japan

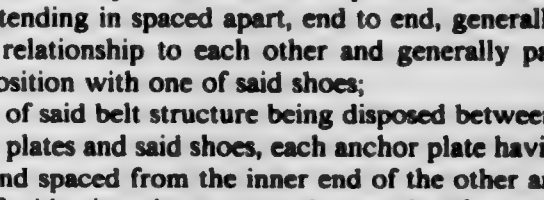
Filed Dec. 22, 1980, Ser. No. 218,828
Claims priority, application Japan, Dec. 28, 1980, 54-172310
Int. Cl.³ B27D *1/00, 5/00*
U.S. Cl. 144—365 **4 Claims**

1. A method of reeling and unreeling a reinforced veneer sheet comprising the steps of

(1) forming at least one elongated cut in a selected one of two sides of a veneer sheet across its grain;

(2) embedding a length of cord in said elongated cut to reinforce the veneer sheet;

(3) winding said reinforced veneer sheet onto a reel having an axis such that said cut side faces radially outward relative to the axis of the reel; and



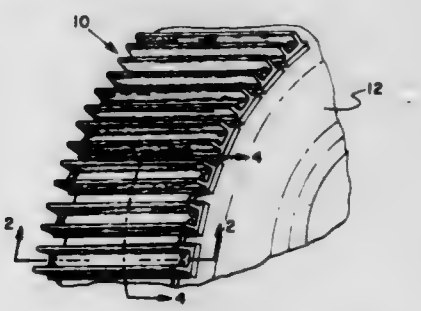
(4) unwinding said wound veneer sheet off the reel such that said cut side faces downward relative to the surface of the earth, whereby said length of cord acts to tightly hold the sheet on the reel during the step (3) and maintain its engagement in the cut by supporting the veneer from below during the step (4).

4,351,380

TRACK BELT ASSEMBLY

Charles J. Pilliod, Jr., Akron, Ohio, and Roger E. Payne, Okemos, Mich., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Dec. 29, 1980, Ser. No. 221,147
Int. Cl.³ B60C *27/06, 9/00*; B62D *55/24*
U.S. Cl. 152—169 **13 Claims**



1. An endless track belt assembly comprising:

an endless reinforcing belt structure having a pair of lateral edges;

a plurality of shoes spaced about the outer periphery of said reinforcing belt structure, each of said shoes having a pair of end portions which extend, respectively, beyond said pair of lateral edges of said reinforcing belt structures;

characterized by means securing said belt structure to said shoes including a plurality of circumferentially adjacent pairs of anchor plates, said anchor plates of each of said pair extending in spaced apart, end to end, generally coplanar relationship to each other and generally parallel superposition with one of said shoes;

a portion of said belt structure being disposed between said anchor plates and said shoes, each anchor plate having an inner end spaced from the inner end of the other anchor plate of said pair and an outer end secured to the outer end portion of said one of said shoes, the space formed between said anchor plates of each pair is such that said space is not circumferentially adjacent the space formed between the anchor plates of the circumferentially adjacent pair.

6. An endless track belt assembly comprising:

an endless reinforcing belt structure having a pair of lateral edges;

a plurality of shoes spaced about the outer periphery of said reinforcing belt structure, each of said shoes having a pair of end portions which extend, respectively, beyond said pair of lateral edges of said reinforcing belt structures;

characterized by means securing said belt structure to said shoes including a plurality of circumferentially adjacent pairs of anchor plates, said anchor plates of each of said pair extending in spaced apart, end to end, generally co-

planar relationship to each other and generally parallel superposition with one of said shoes;

a portion of said belt structure being disposed between said anchor plates and said shoes, each anchor plate having an inner end spaced from the inner end of the other anchor plate of said pair and an outer end secured to the outer end portion of said one of said shoes, said anchor plates of each of said pair are spaced apart and extend axially beneath the reinforcing belt structure such that they are coextensive to each other for at least a portion of their axial length.

4,351,381

TREAD FOR PNEUMATIC TIRE

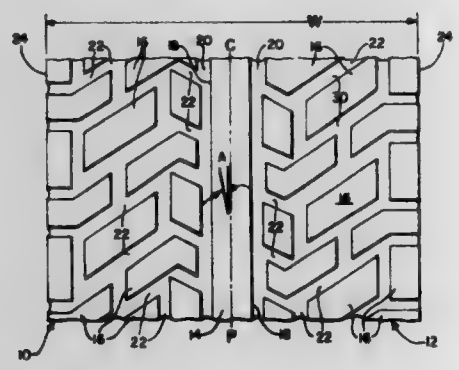
Charles W. Roberts, Akron; Daniel J. Lindner, Canal Fulton, both of Ohio; Henry T. Kwee, Luxembourg, Luxembourg; Michael A. Kolowski, Mogadore, Ohio, and Harold D. Fetty, Birmingham, Mich., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 877,788, Feb. 14, 1978, abandoned. This application Nov. 12, 1980, Ser. No. 206,202

The portion of the term of this patent subsequent to Jan. 22, 1994, has been disclaimed.

Int. Cl.³ B60C *11/04*

U.S. Cl. 152—209 R **1 Claim**



1. A pneumatic passenger tire having a carcass structure, a ground-engaging tread portion disposed circumferentially about said carcass structure, a pair of annular bead portions, one at each of the radial inner ends of said carcass structure, said tire characterized in that the tread portion comprises:

a continuous circumferentially extending rib located substantially in the central portion of said tread portion, the overall circumferential direction of the axial sides of said rib form an angle with respect to the midcircumferential plane of tire no greater than about 10°;

a plurality of independent projections placed circumferentially about the remaining portion of said tread portion so as to provide two continuous circumferentially extending grooves one on each side of said rib and a plurality of laterally extending grooves which extend from each of said circumferentially extending grooves toward the closest respective tread edge of said tire in a substantially uninterrupted manner, said laterally extending grooves and said pair of circumferentially extending grooves having no jogs which are greater than the width of said laterally extending grooves, said tread portion having no other substantially circumferentially extending grooves, said lateral grooves follow a substantially transverse path from said central groove axially outward toward a first point spaced from the midcircumferential plane of said tire a distance of approximately 10% to 20% of the width of said tread and then follows a path from said first point to a second point so that such lateral grooves form an angle of at least 50° with respect to the midcircumferential centerplane of said tire between said first and second points, said second point being spaced from said tread edge a distance of about 15% to 20% of said width of said tread, said lateral grooves follow a path from said second point axially outward to said tread edge in a substantially transverse direction, said central rib is provided with a plurality of sipes or notches, said sipes or notches extend axially across the width of said rib a distance not greater than 50% of the axial width of said rib, the depth of said sipes are not less than 25% of the depth of the grooves in between said projection, wherein said independent projections adjacent said central groove and adjacent said tread edge having a circumferential length such that said adjacent projections alternate in circumferential length in the ratio of about two to one, the net to gross of said tread is less than 65 percent.

4,351,382

TIRE AND WHEEL RIM ASSEMBLIES

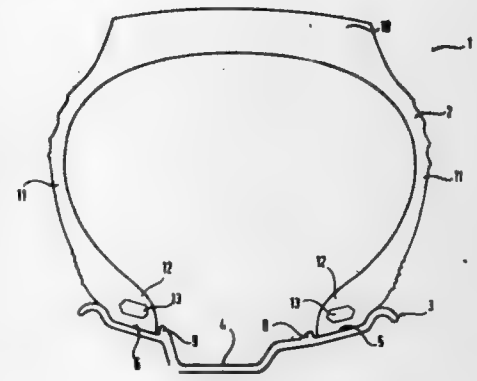
Michael R. Corner, Coventry; Ian Kemp, Tamworth, and Tom French, Sutton Coldfield, all of England, assignors to Dunlop Limited, London, England

Filed Dec. 2, 1980, Ser. No. 212,143

Claims priority, application United Kingdom, Dec. 6, 1979, 7942181

Int. Cl.³ B60C *5/16, 15/02*

U.S. Cl. 152—330 RF **37 Claims**



1. A tire and wheel rim assembly comprising a tire having a tread portion connected at each edge to a respective one of a pair of sidewalls each terminating at its radially inner edge in an annular tire bead, each tire bead having a substantially inextensible bead reinforcement and a one-piece wheel rim having a tire fitting well between a pair of axially spaced bead seats on each of which a respective one of said tire beads is seated, each bead seat being tapered at an angle of about 5° in an axially and radially outwards direction with respect to the rotational axis of said rim and terminating at its radially outer edge in a respective tire bead retaining flange, one of said bead seats being substantially straight and having adjacent to the axially inner edge thereof an abutment extending circumferentially around said bead seat, said abutment being substantially continuous and having a height of at least 2.2 mm and a maximum diameter not greater than the minimum diameter of said bead reinforcement to allow fitment of said tire by passage of the associated tire bead outwards over said abutment and a generally radially extending axially outwardly directed abutment face to engage the toe of said associated tire bead, said abutment face having a maximum radial dimension with respect to the width and the taper angle of the adjacent bead seat such that under the action of road generated forces rotation of said tire bead about said abutment is effected to retain said tire bead at said bead seat.

35. A one piece wheel rim comprising a tire fitting well between a pair of axially spaced annular bead seats, each bead seat being tapered in an axially and radially outwards direction with respect to the rotational axis of said rim and terminating at its axially outer edge in a respective tire bead retaining flange, one of said bead seats being substantially straight and having adjacent to the axially inner edge thereof an abutment extending circumferentially around said bead seat, said abutment being substantially continuous and having a height of at least 2.2 mm and a maximum diameter such that a tire bead of a tire for which the rim is intended can pass over said abutment to seat on said adjacent bead seat and a generally radially

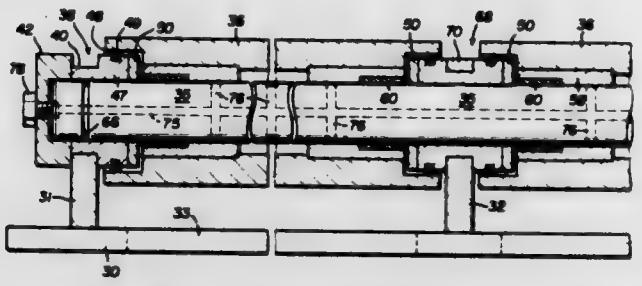
extending and axially outwardly directed abutment face to engage the toe of a tire bead seated on said adjacent bead seat so that under the action of road generated side forces rotation of said tire bead about said abutment is effected to retain the tire bead at said bead seat.

4,351,383

BEARINGS FOR CONTINUOUS CASTING ROLLER APRONS

Floyd R. Gladwin, deceased, late of Grosse Ile, Mich. (by Yvonne J. Gladwin, executrix), assignor to Gladwin Corporation, Taylor, Mich.

Filed Apr. 10, 1980, Ser. No. 138,850
Int. Cl.³ B22D *11/12*
U.S. Cl. 164—448 **8 Claims**



1. In a roller apron for supporting and guiding a metal strand formed in a continuous casting mold through a cooling system such as a water spray or the like, said roller apron having spaced apart rails with elongated rollers extending between the rails and with the rollers each formed of a center shaft and with means fixedly mounting the shaft upon the rails, and a surrounding cylindrically shaped roller sleeve rotatably fitted around the shaft and having its inner circular wall spaced from the outer surface of the shaft, an improved bearing construction comprising:

a journal type bearing arranged between the shaft and roller sleeve and formed of an elongated, thin-wall, generally cylindrically shaped bearing sleeve surrounding the shaft and said bearing sleeve having an axial length, the entire outer surface along the axial length of said bearing sleeve being tightly in surface to surface contact with the inner wall of the roller sleeve so as to form a non-slip, frictional engagement with the roller sleeve and roughly one-half of the axial length of the inner surface of said bearing sleeve forming a rotatable contact with the shaft;

an annular, cylindrically shaped recess of substantial width formed along roughly one-half of the axial length of said bearing sleeve in the inner surface of the bearing sleeve and a thin-wall, cylindrically shaped liner bushing being tightly and non-rotatably fitted within and along substantially the full width of the recess, and the inner surface wall of the bushing rotatably engaging the shaft and forming a part of the shaft engaging wall surface of the bearing;

and said bearing sleeve being formed of a bronze-like bearing type material of relatively substantial compressive strength, and with the liner bushing being formed of a lower coefficient of friction, but lower compressive strength material;

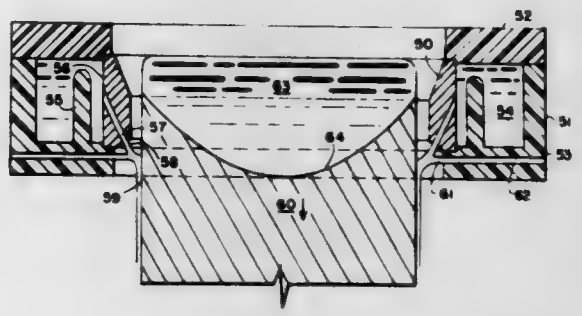
said sleeve and said liner bushing together providing a reduced friction surface for said roller shaft than would be provided by a bronze-like sleeve, and yet providing greater resistance to compression forces transmitted by said shaft, in response to the temperature and ferrostatic pressures of said strand and said cooling system, than would be provided by a lower compressive strength material bushing.

4,351,384

COOLANT CONTROL IN EM CASTING

David G. Goodrich, Danville, Calif., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Sep. 24, 1979, Ser. No. 78,338
Int. Cl.³ B22D *27/02*
U.S. Cl. 164—468 **1 Claim**



1. In the method of continuous or semicontinuous casting of light metal products wherein molten metal is introduced into the feed end of an annular electromagnetic inductor, wherein the shape of the molten metal is controlled as it solidifies or partially solidifies in the inductor by means of forces generatexd by an electromagnetic field and wherein coolant is applied to the surface of the solidified or partially solidified metal which emerges from the discharge end of said electromagnetic inductor, the improvement comprising:

(a) directing a first stream of liquid coolant around the periphery of the emerging metal at an angle of about 5° to 40° from the inductor axis and in the direction away from the discharge end of the electromagnetic inductor;

(b) directing a second stream of fluid around the periphery of the emerging metal at an angle between about 20° and 95° from the first stream so that both first and second streams converge to form a confluent stream at a position disposed a short distance away from the emerging metal surface and the confluent stream then contacts the metal surface at a desired location depending upon the volume and velocity of the two streams, with the sum of the angle between the first stream and the inductor axis and the angle between the first and the second stream not exceeding 125°; and

(c) controlling the volume or velocity or both the volume and velocity of the second fluid stream at elevated levels at the start of casting in order to direct the confluent coolant stream to an impact area on the emerging metal which is as close as possible to the discharge end of the electromagnetic inductor and when the butt of the ingot or billet passes the area of coolant impact, decreasing the volume or velocity or both the volume and velocity of the second fluid stream so that the area of coolant impact on the ingot or billet is moved farther away from the discharge end of the inductor than at the start of casting.

4,351,385

TEMPERATURE CONTROL SYSTEM FOR CHROMATOGRAPHS

Guy C. Amey, Arkansas City, Kans., assignor to The Foxboro Company, Foxboro, Mass.

Filed May 16, 1980, Ser. No. 150,534
Int. Cl.³ F25B *29/00*; G01N *31/08*
U.S. Cl. 165—61 **9 Claims**

1. A field-operable, portable chromatographic instrument, comprising, in combination,

a container with a removable cover to permit ready access to the interior thereof;

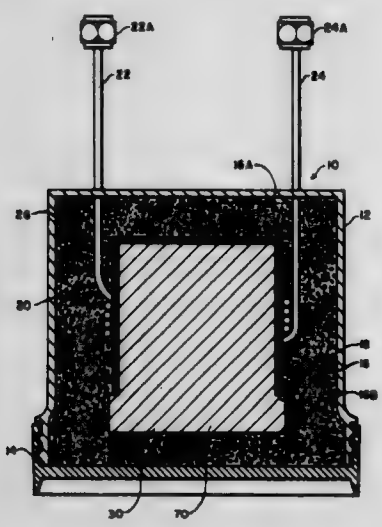
wall means within said container defining an interior cavity having an insert opening at one end thereof, said wall means being capable of high rates of heat transfer;

a chromatographic column wound around said wall means and being in direct heat transfer relationship therewith;

heat insulation means surrounding said column to substan-

tially minimize outward heat transfer away from said container;

a temperature-control module adapted to be inserted within said interior cavity, the shape of said module matching that of said cavity such that when inserted therein said module is in direct heat transfer relationship with said wall means and hencewith said column, said module including means for receiving and storing thermal energy from an external source, said module being isolated from said external source when inserted in said cavity, said module



further including means for transferring stored thermal energy received from said external source between said storing means and said column so as to maintain the temperature of said column at a predetermined value for a period of time long enough to permit chromatographic analysis independent of the transfer to said storing means of more thermal energy from said external source, whereby;

said module is a self-contained source of energy for providing effective temperature control over said column.

4,351,386

INTERNALLY COOLED ROLLER BODY CONSTRUCTION

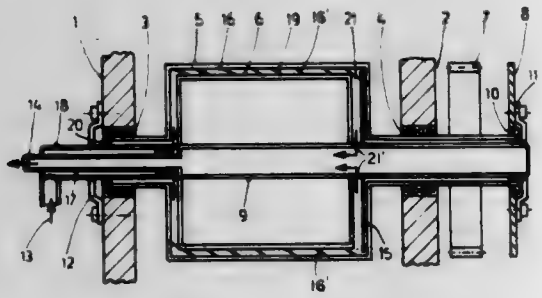
Ingo Köbler, Gessertshausen, Fed. Rep. of Germany, assignor to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Augsburg, Fed. Rep. of Germany

Filed Jun. 17, 1980, Ser. No. 160,231

Claims priority, application Fed. Rep. of Germany, Jul. 5, 1979, 2927198

Int. Cl.³ F28F *5/02*

U.S. Cl. 165—89 **10 Claims**



1. Cooling roller comprising:

an outer rotatable cylindrical jacket (5);

a stationary concentrically positioned body (6) located therein and forming a stationary fluid displacement body, said body being of smaller diameter than the diameter of the jacket (5) to define a cooling fluid chamber (19) between the rotatable jacket and the stationary body;

spiral surface deformations (16) formed on the inner surface of the outer jacket (5) facing the cooling fluid chamber to provide an axial cooling fluid transport spiral;

a stationary hollow shaft (9);

means (10, 20) rotatably supporting the outer cylindrical jacket (5) on said stationary hollow shaft;

a supply pipe (18) surrounding the hollow shaft, with clearance, to define a supply duct (17) between the supply pipe and the hollow shaft;

means communicating the supply duct (17) with the chamber (19) at one axial end thereof and for subsequent fluid transport, in axial direction by said transport spiral;

a quieting, or settling chamber (21) located at the other axial end of the cooling fluid chamber (19) to reduce turbulence of fluid received from said cooling chamber;

and means (21') conducting cooling fluid from said quieting or settling chamber to the interior of the hollow shaft (9) for removal therefrom.

4,351,387

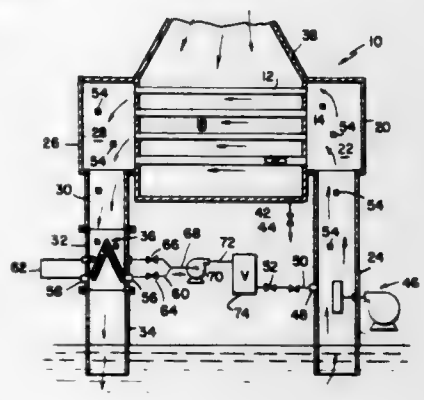
SIEVE ASSEMBLY FOR CLEANING BODIES AND HEAT EXCHANGER SYSTEM INCLUDING SAME

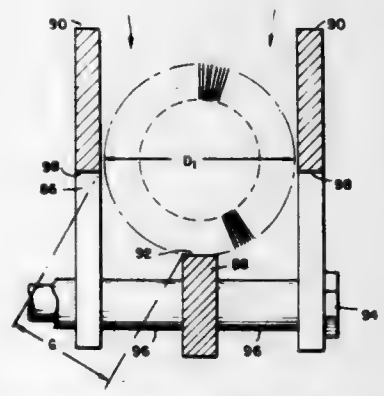
Louis Milia, 16 Ellen Pl., Kings Park, N.Y. 11754

Filed Jul. 8, 1980, Ser. No. 167,160

Int. Cl.³ F28G *13/00;* B01D *35/02*

U.S. Cl. 165—95 **14 Claims**





1. In an apparatus having tubes in which the internal surface is subjected to the build-up of a deleterious scale formation, an assembly for effecting the removal of such scale from said internal surface of said tubes which comprises: a source of fluid, conduit means for passing said fluid through said tubes, means for introducing a plurality of cleaning bodies having a predetermined diameter into said fluid prior to passage through said tubes conduit means for receiving said fluid after passage through said tubes, sieve means for separating said cleaning bodies from said fluid after passage through said tubes, and means for collecting and recycling said cleaning bodies to said conduit means, an improved sieve assembly for said sieve means comprising:

a plurality of guide rails having a top wall, a bottom wall and side walls, said side walls being spaced a distance at least equal to said diameter of said cleaning bodies;

support bars including a top wall and bottom wall disposed between respective guide rails, said top wall of said guide rail extending above said top wall of said support rail a

distance of at least one-half of said diameter of said cleaning bodies and said bottom wall of said guide rail being spaced from said top wall of said support rail of less than one-half of said superficial diameter of said cleaning bodies; and

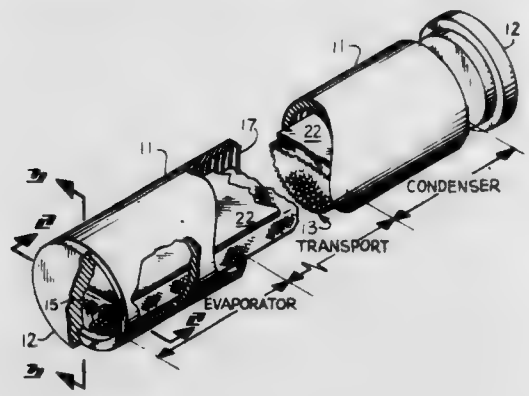
means for mounting in relative juxtaposition said guide rails and said support bars.

4,351,388

INVERTED MENISCUS HEAT PIPE

Leslie D. Calhoun, Creve Coeur, and Marion E. Peeples, Florissant, both of Mo., assignors to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Jun. 13, 1980, Ser. No. 159,220
Int. Cl.³ F28D *15/00*
U.S. Cl. 165—104.26 **17 Claims**



1. A heat pipe having evaporator, transport, and condenser portions comprising:

an enclosure envelope having an axial passage with circumferential grooves therein;

at least one composite wick having a capillary core means with a porous sheath, having a pore size smaller than that of said core means, surrounding and in intimate, continuous contact with said core where said sheath contacts said grooves, axially oriented in said passage and having a cross sectional area less than the cross sectional area of said passage so as to provide at least one axial vapor channel adjacent said composite wick which has at least one axial access path to said circumferential grooves;

means to retain said composite wick having a capillary core means and a porous sheath in intimate contact with said circumferential grooves in said passage; and

a working fluid in said enclosure which wets said circumferential grooves and has sufficient surface tension so as to insure a static capillary rise in said composite wick so as to saturate said wick at least in said evaporator portion of said heat pipe so that as heat is applied to said heat pipe, said working fluid is vaporized at the outside diameter of said circumferential grooves and trapped between the meniscus of said working fluid as it emerges from said pores in said sheath by capillary action maintaining said meniscus in a concave or inverse shape since the working fluid adheres to the minor diameter of said circumferential grooves, whereby a very thin liquid film is maintained where the heat transfer takes place as said vapor cannot escape until it reaches said axial access path.

4,351,389

HEAT EXCHANGER APPARATUS

Stephen Guarnaschelli, 4608 Wayfarer Pl., Orlando, Fla. 32807

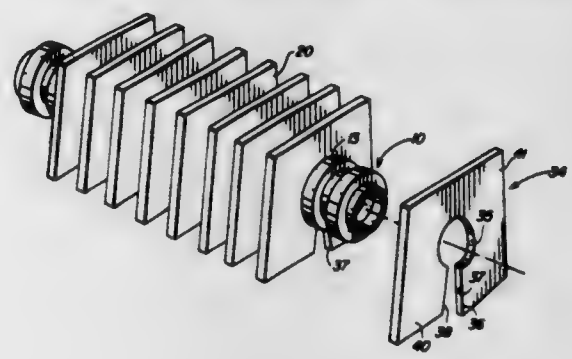
Filed Jul. 27, 1981, Ser. No. 287,376
Int. Cl.³ F28F *1/42*
U.S. Cl. 165—141 **10 Claims**

1. A heat exchanger comprising in combination:

a center pipe;

a coaxially mounted outer pipe mounted over said center pipe and have spiralling grooves formed therein against said center pipe;

heat exchanger fins formed in said outer pipe grooves to thereby transfer heat from said center and outer pipes; and



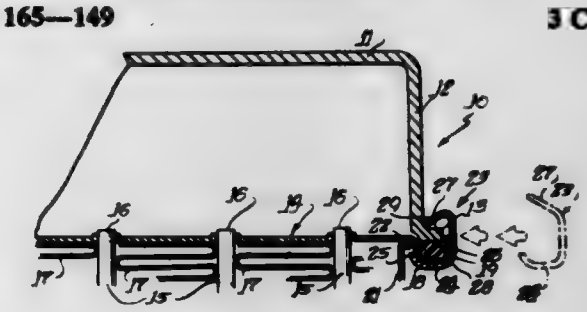
said heat exchanger fins being shaped to have an opening therethrough and a split from each opening to one edge thereof, one side of said split being bent whereby said fins can be threaded onto said outer pipe grooves.

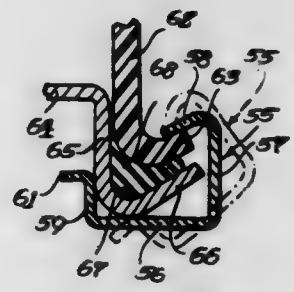
4,351,390

RETAINING CLIPS FOR GASKETED TANKS ON HEAT EXCHANGERS

Charles S. Argyle, Willowdale, and Ralph G. Nanos, Toronto, both of Canada, assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Feb. 11, 1980, Ser. No. 120,433
Int. Cl.³ F28D *1/00*
U.S. Cl. 165—149 **3 Claims**



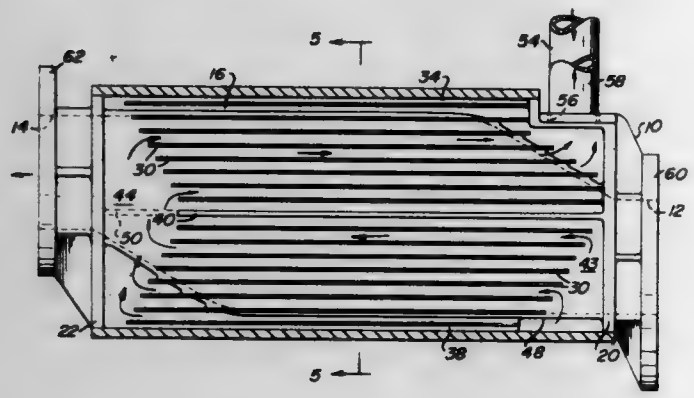


1. A retaining clip for use in securing a tank and a header plate of a heat exchanger together in a fluid tight relationship, the tank and the header plate each having a peripheral flange receiving a resilient sealing gasket therebetween, the header plate flange having a depending portion and an outwardly and upwardly inclined portion defining a channel receiving said gasket, the retaining clip comprising a base portion joining a pair of oppositely disposed substantially parallel walls completely formed prior to assembly, said one wall extending behind the depending flange portion of said header plate flange, and the opposite wall being positioned beyond said peripheral flanges and terminating in an inwardly inclined flange engaging the tank flange to compress the sealing gasket, the inclined clip flange initially contacting said tank flange and the clip is rotated to snap under said header plate flange.

4,351,391
HEAT EXCHANGER FOR WATER PUMPING SYSTEM

H. Alfred Eberhardt, Paoli, Pa., assignor to Hale Fire Pump Company, Conshohocken, Pa.

Filed May 19, 1980, Ser. No. 151,278
Int. Cl.[3] F28D 7/10
U.S. Cl. 165—154 6 Claims



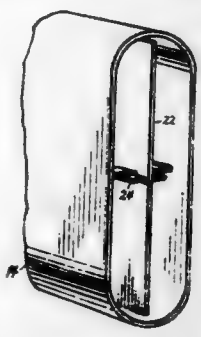
1. A heat exchanger comprising:
an elongated body having an inlet opening at one end thereof and a discharge opening at the other end thereof,
said body including a tubular portion extending between said inlet and discharge openings for defining a first heat exchange chamber internally thereof,
a cover means spaced apart from and enclosing the exterior of said tubular portion to cooperate therewith to define a second heat exchange chamber,
inlet means through which a liquid to be cooled may be supplied to said second heat exchange chamber, and
outlet means through which a liquid to be cooled may be discharged from said second heat exchange chamber,
said tubular portion having fin means providing an extended surface for effective heat exchange action,
said fin means being located on both sides of said tubular portion to extend into both of said first and second heat exchange chambers,
said fin means including a plurality of fins extending generally longitudinally of said tubular portion on both the inside and the outside thereof,
said outside fins cooperating with said cover and said tubular portion to define a plurality of longitudinally extending conduits in said second heat exchange chamber through which the liquid to be cooled flows as it passes through said heat exchanger,
said tubular portion being provided with divider wall portions for dividing said second heat exchange chamber into a plurality of flow compartments extending longitudinally of said tubular portion and crossover ports providing flow communication between adjacent flow compartments, said crossover ports being located so that the liquid to be cooled flows in opposite directions in adjacent ones of said flow compartments,
said divider wall portions dividing said second heat exchange chamber into four flow compartments, there being three crossover ports arranged at the ends of said flow compartments so that said liquid to be cooled makes four passes longitudinally back and forth along said tubular portion.

4,351,392
HEAT EXCHANGE TUBE WITH HEAT ABSORPTIVE SHIELD

Richard F. Stockman, Friendship, N.Y., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Dec. 22, 1980, Ser. No. 218,895
Int. Cl.[3] F28F 1/40
U.S. Cl. 165—186 2 Claims

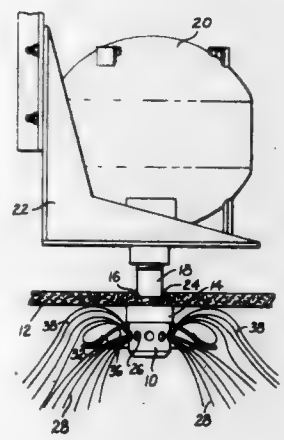
1. A recuperative heat exchanger that directs a fluid to be heated in heat exchange relation with a heating fluid, said heat exchanger including tube means having essentially flat sidewalls with inlet and outlet ends adapted to conduct a fluid to be heated through said tube means, means for directing a heating fluid over the outside of the tube to heat said tube by contact therewith, heat absorptive shield means positional longitudinally in said tube means between sides thereof lying essentially parallel to the flat sides of said tube, and lateral spacers confronting opposite sides of said shield adapted to hold said shield in a predetermined position.



4,351,393
NOZZLE HAVING DEFLECTOR FOR PRESSURIZED FIRE SUPPRESSION FLUID

Charles N. Tyree, Blue Springs, Mo., assignor to Fike Metal Products Corp., Blue Springs, Mo.

Filed Nov. 24, 1980, Ser. No. 209,714
Int. Cl.[3] A62C 37/08
U.S. Cl. 169—37 9 Claims

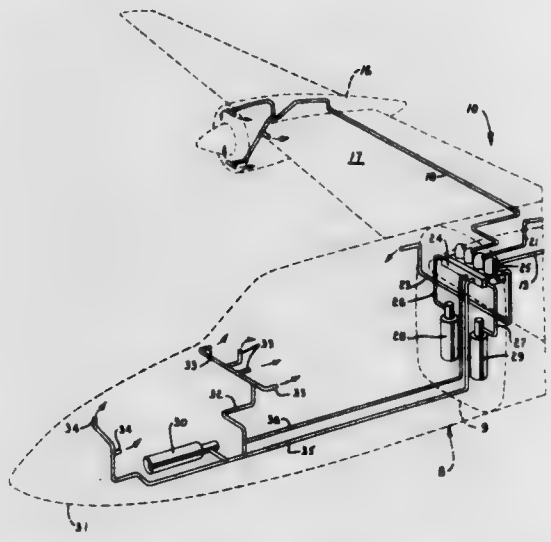


1. In a fire sprinkling system for delivering a fire suppressing fluid initially in liquified form from a fluid pressure tank in response to temperature-sensing means,
a tubular spray nozzle for placement into communication with said tank and disposition adjacent a ceiling in depending relationship thereto,
said nozzle having a number of circumferentially spaced, fluid discharge orifices therearound for converting the pressure existing in said fluid into velocity and throttling the fluid discharged therefrom into small streams radiating from the nozzle; and
a device for protecting the ceiling against damage which would otherwise result from the force of said streams jetting thereagainst,
said device including a hollow shield attached to and surrounding the nozzle between the ceiling and said orifices,
said shield being provided with a lower, fluid impinging surface within the path of said streams and spaced outwardly of said orifices,
said surface being shaped and disposed to deflect a portion of the fluid flow downwardly away from the ceiling, there being a lowermost continuous, annular, planar, outwardly extending, peripheral flange in spaced parallelism with the ceiling below said orifices operable to preclude impingement of the high velocity fire suppressant streams against adjacent portions of the ceiling.

4,351,394
METHOD AND SYSTEM FOR AIRCRAFT FIRE PROTECTION

William A. Enk, 1213 Horizon Dr., Blue Springs, Mo. 64015

Filed Dec. 28, 1979, Ser. No. 107,920
Int. Cl.[3] A62C *3/08, 37/18;* B64D *45/00*
U.S. Cl. 169—61 9 Claims



1. In an aircraft fire protection system having means for applying extinguishant to selected fire zones of the aircraft, the improvement comprising:

a fire responsive sensor in each fire zone having a first condition when a fire condition is sensed and a second condition when a fire condition is not sensed;

an electric circuit for each sensor, each circuit being completed when the corresponding sensor is in the first condition and interrupted when the corresponding sensor is in the second condition;

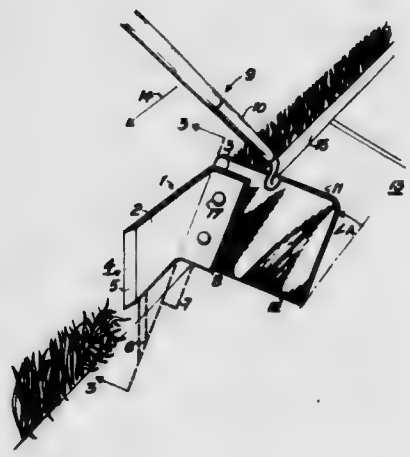
indicator means for indicating which of the circuits are completed to provide an indication of which fire zones are exposed to fire conditions; and

test means for selectively testing each circuit with the extinguishant applying means remaining operative to apply extinguishant to each fire zone, said test means being operable with each sensor in the second condition thereof to test the ability of each circuit to effect completion thereof when the corresponding sensor is subsequently disposed in the first condition thereof.

4,351,395
LAWN EDGER AND TRIMMER

George S. Lilley, 101 E. Pierson Ave., Somers Point, N.J. 08244

Filed Sep. 3, 1980, Ser. No. 183,645
Int. Cl.[3] A01G *3/06;* A01B *1/12*
U.S. Cl. 172—13 6 Claims



1. A sidewalk edger and lawn trimmer implement, comprising:

a one-piece edger and trimmer having a vertical cutting blade portion with a cutting edge; also having an obliquely downwardly and forwardly angled extension portion formed integrally with said edger and trimmer adjacent and generally perpendicular to said vertical portion, said obliquely angled portion providing a groove maker and a hoe attachment portion;

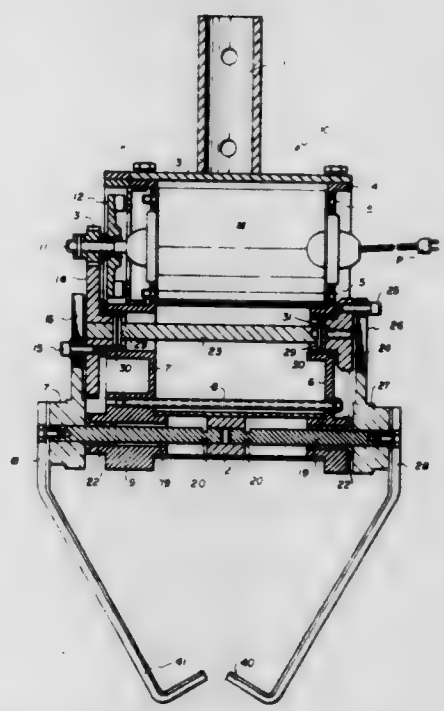
a hoe means having a horizontal edge means for scraping the top surface of the sidewalk and for providing variable control of said vertical portion and said groove maker; and

means connecting said one-piece edger trimmer to said hoe.

4,351,396
OSCILLATING POWERED CULTIVATING TOOL

Lee J. Moulton, Carmichael, Calif., assignor to Hawaiian Motor Company, Long Beach, Calif.

Filed Jan. 30, 1981, Ser. No. 229,925
Int. Cl.[3] A01B *35/00*
U.S. Cl. 172—40 7 Claims



1. A powered cultivating tool or the like comprising, in combination:

a housing having a top portion including a handle supported thereon, said housing defining an enclosure within a topmost portion of which a prime mover is disposed,

ventilation means for said prime mover,

an output shaft extending from said prime mover without said housing,

a pinion fixed to said output shaft and an axle having opposite extremities with a gear carried on one of said extremities, said gear being adapted to mesh with said pinion, said axle supported on bearings within said housing and being vertically below and parallel to said prime mover's output shaft and having both said extremities extending without said housing,

a roller on said gear, axially offset from said axle defining a first cam,

a spindle means vertically below and parallel to said axle disposed in said housing supported on bearings and having terminal portions extending outwardly from said housing,

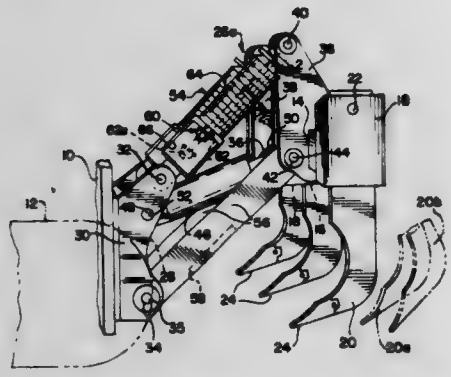
a first cam follower fixed on said spindle means having an upwardly open U-shaped bifurcated portion straddling said roller,

and a cultivating tine fixed to said cam follower and said spindle for pendulum like oscillation in response to movement said roller through said prime mover.

4,351,397
VIBRATING RIPPER

Bernard L. Winker, Prospect, Ill., assignor to International Harvester Co., Chicago, Ill.

Filed Mar. 10, 1980, Ser. No. 129,448
Int. Cl.³ A01B 61/00
U.S. Cl. 172—464 5 Claims



1. A vibrating ripper assembly to swingably suspend ripper teeth shanks from vertical support plate means carried by, and across the rear of, a tractor, comprising:

attachment means for attachment to the vertical support plate means (10) on the tractor; and

quadrilateral linkage means affixed at a relatively inner end thereof to stationary swing connections (32, 34) on the attachment means for swinging movement by the linkage means of the relatively outer end portion thereof, said swinging outer end portion having vertically spaced-apart pitching and pitch axis swing connections (40, 42) linking same in the quadrilateral linkage means, and further having means of suspending ripper teeth shanks (20) from said swinging outer end portion;

said quadrilateral linkage means having an upper link member (54*a*) pivoted to the vertically spaced relatively upper swing connection to render the same the pitching connection, and including, as link sections therein, a pitch actuator cylinder section (82) effective at the just said connection to internally adjust pitch of the linkage means and angle of tooth action about the pitch axis (44) swing connection, and a co-aligned series-connected elastically compressible (68) section of stocked conical springs effective at the pitching connection (40) to yieldably adjust to external pitch changes from horizontal vibratory tooth action about the pitch axis swing connection (42).

4,351,398
WELL DRILLING APPARATUS

Klaar Prins, Savornin Lohmanlaan 7, Velsen, and Reinout K. N. J. Prins, Dorpsstraat 940, Assendelft, both of Netherlands

Filed Jul. 13, 1979, Ser. No. 57,429
Int. Cl.³ E21B 3/04, 15/00
U.S. Cl. 173—104 1 Claim

1. In a drill rig for drilling wells,

a derrick adapted to hold and lower a conductor string and drill pipe string,

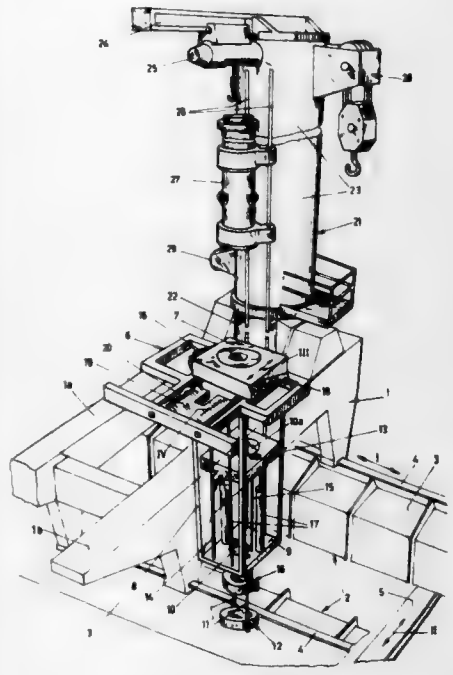
means for holding the lowered conductor string,

a support frame fixed to said derrick to extend over the well to be drilled,

a column excentrically positioned relative to the support frame, said column carrying at least one load arm and vertical guide means for a hammering device, said load arm, guide means and said hammering device being selectively rotatably adjustable between an active position in alignment with the support frame and an inactive position out of alignment therewith,

a rotary table for holding and rotating the drill pipe string, said rotary table being movably mounted on said frame to be displaceable between an active position in alignment with the axis of the well and an inactive position laterally therefrom

drill pipe holding means movably mounted on said frame below said rotary table for displacement between a first position laterally of the axis of said well and a second position in alignment with the axis of said well, and

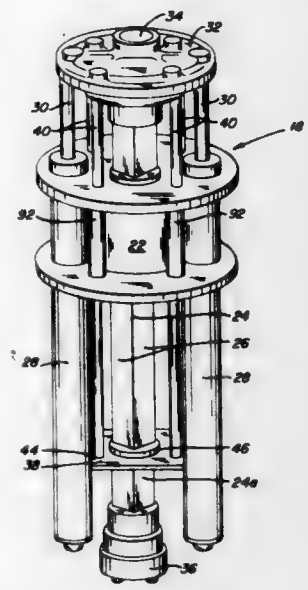


means for displacing said rotary table and means for displacing said drill pipe holding means, whereby said rotary table may be removed from alignment with the axis of the well and said drill pipe string simultaneously held without removal from said well.

4,351,399
DRILL

Roland R. Lapointe, Claremont, N.H., assignor to Joy Manufacturing Company, Pittsburgh, Pa.

Filed Jul. 3, 1980, Ser. No. 166,264
Int. Cl.³ B23Q 5/00; E21C 5/00; B23Q 5/027, 5/033
U.S. Cl. 173—148 23 Claims



1. In an earth drilling apparatus wherein an elongated drive rod is movable in the direction of the axial extent thereof and is adapted to carry an implement adjacent a first end of a forward end portion for earth boring and wherein said drive rod is cooperable with a feed portion of said drilling apparatus and with a rotary drive means in that said feed portion includes feed means operable to move said drive rod in such axial direction with respect to said rotary drive means and said rotary drive means is operable to drive said drive rod in axial rotation, the improvement comprising:

centralizer means adjacent a second end of said forward end portion and slidably cooperable with said forward end

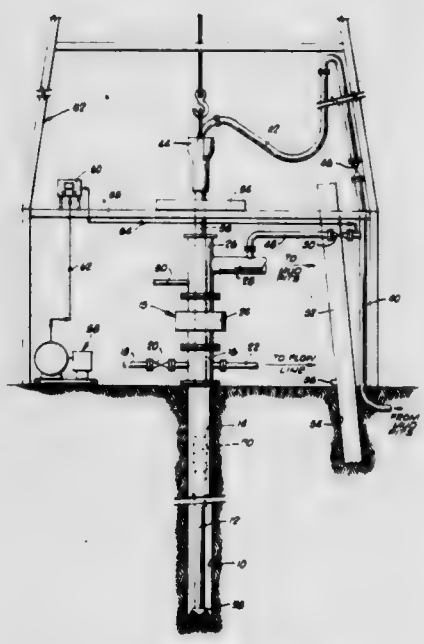
portion of said drive rod and capable of axial movement in conjunction therewith for stabilizing said forward end portion of said drive rod during such earth boring.

4,351,400

METHOD OF PREVENTING DRILL STRING OVERFLOW

Ben V. Faulkner, Rte. 1, Box 15, Washington, Okla. 73093

Filed Oct. 31, 1980, Ser. No. 202,797
Int. Cl.³ E21B *21/14*
U.S. Cl. 175—69 **5 Claims**



1. A method of preventing drilling fluid overflow when adding or removing drill pipe sections to or from a drill string disposed in a well bore comprising the steps of:

introducing gasified drilling fluid into said drill string until a predetermined volume thereof is introduced therein at a predetermined pressure thereby displacing non-gasified drilling fluid downwardly within said drill string and upwardly within the annulus between said drill string and said well bore to lower the level of non-gasified drilling fluid in said drill string a distance such that upon releasing the pressurized gasified drilling fluid from said drill string and removing drilling fluid and gas therefrom, the resulting level of drilling fluid in said drill string is below the level at which said drill pipe sections are added to or removed from said drill string;

releasing said pressurized gasified drilling fluid from said drill string whereby said gasified drilling fluid flows upwardly through said drill string and drilling fluid and air are removed therefrom; and then

adding or removing drill pipe sections to or from said drill string.

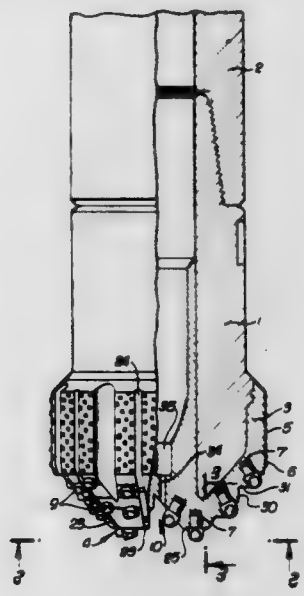
4,351,401

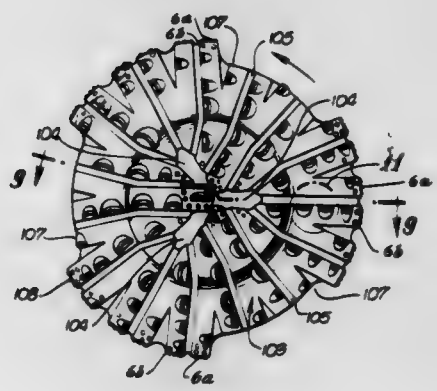
EARTH-BORING DRILL BITS

Coy M. Fielder, Salt Lake City, Utah, assignor to Christensen, Inc., Salt Lake City, Utah

Division of Ser. No. 913,571, Jun. 8, 1978, Pat. No. 4,244,432, which is a continuation of Ser. No. 704,424, Jul. 12, 1976, abandoned. This application Jun. 13, 1980, Ser. No. 159,181
Int. Cl.³ E21B *10/46, 10/56*
U.S. Cl. 175—329 **6 Claims**

1. An earth-boring bit comprising a metallic shank having a fluid passage, one end of said shank being coated with a hard material bonded to said end and forming a face of said bit, said hard material having a wear resistance substantially greater than that of said metallic shank, preformed sockets in said hard material of said face, preform cutters mounted in said sockets and extending to substantially the gage of the bit, each of said cutters including a plurality of abrasive particles bonded into a preform, and penetration control diamonds embedded in said hard material adjacent to the gage of the bit and extending around the gage of the bit, said control diamonds projecting from said hard material, the extent of projection of said control





diamonds from said hard material being substantially less than the extent of projection of said preform cutters from said hard material.

4,351,402

BODY STRUCTURE AND NOZZLE FOR ENHANCING THE FLOW OF DRILLING FLUID IN A ROTARY DRILL BIT

Eduardo B. Gonzalez, Ave. Universidad Num. 482, Mexico 13, D.F., Mexico

Filed May 27, 1980, Ser. No. 153,683
Int. Cl.³ E21B *10/60*
U.S. Cl. 175—340 **22 Claims**

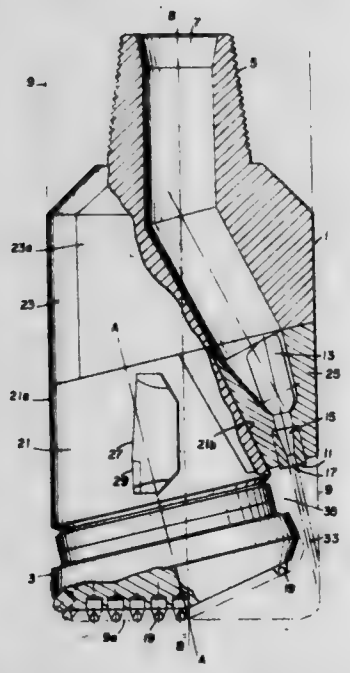
1. A rotary drill bit for drilling a bore hole in the surface of the earth, said drill bit comprising:

(a) a body means having a duct means therethrough for carrying drilling fluid;

(b) a conical cutting head having an axis at an acute angle with respect to the axis of said drill bit, said cutting head having a conical head portion with a plurality of teeth thereon and a stem portion, said stem portion being positioned in said body means for mounting said cutting head on said body means; and

(c) an elongated nozzle means positioned at the end of said duct means for injecting said drilling fluid in an arcuate jet into the bore hole, said nozzle means having an opening means opening into said bore hole, wherein the longitudinal center line of said opening means is arcuate and follows the locus of the midpoint between the side wall of the bore hole, adjacent said nozzle means, and the outermost circumference of the side of the cutting head means, on

the same side of the axis thereof as said nozzle means, wherein the drilling fluid injected through said nozzle



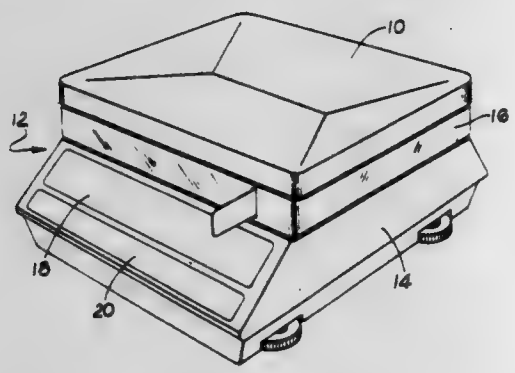
means removes detritus from between the teeth of said cutting head and from the bottom of the bore hole.

4,351,403

WEIGHING SCALES INCORPORATING PRINTERS

Andrew C. Ferguson, Sutton Coldfield, England, assignor to W. & T. Avery Limited, West Midlands, England

Filed Mar. 9, 1981, Ser. No. 242,037
Int. Cl.³ G01G *23/38, 23/18*
U.S. Cl. 177—2 **8 Claims**



1. A weighing scale including printing means characterised in that the load receiving platform of the scale is mounted on a load cell for providing an electrical representation of the applied load, the scale includes a main housing accommodating the load cell, and said printing means is accommodated within a space between said platform and said housing, directly beneath said platform.

4,351,404

BRAKE CONTROL SYSTEM FOR A COMBINATION CAR SYSTEM

Isao Igarashi, Okazaki, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Nov. 17, 1980, Ser. No. 207,452
Claims priority, application Japan, Nov. 16, 1979, 54-158753[U]
Int. Cl.³ B60D *7/00*; B60K *26/04*; B62D *63/00*
U.S. Cl. 180—14 R **7 Claims**

1. In a combination car system, comprising:

(a) a first car, capable of running independently, comprising a first pair of front wheels by which said first car is driven, a first pair of rear wheels, and a first wheel braking element displacement of which provides braking performance for said first car; and

(b) a second car, capable of running independently, comprising a second pair of front wheels, a second pair of rear wheels by which said second car is driven, and a second wheel braking element displacement of which provides braking performance for said second car;

(c) said first car and said second car being couplable together into a coupled car which runs on said first pair of front wheels of said first car and said second pair of rear wheels of said second car, with said first pair of rear wheels of said first car and said second pair of front wheels of said second car being removed from road contact:

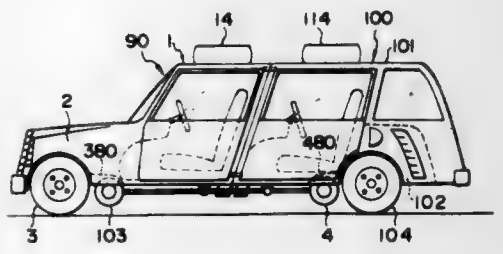
a brake control system, comprising:

(d) a first brake pedal attached to said first car;

(e) a first displacement transmission mechanism, which transmits displacement of said first brake pedal to said first wheel braking element;

(f) a second brake pedal attached to said second car;

(g) a second displacement transmission mechanism, which, when said second car is running independently, transmits displacement of said second brake pedal to said second wheel braking element, comprising:



(g1) a connection unit;

(g2) a first displacement transmission submechanism, which, when said second car is running independently, is removably drivingly coupled to said connection unit, and which at this time transmits displacement of said second brake pedal to said connection unit; and

(g3) a second displacement transmission submechanism, which transmits displacement of said connection unit to said second wheel braking element;

(h) and a third displacement transmission mechanism which, when said first car and said second car are coupled together into said coupled car, extends from a part of said first displacement transmission mechanism to be removably drivingly coupled to said connection unit, said first displacement transmission submechanism being at this time uncoupled from said connection unit;

(i) whereby, when said first car and said second car are coupled together into said coupled car, the braking operation of said first car and the braking operation of said second car are coupled together and are controlled from said first car by displacement of said first brake pedal, the controlling operation of said second brake pedal being at this time disenabled.

4,351,405

HYBRID CAR WITH ELECTRIC AND HEAT ENGINE

Gerald M. Fields, Brentwood, and Robert G. Metzner, Beverly Hills, both of Calif., assignors to Hybricon Inc., North Hollywood, Calif.

Continuation-in-part of Ser. No. 950,795, Oct. 12, 1978, abandoned, which is a continuation-in-part of Ser. No. 885,797, Mar. 13, 1978, abandoned. This application Nov. 30, 1979, Ser. No. 98,930
Int. Cl.³ B60K *41/00, 7/00*
U.S. Cl. 180—65 A **18 Claims**

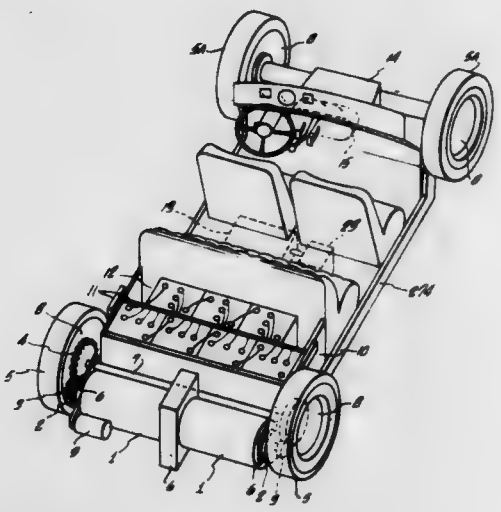
1. A vehicle comprising

a supporting structure having wheels rotatably mounted relative to said supporting structure;

a heat engine mounted on said supporting structure for driving at least a first said wheel, and having a fuel metering device;

a battery powered electric motor mounted on said supporting structure for driving at least a second said wheel, said electric motor having an armature winding;

means for controlling average power flowing through said armature winding and having a control input and power terminals through which the current in said armature winding flows responsive to a control signal at said control input;



a mode select input;

means for heat engine and electric motor speed control having a single accelerator pedal for alternately controlling either said fuel metering device or said control signal at said control input in accordance with a signal at said mode select input; and

a mode selection means for selecting which of said fuel metering device or said control signal said means for heat engine and electric motor speed control is to control and for sending said signal to said mode select input.

4,351,406

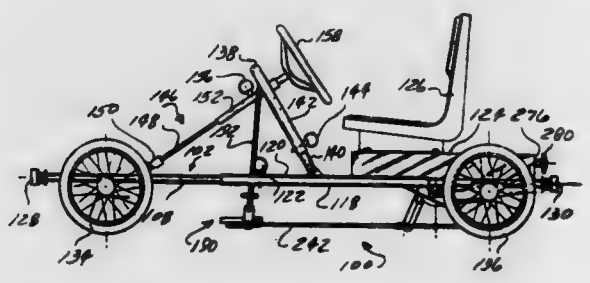
VELOCIPEDE FOR THE PHYSICALLY HANDICAPPED

Larry D. Lay, 26078 Alger, Madison Heights, Mich. 48071

Continuation-in-part of Ser. No. 965,573, Dec. 1, 1978, Pat. No. 4,284,157. This application Aug. 14, 1980, Ser. No. 178,033

Int. Cl.³ B60K *1/00*

U.S. Cl. 180—65 R **18 Claims**



1. A vehicle for the physically handicapped comprising:

a frame;

a carriage portion mounted on said frame;

at least one front and two rear wheels;

means, operably connected to said front wheel, for steering said vehicle;

means for driving at least one of said front and rear wheels, said driving means comprising:

a foot support connected to said driving means and adapted for reciprocal movement;

a brace connected to said foot support for connecting the leg of the occupant to said foot support; and

means, operably connected to said drive means, for preventing the transmission of driving force to said foot support when reciprocal movement of said foot support is hindered by the leg of the occupant.

4,351,407

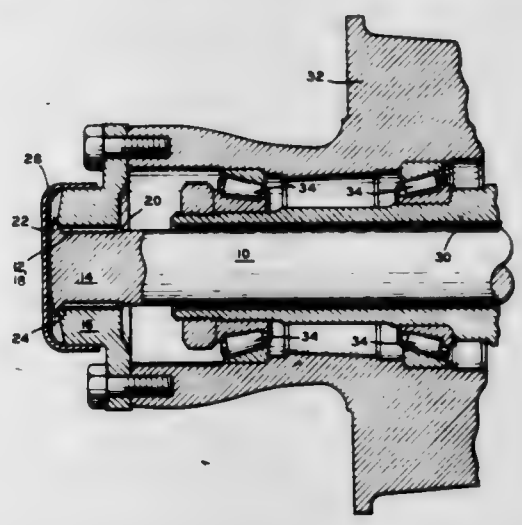
AXLE DRIVE ASSEMBLY

Enos P. Call, Columbia City, Ind., assignor to Dana Corporation, Toledo, Ohio

Filed Dec. 21, 1979, Ser. No. 106,138

Int. Cl.³ B60B *37/00*; F16J *15/10*

U.S. Cl. 180—75 **2 Claims**



1. In a drive assembly comprising an axle tube, a hub rotatably supported on said tube, a drive axle shaft extending through said tube, said axle shaft including external splines at one end thereof, said splines having inner and outer extremities, said assembly further comprising a drive flange having mating internal splines mounted over said external splines of said axle shaft, said drive flange being affixed to said hub for driving rotation thereof; an improvement comprising said drive flange being axially and non-rotatably secured to said axle shaft via the combination of

(a) a forged flange formed at said outer extremity of said splines of said axle shaft whereby said drive flange is urged against said inner extremity of said splines of said axle shaft, and

(b) a helix in at least one of said mating splines whereby an interference fit is achieved between said shaft and drive flange.

4,351,408

ARTICULATED VEHICLE

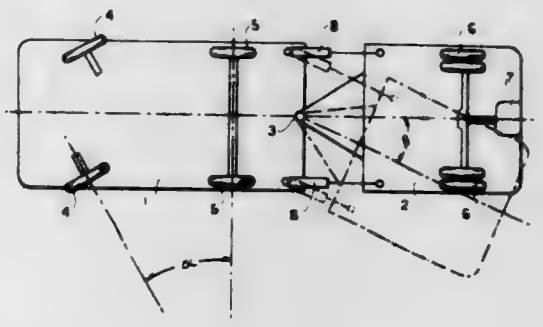
Hans Moll, Augsburg, Fed. Rep. of Germany, assignor to MAN Maschinenfabrik Augsburg-Nurnberg AG, Munich, Fed. Rep. of Germany

Filed Dec. 3, 1979, Ser. No. 99,441

Claims priority, application Fed. Rep. of Germany, Dec. 5, 1978, 2852613

Int. Cl.³ B62D *53/000*

U.S. Cl. 180—135 **2 Claims**



1. An articulated vehicle comprising:

(a) a front member having at least two axles, the forwardmost axle being steerable,

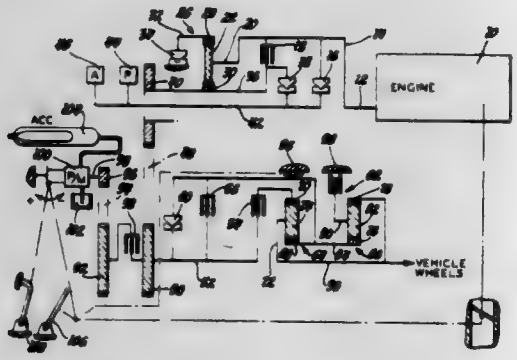
(b) a rear member, connected to the front member by a pivotal joint, having at least one axle and an engine for driving that axle,
(c) a first transducer for producing a signal representative of the angle between the steerable axle and another non-steerable axle of the front member,
(d) a second transducer for producing a signal representative of the buckling angle between the longitudinal centerlines of the front and rear members,
(e) comparator means for receiving the signals from the transducers and for producing a signal in the event that the actual buckling angle between the vehicle members is less or greater than a theoretical buckling angle, the theoretical buckling angle being determined by the signal from the first transducer,
(f) two pneumatic piston and cylinder assemblies pivotally connected between the two vehicle members, the piston and cylinder assemblies being located one on each side of the pivotal joint and being responsive to the signal from the comparator for producing a torque about the pivotal joint to increase or decrease, as the case may be, the actual buckling angle between the vehicle members so that it approaches the theoretical buckling angle, and
(g) a resilient pneumatic fluid within each piston and cylinder assembly for permitting variations between the theoretical and actual buckling angles, caused by roadway conditions, while constantly urging the actual buckling angle toward the theoretical buckling angle.

4,351,409

VEHICLE DRIVE SYSTEM WITH ENERGY STORAGE AND RETRIEVAL

Marvin J. Malik, Bloomfield Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 14, 1980, Ser. No. 206,704
Int. Cl.³ F16H *47/04;* B60K *25/00*
U.S. Cl. 180—165 **2 Claims**



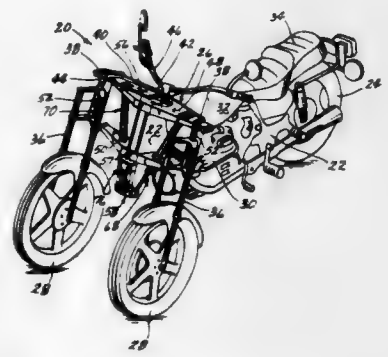
1. A drive system having a power transmission and an energy storage mechanism for use with a self-propelled engine driven vehicle comprising:
a multispeed planetary transmission mechanism including an input shaft, an output shaft, planetary gear means operatively connected between said input and output shaft, and a plurality of selectively engageable and disengageable friction clutch and brake means for establishing a drive connection with said input shaft and various drive ratios within said planetary gear means;
an internal combustion engine having an output shaft;
gear reduction means drivingly connected between said internal combustion engine output shaft and said transmission mechanism input shaft including one-way brake means for establishing a reduced gear ratio through said reduction gear means when torque is directed from said transmission input shaft to said internal combustion engine output shaft and a selectively engageable friction clutch means for providing a direct drive bypassing the gear reduction means;
hydraulic supply means including first and second one-way clutch means for providing a one-way drive connection from said engine output shaft and to said hydraulic supply means and from said transmission input shaft to said hydraulic supply means respectively; and
hydraulic drive and storage means for selectively storing and delivering energy including a variable displacement hydraulic translating means, a storage accumulator means, and a selectively engageable friction clutch means for selectively connecting said hydraulic translating means with said transmission input shaft in parallel drive relationship with said internal combustion engine output shaft, said hydraulic translating means being selectively operable as a hydraulic pump to store hydraulic energy in said accumulator during vehicle coasting and during internal combustion engine operation and also being selectively operable as a hydraulic motor to deliver energy from said accumulator means to said transmission mechanism during acceleration and normal driving of said vehicle and also being operable to supply energy through said gear reduction means to provide automatic starting of the internal combustion engine during any mode of vehicle operation.

4,351,410

SELF-BALANCING WHEELED VEHICLE

Ray T. Townsend, Des Moines, Iowa, assignor to Townsend Engineering Company, Des Moines, Iowa

Filed Jul. 17, 1980, Ser. No. 169,804
Int. Cl.³ B62D *9/02, 61/06;* B62K *5/08*
U.S. Cl. 180—210 **10 Claims**



1. A wheeled vehicle, comprising,
a vehicle frame having opposite ends,
wheel means on one end of said frame,
a hinged parallelogram frame means having four hinged corner portions pivotally mounted on the other end of said frame, and being adapted for pivotal movement in opposite directions,
a pair of spaced wheels secured to said parallelogram frame means at opposite sides thereof, whereby said parallelogram frame means will pivot laterally in first and second opposite lateral directions when said frame leans laterally away from a position of equilibrium in said first and second lateral directions, respectively,
sensing means operatively connected to said parallelogram frame means, and adapted to be actuated by said parallelogram frame means when said frame leans away from a position of equilibrium whereby the inbalance of said frame away from a position of equilibrium actuates said sensing means, and
power means connected to said sensing means and said parallelogram frame means whereby the initial pivotal movement of said parallelogram frame means from a position of equilibrium in one of said lateral directions will automatically cause said sensing means to actuate said power means to move said parallelogram frame means in the opposite lateral direction to cause said vehicle frame to move laterally to a position of equilibrium,
said sensing means comprising a lever pivotally connected to said vehicle frame,
and said power means includes an extensible and retractable cylinder means connected at one end to said lever and

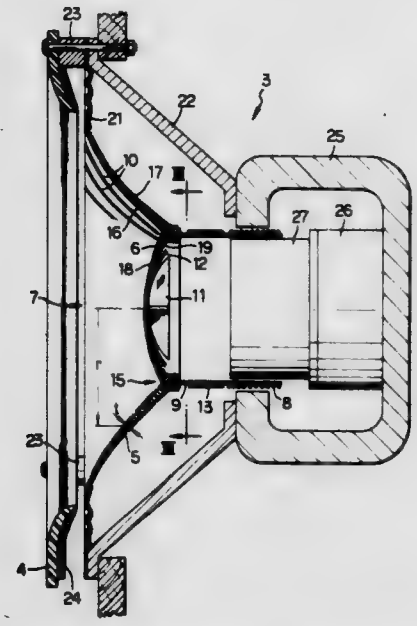
connected at the opposite end to said parallelogram frame means whereby said lever is pivoted in opposite directions with respect to said vehicle frame in response to leaning movement of said parallelogram frame means in said first and second opposite lateral directions, respectively, from a position of equilibrium.

4,351,411

SPEAKER DEVICE

Kenzo Inoue, 22, Kitatanda, Yabu-machi, Tokai-shi, Aichi-ken, Japan

Filed May 27, 1980, Ser. No. 153,703
Claims priority, application Japan, Aug. 29, 1979, 54-110693
Int. Cl.[3] H04R *7/14*
U.S. Cl. 181—168 7 Claims



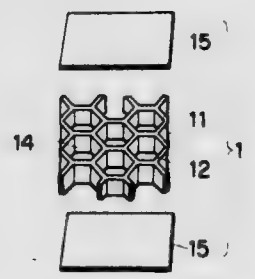
1. A speaker device comprising a diaphragm including a cone portion of synthetic resin material which is reinforced for increased rigidity with a number of circumferentially space, radially extending, integrally formed ribs, said cone portion having an average wall thickness on the order of tenths of a millimeter, and means for improving the sound reproducing capability of said speaker device and for improving the speaker device's resistance to deterioration from exposure to ultraviolet light comprising at least one layer of metal plating on all of the inside and outside surfaces of said cone portion; whereby said cone portion is given further enhanced sound reproduction capability by said at least one layer of metal plating.

4,351,412

DIAPHRAGM FOR ACOUSTIC INSTRUMENTS AND METHOD OF MANUFACTURING THE SAME

Isao Yamamuro, Tokorozawa, and Tsunehiro Tsukagoshi, Ohmori-nishi, both of Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Nov. 28, 1979, Ser. No. 97,989
Claims priority, application Japan, Nov. 30, 1978, 53-147217
Int. Cl.[3] G10K *13/00*
U.S. Cl. 181—170 15 Claims



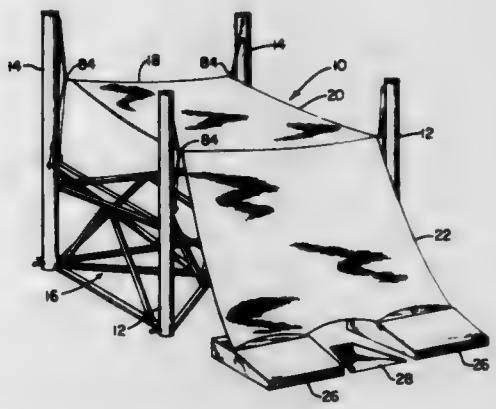
1. A diaphragm for use in an acoustic instrument comprising a body of a kneaded mixture consisting essentially of 10–90 parts by weight of flaky graphite powder and 90–10 parts by weight of a thermoplastic resin, said body including a plurality of closed interior cavities partitioned by an interior rib.

4,351,413

DECELERATION APPARATUS FOR SAFETY NETS

Wayne E. Simon, P.O. Box 125, Evergreen, Colo. 80439

PCT No. PCT/US79/00326, § 371 Date Jan. 15, 1981, § 102(e) Date Jan. 9, 1981, PCT Pub. No. WO80/02507, PCT Pub. Date Nov. 27, 1980
PCT Filed May 15, 1979, Ser. No. 245,345
Int. Cl.[3] A62B *1/22*
U.S. Cl. 182—139 18 Claims



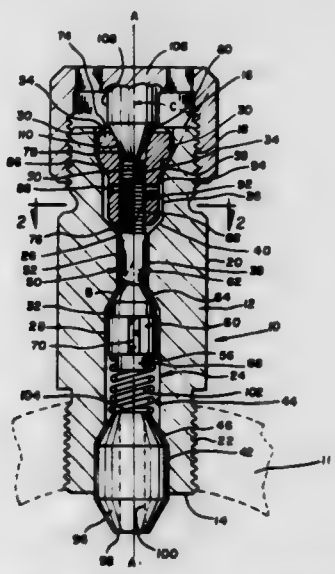
1. A landing net assembly adapted for cushioning the impact of a free falling body comprising a landing net and a plurality of support members in outer surrounding relation to said landing net, a dampening device associated with at least one of said support members, said dampening device including a chamber filled with a fluid, a float suspended in said fluid, and connecting means interconnecting each said float and an outer peripheral edge portion of said net so that the displacement of said landing net imparted to the outer peripheral edge portion adjacent said dampening device will cause a displacement of its respective float in said chamber.

4,351,414

LUBRICANT FITTING

Jeff L. Merten, Rosenberg, Tex., assignor to ACF Industries, Incorporated, New York, N.Y.

Filed Jun. 6, 1980, Ser. No. 156,899
Int. Cl.[3] F01M *1/18;* F16N *21/06*
U.S. Cl. 184—105 B 8 Claims



1. A lubricant fitting adapted to be connected to a valve body comprising:

an elongate body having a central bore therethrough, said

central bore having an intermediate bore portion and opposite bore end portions of enlarged diameters joined by said intermediate bore portion;

an annular seat formed at the juncture of each of said end bore portions with said intermediate bore portion;

an elongate valve member mounted within said central bore having an intermediate section and opposite end sections joined by said intermediate section, each of said end sections having an annular shoulder in an opposed facing relationship to its corresponding said annular seat; and

a threaded connection between said end sections for allowing said end sections to move longitudinally relative to each other upon the relative rotational movement between said end sections to selectively place said opposite end bore portions in fluid isolation.

4,351,415

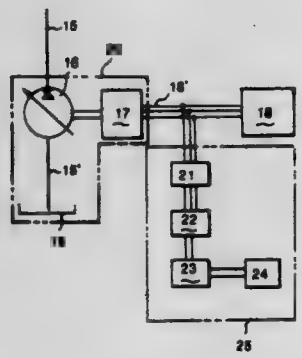
HYDRAULIC ELEVATOR INSTALLATION

Yasuo Kita, Nagoya, Japan, assignor to Shimadzu Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 949,155, Oct. 6, 1978, abandoned. This application Aug. 12, 1980, Ser. No. 177,386

Int. Cl.³ B66B *1/26*

U.S. Cl. 187—29 B **2 Claims**



1. A hydraulic elevator installation comprising:

(a) an elevator cage (11);

(b) a hydraulic actuator, including a cylinder (14) having a plunger (13) connected to said elevator cage (11);

(c) a hydraulic pump (16) having a variable output for supplying said hydraulic actuator with pressure fluid wherein said pump (16) functions to operate as a hydraulic motor, driven with the pressure fluid discharged from said cylinder (14) when said elevator cage (11) is descending, said pump being adjustable to maintain the rotational direction of a drive shaft of the pump the same during ascending and descending of said elevator cage;

(d) an induction motor (17) for driving said hydraulic pump (16), wherein said induction motor (17), when driven at a speed over the synchronous speed by means of said hydraulic motor (16) functions to operate as an induction generator; and,

(e) a power source (18) for driving said induction motor (17).

4,351,416

ELEVATOR CONTROL DEVICE

Narihiro Terazono, and Ryuichi Kajiyama, both of Inazawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 17, 1980, Ser. No. 207,547

Claims priority, application Japan, Nov. 19, 1979, 54-149701; Nov. 22, 1979, 54-151835

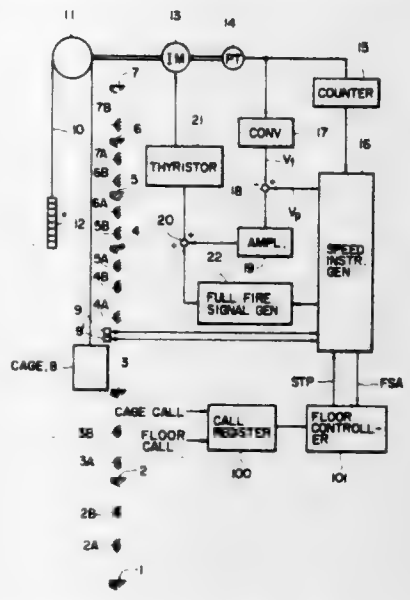
Int. Cl.³ B66B *1/30*

U.S. Cl. 187—29 R **3 Claims**

1. An elevator control device comprising:

memory means for storing floor distance codes representative of distances between floors; and

means for determining which floors are to be traversed, selectively reading out of said memory means said floor distance codes corresponding to said floors to be traversed, synthesizing said floor distance codes, whereby a distance to be traversed is determined, and selecting at least one of an operational mode in which said cage is run at a maximum rated speed and an operational mode in which said cage is run at a speed lower than said maximum rated speed in accordance with said distance to be traversed so that said cage is accelerated by an acceleration instruction signal, and when said cage reaches a position a predetermined distance before said floor where said cage is to be stopped, the remaining distance between said



position and said floor where said cage is to be stopped is calculated to provide a deceleration instruction signal corresponding to said remaining distance, wherein said acceleration instruction signal is compared with said deceleration instruction signal, and when said acceleration instruction signal is smaller than said deceleration instruction signal, said acceleration instruction signal is provided as a speed instruction signal while when said acceleration instruction signal is equal to or larger than said deceleration instruction signal, said deceleration instruction signal is provided as a speed instruction signal.

4,351,417

SPEED RETARDER

Frederick G. Seiz, Telford, and Carl G. Seiz, Hatfield, both of Pa., assignors to Variable Control Systems, Inc., Telford, Pa.

Filed Nov. 17, 1980, Ser. No. 207,622

Int. Cl.³ B66B *5/16*

U.S. Cl. 187—81 **22 Claims**

1. A speed retarder for use with a flexible member comprising:

a frame,

an axle mounted in said frame;

a pair of wheels rotatably mounted on said axle with at least one wheel of said pair also being axially movably mounted on said axle,

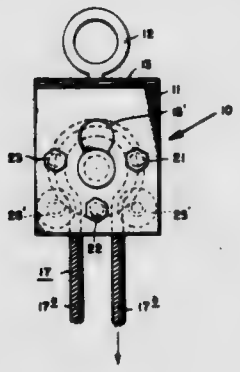
at least said one wheel having an outboard braking surface and a tapered inboard surface,

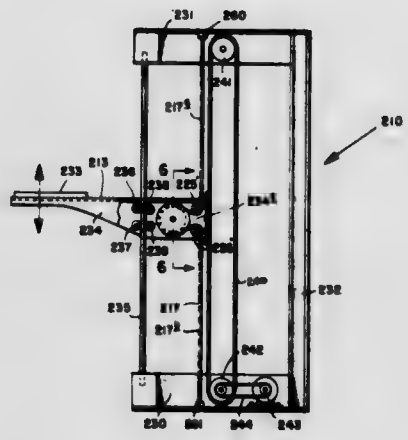
another wheel of said pair of wheels having an inboard surface confronting said tapered surface to define a peripheral gap therebetween,

brake pad means carried in said frame and operable upon outward sliding movement of said one wheel to slidably engage said one wheel with a continuous axially inward pressure operable to create between said one wheel and said frame friction acting counter to the rotational direction of said one wheel, with said pressure, and hence said friction, being directly related to the tension on the flexible member,

guide means carried by said frame for engaging said flexible member and maintaining the same engaged in said wheel gap through a predetermined arcuate extent,

whereby motion of the flexible member with tension thereon urges said one wheel outwardly to create said friction for





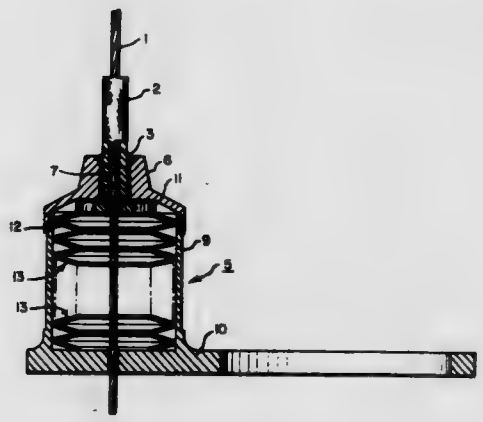
retarding rotation of said wheels and thereby to retard the speed of the flexible member.

4,351,418

VEHICLE BRAKE COMPENSATOR

Cooper C. Woodring, Plandome, and Philip A. Torbet, Port Washington, both of N.Y., assignors to J.C. Penney Company, Inc., New York, N.Y.

Filed Nov. 14, 1980, Ser. No. 207,023
Int. Cl.³ B62L *3/02*
U.S. Cl. 188—24.22 **37 Claims**



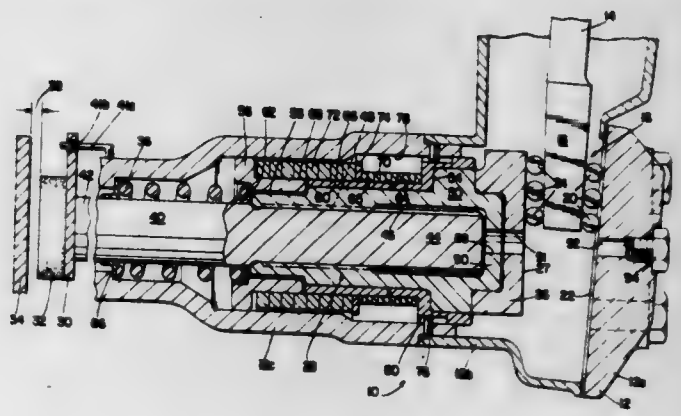
1. An apparatus for controlling the application of a braking force to a wheel of a vehicle, the apparatus being disposed in a vehicle braking system of the type having a braking member which applies the braking force in response to a displacement of an actuation member, the braking and actuation members communicating with one another by a cable which is disposed for at least a portion of its length within a sheath, the actuation member being of the type which transmits braking information to the braking member by applying a tensile force to the cable, which tensile force corresponds to a simultaneous compressive force applied to the sheath, the apparatus being characterized in that there is provided resilient means for producing a dimensional displacement in response to a compressive force, said dimensional displacement of said resilient means being in accordance with a predetermined force-displacement characteristic of said resilient means so as to reduce the braking force applied to the braking member in response to the displacement of the actuation member, said resilient means comprises a compression member having first and second ends and being circumferentially disposed about the cable.

4,351,419

AUTOMATIC SLACK ADJUSTER

Wayne Garrett, Troy, and Richard F. Neuman, Farmington, both of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed May 7, 1980, Ser. No. 147,643
Int. Cl.³ F16D *65/56*
U.S. Cl. 188—71.9 **31 Claims**



1. An automatic, single acting, clearance sensing slack adjuster for maintaining a predetermined running clearance between the selectively engageable friction surfaces of a brake comprising:

a displaceable brake actuation means;

a rotatable driving member;

means for automatically rotating said driving member in response to greater than predetermined displacement of said brake actuation means;

a rotatable intermediate member coaxial with and adjacent said driving member, said intermediate member rotatable relative to said driving member;

a rotatable driven member coaxial with and adjacent said intermediate member, said driven member rotatable relative to said intermediate member;

a rotatable adjustment member rotatably driven by said driven member, rotation of said adjustment member in a given direction of rotation effective to decrease slack in the brake and in the other direction or rotation to increase slack in the brake;

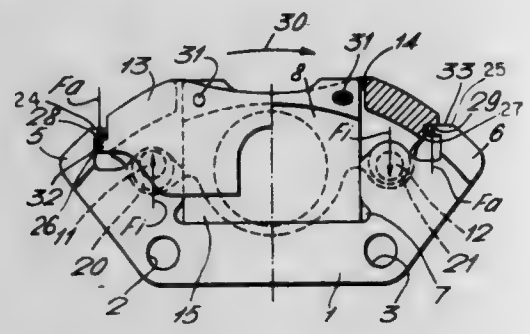
a first coil clutch for rotationally coupling one of said driving member to said intermediate member and said intermediate member to said driven member, said first coil clutch wound to transfer torque in the high torque transfer capacity direction of rotation thereof when rotating said adjustment member in said given direction of rotation and to transfer torque in the low torque transfer capacity direction of rotation thereof when rotating in said other direction of rotation; and

a second coil clutch for rotationally coupling the other of said driving member to said intermediate member and said intermediate member to said driven member, said second coil clutch wound to transfer torque in the low torque transfer capacity direction of rotation thereof when rotating said adjustment member in said given direction of rotation.

4,351,420
SLIDING GUIDE FOR A FLOATING CALIPER DISC BRAKE

Jochen Burgdorf, Offenbach, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Jul. 17, 1980, Ser. No. 169,682
Claims priority, application Fed. Rep. of Germany, Aug. 24, 1979, 2934219; Sep. 26, 1979, 2938926
Int. Cl.[3] F16D 65/02
U.S. Cl. 188—73.45 28 Claims



1. A sliding guide for a floating caliper of a disc brake comprising:

a brake support member having two spaced arms extending over the periphery of a brake disc;

said support member having on one side of said disc first and second guide surfaces parallel to the rotational axis of said disc and spaced with respect to each other to axially guide one end of said caliper, said caliper embracing said disc, one of said first and second guide surfaces exerting a first inwardly directed holding force on said caliper and the other of said first and second guide surfaces exerting a first outwardly directed holding force on said caliper; and

said support member having on the other side of said disc in each of said two arms a different one of third and fourth guide surfaces parallel to the rotational axis of said disc to axially guide the other end of said caliper, one of said third and fourth guide surfaces exerting a second inwardly directed holding force on said caliper and the other of said third and fourth guide surfaces exerting a second outwardly directed holding force on said caliper;

said one of said first and second guide surfaces and said other of said third and fourth guide surfaces are disposed on one side of the rotational axis of said disc and said other of said first and second guide surfaces and said one of said third and fourth guide surfaces are disposed on the other side of the rotational axis of said disc such that a combined inwardly directed holding force is exerted on said caliper along a first line interconnecting said one of said first and second guide surfaces and said one of said third and fourth guide surfaces and a combined outwardly directed holding force is exerted on said caliper along a second line crossing but not intersecting said first line and interconnecting said other of said first and second guide surfaces and said other other of said third and fourth guide surfaces.

4,351,421
DISC BRAKE

Masayuki Kurata, Kazo, and Yushiyo Watanabe, Kuki, both of Japan, assignors to Akebono Brake Industry Co., Ltd., Tokyo, Japan

Filed Jul. 18, 1980, Ser. No. 170,984
Claims priority, application Japan, Aug. 10, 1979, 54-102020
Int. Cl.[3] F16D 55/224
U.S. Cl. 188—73.45 7 Claims

1. A disc brake comprising:

a disc which is arranged to have the brake applied thereto;

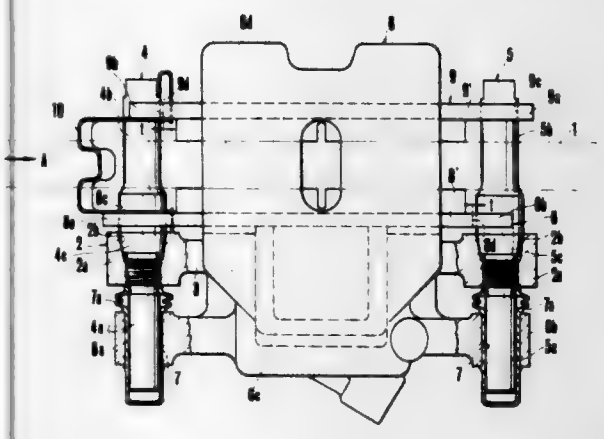
inner and outer friction pads;

a caliper provided with a thrusting mechanism which is arranged to cause said inner friction pad to engage with one side of said disc, said caliper being arranged to move to cause said outer friction pad to engage with the other side of the disc by a reaction to a thrusting action of said thrusting mechanism;

a support member; and

first and second guide pins secured to said support member, said first and second guide pins being arranged to guide said two friction pads and said caliper, said guide pins extending from one side of said disc to the other side thereof,

a brake torque produced at said inner pad being arranged to be

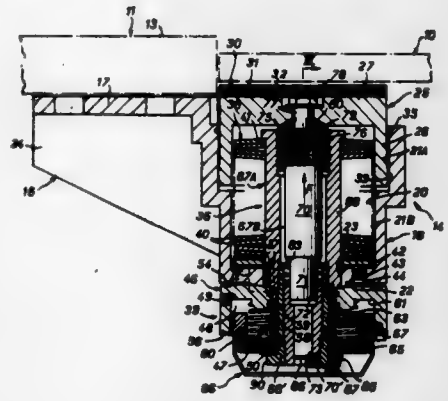


received solely by said first guide pin and a brake torque produced at said outer friction pad solely by said second guide pin, each of said guide pins is provided with a caliper guiding part which engages with a boss part of said caliper; and a pad guiding part which is arranged to carry said friction pads, said caliper guiding part and said pad guiding part being formed into one unified body, each of said guide pins being fixedly screwed to said support at a point between said two guiding parts.

4,351,422
INDUSTRIAL DISC BRAKE

Jean Chauve, Nevers, France, assignor to Societe Anonyme Francaise du Ferodo, Paris, France

Filed Apr. 25, 1980, Ser. No. 143,558
Claims priority, application France, Apr. 26, 1979, 79 10592
Int. Cl.[3] F16F 65/20
U.S. Cl. 188—170 15 Claims

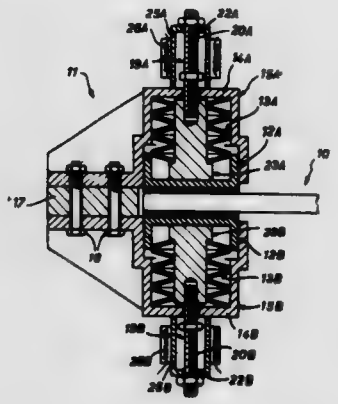


1. A disc brake for industrial use of the type comprising, in association with a brake disc, a fixed support having a bore facing the brake disc with the axis of said bore being perpendicular to said brake disc, a brake shoe axially displaceable in said bore in a first direction relative to the brake disc in response to resilient control means bearing against said fixed support, and in a second direction opposite to the first direction in response to an actuating unit carried by said fixed support, the improvement comprising swivel contact means between said brake shoe and said fixed support, said swivel contact means comprising a contact surface formed on a selected one of said brake shoe and said fixed support for contact with the nonselected one of said brake shoe and said fixed support.

4,351,423
METHOD FOR LIMITED, GRADUAL DISENGAGEMENT OF A BRAKE, AND SUCH A BRAKE

Leonce Rogier, Saint-Denis, France, assignor to Valeo, Paris, France

Filed Nov. 4, 1980, Ser. No. 203,950
Claims priority, application France, Nov. 14, 1979, 79 28034
Int. Cl.³ B60T *13/04*
U.S. Cl. 188—216 10 Claims



1. A method for limited, gradual disengagement of a brake comprising a support, a brake member, and at least one braking member, resilient means urging the braking member towards said brake member, wherein said method comprises the steps of:

attaching said braking member to a stud having an abutment thereon;

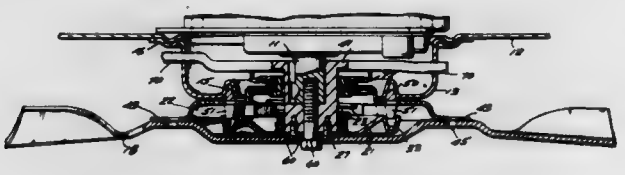
interposing a thermally expandable wedging member between said support and said abutment; and

heating said thermally expandable wedging member thereby disengaging said braking member gradually.

4,351,424
COMBINED CLUTCH AND BRAKE

Randall K. Lawrence, Fairview, and Aaron A. Stevens, Spring Hill, both of Tenn., assignors to The Murray Ohio Manufacturing Co., Brentwood, Tenn.

Filed May 14, 1980, Ser. No. 149,931
Int. Cl.³ B60K *41/24*
U.S. Cl. 192—18 R 26 Claims



1. An assembly for effecting driving or braking of a rotatable working element adapted to be driven by a powered rotatable shaft comprising:

a housing stationary with respect to said shaft and having stationary first surface means associated therewith;

a working element;

means for operatively mounting said working element with respect to said rotatable shaft so that in a first position said working element operatively engages said rotatable shaft for rotation therewith, and in a second position said working element operatively engages said housing and remains stationary with respect to said shaft;

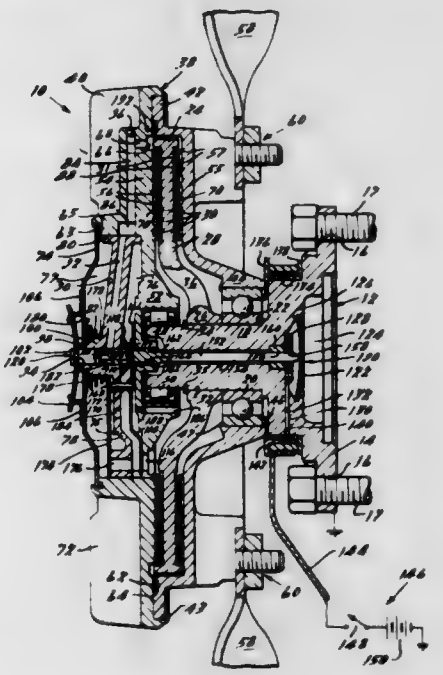
means for actuating said working element operatively mounting means for moving it between said first and second positions thereof; and

said operatively mounting means comprising a drive plate disposed between said housing and said working element, and fixed to and coaxial with said rotatable shaft and having second surface means associated therewith; an adapter plate fixed to said working element and coaxial with said rotatable shaft and having third and fourth surface means associated therewith, said adaptor plate mounted between said housing first surface means and said drive plate along the axis of said rotatable shaft with said third surface means aligned with said first surface means, and said fourth surface means aligned with said second surface means; and means for mounting said adaptor plate for movement parallel to the axis of said rotatable shaft in response to actuation by said actuation means, from said first position wherein said first and third surface means operatively frictionally engage each other and said second and fourth surface means do not operatively engage, to said second position wherein said first and third surface means are not operatively engaged and said second and fourth surface means operatively frictionally engage each other.

4,351,425
DUAL STAGE CONTROL FOR VISCOUS FLUID COUPLING

Warren G. Bopp, Farmington Hills, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Dec. 29, 1980, Ser. No. 220,928
Int. Cl.³ F16D *35/00, 43/25*
U.S. Cl. 192—58 B 15 Claims



1. A viscous fluid clutch comprising:

first and second members mounted for relative rotation about a common axis and defining cooperating shear surfaces;

means operative to generate a flow of viscous fluid between said surfaces;

means operative to modulate said flow as a function of a first sensed fluid temperature; and

means operative to further modulate said flow as a function of a second sensed fluid temperature.

4,351,426
SINGLE STAGE CONTROL FOR VISCOUS FLUID COUPLING

Warren G. Bopp, Farmington Hills, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Dec. 29, 1980, Ser. No. 220,929
Int. Cl.³ F16D *35/00, 43/25*
U.S. Cl. 192—58 B 21 Claims

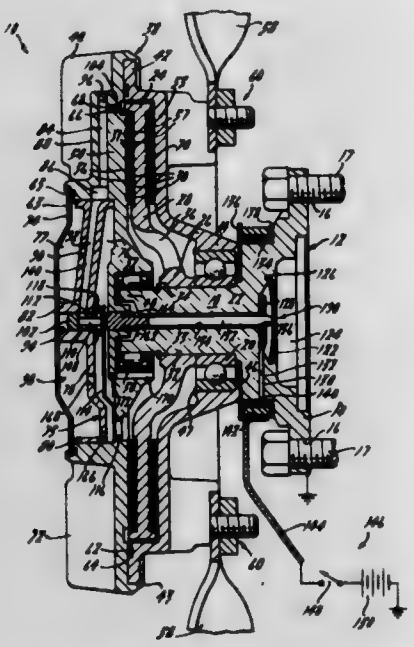
1. A viscous fluid clutch comprising:

first and second members mounted for relative rotation about a common axis;

shear surfaces disposed on said first and second members and forming an operating chamber therebetween;

fluid storage means disposed adjacent said operating chamber;

means operative to generate a circulating flow of viscous fluid between said chamber and storage means;



first flow control means operative to selectively establish a relatively large flow rate of said fluid between said storage means and said operating chamber; and

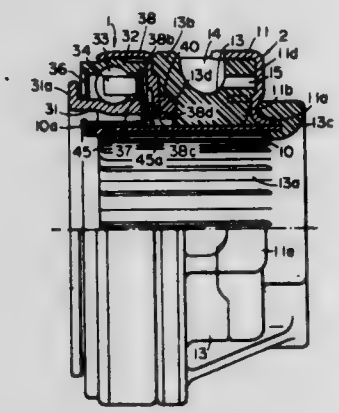
second flow control means operative to selectively establish a relatively small flow rate of said fluid between said storage means and said operating chamber.

4,351,427

CLUTCH RELEASE BEARING ASSEMBLY PROVIDED WITH A SELF-CENTERING MECHANISM

Takashi Miyahara, Yokohama, Japan, assignor to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 20, 1980, Ser. No. 132,178
Claims priority, application Japan, Apr. 10, 1979, 54-42511
Int. Cl.³ F16D *23/14*
U.S. Cl. 192—98 **3 Claims**



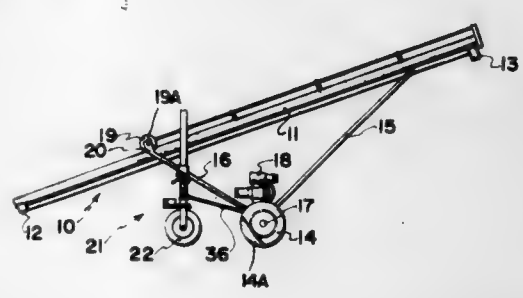
1. In a clutch release bearing assembly of the self-centering type usable with a clutch and comprising a clutch release bearing device, holding means movable axially of the clutch for holding said bearing device and movable in a direction perpendicular to the axial direction of the clutch for centering the bearing device, and a plastic deformation member disposed in the path of the thrust force between the holding means and the bearing device, the improvement comprising said holding means including a base portion formed of metal and having a cylindrical base, and an insert portion formed of a hard synthetic resin and secured integrally with said base portion, wherein the bearing device includes a rotatable race, a stationary race, rollers between both the races and a supporting member securely holding the stationary race, the supporting member having a radially extended portion adapted to form between the radially extended portion and the synthetic resin portion a chamber receiving the plastic deformation member, and the holding means includes a further metallic guide member held in contact with said radially extended portion to support the bearing device movably in a direction perpendicular to the axial direction of the clutch.

4,351,428

POWERED WHEEL ASSEMBLY FOR GRAIN AUGERS AND THE LIKE

John M. Long, 1078 Main St. N., Moose Jaw, Saskatchewan, Canada

Filed Apr. 21, 1980, Ser. No. 141,968
Int. Cl.³ B65G *41/00*
U.S. Cl. 198—302 **8 Claims**



1. In a grain auger assembly which includes an auger tube and flight therein, a pair of ground engaging wheels mounted on an axle, and adjustable front and rear braces extending between said axle and said auger tube for adjusting the inclination of said auger tube with the rear braces extending towards the intake end of said auger and the front braces extending towards the discharge end of said auger; the improvement comprising in combination a wheel assembly secured to and depending downwardly from said rear braces, said wheel assembly including a selectively ground engaging drive wheel, a source of power for said drive wheel and steering means for said drive wheel, means mounting said wheel assembly to said rear braces, said means including a wheel fork assembly for said wheel, said wheel being journalled for rotation within said wheel fork, a plate, a lower support tube extending upwardly from said plate, said plate being secured to the upper end of said wheel fork whereby said wheel fork and said plate include means mounting same for partial rotation relative to said lower support tube, a main shaft slideably engaging said lower support tube for reciprocal motion therein, means operatively connecting said main shaft to said auger assembly, means to raise and lower said drive wheel relative to said rear braces, said means including a jack assembly operatively connected between said lower support tube and said main shaft for moving said lower support tube and said wheel fork assembly and said wheel relative to said main shaft.

4,351,429

CONVEYOR WITH SLIP CLEATS

Francis J. Garvey, Newfield, N.J., assignor to Garvey Corporation, Blue Anchor, N.J.

Continuation of Ser. No. 957,036, Nov. 2, 1978, abandoned. This application Jul. 29, 1980, Ser. No. 173,362
Int. Cl.³ B65G *15/44, 17/44*
U.S. Cl. 198—688 **7 Claims**

1. In a conveyor for upwardly transporting carton-like articles, a structure comprising

upwardly sloping track means,

chain means extending along the track means,

a plurality of flat members attached to the chain means and slidingly supported on the track means,

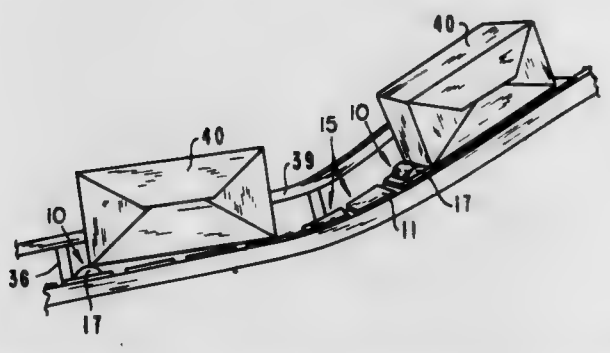
a plurality of cleat members periodically positioned between groups of the flat members and spaced apart by at least one dimension of the articles extending between the cleat members,

said cleat members being attached to the chain means and slidingly supported on the track means,

said flat members and said cleat members having bodies forming a conveying surface,

each of said cleat members including rib means extending upwardly therefrom above the conveying surface and having a leading face that extends at a slope substantially less than 90° relative to the conveying surface,

said leading faces being adapted to exert a maximum force opposing slippage of the articles on the conveying surface, which maximum opposing force is greater than the component of gravitational force of the article parallel to the conveyor surface minus the frictional forces between the



articles and conveyor but is less than forces of resistance to movement of the articles which would damage the articles,

said chain means including a drive chain formed of chain links joined by pins,

said flat members and said cleat members each including a pair of depending legs on opposite sides of a midline thereof for straddling at least one link of the chain links,

said depending legs having apertures for receiving the respective pins, and

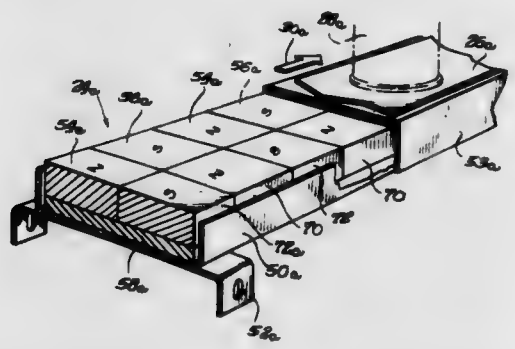
said rib means including a pair of spaced ribs on each cleat member on opposite sides of the midline thereof to permit flexing of each cleat member at the midline to spread the pair of legs.

4,351,430

MAGNETIC RAIL CONSTRUCTION FOR CAN CONVEYOR

Wallace W. Mojden, Hinsdale, Ill., assignor to Fleetwood Systems, Inc., Countryside, Ill.

Filed May 2, 1980, Ser. No. 146,153
Int. Cl.³ B65G *15/58*
U.S. Cl. 198—690 **5 Claims**



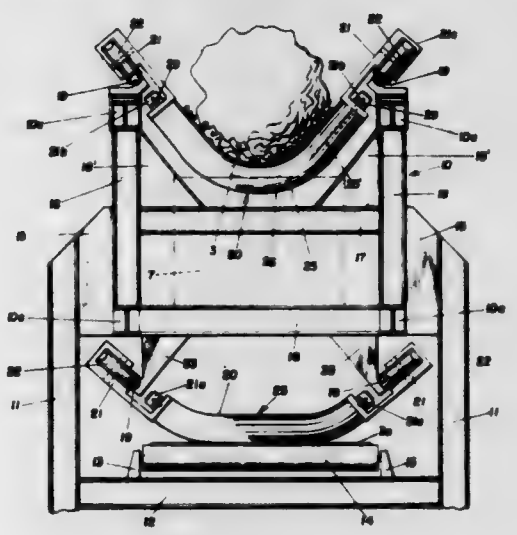
1. In a magnetic conveyor system, the combination comprising: traveling conveyor means adapted to be transported in a predetermined linear direction; and an elongate magnetic rail extending in said linear direction and comprising a first plurality of permanent magnets having a first, common polarity confronting said conveyor means and being arranged in uniformly spaced-apart relationship in a row along said predetermined linear direction closely adjacent said conveyor means; and a second plurality of permanent magnets having a second, common polarity confronting said conveyor means and being opposite the polarity of said first plurality of magnets, said second plurality of magnets being alternately interspersed with said first plurality of magnets in the spaces therebetween said first and second plurality of magnets being in abutting surface-to-surface contact with the magnets immediately adjacent thereto along surfaces of the respective magnets which extend transversely to the linear direction of travel of the conveyor means, such that any one of said magnets of a given polarity facing said support means, except those at the end of said magnetic rail, will have the transverse surfaces thereof in abutting engagement on opposite sides thereof with magnets of an opposite polarity orientation, and common shunt plate means upon which said first and second plurality of magnets are supported, with the sides thereof opposite that facing said support means being engaged with said shunt plate means, to provide a plurality of flux paths of substantial strength.

4,351,431

HEAVY DUTY BELT CONVEYOR

Edward A. Fenton, Jr., Pittsburgh; Ira W. Lakin, Volant, and Gilbert Blair, Corapolis, all of Pa., assignors to Dravo Corporation, Pittsburgh, Pa.

Filed Jul. 7, 1980, Ser. No. 166,466
Int. Cl.³ B65G *15/08*
U.S. Cl. 198—823 **16 Claims**



6. In an endless conveyor belt especially useful for transporting rough, heavy material and particularly broken rock that may comprise at least in part large, heavy fragments and pieces where the belt has a top reach moving from around a main pulley at the head end toward and around a discharge pulley at the opposite end, the invention comprising:

(a) an endless succession of flexibly connected spaced transverse flexible hammock members extending under said top reach of the conveyor belt, said hammock members each having a flanged trolley-wheel at each end, a pair of spaced parallel rails, one extending along each side and so spaced that the hammocks sag from their respective trolley wheels toward the center of the belt, and the loaded belt shapes itself into a continuous trough conforming to the shapes of the hammocks,

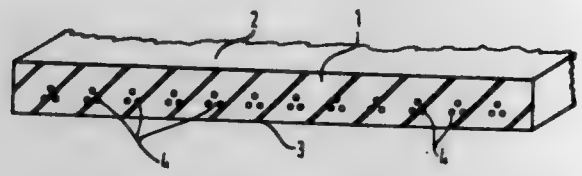
(b) means for driving the belt and hammocks in unison,

(c) the rails for the trolley wheels at the ends of the hammocks spreading apart and decreasing in elevation, with respect to belt, at the approach to the pulley at the discharge end of the belt in such manner as to cause the hammocks to straighten out and the belt to become flat in the direction transverse to its length as it passes around the discharge pulley of the conveyor.

4,351,432
CONVEYOR BELT

Giovanni Ballocci, and Aurelio Brollo, both of Milan, Italy, assignors to Industrie Pirelli S.p.A., Milan, Italy

Filed Mar. 11, 1980, Ser. No. 129,328
Claims priority, application Italy, Mar. 27, 1979, 21302 A/79
Int. Cl.[3] F16G *1/22;* B65G *15/34*
U.S. Cl. 198—847 2 Claims

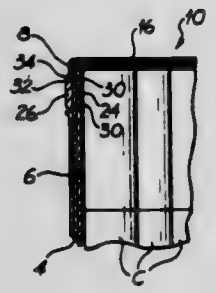


1. A conveyor belt comprising a band of elastomeric material having opposite faces and a tension resistant structure embedded in said band between the faces and formed of a plurality of longitudinally extending cords parallel to one another, characterized by the fact that said cords are grouped in laterally spaced triangularly shaped sets of three cords each of the same kind of material disposed longitudinally through the belt substantially parallel to each other, substantially parallel to the longitudinal axis of the belt, and substantially parallel to the said opposite faces as the sole means for imparting tension resistance to the belt.

4,351,433
CIGARETTE PACKETS

Donald J. Barber, and Douglas G. Meaden, both of London, England, assignors to Molins PLC, London, England

Filed Dec. 26, 1979, Ser. No. 107,483
Claims priority, application United Kingdom, Dec. 27, 1978, 50059/78
Int. Cl.[3] B65D *85/10, 85/12*
U.S. Cl. 206—264 9 Claims



1. A cigarette packet formed from a composite rectangular blank having an outer film of thermoplastic material laminated to a fibrous substrate, such as paper, said blank when erected providing two opposed large faces, two narrow sides, a sealed longitudinal seam extending down one of said faces or down a first one of said narrow sides, a top closure and a bottom closure, wherein:

(a) each of said closures is formed by tucking in material at the respective ends of the narrow dies and successively folding over and sealing together material at the respective ends of the large faces;

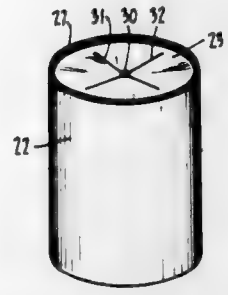
(b) a band is formed by spaced rows of perforations in said fibrous substrate below said top closure and extends across at least a second one of said narrow sides and across a part of one of said large faces; and

(c) a tear strip is integrally formed in said outer film of thermoplastic material, said tear strip being thicker than the remaining outer film, being bounded by lines of weakness in said outer film and being secured over said band to enable said band to be torn open to gain access to the cigarettes in the packet.

4,351,434
DISPOSAL OF NEEDLES

Benjamin Elisha, 5 Mooltan Ave., East St. Kilda, 3183, Victoria, Australia

Filed Jan. 30, 1980, Ser. No. 116,768
Claims priority, application Australia, Jan. 31, 1979, PD7508
Int. Cl.[3] A61M *5/32;* B02C *19/12;* B21D *7/00*
U.S. Cl. 206—366 7 Claims

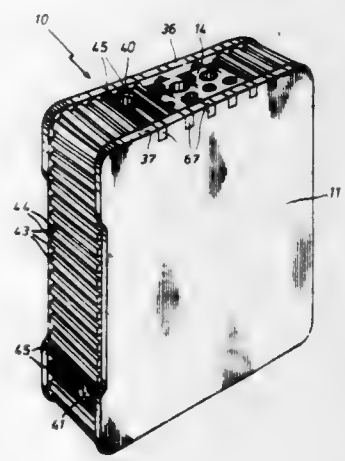


1. A container for receiving and containing hypodermic needles, the container having an opening therein; comprising a generally circular hole and a plurality of slits or lines of weakness which will break into slits radiating from the opening; and wherein the axial length of the hole is substantially the same as the thickness of said wall whereby a disposable needle having a needle shank and a hub can be passed while mounted to a spigot on a syringe having a body so that said wall locates between said hub and said body and so that on retraction of the syringe engagement of the side of said wall within the container with said hub will move the needle off the syringe.

4,351,435
MAGAZINE FOR THE PROTECTED STORAGE OF A SET OF DRILLS

Wolfram Elwert, Ludwigsburg, and Gernot Förster, Asperg, both of Fed. Rep. of Germany, assignors to East Tradacons AG, Steinhausen, Switzerland

Filed Mar. 24, 1980, Ser. No. 133,653
Claims priority, application Fed. Rep. of Germany, Mar. 24, 1979, 2911607
Int. Cl.[3] B65D *85/20, 83/02, 43/20*
U.S. Cl. 206—379 24 Claims



1. A magazine for a protected storage of a set of drills and for a selective withdrawal of the drills arranged in individual pockets in the magazine, the magazine including a covering means having at least one opening movable into positions suitable for giving access to one drill at a time, by guiding displacement of the covering means, characterized in that the magazine includes a flat cuboid magazine body having narrow end faces and comprising at least two straight rows of parallel pockets with drills inserted therein over their full length, the pockets have one open end opening in a direction of one the narrow end face of the magazine body;

the covering means includes at least one covering strip; the

narrow end faces of the magazine body are interconnected by 90° curved transition faces and form a sliding face for the covering strip which is slidably guided along a narrow surface area of the magazine body formed by the narrow end faces and the curved transition faces; the covering strip comprises a number of selector openings corresponding to the number rows of pockets, the covering strip is displaceable and can be alternatively brought into a position giving access to the open end of a selected pocket in one row so that the selected drill can be removed therefrom, a diameter of the selector openings associated with the two rows of pockets being at least equal to a diameter of the largest drill in the respective row, and a center distance of the pockets, measured in a direction of displacement, of the covering strip, being at least equal to a clear width of the selector opening.

4,351,436

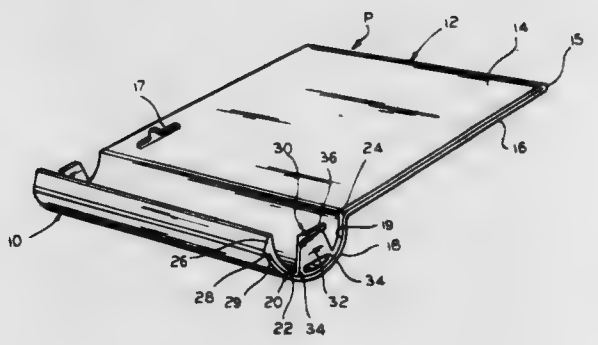
COMPOSITE CARDED DISPLAY PACKAGE

Charles R. Helms, Malvern, Pa., assignor to Container Corporation of America, Chicago, Ill.

Filed May 7, 1981, Ser. No. 261,499

Int. Cl.³ B65B *15/00*; B65D *73/00*

U.S. Cl. 206—477 **16 Claims**



1. In a composite paperboard and plastic carded display package, the combination of:

(a) a relatively thin, generally flat advertising card member, formed of paperboard, and, extending from one end thereof, a hollow pocket member for holding a packaged article;

(b) said pocket member including an outer paperboard shell element, formed integrally with and extending from said card member, and an inner plastic liner element bonded to said shell element;

(c) said linear element having a contour adapted to snugly engage and retain a packaged article therein.

4,351,437

METHOD AND APPARATUS FOR EXAMINING OBJECTS

Peter G. Long, Colchester, England, assignor to Lockwood Graders (UK) Limited, Essex, England

Filed Apr. 21, 1980, Ser. No. 141,763

Claims priority, application United Kingdom, Jan. 18, 1980, 8001807

Int. Cl.³ B07C *5/02, 5/00*

U.S. Cl. 209—545 **43 Claims**

1. A method of operating on a plurality of objects comprising the steps of:

supporting the objects on a floor of a conveyor means with a plurality of objects across the width of the conveyor means;

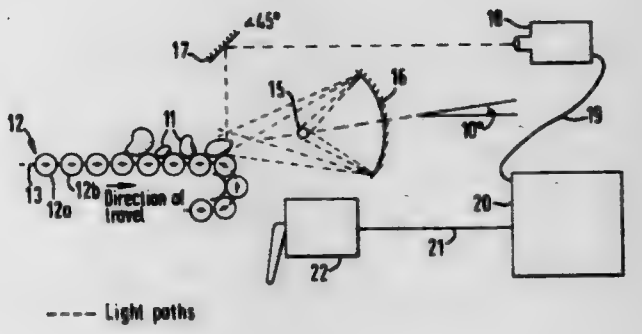
moving said floor with said objects to carry the objects through an inspection station with a plurality of objects arranged across the width of the conveyor means;

illuminating a plurality of objects at the inspection station with electromagnetic radiation incident predominantly from a first direction transverse to the width of the conveyor means;

observing the objects by a radiation detector along a second direction to detect radiation reflected by the objects;

said direction of said observation being inclined to said direction of said illumination at an angle such that said detector does not observe any portion of said floor which is illuminated by said illuminating means;

the illuminating and/or detecting steps including a scanning operation across the objects transverse to the direction of



movement of the conveyor means to provide from the detector a detection signal representing different reflected radiation from different regions along the path of scanning;

repeating the scanning operation to provide a series of scans across the objects;

processing the detection signal to provide an information signal representative of a dimensional parameter of the size of the objects; and

operating upon the objects by action dependent upon the information signal.

4,351,438

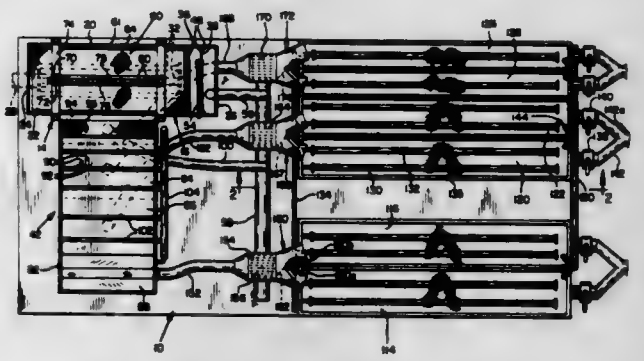
APPARATUS FOR ANALYZING A FISH POPULATION

Kenneth E. Morton, 141 SW. 15th #30, Bend, Oreg. 97701

Filed Jan. 12, 1981, Ser. No. 224,056

Int. Cl.³ B07B *13/05*; A01K *61/00*

U.S. Cl. 209—675 **9 Claims**



1. Apparatus for analyzing a fish population comprising:

an elevated tank for holding a volume of water,

fish-transfer means for transferring fish from a pond containing the fish population into the tank,

fish-grading means operable to sort fish and separate such according to size,

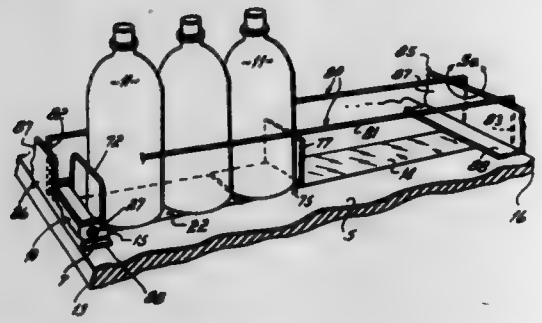
fish-passage means connecting the tank and fish-grading means providing a path for the passage of fish from the tank to said grading means,

and means within said tank for regulating the concentration of fish within said tank adjacent where said fish-passage means connects with said tank.

4,351,439
MERCHANDISE DISPLAY DEVICE

William B. Taylor, Chamblee, Ga., assignor to Leggett & Platt, Incorporated, Carthage, Mo.

Filed Mar. 11, 1980, Ser. No. 129,341
Int. Cl.³ A47F 5/00
U.S. Cl. 211—49 D 14 Claims



1. A display device for feeding a column of serially stacked objects on a shelf forwardly on the shelf as the forwardmost object in the column is removed from the shelf, said device comprising,

a shaft,

a roller mounted upon the shaft and adapted to be rotatably journalled at the front of a shelf,

a flexible belt wrapped around said roller and secured at one end to said roller,

abutment means secured to the opposite end of said belt, said abutment means being engageable with the rearwardmost object in the column of objects stacked on the belt and being moved away from said roller as additional objects are placed upon the belt,

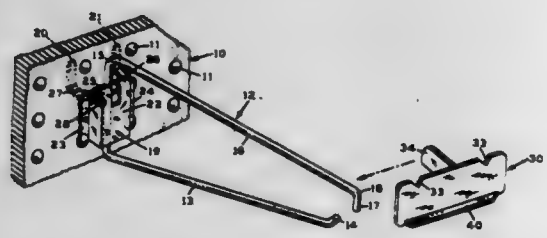
torsion spring means operable to effect automatic rewinding of said belt onto said roller and forward feed of said objects on said belt when the forwardmost object in the column of objects is removed from the belt, and

variable means for adjusting the tension of said torsion spring means to vary the force with which said belt is moved forwardly on the shelf as objects are removed therefrom.

4,351,440
MERCHANDISE HOOK

David R. Thalenfeld, Beechurst, N.Y., assignor to Trion Industries Inc., Garden City, N.Y.

Continuation-in-part of Ser. No. 918,483, Jun. 23, 1978, abandoned. This application May 19, 1980, Ser. No. 151,357
Int. Cl.³ A47F 5/00
U.S. Cl. 211—57.1 13 Claims



1. A merchandise hook for mounting on a display panel, which comprises

(a) a continuous wire-like element shaped into a generally U-shaped configuration,

(b) said wire-like element including a lower, outwardly projecting merchandise supporting arm and an upper, outwardly projecting safety arm,

(c) said safety arm extending outwardly beyond the end of said merchandise supporting arm,

(d) guard means extending downward from the end of said safety arm, and having minimum upward projection from the upper limits of said safety arm,

(e) said merchandise supporting arm having an upwardly tilted end extremity terminating inwardly of said guard means,

(f) said wire-like element further including a vertical base portion connecting said merchandise supporting arm and said safety arm, and

(g) lug means on said base portion for engagement with an apertured display panel,

(h) said guard means comprising a plate-like label holder formed of deflectable plastic material carried by the outer end extremity of said safety arm,

(i) said safety arm having an integral, downturned end extremity terminating outward of the end extremity of said supporting arm, and

(j) said guard means comprising in part a plate-like holder carried by said downturned end extremity,

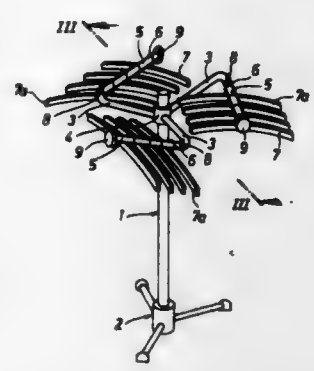
(k) said label holder comprising the forwardmost extremity of said merchandise hook,

(l) said label holder having an integral, wand-supporting flange along its lower portion and a label supporting portion above said flange.

4,351,441
DISPLAY STAND FOR GARMENTS

Werner Schramm, Munich, Fed. Rep. of Germany, assignor to PFP-Anstalt Für Produktentwicklung und Verwertung, Schaan, Liechtenstein

Filed Apr. 15, 1980, Ser. No. 140,595
Claims priority, application Fed. Rep. of Germany, Apr. 21, 1979, 2916226; Oct. 12, 1979, 2941468
Int. Cl.³ A47F 5/06
U.S. Cl. 211—207 18 Claims



1. A display stand for hanging articles including central support means for providing support for the device, a plurality of support arms having one end secured to said central support means at a first predetermined angle to each other, a carrier rod having one end secured to the other end of each of said plurality of support arms at an angle which, in a horizontal projection, is the complementary angle to 180 degrees of said first predetermined angle, wherein the stand is provided with three support arms and three carrier rods further including stops secured to said central support means to control movement of the hung items wherein said stops include a plurality of flatly formed webs projecting into the space defined between each of said support arms and its associated carrier rod.

4,351,442
CHILD-RESISTANT SAFETY CLOSURE

Kenneth L. Summers, Angola, Ind., assignor to Rieke Corporation, Auburn, Ind.

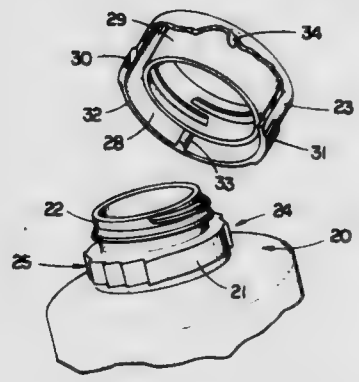
Filed Dec. 17, 1980, Ser. No. 217,409
Int. Cl.³ B65D 55/02
U.S. Cl. 215—216 7 Claims

1. A child-resistant safety closure adapted for threaded receipt by an externally threaded container spout, the safety closure being arranged into a positive-on style and necessitating a two-step release procedure for removal from said container spout, said child-resistant safety closure comprising:

detent means disposed about said externally threaded con-

tainer spout, said detent means including two series of outwardly radiating ratchet teeth, the leading edge of one series being spaced apart from the leading edge of the other series by an angular distance substantially equal to 180 degrees less the angular distance corresponding to one-half of a ratchet tooth; and

a closure cap internally threaded for receipt by said container spout, said closure cap having a side wall which includes two inwardly directed lug means spaced substantially 180 degrees apart and being suitably arranged to provide a positive-on lock with said two series of ratchet teeth when said cap is received by said spout, said lug means providing alternate ratchet tooth engagement with the ratchet teeth of said detent member, said lug means and said ratchet teeth being suitably positioned such that one turn of 180 degrees of said cap is insufficient in order to disengage the positive-on lock of said lug means with said ratchet teeth.

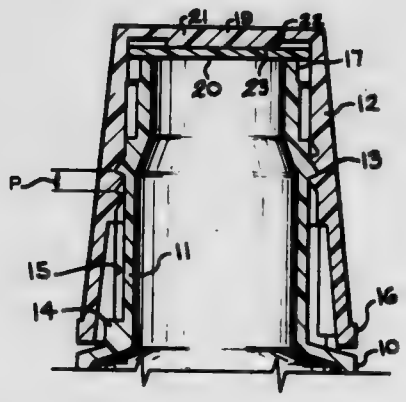


4,351,443

DUAL LIQUID TIGHT CLOSURES

Gerhardt E. Uhlig, 6539 Dorr St., Apt. L20, Toledo, Ohio 43615

Filed May 15, 1981, Ser. No. 264,012
Int. Cl.[3] B65D *55/02*
U.S. Cl. 215—216 20 Claims



1. In combination:

a container including (1) a principal hollow body serving as a receptacle and (2) a connected upstanding neck terminating in a rim-defined opening and having threads formed on the exterior annular surface of said neck for threaded engagement by cooperating thread means formed on a suitable closure,

a closure member including (1) a top wall spanning said rim-defined opening, said top wall being adapted to sealingly contact said rim, (2) a connected depending skirt adapted to threadingly engage said threads on said neck of said container,

said closure and container each including, in coincident registration with said threads, cooperatively engageable and disengageable lock abutments, and

spacing means for allowing rotational tightening beyond that normally achieving locking engagement of container as would induce distortion or stress in either said closure or container;

means associated with said closure adapted for purposeful dextrous manipulation to effect disengagement of said abutments, and

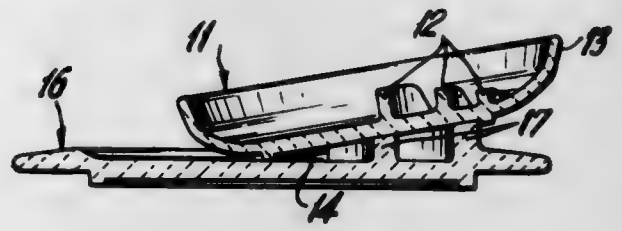
internal forming provisions designedly configurated inside of closure top wall and container top rim defined-opening to draw-form an inserted resilient liner-disc-member sandwiched between said internal forming provisions into a new shape configuration when closure is first time threadingly applied upon container neck, which new shape is individually fashioned and receives downwardly drawn gland surfaces, which surfaces serve as secondary sealing means, said sealing means are functionally under circumferentially embracing pressure by way of individually manufactured new liner component.

4,351,444

BOWL FOR MAINTAINING LIQUIDS AND SOLID FOODS SEPARATE

Edward Majewski, 81 Rae Ave., Staten Island, N.Y. 13102

Filed Nov. 29, 1979, Ser. No. 98,512
Int. Cl.[3] B65D *21/02, 25/04;* A47G *19/02*
U.S. Cl. 220—20 5 Claims



1. A bowl for simultaneously containing solid and liquid edible substances while maintaining said solid and liquid edible substances separate, said bowl comprising

(a) a body portion which has a bottom and at least one side wall for containing said substances within said bowl;

(b) means for tilting said body portion such that the underside of said body portion forms an acute angle with a horizontal plane and said tilting means comprises a plate whose outer diameter is greater than the outside diameter of said bowl, said plate containing a plurality of ridges which are oriented parallel to one another and which increase in length and height as the perimeter of said plate is approached so that said bowl rests on said ridges and inside said plate on which said bowl may be placed; and

(c) at least one ridge attached to the upper side of and extending at least partically across said bottom in such a way as to prevent admixture of said solid and liquid substances when said substances are placed on said upper side of said bottom portion.

4,351,445

BAIL HANGERS FOR PAINT CANS AND THE LIKE

Earl D. Giggard, Clarendon Hills; Nick S. Khoury, Worth; John J. Kowalik, Glenview, and Donald R. Terrien, Naperville, all of Ill., assignors to The Continental Group, Inc., Stamford, Conn.

Filed Sep. 29, 1980, Ser. No. 192,137
Int. Cl.[3] B23P *17/00;* B65D *25/32*
U.S. Cl. 220—91 7 Claims

1. A container having a body including a bottom and an upper edge with an integral outward curl,

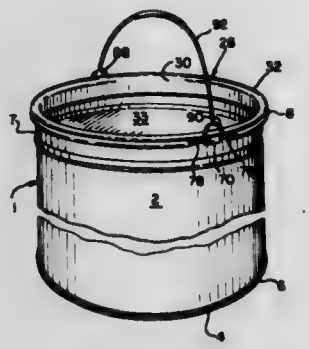
a bail,

and means on said curl for pivotally hanging said container from the bail,

and said means on said curl comprising a portion of said curl cut away from said body and offset therefrom to provide a bail-engaging eye structure,

and said portion of said curl having an end separated along a radial cut from the remainder of the curl and being bent in toward the body portion, and means securing said end to the body portion.

4. A method of making bail securements on a container having a body portion and an outturned curl along its upper edge comprising:



forming from material a container having a bottom, a cylindrical body and an outturned curl about the upper edge of the body,

cutting out bail-engaging portions of the curl to provide a bail receiving opening,

then deforming portions of the curl for clearing the bail from obstruction against the curl;

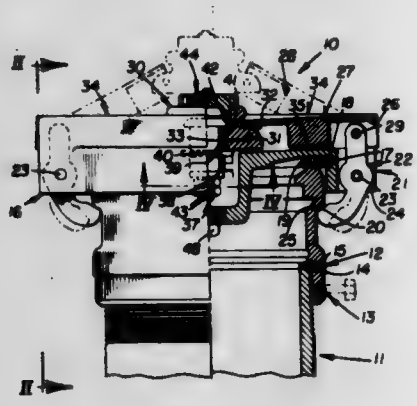
then entering of the ends of the bail into said curl portions to accommodate swinging movements of the bail.

4,351,446

HIGH-SECURITY FILL CAP FOR UNDERGROUND STORAGE TANKS

Michael J. Madden, West Covina, Calif., assignor to Pomeco Corporation, Paramount, Calif.

Filed Jul. 20, 1981, Ser. No. 284,614
Int. Cl.³ B65D *55/14*
U.S. Cl. 220—210 **16 Claims**



1. A high-security fill cap adapted for releasable attachment to a fill pipe of a storage tank comprising

an annular cap adapted for sealing engagement with an open end of said pipe,

latching means movably mounted on said cap for movement between a latched position engaging said pipe and an unlatched position disengaging said pipe,

actuating means for moving said latching means between its latched and unlatched positions in response to movement of said actuating means between lowered and raised positions, respectively, and

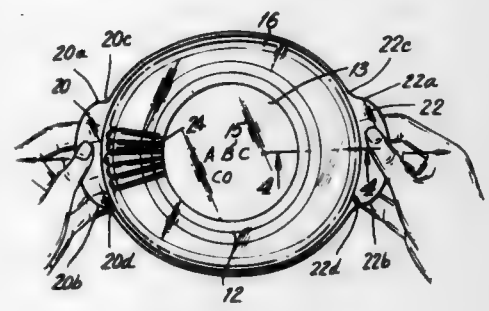
locking means, including a locking lug, for selectively moving said locking lug between a locked position retaining said actuating means in its lowered position and a released position permitting movement of said actuating means to its raised position.

4,351,447

REUSABLE RESILIENTLY DISTORTABLE SHEET PLASTIC CLOSURE FOR APPLICATION TO RIMMED CONTAINERS

Stewart M. Graff, c/o Douglas Stephens Plastics, Inc., 101 E. Main St., Little Falls, N.J. 07424

Filed Jul. 31, 1981, Ser. No. 289,032
Int. Cl.³ B65D *41/16, 41/18*
U.S. Cl. 220—306 **8 Claims**



1. A reusable one-piece resiliently distortable flexible sheet plastic closure for application to rimmed containers of the same size and of the type in which to store edible goods, comprising:

(A) a crown;

(B) a skirt downwardly dependent from the periphery of the crown and joined thereto by a generously rounded section;

(C) retroverted means on the skirt for detachably and mechanically tightly snappingly locking the closure to the rim of the container by extending under the rim; and

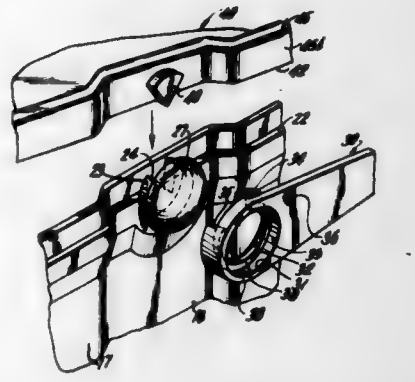
(D) at least one pair of diametrically opposed radially extending pull tabs in one-piece with the closure positioned thereon at the lower edge of the skirt and joined thereto by a generally S-shaped section, said pull tabs capable of diametrically elongatably distorting said closure when pulled radially outwardly by a user to thereby unlock said locking means by radially extending the same to clear the rim and permit removal of said closure from the container without destroying the integrity of said locking means, said closure and said container thus allowing said closure to be reapplied in unimpaired condition to said container.

4,351,448

PACKAGING CONTAINER FOR MINING AND CONSTRUCTION TOOLS

Brian E. Ingersoll, Marietta; Ross C. Nicholson, Stone Mountain, and James W. Dennisson, Atlanta, all of Ga., assignors to General Electric Company, Detroit, Mich.

Filed Aug. 8, 1980, Ser. No. 176,589
Int. Cl.³ B65D *45/04, 21/02, 25/32*
U.S. Cl. 220—318 **10 Claims**



1. A packaging container for tools comprising:

a body portion having an open end portion, a closed base portion, a front wall, a back wall, and a pair of opposed

side walls, said front wall, said back wall and said pair of opposed side walls each including a central recessed portion, the depth of each said central recessed portion decreasing along its length from the open end of the container towards the base portion thereof, said body portion further including a pair of substantially cylindrical cover engagement members, one said cover engagement member being fixedly attached to the central recessed portion of one said side wall and the other cover engagement member being fixedly attached to the central recessed portion of the opposite side wall, each of said cover engagement members including a cutout portion, said body portion further including a pair of handle support members, each of which being fixedly attached to one of said cover engagement members, said front wall of said body portion including at least one tab member fixedly attached thereto;

a cover member for covering the open end of said body portion, said cover member having a planar portion and a front wall, a back wall and a pair of opposed side walls enclosing said planar portion, the back wall of said cover member being hingedly connected to the back wall of said body portion, said cover member including a pair of peg members, one said peg member being fixedly attached to one of said opposed cover side walls and the other said peg member being fixedly attached to the other cover side wall, said peg members being configured and located so as to be receivable in the cutout portions of said body portion cover engagement members when said cover member is closed over said container body, said cover member further including at least one flap member hingedly connected to the front wall of said cover member, each said at least one flap member having an aperture aligned with one of said at least one tab member on said body portion such that each said aperture can resistably engage its associated tab member, said at least one flap member being dimensioned to extend partially over said central recess portion of said front wall when the container cover is closed; and

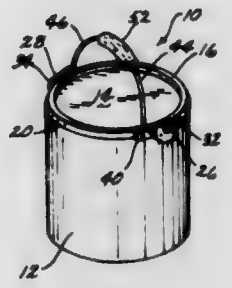
a generally U-shaped handle member having a grip portion and a pair of arm portions, each of said arm portions having an aperture for receiving one of said handle support members, each of said apertures including a reduced diameter portion having a diameter less than that of its associated handle support member and defining an annular wall member within each said aperture, the remaining portion of each said aperture having a diameter greater than that of its associated handle support member, each handle support member being disposed in the portion of greater diameter of its respective handle arm aperture such that said handle may pivot around said handle support members, each of said handle arm portions further including an annular flange member pivotally mounted over one of said handle support members so as to cooperate with the cover engagement member associated with each said one handle support member, each of said annular flange members having a slot portion, such that when said handle member is in a first position, each of said slot portions is substantially aligned with the cutout portion of its associated cover engagement member such that one of said cover peg members may be received in each said cutout portion, and such that when said handle member is pivoted to a second position, each said annular flange member overlies its associated cover engagement cutout portion so as to enclose the respective cover peg member received therein, thus securing said container cover to said container body and enabling the closed container to be carried by said handle, and such that when said handle is pivoted to a third position, said handle engages said at least one tab member securing each said at least one flap on its respective tab member, thereby redundantly locking said cover member to said body portion and securing said container for storing and shipping.

4,351,449

SELF-LOCKING, UNLOCKING DETACHABLE HAND LEVER CAM SEALED CONTAINER

Dwight D. Zobel, 1658 Hyperion, Waterloo, Iowa 50703

Filed May 22, 1981, Ser. No. 266,460
Int. Cl.³ B65D *45/00*
U.S. Cl. 220—318 6 Claims



1. A container having a sealable, releaseable and resealable lid comprising:

a vessel including a body wall and a bottom, with the upper portion of said body wall terminating in an integrally formed rim, defining an opening into the vessel, a cover adapted to matingly overlie said rim, having a sealing gasket secured to the cover so as to sealingly engage said rim,

said cover at its opposite sides having downwardly and outwardly extending tabs defining an open cam surface adapted for receipt of a cam lug when said cover is placed on said lid,

mounted to said vessel adjacent to said rim at opposite sides, a pair of bail support brackets, each of which rotatably support a cam shaft having a cam lug movable between lock and unlock positions, with the outer end of said cam shaft having a protruding ear,

a bail pivotally attached to said ear and extending upward for locking engagement into an associated bail handle,

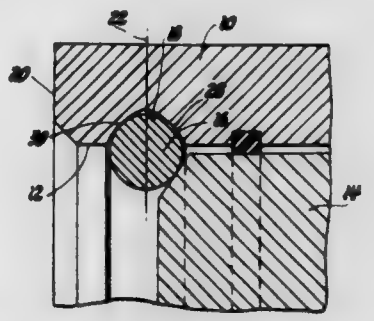
whereby unlocking of said bail handle allows the handle to be pivoted downwardly causing said cam shaft and correspondingly said cam lug to move to the unlock position and exert upward opening force on said cover, and conversely, upward pivoting of said bail responsively moves said cam lug to its lock position, causing downward foce on said cover.

4,351,450

GROOVE STRUCTURE FOR A RETAINING RING

James D. Summerfield, Saginaw, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jun. 8, 1981, Ser. No. 271,658
Int. Cl.³ B65D *45/32*
U.S. Cl. 220—319 3 Claims



1. A retaining structure for an end cap in a circular opening in a housing comprising; an annular groove in the housing having a centerline defined by the intersection of two opposed surfaces of revolution, each surface of revolution having a radius of curvature with its center axially offset from the centerline towards the opposed surface of revolution, and a locking ring having a circular cross section with a radius less than the radius of either surface of revolution and being disposed in

said annular groove in contact with both surfaces of revolution such that loads imposed on said locking ring by the end cap are supported by both surfaces of said annular groove.

4,351,451

RUBBER SEALED METAL VACUUM BOTTLE AND STOPPER CAPS THEREFOR

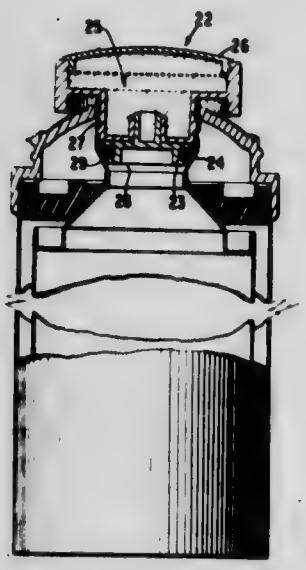
Ha D. Chung, Seoul, Rep. of Korea, assignor to Han Baek Trading Co., Ltd., Seoul, Rep. of Korea

Filed Nov. 6, 1979, Ser. No. 91,866

Claims priority, application Rep. of Korea, Feb. 17, 1979, 890/1979[U]; Feb. 17, 1979, 891/1979[U]

Int. Cl.[3] A47J *41/02*; B65D *25/14, 25/18*

U.S. Cl. 220—420 2 Claims



2. In combination with a vacuum bottle which includes a filler having a neck portion defining a smooth inwardly tapered throat opening having threading at its outermost portion, a closure assembly for said opening comprising:

a stopper cap having threads thereon to engage the threads of the neck portion of the vacuum bottle;

an O-ring retainer movably connected to the bottom of said stopper cap body; and

a rubber O-ring positioned on the lateral surface of the O-ring retainer,

such that when the stopper cap is threaded into the vacuum bottle, the O-ring engages the tapered throat opening and thus spreads to seal the throat opening of the vacuum bottle as the stopper cap is threaded in.

4,351,452

TURRET CUP SUPPLY AND DELIVERY APPARATUS

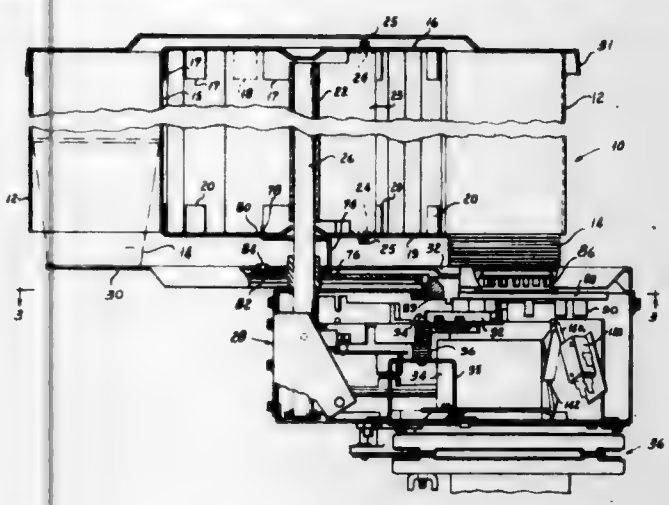
Frank T. Scalera, Maplewood, and Andris C. Sloss, Sussex, both of N.J., assignors to Rowe International, Inc., Whippany, N.J.

Filed Jun. 10, 1980, Ser. No. 158,259

Int. Cl.[3] B65H *7/00*; B65G *59/00*

U.S. Cl. 221—11 9 Claims

1. A cup supply mechanism for use with a drink machine having a shaft which rotates in the course of each cycle of operation of said machine including in combination a cup dispensing mechanism adapted to be operated to deliver cups one by one from a column of cups positioned in operative relation therewith, a turret for holding a plurality of columns of cups, means mounting said turret with one of said columns, in operative relationship with said dispensing mechanism, an arm, means mounting said arm adjacent to said one column at a predetermined level for pivotal movement between a first position at which said arm is out of said column and a second position at which said arm enters said column in the absence of a cup at said level, means biasing said arm to its second position, a drive slide, means mounting said slide on said arm for reciprocating movement between a retracted position and an extended position, means biasing said slide to said retracted position, respective first and second elements on said shaft and on said slide, said elements adapted to clear each other in the course of rotation of said shaft in the first position of said arm and to engage in the course of rotation of said shaft in the second position of said arm to move said slide to its extended



position, and means responsive to movement of said slide to its extended position for moving said turret to position another column in operative relationship with said dispensing mechanism.

4,351,453

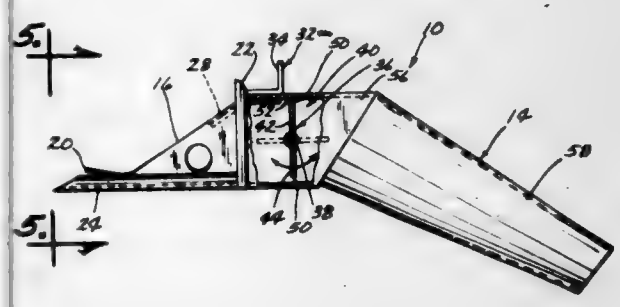
OIL SPOUT WITH VALVE

Alan E. Walker, 1124 Parc Dr., Papillion, Nebr. 68046

Filed Oct. 17, 1980, Ser. No. 197,920

Int. Cl.[3] B67B *7/26*

U.S. Cl. 222—83.5 3 Claims



1. In an apparatus for pouring oil from oil cans, said apparatus including an elongated generally tubular spout having a can piercing blade extended from one end thereof such that upon insertion of said blade into the top of an oil can, oil may be poured from the can through said spout upon inversion of the can, the improvement comprising a valve,

means for supporting said valve interiorly of said spout for movement between a closed position wherein said valve is oriented transversely of said spout to substantially retard oil flow through said spout and an open position wherein said valve is oriented generally perpendicularly to said closed position whereby oil flow through said spout is substantially unimpeded, and

means connected to said valve and positioned exteriorly of said spout for moving said valve between said closed and open positions,

said valve comprising a butterfly valve including a pivot rod extended through said spout and pivotally supported thereon, and a valve plate secured to said rod interiorly of said spout for pivotal movement therewith,

said means for moving said valve between said closed and open positions comprising a handle secured to one end of said rod in response to pivotal movement of said handle,

said handle being an elongated member directed generally parallel to said valve plate whereby the pivotal position of said handle provides an indication of the position of said valve plate,

said valve being of a size and shape relative to said spout such that when said valve is in the closed position, a slight peripheral clearance is provided between the exterior periphery of said valve and the interior periphery of said spout,

said spout including a generally enlarged neck portion at one end thereof, said can piercing blade being connected to said neck portion and extended generally axially therefrom, and said valve being pivotally supported within said neck portion,

an arcuate shield member arranged in close association to said blade and connected to said spout whereby said shield member is operative to direct oil flow into said spout from an oil can pierced by said blade, and

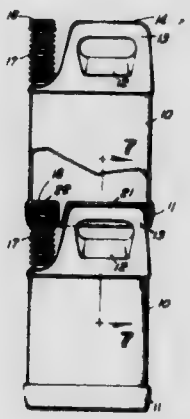
said spout being of compact rigid construction such that upon insertion of said can piercing blade into the top of an oil can and insertion of the opposite end of the spout into an oil filler opening, said can is positioned closely adjacent said opening.

4,351,454

LIQUID CONTAINER HAVING STACKING FEATURE

Walter P. Maynard, Jr., Suite 236, 3070 Presidential Dr., Atlanta, Ga. 30340

Filed Jul. 16, 1980, Ser. No. 169,300
Int. Cl.[3] B67D *5/60*; B65D *21/02*
U.S. Cl. 222—143 4 Claims



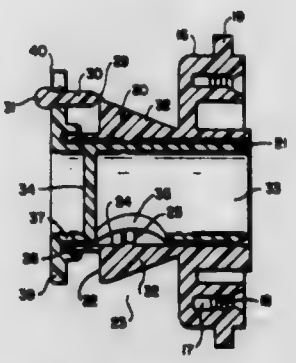
1. A liquid container formed as a unit from plastics material comprising a body portion having a bottom surface, a gabled upper surface, a hollow top carrying handle on said body portion which surmounts said gabled upper surface, a pouring and filling nozzle integrally formed on the top of said body portion and having a sufficiently large interior diameter to be self-venting and to facilitate filling the container through said nozzle, said nozzle being flexible along its length, and a removable closure means for said nozzle so that when said nozzle is upright, the top of said closure means is flush with the top of said handle, said top of said handle and said top of said closure means forming a surface to promote stacking the container with other like containers, said handle having flat, opposite side faces upwardly converging in symmetrical relationship from said body portion and terminating to said top of said handle, said side faces and said top defining a manual grasping aperture and said bottom surface having a longitudinally extending, arcuate-shaped depressed area with opposed side edges and including a manipulating recess on the lower end of said container adjacent said bottom surface and including a main recess in the bottom of said container and a secondary recess in said bottom surface forwardly of said main recess, said main and secondary recesses adapted to receive the upper portion of said handle and the top of the flexible nozzle of an underlying container when two containers are stacked while said nozzle is upright.

4,351,455

FINGER-ACTUATED SLIDEABLE DISPENSING VALVE

Curtis J. Bond, Marion, Ohio, assignor to Liqui-Box Corporation, Worthington, Ohio

Filed Jun. 19, 1980, Ser. No. 160,981
Int. Cl.[3] B65D *25/40*
U.S. Cl. 222—153 4 Claims



1. A dispensing valve assembly adapted to be removably mounted on a spout carried by a flexible bag which is intended for disposition in a box for movement of the valve assembly between a non-dispensing position and a dispensing position locked in an opening in a wall of the box comprising: a cap having a body of substantially disc-like form with means for removably mounting it on the spout, an annular tubular guide sleeve formed concentrically on the disc-like body and projecting axially outwardly therefrom substantially normal thereto, said guide sleeve being of less diameter than the disc-like cap body and having a cylindrical socket extending completely therethrough and through the cap body, a peripheral radially-extending flange spaced axially-inwardly of the outer end of said guide sleeve to provide an axially-outwardly extending annular flexible sealing skirt with an outer extremity, said peripheral flange being spaced axially-outwardly from the disc-like cap body to provide an annular finger-receiving space therebetween; an annular tubular slide valve member mounted for axially sliding and rotating movement in said guide sleeve and being of hollow form to provide a dispensing passage with an open axial inner end, an outer transverse wall closing said dispensing passage adjacent an outer extremity of the valve member but spaced therefrom to provide an outwardly-extending annular inner skirt at said outer extremity, a peripheral radially-outwardly extending flange on said outer extremity of said valve member, said last-named flange having an inwardly-extending annular outer skirt which is concentric with said outwardly-extending inner skirt to form an inwardly-opening annular sealing groove for receiving said flexible outwardly-extending sealing skirt on the guide sleeve when the valve member moves axially inwardly on the guide sleeve into closed position as determined by said extremity of the sealing skirt contacting said peripheral flange on the valve member in the groove, interengaging stop means between the valve member and the guide sleeve to limit axial outward sliding movement of the valve member relative to said sleeve into opened position, said peripheral flange on the outer extremity of said valve member extending radially outwardly thereof over the said peripheral flange on the guide sleeve and being spaced axially-outwardly thereof when the valve member is in its inner closed position on the guide sleeve to provide a finger-receiving space between the two flanges, said valve member having a dispensing port leading radially therefrom just axially inwardly of said transverse wall which is axially within the guide sleeve when the valve member is in closed position but is axially beyond the guide sleeve when the valve member is in opened position as determined by said stop means; said interengaging stop means comprising an annular stop shoulder on the exterior surface of the tubular valve member at its inner extremity and a cooperating annular stop shoulder on the inner surface of said guide sleeve axially adjacent said radially-extending peripheral flange on said guide sleeve so as to position the dispensing port of the valve member beyond the outer extremity of the flexible

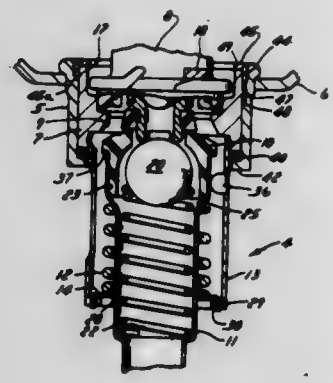
sealing skirt of the guide sleeve when the said stop shoulders are engaged; an annular sealing shoulder on the inner surface of said annular flexible sealing skirt of the guide sleeve for engaging with the adjacent outer surface of said inner skirt of the valve member when the valve member is moved axially inwardly of the guide sleeve into closed position with said flexible sealing skirt extended axially outwardly into said annular sealing groove; a latch tab having an inner end flexibly secured to said peripheral radially-extending flange on the guide sleeve and having a retainer enlargement on its outer end; said peripheral radially-extending flange on the outer extremity of said valve member having a radially-directed keeper notch for receiving said flexible tab with the retainer enlargement outwardly of the flange to hold said valve member in its closed position within the guide sleeve, said dispensing port being formed in said valve member at a point diametrically-opposed to said keeper notch so the latch tab will also locate the dispensing port in proper dispensing position angularly.

4,351,456

VALVED KEG CLOSURE

James E. Nezworski, Waukesha, Wis., assignor to The Perlick Company, Inc., Milwaukee, Wis.

Filed Oct. 14, 1980, Ser. No. 196,645
Int. Cl.[3] B67D *1/04*
U.S. Cl. 222—400.7 9 Claims



1. A keg closure for cooperation with a removable tapping coupler, comprising a relatively fixed substantially cylindrical element which is securable in a keg wall aperture and which defines a coaxial annular valve seat, a relatively fixed tubular element coaxially secured at a top end portion thereof to said cylindrical element and projecting downward therefrom, and an axially movable tube member coaxially received in said tubular element with substantial radial clearance and having an upper end at which there is a valve element, said tube member being substantially longer than said tubular element to have its lower end near the bottom of a keg in which the closure is installed and being biased upward for normal engagement of said valve element with said valve seat, said keg closure being characterized by:

A. a portion of said tube member that is surrounded by said tubular element being of substantially uniform diameter along its length; and

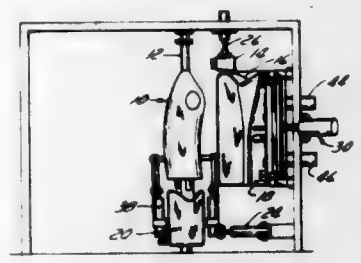
B. said tubular element having integral, circumferentially spaced, radially inwardly bent tabs intermediate its top and bottom ends that slidingly engage said portion of the tube member to confine the same to axial up and down motion.

4,351,457

JACKET PRESSING APPARATUS

Wilhelm Engelbart, Boras, Sweden, assignor to Maskinfirma Certus AB, Ganghester, Sweden

Filed Jul. 11, 1980, Ser. No. 167,654
Int. Cl.[3] D06C *15/00*
U.S. Cl. 223—57 2 Claims



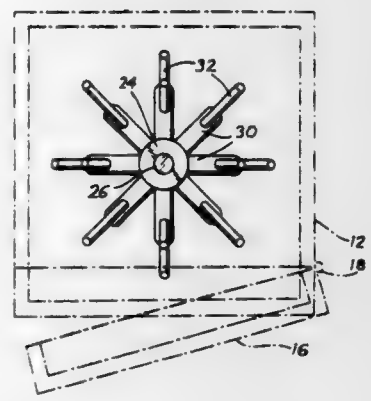
1. In a pressing apparatus which includes means for pressing the side and sleeves of a jacket, the improvement wherein the apparatus includes a body shaped buck adapted to receive at least a side half of the jacket, a combined side pressing head and sleeve buck, means for moving said combined head and buck upwardly from a first position to a position interposed between the side and sleeve of the jacket, means for moving the combined head and buck inwardly and slightly downwardly against a side of the jacket in a pressing relationship thereto, and pressing means adapted to move into and out of a pressing relationship with the sleeve of the jacket and the sleeve buck.

4,351,458

ROTARY THREAD SPOOL STORAGE TREE

Jack L. Wolfe, 13314 SE. Oatfield Rd., Milwaukie, Oreg. 97222

Filed Feb. 9, 1981, Ser. No. 232,563
Int. Cl.[3] A41H *31/00*
U.S. Cl. 223—106 7 Claims



1. A thread spool storage tree, comprising:

(a) a base,

(b) an elongated, vertically extending post member mounted on said base,

(c) outwardly projecting limb members arranged along the length of the post member in longitudinally spaced groups each of a plurality of limb members disposed at circumferentially spaced intervals around said post, and

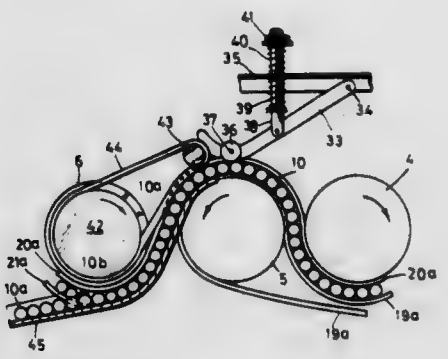
(d) an upwardly and outwardly extending spool holding arm member supported on each said limb member,

(e) the arm and limb members being arranged on the post to allow installation and removal of each spool without interference from spools on adjacent arm and limb members.

4,351,459
AUTOMATIC GLASS TUBE CUTTER

Perng Huey-Miin, No. 35, 1st St., Fu Kuei New Village Tou-Chung Li, Chu-Tung Town, Hsin-chun Hsien, Taiwan

Filed Nov. 26, 1980, Ser. No. 210,737
Int. Cl.³ C03B *33/06*
U.S. Cl. 225—96.5 4 Claims



1. A device for cutting long rod, or tubular products, particularly glass tubes comprising:

a feeding device, including,

a gate at an outlet of a feeding table for controlling the outlet quantity of tubes from said feeding table;

a feeding plate which has a slope to guide the material from said feeding table;

a loading wheel which has a plurality of openings around its periphery; by means of its rotation, tubes falling into said openings are sent to a narrow path;

a scraping plate to scrape away the tubes on said loading wheel and

a narrow path between said loading wheel and an inlet of a conveyor system which allows passing of only a piece of tube so that the feeding is in a row of tubes falling into said conveyor system one by one;

a conveyor system which causes a wave-like transversal conveying of the tubes, and has a width which becomes smaller and smaller gradually following a sequence of cuttings;

a plurality of cutter pairs, each pair of which are installed at two sides of said conveyor system and the distance between said pair of cutters is adjusted upon the length of material to be finished; and

a collection path, installed in front of each said cutter for collecting said cut tubes and then conveyed to a certain place for packing or processing.

4,351,460
TRANSPORT SYSTEM FOR PHOTO-TYPESETTING MACHINE

Alfred R. Ouellette, Saugus, Mass., assignor to Itek Corporation, Lexington, Mass.

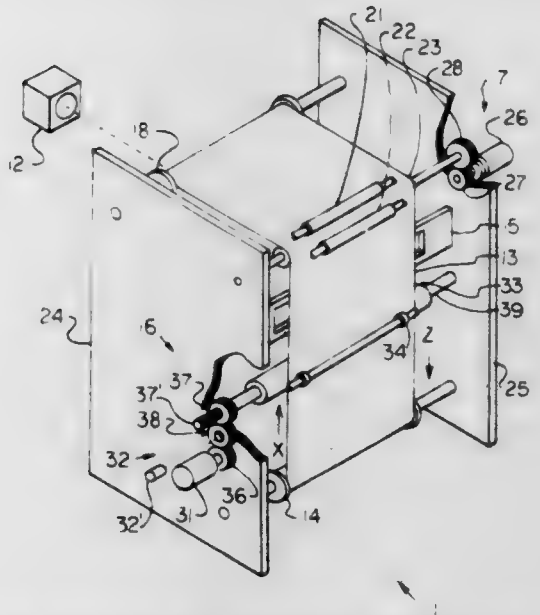
Filed Jun. 16, 1980, Ser. No. 159,428
Int. Cl.³ B65H *23/18, 17/18*
U.S. Cl. 226—25 11 Claims

1. a flexible sheet transport and tensioning system comprising:

primary drive means for feeding the flexible sheet at a predetermined velocity in either a forward or a reverse direction; tension roller means disposed in the path of the flexible sheet so as to be frictionally engaged thereby;

auxiliary drive means; and,

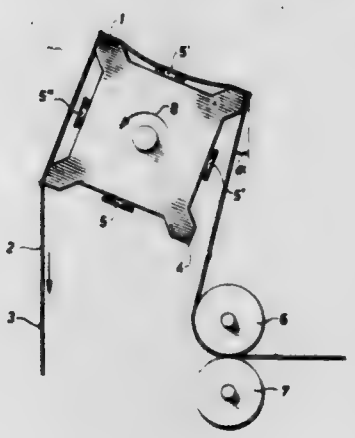
coupling means coupled between said tension roller means an said auxiliary drive means and driven thereby in a given sense that tends to produce rotation of said tension roller means in a direction to move the flexible sheet in said reverse direction, and wherein said coupling means comprises a slip coupling adapted to slip in response to application of a given torque of said tension roller in said forward direction and unidirectional coupling means for preventing movement of said auxiliary drive means in a sense opposite to said given sense.



4,351,461
METHOD AND AN ARRANGEMENT FOR THE FEED OF A MATERIAL WEB

Lars Carlsson, Bjuntarp, Sweden, assignor to Tetra Pak International AB, Lund, Sweden

Filed Dec. 5, 1980, Ser. No. 213,470
Claims priority, application Sweden, Dec. 11, 1979, 7910167
Int. Cl.³ B65H *23/18;* G03B *1/18*
U.S. Cl. 226—28 6 Claims



1. A method for feeding a web containing transverse crease lines in which a rotary driver contains edges spaced around its periphery which are arranged to drivingly engage the crease lines, the improvement comprising the step of temporarily bending that part of the web disposed between two of said edges to urge the respective crease lines into engagement with said two edges.

4,351,462
PNEUMATIC FEEDER FOR PUNCH PRESSES AND THE LIKE

Albert W. Scribner, 6 Country Club Rd., Darien, Conn. 06820

Filed Jan. 9, 1981, Ser. No. 223,786
Int. Cl.³ B65H *17/36, 17/44*
U.S. Cl. 226—150 1 Claim

1. In a pneumatically operated feeder for intermittently advancing stock into the work station of a punch press or the like and having a main body;

rail means extending from said body;

a feed slide mounted on said rail means for reciprocating movement in feed and index directions;

stock gripping means carried by said feed slide and being adapted to be moved between stock gripping and stock release conditions;

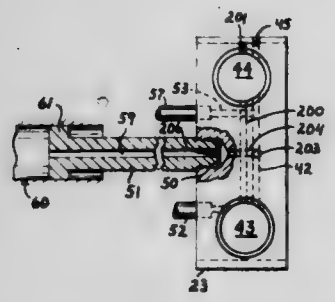
abutment means carried at the outer end of said rail means for adjustably limiting the extent of movement of said feed slide in said index direction;

a first main fluid motor means disposed in said main body, said main fluid motor means including a piston and piston rod, the latter being connected at its outer end to said feed slide whereby said main fluid motor means is capable of reciprocally actuating said feed slide in said feed and index directions;

a second fluid motor means carried by said feed slide and adapted to move said stock gripping means between said stock gripping and stock release conditions; and

valve means carried by said main body and adapted to control the operation of said first and second fluid motor means: the improvement conprising

an improved fluid conduit line arrangement disposed between said valve means and said first and second fluid motor means whereby operation of said valve means causes said feed slide to move through alternate operative feed and index strokes;



said improved conduit line arrangement including a first air conduit line extending from the output of said valve means and through said main body;

a straight rigid tube coupled at one end thereof to said feed slide, the other end thereof being telescopically received by said main body and pneumatically communicating with said first conduit line;

a second air conduit line formed in said feed slide and pneumatically communicating with said second fluid motor means and with said one end of said tube; and

a third air conduit line communicating with said second conduit line in said feed slide and with the head end of said main fluid motor means in said main body and including a longitudinal passageway formed through said piston and piston rod of said first fluid motor means;

said conduit line arrangement thus providing a roundabout circuitous path of flow for the air conducted between said valve means and said head end of said main fluid motor means in said main body, which path requires such air to flow serially through said main body, rigid tube, feed slide, piston rod and piston which in turn promotes in said feeder a short time delay between the respective initiations of operation of said second fluid motor means and said first fluid motor means.

4,351,463

DEVICE FOR FEEDING WEB-SHAPED PACKAGING MATERIAL

Siegfried H. Knecht, Gevelsberg, Fed. Rep. of Germany, assignor to Maschinenfabrik Alfred Schmermund GmbH & Co., Gevelsberg, Fed. Rep. of Germany

Filed Jan. 5, 1981, Ser. No. 222,286

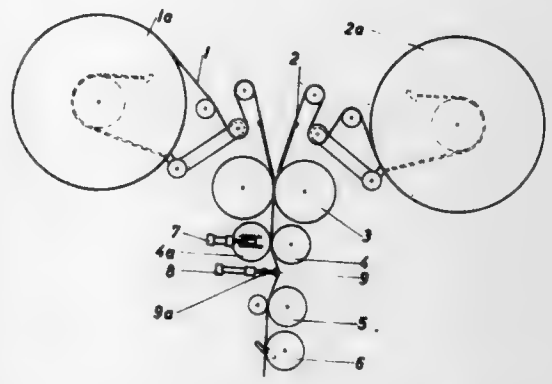
Claims priority, application Fed. Rep. of Germany, Jan. 22, 1980, 3002092

Int. Cl.³ B65H *17/22, 75/02*

U.S. Cl. 226—154 **5 Claims**

1. In a spool changing device for alternately feeding web-shaped packaging material from two supply spools to a packaging machine by way of a common conveying track along which a pair of engraving rollers, a pair of conveying rollers, and a cutting device are sequentially positioned, the improvement comprising:

auxiliary drive means mechanically associated with said engraving rollers and operable to vary the distance be-



tween the axes of said engraving rollers, whereby said engraving rollers may be moved apart by said auxiliary drive means to a position wherein conveying takes place without embossing when the leading end of packaging material arrives from a new spool.

4,351,464

COMPRESSED AIR-OPERATED FASTENER DRIVING TOOL WITH RELEASE SAFETY MEANS

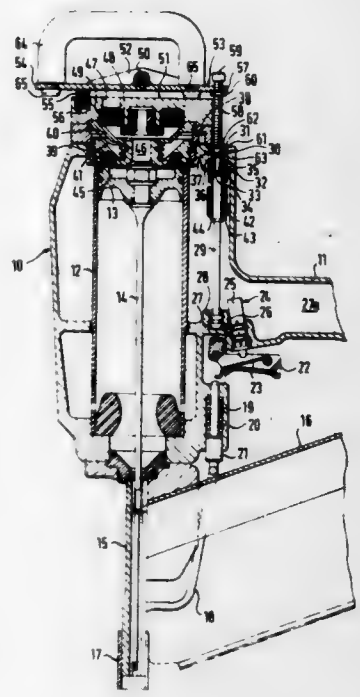
Hellmuth Fehrs, Hamburg, and Wolfgang Elliesen, Ahrensburg, both of Fed. Rep. of Germany, assignors to Joh.Friedrich Behrens AG, Ahrensburg, Fed. Rep. of Germany

Filed Jun. 3, 1980, Ser. No. 155,947

Claims priority, application Fed. Rep. of Germany, Apr. 17, 1980, 3014803

Int. Cl.³ B27F *7/02, 7/34*

U.S. Cl. 227—7 **10 Claims**



1. Compressed air-operated fastener driving tool comprising a pilot valve controlled by a manually operated release lever, a control valve the pressure bias of which is controlled by the pilot valve and which for its part control the supply of compressed air to a working cylinder, and a release barrier actuated by the workpiece by means of which in common with the release lever placed in the working position the actuation of the pilot valve is adapted to be controlled; and in addition to said pilot valve and control valve a third manually operable release organ movably fitted at the fastener driving tool casing outside the gripping region of the operator's hand actuating the

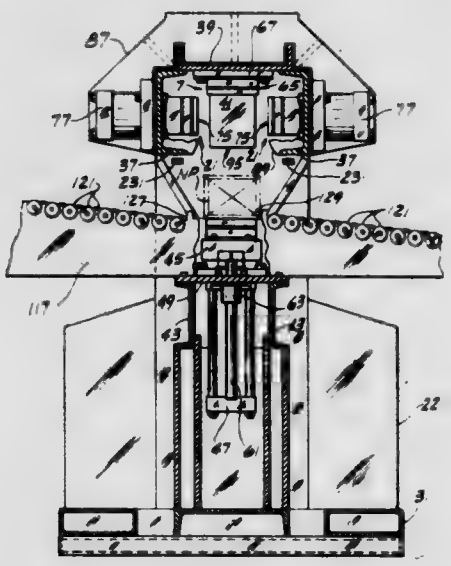
release lever which is effective on a movable valve element of the pilot valve via an opening in the fastener driving tool casing in such a manner that the pilot valve is capable of being moved into the working position only if the other hand of the operator actuates the third release organ, said third release organ being a lever pivotally supported at the fastener driving tool casing which with the aid of a projection over the casing opening is effective on the valve element of the pilot valve and with the aid of a spring is constantly urged in a direction towards the valve element, the force of the spring being greater than the actuating force at the valve element of the pilot valve.

4,351,465

APPARATUS FOR END-PLATING RAILROAD TIES

Walter G. Moehlenpah, Ladue, and Gordon E. Matlock, Sullivan, both of Mo., assignors to Moehlenpah Industries, Inc., St. Louis, Mo.

Filed Sep. 11, 1980, Ser. No. 186,255
Int. Cl.³ B25C 7/00
U.S. Cl. 227—7 **28 Claims**



1. Apparatus for pressing nailing plates into opposite ends of elongate members, such as wooden railroad ties, thereby to end-plate the ties, comprising a press having upper and lower platen means engageable with the top and bottom faces of a tie adjacent the ends thereof, said lower platen means being movable through an upstroke for raising the tie while generally horizontal from a lowered position to an elevated position and for pressing the tie against said upper platen means thereby to apply a vertical compressing force to the tie adjacent the ends thereof, and a downstroke for lowering the tie, side platen means engageable with opposite side faces of said tie adjacent the ends thereof when the tie is in said elevated position, said side platen means being movable toward and away from one another whereby a horizontal compressing force can be applied to and removed from the opposite side faces of the tie adjacent the ends thereof, and a pair of end platens engagable with nailing plates on opposite ends of the tie for pressing the plates into the tie ends when the tie is in said elevated position and while said compressing forces are being applied to the tie by said upper, said lower and said side platen means.

4,351,466

DISPOSABLE INSTRUMENT FOR SURGICAL FASTENING

Douglas G. Noiles, New Canaan, Conn., assignor to United States Surgical Corporation, Norwalk, Conn.

Filed Oct. 16, 1980, Ser. No. 197,614
Int. Cl.³ A61B 17/04, 17/11
U.S. Cl. 227—8 **6 Claims**

1. A surgical fastening instrument which comprises:

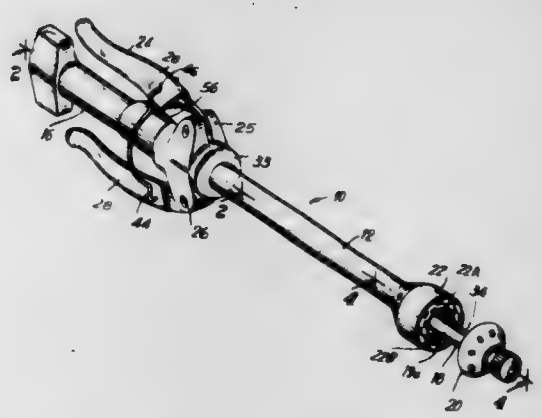
(a) a tubular housing having an axial bore and an axial slot which extends through its tubular wall;

(b) a tubular pusher axially located within the bore of said housing and adapted to move distally and proximally within the bore; said pusher having an axial slot extending through its tubular wall; said pusher slot being angularly aligned with said housing slot;

(c) a central rod axially located within said pusher and adapted to move distally and proximally within said pusher; said central rod having an axial groove in its lateral surface; said central rod groove being angularly aligned with said pusher slot;

(d) means, located at the proximal end of said housing, for moving said central rod distally and proximally within said pusher;

(e) a handle pivotally mounted on the tubular wall of said housing; the pivotal mounting of said handle being laterally spaced from the tubular wall of said housing; a first part of said handle being located on the side of the pivotal mounting remote from said housing and being adapted to move about the pivotal mounting towards said housing; a second part of said handle being located on the other side of the pivotal mounting, adjacent to said housing, and being positioned within the slot in said housing and within the slot in said pusher; the second part of said handle being adapted to move distally against the distal end of the slot in said pusher to move said pusher distally within the bore of said housing upon movement of the first part of said handle towards said housing; the end of the second part of



said handle, remote from the pivotal mounting, being spaced from the pivotal mounting by a distance greater than the lateral distance between the pivotal mounting and the lateral surface of said central rod;

(f) an anvil mounted in a predetermined indexed orientation on the distal end of said central rod;

(g) a staple carrying assembly mounted in a predetermined indexed orientation on the distal end of said housing between said anvil and the distal end of said pusher; said staple carrying assembly being activated by distal movement of said pusher against the proximal end of said staple carrying assembly, so that staples are urged distally against said anvil; and

(h) means for determining that the axial position of the distal end of said central rod relative to the distal end of said housing is such that said anvil and said staple carrying member are properly spaced apart for fastening tissue between them;

the groove in said central rod being located, so that when said anvil and said staple carrying assembly are properly spaced apart for fastening tissue between them: (1) at least a portion of the slot in said pusher is laterally aligned with at least a portion of the groove in said central rod; and (2) the end of the second part of said handle, remote from the pivotal mounting, can move medially and distally into the groove in said central rod and the second part of said handle can move distally against the distal end of the slot in said pusher to move said pusher distally within the bore of said housing

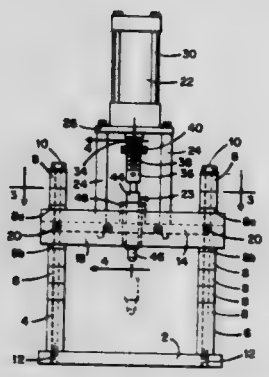
against the proximal end of said staple carrying assembly to activate said staple carrying assembly.

4,351,467

PIN CHUCK PRESS

William P. White, c/o Mechanical Application, Inc., Wiscasset, Me. 04578

Filed Apr. 7, 1980, Ser. No. 138,003
Int. Cl.³ H05K *13/04*; B33B *49/00*
U.S. Cl. 227—142 **4 Claims**



1. In a machine for driving a pin into a hole of cooperating size in a work piece mounted on a base and in which the machine comprises a fluid cylinder with a piston for moving a pin chuck on the end thereof in rectilinear motion with respect to said base on which said cylinder is mounted,

the means for mounting said cylinder on said base comprising a cylinder support and means for adjusting the distance of said support from said base in fixed increments which increments are not greater than the stroke of the said piston,

said support comprising a plate and the means for adjusting the position of said plate comprising a plurality of posts mounted on said base, each post formed of tubular spacers held together by a rod passing therethrough with two adjacent spacers on each post clamping the said plate therebetween,

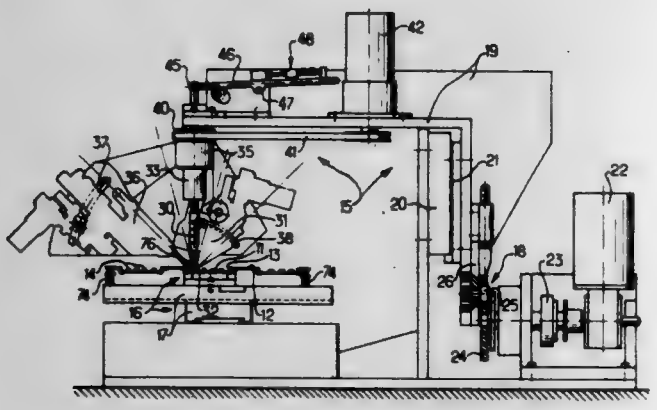
and infinitely adjustable means attached to said piston adapted to engage an element fixed with respect to said support thereby to control the extent of the stroke of said piston and the chuck toward said base.

4,351,468

APPARATUS FOR WIRING CONNECTIONS ON A SUBSTRATE

Claude P. Floury; Claude L. J. M. Guillet, both of Angers; James A. Lokocki, Montreuil Juigne; Maurice R. Devoille, Rochefort Sur Loire, and Bernard Fanene, Prelaze, all of France, assignors to Compagnie Internationale pour l'Informatique CII-Honeywell Bull, Paris, France

Filed Sep. 17, 1980, Ser. No. 188,020
Claims priority, application France, Sep. 28, 1979, 79 24290
Int. Cl.³ B23K *1/00*
U.S. Cl. 228—4.5 **33 Claims**



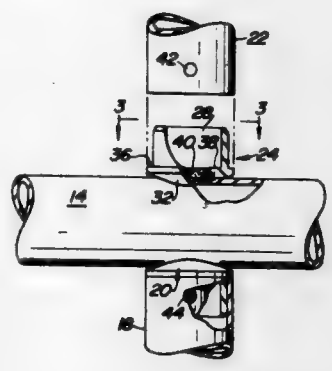
1. Apparatus for wiring on the surface of a substrate comprising a tool carrier, a substrate carrier, means for positioning the substrate carrier in a substantially horizontal plane so it is situated opposite the tool carrier, means for displacing the substrate carrier relative to the tool carrier so the tool carrier is displaceable relative to a vertical plane, a heating element and an electric wire dispenser carried by the tool carrier, said dispenser including a wire outlet orifice situated close to an end of the heating element, means for translating the heating element longitudinally within a sleeve having an axis directed towards the substrate carrier, and a rotary support for carrying the dispenser, said rotary support being rotatable around the sleeve axis to allow the said wire outlet orifice to be positioned with respect to an end of the heating element as a function of the direction of the relative displacement between the substrate carrier and tool carrier.

4,351,469

METHOD OF MAKING RAILING

Don Newman, Philadelphia, Pa., assignor to Stretch Devices, Inc., Philadelphia, Pa.

Division of Ser. No. 938,567, Aug. 31, 1978, Pat. No. 4,238,117. This application Dec. 3, 1979, Ser. No. 99,690
Int. Cl.³ B23K *31/02*
U.S. Cl. 228—135 **7 Claims**



1. A method of making a railing including the steps of:

(a) providing a horizontal rail member and a vertical post member;

(b) providing a hollow one-piece fitting which is open at one end and having an end face at its other end shaped to mate with said rail member, shaping said fitting outer surface so that the outer surface converges toward said end face; positioning said fitting end face in contact with said rail member;

(c) welding said fitting and face to said rail member by introducing a portion of welding apparatus through said fitting so as to provide a weld exposed only through said open end of said fitting;

(d) telescoping one end portion of the post member with respect to said open end of said fitting and then fixedly securing the same together.

4,351,470

METHOD OF MAKING A STIFFENED PANEL

Martin H. Mansbridge, of Filton, England, assignor to British Aerospace Public Limited Company, London, England

Continuation of Ser. No. 78,582, Sep. 21, 1979, abandoned. This application Jul. 1, 1981, Ser. No. 279,610
Claims priority, application United Kingdom, Sep. 29, 1978, 38659/78
Int. Cl.³ B23K *28/02*; B21D *26/02*
U.S. Cl. 228—157 **2 Claims**

1. In the method of making a stiffening panel which includes the steps of:

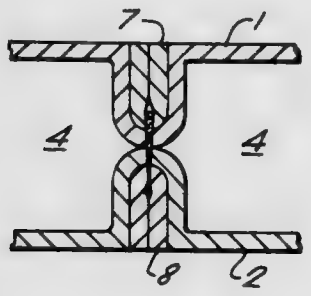
positioning in face-to-face relation two metal sheets at least one of which is superplastically deformable,

attaching the sheets together along at least one line and

about their peripheries to form at least one inflatable envelope; and

inflating the envelope in a mold to superplastically deform the superplastically deformable sheet to form at least two cavities between the sheets separated by wall portions attached to each other along the attaching line, the improvement comprising the further steps of:

prior to the inflating step positioning a plastically deformable metal sheet reinforcing member against the outer surface of the plastically deformable sheet and along the line of attachment of the two sheets;



attaching the member to the plastically deformable sheet along the line of attachment of the two sheets, whereby the member is deformed with the plastically deformable sheet during the inflating step;

continuing the inflating step until portions of the member on opposite sides of the line of attachment meet in face-to-face relation;

bonding together the meeting portions of the member; and

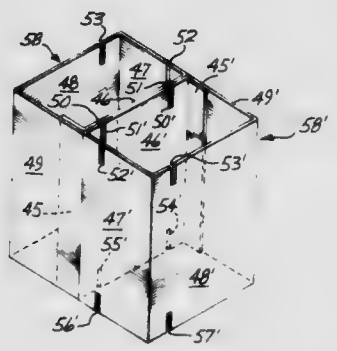
bonding together the opposed portions of the plastically deformable sheet and the member.

4,351,471

DUAL CELL LAMINATED CONTAINER

George H. Dunkle, Locust, N.C., assignor to Weyerhaeuser Company, Tacoma, Wash.

Filed Jan. 27, 1981, Ser. No. 228,862
Int. Cl.[3] B65D 5/48
U.S. Cl. 229—15 8 Claims



1. A rectangular cell for a container

said cell having first, second, third and fourth side walls hingedly joined together,

a first series of slots in one end edge of said cell comprising

a first and a second slot spaced from each other a first distance in said first wall,

said second slot being spaced from the adjacent side edge of said first wall a second distance,

a third slot on said second wall adjacent said side edge of said first wall and spaced from said first wall adjacent side edge said second distance, and

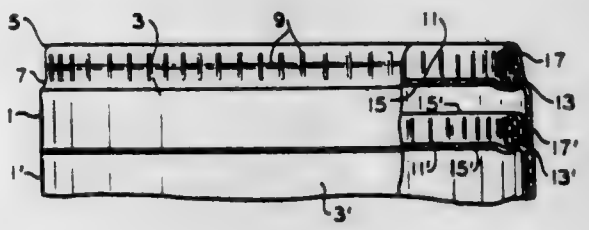
a fourth slot circumferentially spaced from said third slot said first distance and located on the side of said third slot opposite said second slot.

4,351,472

CLOSURE

William R. Eddy, Kansas City, Mo., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation of Ser. No. 822,777, Aug. 8, 1977, abandoned. This application Jul. 1, 1980, Ser. No. 164,875
Int. Cl.[3] B65D 5/64, 21/02, 43/03, 43/08
U.S. Cl. 229—43 8 Claims



1. A two-piece paper product closure comprising:

(a) a skirt portion surmounted by an upstanding flange portion comprising an integral extended part, at least, in the shape of an inverted U and

(b) a disc portion having an, at least, upward projection at the periphery of the disc said projection substantially confined between the integral extended part of the upstanding flange portion,

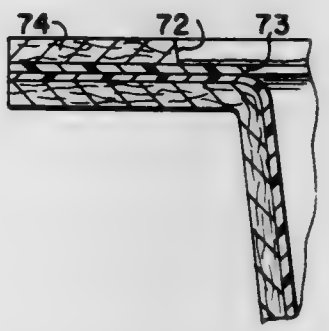
said upstanding flange portion confining the projection swaged to offset the flange portion radially inwardly from the skirt portion at a point between the base of the skirt portion and the top of the flange portion, said offsetting forming a shoulder sufficiently wide to accommodate a duplicate skirt portion stacked thereon and said offset, upstanding flange imprinted at intervals on its outer surface with a crimp design and imprinted at sufficiently closer intervals on its inner surface with a crimp design to take up substantially all excess material from the swaging, said crimp design oriented to provide sufficient entry of air between closures when stacked thereby facilitating automatic destacking.

4,351,473

TRAY CONTAINER WITH TEAR OUT COVER

Guelfo A. Manizza, Blauvelt, N.Y., assignor to Federal Paper Board Co., Inc., Montvale, N.J.

Filed Nov. 17, 1980, Ser. No. 207,682
Int. Cl.[3] B65D 5/64, 5/54
U.S. Cl. 229—43 6 Claims



1. In a tray type container for packaging a product which is formed from a relatively light weight paperboard material with peripheral side walls upstanding from a bottom wall which side walls will buckle when subject to outwardly directed force and which have an outwardly directed narrow flange formation at the top edge thereof, a top cover forming lid member which has a periphery corresponding substantially to the outer periphery of the narrow flange formation, said cover forming member having a seal forming coating at least around the marginal portions which permits adhesively securing the marginal portions on the top face of the flange formation and said cover forming member having parallel spaced

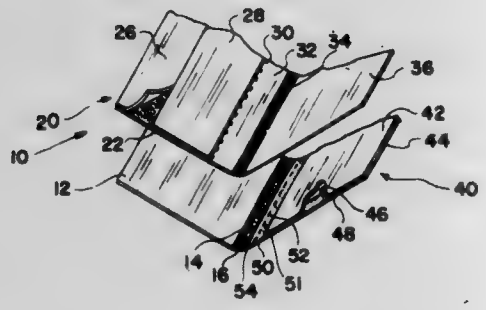
tearing line formations on the outer and inner faces extending around at least a major portion of the peripheral margin, the outermost tearing line formation being spaced from the peripheral edge a predetermined distance which is somewhat less that the width of said flange formation and the innermost tearing line extending adjacent the junction of the inner edge of the flange formation with the top edge of the side wall.

4,351,474

MAILER WITH STICKER-TYPE SIGN

Robert Kaelblein, Springfield, and John H. Jones, Westfield, both of N.J., assignors to Beatrice Foods Co., Chicago, Ill.

Filed Jul. 3, 1980, Ser. No. 165,726
Int. Cl.³ B65D *27/00*
U.S. Cl. 229—68 R **4 Claims**



1. A mailer for sticker-type signs, comprising:
(a) a rectangular mailer envelope having two panels folded along a common fold line to form the envelope bottom edge and the two adjacent side envelope edges being held together by glue strips,
(b) one of the panels being wider than the other and having a flap section containing a strip of remoistenable glue,
(c) an elongated thin envelope retaining section disposed immediately adjacent the envelope flap section,
(d) a perforated line disposed between the envelope retaining section and the envelope flap section which permits the envelope to be separated from the envelope retaining section,
(e) an elongated sticker-retaining strip integrally connected to the envelope retaining section,
(f) a rectangular sticker disposed immediately adjacent the sticker-retaining strip,
(g) a perforated line disposed between the sticker-retaining strip and the sticker which permits the sticker to be separated from the sticker-retaining strip,
(h) the sticker having printing disposed on one side thereof and backing adhesive on the other, and
(i) a peel-off strip covering the backing adhesive on the sticker panel.

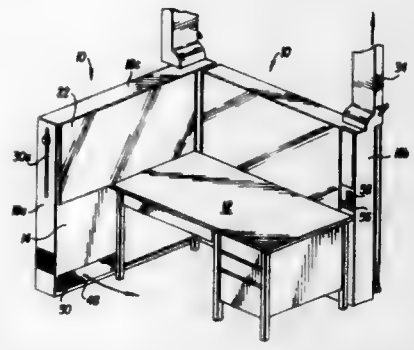
4,351,475

ENVIRONMENTAL CONTROL ROOM DIVIDERS

James W. Hudson, P.O. Box 399, Spotsylvania, Va. 22553

Filed Jun. 24, 1980, Ser. No. 162,550
Int. Cl.³ F24F *7/00*
U.S. Cl. 237—46 **30 Claims**

1. A portable wall-like room divider for resting on the floor and rising to a height of at least three feet, said wall-like room divider having a front facing, a rear facing, and edge members forming a light-source cavity therein wherein an upper portion of said front facing is formed of a light transmissive material, and wherein a light source is positioned inside said light-source cavity for producing light to be transmitted through said light-transmissive material, an adjusting means linked with said light source, but being external of said light-source cavity for adjusting, from outside said light-source cavity, the position of a



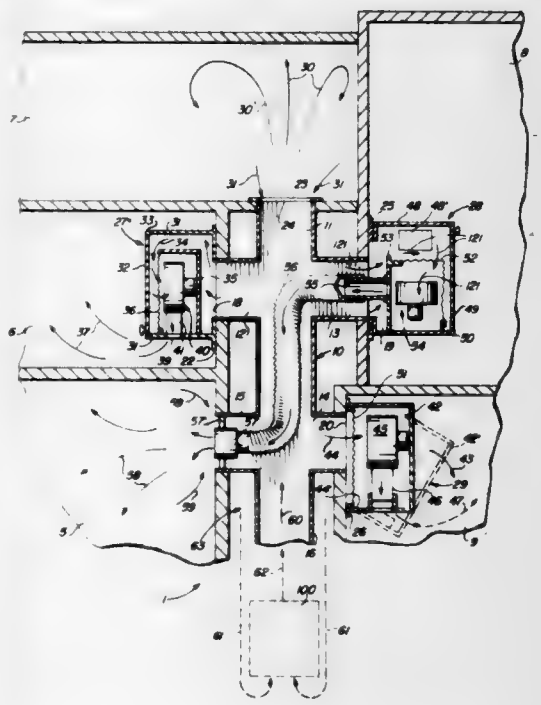
member of said light source, and thereby adjusting the pattern of said light passing through said light-transmissive member.

4,351,476

AIR FILTERING SYSTEM AND METHOD OF OPERATION

William E. Rood, Jr., 1195 S. Idaho Rd., Apache Junction, Ariz. 85220

Filed Nov. 20, 1980, Ser. No. 208,701
Int. Cl.³ F24D *5/04*; B01D *46/42*; F24F *3/16*
U.S. Cl. 237—50 **15 Claims**



1. In a building including
i. a first room and a central air circulation duct system,
ii. a first duct outlet connected to said central air circulation duct system positioned to effect guiding of air in said central air circulation duct system into the first room, and
iii. a main blower connected to said central air circulation duct system for forcing air through said central air circulation duct system,
and an air filtering device comprising in combination:
a. an electric blower having an air inlet and an air outlet;
b. housing means supporting said electric blower and having means for defining a path for air flow from said first duct outlet to said air inlet of said electric blower, said housing means having an air outlet in communication with said air outlet of said electric blower to cause air passing through said electric blower to be blown into said first room; and
c. first filtering means disposed in said housing means between said first duct outlet and said air inlet of said electric blower for filtering all of the air passing into said air inlet of said electric blower.

12. A method of providing a flow of filtered air into a room

of a building, said building having a central air circulation system including a main duct, said method comprising the steps of:

a. steadily drawing unfiltered air only from the main duct of said central air circulation system in the building through a filter by means of an electric blower, regardless of whether the main blower for circulating air through said central air circulation system is operating;

b. preventing any unfiltered air from flowing through the main duct of said central air circulation system directly into the room; and

c. forcing enough of said unfiltered air through said filter into the room to increase the relative pressure in the room to a level such that no more than a negligible amount of unfiltered air enters the room via any openings into the room.

4,351,477

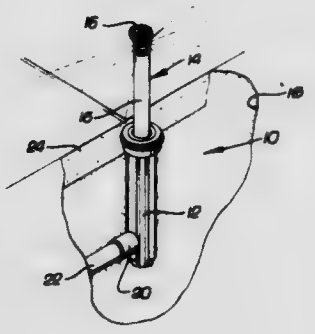
POP-UP SPRINKLER

Mansam Choi, 922 S. Cabrillo Dr., Duarte, Calif. 91010, assignor to Anthony Manufacturing Corporation, Azusa, Calif.

Filed Aug. 4, 1980, Ser. No. 175,121

Int. Cl.³ B05B *15/10*

U.S. Cl. 239—205 **23 Claims**



8. A pop-up sprinkler, comprising:

a housing including an inlet for receiving water under pressure;

a spray nozzle assembly mounted with respect to said housing for vertical sliding movement between a retracted position generally within said housing and an elevated position with its upper end elevated above said housing; and

means within said housing and movable with said assembly for permitting substantially full circle rotation of said assembly with respect to said housing throughout at least a portion of the vertical movement of said assembly below said elevated position to permit adjustment of said assembly to a selected rotational position, and for grippingly engaging said assembly when said assembly is in said elevated position for locking said assembly in said selected rotational position.

4,351,478

APPARATUS FOR CLEANING TANKS OR VESSELS

Bruce T. Looper, 405 48th St., N.W., Bradenton, Fla. 33529

Filed Aug. 18, 1980, Ser. No. 179,094

Int. Cl.³ B08B *9/08*

U.S. Cl. 239—227 **10 Claims**

1. An apparatus for cleaning tanks or vessels, comprising:

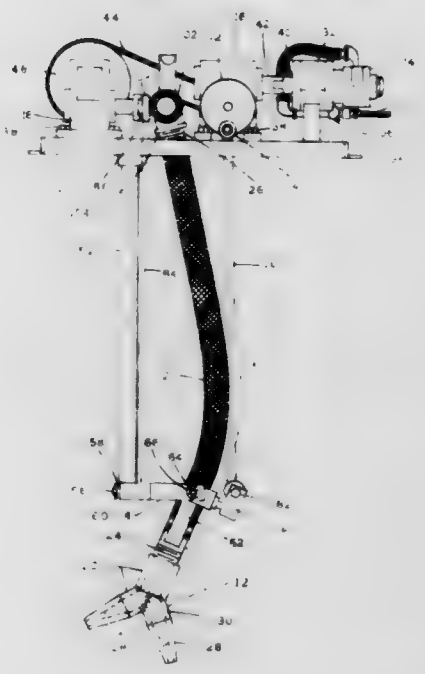
(a) a support frame having an air motor, a first gear box and a second gear box mounted thereon;

(b) an elongated vertical member for insertion through the access opening of the tank or vessel to be cleaned, said elongated vertical member having its upper end attached to said support frame;

(c) a wash nozzle assembly pivotedly attached to the lower end of said elongated vertical member for movement in two directions;

(d) a flexible coupling to operatively connect said air motor and said first gear box;

(e) a belt and pulley mechanism for operatively connecting said first gear box and said second gear box;



(f) a lever arm mechanism for operatively connecting said first gear box and said wash nozzle assembly; and

(g) a lever arm mechanism for operatively connecting said second gear box and said wash nozzle assembly.

4,351,479

JET ENGINE WITH A THRUST VECTOR CONTROL

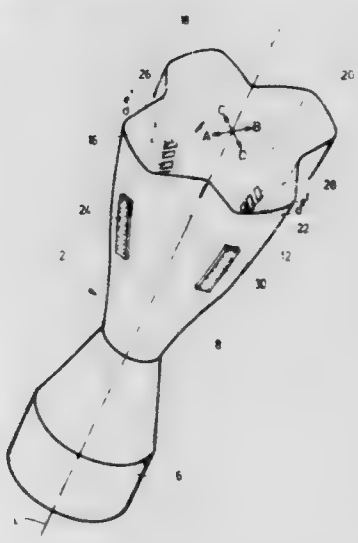
Walter Kranz, Taufkirchen, and Heinz Tillmann, Ottobrunn, both of Fed. Rep. of Germany, assignors to Messerschmitt-Bölkow-Blohm GmbH, Fed. Rep. of Germany

Filed May 29, 1980, Ser. No. 154,428

Claims priority, application Fed. Rep. of Germany, Jun. 2, 1979, 2922576

Int. Cl.³ B64C *15/10*

U.S. Cl. 239—265.23 **11 Claims**



1. A jet engine comprising:

a housing defining a combustion chamber for generating expanding gases;

a thrust nozzle mounted downstream of said combustion chamber having a constricted neck portion and an adjacent diverging nozzle section widening outwardly from said neck portion;

a thrust nozzle extension having an inlet end connected to said nozzle section and widening outwardly from said nozzle section by a proportion greater than a ratio of expansion of an ambient pressure of the expanding gas;

said nozzle section and nozzle extension having a plurality of

control fluid supply ports in the vicinity of said inlet end, disposed in at least one row extending in a longitudinal direction of said nozzle section and nozzle extension, for passing fluidic control pulses to said extension to cause a deflection of the expanding gases; and

control fluid supply means connected to said ports for supplying control fluid through said ports as a function of a peripheral inside pressure exerted by the expanding gases on an inside surface of said extension, so that a first supply port in said row at which the inside pressure falls below a predetermined limit value is opened for the supply of control fluid therethrough and any supply port upstream of said first supply port at which the inside pressure is above said predetermined limit value, is closed.

4,351,480

FUEL INJECTION VALVE FOR AN AUTOMOTIVE VEHICLE

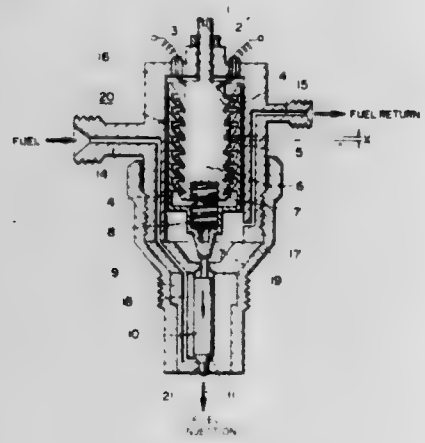
Kenji Masaki, Yokohama, and Masaaki Saito, Yokosuka, both of Japan, assignors to Nissan Motor Company Limited, Yokohama, Japan

Filed Oct. 30, 1980, Ser. No. 202,354

Claims priority, application Japan, Nov. 7, 1979, 54-154507

Int. Cl.³ B05B *1/14*

U.S. Cl. 239—585 **4 Claims**



1. A fuel injection valve for an automotive vehicle, comprising:

(a) a housing having a nozzle at the one end portion thereof through which fuel is ejected, a valve seat portion proximate said nozzle, and a fuel passageway having an inlet portion formed in said housing near a middle portion thereof and an outlet portion formed in said housing near the nozzle;

(b) a valve element for opening and closing the nozzle, said valve element being disposed against the valve seat portion within said housing communicating with the fuel passageway, said valve element being urged in the direction of opening the nozzle when fuel pressure acts on the valve seat portion;

(c) a saw-toothed armature having radially extending flat surfaces and having said valve element at an end thereof, said armature being free to move in the axial direction within said housing;

(d) a saw-toothed core having radially extending flat surfaces and being provided with a coil wound around said saw-toothed core and energized by a unidirectional current, said core being fixed to said housing, the radially extending flat surfaces of said saw-toothed core forming a plurality of working surfaces in cooperation with the radially extending flat surfaces of said saw-toothed armature in order to actuate said armature in the axial direction, said saw-toothed core being operable to urge said armature in the direction of closing the nozzle when said coil is energized; and

(e) a spring positioned between said armature and said core, said spring urging said armature in the direction to close the valve, the closing force of said spring being less than the opening force due to fuel pressure applied on said valve element,

whereby said armature and said core cooperate to operate said valve element with a fast response time to open said nozzle when said coil is deenergized.

4,351,481

CENTRIFUGAL SPREADER, ESPECIALLY FOR GRANULATED FERTILIZERS

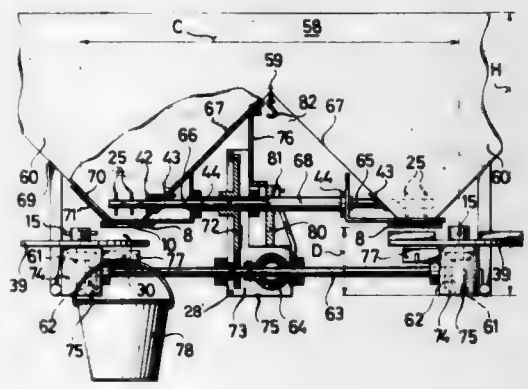
Heinz Dreyer, Hasbergen-Gaste, Fed. Rep. of Germany, assignor to Amazonen-Werke, Hasbergen-Gaste, Fed. Rep. of Germany

Filed Aug. 8, 1979, Ser. No. 64,680

Claims priority, application Fed. Rep. of Germany, Aug. 10, 1978, 2835011

Int. Cl.³ A01C *17/00*

U.S. Cl. 239—670 **20 Claims**

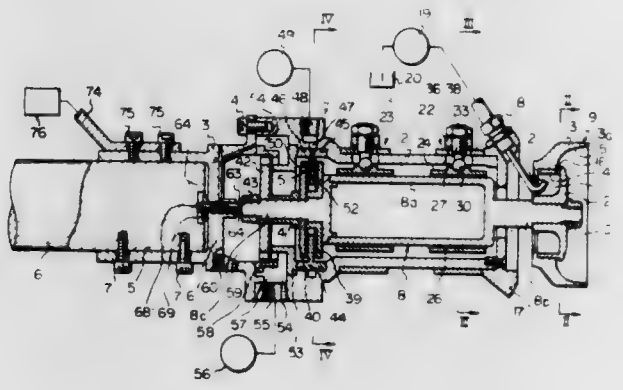


1. In a centrifugal spreader, suitable for spreading granulated fertilizers, comprising a funnel-shaped hopper equipped with a bottom plate, means defining a discharge outlet in the bottom plate, adjustor means for adjusting the size of and shutting off the outlet, a rotatable agitator disposed in the hopper, a rotatable spreading means disposed beneath the hopper for receiving fertilizer issuing from the outlet and spreading the fertilizer, the spreading means being mounted on a drive shaft which terminates outside of the hopper, means for rotating the spreading means, means for rotating the agitator at a substantially lower speed than the speed of the spreading means, the spreading means being releasably mounted on a drive shaft and being exchangeable for a different spreading means and fastening means for said releasable mounting, the improvement which comprises means for positioning the spreading means to dispose same in a position in which the distance (A) situated between the highest point of the spreading means and the part of the hopper situated above said highest point as seen longitudinally of the drive shaft, is greater than the distance (B) between the lower edge of the fastening means of the spreader means and the upper end of the drive shaft, whereby removal of the spreading means is convenient, and means for attaching a catching container underneath the discharge outlet and below the position of the spreader means, and wherein, after removal of the spreader means from its drive shaft, a free space is present beneath the discharge outlet of the hopper for the passage of the fertilizer flowing out of the discharge outlet into a catching container attached as aforesaid.

4,351,482
ROTARY TYPE ELECTROSTATIC SPRAY PAINTING DEVICE

Matsuyoshi Sugiyama, Susono; Teru Morishita, Shizuoka, and Toshikazu Suzuki, Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Oct. 16, 1980, Ser. No. 197,635
Claims priority, application Japan, May 26, 1980, 55-69007
Int. Cl.³ B05B 5/04
U.S. Cl. 239—703 19 Claims



1. A rotary type electrostatic spray painting device comprising:

a metallic housing;

a metallic rotary shaft rotatably arranged in said housing and having a front end and a rear end;

a cup shaped metallic spray head fixed onto the front end of said rotary shaft and having a cup shaped inner wall;

feeding means for feeding a paint onto said cup shaped inner wall;

drive means cooperating with said rotary shaft for rotating said rotary shaft;

non-contact type radial bearing means arranged in said housing and cooperating with said rotary shaft for radially supporting said rotary shaft under a non-contacting state;

non-contact type thrust bearing means arranged in said housing and cooperating with said rotary shaft for axially supporting said rotary shaft under a non-contacting state;

a generator generating a negative high voltage and having an output connected to said housing;

an axially extending electrode arranged in said housing and having an inner end and an outer end which is in contact with the rear end of said rotary shaft for electrically connecting said output to said spray head;

a cooling air source, and;

a cooling air passage having a cooling air inlet and an air passage portion which extends within said electrode and has a cooling air outlet formed on the outer end of said electrode, said cooling air inlet being connected to said cooling air source for feeding a cooling air from said cooling air source into said cooling air passage to discharge the cooling air from said cooling air outlet.

4,351,483
SEPARATION OF ARSENIC FROM FLUORITE ORE, BY MEANS OF MAGNETIC SEPARATION AND FLOTATION OF THE PYRITES TO WHICH IT IS ASSOCIATED

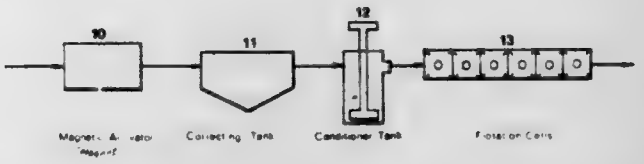
Ricardo Castillo-Gonzalez, San Luis Potosí, Mexico, assignor to Cia Minera Rio Colorado, S.A., San Luis Potosi, Mexico

Filed Jun. 4, 1980, Ser. No. 156,524
Int. Cl.³ B02C 23/18
U.S. Cl. 241—24 9 Claims

1. A process for separating arsenic in all its forms present in pyrites from fluorite ore, said pyrites including at least one of magnetic, non-magnetic and slightly magnetic pyrites, comprising the sequence of the following steps:

(A) wet milling the ore to obtain a pulp of fluorite ore of which at least 85 percent passes through a 200 mesh (Tyler);

(B) subjecting the pulp to the action of a magnet effective to magnetically activate most of the non-magnetic and the slightly magnetic pyrites;



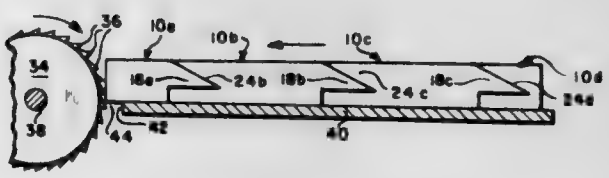
(C) recovering the magnetic pyrites in a collection tank by means of one or more electromagnetic bars positioned inside said tank; and

(D) finally recovering the remaining non-magnetic and slightly magnetic pyrites by conditioning these pyrites with flotation chemical agents followed by flotation in flotation cells.

4,351,484
METHOD OF GRINDING MAGNESIUM INGOTS AND SUCH INGOTS

Robert J. Hart, 190 Briar Wood Crossing, Lawrence, N.Y. 11559

Continuation-in-part of Ser. No. 840,811, Oct. 11, 1977, abandoned, which is a continuation of Ser. No. 717,540, Aug. 25, 1976, abandoned. This application Jul. 17, 1978, Ser. No. 924,956
Int. Cl.³ B02C 19/12
U.S. Cl. 241—30 8 Claims



1. A method of grinding metallic ingots into finely divided form, comprising:

(a) providing a cutting element including a plurality of teeth;

(b) providing a plurality of ingots, each of said ingots comprising a main body having a lower surface, a front end and a rear end, said rear end having an outwardly extending projection and said front end having a corresponding recess at least partially defined by a lower surface, said lower defining surface of said recess defining a plane having an angle α associated therewith relative to a plane extending through the ingot perpendicular to the lower surface thereof, α being selected such that $0° < \alpha \leqq 90°$;

(c) arranging the ingots in end-to-end relation with the projection of each ingot in the corresponding recess of the next ingot; and

(d) disposing the lower surfaces of the ingots on a guideway and feeding the ingots, front ends first, along the guideway into the cutting element to sequentially grind each ingot, including the projection thereof, into finely divided form.

4,351,485

SHREDDING MACHINES

John P. Hardwick, Crewe; Michael J. Pezet, Quorn, both of England; Asadollah A. Sarvestany, Tehran, Iran, and Dayananda Satharasinghe, Singapore, Singapore

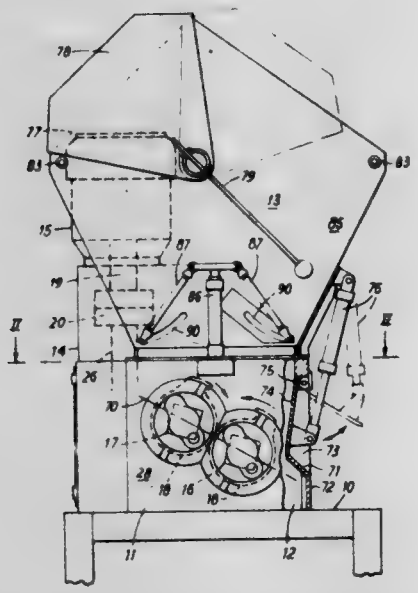
PCT No. PCT/GB79/00112, § 371 Date Mar. 5, 1980, § 102(e) Date Mar. 4, 1980, PCT Pub. No. WO80/00128, PCT Pub. Date Feb. 7, 1980

PCT Filed Jul. 4, 1979, Ser. No. 190,314

Claims priority, application United Kingdom, Jul. 5, 1978, 28952/78

Int. Cl.[3] B02C *25/00*

U.S. Cl. 241—36 9 Claims



1. A rotary shredding machine comprising means for forming a comminuting chamber, an upper cutter shaft and a lower cutter shaft arranged for simultaneous contrarotation, each cutter shaft carrying disc-like cutters, said cutter shafts extending through said chamber means with cutters of one shaft being interleaved with those of the other shaft in a cutting zone between the shafts, a feed hopper above the chamber means, the chamber means having side exit means for opening in response to the presence of an intractable object above the cutting zone whereby such object can be ejected through the side exit means, said cutter shafts being disposed with their axes in spaced generally parallel relationship in a common plane inclined to the horizontal, said side exit means comprising an aperture and an access door, said aperture being in a side of said chamber means adjacent the cutters of said lower cutter shaft, said aperture being directed outwardly from and with respect to said chamber means in a direction generally transverse to the axis of said lower cutter shaft, said access door being openable and closable for opening and closing said aperture, and said shredding machine including means responsive to the nonrotation of said cutter shafts under crash stop conditions for effecting the opening of said access door.

4,351,486

PROCESS AND A GRINDING STONE FOR PREPARING MECHANICAL WOOD PULP

Karl-Heinz Schmöller, Haar; Theodor Bähr, Heidenheim; Ernst Böttger, Herbrechtingen-Eselsburg; Hans-Otto Henrich, Heidenheim; Helmut Thumm, Heidenheim, and Heinz Beck, Heidenheim, all of Fed. Rep. of Germany, assignors to J. M. Voith GmbH, Heidenheim and Dyckerhoff & Widman AG, Munich, both of, Fed. Rep. of Germany

Filed Dec. 7, 1979, Ser. No. 101,285

Claims priority, application Fed. Rep. of Germany, Dec. 13, 1978, 2853716; Feb. 20, 1979, 2906449

Int. Cl.[3] B02C *19/00*

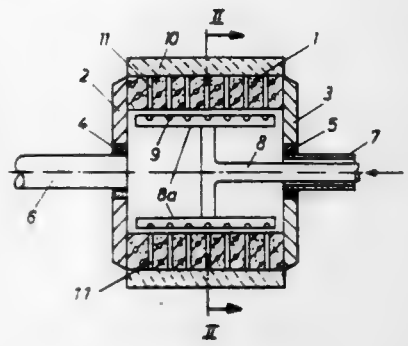
U.S. Cl. 241—67 25 Claims

1. A rotatable grinding stone for preparing wood pulp, said grinding stone comprising:

an annular rotatable core with an interior for defining a free inner space;

a grinding layer around said core for grinding wood into pulp, said core and said grinding layer being adapted to transmit water through themselves;

a water supply line in and extending axially along said free



inner space, and said water supply line having outlet openings for discharging into said free inner space;

pressure increasing means being defined at said core interior for locally increasing the water pressure at said core interior at said pressure increasing means, thereby to urge transmission of water out through said core and said grinding layer.

4,351,487

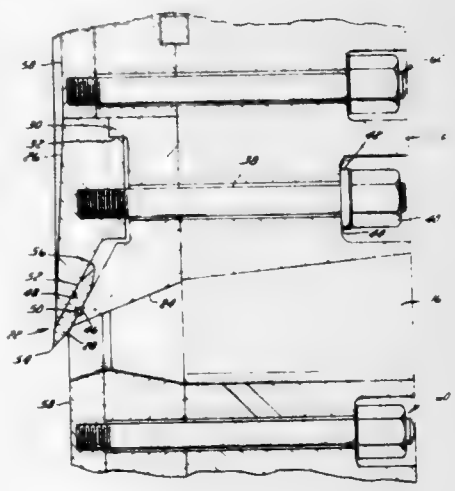
KNIFE ASSEMBLY FOR CHOPPING APPARATUS

Jack R. Haller, Wausau, and William M. Haselton, New Berlin, both of Wis., assignors to Murray Machinery, Inc., Wausau, Wis.

Filed Sep. 15, 1980, Ser. No. 187,164

Int. Cl.[3] B02C *18/18*

U.S. Cl. 241—92 3 Claims

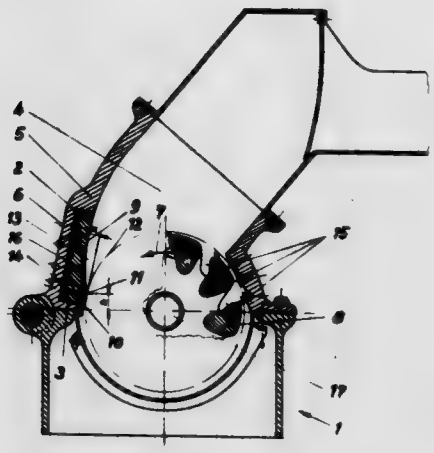


3. An elongated, reversible knife for attachment to a chopping disc, said knife having two opposite cutting edges each defined by two intersecting bevel surfaces, said knife having a pair of opposite flat surfaces extending completely between said bevel surfaces, and an arcuate recess formed in and along only one of said flat surfaces and being centered along the length of one of said flat surfaces for the reception of a complementary shaped rod of a knife holding means on said chopping disc.

4,351,488
FEED BARS FOR SHREDDING MILLS

Viktor Hess, Augsburg, Fed. Rep. of Germany, assignor to Alpine Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 696,279, Jun. 15, 1976, abandoned.
This application Jan. 18, 1978, Ser. No. 870,434
Int. Cl.[3] B02C *18/22*
U.S. Cl. 241—224 10 Claims



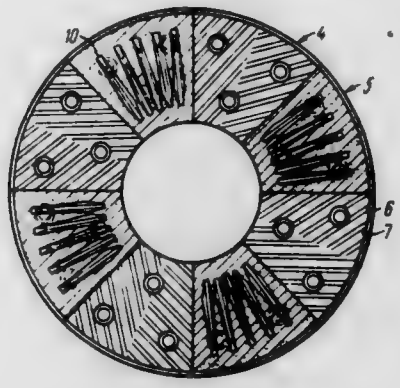
1. A shredding mill comprising a rotor, a plurality of knife edges carried by said rotor on the periphery thereof for rotation about the axis of the rotor, the path of the knife edges about said axis defining a cylindrical envelope, a housing in part defining an entrance chamber for feeding material to said rotor to be shredded, said entrance chamber including a generally wedge-shaped entrance throat, said throat being in part defined by said envelope, a feed bar removably mounted to said housing, said feed bar having two intersecting surfaces, one of said surfaces being anterior and the other posterior with respect to the direction of rotation of said rotor, said anterior surface in part defining said entrance throat, a stationary cutting edge positioned substantially at the intersection of said surfaces and parallel to the axis of said rotor, said cutting edge being closely adjacent to said enveloped for cooperating with the knife edges of said rotor, means other than a pivotable means for varying the shape and size of said entrance throat, and said means including means for changing the position of said cutting edge around the axis of said rotor whereby said mill may be made capable of accepting different materials having varying acceptance characteristics.

4,351,489
REFINER DISK

Lev N. Laptev, Institutsky prospekt. 9, kv. 30; Sergei S. Legotsky, Institutsky prospekt, 9, kv. 18, both of Leningrad; Vladimir A. Semenovsky, ulitsa Promyshlennaya, 1, kv. 3, Karelskaya ASSR, Kondopoga; Sergei S. Sambursky, ulitsa Kilbi, 8, kv. 24, Tallin; Abram B. Litvinov, ultisa Anokhina, 35, kv. 18, and Alexei I. Kondrashov, ulitsa Meretskova, 9, kv. 50, both of Petrozavodsk, all of U.S.S.R.

Continuation of Ser. No. 917,677, Jun. 21, 1978, abandoned.
This application Dec. 31, 1979, Ser. No. 108,527
Int. Cl.[3] B02C *7/12*
U.S. Cl. 241—261.3 4 Claims

1. In a paper pulp refiner wherein a pair of planar refining disks are juxtaposed, at least one of said disks rotating relative to the other, said one disk being a refiner rotor disk comprising a base supporting a combined metal-ceramic refining plate secured thereto, said metal-ceramic refining disk place having a plurality of metallic sectors and a plurality of alternately disposed abrasive sectors, said sectors being each bounded by radii converging toward the center of said plate, said metallic sectors and ceramic sectors having operating surfaces, the operating surfaces of said metallic sectors being level with the operating surface of the ceramic sectors and having rectangular channels depressed below said operating surface of said metallic sectors, said operating surface of said metallic sectors and channels defining a series of refining bars, said abrasive ceramic sectors having channels below the operating surface

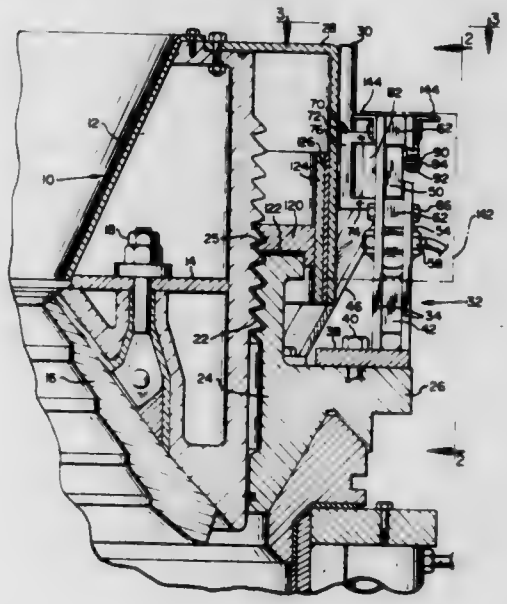


of said sectors; said metallic and ceramic sectors being disposed parallel to the disk plate, all of said metallic and ceramic sectors being fastened to said plate.

4,351,490
POWER DRIVE STRUCTURE FOR ROTATING THREADEDLY SUPPORTED ROCK CRUSHER BOWLS

Louis W. Johnson, 2435 Prairie Rd., Eugene, Oreg. 97402

Filed Apr. 16, 1980, Ser. No. 140,728
Int. Cl.[3] B02C *2/04*
U.S. Cl. 241—286 9 Claims



1. A power driven bowl rotating mechanism for use with rock crushers of the type having a base member and a bowl threadedly supported on the base member whereby upon rotation thereof the bowl is arranged to be raised or lowered, the bowl being of the type which has a plurality of projections secured in spaced relation around the periphery thereof, said power driven bowl rotating mechanism comprising

(a) an upright frame arranged to be secured to the base member of a crusher,

(b) a slide bar supported on said upright frame for horizontal slidable movement,

(c) first double acting means connected between said upright frame and said slide bar and arranged to drive said slide bar longitudinally in reciprocating movement,

(d) driver means pivotally mounted on said slide bar arranged for movement inwardly and outwardly relative to the bowl,

(e) socket means in said driver means arranged to engage the projections on the bowl in an inward position of said driver means whereby the bowl is rotated by operation of said slide bar in one direction of its reciprocating movement and upon outward movement of said driver means out of engagement of said socket means with the projec-

tions, said driver means is movable with said bar in the other direction of reciprocating movement into a position for engagement of said socket means with a succeeding projection for further rotation of said bowl upon operation of said double acting means,

(f) and second double acting means connected between said slide bar and said driver means for pivoting the latter between its inner and outer positions,

(g) said socket means having a driving edge on each defining side thereof for driving the bowl in either direction of rotation as well as for holding the bowl from overrunning after each rotative function.

4,351,491

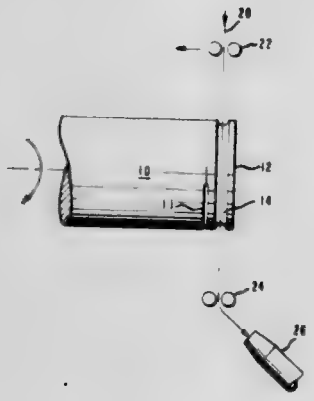
YARN PACKAGE SUPPORT TUBE

Broadus E. Hill, Jr., Wilmington, N.C., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 13, 1981, Ser. No. 253,824

Int. Cl.³ B65H *75/28*

U.S. Cl. 242—18 PW **2 Claims**



1. A yarn support tube having a surface stringup groove extending partially around its circumference and located adjacent one of its ends for initiation of a helical transfer tail, said tube being also provided with a smooth-surfaced circumferential groove located between said one end and said stringup groove.

4,351,492

METHOD FOR THREADING A YARN DELIVERED FROM A GODET ROLLER ON A BOBBIN AND AN APPARATUS FOR EFFECTING THE SAME

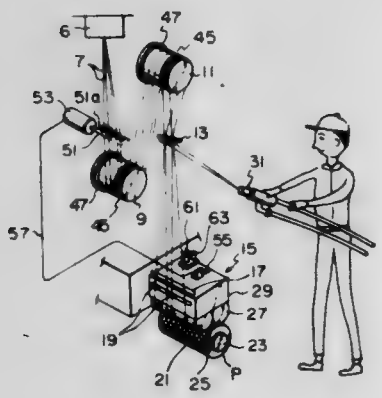
Hideki Aoyama, and Takashi Kishida, both of Matsuyama, Japan, assignors to Teijin Limited, Ehime, Japan

Filed Nov. 2, 1979, Ser. No. 90,593

Claims priority, application Japan, Nov. 7, 1978, 53/152314[U]

Int. Cl.³ B65H *54/02*

U.S. Cl. 242—18 R **13 Claims**



1. In a process wherein a bobbin rotatably supported on and rotated by a winding apparatus may receive a yarn delivered to the bobbin via a godet roller, a method for threading the yarn on the bobbin, comprising the steps of:

providing a godet roller having a circumferential yarn delivery zone and an adjacent circumferential yarn threading zone axially spaced from said yarn delivery zone, disposed so that said yarn may be delivered to and taken up by said bobbin via said yarn delivery zone of said godet roller, said yarn delivery zone having a surface for substantially preventing circumferential and axial slippage of said yarn thereon;

thereafter providing relative axial movement between said yarn and said godet roller, so that said yarn engages only the yarn threading zone of the godet roller, said yarn threading zone presenting (i) a relatively low friction surface to permit slippage of said yarn in the circumferential direction of the godet roller when the yarn tension exceeds a given value, and (ii) a relatively high friction surface to resist slippage of said yarn in the axial direction of the godet roller;

engaging the free end of the yarn traversing the yarn threading zone of the godet roller with said bobbin, so that said free end is caught thereby; and

subsequently providing relative axial movement between said yarn and said godet roller, so that said yarn again engages only the yarn delivery zone of the roller, whereby any change in tension in said yarn while said yarn is threaded on said bobbin can be distributed in yarn located upstream and downstream of said godet roller and entanglement of said yarn around said godet roller is prevented.

4,351,493

TAPE TENSION CONTROL FOR A TAPE RECORDER

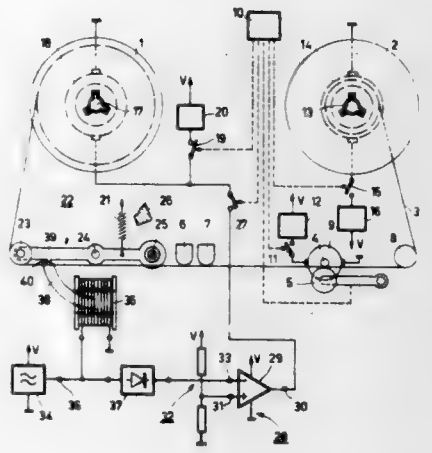
Martin Sonnek, Vienna, Austria, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 2, 1980, Ser. No. 183,501

Claims priority, application Austria, Sep. 20, 1979, 6203/79

Int. Cl.³ B65H *59/38;* G05B *5/00;* G03B *1/04*

U.S. Cl. 242—190 **13 Claims**



7. A recording and/or reproducing apparatus for a record carrier in the form of a tape, comprising:

a source of biasing force,

a tape-tension sensor having a tape guide moveable against said biasing force along which the record carrier tape is passed, the sensor further comprising at least one coil and a metal part which cooperates with said coil,

an oscillator for energizing said at least one coil so as to produce a signal voltage, the amplitude of the signal voltage being a measure of the tape tension, and

a tape-tension control including a control circuit, for influencing the tape tension, said signal voltage being applied to said control circuit,

characterized in that said sensor comprises a single coil only, and that the metal part comprises a damping element for the coil which varies the quality factor of the coil by

movement of the metal part responsive to movement of the tape guide.

4,351,494

BOBBIN TRANSPORT APPARATUS AND METHOD

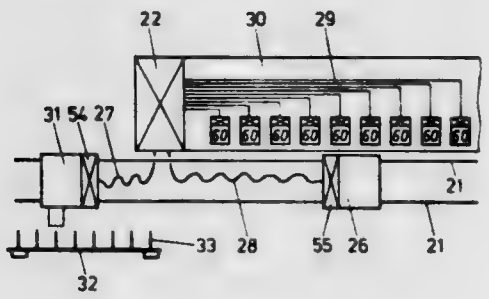
Heinz Schippers; Gerd Münnekehoff, both of Remscheid, and Udo Teich, Sprockhövel, all of Fed. Rep. of Germany, assignors to Barmag Barmer Maschinenfabrik, Remscheid, Fed. Rep. of Germany

Filed Sep. 26, 1980, Ser. No. 191,349

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1979, 2939675; Nov. 14, 1979, 2945861

Int. Cl.³ B65H *54/26*

U.S. Cl. 242—35.5 A **17 Claims**



1. A bobbin transport apparatus adapted for use with a textile yarn processing machine having a plurality of yarn winding stations aligned along at least one side thereof and with the winding stations each having a bobbin mounting means, said apparatus comprising

a carriage adapted for movement along the side of the textile yarn processing machine,

means mounted on said carriage for receiving and supporting a full bobbin from a bobbin mounting means of the textile yarn processing machine or the like, and

measuring means mounted on said carriage for determining the weight of each bobbin while it is supported on said carriage.

4,351,495

THREAD-STORAGE AND DELIVERY DEVICE FOR TEXTILE MACHINES

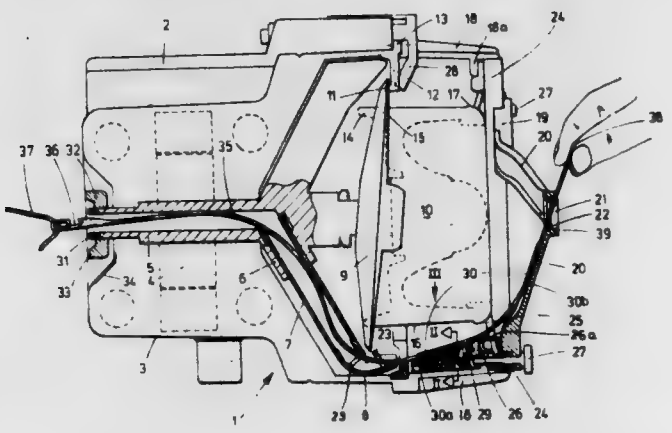
Fred B. Lindström, Jönköping, and Alf R. A. Bengtsson, Fritsla, both of Sweden, assignors to Aktiebolaget IRO, Ulricehamn, Sweden

Filed Aug. 12, 1980, Ser. No. 177,164

Claims priority, application Fed. Rep. of Germany, Aug. 13, 1979, 2932782

Int. Cl.³ B65H *51/20*

U.S. Cl. 242—47.01 **14 Claims**



1. In a thread-storage and delivery device for textile machines, including a stationary base member, a hollow shaft rotatably mounted relative to the base member for driving a thread-feeding structure which includes a feed member for tangentially winding the arriving thread on the surface of a stationary storage drum, from which storage drum said thread is unwound over a drum edge at one end of the drum through a braking ring which surrounds the drum edge and through a center removing guide which is disposed adjacent said one drum end and is supported on a structural part fastened on the base member, which structural part at least partially surrounds but is spaced from the storage drum, the improvement comprising axial guideway means defining a guideway for guiding therethrough a threading needle, said guideway extending from a location adjacent to the free end of the feed member to a location adjacent said removing guide, said threading needle in an inserted condition extending through the hollow shaft, the feed member, the braking ring and the removing guide, said guideway means being disposed in a limited peripheral sector of said structural part, and a turning handle connected to the hollow shaft for aligning the end of the feed member with the guideway.

4,351,496

SAFETY BELT ROLL-UP DEVICE

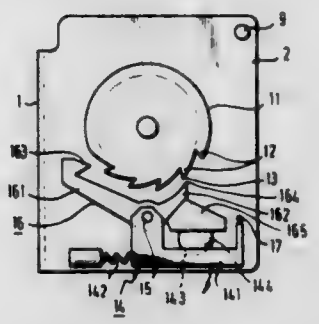
Artur Föhl, Schorndorf-Haubersbronn, Fed. Rep. of Germany, assignor to Repa Feinstanzwerk GmbH, Alfdorf, Fed. Rep. of Germany

Filed Jul. 16, 1980, Ser. No. 169,631

Claims priority, application Fed. Rep. of Germany, Jul. 31, 1979, 2931075

Int. Cl.³ A62B *35/02*; B65H *75/48*

U.S. Cl. 242—107.4 A **10 Claims**



1. Safety belt roll-up device with a locking pawl mechanism for a vehicle comprising a frame, a rotatable belt shaft on which a belt is wound mounted in the frame, a locking wheel with locking teeth of a defined pitch in fixed connection with said belt shaft, a double locking pawl having two lever arms with each lever arm having a pawl tooth for engagement with the locking teeth of said locking wheel, a common pivot axis mounted in the frame, said two lever arms rotatably mounted on said common pivot axis with one lever arm extending on one side and the other lever arm on the other side of the pivot axis along the circumference of the locking wheel, and with pawl teeth of said two lever arms adjacent to but out of engagement with said locking teeth of said locking wheel, said pawl teeth of the two lever arms spaced a distance which is different than the pitch of the locking teeth of the locking wheel or a multiple thereof, a release mechanism responsive to acceleration or deceleration of the vehicle which exceeds a permissible limit mounted on the frame, engaging means activated by said release mechanism when said permissible limit is exceeded to move said double locking pawl and cause engagement of the locking pawl with the locking teeth of the locking wheel.

4,351,497

CASSETTE FOR BAND MATERIAL

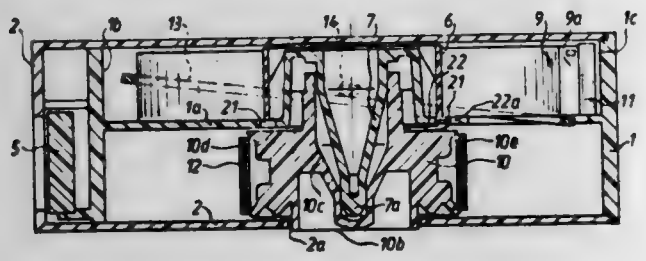
Werner Kiessling, Unterhaching; Otto Wiedemann, Starnberg; Peter Lau, and Gabriel Vondrovsky, both of Munich, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 10, 1981, Ser. No. 233,102

Claims priority, application Fed. Rep. of Germany, Feb. 15, 1980, 3005630

Int. Cl.³ G03B *1/04*

U.S. Cl. 242—194 9 Claims



1. A cassette for band material, particularly for photographic film, comprising a housing having a divider wall; a band supply spool at one side of said wall and, coaxial thereto and at the other side of said wall, a band take-up spool in said housing; rotating means for rotating said take-up spool in one direction to withdraw band material from said supply spool and take it up on said take-up spool; and anti-reversing means for preventing rotation of said take-up spool in an opposite direction counter to said one direction, said anti-reversing means comprising a plurality of holes in said divider wall located coaxial to said take-up spool, and a springy finger projecting from a surface of said take-up spool which is juxtaposed with said divider wall, said springy finger being directed in said opposite direction and projecting towards said divider wall.

4,351,498

CASSETTE TAPE DEVICE

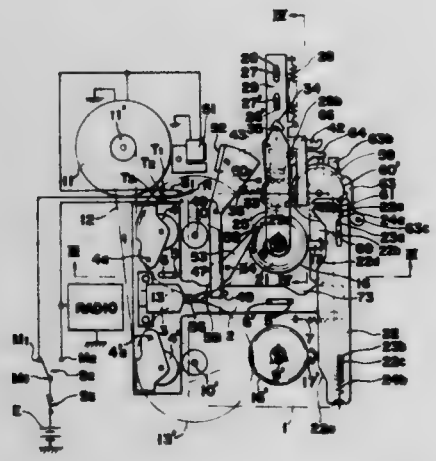
Mitsuo Iwata; Naomasa Masuda; Hideki Uraki, and Kunio Tsuchino, all of Tottori, Japan, assignors to Sanyo Electric Co., Ltd., Osaka and Tottori Sanyo Electric Co., Ltd., Tottori, both of, Japan

Filed Sep. 19, 1980, Ser. No. 188,979

Claims priority, application Japan, Sep. 19, 1979, 54-120987; Jan. 31, 1980, 55-11077; Jun. 5, 1980, 55-76281

Int. Cl.³ G03B *1/04*; G11B *15/32*

U.S. Cl. 242—204 9 Claims



2. A cassette tape device having first and second driving means for driving first and second reels of the cassette, a tape drive mechanism having a play position in which the tape drive mechanism is positioned to advance and play a tape, and a release position in which the tape drive mechanism is positioned as to cease advancing the tape, and a control means for controlling the movement of the tape drive mechanism, wherein said control means comprises:

an electric motor operatively coupled to said first and second driving means for driving at least one of the first and second driving means;

switch means coupled to said motor for turning said motor means on and off;

first and second spindle means for receiving said first and second reels, said first and second spindle means being rotated by the rotation of the first and second driving means, each spindle means being stopped from rotation when a predetermined external load is applied thereto;

detecting means operatively coupled to said first driving means for detecting whether the first and second spindle means are driven, said detecting means being movable between a detecting position when the first and second spindle means are not driven and a non-detecting position when the first and second spindle means are driven;

latch means for engaging at least one of said first and second spindle means, when the tape drive mechanism is in the release position, wherein the first and second spindle means are latched regardless of rotation of the first and second driving means, and for disengaging the first and second spindle means when the tape drive mechanism is moved to the play position to thereby allow the first and second spindle means to rotate;

shifting means operatively coupled to said motor for shifting the tape drive mechanism from the release position towards the play position when said detecting means is moved to the detecting position; and

retaining means for retaining the tape drive mechanism in the play position, said retaining means being energized by the operation of said switch means, wherein when said switch means is off and the tape drive mechanism is in the play position, the retaining means is de-energized, the tape drive mechanism returns towards the release position and the latch means engages at least one of the first and second spindle means and wherein the switch means is on, the detecting means is moved to the detecting position to thereby shift the tape drive mechanism towards the play position, and the retaining means is actuated to maintain the tape drive mechanism in the play position.

4,351,499

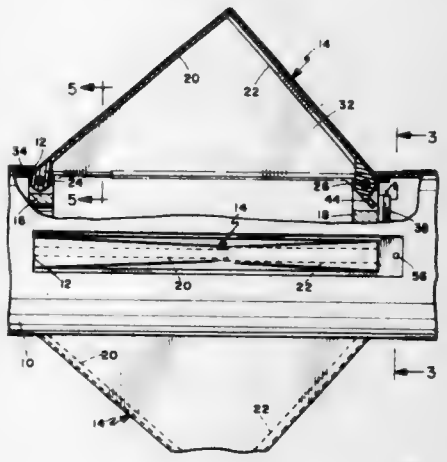
DOUBLE FABRIC, RETRACTABLE, SELF-ERECTING WING FOR MISSLE

Inge Maudal, Claremont; Larry D. Wedertz, Mira Loma, and Kenneth M. Yost, Glendora, all of Calif., assignors to General Dynamics, Pomona, Calif.

Filed Sep. 24, 1979, Ser. No. 77,966

Int. Cl.³ F42B *13/32*

U.S. Cl. 244—3.27 14 Claims



1. In a missile having an elongated body, the body having an outer wall with a plurality of circumferentially spaced, longitu-

dinally extending slots therein, a retractable, self-erecting wing mounted in each slot, each wing comprising:

a wing supporting strut assembly comprised of at least one elongated strut element operably mounted in the slot, said strut assembly being adapted to move from a retracted position completely within said outer wall of said body to an extended position projecting from the body;

biasing means urging said strut assembly toward the extended position;

a wing member of flexible fabric material in the form of a double walled pocket conforming substantially to the extended configuration of the strut assembly and movable therewith, said wing member being secured to said outer wall around the periphery of the slot and enclosing said strut assembly between the fabric walls and within the pocket of said double walled pocket;

retaining means operably mounted in the body for releasably holding, against the force of said biasing means, the wing in a retracted position with the strut assembly and wing member folded within the slot;

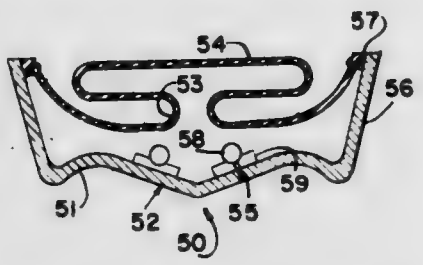
and extension means operably mounted on the body for releasing said retaining means thereby extending the wing pursuant to the force of said biasing means.

4,351,500

SKI/FLOAT LANDING GEAR APPARATUS FOR AIRCRAFT

Richard R. Golze, 637 Kingsley Trail, Bloomfield Hills, Mich. 48013

Filed Jul. 17, 1980, Ser. No. 169,614
Int. Cl.³ B64B *25/56*
U.S. Cl. 244—105 **3 Claims**



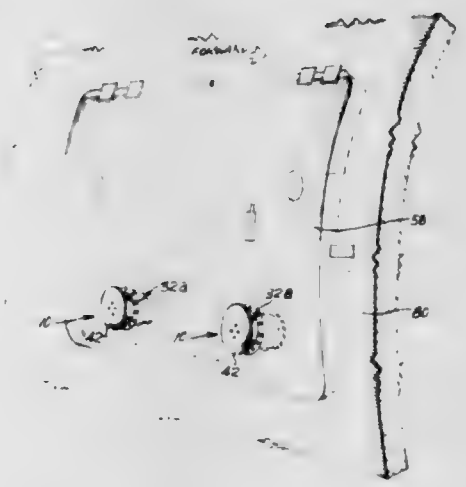
1. An aircraft ski float having a high aspect ratio, and having a long flexible resilient base made of polymeric material and having a long, thin floatation bag joined to lateral extremities of the base and extending longitudinally on the base, and means to selectively inflate and deflate the bag, said base comprises a thin shell having a bottom portion and upward extending sides terminated in upward lateral extremities and wherein the bag comprises a long flexible sheet having lateral extremitie connected to said upward lateral extremities of the base, said bottom portion has a central downward pointed V-shaped apex and wherein portions of the bottom portion slope upward and outward from the apex and wherein said sides extend upward from outward extremities of the base portion and slope upward at greater angles than the base portion, said bottom having flat central portions joining on either side of said V-shaped apex and further including downward extending rounded portions joining the said flat central portions and said sidewall portions of the base, plural openings in said base extending therethrough, and wherein an aircraft engine exhaust line is connected to the openings for exhausting gas downward through the openings to create a boundary layer effect, said engine exhaust inflates the bag and the base and then escapes through the openings via check valves which prevent reverse flow of fluid through the openings when the bag is deflated via said deflative means.

4,351,501

RAM AIR ENHANCED RELIEF VALVE

Douglas E. Peash, Enumclaw, and Arthur S. Yoroza, Seattle, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Nov. 19, 1979, Ser. No. 95,759
Int. Cl.³ B64D *13/04*
U.S. Cl. 244—129.1 **12 Claims**



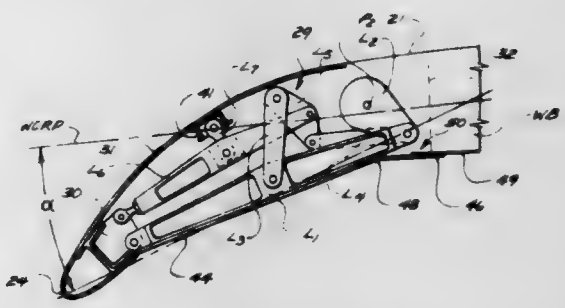
3. A negative pressure relief valve for an aircraft mounted to be resiliently closed by an aircraft door latching mechanism, wherein the valve comprises: an inner poppet valve having a semi-circular tubular member joined at an inboard end to a concentric disk having a larger diameter, an outer poppet valve having a facing semi-circular tubular member joined at an outboard end to a vented concentric disk having a larger diameter, means for sealing between the two valves, a valve housing mounted to an outer wall of an aircraft, means for supporting and for sealing the valves to the housing along each lengthwise edge, and means for holding the two valves in a contacting closed engagement and for simultaneously moving the valves apart in response to negative air pressure across the inner valve to permit airflow through the valves.

4,351,502

CONTINUOUS SKIN, VARIABLE CAMBER AIRFOIL EDGE ACTUATING MECHANISM

Frank D. Statkus, Woodinville, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed May 21, 1980, Ser. No. 142,121
Int. Cl.³ B64C *3/48*
U.S. Cl. 244—219 **24 Claims**



1. In a continuous skin variable camber airfoil of the type having (i) a rigid, centrally located, span-wise structural wing box including means defining both leading and trailing structural main frames, (ii) a leading structural edge member spaced forwardly from said wing box, (iii) a trailing structural edge member spaced rearwardly from said wing box, and (iv) a wing chord reference plane extending through the leading and trailing edges of said airfoil, an improved actuating mechanism for interconnecting at least one of said leading and trailing structural edge members to said main frame defining means so as to permit controlled deflection of said at least one structural

edge member relative to said wing chord reference plane while providing structural load bearing support for said at least one structural edge member in all operating positions thereof, said actuating mechanism comprising, in combination:

(a) a first 4-bar linkage assembly for controlling horizontal and vertical displacement of said structural edge member and including (i) said main frame defining means, (ii) a first generally horizontal control link pivotally connected adjacent one end thereof to the lower inboard edge of said structural edge member at a point P_1 and projecting therefrom toward said structural wing box, (iii) a second generally upright control link pivotally connected adjacent its upper end to said main frame defining means at a point P_2 and pivotally connected adjacent its lower end to the other end of said first control link at a point $P_{1,2}$, and (iv) a third control link having a length greater than said second control link pivotally connected at one end to said first control link at a point $P_{1,3}$ intermediate points P_1 and $P_{1,2}$ and at its other end to said main frame defining means at a point P_3 spaced from and intermediate the points P_1 and P_2, said third control link projecting generally towards said structural edge member from point P_3 when in the cruise camber position;

(b) a second 4-bar linkage assembly for controlling angular rotation of said structural edge member and including (i) said first control link, (ii) a fourth generally horizontal control link pivotally connected at one end to said first control link at point $P_{1,2}$ and extending towards and terminating short of point $P_{1,3}$, (iii) a fifth generally upright control link pivotally connected at its lower end to the free end of said fourth link at a point $P_{4,5}$ and pivotally connected at its upper end to said main frame defining means at point P_3, and (iv) a sixth generally horizontal control link pivotally connected at one end to the upper inboard edge of said structural edge member at a point P_6 and pivotally connected at its opposite end to said fifth control link at a point $P_{5,6}$ intermediate points P_3 and $P_{4,5}$; and,

(c) actuating means for causing the pivotal connection at point $P_{1,2}$ between said first, second and fourth control links to pivot about point P_2.

4,351,503

STABILIZED PROJECTILES

Mordeki Drori, 89 Zahal St., Kiron, Israel

Continuation of Ser. No. 650,045, Jan. 19, 1976, abandoned. This application Feb. 25, 1980, Ser. No. 124,219

Int. Cl.³ F42B *15/16*

U.S. Cl. 244—3.24 **8 Claims**



1. A ballistic projectile characterized in that it includes at least three stabilizing fins symmetrically arranged around the nose of the projectile well forward of its center of mass, each of said fins being independently pivotable on an axis extending radially of the projectile and intersecting the projectile axis at a right angle thereto so as to be pivotable to one side or the other side of the projectile axis for stabilizing the projectile, the leading edge of each fin, and the pivot axis of each fin, being located with respect to the foremost point of the projectile, inclusive of its said fins, a distance which is substantially less than the length of the fin.

4,351,504

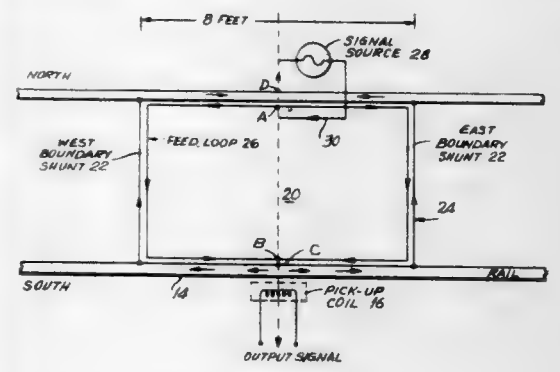
TRACK CIRCUIT PRINCIPLE WHEEL DETECTOR

Klaus H. Frielinghaus, Rochester, N.Y., assignor to General Signal Corporation, Stamford, Conn.

Filed Mar. 5, 1980, Ser. No. 127,281

Int. Cl.³ B61L *13/04*

U.S. Cl. 246—249 **7 Claims**



1. A system for detecting the presence and position of wheel-axles on railroad cars comprising:

a pair of rails;

a transmitter or signal source having a high frequency output;

a pair of current carrying loops, the first loop including said pair of rails and a pair of boundary shunts connecting said rails so as to define a detection zone;

the second loop extending in close proximity to and inside said first loop, said first and second loops being subdivided for current flow into two substantially equal portions with respect to a center line of said detection zone;

said transmitter being coupled to said pair of loops, and being connected to said first loop on said center line; and,

sensing means oriented for sensing field changes due substantially only to the direction of wheel-axle shunt current flow when a wheel-axle contacts said rails in said detection zone, said sensing means being insensitive to the fields produced by the currents flowing in said loops.

4,351,505

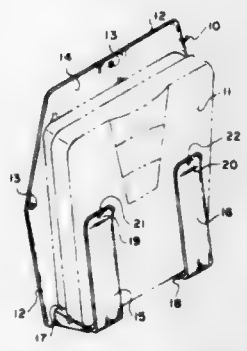
BATHROOM SCALE HOLDER

Edward Wickersham, 190 Nicholson Rd., West Collingswood Heights, N.J. 08059

Filed Apr. 11, 1980, Ser. No. 139,280

Int. Cl.³ A47F *5/00*; A47H *1/10*

U.S. Cl. 248—316 D **8 Claims**



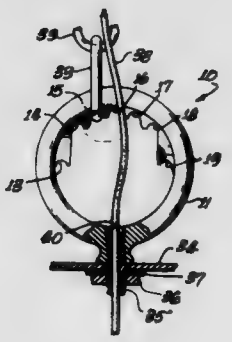
1. A bathroom scale holder comprising

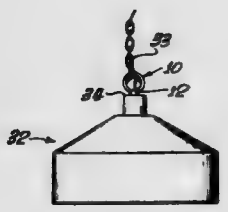
(a) a panel member comprising a rigid sheet of a size approximately that of the typical bathroom scale,

(b) attachment means to hold the panel firmly against a wall,

(c) two horizontal cantilever members extending from and structurally attached to a lower portion of the panel,
(d) two spring members,
(e) adjustable attachment means connecting one of the spring members to one of the horizontal cantilever members allowing the spring members to be adjusted as to its horizontal position for the panel and causing the connection to be firmly held in a chosen position,
wherein the spring members extend in a generally vertical direction and toward the front surface of the panel to hold a scale placed on the horizontal cantilever members against the panel surface, and
wherein at least one of the two pairs of cantilever-spring members through adjustable fastening means, adjusts the angle of the spring members from a generally vertical alignment to an alignment wherein the spring members are angled toward each other along a plane generally parallel with the panel member.

4,351,506
LOOP FOR LEVELING A HANGING LAMP
Reynolds K. Ohai, 8135 Pinositas Rd., Whittier, Calif. 90605
Filed Mar. 2, 1981, Ser. No. 239,354
Int. Cl.³ F21V *21/00*
U.S. Cl. 248—344 **7 Claims**

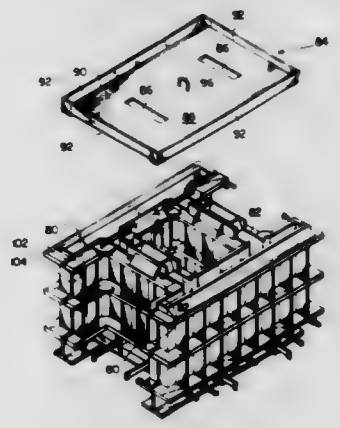




1. A loop for leveling a hanging lamp, said loop comprising:
a closed loop having integral thereto a plurality of link receiving notches flanged along the inner and upper surface thereof; and
means integral to the lower surface of the loop for affixing said loop to a hanging lamp, said means allowing the rotating of said loop with respect to said lamp, whereby the hanging point of the lamp may be changed to overcome an imbalance of the lamp.

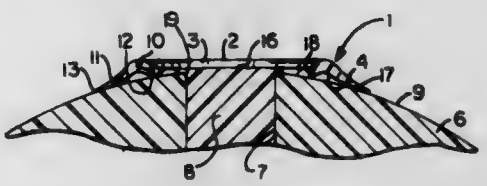
4,351,507
MULTI-PART FORM WITH IMPROVED TIE AND STRIPPING MEANS
Roger L. Toffolon, Hartford, and Warren E. Kart, Bristol, both of Conn., assignors to Doublewal Corporation, Plainville, Conn.
Filed Jan. 16, 1981, Ser. No. 225,692
Int. Cl.³ B28B *1/08, 7/10, 7/04*
U.S. Cl. 249—63 **11 Claims**

1. A multi-part form for casting concrete structural units for retaining walls and the like, the structural units having generally rectangular horizontally spaced parallel and vertical sidewalls which extend longitudinally and which have horizontally spaced parallel and laterally extending substantially vertical connecting arms integrally formed therebetween, the connecting arms each having a downwardly open mortise at the bottom and an upwardly projecting tendon at the top; and the form comprising stationary base and support means including horizontally upwardly exposed surfaces for forming the bottom surface of each sidewall and arm of a structural unit as described, a stationary core means generally rectangular in configuration viewed from above and having substantially vertical outwardly exposed surfaces for forming the inner surfaces of the arms of a structural unit and the inner surface of sidewalls of the unit between the arms, a pair of movable similar but opposite sidewall form members having substantially vertical surfaces for forming the substantially vertical outer surfaces respectively of the opposite sidewalls of a structural unit, a pair of movable similar but opposite arm and sidewall form members having substantially vertical surfaces for forming the substantially vertical outer surfaces of the arms



and inner surfaces of the sidewalls outwardly at the arms respectively at opposite ends of the structural unit, sidewall end surface form members having substantially vertical surfaces for forming the substantially vertical surfaces at the ends of the sidewalls of a structural unit, each of said latter form members being attached to and movable with one of said aforesaid movable members, tie means operatively associated respectively with each of said movable members and said stationary base and support means and serving to tie said movable members to said base and support means in inner and assembled positions of said movable members to provide a multi-part form for casting, and strip means operatively associated with each of said movable members and said stationary base and support means and serving to urge said movable members to outer and disassembled positions relative to said stationary base and support means in a form stripping operation.

4,351,508
REUSABLE PLUGGING DAM FOR BOWLING BALLS
Charles A. Hardman, 3326 W. 8th, Lawrence, Kans. 66044
Filed Oct. 9, 1979, Ser. No. 83,214
Int. Cl.³ B22D *19/04*
U.S. Cl. 249—90 **9 Claims**



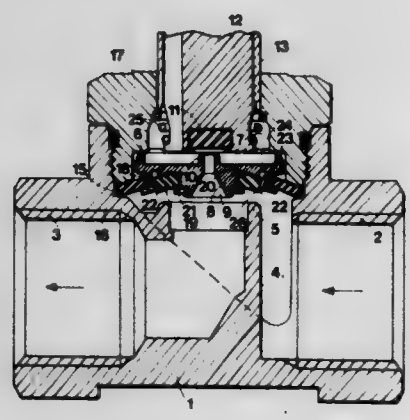
1. A dam structure for detachably mounting upon a bowling ball comprising:
(a) a dam body forming an enclosure for extending substantially about a finger hole in a bowling ball for plugging same, said dam body being of resilient material and having inner and outer skirts defining a concave surface;

(b) said inner skirt forming a wall defining a filling port through said dam body;
(c) said inner and outer skirts diverge in sloping relationship and having diverging lower surfaces for sealing engagement with a bowling ball outer surface, said skirts defining a cavity therebetween for providing a partial vacuum chamber with an outer surface of a bowling ball; and
(d) said skirts being resiliently deformable downwardly upon manual pressure on said dam body toward said bowling ball to spread said skirts outwardly and at least partially exhaust air in said cavity to engage said dam body upon said bowling ball in self-sealing relationship.

4,351,509
VALVE WITH SERVO-COMMAND

Harald Stampfli, 51, chemin des Coudriers, CH-1209 Petit-Saconnex Geneva, Switzerland

PCT No. PCT/CH79/00052, § 371 Date Dec. 6, 1979, § 102(e) Date Nov. 15, 1979, PCT Pub. No. WO79/00896, PCT Pub. Date Nov. 15, 1979
PCT Filed Apr. 5, 1979, Ser. No. 179,289
Claims priority, application Switzerland, Apr. 6, 1978, 3693/78
Int. Cl.³ F16K *31/40, 31/385*
U.S. Cl. 251—38 **3 Claims**

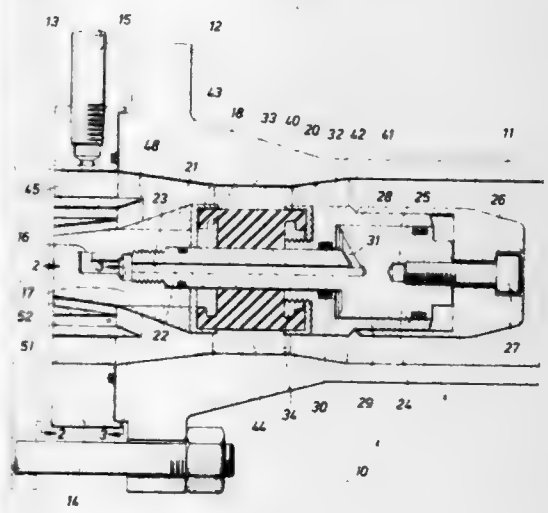


1. A valve with servo-control means comprising a valve body, including an intake duct and an exhaust duct for fluid under pressure, a seat and main poppet valve mounted in said body, a control chamber in said body, a movable member controlling the movements of the poppet valve which causes the pressure prevailing in said control chamber to change, said control chamber being supplied with fluid under pressure through a calibrated intake channel connecting it with said pressurized fluid intake duct, said poppet valve having a centrally located passage for escape of the fluid from the control chamber to said exhaust duct characterized by the fact that the intake channel of the fluid under pressure in the control chamber communicates with an intake conduit which is open across from the edge of the seat which is upstream in relation to the flow of the fluid passing through the valve, said intake conduit being disposed in said poppet valve, said intake conduit opening being at the smallest cross section area of passage of fluid in the valve in all of the possible positions of the poppet valve in relation to said seat, said poppet valve including a fluid-tight gasket of elastic material fitted therein, said intake conduit located in said fluid-tight gasket, said poppet valve comprising a circular member including a housing for receiving said fluid-tight gasket, said gasket being ring shaped, the bottom surface of said housing having a ring-shaped slot therein, the diameter of said slot corresponding substantially to the outside diameter of the fluid-tight gasket, the intake conduit in said gasket comprising a plurality of notches on the periphery of said fluid-tight gasket, said notches opening into said ring-shaped slot, which in turn is connected with the upper surface of the circular member through said intake channel.

4,351,510
FLOW REGULATOR ASSEMBLY

Robert H. Welker, P.O. Box 138, Sugar Land, Tex. 77478

Filed Nov. 10, 1980, Ser. No. 205,286
Int. Cl.³ F16K *13/00*
U.S. Cl. 251—118 **4 Claims**



1. A gas line flow regulator which comprises:
(a) a flange held radially extending transverse plate supported within a pipeline having upstream and downstream faces thereon;
(b) a centrally positioned means supported by said transverse plate on the upstream side thereof for regulating the flow of gas through the pipeline, said means including:
1. an elongate centered body;
2. a resiliently expandable means supported by said body having a relaxed and expanded condition wherein the expanded condition is accompanied by a radial outward expansion of said expandable means, and wherein said expandable means further includes;
3. an exposed outer sealing surface thereon;
(c) spaced sealing surface means defined by the inner wall of the pipeline adjacent to said expandable means positioned within the pipeline to define an annular flow space therebetween which is variably constricted by said expandable means on expanding;
(d) said transverse plate terminating said flow space and having openings therethrough, there being a first opening means for directing flowing gas in a first direction downstream from said transverse plate and a second opening means therethrough for directing flowing gas in a second direction downstream from said transverse plate; and
(e) wherein said first opening means comprise a plurality of holes drilled through said transverse plate, said holes having inlet openings arranged on a circle, and wherein said second opening means comprise a plurality of holes drilled through said transverse plate arranged on a second circle which is larger than the first circle, and said first opening means are directed toward a point of intersection which, if extended downstream of said transverse plate, would intersect within the second circle.

4,351,511
SEALING GASKET FOR AN OBTURATOR SUCH AS A VENTILATION REGULATOR

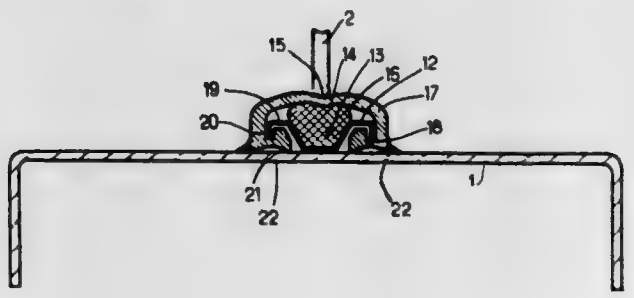
Jean-Claude Garrigues, Ogeu-les-Bains, France, assignor to Applications Mecanique et Robinetterie Industrielle, A.M.-R.I., Paris, France

Filed Oct. 14, 1980, Ser. No. 196,575
Claims priority, application France, Oct. 11, 1979, 79 25365
Int. Cl.³ F16K *1/226*
U.S. Cl. 251—174 **10 Claims**

1. A sealing gasket especially for an obturator utilized in a fluid-tight regulator valve, comprising:
a. a frame structure having a central core, with a central

concavity therein, said core being mountable to the frame of an obturator;

b. said frame structure having lateral wings which have an upwardly extending portion, said wings further having a portion thereof extending in a direction outwardly from said core and substantially transverse to said upwardly extending portions, said transverse portion further having end portions which downwardly extend therefrom;



c. a covering placed over the core and on said lateral wings, said covering having lateral edges which circumscribe and thereby grip the downwardly extending portions of said lateral wings so as to provide an effective seal between said covering and said lateral wings;

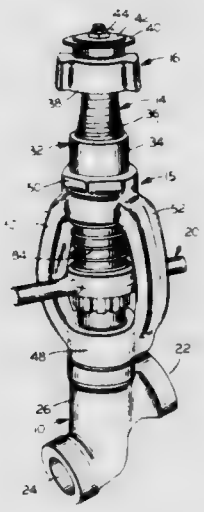
d. an elastic support placed in said central core between said core, lateral wings and said covering, said elastic support providing resilient support to said covering.

4,351,512

VALVE WITH YOKE AND CAPTIVE GLAND WRENCH

Chester A. Siver, 10 Fair Hill La., Suffield, Conn. 06078

Filed Oct. 9, 1981, Ser. No. 310,146
Int. Cl.³ F16K *41/02*; F16J *15/06*; F16L *21/04*
U.S. Cl. 251—214 10 Claims



1. In a valve assembly, the combination comprising:

A. a valve body having a bonnet opening therein and a flow passage therethrough;

B. a bonnet in said bonnet opening and having an outwardly facing axially extending recess therein;

C. a yoke member engaged with said valve body and extending outwardly therefrom, said yoke member having spaced inner and outer ring portions and a pair of yoke arms extending therebetween, said yoke inner ring portion being engaged with said valve body about said bonnet opening;

D. a valve stem extending through said yoke member and bonnet and into said valve body, said valve stem being movable axially relative thereto to open and close said flow passage through said valve body;

E. a packing gland having an axial passage through which said valve stem extends and a packing portion extending into said recess in said bonnet, said packing gland being rotatable and slidable axially along said valve stem and having a multiplicity of axially extending teeth about the circumference thereof along a portion thereof disposed outwardly of said bonnet; and

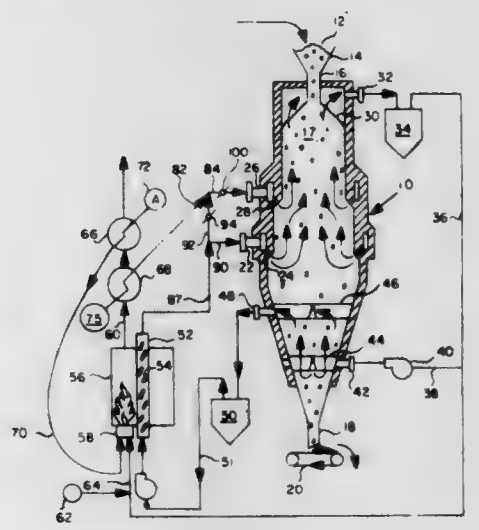
F. a gland wrench including a hub portion with an axially extending bore therethrough and a pair of arms projecting outwardly therefrom, the wall defining said bore including a portion with axially extending teeth thereon engageable with the teeth of said packing gland to effect rotation thereof about said valve stem, the arms of said gland wrench abutting said yoke arms upon rotation through a limited arc in a first direction, said gland wrench being movable axially relative to said packing gland to disengage the teeth thereof and thereby permit rotation of said gland wrench in the opposite direction and then reengagement of the teeth thereof to effect limited rotation of the packing gland in the first direction through a limited arc, whereby the packing gland may be moved inwardly against packing material disposed within said recess of said bonnet to seal any space about said valve stem passing therethrough.

4,351,513

DIRECT REDUCTION OF IRON USING COKE OVEN GAS

Charles W. Sanzenbacher, Charlotte, N.C., assignor to Midrex Corporation, Charlotte, N.C.

Filed Jan. 29, 1981, Ser. No. 229,687
Int. Cl.³ F27B *9/12*
U.S. Cl. 266—156 6 Claims



1. In apparatus for direct reduction of iron oxides to a metallized iron product, including:

(a) a generally vertical shaft furnace;

(b) means for charging particulate iron oxide material to the upper portion of said furnace to form a burden therein, and means for removing metallized iron product from the bottom of said furnace, whereby a continuous gravitational flow of said burden can be established through the furnace;

(c) a first reducing gas inlet intermediate the ends of the furnace;

(d) a second reducing gas inlet intermediate said first reducing gas inlet and the upper end of the furnace;

(e) a reacted gas outlet at the upper end of said furnace;

(f) means communicating with said reacted gas outlet for cooling and scrubbing reacted gas;

(g) a reformer furnace with catalyst containing tubes therein for the formation of gaseous reductants, said reformer furnace having an outlet communicating with said first and second reducing gas inlet;

(h) a source of process fuel gas; and

(i) a process fuel gas pipe communicating with said second reducing gas inlet and said source of process fuel gas;

the improvement comprising:

(a) said reformer furnace having at least one burner therein

for heating said catalyst-containing tubes and a spent combustion gas pipe for removing spent combustion gases from said reformer furnace; and

(b) said spent combustion gas pipe communicating with a heat exchanger, said heat exchanger also communicating with said process fuel gas pipe whereby process fuel gas passes through and is preheated in said heat exchanger.

4,351,514

APPARATUS FOR PURIFYING MOLTEN METAL

Fenton C. Koch, 12706 Rockhaven Rd., Chesterland, Ohio 44026

Filed Jul. 18, 1980, Ser. No. 169,998

Int. Cl.³ C21C *7/072*

U.S. Cl. 266—217 **5 Claims**

1. Apparatus for purifying molten metal such as aluminum or the like, comprising:

(a) structure defining a reservoir containing molten metal to be treated;

(b) an impeller housing submerged below the surface of molten metal in said reservoir;

(c) a rotatable pump impeller and a cooperating volute mounted within said housing, together defining an impeller chamber that extends into fluid communication with structure defining an outlet passage for said chamber, said passage disposed below the surface of molten metal;

(d) an impeller drive supported on a platform located above the surface of molten metal and operatively connected to the impeller by a drive shaft, said drive shaft defining an axis of rotation for said impeller;

(e) said impeller housing defining an inlet through which molten metal from said reservoir is drawn upon rotation of said impeller, said inlet located in coaxial alignment with said impeller;

(f) a gas injection conduit in fluid communication with a source of purifying gas, including an output end disposed below the surface of molten metal, in proximity to the inlet; and,

(g) a gas injection means located at said inlet including means for receiving the output end of said gas injection conduit and a passage means communicating said output end with said inlet so that gas discharged by said conduit is injected and mixed with molten metal drawn into said inlet during rotation of said impeller, said gas reacting with impurities in said molten metal as said metal travels through said impeller chamber and outlet passage.

4,351,515

FEEDBACK CONTROL TYPE SHOCK ABSORBING SUSPENSION SYSTEM

Akio Yoshida, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

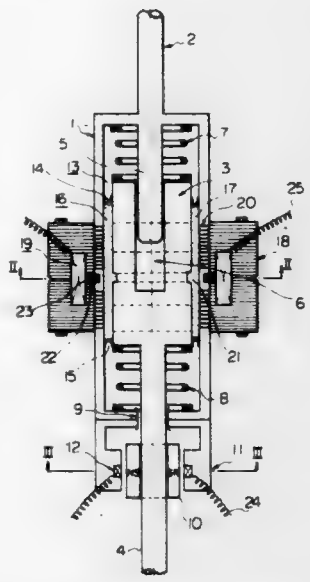
Filed Jun. 16, 1980, Ser. No. 159,518

Claims priority, application Japan, Jul. 2, 1979, 54-82566

Int. Cl.³ F16F *13/00, 15/03*

U.S. Cl. 267—8 R **8 Claims**

1. A feedback control type shock absorbing suspension system to be inserted between a body including a vibration source and a foundation for suspension of said body, which system comprises a suspending spring mechanism interposed between said body and said foundation, a sensor mechanism for detecting velocity of relative movement between said body and said foundation, a cylinder-piston mechanism including a cylinder connected to one of said body and said foundation and a piston connected to the other of said body and said foundation, a magnetic fluid or powder being held between the outer wall face of the piston and the inner wall face of the cylinder, an exciting coil for generating a magnetic flux for magnetizing said magnetic fluid or powder, and an electric circuit for applying a control voltage corresponding to the detected value of said sensor mechanism to said exciting coil, wherein at least two annular seal members are arranged in axially spaced relation between the outer wall face of the piston and the inner wall face of the cylinder, the space between said seal members constituting a sealed annular chamber, said chamber being filled with all of the magnetic fluid or powder between the



inner wall surfaces of the cylinder, and wherein the vibration-damping force between the cylinder and the piston is controlled by magnetization of said magnetic fluid or powder.

4,351,516

SWING CLAMP

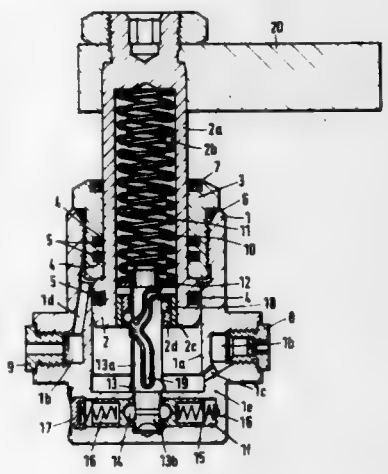
Metin Ersoy, Hilchenbach-Müsen, and Albrecht Weber, Hilchenbach, both of Fed. Rep. of Germany, assignors to Maschinenfabrik Hilma GmbH, Hilchenbach, Fed. Rep. of Germany

Filed Jan. 23, 1981, Ser. No. 227,841

Claims priority, application Fed. Rep. of Germany, Aug. 20, 1980, 3031368

Int. Cl.³ B23Q *3/08*

U.S. Cl. 269—27 **9 Claims**



1. In a hydraulically actuatable swing clamp, particularly for clamping workpieces on a table of a machine tool, having a piston arranged within a housing, the piston rod of which extends in sealed manner out of the housing and carries a clamping arm, and which, in addition to an axial clamping movement, carries out a turning movement corresponding to a guide device, the turning movement effecting a swinging of the clamping arm, the guide device comprising a control bolt extending into the piston and being arranged normally non-rotatably on the housing, and at least one control curve, formed in a guide surface between the control bolt and the piston, having a helical curve section adapted for the swinging and simultaneous lifting movement and an axial section adapted for pure clamping movement of the clamping arm, and a guide member arranged on the piston or control bolt extending into the control curve, the improvement wherein

said guide member comprises at least two diametrically opposite and axially staggered guiding members,

said at least one control curve comprises at least two pairs of control curves,

each of said pairs of control curves comprises:

parallel extending axial sections; and

a left curve section constituting means for operatively effecting left-swinging rotation of the clamping arm in cooperation with said guide member, and a right curve section constituting means for operatively effecting right-swinging rotation of the clamping arm in cooperation with said guide member;

said left curve section and said right curve section of each of said pairs intersect each other and are axially staggered corresponding to said guiding members,

said left curve sections and said right curve sections of respective of said pairs are respectively opposite to each other.

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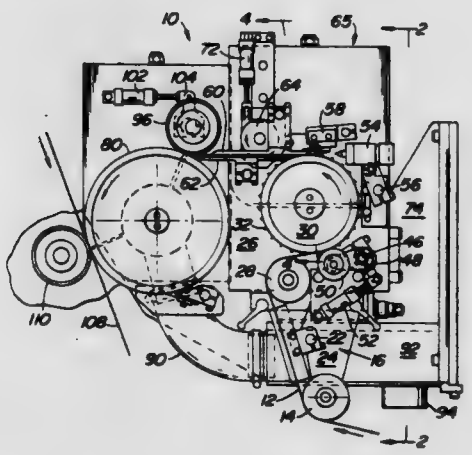
INSERT APPARATUS

Barry Neal, Malvern, and Timothy M. Morris, Coatesville, both of Pa., assignors to Mach-Neal, Inc., Malvern, Pa.

Filed Jul. 14, 1980, Ser. No. 167,955

Int. Cl.³ B65H *39/00*

U.S. Cl. 270—52 **8 Claims**



1. Card insert apparatus comprising a frame means, an applicator drum rotatably mounted on said frame means for sequentially applying cards to a moving web, means at a location adjacent said applicator drum for bursting a strip of cards into individual cards, an assembly moveable as a unit relative to said frame means tangentially toward and away from said applicator drum whereby the insert apparatus is adjustable to accept different length cards, said assembly including a common support for:

a. a feed roll for feeding a web in the form of a strip of connected cards to said applicator drum;

b. said bursting means including a burst roll spaced from a point on said applicator drum by a distance corresponding to the length of a card being processed and also spaced from said feed roll; and

c. a motor for driving said feed roll and means for driving said burst roll.

4,351,518

SUCTION-OPERATED DEVICE FOR FEEDING SHEETS ONE BY ONE TO A POINT OF UTILIZATION

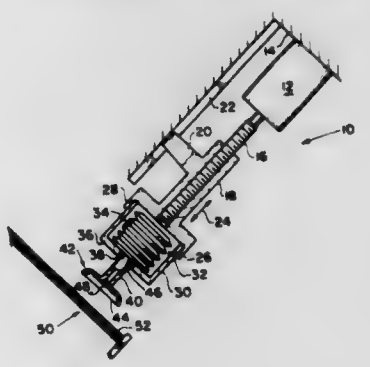
Emile Stievenart, c/o Matrix Instruments Inc., 230 Pegasus Ave., Northvale, N.J. 07647

Filed Dec. 16, 1980, Ser. No. 216,842

Int. Cl.³ B65H *3/08*

U.S. Cl. 271—90 **3 Claims**

1. An improved suction-operated device for feeding sheets one by one to a point of utilization comprising a feed screw powered in rotation, an operative member in threaded engagement on said rotating feed screw operatively arranged to be urged in opposite descending and ascending directions along the rotation axis of said feed screw depending upon the direction of rotation thereof, a cooperating arrangement of a front, a rear, and side walls located adjacent the leading end of said operative member bounding a compartment, a suction cup operatively arranged to be projected from said compartment in facing relation to a supply stack of materials disposed in the path of movement of said operative member, and a bellows disposed in said compartment in an interposed position between said suction cup and said feed screw, whereby during said descending movement said rear compartment wall partially compresses said bellows and results in the suction attachment of said suction cup to a sheet of said supply stack and during said ascending movement said front compartment wall lifts said suction cup and results in a further compression of said bellows against said feed screw and thus the release of said sheet from the suction cup.



4,351,519

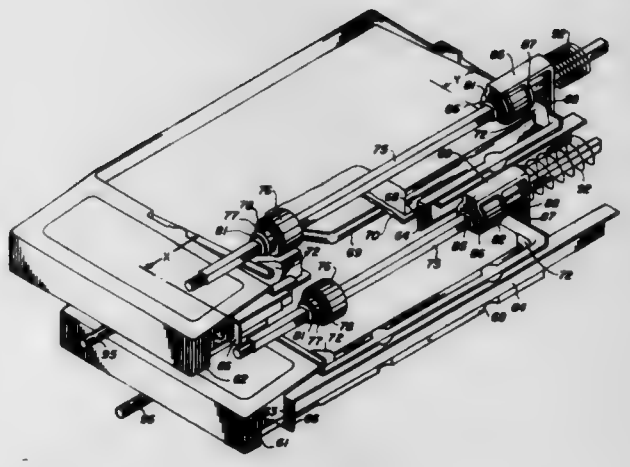
SHEET FEEDING APPARATUS

Rodney J. Jendrick, Newark, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 29, 1979, Ser. No. 70,598

Int. Cl.³ B65H *3/06*

U.S. Cl. 271—117 **10 Claims**



9. Sheet feeding apparatus comprising:

a rotatably driven feed roll shaft with a first feed roll fixedly mounted on said shaft;

a second feed roll axially movably mounted on said feed roll shaft;

means to axially move said second feed roll on said shaft;

a sheet cassette;

guide means for receiving and guiding said sheet cassette into feeding position with said feed roll shaft; said fixed feed roll being mounted on said shaft a fixed distance from a first side of said cassette;

said second feed roll on said feed roll shaft including means automatically responsive to the insertion and movement of a sheet cassette onto said guide means and into the feeding position on said guide means to axially move said second feed roll on said feed roll shaft to a position such

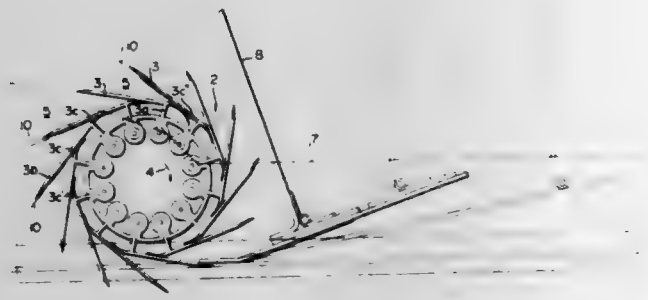
that said axially movable feed roll is positioned the same fixed distance from the opposite parallel side of said cassette.

4,351,520

STACKER APPARATUS FOR A CARD COUNTING MACHINE

Shigeru Tanaka, Matsudo, Japan, assignor to Musashi Co., Ltd., Tokyo, Japan

Filed Feb. 3, 1981, Ser. No. 231,572
Claims priority, application Japan, Feb. 19, 1980, 55/19194
Int. Cl.³ B65H *29/40*
U.S. Cl. 271—315 **4 Claims**



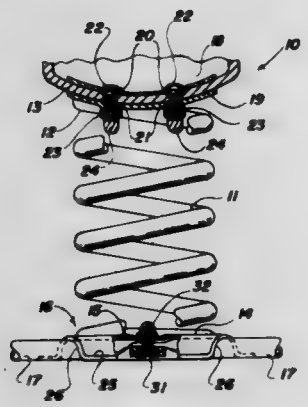
1. A stacker apparatus for a card counting machine comprising a rotary drum having a cylindrical outer surface supported for rotation in a predetermined direction, and a plurality of substantially "L" shaped arms provided in equispaced relationship around said cylindrical surface of said rotary drum, each of said arms having a root portion extending radially outwardly from said cylindrical surface, a first portion extending from the radially outward end of said root portion in a direction substantially opposite to said predetermined direction, and a second flexible portion extending from said radially outward end of said root portion toward said first portion of the preceding arm into soft contact with said preceding arm.

4,351,521

RIDING TOY FOR CHILDREN WITH SPRING SUPPORT BASE

William A. Erdos, Summit County, Ohio, assignor to Eagle Rubber Co., Inc., Ashland, Ohio

Filed Jun. 30, 1980, Ser. No. 164,822
Int. Cl.³ A63G *17/00*
U.S. Cl. 272—52 **6 Claims**



1. In a riding toy for children the improvement of a spring and base support structure for the riding toy having a body formed with a bottom wall, the improvement comprising:

(a) an upright spring member forming a vertical column having upper and lower ends;

(b) attachment means between the upper end of said spring and the bottom wall of the riding toy body;

(c) base means formed with a central raised area supporting said lower end of said spring member, said base means having flange means surrounding said central area at a lower level and formed with a plurality of inverted U-shaped semi-circular sockets opening outwardly from the space beneath said raised central area;

(d) elongated leg members having round portions in cross-section seated in said sockets and flattened inner ends projecting into the area under said raised central area of said base means;

(e) a single securing element connecting said flattened inner ends to said base means; and

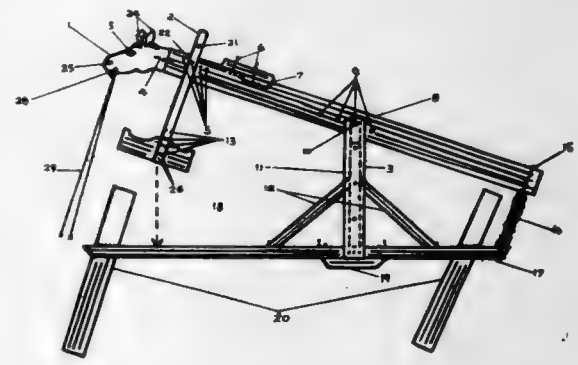
(f) a pair of elements in each socket engaged with said round portions of said leg members from opposite sides and below the major cross-sectional dimension of said round portions for retaining said leg members seated in snap fit relation in said respective sockets.

4,351,522

ADJUSTABLE TOY SPRING HORSE

Ben Marburger, 810 E. 48th St., Austin, Tex. 78751, and Marjorie Mogonye, P.O. Box 415, Elgin, Tex. 78621

Filed Aug. 4, 1980, Ser. No. 175,443
Int. Cl.³ A63G *17/00, 11/00*
U.S. Cl. 272—52 **1 Claim**



1. A hobby horse including a base, a support projecting upwardly from said base, an elongated member pivotally supported by said support about a horizontal axis with respect to the upper portion of said support, spring means biassing the rear end of said elongated member in a downward direction, a seat on said elongated member forward of said pivot axis, a combination hand and foot support mounted on said elongated member forward of said seat, means mounting said elongated member for longitudinal adjustment with respect to said pivot axis, means mounting said seat for adjustment longitudinally on said elongated member, means mounting said combination hand and foot support for longitudinal adjustment of said elongated member, and means mounting said foot support for vertical adjustment relative to the remainder of said combination hand and foot support whereby riders of various sizes and weights can be accomodated.

4,351,523

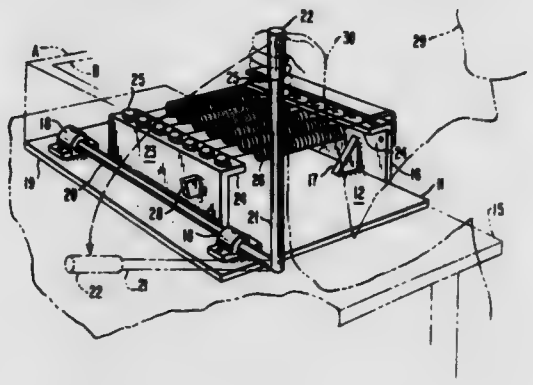
ARM WRESTLING EXERCISER

Glenn Alexander, 3218 N. Park Dr., Flagstaff, Ariz. 86001

Filed Nov. 10, 1980, Ser. No. 205,723
Int. Cl.³ A63B *23/00*
U.S. Cl. 272—67 **1 Claim**

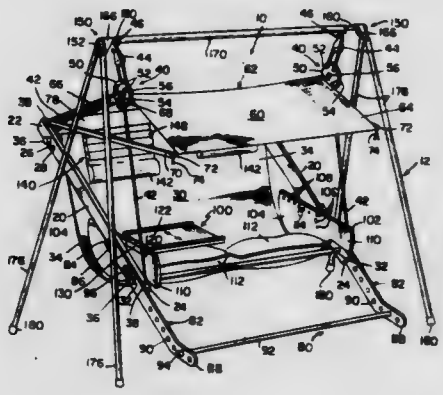
1. An arm wrestling exerciser, comprising, in combination, a base, a plate pivotally supported on said base, a handle affixed on said plate for being pivotally urged by a person, and a plurality of tension coil springs between said plate and said base for resisting a pivotal force by said person; opposite ends of said springs being attached to bolts supported on said plate and said base, said springs being selectively removable or addable, for adjusting a resistance force against said person; said base including a clamping bracket on its underside for clamping to a table; and a clip insertable over any of said

springs comprising a pair of toothed jaws insertable between spaced-apart turns of said spring, one said jaw being connected



to a threaded stem engaged in a threaded stem of the other said jaw.

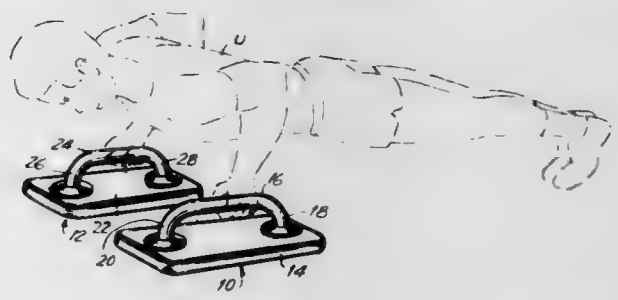
4,351,524
SWING
Daniel Gomes, 104½ E. Kirkwood, Apt. B, Bloomington, Ind. 47601
Filed Jul. 10, 1980, Ser. No. 168,198
Int. Cl.³ A63G *9/00*
U.S. Cl. 272—85 **15 Claims**



1. A swing, comprising a frame, a seat assembly including a sling forming at least one seat well and seat back, first and second elongated bars connected to opposed sides of the sling for engaging the frame, the frame including two elongated side members for supporting the sling therebetween, means for variably positioning each of the first and second elongated bars in at least two different positions relative to the ends of the side members to vary the depth of the seat well and the length of the seat back, the position of the first bar determining the depth of the seat well and the position of the second bar determining the length of the seat back, and suspension means for pivotally supporting the frame from an overhead support structure and for adjusting the inclination of the frame to recline the seat assembly, the suspension means including a pair of support strands connected to the frame on both sides of the seat assembly, a pair of pulleys each rotatably receiving one of the strands to allow movement of the strands, and adjustment blocks movably carried on each strand for establishing strand lengths between the pulleys and the frame to raise and lower portions of the frame and maintain a desired angle of inclination thereof.

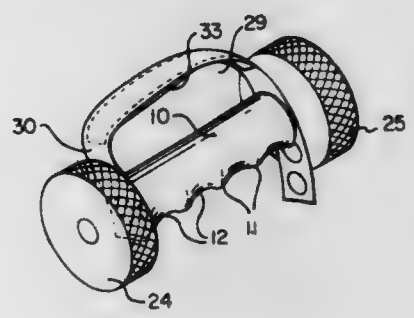
4,351,525
MULTIPLE USE EXERCISING DEVICES
William L. Rozenblad, 401 W. 56th St., New York, N.Y. 10019
Filed Feb. 23, 1981, Ser. No. 236,830
Int. Cl.³ A63B *21/00*
U.S. Cl. 272—93 **3 Claims**

1. An exercising structure comprising at least one support, said support comprising a base and a generally U-shaped member having two ends mounted on said base, said U-shaped member being in generally upright inverted attitude on said base, said U-shaped member being tubular and said ends extending into said base, said structure further comprising inter-



nal elements in said ends and including projections extending at least partly through said base and locking members on the projections to clamp said U-shaped member to said base.

4,351,526
DUMBELLS
Leonard Schwartz, 3471 Fifth Ave., Pittsburgh, Pa. 15213
Filed Mar. 5, 1980, Ser. No. 127,474
Int. Cl.³ A63B *11/00*
U.S. Cl. 272—122 **5 Claims**



1. A dumbell structure particularly adapted for aerobic and related extended time type exercise comprising an elongate rigid body member having a soft, resilient outer covering at the central hand gripping portion thereof, a threaded portion at each end of said body member, a removable weight threaded on each of said threaded ends, and soft conformable hand engaging means engaged at each end of said rigid body member and extending outwardly transversely to said hand gripping portion and then generally parallel thereto to pass around and tightly conform to the back of the hand between the knuckles and wrist of a user, said central gripping hand portion and said hand engaging portion having sufficient resilience between and being spaced apart a sufficient distance so as to engage the hand of a user in such a manner that the structure is capable of being held on the hand without gripping by the fingers and without obstructing blood flow to the hand.

4,351,527
DOUBLE ACTING EXERCISER
Melvin L. Crisp, Jr., No. 4 Bales La., Ponca City, Okla. 74601
Filed Oct. 14, 1980, Ser. No. 196,698
Int. Cl.³ A63B *21/02*
U.S. Cl. 272—137 **9 Claims**

1. A double acting exerciser suited for exercising of the human body comprising:

(a) a tubular body having a first holding member on its first end;

(b) a first compressible resilient member disposed within the tubular body and prevented from passing from the first end thereof by the first holding member;

(c) a rod member having an abutting member on its first end which abuts against the first end of the first resilient member within the tubular body;

(d) a second compressible resilient member positioned in an annulus between the rod member and the tubular body;

(e) a second holding member positioned about the rod member and affixed to the second end of the tubular body such as to permit reciprocating motion in two directions of the rod member therethrough and to prevent movement of the second compressible resilient member beyond the second end of the tubular body;



(f) a first elongated handle member adapted for gripping by a human hand affixed at or near the second end of the rod member;

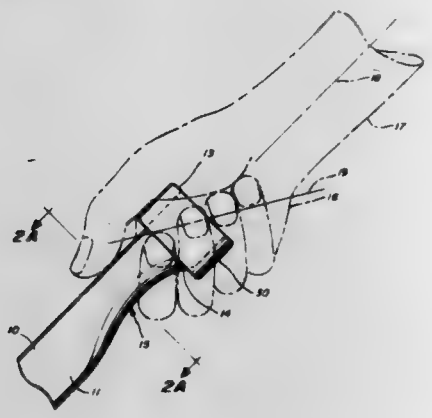
(g) a second elongated handle member affixed at or near the first end of the tubular body; such that movement of the handles together and movement of the handles apart both result in a stroke of suitable length and of suitable resistance in both directions for exercising of the human body.

4,351,528

SPORTS STICK HANDLE

Joseph R. Duplin, Winthrop, Mass., assignor to William H. Brine, Jr., Weston, Mass.

Filed Jul. 7, 1980, Ser. No. 166,498
Int. Cl.³ A63B 59/14
U.S. Cl. 273—67 A **2 Claims**



1. A hockey stick comprising an enlarged axially extending main shank having a straight axis and defining a hand gripping end and another end having an angled blade extending therefrom,

said shank defining a polygonal cross-sectional outline at the gripping and an end retaining stop formed by a hand receiving notch recess within said cross-sectional outline disposed on the side of said axis opposite to that of said blade thereby permitting gripping of said shank end by the hand of a user with the axis of the shank substantially coaxial with the axis of the forearm and the hand in a relaxed gripping position with the gripping axis of the hand at an angle to the shank,

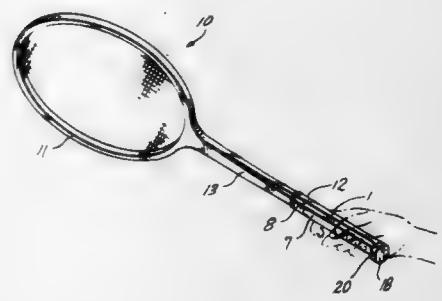
said notch recess being spaced from an end wall defined by said handle by a distance less than the hand span of a user, said notch recess being a curved cutaway of said shank cross section.

4,351,529

RACKET HANDLE

Edward C. Schultz, 304 N. Ford, Fullerton, Calif. 92623, and Robert K. Stevenson, 525 Princeton Cir. West, Fullerton, Calif. 92631

Filed Oct. 20, 1980, Ser. No. 199,072
Int. Cl.³ A63B 49/00
U.S. Cl. 273—75 **9 Claims**



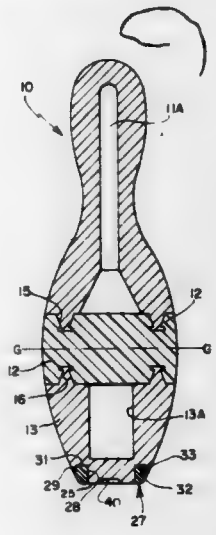
7. A game racket, comprising a stringed head defining a generally planar surface for striking a ball, a shank extending from the head, and an elongated handgrip handle extending from the shank to an end portion, the handle having top and bottom surfaces which are generally perpendicular to the planar surface of the head, rearwardly facing surfaces which face the palm of the hand when the handle is gripped, and forwardly facing surfaces facing away from the palm and generally in the direction of a forehand stroke, at least portions of the forwardly facing surfaces being outwardly flared at the end portion to define a forwardly facing shoulder at the handle end, and the remaining surfaces being smooth and substantially without outward flare in the end portion whereby the shoulder does not interfere with the palm of the hand while providing a bulged stop surface around a portion of the periphery of the handle end to assist handle slippage.

4,351,530

PLASTIC BOWLING PIN

Albert Bertozzi, P.O. Box 478, Pawtucket, R.I. 02860

Filed Oct. 27, 1980, Ser. No. 201,291
Int. Cl.³ A63D 9/00
U.S. Cl. 273—82 R **2 Claims**



1. A plastic bowling pin, comprising three sections, a top section, a medial section and a bottom section, said three sections when assembled providing an outer contour of curvature corresponding to that of a conventional bowling pin, said top section having a hollow axial configuration and a shoulder, a circular flange and a rim in the lower end, said medial section having an upper circular recess provided with a key way

contour, and a lower circular recess provided with a second key way contour, means fastening said circular flange in said first mentioned key way contour with said shoulder and said rim abutting said medial section, said bottom section having a hollow axial configuration and a shoulder, a circular flange and a circular edge in the top end, a second means fastening said last mentioned circular flange in said lower circular recess key way contour with said last mentioned shoulder and circular edge abutting said medial section, the top and bottom sections being fabricated from approximately the same high density polyethylene formulation and the medial section is fabricated from a high density polyethylene formulation having greater density and a lower coefficient of restitution than the polyethylene formulation used in fabricating said top and bottom sections, said medial section having a horizontal strike line which is the center of gravity of the plastic bowling pin and the girth of said medial section and the circular flange on each of said top and bottom sections having structural characteristics resulting from having been fitted into said key way contours by having been melted during a spinning operation and cooled.

4,351,531

SEALING ARRANGEMENT FOR A PISTON PUMP

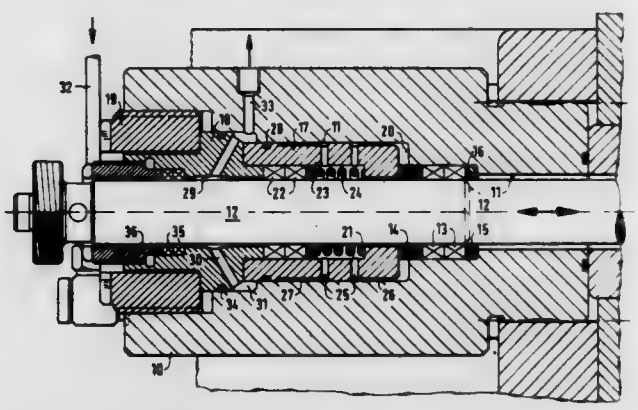
Wolfgang Maasberg, and Adalbert Huperz, both of Werthauser Str. 77-79, D-4100 Duisburg 14, Fed. Rep. of Germany

Filed Sep. 15, 1980, Ser. No. 187,576

Claims priority, application Fed. Rep. of Germany, Sep. 15, 1979, 2937459

Int. Cl.³ F16J *15/40, 15/48*

U.S. Cl. 277—22 **10 Claims**



1. In a high pressure piston pump, an improved sealing means in a clearance space between a cylinder and a plunger reciprocally movable therein comprising:

a first set of high pressure seals positioned forwardly in the direction of the discharge stroke of the pump plunger towards the discharge end of the cylinder;

a second set of high pressure seals separately supported at a spaced-apart location from said first set of seals, rearwardly along the length of the pump cylinder with respect to the discharge end thereof; and

a sleeve around the pump plunger inside of the pump cylinder having a predetermined annual clearance space around its external circumferential surface, and said sleeve defining a chamber around the plunger within which said second set of seals are enclosed, and said sleeve being in fluid communication with the pressurized fluid medium being pumped on both its internal and external surfaces, whereby said sleeve and said second set of seals enclosed therein are hydraulically pressurized radially inwards during the discharge stroke of the pump plunger.

4,351,532

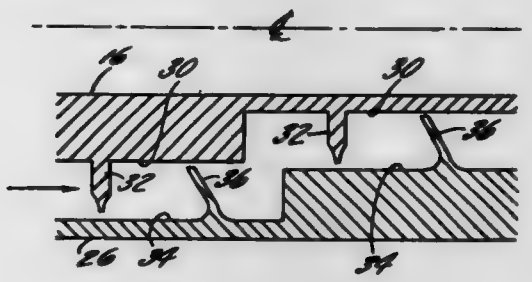
LABYRINTH SEAL

William F. Laverty, Glastonbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Continuation of Ser. No. 618,542, Oct. 1, 1975, abandoned. This application Mar. 28, 1977, Ser. No. 782,157

Int. Cl.³ F16J *15/447*

U.S. Cl. 277—53 **6 Claims**



1. For preventing the leakage of a fluid medium between two components of a machine which are mounted for relative rotation, a labyrinth seal having an upstream throttle aperture and a downstream throttle aperture disposed in series relationship wherein said labyrinth seal further includes flow turning means operatively positioned between the upstream and downstream throttle aperture for directing leakage flow from the upstream aperture into opposing relationship to flow approaching the downstream aperture.

4,351,533

FACE SEAL WITH ROTATABLE SEAL RING

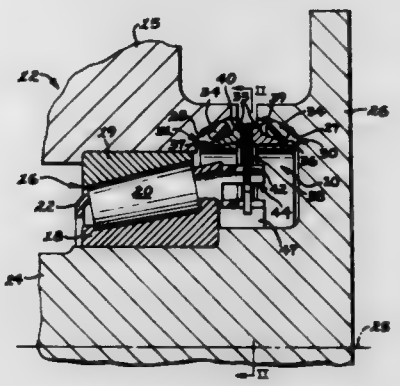
John A. Moore, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US81/00766, § 371 Date Jun. 5, 1981, § 102(e) Date Jun. 5, 1981

This PCT application filed Jun. 5, 1981, Ser. No. 287,540

Int. Cl.³ F16J *15/34*

U.S. Cl. 277—83 **14 Claims**



1. A face seal assembly (10), comprising:

a pair of opposed annular seal faces (36,37) disposed about an axis (25), one of said faces (37) being rotatable relative to the other of said seal faces (36);

a seal ring (38) disposed between said seal faces (36,37) said seal ring (38) having opposite sealing faces (39,40) each in sealing contact with a respective one of said pair of seal faces (36,37); and

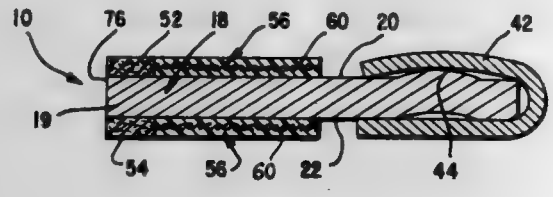
means (44) for rotating said seal ring (38) about said axis (25) at a speed proportionately less than the rotational speed of said one seal face (37), said rotating means (44) being disposed about said axis (25) and including a portion (22) rotatable about said axis (25) at said lesser speed and means (46,47) for rotatably coupling said portion (22) to said seal ring (38).

4,351,534

ABRASIVE-EROSION RESISTANT GASKET ASSEMBLY

Donald J. McDowell, Riverside, Ill., assignor to Felt Products Mfg. Co., Skokie, Ill.

Filed May 12, 1980, Ser. No. 149,036
Int. Cl.³ F16J *15/06*
U.S. Cl. 277—235 B 10 Claims



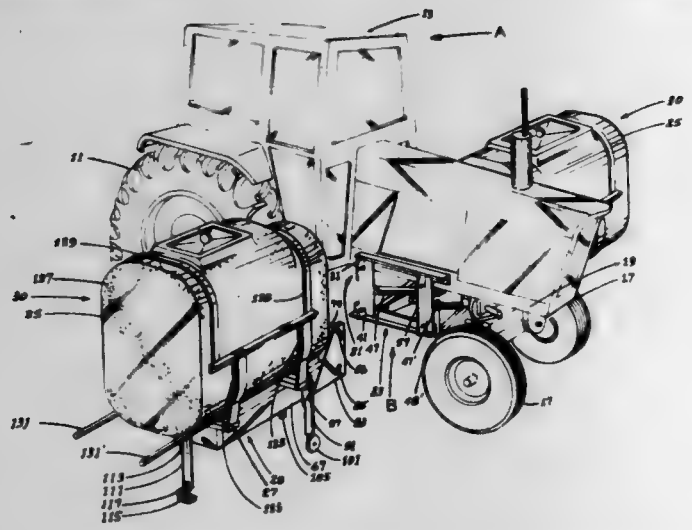
1. An abrasive-erosion resistant gasket assembly adapted to be positioned between an engine block and head, said engine defining at least one combustion chamber, said gasket comprising a main body portion including gasket base providing a first surface and a second surface and a composite facing material on each said surfaces, said gasket assembly defining at least one combustion opening, said gasket assembly further comprising a heat-resistant elastomeric body at each of two opposite ends of said gasket base, said elastomeric body being of a material different from the facing material and being deflectable in shear to deflect in response to relative movements of an engine block and head, thereby to resist abrasive erosion of said gasket assembly.

4,351,535

VERSATILE FAST HITCH SIDE MOUNTING OF AGRICULTURAL SPRAY TANKS

Harold C. Mead, Charles City, Iowa, assignor to Nixdorff Krein Industries, Inc., St. Louis, Mo.

Filed Dec. 24, 1980, Ser. No. 220,111
Int. Cl.³ B60P *3/030*
U.S. Cl. 280—5 R 13 Claims



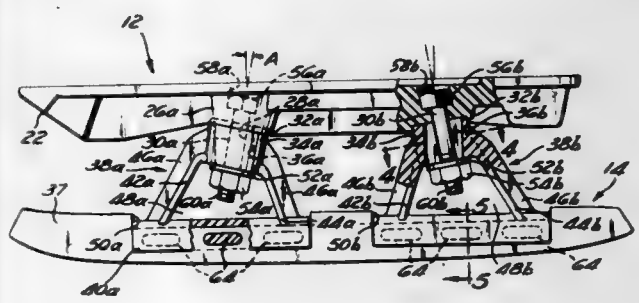
1. An apparatus for fast hitch tractor-side mounting of spray tanks or the like at opposite sides of an agricultural tractor, said apparatus comprising a carry-through frame of truss configuration including means for securement of said carry-through frame beneath said tractor to frame members thereof, said carry-through frame being configured for supporting the weight of filled tanks on opposite sides of said tractor and transferring the weight of said tanks to said tractor frame members, said carry-through frame providing opposite ends proximate said tractor frame members, said opposite ends each including a pair of horizontally spaced apart upright frame members for providing points of securement for corresponding tank-carrying frames on opposite sides of said tractor, said points of securement being immediately proximate corresponding ones of said tractor frame members, each said tank-carrying frame being adapted for carrying at least one of said tanks and including a pair of spaced horizontal side frame members and at least one upright frame member carried by each of said horizontal frame members at one end thereof to provide a horizontally spaced apart pair of upright frame members having spacing therebetween corresponding to spacing between upright frame members of said carry-through frame, a tank saddle mounted upon and secured to each said tank-carrying frame for seating one of said tanks within said saddle, and means for providing initial interengagement of each said tank-carrying frame with said carry-through frame by downward movement, relative to said carry-through frame, of the end of each said tank-carrying frame by which connection is made to said carry-through frame, to provide pivotal interengagement of said carry-through frame with each said tank-carrying frame by defining a transverse pivot axis proximate a corresponding tractor frame member, said upright members of each of said carry-through and tank-carrying frames including a plurality of securement apertures aligning upon rotation of said tank-carrying frame upon said transverse pivot axis to permit rigid interconnection of said carry-through and tank-carrying frames by securement means received through the aligned apertures, whereby one end of each said tank-carrying frame initially may be rapidly and easily pivotally interengaged with said carry-through frame and subsequently the other end of each said tank-carrying frame may be raised to permit rigid, secure interengagement of each said tank-carrying frame with said carry-through frame.

4,351,536

ICE SKATE ATTACHMENT

Hector M. Sandino, 24451 Peacock St., El Toro, Calif. 92630

Filed Aug. 15, 1980, Ser. No. 178,362
Int. Cl.³ A63C *17/18*
U.S. Cl. 280—7.13 1 Claim



1. An ice skate device for attachment to a variety of roller skate foot plates of the type having front and rear bosses for the mounting of roller skate trucks, each said boss having an opening and an action pin passing therethrough, said device comprising:

an ice skating blade;

front and rear support members for attaching said blade to said roller skate foot plate, each said support member being of a one piece, unitary plastic molded construction and comprising:

U-shaped mounting means for mounting said blade;

adaptor means engageable with said bosses and having an opening for receiving said action pin; and

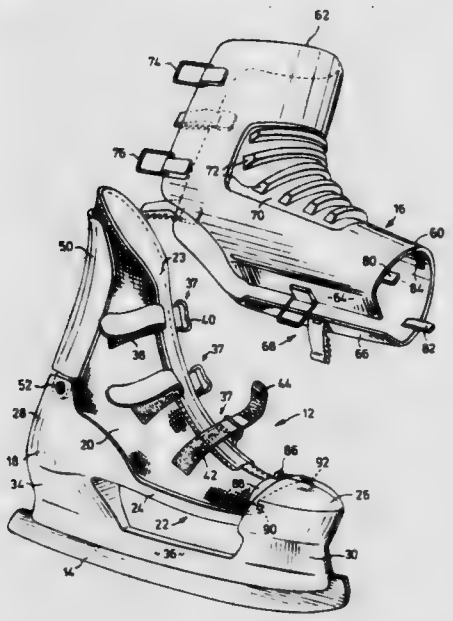
strut means for connecting said adaptor means to said mounting means, said strut means forming a central opening to permit attachment of a fastener on said action pin for attaching said ice skate device to said roller skate foot plate can function interchangeably as a roller skate foot plate or as an ice skate foot plate.

4,351,537

MULTIPART SKATE

Sigurd Seidel, Graz, Austria, assignor to Warrington Inc., Mississauga, Canada

Filed Jan. 16, 1980, Ser. No. 112,686
Claims priority, application Austria, Jan. 19, 1979, 421/79
Int. Cl.[3] A63C *1/00*
U.S. Cl. 280—11.12 12 Claims



1. A skate for use as an ice skate comprising:

a rigid support structure comprising a sole portion, first and second support portions, an integral toe enclosing portion, an integral heel enclosing portion, and an integral blade portion fixed to said first and second support portions,

a relatively soft, flexible sock adapted to receive a skater's foot and adapted to be affixed to said sole portion of said support structure, and

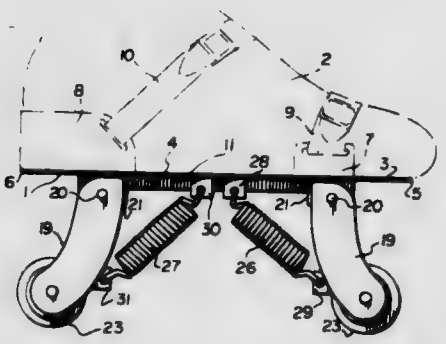
a substantially rigid cover adapted to engage with said support structure to enclose and protect the skater's foot, said cover having a substantially flexible instep portion whereby a skater's ankle may flex with respect to said sole portion and having flanges adapted to extend beneath said sole portion and between said first and second support portions.

4,351,538

SPRING ASSISTED ROLLER SKATES

Sophia Berta, 224 Queensland Dr. SE., Calgary, Alberta, Canada

Filed Apr. 14, 1980, Ser. No. 140,216
Claims priority, application Canada, Feb. 5, 1980, 345048
Int. Cl.[3] A63C *17/02*
U.S. Cl. 280—11.26 2 Claims



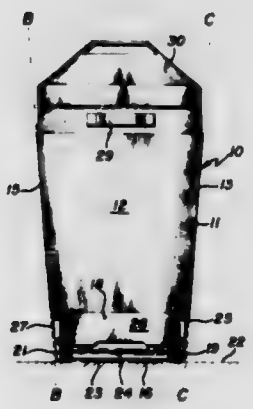
1. A roller skate comprising plate means for connecting the skate to the heel and toe ends of the foot of a user; first arm means comprising a pair of arms inclined with respect to the vertical and extending substantially downwardly and relatively slightly forwardly from the bottom of the toe end of said plate means; second arm means comprising a second pair of arms inclined with respect to the vertical and extending substantially downwardly and relatively slightly rearwardly from the heel end of said plate means; means pivotally interconnecting the top end of each said arm to said plate means for rotation around a horizontal axis; roller means on the bottom end of each of said arms; first tension spring means interconnecting said plate means and said first arm means, said first tension spring means extending from a point on said plate means intermediate the pivotally connected top ends of said first and second arm means to a point on the rear edge of said first arm means intermediate the ends thereof but substantially closer to the bottom end than the top end thereof; and second tension spring means interconnecting said plate means and said second arm means, said second tension spring means extending from substantially the same point on said plate means as said first spring means to a point on the front edge of said second arm means intermediate the ends thereof but substantially closer to the bottom end than the top end thereof, said tension spring means biasing said first and second arm means to said inclined positions such that said roller means are disposed relatively substantial distances below their respective arm pivot connections but relatively small distances respectively forwardly and rearwardly of their respective arm pivot connections, so that when the arms are pivoted away from each other and inclined to a greater extent by downward forces during jumping, the tension springs facilitate jumping by tending to return pivot the arm means toward each other to the original, less inclined positions, the areas below said plate means and respectively forward and rearward of said first and second arm means being free of obstructions in the pivot paths of the arm means so as to permit substantial pivotal movements of said arms respectively forwardly and rearwardly and upwardly against the bias of said spring means, and said first and second pairs of arms being arcuately curved so as to be concave forwardly and rearwardly, respectively wherein said plate means includes a front panel for supporting the toe end of a foot; a rear panel for supporting the heel end of a foot, and means extensibly interconnecting said front and rear panels, so that the length of the plates means can be adjusted to suit the foot of the user, said first and second tension spring means being connected to said front and rear panels, respectively.

4,351,539

TRASH BARREL

Michael S. Rodolakis, Worcester, Mass., assignor to AMS Industries, Inc., Worcester, Mass.

Filed Jul. 30, 1980, Ser. No. 173,768
Int. Cl.[3] B62B *1/00*
U.S. Cl. 280—47.26 4 Claims



1. Trash barrel, comprising:

(a) a single-piece plastic container having four upper tapered side walls, four lower tapered side walls which are generally extensions of the upper side walls, but are spaced inwardly of and parallel with the upper side walls, and a bottom surface, said four lower side walls forming a downwardly-extending pedestal adapted to engage the ground, and an abutment extending laterally from the

pedestal, the bottom of said abutment being higher than the bottom of the pedestal, and the opposite outer side surfaces of the abutment being spaced inwardly of the respective outer opposite side surfaces of the pedestal, and

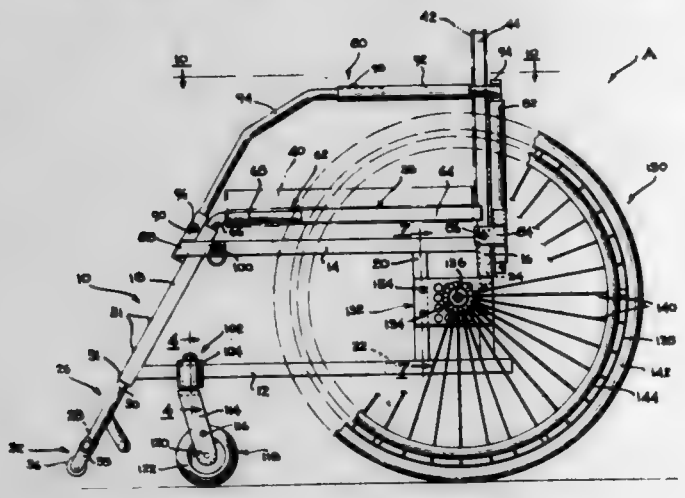
(b) a pair of wheels rotatably mounted on the opposite side surfaces of the abutment, the wheels being generally tangential to a ground plane including the bottom of the pedestal and lying entirely within an envelope defined by the planes of the outer surfaces of the upper side walls and the ground surface, so that, when the trash barrel is nested with other identical trash barrels, the trash barrel is supported by contact of its upper side walls only with the upper side walls of the next lower trash barrel and the wheels do not contact the lower side walls of said next lower trash barrel.

4,351,540

WHEELCHAIR CONSTRUCTION

Jeffrey P. Minnebraker, Oxnard, Calif., assignor to Quadra Wheelchairs, Inc., Westlake Village, Calif.

Filed Nov. 13, 1980, Ser. No. 206,346
Int. Cl.³ A61G 5/02
U.S. Cl. 280—242 WC **47 Claims**



47. A wheelchair comprising:

(a) a main frame,

(b) a first pair of connected and spaced apart plates attached to one side of said frame and a second pair of connected and spaced apart plates attached to an opposite side of said frame,

(c) a plurality of axle receiving openings on each of said spaced apart plates and openings in each of the plates of a pair being aligned to be capable of receiving a rear wheel axle in each of said axle receiving openings,

(d) a rear wheel axle extending outwardly from the rear wheel axle openings on each of said pairs of plates,

(e) flange means on at least one of the plates of each of said pairs for fastner attachment to a frame means of said wheelchair,

(f) quick release means on said rear wheel axle to enable quick release and replacement of rear wheels on said rear wheel axle, such that said axles can be easily removed from one location and replaced in another axle receiving location on said plates so that the response and center of gravity and wheel base on said frame can be easily and quickly altered, said quick release means comprising:

(1) at least one retaining pin extending outwardly from said axle and capable of being retracted therein to permit removal of a wheel on said axle,

(2) manually actuable means on said axle for causing said retaining pin to be retracted upon actuation of said manually actuable means,

(g) a pair of wheel post housings on said frame means,

(h) a post extending vertically downwardly from each of said wheel post housings and being rotatable with respect to the associated post housing,

(i) a separate bracket carried by each of said posts and being rotatable about a generally vertical axis relative to the associated wheel post housing, and each of said brackets having a pair of spaced apart plates with a plurality of pairs of vertically spaced apart aligned apertures in said spaced apart plates,

(j) a separate wheel assembly for each said bracket and each wheel assembly being comprised of a wheel and an axle capable of being disposed in any of the plurality of pairs of aligned apertures to thereby adjust the plane of the frame and hence the angle of attack of the wheelchair relative to a ground plane,

(k) a mounting member extending from each of the wheel post housings and being adapted for attachment to said frame means in a first position and a second position, the wheel post housings being located outwardly of the sides of the frame means when the associated mounting members are in the first position and being located inwardly of the sides of the frame means when the associated mounting members are in the second position, the first or second positions being a function of steering radius and steering stability, said rear wheels and front wheels normally being in engagement with the ground or other supporting surface when said wheelchair is propelled forwardly or in turns in normal transport,

(l) a seat mounted on said frame for supporting an individual using such wheelchair,

(m) a foot rest member of said frame and extending forwardly therefrom, and

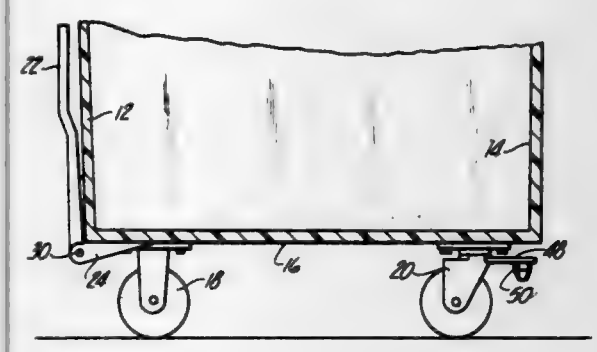
(n) a pair of rollers on said foot rest member and normally being spaced above the ground or other supporting surface a relatively sight distance above the lower ends of said front wheels when said wheelchair is used for normal transport, said wheelchair capable of being tipped by the user thereof so that said rear wheels are temporarily raised a relatively slight distance from the ground or other supporting surface and said rollers are lowered into engagement with the ground or other supporting surface.

4,351,541

VEHICLE TOWING SYSTEM

Robert L. Propst, Bellevue, Wash., and William B. Raftery, Grandville, Mich., assignors to Herman Miller, Inc., Zeeland, Mich.

Filed Apr. 25, 1980, Ser. No. 143,907
Int. Cl.³ B60D 7/00
U.S. Cl. 280—408 **3 Claims**



1. A wheeled vehicle adapted to be incorporated in a train of vehicles in which some vehicles are trailing vehicles with respect to some of the other vehicles and leading vehicles with respect to some of the other vehicles, said vehicle comprising a load-supporting body having a front end and a back end, a pair of axially aligned and axially spaced wheels fixed to the underside of said body adjacent said back end, a caster wheel assembly secured to the underside of said body adjacent said front end, coacting means on said body and said caster wheel assembly operable to releasably connect a trailing vehicle to an identical leading vehicle so that movement of said leading vehicle exerts a pulling force on said trailing vehicle applied at said caster wheel assembly, said coacting means comprising a

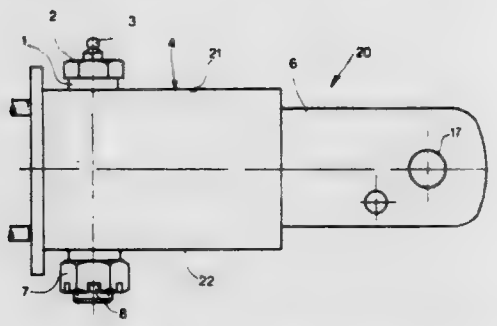
mounting bracket secured to the underside of said body, a wheel support member mounted for swivelling movement about an upright axis on said bracket, a caster wheel rotatably mounted on said support member, a forwardly extending flange on said wheel support member located above said caster wheel, a pin member extending downwardly from said flange adjacent the front end thereof, and a tongue member pivotally mounted on said vehicle back end having an opening at one end thereof, said tongue on a leading vehicle being movable between an upright stored position and a towing position wherein said opening in the tongue receives said caster wheel pin member on a trailing vehicle for applying said pulling force to the trailing vehicle and wherein said leading vehicle tongue is mounted on the leading vehicle by spring-loaded hinge means urging said leading vehicle tongue toward said upright position so that its coupling to the trailing vehicle is effected and maintained by the tongue opening being forceably urged onto the trailing vehicle pin member and the tongue against said flange.

4,351,542

FLEXIBLE TOWING HITCH

Robert Lovell, and Robert Vanos, both of 199 Parramatta Rd., Homebush, New South Wales, Australia (2140)

Filed Jul. 10, 1980, Ser. No. 167,363
Int. Cl.³ B60D *1/00*
U.S. Cl. 280—489 **3 Claims**



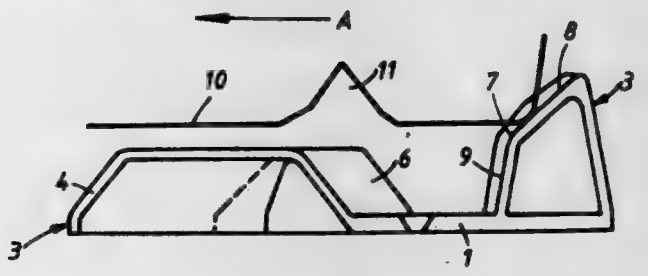
1. A towing hitch comprising a hollow housing having an upper and lower generally horizontal wall, said housing being fixed to a frame adapted to be attached to a vehicle, a towing force transmitting member to which a towed vehicle is to be coupled, a pivot attaching said member to said frame enabling said member to pivot about a generally horizontal axis through a predetermined angle and to extend generally horizontally outwardly of said hollow housing, and a resilient assembly means extending between said member and said frame biasing said member to a predetermined position relative to said housing, said assembly means including an upper and lower resilient member both abutting said towing member with said upper member extending toward said upper wall and said lower member extending toward said lower wall, an upper restraining plate member for said upper resilient member, said upper resilient plate member being generally horizontally disposed and sandwiched between said upper wall and said upper resilient member, a lower restraining plate member for said lower resilient member, said lower restraining plate member being generally horizontally disposed and sandwiched between said lower resilient member and said lower wall, tensioning means extending between said upper and lower plate members for applying a compressive force thereto so as to place said resilient members under compression so that said towing member is biased to said predetermined position within said housing.

4,351,543

DEVICE FOR PUSHING A FORWARDLY EXTENDING PORTION OF A SKI SHOE SOLE INTO A CROSS-COUNTRY SKI BINDING

Josef Linecker, Rosengasse 5, A-5230 Mattinghofen, Austria

Filed Mar. 12, 1980, Ser. No. 129,638
Claims priority, application Austria, Mar. 15, 1979, 1950/79
Int. Cl.³ A63C *9/00*
U.S. Cl. 280—615 **4 Claims**



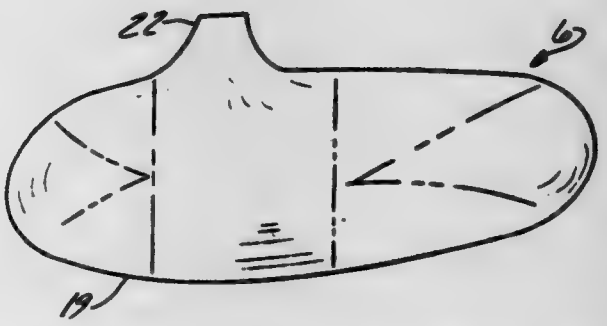
1. In combination with a cross-country ski binding mounted on a ski surface and arranged to receive a forwardly extending portion of a ski shoe sole comprising a heel portion opposite the forwardly extending portion: a device mounted on the ski surface for pushing the forwardly extending ski shoe sole portion into the binding, the binding being mounted on the ski surface closer to the point of the ski than the device and the device comprising an element having a sliding surface obliquely descending towards the ski surface in the direction of the ski point, the projected length of the sliding surface on the ski surface corresponding to the length of the path required for the forwardly extending ski show sole portion to be pushed into the binding for engagement therewith, and the sliding surface being adapted for gliding engagement with a corresponding surface of the shoe sole whereby the gliding engagement of the sliding and shoe sole surfaces pushes the shoe forwardly into the binding, the heel portion having a rear rim forming the corresponding shoe sole surface, and the element being arranged on the ski surface for gliding engagement of the rear rim with the sliding surface.

4,351,544

INFLATABLE APPARATUS AND METHODS OF CONSTRUCTING AND UTILIZING SAME

Tsuneyo Ross, 22301 Winshall, St. Clair Shores, Mich. 48081

Division of Ser. No. 91,088, Nov. 5, 1979, abandoned, which is a division of Ser. No. 455,192, Mar. 27, 1974, Pat. No. 4,173,356. This application Mar. 6, 1981, Ser. No. 241,450
Int. Cl.³ B60R *21/08*
U.S. Cl. 280—743 **2 Claims**



1. A safety bag adapted to be inflated in a vehicle to cushion an occupant of the vehicle in a crash, having a deflated folded condition and an inflated unfolded condition, said bag comprising:

an air inlet nozzle; and

an elongated member extending across the front seat of the vehicle reaching at least from the passenger door to the driver in the unfolded condition;

said elongated member in a folded state being collapsed into a plane perpendicular to said nozzle and forming a plural-

ity of accordion style pleats inwardly directed from said elongated member ends toward said nozzle;

said nozzle being positioned closer to the driver for closer access to a source of air and defining a long portion and a short portion for said member in the unfolded state;

said pleats in said long portion extending transversely inward a greater distance then said pleats in said short portion.

4,351,545

STROP RESTRAINING MEANS

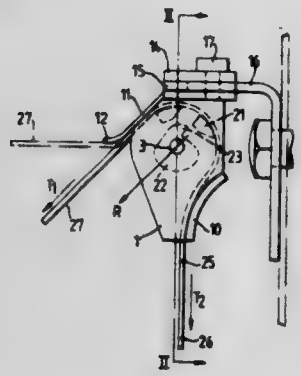
Kenneth H. F. Cardew, Farnborough, England, assignor to The Minister for Transport in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Apr. 2, 1980, Ser. No. 136,709

Claims priority, application United Kingdom, Apr. 3, 1979, 7911680

Int. Cl.³ B60R *21/10*

U.S. Cl. 280—806 **15 Claims**



1. Strop securing means comprising a housing containing a roller having a normal pivotal axis concentrically disposed in said roller, said normal pivotal axis having a fixed position relative to said housing, and means for eccentrically displacing said roller relative to said normal pivotal axis so that said normal pivotal axis is eccentrically disposed in said roller upon displacement, thereby pressing a strop passing around the periphery of said roller between said roller and a portion of said housing.

4,351,546

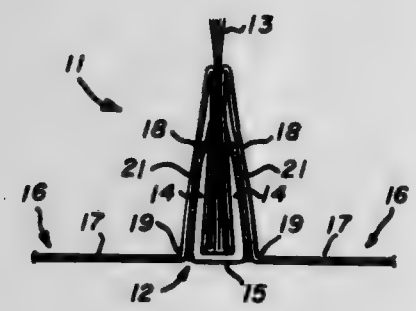
COVER FOR A CHANNEL CLIP BINDER AND METHOD OF MAKING SAME

Richard Cognata, 1268 Sacramento St., San Francisco, Calif. 94108

Filed Apr. 28, 1980, Ser. No. 144,393

Int. Cl.³ B42D *3/00*; B42F *9/00*

U.S. Cl. 281—45 **12 Claims**



1. In a method for covering a channel clip binder of the type wherein the marginal edges of a stack of leaves to be bound together are clipped between a pair of resilient side walls of a channel clip member having said side walls resiliently inwardly converging toward each other and upstanding in laterally spaced relation from an elongated integral base portion of the channel clip member, the steps of:

hinging together major and minor portions respectively of both front and back cover sheet portions of a cover, and

adhesively bonding the faces of said minor cover portions to the outer faces of the side walls of the channel clip member in mutually opposed face-to-face relation with the hinges of each of said front and back cover portions being disposed generally parallel to and adjacent said base portion of the channel clip member, whereby opening and closing the covered clip binder is facilitated.

4,351,547

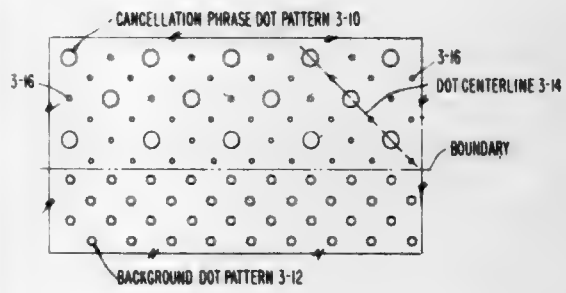
SECURITY DOCUMENT AND METHOD FOR MAKING SAME USING AN ALTERNATING DOT PATTERN

David L. Brooks, II, Fairport, N.Y., assignor to Burroughs Corporation, Detroit, Mich.

Filed Oct. 11, 1979, Ser. No. 83,763

Int. Cl.³ B42D *15/00*

U.S. Cl. 283—8 R **7 Claims**



1. An improved security document comprising:

a substrate having a top surface for carrying indicia;

background printed matter on said top surface, said background printed matter made up of a pattern of small elements of substantially the same size and of a uniform frequency; and,

a cancellation term also printed on said top surface of said substrate, said cancellation term composed of an area pattern consisting of at least two sizes of elements uniformly spaced in an intermingling, alternating pattern and occurring with the same combined contiguous frequency as said elements of said background printed matter.

4,351,548

METHOD OF CONSTRUCTING TIRE AND IDENTIFICATION TAG THEREFOR

Alan E. Cohn, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Nov. 10, 1980, Ser. No. 205,139

Int. Cl.³ B42D *15/00*

U.S. Cl. 283—21 **3 Claims**

1. An identification paper tag having a surface area of one of its two sides in the range of about 2 to about 30, preferably about 5 to about 16 square inches (in^2) and having an information-providing ink composition thereon which covers about 10 to about 50, preferably about 20 to about 40 percent of the surface area of at least one side of said tag where said ink composition contains about 5 to about 25, preferably about 8 to about 15 weight percent, based on the total ink composition, of a heat activatable blowing agent.

4,351,549

MANDREL CLAMP ASSEMBLY

Frank E. Williams, and Alfred D. Story, both of Danville, Ill., assignors to Teepak, Inc., Chicago, Ill.

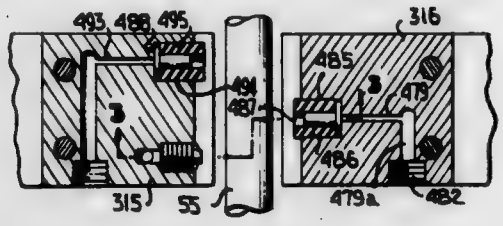
Filed May 8, 1980, Ser. No. 147,773

Int. Cl.³ F16L *41/00*

U.S. Cl. 285—27 **11 Claims**

1. A sealing member for forming a seal with the exterior of

a cylinder member around a radial bore therethrough, said sealing member comprising a sleeve of resiliently deformable material particularly adapted to be received in a bore in a support and having a seal forming end, and a collapse preventing member telescoped within said sleeve beginning at the end of said sleeve opposite from said seal forming end and terminating adjacent to but short of said seal forming end, said collapse preventing member having an axial flow bore extending entirely therethrough, and said axial flow bore having an internally threaded portion accessible to an externally threaded tool from said seal forming end for receiving such a threaded tool to facilitate removal of said sleeve from a support bore.



4,351,550

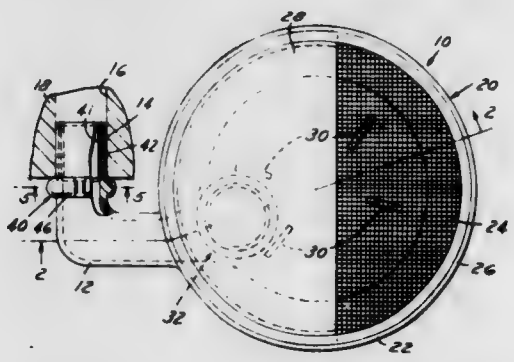
METAL-TO-PLASTIC PIPE JOINT

David L. Anderson, Muskegon, and A. David Joseph, North Muskegon, both of Mich., assignors to Sealed Power Corporation, Muskegon, Mich.

Division of Ser. No. 52,667, Jun. 27, 1979, Pat. No. 4,224,161, which is a continuation-in-part of Ser. No. 906,256, May 15, 1978, abandoned. This application Mar. 24, 1980, Ser. No. 132,875

Int. Cl.[3] F16L *33/20*

U.S. Cl. 285—158 3 Claims



1. A pipe end assembly adapted to be received by press-fit into sealed fluid communication with a substantially cylindrical opening, said pipe end assembly comprising a pipe of plastic material having a pipe end and a circumferential rib around an outer surface of said pipe spaced from said pipe end, and a one-piece metal eyelet having coaxial cylindrical portions respectively disposed internally and externally of said pipe end and a flanged skirt portion at one end of said external cylindrical portion sealingly capturing said rib to hold said eyelet on said pipe end, said external portion having a uniform outer surface adapted for sealing press-fit into a substantially cylindrical opening, said rib and said flanged skirt portion projecting radially outwardly from said surface to limit press-fit into the opening.

4,351,551

BALE TWINE KNOTTER WITH ADJUSTABLE WIPER

Michael J. Verhulst, Ottumwa, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Jul. 25, 1980, Ser. No. 172,307

Int. Cl.[3] A01D *59/04*; B65H *69/04*

U.S. Cl. 289—2 2 Claims

1. In a twine knotter for a crop baling machine comprising:

a rotatably mounted billhook for forming a loop of twine thereabout;

a wiper arm comprising:

(a) a fork defined by a pair of fingers for receiving and guiding twine therebetween; and

(b) a wiper extending transverse to said fingers, the improvement comprising:



(c) at least one transversely extending slot formed in said wiper; and

(d) screw means extending through said slot for releasably fixing said wiper to said arm, said wiper transversely movable back and forth relative to said fork.

4,351,552

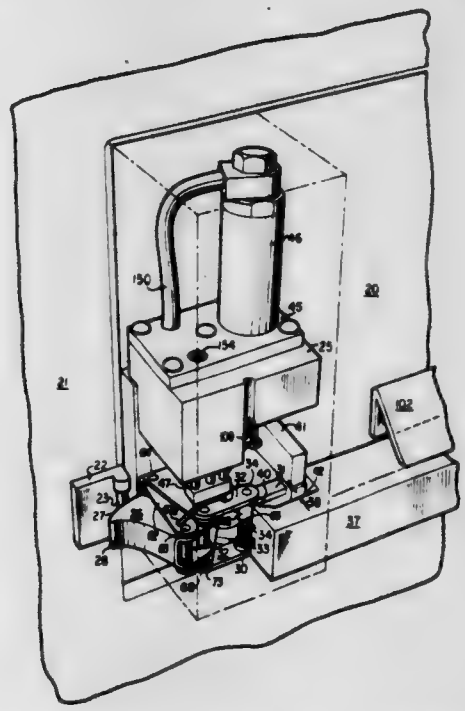
EMERGENCY EXIT DOOR LATCHING AND LOCKING APPARATUS

Roy E. VanDerLinden, New Windsor, Md., assignor to Reliable Security Systems, Inc., Cockeysville, Md.

Filed Mar. 20, 1979, Ser. No. 22,110

Int. Cl.[3] E05C *15/02*

U.S. Cl. 292—201 32 Claims



1. A latch for an emergency exit door door said latch being operable from inside an enclosure comprising:

bolt means including a bolt for engaging a strike;

support means for supporting the bolt means on the door;

mounting means for mounting bolt means on the supporting means for movement between a projected position in which the strike is engaged and a retracted position in which the strike is bypassed by the bolt;

toggle means pivoted at one end to the support means and at the other end of the bolt means at a point on the bolt means, which toggle means is moveable between a first position in which the toggle means dogs the bolt means in the porjected position and a second position in which the toggle means allows the bolt to move to the retracted position, the toggle means including means for biasing the toggle means to the first position for holding the bolt projected;

delay means connected to the toggle to delay movement of the bolt from the projected to the retracted position after the toggle has been moved from the first position to the second position;

operating means mounted on the support means for moving the toggle means from the first position to the second position, whereby when pressure is thereafter applied to the door the bolt will be moved to the retracted position by the strike;

means on the door and responsive to pressure on the door for indicating that an attempt has been made to open the door.

4,351,553

MULTI-PURPOSE MECHANICAL HAND

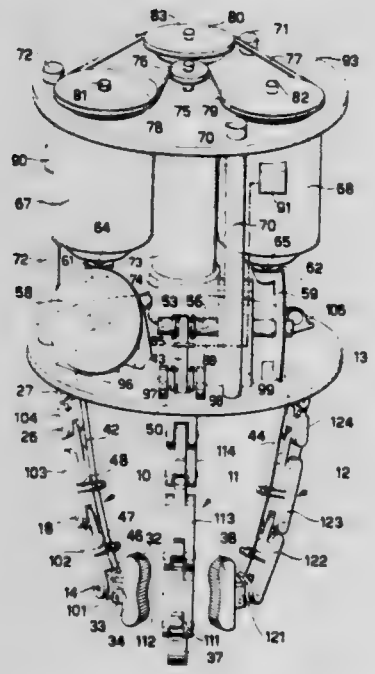
Alberto Rovetta, Mich.LAN; Ilario Franchetti, San Vittore Olona, and Pietro Vicentini, Rho, all of Italy, assignors to Alfa Romeo S.p.A., Milan, Italy

Filed Sep. 10, 1980, Ser. No. 186,201

Claims priority, application Italy, Sep. 19, 1979, 25817 A/79

Int. Cl.³ A61F *1/06*

U.S. Cl. 294—106 **7 Claims**



1. A mechanical hand suitable for gripping pieces, said mechanical hand comprising fingers and a support element for said fingers, each finger being constituted by a set of links connected to each other by hinge means and by preloaded resilient means separately arranged to rotate each link relative to the adjacent link in a predetermined direction until it abuts against stop means in order to cause said finger to assume a predetermined rest configuration, the most outer link of each finger being provided with a gripping element, said gripping element generally opposing one another for gripping an element from opposite directions towards a general center, said mechanical hand also comprising a traction cable for each finger, said cable being fixed to the end link of the finger and being slidably supported by those links of said finger which are able to rotate in a direction which is opposite the direction of rotation imposed by said preloaded resilient means; said mechanical hand also comprising actuator means operationally connected to the finger traction cables, said actuator means being capable of subjecting said cables to traction in order to displace the links of each finger from their rest configuration and to cause them to rotate in the direction opposite to the direction of rotation imposed by said resilient means, so causing the gripping element of each finger to rest on the piece to be gripped, said actuator means being also capable of locking said cables when under traction in order to keep the links of each finger in their working configuration with the piece gripped by the gripping elements of the fingers, said actuator means being finally able to nullify the traction force on said cables in order to enable the links of each finger to return to their rest position under the action of said preloaded resilient means, for each finger there being provided a sensor for sensing the traction force to which the relative cable is subjected, said mechanical hand also comprising control means for said actuator means including threshold comparator means operationally connected to said sensors, said threshold comparator means causing the actuator means to lock said cables under traction when a predetermined value of the traction force is attained.

4,351,554

MOTOR VEHICLE SLEEPER UNIT

Gene H. Miller, North Palm Beach, Fla., assignor to Livlab, Inc., Lake Park, Fla.

Continuation of Ser. No. 125,289, Feb. 27, 1980, abandoned.

This application Sep. 14, 1981, Ser. No. 302,173

Int. Cl.³ B62D *25/00*; B60P *3/32*

U.S. Cl. 296—24 R **21 Claims**



1. A sleeper unit for a motor vehicle including a frame with a forwardly tiltable cab mounted thereon, said sleeper unit comprising a closed compartment having at least four upstanding walls supporting a top wall, and means for mounting said compartment on said vehicle frame; said compartment mounting means comprising support means provided on the vehicle frame for supporting the compartment and fastening means connecting said support means with said compartment at the rear of said compartment whereby said compartment can be tilted with respect to said frame by raising the front of said compartment; and a part of said compartment extending forwardly of the frame over the cab.

4,351,555

FOLDABLE PANEL FOR AN AUTOMOTIVE VEHICLE

Akihiro Hashimoto, Kokubunji, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed May 23, 1979, Ser. No. 41,771

Claims priority, application Japan, May 31, 1978, 53-65178

Int. Cl.³ B60R *5/04*

U.S. Cl. 296—37.16 **5 Claims**

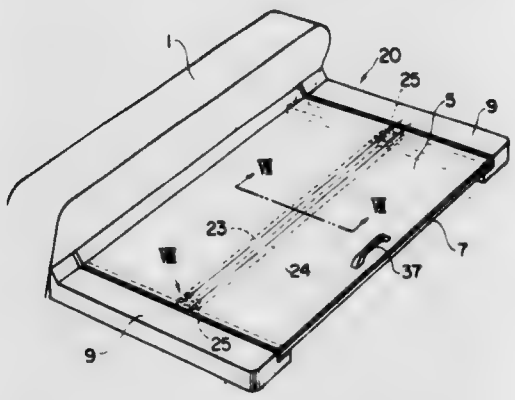
1. A foldable panel for the storage area of an automotive vehicle having a panel supporting structure, comprising:

an outer layer;

a first plate and a second plate which are covered by said outer layer and which have inboard edges spaced from each other;

a generally "U"-shaped member having integral first and second spindles, said first spindle being rotatably connected to said first plate and said second spindle being rotatably connected to said second plate, first and second reinforcement members secured to said first and second plates, respectively, at portions adjacent said inboard edges, said reinforcement members being formed with envelope sections, respectively, for receiving said first and second spindles, respectively, the distance between the axis of said first spindle and the axis of said second spindle

being greater than the sum of the distances between the axis of said first spindle and the upper surface of said outer



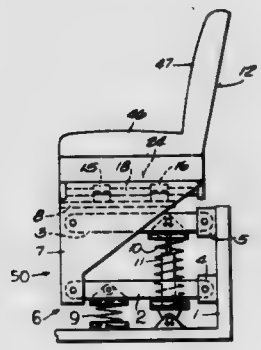
layer and between the axis of said second spindle and said upper surface of said outer layer.

4,351,556

SEAT SUSPENSION

Thomas J. Worringer, Wauwatosa, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Dec. 20, 1979, Ser. No. 105,631
Int. Cl.[3] B60N *1/00*
U.S. Cl. 296—63 10 Claims



1. A horizontal vehicle seat suspension system on a vehicle comprising, a vehicle chassis, a seat, a seat suspension system on said vehicle chassis permitting horizontal movement of said seat relative to said chassis including, an inertia lever pivotally mounted on said vehicle chassis, resilient means normally biasing said inertia lever to a neutral position, a latch means selectively and alternatively connecting said inertia lever to said seat and locking said seat to said chassis, said suspension system thereby causing inertia forces and spring forces to absorb vibration energy with a minimum of vibrations being transmitted across said suspension system at predetermined frequencies from said chassis to said seat.

4,351,557

LIGHT SHIELD FOR VEHICLES HAVING TRANSPARENT MEMBERS

Rajagopala M. N. Chary, 5400 Windy Meadow Dr., Arlington, Tex. 76017

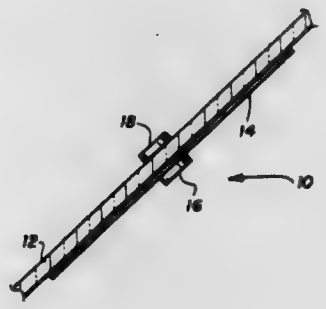
Filed Jul. 14, 1980, Ser. No. 167,818
Int. Cl.[3] B60J *3/02*
U.S. Cl. 296—97 D 17 Claims

1. A light-blocking device adapted for use in vehicles having transparent members such as glass windshields or windows, comprising:

(a) a shield in the form of a relatively stiff and generally flat sheet having sufficient opacity to at least serve as a light-filtering medium;

(b) a first magnet affixed to one side of said shield, and said magnet having a size appreciably smaller than said shield, and said magnet being affixed in such a way that the shield may lay generally flush against the inside surface of the transparent member; and

(c) a second magnet adapted to be placed on the outside of the vehicle's transparent member in a position so that it is juxtaposed with the first or interior magnet, and the first and second magnets respectively having a magnetic orien-



tation such that their confronting faces have opposite polarities, with the result that the two magnets are attracted to each other and the shield is held adjacent the transparent member by the interacting magnetic fields of the two magnets, and each of the magnets having a minimum magnetic strength of about 800 gauss.

4,351,558

TRUCK BODY CONSTRUCTION

Frederick N. Mueller, 7637 El Pastel, Dallas, Tex. 75240

Filed Apr. 23, 1979, Ser. No. 32,390
Int. Cl.[3] B62D *27/02*
U.S. Cl. 296—187 7 Claims



1. A vehicle body comprising:

(a) a plurality of exterior planar panels forming the top, front, side and rear of the exterior vehicle body;

(b) a floor;

(c) fastening members for securing said panels, said fastening members having a first exterior panel slot for securing one panel and a second exterior panel slot for securing another of said exterior panels with said exterior panels being secured in a predetermined configuration, said configuration determined by the relation of said first and second exterior panel slots, said exterior panel slots being dimensioned for insertion of exterior panels therein, said fastening members also including at least one inwardly projecting member including flange means for securing at least one interior panel in approximately parallel relationship to a corresponding exterior panel; and

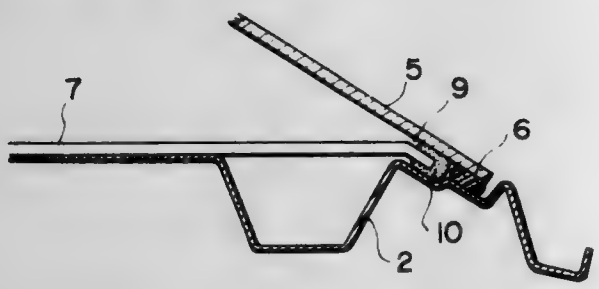
(d) floor fastening members for securing the floor to selected ones of said exterior panels of the vehicle body, said floor fastening members having the slot for allowing insertion therein of said selected ones of said exterior panels, and inwardly projecting members forming a channel to allow insertion therein of the floor and a downwardly projecting slot for allowing insertion of a skirt therein.

4,351,559

PARCEL TRIM ATTACHMENT CONSTRUCTION

Masaki Sugisawa, No. 1-1-15, Kami-ochiai, Shinjuku-ku, Tokyo, Japan

Filed Jul. 18, 1980, Ser. No. 170,316
Claims priority, application Japan, Jul. 30, 1979, 54-97475
Int. Cl.³ B62D *25/08*
U.S. Cl. 296—195 **3 Claims**



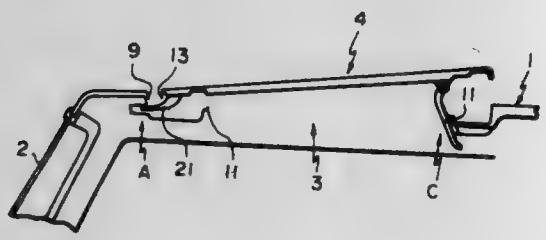
1. An automobile parcel trim attachment construction comprising:
(a) a parcel panel;
(b) a rear window glass bonded to said parcel panel;
(c) said rear window glass and said parcel panel oriented and positioned to form a space therebetween in front of the bond location;
(d) a parcel trim having a rear end inserted into said space; and
(e) an elastomeric member mounted to the rear edge of said parcel trim contacting both sides of said parcel trim;
(f) said elastomeric member contacting said rear window glass and said parcel panel, and resiliently holding said parcel trim rear end in said space, and holding said rear end spaced from and out of direct contact with said window glass and said parcel panel.

4,351,560

REMOVABLE ROOF OF A MOTOR VEHICLE

Noboru Kanou, and Keiji Mori, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha and Aisin Seiki Kabushiki Kaisha, both of Aichi, Japan

Filed Aug. 1, 1980, Ser. No. 174,627
Claims priority, application Japan, Aug. 16, 1979, 54-103523
Int. Cl.³ B60J *7/18*
U.S. Cl. 296—216 **27 Claims**



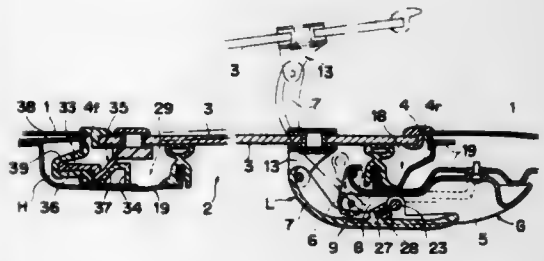
1. In a roof structure of a motor vehicle having a stationary roof that has front and rear ends and an opening formed in a region intermediate the front and rear ends, and a removable roof removably mounted on the stationary roof above the opening and having a contour shape that corresponds to the contour shape of the opening and having a front end and a rear end, the invention comprising:
first means for securing the front end of said removable roof to the stationary roof, said first means comprising at least one tongue member located on the front end of said removable roof and extending substantially horizontally towards the front end of said stationary roof, at least one hollow case on the stationary roof in the vicinity of the front end of said removable roof and having therein a recess with which said tongue member is engageable, and at least one link member arranged to be rotatable from a substantially horizontal position to a standing position, said link member being located in a position that is beneath the front end of said removable roof when the latter is in its closed position, said link member having first and second ends, said second end rotatably engaging the stationary roof, said first means further comprising a latch groove which is engageable with said link member when said link member is in said substantially horizontal position, the direction in which said latch groove is open being such as to release said link member only when the rear end of said removable roof is pivoted upward and forward; and
second means arranged on the stationary roof and cooperating with the rear end of said removable roof for securing the rear end of said removable roof to the stationary roof.

4,351,561

LOCKING DEVICE FOR AN OPENABLE AUTOMOBILE ROOF

Yoshimasa Tuchiya, Sayama; Katsumi Ishii, Tokyo; Toshiharu Iidaka, Funabashi, and Masao Fujita, Yamatsurumachi, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohamashi and Kokusan Kinzoku Kogyo Kabushiki Kaisha, Tokyo, both of, Japan

Filed Aug. 15, 1980, Ser. No. 178,680
Claims priority, application Japan, Aug. 18, 1979, 54-104527
Int. Cl.³ B60J *7/18*
U.S. Cl. 296—216 **4 Claims**

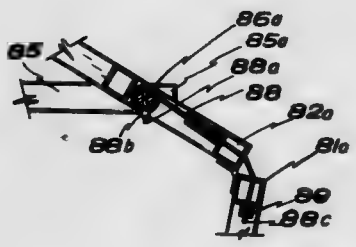


1. A locking device for an openable automobile roof panel comprising:
a base plate fixed to the edge of an opening formed in the roof panel;
a pair of hook portions provided at one end of said base plate;
a lid adapted to close the opening in the roof panel and cooperate with said hook portions of the base plate;
a handle pivotally supported by the edge of said lid corresponding to said hook portions;
a pair of links pivotally connected at one end thereof to said handle;
a shaft pin projected from the other end of each link and rotatably fitted in each hook portion to form a toggle connection;
a pair of stoppers retractably carried by said base plate, each of said stoppers adapted to resiliently block one of said hook portions and hold a respective one of said shaft pins therein; and
knobs disposed on both sides of said handle and interconnected to each other and adapted to operate said stoppers to retract by manipulation of either one of said knobs.

4,351,562
MOVABLE SEAT FOR A MOTORIZED TRANSPORT CHAIR

Brent L. Twitchell, 3451 W. 4400 South, Granger, Utah 84120; Kendel S. Twitchell, 1569 Shenandoah Cir., Murray, Utah 84107, and Brent W. Zitting, 4271 Charles Dr., Granger, Utah 84120

Filed Jul. 17, 1980, Ser. No. 164,707
Int. Cl.³ B62D *11/04*
U.S. Cl. 297—345 9 Claims



1. A movable seat for arrangement with a transport chair comprising,

a seat that includes a bottom and a back that is connected thereto by a hinge arrangement such that said back can be pivoted forwardly to engage said seat bottom;

a seat support means arranged with the transport chair for supporting said seat thereto;

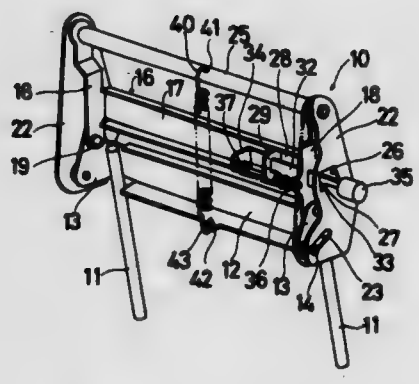
arm means fixed by connection means at ends thereof to the ends of an axle that is journaled across the seat back above said hinge arrangement; and

cable means secured on one end thereof to said seat back below said hinge arrangement with the other cable means and wound around and secured to said axle, said cable means being drawn taut to prohibit axle rotation during rotation of said seat back to maintain said arm means in essentially a parallel attitude over said seat bottom.

4,351,563
HEADREST FOR VEHICLES

Takemi Hattori, Kariya, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Aug. 20, 1980, Ser. No. 179,725
Claims priority, application Japan, Sep. 5, 1979, 54/113955
Int. Cl.³ A47C *1/02*
U.S. Cl. 297—408 5 Claims



1. A headrest for vehicles having a seat backrest comprising:

a stay fixed to said seat backrest and including a projecting portion,

a bracket member fixed to said headrest, and including an elongated hole formed therein,

a link member pivotally supported by said stay at one end thereof and pivotally supporting said bracket member at an opposite end thereof,

said elongated hole provided in said bracket member serving to guide said projecting portion to move said bracket member,

regulating means disposed between said link member and said bracket member for regulating the inclination of said bracket member,

a reinforcing link member rotatably supported by said bracket member and including a reinforcing portion,

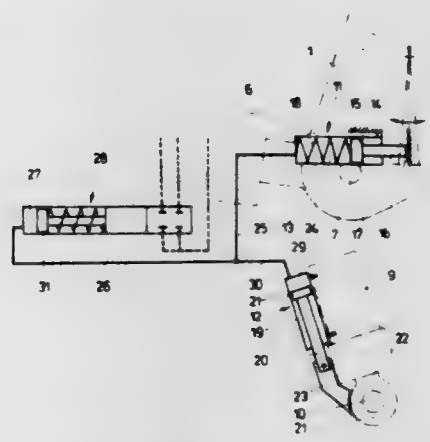
and

a guide link portion pivotally supported by said stay at one end thereof and pivotally supporting said bracket member at the opposite side thereof.

4,351,564
DEVICE FOR PREVENTING COLLISION BETWEEN PART OF THE CUTTING ARM AND PART OF THE LOADING RAMP FOR A CUTTING MACHINE

Erich Dröscher, Scheifling; Hans P. Pfundner, Weiskirchen, and Herwig Wrulich, Zeltweg, all of Austria, assignors to Voest-Alpine Aktiengesellschaft, Vienna, Austria

Filed Oct. 28, 1980, Ser. No. 202,001
Claims priority, application Austria, Nov. 5, 1979, 7097/79
Int. Cl.³ E21C *27/24*
U.S. Cl. 299—1 6 Claims



1. Device for preventing collision between a part of the cutting arm and a part of the loading ramp in a cutting machine comprising a pivotable cutting arm pivotable at least around one horizontal axis and carrying at least one cutting head and comprising a loading ramp arranged below the cutting arm and being designed to be lifted and lowered, characterized in that a transmitter means is provided for the cutting arm, said transmitter means registering the position of the cutting arm relative to the cutting machine, and a transmitter means is provided for the loading ramp, said transmitter means registering the position of the loading ramp relative to the cutting machine, and in that said both transmitter means are in connection with a common receiver means (28) controlling a switching member interrupting the downward movement of the cutting arm and the upward movement of the loading ramp in dependence on a combination of the signals of said both transmitter means.

4,351,565
ROOF SENSING CONTROL OF SHEARER IN LONGWALL MINING

Ken Takahashi, Tokyo, and Tsunetoshi Ito, Yokohama, both of Japan, assignors to Taiheiyo Engineering Inc., Tokyo, Japan

Division of Ser. No. 83,871, Oct. 11, 1979, Pat. No. 4,279,443.
This application Mar. 20, 1981, Ser. No. 245,807
Claims priority, application Japan, Jul. 13, 1979, 54-88090
Int. Cl.³ E21C *35/08*
U.S. Cl. 299—1 3 Claims

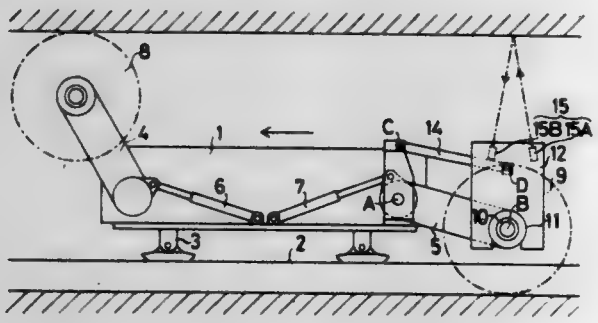
1. A mining method utilizing a mining apparatus having at least upper and lower cutting means, comprising

providing a position detector on said mining apparatus, said detector being vertically moved in association with vertical movement of said lower cutting means,

projecting signals from said position detector to measure distance from said position detector to a mine roof, and

vertically adjusting the position of said lower cutting means

in response to said signals of said position detector so that constant cutting height between the upper and lower



cutting means can be obtained when the upper cutting means is adjusted to cut along a seam.

4,351,566

METHOD AND APPARATUS FOR MIXING GASEOUS OXIDANT AND LIXIVIANT IN AN IN SITU LEACH OPERATION

Tsoung-yuan Yan, Philadelphia, Pa., and Wilton F. Espenscheid, Princeton, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Oct. 31, 1977, Ser. No. 846,863
Int. Cl.³ E21B *43/28*
U.S. Cl. 299—5 **15 Claims**



1. A method of mixing a gaseous oxidant and a lixiviant at a downhole location within a well, said method comprising:

supplying said gaseous oxidant to a mixing zone near the lower end of said injection well;

trapping said gaseous oxidant within said mixing zone;

passing said lixiviant through said trapped gaseous oxidant within said mixing zone to mix said gaseous oxidant and said lixiviant; and

increasing the velocity of said lixiviant as it enters said mixing zone just prior to being passed through said trapped gaseous oxidant.

4,351,567

COWL-LIKE SCRUBBER FOR A LONG-WALL SHEARER

Gary R. Gillingham, Prior Lake, Minn., assignor to Donaldson Company, Inc., Minneapolis, Minn.

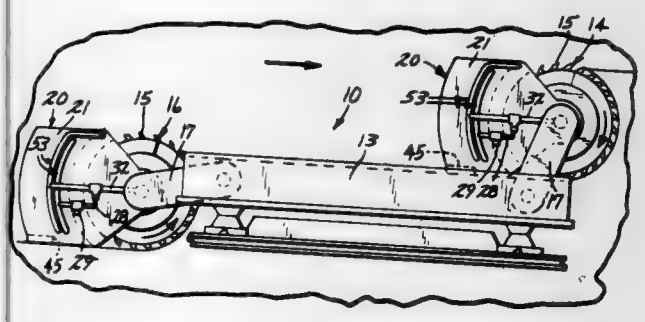
Filed Nov. 14, 1980, Ser. No. 206,708
Int. Cl.³ E21C *35/20*
U.S. Cl. 299—45 **14 Claims**

2. A water-powered dust scrubber adapted to be mounted on a long-wall shearer, said shearer having a cutter drum which generates large particulate material and dust particles, said scrubber comprising:

a housing;

means on said housing for mounting said housing in close spaced-apart relationship with a trailing side of said cutter drum;

means, proximate said trailing side of said cutter drum, for establishing dust-laden air movement through said housing in a direction away from said cutter drum trailing side including water jet sprays in said housing, said air movement means including a plurality of nozzles constructed and arranged across the depth and width of said housing



to direct high velocity, small diameter water droplets into said shearer-generated dust particles within said housing so as to entrain said dust particles within said water droplets, said jet spray air movement means also including a water supply means for said nozzles;

dust-laden mist removal means positioned downstream from and in fluid communication with said jet spray air movement means; and

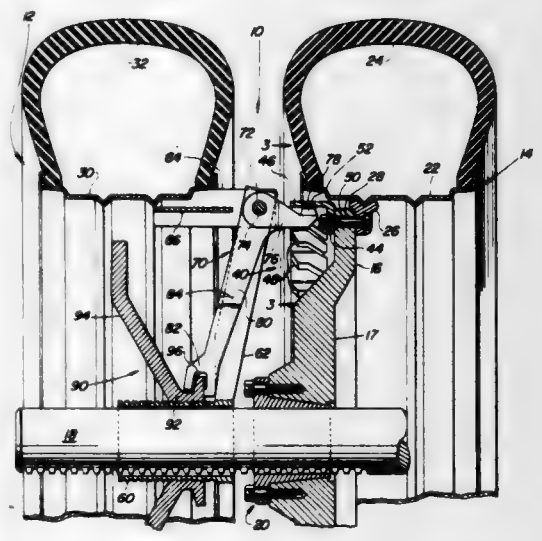
barrier means on said housing positioned behind said cutter drum trailing side and upstream from said jet spray air movement means for preventing larger particles from entering said housing with said dust-laden air.

4,351,568

WHEEL ATTACHING DEVICE

Brian A. Ahlschwede, Waterloo, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Oct. 2, 1980, Ser. No. 193,346
Int. Cl.³ B60B *11/02*
U.S. Cl. 301—36 R **18 Claims**



1. An attaching device for attaching an auxiliary wheel assembly to a vehicle-mounted wheel assembly, the mounted wheel assembly having a wheel fixed for rotation with an axle and a rim attached to the wheel for supporting a tire thereupon, the attaching device comprising:

support structure fixed for rotation with the auxiliary wheel assembly, the support structure comprising a hollow cylindrical member defining an axial bore therein for receiving the axle and a plurality of support members intercon-

necting the cylindrical member and the auxiliary wheel assembly;

a disc member attached to the wheel of the mounted wheel assembly for rotation therewith;

a plurality of pivot members each pivotally attached to a corresponding one of the support members and each with a disc-engaging portion; and

a coupling member mounted on an outer surface of the cylindrical member and engagable with the pivot members, the coupling member being movable with respect to the cylindrical member to pivot the disc-engaging portions of the pivot members into interlocking engagement with the disc member, the interlocked disc and pivot members and the support structure cooperating to cause the mounted and auxiliary wheel assemblies to rotate together.

4,351,569

HUB SLEEVE FORMED OF DEEP-DRAWN PARTS

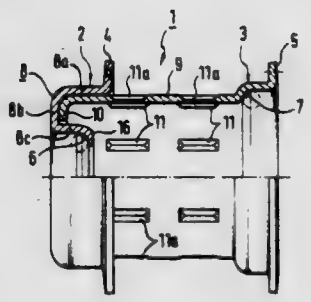
Werner Steuer, Schweinfurt, and Bernd Leiter, Hergolshausen, both of Fed. Rep. of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany

Filed Feb. 13, 1980, Ser. No. 121,118

Claims priority, application Fed. Rep. of Germany, Feb. 21, 1979, 2906627

Int. Cl.³ B60B *27/04*

U.S. Cl. 301—6 V **12 Claims**



1. Hub for a bicycle or the like comprising an axially extending hub sleeve body for receiving components used for at least the driving operation, said sleeve body having a first end and a second end spaced apart in the axial direction thereof and, comprising two coaxially arranged and connected sleeve members formed as deep-drawn components and consisting of a first sleeve member and a second sleeve member with each said first and second sleeve member being axially extending and having a first end and a second end, wherein the improvement comprises said first sleeve member having the shape of a cylinder extending approximately for the full axial length of said hub sleeve body from the first end to the second end thereof with the first end of said first sleeve member forming the first end of said hub sleeve body and the second end of said first sleeve member forming in part the second end of said hub sleeve body and being bent radially inwardly transversely of the axial direction of said hub sleeve body, a spoke flange formed on and extending laterally outwardly from said first sleeve member, said second sleeve member being formed cup-shaped at the second end thereof and with the first end thereof located between the first and second ends of said first sleeve member, at least an axially extending portion at the second end of said first sleeve member being fitted into said second sleeve member, the cup-shaped second end of said second sleeve member is bent radially inwardly in overlapping and surface contact with the radially inwardly bent second end of said first sleeve member and said second sleeve member having a spoke flange formed on and extending laterally outwardly therefrom and located between and spaced from the first end and second end of said hub sleeve body.

4,351,570

VEHICLE BRAKE PRESSURE PROPORTIONING VALVES

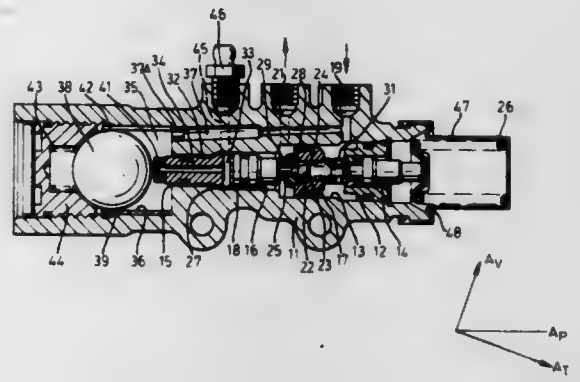
Alastair J. Young, Kenilworth, England, assignor to Automotive Products Limited, Leamington Spa, England

Filed Dec. 11, 1980, Ser. No. 215,430

Claims priority, application United Kingdom, Dec. 14, 1979, 7943238

Int. Cl.³ B60T *8/26*

U.S. Cl. 303—24 F **12 Claims**



1. A vehicle brake pressure proportioning valve comprising:

a housing;

a inlet port in the housing for connection to a driver-controlled source of fluid pressure;

an outlet port in the housing for connection to rear brakes of the vehicle;

a stepped bore in the housing;

a stepped proportioning valve plunger slidable in the stepped bore and having one, relatively small, piston area subject to inlet pressure from the inlet port and another, relatively large, piston area subject to brake pressure at the outlet port;

a loading spring which applies a biassing load to the proportioning valve plunger in a direction opposing movement of the plunger under the action of brake pressure at the inlet port;

metering valve means associated with the proportioning valve plunger for controlling flow between the inlet port and the outlet port;

a control plunger slidable in the stepped bore and co-operating with the metering valve means such that relative movement of the proportioning valve plunger away from the control valve plunger changes the metering valve means from an open state permitting flow between the inlet port and the outlet port and a closed state preventing flow from the inlet port to the outlet port, the control plunger being movable with the proportioning valve plunger during movement of the proportioning valve plunger against the biassing load when brake pressure is increasing;

a liquid filled control chamber having a volume which varies with movement of the control plunger in the stepped bore;

a control passage connecting the inlet port and the control chamber;

a control mass movable in the housing under vehicle deceleration;

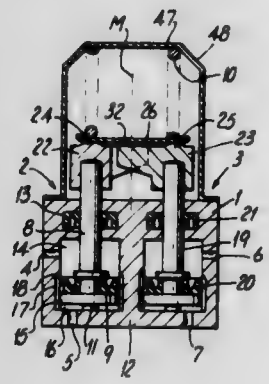
inertia valve means including the control mass for closing the control passage;

and control spring means for applying to the control mass a load which varies according to the distance moved by the control plunger before the control passage is closed.

4,351,571
DUAL-CIRCUIT PRESSURE CONTROL VALVES FOR BRAKE SYSTEMS

Bernd Schopper, Frankfurt am Main, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Aug. 1, 1980, Ser. No. 174,339
Claims priority, application Fed. Rep. of Germany, Sep. 20, 1979, 2938104
Int. Cl.³ B60T 17/18, 11/08
U.S. Cl. 303—40 17 Claims



1. A dual-circuit pressure control valve for a dual-circuit brake system comprising:

two control pistons disposed in a housing in a parallel side by side relationship, each of said two pistons being associated with a different one of said brake circuits; and

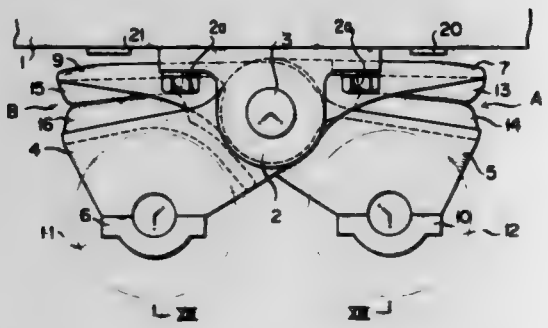
a common unguided preloading device acting on said two pistons through a distribution device and pressing said two pistons against a stop in their rest condition, said distribution device, in the event of a pressure failure in one of said brake circuits, increases the preload on said piston of the other of said brake circuits, said distribution device including

two tops each fastened to an adjacent end of a different one of said two pistons, each of said two tops having a supporting surface disposed coaxial of a longitudinal axis of an associated one of said two pistons abutting said preloading device and at least one additional supporting surface disposed in a slightly spaced relationship with said preloading device, said additional supporting surface extending beyond a first medial plane disposed between said two pistons.

4,351,572
TRACK ROLLER SUSPENSION APPARATUS FOR A TRACK-TYPE VEHICLE

Yasuo Fujiwara; Hidemi Maeo, and Eiichi Muramoto, all of Hirakata, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed May 6, 1980, Ser. No. 147,282
Claims priority, application Japan, May 11, 1979, 54/57013
Int. Cl.³ B62D 55/16
U.S. Cl. 305—27 3 Claims



1. A track roller suspension apparatus for a track-type vehicle having a track frame and a track assembly mounted on the track frame, said apparatus comprising:

a single shaft rotatably mounted on said track frame;

first arm means rotatably mounted on said shaft, said first arm means having a split roller mounting lower section and a single carrier upper section;

second arm means rotatably mounted on said shaft, said second arm means having a split roller mounting lower section, a single carrier upper section and an intermediate portion having an opening therethrough, said first and second arm means being arranged crossing each other at said shaft, with said first arm means passing through said opening on said second arm means where they cross;

first roller means rotatably mounted in the split of the roller mounting lower section of said first arm means;

second roller means rotatably mounted in the split of the roller mounting lower section of said second arm means;

first unitary resilient pad means mounted on the lower surface of the upper section of said first arm means;

second unitary resilient pad means mounted on the upper surface of the roller mounting lower section of said second arm means, said first and second resilient pad means facing each other and being adapted to collide;

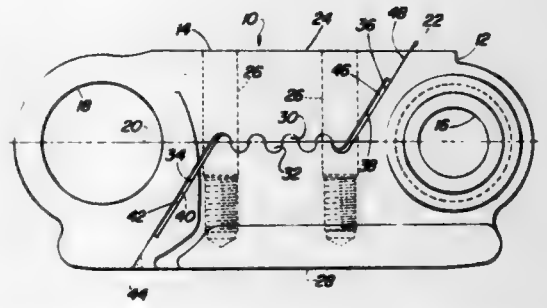
third unitary resilient pad means mounted on the lower surface of the upper section of said second arm means; and

fourth unitary resilient pad means mounted on the upper surface of the roller mounting lower section of said first arm means, said third and fourth resilient pad means facing each other and being adapted to collide.

4,351,573
SPLIT MASTER LINK FOR TRACK OF TRACK-LAYING TRACTORS

Michael Bedis, and Donald E. Westemeier, both of Dubuque, Iowa, assignors to Deere & Company, Moline, Ill.

Filed Dec. 24, 1980, Ser. No. 219,625
Int. Cl.³ B62D 55/20, 55/28
U.S. Cl. 305—54 8 Claims



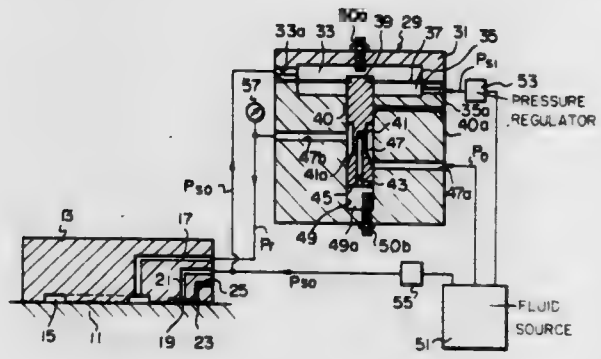
1. In an endless track split master link including an outer side adapted for receiving a track shoe and an opposite inner side, first and second separable link sections respectively having parallel pin and bushing bores extending therethrough, the first and second link sections having respective overlapped portions located between the pin and bushing bores and including respective inner and outer confronting surface portions forming continuations of respective intermediate interengaged serrated surface portions, the improvement comprising: said inner and outer confronting surface portions being inclined relative to a line of centers passing through said pin and bushing bores and spaced apart from each other in respective zones extending from the intermediate interengaged serrated surface portions towards the inner and outer sides of the link; and said inner and outer confronting surface portions being engaged with each other respectively inwardly and outwardly of said respective zones.

4,351,574

LOAD-COMPENSATED TYPE GUIDE MECHANISM ADAPTED FOR A MACHINE

Yuji Furukawa, Tokyo, and Makoto Sato, Kanagawa, both of Japan, assignors to Makino Milling Machine Co., Ltd., Tokyo, Japan

Filed Jul. 15, 1980, Ser. No. 169,216
Claims priority, application Japan, Mar. 6, 1980, 55-27284
Int. Cl.³ F16C *29/02, 32/06*
U.S. Cl. 308—3 A 12 Claims



1. A load-compensated type guide mechanism of a machine, comprising:

a stationary base incorporated in said machine;

a guide surface formed in said stationary base;

a movable machine part having a slide surface contacting said guide surface of said stationary base;

a fluid supply source for generating a pressurized fluid to be supplied between said guide surface and said slide surface;

fluid conduit means disposed between said fluid supply source and said machine for introducing said pressurized fluid from said fluid supply source between said guide surface and said slide surface thereby to produce a pressure force for lifting said movable machine part above said guide surface of said stationary base;

a pressure regulating means for establishing a preadjusted pressure level of said pressurized fluid such that said pressure force for lifting said movable machine part is smaller than a premeasured perpendicular load acting from said slide surface of said movable machine part toward said guide surface of said stationary base;

means for detecting a change in the amount of perpendicular elastic deformation of projections formed in at least one of said slide surface and said guide surface when said perpendicular load acting from said slide surface toward said guide surface changes; and

pressure control means for automatically controlling said preadjusted pressure level of said pressurized fluid in response to the change in said perpendicular elastic deformation so that a frictional force acting between said slide surface of said movable machine part and said guide surface of said stationary base is maintained at a constant level regardless of change in said perpendicular load.

4,351,575

PULL-OUT GUIDE ASSEMBLY FOR DRAWERS

Erich Röck, Höchst, and Bernhard Mages, Dornbirn, both of Austria, assignors to Julius Blum Gesellschaft m. b. H., Höchst, Austria

Filed Jul. 15, 1980, Ser. No. 169,195
Claims priority, application Austria, Jul. 19, 1979, 4980/79; May 6, 1980, 2416/80
Int. Cl.³ F16C *29/04*
U.S. Cl. 308—3.8 7 Claims

1. A pull-out guide assembly for use on each of opposite sides of a drawer in an article of furniture of the type wherein the drawer is slidably insertable into and removable from a furniture body, said assembly comprising:

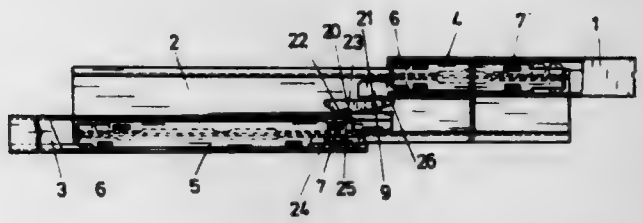
a supporting rail adapted to be connected to a side wall of a furniture body;

a first carriage mounted to run along said supporting rail, said first carriage having bearing supports;

a pull-out rail adapted to be connected to a side of a drawer;

a second carriage mounted to run along said pull-out rail, said second carriage having bearing supports;

a center rail having vertically spaced horizontal flanges extending between and supported by said bearing supports of said first and second carriages, such that said carriages are movable along said center rail and said center rail is movable with respect to said pull-out and supporting rails; and



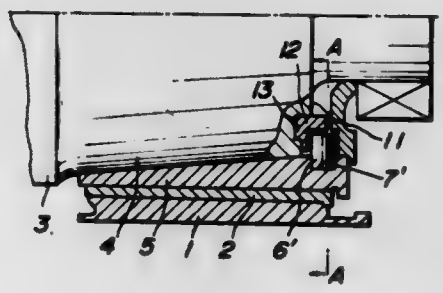
catch means for fixing the relative longitudinal positions of said center rail and said carriages when said pull-out rail is moved with respect to said supporting rail to a drawer fully pulled-out position, said catch means comprising a two-arm lever pivotally connected to said center rail, said lever including a first arm pivotable toward and engageable with one of said carriages in said drawer fully pulled-out position, and said lever including a second arm pivotable toward and engageable with the other of said carriages or the said rail thereof in said fully pulled-out position.

4,351,576

OIL FILM BEARING FOR ROLLING ROLL

Teruyuki Nishide; Takayuki Naoi; Makoto Shitomi; Keiichi Hamada, and Hidetami Noguchi, all of Kurashiki, Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Filed Feb. 24, 1981, Ser. No. 237,625
Claims priority, application Japan, Jul. 8, 1980, 55-92201
Int. Cl.³ F16C *17/02;* B21B *31/07*
U.S. Cl. 308—37 3 Claims



1. In an oil film bearing for rolling roll consisting of a bushing in a roll chock bearing box and a sleeve tightly engaged with a rolling roll tapered neck to form a journal to the bushing, the improvement comprising that said sleeve is provided with a portion which projects from a smaller diameter end of the rolling roll tapered neck, a keyway is provided in an inner circumference of the projected portion of the sleeve and a holder, by which a radially inner end of the key inserted in the keyway is anchored, is provided at the smaller diameter end surface of the tapered neck.

4,351,577
WIRE RING BEARING

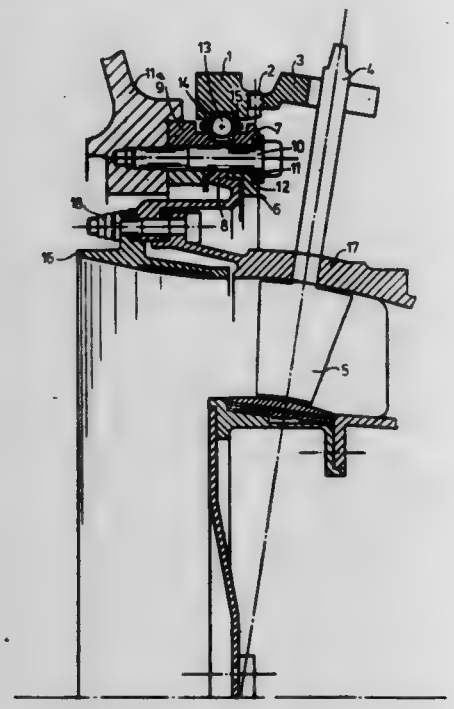
Anton Zacherl, Munich, Fed. Rep. of Germany, assignor to MTU Motoren-und Turbinen-Union Munchen GmbH, Munich, Fed. Rep. of Germany

Filed Oct. 1, 1980, Ser. No. 193,183

Claims priority, application Fed. Rep. of Germany, Oct. 4, 1979, 2940206

Int. Cl.³ F16C *27/04, 33/61*

U.S. Cl. 308—189 R **5 Claims**



1. A wire ring bearing comprising two bearing rings concentrically arranged for relative motion with respect to one another, a plurality of rolling elements disposed between said rings, said rings being provided with opposed circumferentially extending slots, wire rings in said slots rollably supporting said rolling elements, one of the two bearing rings comprising a plurality of individual ring elements which jointly define the slot extending in said one bearing ring, fastener means holding said ring elements together in assembled relation, and means resiliently engaging said individual ring elements in the assembled relation, said means resiliently engaging said individual ring elements in the assembled relation comprising a spring arranged between the fastener means and one of said individual ring elements, said fastener means comprising a screw, a sleeve in a hole provided in said one individual ring element, said screw bearing against said sleeve to urge the same and said one individual ring element against an adjacent second individual ring element, said spring being arranged between said sleeve and said one individual ring element, said one individual ring element being supported for endwise movement relative to the sleeve against the pressure of said spring.

4,351,578
AUTOMATED LAMP AGING

John Fajt, and James V. Neal, Jr., both of Wynnewood, Okla., assignors to Xenell Corporation, Wynnewood, Okla.

Filed Sep. 12, 1980, Ser. No. 186,615

Int. Cl.³ H01J *9/00*

U.S. Cl. 316—1 **52 Claims**

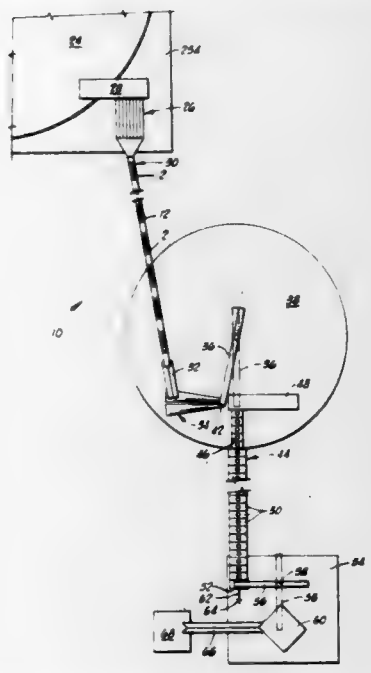
1. An automated method of aging negative glow lamps, comprising:

(a) mechanically orienting a plurality of lamps with a lamp orienting means, each of said lamps including a bulb with first and second lamp lead wires extending therefrom, so that said lamps may be received by a lamp holder;

(b) feeding said oriented lamps to a first predetermined position;

(c) receiving each of said lamps one at a time in said lamp holder when said lamps are in said first predetermined position;

(d) transferring, by movement of said lamp holder, each of said lamps from said first predetermined position to a second predetermined position where said first and second lead wires of each lamp are received in a pair of lead wire receptacles of a lamp aging conveyor, said conveyor including a plurality of pairs of lead wire receptacles so that a plurality of lamps may be conveyed simultaneously;



(e) driving said lamp aging conveyor, thus conveying each of said lamps away from said second predetermined position; and

(f) while each of said lamps is on said lamp aging conveyor, directing an electric current to said pair of lead wire receptacles and thus to said first and second lead wires to age said lamps on said lamp aging conveyor.

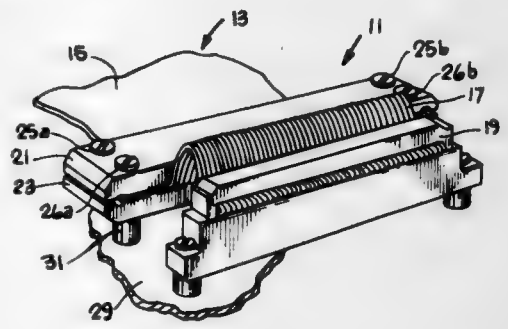
4,351,579
CLAMP FOR ELECTRICAL CABLE AND CABLE TERMINATING SYSTEM

Arthur W. Kordes, Los Altos; Robert M. Andrade, San Jose, and Roger W. Peterson, Los Altos, all of Calif., assignors to The Initiators, Los Altos, Calif.

Filed Nov. 3, 1980, Ser. No. 203,131

Int. Cl.³ H01R *4/66, 13/58*

U.S. Cl. 339—14 R **8 Claims**



1. A clamp for sheathed or jacketed flat electrical cable comprising,

first and second facing jaws formed for mutual contact, said jaws having a length, width and depth, with the width of said jaws exceeding the width of a flat electrical cable to be clamped, said jaws defining a lengthwise tunnel accommodating a flat electrical cable therethrough, fastener means for urging said jaws together in the depthwise direction, constricting said tunnel to dimensions providing snug non-crimping contact with the cable said jaws having a toothed section in said tunnel with teeth extending

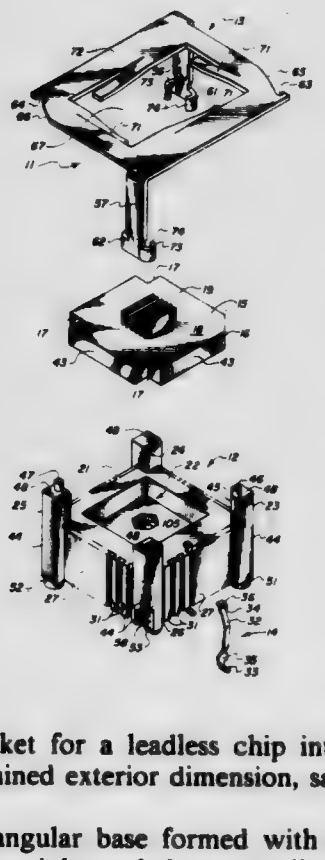
inwardly toward the central tunnel region from a first section recessed further outwardly relative to a second recessed section, said first section accommodating sheathed or jacketed cable, while said second section accommodates unsheathed or unjacketed portions of the same cable.

4,351,580

CARRIER SOCKET FOR LEADLESS INTEGRATED CIRCUIT DEVICES

Michael Kirkman, Swansea; Frank C. Rydwansky, Jr., Quincy; Richard J. Hanlon, Attleboro, and Richard W. Petersen, Taunton, all of Mass., assignors to Augat Inc., Attleboro, Mass.

Filed May 15, 1980, Ser. No. 150,047
Int. Cl.³ H01R *23/72*
U.S. Cl. 339—17 CF **18 Claims**



1. A carrier socket for a leadless chip integrated circuit having a predetermined exterior dimension, said socket comprising:

a generally rectangular base formed with upright corner posts having flat right angled outer walls which have flat surfaces, the flat surfaces on opposed posts defining a plane, said base having side walls extending between said posts, said side walls having outer surfaces, there being a plurality of longitudinal slots in said outer surfaces, said slots being opened outwardly and exposed at the outer surfaces of said walls, said base having an outer dimension defined by the planes which include the flat surfaces of said corner posts, said outer dimension substantially matching the exterior dimension of said integrated circuit, thereby to enable the edges of said circuit to extend out to the exterior dimension of said base;

a plurality of contact members, one said contact member residing in each of at least some of said slots; and

a cover member extending between said corner posts and being substantially coextensive with said base member, said cover member removably engaging said base member.

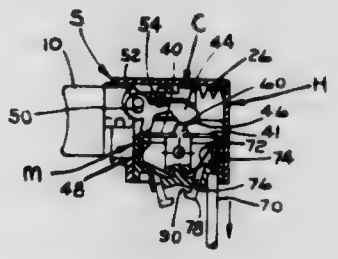
4,351,581

TRIGGER OPERATED TOOL HANDLE SWITCH

Julius P. Wied, Hudson, Ohio, assignor to Lucerne Products, Inc., Hudson, Ohio

Division of Ser. No. 963,778, Nov. 27, 1978, Pat. No. 4,256,942. This application Feb. 12, 1981, Ser. No. 233,930
Int. Cl.³ H01R *4/24*
U.S. Cl. 339—95 D **1 Claim**

1. In an electrical switch mechanism for a portable electric motor driven type tool including a trigger-switch assembly having a switch housing and a switch module portion disposed within the switch housing said module portion comprising; a module casing, a plurality of spaced stationary electrical contacts disposed in said casing, a spring-like elongated retainer blade coacting with each contact and diagonally disposed with respect to the contact with the free end of the blade adapted when in active condition to releasably engage an associated insertable bared conductor wire for gripping the latter to hold it in place against the contact, said module casing having a wire passageway disposed below and leading to a point near the free end of the retainer blade and adjacent the contact for receiving the bared conductor wire, said module casing also having a release arm passageway adjacent the wire passageway, a wire release arm disposed in said release arm passageway for selectively deactivating said retainer blade to permit ready withdrawal of the wire from coaction with the respective stationary contact, said release arm being slidable in said release arm passageway so as to be engageable with the retainer blade for moving the latter out of gripping coaction with the wire to permit withdrawal of the wire from the module, the lower portion of said release arm being disposed exteriorly of said module casing, retaining means for retaining the



release arm within the module casing including locking means on the release arm for coaction with respective restraining means in the module casing for retaining the release arm in assembled relation within the module casing, said release arm having a laterally extending handle lug on its exteriorly exposed free end for engagement with the exterior surface of the module casing to limit inward movement of said release arm with respect to said module casing and also forming a handle enabling facile manual operation of the release arm, the inner end of the release arm which contacts the retainer blade being beveled to effect a coacting plane-to-plane contact with the retainer blade to provide a more positive and firm contact therewith, said passageways being formed in part by the switch housing, each contact having a coacting retainer blade with a coacting release arm, said structure further including adjacent release arms being connected together to form a "U"-shaped tandem release member, the restraining means in the module casing including said module casing having a coacting shoulder extending toward the release arm, and said locking means includes said release arm having a coacting arm abutment engaging said shoulder to reciprocably retain said release arm in said release arm passageway.

4,351,582

ADAPTING ELECTRICAL CONNECTOR

James A. Emerson, Pekin; James M. Ramsey, Floyd Knobs, and Kerry O. Buck, New Albany, all of Ind., assignors to Robinson Nugent, Inc., New Albany, Ind.

Filed May 23, 1980, Ser. No. 152,670
Int. Cl.³ H01R *4/24*
U.S. Cl. 339—97 R **3 Claims**

1. An electrical contact comprising:

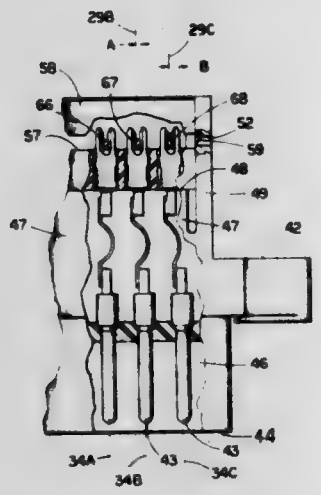
an elongate member of electrically conductive material having a first end portion for engaging a first electrical conductor, a second end portion for engaging a second electrical conductor, and an intermediate portion joined to said end portions,

said intermediate portion shaped to elastically sustain the weight of each of said end portions when the member is

gripped at the other of said end portions, regardless of orientation of said other end portion, but accommodate intentional variation of the distance between said end portions,

said first end portion including an insulation piercing and displacing yoke formed to define a wire receiver slot oriented to receive a wire with its axis perpendicular to said first plane,

part of said intermediate portion having a substantial cross sectional thickness, measured in a first direction perpendicular to said plane, and said part of said intermediate portion having a lesser cross sectional thickness, measured perpendicular to said direction, to accommodate resilient bending of said intermediate portion in a plane parallel to said first plane for changing the distance between the junctions of said intermediate portion to said end portions;



said yoke being formed by a pair of substantially flat and coplanar prongs lying in said first plane, and a bight from which said prongs project;

and an offset arm extending from said bight perpendicular to said first plane;

a leg extending from said arm in a direction opposite the direction of projection of said prongs, and in a second plane parallel to said first plane, said leg having a portion remote from said arm rearwardly turned and commencing said part of said intermediate portion, said leg having a reduced cross section thickness measured in a direction perpendicular to said planes at a line between said rearwardly turned portion and said arm,

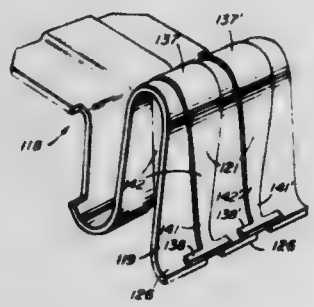
said part of said intermediate portion turning parallel to said second plane at a point remote from said line and extending to said second end portion.

4,351,583

ELECTRICAL TERMINAL

Harold E. Belttary, Rio Piedras, P.R., assignor to GTE Products Corporation, Stamford, Conn.

Filed Jun. 19, 1980, Ser. No. 160,897
Int. Cl.[3] H01R *4/48*
U.S. Cl. 339—259 R **18 Claims**



1. An electrical terminal comprising

an electrical contact including a strip of metal of flexible material having good electrical conductivity, a low coefficient of friction, and the oxide of which is unstable and can break down to produce a relatively good conductor, having at least a portion formed as a generally U-shaped member having a bight portion and having arms more closely spaced at its free ends than in the region of said bight portion, said arms being flared outwardly at said free ends; said U-shaped member being formed with a plurality of recesses which extend from said free ends through said bight portion; and

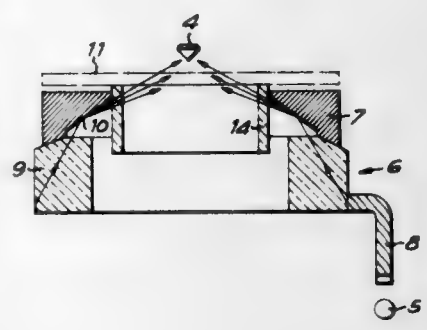
a resilient, generally U-shaped reinforcing member arranged substantially without said U-shaped member contact and embracing said arms, and being formed of material which retains its resiliency when subjected to heat; said resilient member being formed of a plurality of recess engaging portions connected at ends thereof, said connected portions being adapted to nest, at least partially, within said recesses.

4,351,584

RING LIGHTING FOR MICROSCOPES

Jean L. Chandesais, Schawijkstraat 27, 2228 Ranst, Belgium

Filed Mar. 31, 1980, Ser. No. 135,770
Claims priority, application Belgium, Apr. 11, 1979, 57718
Int. Cl.[3] G02B *21/10*
U.S. Cl. 350—89 **2 Claims**



1. An illumination device for use in a microscope to illuminate, in a ring-shaped manner, a precious stone to be examined by said microscope along a viewing axis, said device including:

a source of light mounted at a distance from said precious stone;

a ring-shaped piece mounted around said viewing axis;

a light conducting fiber arranged between said source of light and said annular light transmitter, said transmitter, when receiving light from said light source through said light conducting fibers spreading said light over an annular surface;

an annular reflector mounted adjacent said ring-shaped piece and having a rough inner surface which is inclined with respect to said axis and which is adapted to reflect the light from said annular surface toward said viewing axis in a diffused way;

a ground glass applied within said annular reflector, between said reflector and said precious stone, whereby substantially all of the light reflected by the annular reflector strikes the ground glass.

4,351,585

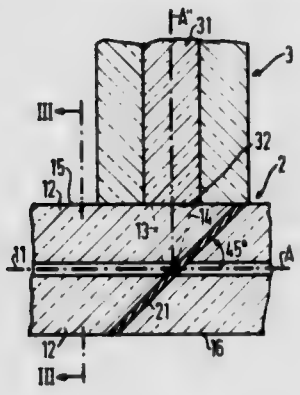
COUPLING ELEMENT FOR AN OPTICAL WAVEGUIDE

Gerhard Winzer, and Franz Auracher, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Nov. 7, 1979, Ser. No. 91,898
Claims priority, application Fed. Rep. of Germany, Nov. 29, 1978, 2851646
The portion of the term of this patent subsequent to Apr. 20, 1999, has been disclaimed.
Int. Cl.[3] G02B *5/172*
U.S. Cl. 350—96.15 **3 Claims**

1. In a coupling element for use in coupling a light signal into

or out of an optical waveguide, said element comprising at least one waveguide being mounted in a support member, the improvement comprising the support member together with the waveguide mounted therein being formed by a single glass core optical fiber having a glass cladding with a diameter of at least 1 mm so that the cladding is very thick relative to the diameter of the core, said single glass core optical fiber with a glass cladding being a monomode glass fiber divided into two



separate parts by a partially reflective layer extending obliquely to the core of the fiber with the core end surfaces being in flush contact therewith, and a multimode waveguide being mounted on a surface of the cladding of the optical fiber with an end surface positioned to receive light reflected from one of the parts of the monomode fiber by the reflective layer, so that the reflected light is coupled into the multimode waveguide.

4,351,586

TERMINATION OF OPTICAL FIBERS

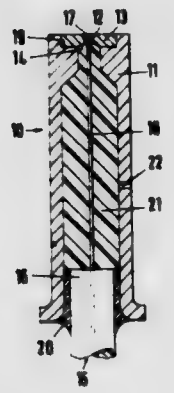
Michael J. Phillips, Stanstead, and Aubrey M. Crick, Epping, both of England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Apr. 23, 1976, Ser. No. 679,759

Claims priority, application United Kingdom, May 6, 1975, 18930/75

Int. Cl.³ G02B *7/26*

U.S. Cl. 350—96.20 **8 Claims**



1. A sheathed optical fiber termination comprising:
a hollow cylindrical ferrule;
an optical fiber mounted lengthwise in said ferrule and having its sheathing terminating within said ferrule leaving a forward unsheathed end portion of said fiber in said ferrule;
a pierced watch bearing jewel fixedly mounted at the forward end of said ferrule having an aperture therein coaxial with the center axis of said ferrule; and
said unsheathed end portion of said fiber being threaded into said aperture.

4,351,587

APPARATUS FOR POSITIONING EYEPIECE OF ENDOSCOPE

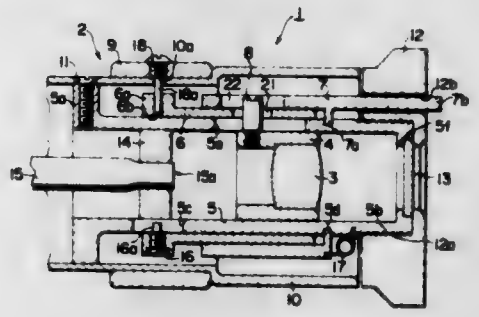
Kazumasa Matsuo, Tama, and Tetsumaru Kubota, Hachioji, both of Japan, assignors to Olympus Optical Company, Ltd., Japan

Filed Feb. 25, 1980, Ser. No. 124,457

Claims priority, application Japan, May 3, 1979, 54/25786; May 3, 1979, 54/25787; May 3, 1979, 54/25788

Int. Cl.³ G02B *7/04*

U.S. Cl. 350—255 **20 Claims**



1. An eyepiece assembly for an endoscope, comprising:
(A) a lens sleeve supporting a lens of said eyepiece assembly and being slidably mounted for translational movement along an optical axis of said lens;
(B) a photographic positioning cam sleeve mounted for rotational movement about said axis, said photographic positioning cam sleeve having a photographic positioning cam slot formed therein;
(C) a dioptry adjusting cam sleeve mounted for translational movement along said axis, said dioptry adjusting cam sleeve having a dioptry adjusting cam slot formed therein; and
(D) a dioptry adjusting pin connected to said lens sleeve and extending through both of said cam slots, said pin cooperating with said cam slots in such a manner that:
(1) said cam slot in said photographic positioning cam sleeve positions said pin, and therefore said lens, at a predetermined axially position, corresponding to a photographing position, when said photographic positioning cam sleeve is in a first angular position; and
(2) said cam slot in said dioptry adjusting cam sleeve positions said pin, and therefore said lens, at an axial position determined by the axial position of said dioptry adjusting cam sleeve when said photographic positioning cam sleeve is in a second angular position, different from said first angular position.

4,351,588

PROCESS AND MEANS FOR CONTROLLING THE RADIANT ENERGIES OF THE ENTIRE SPECTRAL RANGE IN ROOMS

Harry T. Züllig, Montagnola, Switzerland, assignor to Relium AG, Rupperswil, Switzerland

Filed May 21, 1980, Ser. No. 152,081

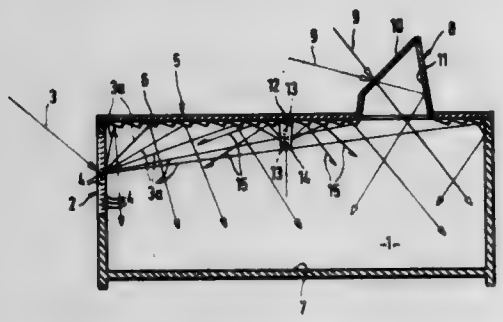
Claims priority, application Switzerland, Apr. 24, 1979, 3815/79; Jun. 21, 1979, 5180/79

Int. Cl.³ G02B *17/00, 27/00*

U.S. Cl. 350—259 **15 Claims**

1. An energy-spreading installation for controlling, in the entire spectral range, radiant energy amounts irradiating a room having a plurality of confining walls comprising a bottom floor, a side wall zone and a ceiling zone, which room the energy amounts are to fill, said radiant energies stemming from at least one radiation source located outside or inside said room, comprising surface means adapted for a predetermined spreading, in said room, of radiant energy in order to attain a state ranging from diffusion to total reflection, in the entire spectral range, said means being mountable on a confining wall of the room; wherein said surface means comprise those of a double-glazed window, said window comprising a plurality of

reflection elements arranged one above the other and located between the two glass panes of the window; and wherein said reflection elements comprise shell-shaped reflectors and support elements for said reflection, said support elements being specular on one side; and said support elements being of transparent plastics material and their side holding the reflectors comprising a specular surface with diffusing structures.



4,351,589

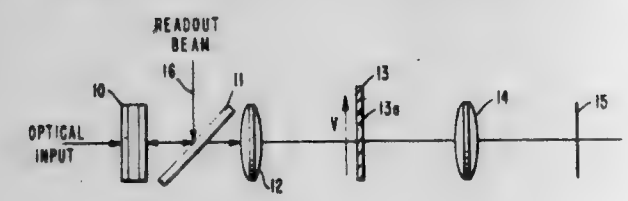
METHOD AND APPARATUS FOR OPTICAL COMPUTING AND LOGIC PROCESSING BY MAPPING OF INPUT OPTICAL INTENSITY INTO POSITION OF AN OPTICAL IMAGE

Pierre H. Chavel; Alexander A. Sawchuk, both of Los Angeles; Bernard H. Soffer, Pacific Palisades; Timothy C. Strand, and Armand R. Tanguay, Jr., both of Los Angeles, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Apr. 8, 1980, Ser. No. 138,672

Int. Cl.³ G02F *1/29, 1/00;* G06F *7/56*

U.S. Cl. 350—342 **14 Claims**



1. An optical logic processor employing input optical intensity to output optical spatial position mapping, comprising:

an electro-optical device for receiving discrete input optical object beams each of a first or a second intensity level and for receiving a separate readout optical beam;

means forming a part of said electro-optical device for producing diffracted optical outputs of portions of said readout optical beam, which optical outputs are diffracted to unique spatial positions, each as a direct function of the intensity of one of said input optical object beams or of combinations of the intensities of said input optical object beams; and

means including a spatial filter having discrete apertures therein, at said unique spatial positions for transmitting selected portions of said diffracted optical outputs for implementing discrete optical logic functions.

4,351,590

MOTION PICTURE CAMERA WITH AUTOMATIC FOCUSING DEVICE

Noritsugu Hirata, Yokohama; Masamichi Toyama, Machida; Hideto Iwama, Kawasaki; Hidekazu Okajima, Naka, and Akimasa Nishimura, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 14, 1980, Ser. No. 196,441

Claims priority, application Japan, Oct. 16, 1979, 54-133409; Dec. 11, 1979, 54-161017

Int. Cl.³ G03B *3/00*

U.S. Cl. 352—140 **6 Claims**

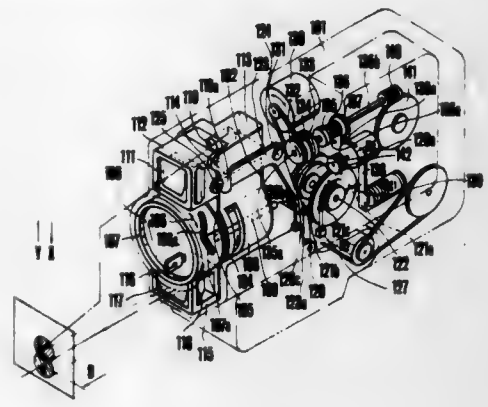
1. A motion picture camera with an automatic focusing device, comprising:

(a) a signal source capable of projecting an energy flux toward an object to be photographed, the direction in which said energy flux is projected being arranged to be continuously variable;

(b) a first rotatable cam member arranged to continuously vary the projecting direction of said signal source in accordance with the rotating phase of said first rotatable cam member;

(c) a second rotatable cam member and a motor for rotatably driving said second cam member, said second rotatable cam member being arranged to directly displace a photograph taking lens in direction of the optical axis of the lens in accordance with the rotating phase of said second cam member;

(d) first rotating phase detecting means being arranged to detect the rotating phase of said first rotatable cam member and to provide a corresponding output;



(e) second rotating phase detecting means being arranged to detect the rotating phase of said second rotatable cam member and to provide a corresponding output;

(f) signal receiving means for receiving the signal projected from said signal source and for providing a corresponding output; and

(g) control circuit means which compares the output of said first rotating phase detecting means with the output of said second rotating phase detecting means when a predetermined output of said signal receiving means is provided, said control circuit means being arranged to control said motor to cause said two outputs of said first and second rotating phase detecting means to satisfy a predetermined relation to each other.

4,351,591

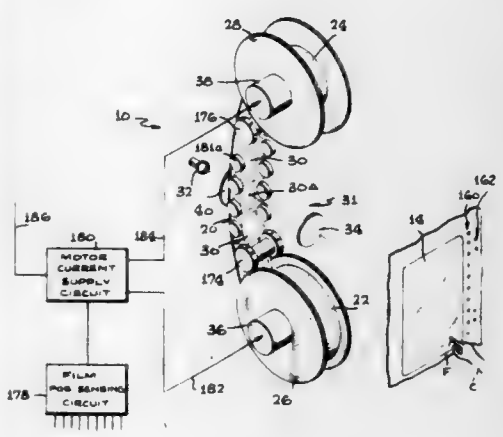
MERCHANDISING TERMINAL

Larry A. Stockett, Washington, D.C., assignor to Logicon, Inc., Torrance, Calif.

Filed Dec. 3, 1979, Ser. No. 99,630

Int. Cl.³ G03B *23/12*

U.S. Cl. 353—25 **5 Claims**



1. A merchandising terminal for aiding in the selection of products appropriate to the conditions of a customer comprising:

a console having a screen;

means for displaying a succession of images on said console screen, with each of a plurality of said images including a plurality of image areas defining different conditions which may relate to a customer, a plurality of said image areas each including a different picture which illustrates the condition;

switch means each associated with a particular one of said image areas and operable by a person viewing the images for selecting an appropriate condition in each of said images which display a plurality of conditions; and

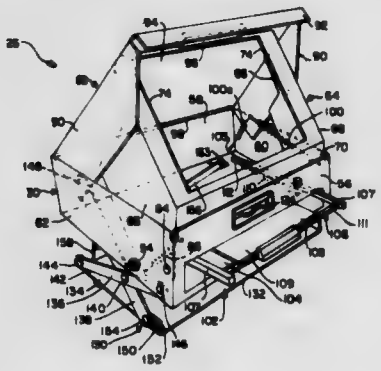
logic means responsive to the selections made by persons on said switch means, for generating outputs indicating products particularly appropriate to the needs of the person, with at least one of said outputs determined by a plurality of said condition selections that are made when different images were displayed.

4,351,592

COLLAPSIBLE MICROFICHE READER ASSEMBLY ESPECIALLY SUITABLE FOR USE IN A DESK DRAWER

William T. Link, Berkeley; Steven R. Runyan, Los Atlos Hills, and Stephen Hobson, Santa Clara, all of Calif., assignors to Datagraphix, Inc., San Diego, Calif.

Filed Mar. 4, 1980, Ser. No. 127,239
Int. Cl.[3] G03B *21/30*
U.S. Cl. 353—72 22 Claims



1. A microfiche reader assembly especially suitable for use in a desk drawer having a horizontal base, opposite upstanding side panels and upstanding front and back panels, said assembly comprising:

(a) a microfiche support arrangement including means for supporting a microfiche, said microfiche supporting means being movable within the confines of a given rectangular operating area;

(b) a projection screen;

(c) an optical arrangement cooperating with a supported microfiche for projecting an enlarged image of a section of said microfiche onto said screen when the supported microfiche is in said operating area;

(d) housing means for supporting said microfiche support arrangement, projection screen and optical arrangement relative to one another;

(e) housing support means adapted for positioning entirely within said drawer on the base of the latter and supporting said housing means for movement between

(i) a first retracted position entirely within the confines of said drawer a fixed distance above the base of the latter such that said microfiche support arrangement, projection screen and optical arrangement are positionable entirely within confines of said drawer, whereby to close the latter, and

(ii) a second extended position above said retracted position such that, when said drawer is open, the operating area of planar movement of said microfiche supporting means extends over an adjacent one of said drawer panels and beyond said adjacent one of said drawer panels and beyond said adjacent panel outside said drawer whereby the supported microfiche is movable outside said drawer while remaining in its operating area; and

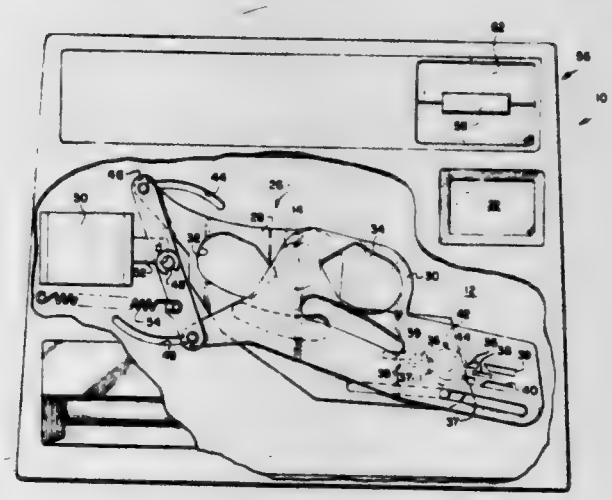
(f) a cover lid pivotally connected with said housing means on one side thereof for movement between a substantially horizontally extending closed position and an upwardly pivoted opened position, said cover lid being interconnected with said housing support means so as to cause the latter to move said housing means from its retracted position to its extended position when said lid is moved from its closed position to its opened position and to cause said housing support means to move said housing means from its extended position to its retracted position when said lid is moved from its opened position to its closed position.

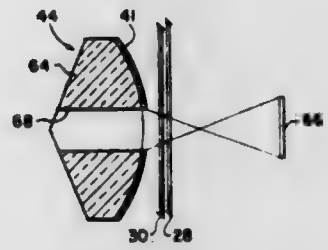
4,351,593

METHOD AND APPARATUS FOR SELECTIVE POSITIONING OF SPECTRAL FILTER DURING EXPOSURE CONTROL

Bruce K. Johnson, Andover, and George D. Whiteside, Lexington, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 31, 1979, Ser. No. 108,219
Int. Cl.[3] G03B *7/087*
U.S. Cl. 354—27 20 Claims





1. In a photographic apparatus having means for directing image forming light rays from a scene along a given path to a photographic film material mounted at a given focal plane, means for evaluating radiation from said scene during an evaluation period, means for unblocking and blocking said path to provide an exposure interval during each part of which essentially the same given range of spectral frequencies are continuously transmitted from the scene to the focal plane, and means responsive to said evaluation means for controlling said unblocking means to define an exposure interval, the improvement wherein said evaluating means includes:

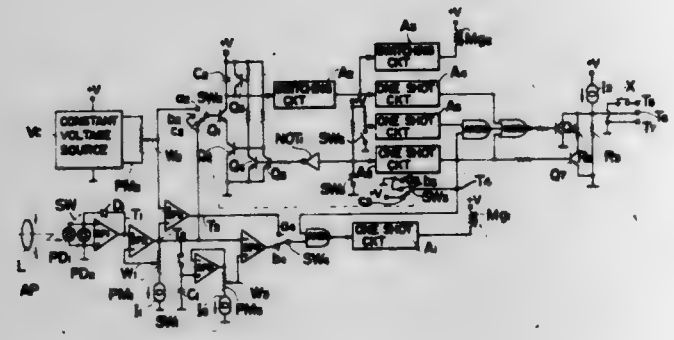
means for substantially precluding evaluation of selected spectral frequencies during one portion of the evaluation period while substantially permitting evaluation of said selected frequencies during at least another portion of said period.

4,351,594

ELECTRONIC EXPOSURE AND FLASH CONTROL SYSTEMS FOR SLIT-SHUTTER TYPE CAMERAS

Tokuji Ishida, Daito, and Masayoshi Sahara, Sennan, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Feb. 5, 1981, Ser. No. 231,670
Claims priority, application Japan, Feb. 6, 1980, 55-14044
Int. Cl.[3] G03B *15/03*
U.S. Cl. 354—139 11 Claims



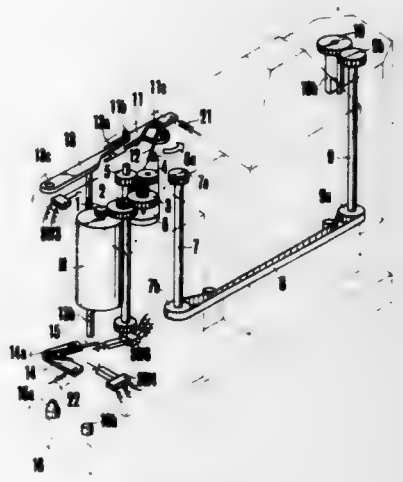
1. A flash photography system for a camera, comprising:
shutter means for exposing the film with a slit sweeping over the film surface;
electrical circuit means for measuring and controlling the exposure time of said shutter means;
means for initiating operation of said shutter means;
a trigger switch for initiating the exposure time measurement of said electric circuit means in synchronization with the initiation of operation of said shutter means;
a signal generation circuit for generating an output signal in response to the operation of said triger switch;
an electronic flash tube for emitting flash light for illuminating a scene to be photographed;
means for supplying electrical power to said electronic flash tube;
a trigger circuit means for triggering the light emission of said electronic flash tube in response to said signal;
a light control circuit means for controlling the electrical power supplied to said electronic flash tube, and including a switching element for connecting and disconnecting said flash tube and said electrical power supplying means to each other, detection means for detecting the light emitted from said flash tube and light control means for controlling said switching element in accordance with the output of said detection means for a time period during which the exposure slit keeps travelling;
said light control means for controlling said switching element includes first level setting means for generating a first level signal, second level setting means for generating a second level signal, comparison means for controlling said switching element in accordance with the comparison of the output of said detection means with said first or second level signal, and first selection means for selectively connecting said first and second level signal with said comparison means, said first level signal providing a higher flash light intensity than said second level signal, and;
said light control means controlling the flash light intensity to be constant with selection of each said first and second level signals.

4,351,595

MOTOR DRIVE CAMERA

Nobuaki Date, Kawasaki; Nobuaki Sakurada, Yokohama, and Masami Shimizu, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 30, 1981, Ser. No. 279,225
Claims priority, application Japan, Jul. 3, 1980, 55-91102; Jul. 3, 1980, 55-91103
Int. Cl.[3] G03B *1/18*
U.S. Cl. 354—173 9 Claims



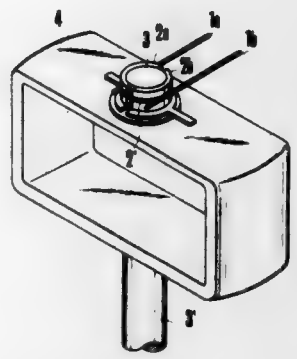
1. A motor drive camera comprising:
a motor drive device;
said motor drive device including a motor for winding up or rewinding the film; and
a power source for said motor drive device;
said camera being adapted to detachably connect an auxiliary power source device to supply additional power to the motor drive device, wherein said motor drive device further includes a timer device whose operation is initiated in relation to the initiation of power supply to the motor drive device and which effects the stop of the power supply to the motor at least after the passage of the time necessary to wind the film by one frame.

4,351,596

ELECTROMAGNETIC DRIVING SOURCE FOR SHUTTER

Takehiko Ohniwa, Chichibu, and Syuichiro Saito, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo and Canon Denshi Kabushiki Kaisha, Saitama, both of, Japan

Filed Dec. 15, 1980, Ser. No. 216,431
Claims priority, application Japan, Dec. 19, 1979, 54-175841[U]
Int. Cl.[3] G03B *9/00*
U.S. Cl. 354—234 1 Claim



1. A current supply device for a moving coil of an electromagnetically driven shutter mechanism for a camera, said moving coil operating in cooperative relationship with a magnetic field generated by the permanent magnet of a stator of said shutter mechanism to be rotatively driven upon being supplied with exciting current from a power source through

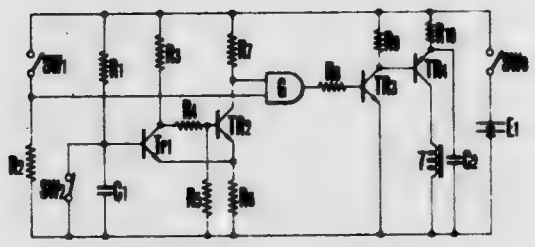
said current supply device in order to drive a shutter blade assembly of said shutter mechanism, said moving coil having a first shaft fixed to one side thereof for transmitting rotation of said coil to said shutter blade assembly, said current supply device comprising: a second shaft fixed to a side of said coil opposite said one side; a pair of slide pieces each affixed to the outer circumference of said second shaft and having insulating material inserted therebetween each connected to the end of said coil; said slide pieces being formed in a semicylindrical configuration and made of highly conductive material having on the outer circumference thereof a groove defining two opposed inclined surfaces; two current supply brushes resiliently contacting each of said slide pieces, respectively, to supply current from a power source to said moving coil in order to rotatively drive said moving coil; said brushes having an arcuate configuration operating to maintain each of said current supply brushes in direct contact with each of said two inclined surfaces of said groove.

4,351,597

CAMERA HAVING ELECTROMAGNETIC RELEASE CONTROL

Nobuaki Date; Hiroshi Aizawa, both of Kawasaki; Masanori Uchidoi, Yokohama, and Yoshiaki Watanabe, Fujisawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 811,303, Jun. 29, 1977, abandoned.
This application Jan. 17, 1979, Ser. No. 4,269
Claims priority, application Japan, Jun. 30, 1976, 51-77189
Int. Cl.³ G03B *17/40*
U.S. Cl. 354—266 7 Claims



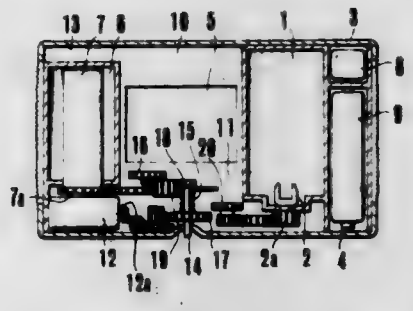
1. An electromagnetic release device for a camera, comprising:
- release operation signal generating means for generating a signal in response to a release operation;
- wind-up completion signal generating means for generating a signal in response to completion of a wind-up operation;
- discriminating means for receiving the signal from the release operation signal generating means and the signal from the wind-up completion signal generating means, for determining which of the two signals is received later, and for generating a release signal in response to the signal which is received later;
- said discriminating means having delay means so as to generate the release signal after a lapse of time set by the delay means when the signal received later is the signal from the wind-up completion signal generating means, and immediately to generate the release signal when the signal received later is the signal from the release operation signal generating means;
- electromagnetic release means for actuating internal mechanisms in the camera, and
- control means for actuating the electromagnetic release means in response to the release.

4,351,598

CAMERA

Toyotosi Suzuki; Hideo Tamamura, both of Tokyo, and Mutsuhide Matsuda, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 10, 1981, Ser. No. 253,063
Claims priority, application Japan, Apr. 14, 1980, 55-50243[U]
Int. Cl.³ G03B *17/02*
U.S. Cl. 354—288 4 Claims



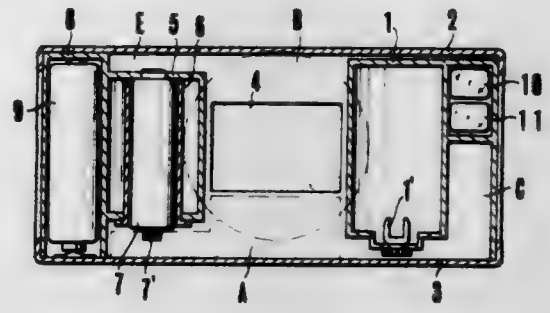
1. A camera adapted to have loaded therein film in a cartridge and having incorporated therein an electric motorized drive mechanism for automatically winding and rewinding said film, comprising:
- an opening window for effecting film exposure formed in a generally central portion of the camera to define at least a pair of shorter sides;
- a cartridge chamber arranged along one of the shorter sides of said opening window;
- a fork for rewinding the film on said cartridge, said fork being provided on the bottom of said cartridge chamber;
- a battery-containing chamber arranged adjacent the side of said cartridge chamber;
- a finder defining a single light path, said finder being arranged beside said cartridge chamber and above said batter-containing chamber; and
- a film winding chamber arranged along the other shorter side of said opening window.

4,351,599

CAMERA

Toyotosi Suzuki, Tokyo; Mutsuhide Matsuda, Yokohama, and Hideo Tamamura, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 13, 1981, Ser. No. 253,409
Claims priority, application Japan, Apr. 17, 1980, 55-51881
Int. Cl.³ G03B *17/02*
U.S. Cl. 354—288 4 Claims



1. A camera capable of utilizing film in a cartridge and having incorporated therein an electric motorized drive mechanism for automatically winding and rewinding said film comprising:
- a camera body having an upper cover portion and a bottom cover portion;
- an opening window for effecting film exposure formed in a generally central portion of said camera body;
- a cartridge camera arranged along one of the shorter sides of said opening window;

a film winding chamber arranged along the other shorter side of said opening window and a drive source contained in a takeup spool in said film winding chamber;

a finder arranged in said camera body, said finder being surrounded by said upper cover portion and said bottom cover portion and being positioned outside of a space defined by said cartridge chamber and said film winding chamber; and

a battery-containing chamber arranged in said camera, said battery-containing chamber being surrounded by said upper cover portion and said bottom cover portion and being positioned outside of a space defined by said cartridge chamber and said film winding chamber, said battery-containing chamber having a dimension in height almost equal to the axial dimension of said cartridge chamber.

4,351,600

FLASH OUTPUT CONTROL FAILURE WARNING DEVICE OF AN AUTOMATIC FLASH OUTPUT CONTROL SPEED LIGHT

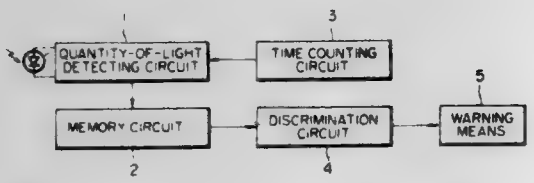
Hiroshi Hasegawa, and Osamu Maida, both of Tokyo, Japan, assignors to Nippon Kogaku K. K., Japan

Continuation of Ser. No. 226,013, Jan. 19, 1981, abandoned. This application Sep. 14, 1981, Ser. No. 302,072

Claims priority, application Japan, Jan. 13, 1980, 55/10702

Int. Cl.³ G03B *17/18*

U.S. Cl. 354—60 L **16 Claims**



1. A flash output control photography failure warning device in a camera characterized by:

a quantity-of-light detecting circuit adapted to start operating in synchronism with shutter release and to change from a first condition to a second condition when the integrated amount of the light from an object reaches a first predetermined value;

a time counting circuit for counting a predetermined time (T_2) greater than the longest light emission time of a flashlight discharge tube in synchronism with shutter release;

a memory circuit adapted to start memorizing the condition of said quantity-of-light detecting circuit after the longest light emission time of the flashlight discharge tube and before said first predetermined time (T_2) and to memorize it till a second predetermined time (T_3);

a discrimination circuit for discriminating that the condition of the quantity-of-light detecting circuit memorized by said memory circuit at a point of time whereat said time counting circuit has couned said first predetermined time (T_2) is the first condition and generating a failure signal; and

warning means controlled by the failure signal of said discrimination circuit.

4,351,601

SHEET STRIPPING HOLD DOWN ASSEMBLY

Raymond G. Cormier, Nashua, and John D. Gibbs, Amherst, both of N.H., assignors to Nashua Corporation, Nashua, N.H.

Filed Jun. 24, 1980, Ser. No. 162,500

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—3 SH **5 Claims**

1. In a copying apparatus having:

a moving reusable photosensitive surface,

means for scanning an original to produce a latent electrostatic image on said surface,

means for developing said latent image, and

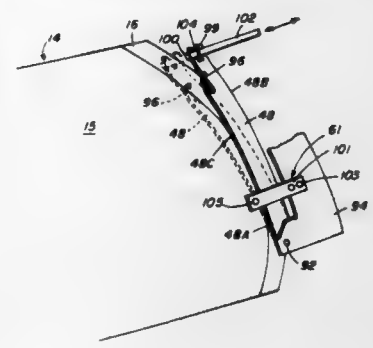
a transfer station for transferring said developed image onto a transfer material, said transfer station having:

means for conveying a sheet of transfer material into contact with said photosensitive surface at said transfer station for transferring said developed image from said surface to said sheet, portions of said sheet successively contacting said surface,

means for stripping said sheet from said surface, and

means for transporting said stripped sheet from said transfer station,

said sheet stripping means including a guide member having a sheet pick-off blade which, during sheet stripping, overlays a marginal portion of said surface at said transfer station for engaging at least a corner of a leading edge of



said sheet conveyed to said transfer station and guiding said leading edge to said transport means,

a sheet hold down assembly comprising

a support member extending substantially normally to the direction of movement of said photosensitive surface, and

a sheet hold-down member, supported by said support member, comprising a longitudinal member extending from said support member normally to said photosensitive surface at a position adjacent the edge of said blade, said sheet hold-down member terminating adjacent said photosensitive surface in a hold-down surface for holding down said transfer sheet conveyed to said drum surface, whereby sheet portions adjacent said blade edge are urged in contact with said photosensitive surface.

4,351,602

ELECTROSTATIC PRINTER

Yoshihiro Yamada, Chiba, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed Jul. 23, 1980, Ser. No. 171,478

Claims priority, application Japan, Jul. 27, 1979, 54-103693[U]

The portion of the term of this patent subsequent to Jul. 1, 1998, has been disclaimed.

Int. Cl.³ G03G *15/00, 21/00;* G03B *27/00*

U.S. Cl. 355—3 R **3 Claims**

1. An electrostatic printer comprising:

a movable photosensitive member;

exposure means including a cathode ray tube for transmitting an optical image to said photosensitive member to form an electrostatic latent image on said photosensitive member and an optical plate connected to said cathode ray tube between said cathode ray tube and said photosensitive member, said optical plate being positioned a predetermined distance from said photosensitive member to form a gap;

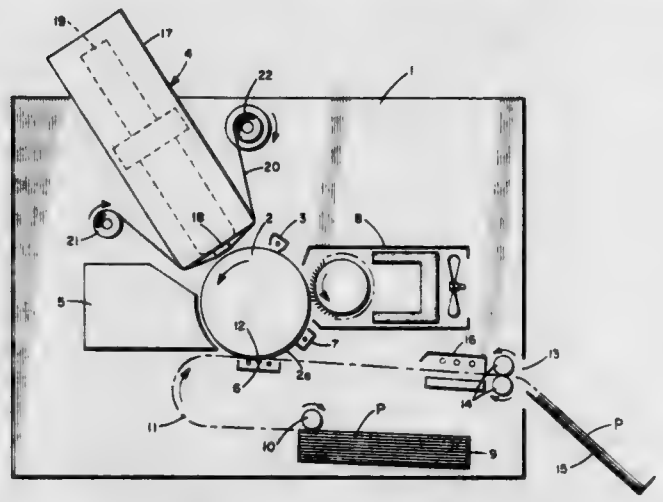
developing means for developing said electrostatic image by applying toner to said photosensitive member;

transfer means for transferring the developed electrostatic image to paper;

a transparent film provided between said photosensitive

member and said optical plate such that it covers and contacts said optical plate; and

moving means for moving said transparent film to cover said



optical plate with a clean toner free film portion, said moving means initially being actuated when power is supplied to said electrostatic printer before the formation of an electrostatic image on said photosensitive member.

4,351,603

ELECTRONIC COPYING APPARATUS

Kazuaki Tagawa, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

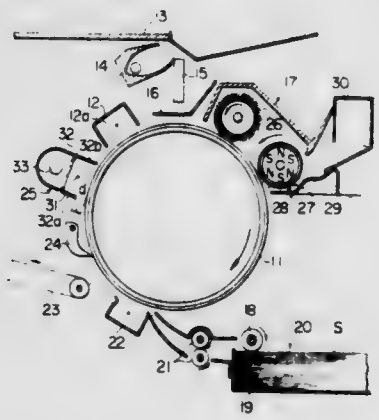
PCT No. PCT/JP79/00221, § 371 Date Apr. 23, 1980, § 102(e) Date Apr. 23, 1980, PCT Pub. No. WO80/00502, PCT Pub. Date Mar. 20, 1980

PCT Filed Aug. 21, 1979, Ser. No. 204,364

Claims priority, application Japan, Aug. 28, 1978, 53-104728; Aug. 29, 1978, 53-105373

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—3 CH **5 Claims**



1. In an apparatus comprising a record medium movable relative to a plurality of processing stations for forming images on a transfer medium, said stations including means for forming an electrostatic latent image on said record medium, a developing unit for developing the electrostatic latent image with a toner powder, a transfer unit including a corona discharger for transferring the developed image onto a transfer member, means including a neutralizer for removing any charge remaining on the surface of the record medium after transfer of the developed image from the record medium, and a cleaning unit for removing any non-transferred toner which may remain on the record medium, said neutralizer comprising a corona discharge wire and a grounded conductive shield plate having two side plates spaced in the direction of movement of said record medium relative to said shield plate, the improvement including means for limiting the electric field produced between the first of said side plates to encounter said record medium and said record medium to a value no greater than 2 kV/cm, said limiting means including spacing said first side plate to encounter said record medium a predetermined distance from said record medium.

4,351,604

MULTI-COLOR ELECTROSTATIC COPYING APPARATUS

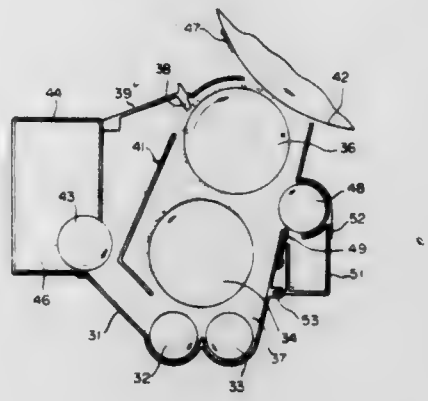
Shuichi Karasawa; Fuyuhiko Matsumoto; Kunihiko Ikeda, and Shuichi Tsushima, all of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Apr. 22, 1980, Ser. No. 142,600

Claims priority, application Japan, Apr. 26, 1979, 54-51916; Jun. 12, 1979, 54-73742; Jun. 21, 1979, 54-78577

Int. Cl.³ G03G *15/01*

U.S. Cl. 355—4 **25 Claims**



1. A multi-color electrostatic copying apparatus including a moving dielectric member, means for forming a bipolar electrostatic image on the dielectric member, first developing means for applying a first toner charged to a first polarity to the dielectric member and second developing means for applying a second toner charged to a second polarity which is opposite to the first polarity to the dielectric member, characterized by comprising:

toner separation means disposed in the second developing means for separating first toner which was removed from the dielectric member while the second developing means applied the second toner to the dielectric member and mixed with the second toner in the second developing means from the second toner, the separation means comprising a separation member charged to the second polarity;

the separation member being positioned such that the first and second toner contact the separation member after the second developing means applies the second toner to the photoconductive member.

4,351,605

CONTROLLED VELOCITY TRANSPORT PRECESSION SYSTEM

Vance J. Carpenter, and Eugene L. Yang, both of Fairport, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed May 11, 1981, Ser. No. 262,353

Int. Cl.³ G03G *15/28*

U.S. Cl. 355—8 **3 Claims**

1. An optical system for scanning a document moving through an exposure zone in an object plane at some absolute speed V_{CVT} and projecting light images of said document along an optical path onto a flat portion of a photoreceptor moving through an image plane at a process velocity V_B, said system including

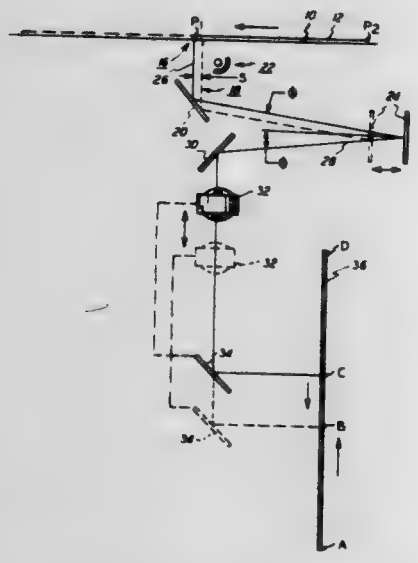
an illumination source for providing a band of illumination at said exposure zone,

a first, stationary mirror reflector positioned adjacent said exposure zone and in said optical path to direct reflections from said illuminated portion of the document onto a second mirror at an incident angle ϕ measured with respect to the mirror normal which is parallel to said object

plane, said second mirror adapted for movement towards said first mirror,

a projection means positioned along the optical path and adapted for translation along said optical axis to project light images reflected from said second mirror onto said photoreceptor,

said optical system having a first mode of operation wherein said second mirror and said projection means remain stationary and wherein V_{CVT}=document scan velocity $Vs=V_B$ and a second mode of operation wherein said second mirror moves towards said first mirror at a velocity Vm2 and said projection means moves along the optical path at a velocity V_L so as to project said light images onto said photoreceptor in a direction opposite to said photoreceptor motion, said movements governed by the following relationships:



$$V_L=(-2Vm2)\cos\phi, V_B=Vs-V_L$$

and

$$V_{CVT}=V_s+2Vm2\sin\phi.$$

4,351,606

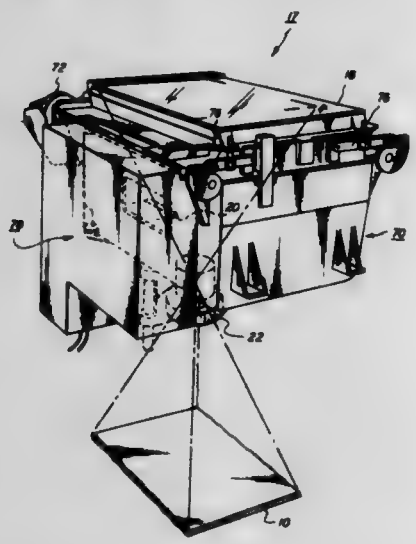
VARIABLE MAGNIFICATION OPTICAL SYSTEM FOR USE IN ELECTROPHOTOGRAPHIC PRINTING

Eugene B. Franko, Marion, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Feb. 23, 1981, Ser. No. 237,031

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—14 R **5 Claims**



1. An electrophotographic printing machine of the type having a variable magnification optical system for adjusting the size of indicia reproduced on a copy sheet from a document, said printing machine including a photoconductive member having at least a portion of the surface thereof charged, said photoconductive member being in communication with the optical system so that exposure of the charged portion of said photoconductive member records an electrostatic latent image thereon, said optical system including a support for holding the document thereon, a light source for illuminating the document on said support, and a lens positioned to receive the light rays transmitted from the document and focusing the light image thereon onto the charged portion of said photoconductive member, the improvement comprising:

means for comparing the size of the surface area of the copy sheet with the surface area of the document and generating a signal indicative of the difference therebetween, said means for comparing including means for detecting the size of the document and generating a document signal corresponding thereto, means for sensing the size of the copy sheet and generating a copy sheet signal corresponding thereto, and means for measuring the difference between the copy sheet signal and the document signal to be generated; and

means, responsive to the signal from said comparing means, for controlling the optical system to adjust the magnification thereof so as to reproduce the indicia of a document on the copy sheet, said controlling means including a motor coupled to said support and said lens so as to move said support and said lens relative to said photoconductive member to adjust the magnification of the indicia being reproduced.

4,351,607

ANALYZER APPARATUS FOR MEASURING AND ADJUSTMENT OF COLOR FILTERING EFFECTS AND/OR EXPOSURE ON MAKING PHOTOGRAPHIC PRINTS

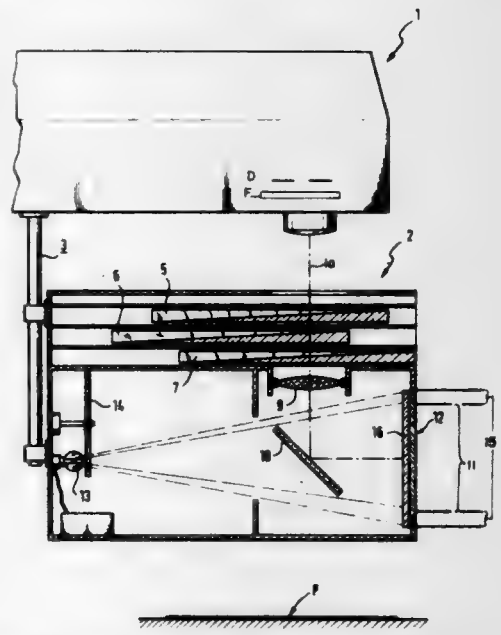
Stefan Reich, Ulrichstrasse 68, D-8026 Irschenhausen, Fed. Rep. of Germany

Filed Jun. 3, 1980, Ser. No. 156,103

Claims priority, application Fed. Rep. of Germany, Apr. 25, 1980, 3016038

Int. Cl.³ G03B *27/72*

U.S. Cl. 355—35 **13 Claims**



1. In a photographic reproduction process,

a method of evaluating spectral composition and brightness characteristics of a color transparency

comprising, in accordance with the invention, the steps of:

projecting at least a major portion of the color transparency on a first portion (11) of an image plane (12, 31);

simultaneously projecting white reference light on a second

portion (15) of the viewing screen, positioned closely adjacent said first portion;

observing the projected image of the at least major portion of the transparency;

comparing said projected image with the reference light at the adjacent second portion of the viewing screen;

and adjusting the light intensity of the projected image until the projected image on the first portion of the viewing screen and the projected reference light adjacent second portion of the viewing screen have a predetermined relationship.

4,351,608

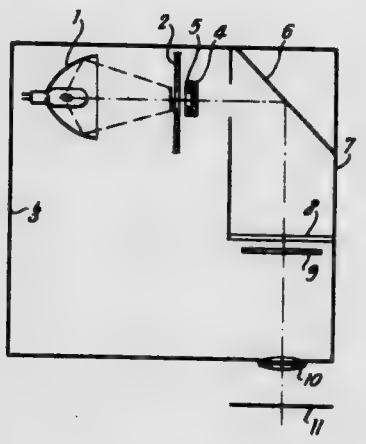
FILTER HEAD

Jack H. Coote, Rochford, and Arthur P. Jenkins, London, both of England, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed Nov. 13, 1979, Ser. No. 49,681

Int. Cl.³ G03B *27/72, 27/76*

U.S. Cl. 355—35 **14 Claims**



1. A lamphouse for use with an enlarger head in the production of prints on variable contrast material or on conventional photographic material in combination with a monochrome negative which comprises a light source from which light is directed to a fixed apertured plate, there being present a composite filter one portion of which passes light in one of two mutually exclusive wavebands and the other portion of which passes light in the other of the two mutually exclusive wavebands, the said composite filter being movably mounted in relation to the said apertured plate so that in one position the light passing the filter is predominantly in one of the said wavebands, and in a second position the light passing the filter is predominantly in the other of the said wavebands, whilst in intermediate positions a varying mixture of light in the two said wavebands is passed, there being present light attenuating means to cut down the amount of light passed in one of the said two mutually exclusive wavebands to which the combination of light source and photosensitive material to be exposed is more sensitive so that prints of equal visual density are obtained by exposures of an equal duration whatever the position of the said composite filter in relation to the apertured plate.

4,351,609

PHOTOGRAPHING APPARATUS

Shunzo Inoue; Takeshi Nagasawa, both of Yokohama; Hitoshi Yanagawa, Tokyo; Toshio Iwaya, Machida, and Michio Kasuya, Fuchu, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 17, 1981, Ser. No. 234,602

Claims priority, application Japan, Feb. 22, 1980, 55/21346; Mar. 17, 1980, 55/33587; Dec. 19, 1980, 55/180238; Jan. 9, 1981, 56/1850; Jan. 9, 1981, 56/1851; Jan. 12, 1981, 56/2877

Int. Cl.³ G03B *27/48, 27/52*

U.S. Cl. 355—50 **21 Claims**

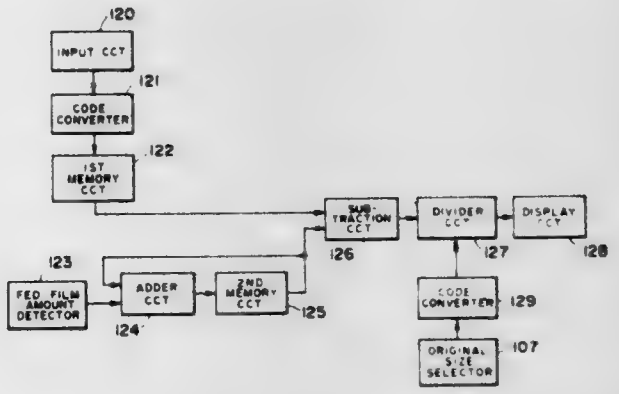
1. A photographing apparatus for photographing originals on a long footage of film, comprising:

a film supply portion for containing unphotographed film therein;

feed means for feeding the film from said film supply portion to a photographing station;

photographing means for photographing originals on the film fed to said photographing station;

measuring means for measuring the length of the unphotographed film contained in said film supply portion;



means for calculating the number of originals photographable on the unphotographed film from the length of the unphotographed film measured by said measuring means and the length of film necessary to photograph originals on the film; and

display means for displaying the number of originals calculated by said calculating means.

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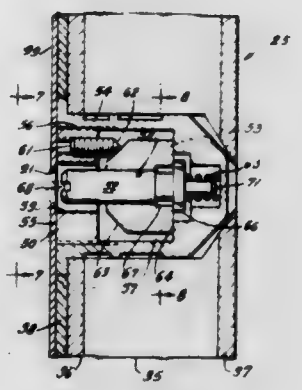
PHOTOCOMPOSER

John P. Skrypek, Mahwah; Robert Williams, Randolph, and Enn Sirvet, Washington Township, Bergen County, all of N.J., assignors to Sun Chemical Corporation, New York, N.Y.

Filed May 27, 1980, Ser. No. 152,990

Int. Cl.³ G03B *27/04*

U.S. Cl. 355—86 **9 Claims**



1. Photocomposing apparatus including a backboard for receiving a sensitized plate; a light means and film carrier unit disposed in front of said backboard and mounted for relative movement with respect to said backboard with such movement being generally parallel to the front of said backboard to positions wherein said unit confronts selected portions of said backboard; adjustable registration pin means on said backboard for locating a sensitized plate thereon in a predetermined position thereon; said registration means including a plurality of pin assemblies each of which includes a registration pin and mounting means to which said pin is mounted for movement between an extended working position projecting forward of said backboard and a retracted position wherein the forward free end of said pin is disposed behind the front surface of backboard, said mounting means including an insert, a retainer and a support; said insert being fixedly secured to said backboard and disposed behind the front surface thereof, said insert having a chamber extending to the front thereof; said support

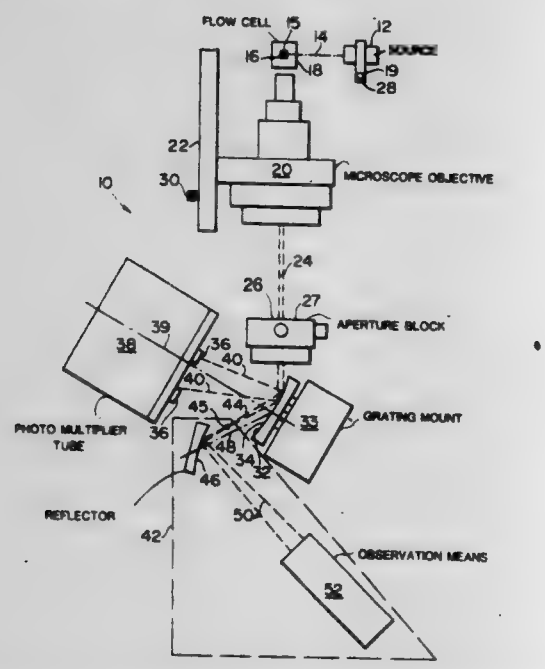
being mounted to said insert and being disposed within said chamber at the front thereof; said retainer being disposed within said chamber to the rear of said support and being transversely adjustable with respect to said insert; said retainer having a front to rear guide aperture closely fitted to said pin and through which the latter extends; said support having a clearance aperture loosely fitted to said pin and through which the latter extends when in said working position; clamping means mounted on said support and operable from the front of said backboard; said clamping means being operatively engageable with said retainer to maintain the latter in its adjusted transverse position relative to said insert; with said retainer in its said adjusted transverse position relative to said insert said pin being in optimum position to be received by a register aperture in a sensitized plate.

4,351,611

MONITORING OF A DETECTION ZONE UTILIZING ZERO ORDER RADIATION FROM A CONCAVE REFLECTING GRATING

Robert C. Leif, Coral Gables, Fla., assignor to Coulter Electronics, Inc., Hialeah, Fla.

Filed Sep. 22, 1980, Ser. No. 189,505
Int. Cl.³ G01J *3/18*
U.S. Cl. 356—328 **3 Claims**



1. An optical flow system, wherein means are provided for measuring radiation signals generated when particles, which are suspended in a fluid flow, are irradiated in a detection zone, said flow system having a concave reflecting grating disposed to intercept the radiation signals and disperse the radiation signals into a spectrum, said concave reflecting grating substantially having a line focus for "zero order" reflected radiation, the improvement of the flow system comprising:

monitoring means, disposed to receive the reflected radiation from the grating, for observing the detection zone;

said monitoring means including a reflector, the line focus of the grating being disposed between the grating and said reflector, said reflector having a concave surface oriented to receive the reflected radiation from the grating;

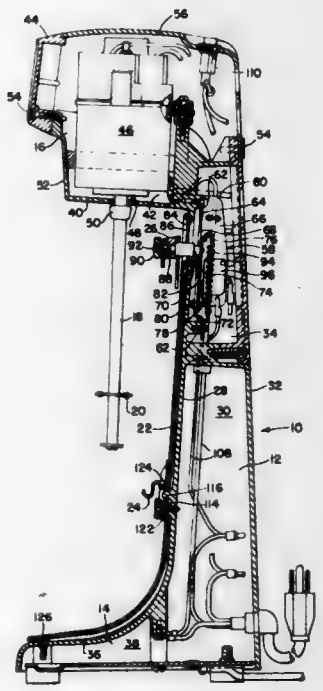
said monitoring means includes observation means, disposed to receive the reflected radiation from said reflector, for observing an image of the detection zone.

4,351,612

DRINK MIXER

Bruno M. Valbona, Farmington, and William C. Pound, Burlington, both of Conn., assignors to Dynamics Corporation of America, Greenwich, Conn.

Division of Ser. No. 234,898, Feb. 17, 1981. This application Jun. 30, 1981, Ser. No. 279,007
Int. Cl.³ B01F *7/26*
U.S. Cl. 366—206 **12 Claims**



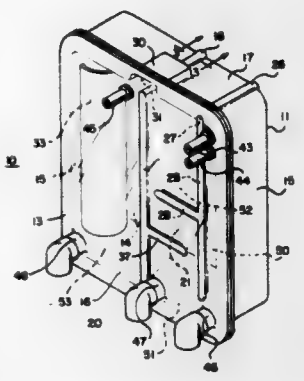
9. A drink mixer comprising an upright standard having a frontwall and spaced sidewalls, a base provided at the lowermost end of said standard, a motor housing containing a motor mounted upon said standard, a stirring shaft depending from said motor housing in spaced relationship to the standard frontwall and terminating above said base, and a splatter shield of unitary construction covering said standard frontwall and curving above said base to cover said base, said splatter shield being removably mounted upon said mixer and extending between said standard frontwall and base and said stirring shaft.

4,351,613

TANKS FOR MIXING APPARATUS

Henry F. Hope, and Stephen F. Hope, both of 2421 Wyandotte Rd., Willow Grove, Pa. 19090

Continuation-in-part of Ser. No. 119,759, Feb. 18, 1980, Pat. No. 4,332,483. This application Jul. 7, 1980, Ser. No. 166,471
Int. Cl.³ B01F *5/06*
U.S. Cl. 366—337 **23 Claims**



1. A tank for mixing apparatus for at least one chemical material to be incorporated in a carrier liquid comprising

a molded unitary body portion having a first vertical side wall portion, integral second opposite spaced vertical side wall portions extending from said first vertical side wall portion,

integral third horizontal opposite spaced side wall portions extending from said first side wall portion and joined at their ends to the ends of said second vertical side wall portions,
said body portion having a peripheral flange extending from said second and third side wall portions and parallel to said first side wall portion,
a vertical cover closing said body portion and in engagement with said peripheral flange,
said integral third horizontal side wall portions including a top wall,
partition members in engagement with said first vertical side wall portion and said vertical cover,
said partition members separating the interior of the body portion into a plurality of communicating spaces at least one of which is for component introduction, at least one of which is for mixing, and another of which is for storage of mixed material,
means for introducing into said space for component introduction a carrier liquid and at least one chemical to be added,
said top wall portion having a struck out portion providing a space into which one of said partition members extends for preventing return of fluid.

4,351,614

METHOD OF AND APPARATUS FOR CONTINUALLY MONITORING THE HEATING VALUE OF A FUEL GAS USING A COMBUSTIBILITY METER

John J. Garnier, Hales Corners, Wis., assignor to Eaton Corporation, Cleveland, Ohio

Filed Mar. 19, 1980, Ser. No. 131,568
Int. Cl.[3] G01N *25/54*
U.S. Cl. 374—37 13 Claims

1. A method of continually monitoring the heating value of a fuel gas, comprising the steps of:
mixing a fuel gas of known heating value with a combustion-supporting gas, in a controlled ratio, to make a homogeneous mixture;
measuring the percent of lower explosive limit of said fuel gas;
setting said ratio of fuel gas to combustion-supporting gas such that the ratio is 100% of the LEL of the fuel gas;
substituting in said mixture a fuel gas of unknown heating value for said fuel gas of known heating value, without changing said ratio of fuel gas to combustion-supporting gas;
and converting the resulting percent of LEL of said fuel gas of unknown heating value into the heating value of said fuel gas.

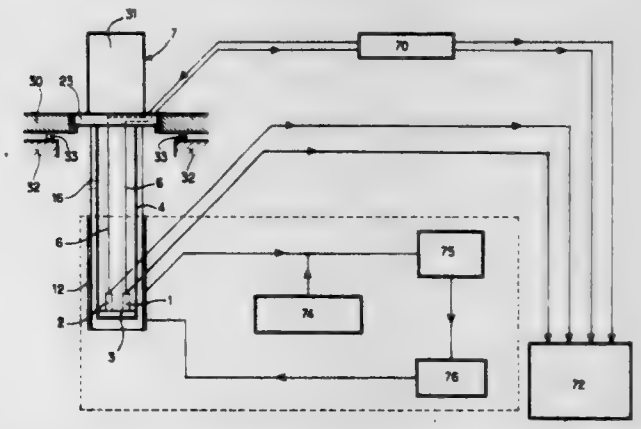
7. An apparatus for continually monitoring the heating value of a fuel gas, comprising:
a mixing system;
means for selectively feeding either fuel gas of known heating value or fuel gas of unknown heating value to said mixing system comprising:
a source of fuel gas of known heating value;
one or more sources of fuel gases of unknown heating values;
a first pump connected between said sources of fuel gases and said mixing system to force said fuel gases into said mixing system at a controlled rate;
and selectively controllable means for admitting first said known heating value fuel gas and thereafter one of said unknown heating value fuel gases to said first pump;
and means to control the ratio of the selected fuel gas and a combustion-supporting gas fed to said mixing system comprising:
a source of combustion-supporting gas;
a second pump to force said combustion-supporting gas into said mixing system at a controlled rate with respect to the controlled rate at which the selected fuel gas is fed thereto so as to provide a predetermined ratio thereof and such that said combustion-supporting gas is mixed with said selected fuel gas to provide a homogeneous mixture;
and a combustibility meter having a sensor located in the stream of said mixture leaving said mixing system such that the percent LEL of said mixtures having the known heating value fuel gas and the unknown heating value fuel gas are measured in sequence to determine the heating value of said unknown heating value fuel gas.

4,351,615

DIFFERENTIAL DILATOMETER

Carlos A. Vettori de Almeida Rodrigues, 30, rue Gassendi, 75014 Paris, France

Filed Oct. 29, 1980, Ser. No. 201,754
Claims priority, application France, Nov. 5, 1979, 79 27215
Int. Cl.[3] G01N *25/15*
U.S. Cl. 374—56 10 Claims



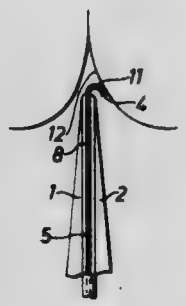
1. A differential dilatometer for simultaneously measuring, particularly at low temperatures, the relative expansion of two different solid test samples, one of which may be a reference sample whose thermal expansion is accurately known or the absolute expansion of the samples, the test sample and the reference being mounted in a support tube, the variation in length of the test sample and the reference being transferred by two push rods which extend inside the support tube, into a measuring head where one push rod supports the coil of a linear variation differential transformer and where the other push rod supports the core of the linear variable differential transformer, the output signal of said transformer being fed to an amplifier whose output is proportional to the differential expansion between the two test samples, wherein the support tube (4) and the two push rods (6) are vertical, the support tube being situated below the measuring head (7); the support tube (4) is at least partially mounted inside a cryostat (8) which allows the circulation of a cryogenic fluid, during measurements, around the test sample (1) and the reference (2), the region of the support tube (4) where the test sample (1) and the reference (2) are mounted being, furthermore, surrounded by an electric heating sleeve (12) embodied inside the cryostat (8), the amount of heat supplied by the heating sleeve (12) being controlled and regulated by means of a temperature regulation system, said heating sleeve avoiding a direct contact between the cryogenic fluid and the test samples, the electric heating sleeve (12) being secured at its upper end to the base of a

protection tube (16) which is of a poor heat conducting material and which surrounds the support tube (4), the cryostat embodying the base of the protection tube (16), wherein both push rods (6) and the support tube (4) are made of vitreous silica, the electric heating sleeve (12) is of a good heat conducting metal, the protection tube (16) is made of stainless steel and is secured to the upper end of the heating sleeve (12), the protection tube (16) and the electric heating sleeve (12) are suspended and removably secured to the lower part of a plate (23) made of a poor heat conducting material, the dilatometer head (7) being secured to and above the plate, said plate being secured below a heavy platform (30) which rests on a support frame (32) supported by anti-vibration means (33), and the support tube (4) being supported by the dilatometer head (7).

4,351,616
THERMOMETER GUARD

Sven E. Färnström, Trangsviken, and Hans Andersson, Nälden, both of Sweden, assignors to Minitube NYA AB, Trangsviken, Sweden

Filed Jun. 4, 1980, Ser. No. 156,341
Claims priority, application Sweden, Jul. 2, 1979, 7905777
Int. Cl.³ G01K *1/08*
U.S. Cl. 374—209 2 Claims



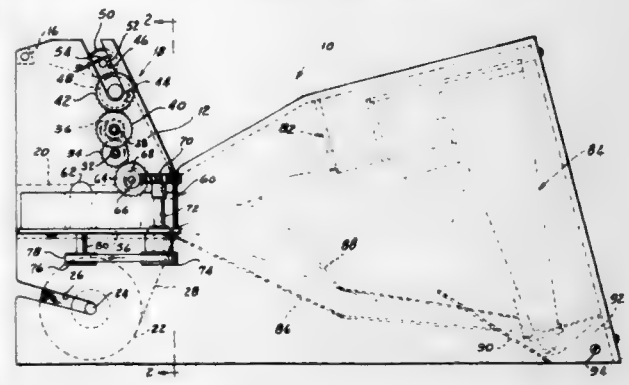
1. A guard device for a clinical thermometer having a tip, which comprises two like films, each film having two lateral edge portions, the films being united along the edge portions to form a sheath having a top edge and being capable of accommodating the thermometer and the films being further united by a joint at an end of the sheath spaced from the top edge, the joint having an arcuate shape conforming to the shape of the tip of the thermometer and the joint constituting a stop spaced from the top edge for the tip of the thermometer accommodated in the sheath, the united films constituting a bendable flap between the joint and the top edge, and the arcuate joint being shaped to permit communication between the interior of the sheath and of the flap, the flap exposing only smooth film surfaces to a body opening of a patient when the flap is bent upon movement of the thermometer accommodated in the sheath into the body opening.

4,351,617
MICROBALLISTIC PRINTER

Benzion Landa, Edmonton, Canada, assignor to Savin Corporation, Valhalla, N.Y.

Continuation of Ser. No. 39,372, May 5, 1979, abandoned. This application Mar. 3, 1981, Ser. No. 239,891
Int. Cl.³ B41J *3/02*
U.S. Cl. 400—118 18 Claims

4. Apparatus for applying printing material to a medium including in combination a platen for supporting said medium, means for successively propelling a plurality of solid projectiles one by one in free flight toward said medium from a location spaced from said medium, and means for orienting said propelling means to control the respective flight paths of

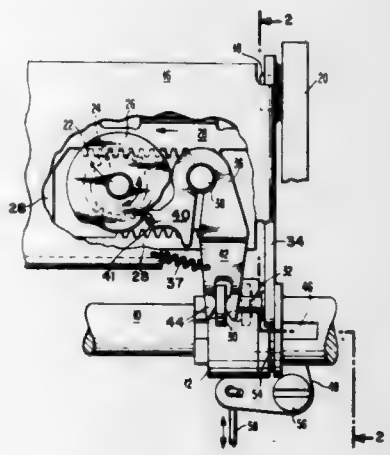


said projectiles to impact the medium in a desired intelligible information pattern.

4,351,618
SELECTION CONTROLLED PRINT IMPRESSION CONTROL FOR SINGLE ELEMENT IMPACT PRINTERS

Mike Prewarski, El Paso, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 26, 1979, Ser. No. 107,469
Int. Cl.³ B41J *1/60*
U.S. Cl. 400—166 23 Claims



1. A print velocity control apparatus for a typewriter having a single print element, comprising:

means for impacting said single print element against a record sheet with one of a plurality of velocities, and

cam means rotationally coupled to and rotatable with said single print element for selecting a velocity of impact of said single print element in accordance with character positions on said single print element.

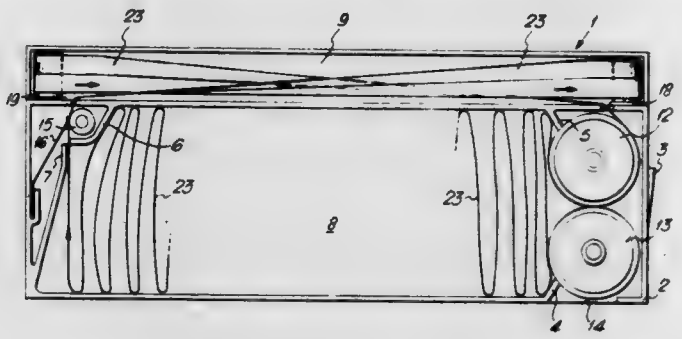
4,351,619
INK RIBBON CASSETTE

Douglas Duke, Brighton, England; Reinhold Drodofsky, and Folker Galaske, both of Pforzheim, Fed. Rep. of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Nov. 28, 1980, Ser. No. 211,228
Claims priority, application United Kingdom, Nov. 29, 1979, 7941277
Int. Cl.³ B41J *33/10, 32/02*
U.S. Cl. 400—196.1 5 Claims

1. An inked ribbon cassette comprising: an endless inked ribbon; a housing defining a first partial enclosure to hold said inked ribbon in a serpentine configuration with the ribbon surface having an elongated major dimension and a minor dimension perpendicular to said major dimension, said housing defining a second partial enclosure to hold said ribbon in place for use, said first and second partial enclosures being separated

by a common wall, said housing having first and second parallel slots through, but at opposite ends of said common wall to permit said ribbon to exit from said first partial enclosure to said second partial enclosure and to enter said second partial enclosure from said first partial enclosure, said common wall being parallel to said ribbon surface minor dimension; first and second pulleys adjacent to said first and second slots, respectively, said first and second pulleys having respective parallel first and second axes perpendicular to the said common wall said ribbon exiting said first slot, and having a first portion



twisting 90 degrees and extending around said second and first pulleys in succession in the same circumferential direction about each pulley and having a second portion twisting 90 degrees and passing through said second slot, said first and second twisting portions of said ribbon overlying each other and being spaced apart a distance very small in comparison to the distance between said axes; and means mounted in said housing to pull said ribbon through said second slot into said first parallel enclosure, said ribbon twisting portions forming said ribbon into a Mobius loop.

4,351,620

DEVICE FOR FASTENING BUILT-IN WIRING DEVICES

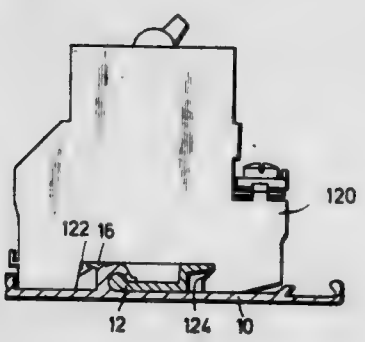
Helmut Stritt, Schwetzingen; Alfred Schmidt, Beerfelden-Gammelsbach, and Erwin Leible, Eberbach, all of Fed. Rep. of Germany, assignors to Brown, Boveri & Cie Aktiengesellschaft, Mannheim-Käfertal, Fed. Rep. of Germany

Filed Oct. 24, 1979, Ser. No. 87,890

Claims priority, application Fed. Rep. of Germany, Oct. 25, 1978, 2846443

Int. Cl.³ F16B *1/00*

U.S. Cl. 403—13 14 Claims



1. Device for fastening built-in wiring equipment, the bottom of the wiring equipment having a fixed projection for engaging behind one L-shaped extension of a support channel having two L-shaped extensions facing away from each other, and a movable projection for snapping behind another L-shaped extension thereof, comprising a support plate having means integral therewith for mounting a bus bar to hold wiring equipment and a first L-shaped extension engageable with a projection of the wiring equipment, and a support strip attachable to said support plate and having a second L-shaped extension integral therewith, said first and second extensions forming together a support channel having two L-shaped extensions facing away from each other.

4,351,621

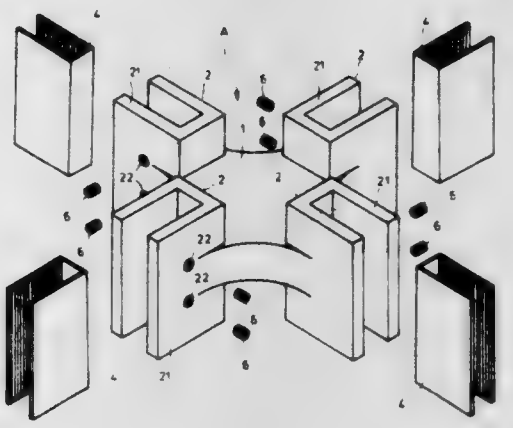
CONNECTOR FOR COMBINATION FURNITURE

Jin S. Liou, No. 315-319, Sec. 5, Yen-Pin N. Rd., Taipei, Taiwan

Filed Dec. 19, 1979, Ser. No. 105,301

Int. Cl.³ F16D *1/00, 3/00*

U.S. Cl. 403—217 1 Claim



1. A connector for connecting together sheet members having separated, flat parallel extending surfaces to form pieces of furniture comprising:

a connector body having a central axis and defining four U-shaped open ended slots extending outward from said axis with the open end of each said slot facing outward for receiving a sheet member;

a U-shaped plastic liner in each said slot between the interior walls of that slot and said sheet; and

a set screw in a threaded hole through a wall of each slot for contacting said liner for locking a received member in place in a slot.

4,351,622

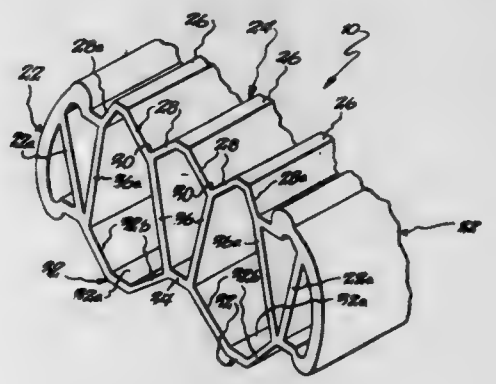
EXPANSION SEAL

James J. Kerschner, Tonawanda, N.Y., assignor to Acme Highway Products Corporation, Amherst, N.Y.

Filed Dec. 22, 1980, Ser. No. 218,701

Int. Cl.³ E01C *11/10*

U.S. Cl. 404—64 7 Claims



1. A seal adapted to be connected between a pair of spaced-apart structural members defining a gap therebetween in an expansion joint assembly, said seal comprising:

an elongated body having longitudinal edges and including a mounting portion extending along each of its longitudinal edges for coaction with the structural members in the installed position of said seal; and

an intermediate expansion portion formed integral with said mounting portions comprising;

an upper treadway surface formed with at least three integrally connected corrugated members, each of said corrugated members having a substantially planar central surface and a pair of downwardly and outwardly inclined legs extending from said central surface, the legs of adjacent corrugated members being joined and defining at the

joinder thereof a substantially V-shaped groove, the outer legs of the outermost corrugated members being integrally connected to said mounting portions,

a lower expansible section spaced vertically below said upper treadway surface and formed with at least two laterally spaced protuberances which are in substantial vertical alignment with said central surface of said outermost corrugated members,

said lower expansible section including an integrally formed connecting section joining said protuberances, and

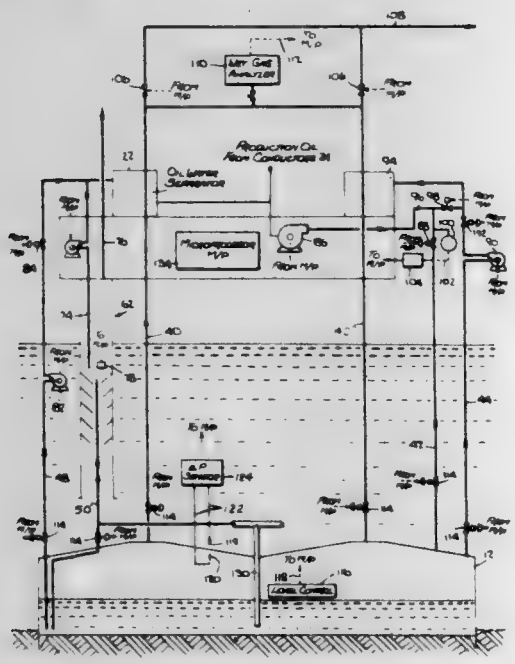
a plurality of nonintersecting, non-joined struts extending between said upper treadway surface and said lower expansible section, said struts connecting said joined legs of said corrugated upper treadway surface with said lower expansible section substantially at the junctures of said protuberances with said connecting section.

4,351,623

UNDERWATER STORAGE OF OIL

Edward J. Heinz, Spring, and H. Thomas Collins, Houston, both of Tex., assignors to Raymond International Builders, Inc., Houston, Tex.

Filed Jun. 10, 1980, Ser. No. 158,071
Int. Cl.³ E02B *17/00*
U.S. Cl. 405—210 **19 Claims**



1. An offshore oil storage facility comprising an enclosed tank supported from a sea bottom, said tank containing a layer of oil floating on a layer of water, a structure extending upwardly from said tank to a location above the sea surface, an oil line supported by said structure and extending therealong from a location communicating with said layer of oil in said tank to a location above the sea surface, a water standpipe supported by said structure and extending therealong from a location communicating with said layer of water to a submerged location above said tank and an oil containment casing comprising a tubular shell surrounding the upper end of said water conduit means and extending from a location below said upper end to a location above the sea surface, said tubular shell being open to the sea below the upper end of said water standpipe.

4,351,624

FILE AND JACKET CONSTRUCTION METHOD AND APPARATUS

Ronald A. Barber, 519 S. Harrison St., West, Tex. 76691

Filed Oct. 15, 1979, Ser. No. 84,842
Int. Cl.³ E02B *17/00*; E02D *13/00*
U.S. Cl. 405—228 **9 Claims**

1. A method of constructing a pile extending through the bottom of a body of water which comprises the steps of:

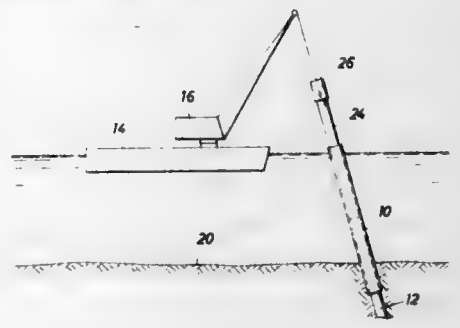
(a) positioning a pile jacket at a desired location and angle relative to the bottom of a body of water and driving the pile jacket into the bottom to a specified depth;

(b) temporarily storing within the pile jacket a first pile segment preliminary to the step of positioning the pile jacket said temporary storage being accomplished by connector link means releasably secured to internal eyelet means of both said pile segment and pile jacket;

(c) releasing said connector link means from said eyelet means after driving said pile jacket;

(d) removing said internal eyelet means of said pile jacket;

(e) raising the pile segment to expose one end thereof protruding from said pile jacket;



(f) joining a second pile segment serially to said pile segment by welding, a strongback being positioned within the adjacent extremities of said first and second pile segments prior to said welding, said strongback aligning said pile segments;

(g) driving the first pile segment and second pile segment into the bottom through said pile jacket; and

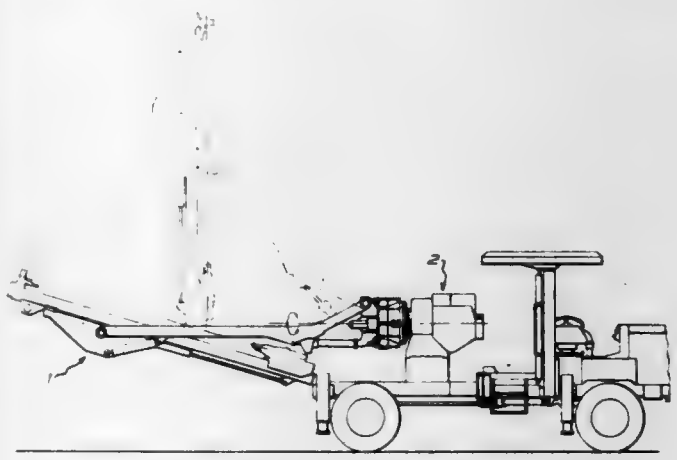
(h) alternately adding additional pile segments to the pile segment aligned and positioned within the pile jacket and driving the pile segments serially through the pile jacket into the bottom and continuing such alternation until the several pile segments form a pile having a specified length and extending through the bottom to a specified depth.

4,351,625

APPARATUS FOR AUTOMATIC BOLTING IN ROCK REINFORCEMENT

Berndt Selestam, DalarUMLo/; Ake Forssell, Västerhaninge, and Per A. Winnersjö, Handen, all of Sweden, assignors to Linden-Alimak AB, Skelleftea, Sweden

PCT No. PCT/SE79/00134, § 371 Date Feb. 13, 1980, § 102(e) Date Feb. 6, 1980, PCT Pub. No. WO80/00093, PCT Pub. Date Jan. 24, 1980
PCT Filed Jun. 13, 1979, Ser. No. 189,925
Claims priority, application Sweden, Jun. 13, 1978, 7806833
Int. Cl.³ E21D *11/00*
U.S. Cl. 405—303 **3 Claims**



1. An apparatus for automatic bolting in rock reinforcement operations, the apparatus comprising a supply beam (6), which carries a drill (3), an injector, a bolting machine (5), a working position adjustment device (9) which has sockets (10, 11, 12)

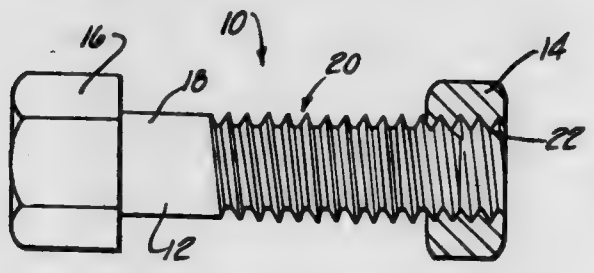
for accommodating a drill bit (13), the forward end of the hose (14) of the injector, a bolt, and a positioning rod (15) which is fixedly mounted at the forward end of the supply beam and is brought into abutment with the rock face for directing, by means of the apparatus, in sequence, the drill bit, the hose and the bolt at a point on the rock face for the purposes of accomplishing the rock reinforcement operation, characterized in that a machine carriage (7), which during operation is adapted to accommodate the drill (3) or the bolting machine (5), is movable along the supply beam (6), and that a linear machine shifter switch (8), by means of which the drill (3) and the bolting machine (5) are insertable on the machine carriage (7), is shiftably disposed along and lockable on the supply beam (6) for different bolt lengths.

4,351,626

SELF-LOCKING THREADED FASTENER

Horace D. Holmes, 28576 Green Willow, Farmington Hills, Mich. 48024

Filed Apr. 18, 1980, Ser. No. 141,535
Int. Cl.³ F16B *39/30*
U.S. Cl. 411—311 **22 Claims**



1. A self-locking fastener combination, comprising:

a first member having a helical thread formed thereon including leading and trailing flanks lying at respective first and second angles to the longitudinal axis of said fastener combination and which, before threaded engagement with another member, converge toward a crest of substantially constant diameter over the working length of said first member; and
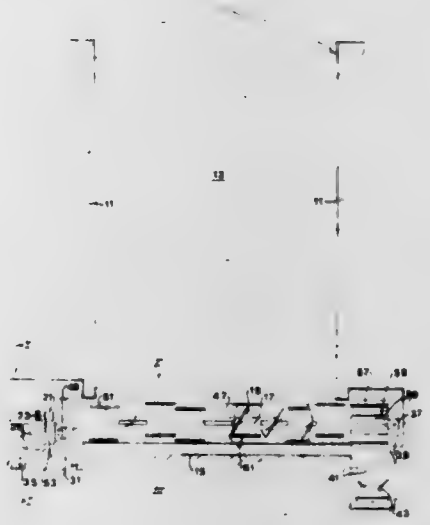
a second member matingly threadable with said first member and having a thread formed thereon including leading and trailing flanks converging toward each other to define a root for receiving the crest of said first member therewithin, said last named leading and trailing flanks lying at respective third and fourth angles with respect to said longitudinal axis, said root being truncated along at least a portion of the thread of said second member to provide a root surface extending between the corresponding leading and trailing flanks of said second member, said portion of the thread of said second member including the truncated root having a thread depth of lesser dimension than the thread of said first member in order to cause firm radial engagement of the crest of said first member with the root surface of said second member whereby to deform at least a portion of said crest, said third angle being greater in magnitude than said first angle whereby the leading flank of said first member diverges away from the leading flank of said second member associated with said thread portion to form an open space adjacent said root surface for receiving the deformed portion of said crest of said first member, the trailing flanks of said first and second members being in substantial face-to-face frictional engagement along said portion of the thread of said second member.

4,351,627

DEVICE WITH SCREW CONVEYOR FOR DISCHARGING BULK MATERIAL

Georg L. K. Forsberg, Nylandsgatan 14, 654 65 Karlstad, Sweden

Continuation-in-part of Ser. No. 845,838, Oct. 26, 1977, abandoned. This application Apr. 29, 1980, Ser. No. 144,943
Claims priority, application Sweden, Oct. 26, 1976, 7611862
Int. Cl.³ B65G *65/46*
U.S. Cl. 414—312 **28 Claims**



1. A device for discharging bulk material from a store thereof, comprising: a rotary screw conveyor rotatable about a longitudinal axis, and surrounded by an elongated drum which is rotatable independently of the screw conveyor; means providing inlet apertures distributed over the periphery and along the length of the cylindrical face of said drum; means for mounting said rotary screw conveyor and drum for movement over a floor in a straight path perpendicular to said longitudinal axis with said drum spaced a predetermined distance from the floor; means for powering said conveyor and said drum in said straight path; means for effecting rotation of said rotary screw conveyor and said drum; and means for preventing detrimental deflection of said drum during long periods of non-use due to settling and compaction of the bulk material, while not interferring with the rotation of and movement of said drum in said straight line path during use, and facilitating rotation of said drum during start-up after a long period of non-use, said means comprising a strip of material disposed on the floor and extending generally in said straight line path, and having an upper surface, said upper surface upstanding from the foor a distance less than the spacing of the drum from the floor during rotation of the drum.

4,351,628

ARTICLE HANDLING AND TRANSFER APPARATUS UNIT

Peter Drexel, Steinenbronn; Gernot Maier, Stuttgart, and Ernst Leisner, Ditzingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Apr. 2, 1980, Ser. No. 136,558
Claims priority, application Fed. Rep. of Germany, Apr. 11, 1979, 2914650
Int. Cl.³ B65G *47/90*
U.S. Cl. 414—749 **18 Claims**

1. An article handling and transfer apparatus unit having

an elongated housing (10), having two end flanges (19, 20);

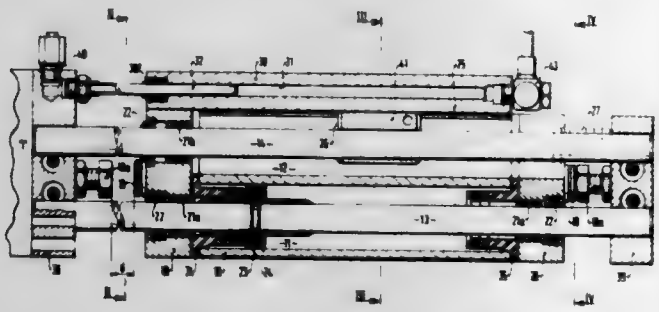
a bore forming a cylinder (11) in the elongated housing;

a piston (23) within the cylinder;

a piston rod (13) forming a positioning rod connected to the piston and extending through at least one (19) of the end flanges (19, 20) of the housing, said apparatus unit further comprising

a hollow chamber (12) extending parallel to the cylinder (11) in the housing;

a guide rod (14) located in said hollow chamber;
a guide opening formed in the at least one end flange (19), the guide rod extending through said guide opening and moveable parallel to said piston rod with respect to said end flange;
at least one receiver attachment flange (38, 39) connected to at least the end of the positioning and piston rod (13) as well as to the guide rod (14) externally of said end flange, to additionally maintain said guide rod and said positioning rod in parallel relationship;
pressure fluid supply means passing through said housing at both sides of the piston (23) for application of a pressure fluid to the piston for reciprocating operation thereof;



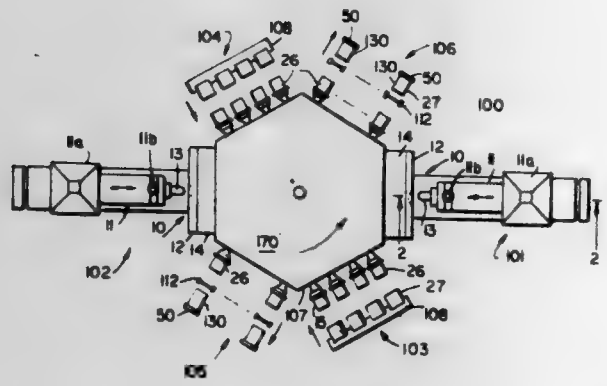
at least two longitudinal extending bores (15, 17) passing through the housing forming energy transmission ducts or channels for transfer of energy in at least one of the forms: pressurized fluid; electricity
through the housing for transfer of energy longitudinally of the housing;
the end flanges (19, 20) closing off the end portion of the housing, said end flanges including
bearing means (21*a*, 21*b*) guiding said positioning and piston rod (13) for longitudinal operation in the housing and said guide rod (14) for longitudinal operation therein,
the pressure fluid supply means including
connection means (15*a*, 16) for connection of pressurized fluid to both sides of the piston (23) within the cylinder (11) formed in the housing.

4,351,629

PLASTIC END CAPPING MACHINE

John J. Farrell, 40 Abby La., Greenbrook, N.J. 08812

Filed Aug. 8, 1980, Ser. No. 176,282
Int. Cl.³ B29F *1/00*; B29C *1/00*
U.S. Cl. 425—116 **12 Claims**



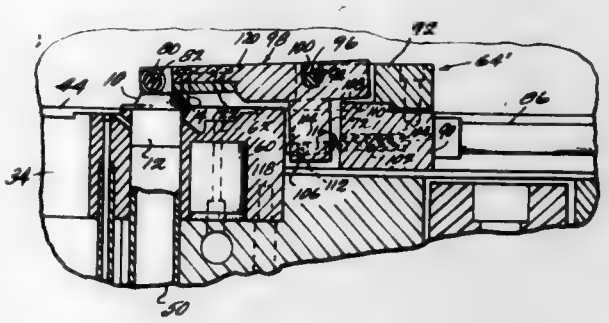
1. An end capping machine for making an integral, wide mouth container, said machine comprising a head having means to rotatably index said head at a plurality of stations; a plurality of core rods mounted on and outwardly disposed from said head so as to be indexed at said stations, said stations comprising a first station comprising means to load sleeves on said core rods, a second station comprising means to injection mold a thermoplastic end cap on first ends of said sleeves so as to form containers, and a third station comprising means to unload said containers, further comprising a core rod onto which said sleeve is inserted, said core rod being disposed within the mold, said core rod further comprising an annular member disposed around the periphery of the core rod and extending radially outwardly from said core rod and being formed on one portion to engage the other end of the sleeve so as to take up the thrust of the injection molding of thermoplastic onto the sleeve, said mold comprising partible sections and means to open and close said partible sections, whereby said sleeve is held on said core rod between the closed partible sections, said mold sections being formed with recessed portions so as to contactingly engage said annular member, said member being formed with a second portion so as to comprise seating means for said partible mold sections, said mold being formed with an annular portion disposed radially outwardly from said one end of said sleeve so as to provide a cavity at both the first end and outside periphery of said sleeve adjacent said first end, whereby thermoplastic flows into the cavity and around the first end of said sleeve so as to be formed and bonded to the sleeve, thereby providing an integral wide-mouth container at said second station.

4,351,630

PIVOTING HINGE EXERCISING MECHANISM

Robert S. Hayberg, Pembroke Lakes, and Eugene L. Foltuz, Hollywood, both of Fla., assignors to Global Precision Inc., Hollywood, Fla.

Filed Dec. 31, 1980, Ser. No. 221,917
Int. Cl.³ B29D *31/00*
U.S. Cl. 425—517 **23 Claims**



1. A device for exercising a living hinge of an article while in a mold for forming said article, said device comprising:
a finger including a portion adapted for engagement with said article;
means for slidably connecting said finger to said mold, said connecting means enabling said finger to slide in a first direction transverse to said hinge from a first position to a second position and enabling said finger to move in a second direction having a component normal to said first direction after said finger has reached said second position, said connecting means being oriented to enable said finger to engage a portion of said article and rotate said article portion about said hinge as said finger moves in said first and second directions; and
means for driving said finger.

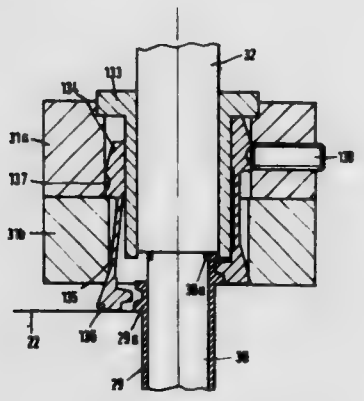
2. In a mold for forming an article having a living hinge, a device for exercising said hinge while said article is in said mold, said device comprising:
a finger including a portion adapted for engagement with said article;
means for slidably connecting said finger to said mold, said connecting means enabling said finger to slide in a first direction transverse to said hinge from a first position to a second position and enabling said finger to move in a second direction having a component normal to said first direction after said finger has reached said second position, said connecting means being oriented to enable said finger to engage a portion of said article and rotate said article portion about said hinge as said finger moves in said first and second directions; and
means for driving said finger.

4,351,631

TRANSFER DEVICE FOR PARISONS AND FINISHED PRODUCTS IN INJECTION BLOW MOLDING DEVICES

Dieter Gessner, Karben, and Lothar Ott, Schwalbach, both of Fed. Rep. of Germany, assignors to tpT Machinery Corporation, Norwalk, Conn.

Filed Jun. 26, 1980, Ser. No. 163,196
Claims priority, application Fed. Rep. of Germany, Jul. 9, 1979, 2927642
Int. Cl.³ B29C 17/07
U.S. Cl. 425—533 18 Claims



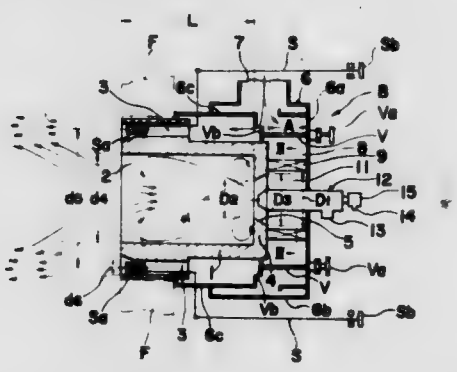
1. Transfer device for open neck articles in injection blow molding equipment to protect the neck from distortion comprising a pin-like means which is attached to a plate and is operative for insertion into the article, said device including an elongated collet having means at one end contacting said neck and said equipment, means associated with said pin-like means for transmitting pressure through said collet to said equipment when said pin-like means contacts said neck, wherein said collet is movable between a first position and a second position and supported between said pin-like means and plate so that said collet grips said neck and prevents distortion thereof when in said first position and releases it when in said second position, whereby pressure from said pin-like means and plate is transmitted away from said neck through said collet.

4,351,632

BURNER WITH SUPPRESSED NO_x GENERATION

Kiyokazu Nagai, Yao, Japan, assignor to Chugairo Kogyo Kaisha Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 921,172, Jun. 30, 1978, abandoned. This application Apr. 1, 1980, Ser. No. 136,394
Claims priority, application Japan, Jul. 1, 1977, 52-79410
Int. Cl.³ F23M 9/00
U.S. Cl. 431—183 4 Claims



1. A burner with suppressed NO_x generation for use with a furnace in which combustion air is divided into primary combustion air and secondary combustion air for two-stage combustion, said burner comprising;

a housing for maintaining a supply of the combustion air under pressure, said housing having an outer wall and a peripheral wall provided with an inlet of the supply of the combustion air;

a hollow cylindrical member constituting a primary combustion chamber, and contiguous to said peripheral wall of said housing, said primary combustion chamber having dimensions represented by the following equations,

$$d_4 = 217R^{\frac{1}{4}}$$

$$L = 368R^{\frac{1}{4}}$$

wherein d_4 is the internal diameter in mm of the primary combustion chamber, R is the burner output (10^6 Kcal/h), and L is the length in mm of the primary combustion chamber;

a plurality of secondary combustion air nozzles provided around and outside said primary combustion chamber in a direction parallel to the axis of said primary combustion chamber and operatively connected to said housing for supplying the secondary combustion air into the furnace in the form of a rectilinear flow, said secondary combustion air nozzles each having dimensions represented by,

$$d_6 = 32R^{\frac{1}{4}}$$

where d_6 is the internal diameter in mm of each of the secondary combustion nozzles;

a primary combustion air nozzle of a frusto-conical shape coaxially formed in an end wall provided at one end of said primary combustion chamber and narrowed toward said primary combustion chamber, said primary combustion air nozzle of a frusto-conical shape having dimensions represented by,

$$D_2 = 121R^{\frac{1}{4}}$$

$$170(R+0.25)^{\frac{1}{4}} \leqq D_3 \leqq 204(R+0.25)^{\frac{1}{4}}$$

wherein D_2 is the minimum diameter in mm of the primary combustion air nozzle of a frusto-conical shape open at the side of the primary combustion chamber and D_3 is the large diameter in mm of the primary combustion air nozzle open at the side of a vortex chamber;

said vortex chamber being provided between said end wall of said primary combustion chamber and said outer wall of said housing and communicated with said primary combustion air nozzle for imparting a powerful swirling motion to the primary combustion air so as to introduce the primary combustion air into said primary combustion chamber, said vortex chamber being defined by a plurality of swirling vanes equally spaced and arranged to form said vortex chamber, and having dimensions represented by,

$$141R < I < 196R$$

wherein I is the minimum total inlet area in cm^2 between two adjacent blades of the swirling vanes; and

a fuel injector nozzle coaxially disposed in said vortex chamber to confront said primary combustion chamber for supplying fuel into said primary combustion air nozzle.

4,351,633

METHOD OF RECOVERING THE SENSIBLE HEAT OF CONTINUOUSLY CAST SLABS

Artur Ortner, and Rudolf Zeller, both of Linz, Austria, assignors to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Oct. 3, 1980, Ser. No. 193,548
Claims priority, application Austria, Oct. 18, 1979, 6790/79
Int. Cl.³ F27D 15/02
U.S. Cl. 432—77 7 Claims

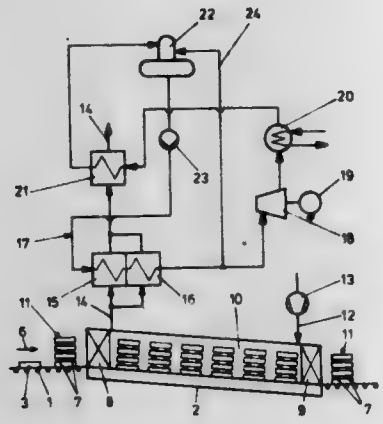
1. In a plant for recovering the sensible heat of continuously cast slabs, of the type including a cooling chamber having an entry lock and an exit lock and transporting means for transporting the slabs, after having been sheared to length, through said cooling chamber, the improvement comprising

an inlet conduit running into said cooling chamber in the region of said exit lock for delivering a first fluid medium into direct contact with the slabs in said cooling chamber,

an exhaust conduit connected to said cooling chamber in the

region of said entry lock for removing the first fluid medium from said cooling chamber,

a first heat exchanger provided in said exhaust conduit for transferring the heat of the first fluid medium to a second fluid medium,



means for moving the first fluid medium through said inlet and exhaust conduits,

means for utilizing the heat of said second fluid medium, and

means for recirculating said second medium between said heat exchanger and said means for utilizing.

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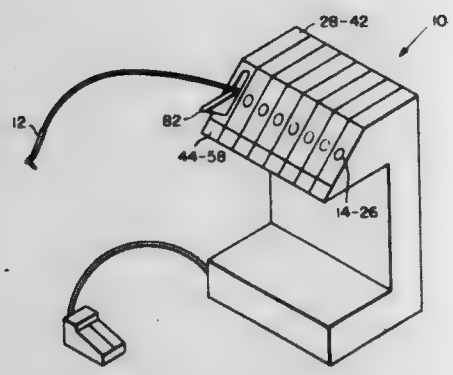
PRIORITY SYSTEM DENTAL INSTRUMENT DELIVERY

Wolfgang Rosenfeldt, Bad Bergzabern, Fed. Rep. of Germany, assignor to Sybron Corporation, Rochester, N.Y.

Filed May 15, 1980, Ser. No. 150,056

Int. Cl.³ A61C *1/02*

U.S. Cl. 433—28 **1 Claim**



1. A dental instrument delivery unit having a delivery priority system comprising:

a dental unit holding a plurality of dental instruments in individual nests;

an instrument selection switch corresponding to each nest and providing a signal upon activation by an operator;

extending means corresponding to each instrument selection switch for extending the nest corresponding to that switch upon receipt of a release signal;

a priority circuit which provides a selection period running from the first time any instrument selection switch is activated, and upon expiration of the selection period causes a release signal to be directed to the extending means corresponding to the instrument selection switch last activated within the selection period, or if two instrument selection switches are simultaneously activated last, directing a release signal to the extending means corresponding to the activated switch futhermost from the operator.

4,351,635

DRIVE SYSTEM FOR MARINE VESSELS

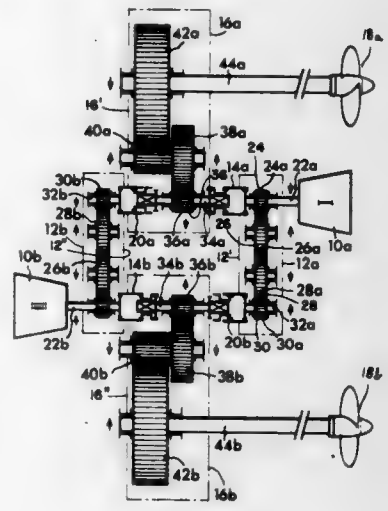
Otto Staedeli, Menzingen, Switzerland, assignor to Maag Gear-Wheel & Machine Co. Ltd., Zürich, Switzerland

Filed Oct. 1, 1979, Ser. No. 80,187

Claims priority, application Switzerland, Oct. 13, 1978, 10644/78

Int. Cl.³ B63H *23/10*

U.S. Cl. 440—75 **6 Claims**



1. A drive system for a marine vessel comprising:

at least two drive units;

at least two propellers driven by said drive units;

a gearing system for operatively interconnecting the propellers with one another;

said gearing system comprising drive pinions;

a respective first switchable clutch for connecting one of the drive pinions with one of the related drive units;

a further respective second switchable clutch provided for each drive pinion;

each drive pinion being arranged between the first switchable clutch, operatively associated with said drive pinion for connecting such drive pinion with the related drive unit, and the further second switchable clutch;

said gearing system for interconnecting both of the propellers comprising two substantially parallelly arranged gear trains;

each gear train being continuously connected with a related one of the drive units; and

each further switchable second clutch connecting the gear train of the related drive unit with the drive pinion of the other drive unit.

4,351,636

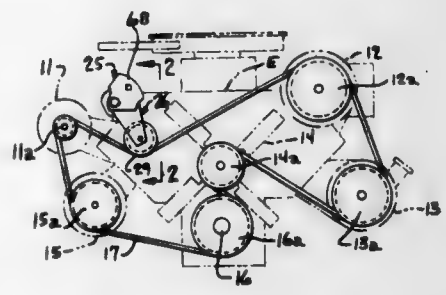
BELT TENSIONING DEVICE

Clarence H. Hager, 3408 Corbridge Lane, Rockford, Ill. 61107

Filed Jun. 6, 1980, Ser. No. 157,101

Int. Cl.³ F16H *7/12*

U.S. Cl. 474—135 **19 Claims**



1. A belt tensioning device for tensioning an endless belt entrained over pulleys on an apparatus, the tensioning device comprising, a pulley support arm, a mounting bracket, means

mounting said pulley support arm on said mounting bracket and on said apparatus for pivotal movement relative thereto about a pivot axis, anchor means for retaining the mounting bracket in a preselected position on the apparatus, an idler pulley mounted on the free end of said pulley support arm for rotation about a pulley axis spaced from and parallel to said pivot axis, spring means for yieldable biasing said support arm in a direction to press the idler pulley against the belt, one of the items comprising support arm in a direction to press the idler pulley against the belt, a pair of vibration dampening pads formed of resilient material and each having a pad face, means fixedly mounting the pads on the side walls of one of the items comprising the support arm and mounting bracket at locations spaced outwardly from the pivot axis with the pad faces slightly engaging respective ones of the side walls of the other of said items and with the pads compressed in a direction perpendicular to the side walls on said other of said items to pressurize the pad faces into engagement therewith.

4,351,637

PRECISION CHAIN DRIVE

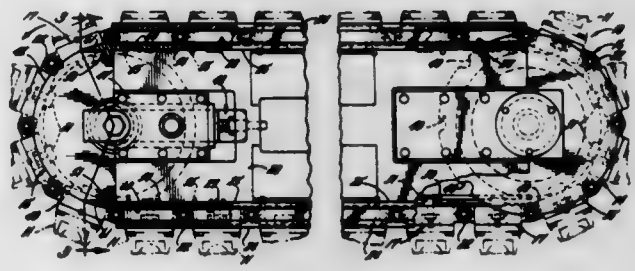
Paul H. Dixon, Belvidere, Ill., assignor to Dixon Automatic Tool, Inc., Rockford, Ill.

Filed Apr. 28, 1980, Ser. No. 144,591

Int. Cl.³ B65G *21/20*

U.S. Cl. 474—148 **4 Claims**

1. A precision chain drive comprising a sprocket wheel and an idler wheel rotatable about spaced parallel axes, drive means for rotating said sprocket wheel, the periphery of said sprocket wheel being formed with angularly spaced pockets, an endless chain trained around said wheels, said chain being formed by an even number of pivotally interconnected links, rollers carried by said links and adapted to enter said pockets whereby said sprocket wheel drives said chain, and means for guiding said chain and causing opposite runs of the chain to travel along straight parallel paths as the runs move between said wheels, said precision chain drive being characterized in that the diameter of said idler wheel is smaller than the effective diameter of said sprocket wheel, first means for holding



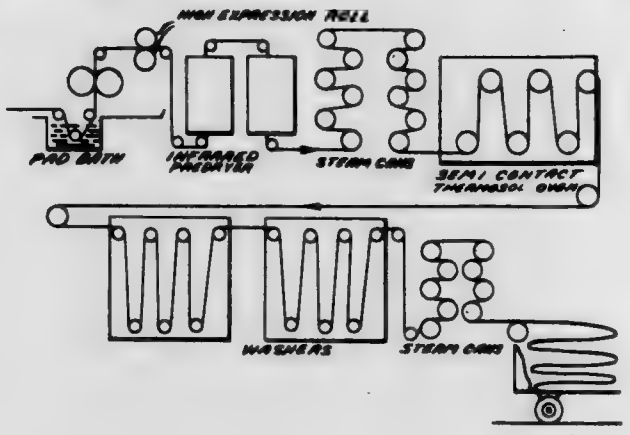
each roller out of engagement with the periphery of said idler wheel as the roller first starts to move out of a straight path and around the idler wheel, said first means enabling each roller to engage said idler wheel after the roller has moved a predetermined distance around the idler wheel, and second means for camming each roller out of engagement with said idler wheel after the roller has progressed around the idler wheel and a predetermined distance before the roller starts to move in a straight path.

4,351,638

PROCESS OF REACTIVELY DYEING AND PRINTING TOWELING

James E. Finlayson, III, Winston-Salem; Joseph P. Holder, Greensboro; L. Earl Holt, Burlington, all of N.C., and Seung Y. Lee, Rochester, N.Y., assignors to Burlington Industries, Inc., Greensboro, N.C.

Filed Sep. 21, 1981, Ser. No. 304,042
Int. Cl.[3] D06P *5/15*; C09B *62/00*
U.S. Cl. 8—463 14 Claims



1. A process of dyeing cotton-containing toweling comprising the successive steps of:

(a) applying to a cotton or cotton-containing toweling a dyebath solution containing a coloring amount of at least one phosphonic acid fiber reactive dye together with sufficient acid such that the fiber-reactive dye reacts with and attaches to the cotton of the toweling;

(b) passing the dyebath-saturated toweling from step (a) through a high expression roll until the wet pickup is in the range of about 45 to about 55% wpu;

(c) heating the dyebath-containing toweling of step (b) to a temperature of at least 200° F. for a time sufficient to fix the dye onto the cotton thereby producing a fully penetrated, evenly dyed toweling.

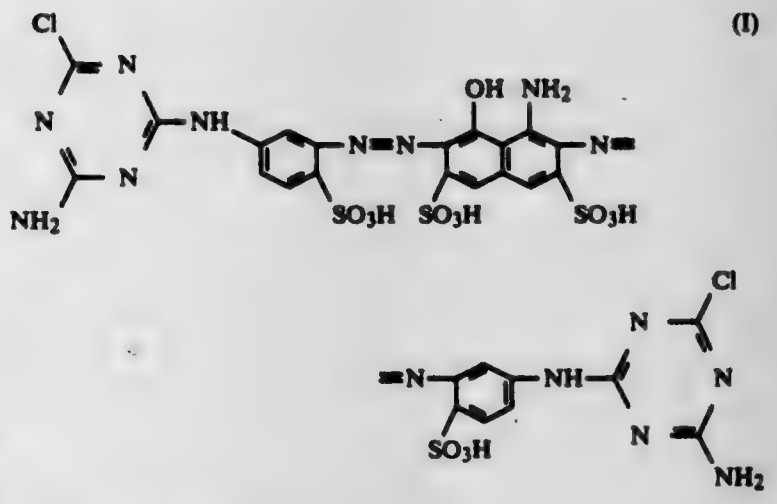
4,351,640

DYE POWDER FORMULATION

Ortwin Schaffer, 43 Bruesseler Ring, and Manfred Herrmann, 23 Parkstrasse, both of 6700 Ludwigshafen, Fed. Rep. of Germany

Filed Jun. 19, 1980, Ser. No. 160,929
Claims priority, application Fed. Rep. of Germany, Jul. 14, 1979, 2928508
Int. Cl.[3] D06P *67/02*
U.S. Cl. 8—524 3 Claims

1. A powder formulation of the dye of the formula



which contains, based on (a+b+c),

(a) from 10 to 65% by weight of the dye of the formula I,

(b) from 5 to 25% by weight of sodium chloride, and

(c) from 10 to 85% by weight of a condensate of β-naphthalenesulfonic acid and formaldehyde, or of a sulfomethylation product which is obtained by condensing phenol, formaldehyde and a sulfite or bisulfite, in the presence of sodium hydroxide, in a molar ratio of phenol:formaldehyde:sulfite or bisulfite:sodium hydroxide of 1:1.0–4:0.3–1.6:0.05–0.5.

4,351,639

PROCESS FOR LIMING PELTS OF ANIMAL HIDES AND SKINS

Rolf Monsheimer, Darmstadt-Eberstadt, and Ernst Pfleiderer, Darmstadt-Arheilgen, both of Fed. Rep. of Germany, assignors to Röhm GmbH, Darmstadt, Fed. Rep. of Germany

Division of Ser. No. 122,041, Feb. 19, 1980, Pat. No. 4,310,328.
This application Jun. 8, 1981, Ser. No. 271,787
Claims priority, application Fed. Rep. of Germany, Mar. 23, 1979, 2911401
The portion of the term of this patent subsequent to Jan. 12, 1999, has been disclaimed.
Int. Cl.[3] C14C *1/08*
U.S. Cl. 8—94.16 11 Claims

1. A method for liming animal skins and hides which comprises treating said skins and hides in a bath of an aqueous alkaline liming liquor comprising from 0.02 to 1 percent, by weight of the skins and hides, of a protective colloid which is a water soluble, alkali stable, high molecular weight polymer of natural or synthetic origin, together with a hydrotropic agent.

4,351,641

CONTINUOUS DYEING OF PILE FABRICS

Thomas M. Tymon, Lancaster, Pa., assignor to Armstrong World Industries, Inc., Lancaster, Pa.

Filed May 14, 1980, Ser. No. 149,670
Int. Cl.[3] D06P *1/00, 3/00*
U.S. Cl. 8—638 1 Claim

1. A method for producing continuous dyed pile fabric comprising:

(a) passing the pile fabric through a wet out bath comprising a wetting agent and an agent for pH adjustment;

(b) applying, to the entire pile surface of the wetted out pile fabric, using a Kusters dye applicator, an aqueous dye solution comprising at least two dyestuffs, the dyestuffs being selected to have approximately equal strike rates, and a sufficient amount of thickening agent to provide a dye solution viscosity of from about 300 to about 1,000 centipoise (Brookfield Viscometer);

(c) steaming to fix the dyes on the pile fabric; and,

(d) washing the pile fabric to remove chemicals and any unfixed dyes;

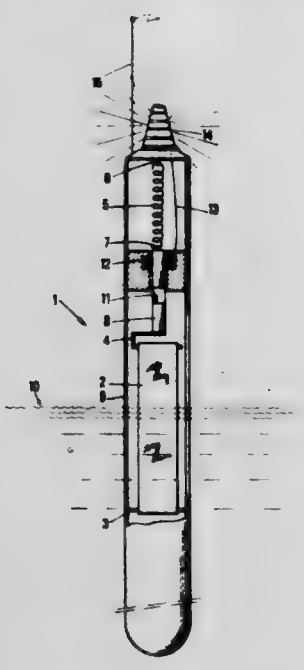
wherein the resulting dyed pile fabric exhibits more uniform shade in the across machine direction as compared to the uniformity of shade obtained using a Kusters dye applicator to apply said dye solution at a conventional Kusters applicator viscosity of less than about 100 centipoise (Brookfield Viscometer).

4,351,642

ELEMENTS SENSITIVE TO CERTAIN POLLUTING AGENTS, PARTICULARLY HYDROCARBONS AND METHOD OF USE

Gerard Bonavent, Rueil-Malmaison, and Lucien Montabord, Corneilles en Parisis, both of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Apr. 28, 1980, Ser. No. 143,979
Claims priority, application France, Apr. 27, 1979, 79 10786
Int. Cl.³ G01N *33/00*; G08B *21/00*; H01H *35/00*
U.S. Cl. 23—230 M 19 Claims



1. A sensitive element comprising

(a) a component made of a material which is resistant to sunlight but which deteriorates upon contact with an organic pollutant, and

(b) means for generating a countermeasure, said means cooperating with said component and being actuated upon deterioration thereof; wherein said material comprises a sequenced styrene-butadiene copolymer of which at least a part is dehydrogenated.

4,351,643

METHOD FOR CONCENTRATING A LOW-CONCENTRATION ELEMENT IN A SOLUTION

Kuppusami Govindaraju, Houdemont, France, assignor to Instruments S.A., Paris, France

Filed Jun. 17, 1980, Ser. No. 160,422
Claims priority, application France, Jun. 18, 1979, 79 15571
Int. Cl.³ G01N *31/04, 33/24, 33/18*; G01J *3/30*
U.S. Cl. 23—230 EP 8 Claims

1. A method for the quantitative analysis of a first element present in low concentration in a first solution wherein said first solution also contains a second element or group of second elements in a concentration higher than the concentration of said first element which comprises:

passing said solution through a column of ion exchange resin for fixing specifically said first element, wherein the diameter of said column is 1 to 3 mm, and the height of said column is 1 to 10 cm, thereby removing said second element or a group of second elements from said first element;

passing a small volume of elution liquid through said column to elute said first element from the ion exchange resin and thereby obtaining a second solution of said first element wherein said first element is present in higher concentration than in said first solution;

supplying all of said second solution to a nebulizer, thereby transforming said second solution into an aerosol;

introducing all of said aerosol and thereby introducing all of said first element initially present in said first solution into an inductive plasma; and

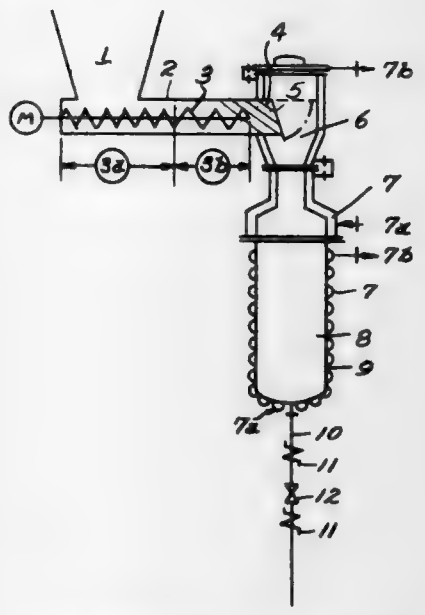
analyzing the spectrum emitted whereby all of the said first element intially present in said first solution takes part in the emission of the spectrum.

4,351,644

PROCESS FOR HANDLING LIQUID CYANURIC CHLORIDE

Norbert Kriebitzsch, Hammersbach; Kurt Puschner, Frankfurt, and Klaus Hentschel, Hanau, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 27, 1981, Ser. No. 248,442
Claims priority, application Fed. Rep. of Germany, Mar. 27, 1980, 3011860
Int. Cl.³ B01J *8/08*
U.S. Cl. 23—293 R 2 Claims



1. In a process of supplying and conveying solid cyanuric chloride into a cyanuric chloride melt wherein there is provided a screw conveyor having a first screw portion having a selected helix pitch and a second screw portion having a selected helix pitch that is larger than said selected helix pitch of said first portion, said screw conveyor being disposed in conduit means having one end adjacent a vapor space that is free of screw windings, the process including the steps of supplying the solid cyanuric chloride along said screw conveyor, compacting the cyanuric chloride to form a gastight stopper of cyanuric chloride at said one end of said conduit means while supplying the cyanuric chloride into said vapor space.

4,351,645

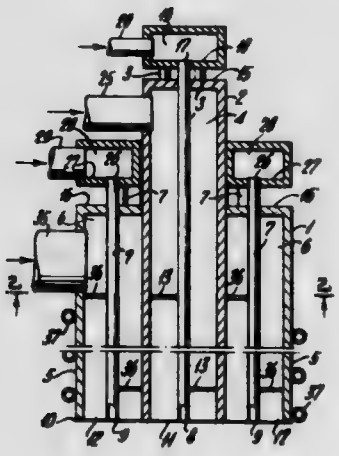
PARTIAL OXIDATION BURNER APPARATUS

Charles P. Marion, Mamaroneck; Albert Brent, Huntington, both of N.Y.; George N. Richter, San Marino, Calif.; William B. Crouch, Chappaqua; Edward T. Child, Tarrytown, both of N.Y., and Blake Reynolds, Riverside, Conn., assignors to Texaco, Inc., White Plains, N.Y.

Continuation-in-part of Ser. No. 107,215, Dec. 26, 1979, abandoned. This application Jul. 14, 1980, Ser. No. 167,876
Int. Cl.³ C10J *3/50*
U.S. Cl. 48—61 28 Claims

1. A burner for the partial oxidation of a reactant fuel feedstream selected from the group consisting of a pumpable slurry of solid carbonaceous fuel in a liquid carrier, liquid or gaseous hydrocarbon fuel, and mixtures thereof with a reactant stream of free-oxygen containing gas, with or without admixture with a temperature moderator comprising: a central conduit, said central conduit being closed at the upstream end and having a downstream circular exit orifice at the tip of the burner; an outer conduit coaxial and concentric with said central conduit

and forming an annular passage therebetween, said outer conduit and annular passage being closed at the upstream end and having an unobstructed downstream annular exit orifice at the tip of the burner and wherein the central longitudinal axis of the annular passage is parallel to the central longitudinal axis of the burner throughout its length; a central bunch of tubes in symmetrical spaced relationship passing through the closed end of said central conduit and making a gastight seal therewith, the tubes of said central bunch of tubes being parallel to each other and to the burner axis and extending along said central conduit without touching each other and having upstream inlet means including a manifold for introducing a first feedstream and downstream ends through which said first feedstream is discharged, and said downstream ends are retracted upstream from the burner face a distance of about 3 to 10 times the minimum diameter of the central conduit exit orifice at the tip of the burner to provide a central pre-mix zone comprising 2 to 5 separate communicating in line coaxial cylindrical shaped central pre-mix chambers in series, means for spacing and supporting said central bunch of tubes with respect to the inside wall of said central conduit and to each other, and upstream inlet means for introducing a second feedstream into said central conduit and the interstices between the central bunch of parallel tubes; an annular bunch of tubes in symmetrical spaced relationship passing through the closed end of said annular passage and making a gastight seal there-



with, the tubes of said annular bunch of tubes being parallel to each other and to the burner axis and extending along said annular passage without touching each other and having upstream inlet means including a manifold for introducing a third feedstream into said tubes and downstream ends through which said third feedstream is discharged, and wherein said downstream ends are retracted upstream from the burner face a distance of about 3 to 10 times the minimum width of the annular exit orifice at the tip of the burner to provide an annular pre-mix zone comprising 2 to 5 separate communicating in line coaxial annular shaped annular pre-mix chambers in series, means for spacing and supporting said annular bunch of tubes with respect to the inside wall of said annular passage and to each other, upstream inlet means for introducing a fourth feedstream into said annular passage and the interstices between the annular bunch of parallel tubes in said annular passage; and a plurality of longitudinal gas conduits parallel to the burner axis and radially spaced between said central conduit and said annular passage, said gas conduits being closed at the downstream end near the burner tip and connected to a gaseous feedstream at the upstream end; and a plurality of feeder lines connecting said gas conduits to said pre-mix chambers in said central conduit and/or in said annular passage for introducing said gaseous feedstream; and wherein ignition of mixtures of the reactant feedstreams takes place downstream from the face of the burner.

4,351,646

CYCLIC PROCESS FOR PRODUCING METHANE FROM CARBON MONOXIDE WITH HEAT REMOVAL

Albert C. Frost, Congers, and Chang-lee Yang, Spring Valley, both of N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Jun. 12, 1980, Ser. No. 158,802
Int. Cl.³ C10K 3/04
U.S. Cl. 48—197 R **4 Claims**

1. In a cyclic, essentially two-step process for the production of methane from carbon monoxide—containing gas streams by (a) disproportionation of the carbon monoxide at a temperature of about 100°–350° C. in a fluidized bed reactor to form carbon monoxide and an active surface carbon that is deposited on the surface of a disproportionation catalyst essentially without the formation of inactive coke thereon, (b) reaction of said active surface carbon with steam at about 100°–400° C. to form methane and carbon dioxide, and (c) passing additional carbon monoxide—containing gas over said catalyst from step (b) and repeating said steps (a) and (b) on a cyclic basis, the improvement comprising removing the exothermic heat of reaction generated during each of said steps (a) and (b) from the catalyst bed, or a portion thereof, essentially prior to the exposure of the catalyst bed, or said portion thereof, to the exothermic heat of reaction of the next succeeding step of the cyclic process such that said steps (a) and (b) are carried out between an initiation temperature as low as on the order of about 230° C. and an upper temperature not exceeding on the order of about 310° C. with the essentially complete removal of all of the heat generated during each complete cycle, with step (a) being carried out in a fluidized bed reactor, with said bed being collapsed to a packed bed during step (b) in which the amount of steam employed is considerably less than the amount of feed gas employed in step (a), and including passing the carbon monoxide containing feed gas stream to the reactor at said initiation temperature as low as on the order of about 230° C. and at a CO concentration of from about 1 percent to about 80 percent by volume, the exothermic heat of reaction generated during the disproportionation step (a) being removed from the reactor through boiler tubes submerged within the reactor without temperature rise within the bed, said boiler tubes serving only partially to remove the exothermic heat of reaction during the subsequent steaming step (b) in which the bed is collapsed and the steaming reaction/heating front moves through the bed faster than the slower moving cooling front, thus raising the temperature of the bed from on the order of about 230° C. to on the order of about 310° C., the sensible heat thus stored in the bed being removed during the next step (a), said submerged boiler tubes being adapted to effectively dissipate said heat upon fluidization of the bed, thus reducing the temperature of the bed from on the order of about 310° C. to on the order of about 230° C. during said disproportionation step (a), thereby avoiding the accumulation of heat over the course of consecutive processing cycles.

4,351,647

PARTIAL OXIDATION PROCESS

Charles P. Marion, Mamaroneck; Albert Breat, Huntington, both of N.Y.; George N. Richter, San Marino, Calif.; William B. Crouch, Chappaqua; Edward T. Child, Tarrytown, both of N.Y., and Blake Reynolds, Riverside, Conn., assignors to Texaco Inc., White Plains, N.Y.

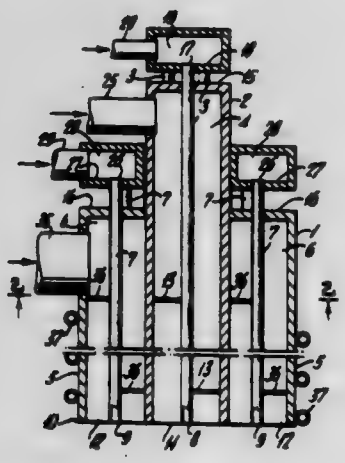
Division of Ser. No. 167,876, Jul. 14, 1980, which is a continuation-in-part of Ser. No. 107,215, Dec. 26, 1979. This application Jun. 10, 1981, Ser. No. 272,418
Int. Cl.³ C10J 3/46
U.S. Cl. 48—197 R **3 Claims**

1. In a continuous process for the manufacture of gas mixtures comprising H_2, CO, CO_2 and at least one material selected from the group consisting of H_2O, N_2, A, CH_4, H_2S and COS by the partial oxidation of a reactant stream selected from the group consisting of a pumpable slurry of solid carbonaceous fuel in a liquid carrier, liquid or gaseous hydrocarbon

fuel, and mixtures thereof with a reactant stream of free-oxygen containing gas, with or without a temperature moderator selected from the group consisting of steam, liquid water, CO_2, N_2, cooled portion of product gas, and mixtures thereof; said partial oxidation reaction taking place in the reaction zone of a free-flow gas generator at an autogenous temperature in the range of about 1700° to 3500° F. and at a pressure in the range of about 5 to 300 atmospheres, the improvement which comprises;

(1) splitting a portion of one of said reactant streams called the first reactant with or without admixture with a portion of said temperature moderator into a plurality of separate streams by passing said portion of first reactant through a central bunch of evenly spaced parallel tubes in a central conduit of a burner, said central conduit being coaxial with the longitudinal axis of said burner and having an unobstructed downstream circular exit orifice at the tip of the burner;

(2) simultaneously passing through said central conduit in the same direction as the plurality of streams of first reactant, a portion of the other reactant stream called the second reactant with or without admixture with a portion of said tem-



perature moderator, and introducing said portion of second reactant into the interstices between said central bunch of tubes;

(3) splitting the remaining portion of said first reactant stream with or without admixture with a said temperature moderator into a plurality of separate streams by passing said remaining portion of first reactant through an annular bunch of evenly spaced parallel tubes in an annular passage of said burner, said annular passage being concentric with said central conduit and having an unobstructed downstream annular exit orifice at the tip of the burner;

(4) simultaneously passing through said annular passage in the same direction as the plurality of streams of first reactant, the remaining portion of said second reactant with or without admixture with a portion of said temperature moderator, and introducing said portion of second reactant into the interstices between said annular bunch of tubes;

(5) mixing together the reactant streams from (1) and (2) to produce a well-distributed blend; and burning the mixture downstream in said reaction zone; and

(6) simultaneously mixing together the reactant streams from (3) and (4); and burning the mixture downstream in said reaction zone.

4,351,648

ELECTROSTATIC PRECIPITATOR HAVING DUAL POLARITY IONIZING CELL

Gaylord W. Penney, Pittsburgh, Pa., assignor to United Air Specialists, Inc., Cincinnati, Ohio

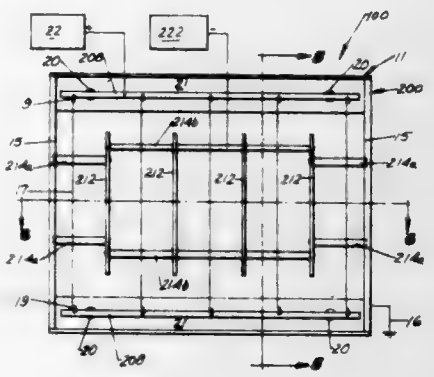
Filed Sep. 24, 1979, Ser. No. 77,891
Int. Cl.³ B03C *3/12, 3/38*
U.S. Cl. 55—137 4 Claims

1. A two-stage electrostatic precipitator air cleaner for removing particles from an airstream laden with said particles comprising an ionizer cell for producing a plurality of relatively high electrostatic fields for charging said particles and a collecting cell positioned downstream from said ionizer cell for collecting said particles, said ionizer cell comprising:

a plurality of thin electrically conductive spaced parallel wire-like ionizer electrodes positioned across the inlet to said ionizer cell;

means for charging said ionizer electrodes to a first relatively high DC voltage;

an electrically conducting plate-like passive electrode positioned between and parallel to each adjacent pair of said ionizer electrodes;



means for charging said passive electrodes to a second relatively high DC voltage such that a relatively high electrostatic field is created between said ionizer electrodes and said passive electrode;

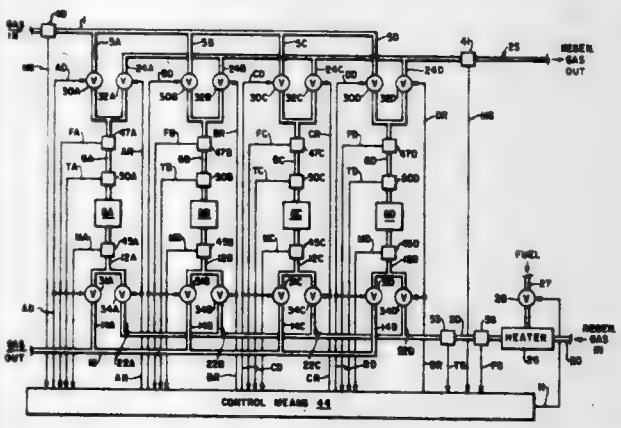
and a box-like enclosure surrounding said ionizer cell, the side walls of said enclosure adjacent the outermost ones of said ionizer electrodes forming grounded electrically conducting surfaces, a relatively high electrostatic field being produced between the outer ones of said ionizer electrodes and said surfaces.

4,351,649

CONTROL SYSTEM FOR GAS DEHYDRATORS

William R. Owens, Ridgefield, Conn.; Henry C. Chan, Port Arthur, Tex.; Ooriapadical C. Abraham, Nederland, Tex., and Levi C. Parker, Port Arthur, Tex., assignors to Texaco Inc., White Plains, N.Y.

Continuation-in-part of Ser. No. 96,862, Nov. 23, 1979, abandoned. This application Jun. 29, 1981, Ser. No. 278,135
Int. Cl.³ B01D *53/04*
U.S. Cl. 55—162 13 Claims



1. A control system for a plurality of gas dehydrators, each dehydrator having a dessicant bed, comprising

means for sensing the moisture of gas entering and leaving each dehydrator and providing moisture signals representative thereof,

moist gas means connected to each dehydrator for providing moist gas to each dehydrator in accordance with control signals,

dehydrated gas means connected to each dehydrator for

discharging dehydrated gas from the dehydrator in accordance with control signals,

regeneration gas means connected to each dehydrator for providing regeneration gas to each dehydrator in accordance with control signals,

discharge regeneration gas means connected to each dehydrator for discharging regeneration gas from the dehydrator in accordance with control signals,

control signal means connected to the sensing means, to the moist gas means, to the dehydrated gas means, to the regeneration gas means and to the discharge regeneration gas means for providing the control signals to the moist gas means, to the dehydrated gas means, to the regeneration gas means and to the discharge regeneration gas means in accordance with the signals from the sensing means so as to cause each dehydrator to dehydrate moist gas to provide dehydrated gas until the dessicant bed in the dehydrator requires regeneration and to then cause regeneration of the bed by applying the regeneration gas and discharging said regeneration gas after passage through the dehydrator until the bed is regenerated at which time the dehydrator again dehydrates moist gas, and

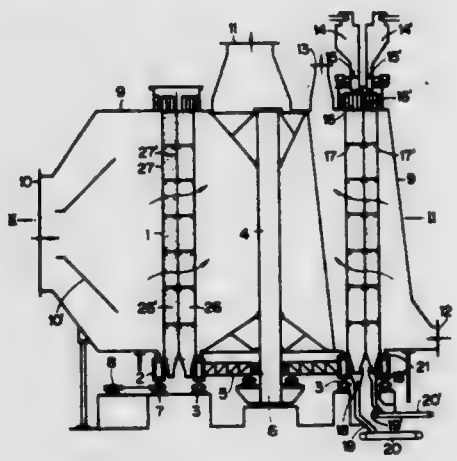
channeling detection means connected to the moisture sensing means for detecting if channeling has occurred in a bed in accordance with the moisture signals.

4,351,650

EXHAUST GAS DESULFURIZATION APPARATUS

Naoharu Shinoda; Nobutaka Maeda, and Kyoji Kubo, all of Hiroshima, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 1, 1981, Ser. No. 249,924
Int. Cl.³ B01D *53/08*
U.S. Cl. 55—181 7 Claims



1. An exhaust gas desulfurization apparatus comprising:

a housing having a plurality of gas inlets and outlets;

a cylindrical cage mounted rotatably about a substantially vertical axis within said housing, said cylindrical cage including a perforated cylindrical outer shell, a concentric perforated inner shell, an imperforate top section, an imperforate bottom section and a concentric perforated shell placed intermediate the inner and outer cylindrical shells and defining, respectively, inner and outer packing sections, said cage further including a plurality of vertically disposed, radially extending sealing partitions defining a plurality of chambers within each of said inner and outer packing sections;

a gas-removing adsorbent placed stationarily with respect to and within the inner packing section;

a particulate separating packing placed stationarily with respect to and within the outer packing section, said particulate separating packing having a smaller particle size than said gas removing adsorbent;

a means for replacing said gas-removing adsorbent;

a means for replacing said particulate separating packing independent of said gas-removing adsorbent;

an inner casing secured within said housing between the vertical axis and the concentric inner shell, said inner casing and corresponding sections of said housing being divided into an adsorption zone, a desorption zone, a cooling zone and a gas-removing adsorbent and particulate separating packing replacement zone,

a first means for sealingly engaging said housing with the perforated cylindrical outer shell; and

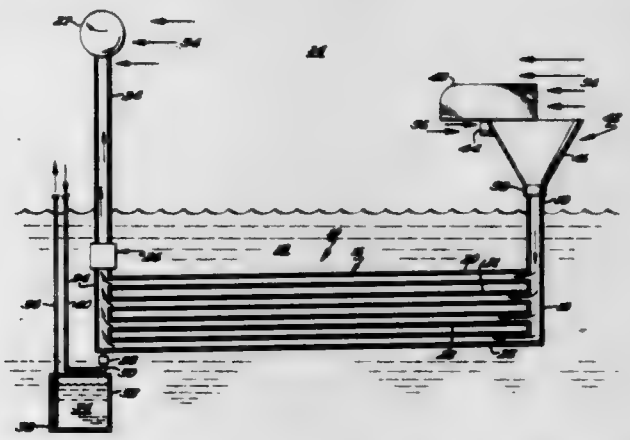
a second means for sealingly engaging said inner casing with the concentric inner shell, said first and second sealing means provided to sealingly separate the inner casing, the corresponding sections of said housing and some of the plurality of chambers into said zones, whereby rotation of said cylindrical cage between each of said zones permits removal of particulate and gaseous contaminants from an exhaust gas introduced into said apparatus through one of said plurality of gas inlets such that the gas passes sequentially through said particulate separating packing contained in the outer packing section and thereafter through the gas-removal adsorbent, desorption of said adsorbent, cooling of said adsorbent and selective replacement of said gas-removal adsorbent and said particulate separating packing.

4,351,651

APPARATUS FOR EXTRACTING POTABLE WATER

Calice G. Courneya, Route 7, Alexandria, Minn. 56308

Filed Dec. 12, 1980, Ser. No. 215,967
Int. Cl.³ B01D *46/00*
U.S. Cl. 55—210 16 Claims



1. Apparatus for extraction of potable water from moisture-laden atmospheric air, comprising, in combination: cold heat exchanger in temperature communication with the subsurface media of earth and providing for passage of moisture-laden air therethrough and providing for the extraction of water from such moisture-laden air by passive cooling of the air to or near the dew point of the air causing the water in the air to condense; air entrance means in air communication with the atmosphere and in air communication with the cold heat exchanger for providing moisture-laden air from the atmosphere to the cold heat exchanger; air exit means in air communication with the cold heat exchanger and in air communication with the atmosphere for providing moisture-drained air from the cold heat exchanger to the atmosphere; means for maximizing the amount of water condensed in the cold heat exchanger and for preventing the air flow from exceeding the heat exchanger capacity comprising an air restrictor in the air exit means for restricting the flow of air through the air exit means for increasing the residence time of the air passing through the cold heat exchanger wherein said restrictor restricts the flow of air to a greater degree as the temperature of the exhaust air through the exit means increases and/or restricts the flow of air to a greater degree as the velocity of the exhaust air through the exit means increases; means for causing air flow from the atmosphere, through the cold heat exchanger and back to the atmosphere; and a reservoir in fluid communication

with the cold heat exchanger to collect water condensed out of the moisture-laden air in the cold heat exchanger.

4,351,652

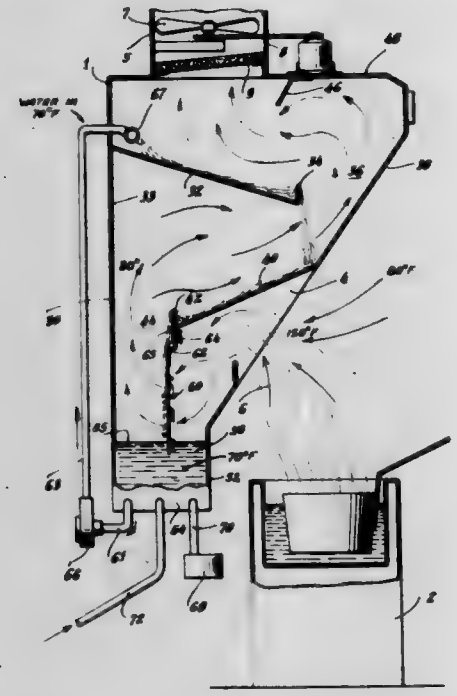
FUME HOOD

Walter L. Wisting, 5 Oakdale Rd., Branford, Conn. 06405

Continuation of Ser. No. 865,793, Dec. 30, 1977, abandoned, which is a continuation of Ser. No. 522,536, Nov. 11, 1974, abandoned. This application Mar. 12, 1981, Ser. No. 243,081

Int. Cl.³ B01D *47/00*

U.S. Cl. 55—229 **4 Claims**



1. A hood adapted to remove contaminants from incoming airflow and adapted to be positioned above a cooking apparatus comprising a housing member, said housing member having top, front, back and side walls, and defining a lower liquid sump, an upper exhaust opening in said top wall, an inlet opening defined in the front wall of said housing member above said defined sump, an upper partition extending between said side walls from said back wall and having a free end defining an air passage between said upper partition and said front wall, said upper partition being inclined downwardly toward its free end, a lower partition extending between said side walls from said front wall and having a free end defining an air passage between said lower partition and said back wall, said lower partition inclined downwardly toward its free end, the free end of said lower partition overhanging said sump, said upper and lower partitions defining an air passage therebetween of decreasing cross-sectional area to said air passage defined by the free end of said upper partition and said front wall whereby a tortuous air passage is defined from said inlet opening about said lower partition, between said partitions, between said upper partition and said front wall and to said exhaust opening, a screen having openings therein extending between said side walls and from the free end of said lower partition into said sump, said screen and said back wall defining an air passage of a lesser cross-sectional area than said air passage between said partitions adjacent said back wall, each of said partitions having means on the free ends thereof defining a liquid dam having a horizontal upper edge, and means for drawing liquid from said sump and delivering the liquid substantially uniformly to the upper surface of said upper partition whereby the liquid will overflow the dam on said upper partition and fall in a sheet to said lower partition and thereafter overflow the dam on the free end of said lower partition, and move across the screen and the openings in said screen to said sump, whereby air passing into said inlet opening and through said housing member passes through the liquid moving across the openings in said screen and then through a sheet of liquid overflowing the dam of said upper partition, and means for moving air through said housing member.

4,351,653

METHOD FOR PRODUCING SEPARATING NOZZLE ELEMENTS

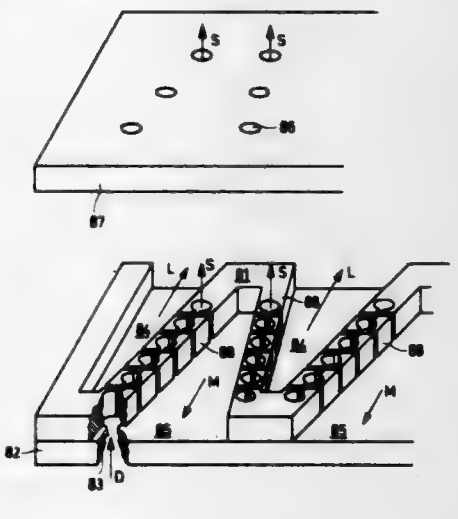
Erwin W. Becker; Wolfgang Ehrfeld; Gunther Krieg, all of Karlsruhe, and Wilhelm Bier, Eggenstein-Leopoldshafen, all of Fed. Rep. of Germany, assignors to Kernforschungszentrum Karlsruhe Gesellschaft mit beschrankter Haftung, Karlsruhe, Fed. Rep. of Germany

Filed Aug. 15, 1980, Ser. No. 178,569

Claims priority, application Fed. Rep. of Germany, Aug. 18, 1979, 2933570

Int. Cl.³ B01D *19/00*

U.S. Cl. 55—394 **13 Claims**



1. A method for producing a separating nozzle element composed of a separating body and end plates enclosing the body, for separating components of gaseous or vaporous mixtures, the separating body being provided with separating structures which delimit separating chambers and gas conduits and the end plates being provided with channels for supplying gas to, and removing gas streams from, the separating chambers and conduits, comprising:

(a) producing the separating body in successive contiguous layers by carrying out the following sequence of steps a plurality of times until a given separating body thickness is achieved:

(i) providing a mold layer of a material whose ability to be removed by a predetermined procedure is influenced by that application thereto of radiation of a given type;

(ii) irradiating selected portions of the layer with an effective amount of the given type of radiation in a spatial pattern corresponding to the separating structures to render only selected regions of the layer which correspond to the separating structures removable in the predetermined manner;

(iii) removing the selected regions by performing the predetermined procedure on the irradiated layer; and

(iv) filling the spaces created in the layer by said step of removing with a material which is compatible with the gaseous or vaporous mixture whose components are to be separated, in order to form a laminar portion of the separating structures; and

(b) removing the remaining material of the mold layers.

12. A separating nozzle element produced according to the method defined in claim **1** and presenting a plurality of adjacent separating nozzle systems each having at least one separating chamber communicating with an associated inlet conduit and outlet conduit, wherein each said inlet conduit communicates with said chambers of an associated pair of adjacent nozzle systems and each said outlet conduit communicates with said chambers of an associated pair of adjacent nozzle systems.

4,351,654
PROCESS FOR THE REMOVAL OF PRECIPITATES IN HEAT EXCHANGERS OF LOW TEMPERATURE INSTALLATIONS

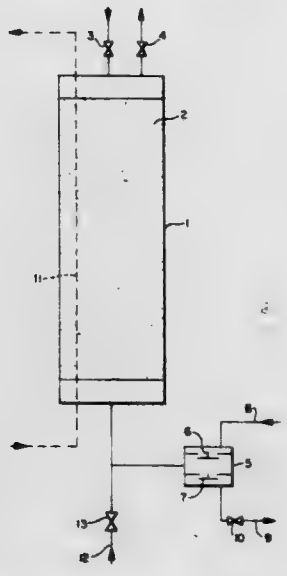
Waldemar Krebs, and Hermann Bromme, both of Marl, Fed. Rep. of Germany, assignors to Chemische Werke Hüls Aktiengesellschaft, Marl, Fed. Rep. of Germany

Filed Dec. 17, 1980, Ser. No. 217,222

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1979, 2950810

Int. Cl.³ F25J *3/00*

U.S. Cl. 62—13 **8 Claims**



1. A process for removing troublesome precipitates of condensable gases in a heat exchanger of a continously operated low temperature installation wherein gas to be cooled which contains condensable gases at a temperature of e.g. from 25° C. to 30° C. is passed from the warm end to the cold end of the exchanger through a storage material and over heat exchange surface, maintained at a temperature ranging from −165° C. to −160° C. at the cold end, and cold regenerator gas free of condensable gases is alternately passed from the cold end to the warm end over the storage material and heat exchanger surfaces to remove precipitates of the condensable gases therefrom in a cyclic operation, without total shut-down of the installation, characterized in that warm gas which is at a temperature of between 0° C. and +110° C. and which does not contain any condensable gases is introduced briefly at the cold end of the heat exchanger and is passed over the heat exchanger surfaces and through the storage material to remove precipitates of the condensable gases.

4,351,655
TWO STAGE CARBON DIOXIDE AND METHANE SEPARATION

Ralph E. Styring, Jr., Dallas, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 108,204, Dec. 28, 1979, abandoned. This application Apr. 21, 1981, Ser. No. 256,197

Int. Cl.³ F25J *3/02*

U.S. Cl. 62—28 **3 Claims**

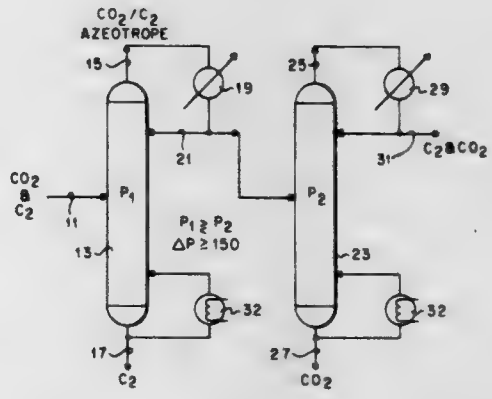
1. A method for separating a mixture of carbon dioxide and ethane derived from a prior separation stage, said method comprising:

(a) passing a fluid mixture comprised of carbon dioxide and ethane into a first distillation column, said fluid mixture having been derived from a prior carbon dioxide separation stage;

(b) operating said first distillation column at a first pressure to form an azeotropic mixture of carbon dioxide and ethane;

(c) passing said azeotropic mixture to a second distillation column;

(d) operating said second distillation column at a second pressure different from said first pressure, said difference between said first pressure and said second pressure being at least 150 psia; and



(e) separating and recovering at least a portion of said ethane in said azeotropic mixture passed to said second distillation column.

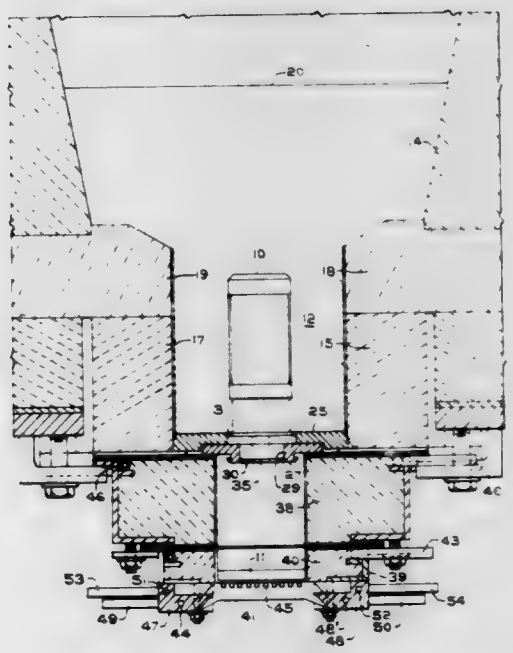
4,351,656
HIGH PRESSURE FORMING BUSHING

Thomas H. Jensen, Murrysville, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 193,206, Oct. 2, 1980, abandoned. This application Aug. 27, 1981, Ser. No. 296,704

Int. Cl.³ C03B *37/025*

U.S. Cl. 65—1 **22 Claims**

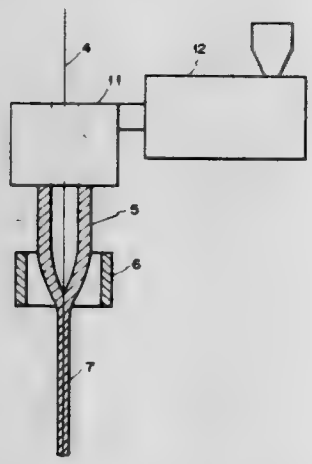


1. A fiber glass forming bushing comprising a container for molten glass having a corrugated bottom forming a plurality of ridges and grooves, said ridges having a generally flat surface and said grooves forming a space between adjacent ridges, each ridge being spaced equidistant from the next adjacent ridge, insulating material filling each of said grooves, orifices positioned on said ridges and projecting therefrom, said orifices being in communication with the interior of said container to thereby permit molten glass to pass from said container through said orifices by gravity and means to connect said bushing to a molten glass source and means external of the bushing and in contact with said insulating material to provide mechanical support to the bottom of the bushing.

4,351,657
METHOD FOR COATING OPTICAL FIBERS WITH THERMOPLASTIC RESIN

Takao Kimura; Shigeki Sakaguchi, and Hisao Takata, all of Mito, Japan, assignors to Nippon Telegraph & Telephone Public Corporation, Tokyo, Japan

Filed Feb. 11, 1981, Ser. No. 233,476
Claims priority, application Japan, Feb. 21, 1980, 55-19843
Int. Cl.³ C03B *37/025*; C03C *25/02*
U.S. Cl. 65—3.11 19 Claims

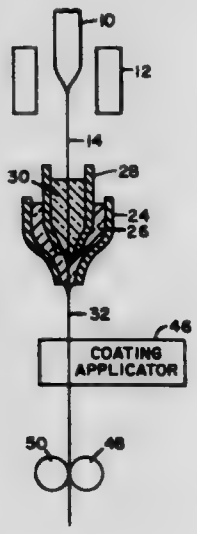


1. A process for preparing optical fibers comprising:
drawing an optical fiber preform, which has been heated and softened, at or above a predetermined speed to form an optical fiber;
continuously extruding thermoplastic resin around said optical fiber to form a continuous thermoplastic pipe having an inner diameter sufficiently large to surround said optical fiber and continuously feeding said extruded thermoplastic pipe along with said optical fiber; and
passing said continuously fed optical fiber and surrounding thermoplastic pipe to a means for heating and softening part of said surrounding thermoplastic pipe to cause said heated and softened thermoplastic pipe to coat said optical fiber as said optical fiber is being fed together with said thermoplastic pipe.

4,351,658
MANUFACTURE OF OPTICAL FIBERS

Robert Olshansky, Natick, Mass., assignor to Corning Glass Works, Corning, N.Y.

Filed Dec. 12, 1980, Ser. No. 215,574
Int. Cl.³ C03B *37/075*; C03C *25/02*
U.S. Cl. 65—3.12 6 Claims

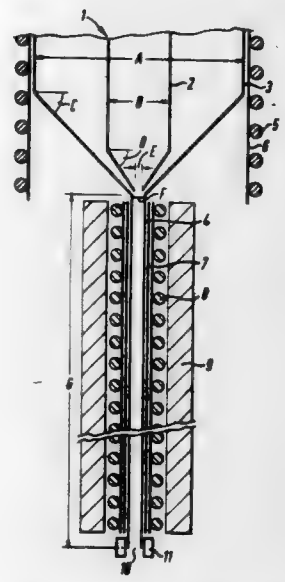


1. A method of forming an optical waveguide fiber comprising the steps of
forming by a chemical vapor deposition technique a glass draw blank comprising a centrally disposed region of core glass surrounded by a thin layer of inner cladding glass,
heating at least a portion of the preform and drawing therefrom a preliminary fiber,
passing said preliminary fiber through a first crucible containing a first outer cladding glass having an expansion coefficient larger than that of said core glass and said inner cladding glass, and
passing the resultant fiber through a second crucible containing a second outer cladding glass having an expansion coefficient lower than that of said first outer cladding glass.

4,351,659
METHOD FOR MANUFACTURE OF GRADED INDEX OPTICAL FIBRES

Keith J. Beales, Ipswich; Clive R. Day, Woodbridge, and George R. Newns, Hintlesham, all of England, assignors to The Post Office, London, England

Division of Ser. No. 19,161, Mar. 9, 1979, abandoned. This application Oct. 26, 1981, Ser. No. 314,779
Claims priority, application United Kingdom, Mar. 14, 1978, 100161/78
Int. Cl.³ C03C *25/02*
U.S. Cl. 65—3.13 1 Claim



1. A method of manufacturing a graded index optical fibre in a double crucible comprising an outer body portion holding molten cladding glass, an inner body portion within the outer body portion, holding molten core glass, the inner body portion having an exit orifice leading into the outer body portion, the said body portions being maintained at an elevated temperature characterised by the steps of extending the dwell period in which the core and cladding glasses remain in contact under diffusing conditions with one another in the crucible by providing on the outer body portion downstream of the exit orifice an elongate flow tube, maintaining said flow tube at a temperature above that of the said body portions and lowering the temperature of one region of the elongate flow tube to control the flow rate of molten glass therethrough.

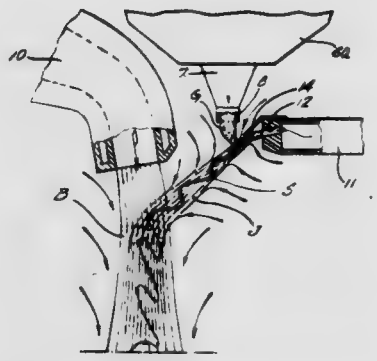
4,351,660
TORATION WITH MULTIPLE JET DEFLECTION

Dominique Plantard, Rantigny; Gerard Langlais, Creil, and Rene Fournier, Rantigny, all of France, assignors to Isover Saint-Gobain, Paris, France

Filed Mar. 16, 1981, Ser. No. 243,709
Claims priority, application France, Feb. 19, 1981, 81 03276
Int. Cl.³ C03B *37/06*
U.S. Cl. 65—5 7 Claims

1. Equipment for making mineral fiber mat comprising a blast generator having a downwardly directed blast orifice, means for generating a plurality of gaseous jets directed in

paths transverse to the path of the blast, a plurality of devices for deflecting each of the jets into paths intercepted by the blast, and a source of molten mineral material with orifice means providing for delivery of streams of the molten material into the deflected jets in zones spaced from the interception of the jets by the blast, the orifice means for delivery of the



streams of molten material being positioned intermediate the blast generator and the means for generating the jets, and the deflected jets having greater kinetic energy than the blast per unit of volume and thereby penetrating the blast and developing zones of interaction in the blast, with resultant fiberization of the streams of molten material in the zones of interaction.

4,351,661

FIBERIZATION BY GAS BLAST ATTENUATION

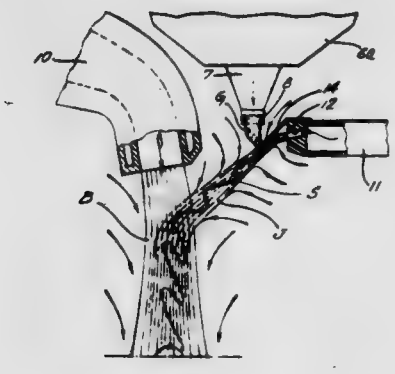
Marcel Levecque, deceased, late of Birchrunville, Pa.; by Marc Levecque, administrator, Paris, France; Jean A. Battigelli, and Dominique Plantard, both of Rantigny, France, assignors to Isover Saint-Gobain, Paris, France

Continuation-in-part of Ser. No. 102,256, Dec. 10, 1979, and Ser. No. 90,078, Oct. 31, 1979, Pat. No. 4,268,293, said Ser. No. 102,256, is a division of Ser. No. 926,954, Jul. 20, 1978, Pat. No. 4,199,338, which is a continuation-in-part of Ser. No. 834,540, Sep. 19, 1977, Pat. No. 4,145,203, and Ser. No. 762,789, Jan. 25, 1977, Pat. No. 4,102,662, said Ser. No. 90,078, is a continuation-in-part of Ser. No. 917,480, Jun. 21, 1978, Pat. No. 4,194,897, which is a continuation of Ser. No. 762,789, , said Ser. No. 762,789, is a continuation-in-part of Ser. No. 557,282, Mar. 11, 1975, Pat. No. 4,015,964, which is a continuation-in-part of Ser. No. 353,984, Apr. 24, 1973, Pat. No. 3,885,940. This application Mar. 16, 1981, Ser. No. 244,129

Claims priority, application France, Feb. 19, 1981, 81 03276

Int. Cl.³ C03B *37/06*

U.S. Cl. 65—5 **28 Claims**



2. A method for making a fibrous mat of fibers formed from attenuable material, comprising directing a gaseous blast in one path, directing a gaseous jet in first path extended transverse to the path of the blast, deflecting the jet from said first path into a second path extended transverse to path of the blast, said second path being extended toward the blast at a smaller angle to the path of the blast than said first jet path, the deflected jet having a transverse cross-sectional dimension smaller than that of the blast but having kinetic energy per unit of volume greater than that of the blast to provide for penetration of the deflected jet into the blast and thereby develop a zone of interaction of the jet in the blast, the jet flow thereby also merging with the blast flow, delivering a stream of attenuable material in attenuable condition into the influence of the jet, into said zone of interaction thereby effect fiberization of said stream in the blast, and collecting formed fibers on a travelling fiber-collecting surface.

4,351,662

METHOD OF MAKING PHOTOSENSITIVE POROUS GLASS

Thomas H. Elmer, Corning, and Che-Kuang Wu, Horseheads, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Jun. 25, 1981, Ser. No. 277,069

Int. Cl.³ C03C *3/26, 11/00*

U.S. Cl. 65—30.1 **3 Claims**

1. A method of providing a dispersion of a photosensitive silver and chlorine-containing polyphosphate in the pores of a porous glass support with a small average pore diameter which comprises the steps of:

(a) introducing NaCl and KH_2PO_4 into the pores using at least one liquid vehicle;

(b) at least partly removing the liquid vehicle from the pores;

(c) introducing $AgNO_3$ into the NaCl and KH_2PO_4-containing pores using a liquid vehicle; and

(d) heating the glass support to remove remaining liquid vehicle and to react the NaCl, KH_2PO_4 and $AgNO_3$ to form a photosensitive silver and chlorine-containing polyphosphate material in situ in the pores of said support.

4,351,663

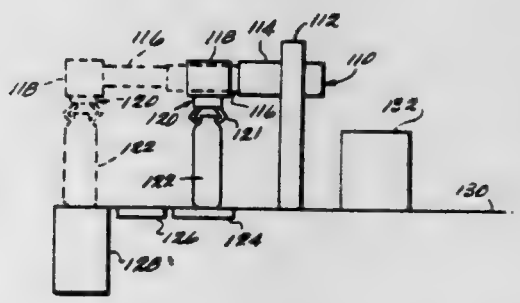
GLASS CONTAINER REJECTOR

Charles L. Wood, Muncie, Ind., assignor to Ball Corporation, Muncie, Ind.

Continuation-in-part of Ser. No. 116,969, Jan. 30, 1980, abandoned. This application Mar. 10, 1981, Ser. No. 242,413

Int. Cl.³ C03B *9/44, 35/12*

U.S. Cl. 65—66 **27 Claims**



1. In an individual section of a machine for forming ware having molded means and cooling means for controllably cooling said ware, an apparatus for transporting ware from said molding means to a selected one of subsequent process means, including said cooling means and a disposal means, said apparatus comprising:

a first member, operable arcuately in a predetermined plane, having first and second actuator means;

a third actuator means for operating said first member arcuately in said predetermined plane;

a second member movable lengthwise with respect to said first member, said first actuator means communicating with said second member and operative to extend and retract said second member with respect to said first member; and

a head member for grasping and releasing said ware, said head member connected to said second member and responsive to said second actuator means for maintaining the axis of said ware perpendicular to a horizontal plane.

25. A method for selectively transferring articles, supplied in successive cycles of operation of a machine, to a first area for

additional processing and a second area for disposal comprising the steps of:

continuously accumulating the number of disposed operations commanded;

grasping said article;

rotating said article, said article being rotated one hundred eighty degrees through a first vertical arc to said first area when the result of said accumulating step is zero and being rotated one hundred eighty degrees through a second vertical arc to said second area when the result of said accumulating step is non-zero;

releasing said article; and

adjusting the result of said accumulating step to account for each executed disposal operation.

4,351,664

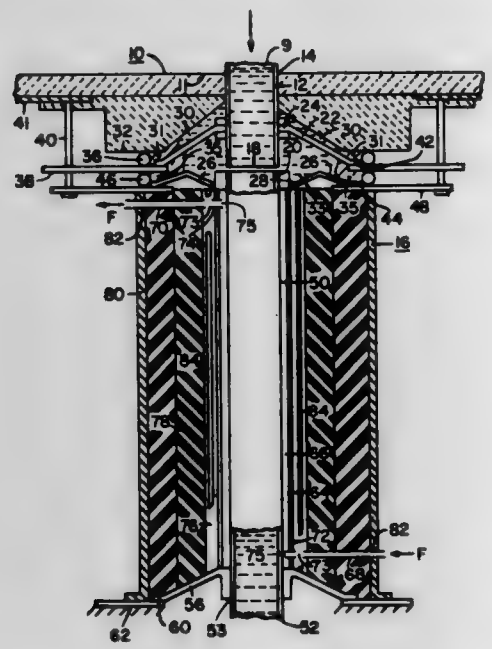
FURNACE DELIVERY SYSTEM

Bihari Bansal, Harrodsburg, Ky., assignor to Corning Glass Works, Corning, N.Y.

Filed Mar. 16, 1981, Ser. No. 244,024

Int. Cl.³ C03B *7/06*

U.S. Cl. 65—128 **17 Claims**



1. A furnace delivery apparatus for conditioning molten thermo-plastic material leaving the furnace at a relatively high temperature comprising: a pipe having inlet adapted to receive the material at one end and an outlet for delivering said material at a desired homogeneity therefrom, the pipe becoming heated to near the high temperature by contact with the thermoplastic material; a shell having at least one fluid inlet and an outlet, the shell located concentrically about said pipe and defining a closed annular space thereabout for receiving a heat exchange fluid and a purge fluid therein, the purge fluid being inert relative to the pipe, said shell having inlets and outlets for at least one pass circulation of the heat exchange fluid and the purge fluid in at least a portion of the annular space adjacent the pipe for respectively removing sensible heat from the material passing through said pipe and for driving out deleterious ambient atmosphere from the annular space, and thereby shielding the pipe while near the relatively high heat from the deleterious ambient; and an insulating structure located about said annular space for minimizing heat loss therefrom.

16. A method of delivering molten thermoplastic material, leaving a furnace at a relatively high temperature through a channel member having an insulating layer spaced exteriorly of the channel member leaving an annular space thereabout, comprising the steps of: conducting said thermoplastic material through the channel member, which channel member becomes heated to near the high temperature by the thermoplastic material in contact therewith; shielding said channel member, while at the elevated temperature, from deleterious ambient atmosphere by supplying a purge fluid into the annular space to be in contact with an exterior of the channel member, and thereby blocking ambient atmosphere from coming into contact with the channel member while it is near the high temperature; choosing the purge fluid to be inert relative to the channel member; and removing heat from said thermo-plastic material by heat exchange with the channel member to a working fluid into and out of portions of said annular space, whereby the thermo-plastic material entering the channel member passes therethrough and is delivered from an outlet end thereof in a desired condition.

4,351,665

SULFINOATE HERBICIDAL ANTIDOTES

Raymond A. Felix, Richmond, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 140,079, Apr. 14, 1980, abandoned, which is a continuation-in-part of Ser. No. 52,389, Jun. 27, 1979, abandoned. This application Mar. 9, 1981, Ser. No. 241,901

Int. Cl.³ A01N *41/00, 33/02*

U.S. Cl. 71—103 **5 Claims**

1. A herbicidal composition consisting essentially of

(a) a herbicidally effective amount of trifluralin; and

(b) a non-phytotoxic antidotally effective amount of a sulfinoate of the formula:



in which R and R_1 are each haloalkyl having 1–4 carbon atoms.

4,351,666

ENOL DERIVATIVES OF 2-ARYL-1,3-CYCLOHEXANEDIONE COMPOUND AS SUGAR ENHANCER FOR PLANTS

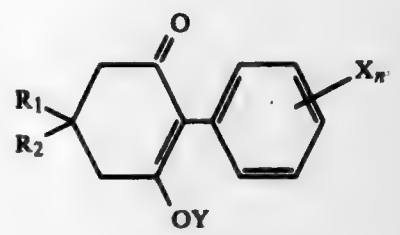
John F. Koerwer, Perkasie, Pa., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Jun. 27, 1980, Ser. No. 163,632

Int. Cl.³ A01N *37/02, 37/06, 31/06, 35/06*

U.S. Cl. 71—106 **10 Claims**

1. A method for increasing the sugar content of plants which comprises applying to such plants prior to harvesting an effective amount of a compound of the formula:



wherein:

R_1 is a hydrogen atom or an alkyl group having from 1 to 4 carbon atoms,

R_2 is a hydrogen atom, an alkyl group having from 1 to 10 carbon atoms, or a cycloalkyl group having from 5 to 10 carbon atoms.

Y is a hydrogen atom, an alkanoyl, alkynol, aryoyl or alkenoyl group having from 6 to 12 carbon atoms or a cation selected from the group consisting of ammonium radicals, alkaline metal cations and alkaline earth metal cations.

X is an alkyl group having from 1 to 4 carbon atoms, an alkoxy group having from 1 to 4 carbon atoms, a halogen atom, a nitro group, an amino group, or a cyano group.

a is an integer of 1 to 3.

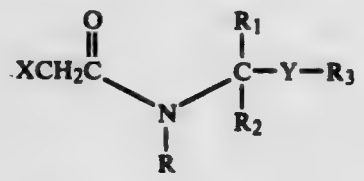
4,351,667

HERBICIDAL TERTIARY 2-HALOACETAMIDES

John P. Chupp, Kirkwood, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 897,472, Apr. 18, 1978, abandoned. This application Apr. 18, 1979, Ser. No. 31,087
Int. Cl.³ A01N *37/18*; C07C *103/37, 121/48*
U.S. Cl. 71—118 45 Claims

1. Compounds having the formula



wherein

X is chlorine, bromine or iodine;

Y is O, S or —NH—;

R is a C_{5-7} 1-cycloalken-1-yl radical which may be substituted with C_{1-6} alkyl;

R_1 and R_2 are hydrogen or C_{1-6} alkyl and

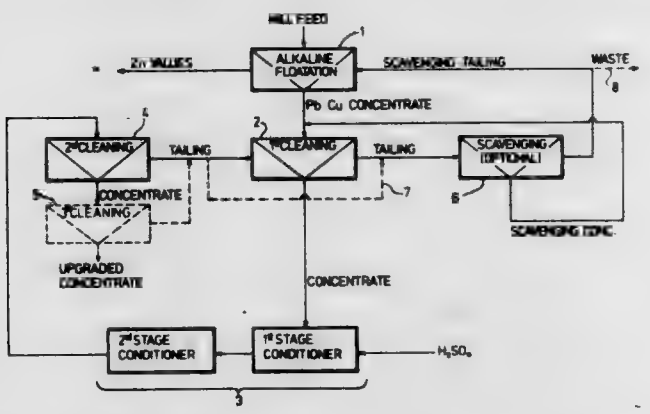
R_3 is C_{1-6} alkyl, haloalkyl or alkoxyalkyl or alkenyl, haloalkenyl or alkynyl having up to 4 carbon atoms, cyclopropylmethyl, acetyl when Y is —NH— or pivaloyl or 2-cyanopropyl when Y is O.

4,351,668

FLOTATION OF CU AND PB SULFIDE CONCENTRATES CONTAINING CARBONATES

Leonard P. Stephenson, Yellowknife, Canada, and Arthur A. Schweizer, Salem, Mo., assignors to Cominco Ltd., Canada

Filed Mar. 9, 1981, Ser. No. 241,960
Int. Cl.³ C22B *1/00*; B03D *1/14*
U.S. Cl. 75—2 9 Claims



1. A process for the beneficiation of lead or copper-lead sulphide ore or concentrate containing calcium and magnesium carbonate impurities comprising conditioning the ore or concentrate in two stages, for a residence time in the conditioning of at least about 15 minutes, with a limited amount of sulphuric acid to form an acidic slurry, said limited amount of sulphuric acid being sufficient to provide a pH in the first stage in the range of about 1.5 to 3.0 without the evolution of hydrogen sulphide, and subjecting said acidic slurry to froth flotation at a pH in the range of about 5 to 6.5 in the presence of a xanthate collector for sulphide minerals for a flotation product of concentrate comprising lead or lead-copper enriched concentrate and a residual slurry of tailing comprising calcium and magnesium as magnesium sulphate, calcium sulphate, and precipitated calcium sulphate.

4,351,669

IMPREGNATING COMPOSITION, A PROCESS FOR ITS PREPARATION AND PRODUCTS PREPARED BY USING THE COMPOSITION

Hilmar R. Nielsen, Forvägen 7, S 145 51 Norsborg, Sweden

Filed Aug. 12, 1980, Ser. No. 177,474
Claims priority, application Sweden, Aug. 16, 1979, 7906866
Int. Cl.³ C09D *5/20*
U.S. Cl. 106—2 15 Claims

1. An impregnating composition suitable for use in imparting fire, water and freezing resistance to cellulose-based materials comprised of the following components:

(a) an alkaline extract formed by contacting an alkali with a lignocellulose material;

(b) a high molecular weight carbohydrate; and

(c) an alkali or alkaline earth metal silicate or colloidal silica.

4,351,670

LIGHTWEIGHT CONCRETE AND METHOD OF MAKING SAME

Harold E. Grice, 120 Abbott St., Salinas, Calif. 93901

Filed Apr. 4, 1980, Ser. No. 137,340
Int. Cl.³ C04B *21/08*
U.S. Cl. 106—88 15 Claims

1. A method of making lightweight, substantially non-shrinking concrete comprising the steps of:

(a) providing a body of cured cellular concrete material, said cellular concrete material being of a type whose curing is accompanied by substantial shrinkage;

(b) breaking said body of cured cellular concrete material into fragments;

(c) coating said fragments with a first cementitious material and allowing said cementitious material to cure; and

(d) mixing said fragments, thus coated, with a second cementitious material for ultimate curing as a finished product, said second cementitious material being of a type whose curing is accompanied by minimal shrinkage.

4,351,671

WATER REDUCING AGENT WITH REDUCED AIR

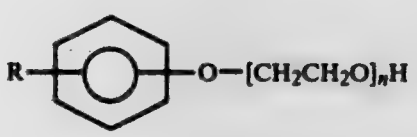
Arnold M. Rosenberg, Potomac; James M. Gaidis, Ellicott City, and Lawrence J. Kindt, Woodbine, all of Md., assignors to W. R. Grace & Co., New York, N.Y.

Filed Apr. 15, 1981, Ser. No. 254,235
Int. Cl.³ C04B *7/35*
U.S. Cl. 106—90 8 Claims

1. An additive composition for hydraulic cement consisting essentially of

(a) a lignin-water-reducing agent and

(b) 2 to 8 weight %, based on the lignin water-reducing agent, of



in which R is octyl or nonyl and n is 10 to 18.

4,351,672

REMOVAL OF OBJECTIONABLE FLAVOR AND ODOR CHARACTERISTICS IN FINISHED SUGAR PRODUCTS PRODUCED FROM MOLASSES

Otto G. Hohnerlein, Jr., Savannah; Willie E. Smith, Jr., Tybee Island, and Nicholas T. Rimedio, Sr., Savannah, all of Ga., assignors to Savannah Foods & Industries, Inc., Savannah, Ga.

Filed Nov. 10, 1980, Ser. No. 205,515
Int. Cl.³ C13D *3/14*
U.S. Cl. 127—46.3 15 Claims

1. A method for removing undesirable flavor and odor char-

acteristics in a finished sugar product produced from the ion exclusion of molasses which yields sugar and non-sugar portions and wherein the sugar portion is treated according to the steps comprising:

(a) subjecting the sugar portion of ion excluded molasses to gross decolorization;

(b) purifying the solution treated according to step (a) to remove all remaining impurities; and

(c) concentrating or evaporating the purified sugar portion so that the percent of dry solids in solution is substantially increased to obtain a high quality sugar product which conforms to or exceeds existing standards for such sugar products, the method being further characterized by subjecting the sugar portion prior to concentrating or evaporating to the steps comprising:

(i) treating the sugar portion with a halogen or a nascent halogen agent so that the sugar portion is acidified to a point lower than its naturally occurring pH;

(ii) removing excess free halogen from the sugar portion treated according to step (i) to render the sugar portion free from objectionable flavor and odor characteristics.

4,351,673

METHOD FOR REMOVING IRON SULFIDE SCALE FROM METAL SURFACES

Michael B. Lawson, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed May 22, 1981, Ser. No. 266,226
Int. Cl.³ C23G *1/08*
U.S. Cl. 134—3 **10 Claims**

1. A process for dissolving ferrous sulfide with minimum evolution of hydrogen sulfide gas comprising contacting said ferrous sulfide with an aqueous acidic solution containing a compound in an amount effective to dissolve ferrous sulfide, said compound selected from the group consisting of maleic acid, maleic anhydride, alkali metal and ammonium salts of maleic acid and mixtures thereof, said aqueous solution having a pH of less than 7, and maintaining said contact for a time and at a temperature sufficient to dissolve said ferrous sulfide.

4,351,674

METHOD OF PRODUCING A SEMICONDUCTOR DEVICE

Isao Yoshida, Tokyo, Japan; Yasuo Wada, Waban, Mass.; Masao Tamura, Tokorozawa, Japan; Masanobu Miyao, Kodaira, Japan; Makoto Ohkura, Hachioji, Japan; Nobuyoshi Natsuaki, Kodaira, Japan, and Takashi Tokuyama, Higashikurume, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 29, 1980, Ser. No. 182,825
Claims priority, application Japan, Aug. 29, 1979, 54-109165
Int. Cl.³ H01L *21/265, 21/263*
U.S. Cl. 148—1.5 **11 Claims**

1. A method of producing a semiconductor device including the step of irradiating with a laser beam both a first region which contains an impurity at a high concentration and a second region which adjoins the first region to diffuse said impurity in a plane direction into said second region, whereby the impurity is more uniformly distributed in the first and second regions to provide a more uniform impurity concentration in the first and second regions.

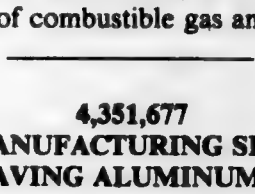
4,351,675

CONVERSION COATINGS FOR ZINC AND CADMIUM SURFACES

Donald J. Gubde, Euclid, Ohio, assignor to ROHCO, Inc., Cleveland, Ohio

Filed Mar. 2, 1981, Ser. No. 239,331
Int. Cl.³ C23F *7/08*
U.S. Cl. 148—6.15 R **34 Claims**

1. An aqueous acidic coating solution for treating zinc, zinc alloy or cadmium surface consisting essentially of water, an effective amount of nitric acid to provide a desired level acidity, and (A) an oxidizing agent selected from the group consisting of hydrogen peroxide, nitrate ion, nitrite ion, halate ion or mixtures thereof, and (B) a compound having the formula



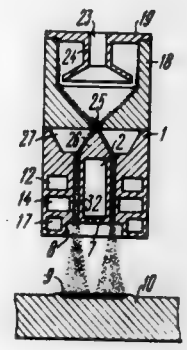
wherein R is hydrogen or an alkyl group of from 1 to 4 carbon atoms.

4,351,676

METHOD AND APPARATUS FOR POWDER SCARFING OF METAL

Artur L. Daiker, ulitsa B.Khmelnitskogo, 27, kv. 14; Anatoly I. Veis, ulitsa Vorovskogo, 9, kv. 77; Evgeny Y. Kochengin, ulitsa Chasovaya, 5, kv. 2; Nikolai M. Novoselov, ulitsa Degtyareva, 89, kv. 58; Gennady Y. Morozov, ulitsa Kommunisticheskaya, 6a, kv. 67; Vladimir S. Rybin, ulitsa Elkina, 84, kv. 29; Nikolai A. Belokur, ulitsa Degtyareva, 40a, kv. 16, and Nina A. Savelieva, prospekt Lenina, 71, kv. 141, all of Chelyabinsk, U.S.S.R.

PCT No. PCT/SU79/00113, § 371 Date Jul. 10, 1981, § 102(e) Date Jul. 10, 1981, PCT Pub. No. WO81/01381, PCT Pub. Date May 28, 1981
PCT Filed Nov. 15, 1979, Ser. No. 285,111
Int. Cl.³ B23K *7/06, 7/08*
U.S. Cl. 148—9 C **3 Claims**



1. A method for powder scarfing of metal, comprising supplying a combustible gas and oxygen to a metal treating zone, delivering flux by means of a flux-carrier gas, melting the flux and feeding it to the metal treating zone, characterized in that prior to being melted, the flux is generated from the flux-carrier gas and the latter is discharged whereupon the flux is melted and then fed to the zone (9) of treating the metal (10) in-between the jets of combustible gas and oxygen.

4,351,677

METHOD OF MANUFACTURING SEMICONDUCTOR DEVICE HAVING ALUMINUM DIFFUSED SEMICONDUCTOR SUBSTRATE

Yasuhiro Mochizuki; Yoko Wakui, and Hiroaki Hachino, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

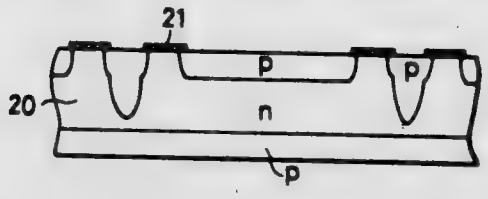
Filed Jul. 10, 1980, Ser. No. 167,399
Claims priority, application Japan, Jul. 16, 1979, 54-89339
Int. Cl.³ H01L *21/225*
U.S. Cl. 148—188 **6 Claims**

1. A method of selectively diffusing aluminum into a silicon semiconductor substrate comprising the steps of:

(a) selectively forming a layer of silicon dioxide to provide a mask pattern having at least one opening therein over a major surface of a silicon semiconductor substrate having an N-conductivity type,

(b) depositing aluminum onto said major surface of said silicon semiconductor substrate so that said aluminum is spaced apart from said layer of silicon dioxide, and

(c) subjecting said substrate to a heat treatment for selectively diffusing said aluminum into selected regions of said silicon semiconductor substrate; said aluminum being



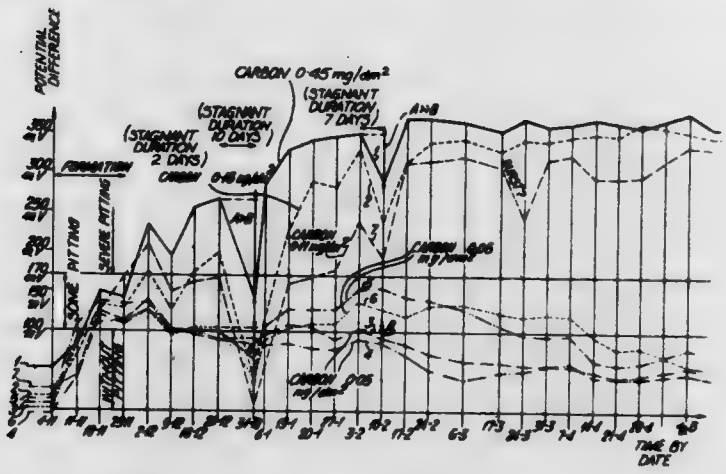
spaced from said layer of silicon dioxide sufficiently to avoid diffusion of the aluminum into said silicon dioxide layer.

4,351,678

METHOD OF MAKING CORROSION RESISTANT PHOSPHOROUS COPPER OR PHOSPHOROUS COPPER ALLOY PIPES

Yves Andrien, Embourg, and Christian Triquet, Esneux, both of Belgium, assignors to Usines a Cuivre et a Zinc de Liege, Belgium

Filed Aug. 6, 1980, Ser. No. 175,749
Int. Cl.³ C23F *7/02*
U.S. Cl. 148—6.31 **3 Claims**



1. A method of manufacturing an improved corrosion resistant pipe comprised primarily of phosphorous copper, the method comprised of the following steps;

forming a pipe by a drawing method;

removing the residue lubricants with a solvent;

heating the pipe to 700° C.;

injecting an atmosphere comprised of 15% by volume oxygen, and 85% by volume of a gaseous mixture comprised of 25% helium and 75% argon; and

heating the pipe to 650° C.

4,351,679

LABEL-LEAFLET APPLYING APPARATUS

Hans C. Dreher, Dallas, Pa., assignor to Culbro Corporation, New York, N.Y.

Filed Aug. 8, 1980, Ser. No. 176,590
Int. Cl.³ B65C *9/08*
U.S. Cl. 156—70 **31 Claims**

1. A high speed apparatus for applying labels to containers in a continuous through put operation, the apparatus having container entry and exit stations and a label applicator station, comprising:

conveyor means for transporting said containers through the apparatus from said entry station to said exit station at a constant predetermined speed and in a predetermined spaced relationship with one another;

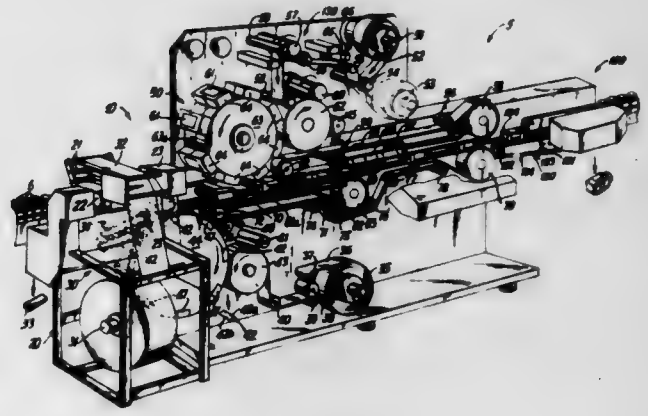
means for feeding a continuous label web to said label application station, said label web having label indicia and particularly oriented verification marks disposed therein for each individual label;

means disposed upstream of said label application station for cutting each individual label from the label web;

means for conveying said cut individual labels to said application station;

label applicator means disposed at said label application station for receiving a cut label and applying said label to a container while the container is in motion as it passes said label application station;

control means for selectively operating said label applicator means at the precise time one of said spaced apart containers passes said label applicator means;



label verification means disposed upstream of said label application station including splice sensing means for detecting portions of the label web which have been spliced together;

tracking means responsive to said splice sensing means for tracking the spliced label web portion and the container to which it is applied; and

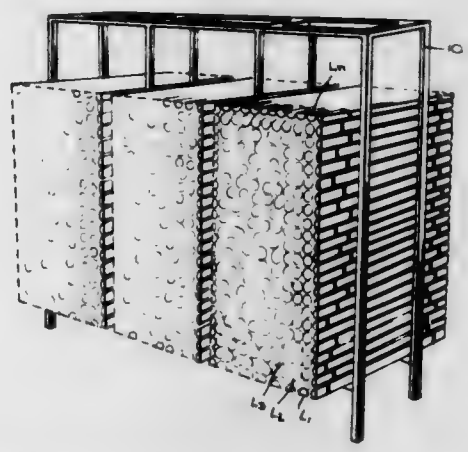
means responsive to said tracking means for segregating said container to which a spliced label web portion has been applied from properly labeled containers.

4,351,680

TECHNIQUE FOR CONVERTING BALSA LOGS INTO CONTOURABLE PANELS

Jean Kohn, New York, N.Y., assignor to Baltek Corporation, Northvale, N.J.

Continuation-in-part of Ser. No. 894,047, Apr. 6, 1978, Pat. No. 4,208,369, which is a continuation-in-part of Ser. No. 860,617, Dec. 14, 1977, Pat. No. 4,122,878. This application Aug. 3, 1978, Ser. No. 930,740
Int. Cl.³ B27K *3/15*; B32B *5/18*; B27D *1/00*
U.S. Cl. 156—79 **5 Claims**



1. A technique for producing contourable panels composed primarily of balsa wood and conformable to curved surfaces for lamination thereto comprising the steps of:

(A) cutting balsa trees whose trunk or branch diameters are in a range of about 1½ to 4 inches into raw logs having a length of at least about 6 feet;

(B) peeling the bark from the raw logs to expose the underlying wood;

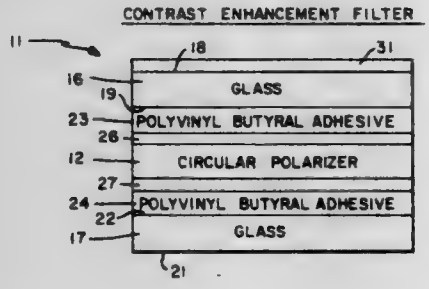
(C) cutting the peeled logs into round balsa wood pieces of like length;
(D) kiln-drying the pieces to reduce the moisture content to about 12 percent;
(E) applying separators to the pieces to keep the pieces from touching each other;
(F) stacking the pieces to form a multi-layer assembly thereof in which the pieces lie in substantially parallel relation and are separated from each other to define a matrix of intersticial spaces;
(G) interlaminating the separated pieces in the assembly by injecting into the matrix a solution of an elastomeric synthetic plastic material which when cured adheres to the pieces to form an integrated stock block; and
(H) dividing said block into panels, each constituted by round tiles hinged together by said elastomeric material, whereby the resultant panel is contourable to said curved surface.

4,351,681

CONTRAST ENHANCEMENT FILTER AND METHOD

Marc A. Kamerling, Santa Rosa, Calif., assignor to Optical Coating Laboratory, Inc., Santa Rosa, Calif.

Division of Ser. No. 1,359, Jan. 5, 1979, Pat. No. 4,278,736. This application May 18, 1981, Ser. No. 264,475
Int. Cl.³ B32B *31/18*; G02B *1/08*
U.S. Cl. 156—99 **8 Claims**



1. In a method for manufacturing a contrast enhancement filter, providing a circular polarizer having outer surfaces formed of cellulose acetate butyrate, placing a thin film of an optically clear primer on the outer surfaces of the cellulose acetate butyrate of the circular polarizer, drying the thin film of primer, providing first and second glass substrates, providing polyvinyl butyral adhesive layers, assembling the glass substrates, the circular polarizer and the polyvinyl butyral adhesive layers into a sandwich construction by placing the circular polarizer with the primer layers thereon between the glass substrates and placing the polyvinyl butyral adhesive layers between the circular polarizer and the glass substrates, temporarily bonding the sandwich into a unitary assembly, evacuating the air between the layers of the sandwich, subjecting the sandwich to an elevated temperature and pressure to a cause any remaining air within the sandwich to be absorbed by the polyvinyl butyral adhesive layers and to cause the polyvinyl butyral adhesive layers to form a hot melt adhesive to bond the parts of the sandwich into a unitary assembly, cooling the unitary assembly so that the polyvinyl butyral adhesive becomes a solid and reducing the pressure to atmospheric.

4,351,682

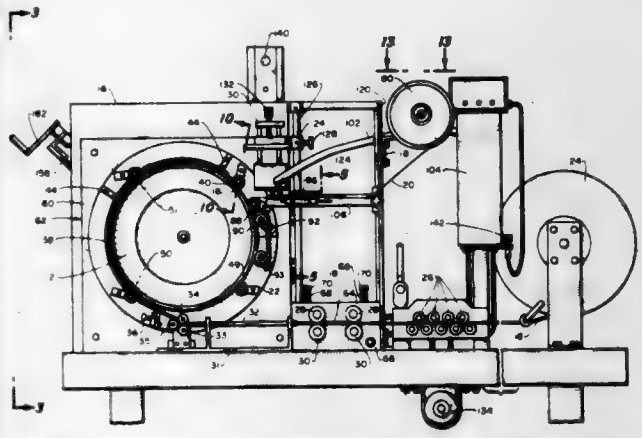
FLEXIBLE DUCT FORMING APPARATUS AND METHOD

Hugh K. McGuire, North Hollywood, Calif., assignor to CASCO Inc., San Fernando, Calif.

Filed Jun. 20, 1980, Ser. No. 161,425
Int. Cl.³ B65H *81/00*
U.S. Cl. 156—143 **78 Claims**

1. A method of producing flexible duct comprising;
feeding flexible strip material to a mandrel;
rotating said mandrel;
wrapping said flexible strip material on said rotating mandrel in a continuous helix, with each successive wrap having overlapping edges;
feeding reinforcing wire to said mandrel;
deforming said reinforcing wire to produce a predetermined coil diameter;
guiding and holding said reinforcing wire on a substantially fixed helical path of constant pitch and diameter from the deforming step to between the overlapping edges of flexible strip material;
sealing said overlapping edges of flexible strip material to each other to encapsulate said wire thereby continuously forming flexible duct.

7. A flexible duct forming apparatus comprising;
a base;
a mandrel;
support means on said base for rotatably supporting said mandrel;
drive means for rotatably driving said mandrel;



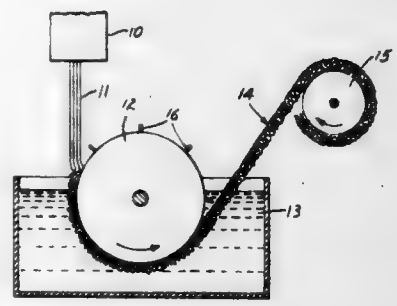
flexible strip material feed means for feeding flexible strip material to said mandrel;
wrapping means for wrapping said flexible strip onto said mandrel in a helical path with adjacent wraps having overlapping edges;
wire feed means comprising;
wire deforming means for deforming said wire to produce a predetermined coil diameter,
wire guide means forming a substantially fixed helical path of constant pitch and diameter for guiding and holding said wire on said substantially fixed helical path from said wire deforming means to between the overlapping edges of said flexible strip material,
sealing means for sealing the overlapping edges of said flexible strip material to encapsulate said wire whereby flexible wire reinforced duct is continuously formed on said mandrel.

4,351,683

METHOD OF FORMING WEB MATERIAL

LeRoy I. Kusilek, River Falls, Wis., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Continuation-in-part of Ser. No. 676,497, Oct. 19, 1967, abandoned. This application Oct. 23, 1970, Ser. No. 83,450
Int. Cl.³ D04B *3/16*
U.S. Cl. 156—167 **4 Claims**



1. Method of making a smooth-surfaced open porous inte-

grated mat of continuous crinkled filaments by continuous differential quenching, which comprises extruding a hot filament-forming extrudable thermoplastic polymeric material in the form of a bundle of closely-spaced separate continuous filaments, permitting said filaments to fall under their own weight toward the surface of a liquid quench bath, maintaining a contact surface above said quench bath surface in a position to permit brief glancing contact with at least a portion of the outer filaments of said bundle while permitting the remaining filaments of said bundle to fall directly to said bath surface, allowing the filaments to fall into the quench bath, and advancing the resulting bundle of filaments within said quench bath at a linear speed substantially less than the extrusion speed of said filaments, whereby to cause crinkling and inter-engagement of said filaments into a lightly unified mat having a flat surface area of increased density.

4,351,684

PNEUMATICALLY OPERATED APPLICATOR AND METHOD OF APPLYING ADHESIVE TAPE

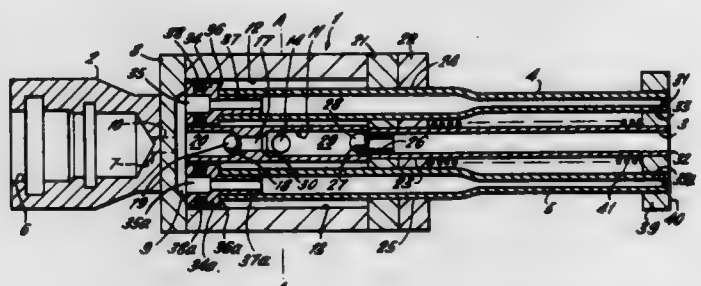
Ralph D. Gibbons, and Geoffrey G. Shackleford, both of Basingstoke, England, assignors to Lansing Bagnall Limited, Hampshire, England

Filed Apr. 27, 1981, Ser. No. 257,612

Claims priority, application United Kingdom, Apr. 29, 1980, 8014054

Int. Cl.³ B29C *17/04, 27/22*

U.S. Cl. 156—215 **11 Claims**



1. A method of applying a length of adhesive tape around a cable, bundle of wires or other generally cylindrical object, comprising:

holding a length of the tape at the end of a tube by pneumatic suction;

moving the said end of the tube to a position adjacent the object;

advancing two probes, one on each side of and relative to the said tube so as to straddle the object; and providing a pneumatic jet laterally inwardly from at least one of the probes to blow a respective part of the tape around the object.

4,351,685

DUPLICATING STENCIL

Leslie Clark, Newcastle upon Tyne, England, assignor to Roneo Alcatel Limited, Romford, England

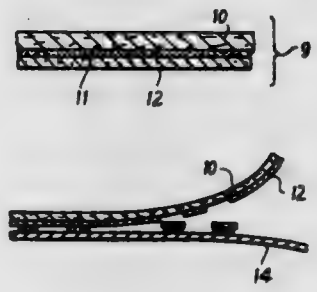
Continuation of Ser. No. 929,467, Jul. 31, 1978, abandoned. This application Feb. 11, 1980, Ser. No. 120,513

Claims priority, application United Kingdom, Aug. 1, 1977, 32243/77

Int. Cl.³ B32B *31/00*; D21F *11/00*; B41L *11/06*; B05D *5/06*

U.S. Cl. 156—234 **8 Claims**

1. A method of producing a duplicating stencil comprising forming a stencil sheet by detachably bonding an ink impermeable surface layer to a porous base layer by means of an adhesive, said ink impermeable layer having been rendered readily breakable by incorporation of the finely-divided particulate material dispersed therein, placing the ink impermeable surface layer in contact with an electrostatically-produced image on a substrate, passing the contacting stencil sheet, surface layer and substrate image through a fusing stage of heating the image such that the image, in addition to being bonded to the substrate, is bonded to said surface layer and subsequently separating the stencil sheet from the substrate so as to remove the surface layer from the stencil sheet in the image regions.



4,351,686

METHOD OF BONDING SILICONE RUBBER TO NON-SILICONE ADHESIVE

David F. Clark, Burlington, Conn., assignor to The Stanley Works, New Britain, Conn.

Filed Dec. 10, 1980, Ser. No. 215,133

Int. Cl.³ C09J *3/02*

U.S. Cl. 156—329 **8 Claims**

1. A method of bonding a silicone rubber to a non-silicone pressure sensitive adhesive comprising the steps of treating the surface of the silicone rubber to be bonded with a silicone adhesive, and thereafter applying a layer of the non-silicone pressure sensitive adhesive to the treated silicone rubber surface so as to obtain an immediate bond between said layer and said surface.

4,351,687

MACHINE FOR COILING STRIP MATERIAL WITH A DEVICE FOR MOMENTARY IMMOBILIZATION OF THE TAILS OF THE STRIPS

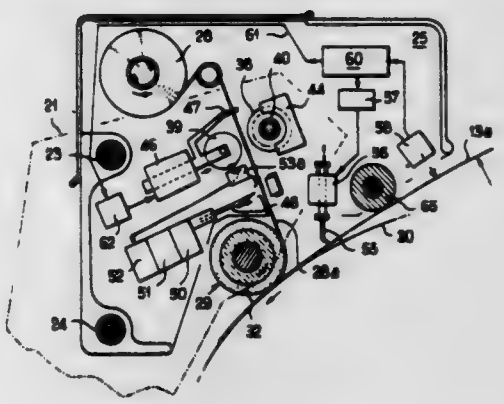
Gaston Lesage, Cannettecourt BP 112, 60600 Clermont, France

Filed Apr. 16, 1981, Ser. No. 254,878

Claims priority, application France, Apr. 16, 1980, 80 08570

Int. Cl.³ B65B *61/00*

U.S. Cl. 156—353 **10 Claims**



1. In a machine for coiling strip material, in which several strips are coiled side by side, on a rotating shaft, a device for momentary immobilization of the strip tails, comprising:

a plurality of supports, each for carrying a roll of adhesive tape;

a pressing roller for pressing tape onto the coil of strip material;

drive and guide means connected to each said support for causing the tape to be driven and guided to said pressing roller, when in an operative position, and for releasing the tape when in a non-operative position;

cutting means mounted on each said support for automatically cutting the adhesive tape after a predetermined length of tape has been fed by said drive and guide means, each of said cutting means comprising a jack fixedly con-

nected to said support, a cutting tool mounted on the piston of said jack, a counting unit for assigning a numerical value to the length of tape being fed by said drive and guide means, and control means for causing said jack to be actuated when said counting unit reaches a preselected numerical value;

separating means mounted on each said support for causing the tail of the strip material to separate from the wound coil;

detector means for detecting the proximity of a tail of strip material; and

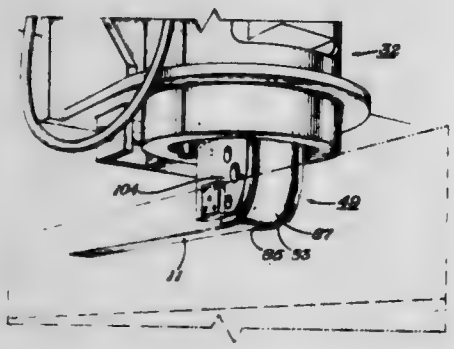
control means for causing said drive and guide means to assume said operative position upon detection of a tail by said detector means.

4,351,688

COMPOSITE TAPE LAYING MACHINE

Olin E. Weiss, Anneta North; Grant L. Davis, Fort Worth; James L. Hudson, Azle, and Harlan T. Dowell, Fort Worth, all of Tex., assignors to General Dynamics Corporation, Fort Worth, Tex.

Division of Ser. No. 101,524, Dec. 10, 1979, Pat. No. 4,292,108.
This application May 20, 1981, Ser. No. 265,373
Int. Cl.³ B32B *31/18*
U.S. Cl. 156—358 **2 Claims**



1. In an apparatus for laying composite tape in parallel rows to form a structural member, the apparatus being of the type having a table, a tape laying head supported adjacent the table, drive means for providing relative movement between the head and the table, and a tape supply carried by the head, having a free end adapted to pass in a feed path in the head and out onto a work surface on the table, the improvement comprising:

a chute mounted to the head at the discharge end of the feed path for guiding the tape, the chute being curved to change the direction of travel of the tape; and

an endless belt mounted adjacent the chute in a curved configuration around the curved portion of the chute, the tape adapted to be carried between the chute and the belt.

2. In an apparatus for laying composite tape in parallel rows to form a structural member, the apparatus having a table, a tape laying head supported adjacent the table, drive means for providing relative movement between the head and the table, a tape supply carried by the head with a free end adapted to pass through a feed path in the head and out a discharge end onto a work surface on the table, and transverse cutter means for making a severance in the tape, the improvement comprising:

a plurality of rollers carried by the head at the discharge end in a transverse row for pressing the tape onto the work surface; and

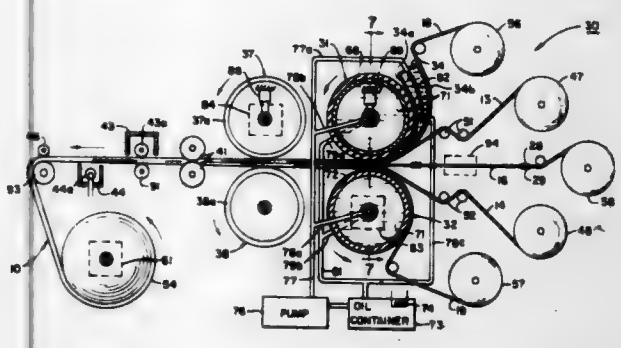
roller actuating means for moving the rollers into and from pressing engagement during said relative movement and for retracting the rollers individually from pressing engagement once a roller approaches the severance.

4,351,689

APPARATUS FOR THE MANUFACTURE OF MULTI-CONDUCTOR FLAT CABLE

William A. Elliott, Reynoldsburg, and Thomas J. Taylor, Gahanna, both of Ohio, assignors to Western Electric Company, Inc., New York, N.Y.

Division of Ser. No. 106,599, Dec. 26, 1979, Pat. No. 4,310,365.
This application Aug. 31, 1981, Ser. No. 298,218
Int. Cl.³ B32B *31/08, 31/18, 31/20, 31/26*
U.S. Cl. 156—378 **16 Claims**



1. An apparatus for the manufacture of multi-conductor flat cable comprising:

first and second rotatably mounted laminating rollers positioned to define a nip, and being adjustably biased so as to provide controllable laminating pressure therebetween, said first roller having a smooth, resilient cylindrical peripheral surface, and said second roller having a cylindrical peripheral surface of metal, and further including an array of laterally spaced, circumferentially disposed grooves of predetermined thickness and width to accommodate respective conductors of one array thereof when drawn through the nip of said rollers;

means for internally heating said first and second rollers to a predetermined temperature;

means for rotatably driving at least one of said first and second rollers;

means positioned between the first roller and a first insulative film, when the latter is advanced through a region immediately adjacent the nip of said first and second rollers, for heating an arcuate portion of said resilient peripheral surface of said first roller to a predetermined temperature, and for heating a surface of a short length of such advanced first insulative film to a predetermined temperature;

first and second payoff supply means for allowing the respective advancement of first and second arrays of conductors through the nip of said first and second laminating rollers;

first and second conductor guiding and tensioning means positioned on the upstream side of said first and second rollers for precisely controlling the alignment of the conductors in said first and second arrays when being advanced to the nip of said first and second rollers;

second and third payoff supply means for allowing the respective advancement of first and second adhesive-backed insulative films through the nip of said first and second rollers while said first and second films are respectively positioned to overlie said first and second conductor arrays, respectively;

third payoff means for allowing the advancement of a third insulative film through the nip of said first and second rollers while interposed between said first and second arrays of conductors, and

take-up means for receiving a cable after having been fabricated upon passing through the nip of said first and second rollers.

7. An apparatus in accordance with claim 1, further including:

third and fourth rotatably mounted finishing rollers positioned downstream from said first and second rollers, and positioned to define a nip, and being adjustably biased so

as to provide controllable pressure therebetween, said third and fourth rollers both being unheated and having smooth, resilient, peripheral surfaces, and

means for rotatably driving at least one of said third and fourth rollers.

10. An apparatus in accordance with claim 7, further comprising:

counter means positioned downstream of said third and fourth rollers, for providing an indication of the lineal running feet of a laminated cable when advanced thereby;

printer means positioned downstream of said third and fourth rollers adapted to imprint desired information on the surface of a fabricated cable when advanced thereby, and

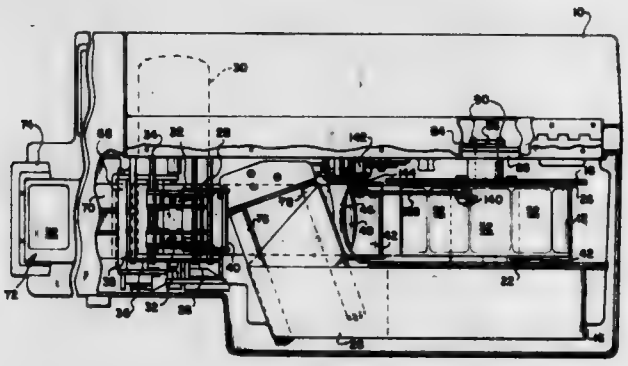
illuminated gauging means positioned downstream of said third and fourth rollers for providing a visual observation of the spacing of the conductors in a fabricated cable when advanced thereby.

4,351,690

LABEL PRINTER SYSTEM

Mark S. George, Dayton, Ohio, assignor to Hobart Corporation, Troy, Ohio

Filed Aug. 11, 1980, Ser. No. 177,025
Int. Cl.³ B65C 9/18
U.S. Cl. 156—384 **21 Claims**



12. A printer system for printing upon labels having pressure sensitive adhesive on the reverse side thereof, said labels being mounted on a web of release material, and for thereafter removing said labels from said web, comprising:

stationary reel support means including a stationary support shaft,

a supply reel, mounted for free rotation on said reel support means, for supporting a supply roll of said release material having labels mounted thereon, said supply reel including a central hub including hub bearing means for providing free rotation of said supply reel about said stationary support shaft,

a take up reel, mounted for free rotation on said reel support means, for supporting a take up roll of said release material wound thereon, said web of release material extending along a supply path from said supply roll to said take up roll,

a printer, mounted adjacent said supply path, for printing on said labels,

web drive means, mounted adjacent said supply path between said printer and said taken up roll, for engaging said web and unreeling said web from said supply roll,

knife edge means, positioned between said printer and said web drive means, for defining a sharp bend in said web supply path to release said labels from said web as said web moves around said sharp bend, and

clutch means, interposed between said supply reel and said take up reel, for rotating said take up reel and said take up roll mounted thereon as said web is unreeled from said supply roll such that substantially the same length of said web of release material is wound onto said take up roll as is unreeled from said supply roll, said clutch means including

a clutch hub mounted for free rotation on said stationary support shaft,

clutch spring means, mounted on said stationary support shaft, for urging said clutch hub into contact with said central hub of said supply reel such that said clutch hub frictionally engages said central hub, and

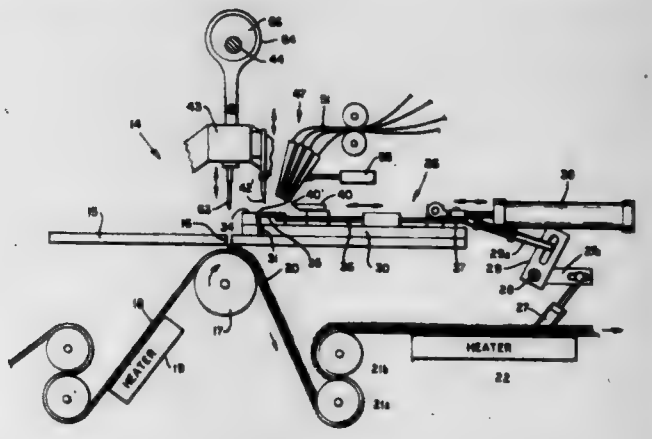
means for attaching said take up reel to said clutch hub, whereby relative rotational movement between said supply reel and said take up reel may be obtained when a torque is applied to said supply reel which is sufficient to overcome the frictional force between said central hub of said supply reel and said clutch hub of said clutch means.

4,351,691

APPARATUS FOR MAKING A TUFTED PRODUCT

Jack M. Schwartz, Rte. 1, Fairmont, Ga. 30755

Filed Nov. 24, 1980, Ser. No. 209,735
Int. Cl.³ D04H 11/00
U.S. Cl. 156—435 **10 Claims**



1. Apparatus for producing tufted material, comprising:

a stationary bed;

an elongated primary tufting slot extending through said stationary bed;

means disposed adjacent one side of said stationary bed to support a tuft receiving backing material in proximate relation to said primary tufting slot;

a sliding bed disposed on the other side of said stationary bed, and selectably movable either to a forward position or a backward position relative to the stationary bed;

an elongated secondary tufting slot extending through said sliding bed, said secondary tufting slot being parallel to said primary tufting slot and being in overlying alignment with the primary tufting slot whenever said sliding bed is in said forward position;

yarn dispensing means disposed adjacent said sliding bed and operative to present plural strands of yarn to the sliding bed at a position spaced apart from said forward position;

yarn clamp means carried on said sliding bed and selectably operative at said spaced apart position to engage and hold said yarn strands, so that lengths of the yarn strands are withdrawn from said yarn dispensing means as said sliding bed moves toward said forward position;

cutting means movable with said sliding bed and operative in response to movement of said sliding bed toward said forward position to cut off a predetermined length of said withdrawn yarn strands, so that the cut lengths of yarn remain engaged by said clamp means and are carried to the forward position with the sliding bed;

said clamp means being operative to release said cut lengths of yarn when said sliding bed is at said forward location with said primary and secondary tufting in overlying alignment, so that the released cut lengths of yarn are disposed over the two aligned slots; and

tufting means positioned adjacent said other side of said stationary bed and disposed in alignment with said primary tufting slot, said tufting means being narrower than

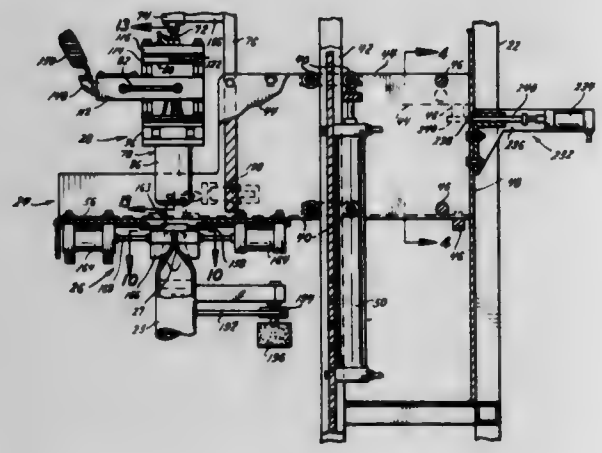
the width of said primary tufting slot and being operative to enter said aligned primary and secondary slots, thereby engaging said released cut lengths of yarn and carrying the yarn lengths through the aligned slots and into engagement with said tuft receiving backing material, so that each cut yarn length forms tufts extending outwardly from the backing material.

4,351,692

APPARATUS AND METHOD FOR AUTOMATICALLY FILLING AND HEAT WELD SEALING LENGTHS OF PLASTIC TUBING

Joseph F. Ouellette, Glendale, Mo., assignor to Ouellette Machinery Systems, Fenton, Mo.

Filed Jan. 7, 1981, Ser. No. 223,117
Int. Cl.[3] B31F *1/00*
U.S. Cl. 156—443 18 Claims



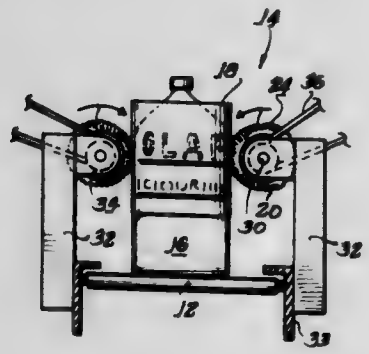
1. A device for sealing an end of a tube comprising means to hold, straighten, and align the tube during the sealing operation, means to abrade the inner surface of the tube end including an arm and a driven rotatable brush mounted thereon with means to selectively position the brush inside the tube end, means to heat the end of the tube being sealed, and means to fold, collapse, and squeeze said heated tube end as it cools, thereby sealing said tube end.

4,351,693

LABEL POSITIONER

Stuart C. Fuller, Riverside, Calif., assignor to Kerr Glass Manufacturing Corp., Los Angeles, Calif.

Filed Sep. 28, 1981, Ser. No. 306,248
Int. Cl.[3] B65C *9/40*
U.S. Cl. 156—556 6 Claims



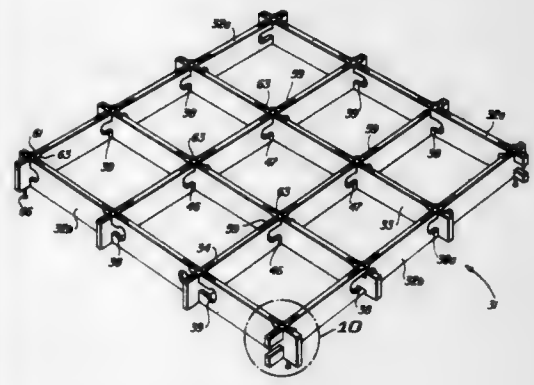
1. In combination
a machine for applying tubular labels over the tops of cylindrical containers, conveyor means for carrying upright cylindrical containers downstream of said machine and a label positioner downstream of said machine for completing application of partially applied labels, said label positioner comprising:
roller means disposed above said conveyor means for tangentially contacting the labels on the conveyed containers, and
drive means for rotating said roller means in a direction which applies a downward stroke to the partially applied labels.

4,351,694

RACK FOR LAYING ITALIAN AND QUARRY TILE

Ronald R. Mathis, 3011 E. Wethersfield, Phoenix, Ariz. 85032

Filed Oct. 15, 1981, Ser. No. 311,520
Int. Cl.[3] B44C *7/00*
U.S. Cl. 156—574 7 Claims



1. A rack for laying tile comprising:
four edging strips arranged to form in end to end arrangement a right angle parallelogram,
one end of each edging strip being notched longitudinal of its length a given distance to receive cooperating notches formed in one of the other ends of said edging strips when they are arranged in end to end arrangement,
each of said edging strips being provided with a pair of like, spacedly arranged slots extending longitudinally thereof, the ends of which are enlarged,
at least one partition strip extending laterally between one pair of parallelly arranged edging strips,
at least another partition strip extending laterally between another pair of parallelly arranged edging strips,
one of said partition strips being provided between its ends with a longitudinally extending slot long and wide enough to receive longitudinally therethrough the other of said partition strips,
the other of said partition strips being notched inwardly of each of its edges at a point along its length corresponding to the position of said slot in said one of said partition strips,
said other of said partition strips when inserted in said slot of said one of said partition strips with its notches aligned with said slot of said one of said partition strips and rotated ninety degrees aligning edge to edge in a common plane with said edging strips and said one of said partition strips, and
a first means for then locking said partition strips in their relative positions.

4,351,695

METHOD OF PRODUCING LOW-RESISTANT, MONOCRYSTALLINE METALLIC LAYERS BY IMPLANTING IONS INTO A POLYCRYSTALLINE METAL LAYER AND HEATING TO PRODUCE A MONOCRYSTALLINE LAYER

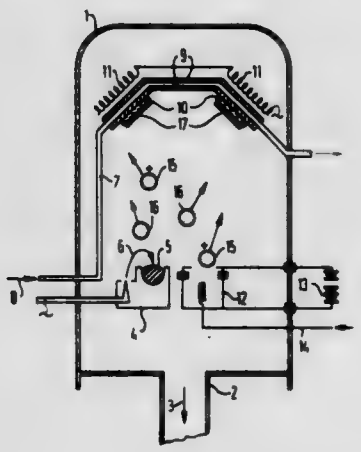
Konrad Hieber, and Norbert Mayer, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jan. 2, 1981, Ser. No. 222,019

Claims priority, application Fed. Rep. of Germany, Jan. 30, 1980, 3003285

Int. Cl.³ C30B *1/02, 29/02;* H01L *21/283*

U.S. Cl. 156—603 12 Claims



1. A method of producing monocrystalline metal layers having a low specific electrical resistance on substrates as are particularly useful in semiconductor and thin film technologies, comprising:

depositing a polycrystalline layer of a select metal onto a substrate;

implanting ions into such layer which are relatively inert to said metal so as to generate crystal lattice disruption in said metal layer; and

heating said substrate to a temperature in the range of about room temperature up to a maximum of about 350° C. so as to convert the resultant greatly disrupted polycrystalline metal layer into its monocrystalline state with a mean grain diameter greater than 100 times the layer thickness.

4,351,696

CORROSION INHIBITION OF ALUMINUM OR ALUMINUM ALLOY FILM UTILIZING BROMINE-CONTAINING PLASMA

Kenneth J. Radigan, Mountain View, Calif., assignor to Fairchild Camera & Instrument Corp., Mountain View, Calif.

Filed Oct. 28, 1981, Ser. No. 315,693

Int. Cl.³ H01L *21/306*

U.S. Cl. 156—643 8 Claims

4. A method for inhibiting corrosion of an aluminum or aluminum alloy film which has been etched in a reactor utilizing chlorinated plasma, comprising the sequential steps of:

(a) purging the reactor utilizing a combination of oxygen and nitrogen;

(b) introducting a bromine-containing gas into the reactor; and

(c) generating a bromine-containing plasma within the reactor.

4,351,697

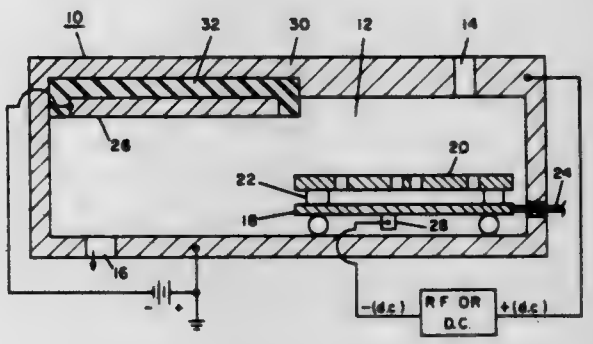
PRINTED WIRING BOARDS

Daniel J. Shanefield, Princeton Township, Mercer County, and Fred W. Verdi, Lawrence Township, Mercer County, both of N.J., assignors to Western Electric Company, Inc., New York, N.Y.

Filed Jan. 4, 1982, Ser. No. 336,980

Int. Cl.³ C23F *1/02*

U.S. Cl. 156—643 9 Claims



1. A method of making a printed circuit from a copper clad substrate having a plurality of spaced through-holes therein comprising:

(a) mechanically scrubbing the surface of the copper cladding;

(b) sputter etching the scrubbed surface so as to remove at least 50 A. of material therefrom;

(c) vacuum metallizing the through-holes subsequent to sputter etching without breaking the vacuum created for sputter etching; and then

(d) forming a circuit pattern on the substrate.

4,351,698

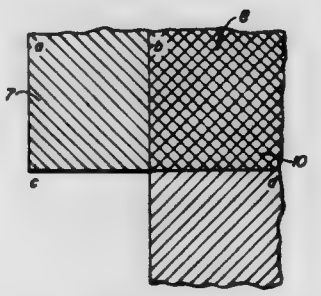
VARIABLE SLOPED ETCHING OF THIN FILM HEADS

John R. Osborne, Saratoga, Calif., assignor to Memorex Corporation, Santa Clara, Calif.

Filed Oct. 16, 1981, Ser. No. 311,968

Int. Cl.³ C23F *1/02*

U.S. Cl. 156—661.1 5 Claims



1. A method of fabricating variable sloped, as well as straight, edges on the Ni-Fe body of a thin film head comprising:

A. forming a Ti layer on the Ni-Fe body covering at least those areas of the body to exhibit the variable slope;

B. forming a photoresist layer atop the Ti layer and Ni-Fe body;

c. removing the photoresist in those areas of the Ti layer and Ni-Fe body which are not to be retained as part of the thin film head after etching;

D. etching the thin film head with an etchant containing HF and $FeCl_3$ to form variable sloped edges in those areas of the Ni-Fe body covered with Ti and photoresist and straight edges at the boundary of those areas of the Ni-Fe body covered only with photoresist.

4,351,699

SOFT, ABSORBENT TISSUE PAPER

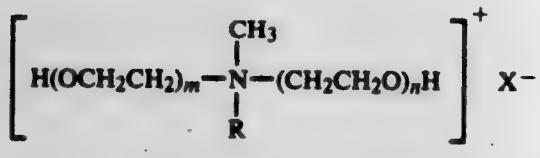
Thomas W. Osborn, III, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Oct. 15, 1980, Ser. No. 197,291
Int. Cl.[3] D21H *3/12, 5/24*
U.S. Cl. 162—112 22 Claims

1. A process for making a soft, absorbent tissue paper web comprising the steps of forming an aqueous papermaking furnish, depositing said furnish on a foraminous surface, removing the water from said furnish, and enhancing the strength of the web so formed wherein said aqueous papermaking furnish comprises:

(a) papermaking fibers;

(b) at least one quaternary ammonium compound having the structure



wherein R is an aliphatic hydrocarbon radical selected from the group consisting of alkyl radicals having from about 12 to about 18 carbon atoms, alkylene radicals having from about 12 to about 18 carbon atoms, coconut, and tallow, X is halogen, m and n are both integers each having a value of at least 1, and the sum of m and n is from about 2 to about 15; and

(c) at least one nonionic surfactant selected from the group consisting of

(1) ethylene oxide adducts of fatty alcohols; and

(2) ethylene oxide adducts of fatty acids

wherein said fatty alcohols and fatty acids each have from about 12 to about 18 carbon atoms and wherein said adducts contain from about 2 to about 12 moles of ethylene oxide;

wherein said quaternary ammonium compound is present at from about 0.5 to about 5.0 grams per kilogram of papermaking fiber and said nonionic surfactant is present at from about 0.5 to about 5.0 grams per kilogram of papermaking fiber.

8. A process for making a soft, absorbent tissue paper web comprising the steps of

(1) forming an aqueous papermaking furnish;

(2) forming from said papermaking furnish a fibrous pattern densified embryonic web having a multiplicity of discrete zones of relatively high density disposed in a predetermined pattern array;

(3) supporting said embryonic web on an array of spaced supports so that each of a predetermined sub-array of said high density zones is justaposed one of a predetermined sub-array of said supports;

(4) at least partially impregnating at least a substantial proportion of the supported predetermined sub-array of said high density zones with a binder by biasing said predetermined sub-array of said supports towards a contacting type impregnating means with said sub-array of said high density zones disposed between said sub-array of said supports and said impregnating means;

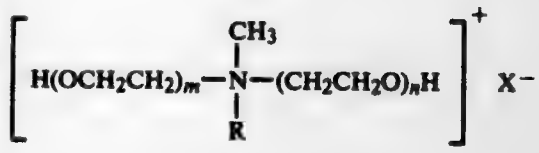
(5) drying said embryonic web; and

(6) creping said dried web

wherein said papermaking furnish is an aqueous slurry comprising:

(a) papermaking fibers;

(b) at least one quaternary ammonium compound having the structure



wherein R is an aliphatic hydrocarbon radical selected from the group consisting of alkyl radicals having from about 12 to about 18 carbon atoms, alkylene radicals having from about 12 to about 18 carbon atoms, coconut, and tallow, X is halogen, m and n are both integers each having a value of at least 1, and the sum of m and n is from about 2 to about 15; and

(c) at least one nonionic surfactant selected from the group consisting of

(1) ethylene oxide adducts of fatty alcohols; and

(2) ethylene oxide adducts of fatty acids

wherein said fatty alcohols and fatty acids each have from about 12 to about 18 carbon atoms and wherein said adducts contain from about 2 to about 12 moles of ethylene oxide;

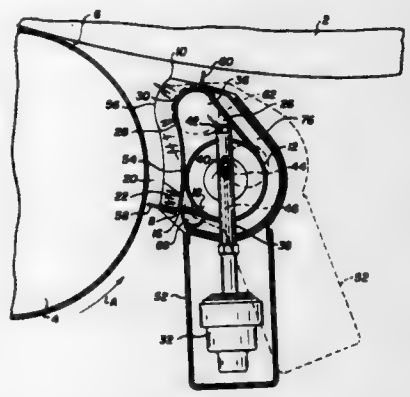
wherein said quaternary ammonium compound is present at from about 0.5 to about 5.0 grams per kilogram of papermaking fiber and said nonionic surfactant is present at from about 0.5 to about 5.0 grams per kilogram of papermaking fiber.

4,351,700

STEAM DISTRIBUTION APPARATUS FOR THE NIP OF TWO ROLLS

Norman F. Dove, 3187 Hoskins Rd., N. Vancouver, British Columbia, Canada (37J 3B5)

Filed Jun. 23, 1980, Ser. No. 162,270
The portion of the term of this patent subsequent to May 26, 1998, has been disclaimed.
Int. Cl.[3] D21F *5/02*
U.S. Cl. 162—252 20 Claims



1. Apparatus to supply steam to a paper sheet that passes by the apparatus from a leading edge to a trailing edge of the apparatus, the apparatus being adapted to be positioned adjacent the nip of two rolls and comprising:

a first header for steam;

a first chamber to receive steam from the first header;

passages for steam between the first header and the first chamber;

an outlet in the first chamber whereby steam may be forced against the paper sheet adjacent the leading edge of the apparatus to form a steam curtain to reduce the amount of air drawn under the apparatus by the paper sheet;

a second chamber to receive steam from the first header;

passages for steam between the first header and the second chamber;

outlets in the second chamber whereby steam may be forced against the paper sheet to heat the sheet;

regulating means to control the flow of steam along the length of the apparatus; the first and second chambers being formed on the exterior of the first header with a

portion of the first header forming a wall of the first chamber and a further portion of the first header forming a wall of the second chamber;

an inner wall of the apparatus conforming generally to the shape of an adjacent portion of a roll surface; and

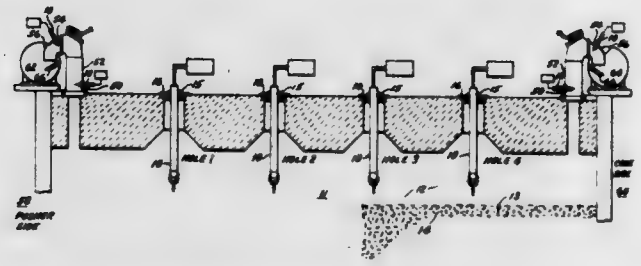
a first part of said inner wall forming a wall of said first chamber and containing the outlet in the first chamber, a second part of said inner wall forming a wall of second chamber and containing said outlets in the chamber.

4,351,701

METHOD OF CONTROLLING A COKING CYCLE

Edmund G. Bauer, Allentown, Pa., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Jan. 12, 1981, Ser. No. 224,405
Int. Cl.³ C10B *5/00*
U.S. Cl. 201—1 **5 Claims**



1. A method of determining the devolatilization endpoint during a coking cycle comprising:

(a) providing a probe adapted to measure the effective thickness of a layer of carbon deposited by gas released from coal during a coking cycle,

(b) positioning said probe such that it is exposed to said gas, and

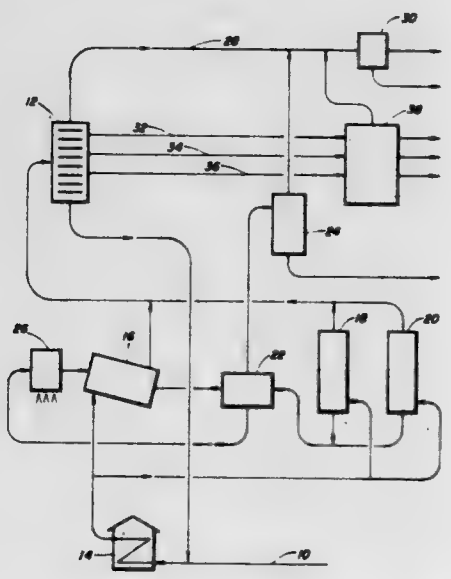
(c) determining endpoint of devolatilization by providing means electrically connected to said probe to indicate effective thickness of carbon having a maximum value.

4,351,702

PROCESSING OF HEAVY HIGH-SULFUR FEEDSTOCKS

Bruce A. Newman, and Lyndon D. Boyer, both of Ponca City, Okla., assignors to Conoco Inc., Ponca City, Okla.

Filed Sep. 8, 1981, Ser. No. 299,747
Int. Cl.³ C10B *55/04, 57/00, 57/02*
U.S. Cl. 201—5 **5 Claims**



1. A process for making low-sulfur metallurgical coke from heavy high-sulfur hydrocarbonaceous feedstock comprising:

(a) heating said feedstock to coking temperature;

(b) passing a first portion of said heated feedstock to a delayed coking operation;

(c) passing a second portion of said heated feedstock to a formcoking operation;

(d) passing delayed coke product from said delayed coking operation and formcoke product from said formcoking operation to a screening operation;

(e) returning undersize material from said screening operation to said formcoking operation;

(f) passing overhead vapors from said coking steps to a fractionation operation;

(g) recovering gas and liquid products from said fractionation operation;

(h) combining the bottoms fraction from said fractionation operation with said feedstock as recycle; and

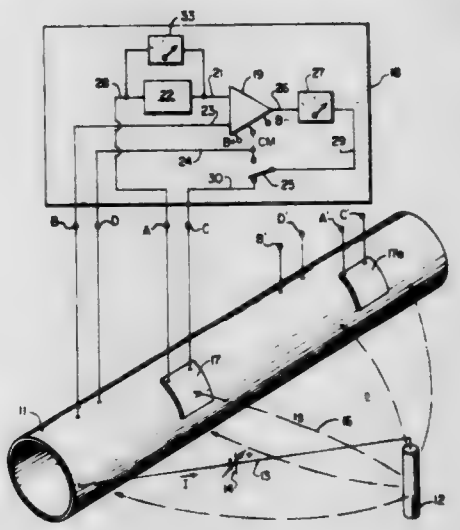
(i) calcining the oversize material from said screening operation at a temperature high enough to produce a calcined coke product having a sulfur content of less than 1.5 percent by weight.

4,351,703

CATHODIC PROTECTION MONITORING

Joseph D. Winslow, Jr., Houston, Tex., assignor to Petrolite Corporation, St. Louis, Mo.

Continuation-in-part of Ser. No. 729,312, Oct. 4, 1976, abandoned. This application Sep. 29, 1978, Ser. No. 947,149
Int. Cl.³ G01N *27/46*; C23F *13/00*
U.S. Cl. 204—1 T **21 Claims**



1. A method for cathodic protection monitoring of a metallic structure located in an earth region or in a body of water and subjected to cathodic protective currents from a remote anode electrode, comprising the steps of;

(a) positioning a metallic specimen closely adjacent to but not in direct electrical contact with the structure and having exposed to the cathodic current a known surface area of at least one magnitude less than the structure, said metallic specimen being of like metallic material to said structure;

(b) inducing current flow between the specimen and the structure until the potential difference between the specimen and the structure is substantially zero;

(c) measuring the current flow between the specimen and the structure;

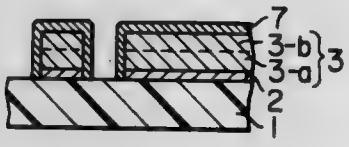
(d) determining the current density impressed upon the specimen which current density is substantially identical to the current density impressed upon exposed like areas of the structure by cathodic current from the remote anode electrode; and

(e) employing an anodic or cathodic induced current flow for varying the potential of the specimen relative to the structure to determine the anodic or cathodic reaction rate, respectively, the unprotected corrosion rate of the structure, and the cathodic current required to protect the structure.

4,351,704
PRODUCTION METHOD FOR SOLDER COATED CONDUCTOR WIRING

Keisuke Kurihara, Yokohama, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 18, 1981, Ser. No. 235,575
Claims priority, application Japan, Feb. 20, 1980, 55-19207
Int. Cl.³ C25D 5/02, 5/10, 5/50
U.S. Cl. 204—15 10 Claims



1. A production method for solder coated conductor wiring comprising the following steps (a) through (g):

(a) a thin metal film selected from the group consisting of chromium, nichrome and titanium is formed on a ceramic substrate by vacuum deposition or sputtering,

(b) a thin copper film is formed on said thin metal film by vacuum deposition or sputtering,

(c) a photo-resist is coated on said thin copper film surface, then developed to remove the photo-resist from the portions of the thin copper film which represent conductors of the wiring to expose the copper of these portions,

(d) an electroplated copper layer is formed on said exposed portions of thin copper film by electroplating,

(e) a lead layer and a tin layer are formed separately superposed relation by electroplating on said copper layer,

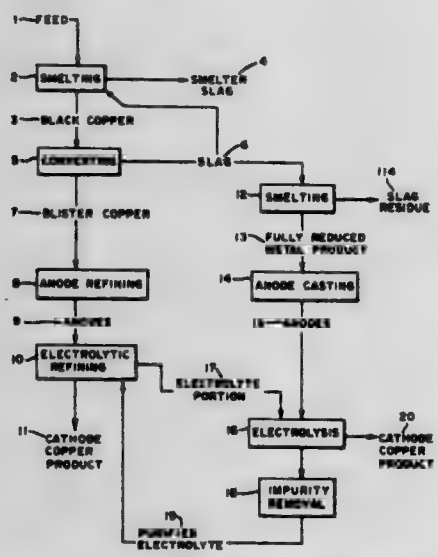
(f) the residual photo-resist is removed and then said thin copper film and one of the thin chromium film, the thin nichrome film and the thin titanium film underlying the photo-resist is removed by etching,

(g) said lead layer and said tin layer are subjected to heat treatment at a suitable temperature for converting the lead and tin into an alloy to produce a lead-tin solder.

4,351,705
REFINING COPPER-BEARING MATERIAL CONTAMINATED WITH NICKEL, ANTIMONY AND/OR TIN

Runyon G. Ernst, deceased, late of Woodbridge, N.J.; by Margaret Ernst, executrix, Jamesburg, N.J.; William R. Opie, Holmdel; Harold P. Rajcevic, Colonia, both of N.J., and Peter D. Parker, Brooklyn, N.Y., assignors to Amax Inc., Greenwich, Conn.

Filed Jun. 30, 1981, Ser. No. 278,928
Int. Cl.³ C25C 1/12
U.S. Cl. 204—108 20 Claims



1. A process for producing high-purity copper from feed material containing copper contaminated with iron and one or more inpurity metals selected from the group consisting of nickel, antimony, and tin, which comprises

(1) treating the feed material to form therefrom an anode consisting essentially of copper and said one or more impurity metals, in amounts no greater than about 1 wt.% nickel, about 0.4 wt.% antimony, and about 0.2 wt.% tin,

(2) electrolytically refining the anode from step (1) in an electrolytic cell comprising an aqueous sulfuric acid electrolyte in which are immersed the anode from step (1) and a cathode, by impressing between said anode and said cathode a voltage effective to dissolve copper from said anode and preferentially deposit high-purity copper onto said cathode, wherein copper dissolves into said electrolyte at a rate which exceeds the rate of deposition of copper onto said cathode,

(3) withdrawing a portion of the electrolyte,

(4) providing oxidic material containing copper, iron, and said one or more impurity metals, said oxidic material being selected from the group consisting of copper converter slags and roasted cupriferous concentrates,

(5) smelting said oxidic material to provide a metallic anode containing copper, less than 2 wt.% iron, and an amount of said one or more impurity metals effective, on application of the voltage in step (7), to lower the copper concentration in said electrolyte portion,

(6) establishing an electrolytic cell comprising said electrolyte portion from step (3) having immersed therein in anode formed in step (5) and a cathode,

(7) applying between the anode and the cathode in the cell of step (6) a voltage effective to dissolve the anode in said electrolyte portion and to preferentially deposit copper from said electrolyte portion onto the cathode, whereby the copper concentration in said electrolyte portion is lowered and said one or more impurity metals become associated with said electrolyte portion,

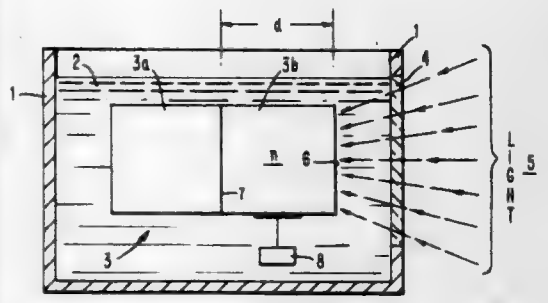
(8) further treating said electrolyte portion to remove from association therewith an amount of said one or more impurity metals at least equal to the amount thereof contained in the anode formed in step (5), thereby providing a purified electrolyte portion, and

(9) returning said purified electrolyte portion to step (2).

4,351,706
ELECTROCHEMICALLY ERODING SEMICONDUCTOR DEVICE

Terry I. Chappell, Amawalk; Geroge D. Pettit, Mahopac, and Jerry M. Woodall, Bedford Hills, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 27, 1980, Ser. No. 134,723
Int. Cl.³ C25F 3/12; C23F 1/02; H01L 21/42
U.S. Cl. 204—129.3 9 Claims



1. A process of electrochemically eroding a semiconductor member to a specific dimension comprising in combination the steps of:

immersing at least the region to be eroded of a semiconductor body in a fluid, said region being unbiased with respect to said fluid and said fluid having the property that erosion of said semiconductor by said fluid occurs only in the presence of electric current flowing from said semiconductor into said fluid, and

illuminating said semiconductor with light having a frequency capable of penetrating into said semiconductor in the vicinity of said specific dimension.

4,351,707

METHODS EMPLOYING MAGNETIC ISOTOPE EFFECT

Nicholas J. Turro, Tenafly, N.J., assignor to Alpine Kinetics, Inc., Northvale, N.J.

Filed Nov. 8, 1979, Ser. No. 92,483
Int. Cl.³ C07G *13/00*
U.S. Cl. 204—158 R 14 Claims

13. A method of isotope enrichment of a chemical compound having both magnetic and non-magnetic isotopes of a chemical element, comprising forming radical pairs in the triplet state from molecules of the compound, some of said radical pairs including a magnetic isotope of the chemical element and other radical pairs including a non-magnetic isotope of the chemical element, and providing for said radical pairs an environment of restricted dimensionality such that the radical pairs containing said magnetic isotope are preferentially converted to the singlet state wherein the environment of restricted dimensionality is selected from the group consisting of micelles, gels, molecular sieves, vesicles, liquid crystals, and clathrates.

4,351,708

PHOTOCHEMICALLY OR THERMALLY POLYMERIZABLE MIXTURES

Godwin Berner, Rheinfelden, and Rudolf Kirchmayr, Aesch, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Feb. 20, 1981, Ser. No. 236,463
Claims priority, application Switzerland, Feb. 29, 1980, 1629/80
Int. Cl.³ C08F *2/46*
U.S. Cl. 204—159.23 14 Claims

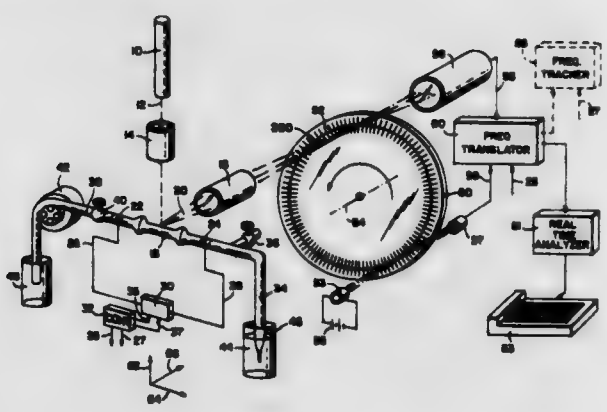
1. A photochemically or thermally polymerisable mixture containing (A) one or more cationically polymerisable compounds, (B) an aromatic iodonium salt as the polymerisation catalyst, (C) one or more photoinitiators which is an aromatic carbonyl compound, as the co-catalyst, and (D) an agent which forms free radicals on heating, as the second co-catalyst.

4,351,709

METHOD OF OBTAINING THE MEAN ELECTROPHORETIC MOBILITY OF PARTICLES

Philip J. Goetz, 56 Brook Manor, Pleasantville, N.Y. 10570

Division of Ser. No. 16,181, Feb. 28, 1979, Pat. No. 4,239,612, which is a division of Ser. No. 767,770, Feb. 11, 1977, Pat. No. 4,154,669. This application Oct. 30, 1980, Ser. No. 202,067
Int. Cl.³ G01N *27/00, 27/26*
U.S. Cl. 204—180 R 9 Claims



4. The method of obtaining the mean electrophoretic mobility of particles moving under the influence of an applied electric field comprising the steps of:

illuminating the moving particles,

modulating the images corresponding to said moving particles with a moving grating to obtain a spectral signal having a primary frequency component related to the mean electrophoretic mobility of said moving particles,

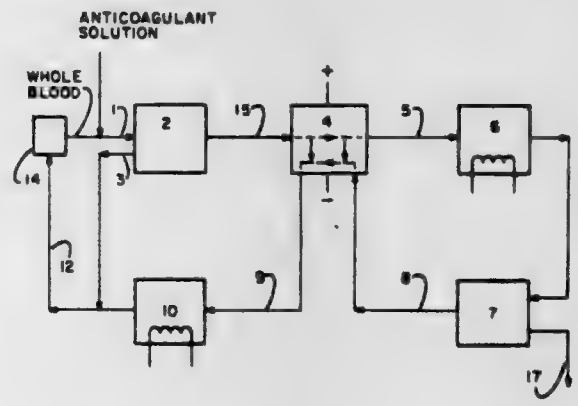
processing said spectral signal to compute said mean electrophoretic mobility.

4,351,710

FRACTIONATION OF PROTEIN MIXTURES

Surendar M. Jain, Watertown, Mass., assignor to Ionics, Incorporated, Watertown, Mass.

Continuation-in-part of Ser. No. 111,144, Jan. 10, 1980, Pat. No. 4,276,140. This application Dec. 15, 1980, Ser. No. 216,719
The portion of the term of this patent subsequent to Jun. 30, 1998, has been disclaimed.
Int. Cl.³ B01D *57/02*
U.S. Cl. 204—180 P 18 Claims



1. A process for separating an aqueous protein mixture into fractions having intrinsically distinguishable compositions comprising removing substantially all the turbidity therefrom, subsequently decreasing the salt content thereof by passing said mixture at a velocity of between 3–40 cm/sec. into and out of an electrodialysis apparatus containing at least one pair of contiguous membranes defining a liquid flow chamber therebetween, impressing an electric current across said apparatus at about a CD/K=0.1 to 10 (where CD is current density in m-amps/cm^2 and K is the conductivity of the aqueous mixture in milli Siemens/cm) thereby altering the ionic environment of said mixture by decreasing its ionic concentration sufficiently to at least partially destabilize one or more proteins in said mixture, allowing said destabilized protein to form turbidity, subsequently removing substantially all of said turbidity and maintaining the temperature of said mixture during the said separation in the range of between about 0°–40° C.

4,351,711

ELECTROPHORESIS METHOD FOR DETECTING GLYCOSYLATED HEMOGLOBIN IN BLOOD

Jeffrey Ambler, Newthorpe, England, assignor to Gelman Sciences, Inc., Ann Arbor, Mich.

Filed Apr. 21, 1981, Ser. No. 256,201
Int. Cl.³ B01D *13/02*
U.S. Cl. 204—180 G 8 Claims

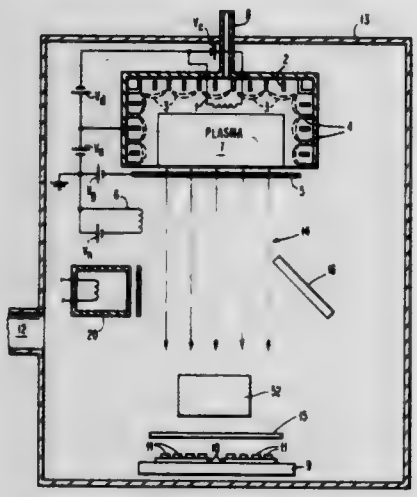
1. A method for electrophoretically separating glycosylated hemoglobin from non-glycosylated hemoglobin in a blood sample, said method comprising placing a medium with the blood sample thereon in a buffer solution, and then passing an electric current through said solution to cause the blood to separate on said medium into fractions having different mobilities, the buffer solution which is in contact with the blood sample containing dextran sulphate to effect a change in the relative mobilities of the glycosylated hemoglobin and the non-glycosylated hemoglobin fractions in the blood whereby the glycosylated hemoglobin is separated from the non-glycosylated hemoglobin during passage of the electric current.

4,351,712

LOW ENERGY ION BEAM OXIDATION PROCESS

Jerome J. Cuomo, Lincolndale, and James M. E. Harper, Yorktown Heights, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 10, 1980, Ser. No. 214,929
Int. Cl.[3] C23C *15/00*; H01L *39/22*
U.S. Cl. 204—192 EC 12 Claims



1. A surface reaction process for compound formation on the surface of a sample material situated in a sample chamber, comprising:

forming an ion plasma with an ion source having magnetic field producing means located around a plasma discharge chamber of said ion source,

feeding a gas into said ion plasma which will form a solid compound product when ions of said gas react with said surface of said sample material,

extracting said ions of said gas out of said ion plasma to form an ion beam, and

applying a voltage potential to said ion source which will accelerate ions of said gas to a low energy in a directed beam which impinges onto said surface of said sample material to produce simultaneous sputter etching and compound formation on said surface, said voltage potential being used to determine the resulting compound thickness, wherein the rate of compound formation balances the rate of sputter etching at said resulting thickness.

4,351,713

ELECTRO-CO-DEPOSITION OF CORROSION RESISTANT NICKEL/ZINC ALLOYS ONTO STEEL SUBSTRATES

Theodore A. Hirt, and Robert H. Dillon, both of Warren, Ohio, assignors to Thomas Steel Strip Corp., Warren, Ohio

Division of Ser. No. 68,877, Aug. 22, 1979, Pat. No. 4,282,073.
This application Mar. 5, 1981, Ser. No. 240,760
Int. Cl.[3] C25D *17/00*
U.S. Cl. 204—207 3 Claims



1. An apparatus for the continuous plating of corrosion resistant coatings on iron or steel strip substrates which comprises,

in combination,

a plating line including a seriatim arrangement of cleansing and plating tanks,

liquid segregation means between said tanks,

and strip propulsion and advancing means;

said plating tanks including

a first nickel plating section fitted with nickel anodes and filled with a nickel ion-containing electrolyte and means for making said strip cathodic to deposit a substantially pure nickel priming layer on said strip,

and a second alloy plating section fitted with zinc and nickel anodes and filled with an electrolyte maintained at a temperature range of 135° F. to 145° F., said electrolyte containing nickel and zinc ions,

wherein the combined metal ion-content of nickel and zinc in the electrolyte is in the range of 10 to 25 oz/gal, the ratio of nickel to zinc in the electrolyte is in the range of 0.1 to 1 to 0.4 to 1 and the nickel ion content is in the range 1.4 to 3.5 oz/gal,

said alloy plating section containing means for making said strip cathodic and providing a cathodic current density to said strip in the range of 15 to 120 amperes per square foot of strip;

whereby the strip, after cleansing is advanced by said propulsion means to said first nickel plating section for the application of a nickel priming layer and then is advanced to said second section where said primed strip is then coated with a corrosion-resistant electrodeposited layer of a nickel/zinc alloy having a content of 10% to 14% nickel, the balance being zinc,

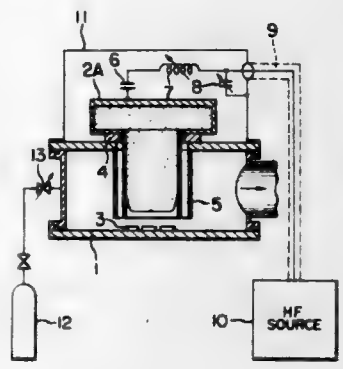
wherein said first plating section and said second plating section are successive sections of a contiguous plating tank both sections of which are filled with the electrolyte of said second section, and wherein the current density in said first section is adjusted by said cathodic making means at less than about 10 amperes per square foot, then rising up to 15 to about 120 amperes per square foot for the subsequent alloy deposition.

4,351,714

SPUTTER-ETCHING DEVICE

Noboru Kuriyama, Yokohama, Japan, assignor to Kabushiki Kaisha Tokuda Seisakusho, Kanagawa, Japan

Filed Apr. 21, 1981, Ser. No. 256,033
Claims priority, application Japan, Apr. 30, 1980, 55-57466
Int. Cl.[3] C23C *15/00*
U.S. Cl. 204—298 10 Claims



1. A sputter-etching device which comprises:

a vacuum chamber filled with a predetermined gas under a pressure substantially equal to a vacuum pressure;

a hollow electrode having an internal space and an opening, said electrode being mounted on a wall of said vacuum chamber in such a manner that an electric discharge gap is formed between said opening and an inner wall of said vacuum chamber;

a radio-frequency electric source for applying a radio-frequency voltage between said electrode and said vacuum chamber; and

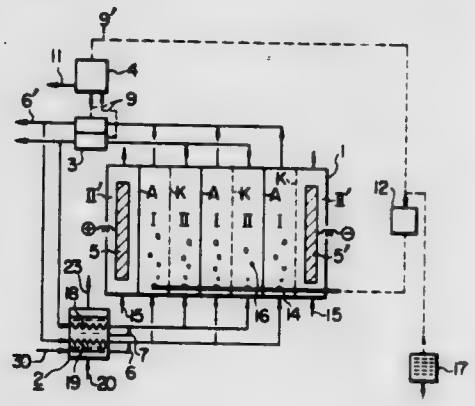
discharge starting means for starting an electric discharge between said electrode and said vacuum chamber,

thereby to subject an object to be processed to sputter-etching.

4,351,715
APPARATUS FOR HIGH TEMPERATURE ELECTRODIALYSIS

Harumi Matsuzaki; Osamu Kuroda; Isao Okouchi, all of Hitachi; Kenkichi Izumi, Mito, and Sankichi Takahashi, Hitachi, all of Japan, assignors to Hitachi, Ltd. and Babcock-Hitachi Kabushiki Kaisha, both of Tokyo, Japan

Division of Ser. No. 138,975, Apr. 10, 1980, Pat. No. 4,311,575.
This application Mar. 2, 1981, Ser. No. 239,578
Claims priority, application Japan, Apr. 18, 1979, 54-46640
Int. Cl.[3] B01D *13/02*
U.S. Cl. 204—301 7 Claims



1. An apparatus for electrodialysis for desalting or concentrating an electrolyte solution comprising:

at least a pair of electrodes immersed in the electrolyte solution;

a plurality of separate anion and cation ion exchange membranes alternately juxtaposed between the pair of electrodes and immersed in the electrolyte solution, thereby forming alternate juxtaposed desalting chambers and concentrating chambers;

gas supply means for dispersing a gas in a bubble state into the chambers through the electrolyte solution between the ion exchange membranes, thereby making the gas contact the electrolyte solution;

heater means for heating at least one of the electrolyte solution and the gas being provided, thereby providing a temperature difference between the gas and the electrolyte solution, said heater means being separate from and in addition to said electrodes; and

condenser means for condensing vapor in the gas after the contact of the gas and the electrolyte solution, thereby obtaining a condensate from the gas.

4,351,716
LIQUEFACTION PROCESS

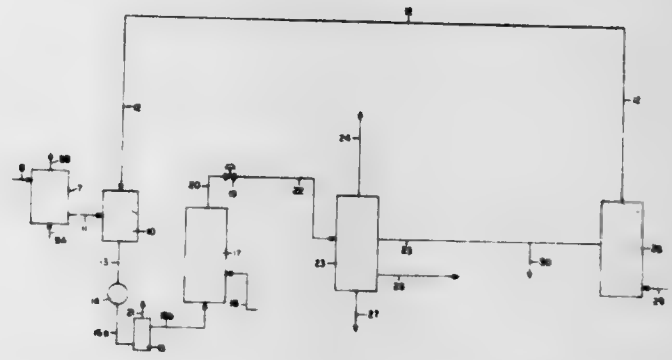
Martin L. Gorbaty, Westfield, N.J.; John B. Stone, and Syamal K. Poddar, both of Houston, Tex., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Mar. 15, 1979, Ser. No. 20,603
Int. Cl.[3] C10G *1/02*
U.S. Cl. 208—8 LE 14 Claims

1. A process for the liquefaction of a lower ranking coal comprising the steps of:

(a) contacting said coal with a gaseous mixture comprising sulfur dioxide and an oxidizing agent so as to reduce the amount of alkaline earth metal humates therein;

(b) liquefying the thus treated coal at liquefaction conditions to produce a petroleum-like product; and

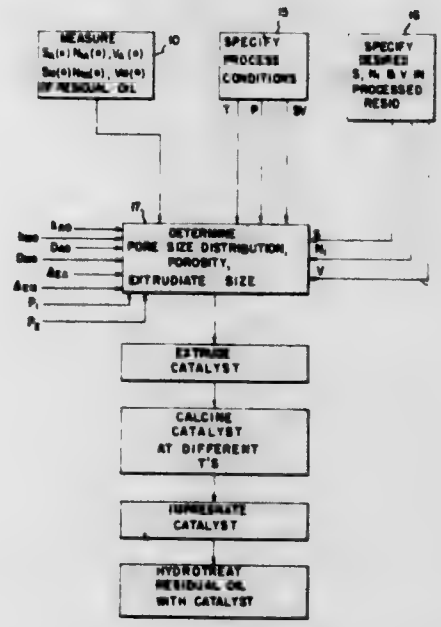


(c) recovering the liquid product from the unliquefied portion of the pretreated coal.

4,351,717
CATALYST FOR HYDROTREATING RESIDUAL PETROLEUM OIL

Stephen B. Jaffe, Cherry Hill, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 822,495, Aug. 8, 1977, Pat. No. 4,267,071.
This application Nov. 21, 1980, Ser. No. 208,956
Int. Cl.[3] C10G *45/08*
U.S. Cl. 208—216 PP 9 Claims



1. A process for catalytically demetalizing and desulfurizing a residual oil comprising:

measuring the size distribution of sulfur, nickel and vanadium containing molecules in said residual oil,

determining from said measured size distribution the pore size distribution, porosity and extrudate size of a catalyst producing desired demetalation and desulfurization of said residual oil for specified conditions of temperature, pressure and space velocity,

producing an alumina having deposited thereon an oxide or a sulfide of a Group VI-B metal and an iron group metal thereby forming said catalyst having said determined pore size distribution, and

contacting said residual oil with hydrogen in the presence of said catalyst at about said specified process conditions whereby inducing said optimum demetalization and desulfurization during said contacting step.

4,351,718
METHOD FOR REMOVING POLYHALOGENATED HYDROCARBONS FROM NONPOLAR ORGANIC SOLVENT SOLUTIONS

Daniel J. Brunelle, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jun. 1, 1981, Ser. No. 269,121
Int. Cl.³ C10G *29/00, 29/06, 29/20*
U.S. Cl. 208—262 5 Claims

1. A method of treating a substantially inert organic solvent solution of polyhalogenated aromatic hydrocarbon present in such inert organic solvent solution at a concentration of up to 1% by weight of the mixture to reduce the polyhalogenated aromatic hydrocarbon concentration to less than 50 ppm, which comprises, agitating a mixture at a temperature of 65° C. to 200° C. comprising such substantially inert organic solvent solution of polyhalogenated aromatic hydrocarbon, polyalkyleneglycol having a molecular weight of about 200 to about 5000 and alkali metal hydroxide for a time which is at least sufficient to effect the minimum aforedescribed reduction in concentration of the polyhalogenated aromatic hydrocarbon in the agitated mixture which comprises by weight

(A) up to about 1% of polyhalogenated aromatic hydrocarbon,

(B) about 0.1 to 10% of polyalkyleneglycol,

(C) about 0.1 to 10% of alkali metal hydroxide, and

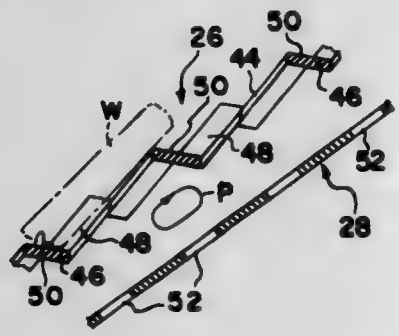
(D) about 80 to 99.8% of substantially inert organic solvent,

where the sum of (A)+(B)+(C)+(D) is equal to 100%.

4,351,719
VIBRATING SCREEN APPARATUS

Larry L. Morey, Mount Pleasant, Mich., assignor to Morbark Industries, Inc., Winn, Mich.

Filed Feb. 19, 1981, Ser. No. 236,032
Int. Cl.³ B07B *1/28, 9/00*
U.S. Cl. 209—234 7 Claims

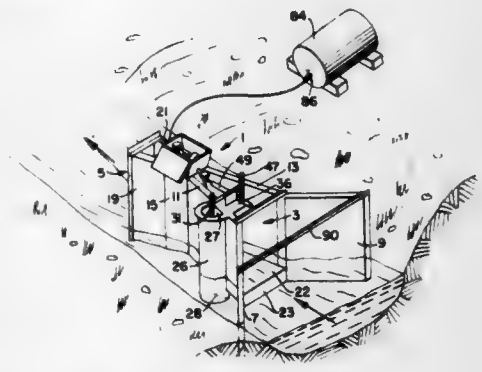


1. In a vibratory screen apparatus for separating wood chips, elongate and other overs, and fines into groups of relatively large A particle overs, medium sized B particle chips and relatively small C particle fines, said apparatus including a fixed frame, a vibratory frame mounted for vibratory movement on said fixed frame, and drive means for driving said vibratory frame in vibratory movement on said fixed frame; vertically spaced upper and lower co-extending screens mounted upon said vibratory frame, said screens being inclined upwardly from lower ends to upper ends disposed generally vertically above the lower ends, conveying means for depositing wood chip material of random sizes upon the upper surface of said upper screen adjacent the upper end thereof, said upper screen having openings therethrough sized to permit B and C particles to pass through said upper screen while retaining A particles on the upper surface thereof and said lower screen having openings therethrough sized to permit C particles to pass through said lower screen while retaining B particles on the upper surface thereof, said lower screen comprising rows of laterally spaced apart fine passing openings; said upper screen comprising vertically extending rows of vertically spaced and aligned transversely extending elongate horizontal abutment bars, each joined at its end by a divergent bar to two such horizontal bars in the adjacent row and each bar spanning several laterally spaced openings in the lower screen, and means vibrating the screens to oppose gravitational flow of the material so that the bars intercept and impart intermittent upward movements to the material.

4,351,720
WATER TREATING APPARATUS

Clyde E. Bailes, Box 512, Summersville, W. Va. 26651

Filed Jun. 18, 1981, Ser. No. 274,924
Int. Cl.³ C02F *1/66*
U.S. Cl. 210—101 12 Claims



1. A water treating apparatus comprising:

front side walls;

intermediate side walls;

central side walls;

rear side walls;

a bottom wall between said side walls;

a float housing on one of said intermediate side walls;

a float supported on a vertically movable rod within said float housing;

a chemical solution holding housing on top of said walls;

a valve exterior of said chemical solution holding housing and communicating with the interior thereof;

means supported on support means and interconnected with said float and said valve operable in response to upward or downward movement of said float to open or close said valve in response to water or liquid flow through said apparatus;

a valve within said chemical solution holding housing; and

a bulk storage container connected to said valve within said chemical solution holding housing whereby said container is replenished with a chemical solution.

4,351,721
DEVICE FOR FLUSHING AND AERATING A SURFACE COATED WITH MICROORGANISMS IN A PLANT FOR BIOLOGICAL PURIFICATION OF WASTE WATER

Aksel S. Frandsen, Vandv rksvej 35, Borkop, Denmark

PCT No. PCT/DK80/00037, § 371 Date Feb. 26, 1981, § 102(e) Date Feb. 11, 1981, PCT Pub. No. WO81/00101, PCT Pub. Date Jan. 22, 1981
PCT Filed Jun. 25, 1980, Ser. No. 233,310
Claims priority, application Denmark, Jun. 26, 1979, 2676/79
Int. Cl.³ C02F *3/08*
U.S. Cl. 210—150 4 Claims

1. A purification apparatus for alternately flushing and aerating water supplied from a body of water comprising:

a first spirally coiled tube;

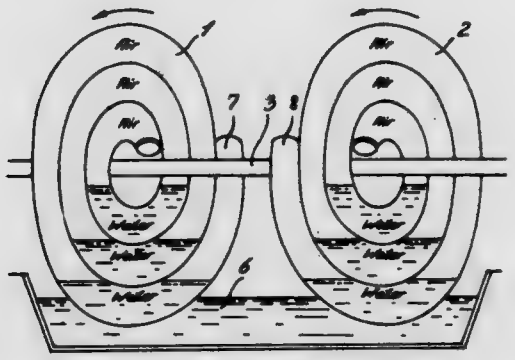
a second spirally coiled tube, oppositely directed and in lateral coaxially spaced relation to said first spirally coiled tube;

a conduit connected to and communicating with the centers of said first and second spirally coiled tubes;

a particulate medium on which microorganisms can grow placed within each of said first and second spirally coiled tubes;

a means for rotating said first and second spirally coiled tubes about an axis passing through said conduit, said axis

placed above and at such distance from the surface of the water such that when said first and second spirally coiled tubes are rotated the outer free opening of said first spirally coiled tube is disposed below the surface of the body of water during part of its rotation and serves as in inlet alternately for water and air and the outer free opening of



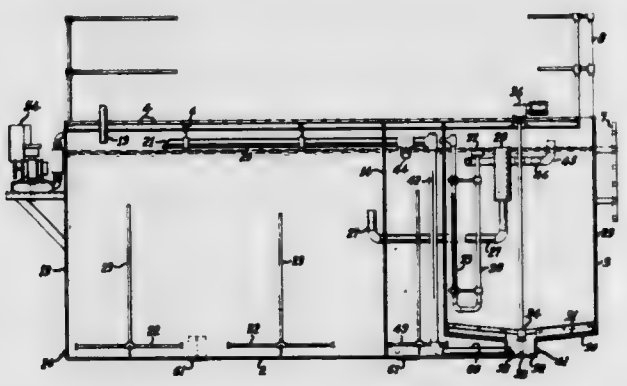
said second spirally coiled tube is disposed below the surface of the water during part of its rotation and serves as an outlet alternately for air and water whereby the effect of admission of water to the inlet of said first spirally coiled tube and efflux from said second spirally coiled tube provides a torque which assists in rotating the spirally coiled tubes.

4,351,722

WATER TREATMENT PLANT

James A. Mixon, Jacksonville, Fla., assignor to American Enviro-Port, Inc., Jacksonville, Fla.

Filed Mar. 1, 1978, Ser. No. 882,437
Int. Cl.[3] C02F *3/22*
U.S. Cl. 210—195.3 12 Claims



1. In a water treatment plant, a generally horizontal elongated first cylindrical tank having a longitudinal axis, an elongated cylindrical upstanding second tank having a cylindrical wall and generally vertical axis, said second tank including a bottom portion having a circular bottom inner surface and an outlet and scraper means disposed in said bottom portion for moving sediment material from said bottom inner surface into said outlet, said longitudinal axis of said first tank being substantially perpendicular to said vertical axis of said second tank, and said first tank having a planar wall integrally attached to and laterally intersecting said wall of said second tank along a substantial portion of the length of said second tank.

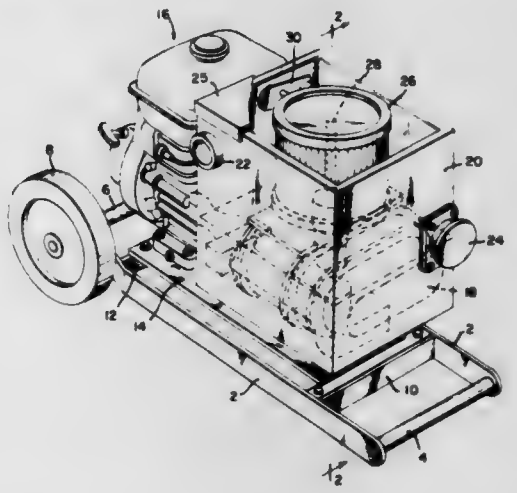
6. In a water treatment plant, a generally horizontal cylindrical elongated first tank having first and second end portions and a longitudinal axis, said first end portion having a planar end wall through which said longitudinal axis extends, an upstanding cylindrical second tank having a bottom portion and an upper portion thereabove, said second tank intersecting and integrally attached to said end wall so that part of said second tank is disposed outwardly of said planar end wall, said longitudinal axis of said first tank being substantially perpendicular to the vertical axis of said second tank, and the width of the intersecting portion of said second tank being less than the width of said planar end wall.

4,351,723

MEANS FOR REMOVING RESIDUAL WATER FROM A SURFACE

Michael C. Palmer, 8938 - 179 Pl., SW., Edmonds, Wash. 98020

Continuation of Ser. No. 40,859, May 21, 1979, abandoned. This application Aug. 18, 1980, Ser. No. 179,233
Int. Cl.[3] B01D *35/02*
U.S. Cl. 210—198.1 1 Claim



1. An apparatus for removing liquid from a substantially flat surface such as a floor, comprising:

framework means;

substantially closed reservoir means mounted on said framework means for holding a liquid, such as water, said reservoir means having an inlet port near the top thereof which is adapted to receive a hose which, in operation, is extended to the liquid to be removed, and an outlet port near the bottom thereof, the inlet port being located above the typical level of liquid in said liquid reservoir when the apparatus is in operation, and the outlet port being located below the typical level of liquid in said liquid reservoir when the apparatus is in operation, said apparatus means being characterized by an absence of means to prevent liquid in said reservoir means from flowing through the outlet port thereof;

pump means for pumping compressible fluid, such as air mounted on the framework means, said pump means having an inlet and an outlet, and an internal configuration between the inlet and outlet such that a liquid, such as water, which is drawn into said pump means through the inlet thereof will flow through the pump means and exit through the outlet thereof;

means connecting the outlet port of said liquid reservoir means to the inlet of said pump means;

filter means positioned upstream of the pump means for filtering liquid from said reservoir means prior to the liquid reaching the pump means; and

aeration means including a conduit having a first open end within the throat of the pump and extending to a position whereat the second open end is continuously in communication with the ambient atmosphere.

4,351,724

FILTER ASSEMBLY HAVING SIDE-SUPPORTED SLIDABLE KING AND QUEEN ENDS

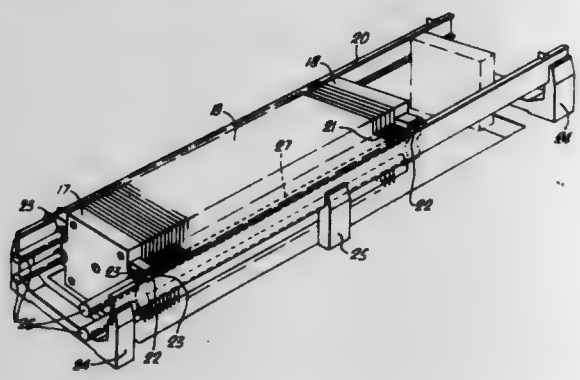
Paul F. Jones, Newcastle-Under-Lyme, England, assignor to Johnson-Progress, Limited, Stoke-on-Trent, England

Filed Feb. 5, 1980, Ser. No. 118,386
Claims priority, application United Kingdom, Feb. 7, 1979, 7904285
Int. Cl.[3] B01D *25/34*
U.S. Cl. 210—230 5 Claims

1. A filter press comprising a pair of fixed side bars extending

horizontally one along each side of the press, a stack of filter plates disposed between the side bars and all supported on the side bars for individual sliding movement therealong by means of pins projecting laterally from the sides of the plates and resting on the side bars, a king end and a queen end at opposite ends of said stack of filter plates and each likewise supported on the side bars for individual sliding movement therealong by means of pins projecting laterally from the sides of said king end and said queen end, and

fluid-operated piston-and-cylinder units mounted on said king end to float therewith on the said side bars,



said piston-and-cylinder units having their axes parallel to said side bars and being disposed at opposite sides of said king end adjacent interiorly of said side bars and longitudinal tie rods coupling said queen end to said piston-and-cylinder units thereby to close the press by pulling said queen end toward said king end,

said tie rods being disposed at opposite sides of said stack of filter plates and lying between said stack and said side bars.

4,351,725

PLATE FILTER PRESS WITH STOP RAILS FOR PLATE GUIDANCE

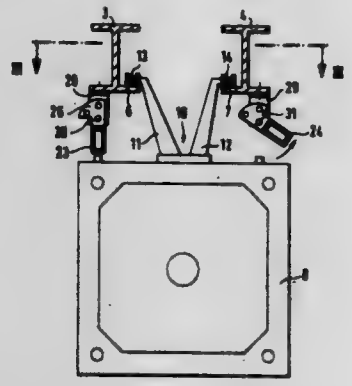
Karl A. Rademacher, Wuppertal, and Max Oelbermann, Remscheid, both of Fed. Rep. of Germany, assignors to Rittershaus & Blecher GmbH, Wuppertal, Fed. Rep. of Germany

Filed Jan. 30, 1981, Ser. No. 229,836

Claims priority, application Fed. Rep. of Germany, Jan. 30, 1980, 8002233[U]

Int. Cl.[3] B01D *25/12*

U.S. Cl. 210—230 21 Claims



1. Plate filter press comprising a plurality of filter plates, each of which is centrally suspended on support guide means for horizontal displacement on a path therealong, and stop rail means positioned parallel to said horizontal displacement path for preventing pendulating oscillations of the filter plates, said stop rail means being mounted for displacement between a first, filter plate guiding, position adjacent the filter plates and a second, non-guiding position, displaced from the filter plates, wherein filter replacement is facilitated.

4,351,726

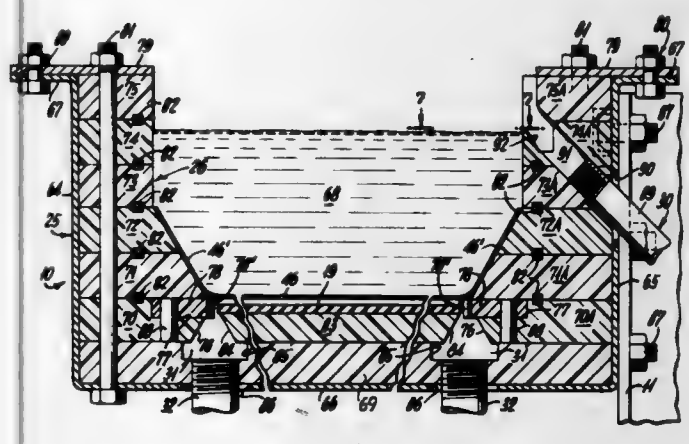
TRAVELING BELT FILTER HAVING VACUUM CHANNELS FORMED ALONG EDGES OF SAID BELT

Robert L. Somerville, Old Amwell Rd., Rte. 1, Box 256, Neshanic, N.J. 08853

Filed Apr. 3, 1981, Ser. No. 250,647

Int. Cl.[3] B01D *33/00*

U.S. Cl. 210—401 16 Claims



1. Filter apparatus having a traveling belt comprising an elongated filtering trough having a base and side walls, a roller adjoining each end of said trough, an endless belt having transverse ridges carried by said rollers with the upper portion of said belt overlying and supported by the base of said trough and with the edges of the belt in spaced relationship to said side walls of said trough defining spaces therebetween, vacuum channels in the base of said trough and communicating with said spaces between each edge of said belt and the adjoining side wall of said trough which form vacuum ports, a source of vacuum communicating with said channels, a filter cloth overlying and traveling with said belt and completely overlying said vacuum channels whereby said source of vacuum functions to draw liquid through said filter cloth from a slurry containing liquids and solids supported by said filter cloth.

4,351,727

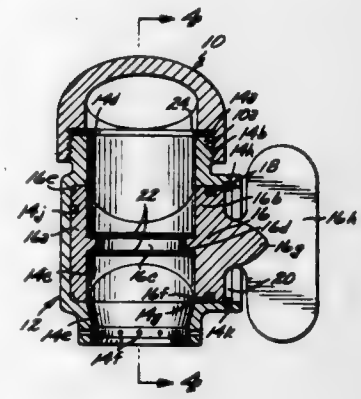
DEVICE FOR REMOVING FOREIGN PARTICLES FROM A SOURCE OF FLUID

Fredric D. Brogger, 613 20th St., Huntington Beach, Calif. 92648

Filed Mar. 23, 1981, Ser. No. 246,478

Int. Cl.[3] B01D *35/02*

U.S. Cl. 210—411 3 Claims



1. A device for removing foreign particles from a source of fluid comprising in combination,

a cylindrical body formed with a through opening providing an inlet having fastening means for attachment of said body to a faucet and an outlet,

filter means including a member rotatably positioned within an internal arcuate recess of said body between said inlet and outlet for rotation about an axis at substantially right angles to the axis of said through opening,

said rotatable member comprising two spaced arcuate bearing surfaces, a wall aligned with said axis of rotation and formed with an aperture providing a pair of oppositely-facing annular ledges,

said body having two bearing surfaces formed complementally of the bearing surfaces of said rotatable member,

means operable between said rotatable member and said body for retaining the rotatable member in said body,

a substantially flat, co-planar filter screen for each of said ledges and respectively secured thereto in close proximity to said axis of rotation, each of said screens being of predetermined mesh to prevent passage therethrough of foreign particles, and

operating means for said filter means secured to said member and extending externally from said body to enable said filter means to be manually rotated 180 degrees about its axis and said filter screens to be rotated therewith substantially at said axis of rotation.

4,351,728

SEPARATOR FOR CLEANING SUSPENSIONS

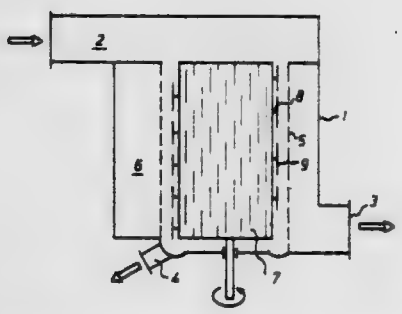
Dieter Egelhof, and Hans R. Schmid, both of Heidenheim, Fed. Rep. of Germany, assignors to J. M. Voith GmbH, Heidenheim, Fed. Rep. of Germany

Filed Jul. 24, 1980, Ser. No. 171,665

Claims priority, application Fed. Rep. of Germany, Jul. 27, 1979, 2930475

Int. Cl.³ B01D *29/42*; B07B *1/20*

U.S. Cl. 210—415 **8 Claims**



1. A separator for cleaning suspensions, particularly fibrous suspensions, with a strainer through which the suspension flows, and with a housing which encloses the strainer, the housing having an inlet for the suspension to be cleaned and outlets both for the cleaned suspension and for the impurities held back by the strainer, and with blades revolving in front of the strainer which are divided into part-blades along the axis of rotation and are offset relative to each other in the circumferential direction the strainer being generally symmetric about the axis of rotation, the improvement wherein several rows of part-blades are arranged within the strainer of such a length and staggered over the circumference in such a way that substantially at every height level, relative to the height of the strainer, part-blades from several rows pass by the strainer and wherein in the vicinity of the outlet for the cleansed suspension, shorter part-blades are circumferentially arranged between the part-blades of normal length.

4,351,729

BIOLOGICAL FILTER AND PROCESS

Enrique R. Witt, Corpus Christi, Tex., assignor to Celanese Corporation, New York, N.Y.

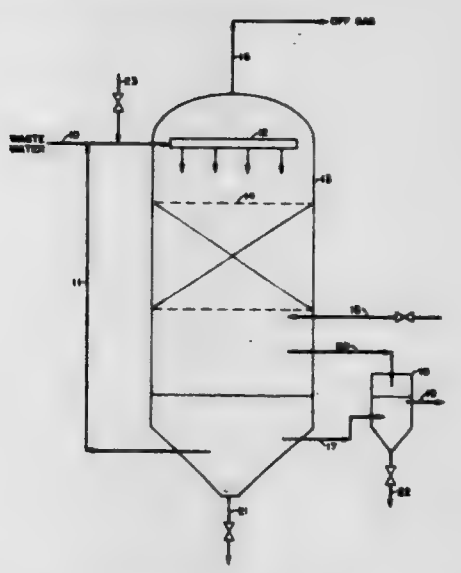
Filed Feb. 6, 1980, Ser. No. 118,935

Int. Cl.³ C02F *3/28*

U.S. Cl. 210—603 **31 Claims**

1. A continuous biological degradation process wherein a liquid waste water stream containing organic pollutants amenable to biological degradation is contacted with a biomass of microorganisms located on the surface of a support packing so as to effect the biological degradation of said organic pollutants to carbon dioxide and other products, said microorganisms being capable of degrading said organic pollutants to carbon dioxide and other products, said process being conducted in the absence of added molecular oxygen, which process comprises:

(a) continuously passing a liquid mixture comprised of said waste water stream and the hereafter defined recycle stream downwardly through a packed section confined within a sealed vessel, said packed section being filled with the said support packing on the surface of which is a said biomass of said microorganisms, said sealed vessel being sealed whereby air and other sources of molecular oxygen cannot enter said sealed vessel, such that said liquid mixture intimately contacts said biomass as its descends through said packed section under conditions whereby at least a portion of the organic pollutants from said waste water stream are biologically degraded and converted to carbon dioxide and other products and resulting in a liquid effluent from the lower end of said packed section containing a lower concentration of said organic pollutants than in said liquid mixture, and whereby liquid descends through said packed section while carbon dioxide and other gases generated in the biological degradation ascend through said packed section countercurrently to the descending liquid, the contacting of said liquid mixture with said biomass being accomplished at a temperature within the range of about 10° to 60° C. which is suitable for said biological degradation and at substantially atmospheric pressure;



(b) continuously withdrawing from the upper end of said sealed vessel at a point above said packed section the said carbon dioxide and other gases generated in the said biological degradation;

(c) continuously withdrawing said liquid effluent from the lower end of said sealed vessel at a point below said packed section, the rate of withdrawal of said liquid effluent being such as to maintain the liquid level of any said liquid effluent accumulating in the bottom of said sealed vessel below said packed section, a portion of said liquid effluent being withdrawn as a treated waste water outfall stream; and

(d) continuously recycling as a said recycle stream a portion of said liquid effluent withdrawn from the lower end of said sealed vessel and mixing said recycle stream with said waste water stream prior to passing the resulting said liquid mixture downwardly through said packed section in accordance with the preceding step (a), the portion of said liquid effluent so recycled as said recycle stream being at least 60% thereof and an amount that, when mixed with said waste water stream, will cause the said liquid mixture to have a concentration of said organic pollutants and of any biostatic or biocidal species to be below that concentration which would inhibit the growth processes of said microorganisms.

20. A continuous biological degradation process wherein a liquid waste water stream containing organic pollutants ame-

nable to biological degradation, and also containing nitrogen compounds wherein combined nitrogen is present as a nitrate, a nitrite or a nitrogen oxide, is contacted with a biomass of microorganisms located on the surface of a support packing so as to effect the biological degradation or conversion of said organic pollutants to carbon dioxide and other products, and to effect the biological degradation or conversion of said combined nitrogen to molecular nitrogen, said microorganisms being capable of degrading said organic pollutants to carbon dioxide and other products and of degrading or converting said combined nitrogen to molecular nitrogen, said process being conducted in the absence of added molecular oxygen, which process comprises:

(a) continuously passing a liquid mixture comprised of said waste water stream and the hereafter defined recycle stream downwardly through a packed section confined within a sealed vessel, said packed section being filled with the said support packing on the surface of which is a said biomass of said microorganisms, said sealed vessel being sealed whereby air and other sources of molecular oxygen cannot enter said sealed vessel, such that said liquid mixture intimately contacts said biomass as it descends through said packed section under conditions whereby at least a portion of the organic pollutants from said waste water stream are biologically degraded and converted to carbon dioxide and other products and at least a portion of the combined nitrogen from said waste water stream is converted to molecular nitrogen and resulting in a liquid effluent from the lower end of said packed section containing a lower concentration of said organic pollutants and a lower concentration of said nitrogen compounds than in said liquid mixture, and whereby liquid descends through said packed section while carbon dioxide, molecular nitrogen and other gases generated in the biological degradation ascend through said packed section countercurrently to the descending liquid, the contacting of said liquid mixture with said biomass being accomplished at a temperature within the range of about 10° to 60° C. which is suitable for said biological degradation and at substantially atmospheric pressure;

(b) continuously withdrawing from the upper end of said sealed vessel at a point above said packed section the said carbon dioxide, molecular nitrogen and other gases generated in the said biological degradation;

(c) continuously withdrawing said liquid effluent from the lower end of said sealed vessel at a point below said packed section, the rate of withdrawal of said liquid effluent being such as to maintain the liquid level of any said liquid effluent accumulating in the bottom of said sealed vessel below said packed section, a portion of said liquid effluent being withdrawn as a treated waste water outfall stream; and

(d) continuously recycling as a said recycle stream a portion of said liquid effluent withdrawn from the lower end of said sealed vessel and mixing said recycle stream with said waste water stream prior to passing the resulting said liquid mixture downwardly through said packed section in accordance with the preceding step (a), the portion of said liquid effluent so recycled as said recycle stream being at least 60% thereof and an amount that, when mixed with said waste water stream, will cause the said liquid mixture to have a concentration of said organic pollutants, and of any said nitrogen compounds, and of any biostatic or biocidal species to be below that concentration which would inhibit the growth processes of said microorganisms.

4,351,730

TREATMENT OF BIOLOGICALLY-DEGRADABLE WASTE

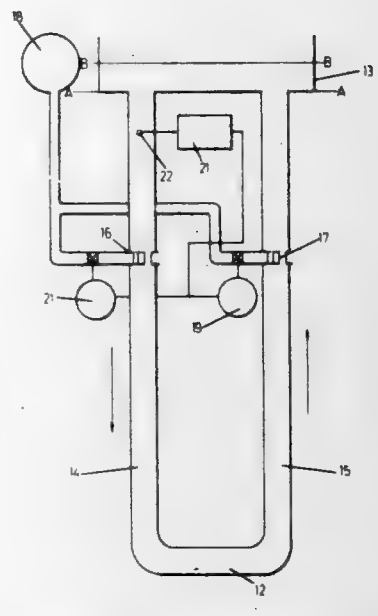
Martin Bailey; David A. Hines; John C. Ousby, and Frank C. Roesler, all of Stockton-on-Tees, England, assignors to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 882,224, Feb. 28, 1978, abandoned, which is a continuation of Ser. No. 467,511, May 16, 1974, abandoned. This application Dec. 5, 1980, Ser. No. 213,596

Claims priority, application United Kingdom, May 16, 1973, 23328/73; Nov. 2, 1973, 53921/73

Int. Cl.³ C02F *3/22, 3/26*

U.S. Cl. 210—629 **8 Claims**



1. A method of treating sewage in apparatus including a basin having a downcomer extending downwardly therefrom, and a riser communicating with said downcomer both in said basin and at the lower end of said downcomer, said method comprising the steps of

continuously circulating the bulk of sewage contained in the basin-downcomer-riser system at any one time down said downcomer, up said riser, and back down said downcomer until sufficient treatment of the sewage is achieved, said continuous circulation being accomplished by injecting said oxygen-containing gas under pressure into said downcomer below the level of sewage in said basin,

supplying oxygen-containing gas to said downcomer so that said gas flows co-currently with sewage flowing down said downcomer, and upwardly with said sewage in said riser, and

injecting oxygen-containing gas in said riser so that said gas flows co-currently with sewage flowing up said riser, at least 50% of the gas injected into the system being initially injected into the riser when the liquid velocity in the downcomer is less than 1 meter/sec., and at least 50% of the gas injected into the system being injected into the downcomer when the liquid velocity in the downcomer is above 1 meter/sec.

6. Apparatus for sewage treatment comprising

a basin,

a downcomer having an upper opening therefor in communication with said basin and extending downwardly from said basin to a bottom opening,

a riser having a bottom opening thereof in communication with the bottom opening of said downcomer and having an upper opening thereof in communication with said basin, said basin, downcomer, and riser comprising a basin-downcomer-riser system,

means for continuously circulating the bulk of sewage contained in the basin-downcomer-riser system at any one time down said downcomer, up said riser, and back down said downcomer until sufficient treatment of the sewage is achieved,

means for supplying oxygen-containing gas to said down-

comer so that said gas flows co-currently with sewage flowing downwardly in said downcomer, and upwardly with sewage in said riser, and

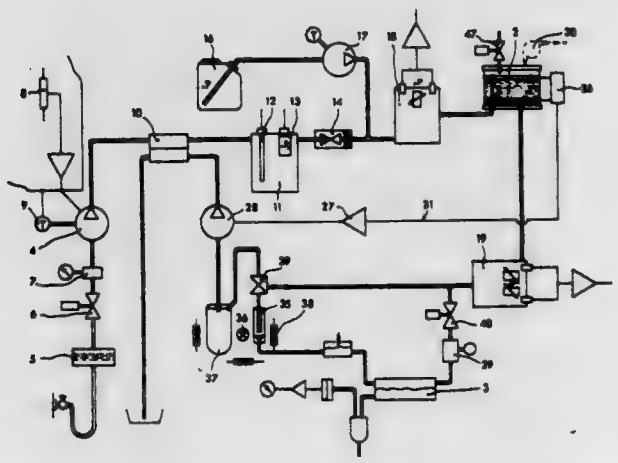
means for injecting oxygen-containing gas in said riser, a source of oxygen-containing gas common to both said downcomer and riser injecting means, and valve means for metering the flow of oxygen-containing gas into said downcomer and said riser so that at least 50% of the total gas injected into the system is injected into the riser when the liquid velocity in the downcomer is less than 1 meter/-second, and at least 50% of the total gas being injected into the system is injected into the downcomer when the liquid velocity in the downcomer is above 1 meter/-second.

4,351,731

PROCESS FOR DIALYZATION OF BLOOD

Erwin Perrot, Schwalbach, Fed. Rep. of Germany, assignor to Klauschenz & Perrot KG, Schwalbach, Fed. Rep. of Germany

Division of Ser. No. 838,389, Sep. 30, 1977, Pat. No. 4,137,168.
This application Dec. 11, 1978, Ser. No. 968,126
Claims priority, application Fed. Rep. of Germany, Oct. 2, 1976, 2644584
Int. Cl.³ B01D *31/00*
U.S. Cl. 210—647 **10 Claims**



1. In a method for the removal of impurities from a liquid by dialysis, an improved process for controlling the dialysis fluid comprising:

mixing a dialysis fluid concentrate with water to form a dialysis fluid having a preselected concentration;

delivering a predetermined quantity of the mixed dialysis fluid to a storage container per unit of time;

withdrawing the dialysis fluid from the storage container and transporting the fluid through a dialysis chamber wherein impurities are transferred to the fluid from the liquid to be purified through a semi-permeable membrane;

constantly measuring the quantity of the dialysis fluid in the storage container; and

controlling the rate of withdrawal of the dialysis fluid from the storage container in response to the quantity of fluid in the container to maintain a constant quantity in the container.

4,351,732

DEHYDRATION OF ETHANOL

John D. Psaras, Arnold, and James A. Zahniser, Severna Park, both of Md., assignors to The C. M. Kemp Manufacturing Co., Glen Burnie, Md.

Filed Dec. 12, 1980, Ser. No. 215,738
Int. Cl.³ B01D *15/00*; C07C *31/08*
U.S. Cl. 210—689 **8 Claims**

1. A process for dehydrating ethanol to more than 199 proof which comprises:

passing liquid phase ethanol through a desiccant bed adapted to dehydrate 190 proof ethanol to more than 199 proof ethanol until said desiccant bed is substantially fully saturated with adsorbed water and regenerating the desiccant bed for renewed adsorption use according to the following procedure:

heating the bed by indirect heat exchange to above about 212° F. to thereby vaporize absorbed and adsorbed ethanol and water from the bed thereafter;

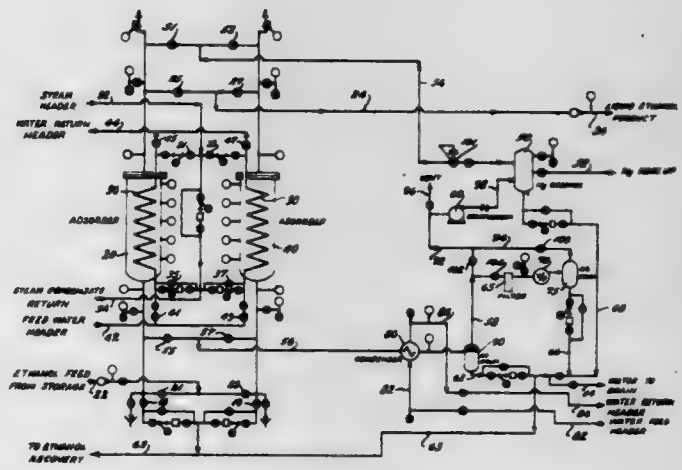
applying sub-atmospheric pressures to the heated bed, desorbing in vapor phase thereby substantial additional proportions of liquid from the bed, and then

cooling the bed by indirect heat exchange to temperature levels suited to adsorption service and releasing the sub-atmospheric pressures thereon.

7. An ethanol dehydration system which comprises an adsorber unit made up of at least two adsorber vessels that alternatively operate through cycles of adsorption and desorption;

each adsorber vessel containing therein a bed of particulate adsorbent and heat exchange means inside said bed adapted to heat and to cool said bed;

means for passing liquid phase ethanol through an adsorber vessel of said adsorber unit during an adsorption cycle to adsorb the water content of the ethanol onto the particulate adsorbent therein;



means for connecting into the hereinafter defined sub-atmospheric pressure inert sweep gas loop an adsorber vessel of said adsorption unit during only the final stages of a desorption cycle to remove vapors evolved from the adsorbent bed therein being regenerated;

means for passing a heating fluid through the heat exchange means in an adsorber vessel from the beginning of the desorption cycle until liquid previously absorbed and adsorbed by the adsorbent bed has been volatilized therefrom thereby regenerating the bed;

a condenser connected to the adsorber vessel undergoing desorption to which the volatilized vapors pass;

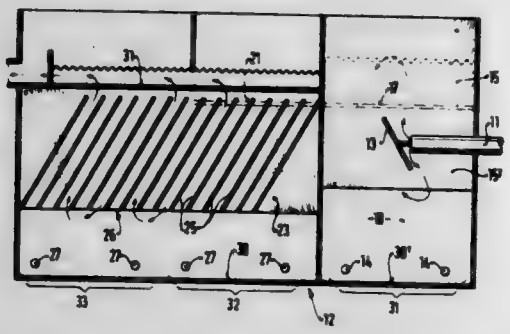
means for passing a cooling fluid through the heat exchange means in an adsorber vessel after regeneration of the bed has been completed;

a sub-atmospheric pressure gas loop for inert sweep gas including one of said adsorber vessels, said condenser, a liquid removing means to remove condensate and a compressor, said gas loop serving to circulate sweep gas from the adsorption unit in the final stages of a desorption cycle successively through condenser, liquid removing means, and compressor, then back to the adsorption unit.

4,351,733
PROCESS AND APPARATUS FOR PURIFICATION OF INDUSTRIAL WASTE WATER

Richard Salzer, Stuttgart, and Hans-Ulrich Schwering, Leonberg, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 26, 1981, Ser. No. 315,214
Claims priority, application Fed. Rep. of Germany, Nov. 15, 1980, 3043254
Int. Cl.³ B01D *21/10*
U.S. Cl. 210—738 11 Claims

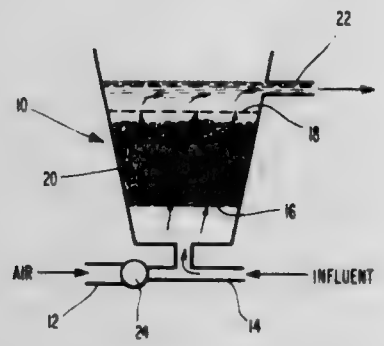


1. A process for the purification of industrial waste water containing solid particles comprising introducing said waste water into a settling tank with agitation wherein a portion of the solid particles in said waste water form flocs and settle in the form of sludge and clarified waste water which contains the remainder of said solid particles which overflow the settling tank, dividing said clarified waste water into several streams, conveying each of said several streams to respective lower portions of spaces between the plates of a first inclined plate pack wherein the solid particles coagulate in the space between the plates, and the coagulated particles settle on the plates and slide to the bottom thereof and then into the bottom of a receiving basin and are removed therefrom, and clarified water rises between the plates and is taken off through an overflow at the top.

4,351,734
SPARK CELL OZONE GENERATOR

Gilbert Kauffman, Bethlehem, Pa., assignor to Ametek, Inc., Paoli, Pa.

Continuation of Ser. No. 792,543, May 2, 1977, abandoned. This application Sep. 15, 1978, Ser. No. 942,864
Int. Cl.³ C02F *1/48, 1/78*
U.S. Cl. 210—748 11 Claims



1. In an apparatus having a chamber with an inlet and outlet for treating liquids with ozone, the improvement which comprises electrode means vertically spaced and horizontally disposed within said chamber,

an expandable bed of electrically conductive particles disposed substantially throughout the space between said electrode means,

said electrically conductive particles forming tortuous paths throughout,

said fluid inlet means being located at the bottom portion of said chamber and said fluid outlet means being located at the top portion of said chamber for passage of the liquid upward through said chamber, said particles and said outlet,

means for applying an electrical potential between said electrodes and for producing arcing in air spaces between said particles, and

means for passing air upwardly through said particles along with said fluid in a manner adapted to expand said particle bed and thereby establish intermittent electrical contact between said electrodes and to cause arcing in air spaces between particles thereby to form ozone.

6. A method of treating a liquid with ozone which comprises:

(a) passing the liquid to be treated upwardly between complementary spaced horizontal electrodes having therebetween an expandable bed of electrically conductive particles,

(b) simultaneously passing pulses of air upwardly with said liquid through said bed, said pulsed air forming bubbles in said liquid,

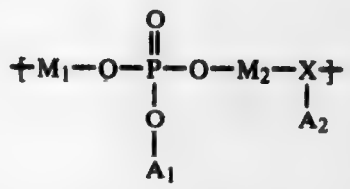
(c) establishing between said electrodes an electrical potential, said upwardly flowing liquid and pulsed air expanding said bed upwardly in a pulsed manner causing intermittent contact between the particles of said bed and said electrodes, said electrical potential being sufficient to create arcing between said particles and across said air bubbles and thereby converting oxygen to ozone therein, said ozone thus being dispersed as it is formed throughout said liquid to effect treatment thereof.

4,351,735
MINERAL ENRICHMENT COMPOSITION AND METHOD OF PREPARING SAME

Bruce D. Buddemeyer; William A. Neville; Nancy A. Rozzo, and Richard G. Bourne, all of Kansas City, Mo., assignors to R.G.B. Laboratories Inc., Kansas City, Mo.

Continuation-in-part of Ser. No. 970,935, Dec. 19, 1978, Pat. No. 4,214,996. This application Jul. 7, 1980, Ser. No. 166,460
The portion of the term of this patent subsequent to Jul. 29, 1997, has been disclaimed.
Int. Cl.³ A23L *1/30*
U.S. Cl. 252—1 34 Claims

1. A composition of matter which includes a moiety of the generalized formula



wherein

M_1 and M_2 are polyvalent and respectively taken from the group consisting of arsenic, silver, aluminum, barium, bismuth, mercury, lead, antimony, tin, beryllium, cadmium, cobalt, chromium, selenium, silicon, strontium, titanium and vanadium,

A_1 and A_2 are respectively taken from the group consisting of hydrogen, ammonium and the alkali metals, and

X is an organic acid moiety having at least three carboxyl groups therein.

4,351,736

PILE-STABILIZING SILICON-CONTAINING TEXTILE AGENTS

Helmut Steinberger, Leverkusen; Hans-Heinrich Moretto, Cologne; Wilfried Kortmann, Hagen, and Josef Pfeiffer, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 22, 1981, Ser. No. 227,444

Claims priority, application Fed. Rep. of Germany, Feb. 9, 1980, 3004824

Int. Cl.³ D06M *15/00;* C08L *83/06*

U.S. Cl. 252—8.6 9 Claims

1. A textile pile-stabilizing impregnating agent comprising a colloidal suspension of a silicic acid and organosilsequioxanes having units of the formula $RSiO_{3/2}$ wherein R is an alkyl or aryl radical with up to 7 carbon atoms.

4,351,737

FABRIC SOFTENER CONCENTRATE

Siegfried Billenstein, Burgkirchen; Adolf May, Hofheim am Taunus, and Hans-Walter Bücking, Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Jun. 26, 1981, Ser. No. 277,909

Claims priority, application Fed. Rep. of Germany, Jul. 4, 1980, 3025369

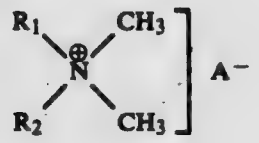
Int. Cl.³ D06M *13/40, 13/46*

U.S. Cl. 252—8.8 2 Claims

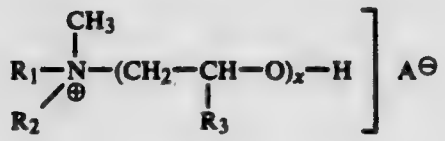
1. Fabric softener concentrates, which contain from:

(a) 30 to 70 weight % of a cationic softener of the formulae:

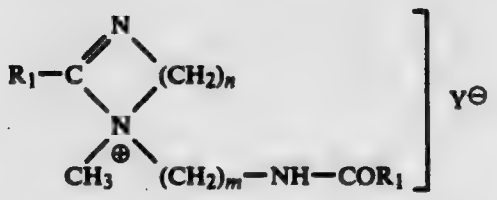
I



II



III



the symbols in the above formulae having the following meanings:

R_1 and R_2 each denotes alkyl or alkenyl of from 8 to 20 carbon atoms,

R_3 is hydrogen or alkyl of from 1 to 3 carbon atoms,

x is an integer of from 1 to 5,

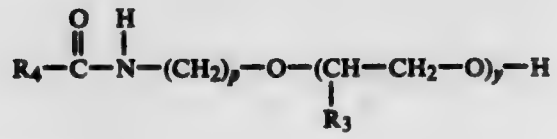
m and n each is 2 or 3,

A^- is chlorine or bromine, and

Y^- is methosulfate;

(b) 5 to 50 weight % of a non-ionic softener of the formula:

IV



wherein

R_4 is alkyl or alkenyl of from 8 to 22 carbon atoms,

R_3 is hydrogen or alkyl of from 1 to 3 carbon atoms,

p is an integer of from 1 to 5 and Y is an integer of from 1 to 15,

(c) 5 to 20 weight % of an oxethylated alkyl phenol or fatty alcohol,

(d) 5 to 30 weight % of a C_1–C_3alkanol,

(e) 5 to 30 weight % of butyl diglycol, ethylene glycol or 1,2-propanediol and

(f) water and optionally perfume and dyestuffs in quantities representing the remainder to 100 weight %.

4,351,738

YARN TREATING COMPOSITION FOR HIGH-SPEED FRICTION DRAW-FALSE TWIST TEXTURING AND A FILAMENTARY YARN TREATED WITH THE SAME

Masao Takahashi, Mihara; Katumi Yoshida; Shinji Ohwaki, both of Matsuyama, and Hiroyuki Moriga, Mihara, all of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Aug. 21, 1980, Ser. No. 180,177

Claims priority, application Japan, Aug. 21, 1979, 54-105467

Int. Cl.³ D06M *15/10, 15/68*

U.S. Cl. 252—8.75 6 Claims

1. A yarn treating composition for high-speed friction draw-false twist texturing comprising substantially (A) a polyether lubricant component and (B) an anionic component, wherein (A) said polyether lubricant component consists of one or two or more types of random or block copolymers having a molar copolymerization ratio between propylene and ethylene oxides of 35:65–90:10, and an average molecular weight in the range of 1,000 to 15,000, both inclusive, and is incorporated in the composition in an amount of 96% by weight or more, and (B) said anionic component is a mixture (C) of compounds I and II, I and III, or I, II and III, said compounds being defined below and said mixture being incorporated in the composition in amounts ranging from 0.5% to 4.0% by weight, said compound I being selected from the following groups (b-1), (b-2) and (b-3):

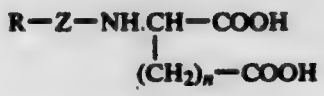
(b-1): alkali metal, ammonium, organic amine salts or their mixtures of long-chain monoolefinic dicarboxylic acids, obtained by addition of long-chain monoolefin having 8 to 18 carbon atoms with at least one of dicarboxylic acids having double bonds, anhydrides thereof and ester derivatives thereof, each having at least one carboxyl group in the molecule, obtained by reacting said long-chain monoolefinic dicarboxylic acids or the corresponding dicarboxylic acid anhydrides with compounds having one or more hydroxyl groups in the molecule,

(b-2): selected from (a), (b) or a mixture of (a) and (b), wherein (a) and (b) are:

(a) alkali metal, ammonium or organic amine salts of dicarboxylic derivatives having long-chain alkyl ethers, long-chain alkyl thioethers or long-chain alkyl ketone groups, obtained by reacting dicarboxylic acids having double bonds, anhydrides, or diesters thereof, with compounds having active hydrogen atoms selected from the group consisting of aliphatic alcohols, aliphatic alkyl mercaptans, and aliphatic aldehydes having 8 to 18 carbon atoms on the average;

(b) alkali metal, ammonium or organic amine salts of ester commpounds having at least one carboxyl group, obtained by reacting said dicarboxylic derivatives having long-chain alkyl ethers, long-chain thioethers or long-chain alkyl ketone groups with compounds each having at least one hydroxyl group in the molecule,

(b-3): alkali metal, ammonium, alkanolamine or alkylamine salts of compounds of the general formula



where R is an alkyl, alkenyl, or fluoroalkyl group having 8 to 22 carbon atoms; n is a positive integer 1 or 2; Z is —CO— or —SO_2—, obtained by reacting amino-dicar-

boxylic acids or derivatives thereof with at least one of aliphatic acyl halides, sulfo-chlorides, and alkali metal, ammonium or organic amine salts of ester compounds each having at least one carboxylic group, obtained from esterification of said compounds defined above or anhydrides thereof with compounds having at least one hydroxyl group in the molecule;

compounds (II): alkali metal, ammonium or organic amine salts of phosphates having higher alkyl or aralkyl polyoxyalkylene ether groups; and

compounds (III): amine, organic amine or alkali metal salts of sulfonate compounds each having at least one alkyl group and sulfonic acid group respectively in the molecule.

4,351,739

SOUND ABSORBENT PANEL

Ingo Romey, Hüenxe, and Willi Trojan, Aachen, both of Fed. Rep. of Germany, assignors to Bergwerksverband GmbH, Essen, Fed. Rep. of Germany

Filed Sep. 6, 1979, Ser. No. 72,921

Claims priority, application Fed. Rep. of Germany, Sep. 7, 1978, 2838944

Int. Cl.³ C04B *43/00*

U.S. Cl. 252—62 **3 Claims**

1. A composition for a sound absorbent panel, comprising a mixture of 70 to 97 weight percent of carbon-containing material which is obtained by destillation or filtration as residue of the product of a coal hydrogenation process and/or pitch filtration and having a carbon content of about 50–60% and comprising an inorganic material at least one of the group of minerals, catalysts for coal-hydrogenation and inorganic filtering auxiliaries, with 3–30 weight percent of a binder of thermosetting or thermoplastic material.

4,351,740

BOTTLED PARTICULATE DETERGENT

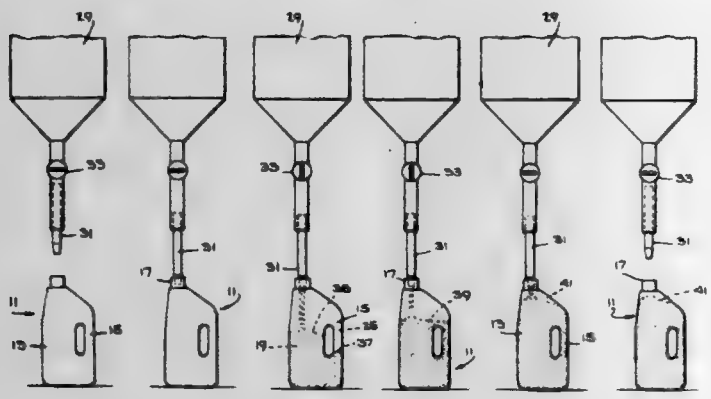
David Joshi, Piscataway, N.J., and Richard Klingaman, Houston, Tex., assignors to Colgate Palmolive Company, New York, N.Y.

Continuation of Ser. No. 964,037, Dec. 21, 1979, Pat. No. 4,269,722. This application Jul. 23, 1980, Ser. No. 171,325

The portion of the term of this patent subsequent to May 26, 1998, has been disclaimed.

Int. Cl.³ B65B *1/06*; C11D *17/06*

U.S. Cl. 252—90 **10 Claims**



1. A bottled particulate laundry detergent which comprises a transparent bottle having a neck portion for dispensing detergent from the bottle, the bottle being made of a thin-walled synthetic organic polymeric plastic which is essentially moisture proof, the neck being located at the top of the bottle and having a passageway therethrough with a cross-sectional area of less than 40% of the average cross-sectional area of the bottle, wherein said neck passageway has a cross-sectional area of about from 2 to 40 sq. cm., the bottle being provided further with an integral hollow handle located on the side of the bottle, wherein the interior of said handle communicates with other interior portions of the bottle, and said handle has an internal cross-sectional area in the range of about 1 to 10 sq. cm., said neck being located nearer the side of the bottle opposite that of the handle and a free-flowing particulate detergent in said bottle, pourable through said neck and handle, the composition of which comprises from about 2 to 50% by weight of a synthetic organic detergent selected from the group consisting of nonionic detergents and mixtures of said nonionic detergents with anionic detergents, wherein said nonionic detergent is a normally tacky ethoxylated detergent, and from about 50 to 90% by weight of builders for said detergent, wherein said builders are selected from the group consisting of ion exchanging clays, organic builders and sodium salts of at least one of bicarbonates, borates, carbonates, phosphates, and silicates, said particles sized such that at least 90% thereof pass through an 8 mesh screen and are retained on a 200 mesh screen (U.S. Sieve Series), are of a bulk density of at least 0.5 g/cc., are of a flowability sufficiently high so that said particulate detergent flows through the neck and handle of said bottle and are substantially dust-free so that after pouring some of said composition from said bottle the bottle and the contained volume above the level of the particulate detergent return to a transparent condition, and a resealable cap for said neck portion.

4,351,741

METHOD OF PREPARING ANTIMONY PENTOXIDE, COLLOIDS THEREOF AND THEIR PREPARATION

John W. Vogt, Chagrin Falls, Ohio, assignor to The Harshaw Chemical Company, Cleveland, Ohio

Filed Feb. 5, 1979, Ser. No. 9,032

The portion of the term of this patent subsequent to Jun. 20, 1995, has been disclaimed.

Int. Cl.³ B01J *13/00*; C01G *30/00*

U.S. Cl. 252—313 R **16 Claims**

1. A method of preparing antimony pentoxide from antimony sulfide-bearing solids which comprises the steps of

(a) leaching the antimony values from the solids with an aqueous potassium hydroxide solution to form an antimony-containing solution and a gangue,

(b) oxidizing the antimony present in the leaching solution to a pentavalent antimony,

(c) recovering the oxidized solution, and

(d) adding an inorganic acid to the solution to reduce the pH of the solution to about 5–7 whereby antimony pentoxide is precipitated from the solution.

15. A method of preparing antimony pentoxide colloids which comprises dispersing the antimony pentoxide prepared in accordance with the method of claim 1 in water.

4,351,742

METHOD FOR THE PRODUCTION OF SYNTHESIS GAS

Norbert Deuser, and Peter Diemer, both of Essen, Fed. Rep. of Germany, assignors to Krupp-Koppers GmbH, Essen, Fed. Rep. of Germany

Filed Apr. 23, 1981, Ser. No. 256,903

Claims priority, application Fed. Rep. of Germany, May 2, 1980, 3016876

Int. Cl.³ C01B *3/16, 3/38*

U.S. Cl. 252—373 **6 Claims**

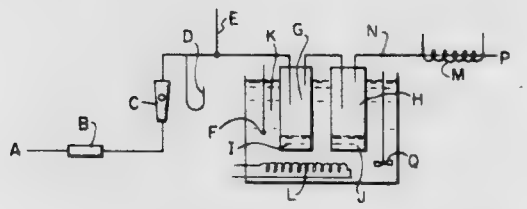
1. In a method for the production of synthesis gas, in which the crude gas obtained through partial oxidation of carbon-containing material is subjected to a catalytic conversion in a conversion of carbon monoxide to hydrogen and carbon dioxide apparatus, which displays a moistening-demoistening system connected by means of a combined water circulation, the improvement comprising branching off a partial stream of water coming from said moistener, heating said partial stream of water by indirect heat exchange with hot product produced from the subsequent reaction of said synthesis gas, and then uniting this heated water with the partial stream of water coming from the demoistener for re-delivery to the moistener.

4,351,743

DILUTE STANDARD GASES PREPARED BY UTILIZING BUFFERED SOLUTION, METHOD FOR PREPARATION THEREOF AND APPARATUS THEREFOR

Yoshikazu Hashimoto, 7-3-14, Minamiaoyama, Minato-ku, Tokyo, Japan

Filed Mar. 31, 1977, Ser. No. 783,458
Claims priority, application Japan, Apr. 7, 1976, 51-38149
Int. Cl.[3] C09K *3/00*
U.S. Cl. 252—408 3 Claims



1. A method for generating a dilute standard gas selected from the group consisting of nitrogen oxides, sulfur oxides, hydrogen sulfide, hydrogen cyanide and formaldehyde at a substantially constant rate which comprises:

(a) preparing a solution containing a compound capable of generating said gas;

(b) adjusting the pH of said solution with a buffer, in a gas generating chamber having gas introduction and exit tubes disposed above said solution, to generate gas into the vapor phase above said solution;

(c) passing a flow of air into said gas generating chamber through said gas introduction tube and removing dilute standard gas through said exit tube,

said gas generating chamber being maintained at a substantially constant temperature throughout said gas generation, whereby said gas is generated at a substantially constant rate and is taken up by said flow of air at a substantially constant rate.

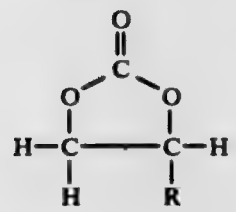
4,351,744

KARL-FISCHER REAGENT

Kaname Muroi, Machida, and Hiroko Fujino, Yamato, both of Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo, Japan

Filed Oct. 1, 1980, Ser. No. 192,880
Claims priority, application Japan, Oct. 31, 1979, 54-140946
Int. Cl.[3] G01N *33/18*
U.S. Cl. 252—408 7 Claims

1. In a Karl-Fischer reagent which consists essentially of iodine, sulfur dioxide, pyridine and a solvent, the improvement wherein the solvent comprises an alkylene carbonate of the formula:



wherein R represents a hydrogen atom or a lower alkyl group.

4,351,745

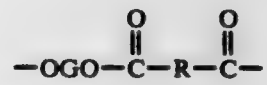
ELECTRICALLY CONDUCTIVE POLYETHERESTER ELASTOMERS

Henry J. Stinger, Devon, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 9, 1980, Ser. No. 110,775
Int. Cl.[3] H01B *1/06*
U.S. Cl. 252—511 10 Claims

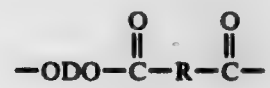
1. An electrically conductive composition, capable of forming self-supporting films, consisting essentially of a uniform mixture of:

(A) 100 parts of a copolyetherester having a melting point of at least about 90° C. and containing 45–85 weight percent of long-chain ester units represented by the following formula (1)



(1)

and 15–55 weight percent of short-chain ester units represented by the following formula (2)



(2)

wherein

R is a divalent radical remaining after removal of carboxyl groups from an aromatic or aliphatic dicarboxylic acid having a molecular weight of less than 300;

G is a divalent radical remaining after the removal of terminal hydroxyl groups from a poly(alkylene oxide) glycol HO-G-OH having a number average molecular weight of about 600–3500 and a carbon/oxygen atomic ratio of at least 2.5; and

D is a divalent radical remaining after removal of hydroxyl groups from a diol HO-D-OH having a molecular weight of less than about 250; and

(B) 60–110 parts of a conductive filler selected from the group consisting of carbon black and a mixture of carbon black and graphite, the proportion of carbon black in such a mixture being no less than about 20 weight percent;

the resistivity of said electrically conductive composition being less than about 2 ohm.cm, its tensile strength at break at least about 10 MPa, and its extension at break at least 20%.

4,351,746

COMPOUND DISPERSIONS AND FILMS

Darrell J. Parish, Stoutsville, Ohio, and Robert S. Mallouk, Chadds Ford, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 25, 1980, Ser. No. 172,998
Int. Cl.[3] H01B *1/06*
U.S. Cl. 252—511 11 Claims

1. A compound dispersion comprising:

(i) electrically conductive carbon particles 0.01 to 20 microns in average diameter;

(ii) a polyolefin having the carbon particles evenly distributed therein to yield a primary dispersion of about 25 to 75 weight percent carbon particles and the remainder polyolefin; and

(iii) a polyester made from dicarboxylic acids or esterforming derivatives thereof and glycols and substantially immiscible with the polyolefin of the primary dispersion, containing less than about 5 weight percent of the carbon particles, and having the primary dispersion evenly distributed therein to yield the compound dispersion of about 5 to 20 weight percent primary dispersion and the remainder polyester.

4,351,747

INFORMATION SIGNAL RECORD MEDIUM OF THE CAPACITANCE TYPE

Kazumichi Miyamoto, Ichikawa; Akira Nishizawa; Takao Okuda, both of Yokohama; Mamoru Nakamura, Takaoka, and Takaharu Abe, Atsugi, all of Japan, assignors to Nippon Zeon Co. Ltd., Tokyo and Victor Company of Japan Limited, Kanagawa, both of, Japan

Filed Oct. 28, 1980, Ser. No. 201,592

Claims priority, application Japan, Oct. 29, 1979, 54/139705

Int. Cl.[3] H01B *1/06*

U.S. Cl. 252—511 15 Claims

1. In an information signal record medium of the capacitance type wherein an information signal is recorded as a variation in the geometrical shape of its surface area, and is played back by the variation of the capacitance between its surface and an electrode of a reproducing stylus scanning the surface of the record medium relatively which occurs according to a variation in the geometrical shape of its surface area, the improvement wherein at least the surface area of the record medium is formed of a material composed of an electrically conductive substance and a copolymer consisting of 98 to 65% by weight of vinyl chloride, 2 to 20% by weight of an alkyl vinyl ether with the alkyl group having 4 to 18 carbon atoms and/or a vinyl ester of a fatty acid in which the fatty acid residue has 4 to 18 carbon atoms and 0 to 15% by weight of another monomer copolymerizable with these compounds.

4,351,748

NORBORNANE (-ENE) DERIVATIVES AND THEIR USE AS PERFUMING INGREDIENTS

Francois Delay, Geneva, Switzerland, assignor to Firmenich SA, Geneva, Switzerland

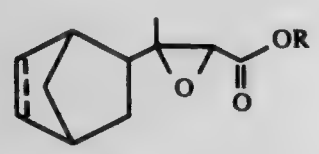
Division of Ser. No. 28,843, Apr. 10, 1979, Pat. No. 4,252,728. This application Feb. 5, 1981, Ser. No. 231,852

Claims priority, application Switzerland, Apr. 17, 1978, 4073/78

Int. Cl.[3] A61K *7/46;* C11B *9/00*

U.S. Cl. 252—522 R 7 Claims

1. A process for imparting, modifying or enhancing the odoriferous properties of perfumes and perfumed articles which comprises the step of adding thereto a perfuming effective amount of a compound of formula



wherein a solid line represents a single bond in the chain and the combination of a solid line and a dotted line represents a double bond in the chain and symbol R represents a lower alkyl radical having 1 to 4 carbon atoms.

4,351,749

MOLECULAR GLASSES FOR NUCLEAR WASTE ENCAPSULATION

Richard C. Ropp, Warren, N.J., assignor to Vitrex Corporation, Livingston, N.J.

Continuation-in-part of Ser. No. 964,120, Nov. 28, 1978, abandoned. This application May 5, 1980, Ser. No. 146,302

Int. Cl.[3] G21F *9/16*

U.S. Cl. 252—629 62 Claims

1. A nuclear waste block for storage of high level radioactive waste, said block comprising, in combination: about 4 to 47 parts by weight of solid radioactive waste material dispersed in 96 to 53 parts by weight, respectively, of a polymeric phosphate glass having the formula:

$$M_3P_7O_{22},$$

where M is a trivalent metal selected from the group consisting of aluminum, indium and gallium.

4,351,750

QUICK-SETTING BITUMINOUS EMULSION COMPOSITIONS

Richard L. Ferm, Lafayette, and Chester C. Latif, Turlock, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation of Ser. No. 16,653, Mar. 1, 1979, abandoned, which is a division of Ser. No. 255,604, May 22, 1972, Pat. No. 4,193,816, which is a continuation-in-part of Ser. No. 672,746, Oct. 4, 1967, abandoned, and Ser. No. 757,137, Sep. 3, 1968, abandoned, and Ser. No. 68,502, Aug. 31, 1970, abandoned. This application Jul. 28, 1980, Ser. No. 173,232

Int. Cl.[3] C04B *7/356;* C08L *95/00*

U.S. Cl. 524—8 13 Claims

1. A surfacing composition which rapidly sets to a tough cohesive surface with early development of tensile strength and rain resistance and is prepared by intimately mixing a solid particulate matter, a bituminous emulsion having a pH greater than about 7, and a set initiator in the following proportions: which comprises 100 parts by weight of a solid particulate matter, 0.1 to less than 5 parts by weight of a set initiator which is Portland cement, hydrated lime, or mixtures thereof; and from about 3 to 150 parts of a bituminous emulsion comprising from about 50 to 70 weight percent of a bituminous binder and from about 0.1 to about 3 weight percent of the anionic ammonium or alkali metal emulsifying salt of a compound selected from the group consisting of a hydrocarbyl phosphoric acid, a hydrocarbyl phosphonic acid and mixtures thereof, wherein the hydrocarbyl moiety is from about 8 to 22 carbon atoms.

4,351,751

GLASS FIBER REINFORCED POLYETHYLENE TEREPHTHALATE RESIN COMPOSITION

Kazuo Kishida; Isao Sasaki, and Hiroshi Mori, all of Ohtake, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Filed Dec. 16, 1980, Ser. No. 217,095

Claims priority, application Japan, Dec. 27, 1979, 54-173011; Aug. 19, 1980, 55-113595

Int. Cl.[3] C08L *91/08, 67/02*

U.S. Cl. 524—375 17 Claims

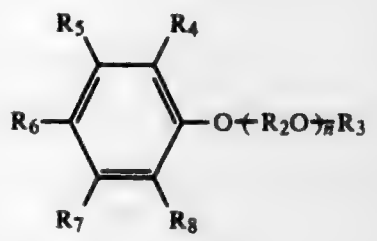
1. A reinforced resin composition exhibiting good heat resistance and appearance, which consists essentially of:

(A) at least 30% by weight of a polyethylene terephthalate resin;

(B) about 5 to about 60% by weight of glass fiber;

(C) about 0.03 to about 5% by weight of at least one organic carboxylic acid salt of a metal of Groups I-a or II-a of the Periodic Table; and

(D) about 0.1 to about 20% by weight of at least one ether compound of the formula:



wherein R_3 is hydrogen or a hydrocarbon group having from 3 to 30 carbon atoms, R_2 is an alkylene group having 2 to 6 carbon atoms, R_4 through R_8 are independently hydrogen or a hydrocarbon group having from 1 to 9 carbon atoms, and n is an average number of the recurring units in the range of from 5 to 200, the components being admixed together so that the total amount of components (A) through (D) is 100% by weight.

4,351,752

DETACKIFIED AQUEOUS SIZING COMPOSITION COMPRISING LIQUID POLYMER AND FREE RADICAL GENERATOR

Balbhadra Das, Allison Park, Pa., and Dennis M. Fahey, Lexington, N.C., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jun. 18, 1979, Ser. No. 49,841
Int. Cl.[3] C08L *91/00;* D02G *3/00*
U.S. Cl. 523—401 6 Claims

1. An aqueous sizing composition for treating glass fibers to yield a sized glass fiber strand having reduced tackiness, comprising:

(a) one or more low molecular weight liquid polymers selected from the group consisting of styrene-butadiene copolymers, acrylonitrile-butadiene copolymers, hydroxy or carboxy terminated derivatives of these copolymers; 1,2-epoxy polymers having unsaturation or a replaceable hydrogen in the polymer backbone or at a pendant position; unsaturated polyester polymers prepared from at least one polyhydric alcohol and polycarboxylic acid or anhydride; and liquid polyurethane polymers produced from isocyanates and polyols and where the liquid polymer is curable with free radical generators; and

(b) a free radical generator selected from the group consisting of peroxides and hydroperoxides in an amount in the range of about 0.2 to about 5 parts per 100 parts of liquid polymer, and

(c) water.

4,351,753

LIQUIFIED NORMALLY SOLID POLYOXYALKYLENE BLOCK COPOLYMERS

Thomas M. Kaneko, Trenton, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Oct. 24, 1980, Ser. No. 200,118
Int. Cl.[3] C08L *63/00*
U.S. Cl. 252—357 18 Claims

1. A liquid composition consisting essentially of a normally solid nonionic polyoxyalkylene block copolymer and ethylene glycol.

4,351,754

THICKENING AGENT FOR AQUEOUS COMPOSITIONS

Jean Dupre, Levittown, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 75,860, Sep. 17, 1979, abandoned. This application Apr. 10, 1980, Ser. No. 139,053
Int. Cl.[3] C08K *3/36*
U.S. Cl. 524—445 11 Claims

1. As a thickening agent for aqueous systems, a composition comprising a mixture of:

(A) a water swellable clay mineral, and

(B) a water insoluble emulsion polymer, an aqueous dispersion of which will thicken upon addition of a neutralization agent, of

(1) 20–50 wt. % of (meth)acrylic acid,

(2) 0.5–25 wt. % of at least one monomer of the formula (I):

$$H_2C{=}C(R){-}C(O){-}O{-}(CH_2CH_2O)_n{-}R^o$$

wherein R is H or CH_3, n is at least 2 and has an average value up to 60 or more, and R^o is a group having at least 8 carbon atoms selected from alkyl, alkaryl and polycyclic hydrocarbyl,

(3) at least 30 wt. % of an alkyl (meth)acrylate wherein the alkyl group has 1 to 4 carbon atoms, and

(4) zero to 1.0 wt. % of a polyethylenically unsaturated monomer;

the proportions of (A) and (B) being effective, upon addition of a neutralizing agent for (B), for thickening an aqueous dispersion formed therewith.

4,351,755

ISOCYANATE-FUNCTIONAL POLYMERS CONTAINING A TERMINAL MONOSULFIDE GROUP

Darryl W. Brixius, Allentown, Pa., and John A. Simms, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

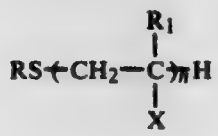
Continuation-in-part of Ser. No. 53,301, Jun. 29, 1979, abandoned, which is a division of Ser. No. 819,121, Jul. 26, 1977, abandoned. This application Oct. 8, 1980, Ser. No. 195,081
Int. Cl.[3] C08K *5/10;* C08F *26/02;* B32B *17/10*
U.S. Cl. 524—555 32 Claims

1. An isocyanate-functional polymer of at least 10% by weight of isocyanatoalkyl acrylate or isocyanatoalkyl methacrylate, polymerized alone or with a polymerizable comonomer,

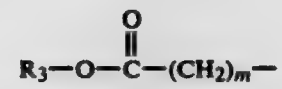
any polymerizable comonomer being at least one member of the group consisting of alkyl acrylates and methacrylates; styrene; ethylene; vinyl acetate; and vinyl chloride,

in the presence of 1–20% by weight, based on the weight of the polymer, of a mercaptan chain-transfer agent,

wherein at least 10% by number of the polymer molecules have the following structure:



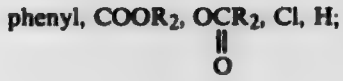
where RS is the residue of a mercaptan chain-transfer agent, R— being C_4–C_{12} alkyl, phenyl, benzyl or



where R_3— is C_4–C_{12} alkyl, phenyl or benzyl and m is 0–8;

R_1 is hydrogen or methyl;

X is COO—A—NCO or a mixture of COO—A—NCO and at least one of



phenyl, $COOR_2$, OCR_2, Cl, H;

where

A is an alkylene group having 2–6 carbon atoms, and

R_2 is an alkyl group having 1–12 carbon atoms;

and n is 2–400 so that the polymer has a number average molecular weight, determined by gel permeation chromatography, utilizing polystyrene standards of polydispersity less than 1.1, of 500–10,000.

4. A coating composition comprising a solution of a polymer of claim 1 in an organic solvent.

4,351,756

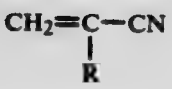
RUBBER-MODIFIED HIGH NITRILE COPOLYMERS WITH IMPROVED IMPACT RESISTANCE

Dorothy C. Prem, Sagamore Hills Township, Summit County; June T. Duke, Chagrin Falls, and Ralph E. Isley, Northfield, all of Ohio, assignors to SOHIO, Cleveland, Ohio

Continuation-in-part of Ser. No. 968,937, Nov. 16, 1978, Pat. No. 4,244,852. This application Jun. 2, 1980, Ser. No. 155,725
The portion of the term of this patent subsequent to Jan. 13, 1998, has been disclaimed.
Int. Cl.[3] C08F *2/16;* C08K *5/12*
U.S. Cl. 524—314 9 Claims

1. The process for preparing a resin having good impact resistance comprising polymerization in an aqueous medium at a temperature in the range of from 0° to 100° C. in the substantial absence of molecular oxygen 100 parts by weight of

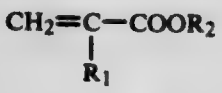
(A) from 60 to 90% by weight of at least one nitrile having the structure



wherein R is hydrogen, a lower alkyl group having from 1 to 4 carbon atoms, or a halogen, and

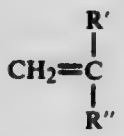
(B) from 10 to 40% by weight based on the combined weights of (A) and (B) of at least one member selected from the group consisting of

(1) an ester having the structure



wherein R_1 is hydrogen, an alkyl group having from 1 to 4 carbon atoms, or a halogen, and R_2 is an alkyl group having from 1 to 6 carbon atoms,

(2) an alpha-olefin having the structure



wherein R′ and R″ are alkyl groups having from 1 to 7 carbon atoms,

(3) a vinyl ether selected from the group consisting of methyl vinyl ether, ethyl vinyl ether, the propyl vinyl ethers, and the butyl vinyl ethers,

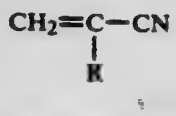
(4) vinyl acetate,

(5) styrene, and

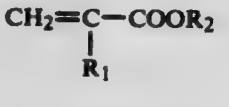
(6) indene,

in the presence of from 1 to 40 parts by weight of

(C) a rubbery polymer of a conjugated diene monomer selected from the group consisting of butadiene and isoprene and optionally a comonomer selected from the group consisting of styrene, a nitrile monomer having the structure



wherein R has the foregoing designation, and an ester having the structure



wherein R_1 and R_2 have the foregoing designations, said rubbery polymer containing from 50 to 100% by weight of polymerized conjugated diene and from 0 to 50% by weight of polymerized comonomer, said (C) having been prepared by carrying out the polymerization of the monomers in the presence of from 5 to 50 parts by weight per 100 parts of monomer of a plasticizer having the structure R^{III}—$COOR^{IV})_2$ wherein R^{III} is an aliphatic hydrocarbon diradical having 4 carbon atoms and R^{IV} is an aliphatic hydrocarbon group having from 1 to 12 carbon atoms or an aliphatic hydrocarbon ether group having from 2 to 12 carbon atoms.

4,351,757

MOLDING MATERIAL OF POLYETHYLENE TEREPHTHALATE AND ALKAI METAL SALT OF C_{30}–C_{54} SUBSTANTIALLY ALIPHATIC CARBOXYLIC ACID

Guenther K. Hoeschele, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 24, 1980, Ser. No. 200,192
Int. Cl.³ C08K *5/10*; C08L *67/02*
U.S. Cl. 524—169 **8 Claims**

1. A polyethylene terephthalate molding blend consisting essentially of:

(a) polyethylene terephthalate which can contain up to 10% by weight of a nonpolymeric comonomer or up to 3% by weight of a polymeric comonomer, and which has an inherent viscosity of at least 0.4 dl/g; and

(b) about 0.1–5% based on polyethylene terephthalate, of an alkali metal salt of a substantially aliphatic polycarboxylic acid containing between 30 and 54 carbon atoms and 2 to 4 carboxyl groups and having a molecular weight of less than about 1500, provided the amount of salt present is sufficient to provide a $\Delta H_H/\Delta H_c$ ratio of less than 0.25 to the blend.

4,351,758

POLYESTER BLENDS

Shau-Zou Lu, Whitehouse Station, and Melvin Druin, West Orange, both of N.J., assignors to Celanese Corporation, New York, N.Y.

Filed Aug. 6, 1980, Ser. No. 175,564
Int. Cl.³ C08L *67/02*
U.S. Cl. 524—227 **33 Claims**

1. A process for the production of a resin molding composition which comprises intimately admixing

(a) a resin blend of polyethylene terephthalate and polybutylene terephthalate in a weight ratio in the range of between about 1:1 and 9:1 respectively, said blend being present in the range of between about 40 and 95 percent by weight based on the total weight of the composition;

(b) an additive, selected from the group consisting of reinforcing agents; mineral fillers; and blends of reinforcing agents and mineral fillers; said additive being present in the range of from about 4 and 65 percent by weight based on the total weight of the composition; and

(c) a nucleating agent, selected from the group consisting of an alkali metal salt having anions which are oxides of the elements of group IV of the Periodic Table; talc; and barium sulfate, said nucleating agent present in the range of from about 0.1 and 20 percent by weight based on the total weight of the composition;

said composition having a moisture content in the range of from about 0.05 and 0.68 weight percent based on the total weight of said resin blend.

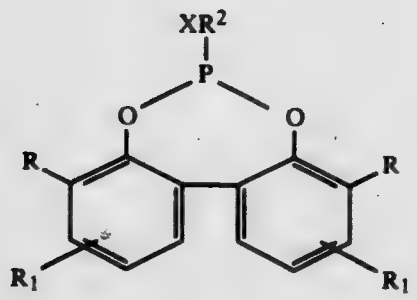
4,351,759

ALKYLATED 2,2′-BIPHENYLENE PHOSPHITES AND STABILIZED COMPOSITIONS

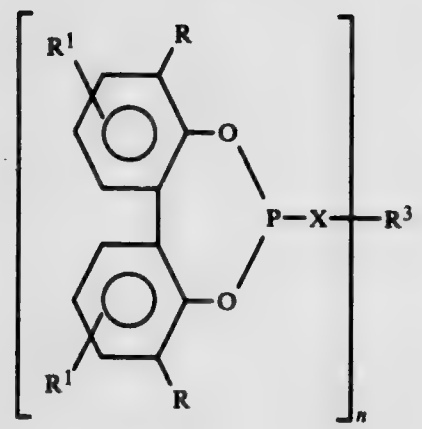
John D. Spivack, Spring Valley, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 93,786, Nov. 13, 1979, Pat. No. 4,288,391, which is a continuation-in-part of Ser. No. 866,748, Jan. 3, 1978, Pat. No. 4,196,117. This application Mar. 23, 1981, Ser. No. 246,341
Int. Cl.³ C08K *5/52*
U.S. Cl. 524—100 **12 Claims**

1. A composition of matter comprising an organic material subject to oxidative, thermal and actinic degradation stabilized with from about 0.01 to about 5% by weight, of the total composition, of a 1,1′-biphenyl-2,2′-diyl phosphite of the formula



or



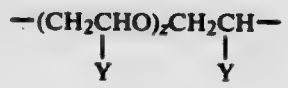
wherein

R is an alkyl group of 1 to 18 carbon atoms,

R^1 is hydrogen or alkyl group of 1 to 18 carbon atoms, and

R^2 is an alkyl group of 1 to 20 carbon atoms, phenyl, phenyl substituted by 1 to 3 alkyl groups each having 1 to 8 carbon atoms, or by two alkyl groups each having 1 to 8 carbon atoms and by —$COOR^4$ where R^4 is alkyl of 1 to 18 carbon atoms,

R^3 is an n-valent radical selected from the group consisting of a straight- or branched-chain alkylene of 2 to 12 carbon atoms, a straight- or branched chain alkane-triyl, -tetrayl, -pentayl or -hexayl of 3 to 6 carbon atoms, alkenylene of 4 to 6 carbon atoms, cycloalkylene of 6 to 12 carbon atoms, 1,4-cyclohexanedimethylene, arylene or arenetriyl of 6 to 10 carbon atoms, p-xylylene, phenylene-E-phenylene where E is a direct bond, —O—, —S—, —NR^5—, where R^5 is alkyl of 1 to 18 carbon atoms; a straight- or branched chain alkylene or alkylidene of 1 to 12 carbon atoms or cycloalkylidene of 5 to 6 carbon atoms, said arylene or said phenylene-E-phenylene substituted by 1 to 4 alkyl groups each having 1 to 8 carbon atoms, —$(CH_2)_xX(CH_2)_x$— where x is 2 to 6, dipentaerythrityl, and



where Y is hydrogen, methyl or ethyl and z is 1 to 10,

X is oxygen or sulfur, and n is 2 to 6.

4,351,760

NOVEL ALKYL SUBSTITUTED FLUORESCENT COMPOUNDS AND POLYAMINO ACID CONJUGATES

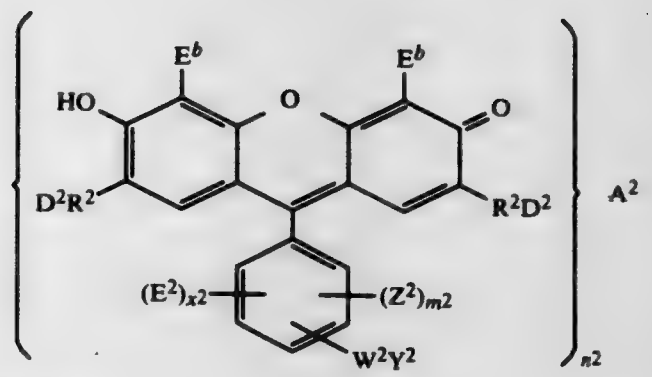
Pyare Khanna, Mountain View, and Edwin F. Ullman, Atherton, both of Calif., assignors to Syva Company, Palo Alto, Calif.

Filed Sep. 7, 1979, Ser. No. 73,158

Int. Cl.³ A61K *39/385, 39/44;* **C07G** *7/00*

U.S. Cl. 260—112 R **7 Claims**

1. A compound of the formula:



wherein:

E^b is hydrogen or chloro;

E^2 is chloro;

Z^2 is carboxy;

R^2 is alkylene of from 1 to 3 carbon atoms;

D^2 is hydrogen or carboxy;

W^2 is a bond, alkylene, carboxamidoalkylene, or poly(carboxamidoalkylene), wherein alkylene is of from 1 to 2 carbon atoms;

Y^2 is non-oxo-carbonyl, carbamoyl, thiocarbamoyl, amino, methylene, oxy or thio;

A^2 is a poly(amino acid) ligand or receptor;

m^2 is 0 to 3;

x^2 is 0 to 4; and

n^2 is 1 to the molecular weight of A^2 divided by 500.

4,351,761

PURIFIED ANTIGEN TO TEST FOR *NEISSERIA GONORRHOEAE* ANTIBODIES

Hassan A. Gaafar, Voorheesville, N.Y., assignor to Research Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 46,639, Jun. 8, 1979, abandoned, which is a continuation of Ser. No. 905,954, May 15, 1978, Pat. No. 4,241,045. This application Feb. 5, 1981, Ser. No. 231,891

Int. Cl.³ A61K *35/74, 39/095, 39/385, 39/40*

U.S. Cl. 260—112 R **12 Claims**

1. A heat stabile antigen preparation, protein in nature isolated from *Neisseria gonorrhoeae* and useful for detecting the presence of *Neisseria gonorrhoeae* antibodies in human serum, containing a heat stable, species specific L-antigen which is characterized as follows:

1. stable in boiling water for a period of one hour,
2. stable in an aqueous medium at pH values of 3-11,
3. stable when incubated with the following enzymes:
   DNA-ase
   RNA-ase
   dextranase
   neuraminidase
   lysosyme,
4. isoelectric point of 4±0.2,
5. molecular weight subunits of 37,000–40,000 as determined by ADS-polyacrylamide gel,
6. contains 2-3% organic phosphorus,
7. soluble in water, and more soluble in aqueous media containing surface active agents; insoluble methanol, chloroform and acetone,
8. reacts specifically with antibodies produced in rabbits against purified L-antigen, and
9. partially soluble in 5% to 10% trichloroacetic acid,
10. contains less than 1% carbohydrate,
11. inactivated when incubated with trypsin.

4,351,762
RAPID, QUANTITATIVE PEPTIDE SYNTHESIS USING MIXED ANHYDRIDES

Michael S. Verlander, Del Mar; William D. Fuller, San Diego, and Murray Goodman, La Jolla, all of Calif., assignors to BioResearch, Inc., Farmingdale, N.Y.

Filed Mar. 10, 1981, Ser. No. 242,310
Int. Cl.³ C07C *103/52*
U.S. Cl. 260—112.5 R 10 Claims

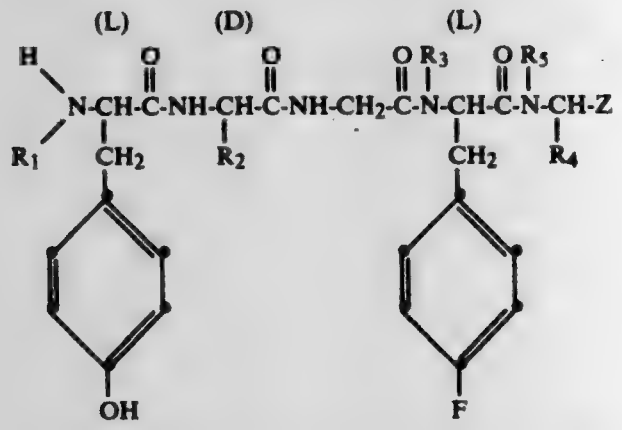
1. In the synthesis of a polypeptide chain on an insoluble solid support containing reactive substituent groups, wherein an N^{α}-urethane-protected amino acid coupled to the support by condensation with said reactive substituent groups is deprotected to provide a free α-amino group on said coupled amino acid, a second, similar or dissimilar N^{α}-urethane-protected amino acid in the form of its mixed anhydride is coupled to said α-amino group and the deprotection and coupling processes repeated until the desired polypeptide is obtained; the improvement wherein the mixed anhydride coupling reactions are conducted at room temperature and above.

4,351,763
PHARMACOLOGICALLY ACTIVE PEPTIDES

Paul D. Gesellchen, Indianapolis, and Robert T. Shuman, Greenwood, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 104,348, Dec. 17, 1979. This application Apr. 24, 1981, Ser. No. 256,861
Int. Cl.³ C07C *103/52*; A61K *37/00*
U.S. Cl. 260—112.5 E 29 Claims

1. A compound of the formula

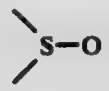


and pharmaceutically acceptable non-toxic acid addition salts thereof, in which

L and D define the chirality;

R_1 is hydrogen or C_1–C_3 primary alkyl;

R_2 is C_1–C_4 primary or secondary alkyl, allyl, cyclopropylmethyl, C_1–C_2 hydroxyalkyl, or $-(CH_2)_m-U-CH_3$ in which U is —S— or



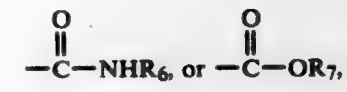
and m is 1 or 2;

R_3 is hydrogen, C_1–C_4 primary or secondary alkyl, cyclopropylmethyl, or allyl;

R_4 is phenyl, or monosubstituted phenyl in which the substituent is halo, hydroxy, C_1–C_3 alkoxy, nitro, C_1–C_3 alkyl, or trifluoromethyl;

R_5 is hydrogen; and

Z is $-CH_2OR_6$,



in which R_6 is hydrogen or C_1–C_3 alkyl and R_7 is C_1–C_3 alkyl.

4,351,764
PROCESS FOR THE SELECTIVE FORMATION OF DISULFIDE BRIDGES IN POLYPEPTIDES AND THERAPEUTIC COMPOSITIONS

Christian Birr, Leimen/St. Ilgen, Fed. Rep. of Germany, assignor to der Wissenschaften e.V. Max-Planck-Gesellschaft zur/Forderung, Gottingen, Fed. Rep. of Germany

Filed Jun. 9, 1980, Ser. No. 158,021
Claims priority, application Fed. Rep. of Germany, Jun. 12, 1979, 2923787
Int. Cl.³ C07C *103/52*
U.S. Cl. 260—112.7 24 Claims

1. Process for the selective formation of at least two disulfide bridges in a polypeptide which process comprises treating a polypeptide starting material carrying at least four SH-groups to mask at least one of two of said SH-groups, intended to form a first disulfide bridge, with a p-methoxybenzyl protective group and to mask at least one SH-group of each further pair of SH-groups intended to form one or more further disulfide bridges, with an acetamido methyl protective group, then splitting off said p-methoxybenzyl protective group with pyridine-polyhydrogen fluoride in the presence of anisol to produce that first disulfide bridge, and then treating the polypeptide with iodine in an acid solution to produce said disulfide bridge-containing polypeptide by forming said one or more further disulfide bridges.

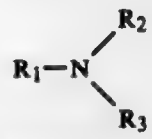
4,351,765
PROCESS FOR THE PRODUCTION OF COMPOUNDS HAVING IN THE MOLECULE AT LEAST ONE β-SULFATOETHYL-SULFONE GROUP AND AT LEAST ONE SULFONIC ACID GROUP

Taira Fujita, Nishinomiya; Hiroyuki Nakagawa, Kawanishi; Mikio Sugihara, Takatsuki; Kimiyuki Kobayashi, Minoo, and Katuhiko Okamoto, Kyoto, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Jan. 29, 1980, Ser. No. 116,623
Claims priority, application Japan, Feb. 13, 1979, 54/15791
Int. Cl.³ C07C *139/00, 139/100, 141/04, 141/14*
U.S. Cl. 260—163 11 Claims

1. In a process for producing a compound having in the molecule at least one sulfonic acid group and at least one β-sulfatoethylsulfone group of the formula, $-SO_2CH_2CH_2OSO_3M$, wherein M is hydrogen or an alkali metal, which comprises reacting a starting compound having in the molecule at least one sulfonic acid group and at least one β-hydroxyethylsulfone group of the formula, $-SO_2CH_2CH_2OH$, with an esterifying agent selected from the group consisting of sulfuric acid, sulfamic acid and chlorosulfonic acid, the improvement comprising

(1) conducting the reaction in the presence of a water-insoluble organic solvent and a secondary or tertiary amine represented by the formula,



wherein R_1 is a C_6–C_{24} aliphatic, aromatic or aralkyl group, and R_2 and R_3 are independently a hydrogen atom or a C_1–C_{24} hydrocarbon group, provided that R_2 and R_3 are not hydrogen atoms at the same time; the starting compound being selected from the group consisting of azo dye compounds, anthraqui-

none dye compounds, naphthalene dye compounds, pyrazolone dye compounds, and phthalocyanine dye compounds, the amount of the esterifying agent being from 1 to 10 moles per β-hydroxyethylsulfone group of the starting compound, the amount of the amine being from 1 to 10 moles per mol of the starting compound, and the reaction being carried out at a temperature of from about 40° to about 180° C.;

(2) washing the resulting reaction mixture with water or a weakly alkaline aqueous solution to remove excess of the esterifying agent; and

(3) subjecting the reaction mixture to extraction with a weakly alkaline aqueous solution, whereby an aqueous solution containing the dye is obtained.

4,351,766

PRODUCTION OF PENICILLINS

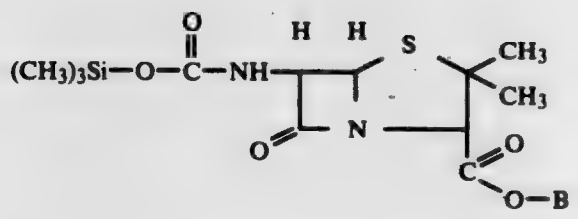
Derek Walker, Jamesville; Herbert H. Silvestri, DeWitt; Chester Sapino, East Syracuse, and David A. Johnson, Fayetteville, all of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Division of Ser. No. 56,976, Jul. 12, 1979, Pat. No. 4,310,458, which is a continuation-in-part of Ser. No. 21,852, Mar. 19, 1979, Pat. No. 4,240,960, which is a continuation-in-part of Ser. No. 4,780, Jan. 19, 1979, abandoned, which is a continuation-in-part of Ser. No. 970,704, Dec. 18, 1978, abandoned. This application Aug. 13, 1981, Ser. No. 292,457

Int. Cl.³ C07D *499/10*

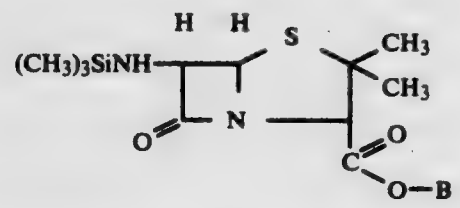
U.S. Cl. 260—239.1 **8 Claims**

1. The process for the production of a compound having the formula



wherein

B is an easily cleavable ester protecting group which comprises first forming a compound having the formula



wherein B has the same meaning as above from 6-APA and thereafter adding dry carbon dioxide to a solution thereof in an anhydrous inert organic solvent at a temperature in the range of 0° C. to 100° C. until completion of the reaction.

4,351,767

SYNTHESIS OF 24,25-DIHYDROXYCHOLESTEROL

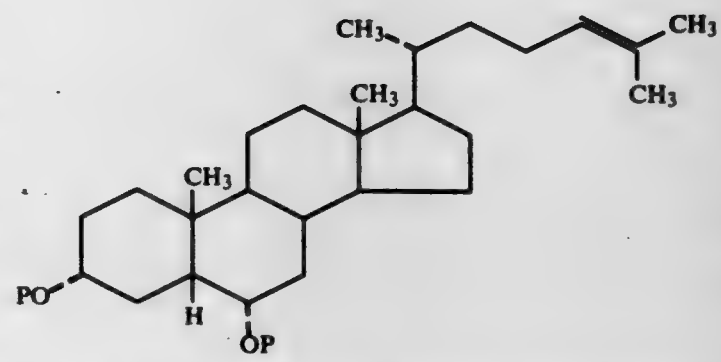
Emil T. Kaiser, 5634 S. Woodlawn Ave., Chicago, Ill. 60637

Filed Jun. 29, 1981, Ser. No. 278,838

Int. Cl.³ C07J *71/00*

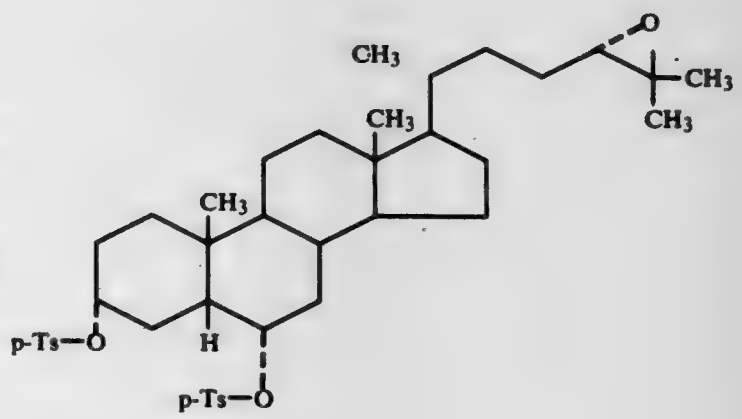
U.S. Cl. 260—239.55 R **12 Claims**

1. A compound having the structure:



where P is 2-tetrahydropyranyl, β-methoxyethoxymethyl, tertiary-butyl, trimethylsilyl or tertiary-butyldimethylsilyl.

6. A compound having the structure:



where ρ-Ts=ρ-toluenesulfonyl.

4,351,768

2-[(3-INDOLYL)CARBONYL]-4/5-CARBOXYBENZOIC ACIDS

Nathan N. Crounse, Cincinnati, and Paul J. Schmidt, Sharonville, both of Ohio, assignors to Sterling Drug Inc., New York, N.Y.

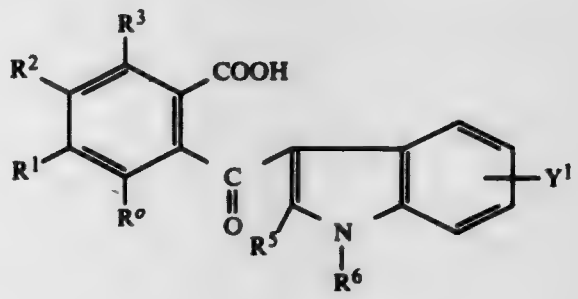
Division of Ser. No. 27,031, Apr. 4, 1979, Pat. No. 4,251,446, which is a continuation-in-part of Ser. No. 868,583, Jan. 11, 1978, Pat. No. 4,189,171, which is a continuation-in-part of Ser. No. 773,180, Mar. 1, 1977, abandoned. This application Mar. 14, 1980, Ser. No. 130,353

Claims priority, application Canada, Feb. 16, 1978, 296986; United Kingdom, Feb. 16, 1978, 6228/78

Int. Cl.³ C07D *209/24*

U.S. Cl. 260—326.13 R **2 Claims**

1. A 2-{[(1-R^6-2-R^5-5/6-Y^1)-3-indolyl]carbonyl}-3-R^0-4-R^1-5-R^2-6-R^3-benzoic acid of the formula



wherein

R^0, R^3 and one of R^1 and R^2 are each hydrogen, and the other of R^1 and R^2 represents carboxy;

R^5 represents hydrogen, C_1 to C_3 alkyl or phenyl,

R^6 represents hydrogen, C_1 to C_{18} alkyl, C_2 to C_4 alkenyl, benzyl or benzyl substituted in the benzene ring by one or two of halo or C_1 to C_3 alkyl; and

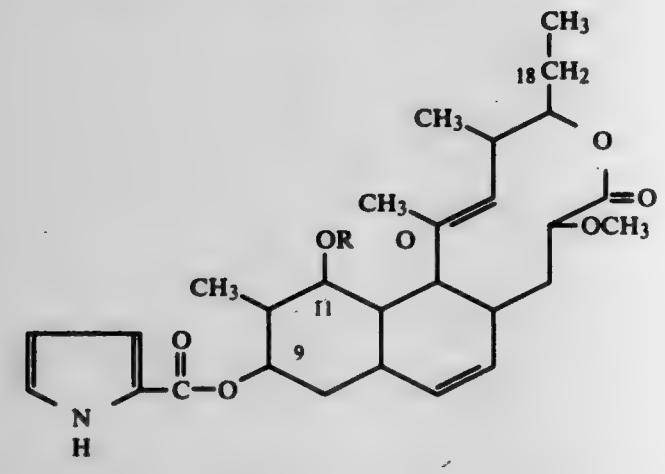
Y^1 represents one or two of hydrogen, C_1 to C_3 alkyl, C_1 to C_3 alkoxy, halo or nitro.

4,351,769
ANTIBIOTIC COMPOSITION OF MATTER

Howard A. Whaley, Portage, and John H. Coats, Kalamazoo, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Aug. 25, 1980, Ser. No. 180,529
Int. Cl.³ C07D *493/08*
U.S. Cl. 260—326.34 **4 Claims**

1. A compound of the formula



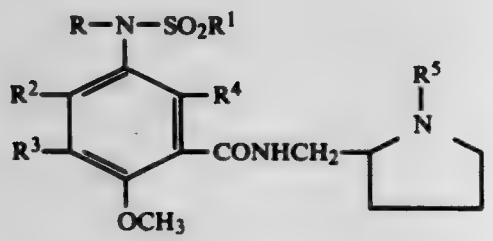
wherein R is H or an hydrocarbon carboxylic acid acyl of from 2 to 18 carbon atoms, inclusive; or a halo-, nitro-, hydroxy-, amino-, cyano-, thiocyano-, or loweralkoxy-substituted hydrocarbon carboxylic acid acyl of from 2 to 18 carbon atoms, inclusive; and loweralkoxycarbonyl.

4,351,770
PREPARATION OF N(2-PYRROLIDINYLMETHYL)2-METHOXY-5-BENZENESULFONAMIDOBENZAMIDES

Masaru Ogata, Kobe, and Hiroshi Matsumoto, Takatsuki, both of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Division of Ser. No. 872,584, Jan. 26, 1978, abandoned. This application Dec. 6, 1978, Ser. No. 967,011
Claims priority, application Japan, Jan. 27, 1977, 52/8443; Aug. 8, 1977, 52/94884
Int. Cl.³ C07D *208/09;* A61K *31/40*
U.S. Cl. 548—567 **1 Claim**

1. A process for preparing a meta-sulfonamidobenzamide compound of the formula:



wherein

R is hydrogen or methyl,

R^1 is C_1–C_6 alkyl, phenyl, C_1–C_6 alkylamino, C_2–C_{12} dialkylamino or C_4–C_5 alkyleneamino,

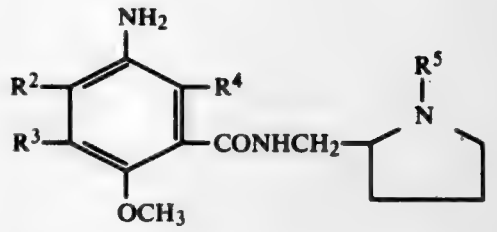
R^2 is hydrogen, halogen, C_1–C_6 alkyl, C_2–C_{12} dialkylamino or C_1–C_6 alkoxy,

R^3 is hydrogen, methyl or methoxy,

R^4 is hydrogen or halogen, and

R^5 is C_1–C_6 alkyl, C_2–C_6 alkenyl, C_3–C_6 cycloalkyl, benzyl or halobenzyl,

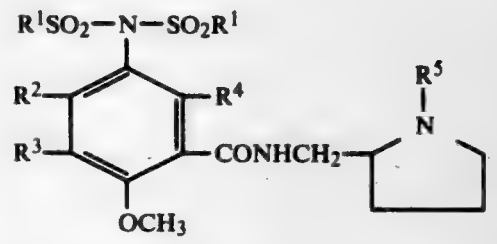
or a pharmaceutically acceptable acid addition salt of said compound, which comprises the step of reacting an anilino compound of the formula:



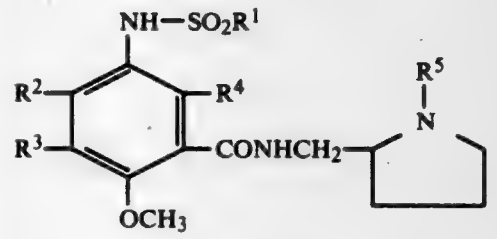
wherein R^2, R^3, R^4 and R^5 each is as defined above, with a sulfonating agent of the formula:

$$A\text{-}SO_2R^1$$

wherein A is chlorine or bromine, and R^1 is as defined above, in an inert solvent in the presence of 2.0 or more mol equivalents of triethylamine at a temperature of 0°–100° C. to yield a disulfonamide of the formula:



wherein R^1, R^2, R^3, R^4 and R^5 each is as defined above, or a mixture of said disulfonamide and a monosulfonamide of the formula:



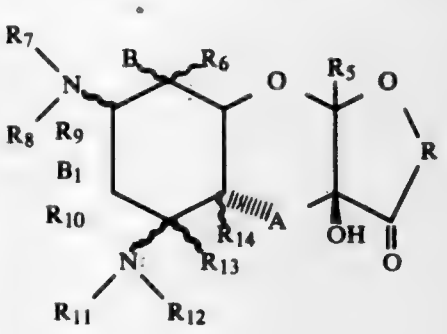
wherein R^1, R^2, R^3, R^4 and R^5 each is as defined above, hydrolyzing said disulfonamide with aqueous alkali hydroxide in methanol with heating on a water bath to yield said monosulfonamide, and, if said meta-sulfonamidobenzamide compound wherein R is methyl is desired, subjecting said monosulfonamide to methylation.

4,351,771
SPECTINOMYCIN ANALOGS AND METHODS FOR THE PREPARATION THEREOF

David R. White, Kalamazoo, and Richard C. Thomas, Oshtemo Township, Kalamazoo County, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

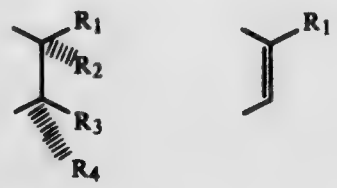
Continuation-in-part of Ser. No. 20,172, Mar. 13, 1979, abandoned. This application May 16, 1980, Ser. No. 150,530
Int. Cl.³ C07H *17/04, 17/00;* C07D *319/24*
U.S. Cl. 549—361 **52 Claims**

1. Anomers and asteric mixtures of a compound having the formula



I

wherein R is selected from the group consisting of



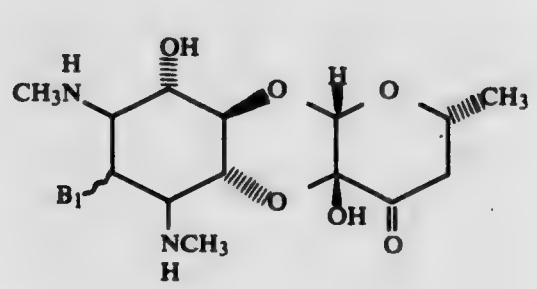
wherein R_1 through R_4 may be the same or different and are selected from the group consisting of hydrogen, lower alkyl, lower alkenyl, lower haloalkyl, lower aminoalkyl, lower alkynyl, —OX and $—(CH_2)_n—OX$ and isomers thereof with the proviso that R_1 and R_2 are not hydroxy and one of R_3 and R_4 must be hydrogen,

wherein X is selected from the group consisting of hydrogen, lower alkyl, lower alkenyl, benzyl and acyl;

n is an integer of from one to four,

R_5 is hydrogen or lower alkyl;

R_6 through R_{14} are selected from the group consisting of hydrogen, lower alkyl, lower alkenyl and lower alkynyl with the proviso that one of R_7 and R_8 is always hydrogen and one of R_{11} and R_{12} is always hydrogen, and B and B_1 are the same or different and are selected from the group consisting of hydrogen, hydroxy, alkoxy, o-lower alkenyl, thio, thio-lower alkyl and thio-lower alkenyl, and A is selected from the group consisting of oxygen and sulfur, hydrated forms thereof, and pharmaceutically acceptable salts of the compound of formula I and hydrated forms thereof; with the proviso that when the compound has the formula



B_1 cannot be hydroxy.

4,351,772

6(9)-ISOPROPYL-9(6)-METHYL-6,9-ETHANO-2-OXASPIRO[4,5]DEC-7-ENES

Horst Upadek, Erkrath, and Klaus Bruns, Krefeld-Traar, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf-Holthausen, Fed. Rep. of Germany

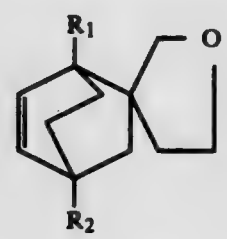
Filed Nov. 20, 1981, Ser. No. 323,430

Claims priority, application Fed. Rep. of Germany, Dec. 6, 1980, 3046068

Int. Cl.³ C07D *307/94*

U.S. Cl. 549—331 **1 Claim**

1. A mixture of isomers of the formula



wherein R_1 and R_2, which are different from each other, are each methyl or isopropyl.

4,351,773

PREPARATION OF MALEIC ANHYDRIDE FROM BUTANE USING FLUIDIZED VANADIUM-PHOSPHOROUS-OXIDE CONTAINING CATALYSTS

Ernest C. Milberger, Solon; Michael F. Lemanski, Cleveland, both of Ohio, and Gregory G. Spitnale, Kalamazoo, Mich., assignors to The Standard Oil Company, Cleveland, Ohio

Filed Dec. 31, 1980, Ser. No. 221,670

Int. Cl.³ C07D *307/60*

U.S. Cl. 549—259 **12 Claims**

1. A process for the production of maleic anhydride by the oxidation of n-butane with molecular oxygen or an oxygen-containing gas in a fluid bed reactor at a reaction temperature of about 250° C. to 600° C. in the presence of a microspheroidal, fluidizable catalyst containing the mixed oxides of vanadium and phosphorus, wherein said catalysts is prepared by:

(a) preparing a vanadium phosphorus mixed oxide containing catalyst precursor in an organic liquid;

(b) comminuting the catalyst precursor to a particle size of less than about one micron average diameter;

(c) introducing the catalyst precursor into water prior or subsequent to said comminuting to form an aqueous slurry; and

(d) spray drying said slurry to form microspheroidal catalyst particles.

4,351,774

PROCESS FOR THE PRODUCTION OF METHOXYANTHRAQUINONES

Peter Baumgartner, Sissach; Urs Karlen, Magden, and Urs Keller, Muttenz, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed Mar. 20, 1980, Ser. No. 132,054

Claims priority, application Switzerland, Mar. 29, 1979, 2920/79

Int. Cl.³ C07C *49/74*

U.S. Cl. 260—383 **7 Claims**

1. A process for the production of methoxyanthraquinones of high purity by reaction of nitroanthraquinones with methanol and alkali, which process comprises carrying out the reaction in the presence of an alkali-resistant nitrous acid inhibitor selected from a group consisting of primary and secondary amines, and sulfamic acid to inhibit secondary reactions which are catalyzed by nitrous acid.

4,351,775

METHOD FOR PREPARATION OF ALKYL VANADATES

Walter L. Magee, Jr., Danbury, Conn., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Mar. 20, 1981, Ser. No. 245,868

Int. Cl.³ C07F *9/00*

U.S. Cl. 260—429 R **7 Claims**

1. A method of preparing an alkyl vanadate which comprises heating vanadium pentoxide and an alkyl alcohol in an alkane solvent to assist in the removal of by-product water.

4,351,776

PREPARATION OF IODOPHTHALONITRILE

Teddy M. Keller, Alexandria, Va., and James R. Griffith, Riverdale Heights, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation of Ser. No. 78,402, Sep. 24, 1979, abandoned. This application Oct. 8, 1980, Ser. No. 195,999

Int. Cl.³ C07C *121/56*

U.S. Cl. 260—465 G **4 Claims**

1. A process of making iodophthalonitrile comprising:

mixing an aminophthalonitrile with an excess of H_2SO_4 at a temperature of about 0° C. to 25° C. until the resultant reaction is substantially complete;

cooling the solution to below about 15° C.;

adding cold water to said solution at a solution temperature below 25° C. to produce amine bisulfate;

adding aqueous $NaNO_2$ to said solution at a solution temperature of about 0° C. to 20° C. to produce a diazonium salt solution;

mixing said diazonium salt solution with an excess of KI until the resulting reaction is substantially complete;

separating and purifying the resultant reaction product, iodophthalonitrile, from said solution.

4,351,777

PREPARATION OF FLUOROBENZONITRILES

R. Ramanadin; Alain Roustan, both of Ales, and Gerard Soula, Meyzieu, all of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Sep. 22, 1981, Ser. No. 304,627

Claims priority, application France, Sep. 25, 1980, 80 20573

Int. Cl.³ C07C *121/52*

U.S. Cl. 260—465 G **13 Claims**

1. A process for the preparation of a fluorobenzonitrile, comprising reacting the chlorobenzonitrile corresponding thereto with at least one alkali metal fluoride, in an aprotic solvent reaction medium, in the presence of an effective amount of at least one tertiary amine sequestering agent having the structural formula:

$$N—CHR_1—CHR_2—O—(CHR_2—O)_nR_5]_3 \quad (I)$$

wherein n is a number greater than or equal to 0 and less than or equal to about 10, R_1, R_2, R_3, R_4, which may be identical or different, each represents a hydrogen atom or an alkyl radical having from 1 to 4 carbon atoms and R_5 represents an alkyl or cycloalkyl radical having from 1 to 12 carbon atoms, a phenyl radical or a radical of the formula $—C_mH_{2m}—\phi$, or $C_mH_{2m+1}—\phi—$, with m ranging from 1 to about 12 and ϕ being phenyl.

4,351,778

PROCESS FOR THE RECOVERY OF MALONODINITRILE

Axel Kleemann, Hanau, and Peter M. Schalke, Seligenstadt, both of Fed. Rep. of Germany, assignors to Degussa AG, Frankfurt, Fed. Rep. of Germany

Filed Feb. 19, 1981, Ser. No. 235,857

Claims priority, application Fed. Rep. of Germany, Feb. 21, 1980, 3006492

Int. Cl.³ C07C *120/00, 121/22*

U.S. Cl. 260—465.8 R **11 Claims**

1. In a process for the recovery of malononitrile prepared by reacting cyanogen chloride with acetonitrile at 500°–1200° C. and working up the reaction gas mixture, the improvement comprising fractionally condensing the reaction gas mixture alone or together with an inert gas in several successive temperature steps in which the first temperature step has the highest temperature and the last temperature step has the lowest temperature, the temperature drop in the first condensation step is to a temperature not below 80° C. and not above 170° C. thereby condensing the malonodinitrile as a first condensate, drawing off the condensed crude malonodinitrile as sump product, supplying the non-condensed portion which consists chiefly of unreacted acetonitrile and cyanogen chloride as well as hydrogen chloride and low boiling byproducts to a second temperature step between 20° C. and 82° C., thereby condensing the residual acetonitrile and cyanogen chloride as a second condensate and drawing off the second condensate and separately working up the condensate obtained in each step.

4,351,779

PROCESS FOR THE PRODUCTION OF METHYLAMINOMETHYLPHOSPHONIC ACID ESTERS

Ludwig Maier, Arlesheim, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

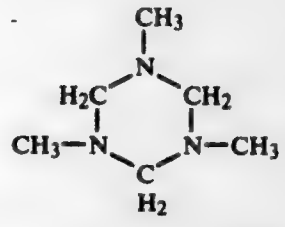
Continuation-in-part of Ser. No. 102,463, Dec. 10, 1979, abandoned, which is a division of Ser. No. 947,271, Sep. 29, 1978, abandoned. This application Aug. 28, 1980, Ser. No. 182,170

Claims priority, application Switzerland, Oct. 4, 1977, 12100/77; United Kingdom, Oct. 3, 1978, 39087/78

Int. Cl.³ C07F *9/40*

U.S. Cl. 260—970 **5 Claims**

1. A process for the production of methylaminomethylphosphonic acid esters and of the corresponding free acid, which comprises heating at a temperature of from about 20° to about 150° C., trimethylhexahydro-s-triazine of the formula



with at least 3 moles of a secondary dialkyl phosphite having branched alkyl radicals to obtain a diester.

4,351,780

PROCESS FOR PREPARING ISOPROPYLPHENYL/PHENYL PHOSPHATE

Silvio L. Giolito, Whitestone, N.Y., and Stanley B. Mirviss, Stamford, Conn., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Dec. 9, 1980, Ser. No. 214,553

Int. Cl.³ C07F *9/09*

U.S. Cl. 260—974 **5 Claims**

1. A process for preparing monoisopropylphenyl/phenyl phosphate containing mixtures by isopropylating phenol and phosphorylating the isopropylation product; wherein the improvement comprises the sequential steps of:

(A) alkylating phenol with propylene using a p-toluene sulfonic acid catalyst under conditions effective to yield an isopropylated product having a C_3/ϕ ratio of less than 0.25;

(B) distilling the isopropylated product of step (A) to remove unreacted phenol to yield a fractionated product having a C_3/ϕ ratio of at least 0.30;

(C) phosphorylating the distilled product of step (B) to yield a monoisopropylphenyl/diphenyl phosphate containing mixture having a reduced 2,6-diisopropylphenyl/phenyl phosphate content.

4,351,781

TERRACED WATER DISTRIBUTOR FOR EVAPORATIVE AIR CONDITIONER

Kenneth F. Blatter, Phoenix, Ariz., assignor to Dresser Industries, Inc., Dallas, Tex.

Continuation of Ser. No. 140,039, Apr. 14, 1980, abandoned. This application Jul. 6, 1981, Ser. No. 280,601

Int. Cl.³ B01F *3/04*

U.S. Cl. 261—29 **1 Claim**

1. An evaporative air conditioner comprising:

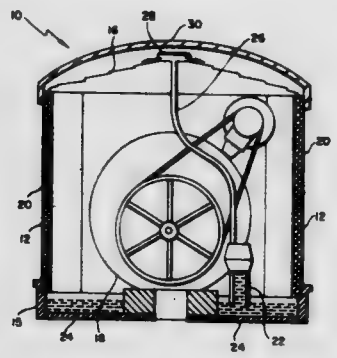
a. a housing having at least one air-pervious portion about its periphery;

b. at least one wettable pad mounted within said housing against the inner surface of said air-pervious portion such that air flowing through said air-pervious portion flows through said pad;

c. air suction means mounted within said housing for drawing air through said air-pervious portion and pad;

d. a unitary imperforate liquid distributor mounted above

said pad having a downwardly sloping distributor surface extending from an upper portion generally central of said housing to a lower edge that is contiguously above the upper edge of the wettable pad, said distributor including a plurality of terraced steps in said distributor surface spaced apart in said sloping direction and extending about the distributor surface in generally parallel relation to the



periphery of said housing for affording a cascade flow of liquid from said upper portion to said lower edge; and

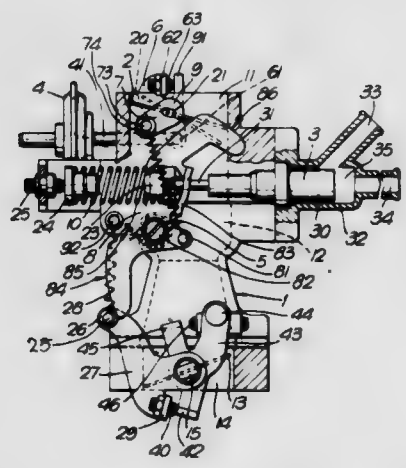
e. liquid supply means for supplying liquid to the center of said distributor such that said liquid flows downwardly by gravity in a cascading flow over said distributor surface portion and directly onto the entirety of the upper edge of said wettable pad.

4,351,782

COLD-ENGINE STARTING AND OPERATING DEVICES FOR CARBURETORS

Francesco Bellicardi; Carlo Dall'Osso, and Bruno Cavallari, all of Bologna, Italy, assignors to Weber S.p.A, Bologna, Italy

Filed Jan. 16, 1981, Ser. No. 225,694
Claims priority, application Italy, Feb. 6, 1980, 3329 A/80
Int. Cl.³ F02M *1/10*
U.S. Cl. 261—39 A **5 Claims**



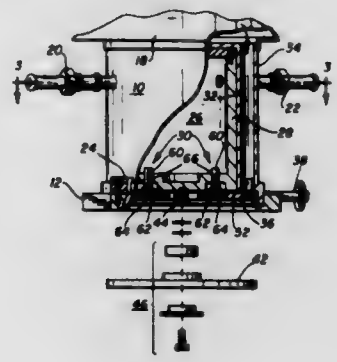
1. Improvements in cold-engine starting and operating devices for carburetors, consisting in an arrangement comprising a cam lever pivotally mounted on the central portion of the carburetor body between a main throttle valve of said carburetor and a choke valve mounted eccentrically in the carburetor body tube upstream of the choke portion and pneumatically operated by a pull-rod connected with a member sensitive to the vacuum in the intake manifold downstream from the throttle valve, a mobile element of a temperature-sensitive member which heats up as the engine temperature increases, which mobile element is movable against first elastic means which are adapted to act upon said cam lever, a choke lever fixed on a spindle of said choke valve and a first lever pivotally mounted on a spindle of said throttle valve, said cam lever being pivoted in its medial extent to the carburetor body and biased to rotate by second elastic means as far as a limit defined by said mobile element, respective opposite ends of said cam lever having cam contours acting separately against said choke and first lever respectively to compel them to rotate against the action of third and fourth respective elastic means in order to open said choke valve and to reduce the small opening of said throttle valve, said third elastic means being connected at one end to said choke lever and at the other end on an appendix outstanding from said cam lever.

4,351,783

COMBUSTION FUEL AND AIR FLOW CONTROL AND MIXER APPARATUS

Donald G. Bennett, 1240 N. Kelly Ave., Odessa, Tex. 79760

Filed May 26, 1981, Ser. No. 266,709
Int. Cl.³ F02M *17/16*
U.S. Cl. 261—44 E **9 Claims**



1. Flow control apparatus for simultaneously controlling the rate of flow of a stream of fuel and a stream of air, and for mixing the streams of fuel and air together to form a combustible mixture, comprising:

a housing having an air inlet end and an air outlet end; a fuel inlet by which a supply of fuel can be connected to the flow control apparatus; a fuel chamber formed within said housing, said fuel chamber is connected to receive a flow of fuel from said fuel inlet, a valve means for controlling fuel flow from said chamber;

a plurality of individual air flow passageways radially spaced respective to one another and having opposed ends, with one end arranged to commence at said air inlet end and the other end arranged to terminate adjacent said air outlet end;

an apertured movable plate member mounted to move about the axial centerline thereof and respective to said housing, said plate member being operatively connected to engine accelerator linkage and movable from one to an alternate position, there being an aperture in said plate which is aligned with a flow passageway when the plate member is moved to said one position, the apertures of said plate being misaligned with said flow passageways when the plate member is moved to the alternant position to thereby reduce air flow through the passageways to a minimum;

said other end of said air passageways forms an outlet end which terminates in a common plane;

said plate member has a face thereof which lies parallel to the plane formed by the outlet ends of the air passageways and abuttingly engages the ends of the passageways to thereby control the flow of air therethrough as the apertures are moved into and out of alignment with the passageways;

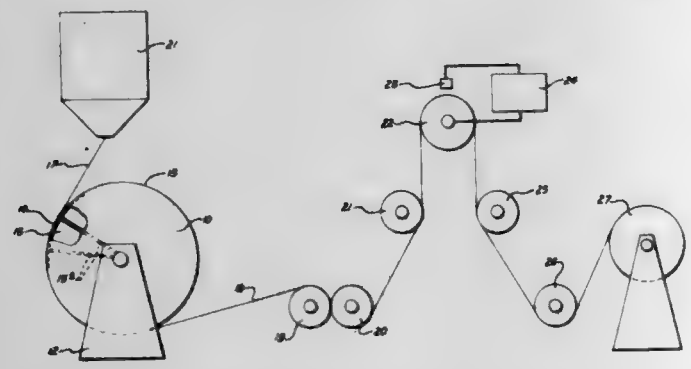
a cam means formed on said plate for actuating said valve means, said valve means being actuated toward the open position proportional to the opening formed between the plate apertures and the air passageways so that the air/fuel ratio is maintained substantially constant.

4,351,784

CORONA TREATMENT OF PERFORATED FILM

Paul E. Thomas, and Garland E. Raley, both of Terre Haute, Ind., assignors to Ethyl Corporation, Richmond, Va.

Filed Dec. 15, 1980, Ser. No. 216,269
Int. Cl.[3] B29D *27/00*
U.S. Cl. 264—22 10 Claims



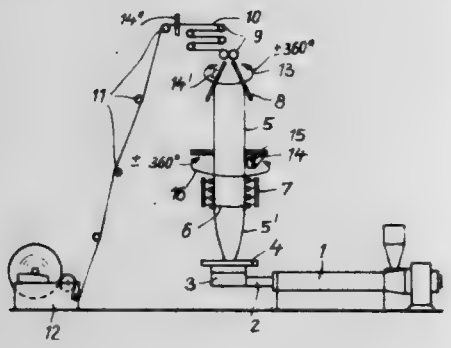
6. In a process for the preparation of perforated thermoplastic film having tapered capillaries, said process comprising forming a hot film of thermoplastic material, applying the hot film to a moving perforated screen, and applying an air pressure differential across the film toward a portion of the screen sufficient to distort the film into the perforations and cause rupture of the film, the improvement comprising subjecting said perforated film to a corona discharge treatment sufficient to provide a perforated film having an increased liquid flow through rate over that of said perforated thermoplastic film prior to the corona discharge treatment and said film has a percent run off of from 5 percent to 20 percent.

4,351,785

METHOD OF CONTROLLING THE FILM THICKNESS AT A BLOWN FILM EXTRUDER INSTALLATION

Hartmut Upmeier; Gerd Klinge, and Gerhard Winkler, all of Lengerich, Fed. Rep. of Germany, assignors to Windmöller & Hölscher, Lengerich, Fed. Rep. of Germany

Filed Dec. 9, 1980, Ser. No. 214,732
Claims priority, application Fed. Rep. of Germany, Dec. 12, 1979, 2950003
Int. Cl.[3] B29F *3/08;* G05D *5/02*
U.S. Cl. 264—40.1 6 Claims



1. A method of controlling the film thickness at a blown film extruder installation, the installation comprising a nozzle ring for extruding tubular film divided into control sectors provided with setting elements, a film calibrating device, and a take-off and coiling apparatus for the film, said method comprising:

forming film sectors (x_F) corresponding to the number of control sectors, the film sectors having equal circumferential lengths;

measuring thicknesses over the circumference of the extruded film;

assigning the measured film thicknesses to the film sectors (x_F);

determining mean thickness distributions ($\bar{s}''_x$) for the individual film sectors;

determining a first film sector having maximum or minimum thickness;

assigning such first film sector to an associated control sector at the nozzle ring based on a predetermined correct relationship between such film sector and the nozzle ring not influenced by variations in thicknesses of other film sectors;

successively alloting subsequent film sectors to the subsequent control sectors; and

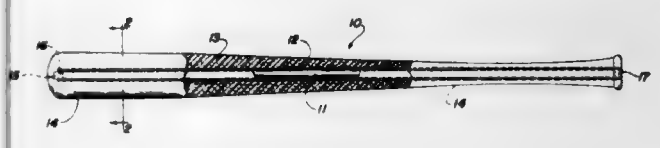
adjusting the temperature of the respective control sectors at the nozzle ring until the desired uniform thickness distribution has been achieved over the film circumference, the control sectors to which film sectors were allocated having thin portions exceeding a thin portion threshold value which is a fraction of the value of the film sector with the absolute minimum thickness being cooled until the film thicknesses are within the permissible tolerance range.

4,351,786

METHOD FOR MAKING A STRESS-RELIEVED COMPOSITE FOAMED RESIN BASEBALL BAT OR BOWLING PIN

Alvin W. Mueller, Ferguson, Mo., assignor to Mueller-Perry Co., Inc., St. Louis, Mo.

Filed Aug. 25, 1980, Ser. No. 181,175
Int. Cl.[3] B29D *27/04;* A63B *59/06;* A63D *9/00*
U.S. Cl. 264—46.7 4 Claims



1. The method of making a molded composite baseball bat, bowling pin or like article having a body of cured-in-place foam plastic of a type which has an exothermic reaction and shrinks on curing comprising the steps of

coating an elongated aluminum core with an adhesive of the type which at least partly softens at the temperature of such exothermic reaction and which at room temperature will securely bond foamed plastic to said core

causing said coating to dry,

mounting said coated core within a mold,

foaming plastic material thereabout within the mold and causing such exothermic reaction,

softening the dry adhesive coating on the core with the heat of such exothermic reaction,

permitting the foamed plastic to shrink and draw together slippingly along the softened adhesive coating on the core, and

thereafter permitting the adhesive coating to harden during cooling of said foamed plastic,

whereby to minimize stresses which would otherwise accompany resistance of the core to the shrinking of the plastic.

4,351,787

PROCESS FOR SINTERING REACTION BONDED SILICON NITRIDE

PierCarlo Martinengo; Angelo Giachello; Giuseppe Tommasini, all of Turin, Italy, and Paul Popper, Newcastle, England, assignors to Fiat Societa per Azioni, Turin, Italy

Filed Dec. 18, 1978, Ser. No. 970,594
Claims priority, application Italy, Dec. 23, 1977, 69900 A/77
Int. Cl.[3] C04B *35/58*
U.S. Cl. 264—65 13 Claims

1. A process for increasing the density of a reaction bonded silicon nitride article, which comprises the steps of:

forming a silicon powder compact consisting essentially of

silicon powder and one or more sintering additives for silicon nitride, the compact having a density of at least 1.3 g/cm^3, said additives being present in the silicon powder in an amount such as to ensure an additive content of from 0.5 to 20 wt.% in the silicon nitride compact wherein the sintering additives are selected from the group consisting of MgO, Y_2O_3, CeO_2 and mixtures thereof with Fe;

nitriding the silicon compact by heating under nitrogen gas blanket at a temperature not exceeding 1500° C., to convert said silicon into reaction bonded silicon nitride, and

sintering the reaction bonded silicon nitride compact by heating in a nitrogen gas atmosphere at a temperature of at least 1500° C., said sintering being in the substantial absence of mechanical pressure, whereby said density is increased.

4,351,788

METHOD FOR THE MANUFACTURE OF CLEAVING TILES

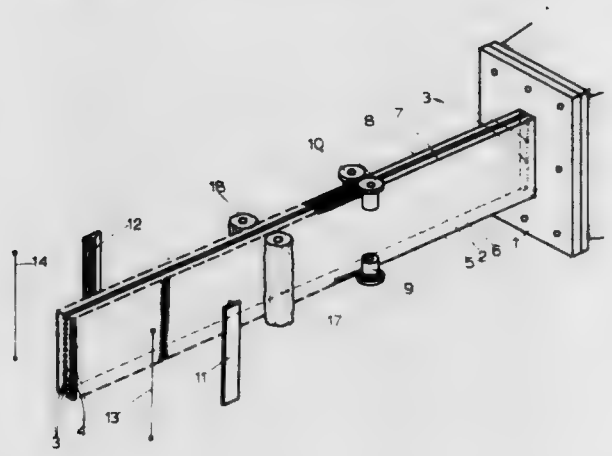
Gustaaf J. Schreurs, Tegelen, Netherlands, assignor to Mosa, B.V., Maastricht, Netherlands

Filed Feb. 26, 1980, Ser. No. 124,902

Claims priority, application Netherlands, Mar. 1, 1979, 7901625

Int. Cl.^{3} B28B *11/00*

U.S. Cl. 264—67 **8 Claims**



1. A method for manufacturing cleaving tiles from a continuously extruded column of a ceramic material having exterior top, bottom and opposing pair of side walls comprising the steps of:

(a) extruding a column of a ceramic material while simultaneously forming a plurality of internal channels, through which air has constant access, each having an elongated axis extending parallel to the direction of movement of the extrusion through the length of the extrusion substantially half way between the pair of side walls;

(b) passing the extrusion through a first shaping station to shape the exterior edges defined by the top, bottom and opposing exterior side walls so that the exterior edges have a rounded, undulating surface;

(c) passing the extrusion through a second shaping station to form a compressed indentation on each side of the extrusion without compressing the plurality of internal channels thereby maintaining air therein, the indentation having parallel opposing rounded and undulating side edge portions terminating along a line substantially perpendicular to the direction of movement of the extrusion;

(d) severing the extrusion into individual segments along the line between the side edge portions formed according to step (c);

(e) firing the individual segments; and

(f) cleaving the individual segments fired according to step (e) to form two separate tiles from each individual segment.

4,351,789

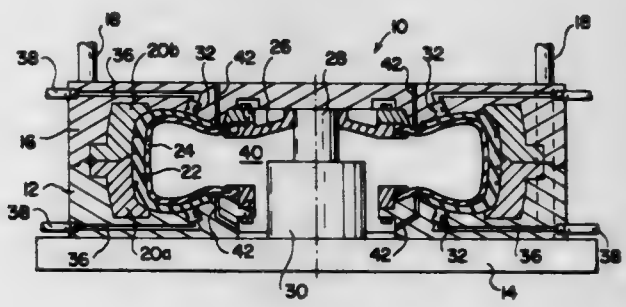
MOLD AND PROCESS FOR MOLDING

James Sidles, Richfield, and Jerome J. Blayne, Brecksville, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Filed Jul. 27, 1981, Ser. No. 286,782

Int. Cl.^{3} B29H *5/02*

U.S. Cl. 264—130 **9 Claims**



1. A process for molding a rubber or plastic article from a blank within a mold cavity of a mold formed by a plurality of mating mold segments, said process comprising:

(a) forming a liquid film of a coating material on the surface of said mold cavity or on the surface of the blank from which the article is to be molded or on both the surface of said mold cavity and the surface of said blank immediately prior to closing said mold, said coating material having a boiling point above the ambient temperature of the work area in which the molding is performed and below the molding temperature at which the article will be molded;

(b) moving said mold with said blank loaded therein to the closed position and exerting externally-applied pressure to maintain said mold cavity in said closed position;

(c) raising the temperature within said mold cavity to a temperature above the boiling point of said coating material;

(d) reducing said externally-applied pressure maintaining said mold cavity in a closed position to expose vapor release passages existing between mating surfaces of said mold segments of said mold through which said coating material in vapor form can exhaust carrying with it air entrapped within said mold cavity as the mold is closed;

(e) re-exerting externally-applied pressure to return said mold cavity to the closed position;

(f) raising the temperature within said mold cavity to a molding temperature at which molding of the article will occur and maintaining said molding temperature for the required molding time period; and

(g) opening said mold and removing the molded article therefrom.

4,351,790

MANUFACTURE OF INSULATED ELECTRIC CONDUCTORS

Ulrich Hochstrasser, Ecublens, and Eberhard Kertscher, Romanel-sur-Lausanne, both of Switzerland, assignors to Maillefer S.A., Switzerland

Filed Mar. 27, 1980, Ser. No. 134,634

Claims priority, application Switzerland, Apr. 3, 1979, 3101/79

Int. Cl.^{3} B29F *3/10*

U.S. Cl. 264—174 **6 Claims**

1. A method of producing a tubular element of cross-linked plastic material, particularly an insulating covering for an electric conductor, of the type wherein a polymer capable of being cross-linked by the use of a hydrolyzable unsaturated silane is fed, together with metered quantities of additives including a free-radical generator and a silanol condensation catalyst, to a screw-type extruder divided into a heating zone, a plasticizing zone, and a homogenizing zone; a metered quantity of a hydrolyzable unsaturated silane is added separately to

the extruder; the foregoing substances are actively stirred in the extruder until a homogeneous mass is obtained; the homogenized mass is extruded; and cross-linking of the product is carried out in the presence of moisture, wherein the improvement comprises the steps of

including among said additives an agent capable of reducing the rate of crystallization of said polymer to enhance penetration of said moisture into said extruded mass, thus increasing the speed of said cross-linking, said agent drawn from the group consisting of vinyl acetate, vinyl acrylate, butyl acrylate and polymers thereof in a proportion of 0.5% to 15% by weight relative to said polymer capable of being cross-linked by the use of a hydrolyzable unsaturated silane, and

carrying out said cross-linking in a moist air atmosphere, said moist air atmosphere exhibiting a relative humidity of at least 60% and a temperature of at least 20° C.

4,351,791

METHOD FOR INSTALLING A SEALING BODY IN A GROOVE OF A SOCKET AND PIPE PART OF PLASTIC MATERIAL

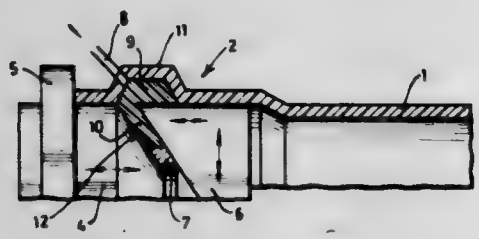
Warner J. de Putter, an Hardenberg, Netherlands, assignor to Wavin B.V., Zwolle, Netherlands

Filed Dec. 16, 1980, Ser. No. 216,965

Claims priority, application Netherlands, Dec. 21, 1979, 7909293

Int. Cl.³ B29C *27/16, 7/00*

U.S. Cl. 264—267 **2 Claims**



1. In a method for installing a sealing body having a lip shaped part 10 of resilient material in a groove 3 of a socket 2 of plastic material the steps comprising forming a closed space 12 inside said socket 2 which space embraces the walls of an axially movable inner core part 4 and a radially retractable core part 6, filling said groove 3 and space 12 with a flowable elastomeric composition confined by the walls of interconnected core parts 4 and 6, and axially removing inner core part 4 and inner core part 6 after radially retracting core part 6, whereby the lip shaped part 10 of the sealing body is undeformed by removing the core parts.

4,351,792

APPARATUS FOR MAKING GROOVES IN TOBACCO SMOKE FILTERS

John H. Sexstone, Anchorage; Tom Lewis, and Ken Milliner, both of Louisville, all of Ky., assignors to Brown & Williamson Tobacco Corporation, Louisville, Ky.

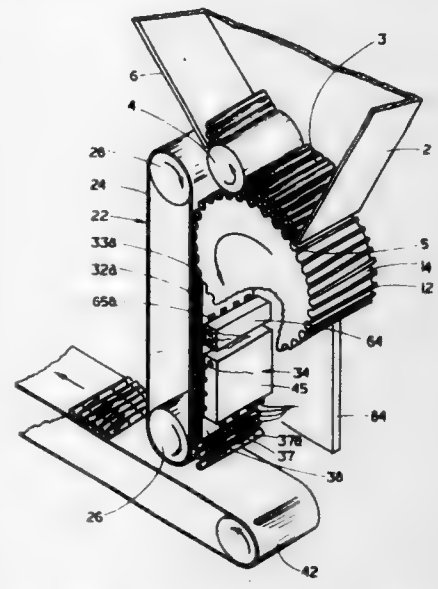
Division of Ser. No. 167,554, Jul. 11, 1980, Pat. No. 4,324,540. This application Mar. 23, 1981, Ser. No. 245,872

Int. Cl.³ B29D *31/00*

U.S. Cl. 264—293 **5 Claims**

1. A method of making substantially longitudinal grooves in cigarette filter rods comprising the steps of:

(a) feeding filter rods linearly and substantially parallel to a stationairly mounted heated groove-forming device; and,



(b) rolling said filter rods in contacting relation with said heated groove-forming device to form grooves in said rods.

4,351,793

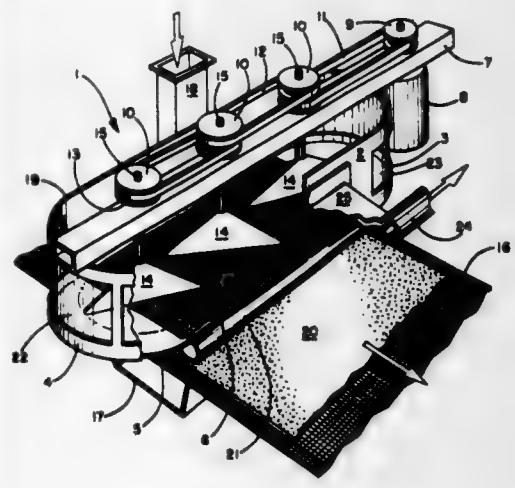
METHOD FOR DRY FORMING A UNIFORM WEB OF FIBERS

Winterton U. Day, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Division of Ser. No. 13,362, Feb. 21, 1979, Pat. No. 4,264,289. This application Apr. 28, 1981, Ser. No. 258,266

Int. Cl.³ B29J *5/00*

U.S. Cl. 264—518 **6 Claims**

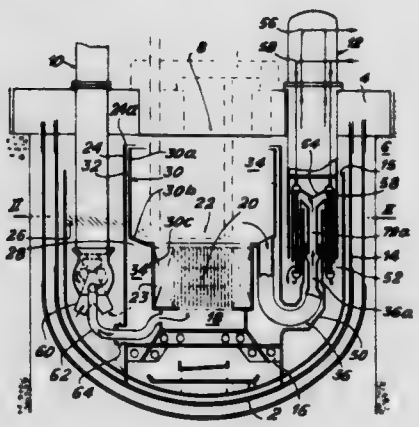


1. A method of reducing variations in the basis weight of a layer of fibers produced on a foraminous surface of a traveling screen in a dry forming process by the deposition of fibers from an air-fiber mixture directed to the foraminous surface through a perforated bottom wall of a housing under the influence of impeller means mounted in the housing closely above and spaced from the upper surface of the perforated wall comprising the steps of obtaining a basis weight profile of a transverse section of a layer of the fibers to determine the variation in fiber density across the layer, and providing in the perforated bottom wall zones of differing aperture sizes which extend longitudinally with the foraminous surface of the traveling screen to minimize differences in the basis weight profile of the layer produced.

4,351,794
FAST NEUTRON REACTOR

Robert Artaud, Aix en Provence; Michel Aubert, Manosque, and Charley Renaux, Jouques, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Mar. 28, 1980, Ser. No. 134,898
Claims priority, application France, Apr. 6, 1979, 79 08793
Int. Cl.[3] G21C *15/00*
U.S. Cl. 376—404 8 Claims



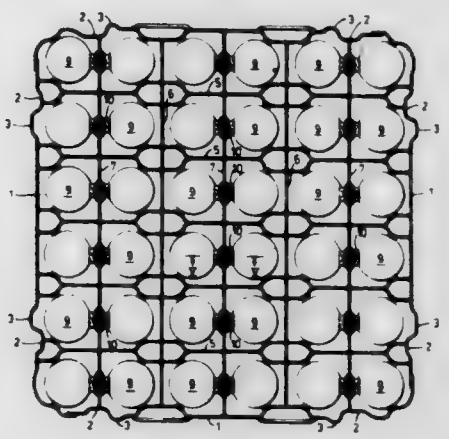
1. A fast neutron reactor cooled by a liquid metal, comprising: a main vessel sealed by an upper slab and having a bottom, and within said main vessel, a cylindrical inner vessel with a vertical axis and placed on flooring resting on the bottom of the main vessel, at least one heat exchanger between said liquid metal and a second fluid, and at least one pump for circulating the liquid metal being located in an annular space defined between the main vessel and the inner vessel, the inner vessel containing the reactor core which rests on a support bearing against the bottom of the main vessel by means of said flooring, the liquid metal circulating from bottom to top through the reactor core, wherein said reactor further comprises an internal baffle which is located within and spaced from said inner vessel and which revolves about the vertical axis of the inner vessel, said baffle comprising an upper cylindrical part adjacent to the inner vessel and arranged above the core, and a lower cylindrical part surrounding the core and having a smaller diameter than the upper part, said lower part being connected to the upper part by a frustum-shaped part, whereby the baffle confines the "hot" liquid metal leaving the core entirely above the latter and at least one pipe being arranged between the frustum-shaped part of the baffle and at least one heat exchanger for connecting the intake of the latter to the inner volume defined by the baffle.

4,351,795
GRIDS FOR NUCLEAR FUEL ASSEMBLIES

Graham Nicholson, Kirkham, England, assignor to British Nuclear Fuels Limited, Warrington, England

Filed Sep. 30, 1980, Ser. No. 192,614
Claims priority, application United Kingdom, Oct. 17, 1979, 7936031
Int. Cl.[3] G21C *3/34*
U.S. Cl. 376—442 15 Claims

1. A grid for a nuclear fuel assembly comprising sets of generally parallel strips arranged to intersect to define a structure of cellular form, at least some of the intersections including a strip which is secured to one other strip at more than one point at one intersection, the plural securement points of the

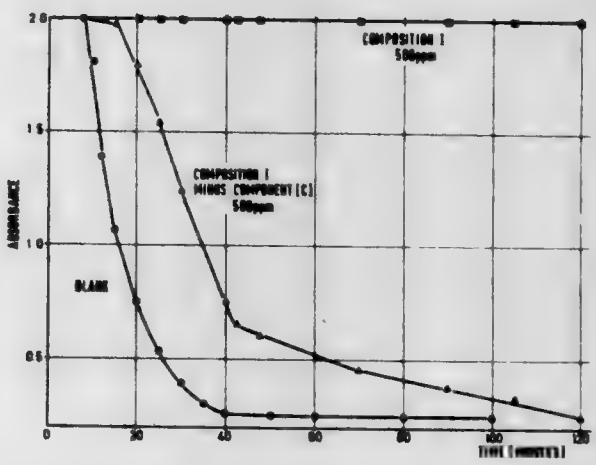


intersection being spaced from each other along the length of one of the two strips.

4,351,796
METHOD FOR SCALE CONTROL

Alan Marshall, Macclesfield, England, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

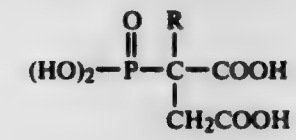
Continuation-in-part of Ser. No. 124,058, Feb. 25, 1980, abandoned, which is a continuation of Ser. No. 21,650, Mar. 19, 1979, abandoned, which is a continuation of Ser. No. 849,743, Nov. 9, 1977, abandoned. This application Dec. 4, 1980, Ser. No. 213,144
Int. Cl.[3] C23F *11/16, 11/18*
U.S. Cl. 422—15 4 Claims



1. A method of inhibiting the deposition of calcium phosphate scale or sludge from an aqueous system, treated with a corrosion inhibitor formulation, which method comprises

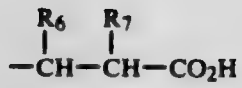
treating the aqueous system with 1 to 100 ppm, based on the aqueous system, of a formulation which consists essentially of

(a) 40 to 69.5% by weight of the total formulation of a phosphono-carboxylic acid selected from the group consisting of a compound of formula II

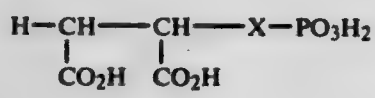


(II)

wherein R is hydrogen, an alkyl, an alkenyl or alkynyl group, each having up to 4 carbon atoms, a phenyl group, cycloalkyl group having from 3 to 6 carbon atoms, a benzyl group, a phenethyl group or a residue having the formula:

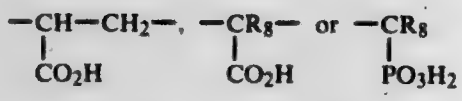


wherein R_6 is hydrogen, an alkyl group having from 1 to 4 carbon atoms or a carboxyl group and R_7 is hydrogen or methyl group; a compound having formula III



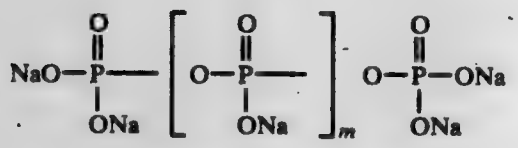
(III)

wherein X is



wherein R_8 is hydrogen or methyl; and a mixture of compounds selected from the group consisting of those of formula II and formula III;

(b) 30 to 50% by weight of the total formulation of a polyphosphate selected from the group consisting of tetrasodium pyrophosphate, sodium tripolyphosphate or a polymeric sodium metaphosphate of formula:



(IV)

wherein m is an integer from 4 to 20; and

(c) 0.5 to 10% by weight of the total formulation of hydrolyzed polymaleic anhydride having a molecular weight in the range of from 300 to 500, as determined by calculation following osmometric measurement on polymaleic anhydride before hydrolyzing, or a water soluble salt of such a hydrolyzed polymaleic anhydride.

4,351,797

TRANSFER MEMBRANE ASSEMBLY

Brian J. Bellhouse, and Francis H. Bellhouse, both of The Lodge, North St., Islip, Oxfordshire, England

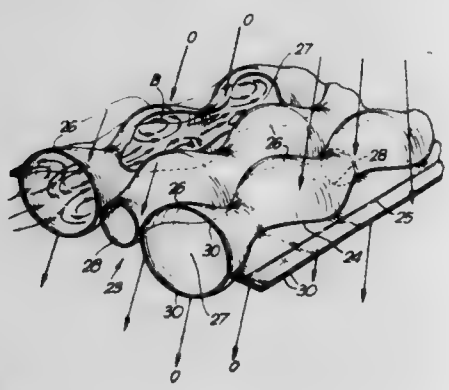
PCT No. PCT/GB79/00181, § 371 Date May 15, 1980, § 102(e) Date May 15, 1980, PCT Pub. No. WO80/00920, PCT Pub. Date May 15, 1980

PCT Filed Nov. 7, 1979, Ser. No. 198,107

Claims priority, application United Kingdom, Nov. 8, 1978, 43618/78

Int. Cl.³ A61M *1/03*; B01D *31/00*

U.S. Cl. 422—48 **14 Claims**



1. In an apparatus for transferring heat or mass between two fluids, said apparatus comprising at least one first conduit having a feed end and a discharge end and defined at least in part by a transfer membrane, first feed means for feeding a first fluid to said first conduit feed end, first discharge means for discharging the first fluid from the said first conduit discharge end, housing means at least in part surrounding said first conduit and defining a second conduit, having a feed end and a discharge end, for a second fluid flowing in contact with said transfer membrane, second feed means for feeding the second fluid to the second conduit feed end, and second discharge means for discharging the second fluid from the second conduit discharge end, the improvement comprising said first conduit comprising two sheets of plastics material, at least one of which is a transfer membrane material, which are sealed together face to face along a plurality of sinuous lines extending generally in the same direction alongside one another with the undulations of each adjacent pair of lines out of phase with one another thereby providing, upon inflation of the passageways between the sheets and between respective adjacent pairs of lines, a plurality of nested tubular conduits, separated by common seal lines, each with longitudinally and substantially regularly spaced hollows with intervening constrictions, in a side-by-side array.

4,351,798

ANALYZING APPARATUS FOR LIQUID SAMPLES

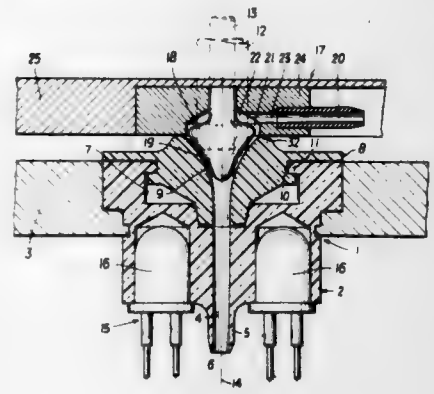
Hermann Marsoner; Helmut List, both of Graz, and Erich Kleinhappl, Kumberg, all of Austria, assignors to Hans List, Graz, Austria

Filed Feb. 11, 1981, Ser. No. 233,574

Claims priority, application Austria, Feb. 12, 1980, 748/80; Aug. 14, 1980, 4196/80

Int. Cl.³ G01N *1/14, 35/06*

U.S. Cl. 422—63 **9 Claims**



1. Feeding means for the feeding of liquid samples from sample containers into an analyzing apparatus for measuring the samples, the feeding means comprising a support having a sample conduit and an upwardly open substantially funnel-shaped filling mouth to accommodate use of the sample containers having various matching-part outlet diameters, said filling mouth being of resilient material and being aligned with said sample conduit through which the liquid samples are fed.

4,351,799

MICROMETERING LIQUID SAMPLE DISPENSER

Valery N. Gross, ulitsa Luganskogo, 73; Evgeny V. Kozhanov, ulitsa Masanchi, 79 "B", kv. 17; Vyacheslav D. Stupnik, ulitsa Transportnaya, 44, and Vladimir V. Valov, ulitsa Astronomicheskaya, 82, kv. 37, all of Alma-Ata, U.S.S.R.

Filed Jul. 15, 1981, Ser. No. 283,786

Int. Cl.³ G01N *1/14*

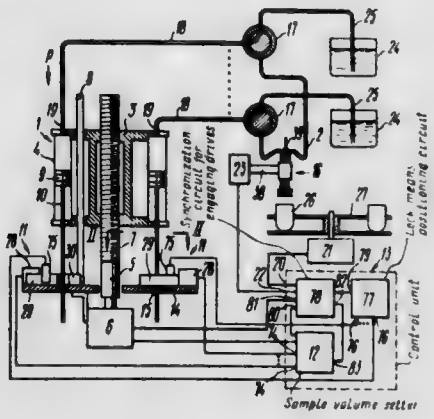
U.S. Cl. 422—63 **5 Claims**

1. A micrometering liquid sample dispenser comprising:

a group of syringe samplers equal in number to the number of sample liquids being metered and dispensed and having cylinders and piston with piston rods;

pipes for conveying the sample liquids into a test tube, the pipes being equal in number to the number sample liquids

and adapted to communicate with outlets of corresponding aforesaid syringe samplers;
a stand accommodating said syringe samplers;
a drive for relative reciprocating displacement of the pistons and cylinders of said syringe samplers serving as a sample volume regulator and kinematically linked with said stand;
a control unit having a set of outputs;
a sample volume and timing setter incorporated into said control unit and having a set of outputs;
a drive for step-by-step rotation of a test tube tray having an output connected to a first output of said set of outputs of said control unit;
a drive for reciprocating the ends of the sample liquid dispensing pipes relative to the test tube, the drive having an output connected to a second output of said set of said control unit;



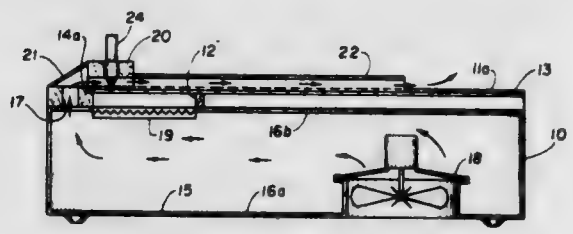
a group of piston rod locking means equal in number to the number of said syringe samplers, the locking means being intended for a programmable metering and dispensing the sample liquids and located in close proximity to said piston rods of said syringe samplers;
outputs of said piston rod lock means connected to said corresponding outputs of said sample volume and timing setter;
three-way valves equal in number to the number of sample liquids being measured and dispensed adapted to hydraulically communicate said corresponding pipes for conveying the sample liquids into a test tube;
pipes equal in number to the number of sample liquids;
containers for the sample liquids; and
a holder for holding the ends of said pipes for conveying the sample liquid being metered and dispensed to effect a programmable dispensing into a test tube.

4,351,800

THIN LAYER PLATE CHROMATOGRAPHY APPARATUS

Reiner H. Kopp, Centerport, and Allen I. Panetz, Huntington, both of N.Y., assignors to Biochemical Diagnostics, Inc., Farmingdale, N.Y.

Filed Feb. 6, 1981, Ser. No. 232,134
Int. Cl.³ G01N *1/14, 31/08*
U.S. Cl. 422—70 **6 Claims**



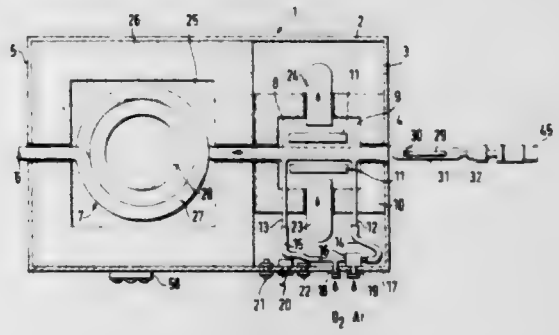
1. Apparatus for the application of specimens to thin layer chromatography plates comprising a housing for supporting one or more plates, positioning stops for locating the plates in a precisely predetermined position, a holder for specimen applicators disposed above the plane of the plate and extending transversely across one end portion thereof and disposed in close proximity to the plane to define an air channel along the top surface of the plate and through which the tip portions of the applicators pass to reach the chromatography plate, said holder including means to mount a plurality of specimen applicators across the width of the plate, air duct means connecting the air channel to the interior of the housing and means in the housing to impel air through the air duct and air channel to pass around the tip portions of the applicators.

4,351,801

COMBUSTION APPARATUS FOR USE IN ELEMENTARY ANALYSIS

Rolf Bartke, Düsseldorf, Fed. Rep. of Germany, assignor to Antek Instruments GmbH, Düsseldorf, Fed. Rep. of Germany

Filed May 14, 1981, Ser. No. 263,582
Claims priority, application Fed. Rep. of Germany, Apr. 22, 1981, 3116049
Int. Cl.³ G01N *25/22, 31/12*
U.S. Cl. 422—78 **10 Claims**



1. A combustion apparatus for elementary analysis, particularly for nitrogen analysis, comprising a quartz tube extending from a receiving aperture for the medium to be analyzed through a digesting zone and a main combustion zone up to a discharge aperture, further comprising at least one oxygen supply connection with which the section of the quartz tube extending through the digesting zone is connected, a first heating device section adapted to permit the heating temperature in the digesting zone to be varied in accordance with a predetermined timing program, a second heating device section adapted to heat the main combustion zone and to keep it at an essentially constant temperature and a closure plug for the receiving aperture of said quartz tube, characterized in that, for use in the analysis of solid samples, each closure plug is provided, in a per se known manner, with a tray adapted to receive a solid sample, said receiving tray extending into the section of the quartz tube which is located in said digesting zone upon said plug being introduced into the receiving aperture, and that there is provided an automatic introducing device adapted successively or alternately to introduce said closure plugs, each of which is provided with a receiving tray.

4,351,802

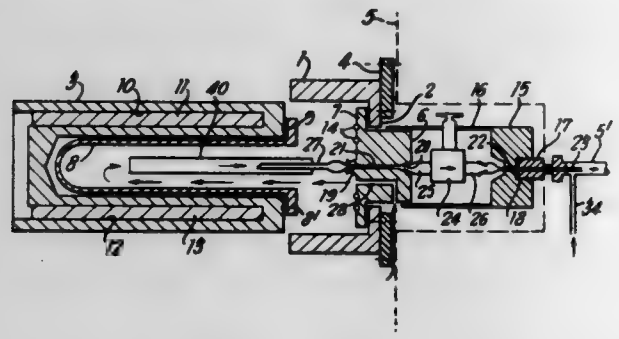
HEADSPACE-SAMPLING APPARATUS

Michael A. Baylis, Totton; Peter Harris, and Stewart R. Massey, both of Southampton, all of England, assignors to British-American Tobacco Co., Ltd., London, England

Continuation of Ser. No. 14,607, Feb. 23, 1979, abandoned. This application Sep. 26, 1980, Ser. No. 191,028
Claims priority, application United Kingdom, Feb. 28, 1978, 7920/78
Int. Cl.³ G01N *1/22*
U.S. Cl. 422—89 **6 Claims**

1. Headspace-sampling apparatus comprising; sampling body means which defines a closable sample chamber, means for mounting said apparatus on a gas chromatograph with the sample chamber exterior to the chromatograph, a removably

positioned solid sample in the chamber, first passage means extending substantially straight from said chamber to connection means for connecting said passage means, when the apparatus is so mounted, to the entry end of a chromatography column held in operative position in the gas chromatograph, a hollow needle the interior of which comprises part of said first passage means, means holding the needle in a stationary posi-



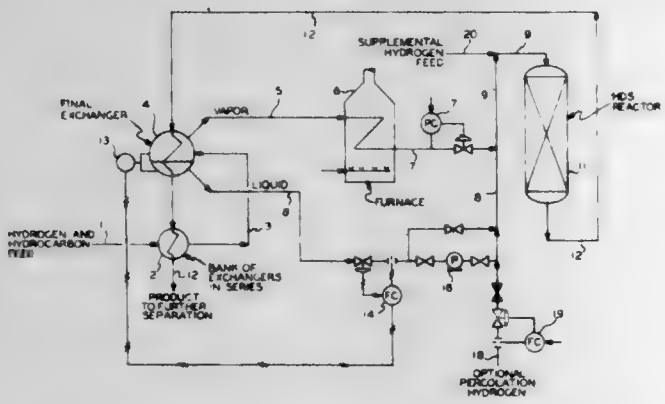
tion within the closed sample chamber and the solid sample, which it penetrates, contained therein, second passage means extending to said chamber, and connection means for connecting a source of gas to said second passage means and providing a gas-flow path within the body means from the second-named connection means through the chamber, the sample and the first passage means including the needle to the first-named connection means.

4,351,803

HYDROCARBON HEATING APPARATUS

John S. Olson, Borger, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 128,991, Mar. 10, 1980, Pat. No. 4,293,402.
This application Jun. 5, 1981, Ser. No. 270,727
Int. Cl.³ B01D *1/00, 1/14;* B01J *8/00, 19/24*
U.S. Cl. 422—106 **2 Claims**



1. Apparatus for treating hydrocarbon containing feedstream comprising

(a) a hydrocarbon feed conduit connected to the feed intake side of

(b) a hydrocarbon preheater, the hydrocarbon outlet of which is connected to

(c) a liquid/gas separator having a gas outlet and a liquid outlet, the gas outlet of said liquid/gas separator being connected to

(d) the inlet of a hydrocarbon vapor super heater the outlet of which is connected to one of two inlets of

(e) a mixing unit, the second inlet of which is connected directly and without a furnace for heating the liquid to the liquid outlet of said liquid/gas separator and the outlet of the mixing unit being connected to the inlet of

(f) a hydrodesulfurization zone

(g) said hydrocarbon preheater and said liquid/gas separator being built as one heat exchanger the last stage of which constitutes the gas/liquid separator having a gas outlet and a liquid outlet, said heat exchanger having a first flow path and a second flow path arranged in indirect heat exchange relationship with each other

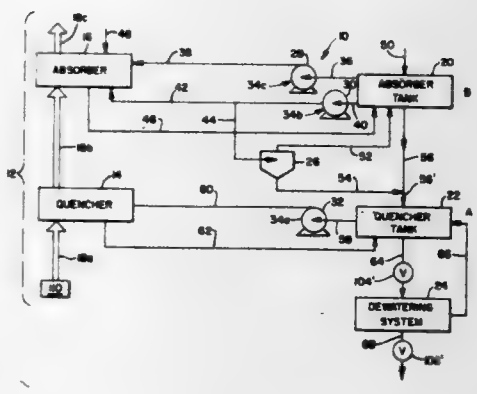
(h) said first flow path of said heat exchanger being connected with said hydrodesulfurization zone in such a manner as to allow at least a portion of the effluent of the hydrodesulfurization zone to flow through said first flow path, and said hydrocarbon feed conduit being connected to said second flow path.

4,351,804

SULFUR DIOXIDE SCRUBBER WITH HYDROCLONE SEPARATOR

Edward L. Biedell, Scotch Plains, and Robert J. Ferb, Warren, both of N.J., assignors to Research-Cottrell, Inc., Somerville, N.J.

Division of Ser. No. 957,674, Nov. 6, 1978, Pat. No. 4,250,152.
This application Apr. 8, 1980, Ser. No. 138,415
Int. Cl.³ B01D *53/14, 53/34;* B01J *19/04*
U.S. Cl. 422—170 **1 Claim**



1. Apparatus for removing sulfur dioxide from flue gas comprising:

a quencher-absorber tower;

a flue gas quencher; and

a flue gas scrubber serially mounted in said tower;

a flue gas inlet for said tower in communication with said flue gas quencher;

gas outlet means for said tower in communication with the flue gas scrubber;

means for serially passing the flue gas first through the quencher and then through the scrubber;

an alkali reagent water slurry;

means for serially contacting the gas first in the quencher and then in the scrubber with the alkali/water slurry;

dewatering means for a portion of the partially spent alkali reagent water slurry;

said dewatering means comprising a hydroclone, a tangential inlet at the upper end of the hydroclone, a bottom outlet for discharging heavy particles from the hydroclone, a vortex finder mounted in the upper end of the hydroclone forming the light fraction discharge from the hydroclone, a slurry feed control valve for the tangential inlet, a heavy particle control valve for the bottom outlet and means for directing the lighter fraction discharged from the hydroclone into the alkali/water slurry for the gas quencher.

4,351,805

SINGLE GAS FLOW ELEVATED PRESSURE REACTOR

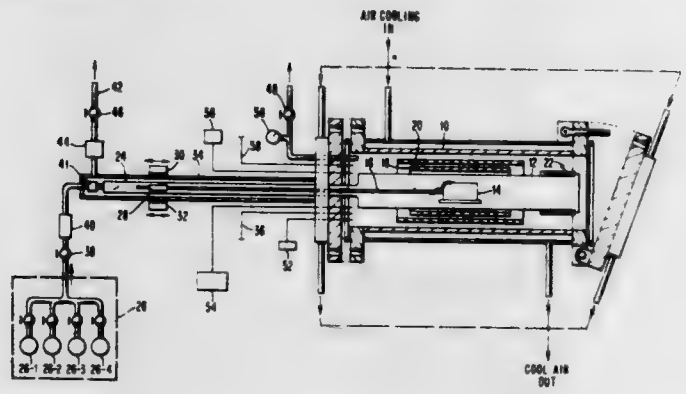
Arnold Reisman, and Melvin Berkenblit, both of Yorktown Heights, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 6, 1981, Ser. No. 251,591
Int. Cl.³ F28D *21/00*
U.S. Cl. 422—202 **5 Claims**

1. In a reactor apparatus for oxidizing or annealing specimens of the type including a reaction tube containing said

specimen surrounded by a heating furnace and enclosed in a pressure chamber, the improvement consisting of;

a single source of pressurized gas connected to one end of said reaction tube for providing gas to react with said specimen,



and a retrograde closure mounted on the other end of said reaction tube to permit said gas to enter said surrounding pressure chamber and to prevent said gas in said pressure chamber from re-entering said reaction tube.

4,351,806

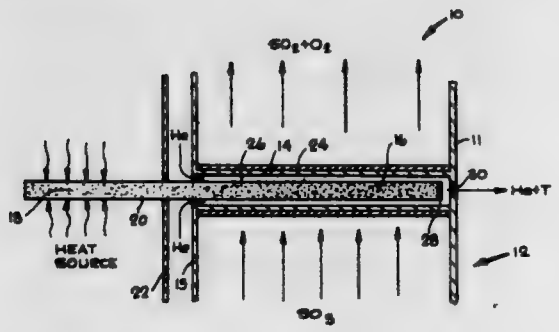
CATALYTIC CARTRIDGE SO_3 DECOMPOSER

Terry R. Galloway, Berkeley, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Continuation-in-part of Ser. No. 208,218, Nov. 18, 1980. This application May 22, 1981, Ser. No. 266,249

Int. Cl.³ F28D *21/00*

U.S. Cl. 422—206 **12 Claims**



1. A cross-flow SO_3 decomposer for thermochemical hydrogen production, comprising:

a cartridge comprising a plurality of walls defining a chamber therebetween, and a cylindrical tube mounted in the chamber and extending through the chamber from one wall of the chamber to an opposing wall thereof, the outer surface of the cylindrical tube being coated with a catalyst for promoting SO_3 decomposition reactions;

means for heating the catalyst coated surface, the heating means extending into the cylindrical tube and in thermal proximity therewith, the heating means adapted to transfer heat into the cartridge for heating the catalyst to a sufficient temperature to promote SO_3 decomposition reactions; and

an inlet port and an outlet port in walls of the cartridge, the inlet port and outlet port being provided at opposite sides of the tube substantially perpendicular to the longitudinal axis of the tube, whereby SO_3 gas may be flowed throgh the inlet port in a direction substantially normal to the tube across the catalyst to contact the catalyst and thereby produce SO_3 decomposition into SO_2 and O_2 which are removable through the outlet port.

2. An axial-flow SO_3 decomposer for thermochemical hydrogen production, comprising:

a cartridge comprising a pair of concentric cylindrical tubes and a pair of end walls, the tubes being mounted at each end to an end wall, the concentric tubes and end walls defining an annular space therebetween, the outer surface of the inner concentric tube being coated with a catalyst for promoting SO_3 decomposition reactions;

means for heating the catalyst coated surface, the heating means extending into the inner concentric cylindrical tube and in thermal proximity therewith, the heating means adapted to transfer heat into the cartridge to heat the catalyst to a sufficient temperature to promote SO_3 decomposition reactions; and

an inlet port and outlet port at opposing ends of the outer concentric tube whereby SO_3 gas may be flowed through the inlet port and through the annular space between the tubes in an axial direction with respect to the tubes to contact the catalyst and thereby produce SO_3 decomposition into SO_2 and O_2 which are removed through the outlet port.

4,351,807

PROCESS FOR SELECTIVE EXTRACTION OF METAL IONS FROM AQUEOUS SOLUTIONS AND EXTRACTING AGENTS SUITABLE FOR THAT PURPOSE

Martinus Tels, Eindhoven; Jan P. Lotens, Duiven, and Hendrikus P. M. Kivits, Eindhoven, all of Netherlands, assignors to Stamicarbon, B.V., Geleen, Netherlands

Continuation-in-part of Ser. No. 52,415, Jun. 27, 1979, abandoned, which is a division of Ser. No. 907,704, May 9, 1978, Pat. No. 4,191,728, which is a continuation-in-part of Ser. No. 883,668, Mar. 6, 1978, abandoned. This application Nov. 21, 1980, Ser. No. 209,121

Claims priority, application Netherlands, Mar. 9, 1977, 7702517

Int. Cl.³ C01G *3/00, 51/00*

U.S. Cl. 423—24 **7 Claims**

1. A process for the selective extraction of copper metal ions from an aqueous solution containing copper and cobalt metal ions, the process comprising the steps of:

a. contacting said aqueous solution at a pH of 4.0 to 6.0 with a substantially immiscible organic extraction agent essentially composed of

a mixture of (1) oleic acid, or (2) oleic acid, and

at least one other unsaturated fatty acid with a (cyclo)aliphatic oxime of from 6 to 12 carbon atoms

thereby formimg a copper-ion rich organic phase and a cobalt-ion rich aqueous phase, and

b. extracting substantially all of the copper, recovering and removing said copper as a copper salt from the organic phase.

4,351,808

AUTOCLAVE SODA DIGESTION OF SCHEELITE CONCENTRATES

Leo W. Beckstead, Arvada; Dale K. Huggins, and Paul B. Queneau, both of Golden, all of Colo., assignors to Amax Inc., Greenwich, Conn.

Filed Jan. 19, 1981, Ser. No. 225,914

Int. Cl.³ C01G *41/00*

U.S. Cl. 423—61 **18 Claims**

1. A process for the soda digestion of scheelite concentrates containing by weight about 2% to 40% WO_3 and gangue minerals including at least about 2% silica which comprises:

forming a slurry of a scheelite concentrate in an aqueous sodium carbonate solution of an initial concentration ranging from about 50 gpl to 200 gpl at a Na_2CO_3/WO_3 weight ratio of about 0.9 to 1.6,

and then digesting said slurry in an autoclave at an elevated pressure and at a temperature ranging from about 180° C. to 310° C.,

said digestion being such that the initial concentration of the Na_2CO_3 solution employed is substantially inversely cor-

related to the digestion temperature and substantially directly correlated to the Na_2CO_3/WO_3 weight ratio,

such as to effect dissolution of at least about 95% of the WO_3 in the concentrate and provide a pregnant liquor containing substantially all of said WO_3 while inhibiting dissolution of gangue minerals.

4,351,809

PROCESS FOR REDUCING PHOSPHATE ORE

Joseph A. Megy, Mission Viejo, and Robert A. Hard, Laguna Beach, both of Calif., assignors to Occidental Research Corporation, Irvine, Calif.

Filed May 20, 1981, Ser. No. 265,305
Int. Cl.³ C01B *25/01*
U.S. Cl. 423—167 **20 Claims**

1. A process for reducing phosphate ore including fluoride and alumina impurities, comprising the steps of:

beneficiating the phosphate ore to reduce the alumina impurities therein to less than about three percent by weight, said fluoride impurities remaining in the beneficiated phosphate ore;

mixing the beneficiated phosphate ore containing said fluoride impurities with silica and solid carbonaceous material in amounts to produce a feed mixture having a CaO/SiO_2 mole ratio within the range of from about 2.5 to about 5.0;

forming the feed mixture into agglomerates; and,

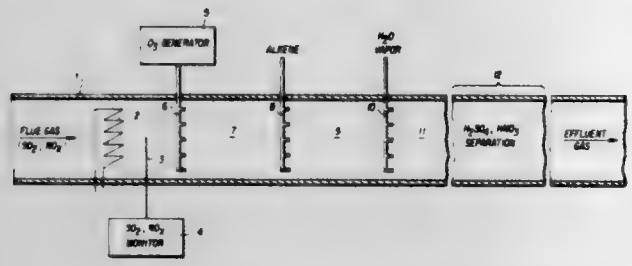
heating, by exposure to a flame, a porous bed of agglomerated feed mixture particles to a temperature sufficient to reduce the phosphate in the feed mixture by reaction with carbonaceous material to form elemental phosphorus vapor without substantial melting of the porous bed.

4,351,810

METHOD FOR REMOVING SULFUR DIOXIDE FROM A GAS STREAM

Richard I. Martinez, Gaithersburg, and John T. Herron, Germantown, both of Md., assignors to The United States of America as represented by the Secretary of Commerce, Washington, D.C.

Filed Jul. 9, 1981, Ser. No. 281,745
Int. Cl.³ C01B *21/00, 17/00, 17/74*
U.S. Cl. 423—235 **16 Claims**



1. A method of removing SO_2 from an industrial flue gas, exhaust gas or waste gas stream, which comprises the steps of:

(a) determining the moisture content of the gas, and, where the moisture content is more than about 1000 times the SO_2 concentration, reducing the moisture content below about 1000 times the SO_2 concentration;

(b) contacting the gas stream with an amount of a stabilized Criegee intermediate sufficient to scavenge the SO_2 in the gas and form a Criegee-SO_2 adduct, the diversion of the stabilized Criegee intermediate by water being less than about 10%;

(c) hydrolysing the Criegee-SO_2 adduct at an H_2O concentration of at least 2 times the initial SO_2 concentration, to convert the adduct directly to H_2SO_4 and oxoalkane; and

(d) separating the resultant H_2SO_4 from the gas stream.

4,351,811

PROCESS FOR REDUCING AN ELIMINATING NITROGEN OXIDES IN AN EXHAUST GAS

Shinpei Matsuda; Akira Kato; Shigeo Uno, all of Hitachi; Youichi Sakuta, Katsuta, and Fumito Nakajima, Hitachi, all of Japan, assignors to Hitachi, Ltd. and Babcock-Hitachi Kabushiki-Kaisha, both of Tokyo, Japan

Filed Jul. 19, 1978, Ser. No. 926,111
Claims priority, application Japan, Jul. 20, 1977, 52-86049; Jul. 22, 1977, 52-87299
Int. Cl.³ B01D *53/36*
U.S. Cl. 423—239 **15 Claims**

1. A process for reducing the concentration of nitrogen oxides in an exhaust gas containing nitrogen oxides, comprising the steps of:

(a) adjusting the mol ratio of NO to NO_2 in the exhaust gas such that the exhaust gas contains approximately equal molar amounts of NO and NO_2,

(b) mixing the exhaust gas having the adjusted mol ratio of NO to NO_2 with an ammonia-containing gas, in which the mol ratio of ammonia to the total of NO and NO_2 in the exhaust gas is about 0.8 to 2:1, and

(c) contacting the resultant mixture with a metallic oxide catalyst at a temperature in the range of 100°–550° C., thereby to reduce nitrogen oxides into nitrogen gas and water, said metallic oxide catalyst containing titanium oxide as its first constituent and an oxide of at least one element selected from the group consisting of iron, copper, nickel, cobalt, molybdenum, tungsten, vanadium, chromium and cerium as its active component.

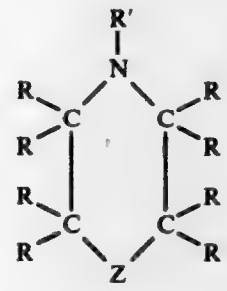
4,351,812

HYDROLYSIS OF CARBON OXYSULFIDE WITH MORPHOLINES AND PIPERAZINES

Glenn D. Correll, Birdsboro, Pa., and Hans R. Friedli, Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 936,675, Aug. 24, 1978, abandoned. This application Aug. 4, 1980, Ser. No. 174,999
Int. Cl.³ C01B *17/00;* C02B *1/18;* C01B *31/20, 17/66*
U.S. Cl. 423—243 **23 Claims**

1. A process for hydrolyzing COS to H_2S and CO_2 which comprises contacting a COS-containing gas or liquid stream with an aqueous N-heterocyclic compound solution of one or more of the N-heterocyclic compounds having the formula:



wherein Z is an oxygen atom or



each R is independently a hydrogen atom or an alkyl group of 1–2 carbon atoms, R′ is the 2-amino ethyl group when Z is



and R′ is a hydrogen atom when Z is an oxygen atom wherein said solution contains an amount of said heterocyclic compound sufficient to hydrolyze the COS.

4,351,813
PROCESS FOR PRODUCING PHOSPHORUS PENTOXIDE OR PHOSPHORUS OR PHOSPHORIC ACID

Joseph A. Megy, Mission Viejo, and Robert A. Hard, Laguna Beach, both of Calif., assignors to Occidental Research Corporation, Irvine, Calif.

Filed May 20, 1981, Ser. No. 265,307
Int. Cl.³ C01B *25/12, 25/16, 25/01, 25/02*
U.S. Cl. 423—304 **13 Claims**

1. A process for reducing phosphorus pentoxide contained in phosphate ores comprising the steps of:

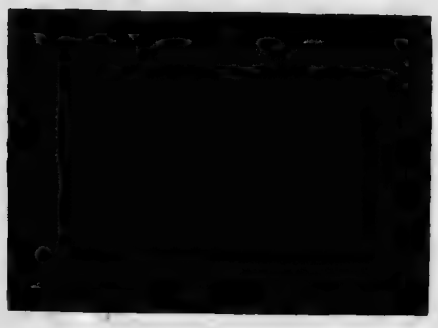
heating, by exposure to a flame, a porous bed comprising phosphate ore and solid carbonaceous material to a temperature sufficient to reduce the phosphorus pentoxide in the phosphate ore by reaction with the solid carbonaceous material to form carbon monoxide and phosphorus; and,

purging the porous bed with an inert gas in order to drive the reaction between the phosphorus pentoxide and the solid carbonaceous material towards complete reduction of the phosphorus pentoxide by removal of carbon monoxide from the porous bed, said inert gas being substantially nonreactive with the phosphorus pentoxide, carbonaceous material, phosphorus and the carbon monoxide.

4,351,814
HYDROTALCITES HAVING A HEXAGONAL NEEDLE-LIKE CRYSTAL STRUCTURE AND PROCESS FOR PRODUCTION THEREOF

Shigeo Miyata, and Akira Okada, both of Takamatsu, Japan, assignors to Kyowa Chemical Industry Co., Ltd., Tokyo, Japan

Filed Dec. 18, 1980, Ser. No. 218,017
Int. Cl.³ C01G *39/00*
U.S. Cl. 423—306 **4 Claims**



1. Hydrotalcites having a hexagonal needle-like crystal structure and having a length-to-diameter ratio, determined by an electron microscope at a magnification of 1000 X, of at least about 10, said hydrotalcites having the following formula:

$$Mg_{1-x_1}M_{x_1}^{3+}(OH)_{2+x_1-ny}A_y^{n-}.m_1H_2O \quad (1)$$

wherein M^{3+} represents a trivalent metal cation, A^{n-} represents an anion having a valence of n, and x_1, y and m_1 are numbers satisfying the following conditions:

$$0<x_1\leqq 0.6,$$

$$0<y\leqq 0.5,$$

$$0\leqq m_1\leqq 2.$$

4. A process for producing a hydrotalcite having a hexagonal needle-like structure and having a length-to-diameter ratio, determined by an electron microscope at a magnification of 1000 X, of at least 10, said hydrotalcite having the following formula:

$$Mg_{1-x_1}M_{x_1}^{3+}(OH)_{2+x_1=ny}A_y^{n-}.m_1H_2O \quad (1)$$

wherein M^{3+} represents a trivalent metal cation, A^{n-} represents an anion having a valence of n, and x_1, y and m_1 are numbers satisfying the following conditions:

$$0<x_1\leqq 0.6,$$

$$0<y=0.5,$$

$$0<m_1\leqq 2;$$

said process comprising contacting a basic magnesium compound having a needle-like crystal structure and expressed by the following formula (2):

$$Mg(OH)_{2-n'x_2}A_{x_2}^{n'-}.m_2H_2O \quad (2)$$

wherein $A^{n'-}$ represents a monovalent or divalent anion, n' is 1 or 2, and x_2 and m_2 are numbers satisfying the following conditions:

$$0.2\leqq x_2\leqq 0.5,$$

$$0<m_2\leqq 2,$$

with a compound capable of providing a trivalent metal cation and being soluble in a liquid reaction medium which is chemically inert and is a non-solvent for the basic magnesium compound, the contacting being carried out in said liquid reaction medium under conditions which do not cause a loss of the needle-like crystal form of the basic magnesium compound, while maintaining the ratio of M^{3+} to the sum of Mg and M^{3+} at $0<M^{3+}/(Mg+M^{3+})\leqq 0.6$ and the pH of the contacting system at not less than 9.

4,351,815
BATTERY CARBON BLACK

Fred E. Glasstetter, Yardley, Pa., and Frank J. Eckert, Monroe, La., assignors to Columbian Chemicals Company, Tulsa, Okla.

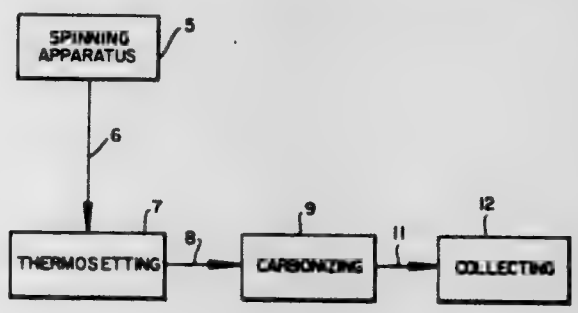
Continuation-in-part of Ser. No. 47,960, Jun. 11, 1979, abandoned. This application Feb. 6, 1981, Ser. No. 232,321
Int. Cl.³ C09C *1/48*
U.S. Cl. 423—445 **9 Claims**

1. A carbon black having a geometric mean aggregate volume (Log Vg, nm^3) ranging from about 6.2 to abut 7.5, a dibutylphthalate absorption (DBPA) between about 210 and about 270 cc/100 g, a nitrogen surface area between about 30 and about 60 m^2/g and an average stacking height (L_c) of ordered graphitic layer segments ranging from about 2.7 to about 3.7 nm.

4,351,816
METHOD FOR PRODUCING A MESOPHASE PITCH DERIVED CARBON YARN AND FIBER

David A. Schulz, Fairview Park, Ohio, assignor to Union Carbide Corporation, Danbury, Conn.

Filed Dec. 17, 1980, Ser. No. 217,438
Int. Cl.³ D01F *9/12*
U.S. Cl. 423—447.4 **12 Claims**



1. A method for producing a mesophase pitch derived carbon yarn, comprising the steps of:

forming a plurality of mesophase pitch fibers to define a mesophase pitch yarn;

thermosetting said mesophase pitch yarn to produce a thermoset yarn;

winding said thermoset yarn onto a bobbin which is thermally and mechanically stable at the tempertures used to pyrolyze and carbonize thermoset yarn and which is chemically compatible with said thermoset yarn at stages of transition of said thermoset yarn; and

subjecting said thermoset yarn on said bobbin to a predetermined heat treatment in an inert atmosphere to pyrolyze and carbonize said thermoset yarn;

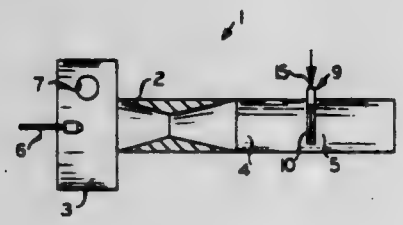
whereby said carbon yarn can be unwound from said bobbin.

4,351,817

CARBON BLACK PROCESS

John E. Slagel, and Allen C. Howard, both of Orange, Tex., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 764,665, Feb. 1, 1977, Pat. No. 4,138,217.
This application Dec. 27, 1978, Ser. No. 973,656
Int. Cl.[3] C09C *1/50*
U.S. Cl. 423—450 1 Claim



1. A method of producing carbon black comprising the steps of:

producing hot combustion gases;

contacting a make hydrocarbon with said thus produced hot combustion gases in a rection zone and thereby pyrolyzing said make hydrocarbon so as to produce an effluent comprising carbon black;

flowing said thus produced effluent along a quench zone having a longitudinal axis;

introducing quench liquid into said quench zone from a plurality of oppositely directed discharge openings lying in a plane generally transverse to the longitudinal axis of the quench zone and being spaced apart at different distances outwardly from the longitudinal axis of such quench zone and extending substantially across the cross section of said quench zone so as to form a curtain of quench liquid extending substantially across the entirety of the cross-section of the quench zone.

4,351,818

CARBON BLACK FURNACE PROCESS

Merle R. Likins, Jr., and Galen D. Stacy, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 1, 1980, Ser. No. 211,984
Int. Cl.[3] C01B *31/02;* C09C *1/48*
U.S. Cl. 423—450 8 Claims

1. In a process for the production of carbon black comprising

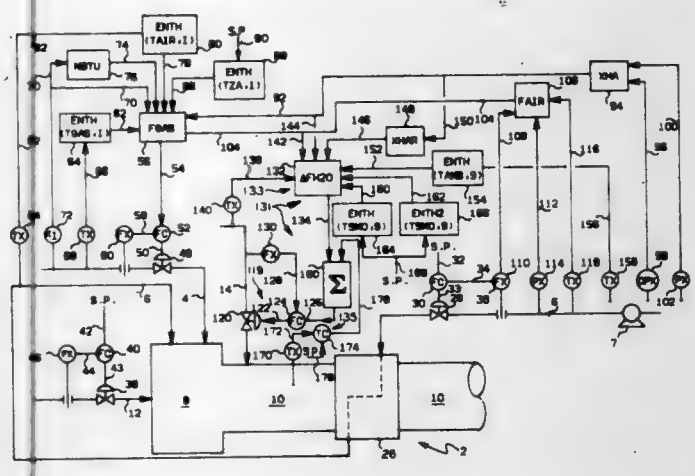
combusting a stream of fuel with a stream of air to form a stream of combustion gases;

reacting a carbonaceous feedstock with said combustion gases to produce carbon black;

introducing a stream of quench fluid into the stream of combustion gases to form a quenched effluent stream; and

passing the quenched effluent stream into an indirect heat exchange relationship with the stream of air and thereafter recovering carbon black; the improvement comprising:

controlling the rate of introduction of the quench fluid stream into the stream of combustion gases in response to



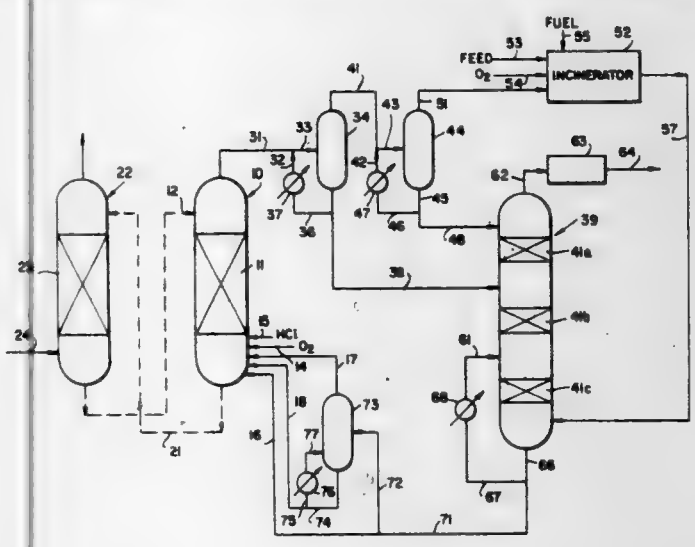
a first signal which is derived at least in part from the moisture content of the air entering the stream of air.

4,351,819

RECOVERY OF CHLORINE VALUES IN INTEGRATED PROCESS FOR OXYCHLORINATION AND COMBUSTION OF CHLORINATED HYDROCARBONS

Herbert Riegel, Maplewood, and Chiung-Yuan Huang, Glen Ridge, both of N.J., assignors to The Lummus Company, Bloomfield, N.J.

Filed Jan. 26, 1981, Ser. No. 228,463
Int. Cl.[3] C01B *7/01;* C07C *21/00*
U.S. Cl. 423—488 7 Claims



1. A process for integrating recovery of chlorine values from a chlorinated organic compound by combustion with an oxychlorination reaction, the improvement comprising:

combusting the chlorinated organic compound to recover the chlorine values therefrom essentially as hydrogen chloride;

contacting a gaseous combustion effluent from said combusting said aqueous hydrogen chloride to recover hydrogen chloride present in the gaseous combustion effluent by absorption;

employing hydrogen chloride recovered by the absorption in an oxychlorination reaction;

recovering from the oxychlorination reaction a gaseous effluent containing water vapor and hydrogen chloride;

cooling the gaseous effluent to condense aqueous hydrogen chloride, and

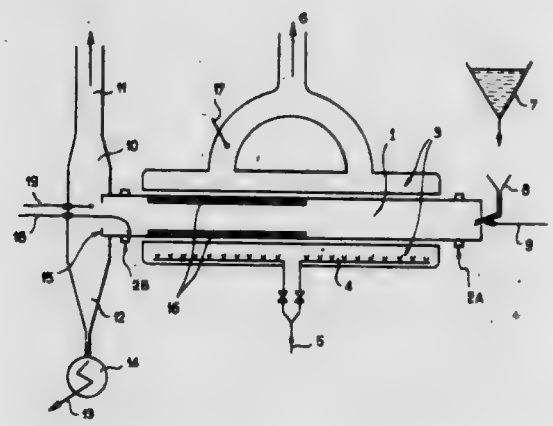
employing condensed aqueous hydrogen chloride in said absorption, whereby hydrogen chloride in the effluent from both the oxychlorination and combustion are recovered for use in the oxychlorination.

4,351,820

REGENERATION OF CHEMICAL RECONVERSION CATALYSTS USED IN A CYCLIC PROCESS FOR THE PRODUCTION OF HYDROGEN PEROXIDE AND APPARATUS THEREFOR

Pierre Thirion, Sassenage, France, assignor to Oxysynthese, Paris, France

Filed Aug. 11, 1980, Ser. No. 176,643
Claims priority, application France, Sep. 6, 1979, 79 22266
Int. Cl.[3] C01B *15/023;* B01J *21/21*
U.S. Cl. 423—588 9 Claims



1. A process for the regeneration of aluminosilicate catalyst, comprising a gel of hydrated sodium aluminosilicate having an Al_2O_3 content of 55–63%, used in a cyclical process for the production of hydrogen peroxide by thermal treatment, comprising:

introducing the catalyst to be regenerated into a thermal enclosure at 650°–700° C. and progressively heating the catalyst in the thermal enclosure for 30 minutes to 2 hours by gradually increasing the temperature to a maximum temperature within the range of 700°–850° C. in the presence of a circulating oxidizing atmosphere.

3. A process according to claim 1, wherein the thermal enclosure is a rotary furnace which is inclined to the horizontal by 0.7° to 1°.

4. A process in accordance with claim 1 wherein the catalyst is continuously passed through said thermal enclosure and subjected to said progressive heating, and wherein the oxidizing atmosphere circulates cocurrently with the direction of movement of the catalyst.

4,351,821

PREPARATION OF GALLIUM OXIDE

Bernard Boudot, Paris; Jean Grosbois, L'Isle Adam, and Michel Pajot, Salindres, all of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Jun. 16, 1981, Ser. No. 274,231
Claims priority, application France, Jun. 27, 1980, 80 14308
Int. Cl.[3] C01G *15/00*
U.S. Cl. 423—624 26 Claims

1. A process for the preparation of gallium oxide, Ga_2O_3, comprising (i) admixing, under stirring, a solution of a gallium salt with a base to convert said salt into gallium hydroxide, $Ga(OH)_3$; (ii) aging said gallium hydroxide reaction medium at elevated temperatures to effect precipitation therefrom of a gallium oxide/hydroxide fraction, GaO(OH); (iii) next filtering said gallium oxide/hydroxide fraction from said precipitation medium; (iv) drying and (v) calcining said filtered precipitate to convert same into said gallium oxide, Ga_2O_3, with said oxide/hydroxide fraction (vi) being washed either before or after said filtration step (iii).

4,351,822

QUANTITATIVE TESTING FOR VITAMIN B_{12}

Robert H. Allen, Englewood, Colo., assignor to University Patents, Inc., Norwalk, Conn.

Continuation of Ser. No. 893,524, Apr. 4, 1978, Pat. No. 4,188,189. This application Aug. 24, 1979, Ser. No. 69,257
The portion of the term of this patent subsequent to Feb. 12, 1997, has been disclaimed.
Int. Cl.[3] G01N *33/56, 33/58*
U.S. Cl. 424—1 25 Claims

1. A radioisotope dilution assay method of measuring the vitamin B_{12} (cobalamin) level in a sample which may also contain vitamin B_{12} analogue comprising: contacting said sample with a known amount of radioisotope of vitamin B_{12} and with an assay composition, said assay composition including an active component of binding protein which is substantially specific to vitamin B_{12} and substantially non-reactive with vitamin B_{12} analogue, wherein one or more binding protein which is non-specific to vitamin B_{12} may be present in the precursor of said assay composition and wherein any said non-specific binding protein has been rendered substantially inactive or inoperative as to its ability to bind with vitamin B_{12}, said assay composition being substantially free of any other substance which is present in a form in which it can react with vitamin B_{12} and any vitamin B_{12} analogue which may be present in said to-be-assayed sample.

4,351,823

DIAGNOSIS OF TUMORS OR BACTERIAL INFECTIONS HAVING β-GLUCURONIDASE ACTIVITY

David Rubin, c/o Israel Medical Foundation, P.O. Box 3592, Jerusalem, Israel, assignor to Adolf W. Schwimmer, Savyon; Irwin S. Schwartz, Tel Aviv and David Rubin, Jerusalem, all of, Ill.X

Continuation-in-part of Ser. No. 89,888, Oct. 31, 1979, Pat. No. 4,337,760, which is a continuation-in-part of Ser. No. 11,619, Feb. 12, 1979, Pat. No. 4,327,074, and a continuation-in-part of Ser. No. 951,270, Oct. 13, 1978, and a continuation-in-part of Ser. No. 951,269, Oct. 13, 1978. This application Jul. 18, 1980, Ser. No. 172,448
Int. Cl.[3] A61K *49/00;* C12Q *1/04, 1/44;* G01N *33/50*
U.S. Cl. 424—9 11 Claims

1. A method for diagnosing the presence of tumors or bacterial infections having β-glucuronidase activity, in a patient, comprising:

injecting a non-toxic conjugated glucuronide of an aglycone, which aglycone, in the free state thereof, differs in color, color intensity, or fluorescence from the conjugated glucuronide thereof;

collecting the urine of the patient for a period of time sufficient to permit most of the injected glcuronide to be expelled from the body if it is not retained therein; and

determining the amount of glucuronide present in the collected urine by deconjugating the glucuronide in a sample of the urine and comparing the color, color intensity or fluorescence of the aglycone with a standard curve, thus indicating the quantity of aglycone in the sample;

whereby, if it appears that a substantial amount of glucuronide has been retained in the body, this is a positive indication of a tumor or bacterial infection having β-glucuronidase activity.

6. A method in accordance with claim 1, wherein prior to or concurrent with administration of the glucuronide a hyperacidifying agent is added to hyperacidify any tumor cells which may be present.

7. A process in accordance with claim 1 or claim 6, wherein previous to or concurrent with administration of the glucuronide an alkalinizing agent is added in an amount sufficient to maintain the pH level of the non-tumor tissues of the patient at approximately 7.4 during the glucuronide treatment.

4,351,824

POLYSTYRENE LATEX REAGENTS, METHODS OF PREPARATION, AND USE IN IMMUNOLOGICAL PROCEDURES

Harris I. Lehrer, Long Beach, Calif., assignor to ICL Scientific, Fountain Valley, Calif.

Filed Feb. 5, 1981, Ser. No. 231,683
Int. Cl.³ G01N *33/54, 33/68*
U.S. Cl. 424—12 **30 Claims**

1. A method for producing stable sensitized polystyrene latex particles useful as a diagnostic reagent in immunological procedures, the method comprising the steps of:

(i) coating a polystyrene latex particle with a water-soluble protein;

(ii) adsorbing a substantially methylated serum albumin onto the particle to form a matrix on the surface of the particle; and

(iii) non-covalently binding a substantially negatively-charged, polymeric compound, having antigenic sites, to the matrix whereby a sensitized particle is made;

wherein a mixture of sensitized particles in solution agglutinates in the presence of antibodies capable of binding antigenic sites of the polymeric compound, but does not exhibit significant auto-agglutination tendencies.

9. A method of making an immunological reagent for the in vitro diagnosis of rheumatic, autoimmune diseases, the method comprises adsorbing a water-soluble albumin and a substantially methylated bovine serum albumin onto surfaces of polystyrene latex beads, non-covalently binding a nuclear component to the methylated bovine serum albumin on the beads' surfaces, whereby the beads are sensitized with the nuclear component, and placing the beads in a preservative suspension, wherein the sensitized beads do not agglutinate in the presence of normal serum, but agglutinate in the presence of serum containing significant amounts of autoimmune antibodies.

18. A method for producing a reagent capable of agglutinating an aliquot of serum from a patient suffering from serum lupus erythematosus, the method comprising the steps of:

(i) combining 1 volume of a concentrated suspension of polystyrene latex beads, with 0.2 volumes of from about 10 micrograms/ml to 100 mg/ml bovine serum albumin in solution, and stirring;

(ii) adding 0.5 volumes of from about 10 micrograms/ml to 50 mg/ml methylated bovine serum albumin in solution, and stirring;

(iii) mixing in about 10 volumes of from about 50 micrograms/ml to about 5000 micrograms/ml, native deoxyribonucleic acid in solution, the deoxyribonucleic acid (DNA) preferably having a relative viscosity of about 1.2 to about 4.0, and stirring;

(iv) washing the beads by centrifugation to separate the beads from unbound albumins or deoxyribonucleic acid; and

(v) storing the washed beads as a suspension, containing preservatives.

4,351,825

PROCESS FOR THE PREPARATION OF TABLETS WITH RETARDED LIBERATION OF THE ACTIVE AGENT IS PREDETERMINED

Gunnar A. Sothmann, Kirkkonummi, and Esko V. Marttila, Helsinki, both of Finland, assignors to Orion-yhtymä Oy, Finland

Filed Jan. 14, 1980, Ser. No. 111,962
Claims priority, application Finland, Feb. 2, 1979, 790350
Int. Cl.³ A61K *9/22, 9/24, 9/52*
U.S. Cl. 424—19 **3 Claims**

1. Process for the preparation of controlled release tablets containing an active agent comprising:

(a) granulating the active agent with an organic solvent solution or a water dispersion of a copolymerizate of acrylic and methacrylic acid esters containing quaternary ammonium groups or an anionic copolymerizate of methacrylic acid and methyl ester of methacrylic acid;

(b) mixing the granules with an ester of a fatty acid containing 10 to 30 carbon atoms, said ester being present in an amount less than 15% of the total weight of the mixture whereby the granules are coated with said ester; and

(c) compressing the resulting mixture into tablets whereby the tablets release the active agent at a rate which is substantially independent of the compression pressure.

4,351,826

PROCESS FOR PREVENTING OR REVERSING CATARACT FORMATION USING ACRYLAMIDES

John I. Clark, Newton; Loretta S. Mengel, and George B. Benedek, both of Belmont, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Feb. 29, 1980, Ser. No. 125,994
Int. Cl.³ A61K *31/78, 31/165*
U.S. Cl. 424—81 **2 Claims**

1. A process for preventing or reversing cataract formation in the eye of the lens of a patient which comprises administering directly to the eye a therapeutically effective amount of a physiologically acceptable solution of a composition that interacts with the constituents of the lens that cause lens opacification in order to clarify the lens, said composition being selected from the group consisting of an acrylamide, a mixture of an acrylamide and an aldehyde, and a mixture of an acrylamide and a glycol.

4,351,827

NOVEL POLYVALENT VIRUS VACCINE

Gosse Bijlenga, La Tour de Salvagny, France, assignor to Gist-Brocades N.V., Delft, Netherlands

Filed Jul. 14, 1980, Ser. No. 168,332
Claims priority, application United Kingdom, Jul. 17, 1979, 7924915
Int. Cl.³ A61K *39/205, 39/175*
U.S. Cl. 424—89 **24 Claims**

1. A process for the preparation of a polyvalent virus vaccine comprising a live rabies virus and a live canine distemper virus substantially free from material emanating from more than one type of tissue cell used to propagate the viruses comprising first propagating at least one living rabies virus in a single cell and then propagating at least one living canine distemper virus in the same single cell and preparing the polyvalent vaccine from the propagation product.

4,351,828

N-SUBSTITUTED CYCLOPEPTIDE DERIVATIVES

Amedeo Failli, St. Laurent; Hans U. Immer, Mount Royal, and Manfred K. Götz, Hudson, all of Canada, assignors to American Home Products Corporation, New York, N.Y.

Division of Ser. No. 941,827, Sep. 11, 1978, Pat. No. 4,237,045. This application Jun. 30, 1980, Ser. No. 164,663
Int. Cl.³ A61K *37/00*
U.S. Cl. 424—177 **7 Claims**

1. A compound of formula I:



(I)

in which R^1 is lower alkyl; R^2 is lower alkyl or cyclo(lower)alkyl, R^3 is a neutral amino acid side chain selected from hydrogen or lower alkyl and Y is a peptide residue of the formula NHCH(R^4)CO—NHCH(R^5)CO—NHCH(R^6)CO—NHCH(R^7)CO—NHCH(R^8)CO wherein R^4 is hydrogen, lower alkyl or benzyl; R^5, R^6 and R^7 each independently is hydrogen or lower alkyl and R^8 is hydrogen, lower alkyl or 2-(methylthio)ethyl.

4,351,829

USE OF POLYPEPTIDES AS ANALGESIC DRUGS

Gerhard Zetler, Lübeck, Fed. Rep. of Germany; Alessandro Rossi, Barzini, and Chiara De Paolis, Milan, both of Italy, assignors to Farmitalia Carlo Erba Spa, Milan, Italy

Filed Sep. 26, 1980, Ser. No. 191,146
Int. Cl.[3] A61K *37/00*; C07C *103/52*
U.S. Cl. 424—177 4 Claims

1. A method of inducing analgesia in animal and human patients suffering from severe pains selected from biliary and renal colic pains, pains caused by peripheral vascular diseases of the extremities, migraine chronic pains in cancer diseases, post-operatory-, traumatological-, large burns-, myocardial infarction- and angina pectoris pains, which comprises administering to the patient in need an effective amount of a polypeptide selected from ceruletide and salts thereof.

4,351,830

POLYMERIC COMPOUND, MF-300, WITH PROTECTIVE ACTIVITY AGAINST BACTERIAL INFECTIONS AND ITS PREPARATION

Takeo Miyazawa; Takahiro Ishii, both of Tokyo; Yuzo Kazuno, Hachioji; Eiichi Akita, Yokohama; Yujiro Yamada, Yokohama, and Taro Niida, Yokohama, all of Japan, assignors to Meiji Seika Kaisha, Ltd., Tokyo, Japan

Filed Jun. 2, 1981, Ser. No. 269,609
Claims priority, application Japan, Jun. 17, 1980, 55/80847
Int. Cl.[3] A61K *31/73*; C07H *15/22*
U.S. Cl. 424—180 4 Claims

1. A polymeric compound, MF-300, which is obtained by reacting 1 to 36 moles crotonoyl chloride per mole of ribostamycin, concentrating the reaction product and recovering therefrom the compound as a fraction having a range of molecular weights of 10,000～100,000 when measured by ultrafiltration method and which has the following properties:

(1) Elemental analysis: C, 48.52±2.16%; H, 7.24±0.24%; N, 8.04±1.02%; Cl, 5.05±0.3%;

(2) Molecular weight: 10,000～100,000, when measured by ultrafiltration; 15,000～70,000, when measured by ultracentrifuge;

(3) Appearance: Pale yellow, amorphous powder;

(4) Decomposition point: 170°～200° C.

(5) Specific rotation: $[\alpha]_D^{25}+40.4°\pm7.3°$ (c 1.0, H_2O);

(6) Infrared absorption: 3400, 2940, 1660, 1630, 1550 cm^{-1};

(7) Ultraviolet absorption: No specific maximum absorption;

(8) NMR spectrum: 1.0～1.5, 1.8～2.1, 3.2～4.2, 5.2～5.4, 5.6～6.3, 6.5～7.2 ppm;

(9) Nature of aqueous solution: pH 4～6 (1% aqueous solution)

(10) Solubility: Soluble in water and methanol; Insoluble in ethanol, chloroform, acetone and petroleum ether;

(11) Color reaction: Positive to anthrone and Molisch reactions; Weakly positive to ninhydrin and biuret reactions; Negative to Tollens reaction.

4. A pharmaceutical composition for use to protect mammals against bacterial infections caused by bacteria of genus Pseudomonas, comprising as active ingredient an effective amount of the compound MF-300 defined in claim 1 in combination with a pharmaceutically acceptable carrier or adjuvant.

4,351,831

PROCESS AND COMPOSITION FOR TREATING DISORDERS BY ADMINISTERING ISOXSURPINE AND CHOLINE

John H. Growdon, Brookline, and Richard J. Wurtman, Boston, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation-in-part of Ser. No. 126,124, Feb. 29, 1980, abandoned, which is a continuation-in-part of Ser. No. 88,227, Oct. 27, 1979, abandoned, which is a continuation of Ser. No. 847,967, Nov. 2, 1977, abandoned. This application Jan. 30, 1981, Ser. No. 229,704
Int. Cl.[3] A61K *31/685*
U.S. Cl. 424—199 12 Claims

1. The process of reducing or eliminating undesirable side effects of a drug administered to a human which side effects result from inadequate release of brain acetylcholine, said drug being selected from the group consisting of isoxsuprine and dihydroergotamine, which comprises administering concomitantly with the drug an amount of a compound effective to release adequate amounts of brain acetylcholine and to raise the blood concentration of choline in the human to between about 10 and about 50 n moles/ml selected from the group consisting of choline, a salt of choline, lysolecithin and acyglycerophosphocholine, glycerophosphatidyl choline and mixtures thereof.

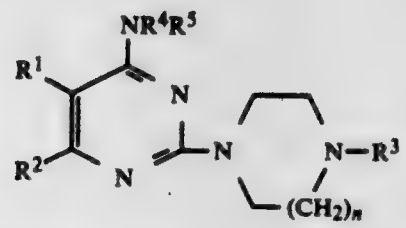
4,351,832

2-(PIPERAZINYL)-4-PYRIMIDINAMINES

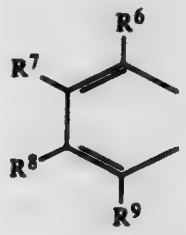
Sumanas Rakhit, Dollard des Ormeaux, and Jehan F. Bagli, Kirkland, both of Canada, assignors to American Home Products Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 141,548, Apr. 18, 1980, Pat. No. 4,333,937. This application Mar. 20, 1981, Ser. No. 245,798
Int. Cl.[3] C07D *403/14, 417/14, 498/04*
U.S. Cl. 424—246 17 Claims

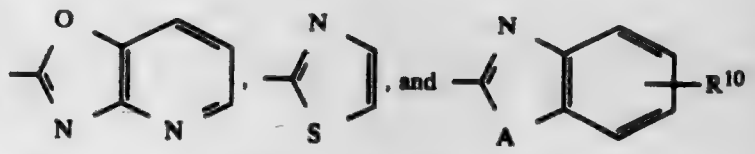
1. A compound of the formula



in which R^1 and R^2 are hydrogen, or R^1 and R^2 together form a chain of the formula



wherein R^6, R^7, R^8 and R^9 each is hydrogen or lower alkoxy; R^3 is selected from the group consisting of



wherein R^{10} is hydrogen, halo, lower alkyl, lower alkoxy, hydroxy, 1-oxo(lower)alkoxy or $NR^{11}R^{12}$ wherein R^{11} and R^{12} each is hydrogen or lower alkyl; A is NR^{13} wherein R^{13} is lower alkyl; R^4 and R^5 each is hydrogen or lower alkyl; and n

is 1 or 2; or a therapeutically acceptable acid addition salt thereof.

9. A pharmaceutical composition for treating hypertension, which comprises a compound of claim 1, and a pharmaceutically acceptable carrier therefor.

11. A method of treating hypertension in a hypertensive mammal, which comprises administering to said mammal an antihypertensive effective amount of a compound of claim 1, in combination with an effective amount of a second therapeutic agent comprising a diuretic, an antihypertensive agent of a combination of a diuretic and an antihypertensive agent.

4,351,833

9-AMINO-1-HYDROXYOCTAHYDROBENZO[C]QUINOLINES AND DERIVATIVES THEREOF AS ANALGESICS AND ANTI-EMETICS

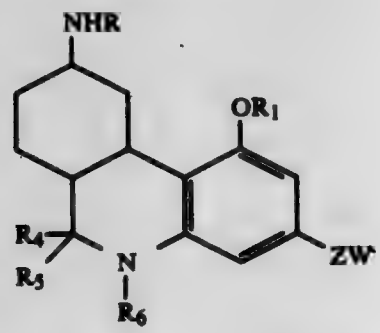
Michael R. Johnson, Gales Ferry, Conn., assignor to Pfizer Inc., New York, N.Y.

Division of Ser. No. 173,207, Jul. 28, 1980, Pat. No. 4,309,545. This application Aug. 27, 1981, Ser. No. 296,745

Int. Cl.[3] C07D *221/12*

U.S. Cl. 424—248.5 26 Claims

1. A compound of the formula



or a pharmaceutically acceptable acid addition salt thereof wherein R is hydrogen, COR_7 or SO_2R_8 where R_7 is a member selected from the group consisting of hydrogen, alkyl, having from one to five carbon atoms; alkenyl and alkynyl each having from two to six carbon atoms, trifluoromethyl, benzyl, furyl, thienyl, pyridyl and $R_9C_6H_4$ where R_9 is a member selected from the group cosisting of H, NH_2, F, Cl, Br, CH_3 and OCH_3; R_8 is alkyl having from one to five carbon atoms or $R_9C_6H_4$;

R_1 is selected from the group consisting of hydrogen, benzyl, benzoyl, alkanoyl having from one to five carbon atoms and $—CO—(CH_2)_p—NR_2R_3$ wherein p is 0 or an integer from 1 to 4; each of R_2 and R_3 when taken individually is selected from the group consisting of hydrogen and alkyl having from one to four carbon atoms; R_2 and R_3 when taken together with the nitrogen to which they are attached form a 5- or 6-membered heterocyclic ring selected from the group consisting of piperidino, pyrrolo, pyrrolidino, morpholino and N-alkylpiperazino having from one to four carbon atoms in the alkyl group;

R_4 is selected from the group consisting of hydrogen, alkyl having from 1 to 6 carbon atoms and $—(CH_2)_z—C_6H_5$ wherein z is an integer from 1 to 4;

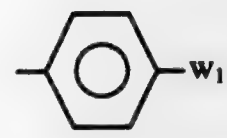
R_5 is selected from the group consisting of hydrogen, methyl and ethyl;

R_6 is selected from the group consisting of hydrogen, $—(CH_2)_y—$carbalkoxy having from one to four carbon atoms in the alkoxy group and wherein y is 0 or an integer from 1 to 4, carbobenzyloxy, formyl, alkanoyl having from two to five carbon atoms, alkyl having from one to six carbon atoms, $—(CH_2)_x—C_6H_5$ wherein x is an integer from 1 to 4; and $—CO(CH_2)_{x-1}—C_6H_5$;

Z is selected from the group consisting of

(a) alkylene having from one to nine carbon atoms;

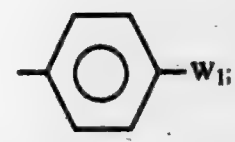
(b) $—(alk_1)_m—X—(alk_2)_n—$ wherein each of (alk_1) and (alk_2) is alkylene having from one to nine carbon atoms, with the proviso that the summation of carbon atoms in (alk_1) plus (alk_2) is not greater than nine; each of m and n is 0 or 1; X is selected from the group consisting of O, S, SO and SO_2; and W is selected from the group consisting of hydrogen, methyl, pyridyl, piperidyl,



wherein W_1 is selected from the group consisting of hydrogen, fluoro and chloro; and



whrerein W_2 is selected from the group consisting of hydrogen and



a is an integer from 1 to 5 and b is 0 or an integer from 1 to 5; with the proviso that the sum of a and b is not greater than 5.

23. A method for producing analgesia in a mammalian subject in need of such treatment which comprises orally or parenterally administering to said subject an analgesic-producing amount of a compound according to claim 1.

4,351,834

PESTICIDE

Hironobu Takahashi; Masamitsu Honda; Yasushi Murakami, all of Tokyo, and Yoshitaka Iwane, Yokohama, all of Japan, assignors to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

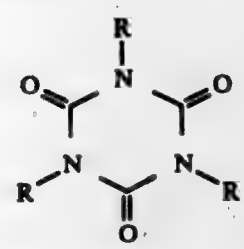
Division of Ser. No. 32,091, Apr. 20, 1979, Pat. No. 4,234,582. This application May 15, 1980, Ser. No. 150,182

Claims priority, application Japan, May 10, 1978, 53/54436; Jul. 11, 1978, 53/83522

Int. Cl.[3] A01N *43/64, 43/08*

U.S. Cl. 424—249 8 Claims

1. A pesticidal composition containing as effective ingredients a trialkyl isocyanurate of the formula:



(wherein R is an alkyl group having 2 to 4 carbon atoms) and a pyrethroid insecticide selected from the group consisting of (+)-3-allyl-2-methyl-4-oxo-2-cyclopentenyl-(+)-trans-chrysanthemate, (±)-3-allyl-2-methyl-4-oxo-2-cyclopentenyl-(±)-cis/trans-chrysanthemate, 5-benzyl-3-furylmethyl-(±)-cis/-trans-chrysanthemate, 5-benzyl-3-furylmethyl-(±)-cis/trans-chrysanthemate, N-(3,4,5,6-tetrahydrophthalimido)-methyl-(±)-cis/trans-chrysanthemate, and 3-phenoxybenzyl-(+)-cis/-trans-chrysanthemate, said isocyanaurate and said pyrethroid being present in insecticidal amounts with said pyrethroid insecticide being present in an amount of 2 to 40% by weight of said trialkyl isocyanurate.

4,351,835
METHOD FOR PREVENTING BODY FAT DEPOSITION IN MAMMALS

Ronald T. Stanko, Pittsburgh, Pa., assignor to Montefiore Hospital, Pittsburgh, Pa.

Filed Apr. 1, 1981, Ser. No. 249,812
Int. Cl.³ A61K *31/12, 31/19, 31/525*
U.S. Cl. 424—252 9 Claims

1. A method for controlling weight in a mammal, which comprises administering orally to said mammal a therapeutic mixture of pyruvate and dihydroxyacetone in an effective amount to induce a weight loss or to reduce an expected weight gain from a given diet.

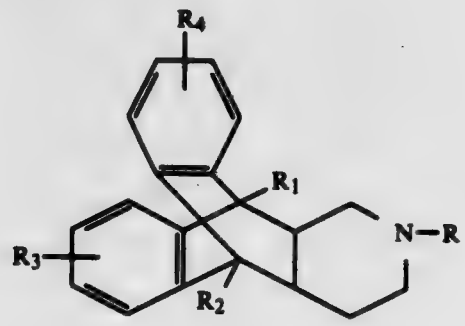
8. A method for increasing the glycogen concentration in the liver of a mammal, which comprises administering orally to said mammal effective amounts of a mixture of pyruvate and dihydroxyacetone for a period sufficient to increase glycogen concentration above normal.

4,351,836
1,2,3,4,4A,5,10,10A-OCTAHYDRO-5,10-ORTHO-BENZENOBENZ[G]ISOQUINOLINES AND ANTIDEPRESSANT USE THEREOF

Parthasarathi Rajagopalan, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

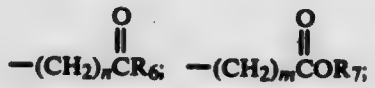
Filed Jul. 28, 1980, Ser. No. 172,991
Int. Cl.³ A61K *31/47;* C07D *221/22*
U.S. Cl. 424—258 12 Claims

1. A compound of the formula



where

R is H; C_1–C_6 alkyl, optionally substituted with —OR_5, phenyl or 1-adamantyl;



or —$CH_2CH(C_6H_5)_2$;

R_1 and R_2 are both H, or, when R=H or CH_3, then one of R_1 and R_2 may be CH_3;

R_3 and R_4 are independently H, Cl, F or CH_3;

R_5 is H, CH_3 or phenyl;

R_6 is C_1–C_3 alkyl;

R_7 is H or C_1–C_4 alkyl;

n is 1, 2, 3 or 4; and

m is 0, 1, 2, 3 or 4;

provided that, when m=0, then R_7 is other than H; and pharmaceutically suitable acid and base salts thereof.

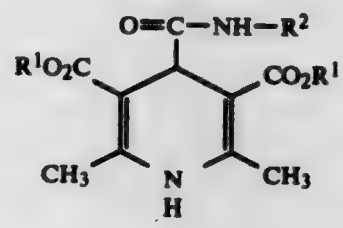
12. A method alleviating depression in mammals comprising administering to the mammal an antidepressive amount of a compound of any one of claims 1 to 10.

4,351,837
1,4-DIHYDROPYRIDINE-3,5-DICARBOXYLATE-4-CARBOXAMIDE COMPOUNDS, COMPOSITIONS CONTAINING SAME AND METHOD OF USING SAME

Carsten Materne, Bonn, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 22, 1981, Ser. No. 266,274
Claims priority, application Fed. Rep. of Germany, Jun. 12, 1980, 3022002
Int. Cl.³ C07D *213/56, 401/12;* A61K *31/455*
U.S. Cl. 424—266 9 Claims

1. A compound which is a 1,4-dihydropyridine of the formula

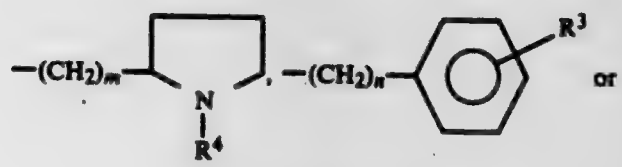


(I)

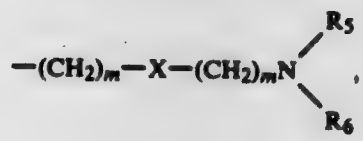
or a pharmaceutically acceptable salt thereof, in which,

R^1 denotes a straight-chain or branched hydrocarbyl radical with 1 to 4 carbon atoms and

R^2 denotes a



or



radical,

in which

n is 0, 1 or 2 and

R^3 denotes one or two radicals selected from methyl, hydroxyl and methoxy,

m is 1 or 2,

R^4 denotes an alkyl group with 1 to 4 carbon atoms,

R^5 and R^6 each independently denote an alkyl group with 1 to 4 carbon atoms and

X denotes a—CH_2— group or a hetero-atom, selected from —O— or —S—.

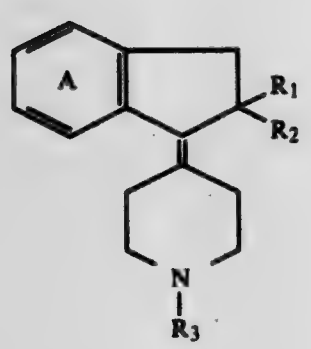
9. A method for lowering blood pressure in a warm-blooded animal which comprises administering to said animal a blood pressure lowering effective amount of an active compound according to claim 1.

4,351,838
INDANE DERIVATIVES, PROCESS FOR THEIR PREPARATION, THEIR USE AS PHARMACEUTICALS AND PHARMACEUTICAL COMPOSITIONS CONTAINING SAID DERIVATIVES

Klaus Haespacher, Riehen, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

Filed Feb. 12, 1981, Ser. No. 233,707
Claims priority, application Switzerland, Feb. 13, 1980, 1170/80
Int. Cl.³ A61K *31/445;* C07D *211/06*
U.S. Cl. 424—267 12 Claims

1. A compound of formula I



(I)

wherein

R_1 and R_2, independently, are C_{1-4}alkyl,

R_3 is hydrogen; C_{1-4}alkyl; C_{3-5}alkenyl; C_{7-10}phenylalkyl optionally substituted in the phenyl ring by halogen, C_{1-4}alkyl or C_{1-4}alkoxy; or a group of formula (a)

$$-(CH_2-CH_2-O)_n-R_4 \quad \text{(a)}$$

wherein n is an integer of from 1 to 3 and R_4 is hydrogen or a non-toxic acid residue which is removable by hydrolysis under physiological conditions, and

the ring A is mono-or-di-substituted by fluoro, chloro or C_{1-4}alkoxy groups,

in free base or in pharmaceutically acceptable acid addition salt form.

11. A method for the treatment or prophylaxis of asthma in a subject in need of such treatment, which method comprises administering to said subject an anti-asthma effective amount of a compound according to claim 1 in free base or pharmaceutically acceptable acid addition salt form.

12. A pharmaceutical composition for the treatment of asthma comprising an anti-asthma effective amount of a compound according to claim 1 in free base or pharmaceutically acceptable acid addition salt form, together with a pharmaceutically acceptable diluent or carrier therefor.

4,351,839

FUNGICIDAL 2-ARYL-2-1-H-AZOYL-(ALKYL)-GAMMA-BUTYROLACTONES

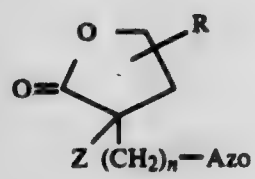
Hak-Foon Chan, Doylestown, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Mar. 30, 1981, Ser. No. 249,250

Int. Cl.[3] **A01N** *43/64, 43/50;* **C07D** *405/04, 405/06*

U.S. Cl. 424—269 **9 Claims**

1. A compound of the formula:



wherein

Z is

phenyl or naphthyl, optionally substituted with up to three substituents selected from

halogen, nitro, trihalomethyl, cyano, (C_1-C_4)alkyl, (C_1-C_4)alkoxy, (C_1-C_4)alkylthio, (C_1-C_4)alkylsulfinyl, (C_1-C_4)alkylsulfonyl, phenyl, benzyl, phenoxy, phenylthio, phenylsulfinyl, or phenylsulfonyl;

R is

hydrogen, (C_1-C_{10})alkyl, (C_3-C_8)alkenyl, (C_3-C_8)alkynyl, or phenyl or naphthyl optionally substituted with up to three substituents selected from

halogen, nitro, trihalomethyl, cyano, (C_1-C_4)alkyl, (C_1-C_4)alkoxy, (C_1-C_4)alkylthio, (C_1-C_4)alkylsulfinyl, (C_1-C_4)alkylsulfonyl, phenyl, benzyl, phenoxy, phenylthio, phenylsulfinyl, or phenylsulfonyl,

or phenyl-(C_1-C_4)alkyl or naphthyl-(C_1-C_4)alkyl the aromatic portion of which is optionally substituted with up to three substituents selected from

halogen, nitro, trihalomethyl, cyano, (C_1-C_4)alkyl, (C_1-C_4)alkoxy, (C_1-C_4)alkylthio, (C_1-C_4)alkylsulfinyl, (C_1-C_4)alkylsulfonyl, phenyl, benzyl, phenoxy, phenylthio, phenylsulfinyl or phenylsulfonyl;

Azo is 1-H-imidazoyl, 1-H-1,2,4-triazoyl or 4-H-1,2,4-triazoyl;

n is 0 or an integer from 1 to 5;

or an agronomically acceptable acid addition salt or metal salt complex thereof.

8. A method of controlling phytopathogenic fungi which comprises applying to the plant, the plant habitat or the plant seed an effective amount of the compound of claim 1.

4,351,840

ANTIBACTERIAL ESTERS OF RESORCINOL WITH AMPICILLIN AND PENICILLANIC ACID 1,1-DIOXIDE DERIVATIVES

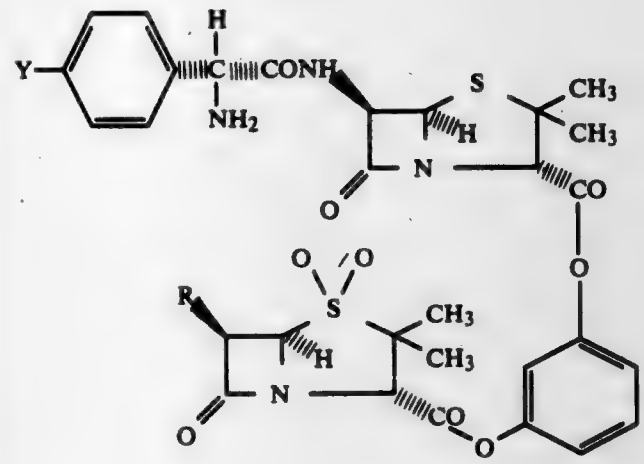
Donald K. Pirie, Uncasville, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Sep. 18, 1981, Ser. No. 303,456

Int. Cl.[3] **A61K** *31/43;* **C07D** *499/00, 499/68*

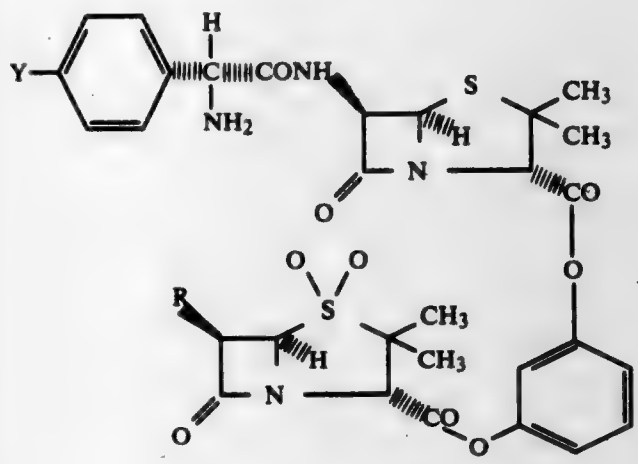
U.S. Cl. 424—271 **21 Claims**

1. A compound of the formula



wherein Y is hydrogen or hydroxy and R is hydrogen or hydroxymethyl, or a pharmaceutically-acceptable acid addition salt thereof.

6. A method of treating bacterial infections in a mammal which comprises treating said mammal with an antibacterially effective quantity of a compound of the formula



wherein Y is hydrogen or hydroxy and R is hydrogen or hydroxymethyl, or a pharmaceutically-acceptable acid addition salt thereof.

4,351,841

PHARMACEUTICAL PREPARATION AND METHOD OF TREATMENT

Friedrich-Johannes Kämmerer, Hochheim am Main, and Rudolf Schleyerbach, Hofheim am Taunus, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

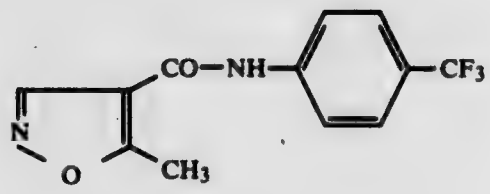
Division of Ser. No. 103,551, Dec. 13, 1979. This application Mar. 3, 1981, Ser. No. 239,986

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1978, 2854439

Int. Cl.[3] A61K *31/42*

U.S. Cl. 424—272 2 Claims

1. A method for the treatment of inflammation, rheumatism or multiple sclerosis which comprises administering to a patient suffering therefrom an effective amount of 5-methylisoxazole-4-carboxylic acid-4-trifluoromethylanilide of the formula



4,351,842

N-CYCLOPROPYLISOINDOLINES

Richard J. Coles, Uxbridge, England, assignor to Glaxo Laboratories Limited, Greenford, England

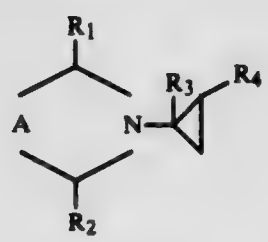
Continuation of Ser. No. 897,047, Apr. 17, 1978, abandoned. This application Jul. 21, 1980, Ser. No. 170,929

Claims priority, application United Kingdom, Apr. 26, 1977, 17305/77

Int. Cl.[3] A61K *31/40;* C07D *209/44, 209/46, 209/60*

U.S. Cl. 424—274 34 Claims

1. A compound of the formula:



in which

A is a benzene ring or a carbocyclic aromatic group consisting of two benzene rings, the group A being linked to the nitrogen containing ring at two adjacent carbon atoms and the benzene ring or each benzene ring is unsubstituted or substituted by one or more substituents which may be the same or different, and are selected from the group consisting of alkyl containing 1–6 carbon atoms, phenyl, halogen, hydroxy, alkanoyloxy containing 1–6 carbon atoms in the alkanoyl portion or benzoyloxy, alkoxy containing 1–6 carbon atoms and a methylene dioxy group (O—CH_2—O—) which is connected to two adjacent positions in a ring;

R_1 and R_2 which may be the same or different, each represent hydrogen; an alkyl group which contains 1–6 carbon atoms and which is unsubstituted or substituted by hydroxy, alkanoyloxy containing 1–6 carbon atoms in the alkanoyl portion or benzoyloxy, alkoxy containing 1–6 carbon atoms, halogen, an alkylamino or dialkylamino group wherein the alkyl contains 1–6 carbon atoms; a hydroxycarbonyl or an alkoxycarbonyl group wherein the alkoxy contains 1–6 carbon atoms; and one of

R_3 and R_4 represents hydrogen, an alkyl group which contains 1–6 carbon atoms, and which is unsubstituted or substituted by hydroxy, alkanoyloxy containing 1–6 carbon atoms in the alkanoyl portion or benzoyloxy, alkoxy containing 1–6 carbon atoms, halogen, an alkylamino or dialkylamino group wherein the alkyl contains 1–6 carbon atoms; hydroxy, alkoxy, hydroxycarbonyl or alkoxycarbonyl group wherein each alkoxy contains 1–6 carbon atoms and the other R_3 and R_4 represents hydrogen, or a non-toxic physiologically acceptable salt, or hydrate thereof.

34. A method of treatment of a patient suffering from depression which comprises administering to the patient an effective amount of a compound as claimed in claim 1.

4,351,843

ANTIDIABETIC PYRROLECARBOXYLIC ACIDS

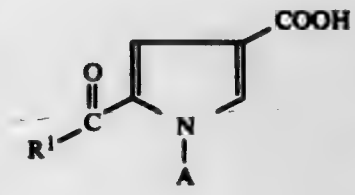
Gerald F. Holland, Old Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.

Division of Ser. No. 128,119, Mar. 7, 1980, Pat. No. 4,282,242. This application Apr. 23, 1981, Ser. No. 256,933

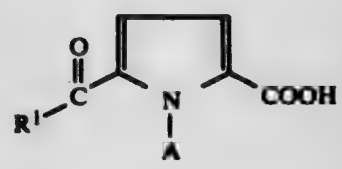
Int. Cl.[3] A61K *31/40*

U.S. Cl. 424—274 13 Claims

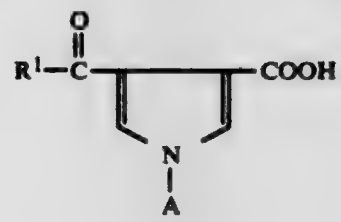
1. A method of lowering the level of blood glucose in a hyperglycemic mammal which comprises administering to said hyperglycemic mammal a compound selected from the group consisting of pyrrole carboxylic acids of structures IV, V and VI:



(IV)



(V)



(VI)

wherein A is selected from the group consisting of hydrogen and (C_1-C_2)alkyl and R^1 is selected from the group consisting of benzyl; cyclohexyl; phenyl; phenyl monosubstituted in the 2-, 3-, or 4-position with methyl, phenyl or chloro; 2,5-dichlorophenyl and 3,5-dimethoxyphenyl;

and the pharmaceutically-acceptable salts thereof, in an amount sufficient to lower said blood glucose level in said hyperglycemic mammal.

4,351,844

HYPOCHOLESTEROLEMIC HYDROGENATION PRODUCTS AND PROCESS OF PREPARATION

Arthur A. Patchett, Westfield, and Chan-Hwa Kuo, South Plainfield, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

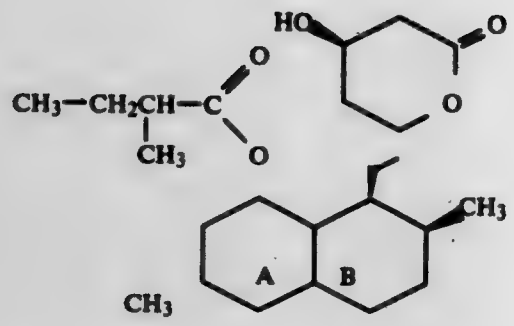
Continuation-in-part of Ser. No. 118,050, Feb. 4, 1980, abandoned. This application Dec. 1, 1980, Ser. No. 210,826

Int. Cl.[3] A61K *31/335, 31/215;* C07C *69/74, 59/11*

U.S. Cl. 424—279 10 Claims

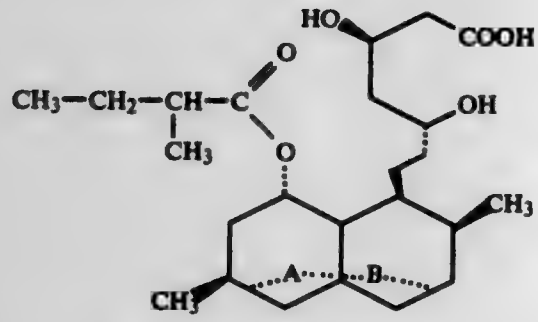
1. A compound of the formula:

II



and its free acid form

III



in which the dotted lines indicated as A and B represent optional double bonds, not more than one of A and B being a double bond, and, where neither A nor B is a double bond, the perhydronaphthyl ring is in the 4aα, 8aβ configuration, together with the pharmaceutically acceptable salts of said free acid and the lower alkyl and substituted lower alkyl esters of said free acid in which said substituent is phenyl, dimethylamino or acetylamino.

9. A method of treating hypercholesterolemia which comprises the administration to a patient in need of such treatment of an effective antihypercholesterolemic amount of a compound of formula II or III of claim 1.

10. An antihypercholesterolemic pharmaceutical composition comprising a pharmaceutical carrier and an antihypocholesterolemic effective amount of a compound of formula II or III of claim 1.

4,351,845

METHOD OF INCREASING FEED EFFICIENCY IN SWINE

Jesse E. Shively, Terre Haute, Ind., assignor to Pfizer Inc., New York, N.Y.

Filed Mar. 12, 1981, Ser. No. 243,105
Int. Cl.[3] A61K *31/35*
U.S. Cl. 424—283 4 Claims

1. A method of increasing the rate of growth and the utilization of feed in swine comprising orally administering to a pig weighing at least about 35 kg during the grower and finishes phases of the growth cycle an effective amount of lasalocid or a physiologically acceptable ester or salt thereof.

4,351,846

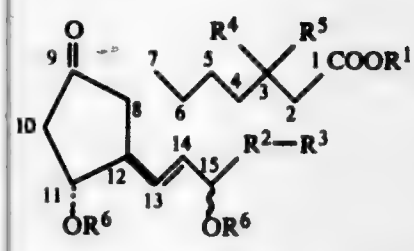
3-HYDROXY AND 3-OXO-PROSTAGLANDIN ANALOGUES

Kimiichiro Matsumoto; Hajimu Miyake, and Hisashi Suga, all of Takatsuki, Japan, assignors to Ono Pharmaceutical Co., Ltd., Osaka, Japan

Filed May 8, 1981, Ser. No. 262,209
Claims priority, application Japan, May 12, 1980, 55-061728
Int. Cl.[3] C07C *177/00;* A61K *31/557*
U.S. Cl. 424—305 22 Claims

1. A prostaglandin analogue of the formula:

IV



(wherein R^1 represents a hydrogen atom or an alkyl group containing from 1 to 12 carbon atoms, R^2 represents a single bond or an alkylene group containing from 1 to 5 carbon atoms, R^3 represents a hydrogen atom, an alkyl or alkoxy group containing from 1 to 8 carbon atoms, a cycloalkyl or cycloalkyloxy group containing from 4 to 7 carbon atoms and being unsubstituted or substituted by at least one alkyl group containing from 1 to 8 carbon atoms, or a phenyl or phenoxy group unsubstituted or substituted by at least one halogen atom, trifluoromethyl group or alkyl group containing from 1 to 4 carbon atoms, one of R^4 and R^5 represents a hydrogen atom and the other represents a hydroxy group or R^4 and R^5 together represent an oxo group, R^6 represents a hydrogen atom or a hydroxy-protecting group which may be removed under mild acidic conditions, the double bond between the carbon atoms in positions 13 and 14 is in trans configuration, the wavy line attached to the carbon atom in position 15 represents α- or β-configuration or a mixture thereof and, when one of R^4 and R^5 represents a hydrogen atom and the other represent a hydroxy group, the configuration of the carbon atom in position 3 is R or S or a mixture thereof, provided that, when R^2 represents a single bond, R^3 does not represent an alkoxy group, a cycloalkyloxy group or a phenoxy group) or when R^6 represents a hydrogen atom, a cyclodextrin clathrate thereof or, when R^1 and R^6 represent hydrogen atoms, a non-toxic salt thereof.

4,351,847

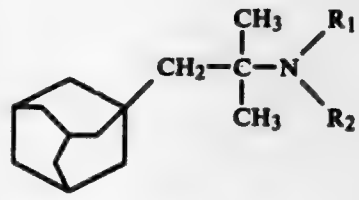
ANTIVIRAL ALPHA, ALPHA-DIALKYL ADAMANTYLETHYLAMINES

Ronald C. Griffith, Pittsford, and Clyde R. Kinsolving, Fairport, both of N.Y., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed Jun. 26, 1981, Ser. No. 277,777
Int. Cl.[3] A61K *31/13*
U.S. Cl. 424—325 6 Claims

1. A method for treating herpes II virus in a warm-blooded animal comprising administering to the animal in need of said treatment an effective amount for treating the herpes II virus of a composition comprising (i) a compound of the formula I or its acid salt:

(I)



wherein R_1 and R_2 are selected from the class consisting of H and $-CH_3$ and (ii) at least one pharmaceutically acceptable carrier, wherein the compound is 0.01 to 95% by weight of the composition.

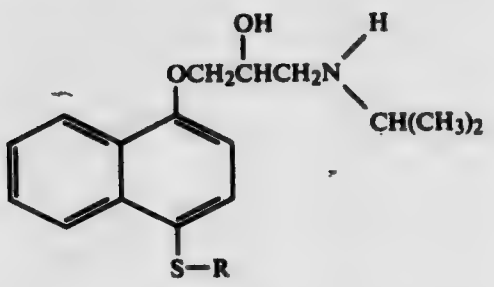
4,351,848

1-((1-METHYLETHYL)AMINO)-3-(((4-ALKYLTHIO)1-NAPHTHALENYL)OXY)-2-PROPANOL

Thomas Walle, Charleston, S.C., assignor to Drug Science Foundation, Charleston, S.C.

Filed Mar. 16, 1978, Ser. No. 887,371
Int. Cl.[3] A01N *33/02*; C07C *93/06*
U.S. Cl. 424—330 6 Claims

1. A compound of the formula:



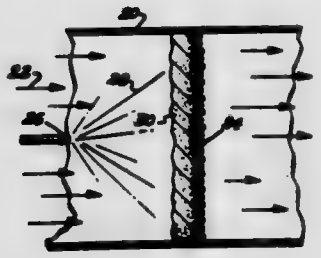
wherein R represents a lower alkyl having from 1 to about 3 carbon atoms; and the pharmaceutically-acceptable salts thereof.

4,351,849

FORAMINOUS MAT PRODUCTS

Reginald E. Meade, Stillwater, Minn., assignor to DEC International, Madison, Wis.

Continuation of Ser. No. 55,626, Jul. 13, 1970, abandoned, which is a continuation-in-part of Ser. No. 850,294, Jul. 1, 1969, abandoned, which is a division of Ser. No. 553,101, May 26, 1966, Pat. No. 3,520,066. This application Jan. 29, 1976, Ser. No. 653,549
Int. Cl.[3] A23C *1/05*
U.S. Cl. 426—61 33 Claims



1. A highly porous mat of agglomerated particles collected on a foraminous member by spraying a mixture of liquid and solid materials into a stream of a drying gas which is flowed through the foraminous collecting member comprising:

a multiplicity of microscopic spheroidal particles which are initially deposited on the foraminous collecting member and are rigidly bonded together at their points of contact to form an initial bed extending substantially over the entire surface of the foraminous collecting member, having upper and lower surfaces, and a multiplicity of communicating pores and channels extending between said upper and lower surfaces and through which substantially all of said drying gas continues to flow,

said initial bed acting as a filter medium to subsequently remove air entrained particles from said drying gas which removed particles are rigidly bonded at their points of contact with each other and the particles forming said initial bed to provide a porous mat having a thickness of several inches corresponding to the combined thickness of a multiplicity of said particles, and

said resultant mat characterized by said bonded particles having a moisture content substantially less than at the time they are deposited on the foraminous collecting member or filtered from said drying gas and by having a void fraction value greater than 0.50.

4,351,850

PROCESS OF PRODUCING A BATTER-COATED ONION PRODUCT

Robert M. Costamagna; Denis W. Mori, and Allen R. Bardett, all of Gilroy, Calif., assignors to McCormick & Company, Incorporated, Hunt Valley, Md.

Filed Oct. 10, 1979, Ser. No. 83,314
Int. Cl.[3] A23L *1/214*
U.S. Cl. 426—302 3 Claims

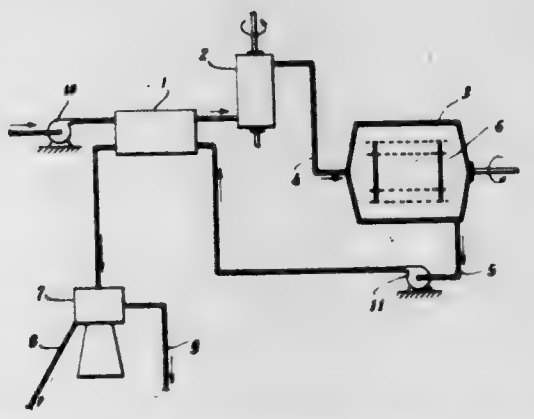
1. A process for producing an onion food product comprising: slicing onion bulbs transversely to form slabs exhibiting concentric rings of onion scales; cutting each slab into pieces having a thickness dimension equal to the thickness of the slab, a width dimension and a length dimension greater than the width dimension by cutting along planes which are perpendicular to the plane of the slab and which are perpendicular to each other, the width and length dimensions being such that most of the pieces include a plurality of curved lengths of onion scales in side-by-side relationship; separating the onion pieces into their individual scales thereby forming nuggets; feeding the onion nuggets onto the upper surface of a generally horizontal elongated surface provided with longitudinal grooves, the surface being constructed of low-friction non-stick material and the surface being vibrated horizontally in the directions of the grooves to convey the nuggets longitudinally of the grooves and simultaneously to cause the nuggets to spread out laterally and longitudinally of the grooves so as to form discrete unagglomerated nuggets; discharging the discrete, unagglomerated nuggets to a batter-coating operation whereby the entire surface of each nugget becomes coated with batter.

4,351,851

METHOD FOR FREEZE-STABILIZING WINE

Hans M. Riese, Lund, Sweden, assignor to Alfa-Laval Inc., Poughkeepsie, N.Y.

Filed Aug. 11, 1980, Ser. No. 177,138
Int. Cl.[3] C12H *1/00*
U.S. Cl. 426—524 6 Claims



1. A method for freeze-stabilizing wine, which comprises chilling the wine to a first temperature at which ice crystals are formed in the wine but while the wine is still pumpable, continuously conveying the chilled wine to a residence tank and there forming tartrate crystals in the wine, agitating the wine in said tank in order to maintain a homogeneous suspension of ice crystals and tartrate crystals in the wine, continuously passing the wine and the suspension of ice and tartrate crystals from said tank through a heating zone, heating and the suspension in said zone to a second temperature at which the ice crystals melt while retaining the tartrate crystals, and removing said tartrate crystals from the wine.

4,351,852

LOW CALORIE CAKE BATTER OR MIX

Charles E. Rule, Lakewood; Cecilia Gilmore, Strongsville, and Eugene J. Stefanski, Garfield Heights, all of Ohio, assignors to SCM Corporation, New York, N.Y.

Filed Jul. 21, 1980, Ser. No. 170,609
Int. Cl.[3] A21D *10/00*
U.S. Cl. 426—554 9 Claims

1. A substantially fat-free, defined as added fat, chemically leavened cake batter or mix, of the type which normally contains a substantial amount of shortening, as distinguished from a sponge cake, comprising cake making essential ingredients, consisting essentially of flour, sugar and eggs, intimately blended with mono- and diglyceride emulsifier, in effective amounts to obtain good volume, grain and texture, the diglyceride being present in the weight proportions of about 38–48%, based on emulsifier weight and a triglyceride content less than the mono- and diglyceride contents combined, the ratio of diglyceride to monoglyceride being about 5:1 to about 1.5:1.

4,351,853

METHOD FOR PRODUCING PROSTHETIC DENTAL APPLIANCES BY PHOTOPOLYMERIZING A SHAPEABLE MASS

Peter Jochum, Hechendorf, and Oswald Gasser, Seefeld, both of Fed. Rep. of Germany, assignors to Espe Fabrik Parmazeutischer Präparate G.m.b.H., Seefeld, Fed. Rep. of Germany

PCT No. PCT/DE81/00014, § 371 Date Sep. 11, 1981, § 102(e) Date Sep. 11, 1981, PCT Pub. No. WO81/01959, PCT Pub. Date Jul. 23, 1981
PCT Filed Jan. 15, 1981, Ser. No. 302,412
Claims priority, application Fed. Rep. of Germany, Jan. 17, 1980, 3001616
Int. Cl.[3] C08F *2/46*
U.S. Cl. 427—2 9 Claims

1. Method for production of prosthetic dental appliances by photopolymerizing of a deformable mass, comprising ethylenically unsaturated polymerizable monomer compounds and as photoinitiators, 1,2-diketones, as well as possibly fillers, dyes and inhibitors, characterized in that the mass containing a bicyclo-[2.2.1]-heptane-dione-2,3 compound as 1,2-diketone is polymerized by irradiation and then in the obtained prosthetic dental appliance the photoinitiator is bleached out through further irradiation.

4,351,854

METHOD OF PROTECTING DEVICES FOR GALVANIZING METAL PRODUCTS

Jacques Pelerin, Angleur, Belgium, assignor to Centre de Recherches Metallurgiques-Centrum voor Research in de Metallurgie, Brussels, Belgium

Filed Nov. 18, 1980, Ser. No. 208,032
Claims priority, application Belgium, Nov. 21, 1979, 880195
Int. Cl.[3] C23C *1/02*
U.S. Cl. 427—34 16 Claims

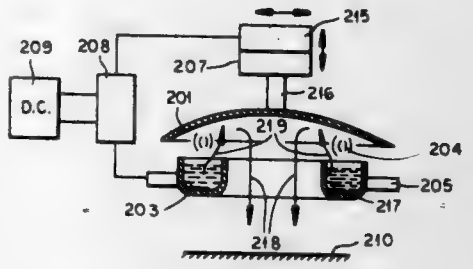
1. In a process for the galvanization of metal products, a method of protecting a device which comes into contact with zinc during galvanization, the method comprising depositing an intermediate layer of at least one metal selected from the group consisting of nickel and aluminum on the device and depositing on the intermediate layer a surface layer comprising at least one constituent selected from the group consisting of the oxides of Mg, Ca, Sr, Ba, Ti, Zr, Cr, W, Fe, Co, Ni, Zn, Cd, B, Al, Si, Ge, Sn, and Pb, the zirconates of Mg, Ca, Sr, and Ba, serpentine, the amphiboles, and silicon carbide.

4,351,855

NONCRUCIBLE METHOD OF AND APPARATUS FOR THE VAPOR DEPOSITION OF MATERIAL UPON A SUBSTRATE USING VOLTAIC ARC IN VACUUM

Eduard Pinkhasov, Forest Hills, N.Y.

Filed Feb. 24, 1981, Ser. No. 237,670
Int. Cl.[3] C23C *13/00, 13/12*
U.S. Cl. 427—37 7 Claims



1. A method of depositing a material upon a substrate, comprising the steps of:

forming a pool of material in a molten state;

striking an arc at least in part between said pool and at least one electrode spaced from said pool, thereby vaporizing material from said pool;

disposing a substrate in spaced relationship with said arc and in the path of vapor of material formed from said pool to deposit said material from a vapor state on said substrate; and

intermittently dipping said electrode into said pool to form a coating of said material on said electrode and vaporizing the coating of said material on said electrode with said arc to form said material in the vapor state.

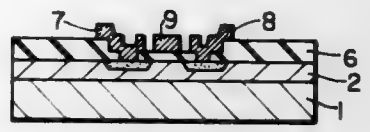
5. An apparatus for depositing material upon a substrate, comprising means for holding a pool of molten material to be deposited on said substrate, an electrode spacedly juxtaposed with said pool, a source of electric current connected between said electrode and said pool for striking an arc therebetween, thereby vaporizing material from said pool, and means for positioning a substrate in spaced relationship to said arc whereby vapor of said material is deposited on said substrate, said container being an upwardly open annular crucible and said electrode being a spherical segment disposed above said crucible and striking a traveling arc with said pool.

4,351,856

SEMICONDUCTOR DEVICE AND METHOD OF MANUFACTURING THE SAME

Makoto Matsui, Kunitachi; Yasuhiro Shiraki, Hino; Yoshifumi Katayama, Tokorozawa; Toshihisa Tsukada, Sekimachi, and Eiichi Maruyama, Kodaira, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 18, 1980, Ser. No. 170,185
Claims priority, application Japan, Jul. 20, 1979, 54-91566
Int. Cl.[3] B05D *3/06, 5/12;* B32B *17/06*
U.S. Cl. 427—38 8 Claims



1. A method of manufacturing a semiconductor device comprising the steps of mounting an amorphous or polycrystalline substrate in a vacuum chamber, and evaporating a polycrystalline silicon film onto said substrate under conditions that the pressure during the evaporation is below 1×10^{-8} Torr and that a partial pressure of oxygen during the evaporation is below 1×10^{-9} Torr, and forming at least one semiconductor device employing said polycrystalline silicon film.

4,351,857

NEW SURFACE IN CELLULOSIC FIBERS BY USE OF RADIOFREQUENCY PLASMA OF AMMONIA

Truman L. Ward, and Ruth R. Benerito, both of New Orleans, La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Aug. 19, 1981, Ser. No. 294,095
Int. Cl.[3] B05D *3/06*
U.S. Cl. 427—40 7 Claims

1. A process for producing a polymeric-type film in the surface of cellulosic fibers which process comprises:

irradiating cellulosic fibers in the colored area of a radiofrequency plasma of ammonia in a reactor designed so that the ammonia is admitted into the reactor area between electrodes and at such a rate so that all of the ammonia molecules have been activated to plasma.

4,351,858

PROCESS FOR THE MANUFACTURE OF SUBSTANTIALLY PORE-FREE SHAPED POLYCRYSTALLINE ARTICLES BY ISOSTATIC HOT-PRESSING

Klaus Hunold, Kempten; Klaus Reinmuth, Durach; Alfred Lipp, Bad Worishofen; Johannes Napholcz, Kempten, and Peter Arnold, Sulzberg, all of Fed. Rep. of Germany, assignors to Elektroschmelzwerk kempten GmbH, Munich, Fed. Rep. of Germany

Filed Feb. 25, 1981, Ser. No. 238,106
Claims priority, application Fed. Rep. of Germany, Mar. 11, 1980, 3009240
Int. Cl.[3] B05D *3/02*
U.S. Cl. 427—193 12 Claims

1. In a process for the manufacture of substantially pore-free shaped polycrystalline articles from heat-resistant articles having open pores in a vacuum-sealed casing of vitreous material by means of isostatic hot-pressing in a high pressure autoclave using an inert gas as pressure-transfer medium, the improvement which comprises applying a first layer comprising a material selected from the group consisting of organic materials that can be decomposed or melted at temperatures of up to about 400° C. under normal pressure, heat-resistant materials that are compressible to at least half their volume, or combinations thereof to the heat-resistant articles; applying a second layer comprising a vitreous or ceramic-like material over said first layer to form an encased article; thermally treating the encased article until the second layer is fused or sintered to form the vacuum sealed casing; and isostatically hot-pressing the vacuum sealed encased article until a substantially pore-free shaped polycrystalline article is formed.

4,351,859

PROCESS FOR ENAMELING THE INSIDE SURFACE OF HOLLOW VESSELS

Ferdinand Hartmann, Vienna, Austria, assignor to Austria Email Aktiengesellschaft, Vienna, Austria

Filed Apr. 1, 1980, Ser. No. 136,250
Claims priority, application Austria, Apr. 2, 1979, 2422/79; Apr. 12, 1979, 2754/79; Jun. 18, 1979, 4280/79
Int. Cl.[3] B05D *7/22*
U.S. Cl. 427—232 5 Claims

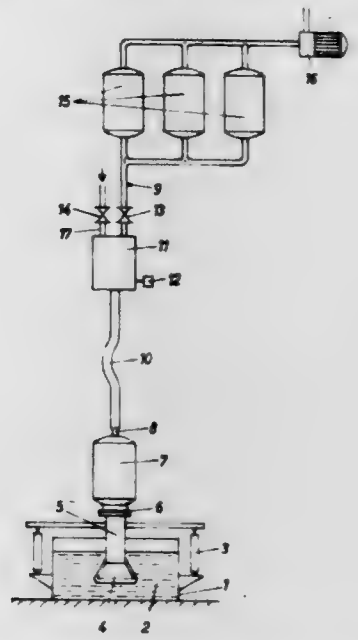
1. A process of enameling the inside surface of hollow vessels comprising:

connecting to one end of the vessel means for establishing a negative pressure within the vessel;

connecting to the other end of the vessel means for charging the interior of the vessel with slip;

establishing fluid communication between said means for establishing and the interior of the vessel, while blocking fluid communication between said means for charging and the interior of the vessel so that a negative pressure is established within the vessel thereby evacuating substantially all of the air from the vessel whereby air is removed from surface pores and cracks of the vessel;

establishing fluid communication between said means for establishing and the interior of the vessel after air has been



removed from the vessel so that slip flows suddenly into the hollow vessel and completely fills the same, the slip being degasified during introduction into the vessel and filling the surface pores and cracks of the vessel; and

removing excess slip from the hollow vessel.

4,351,860

POLYARYL ETHER SULFONE SEMIPERMEABLE MEMBRANE AND PROCESS FOR PRODUCING SAME

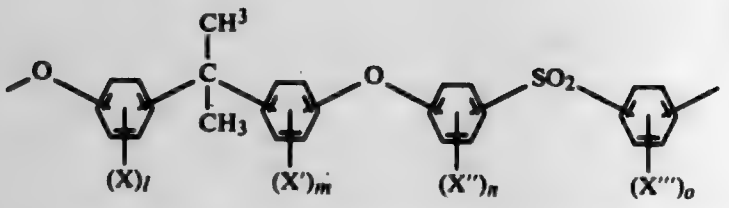
Koichi Yoshida, Fuji; Fusakazu Hayano, Chigasaki, and Yoshiro Ii, Fuji, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Apr. 24, 1981, Ser. No. 257,010
Claims priority, application Japan, May 2, 1978, 53-52919
Int. Cl.[3] B05D *5/00;* B01D *39/6;* B32B *3/26, 27/06*
U.S. Cl. 427—246 8 Claims

1. A process for producing a polyaryl ether sulfone semipermeable membrane having pores of a diameter increasing progressively and continuously from first and second major opposite surface layers of the membrane to the center portion thereof, which center portion is located approximately equidistant from the first and second major opposite surface layers, and the membrane is comprised of a single continuous polymer phase; the diameter of pores present on or in the immediate proximity of the first and second major opposite surface layers being such that the percentage rejection of dextran molecules having an average molecular weight of 10,000 is not greater than 95%, the percentage rejection of dextran molecules having an average molecular weight of 70,000 is in the range of from 5% to 95% and the percentage rejection of dextran molecules having an average molecular weight of 500,000 is at least 5%, and; the average diameter of pores present in said center portion being in the range of from 0.05 to 10 microns;

which process comprises the steps of:

dissolving a polyaryl ether sulfone in a mixed solution comprised of (1) a mixed solvent of (a) an organic polar solvent capable of dissolving the polyaryl ether sulfone and (b) 5 to 50% by weight, based on the weight of the organic polar solvent, of a liquid miscible with the organic polar solvent but incapable of dissolving the polyaryl ether sulfone and (2) 0.5 to 10% by volume, based on the volume of the mixed solvent of an aqueous electrolyte solution, thereby forming a dope of the polyaryl ether sulfone; said polyaryl ether sulfone being comprised of recurring units represented by the general formula (I):



(I)

wherein X, X', X'' and X''', which may be identical to or different from each other, are non-dissociative substituents, and l, m, n and o, which may be identical to or different from each other, are integers of from 0 to 4;

extruding the polyaryl ether sulfone dope through a circular or linear slit or a nozzle to obtain an extrudate in the form of a hollow fiber or a flat film, and; then,

introducing the extrudate into a bath of a coagulating liquid, while a coagulating liquid is forced into the extrudate in the case where the extrudate is in the hollow fiber form, said coagulating liquid being at least one liquid selected from the group consisting of water, methanol, ethanol, ethylene glycol, glycerol, propylene glycol, ethylene diamine and formic acid, whereby both sides of the wall of the hollow fiber or the flat film are brought into contact with the coagulating liquid, thereby removing substantially all the mixed solvent from the hollow fiber or flat film to obtain the membrane.

4,351,861

DEPOSITION OF COATINGS FROM VAPORIZED REACTANTS

Vern A. Henery, Plum Borough, Pa., assignor to PPG Industries Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 74,581, Sep. 12, 1979, which is a division of Ser. No. 836,177, Sep. 23, 1977, Pat. No. 4,182,783.
This application May 18, 1981, Ser. No. 264,520
Int. Cl.³ C23C *11/00, 13/12*
U.S. Cl. 427—255.1 **7 Claims**

1. In a method for coating a substrate with a film by deposition from a vaporous reactant composition comprising the steps of:

fluidizing a mass of particulate solid reactant with a gas at a first temperature substantially below the reaction, vaporization or decomposition temperature of the reactant;

drawing a volume of fluidizing gas and suspended particulate solid reactant from the fluidized mass as a particulate reactant-gas composition;

mixing the withdrawn volume of fluidizing gas and suspended particulate reactant with an additional volume of gas which is at a second temperature, also below the decomposition temperature for the reactant to dilute the particulate reactant-gas composition;

heating the diluted particulate reactant-gas composition to a temperature above the vaporization temperature of the reactant; and

conveying the heated reactant-gas composition into contact with the substrate to be coated;

the improvement which comprises maintaining the substrate at a temperature below said reaction temperature but sufficient to cause the reactant in the composition to deposit a film thereon.

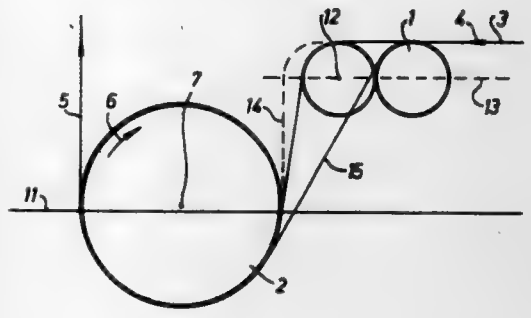
4,351,862

CONTINUOUS HOT-DIP COATING OF METAL STRIP

Paul Cosse, Bellaire, and Jacques Pelerin, Angleur, both of Belgium, assignors to Centre de Recherches Metallurgiques-Centrum Voor Research In De Metallurgie, Brussels, Belgium

Filed Dec. 2, 1980, Ser. No. 212,261
Claims priority, application Luxembourg, Dec. 5, 1979, 81955
Int. Cl.³ C23C *1/02*
U.S. Cl. 427—300 **11 Claims**

1. In a method of continuous hot-dip coating of a two sided metal strip in molten metal wherein an outer side is afforded a full-coating and an inner side is afforded a coating infinitely variable from no-coating up to a full-coating; wherein the metal strip is brought into substantially non-slipping contact on its inner side with a masking roll cylinder rotating about a substantially horizontal axis and which is at least partially immersed in a bath of the molten metal, by introducing the strip into the bath of molten metal, passing the strip around the masking roll so that the inner side of the strip is in contact with a portion of the outer cylindrical surface of the masking roll and then terminating the contact and removing the strip from the molten metal, the outer side of the strip being in contact with the molten metal during the entire passage around the masking roll; and wherein the metal strip is guided by an auxiliary guide roll prior to entry into the molten metal bath, said auxilliary guide roll having an axis parallel to and above the axis of the masking roll; the improvements comprising:



affording a masking roll cylinder whose outer surface consists essentially of a material which is non-wettable by the molten metal; and

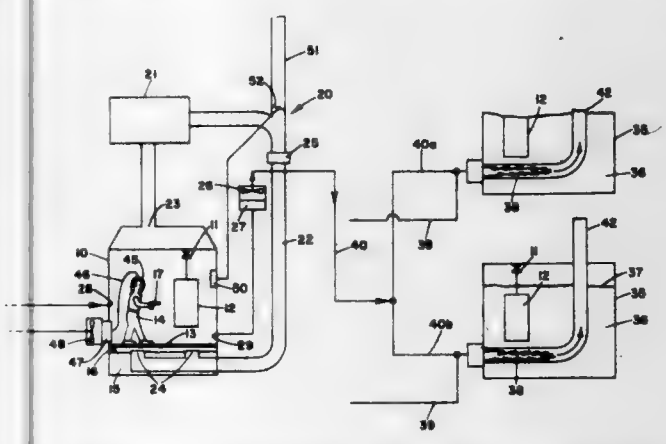
modifying the positions of the point at which the inner side first contacts the surface of the masking roll and the point at which the inner side terminates its contact with the masking roll, thereby permitting varying the exposure of the inner side to the molten metal from substantially no exposure resulting in substantially no-coating up to substantially full exposure resulting in a full-coating.

4,351,863

PAINT SPRAYING ASSEMBLY

Keith G. Roesner, Kewanee, Ill., assignor to Deere & Company, Moline, Ill.

Division of Ser. No. 65,446, Aug. 10, 1979, Pat. No. 4,266,504.
This application Nov. 4, 1980, Ser. No. 203,861
Int. Cl.³ B05D *1/02*
U.S. Cl. 427—421 **10 Claims**



1. A method of maintaining safe painting conditions in a paint spraying booth for a human spraying articles therein and for reducing the contaminants moving through an exhaust therefrom, comprising the steps of: recirculating air through the booth at a relatively high volumetric rate as articles are being sprayed by a human; removing substantially all the paint particles from the air leaving the booth as it is recirculated; drawing off a quantity of the recirculating air at a comparatively low volumetric rate and replacing it with clean air sufficient to maintain the recirculating air at a safe LEL, but at a

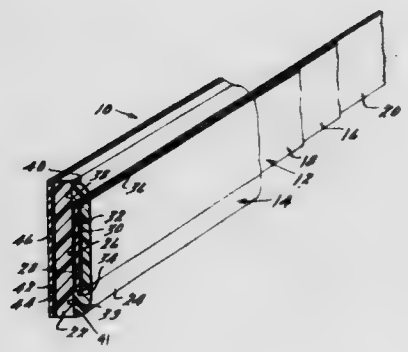
solvent contaminant level unsatisfactory for breathing; burning the solvent from the drawn air prior to its moving through the exhaust; and placing a pressurized hood supplying clean air to the external respiratory orifices of the human in the booth so as to protect the human from paint contaminate in the recirculated air.

4,351,864

MOLDING HAVING ENCAPSULATED METALLIZED FILM

Dimitrios Giannakidis, Athens, Greece, assignor to The Standard Products Company, Cleveland, Ohio

Filed May 6, 1981, Ser. No. 261,041
Int. Cl.³ B60R *13/00;* B32B *15/08*
U.S. Cl. 428—31 **10 Claims**



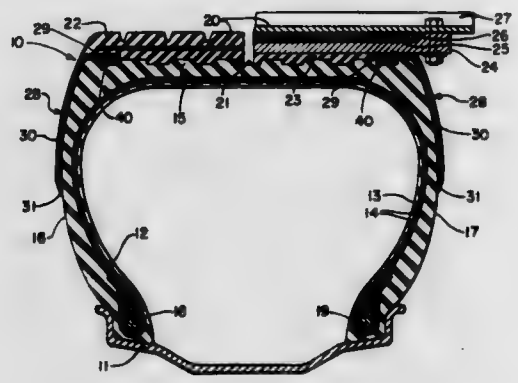
1. An automotive molding having:
a body comprising an ionomer resin;
a cover layer comprising an ionomer resin; and
a film coated on both sides with metal and sandwiched between and bonded to said body and said cover layer.

4,351,865

TIRE SIDEWALL PROTECTOR

George T. Watts, North Canton, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 15,492, Feb. 26, 1979, Pat. No. 4,310,041. This application Aug. 28, 1981, Ser. No. 297,396
Int. Cl.³ B60C *27/20;* B32B *1/08;* F16L *57/00*
U.S. Cl. 428—36 **8 Claims**



1. An annular resilient shield for protection of a sidewall of a tire of the type having a tire carcass, a removable traction element overlying the carcass, and a pair of sidewalls which at least partially surround the carcass, the shield being formed of reinforced elastomeric material and being of generally L-shaped radial cross-sectional configuration, the shield including

a cylindrical portion adapted to be secured between the traction element and the tire carcass, the cylindrical portion being of a manufactured inside diameter less than the outside diameter of the inflated tire carcass over which it is to be fitted;

means carried by the cylindrical portion for forming a mechanical interlock with at least one of the two tire components between which it is adapted to be secured;

an annular sidewall-covering portion extending generally radially inwardly from one axial end of the cylindrical portion, the annular portion adapted to at least cover and engage the adjacent upper sidewall portion of the tire, the annular portion, when viewed in radial cross-section of the undeformed shield, being arcuate and of a smaller radius of curvature than the tire carcass and adjacent sidewall portion when these are viewed in radial cross-section of the inflated tire to which the shield is adapted;

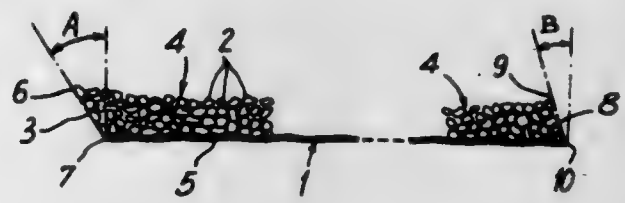
the annular portion including at least two layers of elastomer-coated cord fabric, the cords of adjacent layers of which extend at oppositely directed angles relative to the circumferential direction of the shield, the angle of each of the cords of the undeformed shield near the junction of the annular portion and the cylindrical portion being from about 30 to about 65 degrees relative to the circumferential direction of the shield.

4,351,866

FLEXIBLE STRIP FACING MATERIAL AND METHOD AND APPARATUS FOR CUTTING THE MATERIAL

Paul Mennesson, 32, Avenue du Bois, 78620 L'Etang-la-Ville, and Hugues Moreau, 103, Avenue Felix Faure, 75015 Paris, both of France

Filed Jun. 26, 1980, Ser. No. 163,627
Claims priority, application France, Jul. 5, 1979, 79 17447
Int. Cl.³ B31F *5/00;* B32B *3/10, 5/16*
U.S. Cl. 428—60 **5 Claims**



1. A strip facing material having a visible face and an opposed nonvisible face and adapted to be applied to the walls of buildings, comprising a flexible and extensible perforated support, and a covering of particles of hard material bound together and secured to one of the faces of the flexible support by a flexible transparent macromolecular binder with a low water retention, characterised in that one of the two longitudinal edges of the strip facing material is cut in a first bevel in such a manner that, along this edge, the visible face of the facing material overhangs in relation to the nonvisible face, and in that its other longitudinal edge is cut in a second bevel in such a manner that, along this other edge, the visible face of the facing material is set back in relation to the nonvisible face, the angle of the second bevel measured from a line perpendicular to said faces being less than that of the first bevel.

4,351,867

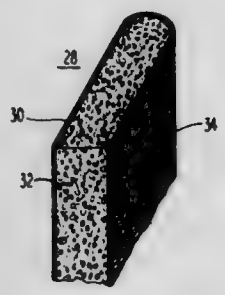
THERMAL INSULATION COMPOSITE OF CELLULAR CEMENTITIOUS MATERIAL

Robert F. Mulvey, Malvern, and Charles E. Crepeau, Centre Square, both of Pa., assignors to General Electric Co., Philadelphia, Pa.

Filed Mar. 26, 1981, Ser. No. 247,669
Int. Cl.³ B32B *3/00, 3/26*
U.S. Cl. 428—70 **14 Claims**

1. A thermally insulating composite comprising:
(a) a low-density cellular cementitious material containing fibrous material; and
(b) at least one structural surface element of cellular cementitious material formed from, integrally with, and upon at least part of the low-density material, the structural sur-

face element containing fibrous material and having a higher density than the low-density material.



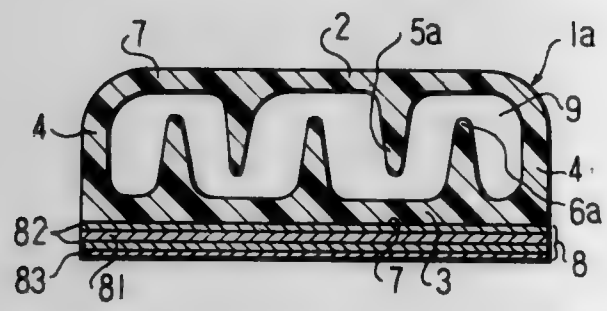
12. The thermally insulating composite of claim 1 further comprising a permeable enclosure element upon the higher density structural surface.

4,351,868

MOLDING

Takashi Otani, Nagoya, Japan, assignor to Toyoda Gosei Co., Ltd., Aichi, Japan

Filed Apr. 15, 1981, Ser. No. 254,267
Int. Cl.³ B32B *3/12*
U.S. Cl. 428—120 **5 Claims**



1. Molding made of high polymer material, formed as a hollow molding body from extrusion for installation on a substance by adhesive means on a rear surface of said molding body, characterized in that plural pieces of a projecting pillar are arranged to be projecting from an upper wall and a bottom wall of a hollow portion of said molding body in the longitudinal direction, each of said pillars being of insufficient length to communicate with said opposed wall and pillar to define a continuous transverse hollow portion when said molding is free from a pushing force applied to said molding, and each of said pillars being sufficiently long to make contact with opposed wall and pillar when a pushing force is applied to said molding to substantially evenly apply said force to said adhesive.

4,351,869

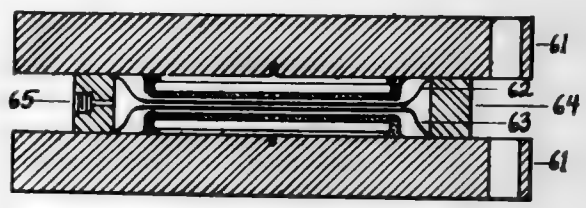
SINTERED POLYMER MOLDINGS AND COMPOSITES HAVING ALTERED CROSS SECTION(S): FLUID COMPACTING AND SINTERING PROCESS AND APPARATUS FOR MAKING SAME

Charles N. Cresap, Silver Mountain, Millerton, N.Y. 12546

Continuation-in-part of Ser. No. 901,625, May 1, 1978, abandoned, which is a continuation-in-part of Ser. No. 585,347, Jun. 9, 1975, abandoned, which is a continuation-in-part of Ser. No. 173,601, Aug. 20, 1971, abandoned, which is a continuation-in-part of Ser. No. 676,674, Oct. 16, 1967, abandoned. This application Jun. 17, 1980, Ser. No. 160,184
Int. Cl.³ B32B *3/04, 27/00;* B29C *17/06;* B29D *9/04*
U.S. Cl. 428—121 **20 Claims**

1. A molded sintered polymer high density article comprising a body having a first portion and at least one second portion with altered configuration, each said first and second portions being uniformly void-free, said first portion having a different density than said second portion and each portion having a density above the threshold for liquid porosity.

11. A process for molding a sintered polymer article having at least one cross-sectional variation from subdivided sinterable polymer material comprising the steps of agglomerating a



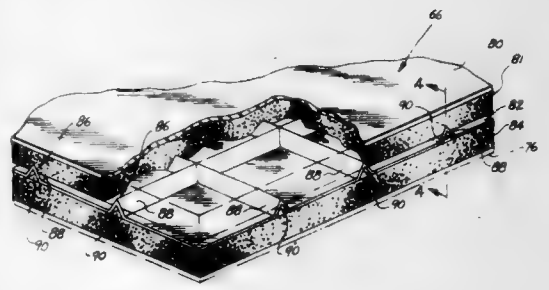
supply of sinterable polymer in the porous state, heating said sinterable material to sintering temperature while simultaneously applying fluid under pressure to compact and irreversibly density said sinterable material to void-free condition to produce an entirely non-porous to liquid sintered article with desired cross-sectional variation.

4,351,870

MAXIMIZED STRENGTH-TO-WEIGHT RATIO PANEL MATERIAL

Edgar English, Jr., 45125 Redwood Ave., Lancaster, Calif. 93534

Filed Oct. 22, 1979, Ser. No. 86,748
Int. Cl.³ B32B *3/02, 7/04;* E04B *2/00*
U.S. Cl. 428—174 **19 Claims**



1. A decorative and structural panel having a large magnitude strength-to-weight ratio comprising: a plurality of laminated panelling material layers firmly bonded together at a plurality of area-spaced, area-disseminated, multi-point interface attachment and junction locations, said plurality of layers of laminated panelling material including at least one convoluted, weight-reducing, strength-increasing, stiffening layer of structural, formed material having a plurality of convolutions extending transversely from a surface plane thereof, said convolutions having outer contact surface portions in contact with corresponding surface portions of a next adjacent layer, at least said convoluted layer being made of a formable thin sheet of high strength material, said laminated panel further including at least one low-density, high specific volume, expanded, compressible, foam filler material layer containing and surrounding a plurality of hollow cells, said foam filler material having a maximized volume-to-weight ratio and carrying a fire extinguishing agent comprising a halogenated compound in particulate form, said halogenated compound being decomposible when subjected to the heat of combustion and adapted to produce, as a result of decomposition, a fire extinguishing gas.

4,351,871
DECORATING TEXTILE FABRICS

Edward J. Lewis, Underwood, Badger La., Hipperholme, Near Halifax, and Ian D. Rattee, 1 St. Catherine's Walk, Leeds LS8 1SB, both of England

Continuation of Ser. No. 966,071, Dec. 4, 1978, abandoned, which is a continuation-in-part of Ser. No. 547,484, Feb. 6, 1975, abandoned, Ser. No. 729,037, Oct. 4, 1976, abandoned, Ser. No. 778,157, Mar. 16, 1977, abandoned, and Ser. No. 851,717, Nov. 15, 1977, abandoned. This application Feb. 23, 1981, Ser. No. 236,722

Claims priority, application United Kingdom, Feb. 15, 1974, 7100/74; Mar. 4, 1974, 9653/74; Jun. 21, 1974, 27778/74; Jun. 30, 1974, 33618/74; Oct. 9, 1974, 41473/75

Int. Cl.³ B32B *3/00*

U.S. Cl. 428—195 35 Claims

11. A fabric decoration material comprising a flexible substrate and at least one layer transferable from the substrate to a fabric to be decorated, wherein the transferable layer has a thickness at most 20 microns, contains at least one colorant material selected from the class consisting of dyes and pigments, contains at least one additive which serves to assist the fixation of the colorant material in the fabric under the effect of heat and is in the form of a film which is based on a thermoplastic polymeric material having elastomeric characteristics which may be caused under the effect of heat and pressure to adhere more strongly to a fabric to be decorated than to the flexible substrate, and which when transferred to a fabric under the action of heat and pressure and subsequently heated to a temperature below that at which the fabric may be damaged undergoes physical breakdown from its film form into discrete particles in a discontinuous distribution whereby to form a discontinuous decoration on the fabric surface.

4,351,872
UNIDIRECTIONAL STRETCH MESH LAMINATE AND METHOD

Janet V. Brosseau, and Jon A. Brosseau, both of Los Altos, Calif., assignors to Harvey G. Lowhurst, Atherton, Calif.

Division of Ser. No. 827,229, Aug. 24, 1977, Pat. No. 4,146,021. This application Jan. 8, 1979, Ser. No. 2,066

Int. Cl.³ B32B *27/14*

U.S. Cl. 428—198 4 Claims



1. A substantially flat sheet of material comprising:
a first layer of two-way stretch material; and
at least one pad of unidirectional stretch mesh bonded to said first layer at a selected location thereof and having selected angular orientation to restrict said selected location to a one-way stretch in a direction determined by said selected orientation.

4,351,873
DOUBLE FACED INSULATING BOARD

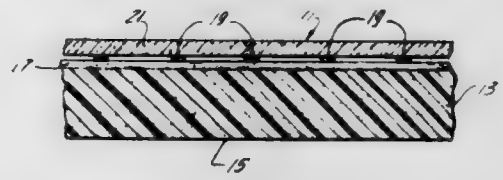
Duane A. Davis, Plainfield, N.J., assignor to GAF Corporation, New York, N.Y.

Filed Jul. 31, 1980, Ser. No. 174,045

Int. Cl.³ B32B *3/26, 5/18, 7/14*

U.S. Cl. 428—198 10 Claims

1. Thermal insulating board comprising:
(a) a rigid closed cell foam core, the cells of which contain fluorocarbon gas;
(b) a first continuous facing continuously adhered to a face of said core, said first facing being non-porous; and
(c) a second continuous facing intermittently adhered to and spaced from said first facing by areas of water resistant



adhesive, said second facing being non-absorbent and said areas of adhesive being spaced so as to allow unrestricted lateral venting of gases from between the facings to the edges of the board.

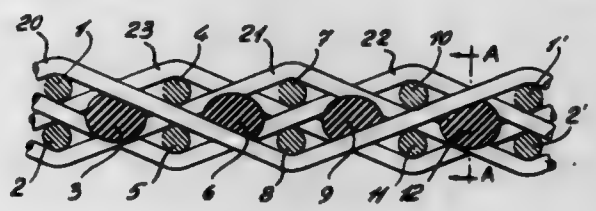
4,351,874
LOW PERMEABILITY DRYER FABRIC

Garry E. Kirby, Marietta, Ga., assignor to JWI, Ltd., Montreal, Canada

Filed Mar. 24, 1980, Ser. No. 133,433

Int. Cl.³ D03D *3/00*

U.S. Cl. 428—229 15 Claims



1. A dryer fabric comprising a plurality of interwoven monofilament plastic polymeric warp and weft strands, at least some of said weft strands are stuffer strands formed of a material softened under the influence of controlled heat during a heat-setting treatment, said stuffer strands being selected from a deformable material which is more absorbtive of said controlled heat than are the remainder of said strands, so that said deformable material softens preferentially whereby said material becomes narrower at crossings of adjacent warp strands and correspondingly bulges between alternate warp strands to reduce the spaces in the interstitial areas formed by surrounding strands thereby lowering the permeability of said fabric, said deformable material retaining its solid property during deformation thereof.

4,351,875
HETEROPOLYMER ACRYLIC LATICES AND TEXTILES TREATED THEREWITH

Charles T. Arkens, Hatfield, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 149,090, May 12, 1980, abandoned, which is a division of Ser. No. 945,733, Sep. 25, 1978, Pat. No. 4,277,384. This application Oct. 21, 1981, Ser. No. 313,399

Int. Cl.³ B32B *27/04*

U.S. Cl. 428—290 4 Claims

1. An article of manufacture comprising a sheet of release material having a dried film of the composition of an acrylic latex, the particles of which comprise about 30–60% by weight of a polymeric core and about 70–40% by weight of a polymeric shell; wherein said core is formed by emulsion copolymerization of a first monomer composition consisting essentially of:
70–95% by weight of a C_1–C_8 alkyl acrylate;
0–15% by weight of a C_1–C_8 alkyl methacrylate,
4–10% by weight of acrylamide or methacrylamide,
0–0.3% by weight of allyl methacrylate, and
0–2% by weight of itaconic acid;
and wherein said shell is formed on said core by emulsion

polymerization of a second monomer composition in the presence of said core, said second monomer composition comprising essentially of:

40–70% by weight of a C_1–C_8 alkyl acrylate,

20–50% by weight of a C_1–C_8 alkyl methacrylate,

2–10% by weight of N-methylol acrylamide, N-methylol methacrylamide, or a mixture of acrylamide and N-methylolacrylamide, or a mixture of methacrylamide and N-methylol methacrylamide, and

0–2% by weight of itaconic acid.

4,351,876

LAMINATE FILMS AND SHEETS OF CROSSLINKED POLYETHYLENE RESINS

Shuhei Doi; Tsutomu Isaka, both of Yokkaichi, and Shinichiro Iida, Mie, all of Japan, assignors to Mitsubishi Petrochemical Company Limited, Japan

Filed Dec. 17, 1980, Ser. No. 217,460

Claims priority, application Japan, Dec. 27, 1979, 54/173641

Int. Cl.³ B32B *27/06, 27/28, 15/08, 27/08*

U.S. Cl. 428—349 **8 Claims**



1. A laminate film or sheet comprising a plurality of laminate layers selected from films or sheets of resins, foils or sheets of metals, paper, cellophane, fabric, glass in sheet or fibrous form and asbestos, in which at least one surface layer among said plurality of laminate layers comprises a heat sealable crosslinked polyethylene copolymer formed by copolymerizing ethylene monomer and an ethylenically unsaturated silane compound so that said copolymer contains about 0.001 to 5 percent by weight of said silane compound and then crosslinking the resultant copolymer by contact with moisture in the presence of a silanol condensation catalyst, whereby the crosslinked copolymer has a gel content of 5 percent or more.

4,351,877

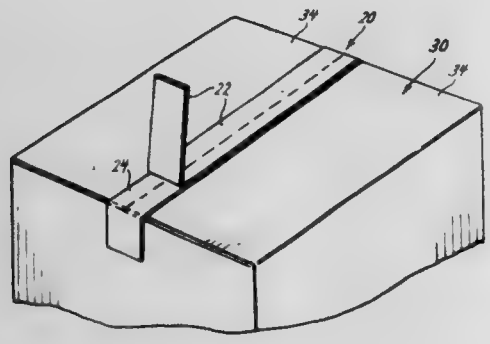
MULTIPLE LAYERED LAMINATED STRIPPABLE TAPE

Robert E. Williams, 9104 Rott Rd., St. Louis, Mo. 63127

Filed Oct. 6, 1980, Ser. No. 194,568

Int. Cl.³ C09J *7/02;* **B32B** *23/08, 27/10*

U.S. Cl. 428—350 **5 Claims**



1. A thin strippable tape for such use as sealing carton tops together, comprising a thin film of strong plastic material to provide a strength layer, a weak, thin carrier layer united on one side to the strength layer, and a water-soluble adhesive film on the opposite side of the carrier layer; the strength layer of plastic material being non-rigid, flexible and floppy, and hence unable to be dispensed lengthwise from a tape dispenser, and the plastic being unable to hold a coating of water-soluble adhesive, the carrier layer being of thin paper-like material continuous and unbroken laterally across the strength layer, the carrier material being capable of holding a water-soluble adhesive, and also of being united to the plastic film, the plastic film and the carrier layer when thus united having sufficient stiffness to enable the resulting tape to be fed lengthwise from a tape dispenser; and the adhesive film being on the exposed face of the carrier opposite the plastic film, the strength layer being of plastic material strong enough to be stripped from an object such as carton flaps to which the tape has been applied, and the carrier layer being of material so weak that when the tape is stripped from the object upon which it is adhered, any parts of the carrier remaining on the object are readily breakable to permit the carton flaps to be easily separated.

4,351,878

COATING FOR GASIFIABLE CARBON-GRAPHITE FIBERS

Jan Harper-Tervet, Palmdale; Warren L. Dowler, Sierra Madre; Shiao-Ping S. Yen, Altadena, and William A. Mueller, Glendale, all of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics & Space Administration, Washington, D.C.

Filed Jun. 30, 1980, Ser. No. 164,585

Int. Cl.³ B32B *19/02*

U.S. Cl. 428—367 **13 Claims**

1. A composition of matter comprising:

graphite fibers having a diameter from 1 to 30 microns directly coated with 0.1 to 10% by weight of a thin, uniform, firmly adherent, film of a linear organic polymer containing anion groups selected from sulfonic, carboxyl or phosphonic which are cross-linked by cations of a polyvalent metal having a work function below 4.2 eV to form macrosalt cross-links with said groups on adjacent polymer chains; said metal being present in an amount of 0.05 to 20% by weight; and

said coated fibers being dispersed and embedded in a binder resin in an amount of 30 to 70% by weight.

4,351,879

POROUS ACRYLIC SYNTHETIC FIBERS COMPRISING CELLULOSE ACETATE IN AN ACRYLIC MATRIX

Yoshikazu Kondo; Toshihiro Yamamoto, and Takaji Yamamoto, all of Hofu, Japan, assignors to Kanebo, Ltd., Tokyo and Kanebo Synthetic Fibers Ltd., Osaka, both of, Japan

Filed Jun. 6, 1980, Ser. No. 156,993

Claims priority, application Japan, Jun. 18, 1979, 54-77046; Jun. 18, 1979, 54-77049; Oct. 1, 1979, 54-127065; Oct. 1, 1979, 54-127066

Int. Cl.³ B32B *27/02;* **D01F** *8/02, 8/10;* **D02G** *3/00*

U.S. Cl. 428—374 **31 Claims**

1. Porous acrylic synthetic fibers consisting of 2 to 30% by weight of cellulose acetate and 70 to 98% by weight of an acrylic polymer, the cellulose acetate being distributed in the acrylic polymer in an elongated form with the longest dimension thereof being parallel to the fiber axis, said synthetic fibers having substantially no microvoids, but having mainly macrovoids therein, and having a surface area A of voids of no greater than 15 m^2/g, a porosity V of 0.05 to 0.75 cm^3/g, and a V/A ratio of not less than 1/30.

4,351,880

PREVENTION OF ADHESION OF EPOXY RESINS

Shosin Fukui, Toyonaka, and Masayoshi Shinjo, Osaka, both of Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

Division of Ser. No. 126,173, Feb. 29, 1980, abandoned. This application Apr. 8, 1981, Ser. No. 252,146

Claims priority, application Japan, Mar. 1, 1979, 54-24359; Oct. 5, 1979, 54-129046

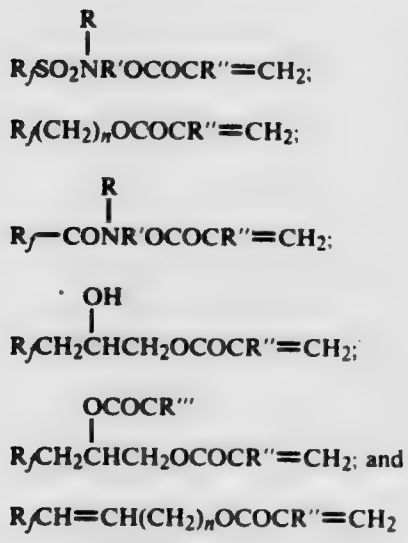
Int. Cl.³ D02G *3/00*

U.S. Cl. 428—378 **17 Claims**

1. A method for coating an electrical product having an electrically conductive lead wire comprising:

coating onto said electrically conductive lead wire an aqueous suspension or an organic solution consisting essen-

tially of a polymer of (a) at least one C_4 to C_{21} perfluoroalkyl group-containing polymerizable compound selected from the group consisting of:



wherein R_f is a C_4 to C_{21} perfluoroalkyl group, R is a hydrogen atom or a C_1 to C_{10} alkyl group, R' is a C_1 to C_{10} alkylene group, R'' is a hydrogen atom or a methyl group, R''' is a C_1 to C_{17} alkyl group and n is an integer of 1 to 10, with or without (b) at least one compound copolymerizable therewith, the content of the component (a) being not less than 40% by weight based on the weight of the polymer and (c) a solvent selected from the group consisting of an organic solvent and water to thereby form a polymer coating on said lead wires;

drying said polymer coating; and

applying an epoxy resin to said article whereby the adhesion of epoxy resin to said polymer coated lead wires is prevented and whereby no material influence is exerted upon the soldering properties of said electrically conductive lead wire.

9. An electrical product formed by the process of claim 1.

4,351,881

RADIATION CURED ACRYLATE COATING METHOD AND COATED PRODUCT

Kazumasa Kamada; Isao Sasaki, and Kenji Kushi, all of Ohtake, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

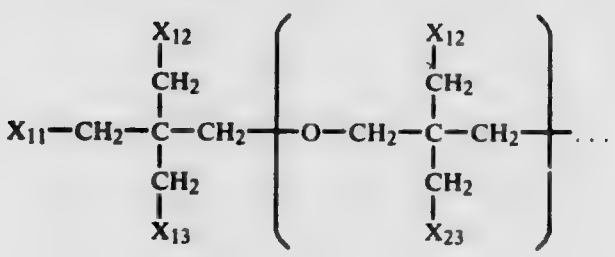
Division of Ser. No. 103,626, Dec. 14, 1979, Pat. No. 4,274,933.
This application Nov. 13, 1980, Ser. No. 206,560
Claims priority, application Japan, Dec. 28, 1978, 53-164683
Int. Cl.³ C08F *2/50, 230/02, 228/04, 216/20*
U.S. Cl. 428—412 **6 Claims**

1. A process of providing a dyeable, cross-linked hardened film exhibiting substantial abrasion resistance, permanent antistaticity and a smooth surface, said process comprising:

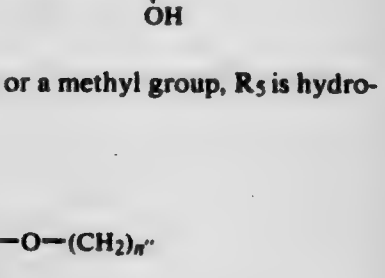
(i) applying the coating composition comprising:

A. from about 5 to about 90 parts by weight of a monomer mixture which consists essentially of:

(1) from about 20 to about 95% by weight of a polypentaerythritol poly(meth) acrylate having at least three (meth)acrylolyloxy groups per molecule and represented by the formula:

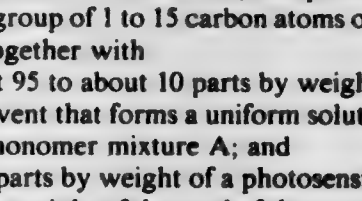


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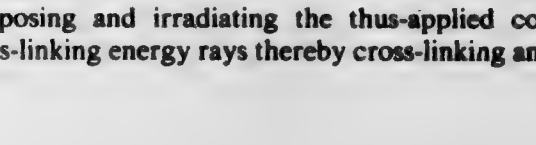
wherein at least 3 of X_{11}, X_{12}, X_{13}, X_{22}, X_{23}, X_{z2}, X_{z3}, and X_{14} are (meth)acryloyloxy groups, and the rest are OH groups and z is an integer of 1 to 5;

(2) from about 1 to about 25% by weight of a monomer represented by the formula:



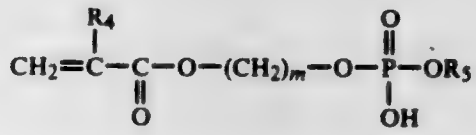
wherein R_1 is hydrogen or a methyl group, R_2 is an alkoxy or (meth)acryloyloxy group of 1 to 5 carbon atoms and n is an integer of 5 to 30;

(3) from about 1 to about 15% by weight of a sulfonic acid-type monomer represented by the formula:

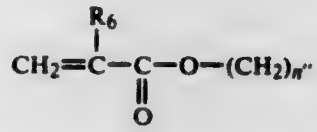


wherein R_3 is hydrogen or a methyl group, Y is a —CONH or —COO group and l, m, n', and r are integers of 0 to 5;

(4) from about 1 to about 20% by weight of a phosphoric acid ester-type monomer represented by the formula:



wherein R_4 is hydrogen or a methyl group, R_5 is hydrogen, or a



group, wherein R_6 is hydrogen or a methyl group and m' and n'' are integers of 1 to 15; and

(5) from about 2 to about 20% by weight of an ethanolamine-type compound represented by the formula:

$$NR_7R_8(CH_2CH_2OH)$$

wherein each of R_7 and R_8 is independently hydrogen, an alkyl group of 1 to 15 carbon atoms or a CH_2CH_2OH group; together with

B. from about 95 to about 10 parts by weight of at least one organic solvent that forms a uniform solution when mixed with said monomer mixture A; and

C. 0.01 to 10 parts by weight of a photosensitizing agent per 100 parts by weight of the total of the monomer mixture A and organic solvent B; to the surface of a synthetic resin article, and

(ii) exposing and irradiating the thus-applied coating to cross-linking energy rays thereby cross-linking and curing

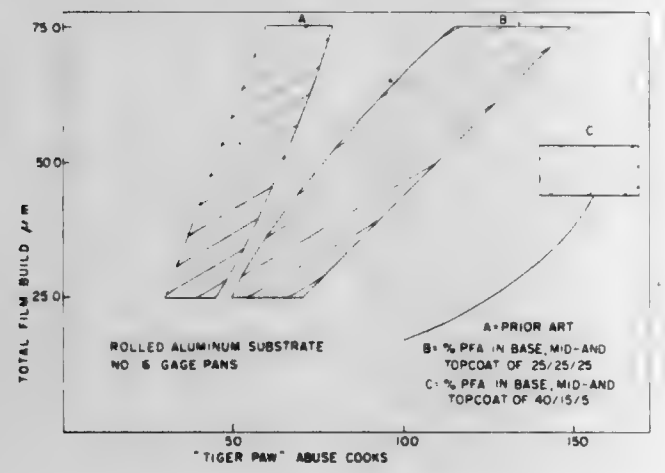
the coating and forming on said article a dyeable, cross-linked hardened film high in abrasion resistance, surface smoothness and cloud prevention, said film having a permanent antistaticity.

4,351,882

ARTICLE COATED WITH FLUOROPOLYMER FINISH WITH IMPROVED DURABILITY

Thomas P. Concannon, Newtown Square, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 13, 1981, Ser. No. 224,684
Int. Cl.³ B32B *27/00, 27/06*
U.S. Cl. 428—422 **17 Claims**



1. An article comprising a substrate having on it multiple coatings, including a basecoat directly on the substrate, which basecoat is overlaid by at least one other coat, and wherein the basecoat is derived from a composition consisting essentially of, by weight:

(a) 15–65% of a particulate polymer of monoethylenically unsaturated hydrocarbon monomers completely substituted with fluorine atoms or a combination of fluorine and chlorine atoms, the polymer having a number average molecular weight of at least 20,000;

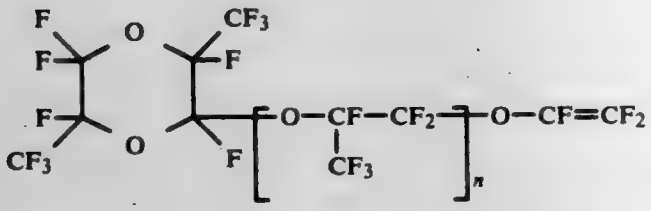
(b) 30–50% of at least one of a particulate copolymer containing

(i) 99.5–92% of tetrafluoroethylene,

(ii) 0.5–8% of at least one perfluorinated vinyl ether having the formula:

$$CF_2{=}CF{-}O{-}R_f$$

in which R_f represents one or more perfluoroalkyl radicals having from 1 to 10 atoms or a particulate perfluroinated ether having the formula:



in which n is zero to 4, and, optionally,

(iii) hexafluoropropylene; and

(c) 0–25% of a polymer having a glass-transition temperature greater than or equal to 130° C. which is also thermally stable at temperatures up to 200° C.;

and wherein the other coats are derived from a composition consisting essentially of (a), (b) and (c), with the concentration of (b) being at least 10% by weight, and also less than or equal to 0.75 times the proportion of (b) in the basecoat composition, and the concentration of (c) being 0–15%.

4,351,883

COMPOSITIONS FOR TREATING ALUMINUM SURFACES FOR TARNISH RESISTANCE

Arnold F. Marcantonio; Paul J. Kress, and John W. Powers, all of Muncie, Ind., assignors to Ball Corporation, Muncie, Ind.

Division of Ser. No. 161,794, Jun. 23, 1980, Pat. No. 4,341,878, which is a continuation of Ser. No. 5,280, Jan. 22, 1979, abandoned. This application Feb. 23, 1981, Ser. No. 237,037
Int. Cl.³ B32B *15/08*
U.S. Cl. 428—450 **16 Claims**

1. A method of treating an aluminum surface to impart tarnish resistance thereto by the steps of contacting said surface with a solution comprising about 0.01 to about 10 weight percent of a water-soluble portion containing about 10 to about 95 weight percent of an alkali metal silicate and about 5 to about 90 weight percent of an organic polymer selected from the group consisting of poly(acrylic-co-acrylate), poly(vinyl alcohol), poly(acrylic acid), poly(acrylamide), poly(maleic anhydride-co-methylvinyl ether), and poly(styrene sulfonic acid), and about 90 to about 99.99 weight percent water and thereafter washing away said solution.

4,351,884

SHAPED ARTICLES FROM POLY(P-METHYLSTYRENE) BLENDS

Arthur B. Robertson, Hillsborough, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Sep. 2, 1980, Ser. No. 183,600
Int. Cl.³ B32B *27/32*
U.S. Cl. 204—159.12 **4 Claims**

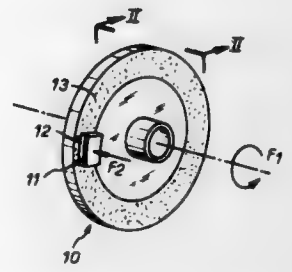
1. Shaped articles of a blend of poly(p-methylstyrene) and between about 0.1 percent and about 10 percent triallyl cyanurate or triallyl isocyanurate thermoformed and irradiated with ionizing radiation between about 5 megarads and about 30 megarads to effect cross-linking to render the shaped article resistant to fatty foods under microwave oven conditions.

4,351,885

METHOD OF IMPROVING FRICTION CONTACT BETWEEN FRICTION ELEMENTS OF A STATIC BRAKE AND IMPROVED FRICTION ELEMENT

Jean-Claude Depoisier, Paris, and Leonce E. R. Rogier, Saint-Denis, both of France, assignors to Societe Anonyme Francaise du Ferodo, Paris, France

Filed Oct. 3, 1979, Ser. No. 81,360
Claims priority, application France, Oct. 3, 1978, 78 28234
Int. Cl.³ B22F *5/00*; F16D *69/00*
U.S. Cl. 428—544 **7 Claims**



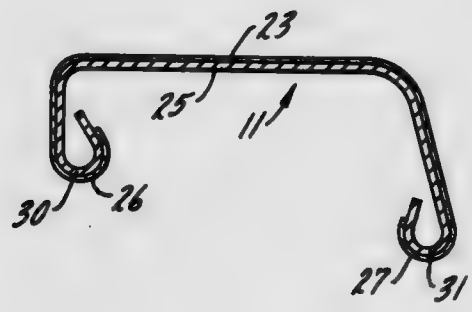
1. A method of providing an improved friction surface on a metallic friction element for use in so-called static braking with an opposed friction element, comprising metal-spraying a metallic substance on a surface of said metallic friction element thereby forming asperities the average roughness Ra of which ranges between 3 and 60 microns, and utilizing said as sprayed metallic substance as a braking surface.

4,351,886

METHOD OF FORMING A LAMINATED STRUCTURAL MEMBER AND MEMBER FORMED THEREBY

Robert K. Howie, Jr., Decatur, Ill., assignor to The Grigoleit Company, Decatur, Ill.

Filed Jul. 11, 1980, Ser. No. 167,420
Int. Cl.[3] B65D 25/28; A47B 95/02
U.S. Cl. 428—591 13 Claims



1. A method of forming a laminated structural member including the steps of:
superimposing a first sheet of metal on a second sheet of metal,
attaching said first sheet of metal and said second sheet of metal to each other along areas spaced from and generally parallel to each other, and
forming at least one bend in said attached sheets of metal between said attached areas with the concave side of said bend being located on the second side sheet of laminate in order to stretch said first sheet of metal through a greater distance than said second sheet of metal is stretched by the forming of the bend.

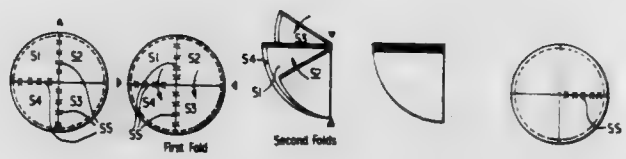
7. A laminated structural member including:
a strengthening core bent to a non-planar cross-section,
the convex side of said bent core being covered by a metal sheet having appearance characteristics and/or finish accepting characteristics more desirable than those of said core,
said metal sheet covering being attached to said core only on opposite sides of said bend and being stretched into conformity with the convex surface of said core.

4,351,887

FOLDABLE METALLIC GAUZE PACK AND SEGMENT

David C. Bishop, London, and Alan E. Heywood, St. Albans, both of England, assignors to Johnson, Matthey & Co., Limited, London, England

Filed Apr. 22, 1980, Ser. No. 143,480
Claims priority, application United Kingdom, May 3, 1979, 7915468
Int. Cl.[3] B32B 3/04
U.S. Cl. 428—594 10 Claims



1. A gauze pack segment for use in an assembly of a foldable gauze pack, the said segment being suitable for locating in a plane with similar segments and in edge to edge contiguous relationship with at least one adjacent segment to form a gauze pack having a predetermined geometric shape, the pack segment comprising a plurality of superposed gauze segments having at least when assembled substantially identical shape and area and held in fixed relationship one with another, in which at least two adjacent segments are hingeably connected, alternate gauze segments being woven from a first metallic material with a gauze segment woven from a second metallic material being interleaved between said alternate gauze segments, each said gauze segment having the form of a sector of a circle.

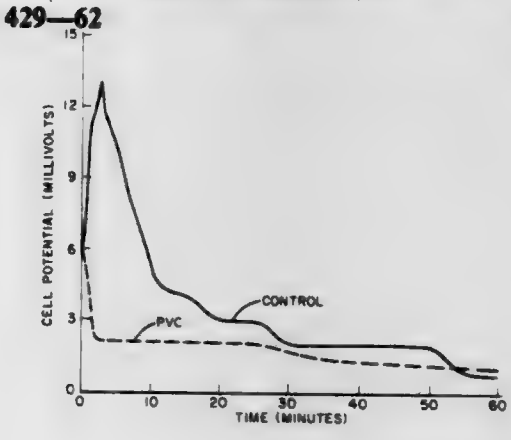
10. A foldable gauze pack having a regular geometric shape and comprising at least two pack segments in which at least two adjacent segments are hingeably connected, comprising a plurality of superposed gauze segments having at least when assembled substantially identical shape and area and held in fixed relationship one with another, alternate gauze segments being woven from a first material with a gauze segment woven from a second material being interleaved between said alternate gauze segments, the said first material comprising an oxidation-resistant stainless steel support material and the second material comprising a getter alloy consisting essentially of gold and palladium.

4,351,888

ELECTROCHEMICAL CELL

Frederick W. Dampier, Waltham, and Risty T. Kalivas, Peabody, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Jul. 30, 1981, Ser. No. 288,612
Int. Cl.[3] H01M 6/14
U.S. Cl. 429—62 10 Claims



1. An electrochemical cell comprising
an oxidizable anode material;
a cathode current collector;
an electrolytic solution, in contact with the anode material and the cathode current collector, comprising a solvent of a reducible liquid cathode material and an electrolyte solute dissolved therein; and
an additive dispersed throughout the electrolytic solution, said additive including material which is substantially insoluble in the electrolytic solution during normal operation of the cell and which becomes soluble in the electrolytic solution at temperatures above the temperature produced by normal operation of the cell whereby current flow through the cell is limited.

4,351,889

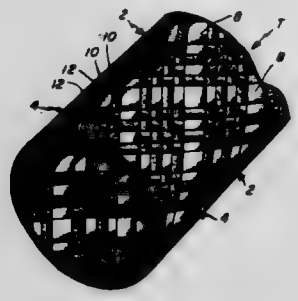
TUBULAR BODIES FOR USE IN A POSITIVE PLATE OF A LEAD-ACID STORAGE BATTERY

Erik G. Sundberg, Newtown Crossing, Pa., assignor to Koehler Manufacturing Company, Marlborough, Mass.

Continuation-in-part of Ser. No. 144,258, Apr. 28, 1980, abandoned. This application Jun. 11, 1981, Ser. No. 272,753
Int. Cl.[3] H01M 2/18
U.S. Cl. 429—141 14 Claims

1. A textured tubular body comprising a latticework of spaced apart tapes selected from the group consisting of a thermoplastic material, unpolymerized phenolic resins, unpolymerized polyesters, unpolymerized epoxy resins, and unpolymerized furan resins, said tapes having reinforcing means included internally therein, the said tapes being interwoven to define interrupted rows of spaces, a foraminous material selected from the group consisting of glass fiber, polyester and mixtures thereof and comprising means for retaining active

material and arranged to fill the spaces in the said rows, said reinforced tapes characterized by the ability to undergo inte-



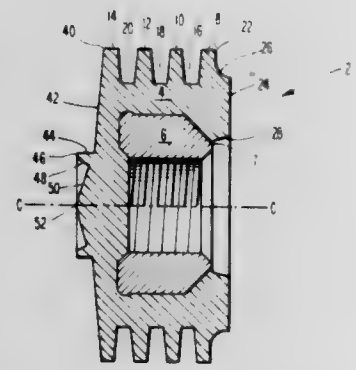
gration with one another in response to externally applied means.

4,351,890

BATTERY CASE HAVING A SIDE TERMINAL MOLDED THEREIN

Terry Oxenreider, Wernersville, Pa., assignor to General Battery Corporation, Reading, Pa.

Filed Jul. 31, 1980, Ser. No. 174,126
Int. Cl.³ H01M *2/06, 2/30*
U.S. Cl. 429—179 **2 Claims**



1. A battery container with a terminal for making the terminal electrical connection with an end element of the battery associated with an upstanding portion of a battery strap through the side wall of the battery container, said battery container side wall having an exterior surface and an interior surface and said terminal molded therein, said terminal comprising;

a unitary body having circumferential lock means wherein said unitary body has a forward face associated with said exterior surface and a rearward portion associated with said interior surface for completing the electrical connection with said end element adjacent to said interior surface;

said rearward portion further comprising a border portion substantially co-planar with said interior surface and a node portion, said node portion further comprising a base recessed from said interior surface and a conical portion extending from said base, and said conical portion extending from said base to a plane substantially co-planar with said interior surface;

whereby the upstanding portion of the battery strap associated with said end element is placed against said interior surface and said upstanding portion is welded to said rearward portion.

4,351,891

LEAD-ACID STORAGE BATTERY PLATE AND METHOD OF MAKING SAME

Charles P. McCartney, Jr., Yorktown, and Ellis G. Wheadon, Anderson, both of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 2, 1981, Ser. No. 250,412
Int. Cl.³ H01M *4/30*
U.S. Cl. 429—225 **2 Claims**



1. In a Pb-acid storage battery electrode including a conductive grid supporting the plates active material and a leady active material embedding said grid such as to form a substantially planar plate defined by two principal faces on opposite sides of the plate, the improvement comprising:

said grid comprising a network of crisscrossing interconnected grid wires defining a plurality of interstitial openings between said grid wires for retaining said active material; and a

plurality of dimples in, and distributed substantially uniformly across, at least one of said faces, said dimples each being located at the approximate center of a said opening to provide a lesser amount of said active material in the center of said opening remote from the grid wires surrounding said opening than is provided in the regions of said plate outboard said dimple and proximate said surrounding grid wires; whereby a plate having improved active material utilization efficiency and capacity is produced.

4,351,892

ALIGNMENT TARGET FOR ELECTRON-BEAM WRITE SYSTEM

T. Grant Davis, Sunnyvale, Calif., assignor to Fairchild Camera & Instrument Corp., Mountain View, Calif.

Filed May 4, 1981, Ser. No. 260,514
Int. Cl.³ H01L *21/312*
U.S. Cl. 430—30 **9 Claims**



1. A method for aligning an electron beam of an electron-beam direct write system with a wafer of semiconductor material, comprising:

(a) forming an alignment target on the wafer by the steps of

(i) forming a layer of silicon oxide on a surface of said wafer;

(ii) forming a layer of silicon nitride on said oxide layer;

(iii) etching an opening in said nitride layer to expose a surface portion of said oxide layer;
(iv) etching said exposed surface portion to form a hole in said oxide layer, said hole being formed such that said oxide layer is undercut beneath said silicon nitride layer such that a cantilevered silicon nitride overhang is formed around the perimeter of said hole; and
(v) depositing a layer of aluminum over said nitride layer;
(b) scanning the surface of the wafer with the electron beam; and
(c) detecting the alignment of the electron beam with the alignment target.

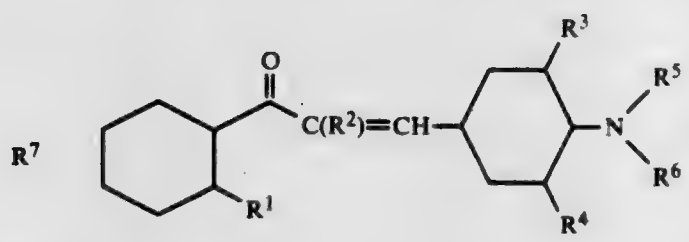
4,351,893

DERIVATIVES OF ARYL KETONES AS VISIBLE SENSITIZERS OF PHOTOPOLYMERIZABLE COMPOSITIONS

Albert G. Anderson, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 31, 1980, Ser. No. 221,887
Int. Cl.³ G03C *1/68*
U.S. Cl. 430—281 **9 Claims**

1. A photopolymerizable composition comprising the components:
(i) at least one nongaseous ethylenically unsaturated compound capable of forming a high molecular weight polymer by photoinitiated addition polymerization;
(ii) at least one 2,4,5-triarylimidazolyl dimer initiator consisting of two 2,4,5-triarylimidazolyl radicals bound together by a single covalent bond; and
(iii) at least one α,β-unsaturated ketone sensitizer having the formula



wherein
R^1 and R^2 are each H, or R^1+R^2 is $—CH_2—$;
R^3 is H, or R^3+R^5 is selected from $—CH_2—_2$, $—CH_2—_3$, and $—CH(CH_3)CH_2C(CH_3)_2—$;
R^4 is H, or R^4+R^6 is selected from $—CH_2—_2$ and $—CH_2—_3$;
R^5 and R^6 are alkyl groups of 1 to 5 carbon atoms, or together are selected from $—CH_2—_4$ and $—CH_2CH_2OCH_2CH_2—$;
R^7, having a total of up to 8 carbon atoms, is selected from trimethylene and tetramethylene groups, unsubstituted, or substituted with 1 to 4 alkyl groups.

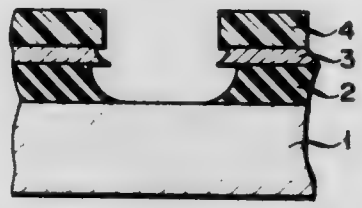
4,351,894

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE USING SILICON CARBIDE MASK

Toshio Yonezawa, Yokosuka; Takashi Ajima, Tokyo; Shunichi Hiraki, Yokohama; Yutaka Koshino, Ohizumi, and Yoshitami Oka, Kawasaki, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Japan

Continuation of Ser. No. 47,216, Jun. 11, 1979, abandoned, which is a continuation of Ser. No. 827,347, Aug. 24, 1977, abandoned. This application May 12, 1981, Ser. No. 262,938
Claims priority, application Japan, Aug. 27, 1976, 51/102430; Oct. 26, 1976, 51/127808; Oct. 26, 1976, 51/127809
Int. Cl.³ H01L *21/314, 21/316*
U.S. Cl. 430—313 **14 Claims**

1. A method of preparing a silicon dioxide film perforated in a prescribed pattern, the film to be used as a mask on the surface of semiconductor material for manufacture of a dimensionally precise semiconductor device, the method comprising:
(a) forming a silicon dioxide film substantially covering the surface of the semiconductor material,
(b) forming a silicon carbide film substantially and adheringly covering said silicon dioxide film,
(c) forming a photoresist mask perforated in the prescribed pattern on said silicon carbide film,
(d) perforating said silicon carbide film in the prescribed



pattern using said photoresist mask, thereby providing a silicon carbide mask for said silicon dioxide film, and
(e) selectively etching said silicon dioxide film using hydrofluoric acid or ammonium fluoride through the perforations having the prescribed pattern in said silicon carbide mask, thereby providing a dimensionally precise silicon dioxide mask for diffusion of an impurity or deposition of an electrode.

4,351,895

DELETION FLUID FOR POSITIVE PRINTING PLATES

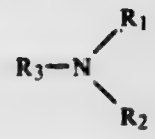
John E. Walls, Annandale, N.J., assignor to American Hoechst Corporation, Somerville, N.J.

Filed Oct. 19, 1981, Ser. No. 312,450
Int. Cl.³ G03C *5/00*
U.S. Cl. 430—331 **10 Claims**

1. A deletion fluid for positive working photographic elements which comprises an aqueous solution containing:
(a) a gum which is soluble both in water and a compound selected from the group consisting of one or more aliphatic alcohols, acetates and ethers; and
(b) at least one compound selected from the group consisting of cyclohexanone, and compounds having the formula:

$$R_1(CH_2CH_2O)_nR_2$$

where
n = 1-10
$R_1 = CH_3O, CH_3(CH_2)_mO$, where m = 1-3
$R_2 = R_1, —OH, CH_3COO—$
(c) a thixotropic agent capable of creating weak hydrogen bonding between itself and the hydroxyl groups of said gum; and
(d) a desensitizing agent selected from the group consisting of morpholine, aniline, chloro-aniline, bromo-aniline, methyl-aniline and compounds having the formula:



where
$R_1 = H, —CH_2CH_2OH, —CH_2CH_3$
$R_2 = R_1$
$R_3 = R_1, (CH_2)_nNH_2 (n = 1-6)$.

4,351,896

MESOIONIC SILVER HALIDE STABILIZER PRECURSOR AND USE IN A HEAT DEVELOPABLE AND HEAT STABILIZABLE PHOTOGRAPHIC SILVER HALIDE MATERIAL AND PROCESS

Henry W. Altland, Rochester, and Daniel D. Shiao, Pittsford, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 215,783, Dec. 12, 1980, abandoned. This application Nov. 9, 1981, Ser. No. 319,566

Int. Cl.³ G03C *5/30*

U.S. Cl. 430—354 **20 Claims**

1. In a heat developable and heat stabilizable photographic silver halide element comprising a support having thereon, in reactive association, in binder:

(a) photographic silver halide,

(b) a photographic silver halide developing agent,

(c) an activating concentration of a thermal base releasing compound,

the improvement comprising

(d) a stabilizing concentration of a mesoionic 1,2,4-triazolium-3-thiolate silver halide stabilizer precursor containing a heat releasable blocking group on the sulfur atom.

4,351,897

COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Kozo Aoki; Nobuo Seto; Yoshiharu Yabuki; Masakazu Morigaki; Nobuo Furutachi, and Kotaro Nakamura, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

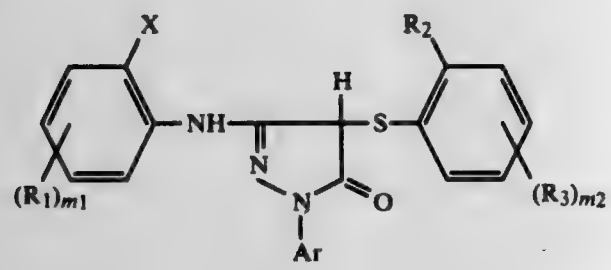
Filed Aug. 11, 1981, Ser. No. 291,886

Claims priority, application Japan, Aug. 12, 1980, 55-110943

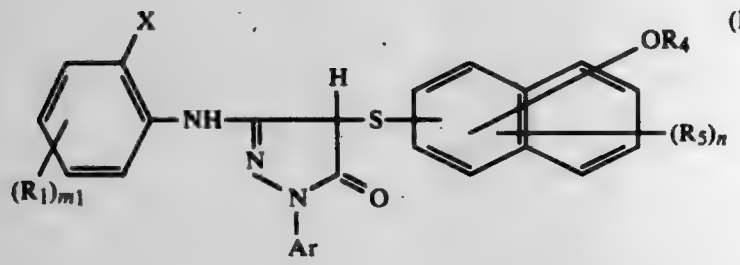
Int. Cl.³ G03C *1/40*

U.S. Cl. 430—555 **22 Claims**

1. A silver halide color photographic light-sensitive material comprising a support having thereon a photographic layer containing at least one coupler represented by formula (I) or (II)



(I)



(II)

wherein Ar represents a phenyl group substituted with at least one substituent selected from the group consisting of a halogen atom, an alkyl group, an alkoxy group, an alkoxycarbonyl group; and a cyano group; X represents a halogen atom or an alkoxy group; R_1 represents a hydrogen atom, a halogen atom, an alkyl group, an alkoxy group, an acylamino group, a sulfonamido group, a sulfamoyl group, a carbamoyl group, a diacylamino group, an alkoxycarbonyl group, an alkoxysulfonyl group, an aryloxysulfonyl group, an alkanesulfonyl group, an arylsulfonyl group, an alkylthio group, an arylthio group, an alkyloxycarbonylamino group, an alkylureido group, an acyl group, a nitro group, a carboxy group, or a trifluoromethyl group; R_2 represents a halogen atom, a hydroxy group, an alkyl group, an alkoxy group, or an aryl group; R_3 represents a hydrogen atom, a halogen atom, a hydroxy group, an alkyl group, an alkoxy group or an aryl group; at least one of R_2 and R_3 represents an alkoxy group; m_1 and m_2 each represents an integer from 1 to 4; R_4 represents an alkyl group or an aryl group; R_5 represents a hydrogen atom, a halogen atom, an alkyl group, an alkoxy group or an aryl group; n represents an integer from 1 to 6; and when m_1, m_2 and n each is 2 or more, each R_1, R_3 and R_5 may be the same or different.

4,351,898

MIXED GRAIN SINGLE EMULSION LAYER PHOTOGRAPHIC MATERIAL

Richard J. Goldberg, 4814 Brandenburg Pl., Tarzana, Calif. 91356

Filed Jan. 3, 1978, Ser. No. 866,272

Int. Cl.³ G03C *1/08, 1/34*

U.S. Cl. 430—571 **3 Claims**

1. A mixed grain photographic emulsion capable of simultaneous exposure in all spectral regions and for use with chemical photographic developers, said emulsion containing metallic silver and silver ions and comprising:

a first emulsion component sensitive to the wavelength, intensity or color of light;

a second emulsion component having a sensitivity to the wavelength, intensity or color of light that is different from said sensitivity to the first emulsion component;

a third emulsion component having a sensitivity to the wavelength, intensity or color of light that is different from said sensitivity of the first and second emulsion components;

an antifoggant in at least two of said emulsion components to provide different levels of antifoggant activity in each emulsion component, said antifoggant comprised of molecules having a portion which is hydrophillic as to metallic silver and silver ions and a portion which is hydrophobic as to said developers, whereby said antifoggant molecules are adsorbed on said metallic silver and silver ions by said hydrophillic portion, and the action of the developers on the metallic silver and silver ions is separately and sequentially inhibited by said hydrophobic portion, thereby permitting each emulsion component to be developed separately and sequentially by said developers.

4,351,899

SEMI-QUANTITATIVE ASSAY OF METABOLIC ACIDS

Oliver E. Owen, 1401 Spring Mill Rd., Gladwyne, Pa. 19035

Continuation-in-part of Ser. No. 925,946, Jul. 19, 1978, Pat. No. 4,254,222. This application Feb. 19, 1981, Ser. No. 235,776

Int. Cl.³ C12Q *1/32*

U.S. Cl. 435—26 **16 Claims**

1. A test indicator for determining the concentration of a metabolic acid selected from the group consisting of beta-hydroxybutyrate and lactic acid in a biological fluid, such indicator comprising:

(a) a first absorbant test surface containing the dried residue resulting from impregnation of the surface with components including

(i) a tetrazolium salt;

(ii) nicotinamide adenine dinucleotide (NAD);

(iii) an electron carrier;

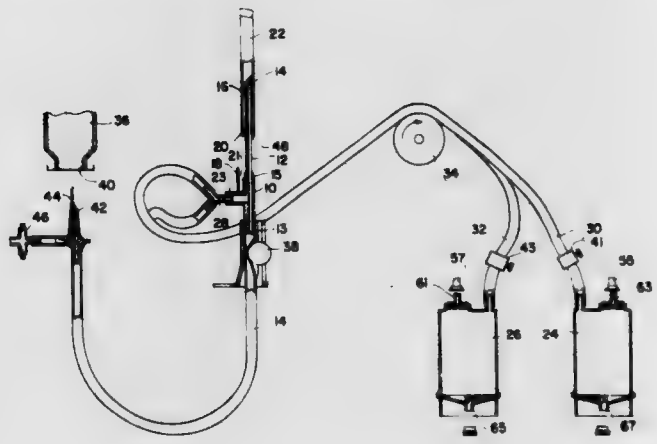
(iv) the enzyme that is a dehydrogenase for the metabolic acid; and

(b) means, distinct from the first absorbant test surface, for buffering the biological fluid, wherein said recited components are present in amounts sufficient to react together to determine the concentration of said acid.

4,351,900
TEST METHOD AND APPARATUS FOR THE PRESENCE OF MICROORGANISMS IN AMPOULE

Jean Lemonnier, Le Vesinet, France, assignor to Millipore Corporation, Bedford, Mass.

Filed Jan. 30, 1981, Ser. No. 229,918
Int. Cl.³ C12Q *1/22*
U.S. Cl. 435—31 8 Claims



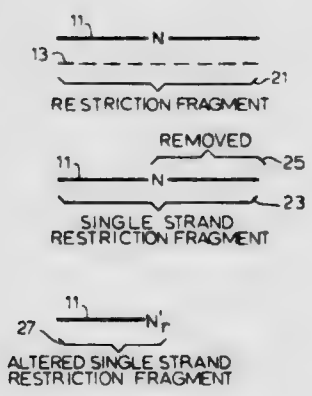
1. Apparatus for testing the sterility of the dry contents of a container which comprises a tubular member, a spout positioned at an intermediate point along said tubular member, a needle having a first channel and a second channel, said first channel being longer than said second channel, said needle being positioned within said tubular member to provide fluid communication through said tubular member through said first channel into said container and said second channel positioned to provide fluid communication from said container to said spout.

4. The process for testing the sterility of the dry contents of a container having a seal which comprises penetrating the seal with a dual channel needle, said needle being positioned within a tubular member having a spout communicating with the interior of said tubular member, passing a liquid capable of dissolving said dry contents through a first channel of said needle to form a solution within said container, passing a sterile rinsing solution through said first channel thereby to force said solution through a second channel of said needle and through said spout, passing said solution from said spout through a filter under sterile conditions, contacting said filter with a growth medium incubating said growth medium and filtered material under sterile conditions and observing the extent of growth on said medium.

4,351,901
METHOD FOR SINGLE NUCLEOTIDE ALTERATION

Chander P. Bahl, El Cerrito, Calif., assignor to Cetus Corporation, Berkeley, Calif.

Filed Mar. 24, 1980, Ser. No. 133,150
Int. Cl.³ C12N *15/00*
U.S. Cl. 435—91 18 Claims



1. A method for altering a nucleotide at a predetermined position in a gene, comprising, isolating single strand fragments of the gene, each having a substantial number of bases on the 5' side of the predetermined position and terminating with the base immediately prior to the predetermined position, attaching a nucleotide corresponding to the desired altered nucleotide to each of the isolated fragments at the predetermined position, providing single strand templates of DNA each corresponding to at least a portion of the strand of the gene complementary to the strand having the isolated fragment, each template having a first part complementary to the isolated fragment and a second part extending at least a substantial number of bases past the predetermined position, annealing the isolated fragments to the first parts of the templates, and producing mismatched double-stranded DNA containing altered nucleotides at the predetermined position by extending the isolated fragments beyond the predetermined position complementary to the second parts of the templates.

4,351,902
PRODUCTION OF 2-KETO-D-GLUCONIC ACID AND HYDROGEN PEROXIDE

Saul L. Neidleman, Oakland; William F. Amon, Jr., Danville, and John Geigert, Clayton, all of Calif., assignors to Cetus Corporation, Berkeley, Calif.

Filed Jun. 16, 1980, Ser. No. 160,122
Int. Cl.³ C12P *7/58, 3/00, 7/26*
U.S. Cl. 435—137 10 Claims

1. A process for producing hydrogen peroxide and 2-keto-D-gluconic acid, comprising, reacting D-glucose in aqueous solution with oxygen and a first enzyme selected from the group consisting of pyranose-2-oxidase, glucose-2-oxidase, and glucose-1-oxidase to catalize oxidation of one of the first and second carbons of the D-glucose and produce an intermediate product comprising D-glucosone or D-glucono-δ-lactone, reacting the intermediate product in aqueous solution with oxygen and a second enzyme selected from the group consisting of pyranose-2-oxidase and glucose-1-oxidase to catalyze oxidation of the other of the first and second carbons of the intermediate product and produce hydrogen peroxide and 2-keto-D-gluconic acid, and recovering the 2-keto-D-gluconic acid.

4,351,903
PROCESS FOR OBTAINING GLUCOSE-ISOMERASE

Nieves LLorente Agudo; Maria F. Elia Miguel; Maria A. Aranguren Escobar; Eulalia Parés Olivet, and José M. Fernández Garvajosa, all of Madrid, Spain, assignors to Compania Espanola de Petroleos, S.A., Spain

Filed Oct. 31, 1980, Ser. No. 202,766
Claims priority, application Spain, Oct. 31, 1979, 485.580
Int. Cl.³ C12N *9/92*
U.S. Cl. 435—234 11 Claims

1. Process for producing glucose-isomerase, which comprises culturing continuously or discontinuously, under aerobic conditions, a strain of the species *Streptomyces griseoflavus* A-40 (NCIB-11542) in a culture medium and recovering glucose-isomerase from said medium.

4,351,904
BLEND OF NORMAL AND MUTANT *STREPTOCOCCUS DIACETILACTIS*

Edmond L. Sing, 3860 Cheviot Pl., Indianapolis, Ind. 46226

Division of Ser. No. 137,243, Apr. 4, 1980, Pat. No. 4,319,928, which is a continuation-in-part of Ser. No. 105,102, Dec. 19, 1979, abandoned. This application Jul. 9, 1981, Ser. No. 281,915
Int. Cl.³ C12N *1/20*; A23C *19/06*
U.S. Cl. 435—253 5 Claims

1. A bacteria-containing composition which comprises:

(a) from 5 to 95 parts of a first strain of *Streptococcus diacetilactis* that produces substantial amounts of diacetyl in a milk culture;

(b) from 5 to 95 parts of a second strain of diacetyl deficient mutant *Streptococcus diacetilactis* selected from the group consisting of mutant strains NRRL B-12070 and NRRL B-12071 that produces essentially no diacetyl in a milk culture; and

(c) additional parts of a suitable carrier for maintenance of viability, and

said composition having over 3×10^9 cells of *Streptococcus diacetilactis* per gram of said composition.

4,351,905

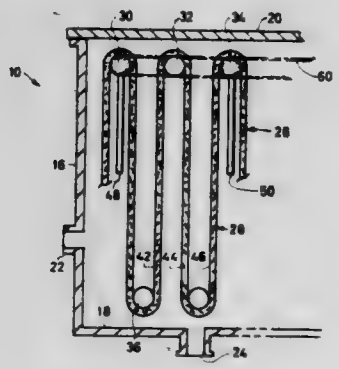
HORIZONTAL FERMENTER

Robert A. Clyde, Box 486, Alfred, N.Y. 14802

Filed Dec. 15, 1980, Ser. No. 216,310

Int. Cl.³ C12M *1/02*

U.S. Cl. 435—316 **16 Claims**



1. A fermenter for allowing the uninhibited growth of an organism suitable for converting a selected nutrient medium into a selected chemical comprising:

a nutrient medium;

a container for containing said nutrient medium, said container including a port for receiving said nutrient medium, exhaust ports for discharging a flow of excess organisms, and CO_2, and a port for removing said selected chemical;

a support substrate, said substrate comprising a multiplicity of fibers for supporting and having attached thereto said selected organisms;

means for supporting said substrate within said container; and

means for physically detaching said organisms from said support substrate.

4,351,906

OPHTHALMIC GLASSES WITH HIGH INDICES OF REFRACTION

Jean E. Boudot; Jean P. Mazeau, both of Avon, and Andre C. Michaud, Nemours, all of France, assignors to Corning Glass Works, Corning, N.Y.

Filed Dec. 7, 1981, Ser. No. 327,771

Claims priority, application France, Jun. 24, 1981, 81 12383

Int. Cl.³ C03C *3/10*

U.S. Cl. 501—74 **3 Claims**

1. A glass suitable for the fabrication of segments or buttons for multifocal ophthalmic lenses having a refractive index between 1.745–1.771, an Abbe number greater than 29 for a refractive index of 1.771 and greater than 31 for a refractive index of 1.745, a softening temperature between approximately 640°–700° C., a coefficient of thermal expansion (25°–300° C.) of approximately $90–98\times10^{-7}$/°C. and satisfactory chemical durability, which consists essentially, espressed in terms of weight percent on the oxide basis, of

SiO_2	28–32.5
Na_2O	2–9
K_2O	0–4
Li_2O	0–1
$K_2O + Na_2O + Li_2O$	4–10.5
BaO	0–22
La_2O_3	0–20
$BaO + La_2O_3$	14–22
PbO	28.5–34
ZnO	0–4
TiO_2	0–9
ZrO_2	2–6.5
Nb_2O_5	0–10
$TiO_2 + Nb_2O_5$	4.5–12
$ZrO_2 + TiO_2 + Nb_2O_5$	6–17

4,351,907

PREPARATION OF ETHYLENE GLYCOL

John F. Knifton, Austin, Tex., assignor to Texaco Inc., White Plains, N.Y.

Division of Ser. No. 219,073, Dec. 22, 1980, Pat. No. 4,315,993. This application Aug. 31, 1981, Ser. No. 297,545

Int. Cl.³ C07C *27/06, 41/01*

U.S. Cl. 518—700 **10 Claims**

1. A process for the preparation of ethylene glycol ethers which comprises reacting carbon monoxide and hydrogen in the presence of a ruthenium compound, a mineral acid and one or more polyhydric phenols at a temperature of about 125° to about 300° C. and at a pressure of about 1000 psi to about 10,000 psi and wherein the said reaction is conducted in the presence of a solvent having the formula:

$$R\ (OCH_2CH_2)_nOR'$$

wherein R is alkyl having 1 to 4 inclusive carbon atoms and R' is selected from the group consisting of hydrogen and alkyl having 1 to 4 inclusive carbon atoms, and n is an integer of from 2 to 4 inclusive.

4,351,908

PROCESS FOR THE MANUFACTURE OF ACETIC ACID, ACETIC ALDEHYDE AND ETHANOL FROM SYNTHESIS GAS

Hans-Joachim Schmidt, Königstein, and Ernst I. Leupold, Neu-Anspach, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 9, 1981, Ser. No. 310,073

Claims priority, application Fed. Rep. of Germany, Oct. 11, 1980, 3038448

Int. Cl.³ C07C *27/06*

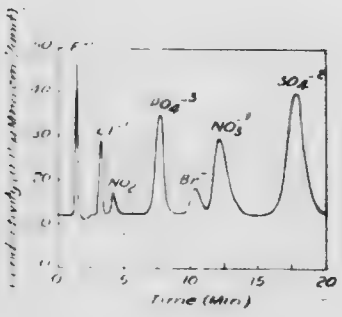
U.S. Cl. 518—716 **2 Claims**

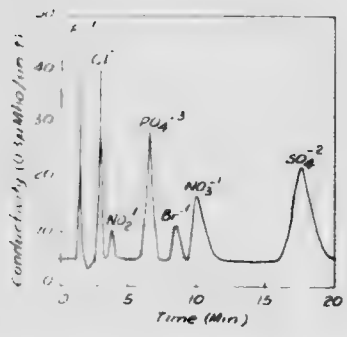
1. A process for the manufacture of acetic acid, acetic aldehyde and ethanol by reaction in the gaseous phase of carbon monoxide and hydrogen in the presence of catalysts containing rhodium and optionally promoters, at elevated temperature and pressure, which comprises raising the temperature in the starting phase of the process, where the catalyst is heated to the working temperature T_R intended for continuous operation, in a range of from T_O to T_R, T_O being 75° to 125° C. below T_R, continuously or in steps of 10° C. at most, in a period of time of from 100 to 1,000 hours; the temperature being raised by 10° C. at most within any 10 hour interval.

4,351,909
HIGH PERFORMANCE ION-EXCHANGE COMPOSITION

Timothy S. Stevens, Midland, Mich., assignor to The Dow Chemical Co., Midland, Mich. and Dionex Corporation, Sunnyvale, Calif.

Continuation of Ser. No. 80,909, Oct. 1, 1979, abandoned. This application May 21, 1981, Ser. No. 265,762
Int. Cl.³ B01J 39/06, 41/06, 47/02
U.S. Cl. 521—28 9 Claims





1. A composition of matter for exchanging ions comprising:
Component A, a substrate which consists essentially of macroporous synthetic resin, having ion-exchanging sites at least on its available surface, having a volume average pore diameter of X; and
Component B, finely divided synthetic resin particles having a volume average diameter (D) less than 0.08 micron and greater than 0.005 micron and having, at least on their outer surfaces, ion-exchanging sites which attract available sites of Component A; wherein the particles of Component B are irreversibly attached as a monolayer to the available surface of Component A;
provided that, the ratio X/D is from about 4 to about 30.

4,351,910
EXPANDABLE STYRENE SERIES RESIN COMPOSITION AND PROCESS FOR PRODUCTION THEREOF

Hatuo Sugitani, Ibaraki; Takeo Kudo; Yoshiyuki Mukoyama, both of Hitachi, and Hiromasa Kawai, Ichihara, all of Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan

Filed Jul. 29, 1981, Ser. No. 287,915
Claims priority, application Japan, Jul. 29, 1980, 55-104539; Sep. 19, 1980, 55-131323; Apr. 2, 1981, 56-50428
Int. Cl.³ C08J 9/18, 9/20
U.S. Cl. 521—56 22 Claims

1. An expandable styrene series resin composition comprising a styrene series resin containing in its molecular structure one or more groups of the formula:

$$-SiY_nR_{3-n} \quad (I)$$

wherein R is an inert monovalent organic group; Y is a hydrolyzable group; and n is an integer of 1 to 3, and a blowing agent, said group or groups being chemically bonded to the molecular structure of the styrene series resin by addition polymerization, by graft polymerization or by free radicals.

4,351,911
FOAMABLE POLYESTER COMPOSITION

Daniel W. Fox, Pittsfield, Mass., assignor to General Electric Company, Pittsfield, Mass.

Continuation of Ser. No. 78,379, Sep. 24, 1979, abandoned, which is a continuation of Ser. No. 897,145, Apr. 17, 1978, abandoned, which is a continuation of Ser. No. 486,212, Jul. 5, 1974, abandoned, which is a continuation-in-part of Ser. No. 375,770, Jul. 2, 1973, abandoned. This application Aug. 1, 1980, Ser. No. 174,604
Int. Cl.³ C08L 67/00
U.S. Cl. 521—138 13 Claims

1. A foamable thermoplastic injection moldable composition consisting essentially of an admixture of:
(a) a polyester resin selected from the group consisting of (1) a poly(ethylene terephthalate) resin or a copolyester thereof, (2) a combination of a poly(ethylene terephthalate) resin and a poly(1,4-butylene terephthalate) resin or copolyesters thereof and (3) a combination of a poly(1,4-butylene terephthalate) resin or a copolyester thereof and a linear aliphatic polyester resin;
(b) a filler selected from the group consisting of fibrous glass or a mineral or mixtures thereof in an amount of from about 5 to about 50 weight percent; and
(c) a minor amount of a foaming agent selected from the group consisting of dinitrosopentamethylene tetramine, p-toluene sulfonyl semicarbazide, 5-phenyltetrazole, calcium oxalate and trihydrazino-s-triazine said amount being sufficient to provide a rigid cellular core within a solid integral skin.

4,351,912
STUCCO COMPOSITION

F. Bon Jasperson, Fort Lauderdale, Fla., assignor to Northwood Mills Ltd., Toronto, Canada

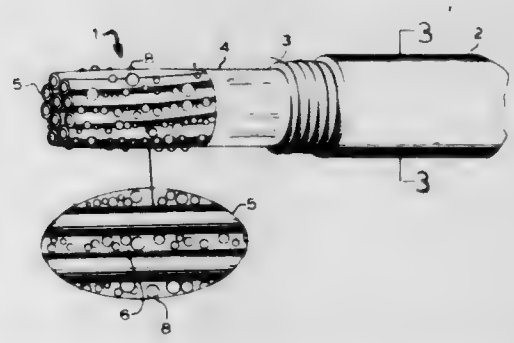
Filed Apr. 20, 1981, Ser. No. 255,834
Int. Cl.³ C08K 3/34
U.S. Cl. 523—218 18 Claims

1. A trowelable, lightweight synthetic stucco composition for producing a lightweight stucco finish consisting essentially of a pigmented latex paint, a texturizing amount of a crushable, lightweight aggregate of a texturizing particle size, and a protective amount of a hard, non-crushable aggregate of a protective particle size, the crushable aggregate being present in an amount of more than 40% of the total weight of aggregate and pigment in said composition, wherein the hard aggregate protects the crushable aggregate from substantial particle size reduction upon troweling.

4,351,913
FILLING MATERIALS FOR ELECTRICAL AND LIGHT WAVEGUIDE COMMUNICATIONS CABLES

Naren I. Patel, Hickory, N.C., assignor to Siecor Corporation, Hickory, N.C.

Division of Ser. No. 235,922, Feb. 19, 1981, Pat. No. 4,324,453. This application Jan. 4, 1982, Ser. No. 336,560
Int. Cl.³ C08J 9/32
U.S. Cl. 523—218 3 Claims



1. A composition of matter composed of a mixture consisting

essentially of of a styrene block copolymer rubber, mineral oil, and inorganic hollow microspheres, wherein:

(a) the amount and type of said block copolymer rubber is either:

(i) 1 to 30 percent by weight of styrene-ethylene-butylene-styrene block copolymer having a styrene to rubber ratio of approximately 0.4 and a specific gravity of approximately 0.9;

(ii) 7 to 10 percent by weight of styrene-butadiene-styrene block copolymer having a styrene to rubber ratio of approximately 0.39 and a specific gravity of approximately 0.94; and

(iii) 8 to 12 percent by weight of styrene-isoprene-styrene block copolymer having a styrene to rubber ratio of approximately 0.16 and a specific gravity of approximately 0.92;

(b) wherein said mineral oil is either:

(i) 60 to 80 percent by weight of paraffinic mineral oil having a viscosity-gravity constant (ASTM D 2501-67) of approximately 0.78 to 0.85 with a minimum of 65 percent paraffinic carbon atoms and a maximum of 5 percent aromatic carbon atoms; or

(ii) 60 to 80 percent by weight of naphthenic mineral oil having a viscosity-gravity constant (ASTM D 2501-67) of approximately 0.78 to 0.85 with a minimum of 35 percent naphthenic carbon atoms and a maximum of 5 percent aromatic carbon atoms; and

(c) said inorganic hollow microspheres are either:

(i) 1 to 20 percent by weight of inorganic hollow microspheres made from glass, having a particle diameter between 10 and 200 microns and a particle density range of approximately 0.1 to 0.3 g/cm^3; or

(ii) up to 35 percent by weight of inorganic hollow microspheres made from ceramic materials, having a particle diameter between 60 and 325 microns and a particle density of approximately 0.6 g/cm^3.

4,351,914

CORROSION-RESISTANT, IMPROVED POWDER PRIMER SURFACER

Ram-Tirth Khanna, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 24, 1981, Ser. No. 247,135

Int. Cl.^{3} C08L *63/02*

U.S. Cl. 523—448 **14 Claims**

1. An improved corrosion-resistant powder coating composition of the kind consisting essentially of finely divided powder particles of a blend of an epoxy functional film-forming resin, an approximately stoichiometric amount of a curing agent that is polyhydroxyl functional, polycarboxyl functional, or polyamino functional, and optionally a flow control agent, pigment, and filler particles wherein the improvement comprises:

(A) 12–45% by weight, based on the weight of the film-forming resin, of a compound selected from the group consisting of zinc oxide, a zinc oxide-containing complex, and mixtures of these; and

(B) a dicarboxylic acid in an amount by weight equal to 0.5–10% of the total weight of (A), this amount being independent of the amount of any dicarboxylic acid which may be present as the curing agent.

4,351,915

2,2,6,6-TETRAMETHYL-4-PIPERIDYL SPIRO ALIPHATIC ETHERS AS STABILIZERS FOR SYNTHETIC POLYMERS

Naohiro Kubota, Ageo; Toshihiro Shibata, Omiya; Kazuo Sugibuchi, Tokyo, and Motonubu Minagawa, Koshigaya, all of Japan, assignors to Adeka Argus Chemical Co., Ltd., Urawa, Japan

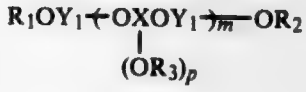
Filed May 26, 1981, Ser. No. 267,138

Claims priority, application Japan, May 30, 1980, 55-72875

Int. Cl.^{3} C07D *491/10*; C07F *5/04, 7/10, 9/65*; C08K *5/34, 5/46, 5/52, 5/53, 5/54, 5/55*; C08G *18/32, 18/38, 63/68, 65/40*

U.S. Cl. 524—103 **43 Claims**

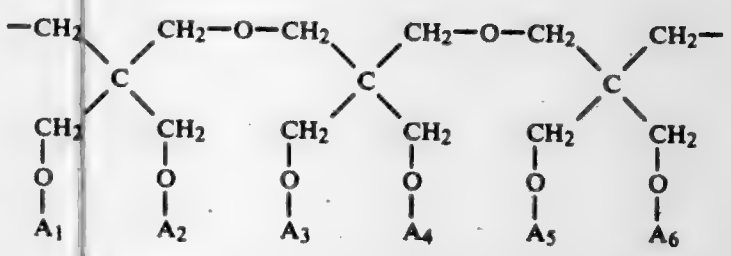
1. 2,2,6,6-Tetramethyl-4-piperidyl spiro aliphatic ethers having the general formula:



(I)

wherein:

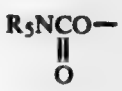
Y_1 is



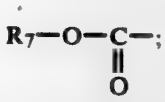
A_1, A_2, A_3, A_4, A_5, and A_6 each are selected from the group consisting of hydrogen; alkyl and hydroxyalkyl having from one to about eighteen carbon atoms; cycloalkyl having from three to about eight carbon atoms; aryl having from about six to about eighteen carbon atoms; acyl having from one to about eighteen carbon atoms



wherein R_4 is selected from the group consisting of aliphatic having from one to about eighteen carbon atoms; cycloaliphatic having from three to about eight carbon atoms; heterocyclic having from six to about eighteen carbon atoms; and aromatic having from six to about eighteen carbon atoms; carbamoyl

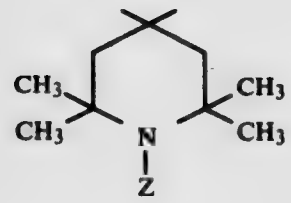


wherein R_5 is selected from the group consisting of aliphatic having from one to about eighteen carbon atoms; cycloaliphatic hving from three to about eight carbon atoms; heterocyclic having from six to about eighteen carbon atoms; and aromatic having from six to about eighteen carbon atoms;



and monovalent oxyacid groups;

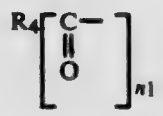
at least one pair of A_1 and A_2; A_3 and A_4; and A_5 and A_6 being taken together to form the group:



wherein:

Z is selected from the group consisting of hydrogen; oxyl O.; alkyl and hydroxyalkyl having from one to about twenty carbon atoms; and aryl and hydroxyaryl having from six to about twenty carbon atoms;

X is selected from the group consisting of alkylene having from one to about eighteen carbon atoms; cycloalkylene having from three to about eight carbon atoms; arylene having from about six to about eighteen carbon atoms; polyacyl



wherein R_4 is as above and n_1 is a number from 2 to 4; polycarbamoyl

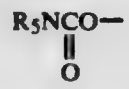


wherein R_5 is as above and n_2 is a number from 2 to 4;

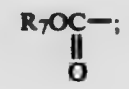


and di- and trivalent oxyacid groups;

R_1 and R_2 each are selected from the group consisting of hydrogen; alkyl having from one to about eighteen carbon atoms; cycloalkyl having from three to about eight carbon atoms; aryl having from about six to about eighteen carbon atoms; carbamoyl



wherein R_5 is selected from the group consisting of aliphatic having from one to about eighteen carbon atoms; cycloaliphatic having from three to about eight carbon atoms; heterocyclic having from six to about eighteen carbon atoms; and aromatic having from six to about eighteen carbon atoms;



and monovalent oxyacid groups;

R_3 is selected from the group consisting of alkyl having from one to about eighteen carbon atoms; cycloalkyl having from three to about eight carbon atoms; aryl having from about six to about eighteen carbon atoms; and —X—O—R_1;

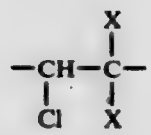
R_7 is selected from the group consisting of the residues of monohydric alcohols having from one to about eighteen carbon atoms and phenols having from six to about fifty carbon atoms;

R_{11} is selected from the group consisting of alkylene and oxyalkylene having from two to about ten carbon atoms and from zero to about five oxyether groups; cycloalkylene having from three to about eight carbon atoms; and arylene having from six to about fifty carbon atoms; and isocyanurate;

m is a number from zero to 10; and

p is zero or 1.

34. A polyvinyl chloride resin composition having improved resistance to deterioration when heated at 350° F., comprising a polyvinyl chloride resin formed at least in part of the recurring group



and having a chlorine content in excess of 40%, where X is either hydrogen or chlorine; and a 2,2,6,6-tetramethyl-4-piperidyl spiro aliphatic ether in accordance with claim 1.

4,351,916

POLYOXYMETHYLENE MOLDING BLENDS

Melvin I. Kohan, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 185,409, Sep. 9, 1980, abandoned. This application May 7, 1981, Ser. No. 261,482

Int. Cl.[3] **C08L** *59/07, 77/00, 59/04*

U.S. Cl. 524—377 **8 Claims**

1. A polyoxymethylene blend consisting essentially of

(a) polyoxymethylene,

(b) 0.1–10 percent, preferably 0.5–5 percent, by weight of blend, poly(ethylene glycol), and

(c) 0.15–3 percent, preferably 0.4–2.0 percent, by weight of blend, of a dispersion of polyamide in a carrier resin, the polyamide comprising about from 10 to 50 wt % of the dispersion and being present in the carrier resin as particles no greater than about 5 microns; the carrier resin being inert to the oxymethylene polymer and having a melting point at or below the processing temperature of the oxymethylene polymer.

4,351,917

POLY(ESTER-AMIDE) CAPABLE OF FORMING AN ANISOTROPIC MELT PHASE DERIVED FROM 6-HYDROXY-2-NAPHTHOIC ACID, AROMATIC MONOMER CAPABLE OF FORMING AN AMIDE LINKAGE, AND OTHER AROMATIC HYDROXYACID

Gordon W. Calundann, North Plainfield; Larry F. Charbonneau, Chatham, and Anthony J. East, Madison, all of N.J., assignors to Celanese Corporation, New York, N.Y.

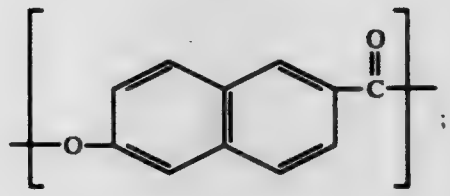
Filed Apr. 6, 1981, Ser. No. 251,625

Int. Cl.[3] **C08G** *69/44*

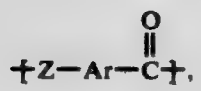
U.S. Cl. 524—602 **33 Claims**

1. A melt processable poly(ester-amide) capable of forming an anisotropic melt phase at a temperature below approximately 400° C. consisting essentially of recurring moieties I, II, and, optionally, III wherein:

I is

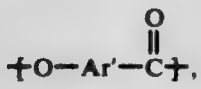


II is



where Ar is a divalent radical comprising at least one aromatic ring, and Z is NH or NR, where R is an alkyl group of 1 to 6 carbon atoms or an aryl group; and

III is



where Ar' is a divalent radical comprising at least one aromatic ring, other than naphthylene;

wherein at least some of the hydrogen atoms present upon the rings optionally may be replaced by subtitution selected from the group consisting of an alkyl group of 1 to 4 carbon atoms, an alkoxy group of 1 to 4 carbon atoms, halogen, phenyl, and mixtures thereof, and wherein moiety I is present in a concentration of approximately 10 to 90 mole percent, moiety II is present in a concentration of approximately 5 to 45 mole percent, and moiety III is present in a concentration of approximately 0 to 45 mole percent, with the total concentration of moieties I and III being within the range of approximately 55 to 95 mole percent.

4,351,918

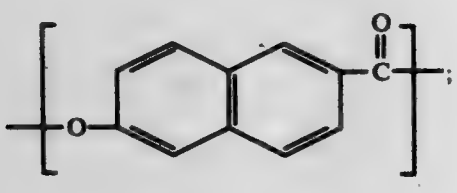
POLY(ESTER-AMIDE) CAPABLE OF FORMING AN ANISOTROPIC MELT PHASE DERIVED FROM 6-HYDROXY-2-NAPHTHOIC ACID, OTHER AROMATIC HYDROXYACID, CARBOCYCLIC DICARBOXYLIC ACID, AND AROMATIC MONOMER CAPABLE OF FORMING AN AMIDE LINKAGE

Larry F. Charbonneau, Chatham; Anthony J. East, Madison, and Gordon W. Calundann, North Plainfield, all of N.J., assignors to Celanese Corporation, New York, N.Y.

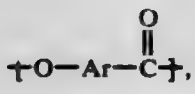
Filed Apr. 6, 1981, Ser. No. 251,629
Int. Cl.³ C08G *69/44*
U.S. Cl. 524—602 **39 Claims**

1. A melt processable poly(ester-amide) capable of forming an anisotropic melt phase at a temperature below approximately 400° C. consisting essentially of recurring moieties I, II, III, IV, and, optionally, V wherein:

I is

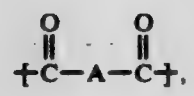


II is



where Ar is a divalent radical comprising at least one aromatic ring other than 2,6-naphthylene;

III is



where A is a divalent carbocyclic radical;

IV is —Y—AR'—Z—, where Ar' is a divalent radical comprising at least one aromatic ring, Y is O, NH, or NR, and Z is NH or NR, where R is an alkyl group of 1 to 6 carbon atoms or an aryl group; and

V is —O—AR''—O—, where Ar'' is a divalent radical comprising at least one aromatic ring,

wherein at least some of the hydrogen atoms present upon the rings optionally may be replaced by substitution selected from the group consisting of an alkyl group of 1 to 4 carbon atoms, an alkoxy group of 1 to 4 carbon atoms, halogen, phenyl, and mixtures thereof, and wherein the total molar concentration of moiety I and moiety II in the polymer is within the range of approximately 10 to 90 mole percent, with the molar ratio of moiety I:moiety II being within the range of approximately 1:9 to 9:1, and the total molar concentration of moiety IV and moiety V is substantially equal to the molar concentration of moiety III, with moiety IV being present in a concentration within the range of approximately 5 to 45 mole percent.

4,351,919

PROCESS FOR THE PRODUCTION OF POLYESTER SILICATE RESINOUS PRODUCTS

David H. Blount, 5450 Lea St., San Diego, Calif. 92105

Continuation-in-part of Ser. No. 256,317, Apr. 22, 1981, which is a continuation-in-part of Ser. No. 122,015, Feb. 19, 1980, which is a continuation-in-part of Ser. No. 10,061, Feb. 7, 1979, Pat. No. 4,200,697, which is a continuation-in-part of Ser. No. 794,915, May 9, 1977, Pat. No. 4,125,498, which is a continuation-in-part of Ser. No. 653,727, Jan. 30, 1976, abandoned, which is a continuation-in-part of Ser. No. 562,201, Apr. 14, 1975, abandoned. This application Oct. 13, 1981, Ser. No. 310,370
Int. Cl.³ C08L *83/00*
U.S. Cl. 524—858 **16 Claims**

1. An improved process for the production of polyester silicate resinous products containing fine oxidated silicon particles very fine particle size, approximately 5 to 10 microns which comprises mixing and reacting the following components:

(a) organosol containing an organic polyhydroxy compound, 10 to 30 parts by weight;

(b) a polycarboxylic compound selected from the group consisting of polycarboxylic acids, polycarboxylic acid anhydrides and mixtures thereof, 10 to 30 parts by weight.

4,351,920

THERMOPLASTIC RESIN COMPOSITION

Nagao Ariga; Kyotaro Shimazu; Hidenori Takenaka, all of Chiba, and Hiroyuki Sato, Yachiyo, all of Japan, assignors to Dainippon Ink & Chemicals, Inc., Tokyo, Japan

Filed May 1, 1981, Ser. No. 259,434
Int. Cl.³ C08L *51/04, 69/00*
U.S. Cl. 525—67 **12 Claims**

1. A thermoplastic resin composition comprising (a) 5 to 40% by weight of a rubber-modified styrene/maleic anhydride copolymer resin and (b) 95 to 60% by weight of a polycarbonate resin as main components.

4,351,921

RESIN COMPOSITION FOR USE IN UNCOATED EXTERIOR MATERIAL

Kazuo Kishida; Akira Hasegawa, and Yasunori Kawachi, all of Ohtake, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Filed Dec. 29, 1980, Ser. No. 221,359
Claims priority, application Japan, Jan. 11, 1980, 55-1943
Int. Cl.³ C08L *33/08, 33/12, 51/04*
U.S. Cl. 525—80 **12 Claims**

1. A resin composition for use in uncoated exterior materials markedly excellent in appearance and having high impact resistance and weather resistance wherein 10–70% by weight of graft copolymer (I) having a high rubber content, 90–30% by weight of a rigid thermoplastic resin (II) comprising 10–90% by weight of at least one aromatic vinyl monomer and

90–10% by weight of at least one ethylenic unsaturated monomer having the following general formula:

$$CH_2=CRX$$

wherein R represents hydrogen or CH_3 group and X represents CN or $COOR_1$ group (R_1 represents alkyl group having 1–8 carbon atoms), and 0–50% by weight of a diene rubber-containing thermoplastic resin (III) are blended together so that the total amount of components (I) through (III) is 100% by weight, said graft copolymer (I) having a high rubber content being obtained by polymerizing 50–10% by weight of a monomer mixture (c) comprising 10–90% by weight of at least one aromatic vinyl monomer and 90–10% by weight of at least one ethylenic monomer having the following general formula:

$$CH_2=CRX$$

wherein R represents hydrogen or CH_3 group and X represents CN or $COOR_1$ group (R_1 represents alkyl group having 1–8 carbon atoms) in the presence of a latex of a crosslinked acrylic rubber having a multi-layer structure which contains, in its particle, 5–30% by weight of a rigid crosslinked resin (a) having a core particle diameter of 0.25–0.40μ and of which outer layer part is constructed of 45–85% by weight of a crosslinked acrylic ester type polymer (b) constituted mainly of an acrylic ester, so that the total amount of components (a) through (c) is 100% by weight.

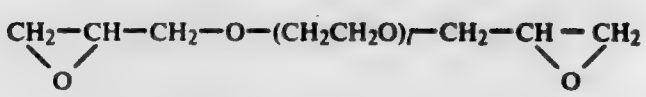
4,351,922

PROCESS FOR THE PRODUCTION OF HIGHLY WATER-ABSORBING BUT LESS WATER-SOLUBLE HYDROGELS

Tooru Yoshida, Yokohama; Seigo Iwagami, Tokyo; Takashi Ueshima, and Yoshikazu Hosoda, both of Yokohama, all of Japan, assignors to Showa Denko Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 19, 1980, Ser. No. 179,609
Int. Cl.³ C08L *63/00;* C08F *20/20, 120/20*
U.S. Cl. 525—116 **20 Claims**

1. A process for producing a highly water-absorbing but less water-soluble hydrogel comprising polymerizing at least one hydrophilic ethylenically unsaturated monomer selected from the group consisting of a carboxylic acid containing an ethylenically unsaturated group, a sulfonic acid containing an ethylenically unsaturated group, and derivatives thereof to form a homopolymer or copolymer of said hydrophilic ethylenically unsaturated monomer, or a mixture of at least 50% of said hydrophilic ethylenically unsaturated monomer and less than 50% of an ethylenically unsaturated monomer copolymerizable therewith other than said hydrophilic ethylenically unsaturated monomer, in the presence of 0.005% to 20% by weight based on the total weight of the ethylenically unsaturated monomers of at least one difunctional compound selected from the group consisting of compounds represented by the formula (1):



(1)

wherein l is an integer of from 5 to 100.

4,351,923

PROCESS FOR TERPOLYMER POLYBLENDS HAVING HIGH GLOSS AND DUCTILITY

Edward F. Tokas, Kirkwood, Mo., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 140,279, Apr. 14, 1980, Pat. No. 4,308,355. This application Dec. 4, 1980, Ser. No. 212,776
Int. Cl.³ C08F *4/34*
U.S. Cl. 525—250 **13 Claims**

1. A process for preparing terpolymer polyblends having high gloss and toughness comprising the steps:

A. charging an aqueous latex having polybutadiene rubber particles dispersed therein to a reaction zone,

B. mixing a monomer formulation of alkenyl aromatic, alkenyl nitrile and alkyl acrylate monomers with said latex, said alkyl acrylate monomer being present in an amount of about 1 to 20% by weight of said monomer formulation,

C. polymerizing by emulsifying on water said monomers in the presence of said latex such that, said rubber particles become grafted with at least a portion of said monomers while said monomers form a matrix terpolymer phase of said monomers,

D. separating said matrix terpolymer phase having said grafted rubber particles dispersed therein from said latex forming said terpolymer polyblend, wherein said polymerization in step (C) is carried out at 20° to 100° C., at 0.7 to 7 atms. of pressure with water soluble catalyst, said polybutadiene rubber particles having an average particle size of about 0.1 to 0.7 microns.

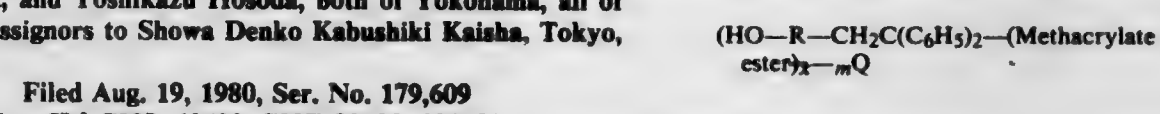
4,351,924

ω-, AND α,ω-HYDROXYHYDROCARBYL-(ALKYL METHACRYLATE) POLYMERS AND PROCESS

Gerald D. Andrews, Hockessin, and William H. Sharkey, Wilmington, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 16, 1981, Ser. No. 243,731
Int. Cl.³ C08F *120/18*
U.S. Cl. 525—330.6 **16 Claims**

1. A polymer consisting essentially of alkyl methacrylate polymers and copolymers having the formula:



wherein:

R is selected from alkylene of 1 to 20 carbons, cycloalkylene of 5 to 10 carbons, alkylenearylene of 7 to 32 carbons, arylene of 6 to 12 carbons, and alkylenearylenealkylene of 8 to 33 carbons;

"Methacrylate ester" represents combined units derived from one or more anionically polymerizable methacrylic acid esters in random or block copolymer segments, said esters having the formula $CH_2=C(CH_3)COOR'$, where R' is selected from:

(a) alkyl of 1 to 18 carbon atoms,

(b) alkenyl of 2 to 18 carbon atoms,

(c) alkadienyl of 5 to 18 carbon atoms,

(d) dialkylaminoalkyl of 4 to 12 carbon atoms,

(e) alkoxyalkyl of 3 to 12 carbon atoms,

(f) lower fluoroalkyl;

x is a number between 2 and 1000;

Q is selected from hydrogen, a carbon-carbon bond, an m-valent hydrocarbyl radical and a network polymer formed by polymerization of the methacrylate ester of a polyol;

m is 1 when Q is hydrogen, 2 when Q is a carbon-carbon bond, 1 to 6 when Q is a hydrocarbyl radical and more than 1 and up to 100 when Q is a network polymer.

4,351,925

PROCESS FOR THE THERMAL STABILIZATION OF ACRYLIC FIBERS AND FILMS

Steven B. Warner, Bernardsville, N.J., assignor to Celanese Corporation, New York, N.Y.

Division of Ser. No. 141,706, Apr. 18, 1980, Pat. No. 4,295,844. This application Apr. 27, 1981, Ser. No. 257,712

Int. Cl.³ C08F *8/32*

U.S. Cl. 525—369 **12 Claims**

1. An improved process for the thermal stabilization of an acrylic film selected from the group consisting of an acrylonitrile homopolymer and acrylonitrile copolymers containing at least about 85 mol percent of acrylonitrile units and up to about 15 mol percent of one or more monovinyl units copolymerized therewith comprising:

(a) contacting said film with a dilute solution of aniline and Group IA metal hydroxide which is provided at an elevated temperature for a residence time of approximately 5 to 30 minutes whereby said film is rendered capable of undergoing thermal stabilization on a more expeditious basis,

(b) removing the excess quantity of said solution adhering to said film following said contact, and

(c) heating said resulting film in an oxygen-containing atmosphere at a temperature of approximately 200° to 360° C. until a stabilized film is formed which is black in appearance, retains its original configuration substantially intact and which is non-burning when subjected to an ordinary match flame.

4,351,926

HEAT CURABLE POLYMER

Michael J. Keogh, Bridgewater, N.J., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Dec. 26, 1979, Ser. No. 106,502

Int. Cl.³ C08F *8/42*

U.S. Cl. 525—370 **15 Claims**

1. A process for making a heat-curable polymer comprising the steps of:

(a) preparing a mixture comprising:

alkylene-alkyl acrylate copolymer;

from 0.1 to 10 parts by weight based on 100 parts by weight of copolymer of difunctional compound having the formula

$$R_1—R_2—R_3$$

wherein R_1 and R_3 are independently selected from the group consisting of —OH, —SH,

$$—O—\overset{\overset{O}{\|}}{C}—R_4,$$

wherein R_4 is C_1 to C_{20} hydrocarbon; R_2 is a divalent organic radical terminated with other than aryl,

from 0.1 to 10 parts by weight based on 100 parts by weight of the copolymer of organo titanate;

(b) heating said mixture to temperature of between the melting temperature of the copolymer and about 200° C.

4,351,927

GLYCOLIZED POLYESTERS

Anthony W. McCollum; William L. Edmonson, both of Longview, Tex., and Stephen N. Belote, Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 1, 1981, Ser. No. 259,410

Int. Cl.³ C08G *63/76*

U.S. Cl. 525—437 **6 Claims**

1. Composition of matter comprising the reaction product of

(a) a polyester derived from an acid component comprising at least one of the acids terephthalic, isophthalic, and orthophthalic and a glycol component having from 2 to 24 carbon atoms, and

(b) 2,2-dimethyl-3-hydroxypropyl-2,2-dimethyl-3-hydroxypropionate

said reaction product containing, by weight, about 40–80% of (a) and about 60–20% of (b) and having a hydroxyl number of about 150–300.

4,351,928

CURABLE HYDROXY FUNCTIONAL RESIN COMPOSITIONS CONTAINING REACTIVE DILUENTS

Harry A. Smith, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 187,932, Sep. 17, 1980, abandoned, which is a continuation-in-part of Ser. No. 62,604, Aug. 1, 1979, abandoned. This application Oct. 26, 1981, Ser. No. 314,824

Int. Cl.³ C08L *67/02, 61/28*

U.S. Cl. 525—443 **14 Claims**

1. A curable composition consisting essentially of:

(A) x parts by weight of a hydroxyl-bearing polymer selected from the group consisting of free hydroxyl-containing polyester, free hydroxyl-containing solid epoxy resins, and homo- and copolymers of vinyl alcohol, hydroxy alkylacrylates and α,β-unsaturated acids;

(B) from 0.10x to 0.60x parts by weight, which represents y-moles, of a liquid, hydroxyl- or amino-bearing aromatic diluent represented by the formula $R(Z)_b$ wherein R is an aromatic radical of valence b having at least one reactive ring position located ortho or para to a Z substituent, b is an integer from 1 to 3 and Z is a $—NH_2$ or —OH group substituted directly on an aromatic ring of R, said diluent having an atmospheric boiling point of about 150° C. or greater;

(C) an aminoplast resin containing unreacted methylol moieties or phenolic resole resin, capable of curing component (A) to a tack-free state, present in a quantity of from $(0.20x+z)$ to $(0.50x+2.5z)$ parts by weight, z being equal to y multiplied by the equivalent weight of said aminoplast or phenolic resole resin; and

(D) a catalytic amount of a catalyst which catalyzes the reaction between components (A) and (C).

4,351,929

CRYSTALLIZABLE CONTROLLED COMPOSITION INTERPOLYMERS OF VINYLIDENE CHLORIDE AND METHYL METHACRYLATE AND METHOD OF PREPARING SAME

Dale S. Gibbs, Midland, and Duane F. Foye, Merrill, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 126,637, Mar. 3, 1980, abandoned, which is a continuation-in-part of Ser. No. 27,201, Apr. 5, 1979, abandoned, which is a continuation-in-part of Ser. No. 902,313, May 3, 1978, abandoned. This application May 11, 1981, Ser. No. 262,265

Int. Cl.³ C08F *2/22, 214/08*

U.S. Cl. 526—80 **4 Claims**

1. A process for preparing, in aqueous emulsion, a crystallizable, controlled composition interpolymer consisting essentially of (a) from about 88 to about 92 mole percent vinylidene chloride, (b) from about 8 to about 12 mole percent methyl methacrylate, and (c) up to about 3 weight percent, based on the combined weight of (a) and (b), of one or more ethylenically unsaturated comonomers; said interpolymer having a relative viscosity of at least about 1.40 at 25° C. as a 1 percent solution in tetrahydrofuran and being capable of forming substantially haze-free solutions when present in an amount of about 20 percent solids in a solvent mixture consisting of 65 percent by weight tetrahydrofuran and 35 percent by weight toluene as measured in terms of at least 85 percent transmission of the solution, after aging at 25° C. for a period of 24 hours,

against a reference of the pure solvent mixture using an ultraviolet spectrophotometer operating at a wavelength of 640 nm said interpolymer having a minimum heat-seal temperature no greater than 115° C., and having a water-vapor transmission rate of no greater than 0.25 g/100 in^2/24 hours when deposited as a coating from a tetrahydrofuran lacquer solution at a coating weight of 4 grams/$meter^2$; said process comprising the sequential steps of:

(1) polymerizing a primary monomer mixture consisting essentially of from about 88 to about 92 mole percent vinylidene chloride and from about 8 to about 12 mole percent methyl methacrylate in an aqueous polymerization medium containing an emulsifier, and a polymerization initiator; wherein

(A) from about 35 to about 45 percent of the primary monomer mixture is added to the aqueous medium at a rate sufficient to continuously provided an excess of unreacted monomer in the aqueous medium, and

(B) the remainder of the primary monomer mixture is added to the aqueous medium at a rate sufficient to continuously preclude the presence of an excess of unreacted monomer in the aqueous medium, and

(2) following the addition of substantially all of the primary monomer mixture, adding an end-shot comonomer to the polymerization medium in an amount and under conditions sufficient to control composition drift in the crystallizable interpolymer.

4,351,930

PROPYLENE COPOLYMERIZATION PROCESS AND PRODUCT

Birendra K. Patnaik, Parsippany, N.J., assignor to El Paso Polyolefins Company, Paramus, N.J.

Filed Feb. 5, 1981, Ser. No. 232,060
Int. Cl.³ C08F *210/06, 4/02*
U.S. Cl. 526—125 **15 Claims**

1. In a process for the production of a copolymer of propylene and ethylene wherein the polymerization of propylene and ethylene is conducted in the presence of a liquid diluent consisting essentially of propylene at pressures sufficient to maintain propylene in liquid phase and at temperatures between about 115° F. and about 165° F. in the presence of a catalyst composition containing the components

(a) an aluminum trialkyl at least partially complexed with an aromatic carboxylic acid ester electron donor and

(b) a complex of a titanium tri- or tetrahalide with an aromatic carboxylic acid ester electron donor supported on magnesium halide the components (a) and (b) being provided in a molar ratio of Al/Ti between about 10 and about 400, the method of increasing the polymerized ethylene content of the polymer without significantly affecting the isotactic index, which comprises: providing from about 1 to about 9 weight percent ethylene feed based on the weight of propylene feed; adding from about 1 to about 8 percent by weight of butene-1 based on the weight of propylene feed to the polymerization zone, and recovering a polymer product having a propylene content of from about 80 to about 96.5 weight percent, and ethylene content of from about 3 to about 17 weight percent and a butene-1 content of from about 0.5 to about 5 weight percent.

4,351,931

POLYETHYLENE COPOLYMERS

John B. Armitage, Sharpley, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 349,759, Mar. 5, 1964, abandoned, which is a continuation-in-part of Ser. No. 119,265, Jun. 26, 1961, abandoned. This application Jul. 19, 1971, Ser. No. 164,074
Int. Cl.³ C08F *2/02, 220/06*
U.S. Cl. 526—227 **31 Claims**

1. A uniformly random, homogeneous copolymer of ethylene and an α, β-ethylenically unsaturated acid selected from the class consisting of acrylic acid and methacrylic acid, said copolymer exhibiting improved adhesion to solid metallic substrates and being composed of at least about 90% by weight ethylene and having at least 0.45% by weight of said unsaturated acid copolymerized therewith and uniformly randomly distributed along the copolymer chains, and said copolymer having a melt index of 0.01 to 30 g/10 min.

4,351,932

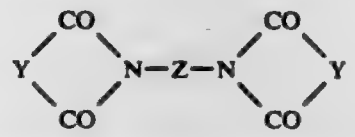
BIS-MALEIMIDE/DIVINYL ARYL CROSSLINKING AGENT RESIN SYSTEM

Sidney W. Street, Hacienda Heights, and Don A. Beckley, Newport Beach, both of Calif., assignors to Hitco, Irvine, Calif.

Filed Mar. 27, 1980, Ser. No. 134,666
Int. Cl.³ C08F *22/40*
U.S. Cl. 526—262 **9 Claims**

1. A resin system essentially of:

50 to 95 percent by weight of a mixture of unsaturated N,N'-bis-imides of the formula:



where Y represents a divalent radical of at least 2 carbon atoms and contains a carbon-carbon double bond and in the major portion of the mixture, Z is the residue of at least one aromatic diamine and in the minor portion of the mixture Z is the residue of an aliphatic diamine;

5 to 35 percent by weight of a divinyl-aryl, cross-linking agent capable of addition polymerization cross-linking with the bis-imides at a temperature from above 100 degrees F. to 250 degrees F.;

0 to 15 percent by weight of compatible elastomers that are compatible with the bis-imide and cross-linking agent;

0 to 10 percent by weight of a trifunctional unsaturated curing agent for said bis-imide; and

0 to 5 percent by weight of an oxidation inhibitor.

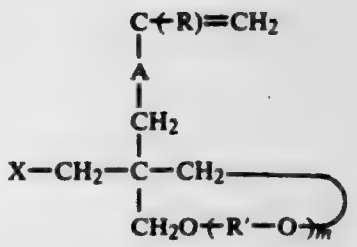
4,351,933

VINYL SUBSTITUTED CYCLIC POLYETHERS AND ADDITION POLYMERS THEREOF

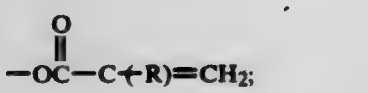
Thomas A. Chamberlin, and Donald A. Tomalia, both of Midland, Mich., assignors to The Dow Chemical Co., Midland, Mich.

Division of Ser. No. 107,813, Dec. 28, 1979, which is a division of Ser. No. 961,159, Nov. 16, 1978, Pat. No. 4,256,855, which is a division of Ser. No. 751,870, Dec. 17, 1976, Pat. No. 4,139,539, which is a continuation-in-part of Ser. No. 517,703, Oct. 24, 1974, abandoned. This application Jun. 8, 1981, Ser. No. 271,745
Int. Cl.³ C08F *20/22, 20/26*
U.S. Cl. 526—266 **11 Claims**

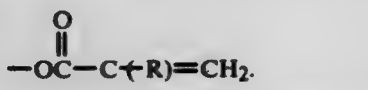
1. An addition polymer of the compound represented by the formula:



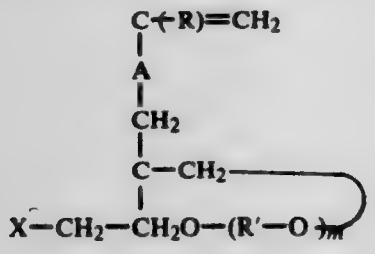
wherein m is an integer from 2 to about 10, —X is —Cl, —OR'' or —AC(—R)═CH_2; —R is hydrogen or methyl; —R'— is ethylene, 1,2-propylene or 1,3-propylene; —R'' is hydrogen or lower hydrocarbyl; and —AC(—R)═CH_2 is —O—C(—R)═CH_2 or



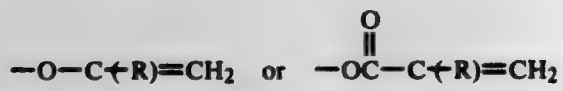
provided that when —X is —Cl, —AC(—R)═CH_2 is



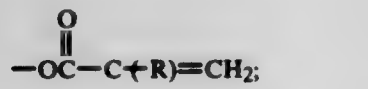
11. A cross-linked, water-insoluble addition polymer of the compound represented by the formula:



wherein m is an integer from 2 to about 10, —X is —Cl, —OR″ or —AC(—R)═CH_2; —R is hydrogen or methyl; —R′— is ethylene, 1,2-propylene or 1,3-propylene; —R″ is hydrogen or lower hydrocarbyl; and —AC(—R)═CH_2 is



provided that when —X is —Cl, —AC(—R)═CH_2 is



and further characterized in that when the cross-linked water-insoluble addition polymer is a homopolymer of the compound or a copolymer of the compound with a comonomer of monoethylene functionality, then —X is —AC(—R)═CH_2; and when the cross-linked, water-insoluble addition polymer is a copolymer of the compound with a comonomer of multiple ethylene functionality then —X is —Cl, —OR″ or —AC(—R)═CH_2.

4,351,934

EPOXY RESIN COMPOSITIONS

Edward W. Kluger, Pauline, and Calvin D. Welch, Spartanburg, both of S.C., assignors to Milliken Research Corporation, Spartanburg, S.C.

Filed Feb. 2, 1981, Ser. No. 230,722

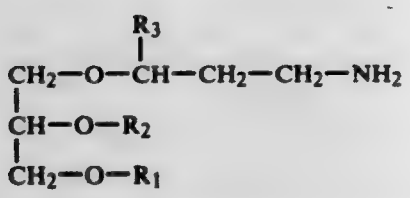
Int. Cl.³ C08G *59/50, 59/64*

U.S. Cl. 528—111 **6 Claims**

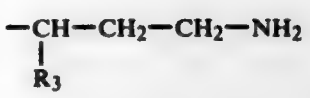
1. An epoxy resin composition comprising:

a. about 100 parts by weight of an epoxy resin; and

b. from about 15 parts to about 35 parts by weight of an aminoalkoxypropane of the formula:



where R_1 and R_2 are independently selected from H and



where R_3 is selected from H and a lower alkyl group having from 1 to about 4 carbon atoms.

4,351,935

THERMOSETTING COATING COMPOSITION CONTAINING A BLOCKED ACID CATALYST

Johan B. Reesink, Didam; Hendrik J. Hageman, Rozendaal, and Ulfert E. Wiersum, Velp, all of Netherlands, assignors to Akzo N.V., Arnhem, Netherlands

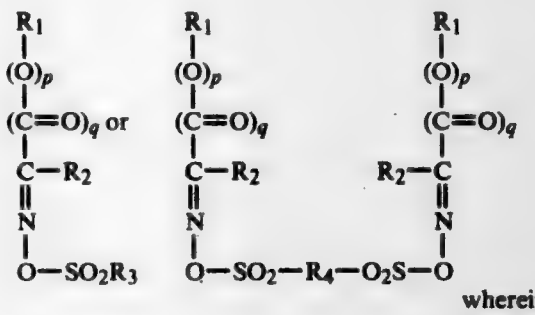
Filed Jul. 14, 1981, Ser. No. 283,332

Claims priority, application Netherlands, Jul. 14, 1980, 8004031

Int. Cl.³ C08G *12/12, 12/32;* C08L *61/32*

U.S. Cl. 528—242 **10 Claims**

1. A thermosetting coating composition containing an acid-curable amino resin and an amount of a blocked acid corresponding to 0.1 to 10 percent by weight, calculated on the amino resin of potentially available sulphonic acid, said blocked acid having one of the following formulae:



wherein,

p=O or 1 and q=O or 1, and

R_1 is a substituted or unsubstituted alkyl group, alkenyl group, cycloalkyl group, cycloalkenyl group, aryl group, aralkyl group, aralkenyl group or heterocyclic group having not more than 20 carbon atoms;

R_2 is the same as R_1, NH_2, CN, an alkoxy carbonyl group, cycloalkoxy carbonyl group, aroxy carbonyl group or acyl group having not more than 20 carbon atoms, or the two groups R_1 and R_2 form part of a cyclic or heterocyclic group having not more than 12 atoms in the ring;

R_3 is an alkyl group, alkenyl group, cycloalkyl group, cycloalkenyl group, aryl group or heterocyclic group having not more than 30 carbon atoms and

R_4 is an alkylene group, alkenylene group, cycloalkylene group, cycloalkenylene group, arylene group or bifunctional heterocyclic group having not more than 35 carbon atoms.

4,351,936

METHOD FOR REDUCING THE TERMINAL CARBOXYL GROUP CONTENT OF A SATURATED POLYESTER, A SATURATED POLYESTER HAVING A REDUCED TERMINAL CARBOXYL GROUP CONTENT, AND A MOLDED ARTICLE COMPOSED OF SUCH A SATURATED POLYESTER

Shunichi Matsumura, Hachioji; Hiroo Inata, Hino, and Tsuto Morinaga, Sagamihara, all of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Dec. 4, 1980, Ser. No. 213,051

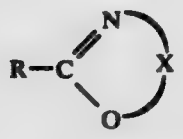
Claims priority, application Japan, Dec. 5, 1979, 54-156893; Apr. 21, 1980, 55-51784; Jun. 18, 1980, 55-81305

Int. Cl.³ C08G *63/44, 73/16*

U.S. Cl. 528—289 **22 Claims**

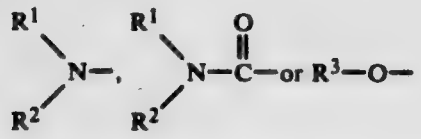
1. A process for producing a saturated polyester having a reduced terminal carboxyl group content, which comprises reacting a carboxyl-terminated, substantially linear, fiber-form-

ing saturated polyester with a monocyclic imino ether compound of the formula



(I)

wherein R is a group of the following formula



in which R^1 is a hydrogen atom, an alkyl group having 1 to 10 carbon atoms, a cycloalkyl group having 5 to 12 carbon atoms, an alkenyl group having 3 to 10 carbon atoms, a cycloalkenyl group having 5 to 12 carbon atoms, an aryl group having 6 to 12 carbon atoms or an aralkyl group having 7 to 20 carbon atoms, and R^2 is any one of the above groups for R^1 with the exception of the hydrogen atom, and R^3 is an alkyl group having 1 to 10 carbon atoms, a cycloalkyl group having 5 to 12 carbon atoms, an alkenyl group having 3 to 10 carbon atoms, a cycoalkenyl group having 5 to 12 carbon atoms, or an aralkyl group having 7 to 20 carbon atoms, and R^1 and R^2 may be bonded to each other, to form together with the nitrogen atom a 5- or 6-membered ring which is non-reactive with the saturated polyester under the reaction conditions; and X is a divalent organic group non-reactive with the saturated polyester under the reaction conditions, which has two or three ring-member carbon atoms constituting the imino ether ring.

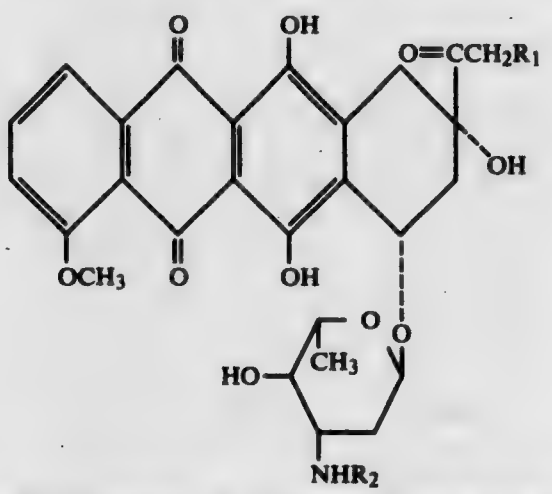
4,351,937

N-GLYCOSYL DERIVATIVES OF ANTHRACYCLINE ANTIBIOTICS AND THE METHOD OF THEIR PREPARATION

Barbara J. Stefanska, Gdansk-Oliwa; Leonard S. Falkowski, Gdansk, and Edward Borowski, Gdansk-Wrzeszcz, all of Poland, assignors to Politechnika Gdanska, Majakowskiego, Poland

Filed Jul. 25, 1980, Ser. No. 172,262
Claims priority, application Poland, Oct. 17, 1979, 219049
Int. Cl.³ C07H *15/24*
U.S. Cl. 536—6.4 **3 Claims**

1. Anthracycline antibiotics selected from the group consisting of daunorubicin and adriamycin, of the formula



I

where R_1 is hydrogen or a hydroxyl group and where R_2 is selected from the group consisting of ribose, glucose, fructose residues and the glucuronamide residues formed with N-octylamide, N-butylamide and the methyl ester of glucuronic acid.

4,351,938

ANTICOAGULANT SUBSTANCE

William E. Barnett, Clearwater, Fla., assignor to Riker Laboratories, Inc., Northridge, Calif.

Filed May 19, 1980, Ser. No. 151,163
Int. Cl.³ C08B *37/10;* A61K *31/725*
U.S. Cl. 536—21 **7 Claims**

1. A process which comprises reacting a heparin salt with from about 5 to 100 milliliters of an aqueous nitrous acid solution per gram of the heparin salt, the aqueous solution containing from about 5 to 80 milligrams of nitrous acid per gram of the heparin salt under controlled conditions of temperature in the range of about 0° C. to 30° C. and pH in the range of from about 1.5 to 4 until the heparin has partially depolymerized to a product which has

(1) a weight average molecular weight of from about 2,000 to 7,000 daltons, when determined by HPLC using 1.5 molar aqueous sodium chloride as the mobile phase and dextrans as the standard,

(2) a polydispersity (D) of less than about 2.5, and

(3) analyzable reducing end groups of which the majority are anhydromannose groups,

terminating the depolymerization reaction and recovering the partially depolymerized product.

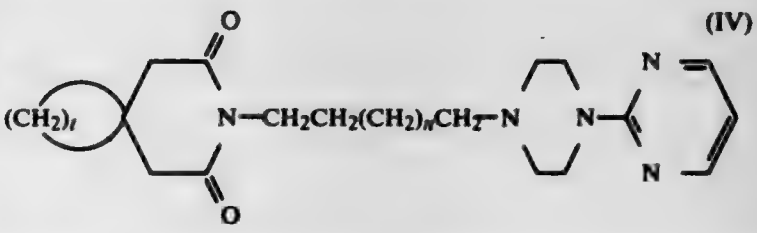
4,351,939

SPIRO-QUATERNARY AMMONIUM HALIDES AND N-(2-PYRIMIDINYL)PIPERAZINYLALKYLAZASPIROALKANEDIONE PROCESS

Jack C. Simms, deceased, late of Elberfeld, Ind., and Old National Bank in Evansville, administrator, Evansville, Ind., assignors to Mead Johnson & Company, Evansville, Ind.

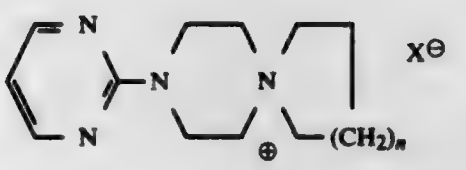
Filed Oct. 16, 1980, Ser. No. 197,416
Int. Cl.³ C07D *401/14, 487/10, 471/10*
U.S. Cl. 544—230 **4 Claims**

1. A process for the preparation of an N-(2-pyrimidinyl)-piperazinylalkylazaspiroalkanedione of Formula IV



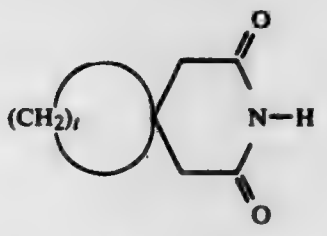
(IV)

wherein n is equal to 1 or 2 and t is equal to 4 or 5 which comprises condensing a spiro-quaternary ammonium halide compound of formula I



(I)

wherein n is equal to 1 or 2 and X is chlorine, bromine, or iodine with a spiro-substituted glutarimide of Formula V



(V)

wherein t is 4 or 5 in a liquid reaction medium in the presence of a strong base.

4,351,940
CHLORO- AND ALKOXY-SUBSTITUTED-2-CHLORO-4-AMINOD-QUINAZOLINES

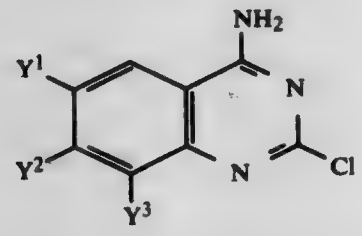
Hans-Jurgen E. Hess, Old Lyme; Jasjit S. Bindra, and Praful K. Shah, both of Groton, all of Conn., assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 126,838, Mar. 3, 1980, Pat. No. 4,287,341, which is a continuation-in-part of Ser. No. 90,313, Nov. 1, 1979, abandoned. This application Apr. 13, 1981, Ser. No. 253,236

Int. Cl.³ C07D *239/95*

U.S. Cl. 544—293 **3 Claims**

1. A compound of the formula



wherein Y^1 is chloro, Y^2 is OR and Y^3 is hydrogen or OR where R is alkyl having from 1 to 3 carbon atoms.

4,351,941
PYRIDINYL-PYRIDINES

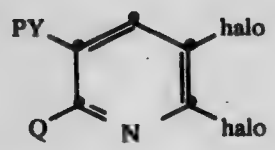
George Y. Lesher; Chester J. Opalka, Jr., both of Schodack, and Donald F. Page, East Greenbush, all of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 231,312, Feb. 4, 1981, Pat. No. 4,331,672, which is a continuation-in-part of Ser. No. 135,100, Mar. 28, 1980, Pat. No. 4,297,360. This application Nov. 2, 1981, Ser. No. 317,548

Int. Cl.³ C07D *401/04*

U.S. Cl. 546—258 **4 Claims**

1. A 2,3-dihalo-5-PY-6-Q-pyridine having the formula



or pharmaceutically-acceptable acid-addition salt thereof, where halo is chloro or bromo, PY is 4- or 3-pyridinyl or 4- or 3-pyridinyl having one or two lower-alkyl substituents, and Q is hydrogen or lower-alkyl.

4,351,942
ISOCHROMANS

Thomas A. Dobson; Leslie G. Humber, both of Dollard des Ormeaux; Christopher A. Demerson, St. Laurent, and Ivo L. Jirkovsky, Montreal, all of Canada, assignors to American Home Products Corp., New York, N.Y.

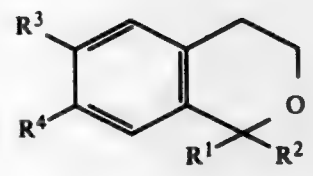
Division of Ser. No. 765,169, Feb. 3, 1977, Pat. No. 4,223,151, which is a division of Ser. No. 584,086, Jun. 5, 1975, Pat. No. 4,021,451, which is a division of Ser. No. 311,023, Nov. 30, 1972, abandoned, which is a continuation-in-part of Ser. No. 289,714, Sep. 15, 1972, Pat. No. 3,939,178, which is a continuation-in-part of Ser. No. 148,895, Jun. 1, 1971, Pat. No. 3,843,681. This application Jan. 7, 1980, Ser. No. 110,430

Claims priority, application South Africa, Sep. 15, 1972, 72/3344

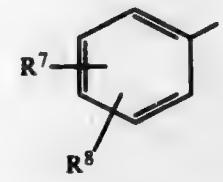
Int. Cl.³ C07D *311/76, 405/04, 409/04*

U.S. Cl. 546—269 **8 Claims**

1. A compound of formula 1



wherein R^3 and R^4 each are hydrogen, hydroxyl or lower alkoxy; R^1 is hydrogen, or lower alkyl; and R^2 is 2-thienyl, 2-pyridyl, 3-pyridyl or



wherein R^7 and R^8 are the same or different and each represent hydrogen, halo, or hydroxyl with the proviso that when R^7 and R^8 are hydrogen, then R^3 and R^4 are hydroxyl, and when R^7 or R^8 is halo then R^3 and R^4 is hydroxyl or lower alkoxy.

4,351,943
PRODUCTION OF 6-(CHLORO OR SUBSTITUTED PHENOXY)-2-DI-(SUBSTITUTED PHENOXY)METHYL PYRIDINES

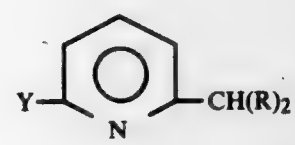
Sudarshan K. Malhotra, Walnut Creek, Calif., assignor to The Dow Chemical Co., Midland, Mich.

Division of Ser. No. 266,016, Sep. 18, 1980, Pat. No. 4,324,896. This application Oct. 30, 1981, Ser. No. 316,608

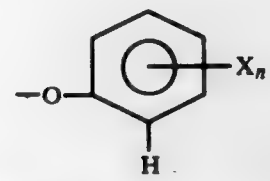
Int. Cl.³ C07D *213/51*

U.S. Cl. 546—301 **19 Claims**

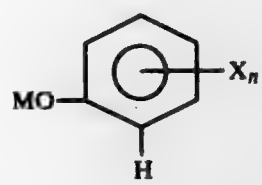
1. A process for the preparation of compounds corresponding to the formula



wherein Y represents chloro or R′; R represents



wherein X independently represents alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, alkylthio of 1 to 4 carbon atoms, alkyl sulfonyl of 1 to 4 carbon atoms, trifluoromethyl, chloro, fluoro or bromo; n represents an integer of 0 to 2 or X_n represents 3,4-methylenedioxy and R′ represents R with the proviso that R and R′ can be the same or different, which comprises reacting one mole of 2-chloro-6-(dichloromethyl)-pyridine with from about 1 to about 3 moles of an alkali metal salt of at least one substituted phenol which corresponds to the formula



wherein M represents sodium, potassium, lithium or cesium at

a temperature of from about 100° to about 200° C. and in the presence of a solvent and recovering the desired product therefrom.

4,351,944

IMPROVED PROCESS FOR PREPARING 3-(4-PYRIDINYL)ANILINE

Rudolf Oesterlin, East Greenbush, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Continuation-in-part of Ser. No. 103,191, Dec. 13, 1979, abandoned. This application May 26, 1981, Ser. No. 266,667

Int. Cl.³ C07D *213/38*

U.S. Cl. 546—329 **5 Claims**

1. In the process for preparing 3-(4-pyridinyl)aniline by acetylating 3-(4-pyridinyl)-2-cyclohexen-1-one oxime to produce the corresponding O-acetyl oxime, and heating the latter under acidic conditions to produce N-acetyl-3-(4-pyridinyl-)aniline and hydrolyzing the N-acetyl compound, the improvement which comprises heating 3-(4-pyridinyl)-2-cyclohexen-1-one oxime with an excess each of acetic anhydride and anhydrous phosphoric acid, distilling off the acetic acid by-product and excess acetic anhydride, adjusting the pH of the reaction mixture to about 5 to 9 with concentrated aqueous alkali, extracting N-acetyl-3-(4-pyridinyl)aniline from the concentrated aqueous phosphate salt solution with a lower-alkanol, and hydrolyzing the N-acetyl-3-(4-pyridinyl)aniline.

4,351,945

TWO-PHASE PROCESS FOR THE PREPARATION OF AZOLE AND AZOLINE DISULFIDES

Stanley J. Brois, Wantage, England, and Antonio Gutierrez, Hamilton Square, N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Division of Ser. No. 970,230, Dec. 18, 1978, Pat. No. 4,286,096, which is a division of Ser. No. 771,183, Feb. 23, 1977, Pat. No. 4,155,910, which is a division of Ser. No. 555,375, Mar. 5, 1975, Pat. No. 4,039,552. This application Feb. 5, 1979, Ser. No. 9,741

Int. Cl.³ C07D *235/28, 263/58, 285/08*

U.S. Cl. 548—130 **13 Claims**

1. A process for preparing a polysulfide of a thiol-substituted azole or azoline comprising the step of halogen-induced oxidative coupling of a 2-mercapto azole or azoline or the alkali or alkaline earth metal salt thereof with a hydrocarbon substituted C_2–C_{100} polysulfide reactant in a two-phase liquid reaction medium comprising a non-polar organic solvent phase and an aqueous phase.

4,351,946

FLUORINATED HETEROCYCLIC SULFIDES

Sameeh S. Toukan, Phoenixville, and Murray Hauptschein, Glenside, both of Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.

Division of Ser. No. 61,567, Jul. 30, 1979, Pat. No. 4,254,266, which is a division of Ser. No. 587,794, Jun. 17, 1975, Pat. No. 4,177,351, which is a division of Ser. No. 396,649, Sep. 12, 1973, Pat. No. 3,933,819, which is a continuation-in-part of Ser. No. 171,325, Aug. 21, 1971, abandoned. This application Nov. 14, 1980, Ser. No. 207,037

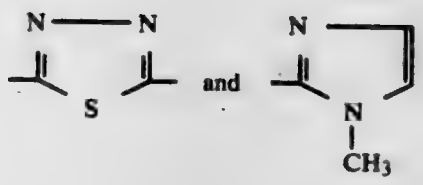
Int. Cl.³ C07D *233/54, 285/12*

U.S. Cl. 548—142 **7 Claims**

1. A fluorinated alkyl sulfide compound represented by the formula:

$$[R_f(CH_2)_n\text{—}S]_z\text{—}Q$$

where R_f is selected from the group consisting of perfluoroalkyl, perfluoroisoalkoxyalkyl and perfluoromonochloroalkyl radicals having from 5 to 13 carbon atoms, n is an integer of 2 or 3, z is 1 or 2, and Q is selected from the group consisting of the following:



4,351,947

TETRAZOLE DERIVATIVE

Chisei Shibuya, Fuji; Masahiro Murakami, Nobeoka; Masateru Kobayashi, Nobeoka, and Takanori Sone, Nobeoka, all of Japan, assignors to Asahi Chemical Industry Co., Ltd., Japan

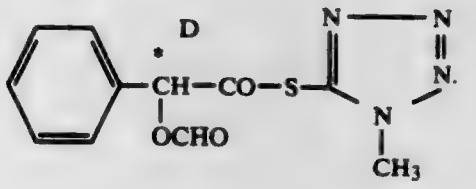
Filed Feb. 20, 1981, Ser. No. 236,542

Claims priority, application Japan, Mar. 6, 1980, 55-27303; Mar. 7, 1980, 55-28043

Int. Cl.³ C07D *544/036*

U.S. Cl. 548—251 **2 Claims**

1. A tetrazole-5-thiol ester having D-configuration of the formula:



(I)

4,351,948

IMIDAZOLE HYDRAZONE DERIVATIVES

Peter J. Fellner, Marlow, England; Brendan J. Hamill, Livingston, Scotland, and Paul W. Manley, High Wycombe, England, assignors to G.D. Searle & Co., Skokie, Ill.

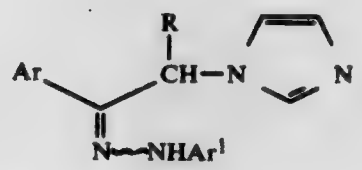
Filed Jan. 16, 1981, Ser. No. 225,583

Claims priority, application United Kingdom, Jan. 25, 1980, 8002577

Int. Cl.³ C07D *409/06, 233/61*

U.S. Cl. 548—336 **17 Claims**

1. A compound of the formula



or a pharmacologically acceptable salt thereof wherein:

Ar is phenyl, thienyl or a mono, di or trisubstituted form thereof wherein the mono, di or trisubstituent is F, Cl, Br, CF_3, C_1–C_3alkyl, C_1–C_3alkoxy, CN, or NO_2;

Ar^1 is $C_6H_{5-n}X_n$;

X is F, Cl or CF_3;

R is H, CH_3 or CH_2CH_3; and

n is an integer from 1 to 5.

4,351,949

BICYCLIC PROSTAGLANDIN ANALOGS AND METHOD OF SYNTHESIS

Richard C. Larock, Ames, Iowa, assignor to Iowa State University Research Foundation, Inc., Ames, Iowa

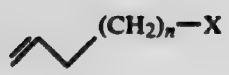
Filed Feb. 5, 1981, Ser. No. 231,596

Int. Cl.³ C07C *177/00*

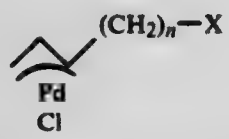
U.S. Cl. 548—359 **7 Claims**

1. A method of synthesis of prostaglandin analogs by the addition of pi-allyl-palladium compounds to bicyclic alkenes, said method comprising:

converting a terminal olefin of the formula:



to a pi-allyl-palladium compound of the formula



wherein "n" equals a whole integer of from 0 to 7 and "X" is carboxylic acid, or C_1–C_8 ester, alcohol, ether or amide groups;

adding said pi-allyl-palladium compound to a bicyclic olefin of the formula



wherein "A" is methylene, ethylene, oxy, imino, or lower alkyl, phenyl, or aryl, substituted amino; and "D" is methylene, ethylene, vinylene, methyleneoxy, alkylidenedioxy, iminooxy, dithio or azo, to provide a bicyclic alkyl palladium addition compound,

displacing the palladium moiety of said addition compound with an acetylene or vinyl moiety, and

removing the protecting groups, if any exist, from the acetylene or vinyl moiety, to provide a prostaglandin analog.

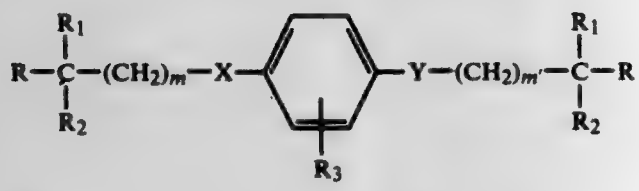
4,351,950

ANTI-ARTERIOSCLEROTIC AGENTS

Ila Sircar, Ann Arbor, Mich., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed Jan. 2, 1980, Ser. No. 108,978
Int. Cl.³ C07C *69/76*
U.S. Cl. 560—62 **32 Claims**

1. A compound having the structural formula:



wherein X and Y are the same or different and are oxygen, sulfur, sulfone or sulfoxide; m and m′ are the same or different and are integers chosen from 2–5; R is CH_2OH; CHO; CO_2A wherein A is hydrogen, alkyl of from 1 to 6 carbon atoms, an alkali or alkaline earth metal cation, an organic amine cation or ammonium; R_1 and R_2 are the same or different and are alkyl of from 1 to 6 carbon atoms, or when taken together are $—(CH_2)—_{3-5}$; and R_3 is hydrogen, halo, alkyl of from 1 to 6 carbon atoms, methoxy, phenyl, trifluoromethyl, 2,5-dichloro, 2,5-dimethyl, 2,3,5-trimethyl, carboxylic acyl of from 1 to 6 carbon atoms, alpha-hydroxyalkyl of from 1 to 6 carbon atoms, 2-chlorophenyl, 4-chlorophenyl, 2,4-dichlorophenyl, 4-methoxyphenyl, 2-tolyl, 4-tolyl or



wherein D is O,CO,S,SO,SO_2,CH_2, or CHOH; provided that R_3 may not be hydrogen when X and Y are oxygen, m and m′ are 2; R_1 and R_2 are CH_3, and R is CO_2H; and further provided that R_3 may not be halo when X and Y are both sulfur; and when R is COOH, the pharmaceutically acceptable salts thereof.

4,351,951

PROCESS FOR MAKING GLYOXYLATE HEMIACETALS

Manuel M. Baizer, Santa Monica, Calif., and Richard D. Goodin, St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 972,170, Dec. 21, 1978. This application Sep. 8, 1980, Ser. No. 184,868
Int. Cl.³ C07C *67/36*
U.S. Cl. 560—186 **12 Claims**

1. A process for making glyoxylate hemiacetals comprising reacting an alcohol of the formula ROH where R is alkyl or reacting formate ester of the formula



where R is alkyl with CO under pressure in the presence of a basic iniator of the formula $M^+(OR)^-$ where M is an alkali metal and R is alkyl, and in the presence of a complexing agent for M^+ selected from ethers and polyamines and having O and/or N donor atoms capable of solvating M^+, or in the presence of a basic initiator of the formula $NR''_4{}^+(OR)^-$ where each R'' is the same or a different alkyl or aralkyl and R is alkyl.

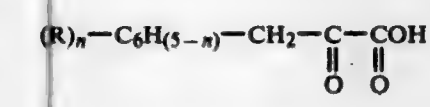
4,351,952

PROCESS FOR PREPARING PHENYL PYRUVIC ACIDS

Marco Foa, Novara; Alessandro Moro, Pernate; Andrea Gardano, Trino Vercellese, and Luigi Cassar, Novara, all of Italy, assignors to Montedison S.p.A., Milan, Italy

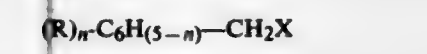
Filed Jul. 1, 1980, Ser. No. 165,019
Int. Cl.³ C07C *51/10*
U.S. Cl. 562—406 **11 Claims**

1. A process for preparing phenyl pyruvic acids having the formula (I):



(I)

in which n is an integer selected from 1, 2 and 3 and substituent or substituents R, which may be the same or different, are hydrogen, alkyls or alkoxy groups having 1 to 4 carbon atoms, alkyl or alkoxy groups substituted by alkoxy groups having 1 to 4 carbon atoms, halogens, nitrile groups, or acyl groups, by carbonylation with CO of benzyl halides having the formula (II):



(II)

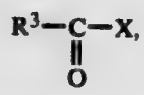
wherein n and R have the same meanings as in formula (I) and X is a halogen selected from chlorine and bromine, in the presence of carbonyl complexes of cobalt and of an inorganic basic agent, characterized in that the carbonylation reaction is conducted in an aqueous-organic medium consisting of a water-mixable ether solvent, at a pressure raging from about 5 to about 60 atmospheres and at a temperature ranging from about 50° to about 90° C.

4,351,953
PREPARATION OF CARBOXYLIC ACIDS BY CARBONYLATION OF ALCOHOLS

Jean Gauthier-Lafaye, Lyon, and Robert Perron, Charly, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Mar. 26, 1981, Ser. No. 247,744
Claims priority, application France, Apr. 2, 1980, 80 07876
Int. Cl.³ C07C *51/12, 53/08, 53/134, 57/30*
U.S. Cl. 562—519 22 Claims

1. A process for the preparation of a carboxylic acid having the structural formula R^1COOH, wherein R^1 is a linear, branched or cyclic chain alkyl radical of from 1 to 6 carbon atoms or a $\Phi—C_nH_{2n}—$ radical wherein Φ is phenyl and $1 \leqq n \leqq 6$, comprising carbonylating an alcohol having the formula $R^1—OH$ with carbon monoxide in liquid phase, in the presence of a catalytically effective amount of nickel and an alkyl or acyl halide promoter therefor, wherein said acyl halide is of the formula



in which X represents a chlorine, bromine or iodine atom and R^3 is defined as was R^1 above, and further wherein R^3 and R^1 may be the same or different, and under a total pressure of less than 200 bars, said carbonylation being carried out in the presence of at least one chromium salt in which the chromium is in an oxidation state (p) of greater than zero ($p>0$), and in an initial carboxylic acid reaction medium having the formula $R^2—COOH$, wherein R^2 is defined as was R^1 above, and further wherein R^1 and R^2 may be the same or different.

4,351,954
HALOGENATED α-AMINO ACIDS

Hiroshige Muramatsu, and Teruo Ueda, both of Nagoya, Japan, assignors to Agency of Industrial Science & Technology and Ministry of International Trade & Industry, both of Tokyo, Japan

Continuation-in-part of Ser. No. 192,808, Oct. 1, 1980, abandoned. This application Aug. 3, 1981, Ser. No. 289,183
Claims priority, application Japan, Oct. 13, 1979, 54-132017
Int. Cl.³ C07C *101/10*
U.S. Cl. 562—574 1 Claim

1. A halogenated α-amino acid represented by the general formula:



wherein, X is one member selected from the group consisting of Cl and Br, X' is one member selected from the group consisting of F, Cl and H, and R is one member selected from the group consisting of H and CH_3.

4,351,955
ALPHA-HYDROXYISOBUTYRIC ACID PROCESS

Carl L. Willis, and Lynn H. Slaugh, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Nov. 5, 1980, Ser. No. 204,676
Int. Cl.³ C07C *59/00*
U.S. Cl. 562—579 5 Claims

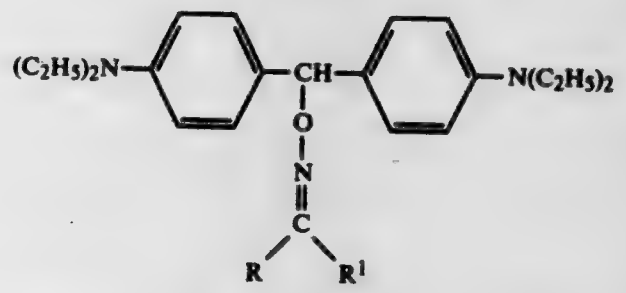
1. A process for producing alpha-hydroxyisobutyric acid which comprises reacting acetone cyanohydrin with alpha-hydroxymethanesulfonic acid and water at a temperature ranging from about 70° C. to about 125° C.

4,351,956
OXIME ETHERS OF 4,4'-BIS(N,N-DIETHYLAMINO)BENZHYDROL AND PRESSURE-SENSITIVE RECORDING SYSTEMS CONTAINING THEM

Frank F. Ceaark, and Daniel W. Thomas, both of Bridgewater, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Aug. 31, 1981, Ser. No. 297,802
Int. Cl.³ C07C *131/00*
U.S. Cl. 564—256 2 Claims

1. The compounds represented by the formula:



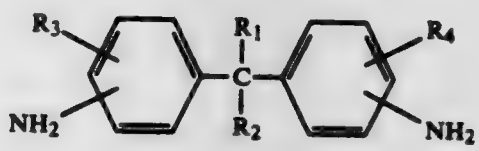
wherein R and R^1, which may be the same or different, represent an alkyl group of 1 to 4 carbon atoms.

4,351,957
PROCESS FOR PREPARING DIAMINODIPHENYL-ALKANES

Kwok K. Sun, Hamden, Conn., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Jun. 29, 1979, Ser. No. 53,378
Int. Cl.³ C07C *87/50*
U.S. Cl. 564—331 13 Claims

1. A process for the preparation of a bis(aminophenyl)alkane having the formula:

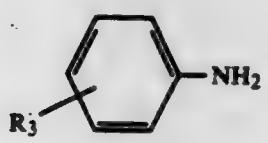


wherein R_1 and R_2, taken individually, each represent lower-alkyl, R_1 and R_2 taken together with the C atom to which they are attached represent the residue of a 1,1-cycloalkylidene group having from 5 to 7 ring carbon atoms, inclusive, and R_3 and R_4 are independently selected from the group consisting of hydrogen, lower-alkyl, lower-alkenyl and lower-alkoxy;

which process comprises the steps of

(a) reacting a m-lower-alkylphenol with a ketone selected from the class consisting of lower-alkanones and cycloalkanones containing from 5 to 7 ring carbon atoms in the proportion of at least 1 mole of m-lower-alkylphenol per mole of ketone and in the presence of an acid catalyst and

(b) heating the resulting product at a temperature of 50° C. to 300° C. with at least 2 moles, per mole of said product, of an acid addition salt of at least one aromatic amine having the formula:



wherein R_3 has the meaning set forth above.

4,351,958
PROCESS FOR PRODUCING ORTHOALKYLATED AROMATIC AMINE

Kazunori Takahata, Otake, and Katsuo Taniguchi, Iwakuni, both of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Aug. 28, 1981, Ser. No. 297,166
Int. Cl.³ C07C *85/24*
U.S. Cl. 564—409 **7 Claims**

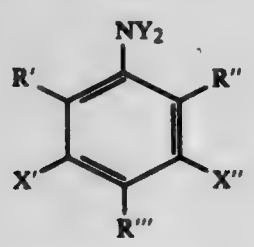
1. A process for producing an orthoalkylated aromatic amine comprising the step of reacting (a) an aromatic amine having at least one hydrogen atom at the ortho-positions and (b) a primary or secondary alcohol under heating in the presence of a catalyst containing, as a main constituent, iron oxides.

4,351,959
PROCESS FOR PREPARATION OF ANILINES SUBSTITUTED BY CHLORINE IN THE META-POSITION

Georges Cordier, Francheville, France, assignor to Rhone-Poulenc Agrochimie, Lyons, France

Filed Jan. 28, 1980, Ser. No. 116,154
Claims priority, application France, Feb. 15, 1979, 79 04481
Int. Cl.³ C07C *85/24*
U.S. Cl. 564—412 **19 Claims**

1. A process for the preparation of anilines substituted in the meta-position by chlorine, by the catalytic hydrogenation of chlorine-substituted nitrogen-containing benzene derivatives, in the liquid phase, in an acid medium, under the action of heat, under pressure and in the presence of noble metals from group VIII of the periodic classification, in which process the benzene derivatives have the formula:



(I)

in which Y represents the hydrogen atom or the oxygen atom, X′ and X″, which are identical or different from one another, each represent a chlorine atom or an optionally substituted alkyl, aryl, aralkyl, alkoxy or aralkoxy radical or one of X′ and X″ in hydrogen, and R′, R″ and R‴, which are identical or different from one another, each represent a chlorine atom or an optionally substituted alkyl, aralkyl, alkoxy or aryloxy radical, at least one of these three representing the chlorine atom and at most two of R′, R″ and R‴ being hydrogen, and the reaction is carried out in an aqueous medium in which the pH is less than 1.5 and/or the concentration of H^+ ions in the aqueous reaction medium is between 0.5 and 12 g.ions/liter, in the presence of iodide and/or bromide ions and in which the proportion of iodide ions in the reaction medium is at least 10^{-6} g.ions/liter and/or the proportion of bromide ions in the reaction medium is at least 0.01 g.ion/liter.

4,351,960
PRODUCTION OF AN ISOMERIC MIXTURE OF SECONDARY PHOSPHINES

Georg Elsner, Hürth; Hartfrid Vollmer, and Gero Heymer, both of Erftstadt, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 24, 1980, Ser. No. 190,448
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1979, 2939588
Int. Cl.³ C07F *9/50*
U.S. Cl. 568—8 **4 Claims**

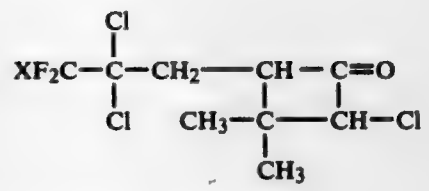
1. In the process for making secondary phosphines by reacting under reaction conditions of pressure hydrogenphosphide with dicyclopentadiene in the presence of a catalyst, the improvement which comprises: reacting the hydrogen phosphide with the dicyclopentadiene in a molar ratio of 1:at least 2 and in the presence of azo-bis-isobutyronitrile or di-t-butylperoxide as catalyst, with the resulting formation of a mixture consisting essentially of isomeric secondary phosphines having the summation formula $C_{20}H_{27}P$.

4,351,961
2-(2′,2′-DICHLORO-3′,3′,3′-TRIFLUOROPROPYL)- AND 2-(2′,2′,3′-TRICHLORO-3′,3′-DIFLUOROPROPYL)-4-CHLOROCYCLOBUTAN-1-ONES

Pierre Martin, Rheinfelden; Eginhard Steiner, Füllinsdorf, and Daniel Bellus, Riehen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 28, 1980, Ser. No. 210,892
Claims priority, application Switzerland, Dec. 7, 1979, 10869/79
Int. Cl.³ C07C *49/457*
U.S. Cl. 568—381 **2 Claims**

1. A compound of the formula I



(I)

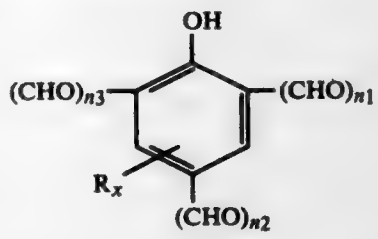
wherein X is chlorine or fluorine.

4,351,962
PROCESS FOR THE PREPARATION OF HYDROXY BENZENE CARBOXALDEHYDES

Peter S. Gradeff, Pottersville, and Stanley T. Murayama, Princeton, both of N.J., assignors to Rhone Poulenc Inc., Monmouth Junction, N.J.

Filed Jul. 11, 1980, Ser. No. 168,940
Int. Cl.³ C07C *45/36, 45/00*
U.S. Cl. 568—432 **28 Claims**

1. A process for the preparation of hydroxy benzene carboxaldehydes having the formula:



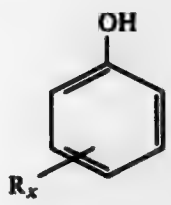
wherein:

R is selected from the group consisting of alkyl, alkoxy, cycloalkyl, aryl, alkoxyalkyl, fluoroalkyl, and hydroxyalkyl oxyalkylene having from one to about twenty carbon atoms; hydroxyalkyl having at least two to about twenty carbon atoms; hydroxy; aldehyde CHO; and halogen;

n_1, n_2 and n_3 are zero or 1; and at least one of n_1, n_2 and n_3 is 1; and

x is zero, 1, 2, 3, or 4, which comprises:

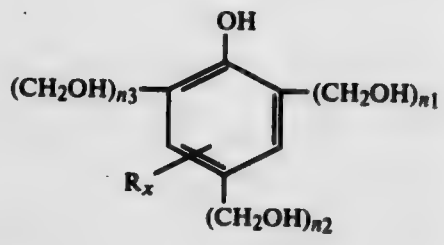
(1) condensing with a formaldehyde compound a phenol having the formula:



wherein

R is selected from the group consisting of alkyl, alkoxy, hydroxyalkyl, cycloalkyl, aryl, alkoxyalkyl, fluoroalkyl, and hydroxyalkyl oxyalkylene having from one to about twenty carbon atoms; hydroxy; and halogen; and

x is zero, 1, 2, 3 or 4, and unsubstituted in at least one ortho or para position in an aqueous reaction medium comprising phenol:HCHO in a molar ratio within the range from about 1:0.1 to about 1:3 and alkali in a molar ratio alkali:phenol within the range from about 1:0.1 to about 1:2 and an alkali concentration not exceeding 30% by weight at a temperature within the range from about 0° to about 120° C. and obtaining a reaction mixture comprising a mixture of monomethylol and polymethylol phenols having the formula:



wherein

R is selected from the group consisting of alkyl, alkoxy, hydroxyalkyl, cycloalkyl, aryl, alkoxyalkyl, fluoroalkyl, and hydroxyalkyl oxyalkylene having from one to about twenty carbon atoms; hydroxy; and halogen;

n_1, n_2 and n_3 are zero or 1; and at least one of n_1, n_2 and n_3 is 1; and

x is zero, 1, 2, 3 or 4;

(2) subjecting the reaction mixture without separation of the monomethylol species from polymethylol species to oxidation under conditions favoring oxidation of methylol species to the corresponding aldehyde species in the presence of oxygen and an amount of alkali that is at least stoichiometrically equal to the amount of phenol and a platinum or palladium oxidation catalyst, at a temperature within the range from about 0° to about 100° C. and a pH within the range from about 11 to about 13.5;

(3) separating and recovering the desired aldehyde in the reaction mixture;

(4) selectively decarbonylating to a corresponding phenol undesired aldehyde species to remove all or selected aldehyde groups in selected ring positions by heating the aldehyde species at a temperature within the range from about 75° to about 275° C. in the presence of a palladium catalyst selected from the group consisting of metallic palladium and palladium hydroxide; and then

(5) recycling the phenol as starting phenol to step (1).

4,351,963

ALIPHATIC OLEFIN OXIDATION USING CATALYST CONTAINING SN, P, O, LI

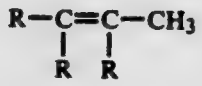
Gardner C. Ray, and Paul W. Solomon, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 23, 1981, Ser. No. 228,038

Int. Cl.³ C07C *45/34, 47/20*

U.S. Cl. 568—477 **6 Claims**

1. A method for preparing aldehyde from aliphatic olefin represented by the formula



wherein each R can be hydrogen or any alkyl group having one to 8 carbon atoms, and each R can be the same or different from the other R's, comprising contacting said aliphatic olefin with an oxygen containing gas at an elevated temperature in the presence of a composition comprising phosphorus, tin, oxygen and lithium.

4,351,964

PROCESS FOR PRODUCING ACETALDEHYDE

Seishiro Nakamura, and Masuhiko Tamura, both of Kurashiki, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed May 8, 1981, Ser. No. 261,805

Claims priority, application Japan, May 19, 1980, 55-66831; May 19, 1980, 55-66832; Mar. 9, 1981, 56-34269

Int. Cl.³ C07C *47/06, 45/41*

U.S. Cl. 568—484 **2 Claims**

1. A process for producing acetaldehyde by reacting acetic anhydride with hydrogen in gaseous phase at a temperature of about 50° to 300° C. and under a pressure of atmospheric to about 20 atmospheres in the presence of palladium metal which is supported on a carrier, the concentration of palladium being in the range of from 0.1 to 5% by weight, based on the weight of the carrier.

4,351,965

NORBORNYL ETHER PREPARATION

Mark A. Sprecker, Sea Bright, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 220,351, Dec. 29, 1980, Pat. No. 4,308,159, which is a continuation-in-part of Ser. No. 200,012, Oct. 23, 1980, Pat. No. 4,311,861. This application Sep. 25, 1981, Ser. No. 305,469

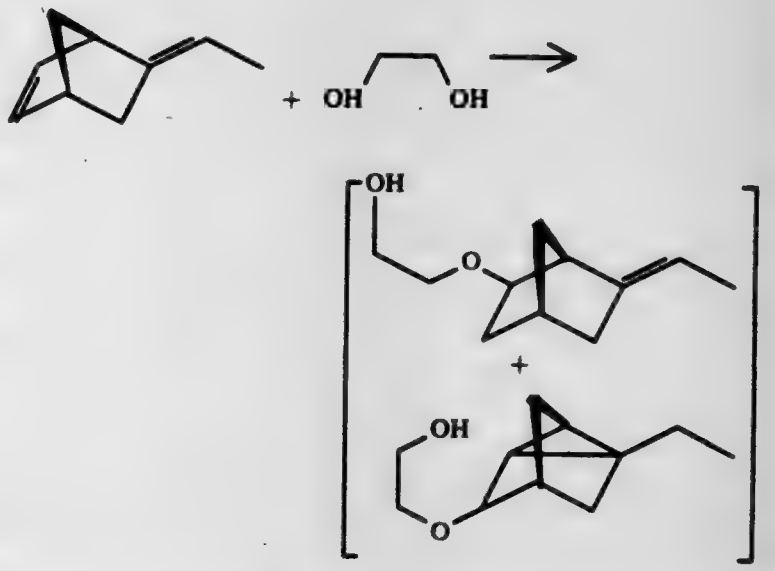
Int. Cl.³ C07C *41/06*

U.S. Cl. 568—665 **1 Claim**

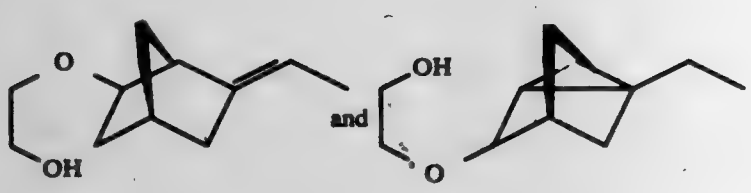
1. The process comprising the step of reacting ethylidene norbornene having the structure:



with ethylene glycol in the presence of a borontrifluoride etherate catalyst at a temperature of 60° C., the mole ratio of catalyst:ethylidene norbornene varying from about 1:99 up to 1:10; the mole ratio of ethylidene norbornene reactant:ethylene glycol reactant varying from about 1:1 up to about 1:2 according to the reaction scheme:



and then recovering a mixture of compounds defined according to the structure:



4,351,966

PHENOL RECOVERY FROM BISPHENOL-A WASTE STREAMS

John W. Flock, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jun. 8, 1971, Ser. No. 271,340
Int. Cl.³ C07C *37/68, 39/04*
U.S. Cl. 568—753 **5 Claims**

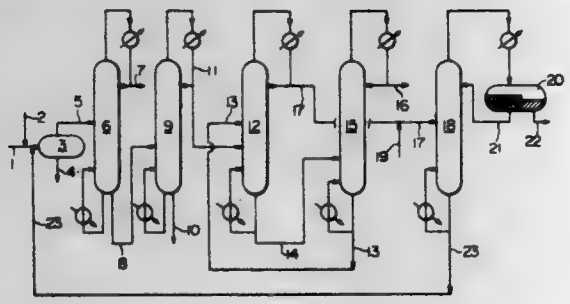
1. The process of cracking a residue derived from the reaction of phenol and acetone in the presence of an acidic catalyst to make bisphenol-A which process comprises contacting the said residue with a molecular sieve catalyst at a temperature from 200° C. to below 500° C. to cause the liberation of phenol from the residue, and collecting the distilled phenol.

4,351,967

PROCESS FOR PRODUCING PHENOLIC COMPOUNDS

Tadahiko Nishimura, Iwakuni; Hiroshi Yamamoto, Ichihara; Masatoshi Osuo, Ichihara, and Akio Kanazawa, Ichihara, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Oct. 31, 1980, Ser. No. 202,482
Claims priority, application Japan, Nov. 2, 1979, 54-142448
Int. Cl.³ B01D *3/40*
U.S. Cl. 568—754 **11 Claims**



1. In a process for producing a phenolic compound which comprises

catalytically cleaving an aralkyl hydroperoxide with an acid to form a phenolic compound,

removing the acid and by-products or impurities having lower and/or higher boiling points than the resulting phenolic compound to recover a crude phenolic compound,

feeding the recovered crude phenolic compound to an extractive distillation column and extractively distilling it in the presence of a polyalkylene glycol or its ether having a higher boiling point than the phenolic compound to separate the phenolic compound and the polyalkylene glycol or its ether as a bottom fraction, and

separating the bottom fraction into the phenolic compound and the polyalkylene glycol or its ether; the improvement wherein

(a) carrying out the extractive distillation under such conditions that the phenolic compound comes out from the top of the column in an amount of 0.3 to 30% by weight based on the total weight of the phenolic compound in the crude phenolic compound fed to the extractive distillation column, and

(b) subjecting the phenol compound-containing overhead fraction from the extractive distillation column to steam distillation and the resulting bottom fraction containing the phenolic compound is recycled to any step after said step of catalytic acid cleavage and before said step of extractive distillation.

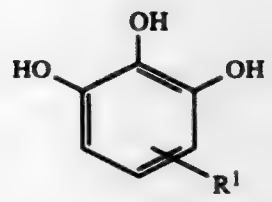
4,351,968

PRODUCTION OF ORGANIC COMPOUNDS

John F. Harris, Cambridge, England, assignor to FBC Limited, Haxton, England

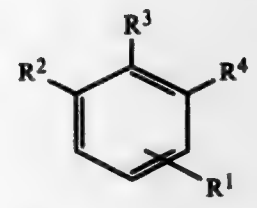
Filed Sep. 12, 1980, Ser. No. 186,556
Claims priority, application United Kingdom, Sep. 14, 1979, 7931996; Dec. 28, 1979, 7944469
Int. Cl.³ C07C *39/10, 37/56*
U.S. Cl. 568—763 **9 Claims**

1. A process for preparing a pyrogallol compound of the formula



I

or a salt thereof, where R^1 represents a hydrogen atom, alkyl of up to 10 carbon atoms, carboxy or alkoxycarbonyl of 2–5 carbon atoms, which process comprises oxidising a carbonyl compound of the formula



II

or a salt thereof, with hydrogen peroxide at a temperature of 0°–200° C. under basic conditions, where R^1 is as defined above and R^2, R^3 and R^4 are the same or different and each represents —OH or —COR^5, at least one of R^2, R^3 and R^4 representing —OH and at least one of R^2, R^3 and R^4 representing —COR^5, where R^5 represents a hydrogen atom, alkyl of 1–4 carbon atoms or phenylalkyl of 7–10 carbon atoms, the amount of hydrogen peroxide being 0.5–5 moles per mole of the carbonyl compound.

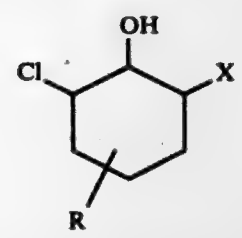
4,351,969

PREPARATION OF CHLOROPHENOLS

Jacques Bourdon, Saint-Auban, France, assignor to Rhone-Poulenc Industries, Paris, France

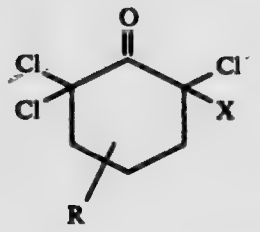
Filed Mar. 17, 1981, Ser. No. 244,688
Claims priority, application France, Mar. 17, 1980, 80 05876
Int. Cl.³ C07C *39/27*
U.S. Cl. 568—774 **14 Claims**

1. A process for the preparation of a chlorophenol having the structural formula:



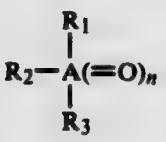
(III)

wherein X is hydrogen or chlorine and R is hydrogen or lower alkyl, comprising thermally dehydrochlorinating, at a temperature in excess of about 120° C., a chlorocyclohexanone having the structural formula:



(I)

wherein X and R are as above defined, in the presence of a catalytically effective amount of a catalyst having the formula:



(II)

wherein A is phosphorus or arsenic, R_1 and R_2, which are identical or different, are each hydrogen, an alkyl radical having from 1 to 12 carbon atoms, a phenyl radical or a radical $—NR_4R_5$, in which R_4 and R_5, which are identical or different, are each H or an alkyl radical having from about 1 to 5 carbon atoms, R_3 is an alkyl radical having from 1 to 12 carbon atoms, a phenyl radical or a radical $—NR_4R_5$, in which R_4 and R_5 are as defined above, and n is equal to 0 or 1.

4,351,970

METHOD OF PREPARING ALCOHOLS HAVING TWO TO FOUR CARBON ATOMS BY CATALYTIC HYDRATION OF OLEFINS

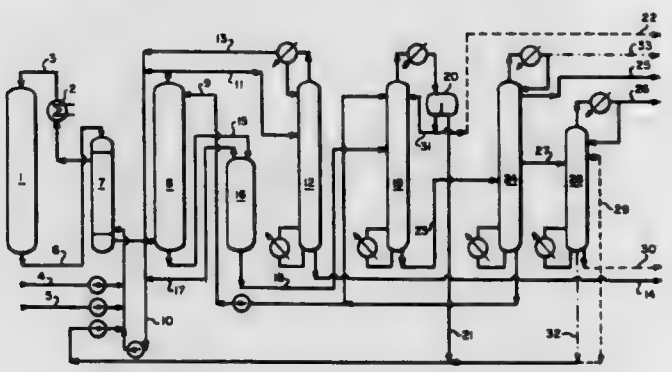
August Sommer; Wilhelm Heitmann, both of Herne, and Rainer Brücker, Castrop-Rauxel, all of Fed. Rep. of Germany, assignors to Veba-Chemie Aktiengesellschaft, Gelsenkirchen-Buer, Fed. Rep. of Germany

Continuation of Ser. No. 973,993, Dec. 28, 1978, abandoned. This application May 21, 1980, Ser. No. 151,991

Claims priority, application Fed. Rep. of Germany, Dec. 31, 1977, 2759237

Int. Cl.³ C07C *29/04*

U.S. Cl. 568—895 **14 Claims**



1. Method of preparing alcohols having 2 or 3 carbon atoms by catalytic hydration of the corresponding olefins on acid catalysts at elevated temperatures and elevated pressure, characterized in that by-products of the hydration including organic soluble by-products which include low-polymerized hydrocarbons which form upon the passage of the input product through the catalyst bed, are separated from the alcohol product and fed to the input product before entry into the reactor, said method being characterized in that:

A. if ethylene is the olefin, the reaction is conducted at a temperature of 200°–300° C. in the gas phase;

B. if propylene is the olefin the reaction is conducted at a temperature of 150° to 220° C. in the gas phase or 120° to 160° C. in the liquid or mixed phase.

4,351,971

PROCESS FOR PREPARING LOWER ALCOHOLS

Kanemaru, Chigasaki; Kenji Yoshida, Fujisawa; Thikashi Higashino, and Tadashi Kozima, both of Yokohama, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Mar. 4, 1981, Ser. No. 240,435

Claims priority, application Japan, May 27, 1980, 55-69591

Int. Cl.³ C07C *29/04*

U.S. Cl. 568—898 **7 Claims**

1. A process for the preparation of lower alcohols by hydration of the corresponding olefins in an aqueous solution, which comprises effecting the hydration reaction in an aqueous solution containing a catalytic system consisting of 0.5 to 2 wt.% of phosphoric acid and 0.5 to 2 wt.% of a heteropolyacid and a chromium compound as an anti-corrosive, the aqueous solution having a pH of 1.4 to 2.4 and reaction being conducted at a temperature of 100° to 300° C.

4,351,972

PROCESS FOR MAKING ANHYDROUS ALKYL IODIDES

Hans K. Kübbeler, Swisttal; Heinz Erpenbach, Cologne; Klaus Gehrmann, and Klaus Schmitz, both of Erftstadt, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 26, 1981, Ser. No. 296,328

Claims priority, application Fed. Rep. of Germany, Sep. 1, 1980, 3032853

Int. Cl.³ C07C *19/02*

U.S. Cl. 570—101 **4 Claims**

1. A process for making anhydrous alkyl iodides, which comprises: reacting carboxylic acid alkyl esters of the formula R^1COOR^2, in which R^1 stands for hydrogen or an alkyl or aryl radical having from 1 to 8 carbon atoms and R^2 stands for an alkyl group having from 1 to 4 carbon atoms, with iodine and hydrogen and optionally carbon monoxide in the presence of compounds of noble metals comprised of rhodium, iridium, palladium or ruthenium as catalyst, and of a heterocyclic aromatic compound, in which at least one hetero atom is a quaternary nitrogen atom, or of a quaternary organophosphorus compound as a promoter, and optionally also in the presence of carboxylic acids having from 1 to 8 carbon atoms and/or their anhydrides, the reaction being effected under practically anhydrous conditions at temperatures of from 350 to 420 K and under a total pressure of up to 30 bars.

4,351,973

STABILIZED METHYLCHLOROFORM

Nobuyuki Ishibe, and Warren F. Richey, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Oct. 6, 1980, Ser. No. 194,512

Int. Cl.³ C07C *17/42*

U.S. Cl. 570—104 **10 Claims**

1. A stabilized methylchloroform composition comprising a stabilizing amount of (1) pyrazine, (2) 2,2-dimethoxypropane, and (3) a nitroalkane or a furan or an alkylfuran in methylchloroform.

4,351,974

PREPARATION OF 3-BROMO-4-FLUOROTOLUENE

Bernd Bassner; Erich Klauke, and Ernst Kysela, all of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 11, 1981, Ser. No. 233,413

Claims priority, application Fed. Rep. of Germany, Mar. 4, 1980, 3008158

Int. Cl.³ C07C *25/13*

U.S. Cl. 570—174 **5 Claims**

1. In the preparation of 3-bromo-4-fluorotoluene by reacting 4-fluorotoluene with bromine, the improvement which com-

prises effecting the bromination in glacial acetic acid in the presence of iodine and iron or an iron salt.

4,351,975

PROCESS FOR PREPARING CHLORINATED COMPOUNDS

Athanassios Tzikas, Pratteln, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

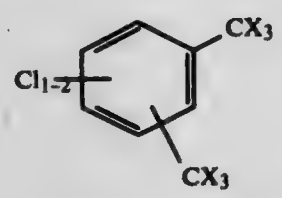
Filed Mar. 24, 1981, Ser. No. 247,087

Claims priority, application Switzerland, Mar. 25, 1980, 2324/80

Int. Cl.³ C07C *17/12*

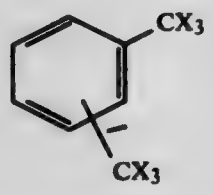
U.S. Cl. 570—209 **8 Claims**

1. A process for the preparation of a compound of the general formula



(I)

in which the X's are each halogen and may be identical or different, wherein a compound of the general formula



(II)

is reacted with elementary chlorine in chlorosulfonic acid at temperatures of −10° to +25° C.

4,351,976

METHOD FOR PURIFYING 1,2-DICHLOROETHANE

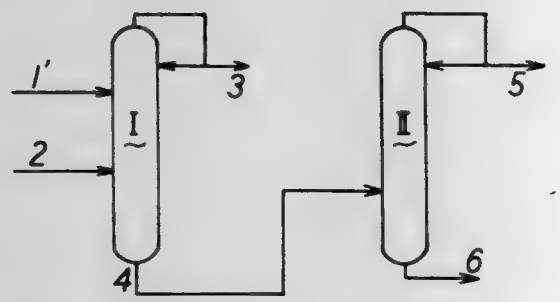
Yusaku Ariki; Takio Hino, and Noboru Yoshida, all of Takasago, Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Mar. 23, 1981, Ser. No. 246,154

Claims priority, application Japan, Mar. 26, 1980, 55-39591

Int. Cl.³ B01D *3/34*

U.S. Cl. 570—262 **4 Claims**



1. In a method for purifying, 1,2-dichloroethane by passing through a distillation column a crude 1,2-dichloroethane produced by oxychlorination of ethylene with at least one of a crude 1,2-dichloroethane produced by direct chlorination of ethylene and a crude uncracked 1,2-dichloroethane recovered in thermal cracking of 1,2-dichloroethane, the improvement which comprises feeding a crude, 1,2-dichloroethane produced by the oxychlorination to an upper plate of a distillation column, feeding to a plate sufficiently below said upper plate at least one crude 1,2-dichloroethane of a crude 1,2-dichloroethane produced by the direct chlorination and a crude uncracked 1,2-dichloroethane recovered in thermal cracking, and recovering 1,2-dichloroethane as a bottom product having a substantially non-varying concentration of carbon tetrachloride over a time duration of said method sufficient to catalyze a thermal cracking of dichloroethane.

4,351,977

POLYUNSATURATED BICYCLIC COMPOUNDS, THEIR PREPARATION AND USE OF SAME AS STARTING MATERIALS FOR PREPARING MONOUNSATURATED BICYCLIC COMPOUNDS

Charles Fehr, Geneva, Switzerland, assignor to Firmenich SA, Geneva, Switzerland

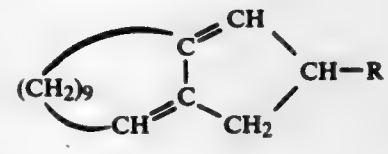
Filed Mar. 9, 1981, Ser. No. 242,013

Claims priority, application Switzerland, Mar. 31, 1980, 2535/80

Int. Cl.³ C07C *13/615*

U.S. Cl. 585—22 **2 Claims**

1. A compound of formula



(III)

wherein symbol R represents a hydrogen atom or a methyl radical.

4,351,978

METHOD FOR THE DISPOSAL OF POLYCHLORINATED BIPHENYLS

Yasuhiro Hatano, Sakaishi, and Kazumune Nakao, Hyogo, both of Japan, assignors to Osaka Prefectural Government and Daido Sanso Kabushiki Kaisha, both of Osaka, Japan

Continuation-in-part of Ser. No. 80,531, Oct. 1, 1970, abandoned, which is a continuation of Ser. No. 888,530, Mar. 21, 1978, abandoned. This application Jul. 21, 1980, Ser. No. 170,535

Int. Cl.³ C07C *1/20*

U.S. Cl. 585—469 **12 Claims**

1. A method of treating polychlorinated biphenyl compounds in aqueous solution to render them substantially harmless, said method comprising:

(A) admixing with said polychlorinated biphenyl compounds the following ingredients with respect to each one gram of chlorine atoms contained in said polychlorinated biphenyl compounds;

(a) from 400 to 2000 ml of water;

(b) from 0.5 to 1.25 gram equivalent weight of an alkali material selected from those metal hydroxides capable of reacting with hydrogen chloride to form a salt;

(c) from 100 to 450 ml of an emulsifying-dispersing agent selected from the group consisting of low molecular weight alcohols;

(d) a hydrogenation catalyst in an effective amount to promote the reaction between hydrogen and said polychlorinated biphenyl compounds;

(B) maintaining said admixture within a pressure range of normal to 100 atmospheres and within a temperature range not higher than 200° C. and, while it is so maintained, introducing gaseous hydrogen in an amount greater than that calculated to be necessary to react with all the chlorines present in the polychlorinated biphenyl compounds.

4,351,979
MANUFACTURE OF AROMATIC COMPOUNDS

Arthur W. Chester, and Yung F. Chu, both of Cherry Hill, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 140,346, Apr. 14, 1980, Pat. No. 4,283,584. This application Apr. 24, 1981, Ser. No. 256,872
The portion of the term of this patent subsequent to Aug. 11, 1998, has been disclaimed.
Int. Cl.³ C07C 5/22
U.S. Cl. 585—481 23 Claims

1. In a process for isomerizing the xylene content of a charge consisting essentially of eight carbon atom aromatic hydrocarbon compounds which mixture contains xylene, and ethylbenzene by contact at conversion conditions under hydrogen pressure with a catalyst comprising a zeolite having a silica/alumina ratio greater than 12 and a constraint index of 1 to 12, the improvement resulting in conversion of ethylbenzene to benzene which comprises adding to the charge 1 to 25 weight percent based on total charge of paraffin hydrocarbons having 3–12 carbon atoms and having no branching in excess of one methyl group on any carbon atom whereby the charge consists essentially of said eight carbon atom aromatic compounds and said paraffinic hydrocarbons, maintaining the conversion temperature between about 600° F. and about 800° F. and using such catalyst comprising a zeolite of reduced acidity such that less than 2 weight percent of xylene is converted to compounds other than xylene when contacted with said catalyst at 900° F., 200 psig and LHSV of 5.

4,351,980
REMOVAL OF OLEFIN FROM ALIPHATIC HYDROCARBON BY TREATMENT WITH ACTIVE SOLID

Robert E. Reusser; Elizabeth A. Claytor, and Brenton E. Jones, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

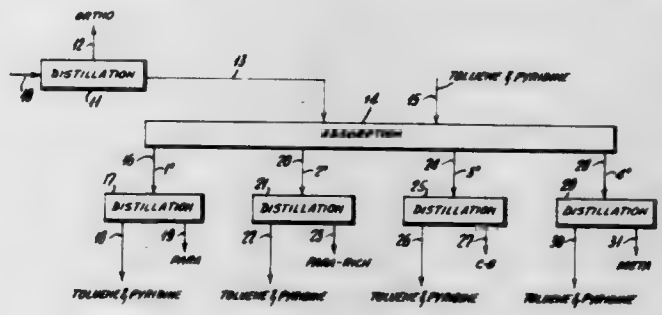
Filed May 22, 1979, Ser. No. 41,454
Int. Cl.³ C07C 7/12
U.S. Cl. 585—820 6 Claims

1. A process for the removal of a small amount of an odor-forming impurity of the order of a few parts per million from a low boiling isoparaffin hydrocarbon aerosol propellant for spray-type application which comprises contacting said hydrocarbon with a solid-acid treated montmorillonite clay catalyst effective to remove said odor-forming impurity.

4,351,981
SEPARATION OF PARA-XYLENE

William Smolin, Fishkill, N.Y., assignor to Texaco Inc., White Plains, N.Y.

Filed May 23, 1980, Ser. No. 152,865
Int. Cl.³ C07C 7/13
U.S. Cl. 585—828 35 Claims



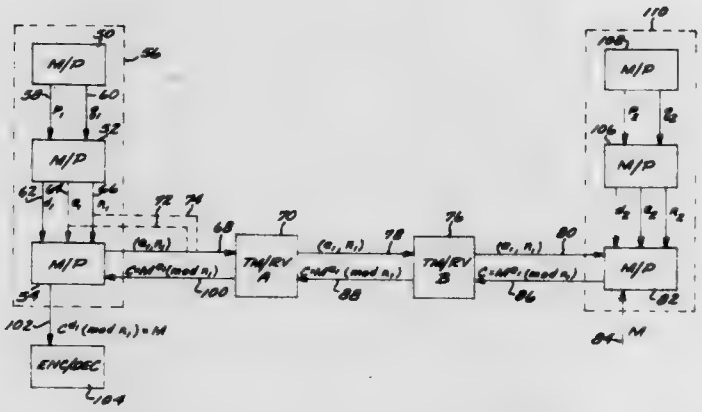
1. The process for separating para-xylene from a feed mixture containing C-8 aromatic hydrocarbons including para-xylene which comprises contacting said feed mixture with, as an adsorbent, a pyridine or substituted pyridine-containing sodium X zeolite or lithium X zeolite thereby selectively adsorbing substantially all of said C-8 aromatic hydrocarbons to the substantial exclusion of para-xylene; and recovering said para-xylene.

4,351,982

RSA PUBLIC-KEY DATA ENCRYPTION SYSTEM HAVING LARGE RANDOM PRIME NUMBER GENERATING MICROPROCESSOR OR THE LIKE

William J. Miller, North Miami, and Nick G. Trbovich, Hollywood, both of Fla., assignors to Racal-Milgo, Inc., Miami, Fla.

Filed Dec. 15, 1980, Ser. No. 216,435
Int. Cl.[3] H04L *9/00*
U.S. Cl. 178—22.11 22 Claims



21. In a public-key data encryption system employing RSA public-key data encryption, a large random prime number generating means for generating large randomly selected prime numbers necessary for RSA public-key data encryption, each having a desired length, the random prime number generating means including a large-scale integrated circuit means for performing the following operations in selecting each of the necessary large random prime numbers:

starting with a P, which is a known prime number having a length which is relatively short in comparison to the desired length, forming a sequence of prime numbers in the form $hP+1$, wherein P is the current prime number in the computed sequence of prime numbers, by selecting at random an h and forming $hP+1$ and testing $hP+1$ for primality by determining first if the greatest common divisor (GCD) of $[(hP+1), (x)]$ is one, wherein x is a composite number consisting of the product of known prime numbers less than or equal to a selected known prime, and if the GCD is equal to 1, determining if both $2^{hP} \equiv 1$ [mod $(hP+1)$] and $2^{h} \not\equiv 1$ [mod $(hP+1)$], and if the GCD is not equal to 1, or if the GCD is equal to 1, but either $2^{hP} \not\equiv 1$ [mod $(hP+1)$] or $2^{h} \equiv 1$ [mod $(hP+1)$], incrementing h to form a new $hP+1$, but if both $2^{hP} \equiv 1$ [mod $(hP+1)$] and $2^{h} \not\equiv 1$ [mod $(hP+1)$], determining if $hP+1$ is greater than or equal to the desired length, and if greater than or equal to the desired length, then setting $hP+1$ as one of the necessary large randomly selected prime numbers, and if not greater than or equal to the desired length, then placing $hP+1$ in the sequence of prime numbers and repeating the above steps using $hP+1$ as the new P and commencing by selecting a new h as above set forth.

4,351,983

SPEECH DETECTOR WITH VARIABLE THRESHOLD

William G. Crouse, and Charles R. Knox, both of Raleigh, N.C., assignors to International Business Machines Corp., Armonk, N.Y.

Continuation of Ser. No. 17,791, Mar. 5, 1979, abandoned. This application Oct. 20, 1980, Ser. No. 198,504
Int. Cl.[3] G10L *1/04;* H04B *15/00*
U.S. Cl. 179—1 SC 3 Claims

1. In a communication system having means for adjustably setting a detection threshold value for an incoming signal stream above which threshold value speech signals are defined to exist and below which threshold value no speech signals are defined to exist, a method for periodically adjusting and setting a new operative level for said detection threshold, comprising steps of:

instantaneously sampling the signal level of said incoming signal stream n times in a period of time t;

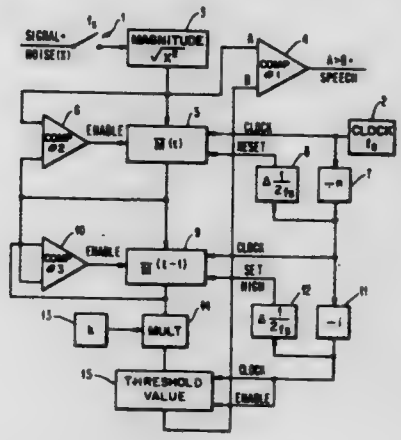
measuring the magnitude M of each said sample;

comparing the magnitude M of each successive said sample with the magnitude M of the preceding said sample;

storing the largest magnitude M encountered during said period of time t as the peak sample magnitude M(t);

comparing said value M(t) to a previous value $M(t-1)$ which represents the smallest M(t) from prior periods of time t; and

following said comparison, storing the lesser of said two magnitudes as the new value $M(t-1)$;



repeating said foregoing steps for i periods of time t and then multiplying the latest existing value of $M(t-1)$ by a constant k; and

storing said product as said new operative threshold level for use during the next i periods of time t; and

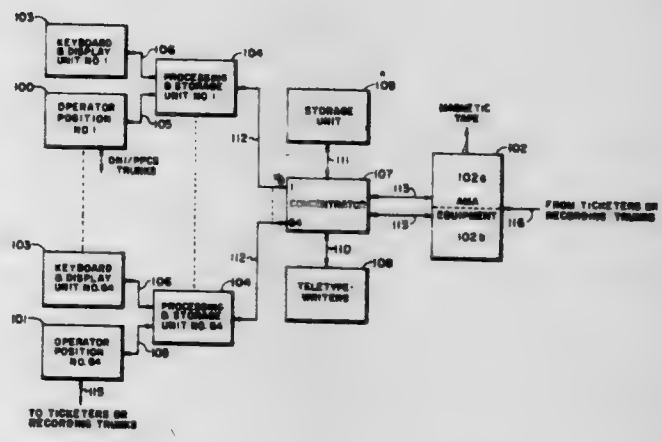
resetting said value $M(t-1)$ to a level above that for the minimum level of speech desired to be detected for samples to be taken over the next said period of time t.

4,351,984

APPARATUS FOR USE IN A TELEPHONE EXCHANGE INCLUDING AN OPERATOR CORDBOARD POSITION

Robert E. Young, Clarendon Hills, and Richard K. Huffman, Hoffman Estates, both of Ill., assignors to Northern Telecom, Inc., Nashville, Tenn.

Filed Jul. 25, 1980, Ser. No. 172,236
Int. Cl.[3] H04M *3/60*
U.S. Cl. 179—7.1 R 9 Claims



1. Apparatus for use in a telephone exchange having a plurality of operator positions one or more of which are operator cordboard positions, said apparatus comprising:

a plurality of information entry and display means each associated with a respective operator position, each information entry and display means comprising means for entering and displaying information relating to telephone connections which are established using the respective operator position;

a plurality of independently operable processing and storage means each coupled to an individual respective one of said information entry and display means;

means for coupling each processing and storage means to the operator position which is associated with the information entry and display means which is coupled to the respective processing and storage means;

each processing and storage means being arranged for monitoring the operator position to which it is coupled, checking information entered via the information entry and display means to which it is coupled, controlling the display of information by the information entry and display means to which it is coupled, timing connections established using the operator position to which it is coupled, and storing information relating to said connections; and

means for coupling said processing and storage means to automatic message accounting equipment for transferring thereto stored information from each processing and storage means.

4,351,985

COUPLING SYSTEM FOR A TELECOMMUNICATION EXCHANGE INSTALLATION

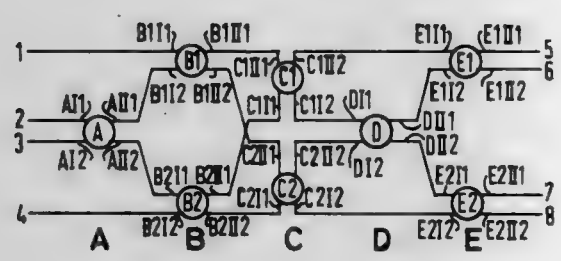
Max Schlichte, Munich, and Wolf Springstubbe, Gauting, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 765,342, Jan. 24, 1977, abandoned, which is a continuation of Ser. No. 644,866, Dec. 29, 1975, abandoned, which is a continuation of Ser. No. 386,281, Aug. 7, 1973, abandoned, which is a continuation of Ser. No. 163,588, Jul. 19, 1971, abandoned. This application Apr. 5, 1979, Ser. No. 27,354

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1970, 2036176

Int. Cl.³ H04Q *3/52*

U.S. Cl. 179—18 GF **13 Claims**



1. A coupling system comprising:

a number of input/output connection lines selectively interconnectable over the coupling system for carrying traffic between N input/output terminals, and

a plurality of interconnected binary switching matrices (A1, A2), each of said matrices having a first pair of leads (I1, I2) and a second pair of leads (II1, II2), each of said first lead pairs being selectively connectable over said matrix to one of said second lead pairs,

at least one of said matrices (A1) having one of said first lead pairs (A1I1) connected to one of said connection lines (1),

the other lead of said first lead pair (A1I2) of said one matrix being connected to one lead of the second lead pair (A2II1) of another of said matrices,

one lead of said second pair (A1II2) of said one matrix being connected to one lead of said second lead pair (A2II2) of said another matrix (A2), and

the other lead of said second pair (A1II1) of said one matrix being connected to one of said connection lines (3).

4,351,986

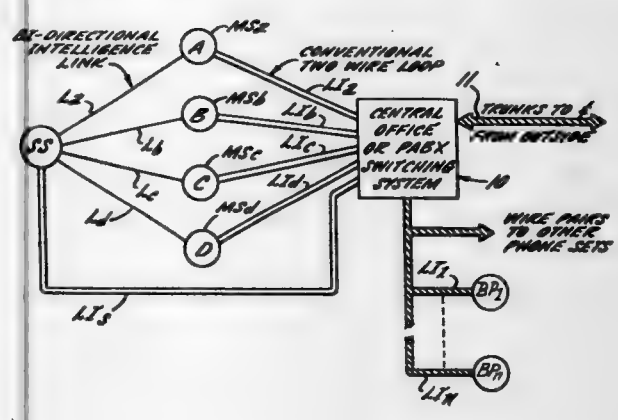
ELECTRONIC TELEPHONES WITH COOPERATIVE INTERACTION BETWEEN A MASTER SET AND MEMBERS' SETS IN A GROUP

William A. Fechalos, Naperville, Ill., assignor to Wescom, Inc., Downers Grove, Ill.

Filed Sep. 19, 1980, Ser. No. 188,925

Int. Cl.³ H04M *1/27, 1/64*

U.S. Cl. 179—27 FH **39 Claims**



9. In a telephone group which includes a secretary's phone set (hereinafter SS) and at least one member's set (hereinafter M_s), each of said sets being served by a central system (CO or PABX) via its own two-wire line with its own directory number, the combination comprising

(a) means in the SS for picking up an incoming call which is producing ringing on the MS line,

(b) means for producing a status signal PU in the SS when a call originally intended for the MS has been picked up,

(c) a group hold switch S_{gh} in the SS, and

(d) means in the SS responsive to actuation of said switch S_{gh} when the status signal PU exists for outputting on the SS line a unique sequence of dial digit signals to the central system,

said sequence including a first group representing a hold code and a second group representing the directory number for the MS.

29. In a telephone set adapted to automatically send out "speed dialed" dial digit signals, the combination comprising

(a) a read/write memory having a plurality of blocks of word addresses, each block corresponding to a dial digit sequence to be sent out,

(a1) each block having a starting address with the word therein contained being a bit code for the first digit of a digit sequence,

(a2) the words at addresses sequentially following said starting address being bit codes for the second and subsequent digits of a digit sequence, and

(a3) all other words within a block at addresses after the last digit word of the sequence containing a bit code for "last digit" LD,

(b) means, when initiated into operation, for reading the first and successive addresses of a block seriatum and outputting a dial digit signal as a consequence of reading each address, each dial digit signal corresponding to the bit code of read-out signals from one address, and

(c) means responsive to read out of a "last digit" LD bit code for terminating the operation of said means (b).

4,351,987

TELEPHONE LINE CIRCUIT HOLD ARRANGEMENT

Thomas E. Feil, New York, N.Y., assignor to V-Band Systems, Inc., New York, N.Y.

Filed Mar. 31, 1981, Ser. No. 249,372

Int. Cl.³ H04Q *5/18*

U.S. Cl. 179—99 H **8 Claims**

1. A hold circuit arrangement for a telephone line circuit for controlling the hold function between a two conductor PBX or central office telephone line and at least one telephone

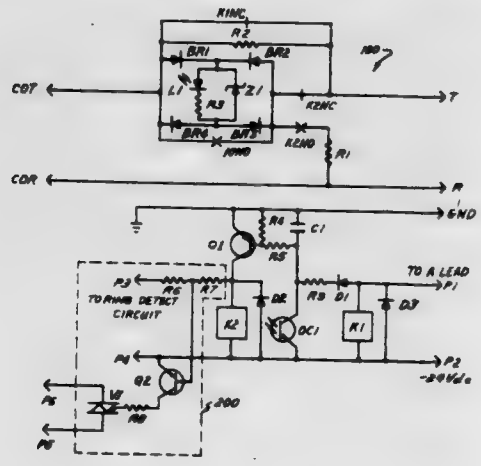
station without introducing an undesireable series impedance condition in the longtudinal path of the telephone line during any of the line circuit's normal operating states, said line circuit adapted for ring detection, lamp control and for A lead control between said station and said line circuit, said hold circuit arrangement comprising:

means for generating an energizing signal in response to the presence of d.c. current in said telephone line,

first and second circuit means for establishing an electrical shunt by passing said energizing signal means in the longitudinal path of said telephone line during all normal operating states of the line circuit,

said first circuit means operating to establish said electrical shunt during the line busy state and said second circuit means operating to establish said electrical shunt during the line hold state,

means operated by said A lead control in response to a station initiated request to place said telephone line in a



hold condition for momentarily switching said energizing signal means in an electrical series connection in the longitudinal path of said telephone line during the transition from the line busy to the line hold condition, whereby said energizing signal is generated if d.c. current is present in said telephone line,

hold means for establishing a hold bridge connection across said telephone line throughout the hold condition, said hold means operated in response to said energizing signal,

said hold means including means for shunting said energizing signal means across the longtudinal path of said telephone line in a series path with the hold bridge upon establishment of the requested hold condition whereby said energizing signal will continue to be generated so long as d.c. current continues to be present in said telephone line, and

means for signaling the release of the hold bridge connection in response to the termination of the hold condition.

4,351,988

KEYBOARD SWITCH ASSEMBLY

Forrest E. Allbright, Centerville, Ohio, assignor to NCR Corporation, Dayton, Ohio

Filed Dec. 8, 1980, Ser. No. 213,974

Int. Cl.³ H01H *13/70*

U.S. Cl. 200—5 A **14 Claims**

1. A keyboard assembly comprising:

base means;

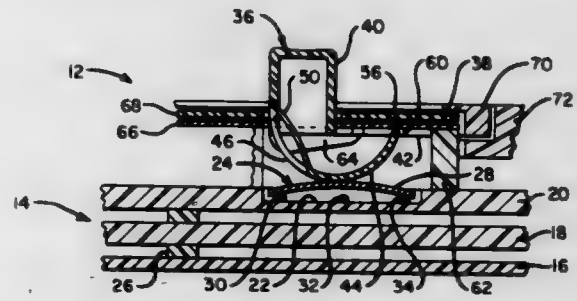
switching assembly means disposed on said base means and including a plurality of switching means;

keyboard means operatively associated with the base means overlying and adjacent to the switching assembly means, having a plurality of keys each disposed in operative relation to one of the switching means;

said keyboard means including support means to which each key is integrally hinged, said support means being apertured to permit movement of each key therethrough;

each of said keys including a switch actuating means of

cantilever configuration extending beneath said key from one side thereof to an opposite side thereof and positioned



to engage the corresponding switching means when said key is depressed.

4,351,989

DISCONNECT SWITCH FOR METAL-ENCAPSULATED HIGH-VOLTAGE SWITCHING INSTALLATIONS

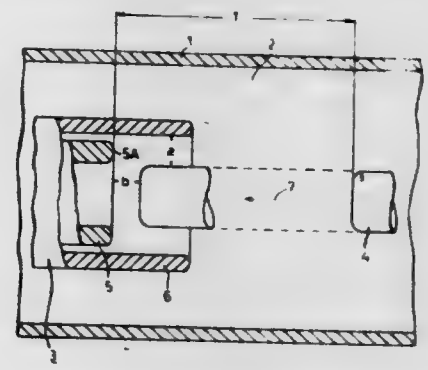
Günther Luxa, Berlin, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jan. 24, 1978, Ser. No. 871,943

Claims priority, application Fed. Rep. of Germany, Jan. 31, 1977, 2704385

Int. Cl.³ H01H *31/00*

U.S. Cl. 200—48 CB **4 Claims**



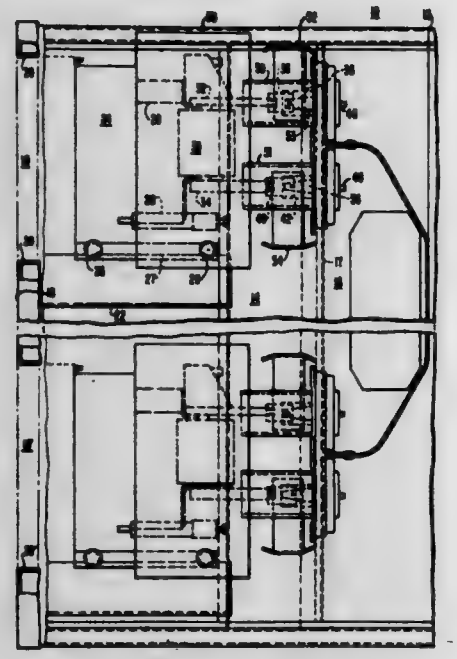
1. In a disconnect switch for use in a metal-encapsulated high-voltage switching installation at voltages of 245 kV and above which includes a tubular grounded encapsulation containing a gaseous insulating medium, said switch including a movable switching pin and a mating contact axially associated therewith, said movable switching pin being adapted for axial movement toward and engagement with said mating contact when said switch is moved from an "off" to an "on" position, the improvement comprising a cylindrical member arranged in spaced surrounding relationship to said mating contact and formed so as to extend beyond that end face of said mating contact which is in facing relationship with said switching pin, said cylindrical member projecting beyond the end face of said mating contact and terminating in the gap between said mating contact and said switching pin when said switch is in said "off" position, said cylindrical member also projecting beyond the end face of said switching pin and surrounding said switching pin when said switch is in said "on" position, said cylindrical member being radially spaced apart from the surface of said switching pin by a distance which is greater than a preliminary breakdown axial distance between said mating contact and said switching pin at which breakdown between said mating contact and switching pin occurs as said switching pin moves towards said mating contact as said switch is moved to said "on" position, so that when said switch is moved to said "on" position, a preliminary breakdown takes place during movement of said movable switching pin to said "on" position of said switch only between said switching pin and said mating contact and not between said switching pin and said cylindrical member.

4,351,990

INTERPHASE BARRIER FOR SWITCHGEAR

Glenn A. Hesselbart, Plum Borough, and Robert E. Wobrak, North Huntingdon, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 1, 1980, Ser. No. 174,340
Int. Cl.[3] H01H *9/22*
U.S. Cl. 200—50 AA 4 Claims



1. A circuit interrupter system, comprising:

(a) movable circuit interrupter means having spaced electrically conductive terminals for interconnection with an electrical circuit which is to be served thereby;

(b) enclosure means for having disposed as part thereof fixed electrically conductive terminals which are complementary with said movable circuit interrupter means terminals, said fixed electrically conductive terminals being interconnectable with said electrical circuit, said enclosure means having an opening therein or predetermined magnitude in a given dimension through which said movable circuit interrupter means moves for removal thereof from said enclosure means;

(c) shutter means disposed within said enclosure means for being alternatively placed to shield said fixed complementary terminals when said terminals of said movable circuit interrupter means are not in electrical contact with said fixed terminals or placed to expose said fixed complementary terminals when said terminals of said movable circuit interrupter means approach a disposition of electrical contact with said fixed terminals; and

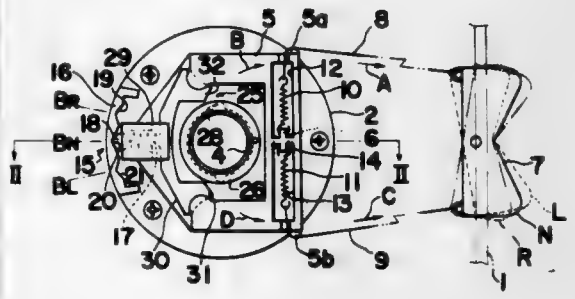
(d) movable electrically insulating barrier means having a maximum displacement in said dimension which is larger than said predetermined magnitude, the difference in displacement between said predetermined magnitude and said maximum displacement providing a related incremental increase in the voltage breakdown characteristic of said barrier means, said barrier means being movably disposed within said enclosure means to a first disposition between said movable spaced terminals when said movable spaced terminals are interconnected with said fixed complementary terminals for thus increasing the voltage breakdown distance between said movable terminals, said barrier means being movably disposed within said enclosure means to a second disposition when said circuit interrupter means is removed from said enclosure means for allowing said shutter means to be disposed to shield said fixed complementary terminals.

4,351,991

DIRECTION INDICATOR BLINKER LIGHT SWITCHING ARRANGEMENT

Masayuki Morita, Tokoname, and Tasuku Nakano, Mizunami, both of Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi, Japan

Filed Nov. 14, 1980, Ser. No. 207,070
Claims priority, application Japan, Nov. 22, 1979, 54-151714; Dec. 12, 1979, 54-172008[U]
Int. Cl.[3] H01H *3/16*
U.S. Cl. 200—61.27 19 Claims



1. A direction indicator blinker light switching arrangement for use in a motor vehicle having a steering shaft and first and second blinker light terminals respectively alternatively engageable to turn on first and second blinker lights, comprising:

an actuator, pivotally mounted to said vehicle, located within reach of a driver of said vehicle and selectively movable between a first neutral position and a first actuating position and between said first neutral position and a second actuating position directionally opposite said first actuating position;

a turn signal switch for engaging said first blinker light terminal to generate a first turn signal when said actuator is in said first actuating position, and for engaging said second blinker light terminal to generate a second turn signal when said actuator is in said second position; and

means for cancelling a selected positioning of said actuator in said first and second positions, said cancelling means including (1) a cancelling mechanism including:

(a) a ratchet pivotally movable in a first direction between a second neutral position and a first switching position and in a second direction between said second neutral position and a second switching position directionally opposite said first switching position; and

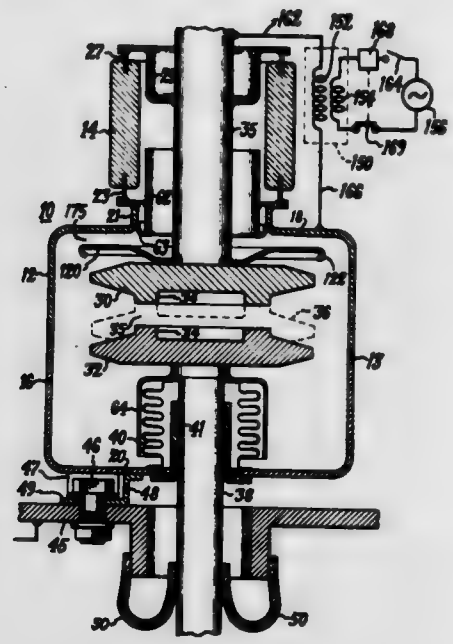
(b) a cancelling cam adjacent to said steering shaft, and rotatable in said first and second directions in response to rotation of said steering shaft, said cancelling cam being engageable with said ratchet to move said ratchet respectively from said first and second switching positions to said neutral position when said ratchet is rotated in said second and first directions, respectively, said actuator being spaced from said cancelling mechanism; and

(2) interconnection means, connecting to said actuator and coupleable with said cancelling mechanism, for transmitting drive forces to move said ratchet from said second neutral position to said first and second switching positions in response to movement of said actuator from said first neutral position to said first and second actuating positions, respectively, and to move said actuator from said first and second actuation positions to said first neutral position in response to movement of said ratchet respectively from said first and second switching positions to said second neutral position.

4,351,992
HIGH-POTENTIAL TESTING OF VACUUM-TYPE CIRCUIT INTERRUPTERS

Donald W. Crouch, Newtown Square, Pa., assignor to General Electric Company, Philadelphia, Pa.

Filed Nov. 5, 1979, Ser. No. 91,027
Int. Cl.[3] H01H *33/66*
U.S. Cl. 200—144 B 5 Claims



1. For use with a vacuum-type circuit interrupter that has a relatively low voltage rating and (i) comprises a pair of separable contacts that are fully separated when the interrupter is opened, (ii) further comprises an envelope having an interior that is normally at a vacuum, the envelope comprising a metal housing electrically connected to one contact and surrounding said pair of contacts and an insulator at one end of the metal housing electrically isolating the other of said contacts from said metal housing, and (iii) is susceptible to external spark-over across said insulator when subjected to high potentials applied between its fully-separated contacts of an effective value equal to a predetermined minimum value sufficient to consistently produce a spark-over between said fully-separated contacts when the space within said interrupter is at atmospheric pressure; a method of assuring, during testing for loss-of-vacuum with high potential higher than normal operating voltage, that a spark-over will occur internally of said interrupter envelope when subjected to high potentials having an effective value substantially lower than said predetermined minimum value when said interrupter space is at atmospheric pressure, comprising:

(a) providing within said interrupter envelope two spaced-apart metallic parts across which appears a potential equal to that applied between said fully-separated contacts, one of said metallic parts being a shield electrically connected to said other contact and extending alongside said metallic housing in spaced relationship thereto, the other of said metallic parts being a portion of said metallic housing located adjacent said shield,

(b) utilizing for the opposing regions of said metallic parts one or more metals that in a vacuum are characterized by higher dielectric strength than the metal or metals used for the opposing regions of said contacts, and

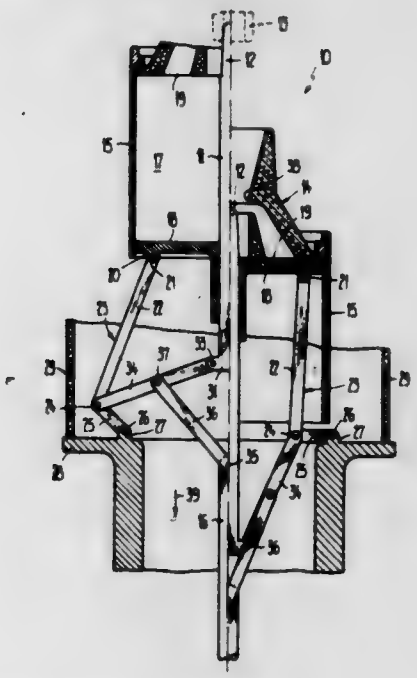
(c) providing a gap between the opposing regions of said metallic parts that is of such length and configuration that it is subjected to substantially higher maximum voltage stresses than the gap between said fully-separated contacts when a high potential is applied across the gap between said fully-separated contacts,

(d) said gap between said metallic parts having: (i) a length sufficiently short that when at atmospheric pressure it will spark-over at high potentials having an effective value substantially lower than said predetermined minimum value and (ii) a minimum length shorter than the gap between said fully-separated contacts.

4,351,993
GAS-BLAST SWITCH

Rudolf Graf, Obermuhen, Switzerland, assignor to Sprecher & Schuh AG, Aarau, Switzerland

Filed Sep. 2, 1980, Ser. No. 183,429
Claims priority, application Switzerland, Nov. 16, 1979, 10246/79
Int. Cl.[3] H01H *33/88*
U.S. Cl. 200—148 A 3 Claims



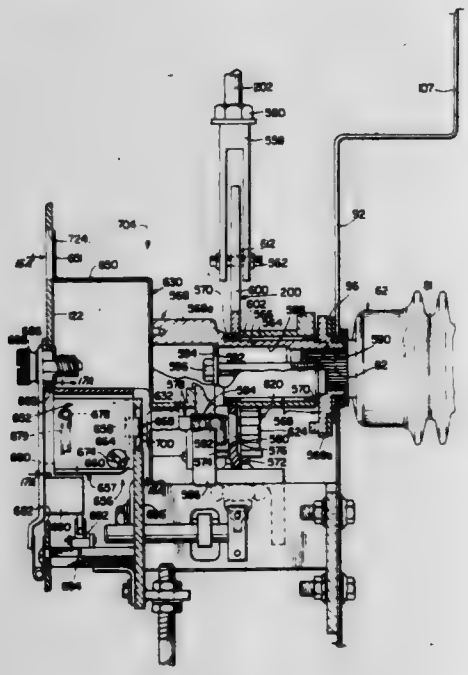
1. A gas-blast switch comprising:
a movable contact element;
a drive rod;
a step-up lever drive for operatively coupling said movable contact element with said drive rod;
a blast nozzle surrounding said contact element and movable along with said movable contact element;
a pump cylinder containing an extinguishing gas;
said blast nozzle being connected with said pump cylinder;
a pump piston upon which there is displaceably guided said pump cylinder;
a toggle lever having a first element and a second element;
said pump piston being hingedly connected with one end of said first element of said toggle lever which in a cut-on position of the gas-blast switch is located in a bent position of the toggle lever;
means defining a stationary location with which there is hingedly connected said second element;
said toggle lever containing a toggle joint operatively coupled with said drive rod, so that during a cut-off stroke of the gas-blast switch the toggle lever is extended and then again bent;
said lever drive comprising a first coupling element and a second coupling element;
said first coupling element being connected at one end with said toggle joint and at its other end with said movable contact element; and
said second coupling element being connected at one end between the opposed ends of said first coupling element at said first coupling element and at its other end being hingedly connected with said drive rod, so that at the start of the cut-off stroke the bent position of the toggle lever initially is intensified.

4,351,994

HIGH-VOLTAGE SWITCHGEAR

David M. Evans, Palantine, and Roy T. Swanson, North Riverside, both of Ill., assignors to S&C Electric Company, Chicago, Ill.

Filed Apr. 1, 1980, Ser. No. 136,632
Int. Cl.³ H01H *3/32*
U.S. Cl. 200—153 SC **29 Claims**



1. Improved high-voltage switchgear of the type having a switch selectively operable between a closed position and an open position and a switch-operating mechanism which can assume a switch-closed or a switch open condition due to the action of means therein for storing a predetermined amount of mechanical energy capable, upon release thereof, of closing or opening the switch, wherein the improvement comprises:

first electrical means for re-storing the predetermined amount of energy in the energy storing means in response to, and after, the release of energy previously stored therein, the re-stored energy being capable of placing the operating mechanism in the condition opposite that assumed by the operating mechanism during the release of the previously stored energy;

first mechanical means responsive to selective manual manipulation thereof for re-storing the predetermined amount of energy in the energy storing means after the release of energy previously stored therein, the re-stored energy being capable of placing the operating mechanism in the condition opposite that assumed by the operating mechanism during the release of the previously stored energy;

second electrical means for releasing energy stored in the energy storing means;

second mechanical means for releasing energy stored in the energy storing means in response to selective manual manipulation thereof;

first preventing means responsive to the ongoing restoration of energy in the energy storing means by either the first electrical means or the first mechanical means for preventing the release of any energy by the second mechanical means until the predetermined amount of energy is re-stored;

second preventing means responsive to the ongoing restoration of energy in the energy storing means by the first mechanical means for preventing both (a) the re-storing of energy in the energy storing means by the first electrical means and (b) the release of any energy in the energy storing means by the second electrical means, at least until the predetermined amount of energy is re-stored;

means responsive to selective manual manipulation thereof for coupling the operating mechanism to or decoupling the operating mechanism from the switch whether or not energy is stored in the energy storing means and regardless of the condition of the operating mechanism;

means responsive to the decoupling of the operating mechanism from the switch for dissipating energy stored in the operating mechanism and for preventing damage to the switch and to the operating mechanism by such dissipated energy; and

means

(a) responsive to an ongoing attempt to decouple the operating mechanism from the switch for locking the switch in its extant position before decoupling is completed and

(b) responsive to an ongoing attempt to couple the operating mechanism to the switch to permit its unlocking the switch for movement by the operating mechanism out of its extant position after coupling is completed.

18. The switchgear of claim 17, which further comprises:

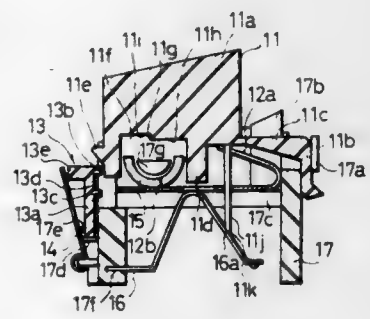
indicating means responsive to partial or completed decoupling of the operating mechanism from the switch for giving a sensible indication that coupling between the operating mechanism and the switch is not completed.

4,351,995

VIBRATION-PREVENTING MECHANISM FOR USE IN A PUSH BUTTON SWITCH

Akihiko Inoue, and Takeo Ito, both of Soma, Japan, assignors to Alps Electric Company, Ltd., Tokyo, Japan

Filed Sep. 5, 1980, Ser. No. 184,284
Claims priority, application Japan, Sep. 8, 1979, 54/124338[U]
Int. Cl.³ H01H *3/12, 13/66*
U.S. Cl. 200—159 A **3 Claims**



1. In a push button switch including a plurality of push buttons having means for deflecting resilient contacts and having a spring member engaging said push buttons to urge them in a direction opposite that for deflecting the resilient contacts, the improvement including means for preventing the resilient contacts from vibrating upon release of the deflecting force from the associated push button, said means including a respective projection formed on the lower portion of said push buttons and extending towards a respective contact and dimensioned to prevent the associated contact from vibrating.

4,351,996

INDUCTION HEATING APPARATUS WITH THERMISTOR AND MAGNETIC SENSOR

Shigeki Kondo, Tachikawa; Tomofumi Iketani, Fuchu; Yoshio Yamazaki, Yoshikawa; Keiichiro Doi, Izumi, and Seiji Tanaka, Yamatokoriyama, all of Japan, assignors to Riccar Co., Ltd. and Sharp Kabushiki Kaisha, both of Osaka, Japan

Filed Jan. 28, 1981, Ser. No. 229,298
Claims priority, application Japan, Jan. 30, 1980, 55-10735; Dec. 15, 1980, 55-180670[U]
Int. Cl.³ H05B *6/12*
U.S. Cl. 219—10.49 R **7 Claims**

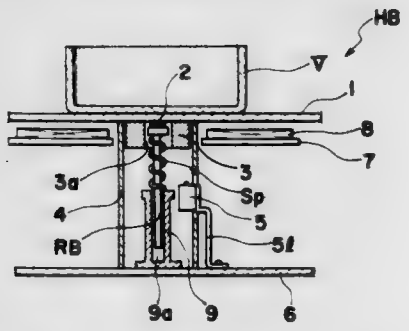
1. An induction heating apparatus having an induction heating coil provided below a top plate means for supporting a container of magnetizable material thereon, said induction heating apparatus comprising:

thermistor element means provided on the undersurface of

said top plate means for controlling energization of said induction heating coil;

magnet member means movably provided below said top plate means so as to be raised through attraction thereof to a said container of magnetizable material on said top plate means; and

switching member means provided below said magnet member means for selective energization and de-energization of said induction heating coil in response to the movement of said magnet member means;



said magnet member means being formed to define bore means therethrough in a predetermined position corresponding to said thermistor element means so as to accommodate said thermistor element means into said bore means upon raising of said magnet member means for preventing collision therebetween and for providing access to said thermistor element means from beneath said magnet member means; and

said apparatus further comprising support means for thermistor element means extending through said bore means.

4,351,997

FOOD PACKAGE

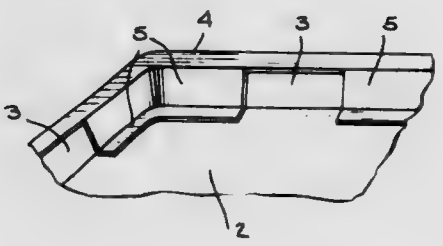
Lennart Mattisson, Kagenrod, and Bertil Ganrot, Bjuv, both of Sweden, assignors to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland

Filed Aug. 20, 1980, Ser. No. 179,635

Claims priority, application Sweden, Aug. 27, 1979, 7907117

Int. Cl.³ H05B *6/80*

U.S. Cl. 219—10.55 E **7 Claims**



1. A food package for controlled heating of prepared food in hot air, convection, household and microwave ovens, said package comprising a tray including a bottom wall transparent to microwave radiation and a peripheral structure, said peripheral structure including a peripheral wall extending upwardly from said bottom wall and a rim extending outwardly from said peripheral wall at the top thereof, at least a portion of said peripheral structure incorporating a microwave radiation reflecting material.

4,351,998

MICROWAVE OVEN WITH RESISTANCE HEATING UNIT

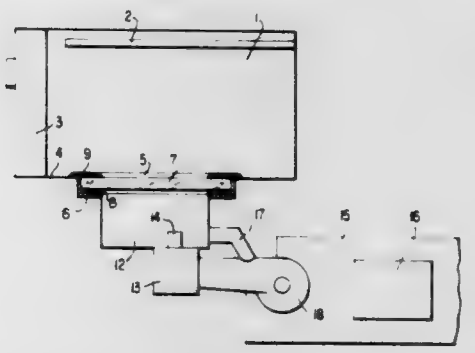
Heinrich Keppel, Nuremberg; Peter Klapper, Schwabach, and Herbert Fleischmann, Nuremberg, all of Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 19, 1980, Ser. No. 208,332

Claims priority, application Fed. Rep. of Germany, Nov. 20, 1979, 2946767

Int. Cl.³ H05B *6/70*

U.S. Cl. 219—10.55 R **2 Claims**



1. In an oven including walls defining a cooking chamber; means defining a microwave window in one of said walls; a glass-ceramic plate covering said window; a securing frame affixed to said one wall and immobilizing said plate by engaging peripheral portions thereof; a microwave connecting housing adjoining said window externally of said cooking chamber; microwave generating and guiding means bounding at least in part the space defined by said connecting housing for directing microwave energy into said cooking chamber through said connecting housing and said window; and electric resistance heating means operatively connected with said cooking chamber; the improvement comprising

(a) a high-temperature resistant seal interposed between said securing frame and said plate; said seal being bonded to said one wall and said plate;

(b) a cooling system for ventilating the oven; the cooling system including pressure means for circulating air; said pressure means having a pressure side; and

(c) a conduit maintaining communication between said pressure side and said space defined by said connecting housing for maintaining said space at an overpressure that is greater than the pressure prevailing in said cooking chamber.

4,351,999

HEATING APPARATUS PROVIDED WITH A VOICE SYNTHESIZING CIRCUIT

Shunichi Nagamoto; Masao Ito, both of Nara; Tatsuo Saka, Ikoma, and Tetsu Kobayashi, Nara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Dec. 23, 1980, Ser. No. 220,234

Claims priority, application Japan, Dec. 26, 1979, 54-172044; May 26, 1980, 55-70435

Int. Cl.³ H05B *6/68*

U.S. Cl. 219—10.55 B **14 Claims**

1. A heating apparatus comprising

an enclosure case having therein a heating chamber in which an object to be heated is to be placed, said enclosure case having a door at an opening of said heating chamber,

a heating means for generating heating energy in said heating chamber,

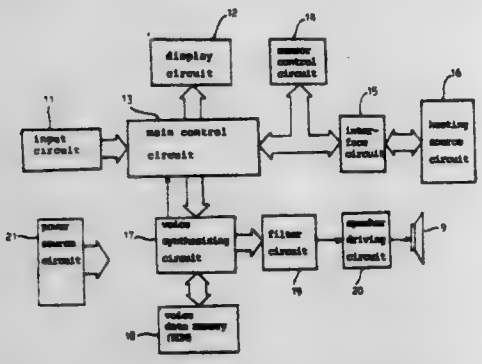
a plurality of operation buttons interconnected with a key input means for inputting predetermined heating sequence data,

a voice data memory means for storing synthesizing voice data corresponding to predetermined heating sequence data,

a voice synthesizing circuit for producing synthesized voice signals from said synthesizing voice data stored in said voice data memory means,

a speaker for generating synthesized voices upon receipt of said synthesized voice signals from said voice synthesized circuit, and

microcomputer control circuit means for controlling circuit operations of said voice synthesizing circuit, and control-



ling heating operations of said heating means following predetermined sequence orders when heating sequence data are given thereto through said key input means said microcomputer control circuit means comprising a built-in read only memory (ROM) for storing programs comprising a first algorithm for checking the validity of key input data and a second algorithm for actuating said voice synthesizing circuit only when said key input data are determined to be valid based on predetermined criteria.

4,352,000

INDUCTION HEATING COOKING APPARATUS

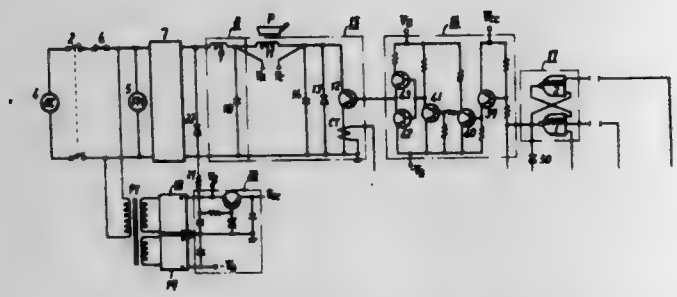
Kunihiro Fujishima, Moriyama, and Takaki Kuramoto, Kyoto, both of Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed Jul. 29, 1980, Ser. No. 173,469

Claims priority, application Japan, Aug. 10, 1979, 54/102453; Oct. 25, 1979, 54-148679[U]

Int. Cl.³ H05B *5/04*

U.S. Cl. 219—10.77 **38 Claims**



1. An induction heating cooking apparatus, comprising:

power supply means having a particular polarity output voltage,

self-controlled inverter means energized by said power supply means,

said self-controlled inverter means comprising

an induction coil and a switching element connected in series with said power supply means,

a resonance capacitor connected in parallel with said switching element, and

a one directional current flow device connected in parallel with said switching element in a reversed polarity with respect to the power supply voltage,

start signal generating means responsive to a turning on of said power supply means for generating a start signal for starting said self-controlled inverter means,

current level detecting means for detecting the level of current flowing through said switching element after said self-controlled inverter means is started,

first control means for controlling said switching element so as to put it into a non-conductive state when the current level detected by said current level detecting means reaches a predetermined current value,

voltage level detecting means for detecting the level of the terminal voltage of said resonance capacitor, and

second control means for applying a voltage to said switching element tending to put it into a conductive state when the voltage level detected by said voltage level detecting means becomes smaller than a predetermined value, said first and second control means causing said inverter means to oscillate at a predetermined frequency.

4,352,001

METHOD AND APPARATUS FOR PRODUCING WELDED METALLIC CAN BODY

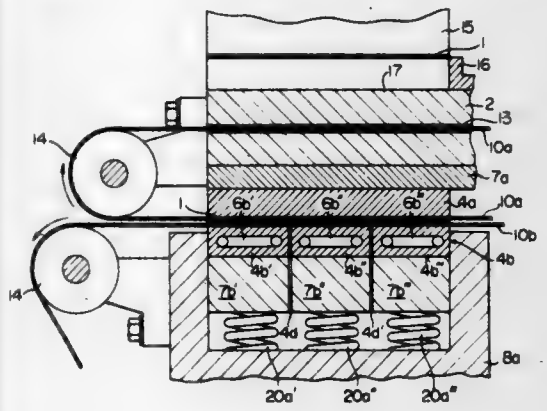
Kazuhisa Ishibashi, Tokyo; Sadaki Matsui, Machida; Hisakazu Yasumuro, Yokohama; Tsuneo Imatani; Hiroshi Ueno, both of Yokosuka, and Seishichi Kobayashi, Yokohama, all of Japan, assignors to Toyo Seikan Kaisha Limited, Tokyo, Japan

Filed Sep. 25, 1980, Ser. No. 190,846

Claims priority, application Japan, Sep. 26, 1979, 54-122546

Int. Cl.³ B23K *1/16*

U.S. Cl. 219—64 **19 Claims**



1. A method for producing a welded metallic can body from a metal blank bent into a cylindrical can-like structure with marginal side edges overlapped, comprising: holding the overlapped edges of the can-like structure along the entire length of the structure between a pair of opposed parallel wire electrodes positioned on the opposed surfaces of parallel electrodes, one of said parallel electrodes being divided into a plurality of portions side-by-side along the wire electrodes and electrically insulated from each other and individually movable toward and away from the opposed parallel electrode; simultaneously passing electric currents electrically in parallel across said portions and the other electrode for a predetermined period of time while exerting pressure on the individual electrode portions independent of the pressure exerted on the other portions for pressing the wire electrodes against the overlapped edges for subjecting the overlapped edges to substantially uniform pressure along the entire length of said parallel electrodes resistance welding, and supplying the electric currents through at least one of said portions from an electric current source independent from the electric current source for the current through the other portions and the respective currents having current level values for causing the temperature rise in the overlapped edges of the can body-like structure to be uniform along the length of the overlapped edges.

4,352,002

ELECTRODES FOR USE IN THE EXTRUSION-FUSION WELDING OF LEAD PARTS THROUGH AN APERTURE IN A BATTERY CASE

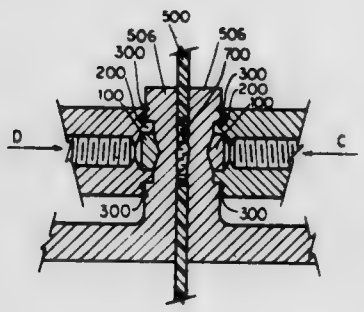
William J. Eberle, Reading, Pa., assignor to General Battery Corporation, Reading, Pa.

Continuation of Ser. No. 5,669, Jan. 22, 1979, Pat. No. 4,256,946, which is a continuation of Ser. No. 790,881, Apr. 26, 1977, Pat. No. 4,166,210. This application Feb. 18, 1981, Ser. No. 235,705

The portion of the term of this patent subsequent to Mar. 17, 1998, has been disclaimed.

Int. Cl.[3] B23K *11/30*

U.S. Cl. 219—78.15 12 Claims



1. In an apparatus having electrodes for extruding and electrically fusing lead parts through an aperture in a battery case to form a connection therethrough, said aperture having a substantially flat surface region disposed around the perimeter thereof, the improvement wherein said electrode comprises a forging means for deforming an exterior portion of said lead parts in an area generally surrounding said aperture which is adjacent said flat surface region to thereby prevent expulsion of molten metal compressed within said aperture.

4,352,003

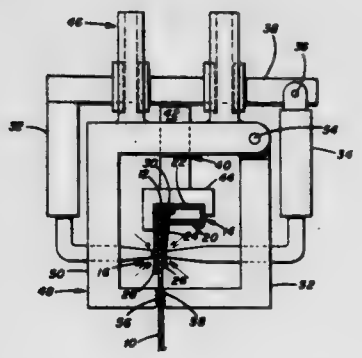
METHOD FOR POSITIONING AND SECURING COMPONENTS OF A WORKPIECE

Peter J. Arnoldt, Clairton, Pa., assignor to Ductmate Industries, Inc., Pittsburgh, Pa.

Filed Sep. 17, 1979, Ser. No. 76,205

Int. Cl.[3] B23K *11/10, 37/04*

U.S. Cl. 219—103 7 Claims



1. The method for positioning and securing components of a workpiece comprising,

positioning a second workpiece component on a first workpiece component relative to a fixed frame,

engaging said first workpiece component by clamp means positioned on said fixed frame,

supporting a welding machine for movement relative to said fixed frame toward and away from said second workpiece component,

moving said welding machine to move a positioning means into abutting relation with said second workpiece component and move said second workpiece component relative to said first workpiece component until said second workpiece component is positioned at a preselected location relative to said first workpiece component,

moving opposed electrodes relative to said positioning means on said welding machine into abutting relation with said workpiece first and second components after the second workpiece component is positioned at said preselected location, and

passing welding current between said opposed electrodes through said first and second workpiece components to secure said second workpiece component to said first workpiece component at a preselected location on said second workpiece component.

4,352,004

JOINING PROCESS

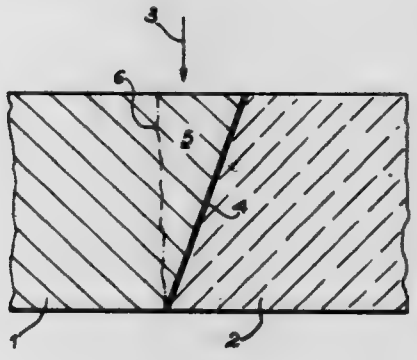
Yvon Gervais, Saint Martin D'Heres; Renea Gillet, Grenoble, and Georges Tania, Meylan, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Jul. 17, 1980, Ser. No. 169,780

Claims priority, application France, Jul. 18, 1979, 79 18609

Int. Cl.[3] B23K *15/00*

U.S. Cl. 219—121 ED 4 Claims



1. A process for joining by electron beam bombardment a copper member to a member made from a refractory metal, wherein a layer of metal selected from the group consisting of chrome and nickel is deposited on the copper member in the area where the electron beam brings about fusion, said refractory material being selected from the group consisting of molybdenum, tungsten, niobium, tantalum, and alloys thereof.

4,352,005

TRIMMING A CIRCUIT ELEMENT LAYER OF AN ELECTRICAL CIRCUIT ASSEMBLY

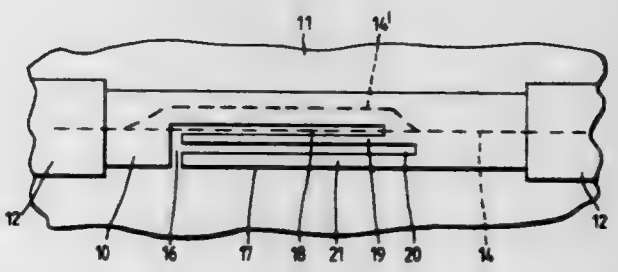
Jonathan L. Evans, and William H. Learmonth, both of Edinburgh, Scotland, assignors to Ferranti Limited, Cheadle, England

Filed Nov. 18, 1980, Ser. No. 207,890

Claims priority, application United Kingdom, Nov. 23, 1979, 7940615

Int. Cl.[3] B23K *9/00;* B26D *3/00*

U.S. Cl. 219—121 LJ 1 Claim



1. A method of trimming a layer of material deposited on a substrate, the layer to comprise at least part of a constituent circuit element of an electrical circuit assembly, at least one pair of spaced terminals being provided for the layer, and under normally encountered operating conditions for the cir-

cuit assembly current flows between the pair of terminals along an axis of the layer, the method comprising providing, in a first, coarsest, trimming action, a first channel through the layer and extending, from one edge of the layer partially across the width of the layer, at least substantially transversely to the axis, providing through the layer, in a second, finer, trimming action, a second channel extending from the extremity of the first channel remote from the edge of the layer, and at least substantially parallel to the axis of the layer, and providing at least one further trimming action, each such further trimming action comprising providing a further channel through the layer extending at least substantially parallel to the axis of the layer, each said further channel being provided successively between the immediately previously provided channel and said one edge of the layer, there being provided successively a plurality of regions of the layer, through each of such regions a current does not flow, each such successively provided region being partially enclosed by the first channel and the immediately previously provided channel, the regions being of successively smaller breadths between said one edge of the layer and the immediately previously provided channel, each succeeding further channel extending at least partially within the region, through which a current does not flow, and partially enclosed by the first channel and the immediately previously provided channel, and in the method there being predetermined and successively greater accuracies associated with the constituent trimming actions, the magnitude of any trimming obtained in each of the successive further trimming actions being determined by the amount the corresponding further channel extends beyond the region, through which a current does not flow, and partially enclosed by the first channel and the immediately previously provided channel.

4,352,006

HEATED MIRROR, DESIGNED IN PARTICULAR TO CONSTITUTE AN EXTERNAL REARVIEW MIRROR ELEMENT FOR A VEHICLE

Bogdan Zega, Geneva, Switzerland, assignor to Societa Italiana Vetro-SIV-S.p.A., Italy

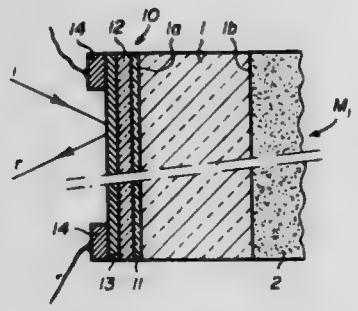
PCT No. PCT/CH80/00067, § 371 Date Feb. 7, 1981, § 102(e) Date Feb. 4, 1981, PCT Pub. No. WO80/02678, PCT Pub. Date Dec. 11, 1980

PCT Filed Jun. 3, 1980, Ser. No. 233,602

Claims priority, application Switzerland, Jun. 7, 1979, 5303/79

Int. Cl.³ H05B *1/00*

U.S. Cl. 219—219 **9 Claims**



1. A heated mirror comprising:

a transparent substrate;

a reflective coating covering at least one of the surfaces of said substrate, said reflective coating including a stack of transparent, non-metallic layers having alternately a high index of refraction and a low index of refraction, at least one of the layers having a high index of refraction being constructed of an electrically conductive, transparent, non-metallic material and the remaining layers of said stack being constructed of transparent, dielectric materials; and

means for supplying an electrical current through said at least one electrically conductive layer to heat said mirror.

4,352,007

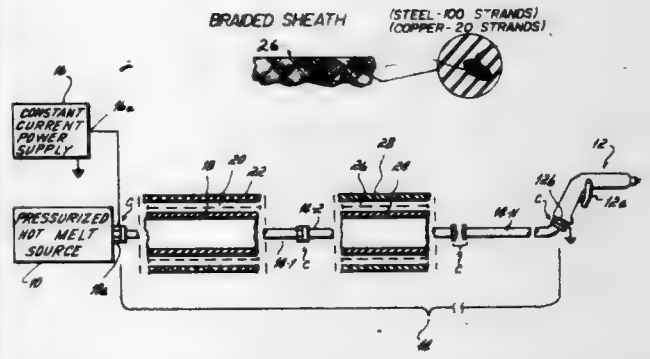
HOT MELT MULTI-SECTION HOSE HEATING SYSTEM

Robert G. Baker, Buford, and Dario J. Ramazzotti, Atlanta, both of Ga., assignors to Nordson Corporation, Amherst, Ohio

Filed Oct. 22, 1980, Ser. No. 199,488

Int. Cl.³ H05B *3/58*

U.S. Cl. 219—301 **5 Claims**



1. A heating system for a hot melt hose interconnecting a source of pressurized hot melt adhesive and a dispenser, comprising:

a first hot melt hose section having:

(a) a first inner electrically nonconductive tube which is chemically inert and fluid impervious relative to hot melt adhesive which flows under pressure therethrough,

(b) a first outer electrically nonconductive sheath of thermally insulating material surrounding said first inner tube and exhibiting a specified heat loss per unit length of hose, and

(c) a first intermediate electrically conductive braided sheath between said first inner tube and first outer sheath for strengthening said first hot melt hose and providing heat thereto when supplied with an electrical current of preset magnitude to maintain the temperature within said first inner tube at a predetermined value, said first braided sheath having N strands of relatively high resistance wire of diameter d;

a second hot melt hose section having:

(a) a second inner electrically nonconductive tube which is chemically inert and fluid impervious relative to hot melt adhesive which flows under pressure therethrough,

(b) a second outer electrically nonconductive sheath of thermally insulating material surrounding said second inner tube and exhibiting substantially less heat loss per unit length of hose than said specified heat loss of said first outer sheath,

(c) a second intermediate electrically conductive braided sheath between said second inner tube and said second outer sheath for strengthening said second hot melt hose and providing heat thereto when supplied with an electrical current of said preset magnitude to maintain the temperature within said second inner tube at said predetermined value notwithstanding said substantially less heat loss of said second outer sheath, said second braided sheath having N-M strands of relatively high resistance wire of diameter d and M strands of relatively low resistance wire of diameter d, said N-M strands and said M strands of said second braided sheath collectively dissipating, when input with electrical current of said preset magnitude, substantially less electrical power per unit length of hose than said N strands of said first braided sheath consistent with the substantially improved heat loss characteristics of said second outer thermally insulating sheath relative to said first outer thermally insulating sheath, said first and second braided sheaths having substantially the same flexibility and strength;

means for interconnecting said first and second hot melt hose sections in series between said hot melt source and

said dispenser with said first and second inner tubes communicating for hot melt flow therethrough and with said first and second braided sheaths in electrical series for passage therethrough of a common electrical current; and an electrical power supply across which said first and second braided sheaths are connected in electrical series for passage therethrough of said common electrical current.

4,352,008

ELECTRIC HEATING DEVICE FOR HEATING THE INTERIOR OF A SWITCH CABINET

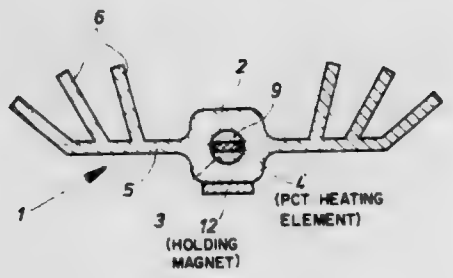
Edwin Höfer, Bellheim, and Helmut Ohnmacht, Kandel, both of Fed. Rep. of Germany, assignors to Firma Fritz Eichenauer, Kandel, Fed. Rep. of Germany

Filed Dec. 31, 1979, Ser. No. 108,784

Claims priority, application Fed. Rep. of Germany, Jan. 26, 1979, 2902090

Int. Cl.³ H05B *3/50;* F24H *7/06;* F28F *1/16*

U.S. Cl. 219—540 **8 Claims**



1. A heating device for warming the interior of a cabinet containing electrical apparatus, said heating device comprising at least one PTC electrical resistance heating and temperature regulating device which is situated in the interior of a body made of thermally conductive material that is connected in a thermally conductive manner to a radiator, said radiator comprising a pair of flat base plates projecting from opposite sides of said body and radiator fins extending only from said base plates and only outwardly from one flat side thereof, wherein said body is a massive hollow element having a wall thickness greater than that of said base plates and fins and a height substantially greater than the wall thickness of said base plates, and wherein said body, base plates and fins are unitarily formed as a one piece extrusion.

4,352,009

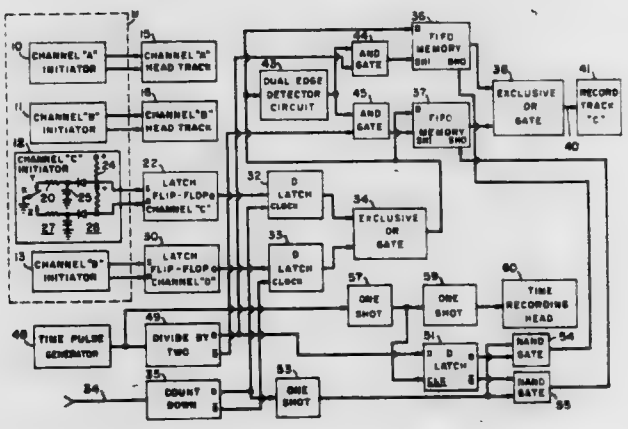
VARIABLE RATIO TOTALIZER

Robert E. Dyer, and Murray C. Carney, both of Dunwoody, Ga., assignors to Sangamo Weston, Inc., Atlanta, Ga.

Filed Jan. 8, 1979, Ser. No. 1,872

Int. Cl.³ G06M *3/08;* G11B *5/00*

U.S. Cl. 235—92 ST **7 Claims**



1. In apparatus for recording data signals from first and second sources on a single channel, each source generating a signal representative of a measured event, said apparatus further including a source of periodic timing signals for defining successive time intervals, the combination comprising: input circuit means for receiving the output signals of said first and second sources and delaying the signals of one source relative to the other, first combining circuit means responsive to said input circuit means for generating a train of data signals representative of the combined signals from said sources; first and second memory circuit means, each having a data input connected to an output of said first combining circuit means for receiving data signals and being adapted to store said data signals sequentially in response to shift-in signals, and to sequentially shift stored data signals to an output in response to shift-out signals; a source of clock signals; memory select circuit means responsive to said clock signals and to said timing signals for generating shift-in signals for storing the output signals of said first combining circuit means in said first and second memory circuit means in alternate time intervals; delay timer circuit means for generating delayed timing signals; shift signal generating means responsive to said clock signals and to said delayed timing signals for generating shift-out signals for shifting the data signals stored in said first or second memory circuit means to respective outputs of said first and second memory circuit means in the same time interval in which said data signals are entered into an associated one of said memory circuit means but delayed relative to the time at which said data signals are entered into the associated memory circuit means; second combining circuit means connected to the outputs of said first and second memory circuit means for receiving the data of said first and second memory circuit means in alternate time intervals and generating a train of output signals representing the combined outputs of said first and second memory circuit means, and recording means for recording the output signals of said second combining circuit means on a first track and for recording said delayed timing signals on a second track in timed relation with the recording of signals on said first track such that successive recorded delayed timing signals indicate successive time intervals during which the recorded events occurred.

4,352,010

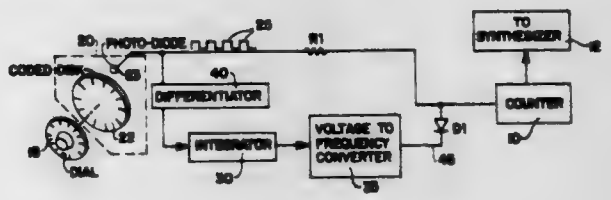
VARIABLE RATE TUNING FOR RADIO TRANSMITTERS AND RECEIVERS

Steven C. Koogler, Dayton, Ohio, assignor to R. L. Drake Company, Miamisburg, Ohio

Filed Feb. 13, 1980, Ser. No. 121,086

Int. Cl.³ G06M *3/14*

U.S. Cl. 235—92 EV **6 Claims**



1. A variable rate tuning circuit including

a manually rotatable dial,

means responsive to the rotation of the dial for producing first pulses directly proportional to the amount of dial rotation,

a frequency determining counter,

means responsive to said first pulses and the direction of dial rotation for incrementing and decrementing said counter, and

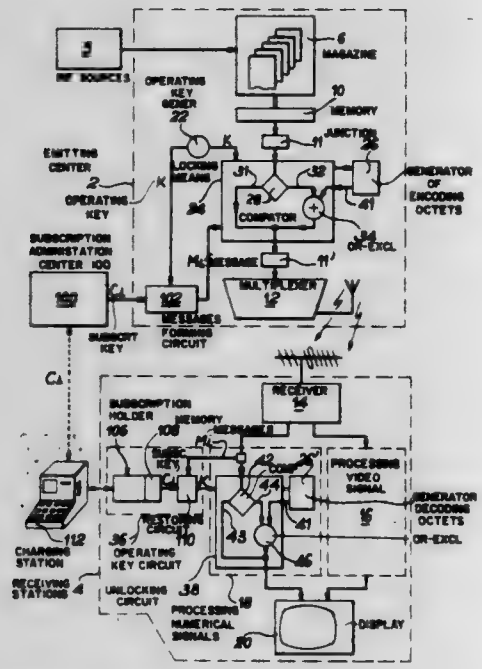
further means responsive to said first pulses for providing additional pulses for incrementing and decrementing said counter, the rate said additional pulses are produced being related to the rate said first pulses are produced,

whereby the amount said counter is incremented or decremented with respect to the amount of dial rotation is a function of the speed at which said dial is rotated.

4,352,011
SUBSCRIPTION CARD FOR A VIDEOTEX RECEIVER

Louis C. Guillou, Bourgbarre-Saint Erblon, France, assignor to Etablissement Public de Diffusion dit "Telediffusion de France", Montrouge and L'Etat Francais, represente par le Secretaire d'Etat aux Poste et Telecommunications (Centre Nationale d'Etudes des Telecommunications), Issy les Moulineaux, both of, France

Filed Jan. 23, 1980, Ser. No. 114,515
Claims priority, application France, Feb. 6, 1979, 79 02996
Int. Cl.[3] G06K *19/06*
U.S. Cl. 235—375 1 Claim



1. A subscription card, comprising:

a central unit constituted by an arithmetical and logical unit and a control unit governing said arithmetical and logical unit,

a Programmable Read Only Memory (PROM),

a Random Access Memory (RAM) acting as a working memory,

a Read Only Memory (ROM) containing instructions for:

(i) recording numerical subscription keys C_i in said Programmable Read Only Memory when said card is inserted in a charging station deliverying said subscription keys Ci,

(ii) carrying out, in said arithemetical and logical unit, a calculation, when said card is introduced in a videotex receiver, said receiver delivering to said card messages Mi which are known functions of subscriptions keys Ci recorded in said PROM and of an operating key K, said calculation being the restoration of said operating key K from the received messages Mi and the recorded keys Ci, and

an interface for exchanging signals defining subscription keys Ci, messages Mi and operating key K, between said card and said charging station and between said card and said receiver.

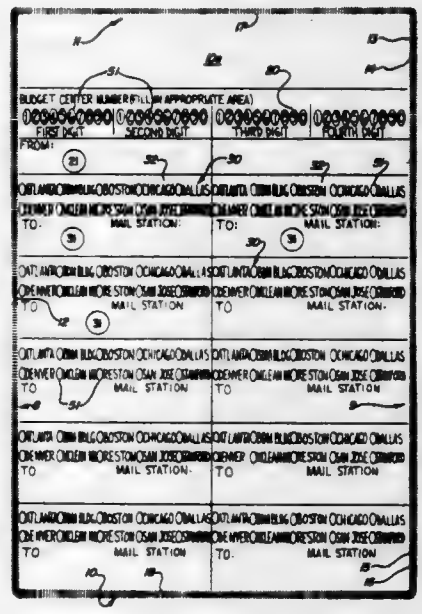
4,352,012
HEADER SHEET FOR IMAGE COMMUNICATIONS SYSTEM

Joseph A. Verderber, 315 S. Valley Rd.; James A. Fortcamp, 162 Harbor Rd., both of Barrington, Ill. 60010; Ace McInturff, 2401 Simpson, Evanston, Ill. 60201, and Denis A. Rose, 1429 Wolftrap Run Rd., Vienna, Va. 22180

Filed Feb. 22, 1980, Ser. No. 123,577
Int. Cl.[3] G06R *19/00*
U.S. Cl. 235—487 10 Claims

1. A document header sheet for an image communication transmission system having means for scanning successive document sheets in a raster of successive spaced substantially parallel lines, said header sheet having:

(a) a peripheral border, said border having a similar marking pattern along each edge of the sheet identifying said sheet as a header sheet when scanned by said scanning means, and variations in said pattern to identify the edge of such sheet that is the leading edge relative to said raster and;



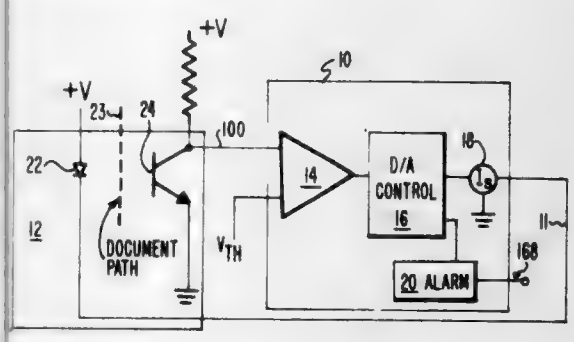
(b) specific marking areas within said peripheral border designed for identifying a pre-determined data group for communicating information to the image communication transmission system; and

(c) marking areas designated for identifying predetermined addressee stations, and means responsive to the detection of a marking in said areas in relation to the position of scan in the raster for generating a signal indicative of one of said addressee stations.

4,352,013
TRACK SENSOR CONTROLLER

Harold A. Fasig, Plymouth, and Eugene E. Paananen, Brighton, both of Mich., assignors to Burroughs Corporation, Detroit, Mich.

Filed Jun. 2, 1980, Ser. No. 155,053
Int. Cl.[3] G01V *9/04*
U.S. Cl. 250—223 R 7 Claims



1. A track sensor controller for controlling the excitation current to a light source operable in cooperative relationship with a light sensor to enable the sensor to detect documents passing between the light source and the sensor along the document travel path of a document sorting machine, comprising:

a document leading and trailing edge detector indicates first means responsive to signals from the sensor for providing further signals of use in preventing false indications that a document has passed beyond an area monitored by the sensor, where the false indications are caused by light passing through holes, or other light transmitting areas, in a document;

said first means including means for comparing signals from

the sensor and signals from a source of first reference values to derive signals indicating whether documents are present;

said first means including means for receiving programmed input signals for use in establishing signals of use in preventing a false indication that the trailing edge of a document has passed when, in fact, the edge of a hole has passed;

said first means employing said derived signals together with said received programmed input signals to generate hole-look-through signals of use in preventing false indications that a document has passed the sensor; and

second means responsive to signals from the sensor and signals from the first means for providing control signals to a current source coupled to maintain the average intensity of the light source at a preselected value.

4,352,014

SAMPLER AND CELL FOR RADON DETECTORS AND METHOD OF USING SAME

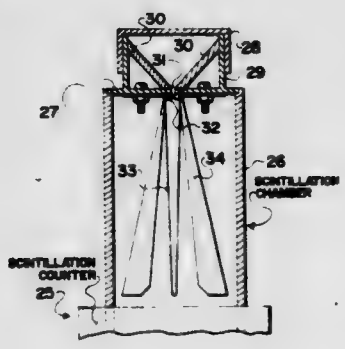
Brian Powell, 221-29th St. West, Saskatoon, Saskatchewan, Canada (S7L 0L8)

Filed Mar. 6, 1980, Ser. No. 127,906

Claims priority, application United Kingdom, Jun. 1, 1979, 7919214

Int. Cl.³ G01V *5/00*

U.S. Cl. 250—253 **11 Claims**



1. A method of sampling radon gas consisting of the steps of placing an acetate sampling strip in the path of the radon gas and maintaining same in position for a predetermined time interval, inserting said sampling strip into a scintillation cell and operatively connecting said cell to a scintillation counter to read the alpha emissions from said sample strip.

4,352,015

ANTI-CONTAMINATION DIAPHRAGM FOR AN ELECTRON BEAM APPARATUS

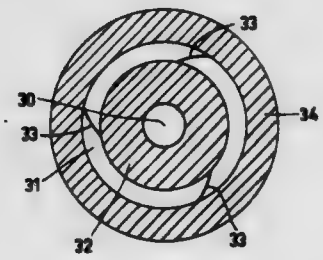
Alfred Jore; Gerardus G. P. Van Gorkom, and Nicolaas H. Dekkers, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 25, 1980, Ser. No. 180,712

Claims priority, application Netherlands, Sep. 5, 1979, 7906633

Int. Cl.³ G01N *23/00*

U.S. Cl. 250—311 **8 Claims**



1. In an electron beam apparatus comprising an electron source for generating an electron beam, an electron-optical lens system arranged along an electron optical axis for transmitting said electron beam, and anti-contamination means for reducing object contamination, the improvement comprising said anti-contamination means including a composite diaphragm arranged about said electron optical axis, said composite diaphragm transmitting a paraxial portion of said electron beam to an object plane and forming a non-paraxial portion of said electron beam annularly surrounding said paraxial portion on said object plane, said non-paraxial portion preventing contamination of the object.

4,352,016

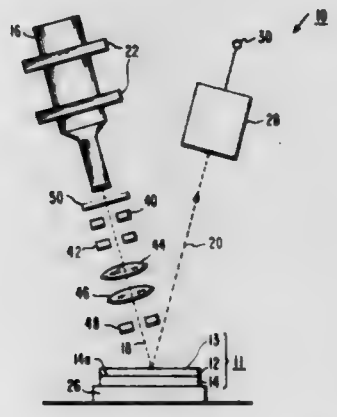
METHOD AND APPARATUS FOR DETERMINING THE QUALITY OF A SEMICONDUCTOR SURFACE

Michael T. Duffy, Princeton Junction, and Peter J. Zanzucchi, Lawrenceville, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Sep. 22, 1980, Ser. No. 189,348

Int. Cl.³ G01N *23/00*; G01T *1/22*; G01J *1/42*

U.S. Cl. 250—358.1 **7 Claims**



1. A method of determining the surface quality of a semiconductor material comprising:

(a) exposing said semiconductor surface to a first beam of radiation of a first wavelength from a source of radiation at a preselected angle of incidence so that a portion of said first beam is reflected from said surface;

(b) measuring the intensity of said reflected beam to obtain a first intensity signal;

(c) thereafter exposing said semiconductor surface to a second beam of radiation from said source at said angle so that a portion of said second beam is reflected from said surface, said second beam having a wavelength different from the wavelength of said first radiation beam, the wavelength of one of said beams being in the ultra-violet spectrum region wherein the influence of crystal lattice disorder of the material on reflectance is significantly greater than the influence of crystal lattice disorder on reflectance of said material at the other wavelength;

(d) measuring the intensity of said second reflected beam to obtain a second intensity signal; and

(e) comparing said first intensity signal with said second intensity signal to determine the difference between the two signals, the magnitude of said difference being a measure of quality of said semiconductor material.

4,352,017

APPARATUS FOR DETERMINING THE QUALITY OF A SEMICONDUCTOR SURFACE

Michael T. Duffy, Princeton Junction; John F. Corboy, Jr., Ringoes, and Peter J. Zanzucchi, Lawrenceville, all of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Sep. 22, 1980, Ser. No. 189,356

Int. Cl.³ G01N *23/00*; G01T *1/22*; G01J *1/42*

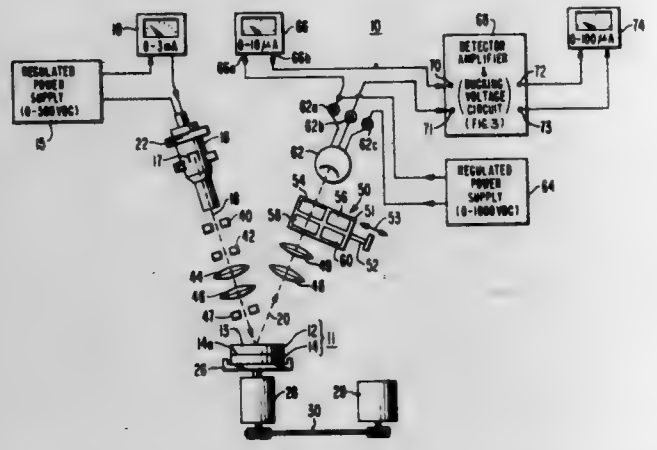
U.S. Cl. 250—358.1 **12 Claims**

1. Apparatus for determining the surface quality of a semiconductor material comprising:

(a) means for exposing said semiconductor surface to a first

beam of radiation of a first wavelength from a source of radiation at a preselected angle of incidence so that a portion of said first beam is reflected from said surface;

(b) means for exposing thereafter said semiconductor surface to a second beam of radiation from said source at said angle having a second wavelength different from said first radiation so that a portion of said second beam is reflected from said surface, the wavelength of one of said beams being in the ultra-violet spectrum region wherein the influence of crystal lattice disorder of the material on reflectance is significantly greater than the influence of crystal lattice disorder on reflectance of said material at the other wavelength;



(c) means for determining, in sequence, the intensity respectively, of the first reflected beam to obtain a first intensity signal, and of the second reflected beam to obtain a second intensity signal;

(d) means for comparing said first intensity signal with said second intensity signal to provide information indicative of the difference between the first and second intensity signals, the difference between said signals being a measure of quality of said semiconductor material; and

(e) means for providing sufficient resolution for comparing very small differences in said first and second intensity signals.

4,352,018

APPARATUS FOR PERFORMING POSITRON EMISSION COMPUTED TOMOGRAPHY

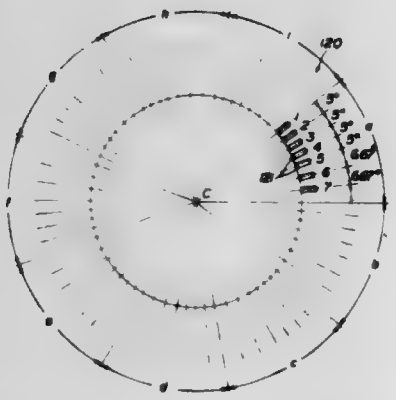
Eiichi Tanaka, Mitaka; Norimasa Nohara, Chiba; Takehiro Tomitani, Chiba; Mikio Yamamoto, Chiba; Kenji Ishimatsu, Abiko, and Katsumi Takami, Tokyo, all of Japan, assignors to National Institute of Radiological Sciences, Chiba and Hitachi Medical Corporation, Tokyo, both of, Japan

Filed Mar. 25, 1980, Ser. No. 133,895

Claims priority, application Japan, Mar. 30, 1979, 54-36860

Int. Cl.³ G01T *1/20*; G01N *21/00*

U.S. Cl. 250—363 S **5 Claims**



1. An apparatus for performing positron emission computed tomography, comprising:

n revolvable detector arrays where n is an odd number equal to at least three, each array including a plurality of detectors where there is a fixed spacing between each detector of each array and the remaining detectors of that array,

each array containing at least one detector disposed at an irregular position relative to other detectors in said array,

said n revolvable detector arrays being successively arranged around a center of revolution where each array has an adjacent array on each side of it and where the relative locations of the detectors with respect to each other are the same for each array so that, for each revolution of the n detector arrays through an angle of 360°/n, the detectors of each array will assume respectively positions previously assumed by the detectors of one of its adjacent arrays.

4,352,019

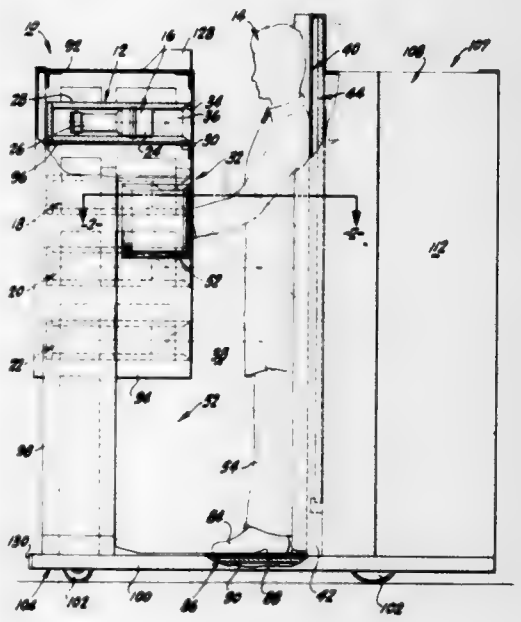
IN-VIVO RADIATION COUNTER

David E. Pollard, Livermore, Calif., assignor to Helgeson Nuclear Services, Inc., Pleasanton, Calif.

Filed Jun. 6, 1980, Ser. No. 156,921

Int. Cl.³ G01J *1/42*

U.S. Cl. 250—394 **6 Claims**



1. A radiation counter for a body utilizing means for determining an aspect of radiation emanating from the body comprising:

a. means for detecting radiation from specific areas of the body, including a multiplicity of radiation detectors proximately spaced from one another;

b. aperture means for forming a corridor for permitting access of selected radiation to said means for detecting radiation from the body, said aperture means including an aperture associated with each of said multiplicity of radiation detectors, each aperture permitting the access of radiation from a specific area of the body;

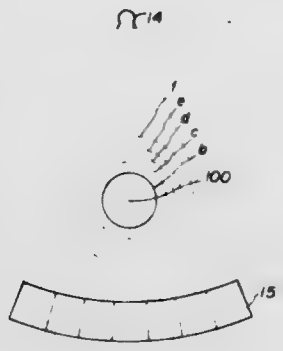
c. means for shielding the corridor from passage of radiation therethrough and to said means for detecting radiation from the body, said shielding means being located such that the body lies between said aperture means and said shielding means; and

d. means for isolating a portion of the body including a rest for restricting movement of a selected portion of the body, said rest being located outside said corridor.

4,352,020
METHOD AND APPARATUS FOR EXAMINING A SUBJECT

Isao Horiba, Nagoya; Shigenobu Yanaka, Kashiwa; Yasuo Kuwabara, Kashiwa, and Kouichi Koike, Kashiwa, all of Japan, assignors to Hitachi Medical Corporation, Tokyo, Japan

Filed Jan. 2, 1980, Ser. No. 109,088
Claims priority, application Japan, Jan. 11, 1979, 54-989
Int. Cl.[3] A61B *6/00*
U.S. Cl. 378—18 12 Claims



1. A tomography system, comprising an X-ray source and X-ray detectors disposed opposite to said source, an examinee to be placed in the measuring path interposed between said X-ray source and detectors; an emission of X-rays from said source, the X-rays, having penetrated through the examinee, being detected by said X-ray detectors to obtain measurements of X-ray absorption through the examinee from the detected values, which system is characterized by:

a plurality of disk-shaped standard phantoms of different radii which are set one by one in the examinee measuring position in said measuring path in such a manner that the disk surface forming the circumference of each phantom coincides with the plane of X-ray scan;

first memory to store X-ray absorption, for each standard phantom, obtained from the values, detected by said detectors, of X-ray having penetrated through said standard phantom after irradiated from said source to said phantom;

second memory to store theoretical X-ray absorption, for each standard phantom, obtained based on said each of the standard phantoms;

X-ray absorption stored in said first memory and the theoretical X-ray absorption being used as data for compensation of the measurements of X-ray absorption from said examinee.

4,352,021
X-RAY TRANSMISSION SCANNING SYSTEM AND METHOD AND ELECTRON BEAM X-RAY SCAN TUBE FOR USE THEREWITH

Douglas P. Boyd, Woodside; William B. Herrmannsfeldt, Los Altos; James R. Quinn, San Jose, and Robert A. Sparks, Palo Alto, all of Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed Jan. 7, 1980, Ser. No. 109,877
Int. Cl.[3] A61B *6/00;* H01J *35/00*
U.S. Cl. 378—12 14 Claims

1. In an x-ray transmission scanning system an electron beam scan tube for providing a plurality of adjacent movable x-ray sources comprising:

an evacuated envelope having a longitudinal axis;

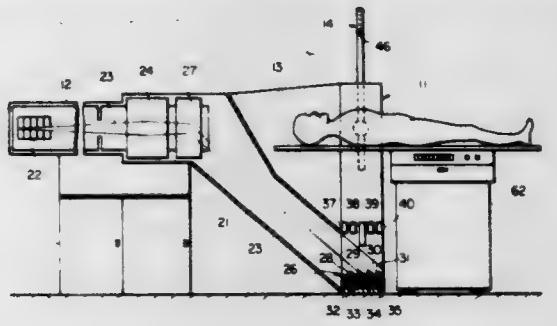
an electron gun disposed axially at one end of the envelope projecting an electron beam along said axis;

a focus coil spaced from said gun to receive and focus said beam;

a plurality of adjacent longitudinally spaced curvilinear elongated targets disposed at the other end of said envelope to receive the electron beam and generate x-rays in response thereto;

means for moving said focused electron beam along said targets and from one target to another; and

a source collimator having an elongated slot disposed adjacent to each of said elongated targets to intercept said x-rays and provide an x-ray beam which fans outwardly

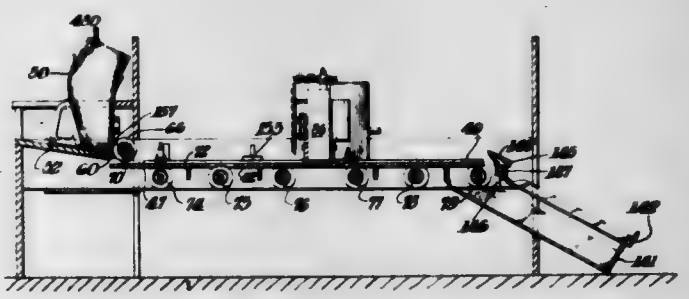


from the received electron beam to form a fan shaped beam which rotates as the electron beam is moved along the corresponding target whereby to scan a plurality of adjacent longitudinally spaced sections at least one for for each of said targets.

4,352,022
READING OF MARKS

Charles W. Britton, 301 Tavistock Dr., Medford, N.J. 08055

Continuation-in-part of Ser. No. 675,628, Apr. 9, 1976, Pat. No. 4,228,952. This application Aug. 6, 1979, Ser. No. 63,736
Int. Cl.[3] G01N *21/86*
U.S. Cl. 250—561 3 Claims



1. An automatic sheet reading assembly comprising an elongated bed along which sheets are moved, sheet-transporting means including a powered feed roller adjacent one end of the bed for engaging the end sheet in a sheet supply pack and rotating in one direction to propel that sheet into the bed, the sheet-transporting means also including sheet-spacing means connected to interrupt the actuation of the feed roller after a transported sheet is disengaged from that roller, to keep the next sheet from being transported into the bed until it is spaced from the previous sheet.

4,352,023
MECHANISM FOR GENERATING POWER FROM WAVE MOTION ON A BODY OF WATER

Herbert K. Sachs, 2551 Ivanhoe Dr., Orchard Lake, Mich. 48033, and George A. Sachs, 1845 Woodland, Sylvan Lake, Mich. 48053

Filed Jan. 7, 1981, Ser. No. 223,120
Int. Cl.[3] F03B *13/12;* H02P *9/04*
U.S. Cl. 290—42 33 Claims

1. A mechanism for generating power from wave motion in a body of water comprising:

a buoyant body adapted to float in said body of water and be partially immersed therein, said buoyant body being pivotally movable in response to said wave motion;

a gyro-wave energy transducer mounted to said buoyant body, said gyro-wave energy transducer comprising:

a gimbal including first and second frames, said first frame being pivotally mounted to said second frame for rotation

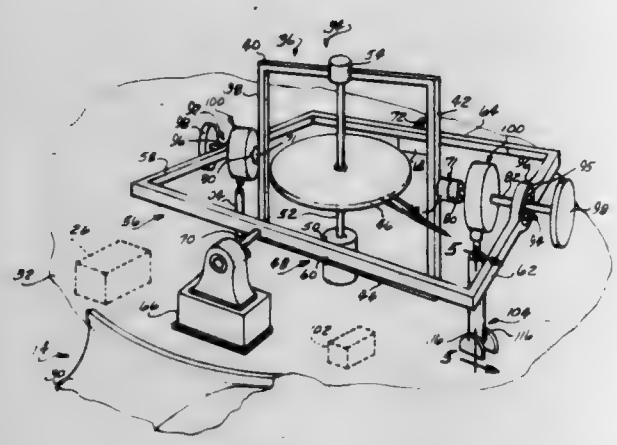
about a first axis, said second frame being pivotally mounted to said buoyant body for rotation about a second axis perpendicular to said first axis;

a gyroscope mounted to said first frame for rotation about a third axis perpendicular to said first and second axes;

means for transferring rotational movement of one of said first and second frames to rotational movement of the other of said first and second frames;

means, responsive to the rotation of said other of said first and second frames, for generating electrical power;

means, coupled to said gyroscope, for maintaining said gyroscope at a controlled rotational velocity;



electrical power storage means, connected to said generating means and to said gyroscope rotational velocity maintaining means, for storing and releasing electrical power; and

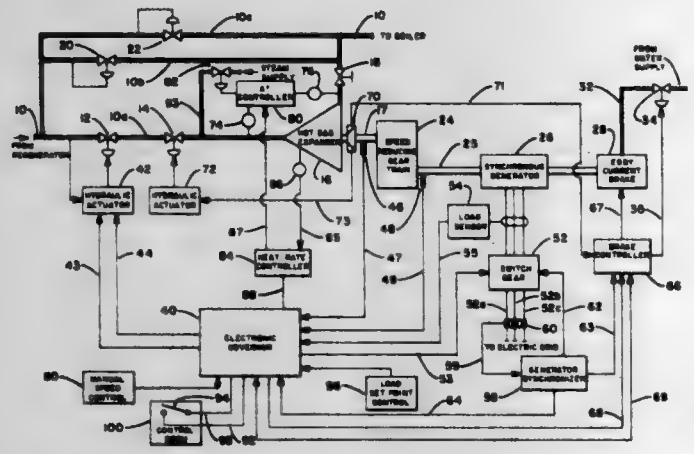
means, responsive to the time rate of change of current from said generating means and operatively coupled to said gyroscope rotational velocity maintaining means, for controlling the rotational velocity of said gyroscope to maintain maximum power output from said said generating means.

4,352,024

EXPANDER-GENERATOR CONTROL SYSTEM

Carl H. Geary, Greensburg, Pa., and Norman A. Samurin, Houston, Tex., assignors to Carrier Corporation, Syracuse, N.Y.

Filed May 4, 1981, Ser. No. 260,231
Int. Cl.³ F02G *3/00*
U.S. Cl. 290—52 **12 Claims**



1. A system for recovering power from a relatively high temperature waste heat fluid comprising:

waste heat fluid supply means;

expansion means connected to said supply means for receiving said relatively high temperature waste heat fluid;

electrical power generating means operatively connected to said expansion means and operated thereby as a result of the expansion of said fluid in said expansion means;

governor means;

valve means located in said supply means upstream of said expansion means and operatively connected to said governor means for opening and closing in response to signals from said governor means;

means for sensing the rotational speed of said expansion means and for transmitting a signal indicative thereof to said governor means;

means for sensing the load on said electrical power generating means and for transmitting a signal indicative thereof to said governor means;

dynamic power absorbing means;

coupling means operatively connected to said governor means for selectively coupling said dynamic power absorbing means to said expansion means to place a load thereon;

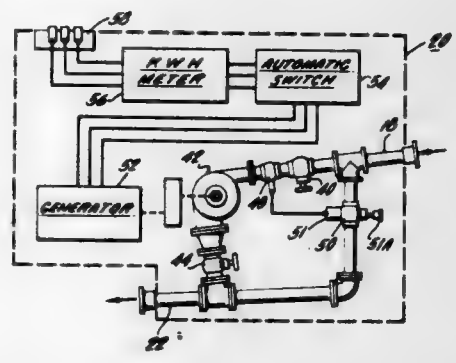
whereby said governor means controls the position of said valve means and the loading of said dynamic power absorbing means to permit normal starting, stopping and operation of said system as well as closing said valve means and fully loading said dynamic power absorbing means during an emergency shutdown of said system.

4,352,025

SYSTEM FOR GENERATION OF ELECTRICAL POWER

Harry D. Troyen, 351 N. 5th St., Reading, Pa. 19606

Filed Nov. 17, 1980, Ser. No. 207,274
Int. Cl.³ F03B *13/00*
U.S. Cl. 290—54 **1 Claim**



1. Apparatus for generating electricity, comprising:

a high-rise building waste water conduit system for delivering waste water from the interior of a high-rise building to an external waste water disposal sewer line;

a hydroelectric generator of electrical power installed in said waste water conduit system for generating electrical power in response to the flow of water from said conduit system to said sewer line wherein said apparatus comprises a bypass conduit containing a normally-closed type of valve, in parallel with said hydroelectric generator, and means responsive to the rate of flow of said water through said generator for opening said valve progressively further as said flow rate rises above a selected value.

4,352,026

MULTI-PHASE CURRENT BALANCING COMPENSATOR

Donald W. Owen, 334 Foreman Ave., Norman, Okla. 73069

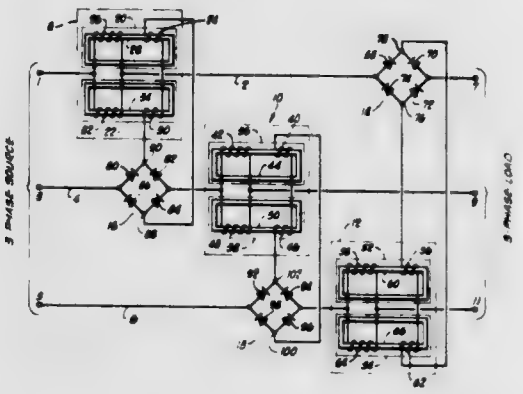
Filed Jun. 26, 1978, Ser. No. 919,225
Int. Cl.³ H02J *3/26*
U.S. Cl. 307—14 **17 Claims**

1. Apparatus for automatically balancing the magnitudes of a plurality of alternating electrical currents carried by respective electrical conductors comprising:

a plurality of control means, each of which is connected to a separate one, and only one, of said conductors, for converting the respective alternating current carried thereby into a control signal; and

a plurality of variable reactance means, each of which is connected to a separate one, and only one, of said control

means and to a separate one, and only one, of said conductors other than that conductor to which the respective separate one of said control means is connected, for changing the reactance in the respective conductors re-



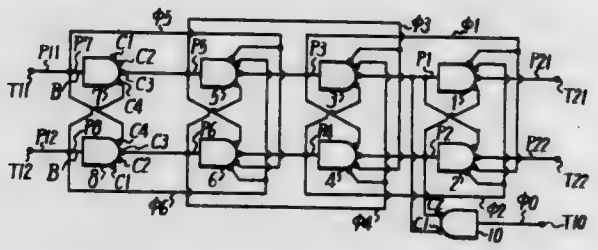
sponsive to control signals from the respective separate ones of said control means to thereby automatically and without presetting control said alternating current in each of said electrical conductors.

4,352,027

SHIFT REGISTER

Masayuki Miyake; Takeo Sekino, and Masashi Takeda, all of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jun. 3, 1980, Ser. No. 156,209
Claims priority, application Japan, Jun. 5, 1979, 54/70300
Int. Cl.³ G11C *19/28*
U.S. Cl. 307—221 R **2 Claims**



1. A shift register comprising: a plurality of flip-flop stages connected in series, a means for supplying clock pulses to the last stage; and a means for applying an AND output of each stage to its preceding stage as a clock signal whereby input data are transferred according to clock states at said stages, in which at least one stage has a pair of gates each having at least four output terminals, one is connected to an input terminal of the pair gate, another to an input terminal of a gate in a following stage, the other two to input terminals of gates in a preceding stage with output terminals of said pairs of gates constituting AND circuits, respectively, to convey said clock pulses in the reverse direction.

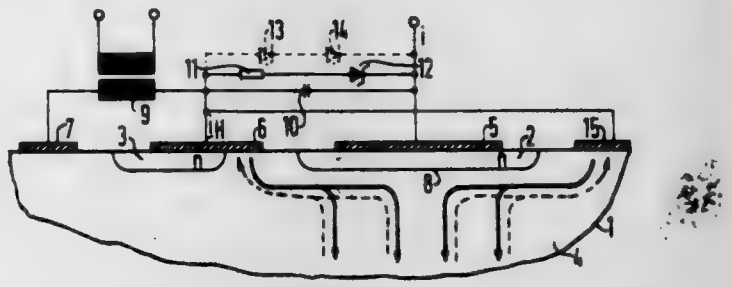
4,352,028

CIRCUIT ARRANGEMENT FOR REDUCING THE RECOVERY TIME OF A THYRISTOR COMPRISING R-C-D NETWORK BETWEEN AUXILIARY AND MAIN EMITTERS

Peter Voss, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Continuation of Ser. No. 2,209, Jan. 9, 1979, abandoned. This application May 15, 1981, Ser. No. 264,140
Claims priority, application Fed. Rep. of Germany, Jan. 16, 1978, 2801722
Int. Cl.³ H03K *17/60*
U.S. Cl. 307—252 A **5 Claims**

1. Circuit arrangement for reducing the recovery time of a thyristor formed with a semiconductor body having a surface, at least one emitter zone, an emitter electrode contacting the surface of the semiconductor body exclusively at and within the confines of the emitter zone, at least one auxiliary emitter zone and a base zone, an auxiliary emitter electrode contacting the auxiliary emitter zone and the base zone, comprising a capacitor electrically connecting the emitter electrode with the auxiliary emitter electrode and a series connection of a resistor and a diode connected in parallel with said capacitor,



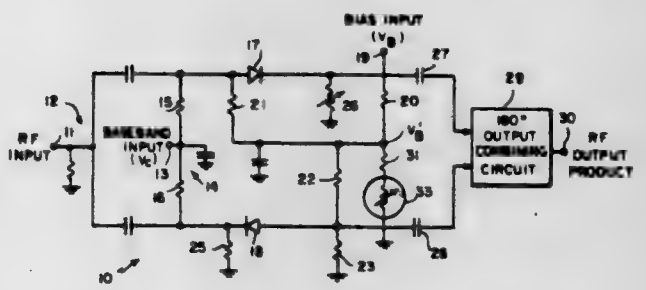
said diode having a lower threshold voltage, than that of an inputed diode formed by the emitter zone and the base zone of the thyristor, said diode of said series connection being poled with respect to the emitter electrode in the same sense as is said inputed diode of the thyristor.

4,352,029

SIGNAL PROCESSING CIRCUITRY

Paul F. Mahoney, Brighton, and Jerrold L. Bonn, Waltham, both of Mass., assignors to Signatron, Inc., Lexington, Mass.

Filed Dec. 13, 1979, Ser. No. 103,347
Int. Cl.³ H03K *3/26*; G06G *7/16*
U.S. Cl. 307—317 R **10 Claims**



1. Signal processing circuitry for processing a first input signal and a second input signal, said circuitry comprising

first and second current controllable resistance means, each having a first and a second terminal;

input circuit means for supplying said first input signal to one of said first and second terminals of said first current controllable resistance means and to one of said first and second terminals of said second current controllable resistance means;

said input circuit means further supplying said second input signal to one of said first and second terminals of said first current controllable resistance means and to the other of said first and second terminals of said second current controllable resistance means;

bias circuit means for applying the same bias voltage input to the same selected one of said first and second terminals of each of said first and second controllable resistance means;

output circuit means responsive to the signal at the terminal of said first current controllable resistance means opposite to the one at which said first input signal is supplied and responsive to the signal at the terminal of said second current controllable resistance means opposite to the one at which said first input signal is supplied for combining said signals to produce an output signal which is the product of said first input signal and said second input signal.

4,352,030

PULSE DETECTORS

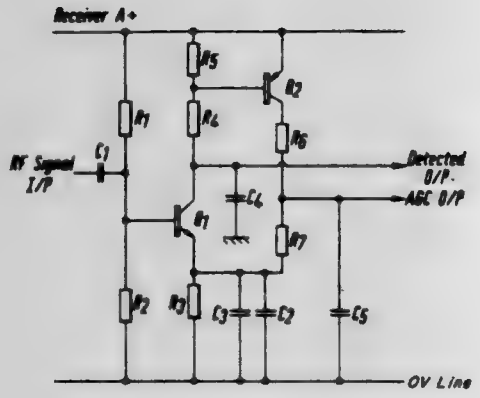
Graham E. Beesley, Basingstoke, England, assignor to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 17, 1980, Ser. No. 130,932

Claims priority, application United Kingdom, Apr. 30, 1979, 7914882

Int. Cl.³ H03K 5/153; G01R 19/165

U.S. Cl. 307—350 3 Claims



1. A detector for detecting radio frequency input signals with varying signal levels and slowly varying carriers, comprising:

positive voltage supply line;

zero voltage supply line;

an amplifying circuit including a first transistor for receiving and amplifying the radio frequency input signals;

a first capacitor coupled to the base electrode of said first transistor for applying the radio frequency input signals to said first transistor;

biasing means for providing a DC bias to put said first transistor into quiescent conducting state, said biasing means including a first voltage divider being connected to the base electrode of the first transistor and between said positive and zero voltage lines;

resistive-capacitive means coupled between the emitter electrode of said first transistor and zero voltage supply line;

a second voltage divider coupled between the collector electrode of said first transistor and positive supply voltage line;

a second capacitor coupled between the ground and collector electrode of said first transistor;

a second transistor, the base electrode of which is coupled to said second voltage divider and the emitter electrode of which is coupled to said positive voltage supply line; and

a third voltage divider connected between the emitter electrode of said first transistor and the collector electrode of the second transistor, wherein said second transistor and said third voltage divider form a feedback loop, and wherein said feedback loop coupled to said amplifying circuit adjusts the level of the DC bias applied to the amplifying circuit by said biasing means to compensate for the variation in the input signal level, whereby noise signals applied at the input of said amplifying circuit are maintained below the threshold at which said first transistor conducts and thereby renders the detector immune to false triggering due to noise and makes the detector independent of the level of slowly varying carriers of the radio frequency input signals.

4,352,031

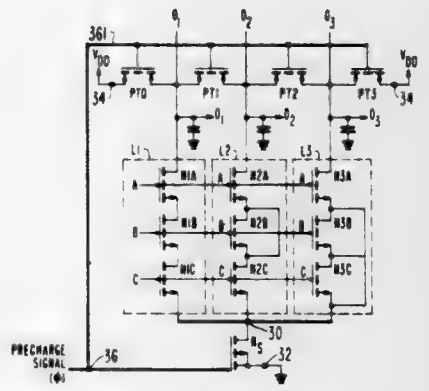
PRECHARGE CIRCUIT

Mark D. Holbrook, Ringoes, and William K. Knapp, Belle Mead, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Apr. 23, 1980, Ser. No. 143,025

Int. Cl.³ H03K 19/08; H01L 27/02

U.S. Cl. 307—444 9 Claims



1. In combination with N separate circuits, where N is an integer greater than 2, each circuit being connected between a different one of N output points and a common point, anim-proved precharge circuit for selectively and concurrently placing said N output points at, or close to, a selected operating potential, comprising:

N-1 transistors, each transistor having a conduction path and a control electrode;

means connecting the conductin paths of each one of said N-1 transistors between two, different ones, of said N output points, whereby the conduction paths of said N-1 transistors are connected end-to-end in series;

an additional transistor having its conduction path connected between one of said N output points and a point of operating potential; and

means connected to the control electrodes of said N-1 transistors and to the control electrode of said additional transistor for selectively turning them on concurrently and distributing the potential at said point of operating potential to said N output points.

4,352,032

APPARATUS FOR COMPUTING THE QUOTIENT OF TWO INDUCTANCES IN AN AUTOMOTIVE CONTROL ELEMENT POSITION SENSOR

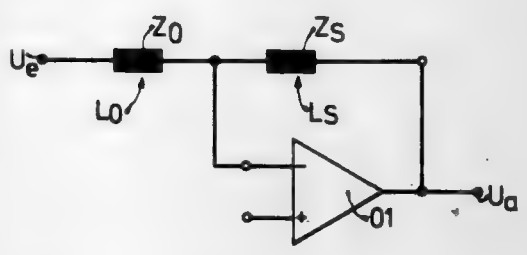
Wolf Wessel, Oberriexingen, and Gerhard Engel, Stuttgart, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 9, 1980, Ser. No. 195,387

Claims priority, application Fed. Rep. of Germany, Nov. 3, 1979, 2944502

Int. Cl.³ G06G 7/00

U.S. Cl. 307—515 9 Claims



1. In a motor vehicle having a control member and sensor means for furnishing a first signal indicative of the position of said control member relative to a fixed position, said sensor means comprising an iron core, a reference coil having a fixed inductance, a measuring coil, and a short-circuiting ring mov-

able with respect to said iron core for varying the inductance of said measuring coil:

apparatus for furnishing a quotient signal corresponding to the ratio of said inductance of said measuring coil to said fixed inductance, comprising

first operational amplifier means (O1) having a direct input, an inverting input and an output;

means for interconnecting said measuring coil between said inverting input and said output;

means for connecting said reference coil (Z_O) to said inverting input; and

means (O2, O3) for applying a periodically increasing and decreasing voltage to said reference coil.

4,352,033

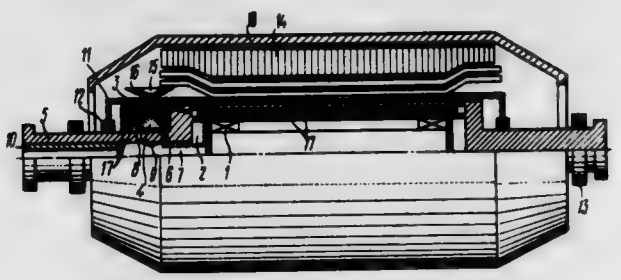
CONTACTLESS SUPERCONDUCTING SYNCHRONOUS ELECTRICAL MACHINE

Jury F. Antonov, prospekt Stachek, 83, kv. 12; Igor A. Glebov, prospekt Smirnova, 24, korpus 3, kv. 52, and Valentin N. Shakhtarin, prospekt Metallistov, 14, kv. 6, all of Leningrad, U.S.S.R.

Filed Jul. 22, 1980, Ser. No. 171,177

Int. Cl.³ H02K 9/19

U.S. Cl. 310—52 **1 Claim**



1. A contactless superconducting synchronous electrical machine comprising: a rotatable shaft; a superconducting excitation winding affixed to said rotatable shaft; an annular former affixed to said shaft in coaxial relation with said superconducting excitation winding; a superconducting armature winding implemented in the form of a cylindrical sheating and affixed to a cylindrical surface of said annular former; at least one magnetizing superconducting annular coil affixed to said shaft in axial relation with said former, in the vicinity of an end face of said former; a cryostat affixed to said shaft and surrounding said superconducting field winding, said annual former, said armature winding, and the magnetizing coil; said cryostat with said elements surrounded by said cryostat constituting a rotor of said machine; an annular stator located in axial relation with said rotor; a stationary annular core installed in concentrical relation with said armature winding; a multiphase winding on said annular core; said cryostat having a portion of a vacuum shell, within a gap between the annular core and the superconducting armature winding, made of dielectric material.

4,352,034

STATOR CORE WITH AXIAL AND RADIAL COOLING FOR DYNAMOELECTRIC MACHINES WTH AIR-GAP STATOR WINDINGS

Barry L. Karhan, Ballston Lake, and James B. Archibald, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

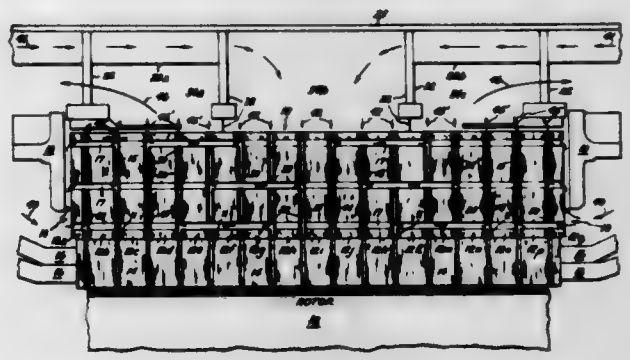
Filed Dec. 22, 1980, Ser. No. 218,627

Int. Cl.³ H02K 9/00

U.S. Cl. 310—59 **8 Claims**

1. A gas-cooled stator core for a dynamoelectric machine, especially a machine exhibiting a high air-gap magnetic flux, said core comprising:

a plurality of annular modules each including a plurality of laminations arranged coaxially, the exterior surfaces of boundary laminations of said modules possessing radially oriented struts and circumferential struts affixed to the planar surfaces thereof so as to maintain an axial separation between said modules, said modules also possessing axially directed passages therethrough, said passages being similarly arranged in each module so as to permit partial axial gas flow through said core;



means for selectively coupling less than all of said adjacently aligned passages in adjacent modules; and

means for selectively closing other passages to provide combined partial circumferential, partial axial and partial radial gas cooling flow paths through said core.

4,352,035

ELECTRIC MOTOR OPERATED ADJUSTING DRIVE

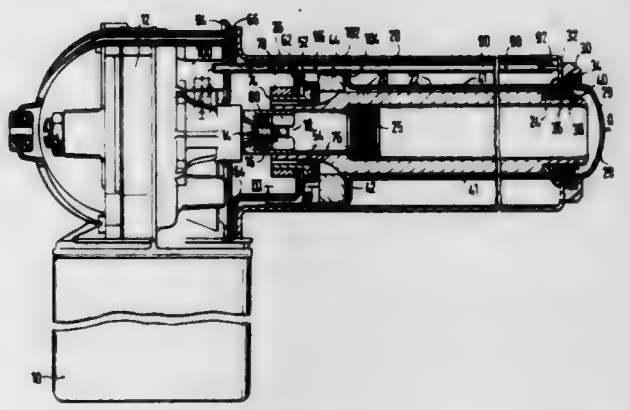
Wilhelm Zirps, Hemmingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 14, 1980, Ser. No. 196,295

Claims priority, application Fed. Rep. of Germany, Oct. 20, 1979, 7929780[U]

Int. Cl.³ H02K 7/06

U.S. Cl. 310—80 **19 Claims**

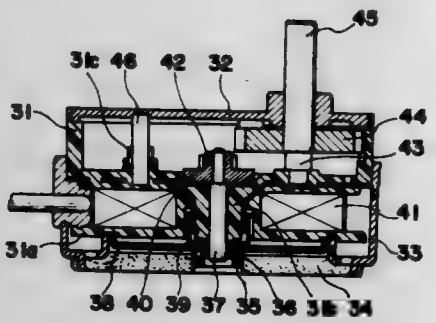


1. An electric motor operated adjusting drive, comprising a housing having an opening; a threaded rotary spindle arranged in said housing and having an axis; an adjusting nut arranged on said spindle axially displaceable and non-rotatable; an adjustment member arranged in said housing and sealed relative to the latter, said adjustment member being actuated by said adjusting nut so as to displace linearly outwardly of said housing through said opening, said adjustment member being formed by a hollow body which is thin-walled and surrounds said threaded spindle; means for sealing said adjustment member inwardly relative to said threaded spindle; and means for sealing said adjustment member outwardly relative to said opening of said housing.

4,352,036
ELECTRICAL ROTARY MACHINE

Tomohisa Kuwako, Anjo, Japan, assignor to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi, Japan

Filed Jul. 25, 1980, Ser. No. 172,283
Claims priority, application Japan, Jul. 27, 1979, 54-103023[U]
Int. Cl.³ H02K 7/10
U.S. Cl. 310—83
7 Claims



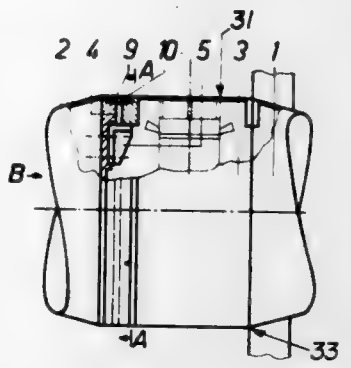
1. An electrical rotary apparatus which comprises:
a motor case of magnetic material;
a stator member forming part of said case;
a rotor member within said case, one of said members having a permanent magnet and the other member being of a magnetic material;
a rotor shaft on which said rotor member is mounted;
a bearing of a synthetic resin material in which said rotor shaft is supported;
a coil bobbin of synthetic resin material around said shaft and on the opposite side of said rotor from said stator;
a ring coil wound around said coil bobbin;
a yoke member of magnetic material extending parallel with said rotor shaft from said rotor and then radially outwardly on the opposite side of said bobbin coil from said rotor;
a reduction mechanism including reduction gears and a further gear secured to said rotor shaft at a point spaced along said shaft from said rotor and on the opposite side of said bearing from said rotor and engaged with said reduction gears;
and
a gear case of synthetic resin material for said reduction gears and having a radially extending wall within which said radially extending part of said yoke is embedded; said gear case, said coil bobbin and said bearing being integrally molded and said gear case being fitted into said motor case for securing said motor case to said gear case and with the outer periphery of said yoke contacting said motor casing.

4,352,037
SEALED GENERATOR HOUSING

Fritz Santner, Graz, Austria, assignor to Elin-Union A.G., Vienna, Austria

Continuation of Ser. No. 943,946, Sep. 20, 1978, abandoned. This application Aug. 11, 1980, Ser. No. 177,000
Claims priority, application Austria, Sep. 23, 1977, 6825/77
Int. Cl.³ H02K 5/00
U.S. Cl. 310—89
6 Claims

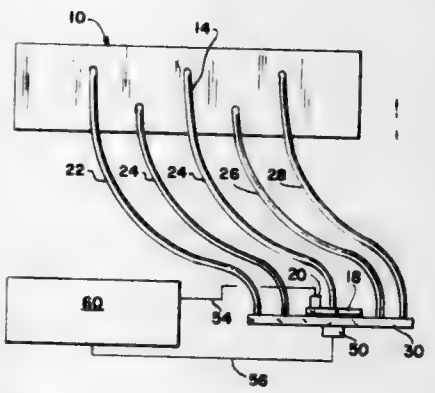
1. A sealing housing, particularly of a submerged fluid-powered generator
comprising, in combination
a turbine housing,
a substantially cylindrical generator stator frame disposed upstream of said turbine housing, being sealingly connected thereto, and forming therewith a first housing component, said generator stator frame having an axial bore,
a cupola-shaped part disposed upstream of said generator stator frame,
a plurality of centering segments being secured to said cupola-shaped part and forming therewith a second housing component, said centering segments being slidable on the surface of said axial bore,
a gap being defined between said cupola-shaped part and said generator stator frame, so as to permit relative axial displacement between said first and second housing components due to thermally caused expansion or contraction, and means for sealing said gap near the periphery of said generator stator frame and said cupola-shaped part exteriorly substantially flush with the portions of said cupola-shaped part and of said generator stator frame adjacent said gap.



4,352,038
ACOUSTICAL TRANSMISSION WAVE GUIDE ASSEMBLY FOR PREDICTING FAILURE OF STRUCTURED MEMBERS

Neal S. Moreton, R.D. 5, Box 292, East Stroudsburg, Pa. 18301

Filed Feb. 19, 1980, Ser. No. 122,044
Int. Cl.³ H01L 41/08
U.S. Cl. 310—323
12 Claims

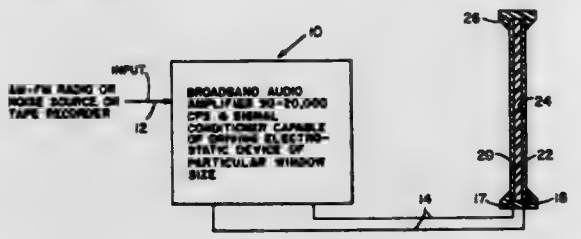


1. An acoustical transmission wave guide assembly for detecting acoustical energy emitted by structural members under adverse stress conditions, comprising:
(a) a thin elongated metal wave guide having a smooth uninterrupted surface free from scratches along which such acoustical energy may travel,
(b) a member having a monitored surface along which acoustic energy emitted by crystal slippage under adverse stress conditions is carried,
(c) one end of the wave guide being rigidly connected to the monitored surface so as to permit the acoustical energy to pass from the monitored surface to the smooth surface of the wave guide along which it travels,
(d) the other end of the wave guide being rigidly attached to a sensing plate such that the acoustical energy carried along the smooth surface of the wave guide is received,
(e) a piezo electric transducer sensitive to such acoustical energy frequencies being attached to the sensing plate, and
(f) protecting means disposed around and spaced from the wave guide transmitting surface to preclude damage to the surface and introduction of spurious acoustical impulses.

4,352,039
SONIC TRANSDUCER

Jerry W. Hagood, and Ralph L. Norman, both of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 25, 1980, Ser. No. 172,360
Int. Cl.³ H04R 19/00
U.S. Cl. 310—328 1 Claim

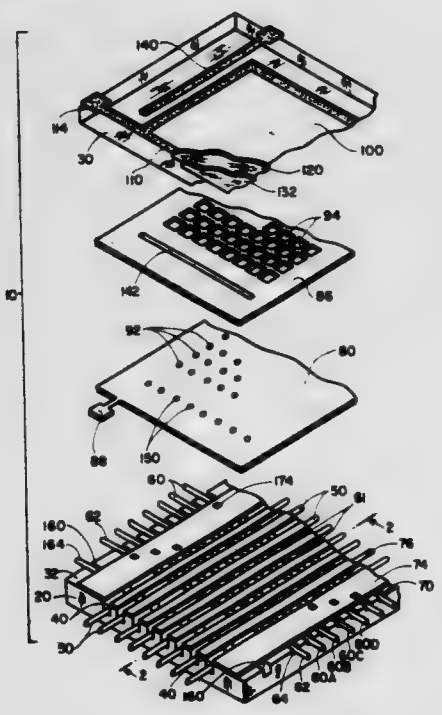


1. A sonic transducer device comprising a broad band amplifier having an input which is fed sonic vibration signals selected from those produced from music, singing, speech and/or noise, said broad band amplifier producing an output which is fed through output leads to an electrical transducer which produces vibrations in a window pane to put an interfering vibrating frequency on the window pane to prevent one from detecting vibrations of the window pane that can be translated into spoken words that are being spoken within a room where the window pane is mounted, said electrical transducer including a pair of electrically conductive sheets of glass that form said window pane and are mounted in an insulated housing with an elastic, transparent, insulative layer between the glass sheets, and said output leads from said broad band amplifier being electrically connected to said glass sheets to cause said glass sheets to vibrate when an output is produced at the output leads.

4,352,040
DISPLAY PANEL WITH ANODE AND CATHODE ELECTRODES LOCATED IN SLOTS OF BASE PLATE

Nicholas C. Andreadakis, Branchburg, N.J., assignor to Burroughs Corporation, Detroit, Mich.

Filed Jul. 14, 1980, Ser. No. 167,830
Int. Cl.³ H01J 17/49, 17/16
U.S. Cl. 313—217 3 Claims

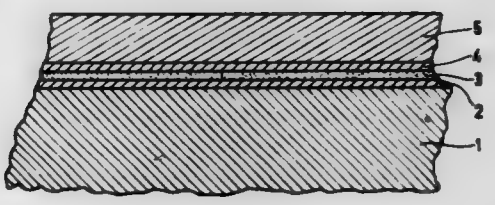


1. A display panel comprising
a gas-filled envelope made up of a base plate and a viewing face plate hermetically sealed together, said envelope having a longitudinal axis,
said base plate having a top surface, upper and lower edges lying parallel to said longitudinal axis, and left and right ends,
a plurality of first parallel longitudinal slots formed in said top surface,
an anode electrode seated in each of said slots and secured in place by a cement deposited in said slots,
a plurality of second parallel slots formed in the top surface of said base plate and oriented generally transverse to said first slots,
an insulating sealing material in each of said second slots and a cathode wire secured in place in each of said second slots by means of said sealing material,
said cathodes being all substantially uniformly positioned depth-wise with respect to the top surface of said base plate,
said cathodes being disposed transverse to and spaced from said anode wires, each crossing of an anode wire and a cathode wire defining a gas-filled cell, there being rows and columns of such cells,
a layer of insulating material on said base plate and having marginal portions extending along the upper and lower edges of said base plate and overlying all of said cathodes, said layer of insulating material having a plurality of apertures in said marginal portions thereof, said apertures overlying selected ones of said cathodes adjacent to the longitudinal edges of said base plate, and
longitudinal conductive runs on said marginal portions of said insulating layer, each conductive run making contact with different ones of said cathodes through said apertures whereby said cathodes are connected together in groups.

4,352,041
ROTARY ANODES FOR X-RAY TUBES

Horst Hübner; Bernhard Lersmacher, both of Aachen; Hans Lydtin, Stolberg, and Rolf Wilden, Roetgen, all of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 3, 1980, Ser. No. 165,894
Claims priority, application Fed. Rep. of Germany, Jul. 19, 1979, 2929136
Int. Cl.³ H01J 35/08
U.S. Cl. 374—144 6 Claims



1. A rotary anode for an X-ray tube comprising a carbon support, a heavy metal target layer and a plurality of intermediate layers interposed between the support and the target layer, said intermediate layers including first and second outer layers consisting essentially of rhenium, in contact with the support and the target layer, respectively, and an inner layer consisting essentially of a rhenium alloy containing at least one carbide-forming metal, interposed between the first and second outer layers.

4,352,042
LUMINESCENT SCREENS FOR FLAT IMAGE DISPLAY DEVICES

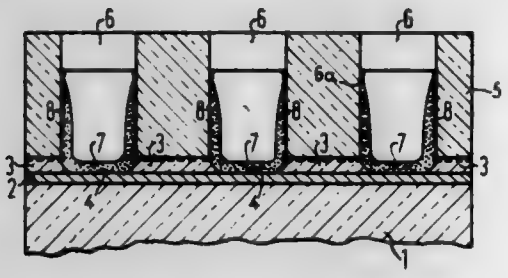
Hans P. Lorenz, Schwarzenbruck, and Rolf Wengert, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Dec. 10, 1979, Ser. No. 101,584
Claims priority, application Fed. Rep. of Germany, Dec. 20, 1978, 2855090
Int. Cl.³ H01J 17/49, 61/42
U.S. Cl. 313—485 13 Claims

1. In a luminescent screen for flat image display devices with

electron beams drawn-out of a gas discharge with an acceleration anode for such electron beams and a plurality of luminescent point surfaces separated from one another by a black bordering layer so that during operation said electron beams strike said luminescent point surfaces, the improvement comprising:

a glass screen plate positioned on the inside of said luminescent screen supports a perforated plate above said black



bordering layer, said perforated plate having a through-hole with an interior hole wall over each luminescent point surface and a light-increasing means positioned on at least portions of said hole wall adjacent and facing said glass screen plate for cooperatively interacting with said luminescent point surfaces for directing electrons reflected against said through-hole walls from the luminescent point surfaces back toward said point surfaces.

4,352,043

CATHODOLUMINESCENT LIGHT SOURCES AND ELECTRIC LIGHTING ARRANGEMENTS INCLUDING SUCH SOURCES

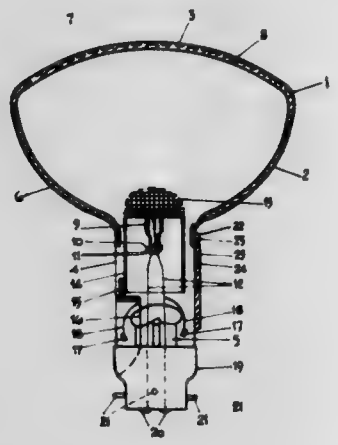
Sydney A. R. Rigden, Hemel Hempstead, England, assignor to The General Electric Company Limited, London, England

Filed Feb. 6, 1981, Ser. No. 232,169

Claims priority, application United Kingdom, Feb. 27, 1980, 8006549; Jun. 4, 1980, 8018285

Int. Cl.³ H05B *43/00*; H01J *63/06*

U.S. Cl. 315—1 **10 Claims**



1. A cathodoluminescent light source consisting of an electric lamp which includes an evacuated bulbous glass envelope with an integral glass neck terminated by a cap, an anode constituted by an electrically conductive coating on at least part of the interior surface of the bulb wall, such that at least part of the bulb wall is light transmissive, a layer of phosphor on the whole of the interior of the bulb wall and overlying the said anode coating, which phosphor is excitable to luminescence by electron bombardment, a dome-shaped metal mesh grid located within the bulb adjacent to the junction between the bulb and neck of the envelope, and supported by a hollow metal cylinder disposed coaxially within the envelope neck, an electron emissive cathode mounted within the assembly of the grid and its supporting cylinder, which cathode is so shaped and so located within the said grid assembly that the electrons emitted from the cathode in operation of the lamp are substantially uniformly distributed over the whole of the surface of the grid on which they impinge, and electrically conducting leads connecting said anode, grid and cathode to respective contacts, the grid and cathode contacts being carried by the said cap and the anode contact being located on the exterior of the envelope neck, which contacts are adapted to be connected to a circuit arrangement for operation of the lamp from a source of electric current supply.

4,352,044

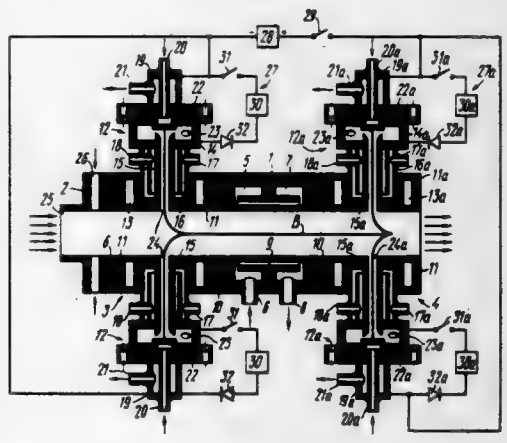
PLASMA GENERATOR

Mikhail F. Zhukov, ulitsa Zolotodolinskaya, 28, Novosibirsk; Albert Y. Lytkin, kvartal 3a, 9, kv. 19, Lytkarino Moskovskoi oblasti; Georgy N. Khudyakov, ulitsa Valtera Ulbrikhta 21, kv. 58, Moscow, and Anatoly S. Anshakov, ulitsa Pravdy, 7, kv. 16, Novosibirsk, all of U.S.S.R.

Filed Jan. 5, 1981, Ser. No. 222,648

Int. Cl.³ H05H *1/42, 1/44*

U.S. Cl. 315—111.21 **1 Claim**



1. A plasma generator comprising: a discharge chamber; a means for introducing a plasma-forming medium into said discharge chamber, installed on said discharge chamber; a cathode assembly associated with said discharge chamber and comprising at least two plasmatrons; an anode assembly associated with said discharge chamber and comprising at least two plasmatrons; a power supply; a system for initiating an arc discharge in each plasmatron; an inlet for the plasma-forming medium in each plasmatron; an end electrode in each plasmatron of said cathode assembly, connected to said arc discharge initiating system and to said power supply; an auxiliary hollow electrode in each plasmatron of said cathode assembly, connected to said arc discharge initiating system and having an exit opening communicating with said discharge chamber, the diameter of said exit opening being selected to satisfy the following relation:

$$D = A \frac{I^{\frac{2m+1}{m+1}}}{G^{\frac{m}{m+1}} \cdot U^{\frac{1}{m+1}}} (m),$$

where

m is a dimensionless coefficient;

$$m > -0.5$$

A is a constant for a given pressure and type of the plasmaforming medium for each plasmatron of said cathode assembly;

I=(I′/n) is the arc current through each plasmatron of said cathode assembly (in amperes);

I′ is the arc current through said discharge chamber (in amperes);

n is the number of plasmatrons in said cathode assembly;

G is the flow rate of the plasma-forming medium through a plasmatron of said cathode assembly (in Kg/s);

U is the voltage drop across the interval between the end

electrode of a plasmatron of said cathode assembly and the conducting portion of the electric arc in said discharge chamber near said exit opening of said auxiliary hollow electrode of the plasmatron of said cathode assembly (in volts);

said end electrode in each plasmatron of said cathode assembly being connected to said arc discharge initiating system and to said power supply; said auxiliary hollow electrode in each plasmatron of said anode assembly being connected to said arc discharge initiating system and having an exit opening communicating with said discharge system, the diameter of said exit opening being selected to satisfy the following relation:

$$D = A \frac{I^{\frac{2m+1}{m+1}}}{G^{\frac{m}{m+1}} \cdot U^{\frac{1}{m+1}}} (m),$$

where

m is a dimensionless coefficient;

$$m > -0.5$$

A is a constant for a given pressure and type of the plasma-forming mediums, for each plasmatron of said anode assembly;

I=(I'/n) is the arc current through each plasmatron of said anode assembly (in amperes);

I' is the arc current through said discharge chamber (in amperes);

n is the number of plasmatrons in said anode assembly;

G is the flow rate of the plasma-forming medium through a plasmatron of said anode assembly (in kg/s);

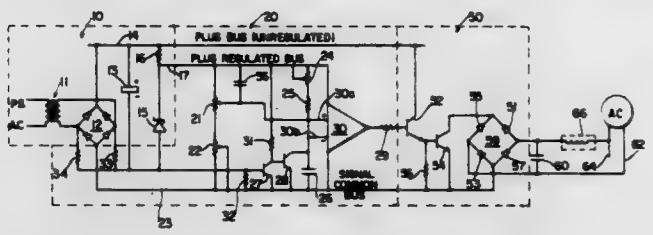
U is the voltage drop across the internal between the end electrode of a plasmatron of said anode assembly and the conducting portion of the electric arc in said discharge chamber near said exit opening of said auxiliary hollow electrode of the plasmatron of said anode assembly (in volts).

4,352,045

ENERGY CONSERVATION SYSTEM USING CURRENT CONTROL

Don F. Widmayer, Bethesda, Md., assignor to Flexiwatt Corporation, Rockville, Md.

Filed Jul. 17, 1981, Ser. No. 284,590
Int. Cl.³ H05B *41/392, 37/02*
U.S. Cl. 315—291 **20 Claims**



1. An electrical control system for controlling the current flow from an A.C. voltage supply to an electrical load device, said control system comprising:

electronic switching means, connected to said load so as to provide a controlled current path to the load, for providing for the application of substantially the entire available A.C. input voltage to the load during the initial portion of the A.C. supply voltage half wave and for switching off this input voltage at a variable point in time during said A.C. supply voltage half wave; and

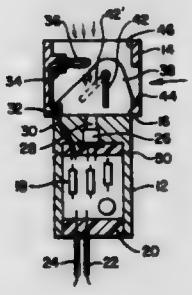
capacitor means, comprising a capacitor connected so as to provide an alternate current path to the load when said input voltage is switched off by said electronic switching means, for sustaining the current flow to the load when said input voltage is switched off by said electronic switching means.

4,352,046

NON-TACTILE SWITCH

Thomas E. Tigner, 1208 Poplar St., Nelsonville, Ohio 45764, and Charles R. Parker, 11 Blick Ave., Athens, Ohio 45701

Continuation of Ser. No. 37,027, May 8, 1979, abandoned. This application Jan. 17, 1980, Ser. No. 112,935
Int. Cl.³ H05B *37/02*
U.S. Cl. 315—362 **12 Claims**



1. Switching apparatus for selectively energizing a load from an alternating current source comprising:

a circuit connectible with said source including solid-state switching means gateable into a conductive state to energize said load with a half-wave component of said source, a light actuable silicon controlled rectifier coupled in gating relationship with said solid-state switching means and an incandescent lamp coupled with said solid-state switching means and energizable thereby from said source simultaneously with the said energization of said load; and

housing means for retaining said circuit and having a portion opaque to light adjacent said light actuable silicon controlled rectifier, said opaque portion having an open passageway extending from an opening in said housing to said light actuable silicon controlled rectifier and having lengthwise and widthwise dimensions for attenuating diffuse ambient light incident upon said opening to an extent precluding an actuation of said light actuable controlled rectifier thereby, means for mounting said incandescent lamp at a location spaced from said passageway and aligned therewith for actuating by illumination generated thereby said light actuable silicon controlled rectifier both during positive going and negative going half cycles of said source, and an opaque flap mounted between said lamp and said opening and actuable by a current of air to move from a stable rest position to an unstable position over said opening and intermediate said opening and said lamp to effect a transient blockage of light from said lamp incident upon said opening to effect de-energization of said load.

4,352,047

SIDE PINCUSHION CORRECTING CIRCUIT FOR COLOR TELEVISION RECEIVERS

Tomoyoshi Imayasu, and Katsuo Isono, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

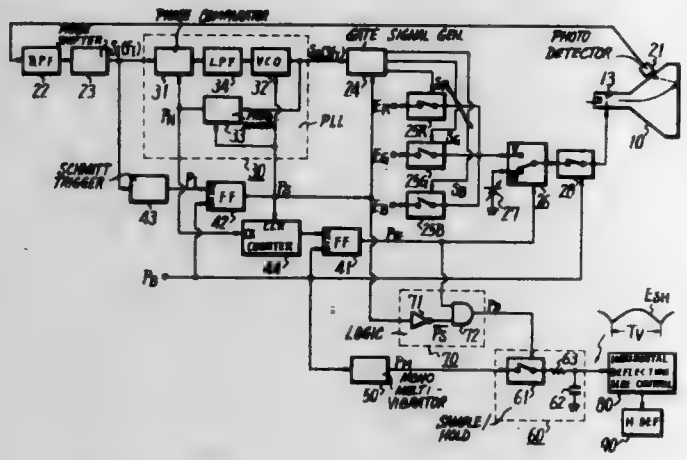
Filed Jun. 16, 1980, Ser. No. 159,633
Claims priority, application Japan, Jun. 14, 1979, 54-74987
Int. Cl.³ G01S *29/70*
U.S. Cl. 315—370 **7 Claims**

1. In a television receiver including a cathode ray tube having beam emitting means for emitting a cathode beam; display means to be scanned by said beam in a raster pattern constituted by horizontal lines, the scanning commencing for each such horizontal line in correspondence to a horizontal control pulse signal, and having at least one index stripe disposed thereon; and detector means for detecting the scanning of said index stripe by said cathode beam and generating a signal in

response to such detecting; a side pincushion correcting circuit comprising:

pulse forming circuit means for generating a reference pulse signal corresponding to the signal generated by said detector means;

phase comparator means providing an output whose magnitude depends on the difference in phase between said reference pulse signal and said horizontal control pulse signal; and



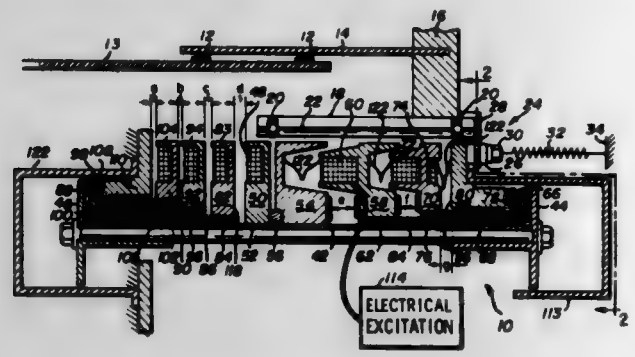
horizontal deflection circuit means supplied with the output of said phase comparator means for controlling the scanning of said cathode beam in the sense to correct for side pincushion distortion.

4,352,048

ELECTROMAGNETIC ACTUATOR APPARATUS

Dieter M. O. T. Schulze, San Jose, Calif., assignor to Ontrax Corporation, Sunnyvale, Calif.

Filed Feb. 19, 1980, Ser. No. 122,245
Int. Cl.[3] G05B *11/28*
U.S. Cl. 318—135 27 Claims



1. An improved electromagnetic actuator apparatus, comprising:

a plurality of connecting members each of different length arranged in an assembly by order of length from the shortest connecting member to the longest connecting member;

means for providing parallel lengthwise motion of each of said connecting members within the assembly of said connecting members;

a plurality of solenoid coil assemblies one each rigidly attached to one end of each connecting member with each solenoid coil assembly forming a magnetic circuit with the adjacent solenoid coil assembly attached to the adjacent connecting member;

a plurality of stop members with one each attached to each connecting member at the opposite end from the solenoid coil assembly attached to each of said connecting members;

means for anchoring one end of one of the shortest connecting member, said means for anchoring connected to a frame and providing a positive motion stop of said longest connecting member in a first direction parallel to the lengthwise dimension of said connecting members;

means for carriage attachment adapted to move adjacent and parallel to the lengthwise dimension of said shortest connecting member between said shortest connecting member solenoid coil assembly and said stop member;

means for bias return of said means for carriage attachment urging motion of said means for carriage attachment opposite and away from said means for anchoring one end of the longest connecting member with one end of said means for spring return connected to said means for carriage attachment and the other end of said means for spring return connected to said frame;

means for selective excitation of individual solenoid coil assemblies,

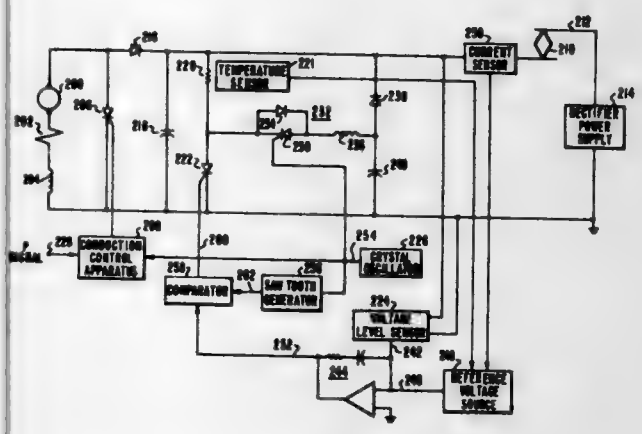
wherein said means for bias return tends to urge all of said stop members into abutting relationship and the excitation stroke of each solenoid coil assembly is in a substantially digital relationship with respect to the stroke of the other solenoid coil assemblies so that said means for carriage attachment may be translated to any position corresponding to any combination of the excitation strokes of the individual solenoid coil assemblies.

4,352,049

BRAKE CONTROL APPARATUS AND METHOD

James H. Franz, Jr., Murrysville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 26, 1979, Ser. No. 97,275
Int. Cl.[3] H02P *3/14*
U.S. Cl. 318—370 6 Claims



1. In control apparatus for a motor coupled with a vehicle and including a chopper apparatus in the brake mode to supply current to a power supply line, with a filter capacitor connected across said chopper apparatus, the combination of:

means for producing a voltage signal in accordance with the voltage across said filter capacitor,

brake control means connected across said filter capacitor,

means responsive to the current flow in relation to the power line for providing a desired reference voltage for said filter capacitor and having a value determined by said current flow,

means responsive to said voltage signal for providing an error signal in relation to said desired reference voltage value for said filter capacitor voltage,

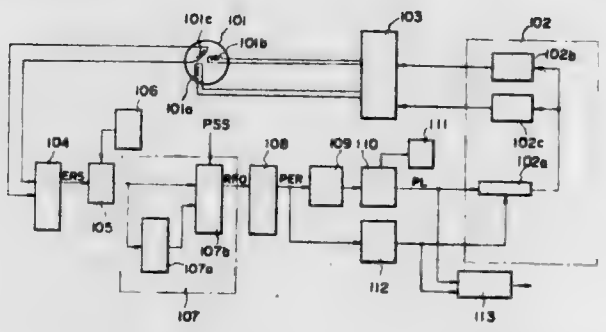
means connected with said chopper apparatus for providing a control signal having a known frequency for determining the operation of said chopper apparatus in accordance with said known frequency, and

signal means responsive to each of the error signal and the control signal and connected with said brake control means for determining the operation of the brake control means in accordance with said known frequency and for a time period proportional to the magnitude of said error signal.

4,352,050
METHOD AND APPARATUS FOR ERROR CORRECTION IN POSITION SENSING CIRCUIT

Tetsurou Sakano, Mitaka, Japan, assignor to Fujitsu Fanuc Limited, Tokyo, Japan

Filed Jul. 10, 1981, Ser. No. 282,269
Claims priority, application Japan, Jul. 14, 1980, 55-95976
Int. Cl.³ G05B 1/06
U.S. Cl. 318—661 6 Claims



1. A method of correcting the error in a position sensing circuit equipped with a sensor including:

primary windings comprising a sine excitation coil and a cosine excitation coil so disposed as to be electrically displaced in phase from each other by $\pi/2$, said sine excitation coil and said cosine excitation coil being excited by a sine-wave primary voltage signal and a cosine-wave primary excitation signal, respectively, each having an amplitude proportional to sin α and to cos α, respectively, for generating an AC flux having an electrical angle α and a constant amplitude, and

a secondary winding which is moved rotatively or linearly with respect to the primary windings in accordance with the movement of a movable body driven by a motor, for producing a sinusoidal secondary voltage signal having an amplitude in accordance with the difference between the electrical angle α and a mechanical angle θ corresponding to the amount the movable body is moved;

a smoothing circuit operatively connected to said secondary winding, for smoothing the secondary voltage signal;

a voltage-to-frequency converter operatively connected to said smoothing circuit, for generating a pulse train having a frequency varying in accordance with the output of said smoothing circuit; and

a primary voltage signal generating circuit operatively connected to said voltage-to-frequency converter and to said primary windings, for generating said primary voltage signals, the electrical angle thereof varies in accordance with the number of pulses in the pulse train so as to make the quantity $(\theta-\alpha)$ equal to zero; said method comprising the steps of:

(a) moving the motor to a first position where said secondary winding is electromagnetically coupled mainly with said cosine excitation coil, and to a second position where said secondary winding is electromagnetically coupled mainly with said sine excitation coil;

(b) varying the electrical angle α by a predetermined amount at said first position and at said second position;

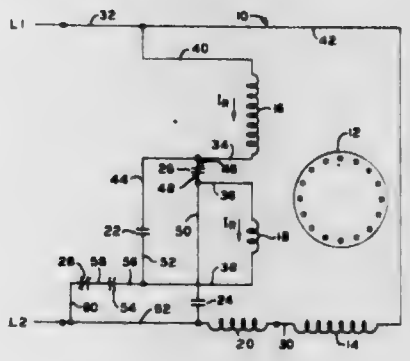
(c) obtaining, at said first position and at said second position, the amount of change in at least one of the following when said electrical angle α has been varied by said predetermined amount: the output voltage of said secondary winding, the number of pulses in said pulse train, and the frequency of said pulse train; and

(d) regulating the excitation voltage of the primary winding constituting and sine excitation coil or said cosine excitation coil in such a manner that the amount of change at said first position and the amount of change at said second position will be equal.

4,352,051
SINGLE PHASE MOTOR WITH REVERSIBLE AUXILIARY WINDINGS

John H. Johnson, Tipp City, Ohio, assignor to General Electric Company, Fort Wayne, Ind.

Continuation of Ser. No. 152,754, May 23, 1980. This application Jul. 16, 1981, Ser. No. 283,870
Int. Cl.³ H02P 1/44
U.S. Cl. 318—790 22 Claims



1. A single phase induction motor comprising: a magnetic core, a main winding disposed on the magnetic core and being adapted for connection to a single phase power source, a start winding disposed on the magnetic core and being adapted for connection to the single phase power source, an auxiliary winding disposed on the magnetic core and adapted for connection to the single phase power source, capacitive means and switching means for establishing a first series connection between the start winding and the auxiliary winding during a start mode of the motor so that current flow through the auxiliary winding establishes a magnetic field which opposes a magnetic field substantially simultaneously established by current flow through the start winding and for establishing a second series connection between the start winding and the auxiliary winding during a run mode of the motor with the second series connection including said capacitive means electrically connected in series with both the auxiliary and start windings, and wherein the second series connection is such that current flow through the auxiliary winding during the run mode of the motor is in a direction opposite to the direction of current flow during the start mode so as to cause the auxiliary winding to establish a magnetic field which is additive to the magnetic field established by the start winding during the run mode, said first and second series connections of said start and auxiliary windings being in parallel with said main winding.

4,352,052
ADAPTOR FOR CHARGING SMALL CELLS IN LARGE-CELL CHARGER

Ray C. Opper, 3263 Vineyard Ave., Sp. 69, Pleasanton, Calif. 94566

Filed Nov. 3, 1980, Ser. No. 203,421
Int. Cl.³ H02J 7/00; H01M 10/46
U.S. Cl. 320—2 11 Claims

1. For use with a charger having a pair of relatively widely-spaced terminals for mating with and charging an energy storage cell having a pair of correspondingly widely-spaced contacts, an adaptor for enabling an energy storage cell having a pair of relatively closely-spaced contacts to be charged in said charger, said adaptor comprising:

means for (a) holding said energy storage cell having said closely-spaced contacts, (b) causing said relatively-closely spaced contacts of said cell, when said cell is held in said adaptor, to be connected electrically with said respective pair of terminals of said charger, and (c) enabling said adaptor to mate physically with said pair of terminals of said charger,

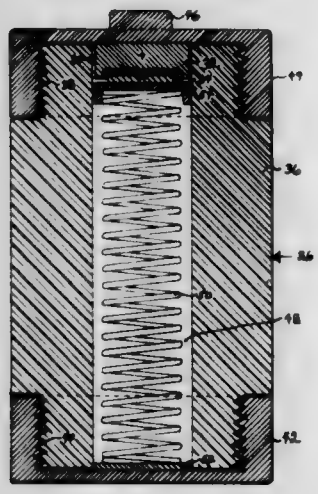
said adaptor having a substantially cylindrical shape,

said adaptor comprising a body portion and removable mating top and bottom portions,

said body portion having an axial through hole extending through said body portion from the top to the bottom thereof,

a spring positioned in said axial through hole and, when relaxed, occupying substantially the entire length of said through hole in said body portion,

said removable top and body portions each comprising a cap which covers a respective end of said through hole so as to captivate said spring, said caps each providing an electrically conductive path from said spring, when said spring is in contact with an interior side of said cap, to an exterior portion of said cap,



each cap mating with said body portion in telescoping relationship and being partially extensible from said body portion in an axial direction without freeing said spring,

whereby energy storage cells of a wide range of lengths, and hence contact spacings, can be held in said adaptor, and a cell of very short length easily can be positioned in the top of said through hole of said adaptor by partially withdrawing the bottom cap from said adaptor to allow said spring to drop down to provide a recess at the top of said through hole, placing said short cell in said recess, fully assembling said top cap to said adaptor, and then fully assembling said bottom cap onto said adaptor to compress said spring.

4,352,053

TEMPERATURE COMPENSATING VOLTAGE GENERATOR CIRCUIT

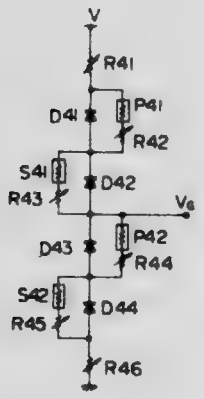
Takuro Oguchi, Kawasaki; Zenichi Ohsawa, Yokohama, both of Japan, and Shinichi Murai, Santa Clara, Calif., assignors to Fujitsu Limited, Kawasaki, Japan

Filed Apr. 27, 1981, Ser. No. 257,551

Claims priority, application Japan, Apr. 28, 1980, 55-56546; Apr. 28, 1980, 55-56547; Apr. 28, 1980, 55-56548; Apr. 28, 1980, 55-56549

Int. Cl.³ G05F *1/60*

U.S. Cl. 323—220 **25 Claims**



1. A temperature compensating voltage generator circuit for compensating temperature characteristics of an electric circuit whose electrical characteristic can be controlled by a control voltage, comprising:

a plurality of temperature sensitive circuits each of which comprises a parallel connection of a diode circuit and a temperature sensitive resistor circuit, said temperature sensitive circuits being connected in series; and

one or more resistor circuits which are operatively connected in series with said plurality of temperature sensitive circuits, the series connection of said temperature sensitive circuits and said resistor circuits comprising a voltage divider circuit, a divided output voltage from said voltage divider circuit being used as a temperature compensating voltage for said electric circuit.

4,352,054

METHOD FOR ACTUATING A SWITCHING TRANSISTOR OPERATING AS A SETTING MEMBER IN A DC/DC CONVERTER

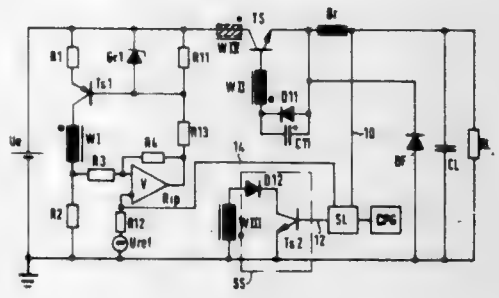
Eckhardt Grünsch, Allmersbach, and Günter Wochele, Oppenweiler, both of Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 4, 1981, Ser. No. 240,545

Claims priority, application Fed. Rep. of Germany, Mar. 7, 1980, 3008716

Int. Cl.³ G05F *1/56*; H02M *3/335*

U.S. Cl. 323—224 **4 Claims**



1. The method of controlling a dc/dc converter including a first switching transistor having an emitter-collector circuit connected to a load, and a base circuit; a transformer having first, second and third electromagnetically coupled windings, the first winding of said transformer being coupled via a second switching transistor to an input voltage source and being selectively energized from said input voltage source, the second winding of said transformer being connected in the base-emitter circuit of said switching transistor, and the third winding of said transformer being coupled by a control stage to a control switching logic circuit controlled by the voltage across said load, the first, second and third windings of said transformer having polarities such that the first winding of said transformer is energized during the off time of said first switching transistor and said control switching logic circuit selectively energizes said first winding and short-circuits said third winding thereby determining the beginning and end of the conducting period of said first switching transistor, said method comprising the steps of:

(a) short-circuiting said third winding thereby causing the voltage across said second winding to decrease and switch said first switching transistor into its non-conducting state;

(b) energizing said first winding from said input voltage source during the off time of said first switching transistor;

(c) deenergizing said first winding after sufficient energy has been stored in the core of said transformer to actuate said first switching transistor; and

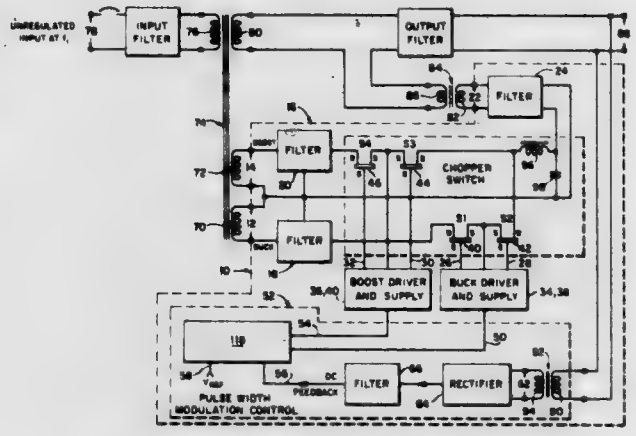
(d) removing the short circuit from said third winding thereby causing the energy stored in said core to be transferred to said second winding and drive said switching transistor into its conducting state.

4,352,055

AC VARIABLE VOLTAGE SOURCE UTILIZING PULSE WIDTH MODULATION

Thomas McCartney, Deerfield, Ill., assignor to ONEAC Corporation, Bannockburn, Ill.

Filed Oct. 24, 1980, Ser. No. 200,433
Int. Cl.[3] G05F 1/30
U.S. Cl. 323—263 21 Claims



1. An AC variable voltage source comprising:

means responsive to an AC input source for providing a controlled output of variable amplitude and of the same waveform characteristics as said input source, said output providing means comprising electronic switch means responsive to switch control signals for selectively switching in phase and out of phase waveforms of said input source at a switching frequency at least several orders of magnitude higher than the frequency of said input source, and output filter means responsive to said electronic switch means for filtering out the high frequency switching components of said switching frequency; and

switch control means for generating said switch control signals in response to a control input, said switch control signals being effective to control the duty cycle of said switch means at said switching frequency, the magnitude of said control input determining the duty cycle of said switch means and the amplitude of said controlled output,

said variable output providing means further comprising two AC phase inputs, said AC input source providing an AC input to each of said two AC phase inputs, each of said AC inputs being of predetermined amplitude, said two AC inputs being of opposite relative phase, said electronic switch means including first and second phase switch stages, each of said first and second phase switch stages being responsive to a respective one of said two AC phase inputs, each of said phase switch stages including two power MOSFETS each having a drain, a source and a gate control connection, each of said source connections of said MOSFETS in each phase switch stage being connected to each other, each of said gate control connections being connected to one of said switch control signals, each of said phase switch stages being connected between a respective one of said AC phase inputs and said output filter means.

4,352,056

SOLID-STATE VOLTAGE REFERENCE PROVIDING A REGULATED VOLTAGE HAVING A HIGH MAGNITUDE

David L. Cave, Tempe; Steven L. Harris, Mesa, and Don W. Zobel, Tempe, all of Ariz., assignors to Motorola, Inc., Del.

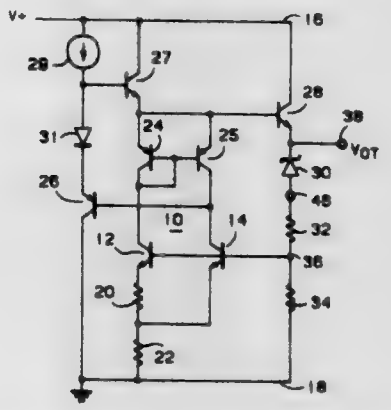
Filed Dec. 24, 1980, Ser. No. 220,207
Int. Cl.[3] G05F 3/18
U.S. Cl. 323—314 12 Claims

1. A voltage reference for providing an output voltage at an output terminal thereof having independently adjustable temperature coefficient and magnitude, wherein the magnitude of the output voltage is of a relatively high level, including in combination:

first and second transistors, each having emitter, base, and collector electrodes;

a negative feedback loop interconnecting said first and second transistors and the output terminal of the voltage reference, said feedback loop enabling the currents through said first and second transistors to have a predetermined non-unity ratio of current densities;

means connected to said emitter electrodes of said first and second transistors for developing a voltage having a positive temperature coefficient in response to said non-unity ratio of current densities; said voltage having said positive



temperature coefficient combining with the emitter-to-base voltage of one of said first and second transistors to produce a combined voltage in said negative feedback loop having a predetermined variation with temperature; and

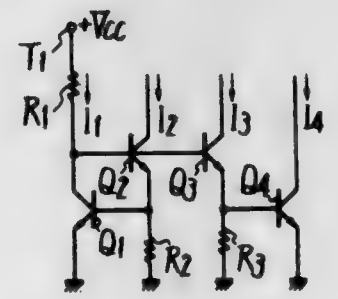
further means coupled in said negative feedback loop providing a voltage having a predetermined variation with temperature which cooperates with said combined voltage to provide a reference voltage having a predetermined temperature coefficient at the output terminal of the voltage reference.

4,352,057

CONSTANT CURRENT SOURCE

Takashi Okada; Hiroshi Sahara, both of Yokohama, and Fumikazu Otsuka, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jun. 24, 1981, Ser. No. 276,943
Claims priority, application Japan, Jul. 2, 1980, 55/90185
Int. Cl.[3] G05F 3/16
U.S. Cl. 323—315 1 Claim



1. A constant current generating circuit comprising:

(A) first, second, third and fourth transistors of one conductivity type each having base, emitter and collector electrodes;

(B) a voltage supply source having first and second voltage terminals;

(C) circuit means for connecting the collector and emitter electrodes of said first transistor to said first and second voltage terminals respectively with a first impedance means between the collector electrode and said first voltage terminal;

(D) circuit means for connecting the emitter electrode of

said second transistor to said second voltage terminal through a second impedance;

(E) circuit means for connecting the emitter electrode of said third transistor to said second voltage terminal through a third impedance;

(F) circuit means for connecting the emitter electrode of said fourth transistor to said second voltage terminal;

(G) circuit means for connecting the base electrode of said first transistor to said emitter electrode of said second transistor;

(H) circuit means for connecting said collector electrode of said first transistor to the base electrodes of said second and third transistors respectively;

(I) circuit means for connecting said emitter electrode of said third transistor to the base electrode of said fourth transistor; and

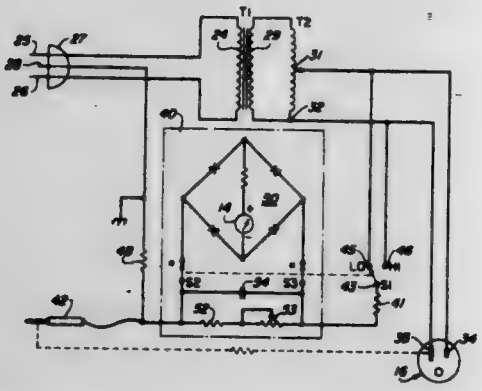
(J) current utilizing means connected between said first voltage terminal and at least one of the collector electrodes of said second, third and fourth transistors.

4,352,058

METHOD AND APPARATUS FOR MEASURING LEAKAGE TO GROUND

Marlin D. Westra, Sioux Falls, S. Dak., assignor to Sencore, Inc., Sioux Falls, S. Dak.

Filed Feb. 1, 1980, Ser. No. 117,611
Int. Cl.³ G01R *31/02*
U.S. Cl. 324—51 **5 Claims**



1. An instrument for use in measuring leakage currents from a piece of equipment under test to ground, said equipment having first and second electric power input terminals, comprising

an isolation transformer having an input winding adapted to be connected across a source of electric power,

first and second output terminals adapted to be connected to respective ones of said electric power input terminals of said equipment,

means connecting said first and second output terminals across an output winding of said isolation transformer,

an electric probe,

an AC ammeter serially connected with said probe, and

selector switch means for selectively connecting said ammeter to one or the other of said first and second output terminals.

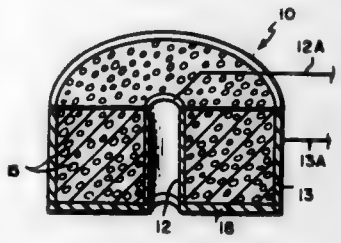
4,352,059

DETERMINATION OF MOISTURE LEVEL IN MATERIALS

Nam P. Suh, Sudbury; Stephen D. Senturia, Boston, both of Mass., and Byung H. Kim, South San Francisco, Calif., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Jun. 13, 1980, Ser. No. 159,221
Int. Cl.³ G01R *27/26*
U.S. Cl. 324—61 R **19 Claims**

1. A method for determining the moisture content of solid dielectric materials comprises placing a sample of said material between two electrodes, applying an alternating electric field having a frequency in the range of radio waves to said electrodes, determining the dielectric loss properties of said material, and using the dielectric loss properties to determine the moisture content.

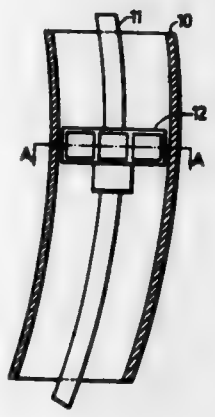


4,352,060

APPARATUS FOR MEASURING THE INTERIOR DIMENSIONS OF A CAST IRON MOLD

Gunnar Garpendahl, Akersberga; Ingrid Bruce, Stockholm, and Ebbe Lundmark, Boden, all of Sweden, assignors to Viak AB, Boden, Sweden

Filed Jul. 1, 1980, Ser. No. 164,900
Int. Cl.³ G01R *27/26*
U.S. Cl. 324—61 R **3 Claims**



1. Apparatus for measuring the interior dimensions of a metallic mold having a rectangular cross-section, comprising:

a guide rail adapted to be disposed within a mold, said guide rail having approximately the same curvature as a mold to be measured and being adapted to be secured at along the center line of the mold to be measured; and

a measuring means mounted for movement along said rail, said measuring means including:

a multiplicity of plates mounted on a rim with a plurality of said plates being disposed adjacent the interior of each mold wall such that each plate forms a capacitor together with the adjacent portion of said mold wall, the plates of each wall being arranged adjacent each other parallel to the wall, and each pair of opposed plates on the rim being connected in an oscillating circuit; and

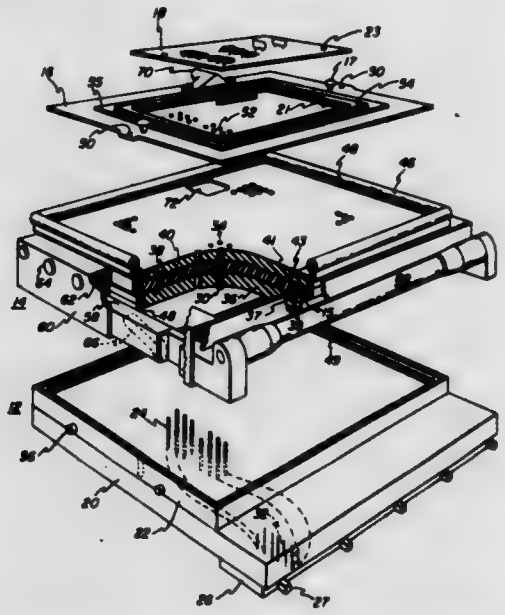
signal processing means for generating and processing signals from said oscillating circuits relating to the capacitances of said capacitors, said signals being indicative of the reasonance frequencies of said oscillating circuits.

4,352,061

UNIVERSAL TEST FIXTURE EMPLOYING INTERCHANGEABLE WIRED PERSONALIZERS

John L. Matrone, Guilderland, N.Y., assignor to Fairchild Camera & Instrument Corp., Mountain View, Calif.

Filed May 24, 1979, Ser. No. 42,116
Int. Cl.[3] G01R *31/02;* H01R *4/64*
U.S. Cl. 324—158 F 16 Claims



1. A printed circuit board test fixture comprising:

a universal matrix device which includes a plurality of electrical spring loaded test probe assemblies, each probe assembly having a longitudinal axis with a tip at one end and a contact surface at the other end, and a means for holding the probe assemblies spaced apart from one another with the axes substantially parallel to one another and with the tips pointing substantially in the same direction wherein the means for holding include a test probe assembly at every point where a test point is desired for a family of various types of different printed circuit boards to be tested;

a support having rigid posts mounted through it equal in number and corresponding in locations on a one-to-one basis both to test points of the particular circuit board under test and to selected probe assemblies of the plurality of probe assemblies of the universal matrix device;

means for positioning the universal matrix relative to the support so that one end of each post makes contact with a contact surface of the corresponding selected assembly, thereby selecting the electrical test probe assemblies required for testing a required number of test points of the particular type of printed circuit board under test; and

means for bringing the tip of each selected assembly and its corresponding test point together to contact each other.

4,352,062

DIGITAL DISPLAY TYPE TACHOMETER FOR AN AUTOMOBILE

Hiroyuki Nomura, Fujisawa; Teruo Kawasaki, and Mikio Takeuchi, both of Yokohama, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

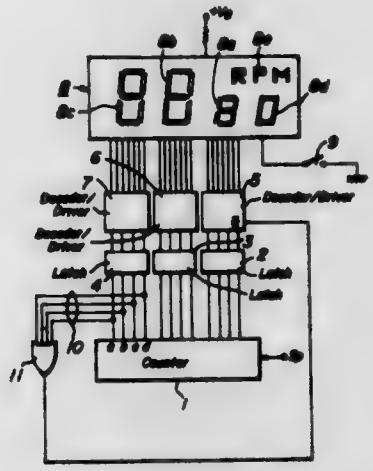
Filed Aug. 13, 1980, Ser. No. 177,630
Claims priority, application Japan, Aug. 24, 1979, 54/107183
Int. Cl.[3] G01P *3/48, 3/54*
U.S. Cl. 324—169 6 Claims

1. A digital display type tachometer for an automobile for numerically displaying a rotation speed of the engine, comprising:

digital display means comprising display sections for 1000's, 100's, 10's and 1's digits, the 1's digit display section being constructed to display always "zero";

means for counting pulses generated in synchronism with the rotation of the engine to provide a digital signal depending on the rotation speed of the engine;

means for converting the digital signal from said counting means into decimal character signals of 1000's, 100's and 10's digits of the rotation speed and supplying these character signals to said 1000's, 100's and 10's digit display sections;



means for detecting whether the rotation speed of the engine is higher or lower than 1000 rpm and producing a detection signal when the rotation speed of the engine is higher than 1000 rpm; and

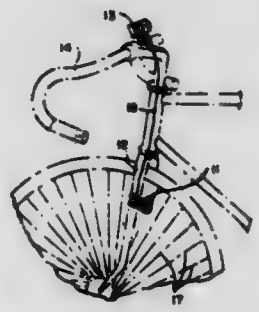
means for controlling in response to said detection signal the 10's digit display section to display "zero".

4,352,063

SELF-CALIBRATING SPEEDOMETER/ODOMETER

Peter W. J. Jones, 70 Oakley Rd., Belmont, Mass. 02178, and Dennis W. Purcell, 121 Allston St., Medford, Mass. 02155

Filed May 8, 1981, Ser. No. 261,759
Int. Cl.[3] G01P *3/48, 3/54*
U.S. Cl. 324—171 12 Claims



1. An odometer/speedometer system for use on a spoke-wheeled vehicle comprising

spoke magnet and coil detection means mounted on said vehicle near the spokes of a selected wheel thereof, the movement of said spokes passing by said detection means producing an output signal from the coil thereof;

signal processing means being mounted on said vehicle and including

means responsive to said coil output signal for producing a plurality of pulses each corresponding to the passage of a spoke by said detection means;

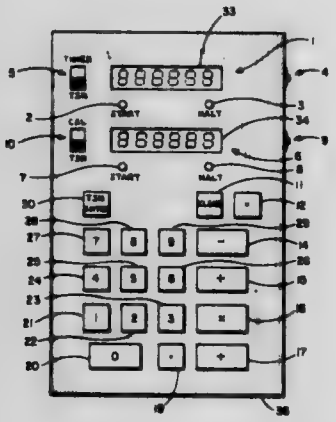
spoke count means responsive to said spoke pulses for counting said pulses to produce a spoke count signal representing said pulse count;

means responsive to said spoke count signal over a selected time period for producing a timed spoke count output signal proportional to the speed of the vehicle.

4,352,064
DEVICE FOR MEASURING THE SPEED OF AN OBJECT TRAVELING BETWEEN TWO FIXED POINTS FROM A STATIONARY OBSERVATION POINT

Ervin T. Dunn, 3003 Overlook Rd., #15, Boise, Id. 83704

Filed Jun. 1, 1979, Ser. No. 44,489
Int. Cl.[3] G01P *3/66*; G01B *9/00*
U.S. Cl. 324—178 9 Claims



1. Apparatus for measuring the average speed of a vehicle traveling between two line-of-sight reference points from a stationary observation point comprising:

means for entering a set-up speed into said apparatus;

means for utilizing said set-up speed to determine a comparison time-speed unit representing the distance traveled by a set-up vehicle moving between the line-of-sight reference points;

means for storing said comparison time-speed unit;

time pulse generating means;

time counter means for counting said time pulses;

manually operated first-fixed-point switch for initiating the count of said time counter means when the vehicle passes a first reference point;

manually operated second-fixed-point switch for terminating the count of said time counter means when the vehicle passes a second reference point;

divide circuit means for dividing the comparison time-speed unit by the contents of said time counter whereby the resulting quotient is a measure of the vehicle speed; and

speed readout means for displaying said vehicle speed.

4,352,065
NONDESTRUCTIVE ELECTROMAGNETIC INSPECTION OF PIPELINES INCORPORATED IN AN ELECTRICALLY CLOSED LOOP

Viktor I. Rogachev, Jurievsky pereulok, 22 korpus 2, kv. 55; Lev I. Trakhtenberg, Proletarsky prospekt, 54, kv. 39, and Petr N. Shkatov, ulitsa Musy Dzhalilya, 17, korpus 1, kv. 127, all of Moscow, U.S.S.R.

Filed Apr. 19, 1979, Ser. No. 31,484
Claims priority, application U.S.S.R., Apr. 28, 1978, 2604876; Apr. 28, 1978, 2604877
Int. Cl.[3] G01N *27/82*; G01R *33/12*
U.S. Cl. 324—238 30 Claims

11. A device for nondestructive inspection of a portion of a pipeline incorporated in an electrically closed loop, comprising:

means coupled to said pipeline forming said electrically closed loop;

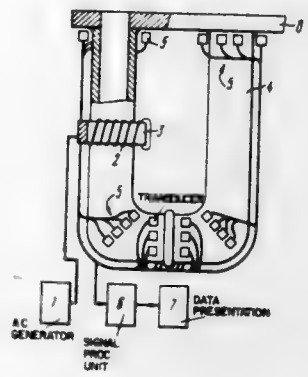
a closed magnetic circuit encircling said pipeline;

an exciting inductance coil connected to said closed magnetic circuit and effective for creating an alternating electromagnetic field in said electrically closed loop;

an a.c. source connected to said exciting inductance;

at least one transducer for measuring a magnetic field at a plurality of points in said electrically closed loop;

a signal processor connected to said at least one transducer and effective to produce an output signal in response to a distribution function of at least one parameter of said magnetic field at said plurality of points; and

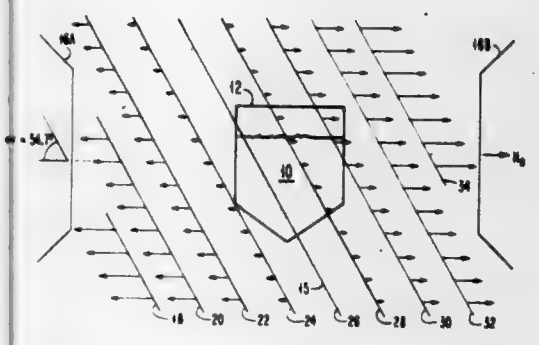


a data presentation unit responsive to said output signal for indicating a state of said pipeline.

4,352,066
METHOD FOR ADJUSTING THE MAGIC ANGLE IN NMR EXPERIMENTS

Raymond D. Kendrick, San Jose, Calif.; Robert A. Wind, Zoetermeer, Netherlands, and Costantino S. Yannoni, Los Gatos, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 31, 1980, Ser. No. 202,546
Int. Cl.[3] G01N *27/00*
U.S. Cl. 324—321 5 Claims



1. A method of orienting the rotation axis of a spinning sample used in a nuclear magnetic resonance (NMR) experiment comprising the steps of:

(a) placing the sample within the r.f. excitation coil and the static external magnetic field of an NMR spectrometer,

(b) superimposing a static magnetic field gradient at an angle of about 54.7° with respect to the direction of the static external magnetic field H_o thereby providing a magnetic field reference axis,

(c) rotating the sample about an axis which makes a second particular angle with respect to the magnetic field reference axis,

(d) observing the width of the NMR resonance lines obtained while rotating the sample, and

(e) changing the second particular angle with respect to the magnetic field reference axis until the width of the NMR resonance lines obtained from rotating the sample is a minimum.

4,352,067
BATTERY ANALYZER

Robert J. Ottone, Newtown, Conn., assignor to DC Electronic Industries, Inc., Wharton, N.J.

Filed Jun. 2, 1980, Ser. No. 155,680
Int. Cl.[3] G01N *27/42*
U.S. Cl. 324—434 14 Claims

1. Apparatus for testing a battery having a plurality of cells, comprising:

a load bank for interconnection across the battery and for draining current therefrom;

monitor means connected to the battery for measuring the voltage of each of the plurality of cells of the battery and for measuring said current drained by said load bank;

control means interconnected between said load bank and monitor means for regulating said load bank; and



wherein said monitor means comprises a multiplexer connected to each of the cells of the battery and mutually exclusively accessing each of such cells for receiving a cell voltage therefrom.

4,352,068

METHOD OF MEASURING ACTIVITIES BY MEANS OF SOLID ION CONDUCTORS

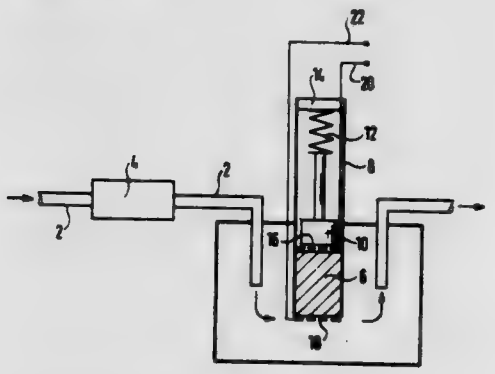
Werner Weppner, Stuttgart, Fed. Rep. of Germany, assignor to Max-Planck-Gesellschaft zur Förderung der Wissenschaften e.V., Göttingen, Fed. Rep. of Germany

Filed Jun. 20, 1980, Ser. No. 161,597

Claims priority, application Fed. Rep. of Germany, Jun. 28, 1979, 2926172

Int. Cl.³ G01N *27/42*

U.S. Cl. 324—452 **7 Claims**



1. A method of measuring the activity of a component of a sample medium by means of a solid ion conductor composed of a phase system having N components, wherein N is $\leqq 3$, wherein one component corresponds to the component to be measured, comprising equilibrating the solid ion conductor first with the medium, then with the N−2 adjacent phases of the phase system of the N components of the solid ion conductor, and finally with a reference electrode and measuring the voltage between the reference electrode and the medium.

4,352,069

SWITCHED CAPACITANCE SIGNAL PROCESSOR

Roger Dessoulavy, Lausanne, Switzerland, assignor to Centre Electronique Horloger S.A., Neuchatel, Switzerland

Filed Dec. 17, 1979, Ser. No. 103,996

Claims priority, application Switzerland, Dec. 18, 1978, 12855/78

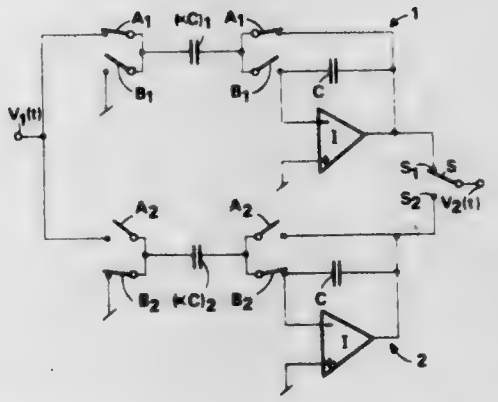
Int. Cl.³ G06G *7/12, 7/18*

U.S. Cl. 328—127 **6 Claims**

1. An electronic circuit comprising:

first and second selective means, each of said selective means being commonly connected to a first input terminal for receiving an applied input voltage, each said selective means comprising: a first capacitor, an integrator means having a second input terminal, a common terminal, and an output terminal providing an output signal, and switching means for connecting said capacitor alternatively between said first input terminal and said integrator means output terminal, and between said common terminal and said integrator means input terminal, in response to a switching signal;

means for providing first and second switching signals to said first and second selective circuits, said switching signals having the same frequency but differing in phase whereby



each of said first and second selective circuits provides for alternate sampling of an input voltage applied to said first input terminal; and

means for combining the output signals at the output terminals of the respective integrator means provided in said first and second selective means.

4,352,070

SAMPLE-AND-HOLD UNIT

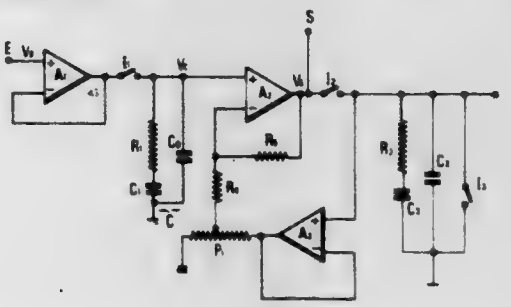
Claude Beauducel, Henouville, and Jacques Cretin, Le Chesnay, both of France, assignors to Institut Francais du Petrole, Rueil-Malmaison and Compagnie Generale de Geophysique, Massy, both of, France

Filed Apr. 4, 1980, Ser. No. 137,100

Claims priority, application France, Apr. 6, 1979, 79 08801

Int. Cl.³ G11C *27/02*

U.S. Cl. 328—151 **5 Claims**



1. In a sample and hold circuit comprising sampling and holding means for receiving signals and temporarily storing said signals, and subsequently transmitting said stored signals, said sampling and holding means comprising capacitor means (C) for receiving and temporarily storing said signals, input means connectable to the capacitor means (C) for transmitting and charging said capacitor means (C) with said signals, and output means connected to the capacitor means (C) for transmitting the signals stored in the capacitor means (C) for readout, the improvement which comprises:

compensating means for compensating for parasitic voltages delivered by said sampling and holding means resulting from diaphony between successive samples having different amplitudes, said compensating means comprising;

(a) a passive compensation circuit including a capacitor (C_2), intermittently connected to the output of said sampling and holding means, and connected to ground, and said passive compensation circuit adapted to reproduce the operational characteristics of said capacitor means (C),

(b) first breaker means (I_2) connected between the output of said sampling and holding means and said passive compensation circuit for intermittently connecting said passive compensation circuit to the output of said sampling and

holding means, and second breaker means (I_3) operatively associated with said passive compensation circuit for intermittently short-circuiting said passive compensation circuit, and said first and second breaker means adapted for being sequentially actuated, and

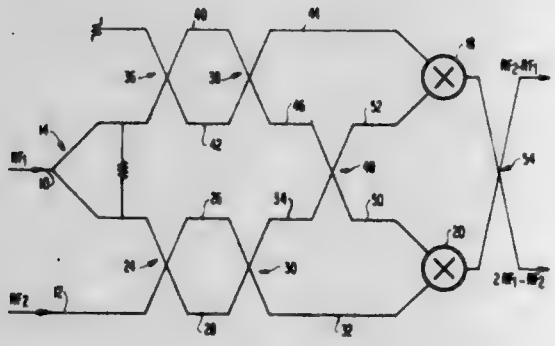
(c) subtracting means operatively associated with said passive compensation circuit, and with said sampling and holding means, for subtracting from the voltages stored in capacitor means (C) a fraction of a signal stored in capacitor (C_2) to thereby compensate for the parasitic voltages appearing at the output of said sampling and holding means resulting from diaphony between successive samples transmitted through said sampling and holding means.

4,352,071

PLANAR QPSK DEMODULATOR

William H. Childs, Gaithersburg, Md., and Christoph E. Mahle, Washington, D.C., assignors to Communications Satellite Corporation, Washington, D.C.

Division of Ser. No. 51,297, Jun. 22, 1979, Pat. No. 4,281,293.
This application May 11, 1981, Ser. No. 262,662
The portion of the term of this patent subsequent to Jul. 28, 1998, has been disclaimed.
Int. Cl.³ H04L *27/22*
U.S. Cl. 329—105 **7 Claims**



1. An image rejection mixer of the type having RF_1 and RF_2 input ports for receiving RF_1 and RF_2 input signals respectively, and RF_2-RF_1 and $2RF_1-RF_2$ ports for providing RF_2-RF_1 and $2RF_1-RF_2$ difference signals respectively, first and second mixers, power dividing means connected to said RF_1 input port and supplying a RF_1 input signal to each of said first and second mixers, coupling means coupled to said RF_2 input port for providing RF_2 inputs to each of said first and second mixers, said RF_2 inputs to said first and second mixers being 90° out-of-phase with respect to one another, and output coupling means receiving the outputs of said first and second mixers for providing said RF_2-RF_1 and $2RF_1-RF_2$ signals, said RF_1 and RF_2 input ports adjacent one another and said RF_2-RF_1 and $2RF_1-RF_2$ ports being adjacent one another without the necessity of any signal path crossovers in said image rejection mixer between one of said RF signals and one of said difference signals.

4,352,072

FEEDFORWARD AMPLIFIER WITH ENHANCED STABILITY INTO LOADS WITH HIGH VSWR

Timothy A. Harrington, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Aug. 29, 1980, Ser. No. 182,534
Int. Cl.³ H03F *1/26*
U.S. Cl. 330—149 **2 Claims**

1. A feedforward amplifier for amplifying an electromagnetic wave signal for driving an output load impedance, comprising:

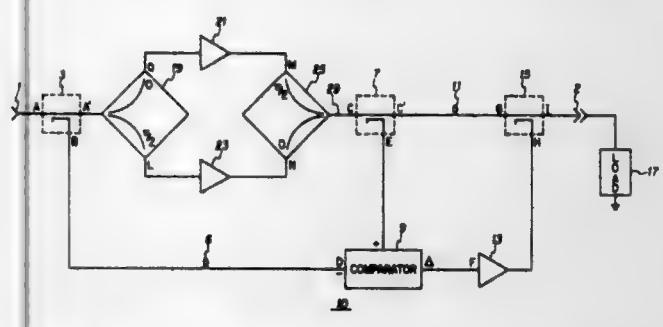
first signal path including, in cascade arrangement, signal amplifier means for amplifying the electromagnetic wave signal, and a first delay network;

second signal path, including in cascade arrangement, a second delay network, summing means, and an error amplifier means;

coupler means for dividing the signal into a first signal component and a second signal component and for coupling the first signal component to the first signal path and the second signal component to the second signal path;

second coupler means for sampling the output of the signal amplifier and coupling the sampled signal to the input of the summing means;

recombiner means for recombining the signal from the first signal path with the signal from the second signal path to obtain an amplified electromagnetic wave signal and



the signal amplifier means includes;

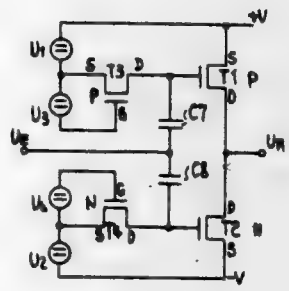
a first Hilbert's transformer means for obtaining a quadrature-phase electromagnetic wave signal and an in-phase electromagnetic wave signal, first amplifier means for amplifying the in-phase electromagnetic wave signal, second amplifier means for amplifying the quadrature-phase electromagnetic wave signal, and second Hilbert's transformer means for recombining the amplified in-phase electromagnetic wave signal with the quadrature-phase electromagnetic wave signal after first performing a Hilbert's transform on the amplified in-phase electromagnetic wave signal.

4,352,073

COMPLEMENTARY MOS FIELD EFFECT TRANSISTOR AMPLIFIER

Oskar Leuthold, Marin, Switzerland, assignor to Ebauches Electroniques SA, Marin, Switzerland

Filed Jun. 13, 1980, Ser. No. 159,073
Claims priority, application Switzerland, Jul. 13, 1979, 6544/79
Int. Cl.³ H03F *3/30*
U.S. Cl. 330—264 **6 Claims**



1. A complementary MOS field effect transistor amplifier for alternating signals, comprising:

an inverter including a first field effect transistor having a first predetermined voltage threshold and a second field effect transistor having a second predetermined voltage threshold, said transistors having insulated gates and being of complementary conductivity;

a first coupling capacitor connected at one end to said gate of said first transistor and a second coupling capacitor connected at one end to said gate of said second transistor, the alternating signals being applied to the other ends of said capacitors;

a third transistor coupled for biasing said first transistor substantially to said first threshold voltage; and

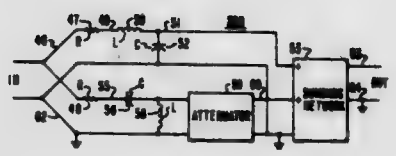
a fourth transistor coupled for biasing said second transistor substantially to said second threshold voltage, said third and fourth transistors being biased to have a high equivalent resistance.

4,352,074

PHASE-LOCKED LOOP FILTER

Herman J. Blinchikoff, Baltimore, and George R. Vaughan, Linthicum Heights, both of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 1, 1980, Ser. No. 117,704
Int. Cl.[3] H03L *7/08*
U.S. Cl. 331—17 10 Claims



1. A phase-locked loop for tracking a selected frequency in an input signal and for providing peak attenuation at fixed frequency spacings from said selected frequency comprising,

a linear phase detector having a first and second input and an output,

an amplifier,

a loop filter,

a voltage-controlled oscillator,

said output of said linear phase detector coupled through said amplifier, loop filter and voltage-controlled oscillator to said first input of said linear phase detector to form a signal loop having an open loop gain K,

means for coupling an input signal to said second input of said phase detector,

means for coupling an output signal from said voltage-controlled oscillator,

said loop filter having a predetermined transfer function $H_L(s)$,

said loop filter including

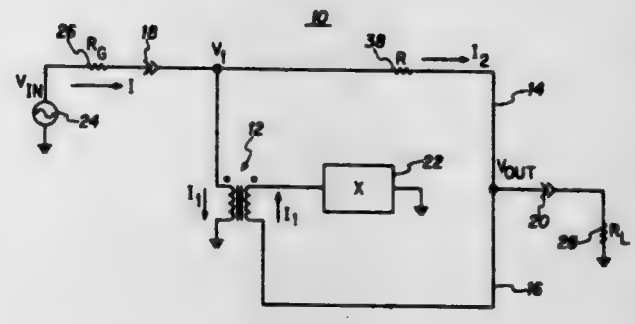
an input terminal coupled to one side of a first and second resistor, the other side of said first resistor coupled through a first inductor to one side of a first capacitor and to a first input of a summing network, the other side of said second resistor coupled through a second capacitor to one side of a second inductor and to a first input of an attenuator network, the output of said attenuator network coupled to a second input of said summing network, the output of said summing network coupled to an output terminal of said loop filter, the other side of said first capacitor, the other side of said second inductor, a terminal of said attenuator and a terminal of said summing network all coupled to a first potential.

4,352,075

SPLIT PHASE DELAY EQUALIZER WITH SINGLE TRANSFORMER AND ADJUSTMENT FOR Q LOSS

Vernon R. Cunningham, Melissa, Tex., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Dec. 8, 1980, Ser. No. 214,300
Int. Cl.[3] H03H *7/01*
U.S. Cl. 333—28 R 3 Claims



1. A split phase delay equalizer using a single transformer, comprising:

a pair of circuit branches connected in parallel between an input and an output;

first resistance means R_g forming an input impedance to said circuit branches and connected to the input of same;

second resistance means R_L forming an output impedance of said circuit branches and connected to the output of same;

a transformer in one of said circuit branches for providing a 180 degree phase inversion of the signal in that branch;

reactance means in a first one of said pair of circuit branches for providing a phase shift of the signal in that branch; and

resistance means only, in the other one of said pair of circuit branches, having a resistance value selected to provide an adjustment shift for Q loss by providing a flat loss shift in amplitude response to eliminate Q loss dip in the latter around the resonant frequency of said reactance means, said reactance means being a series LC network with an equivalent series resistance R_Q due to inductor Q, and wherein said resistance means has a resistance value R,

$$R=R_Q+\sqrt{R_Q^2+4R_GR_L+2R_Q(R_G+R_L)}$$

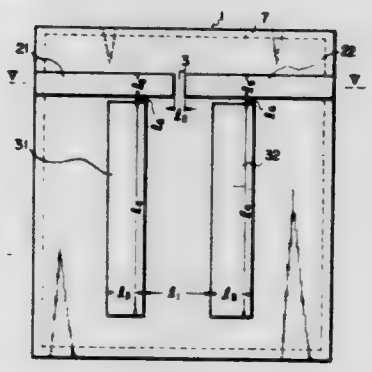
where R_G and R_L are resistance values in said input and output, respectively.

4,352,076

BAND PASS FILTERS

Takeshi Saitoh, Yokohama; Hiroshi Hatashita, Tokyo; Toshio Nagashima, and Susumu Yamamoto, both of Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 12, 1980, Ser. No. 186,738
Claims priority, application Japan, Sep. 19, 1979, 54-119404
Int. Cl.[3] H01P *1/203, 1/212*
U.S. Cl. 333—204 5 Claims



1. A band pass filter consisting of a micro strip line structure, characterized in that a first open end conductor and a second open end conductor are arranged in parallel, the length of each

of said first and second open end conductors being approximately equal to one half of the wave length of the band pass frequency, and an input conductor and an output conductor are arranged opposite to the same side ends of said first and second open end conductors, respectively, forming narrow gaps between said first and second open end conductors, and said input and output conductors, respectively.

4,352,077

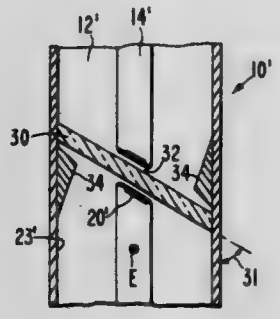
RIDGED WAVEGUIDE WINDOW ASSEMBLY

Richard Z. Gerlack, Cupertino, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Continuation of Ser. No. 40,360, May 18, 1979, abandoned. This application Jun. 4, 1981, Ser. No. 270,328

Int. Cl.³ H01P *1/08*

U.S. Cl. 333—252 **13 Claims**



1. A dielectric window assembly for hollow metallic ridged waveguide having an axially elongated ridge defined within an interior wall thereof, comprising:

a notch defined in said ridge axially transversely;

a slab of dielectric sealed across and within a hollow cross-section of said ridged waveguide, said slab having an area at least that of said hollow cross-section of said ridged waveguide, said slab being parallel to the electric field at the center of said waveguide, said slab extending through said notch.

4,352,078

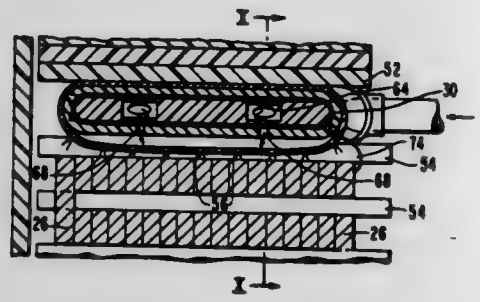
COMBINATION STATIC PLATE AND LIQUID DISTRIBUTION MANIFOLD FOR ELECTRICAL INDUCTIVE APPARATUS

Curtis L. Moore, Hermitage, Pa., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Feb. 6, 1981, Ser. No. 232,328

Int. Cl.³ H01F *27/08*

U.S. Cl. 336—60 **10 Claims**



1. An electrical inductive apparatus comprising:

a winding;

pressure means for applying compressive stress on the top surface of the winding;

manifold means within the pressure means and adjacent to the top surface for distributing a dielectric fluid coolant by gravity flow over the winding;

the manifold means comprising an inner rigid core of dielectric material, a coating of metal foil on the core, and an outer member surrounding the foil-coated core and providing fluid-conducting passage means with the core and the coating;

inlet means for introducing the dielectric fluid coolant into the fluid-conducting passage means and including outlet means for draining the coolant from the passage means and onto the winding; and

the metal foil serving as an electrostatic shield for and electrically connected to the winding.

4,352,079

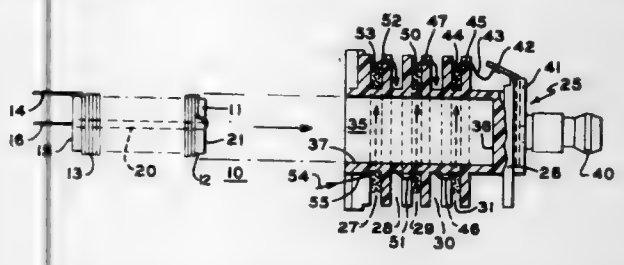
HIGH VOLTAGE IGNITION TRANSFORMER

Dale A. Mueller, St. Paul, and Timothy P. Sperry, New Brighton, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jul. 24, 1981, Ser. No. 286,407

Int. Cl.³ H01F *15/02, 15/10, 27/30*

U.S. Cl. 336—65 **10 Claims**



1. A high voltage ignition transformer which is adapted to be mounted upon an insulating surface, including: a core formed of a magnetic material having a coil winding surface, a mounting end, a confined end, and a recess with said recess formed generally coaxial with said coil winding surface between said ends; a primary winding provided upon said winding surface with said primary winding have two winding ends; a first winding end projecting at said core mounting end, and a second winding end placed in said recess to lead said primary winding from said core confined end to said core mounting end to allow connection to both ends of said primary winding at said core mounting end while causing said second winding end to be spaced from said primary winding; a bobbin formed of an insulating material having a plurality of bays in spaced relationship to one another; said bobbin including a cavity within said bobbin with said bobbin cavity having an open end and a closed end; said cavity receiving and enclosing said core and said primary winding by said core and said primary winding being placed in said cavity through said open end of said bobbin; and a secondary winding for said high voltage transformer being wound on said bobbin with said secondary winding being placed in alternate bays of said bobbin to insulate said alternate bays of said secondary winding from each other.

4,352,080

FERRITE CORE

Tadashi Mitsui, Tokyo; Masaru Wasaki, Ichihara, and Junpei Ohta, Matsudo, all of Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Sep. 19, 1980, Ser. No. 188,978

Claims priority, application Japan, Sep. 25, 1979, 54-132150[U]

Int. Cl.³ H01F *27/24*

U.S. Cl. 336—83 **2 Claims**

1. A ferrite core half for use in a power supply circuit comprising:

(a) a circular center boss;

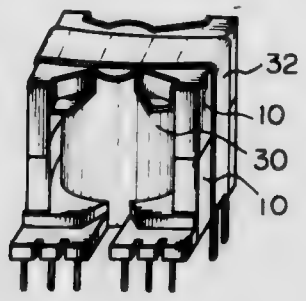
(b) a pair of outer walls positioned at both the sides of said boss for mounting a coil;

(c) a pair of base plates coupling a portion of said boss with said outer walls, said base plates extending from the periphery of said boss to the side surface of said walls wherein said boss, walls and base plates form an E-shaped structure and wherein the end portion of said boss, end

portions of said walls and said base plates are all aligned in a single plane; wherein:

(d) each of the outer walls is substantially rectangular with an external linear wall and an inner wall which is coaxial with said circular boss and the width of said external linear wall is larger than the diameter (d_3) of the circular boss;

(e) each of said base plates is substantially in a sector shape having a pair of tapers which are gradually opened towards the outer walls each taper having two portions at different opening angles, and the portions of said boss which are coupled to said base plates are less than the



whole of the periphery of said boss such that a space is formed between said base plates along the periphery of said boss;

(f) the area (S_3) coupling said base plates with said outer walls is larger than the half of the cross-sectional area ($\frac{1}{4}\pi d_3^2$) of said boss;

(g) the area (S_2) coupling said boss with the base plates is substantially the same as half of the cross-sectional area ($\frac{1}{4}\pi d_3^2$) of said boss; and

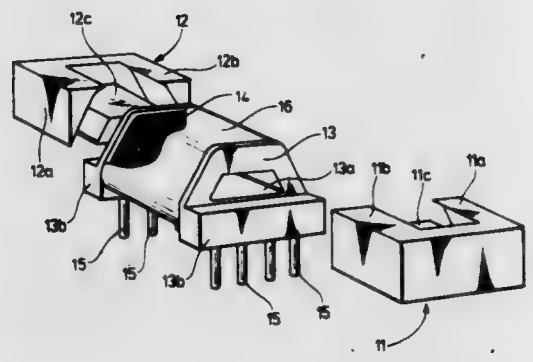
(h) the area (S_1) of the cross-section of each of said outer walls is substantially the same as half of the cross-sectional area ($\frac{1}{4}\pi d_{32}$) of said boss.

4,352,081

COMPACT TRANS CORE

Seiichi Kijima, Tokyo, Japan, assignor to Kijima Musen Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 22, 1980, Ser. No. 199,642
Int. Cl.³ H01F *27/24, 27/30*
U.S. Cl. 336—198 **3 Claims**



1. A transformer comprising:

a core including;

a substantially trapezoidal central core leg having a base with opposite edges and first and second planar side members, each said side member intersecting a different one of said edges of said base at an angle less than 90°;

a first core side leg having a first planar surface closely spaced to and in parallel with said first planar side member; and

a second core side leg having a second planar surface closely spaced to and in parallel with said second planar side member; and

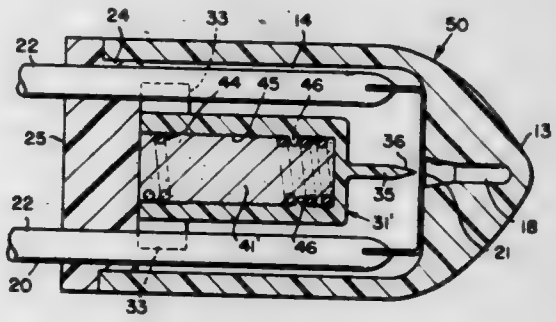
a bobbin member receiving a core winding, said bobbin member having a first end, a second end, and a trapezoidal cross-section and including a trapezoidal central aperture extending through the length of said bobbin member from said first end to said second end, said central trapezoidal aperture receiving said trapezoidal central core leg, said bobbin member separating said first and second planar side members of said central core leg from said first planar surface of said first core side leg and said second planar surface of said second core side leg said bobbin member further including a first enlarged terminal block member at said first end and a second enlarged terminal block member at said second end, each of said enlarged terminal block members receiving a plurality of spaced apart terminal pins interconnected with said core winding and having exterior lateral surfaces and a bottom surface coextensive with the exterior lateral surfaces of said core and the exterior bottom surface of said core winding, respectively.

4,352,082

THERMAL FUSE

Leon G. Barry, and Willis E. Rieman, both of Shelby, N.C., assignors to Fasco Industries, Inc., Boca Raton, Fla.

Filed Feb. 25, 1981, Ser. No. 238,018
Int. Cl.³ H01H *37/76*
U.S. Cl. 337—409 **15 Claims**



1. A thermal fuse, comprising

a housing having therein a sealed chamber, a wire lead extending through said housing and having intermediate its ends a thin, flattened section disposed in said chamber,

means supporting one side of said flattened section of the lead in confronting relation to a recessed die surface formed in one wall of said chamber,

an electrically non-conductive sabot having thereon a sharp cutting edge, and mounted at the opposite side of said flattened section of the lead for movement in said chamber between a first position in which said cutting edge faces said opposite side of flattened section of the lead, and a second position in which said cutting edge is seated in a recess in said die surface,

temperature-responsive means connected to said sabot releasably to retain the sabot in said first position, when the ambient temperature of the fuse is below a predetermined value, and

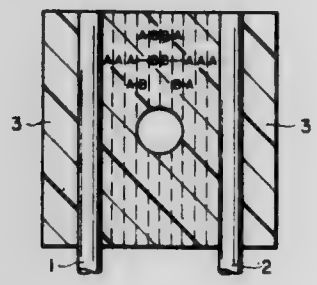
means for driving said sabot suddenly into its second position, when the ambient temperature of the fuse exceeds said predetermined value, whereby during travel of the sabot from its first to its second position the cutting edge thereon serves completely through said flattened section of said lead,

said wire lead, including said flattened section thereof, being of substantially the same cross sectional area throughout its length.

4,352,083
CIRCUIT PROTECTION DEVICES

Lee M. Middleman, Portola Valley; Joseph H. Evans; Arthur E. Blake, both of Palo Alto, and Victor A. Scheff, Berkeley, all of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Filed Apr. 21, 1980, Ser. No. 142,053
Int. Cl.³ H01C 7/02, 7/13
U.S. Cl. 338—23 32 Claims



1. A circuit protection device whose largest dimension is less than 12 inches, which has a resistance at 23° C. of less than 100 ohms and which comprises

(1) a conductive polymer element, at least a part of which is a PTC element, and

(2) two electrodes, at least one of which has an electrically active surface of a generally columnar shape, and which can be connected to a source of electrical power and, when so connected, cause current to flow through said PTC element;

said device being such that, if the portion thereof between the electrodes is divided into parallel-faced slices, the thickness of each slice being about 1/10 of the distance between the closest points of the two electrodes and the faces of the slices being planes which are perpendicular to a line joining the closest points of the two electrodes, then there is at least one Type A slice which comprises a part of the PTC element and at least one Type B slice whose thermal and electrical characteristics are such that, when the current through the device is increased rapidly from a level at which the PTC element is in a low temperature, low resistance state to a level which converts the PTC element into a high temperature, high resistance state, the Type B slice increases in temperature at a rate which is greater than the rate at which the PTC element in the Type A slice increases an temperature;

subject to the proviso that neither of the slices adjacent an electrode is a Type B slice which comprises a part of the PTC element in contiguity with the electrode.

4,352,084
VARIABLE RESISTOR DISK ASSEMBLY

William B. Graves, Cerritos, and James F. Walsh, Irvine, both of Calif., assignors to EECO Incorporated, Santa Ana, Calif.

Filed Nov. 13, 1980, Ser. No. 206,593
Int. Cl.³ H01C 10/16
U.S. Cl. 338—127 12 Claims

1. A rotary variable resistor, comprising;

(a) an insulative planar element (1 or 1') having opposed parallel surfaces,

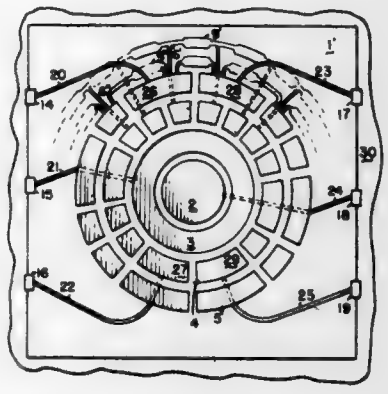
(b) plural circular electrically conductive contacts (2,3) coplanarly upon a said surface,

(c) plural concentric annular conductive rings (4,4',5,5'), having multiple separate contacts surrounding said plural circular contacts coplanarly upon a said surface,

(d) electrically resistive paths (9 or 9') planarly structurally integral with said contacts and rings, upon a said surface,

(e) conductive means (6 or 6'), planarly upon a said surface of said planar element electrically connecting said separate contacts of said annular rings to said resistive paths, and

(f) means for rotatively contacting (35,36,43,44,46,49,47,50) at least one of said circular contacts (2,3),

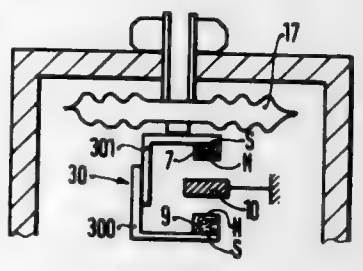


and for simultaneously selectively contacting at least one ring of said separate contacts (4,4' or 5,5').

4,352,085
PRESSURE TRANSDUCER

Werner Herden, Gerlingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 27, 1981, Ser. No. 248,433
Claims priority, application Fed. Rep. of Germany, Apr. 10, 1980, 3013857
Int. Cl.³ H01L 10/10, 43/06
U.S. Cl. 338—42 6 Claims



1. A transducer for measuring pressure comprising a membrane mounted so as to be at least in part displaced by pressure to which it is exposed, a Hall-effect device for producing an electrical signal dependent upon the magnetic field in which it is located, a first permanent magnet mounted for producing a magnetic field such as to provide output of said Hall-effect device which is proportional to the pressure to which said membrane is exposed, a second permanent magnet on the opposite side of said Hall-effect device from which said first permanent magnet, said first and second magnets facing each other with like magnetic poles, and further comprising the improvement which consists in that:

said first and second magnet are connected together and to a pressure-displaceable portion of said membrane by rigid structure so that the relative position of said magnets remains fixed and both may be displaced by said membrane relative to the Hall-effect device located between them.

4,352,086
METHOD AND A CIRCUIT ARRANGEMENT FOR MODIFYING CONTROL INFORMATION IN A TRAFFIC SIGNAL SYSTEM, PARTICULARLY A STREET TRAFFIC SIGNAL SYSTEM

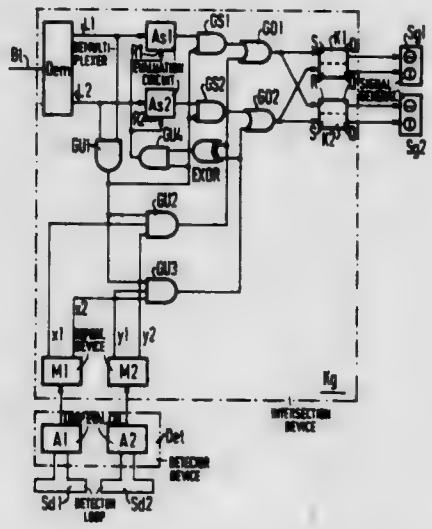
Walter Hunziker, Buehler, Switzerland, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed May 1, 1980, Ser. No. 145,710
Claims priority, application Fed. Rep. of Germany, Jun. 6, 1979, 2922927
Int. Cl.³ G08G 1/00, 1/07
U.S. Cl. 340—35 9 Claims

9. In a method of modifying central control information

commands forming signal programs, which includes the steps of transmitting the central control information commands from a central station to an intersection device of a traffic signal system which controls traffic signal generators connected thereto, and by transmitting local control information commands obtained from traffic information from an area whose traffic flow is controlled by the signal generators, the improvement comprising the steps of:

transmitting control information commands from the central



station to the intersection device with periods of overlapping control information commands, said periods defining permission time for controlling said signal generators only by said local control information commands; and

detecting such periods of overlapping control information commands; and

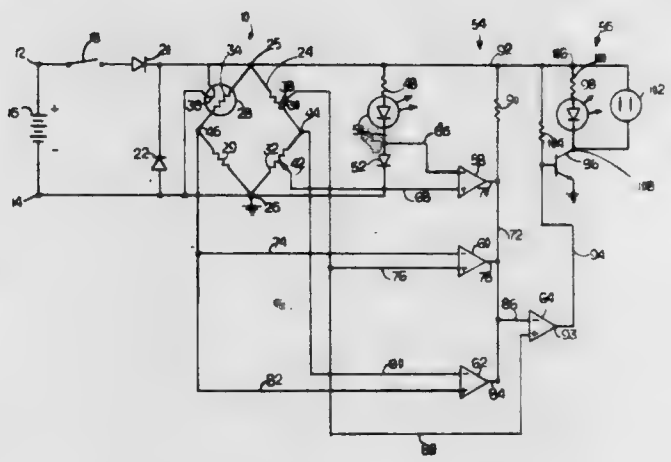
transferring operational control of said traffic signal generators from said control information commands transmitted from said central station to said local control information commands.

4,352,087

FUME DETECTOR AND ALARM SYSTEM

Edward A. Wittmaier, St. Charles, Mo., assignor to Marie C. Kercheval, St. Charles, Mo.

Filed Apr. 22, 1981, Ser. No. 256,386
Int. Cl.³ G08B *17/10*
U.S. Cl. 340—632 **12 Claims**



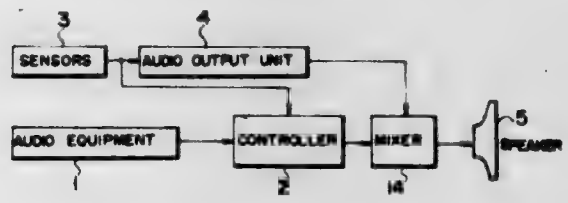
1. A fume detector apparatus for monitoring a predetermined atmosphere comprising an electric circuit including a Wheatstone bridge having a pair of input and a pair of output connections, a source of energy and means connecting the energy source across the pair of bridge input connections, said bridge circuit including parallel impedance paths connected across the input connections, one of the parallel paths being formed by a sensor element whose impedance varies with the condition of the atmosphere being monitored in series with another impedance, the other parallel path being formed by series connected impedance devices, an alarm device, and means connected between the Wheatstone bridge and the alarm device including a first circuit operatively connected across the bridge output connections for detecting a first bridge voltage condition, a second circuit operatively connected across a selected portion of the other parallel bridge path for detecting a second bridge voltage condition, a third circuit operatively connected across selected portions of both parallel bridge paths for detecting a third bridge voltage condition thereacross, each of said first, second and third circuits having respective inputs connected to the bridge circuit and output connections, the output connections of said first, second and third circuits being connected together to a common connection, and a fourth circuit having a first input connected to the common output connection and a second input connected to the bridge circuit at a location therein so as to respond to any one of said voltage conditions detected by the first, second and third circuit, said fourth circuit having an output connection operatively connected to the alarm device.

4,352,068

VOICE WARNING SYSTEM FOR AN AUTOMOTIVE VEHICLE

Masakazu Tsunoda, Fujisawa, Japan, assignor to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Jul. 15, 1980, Ser. No. 169,034
Claims priority, application Japan, Jul. 16, 1979, 54-90082
Int. Cl.³ G08B *19/00*
U.S. Cl. 340—52 F **5 Claims**



1. A voice warning system for an automotive vehicle comprising:

(a) a plurality of sensors for detecting various abnormal conditions in an automotive vehicle,

(b) means for outputting voice warning information in response to said sensors when one of said sensors detects an abnormal condition; and

(c) means for reducing to an audible level lower than an initial audible level an audio signal level sent from other audio equipment provided within the same vehicle so as not to interfere with the voice warning information, said means for reducing the audio signal level being activated by a signal sent from any one of said sensors,

whereby the driver can hear the voice warning information clearly even when the audio equipment is operating.

4,352,089

VOICE WARNING SYSTEM FOR AN AUTOMOTIVE VEHICLE

Hiroshi Yano, HigashiYamato, and Masakazu Tsunoda, Fujisawa, both of Japan, assignors to Nissan Motor Company Limited, Kanagawa, Japan

Filed Aug. 28, 1980, Ser. No. 182,240
Claims priority, application Japan, Aug. 31, 1979, 54-119115[U]
Int. Cl.³ H04B *15/00*
U.S. Cl. 340—52 F **9 Claims**

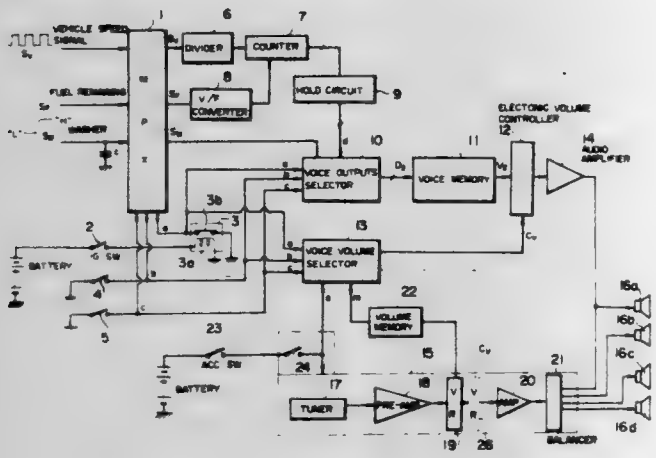
1. A volume control system of a voice warning system for an automotive vehicle, comprising:

(a) a volume setting means for setting a desired volume level of audio equipment provided in the vehicle;

(b) means for holding the volume setting of said audio equipment; and

(c) means for controlling the output volume of the voice warning system according to the sound volume setting of

the audio equipment stored in said holding means so that the output volume level of the voice warning system is higher than that of the audio equipment,



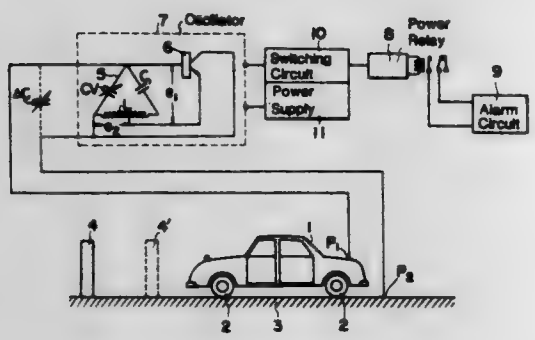
whereby the warning information can always be heard at an appropriate level above the sound volume of the audio equipment.

4,352,090

DETECTION AND ALARM DEVICE FOR USE WITH CAR FOR DETECTING OBSTACLE AND ABNORMAL CONDITIONS OF TIRE

Satoru Ohama, No. 5-59, Tachibanadai 1-chome, Midori-ku, Yokohama-shi, Kanagawa-ken, Japan

Filed Jan. 30, 1981, Ser. No. 230,294
Int. Cl.³ B60C *23/00*; G08B *19/00*
U.S. Cl. 340—52 R **15 Claims**



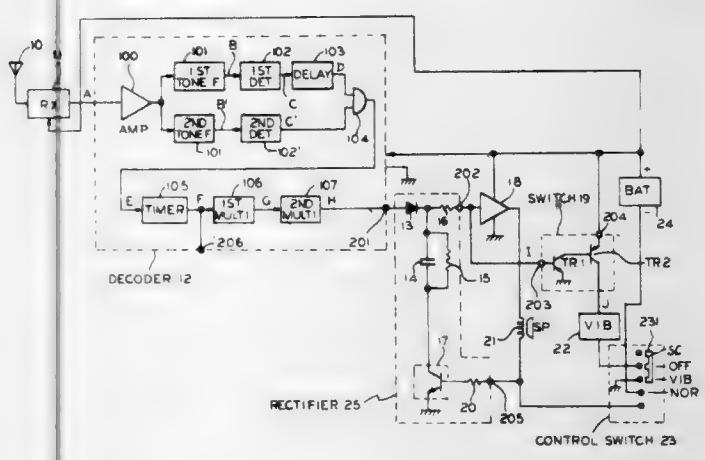
1. A method for detecting the approach of an automobile to obstacles, comprising the steps of: providing an automobile, a capacitance change detection means for detecting a variation of capacitance, an alarm means for activating an alarm when the detecting means detects a given variation of capacitance, first and second electrodes connected to the detecting means for measuring a capacitance between the first and second electrodes, and the first electrode being electrically connected to a metal body of the automobile and the second electrode being electrically coupled to ground; and activating the alarm means based upon a capacitance between ground and the automobile body and thus between the electrodes when the automobile approaches an obstacle.

4,352,091

RADIO PAGER HAVING OPTIONAL ANNUNCIATING MEANS

Koji Yamasaki, Tokyo, Japan, assignor to Nippon Electric Co., Tokyo, Japan

Filed Jan. 3, 1980, Ser. No. 109,306
Claims priority, application Japan, Jan. 8, 1979, 54-1026[U]
Int. Cl.³ G08B *7/00*; H04B *5/04*; H04M *11/02*
U.S. Cl. 340—311.1 **5 Claims**



1. A radio paging receiver comprising:
power supply means;
receiver means for receiving and demodulating paging signals to provide a demodulated signal;
decoder means coupled to the output of said receiver means for decoding said demodulated signal to provide a tone signal at a first output terminal;
means including an input terminal for causing a control signal to appear;
rectifier-integrator circuit means coupled to said first output terminal for rectifying said tone signal, for selectively integrating the rectified tone signals in response to said control signal, and for selectively supplying one of said rectified tone signal and the rectified and integrated tone signal to a second output terminal;
speaker means coupled between said second output terminal and said control signal input terminal for generating an audible alert tone in response to said rectified tone signal, and for supplying said rectified and integrated tone signal to said control signal input terminal, as said control signal, without any audible alert tone;
mechanical vibrator means coupled between said second output terminal and a switch terminal for producings mechanical vibration in response to said rectified and integrated tone signal; and
control circuit means coupled to said control signal input terminal and said switch terminal for selectively supplying an activating voltage from said power supply means to one of said speaker means and said mechanical vibrator means.

4,352,092

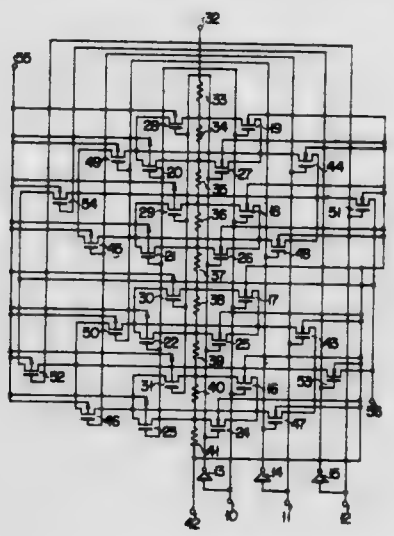
DIGITAL TO ANALOG CONVERTER

Eiji Masuda, and Hiroshi Kawasaki, both of Kawasaki, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Oct. 17, 1980, Ser. No. 197,949
Claims priority, application Japan, Oct. 22, 1979, 54-136252
Int. Cl.³ H03K *13/02*
U.S. Cl. 340—347 DA **10 Claims**

1. A circuit for converting a digital signal having N bits into an analog voltage having 2^N different values, comprising:
N digital input terminals;
an analog output terminal;
a voltage divider having a pair of reference voltage terminals, voltage dividing elements, and 2^N voltage dividing points; and
a switch array comprising N stages of CMOS FET circuits, with each circuit having a first channel MOS FET whose

back gate is connected to a power source terminal and a second channel MOS FET whose back gate is connected to said voltage divider and whose source and drain are connected, respectively, to the source and drain of the first channel MOS FET, each of said CMOS FET circuits having first and second terminals and having current paths interconnecting said first and second terminals, said switch array being adapted to connect one of said voltage dividing points of said voltage divider to said analog output terminal according to the level at said digital input



terminals wherein the first terminals of the CMOS FET circuits of the first stage are connected respectively to the voltage dividing points of said voltage divider, the first terminals of each CMOS FET circuit of the Ith stage (I=2, 3, 4, . . . , N) are connected to respective second terminals of MOS FET circuits of the (I−1)th stage, the second terminals of the CMOS FET circuits of the Nth stage are connected to the analog output terminal, and the control gates of all the CMOS FET circuits of each stage are connected to a corresponding digital input terminal.

4,352,093

HIGH-SPEED DIGITAL/ANALOG CONVERTER

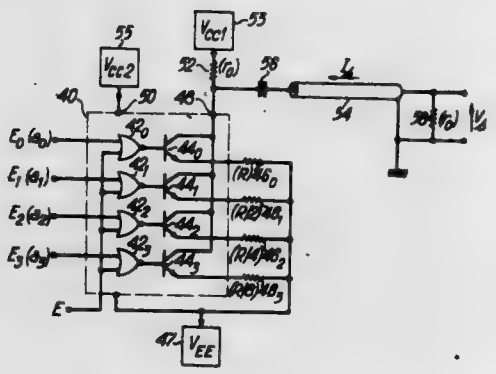
Antoine Laures, 16, rue d'Arcueil, 92120 Montrouge, France

PCT No. PCT/FR80/00059, § 371 Date Dec. 19, 1980, § 102(e) Date Dec. 4, 1980, PCT Pub. No. WO80/02348, PCT Pub. Date Oct. 30, 1980

PCT Filed Apr. 15, 1980, Ser. No. 220,035

Int. Cl.³ H03K *13/02*

U.S. Cl. 340—347 DA **3 Claims**



1. A high-speed, digital/analog converter comprising: a logic circuit with coupled emitters comprising a first stage formed by logic gates having a plurality of inputs and one output and a second, current amplification stage formed by the same number of transistors as there are logic gates, each transistor having an emitter, a base and a collector, each base of a transistor of the second stage being connected to the output of a logic gate of the first stage, said logic circuit also having a first supply line and a voltage V_{cc1} and connected to all the collectors of the transistors of the amplification stages, a second supply line at voltage V_{cc2}, which differs from the first and is connected to the logic gates of the first stage, and a third supply line at a voltage V_{EE} and connected to the two stages, and resistors connected to the emitters of the transistors, the resistor connected to the transistor of rank k having the value $R/2^k$, while all the resistors are joined in parallel to the line V_{EE}, a matched load line connected to the first line V_{cc1} via a capacitor, each bit of rank k of the digital signal to be converted being applied to the input of the logic gate connected to the transistor of the same rank k, the analog conversion signal being constituted by the total current I_s flowing in the load line.

4,352,094

DEVICE FOR ACQUIRING AND AVERAGING SAMPLES OF A NOISY PERIODIC SIGNAL

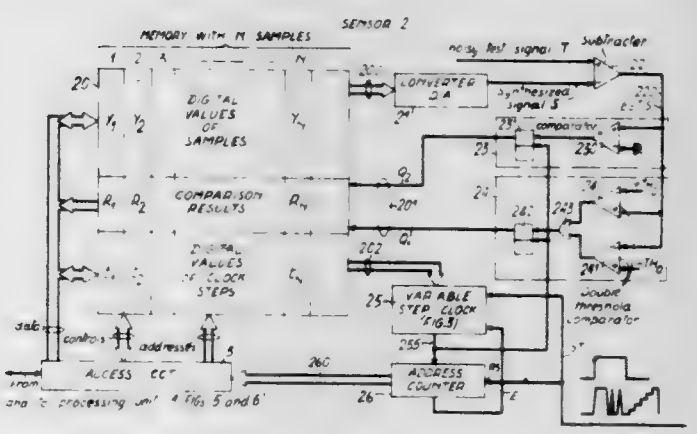
Michel E. Reneric, Paris, France, assignor to Telediffusion de France, Paris, France

Filed Mar. 11, 1981, Ser. No. 242,623

Claims priority, application France, Mar. 17, 1980, 80 05928

Int. Cl.³ H03K *13/02*

U.S. Cl. 340—347 AD **9 Claims**



1. Device for acquiring and averaging samples of an analog noisy periodic signal whose period is made up of a first portion with a signal and a second portion without, comprising:

means for subtracting said first portion of said noisy signal from analog samples that are precalculated during the preceding second portion of said noisy signal to produce an analog error signal;

means for comparing said error signal with zero, a predetermined voltage threshold and the negative thereof to produce for each sample a first bit representative of the magnitude of the modulus of said error signal in relation to said voltage threshold and a second bit representative of the sign of said error signal;

first means for memorizing at least the precalculated digital values of said samples and said first and second bits;

means for reading and writing in synchronism each sample digital value and the first and second bits resulting from the comparisons at a predetermined recurrent time of said first signal portion;

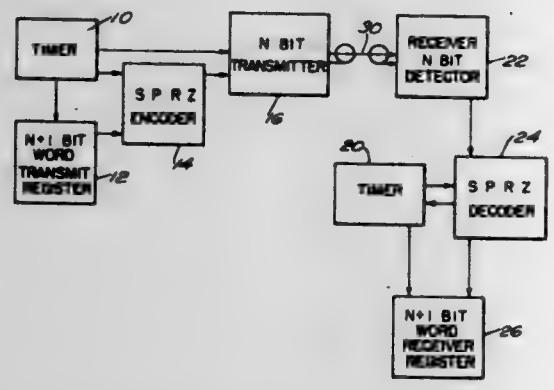
means for converting said digital values of said samples into said analog samples; and

digital means reading the memorized digital value of each sample and the first and second resulting bits for calculating a new sample digital value which is statistically closer to the corresponding amplitude of said periodic signal and for writing said new sample digital value into said first memorising means during at most said second signal portion.

4,352,095
A/D DYNAMIC RANGE ENHANCING TECHNIQUE

Gerald L. Assard, Waterford, Conn., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 25, 1981, Ser. No. 277,298
Int. Cl.³ H03K *13/24*
U.S. Cl. 340—347 DD **2 Claims**



1. An analog to digital range enhancer comprising:

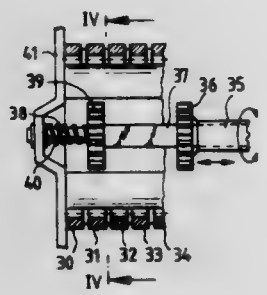
encoding means for changing an N+1 binary bit word to an N ternary word without loss of information and for transmitting said N ternary word, said encoding means comprises an N+1 binary bit word transmit register having an N binary bit shift register and a one binary bit source, a sign polar return to zero encoder having separate inputs for receiving signals from said N binary bit shift register and said one binary bit source and having a plurality of output terminals, and transmitting means connected to said sign polar return to zero output terminals for generating and transmitting said N ternary word, said transmitting means comprises a bridge circuit including a plurality of switching devices; and

decoding means for receiving said N ternary word and for reconstructing said N+1 binary bit word from said N ternary word.

4,352,096
DEVICE FOR PROVIDING A MODULO-N CHECK CHARACTER

Uwe Unghaube, and Friedrich V. Miehe, both of Berlin, Fed. Rep. of Germany, assignors to Nixdorf Computer AG, Paderborn, Fed. Rep. of Germany

Filed Oct. 2, 1979, Ser. No. 81,217
Claims priority, application Fed. Rep. of Germany, Oct. 2, 1978, 2842905
Int. Cl.³ G08C *9/06*; G08B *5/00*
U.S. Cl. 340—815.06 **1 Claim**



1. A device for mechanically generating a modulo-n check character, said device comprising:

a group of rotatable data character wheels, each wheel having a plurality of characters on its outer circumference, said character wheels being initially arranged so as to present a given sequence of data characters, one character from each wheel;

a rotatable check character wheel having a plurality of characters on its outer circumference, said check character wheel being initially arranged to provide a modulo-n check character for the initially presented sequence of data characters;

a rotatable shaft adapted to slide in a longitudinal direction relative to said wheels;

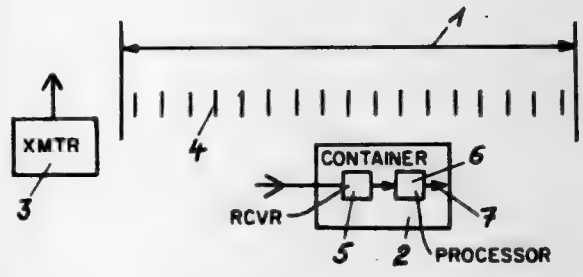
a setting wheel mounted on the shaft inside said wheels, operative to engage one of the data wheels and upon rotation of the shaft to rotate the engaged wheel to produce a different data character in the presented sequence; and

a drive wheel in fixed relationship with the check character wheel and slideably mounted on said shaft, adapted upon rotation of the shaft to rotate said check character wheel a predetermined amount every time one of the data wheels is rotated thereby continuously providing a modulo-n check character for each different presented sequence of data characters.

4,352,097
ANTI-THEFT SYSTEM FOR VALUABLE TRANSPORT

Walter Hamann, Kreillerstrasse 52, D-8000 München 80, Fed. Rep. of Germany

Filed Aug. 14, 1980, Ser. No. 178,087
Claims priority, application Fed. Rep. of Germany, Aug. 22, 1979, 2933893
Int. Cl.³ G08B *13/22*
U.S. Cl. 340—571 **17 Claims**



1. In an anti-theft system for the transport of a container for valuables along a short path between a safe and a waiting valuables transport vehicle, said system having a transmitting unit, separate from said container, for transmitting signals able to be received by a receiving unit on said container, and having a security apparatus designed to be put into operation when said receiving unit receives no signal, the improvement comprising:

a first memory in said transmitting unit,

a second memory in said receiving unit, for cooperating with said first memory,

an information generator, whose information may be recorded by said first and second memories,

a comparison unit at said container for comparison of said information as sequentially read out from said two memories and for causing operation of said security apparatus when said information from one memory is not in agreement with said information from said other memory.

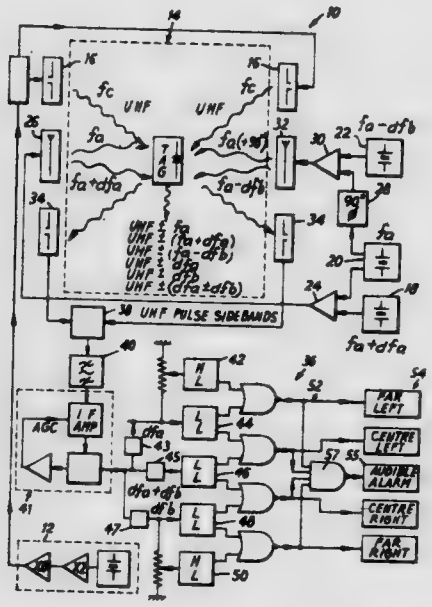
4,352,098
SURVEILLANCE SYSTEMS

James H. Stephen; John D. McCann, and Michael A. Flemming, all of Abingdon, England, assignors to Parmeko Limited, Leicester, England

Filed May 16, 1980, Ser. No. 150,461
Claims priority, application United Kingdom, May 18, 1979, 7917347
Int. Cl.³ G08B *13/14, 13/24*
U.S. Cl. 340—572 **8 Claims**

1. A method of detecting the presence and position in a surveillance zone of an electromagnetic wave passive receptor reradiator with signal mixing capability, comprising the steps of simultaneously radiating first, second and third energy fields

through said zone for causing said receptor reradiator to radiate at least one reply signal which is a function of said energy fields, wherein said first energy field is produced by a microwave signal, said second and third energy fields are produced by low frequency signals relative to said microwave signal, said second energy field is produced by continuously radiating a first pair of closely spaced apart signals and said third energy



field is produced by continuously radiating a second pair of closely spaced apart signals, said second and third energy fields being radiated into said zone at spaced apart locations adjacent the edges of said zone, and said reply signal is the function of the position of said receptor reradiator; detecting in said zone the presence of said reply signal; indicating the position of the receptor reradiator in the zone; and triggering an alarm in response to detection of said reply signal.

4,352,099

GAS SENSING UNIT FOR USE IN ENVIRONMENT COMPRISING EXPLOSIVE GASES

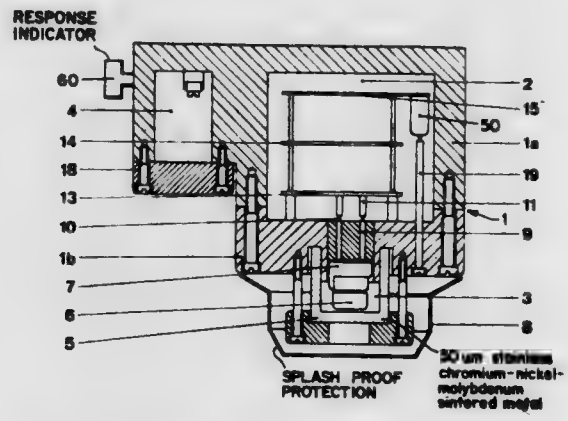
Peter Christen, Männedorf; Hansheinrich Brändli, Uster; Bernhard Durrer, Stäfa, and Arnim Sauerbrey, Adetswil, all of Switzerland, assignors to Cerberus AG, Männedorf, Switzerland

Filed Mar. 10, 1980, Ser. No. 128,529

Claims priority, application Switzerland, Mar. 16, 1979, 2482/79

Int. Cl.³ G08B *17/10*

U.S. Cl. 340—633 **12 Claims**



1. In a gas sensing unit for use in environments containing explosive gases and which in connection with a central station forms a gas sensing signaling system and which gas sensing unit contains a gas sensor which, in the presence of reducing gases, alters its electrical resistance, the improvement which comprises:

housing means containing at least two separated chambers defining first and second chambers;

said first chamber comprising a compression-proof chamber;

electronic evaluation circuit means contained in said first compression-proof chamber;

said second chamber comprising an explosion protected chamber;

a cover member for closing said second chamber;

said cover member being formed of a gas pervious sintered metal rendering possible the exchange of gas with the surrounding atmosphere;

a balancing adapter provided for said gas sensor and contained within said second chamber;

said gas sensor and said balancing adapter collectively forming a gas sensor/adapter-unit;

said housing means including a cover for closing said first chamber; and

said gas sensor/adapter-unit being pluggably arranged in said cover of said housing means.

4,352,100

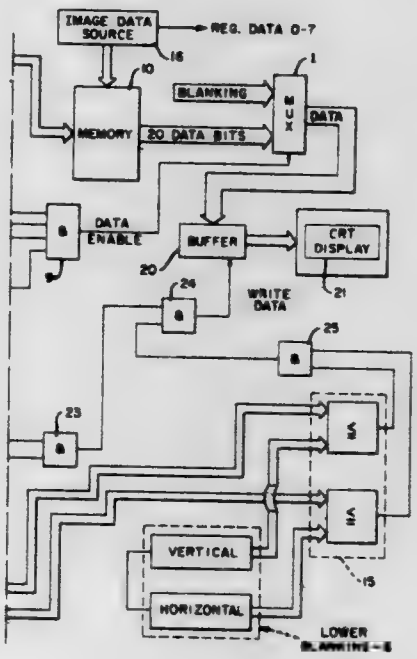
IMAGE FORMATTING APPARATUS FOR VISUAL DISPLAY

Stephen B. O'Connell, Trumansburg, N.Y., assignor to NCR Corporation, Dayton, Ohio

Filed Nov. 24, 1980, Ser. No. 210,085

Int. Cl.³ G09G *1/16*

U.S. Cl. 340—723 **5 Claims**



1. An image formatting apparatus for a visual display comprising:

memory means for storing image data at addressable locations;

display means for displaying image data;

addressing means for generating sequentially and periodically all of the memory addresses of said memory means;

image means for providing memory addresses at which image data is to be read out;

comparing means for comparing the memory address generated by said addressing means with the addresses provided by said image means and for providing address signals to said memory means when a correspondence exists;

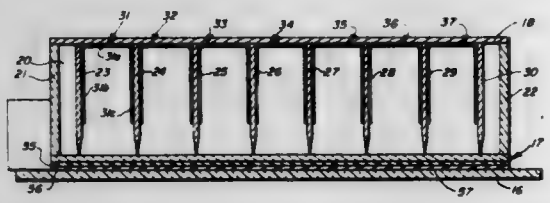
blanking means for providing blanking signals to said display means; and

means interposed between said display means, said blanking means and said memory means for controlling the receipt of blanking signals and image signals by said display means to provide a desired image format.

4,352,101
FLAT PANEL DISPLAY SYSTEM

Michael C. De Jule, Chicago, Ill., assignor to Lucitron, Inc., Northbrook, Ill.

Filed Jun. 20, 1980, Ser. No. 161,504
Int. Cl.[3] G09G 3/28
U.S. Cl. 340—769 20 Claims

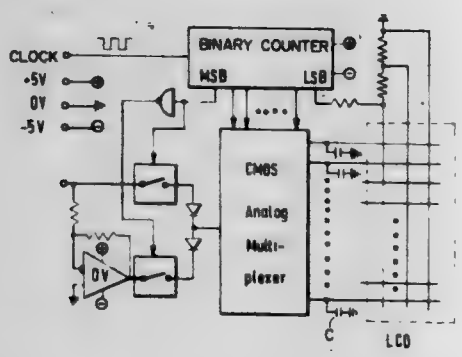


1. In a flat panel display system, a display unit comprising a transparent front wall, a plurality of supporting walls having forward edges in supporting relation to spaced rear surface portions of said front wall, means for developing at least one plasma sac within said unit and behind said front wall in a region aligned with the space between two of said supporting walls, and first and second groups of electrodes for effecting scanning movements of said sac from one point to another within said region, said first group of electrodes extending in parallel relation to each other and in transverse relation to said supporting walls, and said second group of electrodes including electrodes adjacent the forward edges of said two of said supporting walls and operative in response to application of suitable potentials thereto to establish a field adjacent forward edges of said two of said supporting walls such as to allow movement of said sac to points within said region and in close proximity to said two of said supporting walls.

4,352,102
LIQUID CRYSTAL DISPLAY OF TIME DEPENDENT SIGNALS

Günter Kramer, Falkenring 4a, 3303 Vechelde, Fed. Rep. of Germany

Filed Oct. 29, 1979, Ser. No. 89,105
Claims priority, application Fed. Rep. of Germany, Nov. 13, 1978, 2849221
Int. Cl.[3] G09G 3/36
U.S. Cl. 340—784 6 Claims



1. An instrument for displaying time-dependent signals in a histogram-like format of signal strength versus time, comprising:

a liquid crystal display having a first system of parallel elongated electrodes and a second system of parallel elongated electrodes, the first and second systems being perpendicular to each other;

a biasing network connected to the electrodes in the second system and applying bias voltages thereto in a manner that bias voltage of each electrode in the second system is greater than bias voltage of each next electrode in the second system;

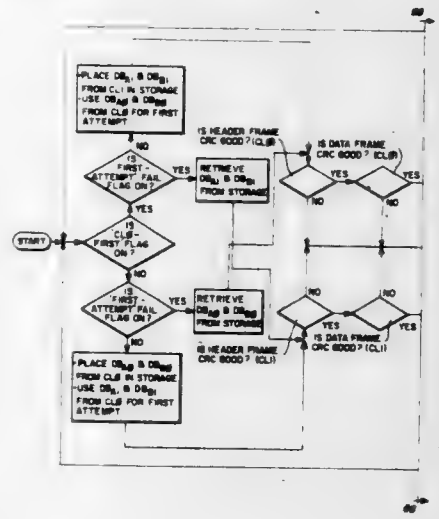
an analog signal input; and

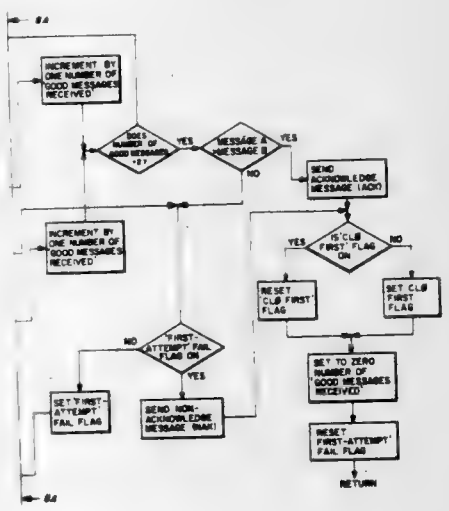
an electronic switch connecting the analog signal input to all of the electrodes in the first system in a sequential fashion of repeated sweeps.

4,352,103
INDUSTRIAL CONTROL SYSTEM

Billy R. Slater, Plano, Tex., assignor to Forney Engineering Company, Carrollton, Tex.

Filed Jan. 24, 1980, Ser. No. 115,160
Int. Cl.[3] H04Q 9/00; G08C 25/00
U.S. Cl. 340—825.01 4 Claims





1. An information transfer system for transmitting digital information between active devices and testing the validity of the transmitted information, said system comprising:

at least one active device for transmitting information in digital form;

at least one other active device for receiving information in digital form;

at least a first and a second independent communication channel connected to and extending between said first-mentioned and said second-mentioned active devices for conveying information therebetween;

a transmitter means associated with said first-mentioned active device for transmitting digital information arranged in blocks of predetermined format, said transmission means transmitting, for each information transfer transaction, an identical block on each of said first and second communication channels;

receiving means associated with said second-mentioned active device for receiving digital information transmitted by said first-mentioned active device and for selecting a one of said first and second communication channels and testing the validity of the received block and, when said received block from said first selected communication channel is found invalid, for selecting the other of said first and second communication channels and testing the valid-

ity of the received block on said other communication channel; and

means associated with said receiver means for first-selecting the first of said communication channels on alternate information transfer transactions and for first-selecting the second of said communication channels on the remaining information transfer transactions.

4,352,104

REMOTE METER-READING APPARATUS

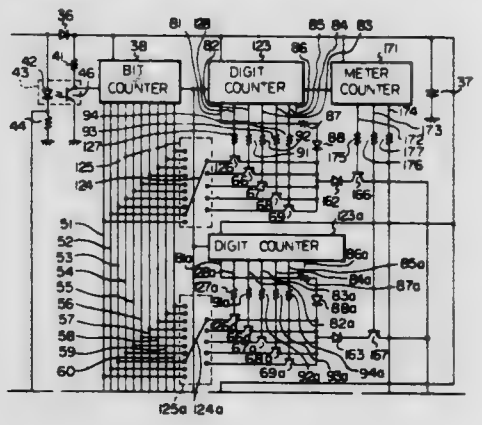
Toshiaki Mizuta; Takeshi Abe; Ichiro Yoshihara, and Kazuhito Saito, all of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

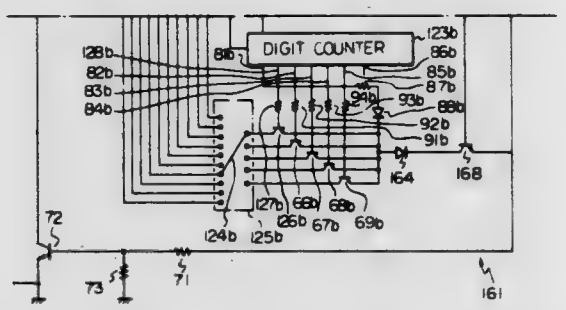
Filed May 5, 1980, Ser. No. 146,570

Claims priority, application Japan, May 7, 1979, 54-54753

Int. Cl.³ H04Q *9/06*; G08B *19/36*

U.S. Cl. 340—825.15 **11 Claims**





1. A remote meter reading apparatus comprising meter means, reading means located remotely from the meter means and communication line means connecting the reading means to the meter means, the reading means being constructed to feed clock pulses to the meter means, the meter means being constructed to feed a predetermined number of synchronization signals followed by a predetermined number of meter data signals followed by a predetermined number of redundancy signals to the reading means in response to and in synchronism with the clock pulses, the synchronization signals and the redundancy signals being different from each other.

4,352,105

DISPLAY SYSTEM

Robert C. Harney, Acton, Mass., assignor to Radiation Dynamics, Inc., Melville, N.Y.

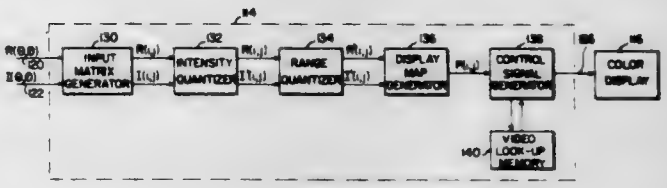
Filed Sep. 25, 1979, Ser. No. 78,793

Int. Cl.³ G01S *7/06*

U.S. Cl. 343—5 CD **6 Claims**

1. System for generating a control signal for controlling a color display to display signals representative of a first function f(i,j) and a second function g(i,j), where i and j are independent integer variables, comprising

A. g-quantizer means for grouping the values of g(i,j) into a predetermined number (N) of groups, each of said groups corresponding to a predetermined range of the values of g(i,j), each of said ranges corresponding to a first predetermined perceptual color characteristic, wherein said g-



quantizer includes means for generating a g-quantized matrix g'(i,j), where

$$g'(i,j) = \begin{cases} n & \text{, if } g(i,j) > T \text{ for } 1 \leqq n \leqq N \\ O & \text{, otherwise} \end{cases}$$

where g'(i,j) is an integer, T equals M&K·S, where M and S are the mode and standard deviation, respectively, of the frequency of occurrence of the respective values o g(i,j) and K is a predetermined constant, and for each (i,j), n is the integer for which the cumulative distribution function of the g values exceeding T evaluated at (i,j) is between

$$(n-1)\frac{M}{N} \text{ and } n\frac{M}{N},$$

where M is the maximum value of said cumulative distribution function,

B. f-quantizer means for grouping the values of f(i,j) into a predetermined number (H) of groups, each of said groups corresponding to a predetermined range of the values of f(i,j), each of said ranges corresponding to a second predetermined perceptual color characteristic, where said secnd predetermined perceptual color characteristic is substantially orthogonal to said first predetermined perceptual color characteristic, wherein said f-quantizer includes means for generating an f-quantized matrix f'(i,j), where

$$f'(i,j) = \begin{cases} \text{integer part}[H(f(i,j) - f_{MIN})/(f_{MAX} - f_{MIN}) + 1], \\ \text{for } f_{MIN} \leqq f(i,j) \leqq f_{MAX} \\ H \quad \text{for } f(i,j) = f_{MAX} \end{cases}$$

wherein f'(i,j) is an integer, f_{MIN} is the minimum value of f(i,j) and f_{MAX} is the maximum value of f(i,j), and

c. display map generator means operative for each point (i,j) to generate said control signal P(i,j), where

$$P(i,j) = \begin{cases} 0 & \text{, if } g'(i,j) = 0 \\ f'(i,j) + N[f'(i,j) - 1], & \text{otherwise} \end{cases}$$

said control signal being representive of the first and second perceptual color characteristics f'(i,j) and g'(i,j), respectively, associated with f(x,y) and g(i,j) for that point.

4,352,106

RADAR REFLECTORS

John H. Firth, 15, The Gowers, Harlow, Essex, England

Filed Sep. 5, 1980, Ser. No. 184,237

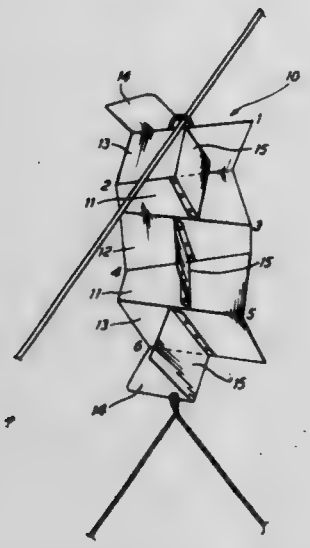
Claims priority, application United Kingdom, Sep. 17, 1979, 7932216

Int. Cl.³ H01Q *15/18*

U.S. Cl. 343—18 C **10 Claims**

1. A radar reflector comprising ten trihedral reflectors directed outwardly of a major axis the inner eight of which are formed in vertically displaced pairs of dihedral reflectors subdivided by a divider portion which reflectors are positioned such that the apexes of the two central dihedral reflectors are relatively displaced about the major axis by an angle a and the

apexes of the dihedral reflectors on each side of the central reflectors are displaced about the major axis relative to the nearest apex of a central dihedral reflector each by an angle



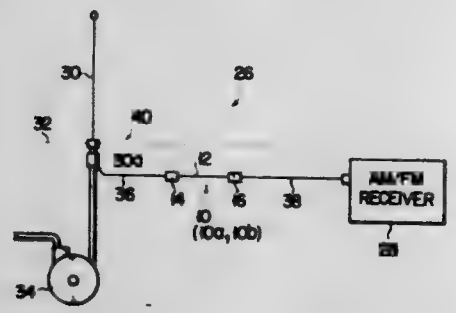
different to a, the arrangement being such that the reflectors cover the full azimuth of 360 degrees and the azimuthal spacing between adjacent central axes of reflection of the trihedral reflectors is in the range of 25 degrees to 45 degrees.

4,352,107

MATCHING CABLE FOR AUTOMOBILE ANTENNAS FOR RECEIVING FM BROADCASTS

Hisamaro Kiyooka, Kawasaki, Japan, assignor to Harada Industry Co., Ltd., Tokyo, Japan

Filed Jan. 27, 1981, Ser. No. 228,982
Claims priority, application Japan, Aug. 22, 1980, 55-115382
Int. Cl.³ H01Q *1/32*
U.S. Cl. 343—715 **2 Claims**



1. A matching cable for automobile antennas for receiving FM broadcasts comprising:

a first connector detachably connected to a first end of an antenna cable which comprises a coaxial cable and a second end of which is connected to an antenna element for automobiles functioning in cooperation with a receiver capable of receiving FM broadcasts;

a coaxial cable to one end of which is connected said first connector and having a length such the resistance components of the impedance of said antenna element side as viewed from the other end of said cable are substantially equal to the input impedance of said receiver, and the reactance components are inductive at substantially the central frequency of a frequency region in which the decrease in the VSWR as measured from said other end is desired, that is, at a specified frequency;

a second connector mounted to the other end of said coaxial cable and detachably connected to said receiver; and

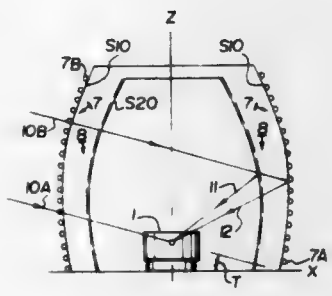
a capacitor encased inside said second connector, connected in parallel to both conductors of said coaxial cable, and having a capacitance such that the capacitive reactance at said specified frequency substantially cancels said inductive reactance.

4,352,108

ANTENNA BEAM SHAPING STRUCTURE EMPLOYING DIPOLES ARRAYED ON A PARABOLIC SURFACE

Robert Milne, Ottawa, Canada, assignor to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence of Her Majesty's Canadian Government, Ottawa, Canada

Filed Jul. 11, 1979, Ser. No. 56,507
Claims priority, application Canada, Aug. 9, 1978, 309005
Int. Cl.³ H01Q *19/12*
U.S. Cl. 343—756 **19 Claims**



1. An antenna beam shaping structure for receiving broadcast radio frequency energy from an earth satellite or other moving body whose bearing and elevation relative to the strueture are subject to variation with time, comprising:

(a) a first surface which is a surface of revolution swept out by a part of a parabolic curve rotated about an antenna axis, the axis of the parabolic curve being inclined at an angle in the range of about 70 to 80 degrees to the antenna axis with the focus of the parabolic curve substantially on the antenna axis, and

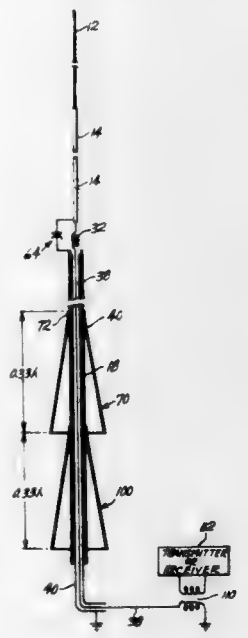
(b) a set of electrically isolated dipoles mounted on said surface and similarly oriented such that they lie along the edges of axial planes of said antenna.

4,352,109

END-SUPPORTABLE DIPOLE ANTENNA

Donald K. Reynolds, 6365 Beach Dr. SW., Seattle, Wash. 98136, and Louis P. C. Smithmeyer, 12009 30th Ave. SW., Seattle, Wash. 98146

Filed Jul. 7, 1980, Ser. No. 165,845
Int. Cl.³ H01Q *1/52, 9/18*
U.S. Cl. 343—792 **14 Claims**



1. An end supportable, center driven, dipole antenna, comprising:

a conductive support mast having an outer end;

means at said outer end for electrically connecting said mast to a first conductor of an antenna circuit;

a conductive rod extending endwise outwardly from the

outer end of said support mast, said rod having an inner end;

means at said inner end for electrically connecting said rod to a second conductor of an antenna circuit;

dielectric connector means at the outer end of said support mast for connecting said rod and said mast together and electrically insulating each from the other; and

a continuous conductive generally conical sleeve of resonant length greater than one quarter wave length, said sleeve having a small diameter outer apex end which is both structurally and electrically connected to said mast, a large diameter inner mouth end which extends circumferentially about the mast and is spaced radially outwardly from the mast a distance sufficient to open-circuit the antenna at that location, and inner and outer surfaces, wherein the inner mouth of the sleeve is the inner extremity of the dipole, and wherein said sleeve is of a length sufficient to effectively serve as a coaxial transmission line of variable characteristic impedance on its inside and as a radiating element of the antenna on its outside.

4,352,110

METHOD FOR SITING COSINE-SQUARED ANTENNAS AND ANTENNA ARRAY OBTAINED THEREBY

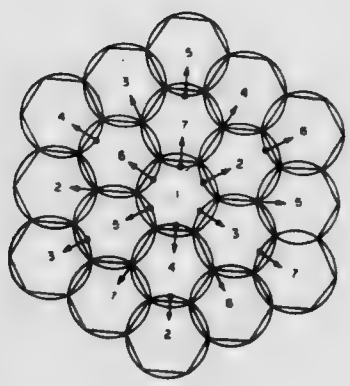
Dirk J. Braak, Heroldsberg, Fed. Rep. of Germany, assignor to Te Ka De Felten & Guilleaume Fernmeldeanlagen GmbH, Nuremberg, Fed. Rep. of Germany

Filed Jun. 2, 1980, Ser. No. 155,483

Claims priority, application Fed. Rep. of Germany, Jun. 7, 1979, 2923088

Int. Cl.³ H01Q *21/06*

U.S. Cl. 343—844 **11 Claims**



1. A method for optimally siting cosine-squared antennas within a geographical area, in order to create an antenna array suitable for use with mobile transceivers moving within the area, comprising: superimposing a dense hexagonal cellular grid system with like hexagonal cells upon the area; circumscribing a circle around each such cell; classifying all cells and circles circumscribed thereabout into like hexagonal cell clusters; locating a center cell in each such cell cluster; locating a centerpoint within each such center cell; and on each circle within each cell cluster excluding a circle circumscribed about the center cell therein, determining a site point which is closest to said centerpoint, each site point being an optimum antenna site within the area upon which a cosine-squared antenna may be located.

4,352,111

MULTI-BAND ANTENNA COUPLING NETWORK

David J. Carlson, and Sander H. C. Tsou, both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Filed Jan. 26, 1981, Ser. No. 228,587

Int. Cl.³ H01Q *19/06*

U.S. Cl. 343—860 **9 Claims**

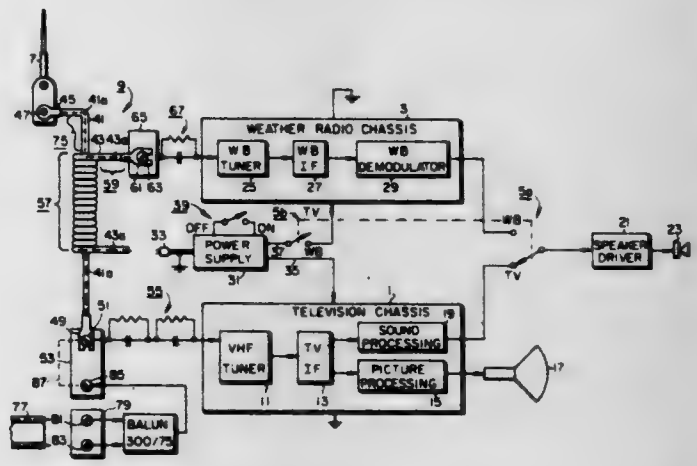
1. Apparatus comprising:

a single antenna for receiving RF carriers in both first and second different bands;

first and second tuners for tuning said RF carriers in respective ones of said first and second bands;

a first wire including a first conductor connected between said antenna and a signal input of said first tuner, said first conductor conducting said RF carriers in both of said first and second bands received by said antenna and thereby supplying said RF carriers in said first band to said first tuner;

a second wire including a second conductor having one end of connected to a signal input of said second tuner



and being wrapped around the first conductor in a predetermined number of discrete turns without D.C. connection to said first conductor or to said antenna to exhibit a frequency selective characteristic between said first and second conductors having a pass band including said second band and a rejection band including said first band for coupling said RF carriers in said second band from said first conductor to said second conductor and thereby serving to supply said RF carriers in said second band to said second tuner from said antenna while inhibiting said RF carriers in said first band from being diverted from said first tuner to said second tuner.

4,352,112

REFLECTOR WITH AIR PRESSURE MEANS

Fritz Leonhardt; Wolfhart Andra; Wilhelm Zellner, and Jörg Schlaich, all of Lenzhalde 16, D-7000 Stuttgart 1, Fed. Rep. of Germany

Filed Sep. 11, 1978, Ser. No. 941,159

Claims priority, application Fed. Rep. of Germany, Sep. 10, 1977, 2740813

Int. Cl.³ H01Q *15/20*

U.S. Cl. 343—915 **21 Claims**



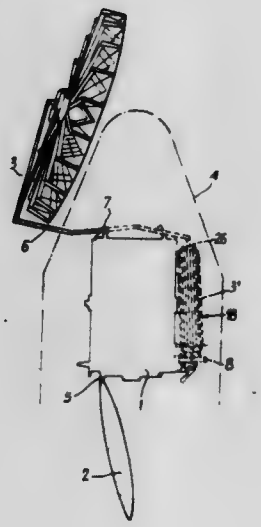
1. A reflector for use as an antenna, solar mirror, or the like comprising a concave membrane having a concave reflector surface, said membrane having been initially flat, said membrane being of a material that in its initial flat state is capable of being deformed in all directions in its plane, and said membrane being permanently deformed to its concave shape by stretching beyond its elastic limit.

4,352,113

FOLDABLE ANTENNA REFLECTOR

Gilles Labruyere, Mandelieu, France, assignor to Societe Nationale Industrielle Aerospatiale, Paris, France

Filed Jun. 26, 1981, Ser. No. 277,857
Claims priority, application France, Jul. 11, 1980, 80 15527
Int. Cl.[3] H01Q *15/20*
U.S. Cl. 343—915
12 Claims



1. An antenna reflector comprising a supple reflecting dish, and

a collapsible, rigid support structure supporting said dish, said structure comprising:

a central base;

a plurality of elongated frame elements radially distributed about said base, one end of each of said elements being articulated to said base about an axis tangential to a circle in a plane perpendicular to the axis of reflection of said dish, said frame elements being movable between a collapsed position generally parallel to said axis of the dish and an extended position transverse thereto;

a plurality of arms, each of which has one free end and one end articulated to the other end of a frame element, each arm being movable from a first position in which it projects angularly with respect to its associated frame element and a second position in which it is folded adjacent the side of said frame elements facing said axis of the dish;

means for moving said frame elements between said collapsed and extended positions;

means for causing said arms to assume said first position when said frame elements are extended and said second position when said frame elements are collapsed;

means for connecting the periphery of said dish to the free ends of said arms;

means including tensioning members extending between said dish and said frame elements for causing said dish to assume a desired configuration when said frame elements are extended;

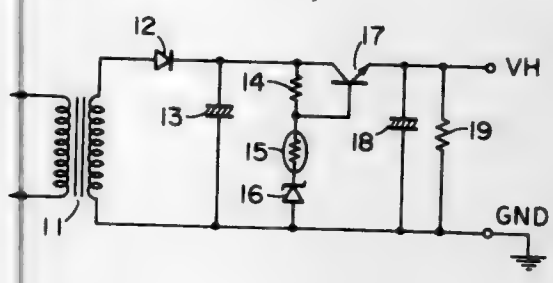
said frame elements, when collapsed, forming a generally tubular bundle of relatively small diameter enclosing said supple dish.

4,352,114

INK JET PRINTER WITH TEMPERATURE COMPENSATION

Hiroshi Kyogoku, Kawasaki; Shigemitsu Tazaki, Matsudo; Shigeru Okamura, Yokohama; Koji Terasawa, Mitaka; Yukio Kasugayama, Yokohama, and Yoshihumi Hattori, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 9, 1980, Ser. No. 195,348
Claims priority, application Japan, Oct. 23, 1979, 54-135917
Int. Cl.[3] G01D *15/18*
U.S. Cl. 346—140 R
2 Claims



1. An ink jet printer for ejecting a single ink droplet in response to each applied input pulse, said ink jet printer comprising:

an ink chamber for storing ink therein;

an electrostriction element for effecting a change of capacity of said ink chamber;

a temperature sensitive element for sensing the temperature of ambient atmosphere; and

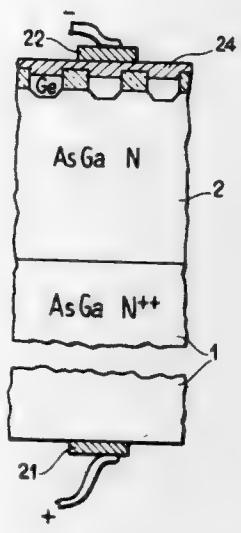
curcuit means responsive to each input pulse applied thereto for straining said electrostriction element causing ejection of only one ink droplet from said ink chamber for each applied input pulse, wherein said circuit means varies the degree of strain of said electrostriction element in accordance with the temperature sensed by said temperature sensitive element.

4,352,115

TRANSIT TIME DIODE WITH AN INPUT STRUCTURE FORMED BY A MATRIX OF MICROPOINTS

Paul C. Moutou, and Jacques Montel, both of Paris, France, assignors to Thomson-CSF, Paris, France

Continuation of Ser. No. 969,314, Dec. 14, 1978, abandoned, which is a continuation of Ser. No. 806,542, Jun. 14, 1977, abandoned. This application Aug. 25, 1980, Ser. No. 180,979
Claims priority, application France, Jun. 15, 1976, 76 18122
Int. Cl.[3] H01L *29/90*
U.S. Cl. 357—13
1 Claim



1. A transit time diode comprising:

a substrate of gallium arsenide material with a high N+ doping;

a first layer of gallium arsenide formed on said substrate, said

first layer having an N doping less than said N+ doping of said substrate and forming a matrix of microscopic pits situated on the side of said first layer opposite to said substrate, said pits having a diameter of 0.5 to 15.0 micrometers;

a second layer of dielectric material formed on said first layer, said second layer having a matrix of microscopic holes exactly superimposed over said pits;

a matrix of germanium deposits situated in said pits;

a third layer of a metal penetrating to said germanium deposits through said holes, and wherein

said first layer has a predetermined thickness suitable to allow development of the avalanche phenomenon and the transit of electrons over a length corresponding to a desired transit time.

4,352,116

SOLID STATE ELECTRO-OPTICAL DEVICES ON A SEMI-INSULATING SUBSTRATE

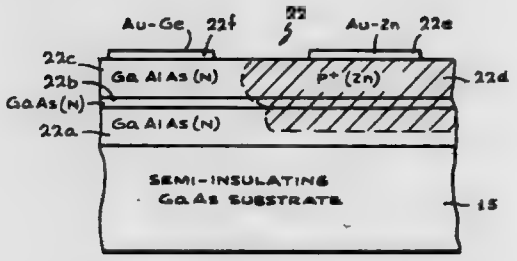
Amnon Yariv, San Marino; Shlomo Margalit, and Chien-Ping Lee, both of Pasadena, all of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Continuation-in-part of Ser. No. 926,649, Jul. 21, 1978, Pat. No. 4,212,020. This application Mar. 17, 1980, Ser. No. 130,990

The portion of the term of this patent subsequent to Jul. 8, 1997, has been disclaimed.

Int. Cl.³ H01L *33/02*

U.S. Cl. 357—17 **20 Claims**



1. A circuit structure comprising:

a layer of semi-insulating matter forming a substrate with a top surface;

n semi-conductor layers successively grown on said substrate and forming a single crystal, with said substrate having lattice matching parameters to those of the layer grown on the top surface of said substrate, $n>1$, with adjacent layers, when $n>1$, being characterized by different electrical properties; and

first and second contacts on said single crystal which includes said n layers, whereby both said contacts are on the same side of said substrate.

4,352,117

ELECTRON SOURCE

Jerome J. Cuomo, Lincolndale; Russell W. Dreyfus, Mount Kisco, and Jerry M. Woodall, Bedford Hills, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 2, 1980, Ser. No. 155,729

Int. Cl.³ H01L *27/14*

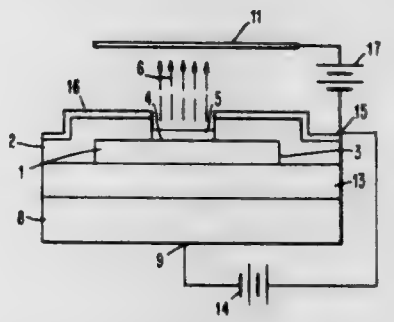
U.S. Cl. 357—30 **10 Claims**

1. An electron source comprising in combination:

a p-type gallium arsenide semiconductor region in which hole-electron pairs can be generated, said region having the property of a specific electron diffusion length,

an electron barrier layer of gallium aluminum arsenide on at least a portion of the surface thereof, said barrier layer having an emission opening exposing a portion of the surface of said semiconductor region,

a negative electron affinity material in contact with the exposed surface of said emission opening, and



means for generating hole electron pairs in said semiconductor region.

4,352,118

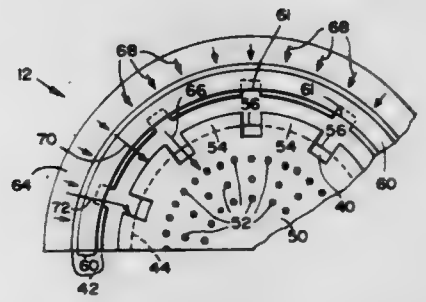
THYRISTOR WITH SEGMENTED TURN-ON LINE FOR DIRECTING TURN-ON CURRENT

Victor A. K. Temple, Clifton Park, N.Y., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Continuation of Ser. No. 16,899, Mar. 2, 1979, abandoned. This application Mar. 5, 1981, Ser. No. 240,855

Int. Cl.³ H01L *29/74*

U.S. Cl. 357—38 **8 Claims**

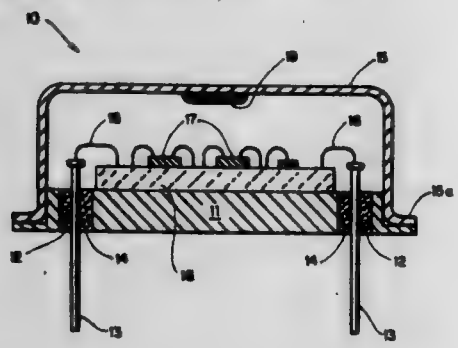


1. A thyristor comprising: a semiconductor body having at least four zones of alternate conductivity type, including an emitter zone of a first conductivity type, a base zone of a second conductivity type forming a junction with said emitter zone, said junction intersecting a surface of said body to define an emitter boundary, an emitter electrode in contact with said emitter zone and extending beyond said emitter boundary and into contact with said base zone at a plurality of locations spaced along said emitter boundary to form a plurality of boundary shorts, the portions of said emitter boundary between said boundary shorts forming turn-on segments, said boundary shorts being formed over a substantial majority portion of said emitter boundary relative to said turn-on segments to provide relatively high dV/dt capability, a gate current source including a gate electrode for supplying carriers to said base zone, and means for directing carriers supplied by said gate current source to said turn-on segments including a continuous gate barrier region of said first conductivity type adjacent said base zone and opposite and substantially coextensive with said emitter boundary and carrying said gate electrode, said gate barrier region serving to substantially block gate current from passing between said gate electrode and said base zone, portions of said gate electrode being in contact with said gate barrier region and other portions of said gate electrode contacting said base zone at a plurality of separate locations generally aligned with said turn-on segments for directing carriers supplied by said gate electrode substantially only to said turn-on segments to provide a shortened turn-on line for increased gate sensitivity.

4,352,119
ELECTRICAL DEVICE AND METHOD FOR PARTICLE ENTRAPMENT DEVICE FOR AN ELECTRICAL COMPONENT

William H. Bardens, San Juan Capistrano, and Gale C. Nelson, Mira Loma, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Sep. 17, 1979, Ser. No. 75,864
Int. Cl.³ H01L 23/36, 23/02, 23/12
U.S. Cl. 357—78 7 Claims



1. An electrical device comprising:
(a) an operational element for performing an electrical function;
(b) package means for containing said operational element;
(c) a particle getter disposed within said package means for entrapping and retaining particles within said package means, said particles getter comprising the reaction product of an organo polysiloxane resin and an effective amount of a curing agent to partially cure said organo polysiloxane material to a substantially non-flow, particle entrapping and retaining condition.

4,352,120
SEMICONDUCTOR DEVICE USING SIC AS SUPPORTER OF A SEMICONDUCTOR ELEMENT

Yasutoshi Kurihara, Katsuta; Hiroaki Hachino, and Kousuke Nakamura, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 22, 1980, Ser. No. 142,778
Claims priority, application Japan, Apr. 25, 1979, 54-50348
Int. Cl.³ H01L 23/02, 23/48, 29/44
U.S. Cl. 357—81 9 Claims



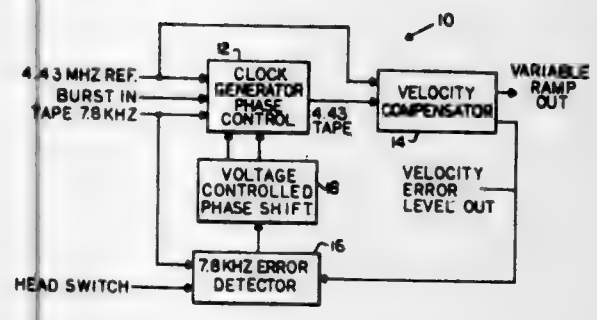


1. A semiconductor device comprising at least one semiconductor element and a supporter of silicon carbide, wherein said element is mounted on said supporter and said supporter is a sintered body including therein one or more of Al, Al_2O_3, Fe and Si.

4,352,121
PAL BURST PHASE SHIFT ERROR CORRECTOR

Martin A. Lilley, Fremont, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Apr. 8, 1980, Ser. No. 138,464
Int. Cl.³ H04N 5/795
U.S. Cl. 358—326 11 Claims

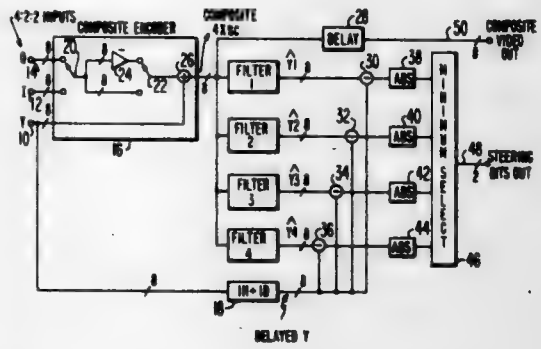


1. A method for eliminating phase error between alternating PAL subcarrier reference bursts in a time varying video signal reproduced from a record medium by a plurality of transducers, comprising the steps of:
removing the 90° phase shift between subcarrier bursts on successive lines;
sensing the line velocity error in said phase shifted bursts for each such line;
sampling and retaining in a first unit said velocity error occurring on first alternate lines;
sampling and retaining in a second unit said velocity error occurring on opposite alternate lines;
combining the outputs from said first and second sampling and retaining units and generating therefrom a phase signal which is a function of any 7.8 kHz phase difference between such alternating lines; and
adjusting the phase of said subcarrier bursts as a function of said phase signals to substantially remove any said 7.8 kHz phase difference.

4,352,122
ADAPTIVE COMPOSITE-COMPONENT TRANSCODING HIERARCHY FOR DIGITAL VIDEO

Glenn A. Reitmeier, Trenton, and Robert A. Dischert, Burlington, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Mar. 2, 1981, Ser. No. 239,613
Int. Cl.³ H04N 9/42, 9/38, 9/535
U.S. Cl. 358—11 16 Claims

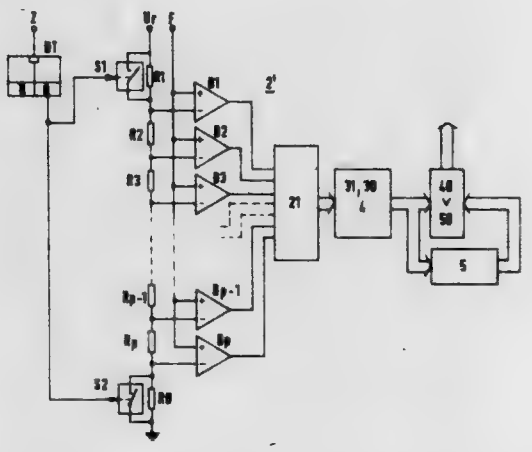


1. A method comprising forming a composite video signal from component video signals, transmitting samples of said composite video signal, and transmitting a control signal indicative of which of combinations of surrounding samples of said transmitted samples has a component that provides the closest match to the corresponding component of the original component video signals.

4,352,123
COLOR-TELEVISION RECEIVER HAVING INTEGRATED CIRCUIT FOR THE LUMINANCE SIGNAL AND THE CHROMINANCE SIGNALS

Peter M. Flamm, Freiburg, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Feb. 23, 1981, Ser. No. 237,187
Claims priority, application Fed. Rep. of Germany, Apr. 19, 1980, 3015141
Int. Cl.³ H04N 9/50
U.S. Cl. 358—23 1 Claim



1. A color-television receiver comprising at least one integrated circuit for separating and conditioning the luminance signal and the chrominance signals from the composite color signal, said integrated circuit containing:

a chrominance-subcarrier oscillator,

a chrominance-subcarrier band-pass filter,

a synchronous demodulator,

a PAL switch,

a color matrix, and, if necessary,

an R—G—B matrix, and being characterized by the following subcircuits for conditioning digital signals:

the chrominance-subcarrier oscillator is a squarewave clock generator providing four clock signals the first of which has four times the chrominance-subcarrier frequency and the second to fourth of which have the chrominance-subcarrier frequency, with the first and second clock signals having a pulse duty factor of 0.5, and the third and fourth clock signals each consisting of two consecutive, T/2-long pulses separated by T/2 within each 4T-long period (T=period of the first clock signal);

an analog-to-digital converter clocked by the first clock signal, whose analog input is presented with the composite color signal, and which forms as its output signal a parallel binary word from the amplitude of the composite color signal (F) at the instants the respective amplitudes of the undemodulated chrominance signal are equal to the amplitudes of the respective color-difference signal;

a first binary arithmetic stage which multiplies the output signal of the analog-to-digital converter by a binary overall-contrast control signal;

a two-stage delay line which delays the output signal of the first binary arithmetic stage by T/2;

a second binary arithmetic stage which forms the arithmetic mean of the delayed and undelayed output signals of the first binary arithmetic stage;

a third binary arithmetic stage which subtracts the output signal of the second binary arithmetic stage from the output signal of the first delay stage;

a buffer-memory arrangement which temporarily stores the output signal of the third binary arithmetic stage, and whose enable input is fed with the third clock signal;

a shift-register arrangement consisting of n parallel shift registers (n=number of bits at the output of the third binary arithmetic stage) each of which provides a delay of one line period and whose serial inputs are connected to the parallel outputs of the buffer-memory arrangement, while their clock inputs are fed with the fourth clock signal;

a fourth binary arithmetic stage which forms the arithmetic mean of the input and output signals of the shift-register arrangement;

a fifth binary arithmetic stage which subtracts the input signal of the shift-register arrangement from the output signal of this arrangement and then divides the difference by two;

a sixth binary arithmetic stage which, controlled by the PAL switch, either leaves the output signal of the fifth binary arithmetic stage unchanged or forms its absolute value;

a seventh binary arithmetic stage which forms the green color-difference signal from the output signals of the fourth and sixth binary arithmetic stages;

the outputs of the second, fourth, sixth and seventh binary arithmetic stages are connected to the binary R-G-B matrix each of whose outputs is coupled to one of three digital-to-analog converters for deriving the analog signals for controlling the R-G-B values of the picture tube, or

the outputs of the second, fourth, sixth and seventh binary arithmetic stages are each connected to one of four digital-to-analog converters for deriving the analog signals for controlling the color-difference value of the picture tube;

the improvement wherein

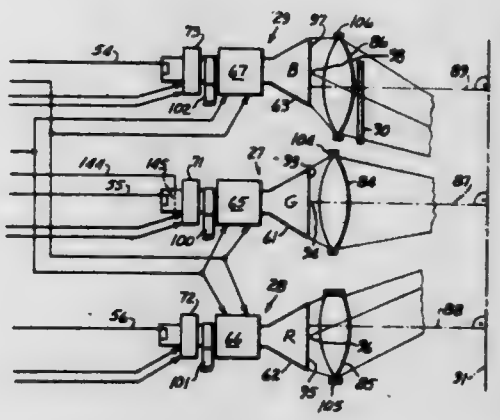
the analog-to-digital converter is a parallel analog-to-digital converter with $p=2^r-1$ differential amplifiers as comparators, where r is the number of binary digits of the output signal of the analog-to-digital converter minus one, the composite color signal being applied as the input signal to one of the noninverting or inverting inputs of all p differential amplifiers and the other of the inverting or noninverting inputs of the differential amplifiers being connected successively to the taps of a resistive voltage divider which contains equal-value resistors and is fed with a reference voltage (Ur), and

for the duration of every second line, either the reference voltage (Ur) or the input signal (F) is shifted by $\Delta U=0.5\ Ur/2^r$.

4,352,124
AIRCRAFT PASSENGER ENTERTAINMENT SYSTEM

Donald D. Kline, Newport Beach, Calif., assignor to Bell & Howell Company, Chicago, Ill.

Filed Oct. 27, 1978, Ser. No. 955,721
Int. Cl.³ H04N 9/31
U.S. Cl. 358—60 34 Claims



1. In a method of displaying color video pictures to passengers aboard an aircraft with the aid of a first imaging device for presenting a first one of three complementary color component images in a first image display field, said first image display field having a first center, a first projecting device including a first lens for projecting said first image from said first field onto a screen, said first lens having a first lens axis, a second imaging device for presenting a second one of said color component images in a second image display field, said second

image display field having a second center, a second projecting device including a second lens for projecting said second image from said second field onto said screen, said second lens having a second lens axis, a third imaging device for presenting the third of said color component images in a third image display field, said third image display field having a third center, and a third projecting device including a third lens for projecting said third image from said third field onto said screen, said third lens having a third lens axis, the improvement comprising in combination the steps of:

mounting said screen in a first plane;

disposing said first image display field in a plane parallel to said first plane;

disposing said second image display field in a plane parallel to said first plane;

disposing said third image display field in a plane parallel to said first plane;

disposing each of said first, second and third lens axes perpendicularly to said first plane;

providing a closer spacing between said second and third axes of said second and third lenses than between said second and third centers of said second and third image display fields;

omitting marginal portions of at least some of said first, second and third lenses to precorrect spatial rightness variations in the color video picture;

providing three complementary color component image signals for composing via said first, second and third imaging and projecting devices a color video picture;

applying said three complementary color component signals respectively to said first, second and third imaging devices for providing said first, second and third color component images respectively in said first, second and third image display fields; and projecting said provided first, second and third color component images respectively with said first, second and third projecting devices, including said first, second and third lenses, onto said screen for composite viewing of said color video picture by said passengers.

4,352,125

RECOGNITION APPARATUS

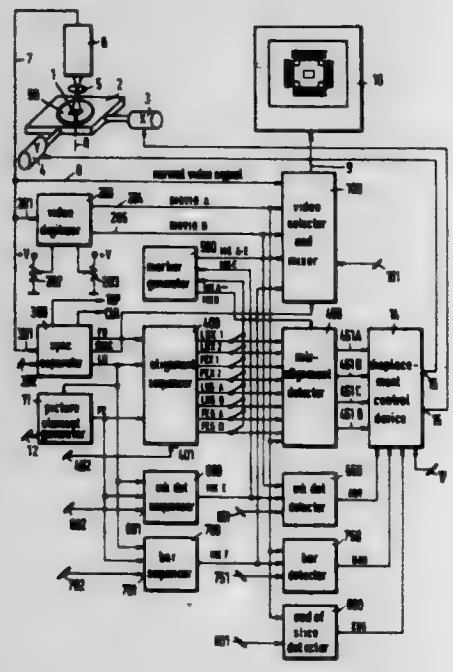
Friedrich Guth, Freising, Fed. Rep. of Germany, assignor to Texas Instruments Deutschland GmbH, Freising, Fed. Rep. of Germany

Division of Ser. No. 948,064, Nov. 29, 1978, abandoned. This application Jan. 28, 1980, Ser. No. 115,659

Claims priority, application Fed. Rep. of Germany, Jan. 27, 1978, 2803653

Int. Cl.³ H04N 7/18

U.S. Cl. 358—101 **12 Claims**



1. Apparatus for recognizing the presence of an identification area having a first reflection characteristic on a background surface of an object having a second reflection characteristic, comprising television camera means operable to generate an electrical video signal representative of a video image of a surface area of the object containing the identification area; digitizing means for receiving the video signals and forming therefrom digital video signals having two signal levels which for the video signals originating from the background area have predominantly a first signal level and for the video signals originating from the identification area have predominantly a second signal level; marker generator means operable under control of control signals for generating marker signals which define the boundaries of a predetermined number of intervals provided for analysis of said digital video signals; means for analyzing the digital video signals at a predetermined number of instants during said intervals for generating a count pulse in each case when the analyzed digital video signal has the second signal level; and means for counting the count pulses and for furnishing a signal indicating the presence of the identification area whenever said count exceeds a predetermined value during a complete analysis.

4,352,126

SYSTEM FOR REDUCING VISIBLE NOISE IN TELEVISION IMAGES

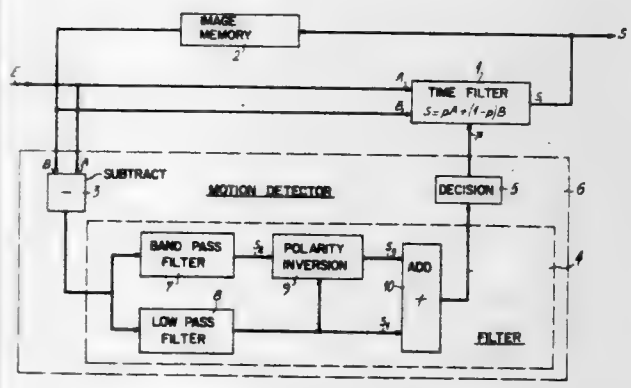
Jacques Poncin, 11 boulevard Volney, 35000 Rennes; Pierre Rogel, 14, rue Gould'oeuvre, 35690 Acigne, and Maurice Remy, 5 avenue Erlanger, 75016 Paris, all of France

Filed Aug. 11, 1980, Ser. No. 177,012

Claims priority, application France, Aug. 16, 1979, 79 21201

Int. Cl.³ H04N 5/21

U.S. Cl. 358—167 **8 Claims**

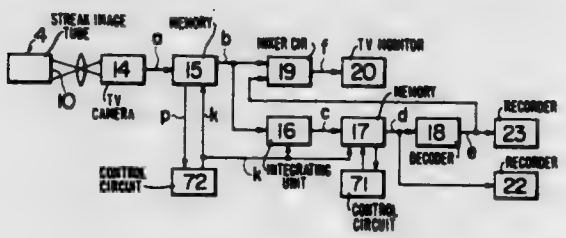


1. A motion detector system for reducing visible noise in television images responsive to a numerical treatment of a video signal, said system comprising numerical time filter means, sample memory means coupled to the output of the time filter means, means in said time filter for combining a sample of video image signals to be treated with a corresponding sample signal delivered by the memory means, threshold-type decision circuit means for determining the combination parameter of the time filter, a subtraction circuit means having one input coupled to receive the image sample to be treated and a second input coupled to receive the corresponding sample delivered by the sample memory means, low-pass filter means and band-pass filter means having parallel inputs for receiving samples delivered by said subtracting means, and means for giving sign outputs in response to said band-pass and low-pass filter means, polarity reversal circuit means including an exclusive OR circuit means, said sign outputs being coupled to two inputs of said exclusive OR circuit means, said polarity reversal circuit means being responsive to said two filter means and controlled by said OR circuit means, adding means jointly responsive to the low-pass filter means and said polarity reversal circuit means, the output of said adding means being connected to said threshold-type decision circuit means, and said polarity reversal means executing a polarity reversal when the values of the inputs of the exclusive OR circuit are different.

4,352,127
METHOD AND APPARATUS FOR ANALYZING STREAK IMAGE OF LIGHT PULSE FORMED ON ELECTRO-OPTICAL STREAKING IMAGE TUBE

Yutaka Tsuchiya, Hamamatsu, Japan, assignor to Hamamatsu TV Co., Ltd., Hamamatsu, Japan

Filed Dec. 26, 1979, Ser. No. 107,181
Claims priority, application Japan, Dec. 27, 1978, 53-163329
Int. Cl.³ H04N *5/34*
U.S. Cl. 358—217 **6 Claims**



1. A method of analyzing a streak image of light pulse formed on an electro-optical streaking image tube comprising the steps of:

picking up the streak image formed on a fluorescent screen of the electro-optical streaking image tube by a progressive scanning method that employs as many scanning lines as are n-times greater in number than in the standard scanning method, using a television camera;

storing the picked up video signals in a picture memory unit by the progressive scanning method so that the streak image is kept two-dimensionally;

reading out the stored video signals by the 2n:1 interlaced scanning for integration by scanning line;

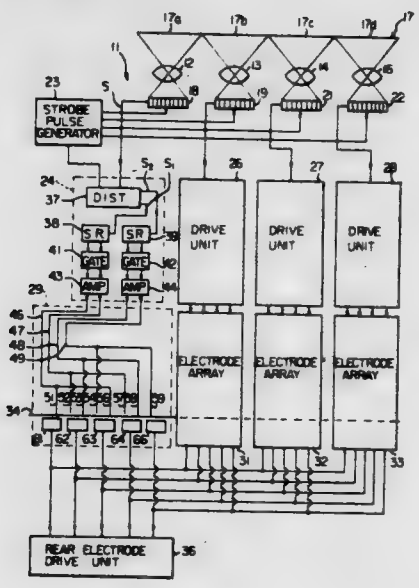
storing the integrals at addresses corresponding to the order to the scanning lines; and

inputting the integrals read out in the order of address, on completion of the storing of the integrals for all scanning lines, in means for displaying and/or recording which displays and/or records the waveform of the light pulse.

4,352,128
COMBINATION ELECTROSTATIC COPYING MACHINE AND FACSIMILE TRANSCEIVER

Tamio Ohori; Fuyuhiko Mastumoto, and Satoru Tomita, all of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jul. 10, 1978, Ser. No. 923,295
Claims priority, application Japan, Jul. 14, 1977, 52-84461
Int. Cl.³ H04N *1/18, 1/22*
U.S. Cl. 358—294 **8 Claims**



1. A reproduction apparatus comprising:

optoelectronic sensor means for scanning a linear portion of an original document, the sensor means comprising N linear photosensor arrays arranged in a row, each photosensor array comprising M photosensor elements, N and M being integers;

strobe means; and

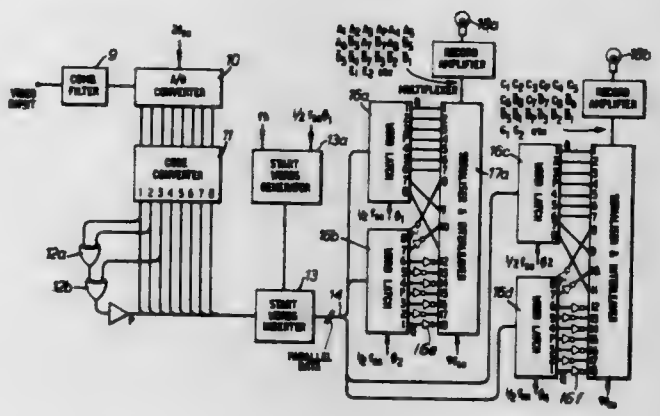
printing means for receiving the output signals of all of the photosensor arrays and forming marks on a reproduction medium corresponding thereto, and;

control means for controlling the strobe means to selectively apply M strobe pulses to all of the N photosensor arrays simultaneously for printing or to apply N groups of M strobe pulses each to the N photosensor arrays respectively in sequence for transmission, the strobe means sequentially applying M strobe pulses to the M photosensor elements respectively in the arrays, the photosensor elements producing output signals in response to the respective strobe pulses.

4,352,129
DIGITAL RECORDING APPARATUS

John L. E. Baldwin, Eastleigh, England, assignor to Independent Broadcasting Authority, London, England

Filed Feb. 1, 1980, Ser. No. 117,511
Int. Cl.³ H04N *5/78*; H03K *13/24*
U.S. Cl. 360—32 **4 Claims**



1. Digital recording apparatus, comprising

(a) analogue to digital converter means (**10**) for converting an analogue signal to a plurality of digital words each including a plurality of binary digits;

(b) code converter means (**11**) for converting each of said digital words to a corresponding coded word;

(c) means (**12*a*, 12*b*, 12*c***) for inserting a parity bit in each word, thereby to produce a resultant word;

(d) start word inserter means (**13*a***) for inserting within a series of the coded resultant words a digital start word;

(e) latch means including pairs of word latches (**16*a*, 16*b*; 16*c*, 16*d***) connected with the output of said start words inserter means, one latch of each pair being operable to pass a word exactly as it enters the latch means, and the other latch of that pair being associated with inserter means and operable to produce the ones complement of the word entering the latch, whereby a first word supplied to one latch exits that latch in the identical condition, and a second word supplied to the companion latch exits that latch in the ones complement condition;

(f) serializing and interleaver means (**17*a*, 17*b***) for at least partially interleaving the bits of the first word with the ones complemented bits of the second word;

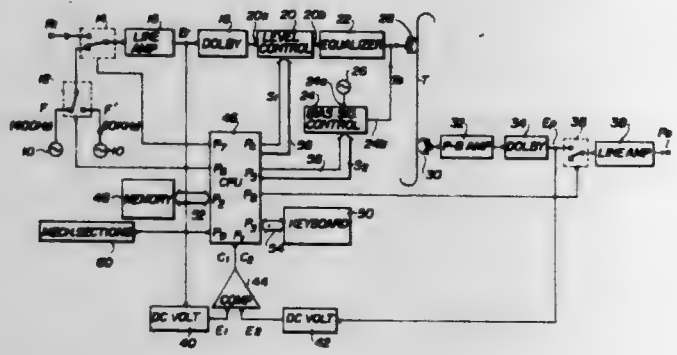
(g) means for combining the outputs of said latch means; and

(h) means (**19*a*, 19*b***) for recording the interleaved combined words in a recording medium.

4,352,130
MAGNETIC SOUND RECORDER HAVING COMPUTER-CONTROLLED ADJUSTING DEVICE

Tsunao Hasegawa, and Yasushi Ohtake, both of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Nov. 14, 1979, Ser. No. 93,986
Claims priority, application Japan, Nov. 14, 1978, 53-140701
Int. Cl.³ G11B *5/47*
U.S. Cl. 360—66 **6 Claims**



1. A magnetic tape sound recorder including a computer-controlled device for automatically adjusting the recording signal level and the level of the bias current to be superposed on the recording signal, wherein the improvement comprises sources of first and second recording signals having different frequencies, a recording signal level control circuit operative to vary the signal level of the recording signal supplied thereto, a bias signal control circuit operative to vary the level of the bias current to be impressed on the output signal from said recording signal level control circuit, and digital signal processing means coupled with said signal level control circuit and said bias signal control circuit and programmed to provide at least two consecutive cycles each consisting of a first step of varying the signal level of said first recording signal in said recording signal level control circuit with the level of said bias current fixed at a predetermined value in said bias signal control circuit until the signal level of the output signal delivered from the signal level control circuit reaches a value at which the signal level of the playback signal resulting from the output signal from the signal level control circuit is substantially equalized with the signal level of said output signal, and a second step of varying the level of said bias current in said bias signal control circuit with the signal level of the second recording signal fixed at said value of the signal level of said output signal until the signal level of the playback signal resulting from the output signal from the recording signal level control circuit is substantially equalized with the signal level of said output signal.

4,352,131
MEMORY DISC ADDRESSING DEVICE

Alfred Van Herk, Eindhoven; Jacob A. M. Buis, The Hague; Jan H. Klijnstra, The Hague, and Jan Van Staalduinen, The Hague, all of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

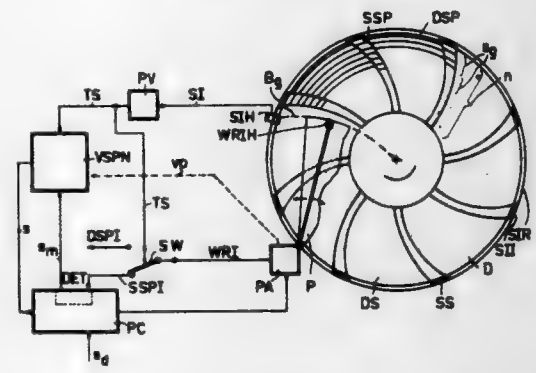
Filed Feb. 29, 1980, Ser. No. 126,077
Int. Cl.³ G11B *21/08, 21/10*
U.S. Cl. 360—78 **8 Claims**

1. A device for recovering a storage track number of a storage track present on a disc-shaped and rotatable record carrier, said storage track being aligned with a transducer device provided on a positioning member for being cross-track positionable, wherein the record carrier comprises a first plurality of groups of storage tracks being divided into alternate data tracks and servo tracks, the record carrier thereby being divided into alternate sectors of data tracks (DS) and servo tracks (SS), and wherein each servo track comprises the in-group number of the associated storage track within its grup of storage tracks, said device comprising:

indicator means (1) for indicating a validated complete storage track number composed of an in-group storage track number and a group number; read means (SW) connected to said transducer device for, upon encountering a servo track, reading the in-group storage track number (SM) therefrom, said read means having an output connected to said indicator means, for thereto forwarding a preliminary in-group storage track number as read most recently;

synchronizer means (PV) for, upon said transducer device encountering a servo track, generating a synchronizing signal (TS);

estimating means (4) connected to an output of said indicator means for, under control of a synchronizing signal from said synchronizer means while determining a cross-track speed attained by said transducer device between successive encounters with two servo sectors, generating an estimated complete storage track number by extrapolating the validated complete storage track number with said cross-track speed, generator means (1) for, under control of a synchronizing signal, generating a sequence of at least



one preliminary group number and having an output connected to said indicator means for thereto forwarding a preliminary group number as generated most recently thereby;

difference determining means (3) connected to an output of said indicator means and to an output of said estimating means for determining the difference between an estimated complete storage track number and a preliminary group number and a preliminary in-group storage track number;

comparator means (5) connected to an output of said difference determining means for comparing said difference with a quantity equal to half said second plurality and for, under control of a smaller difference, generating a validating signal (VOK) to said indicator means with a stop signal to said generator means, but under control of a larger difference generating a proceed signal (VNOK) to said generator means, for generating at least one further preliminary group number.

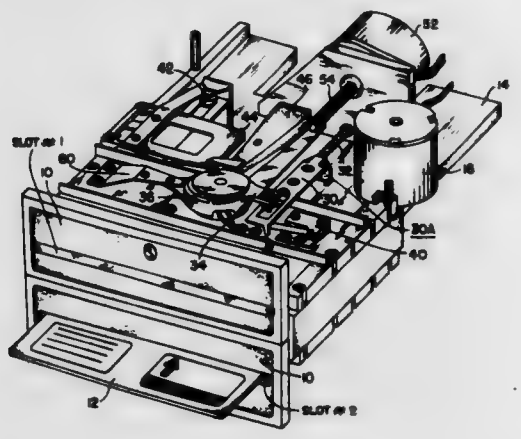
4,352,132
FLOPPY DISC DRIVE

Koko Gyi, Thousand Oaks, Calif., assignor to Data Master, Carmarillo, Calif.

Filed Jul. 18, 1980, Ser. No. 170,100
Int. Cl.³ G11B *5/016, 3/62*
U.S. Cl. 360—97 **7 Claims**

1. A disc drive unit for a record disc having a hole therein, comprising: a chassis; a hub rotatably mounted on the chassis for rotation about an axis of rotation; a drive motor coupled to the hub; an inertial disc mounted coaxially with said hub for relative angular movement with respect thereto and for rotation therewith about said axis of rotation; a spring-loaded pin extending axially through the inertial disc and through the hub in a position displaced radially from the axis of rotation of the hub and of the inertial disc, said pin being locked in a retracted position by said inertial disc and released to an extended position with respect to the surface of the hub upon relative angular movement of the hub and the inertial disc; an end wall

having a slot for receiving the record disc; and a switch mounted on the chassis in the path of said record disc to be actuated by the record disc upon the insertion thereof into said slot, said switch serving to energize the drive motor to cause said hub to turn and said inertial disc to release said pin so that



the pin extends through the hole in the record disc in a position displaced from the center of said hole and adjacent to the rim thereof and turns around the rim as said hub turns about said axis of rotation to center the record disc with respect to the axis of rotation.

4,352,133

MAGNETIC DISC MEMORY

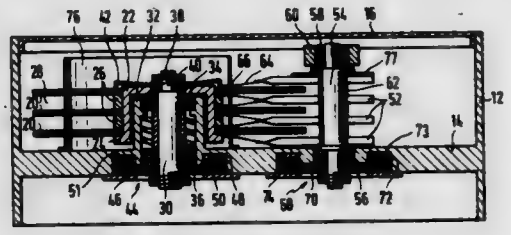
Horst Hager, Paderborn, Fed. Rep. of Germany, assignor to Nixdorf Computer AG, Paderborn, Fed. Rep. of Germany

Continuation of Ser. No. 922,735, Jul. 7, 1978, abandoned. This application Feb. 23, 1981, Ser. No. 236,970

Claims priority, application Fed. Rep. of Germany, Jul. 18, 1977, 2732432

Int. Cl.³ G11B *21/08, 5/60*

U.S. Cl. 360—106 **8 Claims**



1. A magnetic disc memory comprising a plurality of circular magnetic storage discs which are arranged axially spaced from one another on a shaft directed at right angles to the disc plane, a first drive means to drive the shaft, a plurality of swivel arms mounting a plurality of magnetic heads to record and play back information onto or from the magnetic storage discs, the heads including means for dynamic air-spacing from the discs responsive to high speed disc rotation, means pivotally mounting the swivel arms on a pivot for common swivel movement about an axis spaced from and substantially parallel to the shaft axis, so that a swivel arm can be swung in an arcuate path across the disc plane immediately adjacent thereto to position said magnetic heads between two adjacent magnetic storage discs to record and play back information on various tracks thereon, and a second drive means to swing the swivel arms, each of said swivel arms over the portion thereof which extends into the region adjacent the storage discs being constructed of spaced apart upper and lower planar walls of rigid material which extend parallel to one another and to the disc planes, said spaced apart walls being joined at the leading edge thereof by a semicircular wall portion and being joined at the trailing edge thereof by a wall portion to produce a hollow, lightweight body having a symmetrical aerodynamic surface thereby to minimize the weight and air resistance of said portion, the spacing between said upper and lower planar walls being reduced to substantially zero over the terminal end portions thereof remote from said pivot, and means securing the magnetic heads to the respective swivel arms at the terminal ends thereof opposite the pivot.

4,352,134

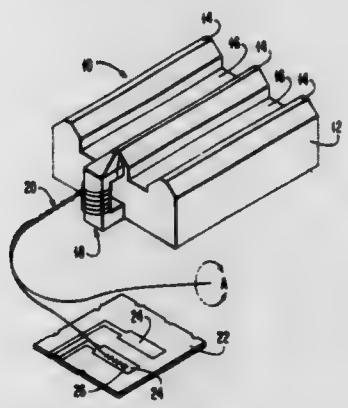
MAGNETIC HEAD ASSEMBLY WITH CORROSION RESISTANT CONDUCTIVE WIRE

Terry A. Burns, Milpitas, Calif., and Leslie H. Johnston, Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 19, 1979, Ser. No. 95,282

Int. Cl.³ G11B *5/20*

U.S. Cl. 360—123 **4 Claims**



1. In a bidirectional accessing magnetic head assembly characterized by:

a transducer core for bidirectional movement during accessing by said head assembly;

a coiled wire coupled to said core for moving bidirectionally with said transducer core;

the improvement wherein said wire is formed from a zirconium-copper alloy core;

a layer of conductive metal deposited over said alloy core;

an insulator coating surrounding said metal layer; and

a circuit assembly attached to said wire by means of a fluxless solder reflow termination connection.

4,352,135

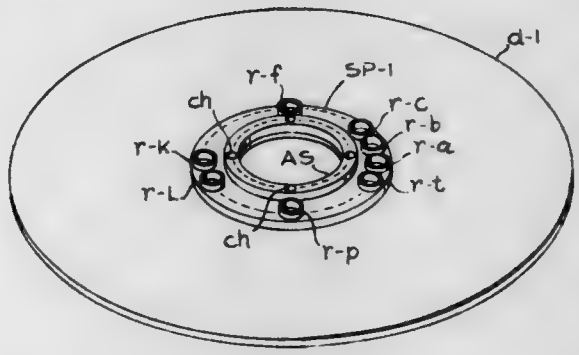
FLOPPY PACK WITH IMPROVED SPACER MEANS

Dean DeMoss, Camarillo, and Harvey J. Richardson, Sepulveda, both of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Jun. 3, 1980, Ser. No. 156,197

Int. Cl.³ G11B *23/02, 5/016*

U.S. Cl. 360—133 **21 Claims**



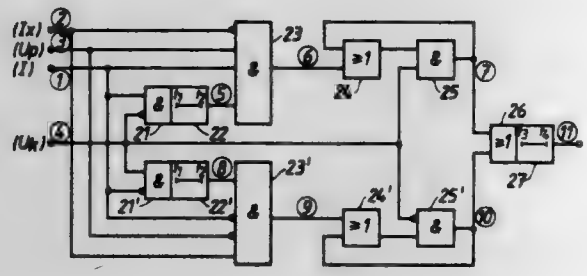
1. In an improved pack of flexible disks adapted to be pneumatically partitioned axially and wherein the disks are formed with gas-conducting apertures therethrough, the combination therewith of:

rim means disposed in each gap between respective disks and adapted to isolate the gap from the gas stream passing axially-up certain of said holes and also to provide a reference platform against which the disks may be pressed.

4,352,136
IMPEDANCE-MEASURING DEVICE FOR IMPEDANCE PROTECTION

Leif Ericksson, Sala, Sweden, assignor to Asea Aktiebolag, Vasteras, Sweden

Filed Aug. 26, 1980, Ser. No. 181,656
Claims priority, application Sweden, Aug. 30, 1979, 7907212
Int. Cl.³ H02H 3/26
U.S. Cl. 361—80 6 Claims



1. An impedance-measuring device for the impedance protection of an electric power line, comprising a comparator means built up from logic components for comparing the phase positions of a plurality of alternating current quantities which together contain information of such a nature that a phase comparison of said quantities is sufficient to obtain a criterion of whether the impedance in a fault loop lies inside or outside certain limits of an impedance zone which are defined by means of a model impedance, $Z_k=R+jX$; said alternating current quantities being transformed into signals containing only polarity information, said signals each being supplied to an input of at least one comparator means which is adapted to supply a specified output signal only when the supplied signals constitute a combination of logic levels for which the impedance of the fault loop lies inside said limits, one of said signals corresponding to the current I in the fault loop, each of said comparator means comprises a first, a second and a third logic component; and that one of the inputs of said second logic component is connected via a delay element to the output of said first logic component; and that the input side of said first logic component is supplied with a signal corresponding to $U_k=IZ_k-U$, where U is the voltage of the fault loop, and with said I-signal; and further that said I-signal and a signal corresponding to IX are supplied to respective inputs of said second logic component; and that said third logic component has an input to which said U_k-signal is supplied as well as an input which is supplied with a signal which is derived from the output signal of said second logic component.

4,352,137
METHODS AND APPARATUS FOR FAULT DETECTION

Allan T. Johns, Corsham, England, assignor to The General Electric Company Limited, London, England

Filed Feb. 25, 1981, Ser. No. 237,867
Claims priority, application United Kingdom, Mar. 1, 1980, 8007031
Int. Cl.³ H02H 3/18
U.S. Cl. 361—82 16 Claims

1. A method of determining the direction of a fault on an electrical conductor from a monitoring position along the length of the conductor comprising: forming first and second signals S_{1R} and S_{2R} of the form:

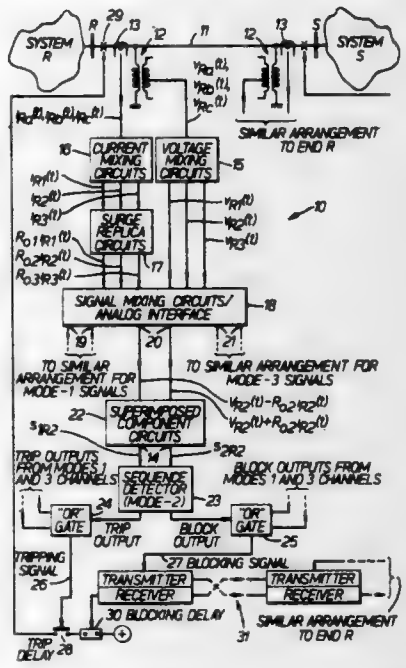
$$S_{1R}=K_1V_{fl}(t)-K_2Ri_R(t)$$

$$S_{2R}=K_3V_{fl}(t)+K_4Ri_R(t)$$

where

$V_{fl}(t)$ is a signal proportional to the difference between the steady-state voltage and the instantaneous voltage on the conductor at the monitoring position;

$Ri_R(t)$ is a signal proportional to the product of the difference between the steady-state current and the instantaneous current on the conductor at the monitoring position and a constant (R) which is related to the surge impedance of the conductor; and each of

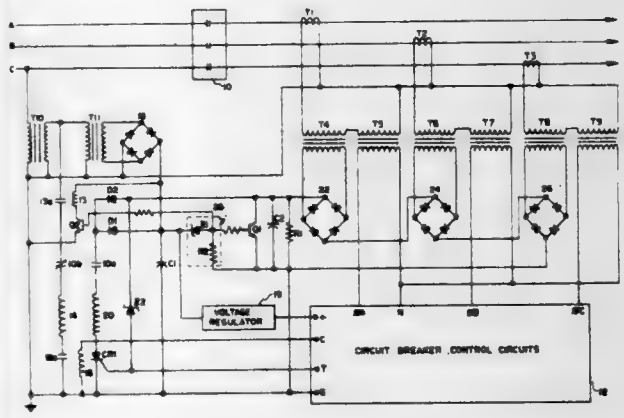


K_1,K_2,K_3 and K_4 is a positive or negative constant; and determining the sequence in which the signals S_{1R} and S_{2R} vary from selected values, and thereby the direction of the fault.

4,352,138
BACKUP TRIP CIRCUIT FOR A CIRCUIT BREAKER

Clyde Gilker, South Milwaukee, Wis., assignor to McGraw-Edison Company, Rolling Meadows, Ill.

Filed Nov. 25, 1980, Ser. No. 210,318
Int. Cl.³ H02H 3/24
U.S. Cl. 361—92 12 Claims



1. In a circuit breaker for a protected alternating electric circuit which includes separable contacts, operating means for opening and closing said contacts, a trip coil for actuating said operating means to open said contacts when said trip coil is energized, a trip switch which is rendered conductive by a triggering signal for energizing said trip coil from a normal direct current power source, a normal trip control circuit energized from said normal direct current power source and coupled to said protected circuit for generating said triggering signal for said trip switch upon the occurrence of a predetermined overcurrent condition in at least one phase of said protected circuit, and said normal direct current power source, a combination backup trip control circuit and direct current power source comprising:

current sensing means coupled to said protected circuit, for producing a direct current signal having an instantaneous peak value each half cycle proportional to the instantaneous peak value of the maximum phase current of said protected circuit;

a resistor-capacitor network, connected across said current

sensing means to receive said direct current signal, and comprising at least one capacitor and one resistor connected across said capacitor;

rectifier means disposed between the series combination of said trip coil and said trip switch and both said normal power source and said resistor-capacitor network, to allow current flow from either said normal direct current power source or said resistor-capacitor network through said trip coil when said trip switch is rendered conductive, but to block current flow between said normal direct power source and said resistor-capacitor network;

a first voltage sensing means, connected to sense the voltage level of said normal direct current power source, for actuating a first normally open switching means, when ever the voltage level of said normal direct current source exceeds a predetermined level;

said first switching means, connected across said resistor-capacitor network, for shorting said network when actuated by said first voltage sensing means; and

a second voltage sensing means, connected to sense the voltage across said resistor-capacitor network, and coupled to said trip switch, for generating said triggering signal for said trip switch whenever the voltage level of said resistor-capacitor network exceeds a predetermined level.

4,352,139

FLEXIBLE CONNECTOR FOR H.V. ARRESTER

John P. Du Pont; Hatim H. Taj, both of Waukesha; Randall R. Schoenwetter, Milwaukee; Theodore J. Vanlankvelt, Elm Grove; Robert E. Kwiatkowski, Eagle, and Richard W. Lange, Waukesha, all of Wis., assignors to RTE Corporation, Waukesha, Wis.

Filed Feb. 4, 1980, Ser. No. 118,580
Int. Cl.³ H02H *9/04*
U.S. Cl. 361—117 **12 Claims**

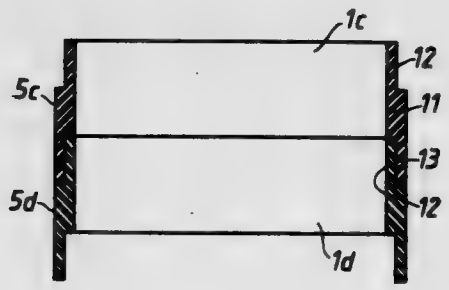
1. A gaples arrester comprising a dielectric elastomeric housing having a bore in one portion and a receptacle in another portion thereof, an arrester block assembly positioned in said bore, said assembly being formed from one or more surge arrester blocks, a connector at one end of the surge arrester blocks, and an electrically conductive flexible wire connecting said connector to said surge arrester blocks, whereby said connector will be located at the inner end of said receptacle when said assembly is positioned in said bore.

4,352,140

SURGE ARRESTER

Bror Axelsson, Västervik; Ulf Johnsen, Ludvika; Lennart Stenström, and Bengt Thors, both of Ludvika, all of Sweden, assignors to Asea Aktiebolag, Vasteras, Sweden

Filed Apr. 24, 1981, Ser. No. 257,262
Claims priority, application Sweden, May 5, 1980, 8003329
Int. Cl.³ H02H *3/22*
U.S. Cl. 361—127 **8 Claims**



1. A surge arrester comprising:

an insulating housing;

a plurality of cylindrical varistor blocks arranged coaxially in a stack in said housing, the end surfaces of said varistor blocks being provided with electrodes for electrical series connection of said blocks in said stack; and

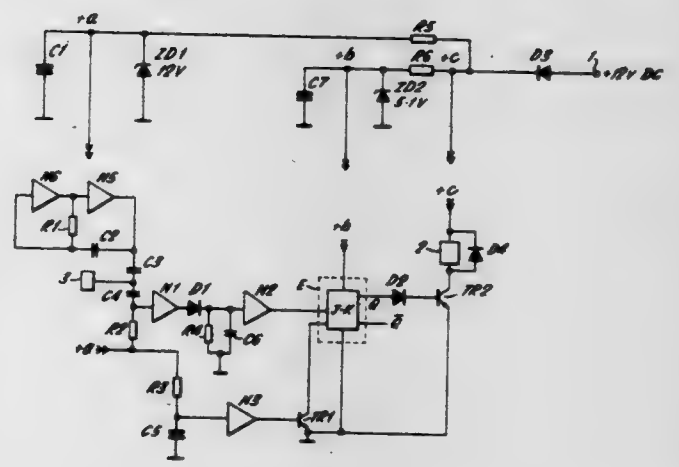
annular protective members of insulating material tightly surrounding the envelope surfaces of said varistor blocks, said protective members being formed so as to overlap each other between varistor blocks positioned adjacent to each other.

4,352,141

TOUCH SWITCH DEVICE

Brian Kent, Hemel Hempstead, England, assignor to Starcote Limited, Hertfordshire, England

Filed Dec. 8, 1980, Ser. No. 214,048
Int. Cl.³ H01H *36/00*
U.S. Cl. 361—181 **2 Claims**



1. A touch switch device comprising an oscillator; a charging circuit, including a capacitative store, for receiving a signal from said oscillator; means, including a touch plate, responsive to close approach to said plate to interrupt the passage of the signal from said oscillator to said charging circuit, the store being arranged to discharge when the said passage is interrupted; a switch; a bistable circuit controlling the state of the switch; means responsive to a change in the charge state of the store consequent on the said interruption to cause said bistable circuit to change the state of the switch, the switch remaining in the state to which it is changed when the said interruption ceases; means responsive to the supply of electrical power to the device to cause the said bistable circuit to maintain the state of the switch in a predetermined state for an initial period, during which the said switch is maintained unresponsive to interruptions of the said signal; said means responsive to said supply being operative during said initial period to feed a reset signal to said bistable circuit, said bistable circuit being responsive to the reset signal to maintain said switch in said predetermined state; said means responsive to the change in the charge state of the store causing the bistable circuit to control the state of the switch, after the elapse of said initial period, in accord with the changes in the charge state of said capacitative store.

4,352,142

COMPOSITE AIRCRAFT STRUCTURE HAVING LIGHTNING PROTECTION

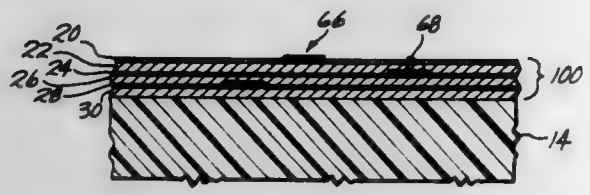
Glenn O. Olson, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Apr. 15, 1981, Ser. No. 254,799
Int. Cl.³ H05F *3/00*
U.S. Cl. 361—218 **4 Claims**

1. An aircraft structure comprising in combination:

a graphite epoxy laminate layer;

a sandwich structure applied to one major surface area of said graphite epoxy laminate layer;



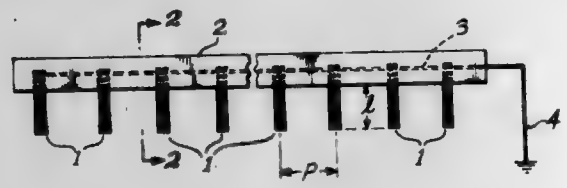
said sandwich structure comprising a pair of layers of aluminum foil having a layer of dielectric material disposed between said pair of layers of aluminum foil.

4,352,143

DEVICE FOR DISCHARGING STATIC ELECTRICITY AND METHOD OF PRODUCING THE SAME

Kenkichi Uno, 1407 80th St. SW., Everett, Wash. 98203

Filed May 27, 1980, Ser. No. 153,269
Int. Cl.[3] H05F *3/00*; A46B *3/06*
U.S. Cl. 361—221 6 Claims



1. A method of producing a device for discharging static electricity comprising: forming a plurality of electrodes, each of which being constituted by a bundle of 50 to 1,000 pieces of stainless steel fibers each having a diameter of 5 to 50μ, said bundle being twisted such that the number n of twist falling within the range of $0.1 \leqq n \leqq 3$; fixing said electrodes at their base ends to a supporting frame at a right angle to the latter, such that the pitch of said electrodes is within 50 mm and the effective length of each electrode is not smaller than 3 mm; and releasing said bundles from twisting to obtain a larger width of each electrode at the free end of the latter than at the fixed base end of the same.

4. A method of producing a plurality of devices for discharging static electricity, comprising:

arraying a plurality of warps in a parallel relation, each of said warps consisting of a bundle of 50 to 1,000 pieces of stainless steel fibers each having a diameter of 5 to 50μ;

weaving a plurality of groups of conductive yarn into said warps at a right angle to the latter, such that distance between adjacent groups of wefts is not smaller than 3 mm;

fixing said wefts and warps at the points of contact therebetween;

and cutting said warps at portions in the close proximity of one side edge of each group of weft such that the cut warps have an equal length.

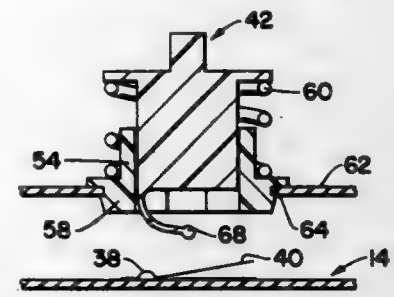
4,352,144

CAPACITIVE KEYSWITCH WITH OVERTRAVEL PLUNGER MECHANISM

John K. McVey, Bensenville, and Edward W. Wanatowicz, Jr., Elk Grove Village, both of Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.

Filed Jan. 21, 1981, Ser. No. 226,583
Int. Cl.[3] H01G *5/16*
U.S. Cl. 361—288 4 Claims

1. A capacitive keyswitch comprising a fixed, flat capacitor plate in a first plane, a moveable flat capacitor plate hinged at one end to project in a second plane and to move towards a parallel position with respect to said fixed plate when an actuating force is applied to said moveable plate, an actuating plunger for applying said force to said moveable plate, return means for returning said plunger to its unactuated position and a flexible, cantilever mounted, overtravel arm integrally formed on said plunger which carries contact means that engages said moveable plate after said plunger has been depressed by a predetermined amount.

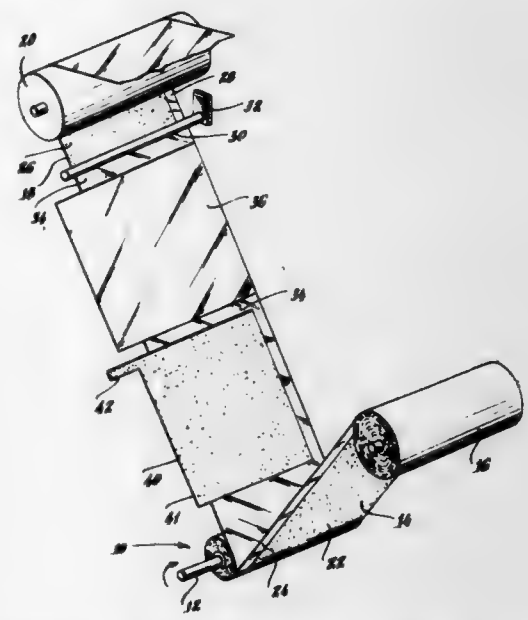


4,352,145

MULTIPLE ELEMENT CYLINDRICAL METALLIZED FILM CAPACITORS AND METHOD OF MAKING THE SAME

Robert M. Stockman, Brookfield Center, Conn., assignor to American Radionic Co., Inc., Danbury, Conn.

Filed Nov. 5, 1980, Ser. No. 204,164
Int. Cl.[3] H01G *4/38*
U.S. Cl. 361—329 8 Claims



1. The method of making multiple element, cylindrical, metallized film capacitors from first and second dielectric films which are metallized on one side thereof and which are wound in cylindrical form with the non-metallized side of one film being in contact with the metallized side of the other film comprising the steps of:

providing a non-metallized area on a portion of the metallized side of said first dielectric film,

inserting a metal strip of predetermined length over the non-metallized area of said first film, said metal strip forming one plate of a small capacitor of the multiple element capacitor being wound,

inserting an insulating strip of predetermined length between said first and second dielectric films,

isolating said one plate of said multiple element capacitor from the remaining elements thereof by winding at least one turn of said insulating strip around said metal strip,

completing the winding of said first and second films, and

connecting a leadwire to said metal strip which constitutes a connection to the small capacitor formed by said metal strip in said multiple element capacitor.

5. In a multiple element, cylindrical capacitor wound from first and second dielectric films selectively metallized on one side and having at least one unmetallized section on one of said

films selectively forming first and second layers of metal separated by dielectric film, the invention comprising:

a metal insert having a metal tab extending therefrom,

said metal insert interleaved between said first and second dielectric films in contact with said unmetallized section of one of said films,

said metal tab extending from an end portion of said capacitor and adapted to receive an electrical connection thereto,

an insulating insert interleaved between said first and second films between said metal insert on one of said metallized layers surrounding said metal insert to isolate said metal insert from said metallized layer whereby said metal insert forms a separate plate in said multiple element capacitor.

4,352,146

RACK STRUCTURE FOR ELECTRICAL COMMUNICATIONS EQUIPMENT

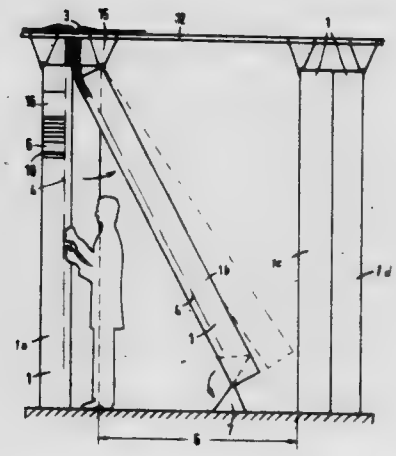
Peter Hermanutz, Ditzingen, and Franz Roessler, Hemmingen, both of Fed. Rep. of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Continuation of Ser. No. 99,147, Nov. 30, 1979, abandoned. This application Jul. 9, 1981, Ser. No. 281,819

Claims priority, application Fed. Rep. of Germany, Dec. 7, 1978, 2852823

Int. Cl.³ H02B *1/20*; H05K *7/16*

U.S. Cl. 361—428 **4 Claims**



1. A rack structure for supporting a plurality of wiring boards each capable of receiving one or more modular plug-in circuit boards, said structure including a subrack which in its normal position extends substantially vertically from its upper end to a lower end adjacent a support floor, a cable runway extending substantially horizontally above the upper end of said subrack, means hinging said subrack for unitary tilt movement about the axis of the hinging means from said normal position to one of a plurality of tilt positions with said subrack at respective acute angles from the normal position in the tilt positions, said subrack including a pair of spaced sidewalls with a cabling wall along one face of the spaced sidewalls for supporting wiring boards, the opposed face of the subrack being open for the insertion of said circuit boards for mating contact with respective wiring boards, a support member hinged to the subrack adjacent the lower end thereof, said support member hingedly movable to a support position resting on the support floor to maintain said subtrack in a tilt position enabling access to the cabling wall of the subrack.

4,352,147

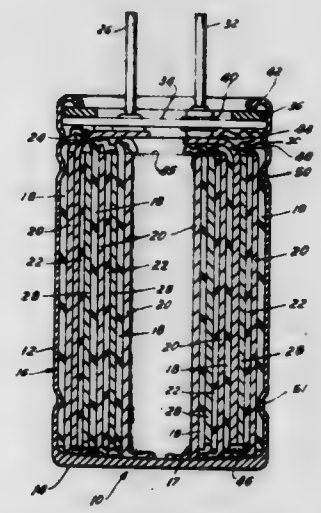
CAPACITOR FOR HIGH VIBRATION ENVIRONMENTS HAVING A CONTROLLED GAS RESERVOIR

William H. Elias, Six Mile, and Harold M. Granger, Greenville, both of S.C., assignors to Sangamo Weston, Inc., Norcross, Ga.

Continuation of Ser. No. 974,163, Dec. 28, 1978, abandoned. This application Feb. 6, 1981, Ser. No. 232,099

Int. Cl.³ H01G *9/00*; B01J *17/00*

U.S. Cl. 361—433 **19 Claims**



1. In a capacitor for providing a predetermined capacitance at a predetermined rated voltage, said capacitor including a case having disposed therein a first spacer film, a first electrode film abutting said first spacer film, a second spacer film containing a capacitor electrolyte and abutting said first electrode film, a second electrode film abutting said second spacer film, a first tab having a first terminal connected thereto abutting said first electrode film, and a second tab having a second terminal connected thereto abutting said second electrode film, the improvement comprising: said first spacer film disposed in said case with a predetermined fit leaving a minimum of clearance between said first spacer film and said case and said films having provided therein a predetermined gas volume in cubic inches less than a predetermined constant of two and greater than a predetermined constant of one times said predetermined capacitance in farads times said predetermined rated voltage in volts whereby relative motion between said films and said case is prevented while internal pressure rise of gas in said capacitor during operation is controlled.

4,352,148

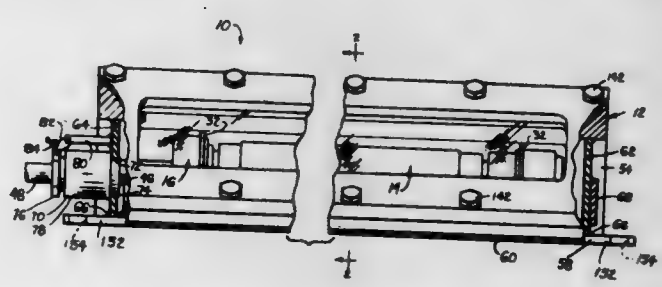
EQUIPMENT CORNER NOTCH-MOUNTED TRIANGULAR ENCLOSURE FOR TUBULAR LIGHT SOURCE

Howard P. McJunkin, Jr., Charleston, and Larry W. Rowley, Sissonville, both of W. Va., assignors to McJunkin Corporation, Charleston, W. Va.

Division of Ser. No. 927,735, Jul. 24, 1978, Pat. No. 4,282,564. This application Aug. 19, 1980, Ser. No. 179,439

Int. Cl.³ B60Q *1/00*

U.S. Cl. 362—61 **3 Claims**



1. An electric lighting system, comprising:

a substrate having two walls which meet at an approxi-

mately right angle at an outside corner having an outer edge;

said corner, along at least a portion of the length thereof being obliquely relieved to provide a notch in said outer edge;

a triangular enclosure for a tubular light source, comprising:

a unitary housing of generally isosceles right triangular transverse cross-sectional shape, thus having two sides which meet along a common border at generally a 90° angle, and each of which has a respective outer border where it is joined to the respective outer edge of a base plate; said housing further including two opposed generally triangular end walls securely located at opposite ends of said sides and base plate;

gland fitting means being provided in one of said end walls for communicating an electrical cable through the housing to and from the inside of the housing;

means defining an aperture through each said side;

two light transmitting lenses;

means mounting a respective said lens covering each said aperture;

said mounting means in respect to one of said apertures removably mounting the lens to the respective side, in order to permit access to within the housing through the respective aperture;

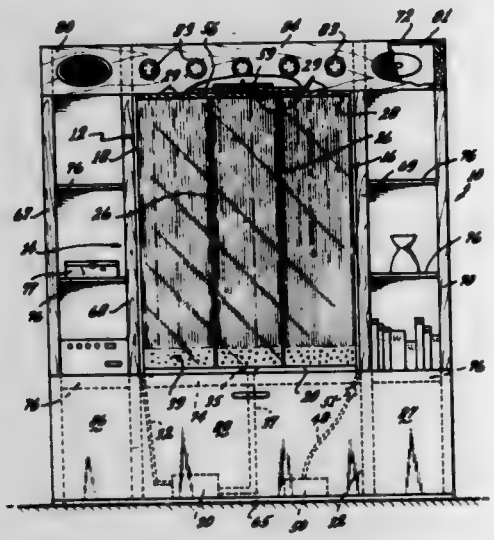
means mounting said triangular enclosure in said notch so that said two sides thereof are substantially flush with said two walls of said substrate and so that said common border of said two sides is substantially aligned with said outer edge of said outside corner of said two walls.

4,352,149

SIMULATED RAIN ON A WINDOW PANE PANEL ASSEMBLY

Harold O. Stetler, 13066 Avenida Del General, San Diego, Calif. 92129

Filed Nov. 23, 1979, Ser. No. 96,768
Int. Cl.³ F21V *33/00*
U.S. Cl. 362—96 **9 Claims**



1. A simulated rain on a window pane panel assembly for decorative use inside a building comprising a minor frame assembly having a pair of laterally spaced upright side frame members interconnected adjacent their respective bottom ends by a bottom frame member;

a primary tubular member extending substantially across the width of said minor frame assembly adjacent the top of said minor frame assembly;

a first rigid plastic panel covering the front of said minor frame assembly and a second rigid plastic panel covering the rear of said minor frame assembly, said plastic panels being of such a height that they extend from said bottom frame member all the way up to the top of said minor frame to form a water tight chamber therein, all the way up to said primary tubular member;

said primary tubular member also being positioned between said laterally spaced first and second plastic panels, said primary tubular member having a plurality of apertures across its length in its bottom surface, some of the apertures in the bottom of said primary tubular member being oriented to spray water droplets against the inner surfaces of said first and second plastic panel members;

a water pump;

a water evacuation port formed adjacent the bottom of said water tight chamber; and

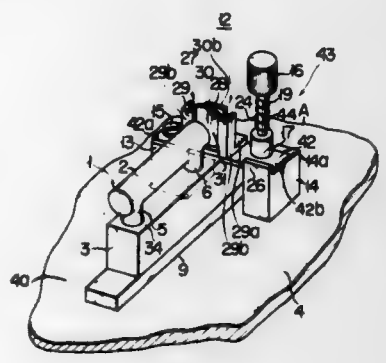
a first tubing member connected between one end of said primary tubular member and said water pump and a second tubing member connected between said water evacuation port and said water pump.

4,352,150

LIGHT SOURCE DEVICE

Seiichi Hosoda, Fuchu, Japan, assignor to Olympus Optical Co. Ltd., Tokyo, Japan

Filed Sep. 12, 1980, Ser. No. 186,478
Claims priority, application Japan, Sep. 17, 1979, 54-128386[U]
Int. Cl.³ F21V *7/00*
U.S. Cl. 362—282 **12 Claims**



1. A light source device which comprises:

a housing having an outer surface;

a light source lamp rest mounted on the outer surface of the housing;

a light source lamp which has two ends and is detachably fitted to the light source lamp rest;

a reflection mirror; and

a reflection mirror-retracting mechanism which is set adjacent to one of said two ends of the light source lamp and which comprises a swing member carrying the reflection mirror, having two ends and swingable around one of said two ends of the swing member between a first position in which the reflection mirror is brought adjacent to said one end of the light source lamp and a second position in which the reflection mirror is retracted from the light source lamp, and fixing means for locking the swing member in the first position.

4,352,151

LIGHTING APPARATUS

Andrew G. Lewis, 1090 Webster La., Des Plaines, Ill. 60016

Continuation of Ser. No. 900,823, Apr. 28, 1978, abandoned. This application Jul. 17, 1980, Ser. No. 169,668
Int. Cl.³ B60Q *1/00*
U.S. Cl. 362—368 **5 Claims**

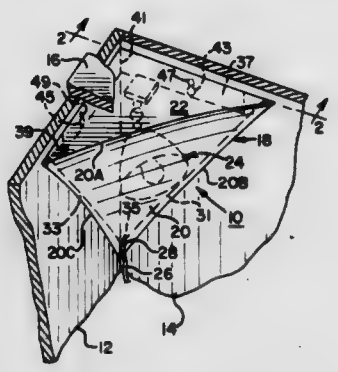
1. A corner mountable lighting apparatus adapted to be mounted in a corner space defined by a pair of intersecting vertical surfaces and by a horizontal surface, comprising:

open frame means adapted to be mounted to at least one of said surfaces;

light emitting means mounted on said frame means;

said frame means having a substantially triangularly shaped inclined front panel disposed in front of said light emitting means and at least partly composed of translucent material to permit light to pass therethrough from said light emitting

means, said frame means including mounting means having at least one generally triangularly-shaped member connected fixedly along one of its edges to an adjoining edge of said front panel with the planes of said panel and said member being disposed at an acute angle to enable said apparatus to fit into the corner space and to position said front panel at an incline relative to said member to effectively close off said corner space, said member being adapted to overlie one of said surfaces, said mounting means having means defining at least one fastening member receiving opening therein to



facilitate the mounting of said apparatus to at least one of said surfaces, said mounting member being a generally triangularly shaped side flange adapted to engage in overlying relationship one of said vertical surfaces, an oppositely disposed second generally triangularly shaped side flange being adapted to engage in overlying relationship the other one of said vertical surfaces, said fastening member receiving opening including a C-shaped rearwardly-facing open slot, means defining a second fastening member receiving opening, said second opening including a C-shaped rearwardly-facing open slot.

4,352,152

HIGH SPEED NON-SATURATING INVERTER

Stephen H. Smith, Playa del Rey, Calif., assignor to Hybricon Inc., North Hollywood, Calif.

Filed Jan. 11, 1980, Ser. No. 111,259
Int. Cl.[3] H02M *1/12*
U.S. Cl. 363—41 17 Claims

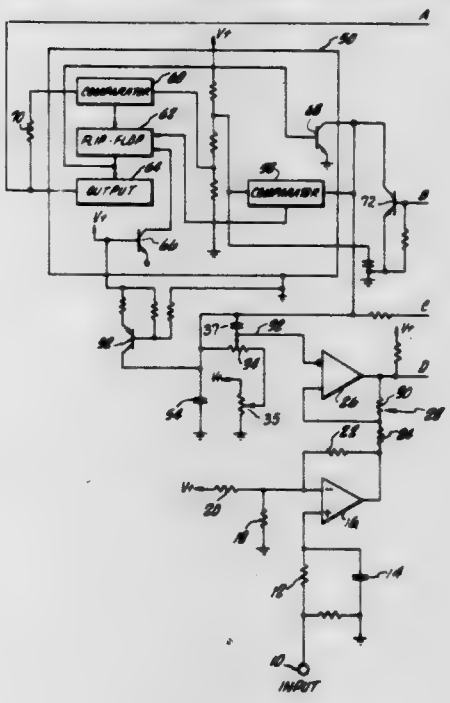
1. Apparatus for generating a variable duty cycle pulse train comprising

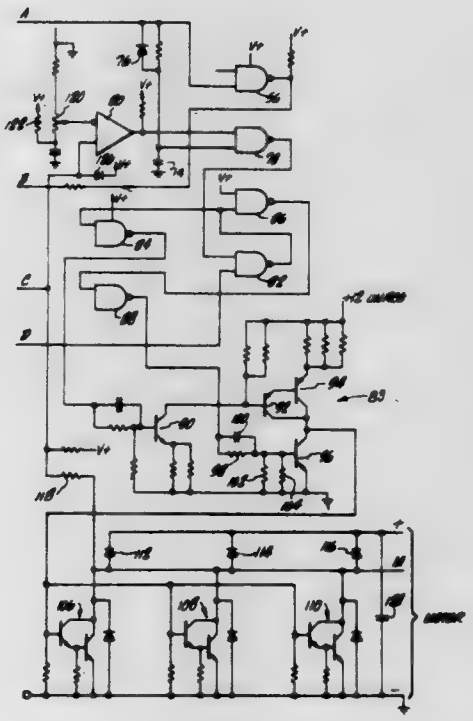
means adapted to receive a control signal,

sawtooth generator means for supplying a sawtooth waveform,

first amplifier means responsive to said control signal for establishing a reference voltage in accordance with the amplitude of said control signal, and

open loop amplifier means responsive to said reference voltage and said sawtooth generator means for generating a train of pulses, the value of said reference voltage establishing the duty cycle of said pulse train, said open loop amplifier means including means for providing positive





feedback of a substantially smaller amplitude than the amplitude of the output of said open loop amplifier means.

4,352,153

REGULATED CONVERTER WITH VOLT-BALANCING CONTROL CIRCUIT

Joseph L. Voyer, Longwood, Fla., assignor to NCR Corporation, Dayton, Ohio

Filed Mar. 11, 1981, Ser. No. 242,519
Int. Cl.[3] H02P *13/22*
U.S. Cl. 363—56 15 Claims

1. In a power supply comprising an input circuit, an output circuit, first and second switching means driving opposite sides of the input windings of an output transformer when enabled, means for generating pulse-width modulated control signals for enabling said switching means comprising:

first means for generating a first digital value representing the change in level of the output circuit;

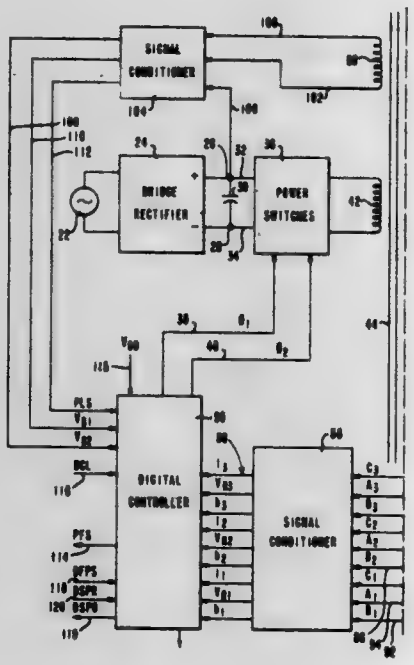
means for sensing the output level of said first and second switching means;

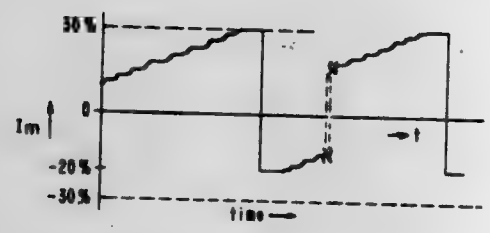
second means for generating first and second control signals

upon the output level of said first and second switching means reaching a first threshold level;

adding means connected to said first generating means for receiving said first digital values;

logic means connected to said adding means to output a second digital value in response to the generation of said





first and second control signal enabling said adding means to add said first and second digital values to produce a third digital value;

and means connected to said adding means for converting the third digital value to a pulse-width modulated control signal for changing the output level of said first and second switching means.

4,352,154

VARYING TWO PHASE VOLTAGES IN DC TO THREE PHASE CONVERTER

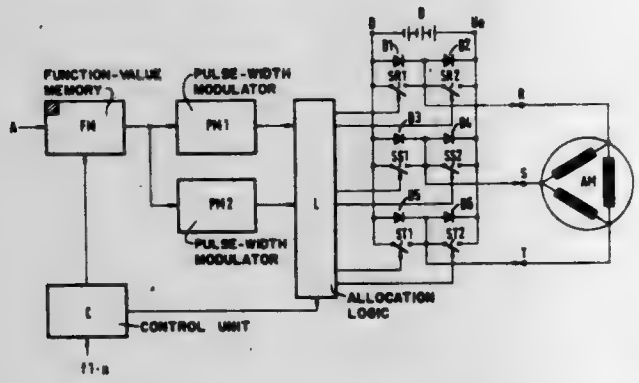
Hans Reiber, Stuttgart, Fed. Rep. of Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Feb. 26, 1981, Ser. No. 238,335

Claims priority, application Fed. Rep. of Germany, Feb. 29, 1980, 3007629

Int. Cl.³ H02M *7/44*

U.S. Cl. 363—123 **12 Claims**



1. A method of controlling the generation of three-phase alternating current flowing, with a one-third period shift between the phases, between two terminals of a DC source which are at different voltage levels, comprising, during each one-sixth of the period, the steps of:

maintaining a respective one of the three phases at a respective one of the voltage levels; and

varying the voltages of the respective remaining two phases in substantially sinusoidal waveforms with a shift of 60 electrical degrees therebetween,

such that, in the course of the respective period, the voltage of the respective phase remains at the lower level for one-sixth, then sinusoidally rises for the next two-sixths, then remains at the higher level for the next one-sixth, and finally sinusoidally decreases for the next two-sixths of the period.

4,352,155

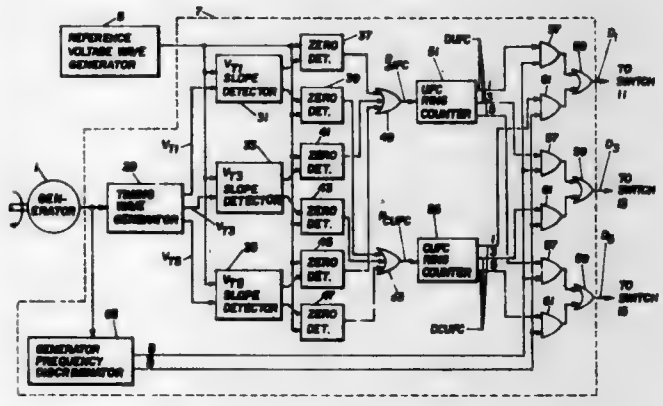
VARIABLE SPEED CONSTANT FREQUENCY POWER CONVERTER WITH TWO MODES OF OPERATION

Laszlo Gyugyi, Penn Hills, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 14, 1981, Ser. No. 292,975

Int. Cl.³ H02M *5/275*

U.S. Cl. 363—163 **14 Claims**



9. A frequency changer for synthesizing an output line, an output waveform of a desired substantially constant frequency from segments of a multiphase input waveform of varying frequency comprising,

a bidirectional switch connected between each phase of the input waveform and the output line;

means for determining the frequency of the multiphase input waveform;

means for generating timing waveforms phase locked to each phase of the input waveform;

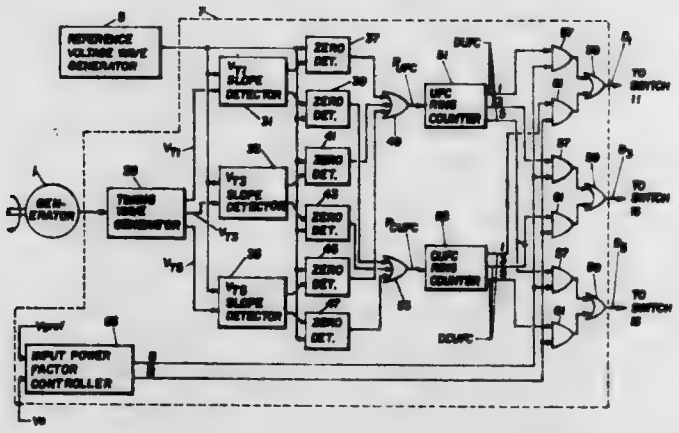
means for generating a reference waveform at a frequency equal to the fundamental frequency of the desired output waveform;

control means responsive to said timing waveform generating means, said frequency determining means and said reference waveform generating means for sequentially turning on said bidirectional switches, while the frequency of said input waveform is equal to or less than a preselected frequency, at instants when the reference waveform is equal in amplitude to a timing waveform but opposite in slope and for sequentially turning on said switches, while the frequency of said input waveform is greater than the preselected frequency, at instants when the reference waveform is equal in amplitude and has a slope of the same sense as a timing waveform.

4,352,156
AC TO AC POWER CONVERTER WITH A CONTROLLABLE POWER FACTOR

Laszlo Gyugyi, Penn Hills, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 14, 1981, Ser. No. 293,045
Int. Cl.[3] H02M 5/22
U.S. Cl. 363—163 14 Claims



9. A frequency changer for generating on an output line an output waveform of one frequency, from a multiphase input waveform of another frequency, and for controlling the power factor of the input waveform, said frequency changer comprising:

a bidirectional switch connected between each phase of a multiphase input waveform and the output line,

a timing wave generator for generating a set of timing waveforms phase locked to each phase of the input waveform,

a reference waveform generator for generating a reference waveform having a frequency equal to that of the fundamental component of the output waveform,

first switching control means which when enabled turn on the bidirectional switches sequentially one at a time at instants when the reference waveform is equal in amplitude but opposite in slope to one of the timing waveforms such that the power factor of the input waveform is opposite to that of the output waveform generated thereby;

second switching control means which when enabled turn on the bidirectional switches sequentially one at a time at instants when the reference waveform is equal in amplitude to, and has a slope of the same sense as, each of the timing waveforms, such that the power factor of the input waveform is the same as that of the output waveform generated thereby;

means for repetitively generating timing intervals having a frequency which is higher than the frequency of the input waveform; and

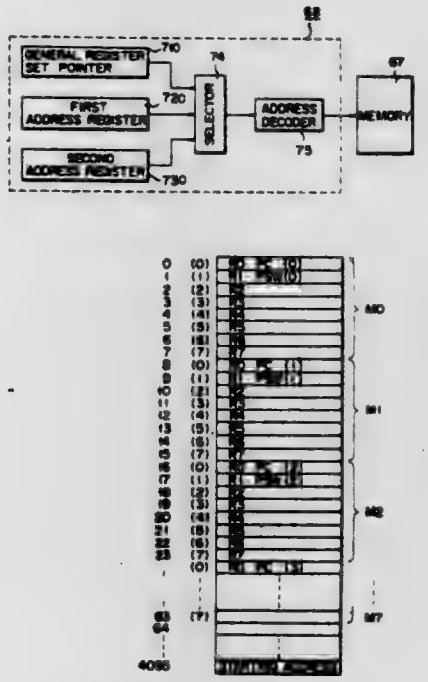
means for enabling one switching control means and then the other during each interval, with the relative proportion of each interval in which each switching control is enabled being selected to provide the selected input power factor.

4,352,157
DATA-PROCESSING APPARATUS HAVING IMPROVED INTERRUPT HANDLING PROCESSOR

Keiji Namimoto, Yokohama; Seiji Eguchi, Kawasaki, and Yutaka Murao, Tokyo, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Japan

Continuation of Ser. No. 907,856, May 19, 1978, Pat. No. 4,217,638. This application Feb. 4, 1980, Ser. No. 118,316
Claims priority, application Japan, May 19, 1977, 52-57100; May 19, 1977, 52-57101; May 19, 1977, 52-57102
The portion of the term of this patent subsequent to Aug. 12, 1997, has been disclaimed.
Int. Cl.[3] G06F 9/18, 13/00
U.S. Cl. 364—200 4 Claims

1. A data processing apparatus comprising a central processing unit formed in a single IC chip for comparing data, arithmetically processing data and branching data, said central processing unit including a memory including a plurality of addressable memory locations, and at least two general register sets, each of said general register sets comprising a plurality of associated general registers for storing a program counter, a program status word, and data, and a general register set pointer for designating any of said general register sets, each of

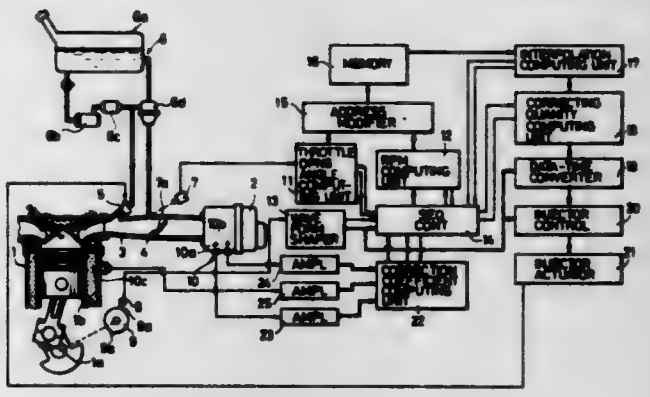


said general registers of each of said general register sets having a first address to be designated when said general register set pointer designates said associated general register set and a second address to designate a memory location used as a work area when said general register set pointer designates the other of said general register sets, said general register sets including at least one common general register for storing data associated with either of said general register sets, and means for addressing said common general register to store data therein.

4,352,158
ENGINE FUEL SUPPLY CONTROLLING SYSTEM

Tasuku Date, Tokyo; Toshio Nomura, Niiza, and Isao Kobayashi, Tokyo, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 28, 1980, Ser. No. 134,811
Claims priority, application Japan, Apr. 2, 1979, 54-38394
Int. Cl.[3] F02M 51/00; F02D 5/02
U.S. Cl. 364—431.05 6 Claims



1. An engine controlling system comprising:

a plurality of sensors for detecting the engine operating conditions,

a memory storing the digital values of predetermined fuel injection quantities depending upon two parameters which are derived from the outputs of two of said sensors

and represent throttle valve position and engine rpm at storage locations that are addressed by said two parameters,

means responsive to said parameters for addressing said memory to read out of said memory the digital fuel injection quantity based on said two parameters,

means for obtaining corrected fuel injection quantity from said read-out fuel injection quantity multiplied by a coefficient associated with at least one further parameter detected by said sensors, and

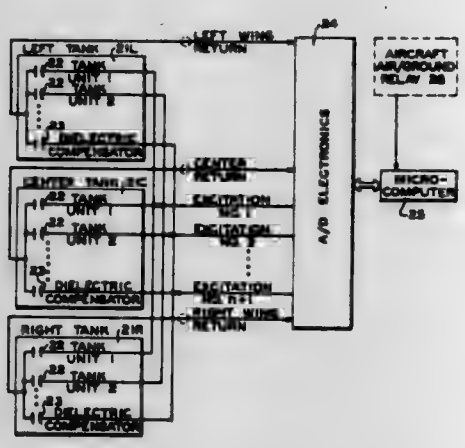
means for controlling the engine by using the corrected controlling quantity, the predetermined fuel injection quantities being stored in said memory with small variations within the range of engine operation corresponding to small values of throttle opening, but being stored in said memory with significantly greater variations in that range of operations where there are larger values of throttle opening.

4,352,159

LIQUID GAGING SYSTEM LOST SENSOR RECOVERY

Dwight D. Colby, Roseville, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed May 14, 1980, Ser. No. 149,773
Int. Cl.³ G01F *23/00*
U.S. Cl. 364—509 **11 Claims**



1. In a liquid gaging system wherein a value related to a liquid quantity in a tank is determined by the system based on signals from a plurality of sensors, the accuracy of the value being dependent upon the validity of the signals from the sensors, an apparatus for reducing error in the value introduced by an incapacitated sensor, comprising:

the plurality of sensors, each sensor providing a liquid measurement signal relating to a liquid depth at a particular location in the tank;

means for selectively monitoring the liquid measurement signal of each individual sensor, the means for selectively monitoring being connected to the sensors;

means for identifying at least one sister sensor corresponding to each sensor; and

means for determining an estimated liquid depth corresponding to the incapacitated sensor by using the liquid measurement signal of the at least one sister sensor corresponding to the incapacitated sensor and for determining the value based on the liquid measurement signals and the estimated liquid depth, the means for determining being connected to the means for selectively monitoring and the means for identifying;

whereby the value has less error associated with it than if an invalid liquid measurement signal from the incapacitated sensor were used to determine the value.

4,352,160

STATISTICAL METHOD OF MEASURING THE DIFFERENTIAL LINEARITY OF AN ANALOG/DIGITAL CONVERTER USING A PSEUDO-RANDOM TRIANGLE WAVE STIMULUS

John W. Frech, Baltimore, Md., and Lonnie C. Au, Fort Wayne, Ind., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jan. 21, 1980, Ser. No. 113,890
Int. Cl.³ G06F *15/20*; G01R *15/12*
U.S. Cl. 364—553 **1 Claim**



1. The method of measuring the differential linearity of an analog/digital converter having an input and an output and a transfer characteristic represented by n coded steps, n being an integer, said method comprising the steps of

generating a triangle waveform stimulus signal having a uniform amplitude probability density function and a pseudo random periodicity, the frequency of said triangle waveform stimulus signal having a relationship to the analog/digital sampling rate that permits equal sampling at all points along the analog/digital converter, said frequency being not less than 5 Hz nor more than 20 MHz, the repeat period of said pseudo random stimulus signal being substantially longer than the test period of said analog/digital converter, the amplitude of said triangle waveform stimulus signal being less than the analog/digital input signal voltage range, and the analog/digital converter D.C. being shifted to measure the linearity of a given portion of the analog/digital converter transfer characteristics,

applying said signal to the input of said analog/digital converter,

counting the number of times the output code word for each transfer characteristic step occurs, each step size being a function of the number of times its code word occurs,

recording a list of all transfer characteristic step sizes,

recording transfer characteristic step sizes that fall within discrete analog/digital converter step size windows, and

recording D.C. locations for all values within any analog/-digital step size window.

4,352,161

ELECTRONIC CALCULATOR CAPABLE OF DEALING WITH VARIABLES

Reiji Hirano, Yokohama, and Shinichi Nakata, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 34,207, Apr. 27, 1979, abandoned, which is a continuation of Ser. No. 841,293, Oct. 12, 1977, abandoned. This application Feb. 12, 1981, Ser. No. 233,883
Claims priority, application Japan, Oct. 25, 1976, 51-128057
Int. Cl.³ G06F *15/06*
U.S. Cl. 364—706 **5 Claims**

1. An electronic calculator comprising:

keyboard means having numeric keys for entering numerical informtion and instruction keys for entering instruction information;

program memory means connected to said keyboard means for storing instruction information;

second memory means connected to said keyboard means for storing a value in the form of numerical information;

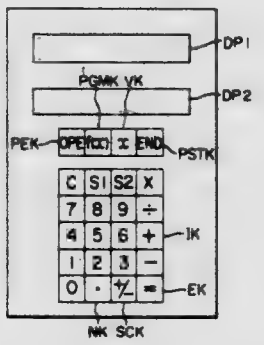
first display means connected to said second memory means for displaying said value;

first processing means connected to said second memory means and said program memory means for processing said value in accordance with the instruction information stored in said program memory means to obtain a result;

third memory means connected to said first processing means for storing said result;

second display means connected to said third memory means for displaying said result; and

second processing means connected to said second memory means, said third memory means and said keyboard means



for selectably processing either said result or said value in accordance with instruction information entered by way of said keyboard to obtain either a modified result or a modified value and for storing said modified result or said modified value, as the case may be, in said second memory means.

4,352,162

DIGITAL FILTER

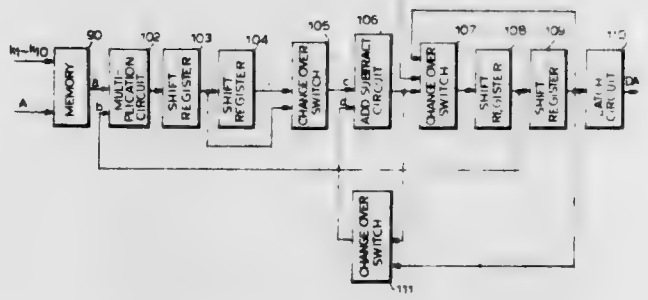
Tomoaki Nyuji, Hirakata; Itaru Kawasaki, Minoo; Masahiro Noguchi, Hirakata, and Masahide Tsukamoto, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 24, 1980, Ser. No. 162,614

Claims priority, application Japan, Jun. 25, 1979, 54-80603; Jan. 18, 1980, 55-4855

Int. Cl.³ G06F *15/34*; G10L *1/00*

U.S. Cl. 364—724 **6 Claims**



1. A digital filter for responding to digital exciting signals and a plurality of digital values representing filter coefficients, comprising a memory means for storing a plurality of digital values representing filter coefficients, a multiplication circuit having a first input which is connected to an output from said memory means, a first delay circuit means which is connected to an output from said multiplication circuit, a first intermittently operating delay circuit means which is connected to an output from said first delay circuit means, a first change-over switch means for selectively changing over from either said output from said first delay circuit means or an output from said first intermittently operating delay circuit means, an addition-subtraction circuit having a first input which is connected to an output from said firsrt change-over switch means, a second delay circuit means which has an output which is connected to a second input of said multiplication circuit, a second intermittently operating delay circuit means which is connected to an output from said second delay circuit means, a second change-over switch means for selectively changing over from either an output of said addition-subtraction circuit or an output of said second intermittently operating delay circuit means and for outputting same as a second input for said addition-subtraction circuit, a third change-over switch for selectively changing over from either an output from said addition-subtraction circuit or an output from said second intermittently operating delay circuit means and for outputting same as an input for said second delay circuit means, and a latch means for temporarily storing a data output from said second intermittently operating delay circuit means.

4,352,163

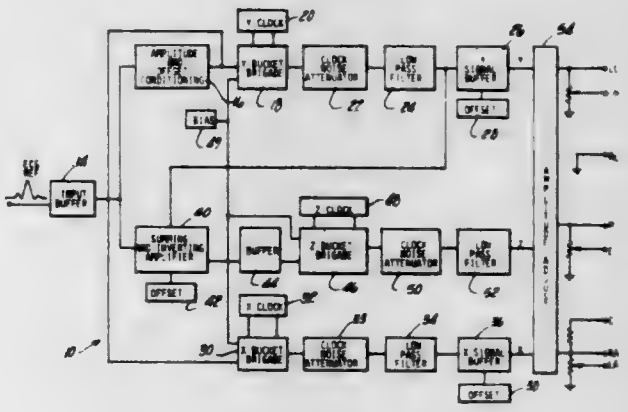
VECTORCARDIOGRAM SIMULATOR

Edward R. Schultz, Jr.; Kenneth J. Cook, both of Troy; Joseph S. Power, Fraser, and Frederick B. Ruszala, Sterling Heights, all of Mich., assignors to The Valeron Corporation, Troy, Mich.

Filed Nov. 9, 1979, Ser. No. 93,085

Int. Cl.³ G06G *7/48*

U.S. Cl. 364—801 **22 Claims**



1. An electronic waveform simulator for generating simulated waveforms for testing the operability of a vectorcardiogram machine, said device comprising:

reference means for providing a reference simulated electrocardiogram waveform;

X waveform generator means for generating a waveform simulating an X-axis vectorcardiogram waveform, said X waveform generator means including a first electronic bucket brigade having an input coupled for receipt of said reference waveform, operative to delay the generation of said reference waveform at an output of the first electronic bucket brigade for a first given time period;

Y waveform generator means for generating a waveform generally simulating a Y-axis vectorcardiogram waveform and having an input coupled for receipt of said reference waveform;

Z waveform generator means for generating a waveform generally simulating a Z-axis vectorcardiogram waveform and having an input coupled for receipt of said reference waveform; and

connector means selectively coupled to the X, Y and Z waveform generator means, operative to supply output signals to a vectorcardiogram machine corresponding to waveforms ordinarily supplied by a plurality of electrodes attached to a live patient at various positions.

4,352,164

DATA RECORDING METHOD AND APPARATUS

Alan C. Reed, Salt Lake City, and John H. Sherwood, Bountiful, both of Utah, assignors to Utility Devices, Inc., Salt Lake City, Utah

Continuation-in-part of Ser. No. 872,648, Jan. 26, 1978, which is a continuation of Ser. No. 755,846, Dec. 30, 1976, abandoned, which is a continuation of Ser. No. 592,057, Jun. 30, 1975, abandoned. This application Sep. 24, 1979, Ser. No. 78,439

The portion of the term of this patent subsequent to Sep. 25, 1996, has been disclaimed.

Int. Cl.³ G06F *3/14*

U.S. Cl. 364—900 **16 Claims**

1. A portable electronic recording apparatus for recording

the data displayed on each of a plurality of designated utility meters, wherein said meters are positioned at a plurality of different locations and each of said meters has a unique identification number, the recording apparatus comprising:

a solid state memory means for storing meter location, meter identification and meter data therein;

first means for writing into selected locations of said memory, in sequence, the meter location information of each of a plurality of meters and the meter identification of each of said plurality of meters;

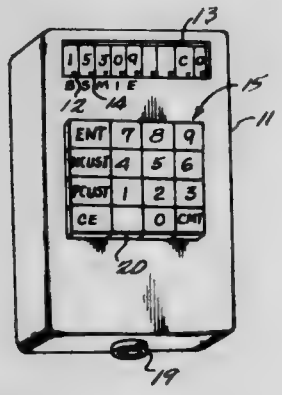
a temporary memory for temporarily storing said meter data as said meter data is keyed into said recording apparatus;

a keyboard means for introducing said meter data for each of said meters into said temporary memory;

comparator means for comparing said temporarily stored meter data with at least one preselected limit;

second means for writing said meter data into an address meter data storage location in said solid state memory means if said meter data is within at least one predetermined limit;

means for generating time data related to the time said meter data are written into said solid state memory means;



means for writing said time data into said solid state memory means;

selective means in said keyboard means for erasing the meter data in said temporary memory location if said meter data is outside said at least one preselected limit;

a display means for visually displaying in sequence for each meter, the meter location, the meter identification and the meter data keyed into said memory means;

means for addressing said memory means for coupling the information in the address memory location to said display means; and

means for advancing said addressing means after said meter location information is displayed to the memory location of at least one meter identification number corresponding to said location, said addressing means being responsive to said advancing means to address a meter data storage location after said meter identification number has been displayed, said addressing means being responsive to said advancing means for addressing the next meter location after said meter data has been stored in said addressed memory location.

4,352,165

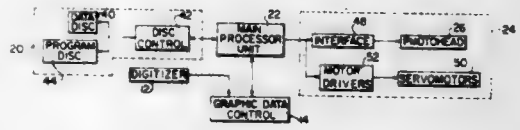
APPARATUS FOR STORING AND RETRIEVING DATA

Charles M. Hevenor, Jr., Bolton, Conn., assignor to The Gerber Scientific Instrument Company, South Windsor, Conn.

Filed Dec. 17, 1979, Ser. No. 104,196
Int. Cl.³ G06F *13/04, 3/06*
U.S. Cl. 364—900 **9 Claims**

1. In a system for processing data defining a graphic workpiece and having a main processing unit controlling the processing of the data between a source and an output device for the data, an improved random access data storage and retrieval apparatus for storing and retrieving workpiece data comprising:

data memory means connected with the main processor unit for storing the data processed through said unit and including a data entry file in a storage medium having a plurality of physically distributed memory locations for storing data defining the workpiece, the memory locations in the file being divided geometrically into groups of contiguous locations, each group having a memory address corresponding to one of a plurality of defined geometric zones of the workpiece for entry of data from said defined zone and no other zone; and



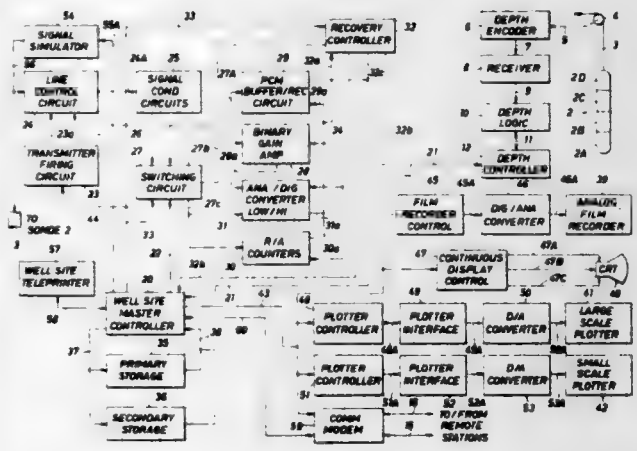
means for directly storing and retrieving data from the zones of the workpiece randomly in the corresponding groups of memory locations by means of has memory addresses, the data associated with a defined zone being stored in the entry file exclusively in the corresponding group of memory locations.

4,352,166

SYSTEM AND METHOD FOR VISUAL DISPLAY OF WELL-LOGGING DATA

Larry G. Schoonover, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 949,592, Oct. 10, 1978. This application Oct. 12, 1979, Ser. No. 84,401
Int. Cl.³ G01V *1/40*
U.S. Cl. 367—69 **11 Claims**



1. A method of investigating the character of subsurface earth materials traversed by a borehole, comprising

deriving a plurality of well-logging measurements of said earth materials at selected locations along the length of said borehole,

deriving and storing recordable measurements of first and second selected lithological characteristics of said materials at said locations on a real-time basis as a function of at least one of said plurality of well-logging measurements, and

displaying and recording a visible representation of said first and second characteristics and said character of subsurface materials defined by a difference between said first and second characteristics, wherein said displaying step

further comprises retrieving said measurement of said first characteristic,

generating a first sequence of digital 0's having a first total number corresponding to said measurement of said first characteristic

storing a 2-dimensional lithological matrix pattern of digital 1's and 0's corresponding to said character of subsurface materials,

retrieving said measurement of said second characteristic,

retrieving at least a portion of one line of said matrix pattern,

generating a second sequence of digital 1's and 0's from said portion having a second total number corresponding to the difference between said measurement of said second and said first characteristics,

generating a third sequence of digital 0's having a third total number corresponding to the difference between a preselected total and the sum of said first and second total numbers, and

displaying in sequence a visible representation of said first, second and third sequences.

4,352,167

METHOD OF LOCATING SOUND GENERATION WITHIN ENCLOSURE

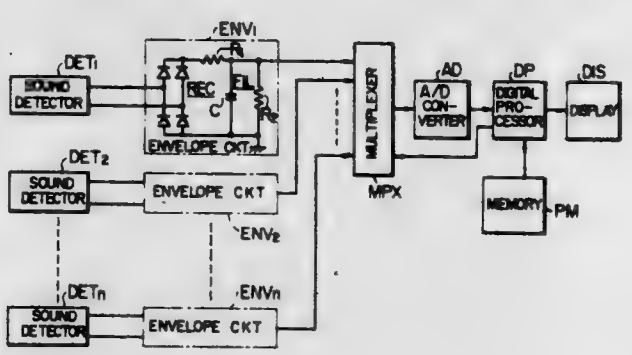
Yuuji Hashimoto, Hiroshima; Izumi Kobayashi, Higashikurume; Mitsuo Suzuki, Yokohama; Kimio Yamada, Hitachi; Shigeru Izumi, Tokyo, and Yoshihiro Michiguchi, Ibaraki, all of Japan, assignors to The Chubu Electric Power Co., Inc.; The Chugoku Electric Power Co., Inc.; The Tokyo Electric Power Co., Inc. and Hitachi, Ltd., all of Tokyo, Japan

Filed Mar. 12, 1980, Ser. No. 129,559

Claims priority, application Japan, Sep. 14, 1979, 54-118306

Int. Cl.³ G01S *5/18*

U.S. Cl. 367—127 **15 Claims**



1. A method of determining a location at which a sound signal is produced in an object to be monitored in respect of generation of said sound signal, comprising steps of providing a plurality of detectors at a corresponding number of portions of said object each for detecting propagation of sound, determining relative peak values and time differences among detection signals available from said detectors, and comparing combinations of said relative peak values and said time differences with combinations of relative peak values and the time differences which are previously measured for said object, to thereby determine the location at which the sound signal is produced.

4,352,168

DIVER'S BOTTOM TIMER/DEPTH GAUGE OR THE LIKE AND DIRECT DIGITAL INPUT AND TRACKING SYSTEM THEREFOR

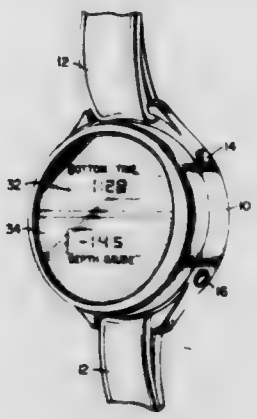
Robert D. Anderson, 3936 Hendrix St., Irvine, Calif. 92714

Filed Apr. 14, 1980, Ser. No. 139,741

Int. Cl.³ G04B *47/00*; G01L *7/20*; G08C *9/00*

U.S. Cl. 368—10 **6 Claims**

1. A direct digital input and tracking system for converting mechanical movement input into a predetermined digital input for a microprocessor or the like comprising: a plurality of movable contacts in a predetermined arrangement, said contacts being moved in response to a sensed condition such as variation in ambient pressure; and a patterned array of coded, binary input lines located beneath said contacts, one binary line for each said contact, said binary lines being connected to a microprocessor or computer in preplanned fashion, whereby the sensed condition is directly converted into binary signals



without need of any analog to digital conversion means, said sensed condition being variation in ambient pressure, said system further comprising a pressure sensitive bellows assembly having a fixed end and an opposite end linearly movable in response to said sensed condition, said movable contacts being fixed to said bellows movable end, said binary input lines being arranged in linear fashion beneath said movable contacts.

4,352,169

ELECTRONIC TIMEPIECE

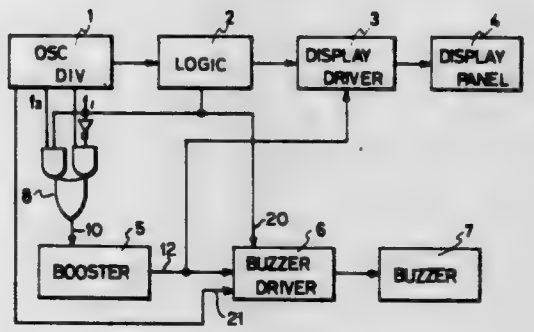
Kazuhiro Asano, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Japan

Filed Aug. 11, 1978, Ser. No. 933,094

Claims priority, application Japan, Sep. 1, 1977, 52-105079

Int. Cl.³ G04B *23/02*; G04C *3/00*; G08B *3/00*

U.S. Cl. 368—73 **5 Claims**



1. An electronic timepiece, comprising: an oscillator circuit for generating a plurality of oscillatory output signals; means comprising a logic circuit for generating a buzzer control signal to control buzzer operation and for generating output signals representative of time; display means responsive to the output signals of said logic circuit for displaying time; a buzzer comprised of a piezoelectric element; a buzzer driving circuit for applying an oscillatory driving signal to drive said piezoelectric element; a voltage booster circuit comprising voltage boosting means for boosting a supply voltage applied to said voltage boosting means and for applying an oscillatory driving signal having an amplitude equal to the boosted voltage to said buzzer driving circuit, and said voltage boosting means having an output current capacity dependent upon the frequency of an oscillatory input signal applied thereto; signal selection means responsive to said buzzer control signal for selecting among different frequency oscillatory output signals generated by said oscillator circuit and for applying a selected signal of one frequency to said voltage booster circuit when said buzzer is to be inoperative and for applying another selected signal of a

different frequency to said voltage booster circuit when said buzzer is to operate and which is effective to increase the output current capacity of said voltage booster circuit during buzzer operation.

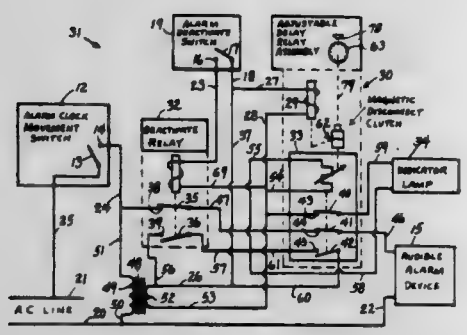
4,352,170

ALARM DEACTIVATION SYSTEM EMPLOYING TIMED MANUAL SWITCH OPERATION

Milton W. Jetter, 301 G St., SW., Washington, D.C. 20024

Filed Dec. 22, 1980, Ser. No. 218,519
Int. Cl.³ G04C *21/00*
U.S. Cl. 368—73 **7 Claims**





1. In an alarm clock system, alarm sounding means, movement-actuated switch means, alarm circuit means to normally energize the alarm sounding means responsive to operation of said movement-actuated switch means, normally-open alarm deactivate switch means in the clock, circuit means including the deactivate switch means to immediately open and to hold said alarm circuit means open responsive to the initial and continued operation of said alarm deactivate switch means, whereby said alarm sounding means is immediately deenergized, means to operate said alarm deactivate switch means responsive to the manual exertion of positive upward force by the user on at least a portion of the clock, and means to latch the alarm sounding means in a deenergized state responsive to the continuous exertion of said positive manual upward force for a predetermined period of time, visible indicating means, means to energize said visible indicating means continuously during said predetermined period of time, and means to deenergize said indicating means and remove its indication at the termination of said period to inform the user that said positive upward force can be discontinued.

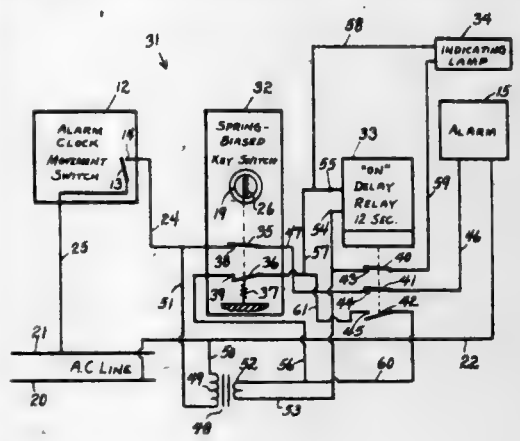
4,352,171

CLOCK ALARM-DEACTIVATING SYSTEM

Milton W. Jetter, 800 4th St., SW., Washington, D.C. 20024

Filed Jun. 26, 1980, Ser. No. 163,397
Int. Cl.³ G04C *21/00*
U.S. Cl. 368—73 **5 Claims**

1. In an alarm clock system, clock movement-actuated alarm-activating means, alarm sounding means, and circuit means to energize the alarm sounding means responsive to operation of said movement-actuated means, said circuit means including normally-closed key-controlled turn-off switch means having a removable key, said key being manually insertable at times in the turn-off switch means for operating said turn-off switch means to open condition, means to latch the key-controlled switch means in open condition, means to provide a predetermined time delay period during which the key must be held by the user after insertion to keep the switch means open between the initial operation of said key-controlled switch means and said latched-open condition, said alarm sounding means being deenergized immediately responsive to the manual operation of said key-controlled turn-off switch means and being maintained deenergized while the



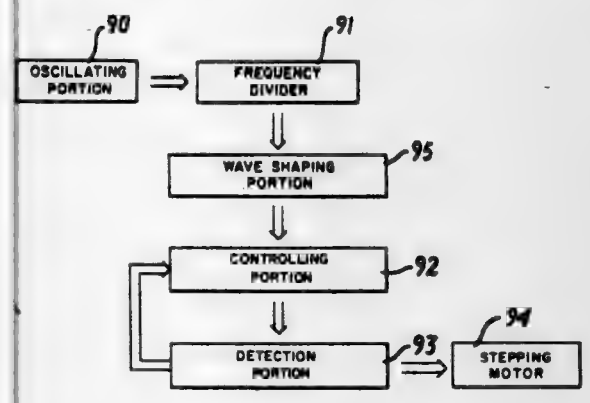
turn-off switch means is manually continuously held open during said time delay period, visual indicating means, and circuit means to provide display by said visual indicating means during said time delay period and to turn off said indicating means at the end of said time delay period.

4,352,172

DETECTION DEVICE OF ELECTRONIC TIMEPIECE

Makoto Ueda; Akira Torisawa; Shuji Otawa; Masaaki Mandai; Masaharu Shida, and Katsuhiko Sato, all of Tokyo, Japan, assignors to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed Apr. 28, 1980, Ser. No. 144,662
Claims priority, application Japan, May 4, 1979, 54-54862
Int. Cl.³ G05B *19/40;* G04B *19/00;* G04F *5/00*
U.S. Cl. 368—76 **12 Claims**



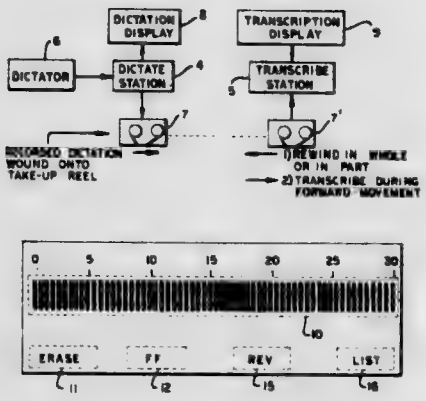
1. In an electronic timepiece having a stepping motor comprised of a stator, rotor and coil; means for generating and applying driving pulses to the coil to effect stepwise rotation of the rotor; magnetic field detecting means operable when enabled for detecting the presence of an external alternating magnetic field, said magnetic field detecting means comprising a first loop comprised of a first impedance element and said coil; rotation detecting means operable when enabled for detecting rotation and non-rotation of the rotor, said rotation detecting means comprising said first loop and a second loop comprised of a second impedance element and said coil; and circuit means for enabling said magnetic field detecting means by switching said coil from an open-circuit condition to said first loop and for enabling said rotation detecting means by alternately switching between said first and second loops.

4,352,173

DICTATION DISPLAY DEVICE

Theodore Titus, IV, Tucker, and Julius B. Bagley, Atlanta, both of Ga., assignors to Lanier Business Products, Inc., Atlanta, Ga.

Filed Apr. 9, 1979, Ser. No. 27,990
Int. Cl.[3] G11B *27/34*
U.S. Cl. 369—27 12 Claims



7. In a system for transcribing dictation recorded on a recording medium as said recording medium was moved in a first direction relative to a transducer;

motion means for moving said recording medium in said first direction and in a second direction opposite to said first direction;

transcribing means for transcribing said dictation as said recording medium is moved in said first direction;

a display array;

first display means for providing a first display moving from a particular end of said display array having a length proportional to the length of said recording medium moved in said second direction in response to said recording medium being moved in said second direction; and

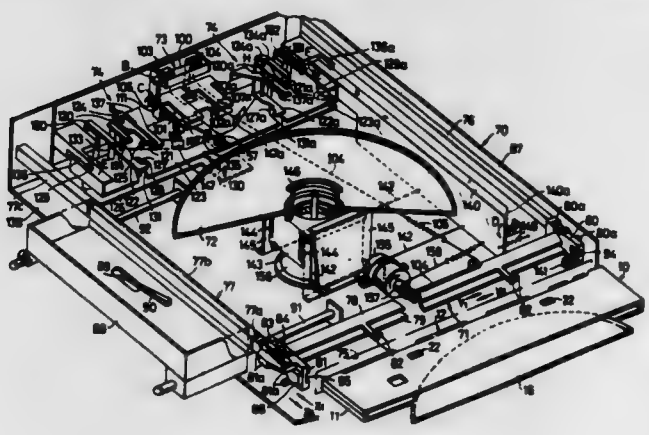
second display means response to said recording medium being moved in said first direction subsequent to being moved in said second direction for providing a second display superimposed on said first display and moving from said particular end of said display array having a length proportional to the length of said recording medium subsequently moved in said first direction.

4,352,174

DISC-SHAPED RECORDING MEDIUM REPRODUCING APPARATUS

Osamu Tajima, Kanagawa; Takashi Yamamura, Yokohama; Masafumi Mochizuki, Yamato, and Yoichi Mita, Tokyo, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Feb. 5, 1981, Ser. No. 231,868
Claims priority, application Japan, Feb. 7, 1980, 55-14221
Int. Cl.[3] G11B *3/00;* H04N *5/76*
U.S. Cl. 369—77 8 Claims



1. A reproducing apparatus for reproducing a disc-shaped recording medium which is accommodated within a case, said case comprising a jacket which has a space for accommodating said disc-shaped recording medium and an opening for allowing said disc-shaped recording medium to go in and out of said jacket, and a lid plate inserted through said opening of said jacket for closing said opening of said jacket, said lid plate having cutouts and ride-over parts,

said reproducing apparatus comprising:

an inserting opening through which said case is inserted;

a turntable for rotating said disc-shaped recording medium;

lid plate locking means and disc-shaped recording medium clamping means respectively provided at the innermost part of said reproducing apparatus opposite to said inserting opening with respect to said turntable; and

jacket opening enlarging means provided in the vicinity of said inserting opening, capable of moving over said turntable between the position in the vicinity of said inserting opening and said innermost part of said reproducing apparatus,

said jacket opening enlarging means having an enlarging member for enlarging said opening of said jacket by entering inside said cutouts of said lid plate, upon insertion of said jacket into said reproducing apparatus through said inserting opening,

said lid plate locking means having a locking member for locking said lid plate by entering inside said cutouts of said lid plate, upon insertion of said lid plate into the innermost part of said reproducing apparatus together with said jacket,

said disc-shaped recording medium clamping means having a clamping member for clamping said disc-shaped recording medium within said jacket by riding over said ride-over part of said lid plate and entering through the enlarged opening of said jacket, upon insertion of said lid plate into said innermost part of said reproducing apparatus together with said jacket, and

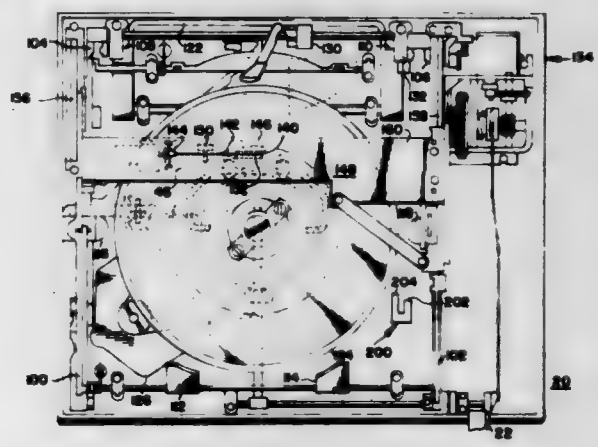
said jacket being pulled out in an empty state leaving behind said lid plate locked by said lid plate locking means and said disc-shaped recording medium clamped by said disc-shaped recording medium clamping means, when said jacket is pulled out from within said reproducing apparatus in a direction opposite to the direction of the insertion.

4,352,175

VIDEO DISC PLAYER HAVING RECORD SIDE IDENTIFYING APPARATUS

Horatio N. Crooks, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Jun. 19, 1981, Ser. No. 276,691
Int. Cl.[3] G11B *17/04*
U.S. Cl. 369—77 15 Claims



1. In a player for use with a disc record enclosed in a protective caddy such that the respective sides of said record are associated with the corresponding sides of said caddy; said caddy being subject to insertion along a path into said player

through an input slot to load an enclosed record therein; a record side identifying apparatus comprising:

(A) a pair of independently-operated actuating members disposed in said player in said caddy insertion path; said actuating members being located such that they are operated respectively in a given and a reverse sequence depending upon which side of said caddy is uppermost during a caddy insertion; and

(B) means responsive to the sequence of operation of said actuating members for providing an indication of the record side subject to play.

4,352,176

ELECTROMAGNETIC PICKUP CARTRIDGE

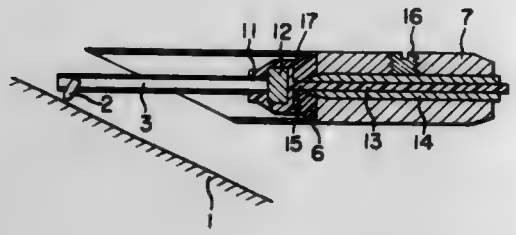
Masashi Itoh, Settsu, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 16, 1980, Ser. No. 216,868

Claims priority, application Japan, Dec. 19, 1979, 54/165875; Feb. 6, 1980, 55/14601[U]

Int. Cl.³ H04R *11/12*

U.S. Cl. 369—170 **5 Claims**



1. An electromagnetic pickup cartridge having a vibration system wherein the vibration system comprises: a flat centerholeless armature symmetrical about its centerline and having opposite first and second major surfaces; a cantilever extended perpendicularly from the center of the first major surface of said flat armature provided with a stylus tip near the free end; an armature holder made of a high molecular weight resin molded to cover all the surfaces of the armature and the end of the cantilever adjacent the first major surface of the armature; a suspension thread, integral with the armature holder, extends perpendicularly to the center of the second major surface of said flat armature; a damper made of elastic material in contact with the armature holder, said armature holder being maintained in contact with the damper by means of the suspension thread extending through the damper and a sleeve.

4,352,177

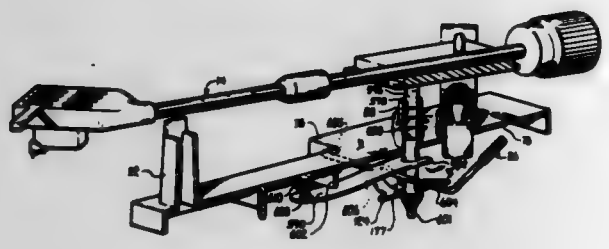
AUTOMATIC RECORD PLAYER

James T. Dennis, P.O. Box 15100, Oklahoma City, Okla. 73155, and George Kolomayets, Chicago, Ill., assignors to James T. Dennis, Oklahoma City, Okla.

Division of Ser. No. 9,254, Feb. 5, 1979, Pat. No. 4,291,886, which is a continuation of Ser. No. 813,225, Jul. 5, 1977, abandoned. This application Dec. 1, 1980, Ser. No. 211,859

Int. Cl.³ G11B *3/10*

U.S. Cl. 369—246 **7 Claims**



1. A phonograph record player mechanism which includes a tone arm, means for mounting the tone arm for rotation about an axis, a cueing lever lift rod for causing movement of said arm by engagement therewith at a point spaced from the said axis, dash pot means associated with said lift rod for opposing motion thereof, a generally flat spring having one end thereof connected to the lift rod and the other end thereof secured to the mechanism chassis, means defining a fixed shoulder in engagement with one side of the spring which faces said tone arm, and a cueing lever which is rotatable about a substantially horizontal axis and has a portion which engages said spring in an area between the lift rod and the said shoulder and raises said area by physical engagement therewith when the cueing lever is rotated about the said horizontal axis.

4,352,178

CARTRIDGE EQUALIZER

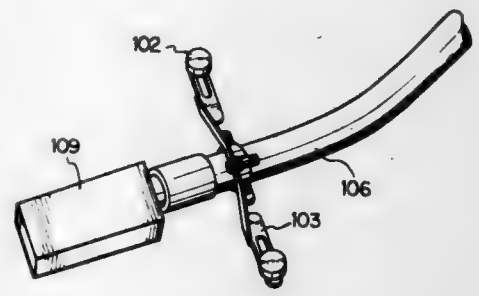
Masaki Kitamura, No. 9-22, 1-chome, Higashi, Okegawashi, Saitama, Japan; Naoki Saisu, Kitamotoshi, and Shigeo Koide, Higashimurayamashi, both of Japan, assignors to Masaki Kitamura, Saitama, Japan

Filed May 14, 1980, Ser. No. 149,831

Claims priority, application Japan, May 17, 1979, 54-66036[U]

Int. Cl.³ G11B *3/16*

U.S. Cl. 369—252 **3 Claims**



1. A cartridge equalizer adapted to be added onto a tone arm comprising:

a crossing rod having a wing section-shape including a central portion, two intermediate portions extending diagonally downward from said central portion and two end portions which extend respectively from the downwardmost portions of said intermediate portions;

respective counterweights mounted on respective ones of said end portions of said crossing rod;

means to adjust the position of each of said counterweights on its respective end portion of said crossing rod;

a ring-shaped fitting at said central portion of said crossing rod for fastening the equalizer to a tone arm;

and said ring-shaped fitting comprising means to permit it to be removably fastened to a tone arm at any selected location on said tone arm including positions close to a cartridge mounted on the end of an associated tone arm, said ring-shaped fitting defining a plane substantially perpendicular to the axis of said tone arm;

said ring-shaped fitting removable fastening means comprising a pair of half fittings one of which is secured to said crossing rod central portion and the other of which is a mating separate piece, said fitting halves defining a shape snuggly mating to the cross-sectional shape of a tone arm on which the equalizer is to be fastened, securing means for fastening said separate piece half fitting to the mating half fitting on said central portion with the tone arm sandwiched therebetween;

said crossing rod being formed of thin plate material consisting of a light weight alloy;

the planes of said diagonally extending portions of said crossing rod being substantially parallel to said ring-shaped fitting plane and the planes of said end portions of said crossing rod being substantially at right angles to said ring-shaped fitting plane;

whereby said counterweights can be adjusted towards and away from said tone arm axis individually, and

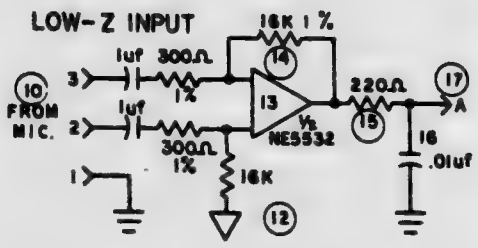
whereby the entire cartridge equalizer can be adjusted on said tone arm with respect to said cartridge with the use of said ring-shaped fitting with no modification whatsoever to said tone arm.

4,352,179

TIME DOMAIN MULTIPLEXING APPARATUS FOR MULTIPLE MICROPHONES

James H. Dabney, 2700 Peterson Way, Apt. 45 "B", Costa Mesa, Calif. 92626

Filed Jul. 9, 1979, Ser. No. 55,612
Int. Cl.[3] H04J *3/02*
U.S. Cl. 370—6 12 Claims



1. A time domain multiplexer for feeding an analogue signal input from a plurality of signal sources along a transmission line, comprising:

a. a multiplexer connected by a channel line to each signal source for channel-to-channel switching at switching speeds of about 1.5–2.3×10^6 times/second to produce a sample train from the separate channel signals and convert the analog signals to sample pulses at an individual sample rate of about 225 KHz–275 KHz;

b. blanking generator means for producing a time delay of about 100–200 ns between successive sample pulses to prevent sample pulse overlap, thereby reducing cross talk;

c. means to superimpose a synchronizing pulse at the end of each complete sample cycle;

d. a counter for driving the multiplexer and a demultiplexer;

e. a clock generator for producing a clock signal superimposed on the sample cycle and for driving the counters and blanking generator, each sample cycle being identified by a clock signal and synchronizing pulse;

f. means for amplifying and driving the synchronizing pulse, clock signal and sample pulse along the transmission line; and,

g. a demultiplexer for converting the sample pulses to continuous and discrete analog signals, the demultiplexer being driven by decoders for the synchronizing pulses and clock signal pulses.

4,352,180

DIGITAL TIME-DIVISION MULTIPLEX TELECOMMUNICATION SYSTEM

Elmar Schulze, No. 7, Wermuthweg, 1000 Berlin 47, Fed. Rep. of Germany

Filed Apr. 21, 1980, Ser. No. 141,850
Claims priority, application Fed. Rep. of Germany, Apr. 27, 1979, 2917675
Int. Cl.[3] H04J *3/00*
U.S. Cl. 370—58 9 Claims

1. A digital time-division multiplex telecommunication system comprising:

(a) a plurality of subscriber stations,

(b) a plurality of standarized branching nodes,

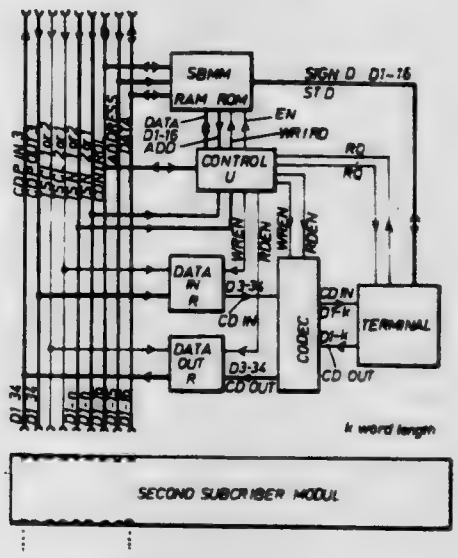
(c) a plurality of two-wire bidirectional transmission lines,

(d) means for providing a plurality of fully synchronized time-division multiplex communication channels on said transmission lines,

(e) means for coupling each of said branching nodes to at least two of said transmission lines, and

(f) means for coupling said subscriber stations to said branching nodes;

(g) said branching nodes comprising:



(1) means for establishing a connection in at least one of said channels between a calling subscriber station and a called subscriber station, and

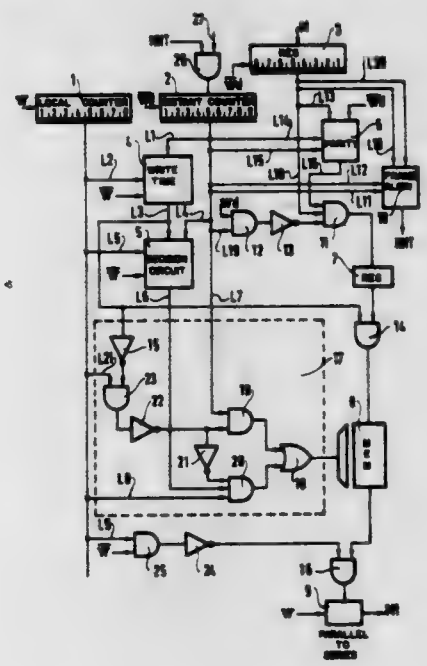
(2) means for controlling establishing said connection whereby said connection occupies said channel only on said transmission lines between said calling station and said called station.

4,352,181

DEVICE FOR SYNCHRONISING MULTIPLEX LINES IN A TIME-DIVISION EXCHANGE

Bernard Le Dieu, Perros Guirec, and Jean-Rene Herledan, Lannion, both of France, assignors to Compagnie Industrielle des Telecommunications CIT-ALCATEL, Paris, France

Filed May 5, 1980, Ser. No. 146,852
Claims priority, application France, May 3, 1979, 79 11094
Int. Cl.[3] H04J *3/06*
U.S. Cl. 370—105 6 Claims



1. A device for synchronising multiplex lines in a time-division exchange, the multiplex lines conveying PCM encoded signals arranged in time slots grouped into frames, the device comprising:

a local counter with a counting capacity equal to the number of bits in a frame, controlled by a local clock signal;

a distant counter with a counting capacity equal to the sum

of the number of bits of two distant frames, controlled by an inverted distant clock signal representative of timing of said conveyed encoded signals;

an input register;

a parallel register connected to the output of the input register and receiving data in parallel from said input register;

an output register;

a memory with a storage capacity of two distant frames with its input connected to the output of said parallel register through a write AND gate and its output connected to the output register through a read AND gate;

an addressing circuit for memory write and read operations, having its input connected to the local counter which outputs the read addresses and to the distant counter which outputs the write addresses, the addressing circuit output being connected to a memory addressing control input;

a write time select circuit for selecting write times and having an input connected to the local counter and to the distant counter and an output connected to the memory addressing circuit and to said write AND gate;

a decision circuit for detecting any relative shift in the values output by the local and distant counters of less than a predetermined value, the decision circuit responding by imposing readout of a second frame in memory, said decision circuit having its input connected to the local counter, to the distant counter and to the output of the write time select circuit, and having an output connected to an input of the memory addressing circuit; and

a frame alignment circuit for detecting and checking an identification code known as the multiplex frame alignment word and for initialising the distance counter on detection of the frame alignment word, the frame alignment circuit having an input connected to the distant counter and the input register and an output connected to the input of the distant counter.

4,352,182

METHOD OF AND DEVICE FOR TESTING THE QUALITY OF DIGITAL SPEECH-TRANSMISSION EQUIPMENT

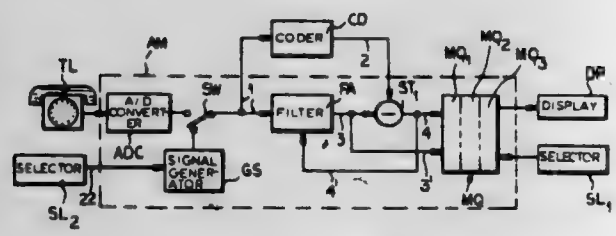
Roberto Billi, Leghorn, and Carlo Scagliola, Genoa, both of Italy, assignors to Cselt - Centro Studi e Laboratori Telecomunicazioni S.p.A., Turin, Italy

Filed Dec. 12, 1980, Ser. No. 215,796

Claims priority, application Italy, Dec. 14, 1979, 69404 A/79

Int. Cl.³ G01R *27/00*

U.S. Cl. 371—22 **13 Claims**



1. A method of testing the quality of digital speech-transmission equipment, comprising the steps of:

generating a first test signal consisting of a sequence of digital samples;

transmitting said first test signal to said equipment and to an adaptive transversal filter;

modifying samples of said first test signal in said filter by multiplication with weighting coefficients to produce a first corrected signal;

generating a first error signal formed as a difference between said first corrected signal and a first output signal emitted by said equipment in response to said test signal;

feeding said error signal back to said filter;

updating said coefficients in said filter with the aid of said error signal;

upon minimization of said error signal, storing the values of said coefficients last attained as a measure of the characteristics of the linear part of said equipment;

generating a second test signal consisting of a sequence of digital samples;

transmitting said second test signal to said equipment and to said filter;

weighting the samples of said second test signal with the stored values of said coefficients to form a second corrected signal;

generating a second error signal formed as a difference between said second corrected signal and a second output signal emitted by said equipment in response to said second test signal; and

calculating an indication of the transmission quality of said equipment from said second error signal and said second corrected signal.

4,352,183

INFORMATION TRANSMISSION SYSTEM

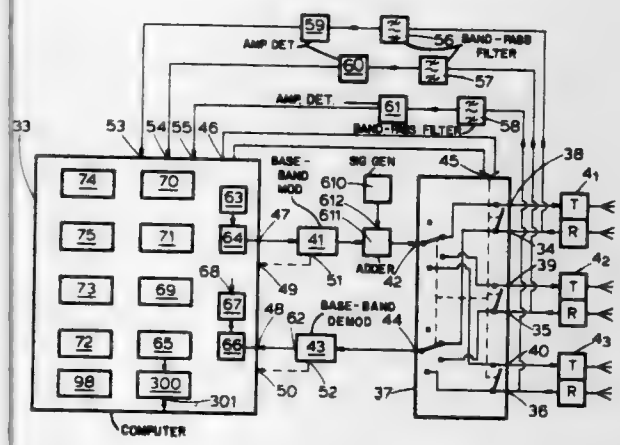
Christopher K. Davis, Crawley, and Richard F. Mitchell, Merstham, both of England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 29, 1980, Ser. No. 201,865

Claims priority, application United Kingdom, Sep. 11, 1979, 7938975; Mar. 13, 1980, 8008510

Int. Cl.³ G06F *11/10*

U.S. Cl. 371—33 **3 Claims**



1. An information transmission system having a first transmitter/receiver and a plurality of further transmitter/receivers which can each communicate with said first transmitter/-receiver over the same transmission channel or group of transmission channels, characterized in that said first transmitter/-receiver comprises:

means for detecting whether any of said channels are free;

means for transmitting on one of said free channels a sequence of identical command signals each having a limited duration, said command signals being separated one from the other by at least a predetermined number of time slots;

means for receiving on said free channel a digital information message from any one of said further transmitter/-receivers in each of said predetermined number of time slots;

means for checking said digital information message for errors and, if said digital information message is error-free, for transmitting back, on said free channel, an acknowledgement signal, for the further transmitter/receiver having transmitted said error-free digital information message, prior to the transmission of a next command signal in said sequence of command signals; and

means for assigning, after said sequence of command signals, one of said free channels to each of said further transmitter/receivers to which said acknowledgement signal had been transmitted, for further communication thereon; and characterized in that each of said further transmitter/-receivers comprises:

means for scanning said channels and for detecting the chan-

nel on which said first transmitter/receiver is transmitting said sequence of command signals;

means for transmitting on said channel said digital information message in one of said predetermined number of time slots, if communication on one of said free channels is desired;

means for detecting whether said first transmitter/receiver transmitted said acknowledgement signal in response to said digital information message;

means for retransmitting said digital information signal after a next command signal in said sequence of command signals if said acknowledgement signal is not received; and

means for effecting said communication on said free channel assigned by said first transmitter/receiver.

4,352,184

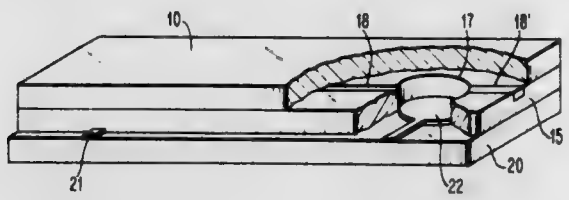
GAS LASER AND METHOD OF MANUFACTURING

Dudley A. Chance, Danbury, Conn., assignor to IBM Corporation, Armonk, N.Y.

Continuation of Ser. No. 737,375, Nov. 1, 1976. This application Aug. 3, 1978, Ser. No. 930,617

Int. Cl.[3] H01S *3/03*

U.S. Cl. 372—61 16 Claims



1. In a longitudinally excited gas laser, the improvement comprising a laser body including:

a plurality of communicating gas passages including a plasma tube,

at least a pair of electrodes and a pair of mirrors, said plasma tube located between said electrodes and colinear with said mirrors and wherein

said electrodes comprise metallized layers deposited on a portion of said body.

4,352,185

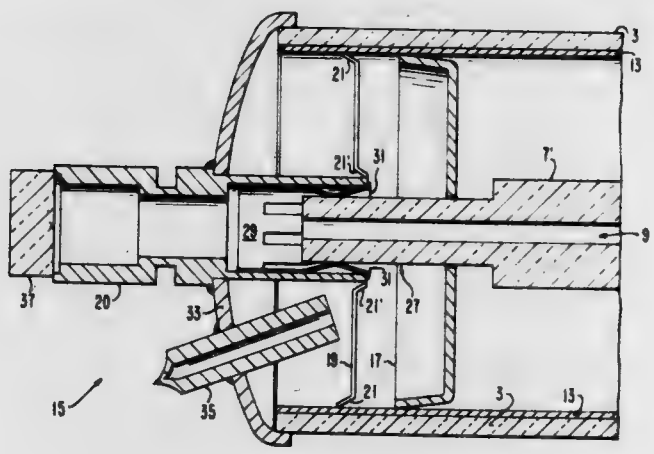
GAS LASER HAVING IMPROVED STABILITY AGAINST ENVIRONMENTAL CONDITIONS

Dale E. Crane, Sunnyvale, Calif., assignor to Uniphase Corporation, Mountain View, Calif.

Filed Jul. 18, 1980, Ser. No. 169,989

Int. Cl.[3] H01S *3/13*

U.S. Cl. 372—29 14 Claims



1. A gas laser, comprising a hermetically sealed elongated envelope enclosing a generally static gaseous medium capable of supporting stimulated emission of radiation in response to an electric field impressed upon said gaseous medium, electrode means to be energized with a potential difference, disposed spaced apart generally at opposite ends of said envelope to define therebetween an axis along which said electric field extends, a pair of mirrors spaced apart and facing each other along said axis to define therebetween an optical cavity, said mirrors being reflective at a pre-selected wavelength at which said gaseous medium is capable of supporting said stimulated emission of radiation, and a metallic thermally conductive liner means having a significantly greater thermal conductivity than said envelope in good thermally conducting relation with the full inner surface of said envelope over a major portion of the length of said envelope between said mirrors to substantially equalize the temperature of said envelope portion.

4,352,186

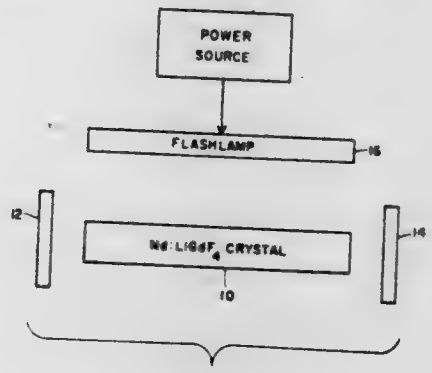
LASER CRYSTAL

John D. Kuppenheimer, Jr., Tewksbury, Mass., and James W. Baer, Nashua, N.H., assignors to Sanders Associates, Inc., Nashua, N.H.

Filed Mar. 13, 1980, Ser. No. 129,945

Int. Cl.[3] H01S *3/14*

U.S. Cl. 372—41 2 Claims



1. A crystal, comprising:

a Lithium Gadolinium Fluoride host material; and active ions of Neodymium wherein the concentration of Neodymium ions is higher than four percent.

4,352,187

SEMICONDUCTOR LASER DIODE

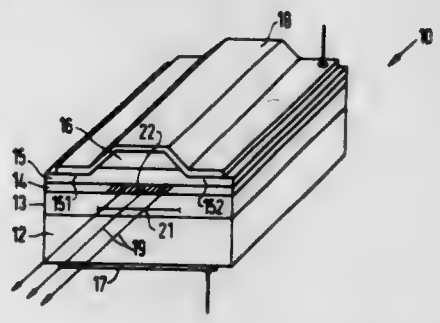
Markus C. Amann, Strassbergerstrasse 9/506c, 8000 Muenchen 40, Fed. Rep. of Germany

Filed Dec. 19, 1979, Ser. No. 105,126

Claims priority, application Fed. Rep. of Germany, Dec. 28, 1978, 2856507

Int. Cl.[3] H01S *3/19*

U.S. Cl. 372—46 7 Claims



1. A semiconductor laser diode, comprising: a layer sequence of a chromium/gold metal electrode layer connecting to a first electrode terminal, a first highly-doped semiconductor layer of first conductivity type and formed of gallium arsenide, a second semiconductor layer of first conductivity type having a lesser doping than the first layer and formed of gallium aluminum arsenide, a gallium arsenide third semiconductor layer in which a strip shaped laser active zone is to be formed, a fourth semiconductor layer of gallium aluminum arsenide of second conductivity type, and a second electrode

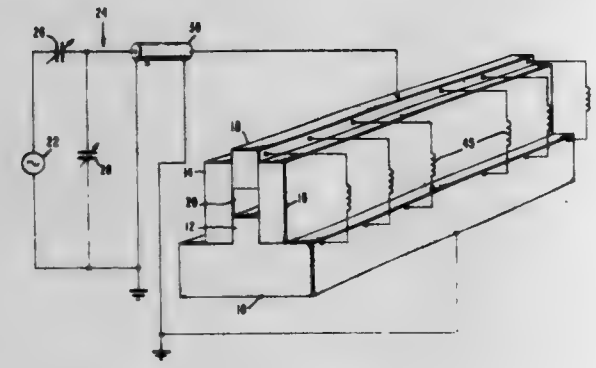
terminal coupled to the fourth semiconductor layer; a resonant cavity means comprised of said strip-shaped laser active zone; and second lesser doped semiconductor layer having a doping level such that the layer forms a junction having a high resistance with the chromium/gold alloy relative to a junction resistance formed between the first layer and the alloy when a voltage is applied to the first and second electrode terminals; the first semiconductor layer having a lateral width dimension orthogonal to a direction of laser propagation chosen to be substantially the same as a desired width of the desired strip-shaped laser-active zone to be formed in the third semiconductor layer; the second semiconductor layer having a substantial part of its thickness removed at regions beyond said lateral width dimension of the first layer and portions of the metal electrode layer being extended to cover the regions; and the reduced thickness region and the width of the first semiconductor layer defining a resultant lateral dimension of the laser active zone when the voltage is applied to the first and second terminals so as to achieve a preferred laser excitation in a basic transversal mode.

4,352,188

RF PUMPED WAVEGUIDE LASER WITH INDUCTIVE LOADING FOR ENHANCING DISCHARGE UNIFORMITY

Glen A. Griffith, Redondo Beach, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Jul. 3, 1980, Ser. No. 165,524
Int. Cl.[3] H01S *3/093*
U.S. Cl. 372—82 5 Claims



1. A waveguide laser comprising:

means defining an elongated chamber of cross-sectional dimensions suitable for guiding laser light and including first and second elongated electrically conductive elements disposed parallel to one another on opposite sides of said chamber;

a laser gas contained in said chamber;

means for generating an alternating excitation voltage at a frequency of not less than about 30 MHz and for applying said excitation voltage between said first and second electrically conductive elements to establish a laser-exciting discharge in said laser gas so as to invert the population of the energy levels of the desired laser transition of said gas, said excitation voltage providing in said chamber a standing wave voltage which varies in magnitude along the length of said chamber; and

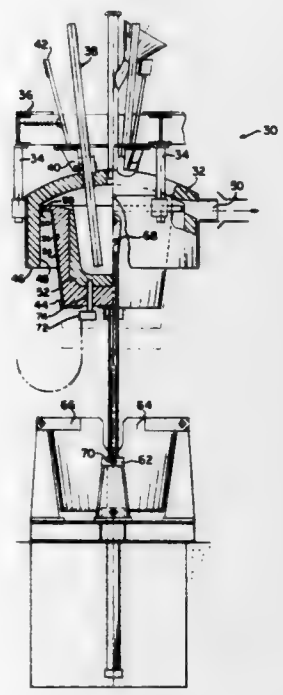
inductive means coupled between said first and second electrically conductive elements externally of said chamber for reducing the magnitude of the variation of said standing wave voltage.

4,352,189

ATMOSPHERE CONTROL OF SLAG MELTING FURNACE

Patrick J. Wooding, Moorestown, N.J., assignor to Wooding Corporation, Moorestown, N.J.

Continuation-in-part of Ser. No. 773,263, Mar. 1, 1977. This application Oct. 11, 1979, Ser. No. 83,585
The portion of the term of this patent subsequent to May 13, 1997, has been disclaimed.
Int. Cl.[3] F27D *7/06*
U.S. Cl. 373—45 30 Claims



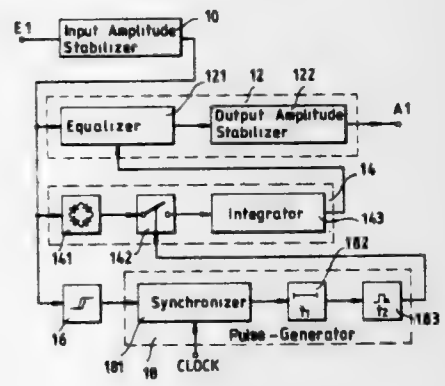
1. An electric furnace for melting slag comprising a crucible including an electrically conductive refractory liner therein; at least one electrode extending into the interior of said crucible; means for sealing the interior of said crucible from the outside atmosphere; means for removing detrimental gases from within said crucible, and means for connecting said liner to an electrical power source whereby said liner will function as an electrode.

4,352,190

DEVICE FOR AUTOMATIC EQUALIZATION OF ELECTRICAL DATA TRANSMISSION CHANNELS

Josef Hullwegen, Altenbeken, Fed. Rep. of Germany, assignor to Nixdorf Computer AG, Paderborn, Fed. Rep. of Germany

Filed Nov. 7, 1980, Ser. No. 205,037
Claims priority, application Fed. Rep. of Germany, Nov. 9, 1979, 2945332
Int. Cl.[3] H04L *25/03;* H03K *5/135*
U.S. Cl. 375—14 7 Claims



1. A device for the automatic equalization of an electrical data signal of the type having zero level transitions comprising:

an equalizer unit having an input connected to receive said

data signal, an output for said data signal after equalization, and a control input for receiving a regulating signal;

a regulating signal generator having an input connected to receive the data signal and comprising a rectifier unit, an integrator having an input, an output, and an integration time corresponding to a multiple of the basic interval between zero level transitions of the data signal, and a switch connected in series between the rectifier and the integrator input and adapted to be controlled by a clock signal for periodic, transient feeding of the rectified data signal to the integrator;

a clock signal generator having an input connected to receive the data signal and responsive thereto to produce a clock signal output synchronized with the ideal points in time of said zero level transitions;

said clock signal output being connected to the switch to control said periodic, transient feeding;

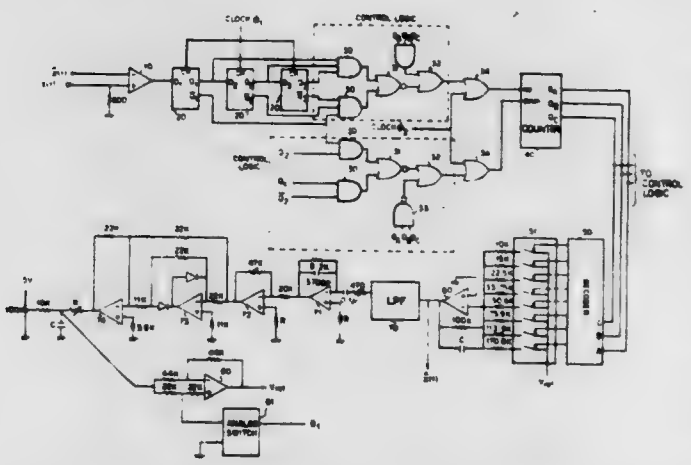
the integrator output being connected to the control input of the equalizer unit.

4,352,191

HYBRID COMPANDING DELTA MODULATION SYSTEM

Chong K. Un, Apt. E-1 San 4-51 Hoeki-dong, Dongdaemun-ku, Seoul, Rep. of Korea

Filed May 19, 1980, Ser. No. 151,330
Int. Cl.³ H03K *13/22*
U.S. Cl. 375—30 **17 Claims**



1. A hybrid companding delta modulation system comprising:

a. a comparator for comparing a system input signal and a predicted signal and for generating digital output signals sampled in accordance with a clock signal;

b. an instantaneous compandor coupled to said comparator and including a plurality of flip-flops for storing a present output signal and two previous signals, a control logic means coupled to said flip-flops for comparing the present output and two previous signals, an up or down counter coupled to and controlled by said logic means in accordance with a predetermined control logic to produce up or down logic levels, and a decoder coupled to said counter;

c. voltage means forming part of said instantaneous compandor for generating voltage steps and controlled by said decoder;

d. a syllabic compandor including means for measuring a characteristic of the system input signal and for generating a reference voltage, thereby to control the voltage step size of said voltage means; and

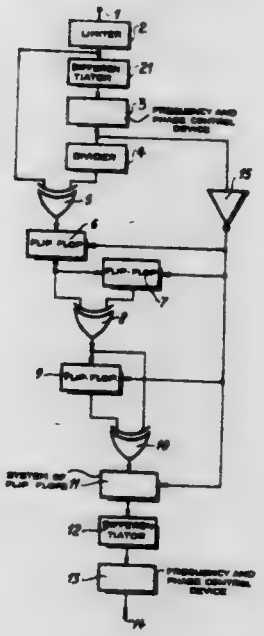
e. a prediction filter coupled between said voltage means and said comparator for supplying the predicted signal varying both in accordance with the slope variations of the system input signal and said control logic means output in accordance with variations of the system input signal.

4,352,192

TIMING SIGNAL SYNCHRONIZATION DEVICE

Andre Perez; Jean M. Boljevic, and Alain Dautremay, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed May 29, 1980, Ser. No. 154,305
Claims priority, application France, Jun. 1, 1979, 79 14181
Int. Cl.³ H04L *7/06*
U.S. Cl. 375—56 **3 Claims**



1. A device for synchronizing a local timing signal with respect to a first timing signal, whose frequency F_1 is the same as that at which groups of two data bits are transmitted by means of a differential phase-modulated frequency carrier F, F_1 being equal to (2F/3), comprising a carrier wave limiter having an output for supplying a first signal, a differentiating circuit having an input coupled to the output of the limiter and an output, a first frequency and phase control device for supplying a second timing signal whose frequency is equal to quadruple the carrier frequency F having an input coupled to the output of the differentiating circuit and an output, a frequency divider by four having an input coupled to the output of the first frequency and phase control device and an output for supplying a second signal, a device for detecting the phase change position of the carrier wave performing a correlation sequence from the first signal and the second signal having a first and a second input coupled respectively to the output of the divider and to the output of the limiter and an output for supplying pulses representative of the position of the phase jumps, and a second frequency and phase control device having an input coupled to the output of the detection device and an output for supplying a local controlled timing signal.

4,352,193

INTENDED VALUE DETERMINATION SYSTEM

William F. Acker, Seminole, Fla., assignor to Honeywell Inc., Minneapolis, Minn.

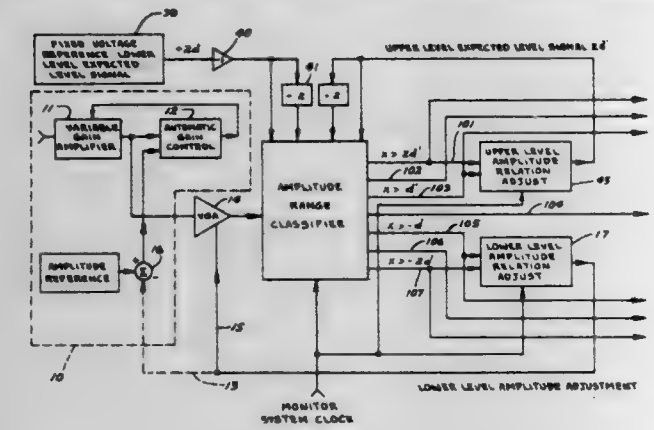
Continuation of Ser. No. 100,751, Dec. 5, 1979, abandoned, which is a division of Ser. No. 829,705, Sep. 1, 1977, Pat. No. 4,207,523. This application Nov. 24, 1980, Ser. No. 210,093
Int. Cl.³ H04B *1/10*
U.S. Cl. 375—76 **6 Claims**

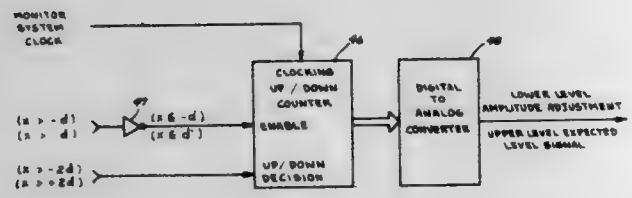
1. An expected signal level decision means to establish, for a corrupted incoming signal recognized as a sequence of data samples, that expected level signal which those said data samples within a selected range thereof are expected to substantially equal if said incoming signal were not so corrupted, said expected level decision means comprising:

an incoming signal amplitude range classifier for determining whether said data samples from said incoming signal are within certain amplitude ranges and having first and second classifier outputs, said incoming signal amplitude range classifier being capable of providing (i) as a first

classifier output signal an indication for each said data sample, at said first classifier output, whether that said data sample has a value that is within said selected range, and providing (ii) as a second classifier output signal an indication for each said data sample, at said second classifier output, whether that said data sample has a value above or below that of said expected level signal;

a counter means connected to both said first and second classifier outputs, and which has a counter means output, said counter means being capable of keeping count total therein and being capable of being enabled to alter said count total by said first classifier output signal and said counter means being capable of being directed whether to





increase or decrease said count total by said second classifier output signal, said counter means being capable of providing at said counter means output, as said counter means output signal, a signal having a value which indicates whatever count total has been reached in said counter means; and

an incoming signal-expected level adjustment means having an adjustment means input connected to said counter means output, said incoming signal-expected signal level adjustment means being capable of adjusting an amplitude relationship occurring between said incoming signal and said expected signal level in response to said counter means output signal.

4,352,194

SYSTEM AND METHOD FOR FREQUENCY DISCRIMINATION

Michael G. Caracappa, Haddonfield, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jul. 25, 1980, Ser. No. 172,214
Int. Cl.³ H04L *27/14*
U.S. Cl. 375—89 **12 Claims**

1. In a system employing N time synchronous tone segments which are sampled at a sampling rate $1/T_1$ and each having one of N predetermined frequencies, means for determining the frequency of each tone segment and comprising:

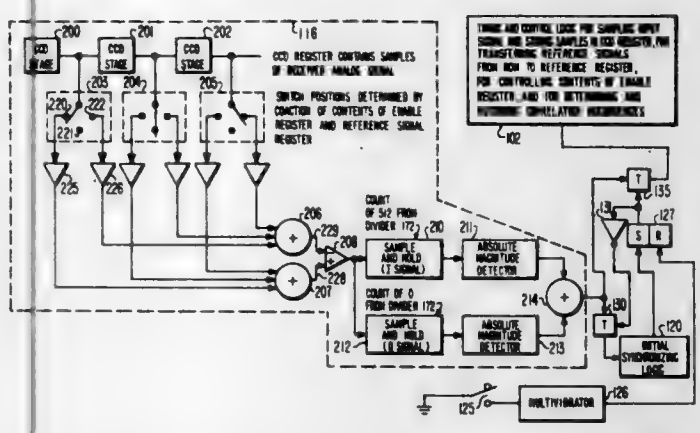
first shift register means having M stages;

second register means having at least M stages each being aligned with one of the M stages of said first shift register means;

means for sampling each received tone segment into P samples where $P<M$ and $M-P=L$, and for entering said P samples into said first shift register means;

means for generating 2N(I and Q) reference tones each being P bits in length and each having one of said N predetermined frequencies;

means for successively entering the P bits of said 2N(I and Q) reference tones into said second register means at a rate $R_2 \geqq 2MN/LT_1$ in successively displaced positions in said second register means so that each reference tone is aligned with the sampled received tone segment whose frequency is being determined; and



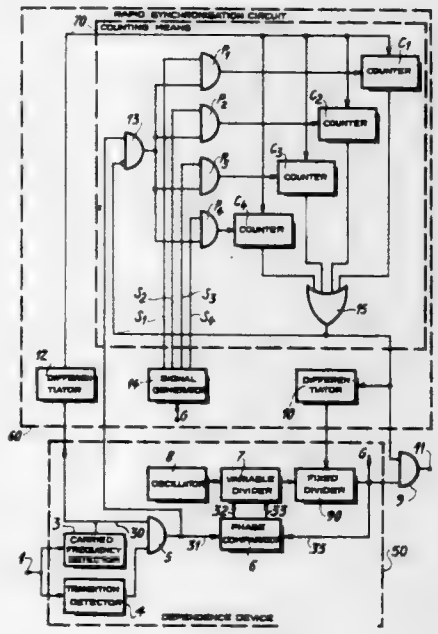
logic means for comparing the sampled tone segment with each reference tone to determine which reference tone correlates most closely with said sampled tone segment.

4,352,195

DEVICE FOR THE SYNCHRONIZATION OF A TIMING SIGNAL

Alain Dautremay, and Jean M. Boljevic, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed May 30, 1980, Ser. No. 154,955
Claims priority, application France, Jun. 1, 1979, 79 14178
Int. Cl.³ H03L *7/18*
U.S. Cl. 375—120 **4 Claims**



1. A device for the synchronization of a local timing signal with respect to a data signal, wherein it comprises: a dependence device incorporating a data signal transition detector having an output, a phase comparator for determining the position of the transitions relative to the rising front of the local timing signal and having an input coupled to the output of the detector and an output, and a local timing signal generator having in series an oscillator, a divider with a variable dividing number coupled to the oscillator and having a control input coupled to the output of the phase comparator, and a fixed divider, coupled to the divider having a variable dividing number and having an initiating input and an output, a rapid synchronization circuit comprising counting means for counting the number of coincidences of n successive transitions detected (n equals positive integer) with each of k separate time intervals (k equals positive integer) of the same duration,

dividing up the integrality of each local timing signal cycle and for supplying a pulse as from the time at which p coincidences with one of the k time intervals have been counted, having a signal input coupled to the output of the transition detector, an output coupled to the initiating input of the fixed divider and a counting control input coupled to the output of the fixed divider.

4,352,196

X-RAY TUBE FOR PRODUCING A FLAT WIDE-ANGLE FAN-SHAPED BEAM OF X-RAYS

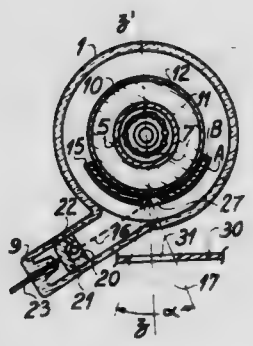
Emile Gabbay, Paris, France, assignor to Compagnie Generale de Radiologie, Paris, France

Continuation of Ser. No. 871,994, Jan. 24, 1978, abandoned. This application Oct. 9, 1979, Ser. No. 82,691

Claims priority, application France, Jan. 28, 1977, 77 02456

Int. Cl.³ H01J *35/04*

U.S. Cl. 378—125 **6 Claims**



1. In a radiodiagnostic apparatus, in combination:

an X-ray tube comprising a rotating anode with an X-ray-emissive cylindrical surface centered on an axis in a vacuum-tight envelope;

shield means in said envelope enshrouding at least part of said anode while closely paralleling said cylindrical surface, said shield means having an aperture confronting a target area of said cylindrical surface;

means in said envelope including a cathode offset from a radial line normal to said target area for generating an electron beam approaching said radial line;

electron-optical means for deflecting said beam through said aperture onto said target area whereby the latter emits X-radiation traversing said aperture; and

a diaphragm separated by said shield means from said cylindrical surface and disposed in a plane transverse to said axis including said radial line, said diaphragm having a slit in said transverse plane aligned with said aperture for letting said X-radiation spread within said plane into a fan-shaped beam adapted to illuminate an array of X-ray detectors.

4,352,197

MOUNTING DEVICE FOR AN X-RAY FILM CASSETTE

Hans Waerve, Sollentuna, Sweden, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Division of Ser. No. 16,293, Feb. 28, 1979, Pat. No. 4,247,778. This application Sep. 4, 1980, Ser. No. 183,944

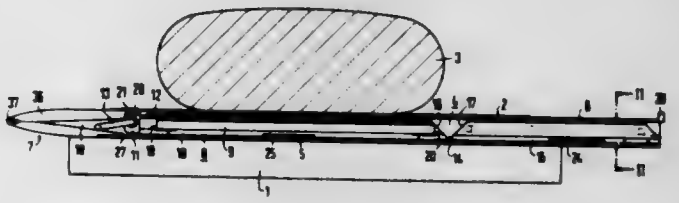
Claims priority, application Fed. Rep. of Germany, Mar. 17, 1978, 2811765

The portion of the term of this patent subsequent to Jan. 27, 1998, has been disclaimed.

Int. Cl.³ G03B *41/16*

U.S. Cl. 378—177 **3 Claims**

1. A cassette mounting assembly comprising a cassette mounting device (4) of configuration to be disposed in underlying relation to a patient, said cassette mounting device having a cassette chamber (8) into which an X-ray film cassette can be inserted; and said cassette chamber (8) being movable in said cassette mounting device (4) from a first position in underlying relation to a patient, to a second position displaced by about 90° with respect to said first position and disposed laterally of a patient while the cassette mounting device (4) remains in said underlying relation to the patient, said cassette mounting device (4) having an upper wall (6) of a material that is permeable to X-ray beams for underlying a patient to be examined and for overlying said cassette chamber (8) in said first position thereof, said cassette mounting device (4) consisting of components all of which lie essentially below the level of said upper wall (6) in said first position of said cassette chamber, and means comprising the disposition of said components essentially below the level of said upper wall (6) providing an unobstructed space above the level of said upper wall (6) over the entire extent of the cassette mounting device (4) when said cassette chamber is in said first position, said cassette mounting device having a laterally extending receiving space below said upper wall (6) accommodating said cassette chamber (8) in said



first position thereof, and providing for movement of the cassette chamber in a lateral direction, and having a lateral opening at one lateral side thereof leading from said receiving space and of a size to accomodate removal of the cassette chamber (8) from said first position and out of said receiving space, and hinge means for coupling said cassette chamber with said cassette mounting device at said one lateral side thereof such that when the cassette chamber has been moved out of said receiving space through said lateral opening said hinge means couples said cassette chamber with said cassette mounting device for pivotal movement through about 90° and into said second position with said cassette chamber extending upwardly from said lateral opening at one lateral side of a patient overlying said upper wall of said cassette mounting device, and said cassette mounting device having means comprising said hinge means for fixing said cassette chamber in said second position for the taking of a lateral X-ray photograph.

4,352,198

X-RAY PHOTOGRAPHY CASSETTE

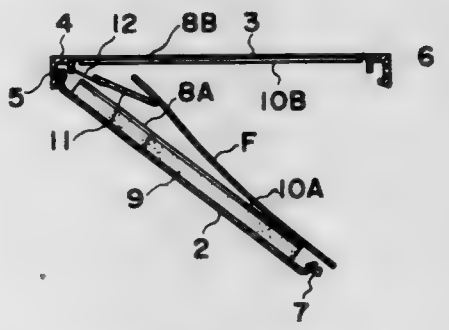
Osamu Fukushima; Masahide Akisada; Yoshiyuki Monma, all of Minami-ashigara, and Kazuaki Kitamura, Tokyo, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 25, 1980, Ser. No. 115,326

Claims priority, application Japan, Jan. 26, 1979, 54-8043

Int. Cl.³ G03D *41/16*

U.S. Cl. 378—185 **5 Claims**



1. An X-ray photography cassette comprising a cassette body including a frame and a front plate coupled to said frame, hinge members for coupling a rear cover to said body, first and second intensifying screens positioned adjacent inner surfaces of said front plate and said rear cover, respectively, a peeling member adapted to peel a film loaded in said cassette off said second intensifying screen, said peeling member being coupled

to said body at an inward point where said rear cover is hinged to said body in such a manner that said peeling member is in alignment with a cut-out portion formed in said second intensifying screen and is moved outward from said cut-out portion when said rear cover separates from said body to separate said film from said second intensifying screen, and a space being provided between said peeling member and said first intensifying screen for receiving said film to lie on said second intensifying screen.

4,352,199

METHOD AND DEVICE FOR DETECTING AND INTERPRETING A DISTRESS SIGNAL

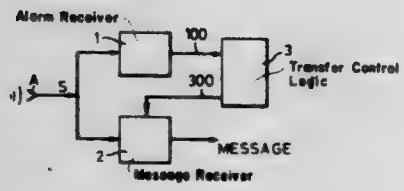
Roger Rogard, Verdistraat 16, 2162 AV - Lisse, Netherlands

PCT No. PCT/EP80/00003, § 371 Date Sep. 24, 1980, § 102(e) Date Sep. 24, 1980, PCT Pub. No. WO80/01631, PCT Pub. Date Aug. 7, 1980

PCT Filed Jan. 25, 1980, Ser. No. 205,447

Int. Cl.³ H04B *1/59*

U.S. Cl. 455—31 **5 Claims**



1. An emergency telecommunication process for producing a distress signal repeatedly transmitted from a mobile station in successive sequences and for detecting and interpreting the distress signal with a high reliability at a shore terminal, said process comprising the steps of:

transmitting in each sequence of the distress signal, an alarm signal during a first time interval and a message signal during a second time interval, said alarm signal being only comprised of a carrier phase-modulated by a sub-carrier and said message signal being comprised of a carrier which is phase-modulated by a sub-carrier to which the information is superimposed by binary phase modulation;

detecting the alarm signal at a shore terminal during said first time interval for producing a command signal indicating the occurrence of a distress signal; and

controlling and demodulating the message signal during said second time interval in response to said command signal so as to restore the distress message.

4,352,200

WIRELESS AIRCRAFT PASSENGER AUDIO ENTERTAINMENT SYSTEM

Martin H. Oxman, Malden, Mass., assignor to Bell and Howell Company, Chicago, Ill.

Filed Oct. 9, 1979, Ser. No. 82,849

Int. Cl.³ H04B *5/00*

U.S. Cl. 455—41 **25 Claims**

1. A method of supplying audio information in several audio channels via headsets to passengers seated aboard an aircraft in rows of seats including armrests and being distributed along an elongate passenger section inside a metallic fuselage, comprising in combination the steps of:

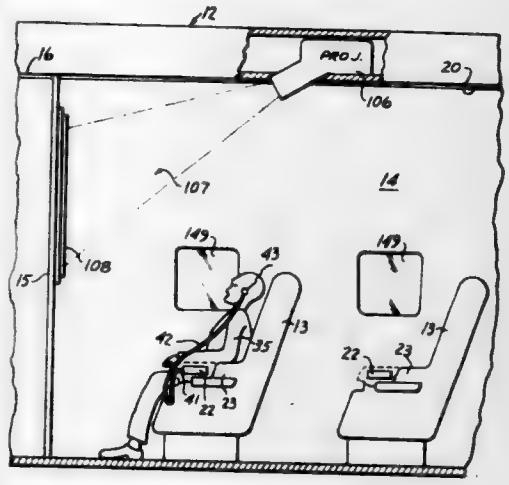
running a transmitting antenna along the passenger section of said aircraft for radio transmission inside such elongate passenger section in a frequency range including at least a band between 72 and 73 MHz;

providing individual antennas for said seats for receiving said radio transmission and distributing such receiving antennas among predetermined armrests of said seats;

providing said audio information in radio frequency channels in said band between 72 and 73 MHz;

coupling said distributed receiving antennas via seated passengers to said transmitting antenna;

transmitting said radio frequency channels in said band via said transmitting antenna, seated passengers and distributed receiving antennas to said predetermined armrests;



deriving said audio information in said audio channels from said transmitted radio frequency channels in said predetermined armrests;

individually enabling passengers to select audio information from among audio channels containing said derived audio information; and

applying said selected audio information individually to said headsets.

4,352,201

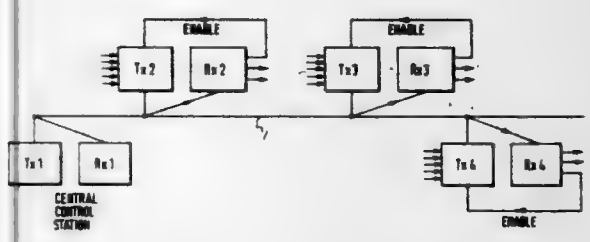
DATA TRANSMISSION SYSTEM

Geoffrey D. Miller, Plymstock, England, assignor to M.L. Engineering (Plymouth) Limited, England

Filed Apr. 30, 1979, Ser. No. 34,510

Int. Cl.³ H04B *3/50*

U.S. Cl. 455—58 **5 Claims**



1. A data transmission system comprising a plurality of transmitters, a communication channel, and a receiver arranged to receive data transmitted from the individual transmitters sequentially over said communication channel, each said transmitter comprising:

first timing means which, during periods when it is enabled, is arranged to time a first time interval, the first timing means being further arranged to generate an output signal upon completion of the timing of said first interval,

a channel signal detector coupled to said communication channel and arranged to generate an output signal in the absence of a signal or noise on said channel,

control means connected to said signal detector and said first timing means and responsive to the presence of the signal-detector output signal to enable the first timing means only during the absence of detected signal or noise on said channel,

signal transmission means coupled to said communication channel and operative in response to the generation of a

said output signal by the first timing means to transmit a data message of predetermined duration in signal form over said channel to said receiver, and

inhibit means which, following the transmission of a said data message by said signal transmission means, is operative to prevent said transmission means from transmitting a further said data message over said channel for a second time interval the duration of which is sufficient to allow the other said transmitters to sequentially transmit their associated data messages, said inhibit means including second timing means for timing said second time interval,

the duration of said first time intervals differing for each said transmitter by random delays whereby upon initial operation of the system, the transmitters will transmit in a sequence randomly established by the relative duration of their said first intervals, and therefor this sequence is maintained.

4,352,202

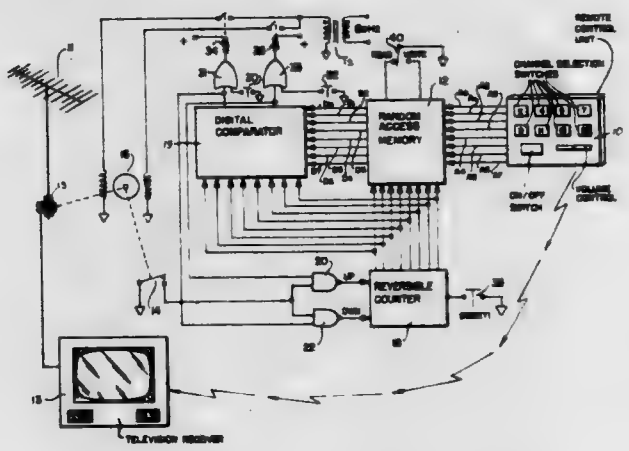
COMBINED REMOTE CONTROL FOR WIRELESS COMMUNICATION EQUIPMENT AND ASSOCIATED ANTENNA

Richard E. Carney, 6253 Longford Dr., Citrus Heights, Calif. 95610

Continuation-in-part of Ser. No. 72,174, Sep. 4, 1979, abandoned. This application Feb. 17, 1981, Ser. No. 234,467

Int. Cl.³ H04B *7/08*; H02P *1/04*; G05B *19/20*

U.S. Cl. 455—151 **3 Claims**



1. In combination with a remote control unit for wireless equipment which is capable of tuning the equipment to any one of a plurality of pre-selected signal channels, said remote control unit generating binary-coded signals representative of the plurality of pre-selected signal channels, and control apparatus connected to said remote control unit for causing the antenna associated with said wireless equipment to be rotated to pre-selected angular positions so as to provide optimum processing of signals in each of the pre-selected signal channels, said wireless equipment having an associated antenna and said control apparatus including: an electric motor coupled to the antenna for rotating the antenna to pre-selected angular positions; means mechanically connected to the motor for generating electrical signals indicative of the pre-selected angular positions as the antenna rotates; binary counter means electrically connected to the generating means for generating binary signals in response to said electrical signal; memory means electrically connected to the counter means for storing the binary signals from the counter means corresponding to pre-selected angular positions of the antenna in predetermined address locations in the memory means, and said memory means being electrically connected to said remote control unit and responsive to the binary signals therefrom selectively to address the binary signals stored in the memory means at the pre-selected memory locations; comparator means connected to the memory means and to the counter; and control and drive circuitry connecting said comparator means to said electric motor to cause the electric motor to rotate the antenna to the pre-selected angular positions.

4,352,203

STATION SELECTING DEVICE

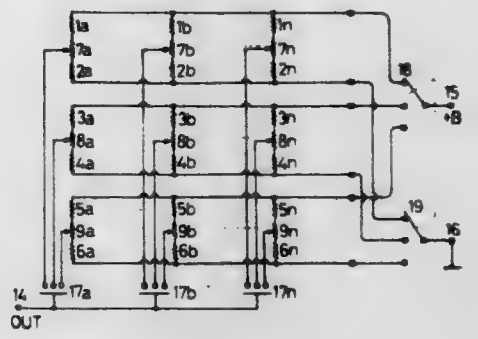
Wataru Ohkubo, Soma, Japan, assignor to Alps Electric Company, Ltd., Tokyo, Japan

Filed Aug. 7, 1980, Ser. No. 175,952

Claims priority, application Japan, Aug. 11, 1979, 54-110843[U]

Int. Cl.³ H04B *1/16*; H03J *5/32*

U.S. Cl. 455—176 **2 Claims**



1. A device for selecting a desired channel from among a plurality of channels grouped into bands each containing a predetermined number of said channels; comprising a plurality of variable resistors each corresponding to a respective channel and connected so that the variable resistors corresponding to the channels of each band are connected in a respective parallel circuit with one another; supply means for selectively applying a voltage to each resistor of the parallel circuit containing a variable resistor corresponding to the desired channel, said supply means including a first switch for connecting a source of voltage to each resistor of the parallel circuit containing a variable resistor corresponding to the desired channel and a second switch for grounding each of said resistors connected to said source of voltage; and means including a plurality of channel switches each connected to one variable resistor only within each parallel circuit for enabling the desired channel to be selected by actuating only said supply means and an appropriate channel switch.

4,352,204

ENTRY APPARATUS OF DIGITAL VALUE IN MEMORY

Tsutomu Ohgishi, Hirakata, and Tadashi Sakurai, Neyagawa, both of Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi, Japan

Continuation of Ser. No. 825,183, Aug. 17, 1977, abandoned. This application Sep. 27, 1979, Ser. No. 79,537

Claims priority, application Japan, Aug. 25, 1976, 51-102926; Sep. 17, 1976, 51-113435

Int. Cl.³ H03J *5/00*

U.S. Cl. 455—182 **15 Claims**

1. Apparatus for tuning a radio receiver to select a station for reception within a given frequency band comprising tuner means including phase lock loop circuit means having oscillating means and frequency control means including programmable means for controlling the frequency of said oscillating means for selecting a first signal corresponding to the station to be selected within a given frequency band,

means for generating a reptitively changeable digital value as a function of time over a predetermined range of digital values corresponding to at least a portion of said frequency band including the frequency of said first signal,

memory means coupled to said changeable digital value generating means and responsive to a load enable signal for loading in said memory means the digital value obtained from said changeable digital value generating means which corresponds to said first signal,

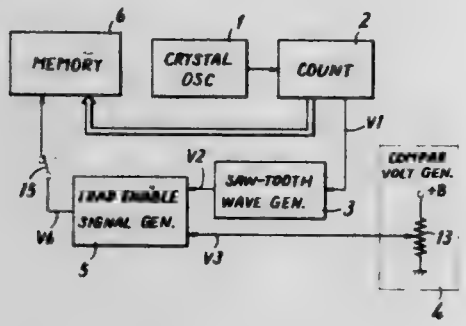
means operatively coupled to said changeable digital value generating means for providing to said memory means a load enable signal in synchronism with and at a predetermined phase time of the repetitive change of said change-

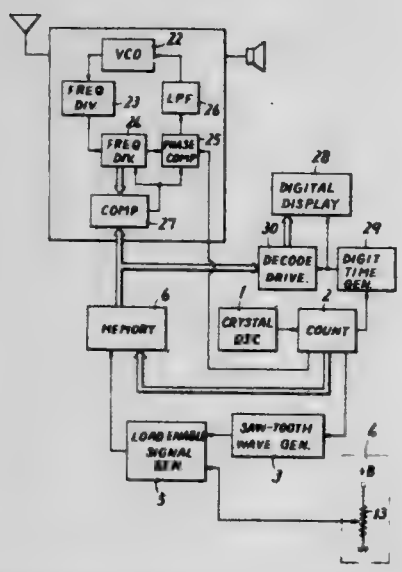
able digital value corresponding to said first signal, said load enable signal providing means including:

means responsive to said changeable digital value generating means for generating a ramp signal in synchronism with the repetitive change of said changeable digital value, said ramp signal having a waveform changeable as a function of time in synchronism with the repetitive change of said changeable digital value,

analog operated continuously tunable control means for generating a reference signal to be compared with said ramp signal, and

means operatively coupled to said ramp signal generating means and said reference signal generating means for comparing said ramp signal and said reference signal for providing a load enable signal whenever both coincide with each other,





the operation of said analog operated control means selectively adjusting the phase time of said load enable signal whereby a digital value obtainable from said changeable digital value generating means at the phase time, as adjusted by said control means, is loaded in said memory means responsive to the load enable signal,

and first means for operatively coupling said frequency control means of said phase lock loop circuit means to said memory means for providing said programmable means of said frequency control means with a signal corresponding to the frequency of said first signal in accordance with the digital value loaded in said memory means to thereby control the frequency of said oscillating means for enabling selection of said first signal associated with said digital value as adjusted by said control means.

4,352,205

TUNING SYSTEM

Masaki Kato, and Katsumi Tobita, both of Soma, Japan, assignors to Alps Electric Company, Ltd., Tokyo, Japan

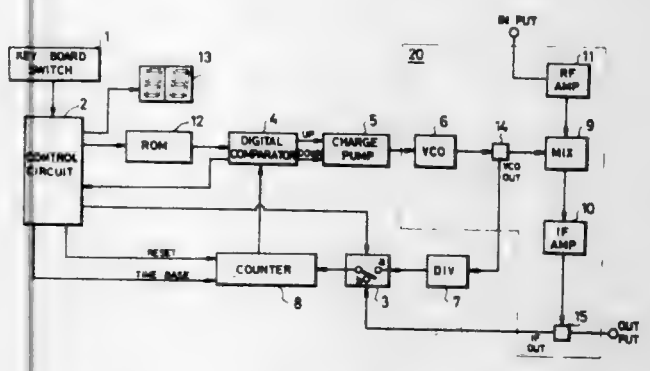
Filed May 16, 1980, Ser. No. 150,296

Claims priority, application Japan, May 16, 1979, 54-60053

Int. Cl.³ H03J *7/18, 5/24*

U.S. Cl. 455—183 **11 Claims**

1. In a tuning system for selected and tuning a channel signal selected from any one of a plurality of channel signals in the service area of the system; including a variable oscillator responsive to control signals for producing a local oscillation signal; means including a counter receiving signals from said variable oscillator for producing a count signal corresponding to the frequency of said local oscillation signal; means includng a memory for storing signals corresponding to the count signal desired when the variable oscillator is producing the proper local oscillation signal for the channel signal selected; and means including a comparator receiving both said count signals and the signals stored in said memory corresponding to the selected channel signal for producing said control signals for said variable oscillator whereby said variable oscillator will produce the local oscillation signal corresponding to the channel signal selected; and means mixing the local oscillation



signal produced by said variable oscillator and a received channel signal for producing an intermediate frequency signal; the improvement wherein said memory additionally storing IF signals corresponding to the intermediate frequency signal, and control means are provided for receiving at least a portion of said intermediate frequency signal and comparing it with said IF signals stored in said memory for producing a second control signal varying said variable oscillator so as to hold said intermediate frequency signal constant, and circuit means for controlling said tuning system so that said control signals produced upon comparing said signals stored in said memory with said count signals are first produced to lock the variable oscillator on the local oscillation signal corresponding to the channel signal selected and then said second control signals are produced to hold said intermediate frequency constant.

4,352,206

COMPARISON ARRANGEMENT FOR A DIGITAL TUNING SYSTEM

Felix Aschwanden, Thalwil, Switzerland, assignor to RCA Corporation, New York, N.Y.

Filed Mar. 11, 1981, Ser. No. 242,619

Claims priority, application United Kingdom, Apr. 8, 1980, 8011554

Int. Cl.³ H04B *1/26*

U.S. Cl. 455—184 **5 Claims**

1. In a tuning system for a receiver, apparatus comprising:

station selection means for generating a station-representative digital word having M bits;

local oscillator means for generating a local oscillator signal having a frequency controlled in response to a tuning signal;

timing means for generating a measurement pulse;

counter means for couting periods of said local oscillator signal during the duration of said measurement pulse to produce a count-representative digital word having N bits, where N is less than M;

comparison means for generating at least one comparison signal representing the deviation between said station-representative digital word and said count-representative digital word;

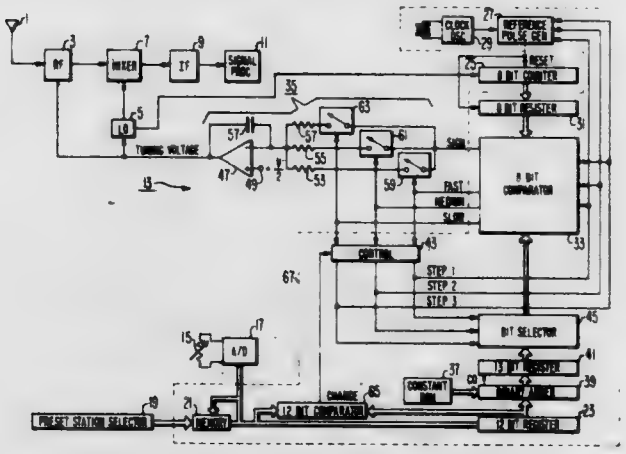
tuning signal generating means for generating said tuning signal in response to said comparison signal;

control means for generating a plurality of step-representa-

tive control signals representing respective successive operating steps;

bit selection means for selectively applying groups of successively lower order bits, N in number, including at least some of the bits of said station-representative digital word, to said comparison means in response to respective successive step-representative control signals; and

measurement interval control means for selectively setting



the duration of said measurement pulse to successively higher values corresponding to the order of respective groups of said N bits applied to said comparison means in response to respective successive step-representative control signals;

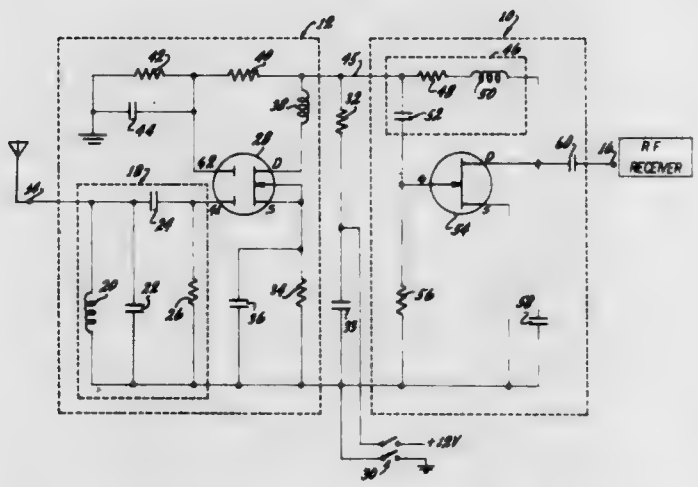
said control means generating the step-representative signal representing the next successive operating step when said comparison signal represents a deviation less than a predetermined deviation.

4,352,207

NOISE SUPPRESSION CIRCUIT

James A. Cross, Azusa, and John E. Snyder, Diamond Bar, both of Calif., assignors to R.F. Technical Products, Inc., Diamond Bar, Calif.

Filed Apr. 18, 1980, Ser. No. 141,603
Int. Cl.³ H04B *1/10*
U.S. Cl. 455—223 **5 Claims**



1. A circuit for insertion between a receiving antenna and an RF receiver to suppress noise in an RF signal received by the receiving antenna, said circuit comprising:

a bandpass filter circuit including a parallel tuned circuit connected to the receiving antenna to receive the RF signal, for attenuating components of the RF signal that have frequencies outside of the pass band of said bandpass filter circuit and for thereby producing a filtered RF signal; and,

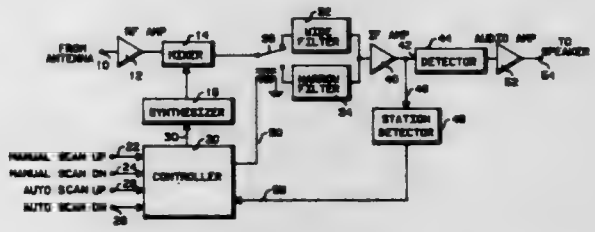
a blanking circuit including a JFET responsive to the filtered RF signal to remove from the filtered RF signal those portions of the filtered RF signal that exceed a preset voltage and to pass the remainder of the filtered RF signal to the RF receiver, said blanking circuit also comprising a series tuned circuit connected between the drain and the gate of said FJET, said series tuned circuit being tuned to the same frequency as said parallel tuned circuit.

4,352,208

AUTOMATIC IF SELECTIVITY FOR RADIO RECEIVER SYSTEM

Daniel R. Schroeder, Glen Ellyn, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation-in-part of Ser. No. 127,006, Mar. 4, 1980, abandoned. This application Apr. 23, 1981, Ser. No. 256,760
Int. Cl.³ H03J *3/08*; H04B *1/16*
U.S. Cl. 455—266 **4 Claims**



1. In a bandwidth switching system for a radio receiver capable of switching the bandwidth of an intermediate frequency stage of the receiver from a first bandwidth to a second bandwidth automatically, the improvement comprising:

means for scanning predetermined broadcast channels,

means for receiving signals from said scanning means and providing predetermined IF bandwidths in response thereto;

said signal receiving means being further characterized by having a first mode of operation with a first bandwidth and a second mode of operation with a second bandwidth;

detector means for receiving the predetermined IF bandwidth signals from the signal receiving means and converting the signals into audio signals,

station detector means coupled to an output of said signal receiving means for detecting the presence of a predetermined channel having a signal of sufficient strength within the predetermined IF bandwidth and for supplying an output signal to said scanning means if such signal is present so as to enable said scanning means to operate to scan up and down at least one adjacent channel spacing; and

controlling means for controlling the mode of operation of said signal receiving means in response to signals received from said station detector means whereby either said first mode of operation or said second mode of operation is selected depending upon whether an adjacent channel of predetermined magnitude is detected and for controlling the scanning means to operate to respectively scan down or up at least one adjacent channel spacing back to said predetermined channel.

4,352,209

UP-DOWN FREQUENCY CONVERTER FOR CABLE T.V.

John Ma, 3622 Winnetka Rd., Glenview, Ill. 60025

Filed Mar. 23, 1981, Ser. No. 242,908
Int. Cl.³ H04B *1/26*
U.S. Cl. 455—315 **5 Claims**

1. An up-down dual conversion frequency converter for converting selected ones of a plurality of received cable television signals to a predetermined broadcast frequency for display by a television receiver comprising:

a substantially quadrilateral electrically conductive housing enclosed on the top and bottom by generally planar electrically conductive shields;

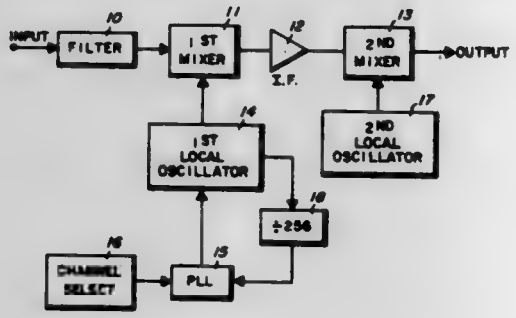
first and second local oscillators located in said housing, said first local oscillator being tunable to produce frequencies above the frequency of said cable television signals and

said second local oscillator being fixed to a frequency less than the frequency of said first oscillator;

first and second mixers located in said housing and coupled respectively to said first and second local oscillators;

a signal input circuit in said housing coupled to said first mixer, positioned adjacent a first corner of said housing and receiving said plurality of cable television signals;

an output signal circuit in said housing coupled to said second mixer, positioned adjacent a second corner of said housing and providing said predetermined broadcast frequency; and



a pair of electrically shielded tuned cavities coupled between said first and second mixers to electrically isolate said input signal circuit, first oscillator and first mixer from said output signal circuit, second oscillator and second mixer,

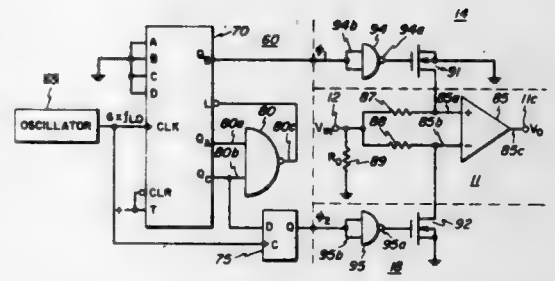
a signal input terminal and a signal output terminal respectively coupled to said input and output circuits and respectively located adjacent said first and second housing corners, said terminals being alternatively locatable on either one of a respective pair of housing sides adjacent said respective first and second corners without performance degradation of said frequency converter.

4,352,210

LINEAR MIXER WITH REDUCED SPURIOUS RESPONSES

Charles M. Puckette, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Sep. 12, 1980, Ser. No. 186,686
Int. Cl.³ H04B *1/26, 1/10*
U.S. Cl. 455—317 **9 Claims**



1. A reduced-spurious-response mixer circuit comprising:

an input terminal receiving an input signal;

an output terminal;

a balanced differential summing network having an inverting input, a non-inverting input and an output connected to said output terminal;

first and second switch means for selectively coupling said input signal from said input terminal respectively to said summing network inverting and non-inverting inputs responsive respectively to first and second local oscillator signals; and

means for providing said first and second local oscillator signals as digital waveforms each having first binary values for one-third of a time interval equal to the reciprocal of the local oscillator frequency, and having a second binary value at all other times, said first and second signals being offset from one another by a time interval equal to one-half the local-oscillator time interval, to cause the third harmonic of said local oscillator frequency to have an essentially zero magnitude in a waveform resulting at said output terminal.

DESIGNS

SEPTEMBER 28, 1982

266,285
SHOE

Christian Vermonet, Cholet, France, assignor to Societe Technisynthese (S.A.R.L.), Saint Pierre Montlimart, France

Filed May 6, 1980, Ser. No. 147,322
Claims priority, application France, Mar. 3, 1980, 80 382
Term of patent 3½ years
Int. Cl. D2—*04*
U.S. Cl. D2—309



266,286
SHOE

Christian Vermonet, Cholet, France, assignor to Societe Technisynthese (S.A.R.L.), Saint Pierre Montlimart, France

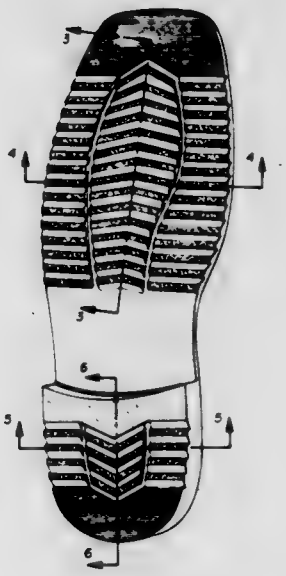
Filed May 6, 1980, Ser. No. 147,325
Claims priority, application France, Mar. 3, 1980, 80 382
Term of patent 3½ years
Int. Cl. D2—*04*
U.S. Cl. D2—309



266,287
SHOE SOLE

Malcolm G. Blissett, Grand Rapids, Mich.; Arthur W. Bowen, Quechee, and James H. Lucarelli, Brownsville, both of Vt., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

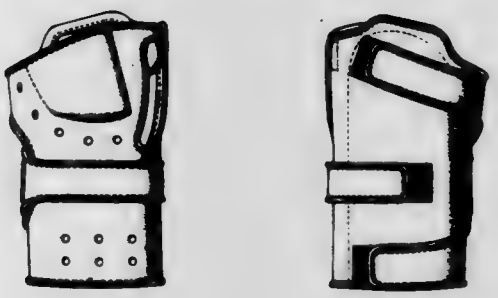
Filed Aug. 14, 1980, Ser. No. 178,198
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—320



266,288
BOWLING GLOVE

Richard H. Coon, 10758 188th St., Miami, Fla. 33157

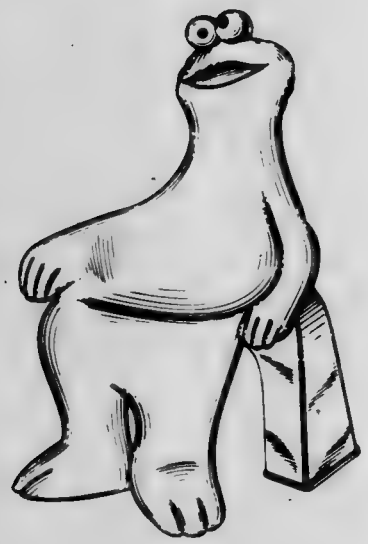
Filed Jun. 23, 1980, Ser. No. 161,767
Term of patent 14 years
Int. Cl. D02—*06*
U.S. Cl. D2—361



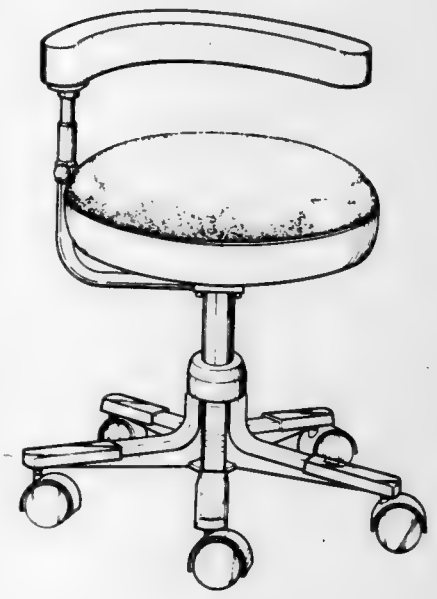
266,289
COLLAR FOR TASSELS
Kenneth E. Kampfe, Omaha, Nebr., assignor to Willsie Cap and Gown Company, Omaha, Nebr.
Filed Mar. 7, 1980, Ser. No. 128,088
Term of patent 14 years
Int. Cl. D2—*07*
U.S. Cl. D2—448



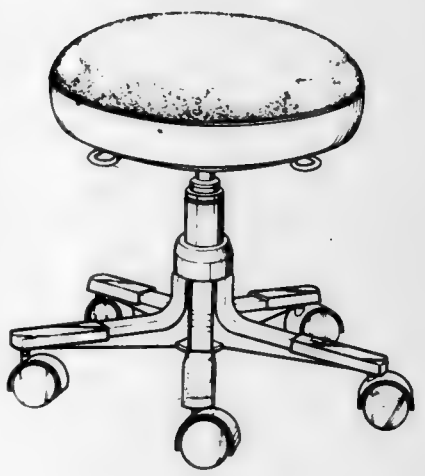
266,290
CHILD'S CHAIR
Henry Orenstein, 136 Lakeside Ave., Verona, N.J. 07044
Filed Apr. 18, 1980, Ser. No. 141,470
Term of patent 3½ years
Int. Cl. D6—*01*
U.S. Cl. D6—12



266,291
CHAIR
Dennis F. Leffler, Charlotte, and Danny M. Truette, Pineville, both of N.C., assignors to The Pelton & Crane Company, Charlotte, N.C.
Filed Mar. 3, 1980, Ser. No. 126,237
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—30



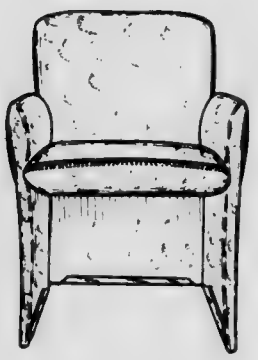
266,292
STOOL
Dennis F. Leffler, Charlotte, and Danny M. Truette, Pineville, both of N.C., assignors to The Pelton & Crane Company, Charlotte, N.C.
Filed Mar. 3, 1980, Ser. No. 126,793
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—35



266,293
CHAIR

Ernesto Radaelli, Gallarate, Italy, assignor to Fratelli Saporiti, Besnate, Italy

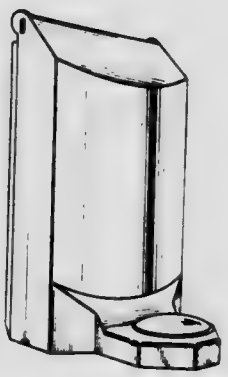
Filed Mar. 19, 1980, Ser. No. 131,650
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—71



266,294
FLUID DISPENSER

Paul J. O'Halloran, Grand Prairie, and Glen Morgan, Ft. Worth, both of Tex., assignors to HOH, Inc., San Antonio, Tex.

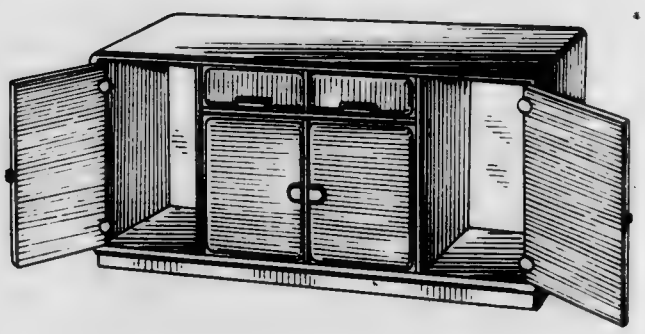
Filed Dec. 10, 1980, Ser. No. 215,052
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D6—95



266,295
BUFFET CABINET

Colman Zola, 58 Tamarack Way, Pleasantville, N.Y. 10570

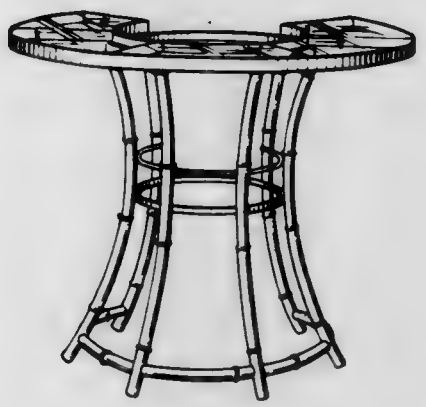
Filed Sep. 12, 1980, Ser. No. 186,525
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—159



266,296
TABLE

Gregory D. Bergquist, Mountain Brook, and John A. Jones, Trussville, both of Ala., assignors to Simmons Universal Corporation, New York, N.Y.

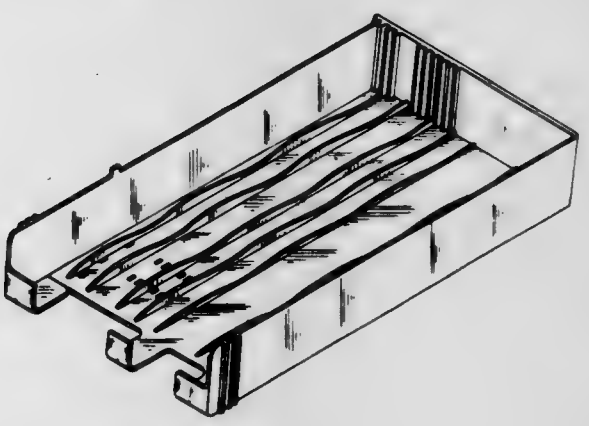
Filed Oct. 1, 1980, Ser. No. 192,748
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—175



266,297
DISPENSING RACK FOR ROLLING GOODS

Marvin Zaro, New York, N.Y., assignor to Advertising Displays Company, Englewood, N.J.

Continuation-in-part of Ser. No. 29,089, Apr. 11, 1979. This application Feb. 1, 1980, Ser. No. 117,586
Term of patent 14 years
Int. Cl. D6—*04;* D20—*02*
U.S. Cl. D6—199



266,298
CUP OR THE LIKE
Loretta H. Moskal, Glen Riddle, Pa., assignor to Corning Glass Works, Corning, N.Y.
Filed Oct. 17, 1980, Ser. No. 197,922
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—9

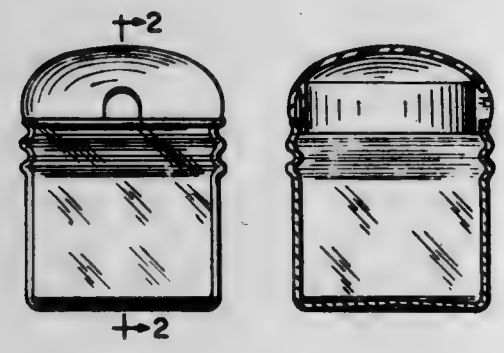


266,299
FOOD STORAGE CONTAINER
Andrew V. Taylor, Sydney, Australia, assignor to Tayclox Industries Pty. Limited, Hornsby, Australia
Filed May 16, 1980, Ser. No. 150,612
Term of patent 14 years
Int. Cl. D7—*01, 07*
U.S. Cl. D7—17

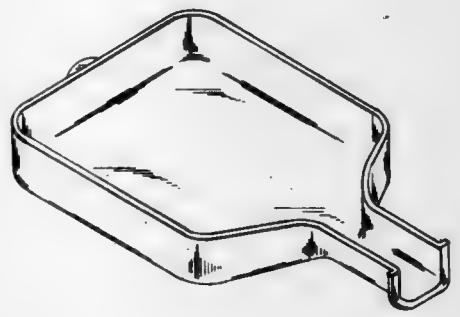




266,300
COVERED SUGAR BOWL OR THE LIKE
Richard V. Haner, Elmira, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed Aug. 20, 1980, Ser. No. 179,891
Term of patent 14 years
Int. Cl. D7—*01, 06*
U.S. Cl. D7—17



266,301
HANDYMAN TRAY
Ardal F. Hall, 4007 W. Glenn Dr., Phoenix, Ariz. 85021
Filed Oct. 15, 1980, Ser. No. 197,230
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D7—19



266,302
PLATE OR THE LIKE
Loretta H. Moskal, Glen Riddle, Pa., assignor to Corning Glass Works, Corning, N.Y.
Filed Oct. 17, 1980, Ser. No. 197,923
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—26

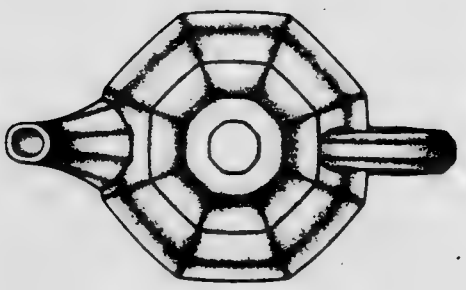


266,303
DECORATIVE BAND FOR CASSEROLE HOLDERS OR THE LIKE
Cynthia S. Gerow, Ballston Spa, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed May 14, 1980, Ser. No. 149,679
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—39

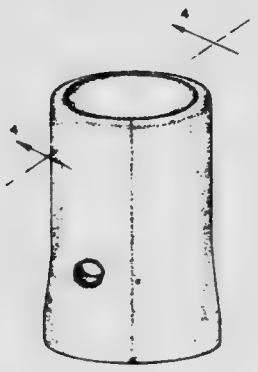


266,304
CREAM PITCHER
Walter Everhan, Klettenberg, Fed. Rep. of Germany, assignor to American Commercial, Incorporated, Gardena, Calif.
Filed Aug. 12, 1980, Ser. No. 177,414
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—66

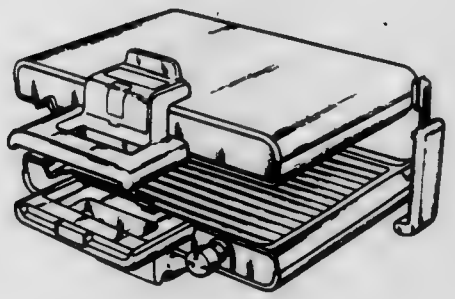




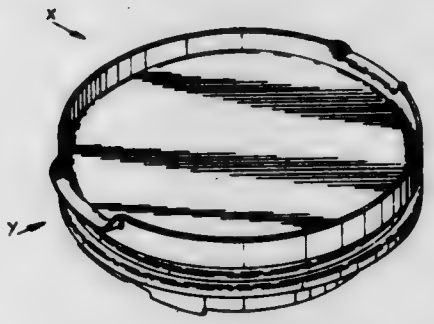
266,305
BEVERAGE CONTAINER INSULATOR
Stephen M. Scheurer, P.O. Drawer 539, Wichita Falls, Tex. 76307
Filed Aug. 14, 1979, Ser. No. 66,586
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D7—77

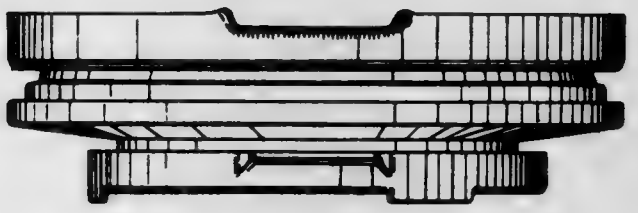


266,306
MEAT GRILL
Pierre Ansel, Vagney, France, assignor to SEB, Selongey, France
Filed Nov. 1, 1979, Ser. No. 90,448
Claims priority, application France, May 23, 1979, 79 160
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—88

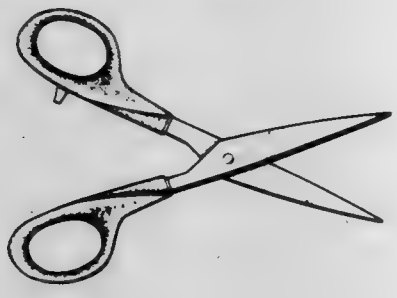


266,307
COOKING PAN UNIT
Yanta H. T. Lam, Kowloon, Hong Kong, assignor to Meyer Manufacturing Co. Ltd., Kowloon, Hong Kong
Filed May 10, 1979, Ser. No. 37,769
Claims priority, application United Kingdom, Apr. 4, 1979, 79 989358
Term of patent 14 years
Int. Cl. D07—*02*
U.S. Cl. D7—94

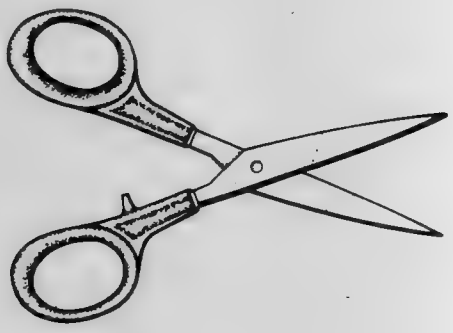




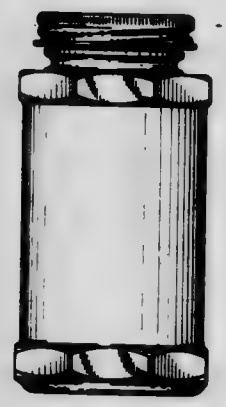
266,308
SCISSORS
Erkki O. Linden, Billnäs, Finland, assignor to Oy Fiskars AB, Helsinki, Finland
Filed Feb. 29, 1980, Ser. No. 126,148
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—57



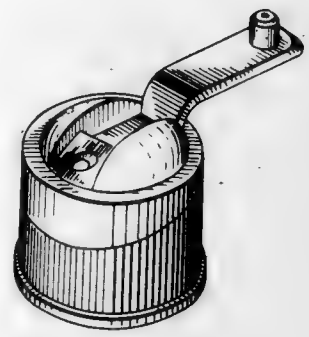
266,309
SCISSORS
Erkki O. Linden, Billnäs, Finland, assignor to Oy Fiskars AB, Helsinki, Finland
Filed Feb. 29, 1980, Ser. No. 126,150
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—57



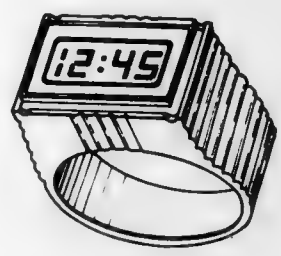
266,310
JAR OR SIMILAR ARTICLE
Jay W. Fidler, Port Chester, and Frank Cornacchuila, Bellport, both of N.Y., assignors to Hercules Chemical Company, Inc., New York, N.Y.
Filed Aug. 18, 1980, Ser. No. 179,304
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—392



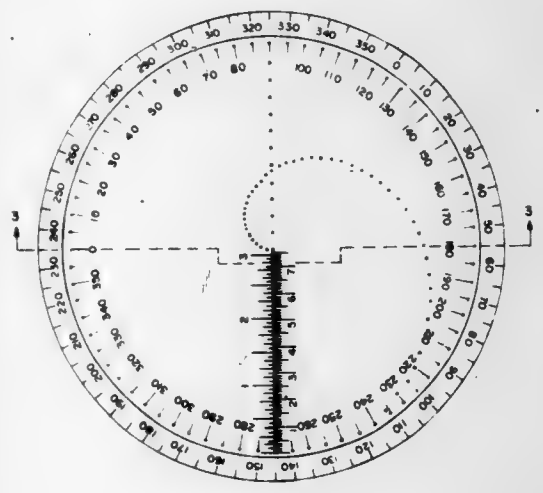
266,311
DISPENSING CAP FOR LIQUID CONTAINERS
Harley H. Mattheis, Verona, N.J., assignor to Risdon Corporation, Naugatuck, Conn.
Filed Apr. 23, 1980, Ser. No. 143,158
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—446



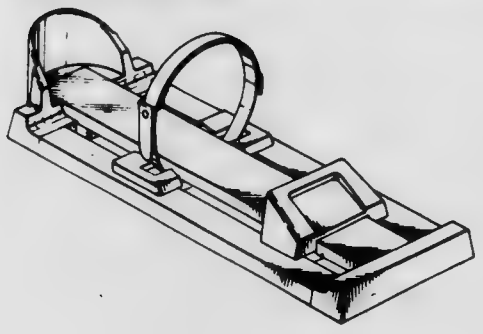
266,312
DIGITAL WATCH RING
Ellick Lin, 55-484, Taipei, Taiwan
Filed Jul. 22, 1980, Ser. No. 171,021
Term of patent 14 years
Int. Cl. D10—*02*; D11—*01*
U.S. Cl. D10—31



266,313
DRAFTING AND MEASURING TOOL
Jerrell F. Fulton, Crown King, Star Route, Mayer, Ariz. 86333
Filed Jun. 23, 1980, Ser. No. 162,193
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—62



266,314
FOOTGAUGE
Nöel J. Haring, Woking, and Laurence A. Snook, Winchester, both of England, assignors to Clarks Limited, Somerset, England
Filed Aug. 11, 1980, Ser. No. 177,057
Claims priority, application United Kingdom, Mar. 19, 1980, 994114
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—70



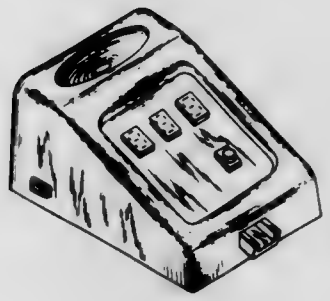
266,315
HYDROMETER
Ulf S. Tamm, 122 Ch. de la Montague, 1224 Chene Bougerics, Switzerland
Filed Aug. 12, 1980, Ser. No. 177,501
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—84



266,316
FLUID FLOW MEASURING HEAD
Zell Du Vall, St. Paul, Minn., assignor to TSI Incorporated, St. Paul, Minn.
Filed Oct. 27, 1980, Ser. No. 186,761
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—96



266,317
PILL COUNTER
William C. Dino, 62 Plantation St., and Stephen L. Johnson, 9 Beechmont St., both of Worcester, Mass. 01609
Filed Sep. 26, 1980, Ser. No. 190,929
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—97



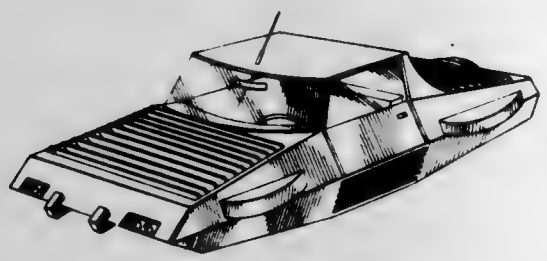
266,318
DIAL PLATE FOR A TIMEPIECE
Kiichi Noguchi, No. 2400, Ohyaguchi, Urawa-shi, Saitama-ken, Japan (336)
Filed Apr. 27, 1979, Ser. No. 33,786
Claims priority, application Japan, Dec. 18, 1978, 53/53268; Dec. 18, 1978, 53/53270; Dec. 25, 1978, 53/55037; Dec. 25, 1978, 53/55040; Dec. 25, 1978, 53/55041; Dec. 25, 1978, 53/55042
Term of patent 14 years
Int. Cl. D10—*07*
U.S. Cl. D10—123



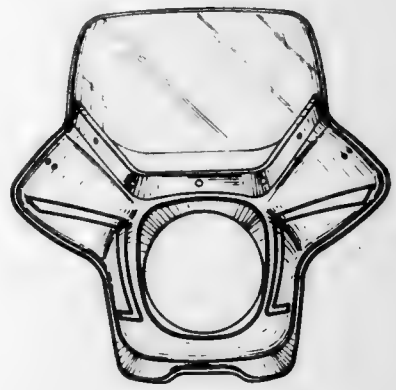
266,319
BADGE
Ernest Picheria, 108 Liberty St., Lodi, N.J. 07644
Filed Apr. 12, 1979, Ser. No. 29,176
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—56



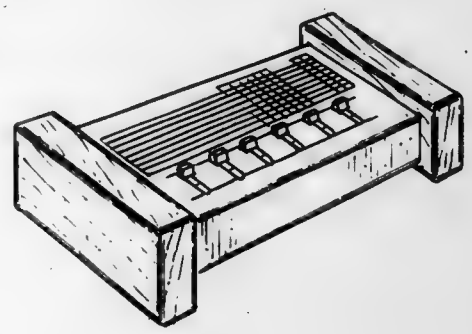
266,320
HOVER CRAFT
Elie P. Kfoury, 15, Mahmoud Bassiouni St., 2485 Cairo A.R.E., Egypt
Filed Sep. 7, 1979, Ser. No. 73,497
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D12—5



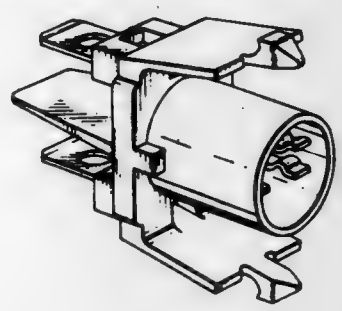
266,321
WINDSHIELD FOR MOTORCYCLE
Minoru Morioka, Kawagoe, and Hideki Sugihara, Tokyo, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha (Honda Motor Co., Ltd.), Tokyo, Japan
Filed Aug. 2, 1979, Ser. No. 63,332
Claims priority, application Japan, Feb. 6, 1979, 54-42151
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—182



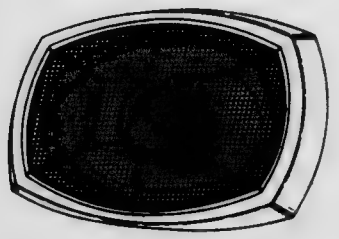
266,322
MASTER CONTROL FOR TELEVISION AND VIDEO RECORDER SYSTEM
Ted Easterling, 7738 Clairemont Mesa, San Diego, Calif. 92111
Filed Feb. 22, 1980, Ser. No. 123,914
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—12

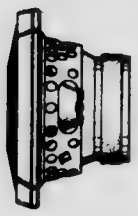


266,323
MINIATURE LAMPHOLDER
David Partridge, West Wickham, England, assignor to Starpoint Electrics Limited, Surrey, England
Filed Mar. 24, 1980, Ser. No. 133,449
Claims priority, application United Kingdom, Oct. 1, 1979, 991791
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—25

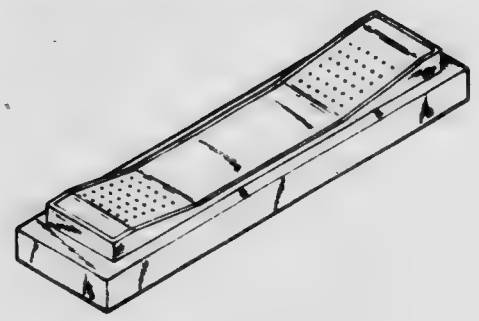


266,324
LOUDSPEAKER
Takekazu Iijima, Tokyo, Japan, assignor to Pioneer Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 10, 1980, Ser. No. 139,143
Claims priority, application Japan, Feb. 5, 1979, 54-3894
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—30

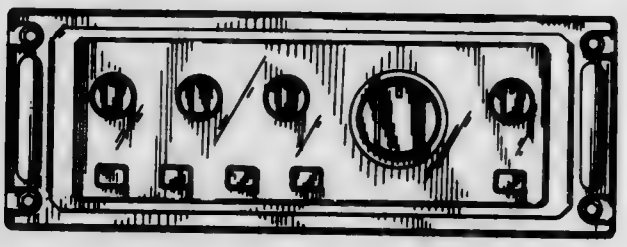




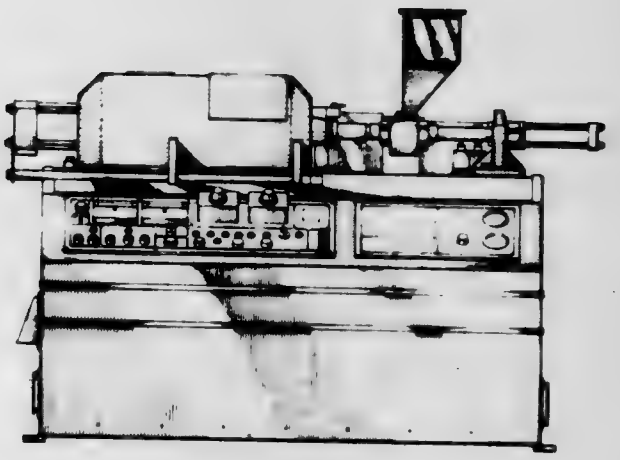
266,325
TELEPHONE CONSOLE
Joseph J. Butchko, P.O. Box G-747 - Station "G", Calgary, Alberta, Canada
Filed May 29, 1979, Ser. No. 43,390
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—63



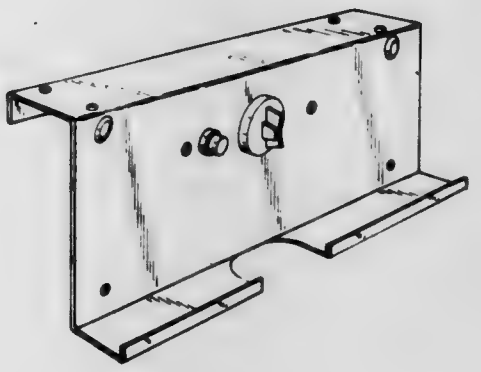
266,326
AMPLIFIER FOR AUTOMOBILE
Toshiyoshi Kikuhara, Naka, Japan, assignor to Clarion Co., Ltd., Tokyo, Japan
Filed Oct. 26, 1979, Ser. No. 88,624
Claims priority, application Japan, Apr. 26, 1979, 54-17299
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—96



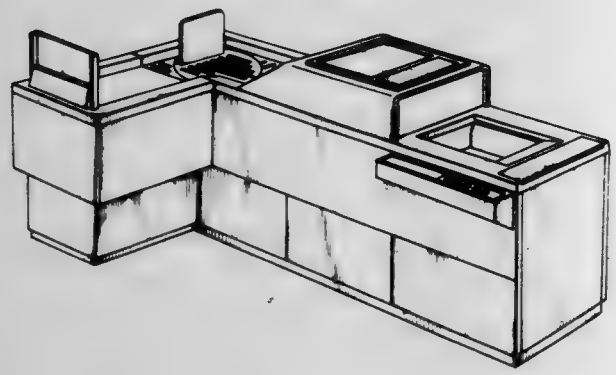
266,327
AUTOMATIC INJECTION MOLDING MACHINE
Marvin E. Haight, Fairfield, and William R. Jones, Cincinnati, both of Ohio, assignors to Micromolder Machinery, Inc., Cincinnati, Ohio
Filed Jul. 7, 1980, Ser. No. 166,351
Term of patent 14 years
Int. Cl.[3] D15—*09*
U.S. Cl. D15—135



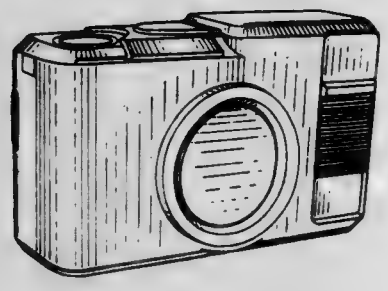
266,328
COMBINATION SUPPORT AND CONTROL FOR A HEAT SHRINK ROLLER
Shirley F. Fleshman, P.O. Box 75402, Oklahoma City, Okla. 73147
Filed May 18, 1979, Ser. No. 40,329
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D15—144



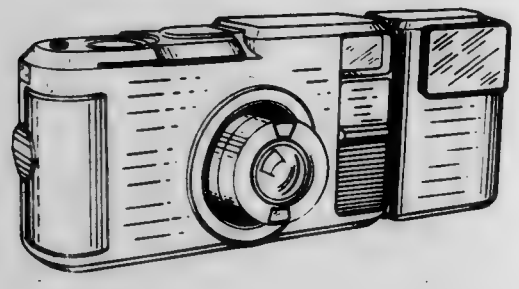
266,329
MERCHANDISE BAGGING MACHINE
Eiichi Tsujimoto, Kobe, Japan, assignor to Kawasaki Steel Corporation, Kobe, Japan
Filed Apr. 3, 1980, Ser. No. 137,002
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D15—145



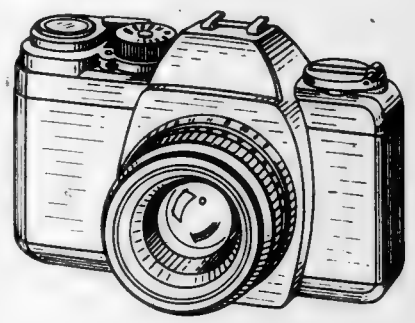
266,330
PHOTOGRAPHIC CAMERA
Herbert Schultes, Fürstenfeldbruck, and Karl-Heinz Rubner, Munich, both of Fed. Rep. of Germany, assignors to AGFA-Gevaert AG, Leverkusen, Fed. Rep. of Germany
Filed Jul. 31, 1980, Ser. No. 175,191
Term of patent 14 years
Int. Cl. D16—*01*
U.S. Cl. D16—1



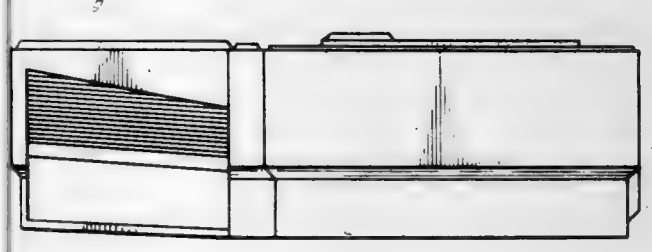
266,331
COMBINED CAMERA AND FLASH UNIT
Herbert Schultes, Fürstenfeldbruck, and Karl-Heinz Rubner, Munich, both of Fed. Rep. of Germany, assignors to AGFA-Gevaert AG, Leverkusen, Fed. Rep. of Germany
Filed Jul. 31, 1980, Ser. No. 175,188
Term of patent 14 years
Int. Cl. D16—*01*
U.S. Cl. D16—6



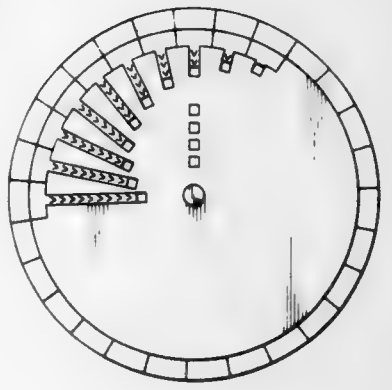
266,332
SINGLE LENS REFLEX CAMERA
Herbert Schultes, Fürstenfeldbruck, and Karl-Heinz Rubner, Munich, both of Fed. Rep. of Germany, assignors to Agfa-Gevaert AG, Leverkusen, Fed. Rep. of Germany
Filed Jul. 25, 1980, Ser. No. 172,430
Term of patent 14 years
Int. Cl. D16—*01*
U.S. Cl. D16—8



266,333
COMBINED COPYING AND SORTING APPARATUS
Frederick J. Lawrence, 13372 Cindy La., Tustin, Calif. 92680
Filed May 7, 1980, Ser. No. 147,368
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D16—32



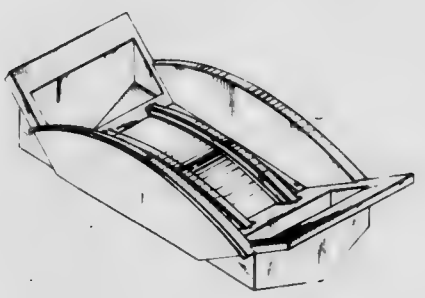
266,334
COMPUTER FOR BLACKJACK DECISIONS
Stephen M. Speers, 1 W. Armour Blvd., Kansas City, Mo. 64111
Filed Aug. 6, 1979, Ser. No. 64,200
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D18—10



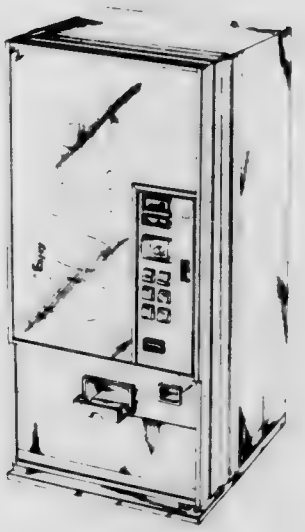
266,335
COMBINED WRITING INSTRUMENT AND WATCH
Ho Sing Chau, Kowloon, Hong Kong, assignor to H & T Electronic Industries Ltd., Kowloon, Hong Kong
Filed Jul. 25, 1980, Ser. No. 173,267
Claims priority, application United Kingdom, Jan. 30, 1980, 993364
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—36



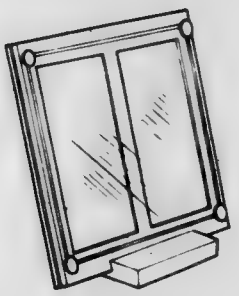
266,336
CARD FILE
William S. Leib, III, Newton, N.J., assignor to The Bates Manufacturing Company, Hackettstown, N.J.
Filed Aug. 25, 1980, Ser. No. 181,193
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—76



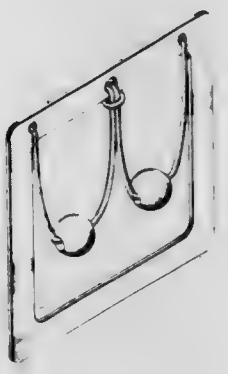
266,337
VENDING MACHINE
G. Merle Bachmann, Stone Mountain; Charles L. Davis, and Annis R. Morgan, Jr., both of Atlanta, all of Ga., assignors to The Coca-Cola Company, Atlanta, Ga.
Filed Feb. 20, 1981, Ser. No. 236,182
Term of patent 14 years
Int. Cl. D20—*01*
U.S. Cl. D20—5



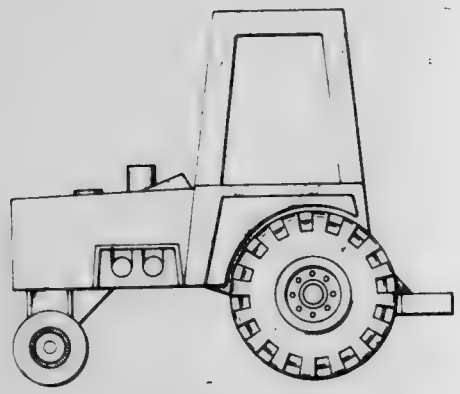
266,338
CARD HOLDER AND DISPLAY DEVICE
Charles S. Mandel, 25483 Ingleside, Southfield, Mich. 48034
Filed Jun. 23, 1980, Ser. No. 161,773
Term of patent 3½ years
Int. Cl. D20—*03;* D6—*07*
U.S. Cl. D20—43



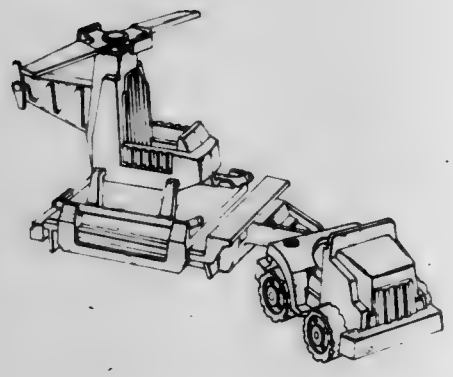
266,339
PUZZLE
Dennis B. Dunstan, 9477 Lloyd Crest Dr., Beverly Hills, Calif. 90210
Filed May 11, 1981, Ser. No. 262,339
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—104



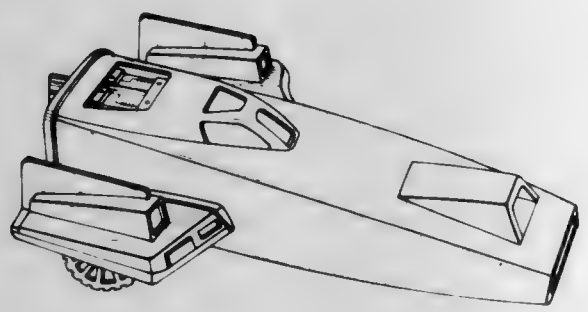
266,340
TOY TRACTOR
Kenneth R. Wilkes, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Jan. 27, 1981, Ser. No. 228,776
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—132



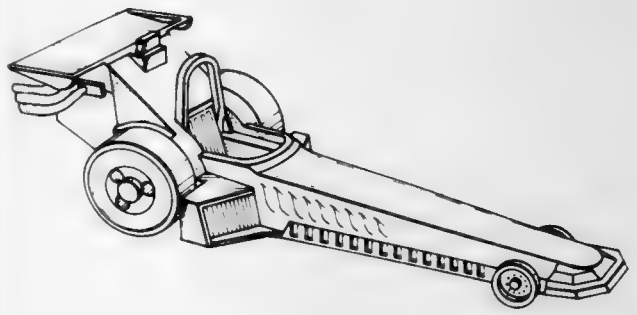
266,341
TOY HELICOPTER RIG
Jack L. Breneman, Orchard Park, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Dec. 24, 1980, Ser. No. 219,945
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—134



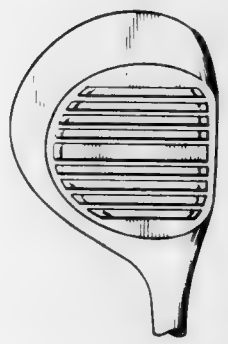
266,342
TOY RACE CAR
Kenneth R. Wilkes, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Dec. 15, 1980, Ser. No. 216,207
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—137



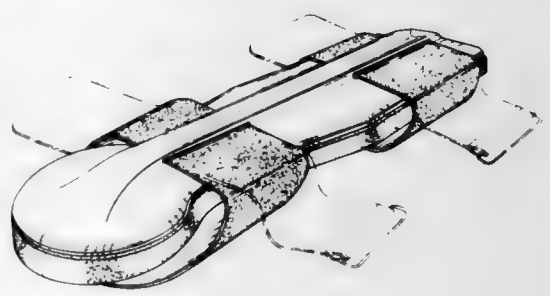
266,343
TOY DRAGSTER
Steven E. Hilko, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Dec. 15, 1980, Ser. No. 216,265
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—137



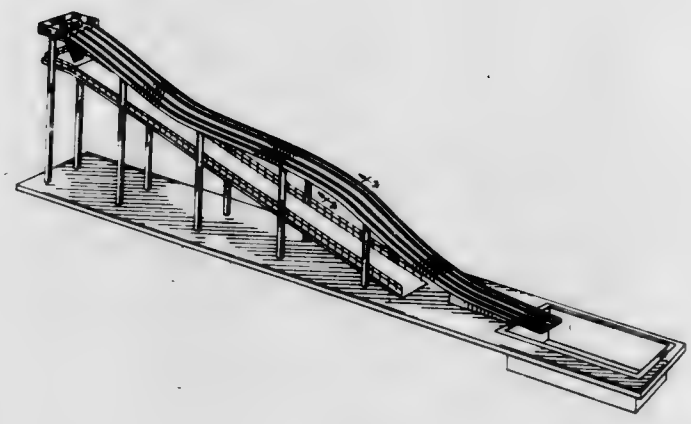
266,344
GOLF DRIVER HEAD
Clovis R. Duclos, 15463 Chemical La., Huntington Beach, Calif. 92649
Filed Apr. 10, 1980, Ser. No. 139,012
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—214



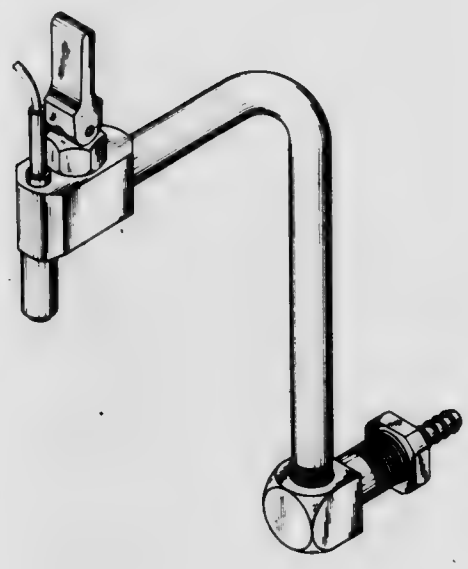
266,345
GOLFING WRIST CONTROL ATTACHMENT OR THE LIKE
George F. Bigham, 1203 Berwick La., South Euclid, Ohio 44121, and Rodney B. Johnston, 4800 Dalebridge Rd., Warrensville Heights, Ohio 44128
Filed May 2, 1979, Ser. No. 35,250
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—234



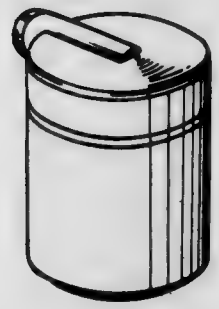
266,346
WATER SLIDE
George D. Millay, and Ronald D. Harper, both of San Diego, Calif., assignors to Wet 'N Wild, Inc., Orlando, Fla.
Filed Feb. 13, 1980, Ser. No. 121,121
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D21—244



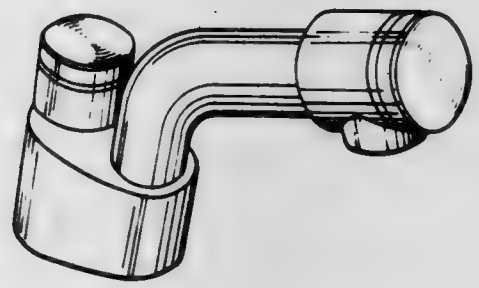
266,347
FAUCET FOR PROTECTING STERILE FLUID SYSTEMS
Narbik A. Karamian, 7609 Exeter Rd., Bethesda, Md. 20014
Filed May 19, 1980, Ser. No. 151,171
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—03



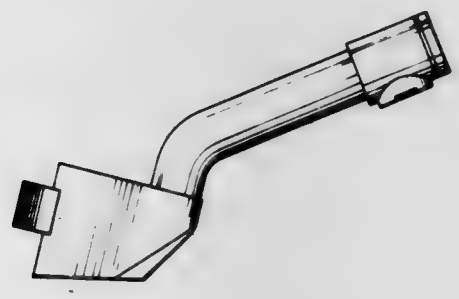
266,348
FAUCET HANDLE
Nazzareno Piesco, Milan, Italy, assignor to F.I.R. Fabbrica Italiana Rubinetterie S.p.A., Cavaglio D'Agogna, Italy
Filed Mar. 4, 1981, Ser. No. 240,357
Claims priority, application Italy, Sep. 4, 1980, 22678 B/80
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—28



266,349
COMBINED SPOUT AND POP-UP DRAIN KNOB
Nazzareno Piesco, Milan, Italy, assignor to F.I.R. Fabbrica Italiana Rubinetterie S.p.A., Novara, Italy
Filed Mar. 4, 1981, Ser. No. 240,353
Claims priority, application Italy, Sep. 4, 1980, 22680 B/80
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—32



266,350
SPOUT
Nazzareno Piesco, Milan, Italy, assignor to F.I.R. Fabbrica Italiana Rubinetterie S.p.A., Cavaglio D'Agogna, Italy
Filed Mar. 4, 1981, Ser. No. 240,356
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—32

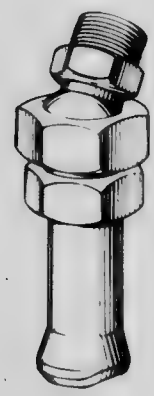


266,351

MULTIDIRECTIONAL WELDING OUTLET

Robert W. Schneider, Allentown; Alfred S. Gilly, Northampton; John R. Diamant, Nazareth, and James I. Dantzer, Center Valley, all of Pa., assignors to Gulf & Western Manufacturing Company, Southfield, Mich.

Filed May 19, 1980, Ser. No. 151,026
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—40

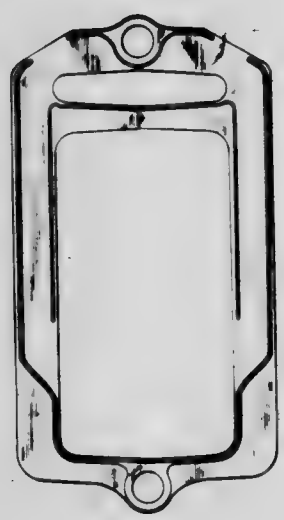


266,352

BOILER SECTION

Henning Rasmussen, Odense, Denmark, assignor to A/S Tasso Odense, Odense, Denmark

Filed Apr. 22, 1980, Ser. No. 142,723
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—90

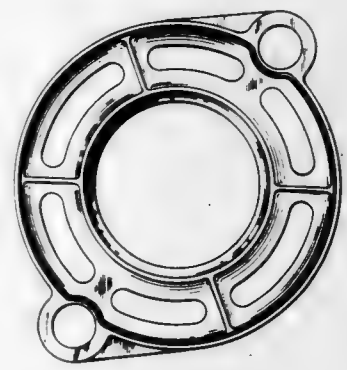


266,353

BOILER SECTION

Henning Rasmussen, Odense, Denmark, assignor to A/S Tasso Odense, Odense, Denmark

Filed Apr. 22, 1980, Ser. No. 142,724
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—90

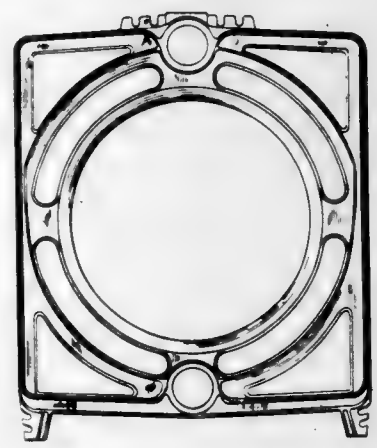


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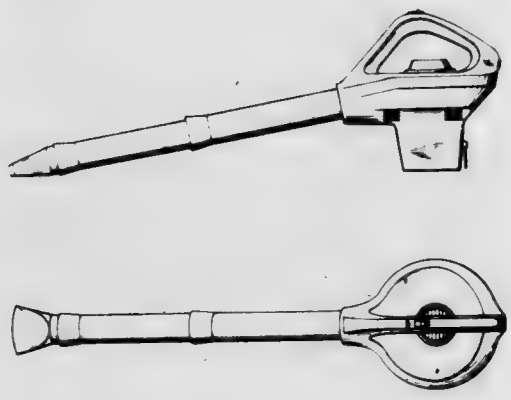
BOILER SECTION

Henning Rasmussen, Odense, Denmark, assignor to A/S Tasso Odense, Odense, Denmark

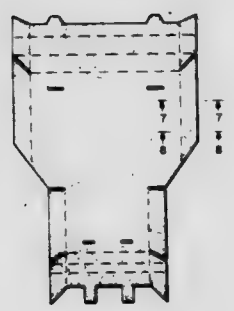
Filed Apr. 22, 1980, Ser. No. 142,725
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—90



266,355
AIR BLOWER
James F. Mariol, Cincinnati, Ohio, assignor to Emerson Electric Co., St. Louis, Mo.
Filed May 19, 1980, Ser. No. 151,348
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—155



266,356
BLANK FOR A COMBINED VENT AND BAFFLE
Bruce K. Ward, 2904 Virginia Ave. South, St. Louis Park, Minn. 55426
Filed Apr. 15, 1980, Ser. No. 140,671
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—163



266,357
BLANK FOR A COMBINED VENT AND BAFFLE
Bruce K. Ward, 2904 Virginia Ave. South, St. Louis Park, Minn. 55426
Filed Apr. 28, 1980, Ser. No. 144,646
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—163



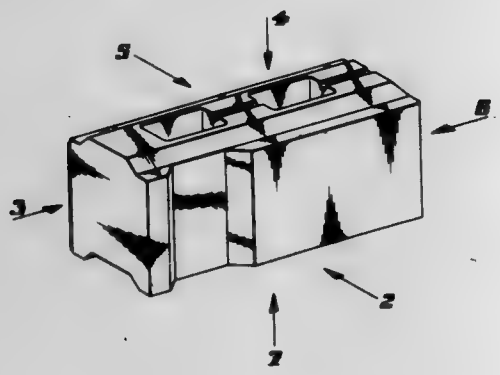
266,358
SAMPLE CUP
Ralph M. Kerns, Arlington, Tex., assignor to Abbott Laboratories, North Chicago, Ill.
Filed Jun. 2, 1980, Ser. No. 155,285
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—56



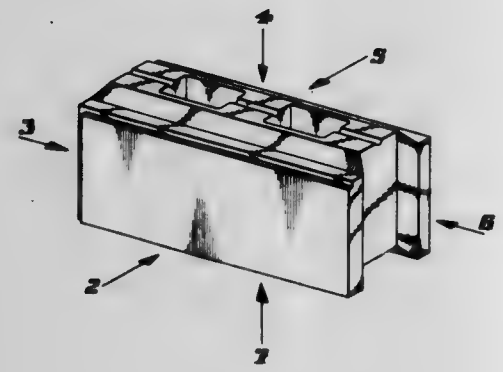
266,359
CHANNEL MEMBER FOR OFFICE SPACE DIVIDING SYSTEM
Burton L. Siegal, Skokie, Ill., assignor to Acme Steel Door Corp., Brooklyn, N.Y.
Filed Sep. 30, 1980, Ser. No. 192,470
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—74



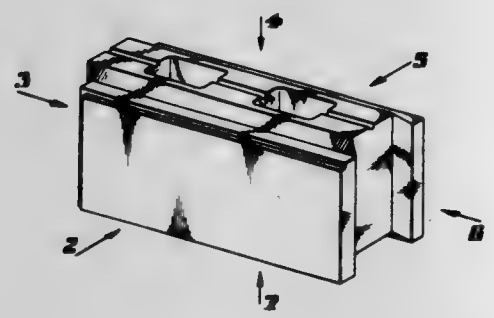
266,360
BUILDING BLOCK
Jose Coelho dos Santos, Estrada dos Arneiros, 46-1° Dto., Lisbon, Portugal
Filed Sep. 17, 1980, Ser. No. 187,986
Claims priority, application Portugal, Mar. 25, 1980, 15050
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—80



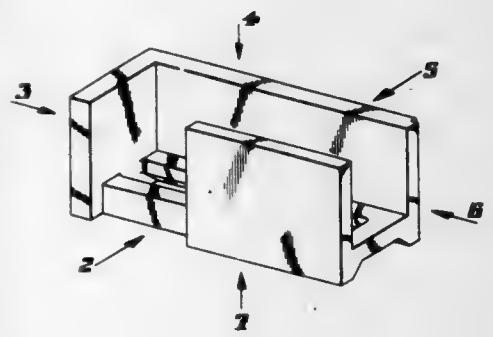
266,361
BUILDING BLOCK
Jose Coelho dos Santos, Estrada dos Arneiros, 46-1° Dto., Lisbon, Portugal
Filed Sep. 17, 1980, Ser. No. 188,013
Claims priority, application Portugal, Mar. 25, 1980, 15048
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—80



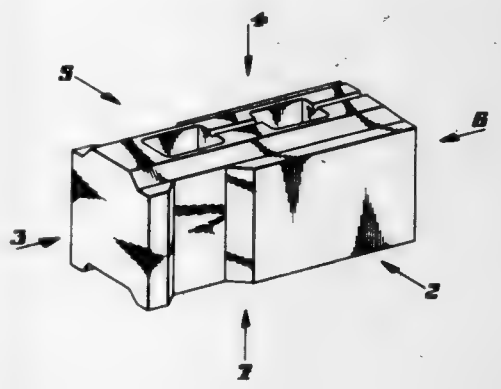
266,362
BUILDING BLOCK
Jose Coelho dos Santos, Estrada dos Arneiros, 46-1° Dto., Lisbon, Portugal
Filed Sep. 17, 1980, Ser. No. 188,014
Claims priority, application Portugal, Mar. 25, 1980, 15045
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—80



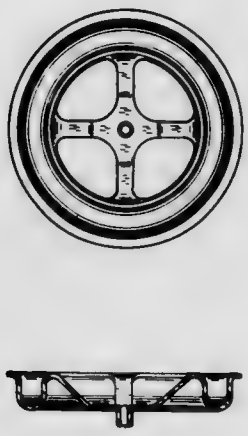
266,363
BUILDING BLOCK
Jose Coelho dos Santos, Estrada dos Arneiros, 46-1° Dto., Lisbon, Portugal
Filed Sep. 17, 1980, Ser. No. 188,015
Claims priority, application Portugal, Mar. 25, 1980, 15046
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—80



266,364
BUILDING BLOCK
Jose Coelho dos Santos, Estrada dos Arneiros, 46-1° Dto., Lisbon, Portugal
Filed Sep. 17, 1980, Ser. No. 188,016
Claims priority, application Portugal, Mar. 25, 1980, 15047
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—80



266,365
CANDLE FLOAT OR THE LIKE
Robert A. Rosenbaum, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed Jul. 24, 1980, Ser. No. 171,974
Term of patent 14 years
Int. Cl. D26—*01*
U.S. Cl. D26—22



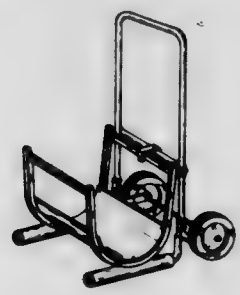
266,366
WELSH MINER'S LAMP
David S. Harper, Bishopston, England, assignor to Mayer Mill Mining and Trade Company, Washington, D.C.
Filed Sep. 10, 1979, Ser. No. 74,102
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D26—104



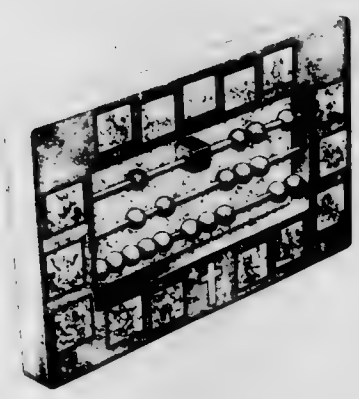
266,367
TRASH CART
Louis G. Marini, Mt. Laurel, and Thomas O. Marini, Marlton, both of N.J., assignors to Suntemp Industries, Inc., Blackwood, N.J.
Filed Mar. 24, 1980, Ser. No. 132,825
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D34—24



266,368
LOG CART
Dudley K. Flanders, Fort Smith, Ark., assignor to Flanders Industries, Inc., Fort Smith, Ark.
Filed Mar. 19, 1981, Ser. No. 245,380
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D34—26



266,369
CONTEMPORARY ROSARY
Mary Corigliano, 139 Parsonage Hill Rd., Short Hills, N.J. 07078
Filed Aug. 8, 1980, Ser. No. 176,412
Term of patent 14 years
Int. Cl. D31—*00*
U.S. Cl. D99—26



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TO WHOM

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NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

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Abe, Takeshi: *See—*
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Abraham, Ooriapadical C.: *See—*
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ACF Industries, Inc.: *See—*
McNairy, James A.; and Fitzgerald, John B., 4,351,151, Cl. 60-290.000.
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Kerschner, James J., 4,351,622, Cl. 404-64.000.

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Kubota, Naohiro; Shibata, Toshihiro; Sugibuchi, Kazuo; and Minagawa, Motonubu, 4,351,915, Cl. 524-103.000.

Adler, Karl-Heinz; Pfaff, Georg; Leussink, Reinhard; Sohner, Gerhard; Hohne, Gerd; Jokh, Thomas; and Decker, Heinz, to Robert Bosch GmbH. Ignition coil with overvoltage protection connected to the secondary winding of the ignition coil. 4,351,310, Cl. 123-644.000.

Afanasiev, Vladimir K.: *See—*
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Muramatsu, Hiroshige; and Ueda, Teruo, 4,351,954, Cl. 562-574.000.

Agfa-Gevaert Aktiengesellschaft: *See—*
Kiessling, Werner; Wiedemann, Otto; Lau, Peter; and Vondrovsky, Gabriel, 4,351,497, Cl. 242-194.000.

Ahlschwede, Brian A., to Deere & Company. Wheel attaching device. 4,351,568, Cl. 301-36.00R.

Aiba, Makoto: *See—*
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Iwasaki, Shinichiro, 4,351,191, Cl. 73-728.000.

Aisin Seiki Kabushiki Kaisha: *See—*
Hattori, Takemi, 4,351,563, Cl. 297-408.000.
Kanou, Noboru; and Mori, Keiji, 4,351,560, Cl. 296-216.000.
Toyoda, Minoru, 4,351,173, Cl. 70-456.00R.

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Date, Nobuaki; Aizawa, Hiroshi; Uchidoi, Masanori; and Watanabe, Yoshiaki, 4,351,597, Cl. 354-266.000.

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Yonezawa, Toshio; Ajima, Takashi; Hiraki, Shunichi; Koshino, Yutaka; and Oka, Yoshitami, 4,351,894, Cl. 430-313.000.

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Kurata, Masayuki; and Watanabe, Yushiyo, 4,351,421, Cl. 188-73.450.

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Fukushima, Osamu; Akisada, Masahide; Monma, Yoshiyuki; and Kitamura, Kazuaki, 4,352,198, Cl. 378-185.000.

Akita, Eiichi: *See—*
Miyazawa, Takeo; Ishii, Takahiro; Kazuno, Yuzo; Akita, Eiichi; Yamada, Yujiro; and Niida, Taro, 4,351,830, Cl. 424-180.000.

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Richter, Helmuth, 4,351,154, Cl. 60-605.000.

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Reesink, Johan B.; Hageman, Hendrik J.; and Wiersum, Ulfert E., 4,351,935, Cl. 528-242.000.

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Sebring, Robert E.; and Coplan, Myron J., 4,351,092, Cl. 28-100.000.

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Hess, Viktor, 4,351,488, Cl. 241-224.000.

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Turro, Nicholas J., 4,351,707, Cl. 204-158.00R.

Alps Electric Company, Ltd.: *See—*
Inoue, Akihiko; and Ito, Takeo, 4,351,995, Cl. 200-159.00A.
Kato, Masaki; and Tobita, Katsumi, 4,352,205, Cl. 455-183.000.
Ohkubo, Wataru, 4,352,203, Cl. 455-176.000.

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Altenpohl, William F.; and Altenpohl, Paul J. Latch release system for poultry carriers. 4,351,087, Cl. 17-44.100.

Altland, Henry W.; and Shiao, Daniel D., to Eastman Kodak Company. Mesoionic silver halide stabilizer precursor and use in a heat developable and heat stabilizable photographic silver halide material and process. 4,351,896, Cl. 430-354.000.

Amann, Markus C. Semiconductor laser diode. 4,352,187, Cl. 372-46.000.

Amax Inc.: *See—*
Beckstead, Leo W.; Huggins, Dale K.; and Queneau, Paul B., 4,351,808, Cl. 423-61.000.
Ernst, Runyon G., deceased; Ernst, Margaret, executrix; Opie, William R.; Rajcevic, Harold P.; and Parker, Peter D., 4,351,705, Cl. 204-108.000.

Amazonen-Werke: *See—*
Dreyer, Heinz, 4,351,481, Cl. 239-670.000.

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Ament, Frank, to General Motors Corporation. Diesel fuel injection pump secondary fuel metering control system. 4,351,283, Cl. 123-458.000.

American Cyanamid Company: *See—*
Cesark, Frank F.; and Thomas, Daniel W., 4,351,956, Cl. 564-256.000.

American Enviro-Port, Inc.: *See—*
Mixon, James A., 4,351,722, Cl. 210-195.300.

American Hoechst Corporation: *See—*
Walls, John E., 4,351,895, Cl. 430-331.000.

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Dobson, Thomas A.; Humber, Leslie G.; Demerson, Christopher A.; and Jirkovsky, Ivo L., 4,351,942, Cl. 546-269.000.
Failli, Amedeo; Immer, Hans U.; and Gotz, Manfred K., 4,351,828, Cl. 424-177.000.
Hurwitz, Arthur; Michelucci, John; and Krupey, John, 4,351,158, Cl. 62-60.000.
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Stockman, Robert M., 4,352,145, Cl. 361-329.000.

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Amey, Guy C., to Foxboro Company, The. Temperature control system for chromatographs. 4,351,385, Cl. 165-61.000.
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Folk, Kenneth F., 4,351,110, Cl. 29-749.000.
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Rodolakis, Michael S., 4,351,539, Cl. 280-47.260.
Anderson, Albert G., to Du Pont de Nemours, E. I., and Company. Derivatives of aryl ketones as visible sensitizers of photopolymerizable compositions. 4,351,893, Cl. 430-281.000.
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Andersson, Hans: *See*—
Farnstrom, Sven E.; and Andersson, Hans, 4,351,616, Cl. 374-209.000.
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Kordes, Arthur W.; Andrade, Robert M.; and Peterson, Roger W., 4,351,579, Cl. 339-14.00R.
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Angarov, Ernst I.: *See*—
Abduganiev, Abdurakhim; Krjuk, Timur P.; Zhestkov, Vitaly I.; Tikhonov, Valentin N.; Glazov, Vladimir G.; Kletny, Mikhail M.; Shlykov, Gennady N.; Afanasiev, Vladimir K.; Dyachkov, Vasily M.; Zhigalov, Gennady V.; Mangutov, Rafael A.; and Angarov, Ernst I., 4,351,149, Cl. 57-263.000.
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Anthony Manufacturing Corporation: *See*—
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Anton Steinecker Maschinenfabrik GmbH: *See*—
Wolfseder, Alfons, 4,351,231, Cl. 99-277.200.
Antonov, Jury F.; Glebov, Igor A.; and Shakhtarin, Valentin N. Contactless superconducting synchronous electrical machine. 4,352,033, Cl. 310-52.000.
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Assard, Gerald L., to United States of America, Navy. A/D Dynamic range enhancing technique. 4,352,095, Cl. 340-347.0DD.
Atlantic Richfield Company: *See*—
Styring, Ralph E., Jr., 4,351,655, Cl. 62-28.000.
Au, Lonnie C.: *See*—
Frech, John W.; and Au, Lonnie C., 4,352,160, Cl. 364-553.000.
Aubert, Michel: *See*—
Artaud, Robert; Aubert, Michel; and Renaux, Charley, 4,351,794, Cl. 376-404.000.
Augat Inc.: *See*—
Kirkman, Michael; Rydwansky, Frank C., Jr.; Hanlon, Richard J.; and Petersen, Richard W., 4,351,580, Cl. 339-17.0CF.
Auracher, Franz: *See*—
Winzer, Gerhard; and Auracher, Franz, 4,351,585, Cl. 350-96.150.
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Hartmann, Ferdinand, 4,351,859, Cl. 427-232.000.
Auto-Valve, Inc.: *See*—
Koller, Floyd G.; and Drew, Ralph H., Jr., 4,351,355, Cl. 137-329.060.
Automatic Solar Covers, Inc.: *See*—
Smith, Marc, 4,351,072, Cl. 4-503.000.
Automotive Products Limited: *See*—
Young, Alastair J., 4,351,570, Cl. 303-24.00F.
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Axton, Hoyt W. Survival stick. 4,351,348, Cl. 135-66.000.
Aylott, John, to WIPAC Development Limited. Coil assembly for an ignition system. 4,351,286, Cl. 123-601.000.
Azzolini, Georges P., to Sovra S.A. Method and apparatus for cutting blanks from foam material. 4,351,211, Cl. 83-861.000.
B.A.T. Cigaretten-Fabriken GmbH: *See*—
Brummer, Ursula; and Heeman, Volker, 4,351,346, Cl. 131-276.000.
B. F. Goodrich Company, The: *See*—
Sidles, James; and Blayne, Jerome J., 4,351,789, Cl. 264-130.000.
Baasner, Bernd; Klauke, Erich; and Kysela, Ernst, to Bayer Aktiengesellschaft. Preparation of 3-bromo-4-fluorotoluene. 4,351,974, Cl. 570-174.000.
Babbage, Thomas A., to Trianco Redfyre Limited. Boilers. 4,351,315, Cl. 126-73.000.
Babcock-Hitachi Kabushiki-Kaisha: *See*—
Matsuda, Shinpei; Kato, Akira; Uno, Shigeo; Sakuta, Youichi; and Nakajima, Fumito, 4,351,811, Cl. 423-239.000.
Matsuzaki, Harumi; Kuroda, Osamu; Okouchi, Isao; Izumi, Kenkichi; and Takahashi, Sankichi, 4,351,715, Cl. 204-301.000.
Babcock & Wilcox Company, The: *See*—
Ackerman, Dean C.; and Smith, Don W., 4,351,082, Cl. 15-316.00R.
Baer, James W.: *See*—
Kuppenheimer, John D., Jr.; and Baer, James W., 4,352,186, Cl. 372-41.000.
Bagley, Julius B.: *See*—
Titus, Theodore, IV; and Bagley, Julius B., 4,352,173, Cl. 369-27.000.
Bagli, Jehan F.: *See*—
Rakhit, Sumanas; and Bagli, Jehan F., 4,351,832, Cl. 424-246.000.

Bahl, Chander P., to Cetus Corporation. Method for single nucleotide alteration. 4,351,901, Cl. 435-91.000.
Bahr, Theodor: *See*—
Schmoller, Karl-Heinz; Bahr, Theodor; Bottger, Ernst; Henrich, Hans-Otto; Thumm, Helmut; and Beck, Heinz, 4,351,486, Cl. 241-67.000.
Bailes, Clyde E. Water treating apparatus. 4,351,720, Cl. 210-101.000.
Bailey, Martin; Hines, David A.; Ousby, John C.; and Roesler, Frank C., to Imperial Chemical Industries Limited. Treatment of biologically-degradable waste. 4,351,730, Cl. 210-629.000.
Baizer, Manuel M.; and Goodin, Richard D., to Monsanto Company. Process for making glyoxylate hemiacetals. 4,351,951, Cl. 560-186.000.
Baker, Robert G.; and Ramazzotti, Dario J., to Nordson Corporation. Hot melt multi-section hose heating system. 4,352,007, Cl. 219-301.000.
Baldwin, John L. E., to Independent Broadcasting Authority. Digital recording apparatus. 4,352,129, Cl. 360-32.000.
Ball Corporation: *See*—
Marcantonio, Arnold F.; Kress, Paul J.; and Powers, John W., 4,351,883, Cl. 428-450.000.
Wood, Charles L., 4,351,663, Cl. 65-66.000.
Ballendux, Gerardus M.: *See*—
Prince, George T.; and Ballendux, Gerardus M., 4,351,168, Cl. 464-64.000.
Ballintyn, Nicolaas J.; and Michno, Michael J., Jr., to Union Carbide Corporation. Prosthetic devices having sintered thermoplastic coatings with a porosity gradient. 4,351,069, Cl. 3-1.912.
Ballocci, Giovanni; and Brollo, Aurelio, to Industrie Pirelli S.p.A. Conveyor belt. 4,351,432, Cl. 198-847.000.
Balmar Crimp Tool Corp.: *See*—
Kelly, William D.; and Vella, Gregory J., 4,351,109, Cl. 29-747.000.
Baltek Corporation: *See*—
Kohn, Jean, 4,351,680, Cl. 156-79.000.
Bansal, Bihari, to Corning Glass Works. Furnace delivery system. 4,351,664, Cl. 65-128.000.
Barber, Donald J.; and Meaden, Douglas G., to Molins PLC. Cigarette packets. 4,351,433, Cl. 206-264.000.
Barber, Ronald A. File and jacket construction method and apparatus. 4,351,624, Cl. 405-228.000.
Bardens, William H.; and Nelson, Gale C., to Beckman Instruments, Inc. Electrical device and method for particle entrapment device for an electrical component. 4,352,119, Cl. 357-78.000.
Bardett, Allen R.: *See*—
Costamagna, Robert M.; Mori, Denis W.; and Bardett, Allen R., 4,351,850, Cl. 426-302.000.
Barmag Barmer Maschinenfabrik: *See*—
Schippers, Heinz; Munnekehoff, Gerd; and Teich, Udo, 4,351,494, Cl. 242-35.50A.
Barmore, Donald L.: *See*—
Cobleigh, Wendall C.; and Barmore, Donald L., 4,351,208, Cl. 83-167.000.
Barnett, William E., to Riker Laboratories, Inc. Anticoagulant substance. 4,351,938, Cl. 536-21.000.
Barry, Leon G.; and Rieman, Willis E., to Fasco Industries, Inc. Thermal fuse. 4,352,082, Cl. 337-409.000.
Bartels, Franklin D. Work gloves with attachment mechanism. 4,351,067, Cl. 2-160.000.
Bartels, Harold U.: *See*—
Ellestad, Raymond A.; and Bartels, Harold U., 4,351,329, Cl. 128-204.210.
Bartke, Rolf, to Antek Instruments GmbH. Combustion apparatus for use in elementary analysis. 4,351,801, Cl. 422-78.000.
BASF Wyandotte Corporation: *See*—
Kaneko, Thomas M., 4,351,753, Cl. 252-357.000.
Bass, Steven C., to Kimball International, Inc. Digital tone generation system utilizing fixed duration time functions. 4,351,219, Cl. 84-1.210.
Bassoli, Cesare; Cornetti, Giorgio; and Lovisolo, Francesco, to Centro Ricerche Fiat S.p.A. Fuel injection method. 4,351,295, Cl. 123-300.000.
Battigelli, Jean A.: *See*—
Levecque, Marcel, deceased; Levecque, Marc, administrator; Battigelli, Jean A.; and Plantard, Dominique, 4,351,661, Cl. 65-5.000.
Bauer, Edmund G., to Bethlehem Steel Corporation. Method of controlling a coking cycle. 4,351,701, Cl. 201-1.000.
Bauer, Herbert; and Weik, Guenter, to INOVAN - Stroebe G.m.b.H. and Co. KG. Method of producing a profile strip. 4,351,174, Cl. 72-47.000.
Bauermeister, Klaus; Ziemek, Gerhard; and Eilhardt, Bernd, to Kabel- und Metallwerke Gutehoffnungshutte Aktiengesellschaft. Thermally insulated tube. 4,351,365, Cl. 138-149.000.
Baumberger, Otto: *See*—
Kalbskopf, Reinhard; and Baumberger, Otto, 4,351,267, Cl. 118-718.000.
Baumgartner, Peter; Karlen, Urs; and Keller, Urs, to Ciba-Geigy AG. Process for the production of methoxyanthraquinones. 4,351,774, Cl. 260-383.000.
Baxt Industries, Inc.: *See*—
Enyart, Charles E.; and Shoulis, John E., 4,351,137, Cl. 52-202.000.
Bayer Aktiengesellschaft: *See*—
Baasner, Bernd; Klauke, Erich; and Kysela, Ernst, 4,351,974, Cl. 570-174.000.
Materne, Carsten, 4,351,837, Cl. 424-266.000.
Steinberger, Helmut; Moretto, Hans-Heinrich; Kortmann, Wilfried; and Pfeiffer, Josef, 4,351,736, Cl. 252-8.600.
Baylis, Michael A.; Harris, Peter; and Massey, Stewart R., to British-American Tobacco Co., Ltd. Headspace-sampling apparatus. 4,351,802, Cl. 422-89.000.
Bazell, Seymour: *See*—
Goldberg, Edward M.; and Bazell, Seymour, 4,351,341, Cl. 128-348.000.
BBC Brown, Boveri & Company, Ltd.: *See*—
Germann, Willy, 4,351,107, Cl. 29-736.000.
Beales, Keith J.; Day, Clive R.; and Newns, George R., to Post Office, The. Method for manufacture of graded index optical fibres. 4,351,659, Cl. 65-3.130.
Bear Medical Systems, Inc.: *See*—
Ellestad, Raymond A.; and Bartels, Harold U., 4,351,329, Cl. 128-204.210.
Beatrice Foods Co.: *See*—
Kaelblein, Robert; and Jones, John H., 4,351,474, Cl. 229-68.00R.
Beauducel, Claude; and Cretin, Jacques, to Institut Francais du Petrole; and Compagnie Generale de Geophysique. Sample-and-hold unit. 4,352,070, Cl. 328-151.000.
Beck, Heinz: *See*—
Schmoller, Karl-Heinz; Bahr, Theodor; Bottger, Ernst; Henrich, Hans-Otto; Thumm, Helmut; and Beck, Heinz, 4,351,486, Cl. 241-67.000.
Becker, Erwin W.; Ehrfeld, Wolfgang; Krieg, Gunther; and Bier, Wilhelm, to Kernforschungszentrum Karlsruhe Gesellschaft mit beschrankter Haftung. Method for producing separating nozzle elements. 4,351,653, Cl. 55-394.000.
Beckley, Don A.: *See*—
Street, Sidney W.; and Beckley, Don A., 4,351,932, Cl. 526-262.000.
Beckman Instruments, Inc.: *See*—
Bardens, William H.; and Nelson, Gale C., 4,352,119, Cl. 357-78.000.
Beckstead, Leo W.; Huggins, Dale K.; and Queneau, Paul B., to Amax Inc. Autoclave soda digestion of scheelite concentrates. 4,351,808, Cl. 423-61.000.
Bedis, Michael; and Westemeier, Donald E., to Deere & Company. Split master link for track of track-laying tractors. 4,351,573, Cl. 305-54.000.
Beesley, Graham E., to Motorola, Inc. Pulse detectors. 4,352,030, Cl. 307-350.000.
Beisel, Hermann; and Kraft, Hermann, to Heidelberger Druckmaschinen Aktiengesellschaft. Combined dampening-inking unit for offset printing machines. 4,351,236, Cl. 101-148.000.
Belin, Juliette. Ring. 4,351,166, Cl. 63-15.000.
Bell & Howell Company: *See*—
Kline, Donald D., 4,352,124, Cl. 358-60.000.
Oxman, Martin H., 4,352,200, Cl. 455-41.000.
Bellhouse, Brian J.; and Bellhouse, Francis H. Tranafer membrane assembly. 4,351,797, Cl. 422-48.000.
Bellhouse, Francis H.: *See*—
Bellhouse, Brian J.; and Bellhouse, Francis H., 4,351,797, Cl. 422-48.000.
Bellicardi, Francesco; Dall'Osso, Carlo; and Cavallari, Bruno, to Weber S.p.A. Cold-engine starting and operating devices for carburetors. 4,351,782, Cl. 261-39.00A.
Bellus, Daniel: *See*—
Martin, Pierre; Steiner, Eginhard; and Bellus, Daniel, 4,351,961, Cl. 568-381.000.
Belokur, Nikolai A.: *See*—
Daiker, Artur L.; Veis, Anatoly I.; Kochengin, Evgeny Y.; Novoselov, Nikolai M.; Morozov, Gennady Y.; Rybin, Vladimir S.; Belokur, Nikolai A.; and Savelieva, Nina A., 4,351,676, Cl. 148-9.00C.
Belote, Stephen N.: *See*—
McCollum, Anthony W.; Edmonson, William L.; and Belote, Stephen N., 4,351,927, Cl. 525-437.000.
Belttary, Harold E., to GTE Products Corporation. Electrical terminal. 4,351,583, Cl. 339-259.00R.
Bendix Corporation, The: *See*—
Orme, Myrl E., 4,351,357, Cl. 137-446.000.
Benedek, George B.: *See*—
Clark, John I.; Mengel, Loretta S.; and Benedek, George B., 4,351,826, Cl. 424-81.000.
Benenati, Salvatore. Comminuting powered lawn mower. 4,351,144, Cl. 56-295.000.
Benerito, Ruth R.: *See*—
Ward, Truman L.; and Benerito, Ruth R., 4,351,857, Cl. 427-40.000.
Bengtsson, Alf R. A.: *See*—
Lindstrom, Fred B.; and Bengtsson, Alf R. A., 4,351,495, Cl. 242-47.010.
Bennett, Donald G. Combustion fuel and air flow control and mixer apparatus. 4,351,783, Cl. 261-44.00E.
Bergwerksverband GmbH: *See*—
Romey, Ingo; and Trojan, Willi, 4,351,739, Cl. 252-62.000.
Berkenblit, Melvin: *See*—
Reisman, Arnold; and Berkenblit, Melvin, 4,351,805, Cl. 422-202.000.
Berner, Godwin; and Kirchmayr, Rudolf, to Ciba-Geigy Corporation. Photochemically or thermally polymerizable mixtures. 4,351,708, Cl. 204-159.230.
Berta, Sophia. Spring assisted roller skates. 4,351,538, Cl. 280-11.260.
Bertozzi, Albert. Plastic bowling pin. 4,351,530, Cl. 273-82.00R.
Bethlehem Steel Corporation: *See*—
Bauer, Edmund G., 4,351,701, Cl. 201-1.000.

Bhojwani, Arju H.; Gartside, Robert J.; and Woebcke, Herman N., to Stone & Webster Engineering Corp. Solids quench boiler and process. 4,351,275, Cl. 122-7.00R.

Biedell, Edward L.; and Ferb, Robert J., to Research-Cottrell, Inc. Sulfur dioxide scrubber with hydroclone separator. 4,351,804, Cl. 422-170.000

Bielomatik Leuze GmbH + Co.: *See*—
Mann, Friedrich; and Negro, Guido, 4,351,371, Cl. 140-92.300.

Bier, Wilhelm: *See*—
Becker, Erwin W.; Ehrfeld, Wolfgang; Krieg, Gunther; and Bier, Wilhelm, 4,351,653, Cl. 55-394.000.

Bijlenga, Gosse, to Gist-Brocades N.V. Novel polyvalent virus vaccine. 4,351,827, Cl. 424-89.000.

Billenstein, Siegfried; May, Adolf; and Bucking, Hans-Walter, to Hoechst Aktiengesellschaft. Fabric softener concentrate. 4,351,737, Cl. 252-8.800.

Billi, Roberto; and Scagliola, Carlo, to Cselt - Centro Studi e Laboratori Telecomunicazioni S.p.A. Method of and device for testing the quality of digital speech-transmission equipment. 4,352,182, Cl. 371-22.000.

Bindra, Jasjit S.: *See*—
Hess, Hans-Jurgen E.; Bindra, Jasjit S.; and Shah, Praful K., 4,351,940, Cl. 544-293.000.

Bio-Med Devices, Inc.: *See*—
Stenzler, Alex, 4,351,344, Cl. 128-720.000.

Biochemical Diagnostics, Inc.: *See*—
Kopp, Reiner H.; and Panetz, Allen I., 4,351,800, Cl. 422-70.000.

BioResearch, Inc.: *See*—
Verlander, Michael S.; Fuller, William D.; and Goodman, Murray, 4,351,762, Cl. 260-112.50R.

Birr, Christian, to der Wissenschaften e.V. Max-Planck-Gesellschaft zur/Forderung. Process for the selective formation of disulfide bridges in polypeptides and therapeutic compositions. 4,351,764, Cl. 260-112.700.

Bishop, David C.; and Heywood, Alan E., to Johnson, Matthey & Co., Limited. Foldable metallic gauze pack and segment. 4,351,887, Cl. 428-594.000.

BJ-Hughes Inc.: *See*—
Scott, Floyd L., Jr., 4,351,116, Cl. 33-307.000.

Black & Decker Inc.: *See*—
Lessig, William R., III, 4,351,143, Cl. 56-17.500.

Blackmon, Lawrence E.; Kelly, Darrell A.; Mowe, Wayne T.; and Yu, Jing-peir, to Fiber Industries, Inc. Spun-like yarn. 4,351,147, Cl. 57-208.000.

Blair, Albert; and Grant, Patrick T., to National Research Development Corporation. Rotatable fish cage. 4,351,268, Cl. 119-3.000.

Blair, Gilbert: *See*—
Fenton, Edward A., Jr.; Lakin, Ira W.; and Blair, Gilbert, 4,351,431, Cl. 198-823.000.

Blake, Arthur E.: *See*—
Middleman, Lee M.; Evans, Joseph H.; Blake, Arthur E.; and Scheff, Victor A., 4,352,083, Cl. 338-23.000.

Blatchford, Brian G., to Chas. A. Blatchford & Sons Limited. Artificial leg with stabilized knee mechanism. 4,351,070, Cl. 3-27.000.

Blatter, Kenneth F., to Dresser Industries, Inc. Terraced water distributor for evaporative air conditioner. 4,351,781, Cl. 261-29.000.

Blayne, Jerome J.: *See*—
Sidles, James; and Blayne, Jerome J., 4,351,789, Cl. 264-130.000.

Blinchikoff, Herman J.; and Vaughan, George R., to Westinghouse Electric Corp. Phase-locked loop filter. 4,352,074, Cl. 331-17.000.

Blount, David H. Process for the production of polyester silicate resinous products. 4,351,919, Cl. 524-858.000.

Bodai, Balaza I., to Sontek Industries, Inc. Simultaneous respiration and endotracheal suctioning of a critically ill patient. 4,351,328, Cl. 128-202.160.

Boeing Company, The: *See*—
Olson, Glenn O., 4,352,142, Cl. 361-218.000.
Peash, Douglas E.; and Yorozu, Arthur S., 4,351,501, Cl. 244-129.100.
Statkus, Frank D., 4,351,502, Cl. 244-219.000.

Bohanan, Roy E.: *See*—
Keehner, James E.; Linn, Samuel A.; Kahut, Marvin L.; Forrester, Bobby G.; and Bohanan, Roy E., 4,351,234, Cl. 101-10.000.

Boljevic, Jean M.: *See*—
Dautremay, Alain; and Boljevic, Jean M., 4,352,195, Cl. 375-120.000.
Perez, Andre; Boljevic, Jean M.; and Dautremay, Alain, 4,352,192, Cl. 375-56.000.

Bonavent, Gerard; and Montabord, Lucien, to Institut Francais du Petrole. Elements sensitive to certain polluting agents, particularly hydrocarbons and method of use. 4,351,642, Cl. 23-230.00M.

Bond, Curtis J., to Liqui-Box Corporation. Finger-actuated slideable dispensing valve. 4,351,455, Cl. 222-153.000.

Bonn, Jerrold L.: *See*—
Mahoney, Paul F.; and Bonn, Jerrold L., 4,352,029, Cl. 307-317.00R.

Bopp, Warren G., to Eaton Corporation. Dual stage control for viscous fluid coupling. 4,351,425, Cl. 192-58.00B.

Bopp, Warren G., to Eaton Corporation. Single stage control for viscous fluid coupling. 4,351,426, Cl. 192-58.00B.

Borg-Warner Corporation: *See*—
Argyle, Charles S.; and Nanos, Ralph G., 4,351,390, Cl. 165-149.000.
Kountz, Kenneth J.; and Erth, Richard A., 4,351,160, Cl. 62-201.000.
Ross, Louis, 4,351,204, Cl. 74-804.000.

Borowski, Edward: *See*—
Stefanska, Barbara J.; Falkowski, Leonard S.; and Borowski, Edward, 4,351,937, Cl. 536-6.400.

Bottger, Ernst: *See*—
Schmoller, Karl-Heinz; Bahr, Theodor; Bottger, Ernst; Henrich, Hans-Otto; Thumm, Helmut; and Beck, Heinz, 4,351,486, Cl. 241-67.000.

Bouchard, Edgar, to Bouchard, Normand. Protective garment for the user of a chain saw. 4,351,065, Cl. 2-23.000.

Bouchard, Normand: *See*—
Bouchard, Edgar, 4,351,065, Cl. 2-23.000.

Boudot, Bernard; Grosbois, Jean; and Pajot, Michel, to Rhone-Poulenc Industries. Preparation of gallium oxide. 4,351,821, Cl. 423-624.000.

Boudot, Jean E.; Mazeau, Jean P.; and Michaud, Andre C., to Corning Glass Works. Ophthalmic glasses with high indices of refraction. 4,351,906, Cl. 501-74.000.

Bourdon, Jacques, to Rhone-Poulenc Industries. Preparation of chlorophenols. 4,351,969, Cl. 568-774.000.

Bourne, Richard G.: *See*—
Buddemeyer, Bruce D.; Neville, William A.; Rozzo, Nancy A.; and Bourne, Richard G., 4,351,735, Cl. 252-1.000.

Boyd, Douglas P.; Herrmannsfeldt, William B.; Quinn, James R.; and Sparks, Robert A., to University of California, The Regents of the. X-Ray transmission scanning system and method and electron beam X-ray scan tube for use therewith. 4,352,021, Cl. 378-12.000.

Boyer, Lyndon D.: *See*—
Newman, Bruce A.; and Boyer, Lyndon D., 4,351,702, Cl. 201-5.000.

Braak, Dirk J., to Te Ka De Felton & Guilleaume Fernmeldeanlagen GmbH. Method for siting cosine-squared antennas and antenna array obtained thereby. 4,352,110, Cl. 343-844.000.

Bradshaw, Cyril E., to Eaton Corporation. Exhaust gas recycling modulator valve assembly. 4,351,285, Cl. 123-568.000.

Brady, Allan O. Battery cell assembly system and method. 4,351,106, Cl. 29-730.000.

Brandenberg, Karl A.; and Kautz, Wilbert G., to Aro Corporation, The. Vibration attenuation construction for an impact air tool. 4,351,225, Cl. 91-50.000.

Brandli, Hansheinrich: *See*—
Christen, Peter; Brandli, Hansheinrich; Durrer, Bernhard; and Sauerbrey, Arnim, 4,352,099, Cl. 340-633.000.

Brashears, David F., to Mechtron International Corp. Combustion apparatus. 4,351,251, Cl. 110-261.000.

Brems, John H.; and Graham, James T., to F. Jos. Lamb Company, a part interest. Workpiece storage system. 4,351,241, Cl. 104-93.000.

Brent, Albert: *See*—
Marion, Charles P.; Brent, Albert; Richter, George N.; Crouch, William B.; Child, Edward T.; and Reynolds, Blake, 4,351,645, Cl. 48-61.000.
Marion, Charles P.; Brent, Albert; Richter, George N.; Crouch, William B.; Child, Edward T.; and Reynolds, Blake, 4,351,647, Cl. 48-197.00R.

Brett Enterprises, Inc.: *See*—
Brettler, David H., 4,351,302, Cl. 123-566.000.

Bretthauer, Hans J.: *See*—
Focke, Heinz H.; Liedtke, Kurt; and Bretthauer, Hans J., 4,351,142, Cl. 53-575.000.

Brettler, David H., to Brett Enterprises, Inc. Method and apparatus for reducing automotive pollution. 4,351,302, Cl. 123-566.000.

Brickner, Laurence R.; Moutner, David N.; and Pratt, Barbara J., to Sea-Land Service, Inc. Self-venting cargo container. 4,351,230, Cl. 98-31.000.

Brine, William H., Jr.: *See*—
Duplin, Joseph R., 4,351,528, Cl. 273-67.00A.

Bringhurst, Edward D., to Mannesmann Tally Corporation. Dot printing mechanism for dot matrix line printers. 4,351,235, Cl. 101-93.040.

Bristol-Myers Company: *See*—
Walker, Derek; Silvestri, Herbert H.; Sapino, Chester; and Johnson, David A., 4,351,766, Cl. 260-239.100.

British Aerospace Public Limited Company: *See*—
Swadling, Sidney J.; Mansbridge, Martin H.; Payne, Dennis J.; and Norton, John, 4,351,470, Cl. 228-157.000.

British-American Tobacco Co., Ltd.: *See*—
Baylis, Michael A.; Harris, Peter; and Massey, Stewart R., 4,351,802, Cl. 422-89.000.

British Nuclear Fuels Limited: *See*—
Nicholson, Graham, 4,351,795, Cl. 376-442.000.

British Steel Corporation: *See*—
Garner, Henry C.; and Broadbent, Jack, 4,351,184, Cl. 73-104.000.

Britton, Charles W. Reading of marks. 4,352,022, Cl. 250-561.000.

Brixius, Darryl W.; and Simms, John A., to Du Pont de Nemours, E. I., and Company. Isocyanate-functional polymers containing a terminal monosulfide group. 4,351,755, Cl. 524-555.000.

Broadbent, Jack: *See*—
Garner, Henry C.; and Broadbent, Jack, 4,351,184, Cl. 73-104.000.

Brogger, Fredric D. Device for removing foreign particles from a source of fluid. 4,351,727, Cl. 210-411.000.

Brois, Stanley J.; and Gutierrez, Antonio, to Exxon Research & Engineering Co. Two-phase process for the preparation of azole and azoline disulfides. 4,351,945, Cl. 548-130.000.

Brollo, Aurelio: *See*—
Ballocci, Giovanni; and Brollo, Aurelio, 4,351,432, Cl. 198-847.000.

Bromme, Hermann: *See*—
Krebs, Waldemar; and Bromme, Hermann, 4,351,654, Cl. 62-13.000.

Bronkhorst, Arie J., to Buhrmann, David L. Therapeutic walking device. 4,351,324, Cl. 128-80.00J.

Brooks, David L., II, to Burroughs Corporation. Security document and method for making same using an alternating dot pattern. 4,351,547, Cl. 283-8.00R.

Brosseau, Janet V.; and Brosseau, Jon A., to Lowhurst, Harvey G. Unidirectional stretch mesh laminate and method. 4,351,872, Cl. 428-198.000.

Brosseau, Jon A.: *See*—
Brosseau, Janet V.; and Brosseau, Jon A., 4,351,872, Cl. 428-198.000.

Brouwer, Cornelis, to Rotaque (Proprietary) Limited. Pivoted railway hopper car door latch. 4,351,243, Cl. 105-241.200.

Brown, Boveri & Cie Aktiengesellschaft: *See*—
Stritt, Helmut; Schmidt, Alfred; and Leible, Erwin, 4,351,620, Cl. 403-13.000.

Brown, Jack, to Singer Company, The. Sewing machine needle positioning. 4,351,254, Cl. 112-158.00E.

Brown, Louis S., Jr., to Seaward International, Inc. Marine fender. 4,351,257, Cl. 114-219.000.

Brown, Paul C., to Convey, Inc. Player for digitally recorded music. 4,351,213, Cl. 84-1.010.

Brown & Williamson Tobacco Corporation: *See*—
Sexstone, John H.; Lewis, Tom; and Milliner, Ken, 4,351,792, Cl. 264-293.000.

Bruce, Ingrid: *See*—
Garpendahl, Gunnar; Bruce, Ingrid; and Lundmark, Ebbe, 4,352,060, Cl. 324-61.00R.

Brucker, Rainer: *See*—
Sommer, August; Heitmann, Wilhelm; and Brucker, Rainer, 4,351,970, Cl. 568-895.000.

Brummer, Ursula; and Heeman, Volker, to B.A.T. Cigaretten-Fabriken GmbH. Process for the preparation of aromatic substances. 4,351,346, Cl. 131-276.000.

Brunelle, Daniel J., to General Electric Company. Method for removing polyhalogenated hydrocarbons from nonpolar organic solvent solutions. 4,351,718, Cl. 208-262.000.

Bruns, Klaus: *See*—
Upadek, Horst; and Bruns, Klaus, 4,351,772, Cl. 549-331.000.

Bryant, Spencer L.: *See*—
Glorfield, Paul H.; Bryant, Spencer L.; and Kirklin, Vance L., 4,351,141, Cl. 53-473.000.

Buck, Kerry O.: *See*—
Emerson, James A.; Ramsey, James M.; and Buck, Kerry O., 4,351,582, Cl. 339-97.00R.

Bucking, Hans-Walter: *See*—
Billenstein, Siegfried; May, Adolf; and Bucking, Hans-Walter, 4,351,737, Cl. 252-8.800.

Buddemeyer, Bruce D.; Neville, William A.; Rozzo, Nancy A.; and Bourne, Richard G., to R.G.B. Laboratories Inc. Mineral enrichment composition and method of preparing same. 4,351,735, Cl. 252-1.000.

Buhrmann, David L.: *See*—
Bronkhorst, Arie J., 4,351,324, Cl. 128-80.00J.

Buis, Jacob A. M.: *See*—
Van Herk, Alfred; Buis, Jacob A. M.; Klijnstra, Jan H.; and Van Staalduinen, Jan, 4,352,131, Cl. 360-78.000.

Bunker Ramo Corporation: *See*—
Parrillo, Michael R.; and Colwell, John C., 4,351,343, Cl. 128-695.000.

Burgdorf, Jochen, to ITT Industries, Inc. Sliding guide for a floating caliper disc brake. 4,351,420, Cl. 188-73.450.

Burlington Industries, Inc.: *See*—
Finlayson, James E., III; Holder, Joseph P.; Holt, L. Earl; and Lee, Seung Y., 4,351,638, Cl. 8-463.000.

Burns, Terry A.; and Johnston, Leslie H., to International Business Machines Corporation. Magnetic head assembly with corrosion resistant conductive wire. 4,352,134, Cl. 360-123.000.

Burroughs Corporation: *See*—
Andreadakis, Nicholas C., 4,352,040, Cl. 313-217.000.
Brooks, David L., II, 4,351,547, Cl. 283-8.00R.
DeMoss, Dean; and Richardson, Harvey J., 4,352,135, Cl. 360-133.000.
Fasig, Harold A.; and Paananen, Eugene E., 4,352,013, Cl. 250-223.00R.

C. M. Kemp Manufacturing Co., The: *See*—
Psaras, John D.; and Zahniser, James A., 4,351,732, Cl. 210-689.000.

Calhoun, Leslie D.; and Peeples, Marion E., to McDonnell Douglas Corporation. Inverted meniscus heat pipe. 4,351,388, Cl. 165-104.260.

California Institute of Technology: *See*—
Yariv, Amnon; Margalit, Shlomo; and Lee, Chien-Ping, 4,352,116, Cl. 357-17.000.

Call, Enos P., to Dana Corporation. Axle drive assembly. 4,351,407, Cl. 180-75.000.

Calundann, Gordon W.; Charbonneau, Larry F.; and East, Anthony J., to Celanese Corporation. Poly(ester-amide) capable of forming an anisotropic melt phase derived from 6-hydroxy-2-naphthoic acid, aromatic monomer capable of forming an amide linkage, and other aromatic hydroxyacid. 4,351,917, Cl. 524-602.000.

Calundann, Gordon W.: *See*—
Charbonneau, Larry F.; East, Anthony J.; and Calundann, Gordon W., 4,351,918, Cl. 524-602.000.

Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence of Her Majesty's Canadian Government: *See*—
Milne, Robert, 4,352,108, Cl. 343-756.000.

Canon Denshi Kabushiki Kaisha: *See*—
Ohniwa, Takehiko; and Saito, Syuichiro, 4,351,596, Cl. 354-234.000.

Canon Kabushiki Kaisha: *See*—
Date, Nobuaki; Sakurada, Nobuaki; and Shimizu, Masami, 4,351,595, Cl. 354-173.000.
Date, Nobuaki; Aizawa, Hiroshi; Uchidoi, Masanori; and Watanabe, Yoshiaki, 4,351,597, Cl. 354-266.000.
Hirano, Reiji; and Nakata, Shinichi, 4,352,161, Cl. 364-706.000.
Hirata, Noritsugu; Toyama, Masamichi; Iwama, Hideto; Okajima, Hidekazu; and Nishimura, Akimasa, 4,351,590, Cl. 352-140.000.
Inoue, Shunzo; Nagasawa, Takeshi; Yanagawa, Hitoshi; Iwaya, Toshio; and Kasuya, Michio, 4,351,609, Cl. 355-50.000.
Kyogoku, Hiroshi; Tazaki, Shigemitsu; Okamura, Shigeru; Terasawa, Koji; Kasugayama, Yukio; and Hattori, Yoshihumi, 4,352,114, Cl. 346-140.00R.
Ohniwa, Takehiko; and Saito, Syuichiro, 4,351,596, Cl. 354-234.000.
Suzuki, Toyotosi; Tamamura, Hideo; and Matsuda, Mutsuhide, 4,351,598, Cl. 354-288.000.
Suzuki, Toyotosi; Matsuda, Mutsuhide; and Tamamura, Hideo, 4,351,599, Cl. 354-288.000.

Caracappa, Michael G., to RCA Corporation. System and method for frequency discrimination. 4,352,194, Cl. 375-89.000.

Cardew, Kenneth H. F., to United Kingdom of Great Britain and Northern Ireland, The Minister for Transport in Her Britannic Majesty's Government of the. Strop restraining means. 4,351,545, Cl. 280-806.000.

Carlo Erba Strumentazione S.p.A.: *See*—
Colombo, Bruno; and Tosi, Bruno, 4,351,193, Cl. 73-864.820.

Carlson, David J.; and Tsou, Sander H. C., to RCA Corporation. Multi-band antenna coupling network. 4,352,111, Cl. 343-860.000.

Carlsson, Lars, to Tetra Pak International AB. Method and an arrangement for the feed of a material web. 4,351,461, Cl. 226-28.000.

Carnahan, Howard L.: *See*—
Rutger, J. Neil; and Carnahan, Howard L., 4,351,130, Cl. 47-58.000.

Carney, Andrew L. Methods of securing electrodes to the heart. 4,351,345, Cl. 128-786.000.

Carney, Murray C.: *See*—
Dyer, Robert E.; and Carney, Murray C., 4,352,009, Cl. 235-92.0ST.

Carney, Richard E. Combined remote control for wireless communication equipment and associated antenna. 4,352,202, Cl. 455-151.000.

Carpenter, Vance J.; and Yang, Eugene L., to Xerox Corporation. Controlled velocity transport precession system. 4,351,605, Cl. 355-8.000.

Carr, John A. Machine tool for scribing arcs and circles. 4,351,111, Cl. 30-164.900.

Carrier Corporation: *See*—
Geary, Carl H.; and Samurin, Norman A., 4,352,024, Cl. 290-52.000.

Carson, Donald G. Precision positioning apparatus having a rotating driving element and a rotating driven element. 4,351,197, Cl. 74-89.220.

CASCO Inc.: *See*—
McGuire, Hugh K., 4,351,682, Cl. 156-143.000.

Cassar, Luigi: *See*—
Foa, Marco; Moro, Alessandro; Gardano, Andrea; and Cassar, Luigi, 4,351,952, Cl. 562-406.000.

Castillo-Gonzalez, Ricardo, to Cia Minera Rio Colorado, S.A. Separation of arsenic from fluorite ore, by means of magnetic separation and flotation of the pyrites to which it is associated. 4,351,483, Cl. 241-24.000.

Caterpillar Tractor Co.: *See*—
Moore, John A., 4,351,533, Cl. 277-83.000.

Cavallari, Bruno: *See*—
Bellicardi, Francesco; Dall'Osso, Carlo; and Cavallari, Bruno, 4,351,782, Cl. 261-39.00A.

Cave, David L.; Harris, Steven L.; and Zobel, Don W., to Motorola, Inc. Solid-state voltage reference providing a regulated voltage having a high magnitude. 4,352,056, Cl. 323-314.000.

Celanese Corporation: *See*—
Calundann, Gordon W.; Charbonneau, Larry F.; and East, Anthony J., 4,351,917, Cl. 524-602.000.
Charbonneau, Larry F.; East, Anthony J.; and Calundann, Gordon W., 4,351,918, Cl. 524-602.000.
Lu, Shau-Zou; and Druin, Melvin, 4,351,758, Cl. 524-227.000.
Warner, Steven B., 4,351,925, Cl. 525-369.000.
Witt, Enrique R., 4,351,729, Cl. 210-603.000.

Centre de Recherches Metallurgiques-Centrum Voor Research In De Metallurgie: *See*—
Cosse, Paul; and Pelerin, Jacques, 4,351,862, Cl. 427-300.000.
Pelerin, Jacques, 4,351,854, Cl. 427-34.000.

Centre Electronique Horloger S.A.: *See*—
Dessoulavy, Roger, 4,352,069, Cl. 328-127.000.

Centro Ricerche Fiat S.p.A.: *See*—
Bassoli, Cesare; Cornetti, Giorgio; and Lovisolo, Francesco, 4,351,295, Cl. 123-300.000.

Cerberus AG: *See*—
Christen, Peter; Brandli, Hansheinrich; Durrer, Bernhard; and Sauerbrey, Arnim, 4,352,099, Cl. 340-633.000.

Cesark, Frank F.; and Thomas, Daniel W., to American Cyanamid Company. Oxime ethers of 4,4'-bis(N,N-diethylamino)benzhydrol and pressure-sensitive recording systems containing them. 4,351,956, Cl. 564-256.000.

Cetus Corporation: *See*—
Bahl, Chander P., 4,351,901, Cl. 435-91.000.
Neidleman, Saul L.; Amon, William F., Jr.; and Geigert, John, 4,351,902, Cl. 435-137.000.

Chamberlin, Thomas A.; and Tomalia, Donald A., to Dow Chemical Co., The. Vinyl substituted cyclic polyethers and addition polymers thereof. 4,351,933, Cl. 526-266.000.
Champion Spark Plug Company: *See*—
Mahaney, Robert A., 4,351,291, Cl. 123-145.00A.
Chan, Hak-Foon, to Rohm and Haas Company. Fungicidal 2-aryl-2-1-H-azoyl-(alkyl)-gamma-butyrolactones. 4,351,839, Cl. 424-269.000.
Chan, Henry C.: *See*—
Owens, William R.; Chan, Henry C.; Abraham, Ooriapadical C.; and Parker, Levi C., 4,351,649, Cl. 55-162.000.
Chance, Dudley A., to International Business Machines Corporation. Gas laser and method of manufacturing. 4,352,184, Cl. 372-61.000.
Chandesais, Jean L. Ring lighting for microscopes. 4,351,584, Cl. 350-89.000.
Chappell, Terry I.; Pettit, Geroge D.; and Woodall, Jerry M., to International Business Machines Corporation. Electrochemically eroding semiconductor device. 4,351,706, Cl. 204-129.300.
Charbonneau, Larry F.; East, Anthony J.; and Calundann, Gordon W., to Celanese Corporation. Poly(ester-amide) capable of forming an anisotropic melt phase derived from 6-hydroxy-2-naphthoic acid, other aromatic hydroxyacid, carbocyclic dicarboxylic acid, and aromatic monomer capable of forming an amide linkage. 4,351,918, Cl. 524-602.000.
Charbonneau, Larry F.: *See*—
Calundann, Gordon W.; Charbonneau, Larry F.; and East, Anthony J., 4,351,917, Cl. 524-602.000.
Chas. A. Blatchford & Sons Limited: *See*—
Blatchford, Brian G., 4,351,070, Cl. 3-27.000.
Chartrand, Joseph A.; and Perreault, Irenee. Process and apparatus for recycling organic wastes. 4,351,250, Cl. 110-227.000.
Chary, Rajagopala M. N. Light shield for vehicles having transparent members. 4,351,557, Cl. 296-97.00D.
Chauve, Jean, to Societe Anonyme Francaise du Ferodo. Industrial disc brake. 4,351,422, Cl. 188-170.000.
Chavel, Pierre H.; Sawchuk, Alexander A.; Soffer, Bernard H.; Strand, Timothy C.; and Tanguay, Armand R., Jr., to Hughes Aircraft Company. Method and apparatus for optical computing and logic processing by mapping of input optical intensity into position of an optical image. 4,351,589, Cl. 350-342.000.
Chemie-Anlagenbau Bischofsheim GmbH: *See*—
Hilterhaus, Karl-Heinz; and Moser, Reinhard, 4,351,354, Cl. 137-240.000.
Chemische Werke Huls Aktiengesellschaft: *See*—
Krebs, Waldemar; and Bromme, Hermann, 4,351,654, Cl. 62-13.000.
Chester, Arthur W.; and Chu, Yung F., to Mobil Oil Corporation. Manufacture of aromatic compounds. 4,351,979, Cl. 585-481.000.
Chevron Research Company: *See*—
Ferm, Richard L.; and Latif, Chester C., 4,351,750, Cl. 524-8.000.
Child, Edward T.: *See*—
Marion, Charles P.; Brent, Albert; Richter, George N.; Crouch, William B.; Child, Edward T.; and Reynolds, Blake, 4,351,645, Cl. 48-61.000.
Marion, Charles P.; Brent, Albert; Richter, George N.; Crouch, William B.; Child, Edward T.; and Reynolds, Blake, 4,351,647, Cl. 48-197.00R.
Childs, William H.; and Mahle, Christoph E., to Communications Satellite Corporation. Planar QPSK demodulator. 4,352,071, Cl. 329-105.000.
China National Light Industrial Products Import Export Corporation, Shantung Branch: *See*—
Tsui, Yaiman, 4,351,171, Cl. 70-339.000.
Choi, Mansam, to Anthony Manufacturing Corporation. Pop-up sprinkler. 4,351,477, Cl. 239-205.000.
Christen, Peter; Brandli, Hansheinrich; Durrer, Bernhard; and Sauerbrey, Arnim, to Cerberus AG. Gas sensing unit for use in environment comprising explosive gases. 4,352,099, Cl. 340-633.000.
Christensen, Inc.: *See*—
Fielder, Coy M., 4,351,401, Cl. 175-329.000.
Christiani, Peter. Porous salad bowl including ribbed lid for cooling. 4,351,164, Cl. 62-315.000.
Chu, Yung F.: *See*—
Chester, Arthur W.; and Chu, Yung F., 4,351,979, Cl. 585-481.000.
Chubu Electric Power Co., Inc., The: *See*—
Hashimoto, Yuuji; Kobayashi, Izumi; Suzuki, Mitsuo; Yamada, Kimio; Izumi, Shigeru; and Michiguchi, Yoshihiro, 4,352,167, Cl. 367-127.000.
Chugai Seiyaku Kabushiki Kaisha: *See*—
Takahashi, Hironobu; Honda, Masamitus; Murakami, Yasushi; and Iwane, Yoshitaka. 4,351,834, Cl. 424-249.000.
Chugairo Kogyo Kaisha Ltd.: *See*—
Nagai, Kiyokazu, 4,351,632, Cl. 431-183.000.
Chugoku Electric Power Co., Inc., The: *See*—
Hashimoto, Yuuji; Kobayashi, Izumi; Suzuki, Mitsuo; Yamada, Kimio; Izumi, Shigeru; and Michiguchi, Yoshihiro, 4,352,167, Cl. 367-127.000.
Chung, Ha D., to Han Baek Trading Co., Ltd. Rubber sealed metal vacuum bottle and stopper caps therefor. 4,351,451, Cl. 220-420.000.
Chupp, John P., to Monsanto Company. Herbicidal tertiary 2-haloacetamides. 4,351,667, Cl. 71-118.000.
Cia Minera Rio Colorado, S.A.: *See*—
Castillo-Gonzalez, Ricardo, 4,351,483, Cl. 241-24.000.
Ciba-Geigy AG: *See*—
Baumgartner, Peter; Karlen, Urs; and Keller, Urs, 4,351,774, Cl. 260-383.000.
Coote, Jack H.; and Jenkins, Arthur P., 4,351,608, Cl. 355-35.000.
Tzikas, Athanassios, 4,351,975, Cl. 570-209.000.
Ciba-Geigy Corporation: *See*—
Berner, Godwin; and Kirchmayr, Rudolf, 4,351,708, Cl. 204-159.230.
Maier, Ludwig, 4,351,779, Cl. 260-970.000.
Marshall, Alan, 4,351,796, Cl. 422-15.000.
Martin, Pierre; Steiner, Eginhard; and Bellus, Daniel, 4,351,961, Cl. 568-381.000.
Spivack, John D., 4,351,759, Cl. 524-100.000.
Clar, Milton. Water-saving device. 4,351,071, Cl. 4-324.000.
Clark, David F., to Stanley Works, The. Method of bonding silicone rubber to non-silicone adhesive. 4,351,686, Cl. 156-329.000.
Clark, Dewey: *See*—
Selvidge, Richard H.; and Clark, Dewey, 4,351,300, Cl. 123-527.000.
Clark, John I.; Mengel, Loretta S.; and Benedek, George B., to Massachusetts Institute of Technology. Process for preventing or reversing cataract formation using acrylamides. 4,351,826, Cl. 424-81.000.
Clark, Larry G. Pass-through for drive-up window. 4,351,247, Cl. 109-19.000.
Clark, Leslie, to Roneo Alcatel Limited. Duplicating stencil. 4,351,685, Cl. 156-234.000.
Clarkson, James A. Hinged gutter guard. 4,351,134, Cl. 52-12.000.
Claytor, Elizabeth A.: *See*—
Reusser, Robert E.; Claytor, Elizabeth A.; and Jones, Brenton E., 4,351,980, Cl. 585-820.000.
Clements, Gary B.; and Ramsey, Robert E., to Hinderliter Energy Equipment Corp. Spring clip for wellhead slips. 4,351,090, Cl. 24-263.00D.
Clompus, I. Bertram. Key actuated locking bolt. 4,351,170, Cl. 70-90.000.
Clyde, Robert A. Horizontal fermenter. 4,351,905, Cl. 435-316.000.
Coats, John H.: *See*—
Whaley, Howard A.; and Coats, John H., 4,351,769, Cl. 260-326.340.
Cobleigh, Wendall C.; and Barmore, Donald L., to Professional Marketing Associates. Film dispenser and slitter. 4,351,208, Cl. 83-167.000.
Cocks, Philip J., to Dunlop Limited. Steel reinforced pipe. 4,351,364, Cl. 138-133.000.
Cognata, Richard. Cover for a channel clip binder and method of making same. 4,351,546, Cl. 281-45.000.
Cohn, Alan E., to Goodyear Tire & Rubber Company, The. Method of constructing tire and identification tag therefor. 4,351,548, Cl. 283-21.000.
Colby, Dwight D., to Honeywell Inc. Liquid gaging system lost sensor recovery. 4,352,159, Cl. 364-509.000.
Coles, Richard J., to Glaxo Laboratories Limited. N-Cyclopropylisoindolines. 4,351,842, Cl. 424-274.000.
Colgate Palmolive Company: *See*—
Joshi, David; and Klingaman, Richard, 4,351,740, Cl. 252-90.000.
Collins, H. Thomas: *See*—
Heinz, Edward J.; and Collins, H. Thomas, 4,351,623, Cl. 405-210.000.
Colombo, Bruno; and Tosi, Bruno, to Carlo Erba Strumentazione S.p.A. Sampler for analytical detection systems. 4,351,193, Cl. 73-864.820.
Columbian Chemicals Company: *See*—
Glasstetter, Fred E.; and Eckert, Frank J., 4,351,815, Cl. 423-445.000.
Colwell, John C.: *See*—
Parrillo, Michael R.; and Colwell, John C., 4,351,343, Cl. 128-695.000.
Combustion Engineering, Inc.: *See*—
Stockman, Richard F., 4,351,392, Cl. 165-186.000.
Cominco Ltd.: *See*—
Stephenson, Leonard P.; and Schweizer, Arthur A., 4,351,668, Cl. 75-2.000.
Commissariat a l'Energie Atomique: *See*—
Artaud, Robert; Aubert, Michel; and Renaux, Charley, 4,351,794, Cl. 376-404.000.
Gervais, Yvon; Gillet, Renen; and Tanis, Georges, 4,352,004, Cl. 219-121.0ED.
Communications Satellite Corporation: *See*—
Childs, William H.; and Mahle, Christoph E., 4,352,071, Cl. 329-105.000.
Compagnie Generale de Geophysique: *See*—
Beauducel, Claude; and Cretin, Jacques, 4,352,070, Cl. 328-151.000.
Compagnie Generale de Radiologie: *See*—
Gabbay, Emile, 4,352,196, Cl. 378-125.000.
Compagnie Industrielle des Telecommunications CIT-ALCATEL: *See*—
Le Dieu, Bernard; and Herledan, Jean-Rene, 4,352,181, Cl. 370-105.000.
Compagnie Internationale pour l'Informatique CII-Honeywell Bull: *See*—
Floury, Claude P.; Guillet, Claude L. J. M.; Lokocki, James A.; Devoille, Maurice R.; and Fanene, Bernard, 4,351,468, Cl. 228-4.500.
Compania Espanola de Petroleos, S.A.: *See*—
LLorente Agudo, Nieves; Elia Miguel, Maria F.; Aranguren Escobar, Maria A.; Pares Olivet, Eulalia; and Fernandez Garvajosa, Jose M., 4,351,903, Cl. 435-234.000.
Concannon, Thomas P., to Du Pont de Nemours, E. I., and Company. Article coated with fluoropolymer finish with improved durability. 4,351,882, Cl. 428-422.000.

Conoco Inc.: *See—*
Newman, Bruce A.; and Boyer, Lyndon D., 4,351,702, Cl. 201-5.000.

Container Corporation of America: *See—*
Helms, Charles R., 4,351,436, Cl. 206-477.000.

Continental Group, Inc., The: *See—*
Giggard, Earl D.; Khoury, Nick S.; Kowalik, John J.; and Terrien, Donald R., 4,351,445, Cl. 220-91.000.

Convey, Inc.: *See—*
Brown, Paul C., 4,351,213, Cl. 84-1.010.

Cook, Kenneth J.: *See—*
Schultz, Edward R., Jr.; Cook, Kenneth J.; Power, Joseph S.; and Ruszala, Frederick B., 4,352,163, Cl. 364-801.000.

Coote, Jack H.; and Jenkins, Arthur P., to Ciba-Geigy AG. Filter head. 4,351,608, Cl. 355-35.000.

Coplan, Myron J.: *See—*
Sebring, Robert E.; and Coplan, Myron J., 4,351,092, Cl. 28-100.000.

Copp, Carl A., Jr.; Pandzik, Richard T.; and Gaines, Marvin E., to General Motors Corporation. Multicylinder swash plate compressor piston ring arrangement. 4,351,227, Cl. 92-71.000.

Corboy, John F., Jr.: *See—*
Duffy, Michael T.; Corboy, John F., Jr.; and Zanzucchi, Peter J., 4,352,017, Cl. 250-358.100.

Cordier, Georges, to Rhone-Poulenc Agrochimie. Process for preparation of anilines substituted by chlorine in the meta-position. 4,351,959, Cl. 564-412.000.

Cordle, Paul E.: *See—*
McCubbin, Melvin J.; Johnson, Clifford T.; and Cordle, Paul E., 4,351,240, Cl. 102-364.000.

Cormier, Raymond G.; and Gibbs, John D., to Nashua Corporation. Sheet stripping hold down assembly. 4,351,601, Cl. 355-3.0SH.

Cornelis, Christiaan A.; and van Prooijen, Pieter, to IHC Holland N.V. System for controlling the position of the drag pipe of a dredge. 4,351,122, Cl. 37-58.000.

Corner, Michael R.; Kemp, Ian; and French, Tom, to Dunlop Limited. Tire and wheel rim assemblies. 4,351,382, Cl. 152-330.0RF.

Cornetti, Giorgio: *See—*
Bassoli, Cesare; Cornetti, Giorgio; and Lovisolo, Francesco, 4,351,295, Cl. 123-300.000.

Corning Glass Works: *See—*
Bansal, Bihari, 4,351,664, Cl. 65-128.000.
Boudot, Jean E.; Mazeau, Jean P.; and Michaud, Andre C., 4,351,906, Cl. 501-74.000.
Elmer, Thomas H.; and Wu, Che-Kuang, 4,351,662, Cl. 65-30.100.
Olshansky, Robert, 4,351,658, Cl. 65-3.120.

Correll, Glenn D.; and Friedli, Hans R., to Dow Chemical Company, The. Hydrolysis of carbon oxysulfide with morpholines and piperazines. 4,351,812, Cl. 423-243.000.

Cosse, Paul; and Pelerin, Jacques, to Centre de Recherches Metallurgiques-Centrum Voor Research In De Metallurgie. Continuous hot-dip coating of metal strip. 4,351,862, Cl. 427-300.000.

Costamagna, Robert M.; Mori, Denis W.; and Bardett, Allen R., to McCormick & Company, Incorporated. Process of producing a batter-coated onion product. 4,351,850, Cl. 426-302.000.

Costello, Christopher, to Lucas Industries Limited. Fuel injection system. 4,351,299, Cl. 123-472.000.

Coulter Electronics, Inc.: *See—*
Leif, Robert C., 4,351,611, Cl. 356-328.000.

Courneya, Calice G. Apparatus for extracting potable water. 4,351,651, Cl. 55-210.000.

Crane, Dale E., to Uniphase Corporation. Gas laser having improved stability against environmental conditions. 4,352,185, Cl. 372-29.000.

Crepeau, Charles E.: *See—*
Mulvey, Robert F.; and Crepeau, Charles E., 4,351,867, Cl. 428-70.000.

Cresap, Charles N. Sintered polymer moldings and composites having altered cross section(s): fluid compacting and sintering process and apparatus for making same. 4,351,869, Cl. 428-121.000.

Cretin, Jacques: *See—*
Beauducel, Claude; and Cretin, Jacques, 4,352,070, Cl. 328-151.000.

Crick, Aubrey M.: *See—*
Phillips, Michael J.; and Crick, Aubrey M., 4,351,586, Cl. 350-96.200.

Crisp, Melvin L., Jr. Double acting exerciser. 4,351,527, Cl. 272-137.000.

Crompton & Knowles Corporation: *See—*
Guy, David A.; and Nims, Philip A., 4,351,370, Cl. 139-450.000.

Crooks, Horatio N., to RCA Corporation. Video disc player having record side identifying apparatus. 4,352,175, Cl. 369-77.000.

Cross, Carroll N. Display mount and method. 4,351,123, Cl. 40-120.000.

Cross, James A.; and Snyder, John E., to R.F. Technical Products, Inc. Noise suppression circuit. 4,352,207, Cl. 455-223.000.

Crouch, Donald W., to General Electric Company. High-potential testing of vacuum-type circuit interrupters. 4,351,992, Cl. 200-144.00B.

Crouch, William B.: *See—*
Marion, Charles P.; Brent, Albert; Richter, George N.; Crouch, William B.; Child, Edward T.; and Reynolds, Blake, 4,351,645, Cl. 48-61.000.
Marion, Charles P.; Brent, Albert; Richter, George N.; Crouch, William B.; Child, Edward T.; and Reynolds, Blake, 4,351,647, Cl. 48-197.00R.

Crounse, Nathan N.; and Schmidt, Paul J., to Sterling Drug Inc. 2-[(3-Indolyl)carbonyl]-4/5-carboxybenzoic acids. 4,351,768, Cl. 260-326.13R.

Crouse, William G.; and Knox, Charles R., to International Business Machines Corp. Speech detector with variable threshold. 4,351,983, Cl. 179-1.0SC.

Crute, Billy G., to Stant Inc. Valving assembly for a liquid-containing tank. 4,351,350, Cl. 137-39.000.

Cselt - Centro Studi e Laboratori Telecomunicazioni S.p.A.: *See—*
Billi, Roberto; and Scagliola, Carlo, 4,352,182, Cl. 371-22.000.

Csoke, Istvan: *See—*
Farkas, Peter E., 4,351,145, Cl. 56-400.160.

Culbro Corporation: *See—*
Dreher, Hans C., 4,351,679, Cl. 156-70.000.

Cunningham, Vernon R., to Rockwell International Corporation. Split phase delay equalizer with single transformer and adjustment for Q loss. 4,352,075, Cl. 333-28.00R.

Cuomo, Jerome J.; and Harper, James M. E., to International Business Machines Corporation. Low energy ion beam oxidation process. 4,351,712, Cl. 204-192.0EC.

Cuomo, Jerome J.; Dreyfus, Russell W.; and Woodall, Jerry M., to International Business Machines Corporation. Electron source. 4,352,117, Cl. 357-30.000.

Currans, James H. Linear, gas to voltage transducer circuit. 4,351,181, Cl. 73-23.000.

Curtis, George F., to Maremont Corporation. Bipod mechanism for small arms. 4,351,224, Cl. 89-37.0BA.

Cyrot, Luc P., to Parker-Hannifin Corporation. Fluid control system. 4,351,226, Cl. 91-387.000.

Dabney, James H. Time domain multiplexing apparatus for multiple microphones. 4,352,179, Cl. 370-6.000.

Dahlquist, E. Arthur. Tree planter and trailer. 4,351,253, Cl. 111-2.000.

Daido Sanso Kabushiki Kaisha: *See—*
Hatano, Yasuhiro; and Nakao, Kazumune, 4,351,978, Cl. 585-469.000.

Daiker, Artur L.; Veis, Anatoly I.; Kochengin, Evgeny Y.; Novoselov, Nikolai M.; Morozov, Gennady Y.; Rybin, Vladimir S.; Belokur, Nikolai A.; and Savelieva, Nina A. Method and apparatus for powder scarfing of metal. 4,351,676, Cl. 148-9.00C.

Daikin Kogyo Co., Ltd.: *See—*
Fukui, Shosin; and Shinjo, Masayoshi, 4,351,880, Cl. 428-378.000.

Dainippon Ink & Chemicals, Inc.: *See—*
Ariga, Nagao; Shimazu, Kyotaro; Takenaka, Hidenori; and Sato, Hiroyuki, 4,351,920, Cl. 525-67.000.

Dalebout, Melvin W., to Engineered Sports Products, Inc. Removable traction surfaces for footwear. 4,351,120, Cl. 36-117.000.

Dall'Osso, Carlo: *See—*
Bellicardi, Francesco; Dall'Osso, Carlo; and Cavallari, Bruno, 4,351,782, Cl. 261-39.00A.

Dampier, Frederick W.; and Kalivas, Risty T., to GTE Laboratories Incorporated. Electrochemical cell. 4,351,888, Cl. 429-62.000.

Dana Corporation: *See—*
Call, Enos P., 4,351,407, Cl. 180-75.000.

Das, Balbhadra; and Fahey, Dennis M., to PPG Industries, Inc. Detackified aqueous sizing composition comprising liquid polymer and free radical generator. 4,351,752, Cl. 523-401.000.

Data Master: *See—*
Gyi, Koko, 4,352,132, Cl. 360-97.000.

Datagraphix, Inc.: *See—*
Link, William T.; Runyan, Steven R.; and Hobson, Stephen, 4,351,592, Cl. 353-72.000.

Date, Nobuaki; Sakurada, Nobuaki; and Shimizu, Masami, to Canon Kabushiki Kaisha. Motor drive camera. 4,351,595, Cl. 354-173.000.

Date, Nobuaki; Aizawa, Hiroshi; Uchidoi, Masanori; and Watanabe, Yoshiaki, to Canon Kabushiki Kaisha. Camera having electromagnetic release control. 4,351,597, Cl. 354-266.000.

Date, Tasuku; Nomura, Toshio; and Kobayashi, Isao, to Honda Giken Kogyo Kabushiki Kaisha. Engine fuel supply controlling system. 4,352,158, Cl. 364-431.050.

Dautremay, Alain; and Boljevic, Jean M., to Thomson-CSF. Device for the synchronization of a timing signal. 4,352,195, Cl. 375-120.000.

Dautremay, Alain: *See—*
Perez, Andre; Boljevic, Jean M.; and Dautremay, Alain, 4,352,192, Cl. 375-56.000.

Davies, Michael J., to United Kingdom Atomic Energy Authority. Method of making spark plugs. 4,351,095, Cl. 29-25.120.

Davis, Christopher K.; and Mitchell, Richard F., to U.S. Philips Corporation. Information transmission system. 4,352,183, Cl. 371-33.000.

Davis, Duane A., to GAF Corporation. Double faced insulating board. 4,351,873, Cl. 428-198.000.

Davis, Grant L.: *See—*
Weiss, Olin E.; Davis, Grant L.; Hudson, James L.; and Dowell, Harlan T., 4,351,688, Cl. 156-358.000.

Davis, T. Grant, to Fairchild Camera & Instrument Corp. Alignment target for electron-beam write system. 4,351,892, Cl. 430-30.000.

Day, Clive R.: *See—*
Beales, Keith J.; Day, Clive R.; and Newns, George R., 4,351,659, Cl. 65-3.130.

Day, Winterton U., to Kimberly-Clark Corporation. Method for dry forming a uniform web of fibers. 4,351,793, Cl. 264-518.000.

DC Electronic Industries, Inc.: *See—*
Ottone, Robert J., 4,352,067, Cl. 324-434.000.

DEC International: *See—*
Meade, Reginald E., 4,351,849, Cl. 426-61.000.

Decker, Heinz: *See—*
Adler, Karl-Heinz; Pfaff, Georg; Leussink, Reinhard; Sohner, Gerhard; Hohne, Gerd; Jokh, Thomas; and Decker, Heinz, 4,351,310, Cl. 123-644.000.

Deere & Company: *See*—
Ahlschwede, Brian A., 4,351,568, Cl. 301-36.00R.
Bedis, Michael; and Westemeier, Donald E., 4,351,573, Cl. 305-54.000.
Roesner, Keith G., 4,351,863, Cl. 427-421.000.
Verhulst, Michael J., 4,351,551, Cl. 289-2.000.

Degussa AG: *See*—
Kleemann, Axel; and Schalke, Peter M., 4,351,778, Cl. 260-465.80R.

Degussa Aktiengesellschaft: *See*—
Kriebitzsch, Norbert; Puschner, Kurt; and Hentschel, Klaus, 4,351,644, Cl. 23-293.00R.

De Jule, Michael C., to Lucitron, Inc. Flat panel display system. 4,352,101, Cl. 340-769.000.

Dekkers, Nicolaas H.: *See*—
Jore, Alfred; Van Gorkom, Gerardus G. P.; and Dekkers, Nicolaas H., 4,352,015, Cl. 250-311.000.

Delay, Francois, to Firmenich SA. Norbornane (-ene) derivatives and their use as perfuming ingredients. 4,351,748, Cl. 252-522.00R.

Delgado, Manuel O., Jr. Liquified gas pumping and cylinder re-fill system. 4,351,372, Cl. 141-2.000.

Demerson, Christopher A.: *See*—
Dobson, Thomas A.; Humber, Leslie G.; Demerson, Christopher A.; and Jirkovsky, Ivo L., 4,351,942, Cl. 546-269.000.

DeMoss, Dean; and Richardson, Harvey J., to Burroughs Corporation. Floppy pack with improved spacer means. 4,352,135, Cl. 360-133.000.

Dennis, James T.; and Kolomayets, George, to Dennis, James T. Automatic record player. 4,352,177, Cl. 369-246.000.

Dennisson, James W.: *See*—
Ingersoll, Brian E.; Nicholson, Ross C.; and Dennisson, James W., 4,351,448, Cl. 220-318.000.

De Paolis, Chiara: *See*—
Zetler, Gerhard; Rossi, Alessandro; and De Paolis, Chiara, 4,351,829, Cl. 424-177.000.

Depoisier, Jean-Claude; and Rogier, Leonce E. R., to Societe Anonyme Francaise du Ferodo. Method of improving friction contact between friction elements of a static brake and improved friction element. 4,351,885, Cl. 428-544.000.

de Putter, Warner J., to Wavin B.V. Method for installing a sealing body in a groove of a socket and pipe part of plastic material. 4,351,791, Cl. 264-267.000.

Depweg, Frank A.; and Zukowski, Edward A., to White Consolidated Industries, Inc. Multiple spindle rotary indexing machine tool. 4,351,096, Cl. 29-38.00A.

der Wissenschaften e.V. Max-Planck-Gesellschaft zur/Forderung: *See*—
Birr, Christian, 4,351,764, Cl. 260-112.700.

Dessoulavy, Roger, to Centre Electronique Horloger S.A. Switched capacitance signal processor. 4,352,069, Cl. 328-127.000.

Deuser, Norbert; and Diemer, Peter, to Krupp-Koppers GmbH. Method for the production of synthesis gas. 4,351,742, Cl. 252-373.000.

Deutsch, Ralph, to Kawai Musical Instrument Mfg. Co., Ltd. Recursive formant generator for an electronic musical instrument. 4,351,218, Cl. 84-1.190.

Devoille, Maurice R.: *See*—
Floury, Claude P.; Guillet, Claude L. J. M.; Lokocki, James A.; Devoille, Maurice R.; and Fanene, Bernard, 4,351,468, Cl. 228-4.500.

Diemer, Peter: *See*—
Deuser, Norbert; and Diemer, Peter, 4,351,742, Cl. 252-373.000.

Dillon, Robert H.: *See*—
Hirt, Theodore A.; and Dillon, Robert H., 4,351,713, Cl. 204-207.000.

Dionex Corporation: *See*—
Stevens, Timothy S., 4,351,909, Cl. 521-28.000.

Dischert, Robert A.: *See*—
Reitmeier, Glenn A.; and Dischert, Robert A., 4,352,122, Cl. 358-11.000.

Di Sciascio, Nicola: *See*—
Filidoro, Roberto; and Di Sciascio, Nicola, 4,351,353, Cl. 137-219.000.

Dixon Automatic Tool, Inc.: *See*—
Dixon, Paul H., 4,351,637, Cl. 474-148.000.

Dixon, Paul H., to Dixon Automatic Tool, Inc. Precision chain drive. 4,351,637, Cl. 474-148.000.

Dobson, Thomas A.; Humber, Leslie G.; Demerson, Christopher A.; and Jirkovsky, Ivo L., to American Home Products Corp. Isochromans. 4,351,942, Cl. 546-269.000.

Doi, Keiichiro: *See*—
Kondo, Shigeki; Iketani, Tomofumi; Yamazaki, Yoshio; Doi, Keiichiro; and Tanaka, Seiji, 4,351,996, Cl. 219-10.49R.

Doi, Shuhei; Isaka, Tsutomu; and Iida, Shinichiro, to Mitsubishi Petrochemical Company Limited. Laminate films and sheets of crosslinked polyethylene resins. 4,351,876, Cl. 428-349.000.

Donaldson Company, Inc.: *See*—
Gillingham, Gary R., 4,351,567, Cl. 299-45.000.

Donskoi, Leonid: *See*—
Rehme, Wilfried; Stipura, Anatoly; Ripnyi, Victor; Donskoi, Leonid; and Schevtschenko, Nikolai, 4,351,190, Cl. 73-638.000.

Dornier System GmbH: *See*—
Schmidberger, Rainer, 4,351,182, Cl. 73-27.00R.

Doublewal Corporation: *See*—
Toffolon, Roger L.; and Kart, Warren E., 4,351,507, Cl. 249-63.000.

Dove, Norman F. Steam distribution apparatus for the nip of two rolls. 4,351,700, Cl. 162-252.000.

Dover Corporation: *See*—
Polson, Charles L., 4,351,375, Cl. 141-98.000.

Dow Chemical Co., The: *See*—
Chamberlin, Thomas A.; and Tomalia, Donald A., 4,351,933, Cl. 526-266.000.
Correll, Glenn D.; and Friedli, Hans R., 4,351,812, Cl. 423-243.000.
Gibbs, Dale S.; and Foye, Duane F., 4,351,929, Cl. 526-80.000.
Ishibe, Nobuyuki; and Richey, Warren F., 4,351,973, Cl. 570-104.000.
Malhotra, Sudarshan K., 4,351,943, Cl. 546-301.000.
McMillan, William J.; and Severson, Jerry L., 4,351,138, Cl. 52-309.400.
Smith, Harry A., 4,351,928, Cl. 525-443.000.
Stevens, Timothy S., 4,351,909, Cl. 521-28.000.

Dowell, Harlan T.: *See*—
Weiss, Olin E.; Davis, Grant L.; Hudson, James L.; and Dowell, Harlan T., 4,351,688, Cl. 156-358.000.

Dowler, Warren L.: *See*—
Harper-Tervet, Jan; Dowler, Warren L.; Yen, Shiao-Ping S.; and Mueller, William A., 4,351,878, Cl. 428-367.000.

Dragerwerk Aktiengesellschaft: *See*—
Rinne, Gerhart; and Heim, Ulrich, 4,351,327, Cl. 128-200.140.

Dravo Corporation: *See*—
Fenton, Edward A., Jr.; Lakin, Ira W.; and Blair, Gilbert, 4,351,431, Cl. 198-823.000.

Dreher, Hans C., to Culbro Corporation. Label-leaflet applying apparatus. 4,351,679, Cl. 156-70.000.

Dresser Industries, Inc.: *See*—
Blatter, Kenneth F., 4,351,781, Cl. 261-29.000.
Schoonover, Larry G., 4,352,166, Cl. 367-69.000.

Drew, Ralph H., Jr.: *See*—
Koller, Floyd G.; and Drew, Ralph H., Jr., 4,351,355, Cl. 137-329.060.

Drexel, Peter; Maier, Gernot; and Leisner, Ernst, to Robert Bosch GmbH. Article handling and transfer apparatus unit. 4,351,628, Cl. 414-749.000.

Dreyer, Heinz, to Amazonen-Werke. Centrifugal spreader, especially for granulated fertilizers. 4,351,481, Cl. 239-670.000.

Dreyfus, Russell W.: *See*—
Cuomo, Jerome J.; Dreyfus, Russell W.; and Woodall, Jerry M., 4,352,117, Cl. 357-30.000.

Drlik, Gunther, to OBE-Werk Ohnmacht & Baumgartner GmbH & Co. K.G. Biased eyeglass hinge. 4,351,086, Cl. 16-228.000.

Drodofsky, Reinhold: *See*—
Duke, Douglas; Drodofsky, Reinhold; and Galaske, Folker, 4,351,619, Cl. 400-196.100.

Drori, Mordeki. Stabilized projectiles. 4,351,503, Cl. 244-3.240.

Droscher, Erich; Pfundner, Hans P.; and Wrulich, Herwig, to Voest-Alpine Aktiengesellschaft. Device for preventing collision between part of the cutting arm and part of the loading ramp for a cutting machine. 4,351,564, Cl. 299-1.000.

Drucker, Fred F.: *See*—
Gottsegen, Marten; Drucker, Fred F.; and Glass, Henry, 4,351,165, Cl. 62-371.000.

Drug Science Foundation: *See*—
Walle, Thomas, 4,351,848, Cl. 424-330.000.

Druin, Melvin: *See*—
Lu, Shau-Zou; and Druin, Melvin, 4,351,758, Cl. 524-227.000.

Ductmate Industries, Inc.: *See*—
Arnoldt, Peter J., 4,352,003, Cl. 219-103.000.

Duffy, Michael T.; and Zanzucchi, Peter J., to RCA Corporation. Method and apparatus for determining the quality of a semiconductor surface. 4,352,016, Cl. 250-358.100.

Duffy, Michael T.; Corboy, John F., Jr.; and Zanzucchi, Peter J., to RCA Corporation. Apparatus for determining the quality of a semiconductor surface. 4,352,017, Cl. 250-358.100.

Duke, Douglas; Drodofsky, Reinhold; and Galaske, Folker, to International Standard Electric Corporation. Ink ribbon cassette. 4,351,619, Cl. 400-196.100.

Duke, June T.: *See*—
Prem, Dorothy C.; Duke, June T.; and Isley, Ralph E., 4,351,756, Cl. 524-314.000.

Dunkle, George H., to Weyerhaeuser Company. Dual cell laminated container. 4,351,471, Cl. 229-15.000.

Dunlop Limited: *See*—
Cocks, Philip J., 4,351,364, Cl. 138-133.000.
Corner, Michael R.; Kemp, Ian; and French, Tom, 4,351,382, Cl. 152-330.0RF.

Dunn, Ervin T. Device for measuring the speed of an object traveling between two fixed points from a stationary observation point. 4,352,064, Cl. 324-178.000.

Duplin, Joseph R., to Brine, William H., Jr. Sports stick handle. 4,351,528, Cl. 273-67.00A.

Du Pont de Nemours, E. I., and Company: *See*—
Anderson, Albert G., 4,351,893, Cl. 430-281.000.
Andrews, Gerald D.; and Sharkey, William H., 4,351,924, Cl. 525-330.600.
Armitage, John B., 4,351,931, Cl. 526-227.000.
Brixius, Darryl W.; and Simms, John A., 4,351,755, Cl. 524-555.000.
Concannon, Thomas P., 4,351,882, Cl. 428-422.000.
Hill, Broadus E., Jr., 4,351,491, Cl. 242-18.0PW.
Hoeschele, Guenther K., 4,351,757, Cl. 524-169.000.
Irwin, Howard D., 4,351,242, Cl. 105-206.00A.
Khanna, Ram-Tirth, 4,351,914, Cl. 523-448.000.
Kohan, Melvin I., 4,351,916, Cl. 524-377.000.

Parish, Darrell J.; and Mallouk, Robert S., 4,351,746, Cl. 252-511.000.
Rajagopalan, Parthasarathi, 4,351,836, Cl. 424-258.000.
Stinger, Henry J., 4,351,745, Cl. 252-511.000.

Du Pont, John P.; Taj, Hatim H.; Schoenwetter, Randall R.; Vanlankvelt, Theodore J.; Kwiatkowski, Robert E.; and Lange, Richard W., to RTE Corporation. Flexible connector for H.V. arrester. 4,352,139, Cl. 361-117.000.

Dupre, Jean, to Rohm and Haas Company. Thickening agent for aqueous compositions. 4,351,754, Cl. 524-445.000.

Durrer, Bernhard: *See*—
Christen, Peter; Brandli, Hansheinrich; Durrer, Bernhard; and Sauerbrey, Arnim, 4,352,099, Cl. 340-633.000.

Dyachkov, Vasily M.: *See*—
Abduganiev, Abdurakhim; Krjuk, Timur P.; Zhestkov, Vitaly I.; Tikhonov, Valentin N.; Glazov, Vladimir G.; Kletny, Mikhail M.; Shlykov, Gennady N.; Afanasiev, Vladimir K.; Dyachkov, Vasily M.; Zhigalov, Gennady V.; Mangutov, Rafael A.; and Angarov, Ernst I., 4,351,149, Cl. 57-263.000.

Dyckerhoff & Widman AG: *See*—
Schmoller, Karl-Heinz; Bahr, Theodor; Bottger, Ernst; Henrich, Hans-Otto; Thumm, Helmut; and Beck, Heinz, 4,351,486, Cl. 241-67.000.

Dyer, Robert E.; and Carney, Murray C., to Sangamo Weston, Inc. Variable ratio totalizer. 4,352,009, Cl. 235-92.0ST.

Dynamics Corporation of America: *See*—
Valbona, Bruno M.; and Pound, William C., 4,351,612, Cl. 366-206.000.

Eagle Rubber Co., Inc.: *See*—
Erdos, William A., 4,351,521, Cl. 272-52.000.

East, Anthony J.: *See*—
Calundann, Gordon W.; Charbonneau, Larry F.; and East, Anthony J., 4,351,917, Cl. 524-602.000.
Charbonneau, Larry F.; East, Anthony J.; and Calundann, Gordon W., 4,351,918, Cl. 524-602.000.

East Tradacons AG: *See*—
Elwert, Wolfram; and Forster, Gernot, 4,351,435, Cl. 206-379.000.

Eastman Kodak Company: *See*—
Altland, Henry W.; and Shiao, Daniel D., 4,351,896, Cl. 430-354.000.
McCollum, Anthony W.; Edmonson, William L.; and Belote, Stephen N., 4,351,927, Cl. 525-437.000.

Eaton Corporation: *See*—
Bopp, Warren G., 4,351,425, Cl. 192-58.00B.
Bopp, Warren G., 4,351,426, Cl. 192-58.00B.
Bradshaw, Cyril E., 4,351,285, Cl. 123-568.000.
Garnier, John J., 4,351,614, Cl. 374-37.000.
Garrett, Wayne; and Neuman, Richard F., 4,351,419, Cl. 188-71.900.
Worthen, Roger P.; and Larson, Jay M., 4,351,292, Cl. 123-188.0AA.

Ebauches Electroniques SA: *See*—
Leuthold, Oskar, 4,352,073, Cl. 330-264.000.

Eberhardt, H. Alfred, to Hale Fire Pump Company. Heat exchanger for water pumping system. 4,351,391, Cl. 165-154.000.

Eberle, William J., to General Battery Corporation. Electrodes for use in the extrusion-fusion welding of lead parts through an aperture in a battery case. 4,352,002, Cl. 219-78.150.

Eckert, Frank J.: *See*—
Glasstetter, Fred E.; and Eckert, Frank J., 4,351,815, Cl. 423-445.000.

Eddy, William R., to Phillips Petroleum Company. Closure. 4,351,472, Cl. 229-43.000.

Edmonson, William L.: *See*—
McCollum, Anthony W.; Edmonson, William L.; and Belote, Stephen N., 4,351,927, Cl. 525-437.000.

EECO Incorporated: *See*—
Graves, William B.; and Walsh, James F., 4,352,084, Cl. 338-127.000.

Egbert, Bill R. Apparatus and method for determining the osmolarity/-specific gravity of a solution. 4,351,183, Cl. 73-32.00R.

Egelhof, Dieter; and Schmid, Hans R., to J. M. Voith GmbH. Separator for cleaning suspensions. 4,351,728, Cl. 210-415.000.

Eggertsen, Claire C.; and Eggertsen, John H. Pressure sensitive adhesively backed disposable measuring tape and method of manufacture. 4,351,113, Cl. 33-137.00R.

Eggertsen, John H.: *See*—
Eggertsen, Claire C.; and Eggertsen, John H., 4,351,113, Cl. 33-137.00R.

Eguchi, Seiji: *See*—
Namimoto, Keiji; Eguchi, Seiji; and Murao, Yutaka, 4,352,157, Cl. 364-200.000.

Ehrfeld, Wolfgang: *See*—
Becker, Erwin W.; Ehrfeld, Wolfgang; Krieg, Gunther; and Bier, Wilhelm, 4,351,653, Cl. 55-394.000.

Eilhardt, Bernd: *See*—
Bauermeister, Klaus; Ziemek, Gerhard; and Eilhardt, Bernd, 4,351,365, Cl. 138-149.000.

El Paso Polyolefins Company: *See*—
Patnaik, Birendra K., 4,351,930, Cl. 526-125.000.

Electric Power Research Institute, Inc.: *See*—
Moore, Curtis L., 4,352,078, Cl. 336-60.000.
Temple, Victor A. K., 4,352,118, Cl. 357-38.000.

Electroplating Engineers of Japan, Limited: *See*—
Ando, Masato; Yamamoto, Kenji; and Taniguchi, Kazuhiro, 4,351,266, Cl. 118-425.000.

Elektroschmelzwerk kempten GmbH: *See*—
Hunold, Klaus; Reinmuth, Klaus; Lipp, Alfred; Napholcz, Johannes; and Arnold, Peter, 4,351,858, Cl. 427-193.000.

Eli Lilly and Company: *See*—
Gesellchen, Paul D.; and Shuman, Robert T., 4,351,763, Cl. 260-112.50E.

Elia Miguel, Maria F.: *See*—
LLorente Agudo, Nieves; Elia Miguel, Maria F.; Aranguren Escobar, Maria A.; Pares Olivet, Eulalia; and Fernandez Garvajosa, Jose M., 4,351,903, Cl. 435-234.000.

Elias, William H.; and Granger, Harold M., to Sangamo Weston, Inc. Capacitor for high vibration environments having a controlled gas reservoir. 4,352,147, Cl. 361-433.000.

Elin-Union A.G.: *See*—
Santner, Fritz, 4,352,037, Cl. 310-89.000.

Elisha, Benjamin. Disposal of needles. 4,351,434, Cl. 206-366.000.

Ellestad, Raymond A.; and Bartels, Harold U., to Bear Medical Systems, Inc. High frequency breath pump. 4,351,329, Cl. 128-204.210.

Elliesen, Wolfgang: *See*—
Fehrs, Hellmuth; and Elliesen, Wolfgang, 4,351,464, Cl. 227-7.000.

Elliott, William A.; and Taylor, Thomas J., to Western Electric Company, Inc. Apparatus for the manufacture of multi-conductor flat cable. 4,351,689, Cl. 156-378.000.

Elmer, Thomas H.; and Wu, Che-Kuang, to Corning Glass Works. Method of making photosensitive porous glass. 4,351,662, Cl. 65-30.100.

Elsas, Norman E., to Nemo Industries, Inc. Safety net for lavatory. 4,351,073, Cl. 4-654.000.

Elsner, Georg; Vollmer, Hartfrid; and Heymer, Gero, to Hoechst Aktiengesellschaft. Production of an isomeric mixture of secondary phosphines. 4,351,960, Cl. 568-8.000.

Elwert, Wolfram; and Forster, Gernot, to East Tradacons AG. Magazine for the protected storage of a set of drills. 4,351,435, Cl. 206-379.000.

Emerson Electric Co.: *See*—
McElroy, Jerry W., 4,351,200, Cl. 74-568.00T.

Emerson, James A.; Ramsey, James M.; and Buck, Kerry O., to Robinson Nugent, Inc. Adapting electrical connector. 4,351,582, Cl. 339-97.00R.

Engel, Gerhard: *See*—
Wessel, Wolf; and Engel, Gerhard, 4,352,032, Cl. 307-515.000.

Engelbart, Wilhelm, to Maskinfirma Certus AB. Jacket pressing apparatus. 4,351,457, Cl. 223-57.000.

Engineered Sports Products, Inc.: *See*—
Dalebout, Melvin W., 4,351,120, Cl. 36-117.000.

English, Edgar, Jr. Maximized strength-to-weight ratio panel material. 4,351,870, Cl. 428-174.000.

Enk, William A. Method and system for aircraft fire protection. 4,351,394, Cl. 169-61.000.

Entreprise d'Equipements Mecaniques et Hydrauliques, E.M.H.: *See*—
Tuson, Samuel; and Vilain, Robert, 4,351,260, Cl. 114-230.000.

Enyart, Charles E.; and Shoulis, John E., to Baxt Industries, Inc. Plastic panel mounting frame. 4,351,137, Cl. 52-202.000.

Erdos, William A., to Eagle Rubber Co., Inc. Riding toy for children with spring support base. 4,351,521, Cl. 272-52.000.

Ericksson, Leif, to Asea Aktiebolag. Impedance-measuring device for impedance protection. 4,352,136, Cl. 361-80.000.

Ernst, Margaret, executrix: *See*—
Ernst, Runyon G., deceased; Ernst, Margaret, executrix; Opie, William R.; Rajcevic, Harold P.; and Parker, Peter D., 4,351,705, Cl. 204-108.000.

Ernst, Runyon G., deceased; by Ernst, Margaret, executrix; Opie, William R.; Rajcevic, Harold P.; and Parker, Peter D., to Amax Inc. Refining copper-bearing material contaminated with nickel, antimony and/or tin. 4,351,705, Cl. 204-108.000.

Erpenbach, Heinz: *See*—
Kubbeler, Hans K.; Erpenbach, Heinz; Gehrmann, Klaus; and Schmitz, Klaus, 4,351,972, Cl. 570-101.000.

Ersoy, Metin; and Weber, Albrecht, to Maschinenfabrik Hilma GmbH. Swing clamp. 4,351,516, Cl. 269-27.000.

Erth, Richard A.: *See*—
Kountz, Kenneth J.; and Erth, Richard A., 4,351,160, Cl. 62-201.000.

Eschenbach, Paul W., to Milliken Research Corporation. False twisted slub yarn. 4,351,148, Cl. 57-209.000.

Espe Fabrik Parmazeutischer Praparate G.m.b.H.: *See*—
Jochum, Peter; and Gasser, Oswald, 4,351,853, Cl. 427-2.000.

Espenscheid, Wilton F.: *See*—
Yan, Tsoung-yuan; and Espenscheid, Wilton F., 4,351,566, Cl. 299-5.000.

Etablissement Public de Diffusion dit "Telediffusion de France": *See*—
Guillou, Louis C., 4,352,011, Cl. 235-375.000.

Ethyl Corporation: *See*—
Thomas, Paul E.; and Raley, Garland E., 4,351,784, Cl. 264-22.000.

Evans, David M.; and Swanson, Roy T., to S&C Electric Company. High-voltage switchgear. 4,351,994, Cl. 200-153.0SC.

Evans, Jonathan L.; and Learmonth, William H., to Ferranti Limited. Trimming a circuit element layer of an electrical circuit assembly. 4,352,005, Cl. 219-121.0LJ.

Evans, Joseph H.: *See*—
Middleman, Lee M.; Evans, Joseph H.; Blake, Arthur E.; and Scheff, Victor A., 4,352,083, Cl. 338-23.000.

Exxon Research & Engineering Co.: *See*—
Brois, Stanley J.; and Gutierrez, Antonio, 4,351,945, Cl. 548-130.000.

Flory, John F.; and Woehleke, Steven P., 4,351,351, Cl. 137-68.00R.
Gorbaty, Martin L.; Stone, John B.; and Poddar, Syamal K., 4,351,716, Cl. 208-8.0LE.
Worley, Arthur C., 4,351,361, Cl. 137-625.440.

F. Jos. Lamb Company: *See*—
Brems, John H.; and Graham, James T., 4,351,241, Cl. 104-93.000.

Fahey, Dennis M.: *See*—
Das, Balbhadra; and Fahey, Dennis M., 4,351,752, Cl. 523-401.000.

Failli, Amedeo; Immer, Hans U.; and Gotz, Manfred K., to American Home Products Corporation. N-Substituted cyclopeptide derivatives. 4,351,828, Cl. 424-177.000.

Fairchild Camera & Instrument Corp.: *See*—
Davis, T. Grant, 4,351,892, Cl. 430-30.000.
Matrone, John L., 4,352,061, Cl. 324-158.00F.
Radigan, Kenneth J., 4,351,696, Cl. 156-643.000.

Fajt, John; and Neal, James V., Jr., to Xenell Corporation. Automated lamp aging. 4,351,578, Cl. 316-1.000.

Falkowski, Leonard S.: *See*—
Stefanska, Barbara J.; Falkowski, Leonard S.; and Borowski, Edward, 4,351,937, Cl. 536-6.400.

Fanene, Bernard: *See*—
Floury, Claude P.; Guillet, Claude L. J. M.; Lokocki, James A.; Devoille, Maurice R.; and Fanene, Bernard, 4,351,468, Cl. 228-4.500.

Farkas, Peter E., to Szentkiralyi, Laszlo; and Csoke, Istvan, a part interest to each. Combo hand rake. 4,351,145, Cl. 56-400.160.

Farmitalia Carlo Erba Spa: *See*—
Zetler, Gerhard; Rossi, Alessandro; and De Paolis, Chiara, 4,351,829, Cl. 424-177.000.

Farnstrom, Sven E.; and Andersson, Hans, to Minitube NYA AB. Thermometer guard. 4,351,616, Cl. 374-209.000.

Farrell, John J. Plastic end capping machine. 4,351,629, Cl. 425-116.000.

Fasco Industries, Inc.: *See*—
Barry, Leon G.; and Rieman, Willis E., 4,352,082, Cl. 337-409.000.

Fasig, Harold A.; and Paananen, Eugene E., to Burroughs Corporation. Track sensor controller. 4,352,013, Cl. 250-223.00R.

Faulkner, Ben V. Method of preventing drill string overflow. 4,351,400, Cl. 175-69.000.

Faure, Jean-Louis; and Vanhelle, Michel, to ASA S.A. Process and device for producing a yarn having alternate twists of opposite directions. 4,351,146, Cl. 57-6.000.

FBC Limited: *See*—
Harris, John F., 4,351,968, Cl. 568-763.000.

Fechalos, William A., to Wescom, Inc. Electronic telephones with cooperative interaction between a master set and members' sets in a group. 4,351,986, Cl. 179-27.0FH.

Federal Paper Board Co., Inc.: *See*—
Manizza, Guelfo A., 4,351,473, Cl. 229-43.000.

Fehr, Charles, to Firmenich SA. Polyunsaturated bicyclic compounds, their preparation and use of same as starting materials for preparing monounsaturated bicyclic compounds. 4,351,977, Cl. 585-22.000.

Fehrs, Hellmuth; and Elliesen, Wolfgang, to Joh.Friedrich Behrens AG. Compressed air-operated fastener driving tool with release safety means. 4,351,464, Cl. 227-7.000.

Feil, Thomas E., to V-Band Systems, Inc. Telephone line circuit hold arrangement. 4,351,987, Cl. 179-99.00H.

Felix, Raymond A., to Stauffer Chemical Company. Sulfinoate herbicidal antidotes. 4,351,665, Cl. 71-103.000.

Fellner, Peter J.; Hamill, Brendan J.; and Manley, Paul W., to G.D. Searle & Co. Imidazole hydrazone derivatives. 4,351,948, Cl. 548-336.000.

Felt Products Mfg. Co.: *See*—
McDowell, Donald J., 4,351,534, Cl. 277-235.00B.

Fenton, Edward A., Jr.; Lakin, Ira W.; and Blair, Gilbert, to Dravo Corporation. Heavy duty belt conveyor. 4,351,431, Cl. 198-823.000.

Ferb, Robert J.: *See*—
Biedell, Edward L.; and Ferb, Robert J., 4,351,804, Cl. 422-170.000.

Ferguson, Andrew C., to W. & T. Avery Limited. Weighing scales incorporating printers. 4,351,403, Cl. 177-2.000.

Ferm, Richard L.; and Latif, Chester C., to Chevron Research Company. Quick-setting bituminous emulsion compositions. 4,351,750, Cl. 524-8.000.

Fernandez Garvajosa, Jose M.: *See*—
LLorente Agudo, Nieves; Elia Miguel, Maria F.; Aranguren Escobar, Maria A.; Pares Olivet, Eulalia; and Fernandez Garvajosa, Jose M., 4,351,903, Cl. 435-234.000.

Ferranti Limited: *See*—
Evans, Jonathan L.; and Learmonth, William H., 4,352,005, Cl. 219-121.0LJ.

Fetty, Harold D.: *See*—
Roberts, Charles W.; Lindner, Daniel J.; Kwee, Henry T.; Kolowski, Michael A.; and Fetty, Harold D., 4,351,381, Cl. 152-209.00R.

Fiat Societa per Azioni: *See*—
Martinengo, PierCarlo; Giachello, Angelo; Tommasini, Giuseppe; and Popper, Paul, 4,351,787, Cl. 264-65.000.

Fiber Industries, Inc.: *See*—
Blackmon, Lawrence E.; Kelly, Darrell A.; Mowe, Wayne T.; and Yu, Jing-peir, 4,351,147, Cl. 57-208.000.

Fichtel & Sachs AG: *See*—
Steuer, Werner; and Leiter, Bernd, 4,351,569, Cl. 301-6.00V.

Fiebiger, Josef, to Gesipa Blindniettechnik Gesellschaft mit Beschrankter Haftung. Manual riveting tool. 4,351,179, Cl. 72-391.000.

Fielder, Coy M., to Christensen, Inc. Earth-boring drill bits. 4,351,401, Cl. 175-329.000.

Fields, Gerald M.; and Metzner, Robert G., to Hybricon Inc. Hybrid car with electric and heat engine. 4,351,405, Cl. 180-65.00A.

Fike Metal Products Corp.: *See*—
Tyree, Charles N., 4,351,393, Cl. 169-37.000.

Filidoro, Roberto; and Di Sciascio, Nicola, to Nuovo Pignone S.p.A. Balanced-spotter valve. 4,351,353, Cl. 137-219.000.

Finike Italiana Marposs, S.p.A.: *See*—
Possati, Mario, 4,351,115, Cl. 33-178.00D.

Finlayson, James E., III; Holder, Joseph P.; Holt, L. Earl; and Lee, Seung Y., to Burlington Industries, Inc. Process of reactively dyeing and printing toweling. 4,351,638, Cl. 8-463.000.

Firmenich SA: *See*—
Delay, Francois, 4,351,748, Cl. 252-522.00R.
Fehr, Charles, 4,351,977, Cl. 585-22.000.

Firth, John H. Radar reflectors. 4,352,106, Cl. 343-18.00C.

Fischer, Gunter, to Zahnradfabrik Friedrichshafen. Apparatus for the automatic shifting of a stepped speed-change transmission, especially for automotive vehicles. 4,351,205, Cl. 74-866.000.

Fischer, Nathan A.: *See*—
Leining, Lyndon R.; Fischer, Nathan A.; Simonson, Kent L.; White, Gordon G.; and Lindstrom, Oscar H., 4,351,088, Cl. 17-50.000.

Fitzgerald, John B.: *See*—
McNairy, James A.; and Fitzgerald, John B., 4,351,151, Cl. 60-290.000.

Fitzpatrick Associates, Inc.: *See*—
Fitzpatrick, John R., 4,351,079, Cl. 15-104.06A.

Fitzpatrick, John R., to Fitzpatrick Associates, Inc. Sphere launching and receiving valve. 4,351,079, Cl. 15-104.06A.

Flamm, Peter M., to ITT Industries, Inc. Color-television receiver having integrated circuit for the luminance signal and the chrominance signals. 4,352,123, Cl. 358-23.000.

Flaum, Stephen S.; and Leff, Martin J., to S&S Corrugated Paper Machinery Co., Inc. Adhesive metering device. 4,351,264, Cl. 118-203.000.

Fleetwood Systems, Inc.: *See*—
Molden, Wallace W., 4,351,430, Cl. 198-690.000.

Fleischmann, Herbert: *See*—
Keppel, Heinrich; Klapper, Peter; and Fleischmann, Herbert, 4,351,998, Cl. 219-10.55R.

Flemming, Michael A.: *See*—
Stephen, James H.; McCann, John D.; and Flemming, Michael A., 4,352,098, Cl. 340-572.000.

Flexiwatt Corporation: *See*—
Widmayer, Don F., 4,352,045, Cl. 315-291.000.

Flock, John W., to General Electric Company. Phenol recovery from bisphenol-A waste streams. 4,351,966, Cl. 568-753.000.

Flory, John F.; and Woehleke, Steven P., to Exxon Research and Engineering Co. Breakaway pipe coupling with automatically closed valves. 4,351,351, Cl. 137-68.00R.

Floury, Claude P.; Guillet, Claude L. J. M.; Lokocki, James A.; Devoille, Maurice R.; and Fanene, Bernard, to Compagnie Internationale pour l'Informatique CII-Honeywell Bull. Apparatus for wiring connections on a substrate. 4,351,468, Cl. 228-4.500.

Foa, Marco; Moro, Alessandro; Gardano, Andrea; and Cassar, Luigi, to Montedison S.p.A. Process for preparing phenyl pyruvic acids. 4,351,952, Cl. 562-406.000.

Focke and Company: *See*—
Focke, Heinz H.; Liedtke, Kurt; and Bretthauer, Hans J., 4,351,142, Cl. 53-575.000.

Focke, Heinz H.; Liedtke, Kurt; and Bretthauer, Hans J., to Focke and Company. Apparatus for wrapping objects, in particular groups of cigarettes. 4,351,142, Cl. 53-575.000.

Fohl, Artur, to Repa Feinstanzwerk GmbH. Safety belt roll-up device. 4,351,496, Cl. 242-107.40A.

Foley, Daniel J.: *See*—
Reynolds, Richard W.; Myers, Allen; and Foley, Daniel J., 4,351,152, Cl. 60-395.000.

Folk, Kenneth F., to AMP Incorporated. Apparatus for terminating ribbon cable. 4,351,110, Cl. 29-749.000.

Foltuz, Eugene L.: *See*—
Hayberg, Robert S.; and Foltuz, Eugene L., 4,351,630, Cl. 425-517.000.

Fontana, Frank J., to Stewart-Warner Corporation. Soft tread caster wheel and method of making same. 4,351,084, Cl. 16-45.000.

Ford Motor Company: *See*—
Lemieux, George E.; and Tibbles, Tom T., 4,351,206, Cl. 74-866.000.

Forney Engineering Company: *See*—
Slater, Billy R., 4,352,103, Cl. 340-825.010.

Forrester, Bobby G.: *See*—
Keehner, James E.; Linn, Samuel A.; Kahut, Marvin L.; Forrester, Bobby G.; and Bohanan, Roy E., 4,351,234, Cl. 101-10.000.

Forsberg, Georg L. K. Device with screw conveyor for discharging bulk material. 4,351,627, Cl. 414-312.000.

Forssell, Ake: *See*—
Selestam, Berndt; Forssell, Ake; and Winnersjo, Per A., 4,351,625, Cl. 405-303.000.

Forster, Gernot: *See*—
Elwert, Wolfram; and Forster, Gernot, 4,351,435, Cl. 206-379.000.

Fortcamp, James A.: *See*—
Verderber, Joseph A.; Fortcamp, James A.; McInturff, Ace; and Rose, Denis A., 4,352,012, Cl. 235-487.000.

Foulks, Alan L.; and Larson, Gary O., to Sperry Corporation. Single cue drive for flight director indicator. 4,351,187, Cl. 73-178.00R.

Fournier, Rene: *See—*
Plantard, Dominique; Langlais, Gerard; and Fournier, Rene, 4,351,660, Cl. 65-5.000.

Fox, Daniel W., to General Electric Company. Foamable polyester composition. 4,351,911, Cl. 521-138.000.

Foxboro Company, The: *See—*
Amey, Guy C., 4,351,385, Cl. 165-61.000.

Foye, Duane F.: *See—*
Gibbs, Dale S.; and Foye, Duane F., 4,351,929, Cl. 526-80.000.

Franchetti, Ilario: *See—*
Rovetta, Alberto; Franchetti, Ilario; and Vicentini, Pietro, 4,351,553, Cl. 294-106.000.

Frandsen, Aksel S. Device for flushing and aerating a surface coated with microorganisms in a plant for biological purification of waste water. 4,351,721, Cl. 210-150.000.

Franke, Walter. Internal combustion engine and intermediate flange member for such an engine. 4,351,298, Cl. 123-432.000.

Franko, Eugene B., to Xerox Corporation. Variable magnification optical system for use in electrophotographic printing. 4,351,606, Cl. 355-14.00R.

Franz, James H., Jr., to Westinghouse Electric Corp. Brake control apparatus and method. 4,352,049, Cl. 318-370.000.

Frech, John W.; and Au, Lonnie C., to United States of America, Air Force. Statistical method of measuring the differential linearity of an analog/digital converter using a pseudo-random triangle wave stimulus. 4,352,160, Cl. 364-553.000.

Freller, Walter. Length-adjustable structural unit. 4,351,135, Cl. 52-67.000.

French, Tom: *See—*
Corner, Michael R.; Kemp, Ian; and French, Tom, 4,351,382, Cl. 152-330.0RF.

Friedli, Hans R.: *See—*
Correll, Glenn D.; and Friedli, Hans R., 4,351,812, Cl. 423-243.000.

Frielinghaus, Klaus H., to General Signal Corporation. Track circuit principle wheel detector. 4,351,504, Cl. 246-249.000.

Frister, Manfred: *See—*
Grozinger, Alfred; Frister, Manfred; and Kreuzer, Helmut, 4,351,102, Cl. 29-596.000.

Fritz Eichenauer, Firma: *See—*
Hofer, Edwin; and Ohnmacht, Helmut, 4,352,008, Cl. 219-540.000.

Frost, Albert C.; and Yang, Chang-lee, to Union Carbide Corporation. Cyclic process for producing methane from carbon monoxide with heat removal. 4,351,646, Cl. 48-197.00R.

Fuji Photo Film Co., Ltd.: *See—*
Aoki, Kozo; Seto, Nobuo; Yabuki, Yoshiharu; Morigaki, Masakazu; Furutachi, Nobuo; and Nakamura, Kotaro, 4,351,897, Cl. 430-555.000.
Fukushima, Osamu; Akisada, Masahide; Monma, Yoshiyuki; and Kitamura, Kazuaki, 4,352,198, Cl. 378-185.000.

Fujino, Hiroko: *See—*
Muroi, Kaname; and Fujino, Hiroko, 4,351,744, Cl. 252-408.000.

Fujishima, Kunihiro; and Kuramoto, Takaki, to Sanyo Electric Co., Ltd. Induction heating cooking apparatus. 4,352,000, Cl. 219-10.770.

Fujita, Masao: *See—*
Tuchiya, Yoshimasa; Ishii, Katsumi; Iidaka, Toshiharu; and Fujita, Masao, 4,351,561, Cl. 296-216.000.

Fujita, Taira; Nakagawa, Hiroyuki; Sugihara, Mikio; Kobayashi, Kimiyuki; and Okamoto, Katuhiko, to Sumitomo Chemical Company, Limited. Process for the production of compounds having in the molecule at least one β-sulfatoethyl-sulfone group and at least one sulfonic acid group. 4,351,765, Cl. 260-163.000.

Fujitsu Fanuc Limited: *See—*
Sakano, Tetsurou, 4,352,050, Cl. 318-661.000.

Fujitsu Limited: *See—*
Oguchi, Takuro; Ohsawa, Zenichi; and Murai, Shinichi, 4,352,053, Cl. 323-220.000.

Fujiwara, Yasuo; Maeo, Hidemi; and Muramoto, Eiichi, to Kabushiki Kaisha Komatsu Seisakusho. Track roller suspension apparatus for a track-type vehicle. 4,351,572, Cl. 305-27.000.

Fukui, Shosin; and Shinjo, Masayoshi, to Daikin Kogyo Co., Ltd. Prevention of adhesion of epoxy resins. 4,351,880, Cl. 428-378.000.

Fukunaga, Koichi, to Toyota Jodosha Kogyo Kabushiki Kaisha. Gear box breather plug assembly. 4,351,203, Cl. 74-606.00R.

Fukushima, Madoka; Akita, Kin-ichiro; and Masuda, Yoshihisa, to Radio Research Laboratories, Ministry of Posts and Telecommunications. Method and apparatus for remote measurement of wind direction and speed in the atmosphere. 4,351,188, Cl. 73-189.000.

Fukushima, Osamu; Akisada, Masahide; Monma, Yoshiyuki; and Kitamura, Kazuaki, to Fuji Photo Film Co., Ltd. X-Ray photography cassette. 4,352,198, Cl. 378-185.000.

Fuller, Francis M., to Raymond International Builders, Inc. Ground anchor installation. 4,351,136, Cl. 52-155.000.

Fuller, Stuart C., to Kerr Glass Manufacturing Corp. Label positioner. 4,351,693, Cl. 156-556.000.

Fuller, William D.: *See—*
Verlander, Michael S.; Fuller, William D.; and Goodman, Murray, 4,351,762, Cl. 260-112.50R.

Furukawa, Yuji; and Sato, Makoto, to Makino Milling Machine Co., Ltd. Load-compensated type guide mechanism adapted for a machine. 4,351,574, Cl. 308-3.00A.

Furutachi, Nobuo: *See—*
Aoki, Kozo; Seto, Nobuo; Yabuki, Yoshiharu; Morigaki, Masakazu; Furutachi, Nobuo; and Nakamura, Kotaro, 4,351,897, Cl. 430-555.000.

G.D. Searle & Co.: *See—*
Fellner, Peter J.; Hamill, Brendan J.; and Manley, Paul W., 4,351,948, Cl. 548-336.000.

Gaafar, Hassan A., to Research Corporation. Purified antigen to test for *Neisseria gonorrhoeae* antibodies. 4,351,761, Cl. 260-112.00R.

Gabbay, Emile, to Compagnie Generale de Radiologie. X-Ray tube for producing a flat wide-angle fan-shaped beam of X-rays. 4,352,196, Cl. 378-125.000.

GAF Corporation: *See—*
Davis, Duane A., 4,351,873, Cl. 428-198.000.

Gaidis, James M.: *See—*
Rosenberg, Arnold M.; Gaidis, James M.; and Kindt, Lawrence J., 4,351,671, Cl. 106-90.000.

Gaines, Marvin E.: *See—*
Copp, Carl A., Jr.; Pandzik, Richard T.; and Gaines, Marvin E., 4,351,227, Cl. 92-71.000.

Galaske, Folker: *See—*
Duke, Douglas; Drodofsky, Reinhold; and Galaske, Folker, 4,351,619, Cl. 400-196.100.

Galloway, Terry R., to United States of America, Energy. Catalytic cartridge SO_3 decomposer. 4,351,806, Cl. 422-206.000.

Gander, Peter, to Armex AG. Connecting element for concrete or reinforced concrete structural members that are to be cast one after the other. 4,351,139, Cl. 52-378.000.

Ganrot, Bertil: *See—*
Mattisson, Lennart; and Ganrot, Bertil, 4,351,997, Cl. 219-10.55E.

Garcia, Vilma A., to Magnaflux Corporation. High temperature penetrant system. 4,351,185, Cl. 73-104.000.

Gardano, Andrea: *See—*
Foa, Marco; Moro, Alessandro; Gardano, Andrea; and Cassar, Luigi, 4,351,952, Cl. 562-406.000.

Garner, Henry C.; and Broadbent, Jack, to British Steel Corporation. Surface inspection equipment. 4,351,184, Cl. 73-104.000.

Garnier, John J., to Eaton Corporation. Method of and apparatus for continually monitoring the heating value of a fuel gas using a combustibility meter. 4,351,614, Cl. 374-37.000.

Garpendahl, Gunnar; Bruce, Ingrid; and Lundmark, Ebbe, to Viak AB. Apparatus for measuring the interior dimensions of a cast iron mold. 4,352,060, Cl. 324-61.00R.

Garrett, Wayne; and Neuman, Richard F., to Eaton Corporation. Automatic slack adjuster. 4,351,419, Cl. 188-71.900.

Garrigues, Jean-Claude, to Applications Mecanique et Robinetterie Industrielle, A.M.R.I. Sealing gasket for an obturator such as a ventilation regulator. 4,351,511, Cl. 251-174.000.

Gartside, Robert J.: *See—*
Bhojwani, Arju H.; Gartside, Robert J.; and Woebcke, Herman N., 4,351,275, Cl. 122-7.00R.

Garvey Corporation: *See—*
Garvey, Francis J., 4,351,429, Cl. 198-688.000.

Garvey, Francis J., to Garvey Corporation. Conveyor with slip cleats. 4,351,429, Cl. 198-688.000.

Gaschler, Erich; and Schwarz, Cornelia, to Volkswagenwerk AG. Drive aggregate for a heat pump. 4,351,278, Cl. 123-195.00R.

Gasloli, Joseph L., to White Consolidated Industries, Inc. Oven door latch. 4,351,288, Cl. 126-197.000.

Gasser, Oswald: *See—*
Jochum, Peter; and Gasser, Oswald, 4,351,853, Cl. 427-2.000.

Gauthier-Lafaye, Jean; and Perron, Robert, to Rhone-Poulenc Industries. Preparation of carboxylic acids by carbonylation of alcohols. 4,351,953, Cl. 562-519.000.

Geary, Carl H.; and Samurin, Norman A., to Carrier Corporation. Expander-generator control system. 4,352,024, Cl. 290-52.000.

Gehrmann, Klaus: *See—*
Kubbeler, Hans K.; Erpenbach, Heinz; Gehrmann, Klaus; and Schmitz, Klaus, 4,351,972, Cl. 570-101.000.

Geiger, Istvan; Theuerkauf, Heinz; and Stamm, Klaus, to Volkswagenwerk Aktiengesellschaft. Method and system for operation of a spark-ignited internal combustion engine. 4,351,281, Cl. 123-425.000.

Geigert, John: *See—*
Neidleman, Saul L.; Amon, William F., Jr.; and Geigert, John, 4,351,902, Cl. 435-137.000.

Gelman Sciences, Inc.: *See—*
Ambler, Jeffrey, 4,351,711, Cl. 204-180.00G.

General Battery Corporation: *See—*
Eberle, William J., 4,352,002, Cl. 219-78.150.
Oxenreider, Terry, 4,351,890, Cl. 429-179.000.

General Dynamics: *See—*
Maudal, Inge; Wedertz, Larry D.; and Yost, Kenneth M., 4,351,499, Cl. 244-3.270.

General Dynamics Corporation: *See—*
Weiss, Olin E.; Davis, Grant L.; Hudson, James L.; and Dowell, Harlan T., 4,351,688, Cl. 156-358.000.

General Electric Company: *See—*
Brunelle, Daniel J., 4,351,718, Cl. 208-262.000.
Crouch, Donald W., 4,351,992, Cl. 200-144.00B.
Flock, John W., 4,351,966, Cl. 568-753.000.
Fox, Daniel W., 4,351,911, Cl. 521-138.000.
Ingersoll, Brian E.; Nicholson, Ross C.; and Dennisson, James W., 4,351,448, Cl. 220-318.000.
Johnson, John H., 4,352,051, Cl. 318-790.000.
Karhan, Barry L.; and Archibald, James B., 4,352,034, Cl. 310-59.000.
Mulvey, Robert F.; and Crepeau, Charles E., 4,351,867, Cl. 428-70.000.
Poling, Ronald W., 4,351,105, Cl. 29-622.000.
Puckette, Charles M., 4,352,210, Cl. 455-317.000.

Rodenbeck, Philip G., 4,351,103, Cl. 29-596.000.
Schulze, Wallace M., 4,351,150, Cl. 60-226.00R.
Schumacher, Frank A., 4,351,159, Cl. 62-79.000.
Sivertsen, Marvin L.; and Sobolewski, Valentine S., 4,351,124, Cl. 40-158.00B.

General Electric Company Limited, The: *See*—
Johns, Allan T., 4,352,137, Cl. 361-82.000.
Rigden, Sydney A. R., 4,352,043, Cl. 315-1.000.

General Foods Corporation: *See*—
Keehner, James E.; Linn, Samuel A.; Kahut, Marvin L.; Forrester, Bobby G.; and Bohanan, Roy E., 4,351,234, Cl. 101-10.000.
Oldershaw, C. G. Peter, 4,351,374, Cl. 141-71.000.

General Motors Corporation: *See*—
Ament, Frank, 4,351,283, Cl. 123-458.000.
Copp, Carl A., Jr.; Pandzik, Richard T.; and Gaines, Marvin E., 4,351,227, Cl. 92-71.000.
Luckman, James E.; Winstead, William P.; and Kastura, John L., 4,351,306, Cl. 123-609.000.
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McCartney, Charles P., Jr.; and Wheadon, Ellis G., 4,351,891, Cl. 429-225.000.
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Frielinghaus, Klaus H., 4,351,504, Cl. 246-249.000.

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Leining, Lyndon R.; Fischer, Nathan A.; Simonson, Kent L.; White, Gordon G.; and Lindstrom, Oscar H., 4,351,088, Cl. 17-50.000.

George, Mark S., to Hobart Corporation. Label printer system. 4,351,690, Cl. 156-384.000.

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Hevenor, Charles M., Jr., 4,352,165, Cl. 364-900.000.

Gereg, Gordon A. Endotracheal tube holder and bite block. 4,351,331, Cl. 128-207.170.

Gerlack, Richard Z., to Varian Associates, Inc. Ridged waveguide window assembly. 4,352,077, Cl. 333-252.000.

Germann, Willy, to BBC Brown, Boveri & Company, Ltd. Apparatus for compressing winding elements in an electric machine. 4,351,107, Cl. 29-736.000.

Gervais, Yvon; Gillet, Renen; and Tanis, Georges, to Commissariat a l'Energie Atomique. Joining process. 4,352,004, Cl. 219-121.0ED.

Gesellchen, Paul D.; and Shuman, Robert T., to Eli Lilly and Company. Pharmacologically active peptides. 4,351,763, Cl. 260-112.50E.

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Fiebiger, Josef, 4,351,179, Cl. 72-391.000.

Gessner, Dieter; and Ott, Lothar, to tpT Machinery Corporation. Transfer device for parisons and finished products in injection blow molding devices. 4,351,631, Cl. 425-533.000.

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Martinengo, PierCarlo; Giachello, Angelo; Tommasini, Giuseppe; and Popper, Paul, 4,351,787, Cl. 264-65.000.

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Gibbs, Dale S.; and Foye, Duane F., to Dow Chemical Company, The. Crystallizable controlled composition interpolymers of vinylidene chloride and methyl methacrylate and method of preparing same. 4,351,929, Cl. 526-80.000.

Gibbs, John D.: *See*—
Cormier, Raymond G.; and Gibbs, John D., 4,351,601, Cl. 355-3.0SH.

Giddings, Edward H. Fluidic diode combustion chamber. 4,351,294, Cl. 123-291.000.

Giggard, Earl D.; Khoury, Nick S.; Kowalik, John J.; and Terrien, Donald R., to Continental Group, Inc., The. Bail hangers for paint cans and the like. 4,351,445, Cl. 220-91.000.

Gilker, Clyde, to McGraw-Edison Company. Backup trip circuit for a circuit breaker. 4,352,138, Cl. 361-92.000.

Gillet, Renen: *See*—
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Gillingham, Gary R., to Donaldson Company, Inc. Cowl-like scrubber for a long-wall shearer. 4,351,567, Cl. 299-45.000.

Gilmore, Cecilia: *See*—
Rule, Charles E.; Gilmore, Cecilia; and Stefanski, Eugene J., 4,351,852, Cl. 426-554.000.

Giolito, Silvio L.; and Mirviss, Stanley B., to Stauffer Chemical Company. Process for preparing isopropylphenyl/phenyl phosphate. 4,351,780, Cl. 260-974.000.

Gist-Brocades N.V.: *See*—
Bijlenga, Gosse, 4,351,827, Cl. 424-89.000.

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Gladwin, Yvonne J., executrix: *See*—
Gladwin, Floyd R., deceased, 4,351,383, Cl. 164-448.000.

Glass, Henry: *See*—
Gottsegen, Marten; Drucker, Fred F.; and Glass, Henry, 4,351,165, Cl. 62-371.000.

Glasstetter, Fred E.; and Eckert, Frank J., to Columbian Chemicals Company. Battery carbon black. 4,351,815, Cl. 423-445.000.

Glaxo Laboratories Limited: *See*—
Coles, Richard J., 4,351,842, Cl. 424-274.000.

Glazov, Vladimir G.: *See*—
Abduganiev, Abdurakhim; Krjuk, Timur P.; Zhestkov, Vitaly I.; Tikhonov, Valentin N.; Glazov, Vladimir G.; Kletny, Mikhail M.; Shlykov, Gennady N.; Afanasiev, Vladimir K.; Dyachkov, Vasily M.; Zhigalov, Gennady V.; Mangutov, Rafael A.; and Angarov, Ernst I., 4,351,149, Cl. 57-263.000.

Glebov, Igor A.: *See*—
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Global Precision Inc.: *See*—
Hayberg, Robert S.; and Foltuz, Eugene L., 4,351,630, Cl. 425-517.000.

Glorfield, Paul H.; Bryant, Spencer L.; and Kirklin, Vance L., to J. R. Simplot Company. Carton filling system. 4,351,141, Cl. 53-473.000.

Goetz, Philip J. Method of obtaining the mean electrophoretic mobility of particles. 4,351,709, Cl. 204-180.00R.

Goldberg, Edward M.; and Bazell, Seymour, to UreSil Company. Balloon catheter. 4,351,341, Cl. 128-348.000.

Goldberg, Richard J. Mixed grain single emulsion layer photographic material. 4,351,898, Cl. 430-571.000.

Golze, Richard R. Ski/float landing gear apparatus for aircraft. 4,351,500, Cl. 244-105.000.

Gomes, Daniel. Swing. 4,351,524, Cl. 272-85.000.

Gonzalez, Eduardo B. Body structure and nozzle for enhancing the flow of drilling fluid in a rotary drill bit. 4,351,402, Cl. 175-340.000.

Goodin, Richard D.: *See*—
Baizer, Manuel M.; and Goodin, Richard D., 4,351,951, Cl. 560-186.000.

Goodkin, Richard P. Method of preserving corpses. 4,351,091, Cl. 27-22.00R.

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Verlander, Michael S.; Fuller, William D.; and Goodman, Murray, 4,351,762, Cl. 260-112.50R.

Goodrich, David G., to Kaiser Aluminum & Chemical Corporation. Coolant control in EM casting. 4,351,384, Cl. 164-468.000.

Goodyear Tire & Rubber Company, The: *See*—
Cohn, Alan E., 4,351,548, Cl. 283-21.000.
Pilliod, Charles J., Jr.; and Payne, Roger E., 4,351,380, Cl. 152-169.000.
Roberts, Charles W.; Lindner, Daniel J.; Kwee, Henry T.; Kolowski, Michael A.; and Fetty, Harold D., 4,351,381, Cl. 152-209.00R.
Watts, George T., 4,351,865, Cl. 428-36.000.

Gorbaty, Martin L.; Stone, John B.; and Poddar, Syamal K., to Exxon Research & Engineering Co. Liquefaction process. 4,351,716, Cl. 208-8.0LE.

Gottsegen, Marten; Drucker, Fred F.; and Glass, Henry. Portable cooler. 4,351,165, Cl. 62-371.000.

Gotz, Manfred K.: *See*—
Failli, Amedeo; Immer, Hans U.; and Gotz, Manfred K., 4,351,828, Cl. 424-177.000.

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Gradeff, Peter S.; and Murayama, Stanley T., to Rhone Poulenc Inc. Process for the preparation of hydroxy benzene carboxaldehydes. 4,351,962, Cl. 568-432.000.

Graf, Rudolf, to Sprecher & Schuh AG. Gas-blast switch. 4,351,993, Cl. 200-148.00A.

Graff, Stewart M. Reusable resiliently distortable sheet plastic closure for application to rimmed containers. 4,351,447, Cl. 220-306.000.

Graham, James T.: *See*—
Brems, John H.; and Graham, James T., 4,351,241, Cl. 104-93.000.

Granger, Harold M.: *See*—
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Grant, Patrick T.: *See*—
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Graves, William B.; and Walsh, James F., to EECO Incorporated. Variable resistor disk assembly. 4,352,084, Cl. 338-127.000.

Gray, John O.; and Sanderson, Michael L., to National Research Development Corporation. Differential flowmeters. 4,351,189, Cl. 73-196.000.

Grice, Harold E. Lightweight concrete and method of making same. 4,351,670, Cl. 106-88.000.

Griffith, Glen A., to Hughes Aircraft Company. rf Pumped waveguide laser with inductive loading for enhancing discharge uniformity. 4,352,188, Cl. 372-82.000.

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Keller, Teddy M.; and Griffith, James R., 4,351,776, Cl. 260-465.00G.

Griffith, Ronald C.; and Kinsolving, Clyde R., to Pennwalt Corporation. Antiviral alpha, alpha-dialkyl adamantylethylamines. 4,351,847, Cl. 424-325.000.

Grigoleit Company, The: *See*—
Howie, Robert K., Jr., 4,351,886, Cl. 428-591.000.

Grosbois, Jean: *See*—
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Gross, Valery N.; Kozhanov, Evgeny V.; Stupnik, Vyacheslav D.; and Valov, Vladimir V. Micrometering liquid sample dispenser. 4,351,799, Cl. 422-63.000.

Grossman, Milton. Toothbrush with curved bristles and handle. 4,351,080, Cl. 15-167.00R.
Grove, Edward E.: *See*—
Ryan, Jerry E.; and Grove, Edward E., 4,351,277, Cl. 122-390.000.
Growdon, John H.; and Wurtman, Richard J., to Massachusetts Institute of Technology. Process and composition for treating disorders by administering isoxsurpine and choline. 4,351,831, Cl. 424-199.000.
Grozinger, Alfred; Frister, Manfred; and Kreuzer, Helmut; to Robert Bosch GmbH. Method for winding the stator in a three phase AC machine. 4,351,102, Cl. 29-596.000.
Grunsch, Eckhardt; and Wochele, Gunter, to Licentia Patent-Verwaltungs-G.m.b.H. Method for actuating a switching transistor operating as a setting member in a DC/DC converter. 4,352,054, Cl. 323-224.000.
GTE Laboratories Incorporated: *See*—
Dampier, Frederick W.; and Kalivas, Risty T., 4,351,888, Cl. 429-62.000.
GTE Products Corporation: *See*—
Belttary, Harold E., 4,351,583, Cl. 339-259.00R.
Guarnaschelli, Stephen. Heat exchanger apparatus. 4,351,389, Cl. 165-141.000.
Guhde, Donald J., to ROHCO, Inc. Conversion coatings for zinc and cadmium surfaces. 4,351,675, Cl. 148-6.15R.
Guillet, Claude L. J. M.: *See*—
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Guillou, Louis C., to Etablissement Public de Diffusion dit "Telediffusion de France"; and L'Etat Francais, represente par le Secretaire d'Etat aux Poste et Telecommunications (Centre Nationale d'Etudes des Telecommunications). Subscription card for a videotex receiver. 4,352,011, Cl. 235-375.000.
Guth, Friedrich, to Texas Instruments Deutschland GmbH. Recognition apparatus. 4,352,125, Cl. 358-101.000.
Gutierrez, Antonio: *See*—
Brois, Stanley J.; and Gutierrez, Antonio, 4,351,945, Cl. 548-130.000.
Guy, David A.; and Nims, Philip A., to Crompton & Knowles Corporation. Yarn brake for a textile machine. 4,351,370, Cl. 139-450.000.
Gyi, Koko, to Data Master. Floppy disc drive. 4,352,132, Cl. 360-97.000.
Gyugyi, Laszlo, to Westinghouse Electric Corp. Variable speed constant frequency power converter with two modes of operation. 4,352,155, Cl. 363-163.000.
Gyugyi, Laszlo, to Westinghouse Electric Corp. AC to AC Power converter with a controllable power factor. 4,352,156, Cl. 363-163.000.
Haberli, Peter, to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG. Method of manufacturing a sabot projectile and sabot projectile produced thereby. 4,351,094, Cl. 29-1.200.
Hachino, Hiroaki: *See*—
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Hageman, Hendrik J.: *See*—
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Hager, Clarence H. Belt tensioning device. 4,351,636, Cl. 474-135.000.
Hager, Horst, to Nixdorf Computer AG. Magnetic disc memory. 4,352,133, Cl. 360-106.000.
Hagood, Jerry W.; and Norman, Ralph L., to United States of America, Army. Sonic transducer. 4,352,039, Cl. 310-328.000.
Hale Fire Pump Company: *See*—
Eberhardt, H. Alfred, 4,351,391, Cl. 165-154.000.
Halilovic, Esref; and Radisic, Branko. Photoactive ionization high-tension pulsator of carburetor motor ignition system. 4,351,308, Cl. 123-627.000.
Haller, Jack R.; and Haselton, William M., to Murray Machinery, Inc. Knife assembly for chopping apparatus. 4,351,487, Cl. 241-92.000.
Halliburton Company: *See*—
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Hamada, Keiichi: *See*—
Nishide, Teruyuki; Naoi, Takayuki; Shitomi, Makoto; Hamada, Keiichi; and Noguchi, Hidetami, 4,351,576, Cl. 308-37.000.
Hamamatsu TV Co., Ltd.: *See*—
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Hamann, Walter. Anti-theft system for valuable transport. 4,352,097, Cl. 340-571.000.
Hamel, Daniel L. Log splitter. 4,351,377, Cl. 144-193.00A.
Hamill, Brendan J.: *See*—
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Hamm, Russell O. Electronic pitch detection for musical instruments. 4,351,216, Cl. 84-1.150.
Han Baek Trading Co., Ltd.: *See*—
Chung, Ha D., 4,351,451, Cl. 220-420.000.
Hanke, Wolfgang; and Schmitt, Manfred, to Voith Getriebe KG. Elastic coupling of disc construction. 4,351,167, Cl. 464-24.000.
Hanlon, Richard J.: *See*—
Kirkman, Michael; Rydwansky, Frank C., Jr.; Hanlon, Richard J.; and Petersen, Richard W., 4,351,580, Cl. 339-17.0CF.
Hanna, Glenn W. Method for repairing and reinforcing cast iron molds. 4,351,098, Cl. 29-402.150.
Hansen, Kenneth N., to Allis-Chalmers Corporation. Hand and foot controlled throttle. 4,351,198, Cl. 74-482.000.
Harada Industry Co., Ltd.: *See*—
Kiyooka, Hisamaro, 4,352,107, Cl. 343-715.000.
Hard, Robert A.: *See*—
Megy, Joseph A.; and Hard, Robert A., 4,351,809, Cl. 423-167.000.
Megy, Joseph A.; and Hard, Robert A., 4,351,813, Cl. 423-304.000.
Hardman, Charles A. Reusable plugging dam for bowling balls. 4,351,508, Cl. 249-90.000.
Hardwick, John P.; Pezet, Michael J.; Sarvestany, Asadollah A.; and Satharasinghe, Dayananda. Shredding machines. 4,351,485, Cl. 241-36.000.
Harney, Robert C., to Radiation Dynamics, Inc. Display system. 4,352,105, Cl. 343-5.0CD.
Harper, James M. E.: *See*—
Cuomo, Jerome J.; and Harper, James M. E., 4,351,712, Cl. 204-192.0EC.
Harper-Tervet, Jan; Dowler, Warren L.; Yen, Shiao-Ping S.; and Mueller, William A., to United States of America, National Aeronautics & Space Administration. Coating for gasifiable carbon-graphite fibers. 4,351,878, Cl. 428-367.000.
Harpold, Charles W. Method for screen printing. 4,351,238, Cl. 101-128.400.
Harrington, Timothy A., to Rockwell International Corporation. Feedforward amplifier with enhanced stability into loads with high VSWR. 4,352,072, Cl. 330-149.000.
Harris, John F., to FBC Limited. Production of organic compounds. 4,351,968, Cl. 568-763.000.
Harris, Peter: *See*—
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Harris, Steven L.: *See*—
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Hart, Robert J. Method of grinding magnesium ingots and such ingots. 4,351,484, Cl. 241-30.000.
Hartmann, Ferdinand, to Austria Email Aktiengesellschaft. Process for enameling the inside surface of hollow vessels. 4,351,859, Cl. 427-232.000.
Hasegawa, Akira: *See*—
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Hasegawa, Hiroshi; and Maida, Osamu, to Nippon Kogaku K. K. Flash output control failure warning device of an automatic flash output control speed light. 4,351,600, Cl. 354-60.00L.
Hasegawa, Katsuji, to Meinan Machinery Works, Inc. Method of reeling and unreeling a reinforced veneer sheet. 4,351,379, Cl. 144-365.000.
Hasegawa, Tsunao; and Ohtake, Yasushi, to Pioneer Electronic Corporation. Magnetic sound recorder having computer-controlled adjusting device. 4,352,130, Cl. 360-66.000.
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Hashimoto, Akihiro, to Nissan Motor Company, Limited. Foldable panel for an automotive vehicle. 4,351,555, Cl. 296-37.160.
Hashimoto, Seiichi; and Aoki, Takaaki. Hydraulic pliers for snap rings. 4,351,097, Cl. 29-229.000.
Hashimoto, Yoshikazu. Dilute standard gases prepared by utilizing buffered solution, method for preparation thereof and apparatus therefor. 4,351,743, Cl. 252-408.000.
Hashimoto, Yuuji; Kobayashi, Izumi; Suzuki, Mitsuo; Yamada, Kimio; Izumi, Shigeru; and Michiguchi, Yoshihiro, to Chubu Electric Power Co., Inc., The; Chugoku Electric Power Co., Inc., The; Tokyo Electric Power Co., Inc., The; and Hitachi, Ltd. Method of locating sound generation within enclosure. 4,352,167, Cl. 367-127.000.
Hasspacher, Klaus, to Sandoz Ltd. Indane derivatives, process for their preparation, their use as pharmaceuticals and pharmaceutical compositions containing said derivatives. 4,351,838, Cl. 424-267.000.
Hatano, Yasuhiro; and Nakao, Kazumune, to Osaka Prefectural Government; and Daido Sanso Kabushiki Kaisha. Method for the disposal of polychlorinated biphenyls. 4,351,978, Cl. 585-469.000.
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Hayberg, Robert S.; and Foltuz, Eugene L., to Global Precision Inc. Pivoting hinge exercising mechanism. 4,351,630, Cl. 425-517.000.
Heeman, Volker: *See*—
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Helgeson Nuclear Services, Inc.: *See*—
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Helms, Charles R., to Container Corporation of America. Composite carded display package. 4,351,436, Cl. 206-477.000.
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Hentschel, Klaus: *See*—
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Herden, Werner, to Robert Bosch GmbH. Pressure transducer. 4,352,085, Cl. 338-42.000.
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Hermanutz, Peter; and Roessler, Franz, to International Standard Electric Corporation. Rack structure for electrical communications equipment. 4,352,146, Cl. 361-428.000.
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Herrmannsfeldt, William B.: *See*—
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Hertzler, Merle E., to RCA Corporation. System for applying a liquid to the studs of a color kinescope faceplate panel. 4,351,265, Cl. 118-211.000.
Hess, Hans-Jurgen E.; Bindra, Jasjit S.; and Shah, Praful K., to Pfizer Inc. Chloro- and alkoxy-substituted-2-chloro-4-aminodquinazolines. 4,351,940, Cl. 544-293.000.
Hess, Viktor, to Alpine Aktiengesellschaft. Feed bars for shredding mills. 4,351,488, Cl. 241-224.000.
Hesselbart, Glenn A.; and Wobrak, Robert E., to Westinghouse Electric Corp. Interphase barrier for switchgear. 4,351,990, Cl. 200-50.0AA.
Hevenor, Charles M., Jr., to Gerber Scientific Instrument Company, The. Apparatus for storing and retrieving data. 4,352,165, Cl. 364-900.000.
Hewitt, John T. Diesel vehicle speed control system. 4,351,293, Cl. 123-198.0DB.
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Hilterhaus, Karl-Heinz; and Moser, Reinhard, to Chemie-Anlagenbau Bischofsheim GmbH. Supply control apparatus for a mixing chamber. 4,351,354, Cl. 137-240.000.
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Ariki, Yusaku; Hino, Takio; and Yoshida, Noboru, 4,351,976, Cl. 570-262.000.
Hiraki, Shunichi: *See*—
Yonezawa, Toshio; Ajima, Takashi; Hiraki, Shunichi; Koshino, Yutaka; and Oka, Yoshitami, 4,351,894, Cl. 430-313.000.
Hirano, Reiji; and Nakata, Shinichi, to Canon Kabushiki Kaisha. Electronic calculator capable of dealing with variables. 4,352,161, Cl. 364-706.000.
Hirata, Noritsugu; Toyama, Masamichi; Iwama, Hideto; Okajima, Hidekazu; and Nishimura, Akimasa, to Canon Kabushiki Kaisha. Motion picture camera with automatic focusing device. 4,351,590, Cl. 352-140.000.
Hirt, Theodore A.; and Dillon, Robert H., to Thomas Steel Strip Corp. Electro-co-deposition of corrosion resistant nickel/zinc alloys onto steel substrates. 4,351,713, Cl. 204-207.000.
Hitachi Chemical Company, Ltd.: *See*—
Sugitani, Hatuo; Kudo, Takeo; Mukoyama, Yoshiyuki; and Kawai, Hiromasa, 4,351,910, Cl. 521-56.000.
Hitachi, Ltd.: *See*—
Hashimoto, Yuuji; Kobayashi, Izumi; Suzuki, Mitsuo; Yamada, Kimio; Izumi, Shigeru; and Michiguchi, Yoshihiro, 4,352,167, Cl. 367-127.000.
Kurihara, Keisuke, 4,351,704, Cl. 204-15.000.
Kurihara, Yasutoshi; Hachino, Hiroaki; and Nakamura, Kousuke, 4,352,120, Cl. 357-81.000.
Matsuda, Shinpei; Kato, Akira; Uno, Shigeo; Sakuta, Youichi; and Nakajima, Fumito, 4,351,811, Cl. 423-239.000.
Matsui, Makoto; Shiraki, Yasuhiro; Katayama, Yoshifumi; Tsukada, Toshihisa; and Maruyama, Eiichi, 4,351,856, Cl. 427-38.000.
Matsuzaki, Harumi; Kuroda, Osamu; Okouchi, Isao; Izumi, Kenkichi; and Takahashi, Sankichi, 4,351,715, Cl. 204-301.000.
Mochizuki, Yasuhiro; Wakui, Yoko; and Hachino, Hiroaki, 4,351,677, Cl. 148-188.000.
Saitoh, Takeshi; Hatashita, Hiroshi; Nagashima, Toshio; and Yamamoto, Susumu, 4,352,076, Cl. 333-204.000.
Uehara, Katuharu; and Ochiai, Izumi, 4,351,178, Cl. 72-383.000.
Yoshida, Isao; Wada, Yasuo; Tamura, Masao; Miyao, Masanobu; Ohkura, Makoto; Natsuaki, Nobuyoshi; and Tokuyama, Takashi, 4,351,674, Cl. 148-1.500.
Hitachi Medical Corporation: *See*—
Horiba, Isao; Yanaka, Shigenobu; Kuwabara, Yasuo; and Koike, Kouichi, 4,352,020, Cl. 378-18.000.
Tanaka, Eiichi; Nohara, Norimasa; Tomitani, Takehiro; Yamamoto, Mikio; Ishimatsu, Kenji; and Takami, Katsumi, 4,352,018, Cl. 250-363.00S.
Hitco: *See*—
Street, Sidney W.; and Beckley, Don A., 4,351,932, Cl. 526-262.000.
Hobart Corporation: *See*—
George, Mark S., 4,351,690, Cl. 156-384.000.
Hobbs, Aubrey C.: *See*—
Von Canon, George Y.; and Hobbs, Aubrey C., 4,351,118, Cl. 34-24.000.
Hobson, Stephen: *See*—
Link, William T.; Runyan, Steven R.; and Hobson, Stephen, 4,351,592, Cl. 353-72.000.
Hochstrasser, Ulrich; and Kertscher, Eberhard, to Maillefer S.A. Manufacture of insulated electric conductors. 4,351,790, Cl. 264-174.000.
Hoechst Aktiengesellschaft: *See*—
Billenstein, Siegfried; May, Adolf; and Bucking, Hans-Walter, 4,351,737, Cl. 252-8.800.
Elsner, Georg; Vollmer, Hartfrid; and Heymer, Gero, 4,351,960, Cl. 568-8.000.
Kammerer, Friedrich-Johannes; and Schleyerbach, Rudolf, 4,351,841, Cl. 424-272.000.
Kubbeler, Hans K.; Erpenbach, Heinz; Gehrmann, Klaus; and Schmitz, Klaus, 4,351,972, Cl. 570-101.000.
Schmidt, Hans-Joachim; and Leupold, Ernst I., 4,351,908, Cl. 518-716.000.
von der Eltz, Hans-Ulrich; and Reuther, Albert, 4,351,076, Cl. 8-149.100.
Hoeschele, Guenther K., to Du Pont de Nemours, E. I., and Company. Molding material of polyethylene terephthalate and alkai metal salt of C_{30}–C_{54} substantially aliphatic carboxylic acid. 4,351,757, Cl. 524-169.000.
Hofer, Edwin; and Ohnmacht, Helmut, to Fritz Eichenauer, Firma. Electric heating device for heating the interior of a switch cabinet. 4,352,008, Cl. 219-540.000.
Hofmann, Helmut J. Cleaning apparatus for submerged surfaces. 4,351,077, Cl. 15-1.700.
Hohne, Gerd: *See*—
Adler, Karl-Heinz; Pfaff, Georg; Leussink, Reinhard; Sohner, Gerhard; Hohne, Gerd; Jokh, Thomas; and Decker, Heinz, 4,351,310, Cl. 123-644.000.
Hohnerlein, Otto G., Jr.; Smith, Willie E., Jr.; and Rimedio, Nicholas T., Sr., to Savannah Foods & Industries, Inc. Removal of objectionable flavor and odor characteristics in finished sugar products produced from molasses. 4,351,672, Cl. 127-46.300.
Holbrook, Mark D.; and Knapp, William K., to RCA Corporation. Precharge circuit. 4,352,031, Cl. 307-444.000.
Holder, Joseph P.: *See*—
Finlayson, James E., III; Holder, Joseph P.; Holt, L. Earl; and Lee, Seung Y., 4,351,638, Cl. 8-463.000.
Holland, Eddie L.; Stallings, Charles K.; and Parker, Jack, to U.S. Industries, Inc. Movable chick guard. 4,351,273, Cl. 119-51.00R.
Holland, Gerald F., to Pfizer Inc. Antidiabetic pyrrolecarboxylic acids. 4,351,843, Cl. 424-274.000.
Holmes, Horace D. Self-locking threaded fastener. 4,351,626, Cl. 411-311.000.
Holt, L. Earl: *See*—
Finlayson, James E., III; Holder, Joseph P.; Holt, L. Earl; and Lee, Seung Y., 4,351,638, Cl. 8-463.000.

Honda Giken Kogyo Kabushiki Kaisha: *See—*
Date, Tasuku; Nomura, Toshio; and Kobayashi, Isao, 4,352,158, Cl. 364-431.050.
Honda, Masamitus: *See—*
Takahashi, Hironobu; Honda, Masamitus; Murakami, Yasushi; and Iwane, Yoshitaka, 4,351,834, Cl. 424-249.000.
Honeywell Inc.: *See—*
Acker, William F., 4,352,193, Cl. 375-76.000.
Colby, Dwight D., 4,352,159, Cl. 364-509.000.
Mueller, Dale A.; and Sperry, Timothy P., 4,352,079, Cl. 336-65.000.
Young, Miriam F., 4,351,101, Cl. 29-577.00C.
Hope, Henry F.; and Hope, Stephen F. Tanks for mixing apparatus. 4,351,613, Cl. 366-337.000.
Hope, Stephen F.: *See—*
Hope, Henry F.; and Hope, Stephen F., 4,351,613, Cl. 366-337.000.
Horiba, Isao; Yanaka, Shigenobu; Kuwabara, Yasuo; and Koike, Kouichi, to Hitachi Medical Corporation. Method and apparatus for examining a subject. 4,352,020, Cl. 378-18.000.
Hosiden Electronics Co., Ltd.: *See—*
Ojima, Shin; and Neriki, Yoshiaki, 4,351,318, Cl. 126-208.000.
Hosoda, Seiichi, to Olympus Optical Co. Ltd. Light source device. 4,352,150, Cl. 362-282.000.
Hosoda, Yoshikazu: *See—*
Yoshida, Tooru; Iwagami, Seigo; Ueshima, Takashi; and Hosoda, Yoshikazu, 4,351,922, Cl. 525-116.000.
Howard, Allen C.: *See—*
Slagel, John E.; and Howard, Allen C., 4,351,817, Cl. 423-450.000.
Howie, Robert K., Jr., to Grigoleit Company, The. Method of forming a laminated structural member and member formed thereby. 4,351,886, Cl. 428-591.000.
Huang, Chiung-Yuan: *See—*
Riegel, Herbert; and Huang, Chiung-Yuan, 4,351,819, Cl. 423-488.000.
Hubner, Horst; Lersmacher, Bernhard; Lydtin, Hans; and Wilden, Rolf, to U.S. Philips Corporation. Rotary anodes for X-ray tubes. 4,352,041, Cl. 374-144.000.
Hudson, James L.: *See—*
Weiss, Olin E.; Davis, Grant L.; Hudson, James L.; and Dowell, Harlan T., 4,351,688, Cl. 156-358.000.
Hudson, James W. Environmental control room dividers. 4,351,475, Cl. 237-46.000.
Huey-Miin, Perng. Automatic glass tube cutter. 4,351,459, Cl. 225-96.500.
Huffman, Richard K.: *See—*
Young, Robert E.; and Huffman, Richard K., 4,351,984, Cl. 179-7.10R.
Huggins, Dale K.: *See—*
Beckstead, Leo W.; Huggins, Dale K.; and Queneau, Paul B., 4,351,808, Cl. 423-61.000.
Hughes Aircraft Company: *See—*
Chavel, Pierre H.; Sawchuk, Alexander A.; Soffer, Bernard H.; Strand, Timothy C.; and Tanguay, Armand R., Jr., 4,351,589, Cl. 350-342.000.
Griffith, Glen A., 4,352,188, Cl. 372-82.000.
Hullwegen, Josef, to Nixdorf Computer AG. Device for automatic equalization of electrical data transmission channels. 4,352,190, Cl. 375-14.000.
Humber, Leslie G.: *See—*
Dobson, Thomas A.; Humber, Leslie G.; Demerson, Christopher A.; and Jirkovsky, Ivo L., 4,351,942, Cl. 546-269.000.
Hunold, Klaus; Reinmuth, Klaus; Lipp, Alfred; Napholcz, Johannes; and Arnold, Peter, to Elektroschmelzwerk kempten GmbH. Process for the manufacture of substantially pore-free shaped polycrystalline articles by isostatic hot-pressing. 4,351,858, Cl. 427-193.000.
Hunziker, Walter, to Siemens Aktiengesellschaft. Method and a circuit arrangement for modifying control information in a traffic signal system, particularly a street traffic signal system. 4,352,086, Cl. 340-35.000.
Huperz, Adalbert: *See—*
Maasberg, Wolfgang; and Huperz, Adalbert, 4,351,531, Cl. 277-22.000.
Hurwitz, Arthur; Michelucci, John; and Krupey, John, to American Home Products Corporation. Method of producing multicomponent lyophilized product. 4,351,158, Cl. 62-60.000.
Hutchins, Ferris L., Jr., to Mead Corporation, The. Temporary display stand for merchandizing. 4,351,246, Cl. 108-156.000.
Hybricon Inc.: *See—*
Fields, Gerald M.; and Metzner, Robert G., 4,351,405, Cl. 180-65.00A.
Smith, Stephen H., 4,352,152, Cl. 363-41.000.
Ichikawa, Kiyoshi: *See—*
Yamada, Shigeru; and Ichikawa, Kiyoshi, 4,351,220, Cl. 84-1.240.
Ichikawa, Shigeo; Ito, Motonobu; and Aiba, Makoto, to Taiho Kogyo Kabushiki Kaisha. Method of manufacturing an arc-like formed product and equipment for carrying out the method. 4,351,175, Cl. 72-203.000.
ICL Scientific: *See—*
Lehrer, Harris I., 4,351,824, Cl. 424-12.000.
Igarashi, Isao, to Toyota Jidosha Kogyo Kabushiki Kaisha. Brake control system for a combination car system. 4,351,404, Cl. 180-14.00R.
IHC Holland N.V.: *See—*
Cornelis, Christiaan A.; and van Prooijen, Pieter, 4,351,122, Cl. 37-58.000.
Ii, Yoshiro: *See—*
Yoshida, goichi; Hayano, Fusakazu; and Ii, Yoshiro, 4,351,860, Cl. 427-246.000.
Iida, Shinichiro: *See—*
Doi, Shuhei; Isaka, Tsutomu; and Iida, Shinichiro, 4,351,876, Cl. 428-349.000.
Iidaka, Toshiharu: *See—*
Tuchiya, Yoshimasa; Ishii, Katsumi; Iidaka, Toshiharu; and Fujita, Masao, 4,351,561, Cl. 296-216.000.
Ikeda, Kunihiko: *See—*
Karasawa, Shuichi; Matsumoto, Fuyuhiko; Ikeda, Kunihiko; and Tsushima, Shuichi, 4,351,604, Cl. 355-4.000.
Iketani, Tomofumi: *See—*
Kondo, Shigeki; Iketani, Tomofumi; Yamazaki, Yoshio; Doi, Keiichiro; and Tanaka, Seiji, 4,351,996, Cl. 219-10.49R.
Illinois Tool Works Inc.: *See—*
McVey, John K.; and Wanatowicz, Edward W., Jr., 4,352,144, Cl. 361-288.000.
Imatani, Tsuneo: *See—*
Ishibashi, Kazuhisa; Matsui, Sadaki; Yasumuro, Hisakazu; Imatani, Tsuneo; Ueno, Hiroshi; and Kobayashi, Seishichi, 4,352,001, Cl. 219-64.000.
Imayasu, Tomoyoshi; and Isono, Katsuo, to Sony Corporation. Side pincushion correcting circuit for color television receivers. 4,352,047, Cl. 315-370.000.
Immer, Hans U.: *See—*
Failli, Amedeo; Immer, Hans U.; and Gotz, Manfred K., 4,351,828, Cl. 424-177.000.
Imperial Chemical Industries Limited: *See—*
Bailey, Martin; Hines, David A.; Ousby, John C.; and Roesler, Frank C., 4,351,730, Cl. 210-629.000.
Inata, Hiroo: *See—*
Matsumura, Shunichi; Inata, Hiroo; and Morinaga, Tsuto, 4,351,936, Cl. 528-289.000.
Independent Broadcasting Authority: *See—*
Baldwin, John L. E., 4,352,129, Cl. 360-32.000.
Industrie Pirelli S.p.A.: *See—*
Angioletti, Attilio, 4,351,366, Cl. 138-149.000.
Ballocci, Giovanni; and Brollo, Aurelio, 4,351,432, Cl. 198-847.000.
Ingersoll, Brian E.; Nicholson, Ross C.; and Dennisson, James W., to General Electric Company. Packaging container for mining and construction tools. 4,351,448, Cl. 220-318.000.
Inglefield, Joseph T., Jr. Safety device for securing thumb or finger to a syringe. 4,351,334, Cl. 128-218.0PA.
Initiators, The: *See—*
Kordes, Arthur W.; Andrade, Robert M.; and Peterson, Roger W., 4,351,579, Cl. 339-14.00R.
Inoue, Akihiko; and Ito, Takeo, to Alps Electric Company, Ltd. Vibration-preventing mechanism for use in a push button switch. 4,351,995, Cl. 200-159.00A.
Inoue, Kenzo. Speaker device. 4,351,411, Cl. 181-168.000.
Inoue, Shunzo; Nagasawa, Takeshi; Yanagawa, Hitoshi; Iwaya, Toshio; and Kasuya, Michio, to Canon Kabushiki Kaisha. Photographing apparatus. 4,351,609, Cl. 355-50.000.
INOVAN - Stroebe G.m.b.H. and Co. KG: *See—*
Bauer, Herbert; and Weik, Guenter. 4,351,174, Cl. 72-47.000.
Inovius, Allan. Reactor. 4,351,249, Cl. 110-210.000.
Institut Francais du Petrole: *See—*
Beauducel, Claude; and Cretin, Jacques, 4,352,070, Cl. 328-151.000.
Bonavent, Gerard; and Montabord, Lucien, 4,351,642, Cl. 23-230.00M.
Instruments S.A.: *See—*
Govindaraju, Kuppusami, 4,351,643, Cl. 23-230.0EP.
International Business Machines Corporation: *See—*
Burns, Terry A.; and Johnston, Leslie H., 4,352,134, Cl. 360-123.000.
Chance, Dudley A., 4,352,184, Cl. 372-61.000.
Chappell, Terry I.; Pettit, Geroge D.; and Woodall, Jerry M., 4,351,706, Cl. 204-129.300.
Crouse, William G.; and Knox, Charles R., 4,351,983, Cl. 179-1.0SC.
Cuomo, Jerome J.; and Harper, James M. E., 4,351,712, Cl. 204-192.0EC.
Cuomo, Jerome J.; Dreyfus, Russell W.; and Woodall, Jerry M., 4,352,117, Cl. 357-30.000.
Kendrick, Raymond D.; Wind, Robert A.; and Yannoni, Costantino S., 4,352,066, Cl. 324-321.000.
Prewarski, Mike, 4,351,618, Cl. 400-166.000.
Reisman, Arnold; and Berkenblit, Melvin, 4,351,805, Cl. 422-202.000.
International Flavors & Fragrances Inc.: *See—*
Sprecker, Mark A., 4,351,347, Cl. 131-276.000.
Sprecker, Mark A., 4,351,965, Cl. 568-665.000.
International Harvester Company: *See—*
White, David J.; and Roberts, Peter B., 4,351,156, Cl. 60-737.000.
Winker, Bernard L., 4,351,397, Cl. 172-464.000.
International Standard Electric Corporation: *See—*
Duke, Douglas; Drodofsky, Reinhold; and Galaske, Folker, 4,351,619, Cl. 400-196.100.
Hermanutz, Peter; and Roessler, Franz, 4,352,146, Cl. 361-428.000.
Phillips, Michael J.; and Crick, Aubrey M., 4,351,586, Cl. 350-96.200.
Reiber, Hans, 4,352,154, Cl. 363-123.000.
Ionics, Incorporated: *See—*
Jain, Surendar M., 4,351,710, Cl. 204-180.00P.

Iowa State University Research Foundation, Inc.: *See*—
Larock, Richard C., 4,351,949, Cl. 548-359.000.
Irwin, Howard D., to Du Pont de Nemours, E. I., and Company. Railway car truck side frame. 4,351,242, Cl. 105-206.00A.
Isaka, Tsutomu: *See*—
Doi, Shuhei; Isaka, Tsutomu; and Iida, Shinichiro, 4,351,876, Cl. 428-349.000.
Ishibashi, Kazuhisa; Matsui, Sadaki; Yasumuro, Hisakazu; Imatani, Tsuneo; Ueno, Hiroshi; and Kobayashi, Seishichi, to Toyo Seikan Kaisha Limited. Method and apparatus for producing welded metallic can body. 4,352,001, Cl. 219-64.000.
Ishibe, Nobuyuki; and Richey, Warren F., to Dow Chemical Company, The. Stabilized methylchloroform. 4,351,973, Cl. 570-104.000.
Ishida, Tokuji; and Sahara, Masayoshi, to Minolta Camera Kabushiki Kaisha. Electronic exposure and flash control systems for slit-shutter type cameras. 4,351,594, Cl. 354-139.000.
Ishii, Katsumi: *See*—
Tuchiya, Yoshimasa; Ishii, Katsumi; Iidaka, Toshiharu; and Fujita, Masao, 4,351,561, Cl. 296-216.000.
Ishii, Takahiro: *See*—
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Ishimatsu, Kenji: *See*—
Tanaka, Eiichi; Nohara, Norimasa; Tomitani, Takehiro; Yamamoto, Mikio; Ishimatsu, Kenji; and Takami, Katsumi, 4,352,018, Cl. 250-363.00S.
Isley, Ralph E.: *See*—
Prem, Dorothy C.; Duke, June T.; and Isley, Ralph E., 4,351,756, Cl. 524-314.000.
Isogai, Kiyoshi; and Sugaya, Kazuyoshi, to Nippondenso Co., Ltd. Fuel injection apparatus for an internal combustion engine. 4,351,305, Cl. 123-590.000.
Isono, Katsuo: *See*—
Imayasu, Tomoyoshi; and Isono, Katsuo, 4,352,047, Cl. 315-370.000.
Isover Saint-Gobain: *See*—
Levecque, Marcel, deceased; Levecque, Marc, administrator; Battigelli, Jean A.; and Plantard, Dominique, 4,351,661, Cl. 65-5.000.
Meunier, Georges, 4,351,119, Cl. 34-28.000.
Plantard, Dominique; Langlais, Gerard; and Fournier, Rene, 4,351,660, Cl. 65-5.000.
Itek Corporation: *See*—
Ouellette, Alfred R., 4,351,460, Cl. 226-25.000.
Ito, Masao: *See*—
Nagamoto, Shunichi; Ito, Masao; Saka, Tatsuo; and Kobayashi, Tetsu, 4,351,999, Cl. 219-10.55B.
Ito, Motonobu: *See*—
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Ito, Takeo: *See*—
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Ito, Teruyoshi: *See*—
Utsumi, Hiroo; Sakakibara, Yukio; Ito, Teruyoshi; Iwata, Toshiharu; and Yamada, Takashi, 4,351,282, Cl. 123-425.000.
Ito, Tsunetoshi: *See*—
Takahashi, Ken; and Ito, Tsunetoshi, 4,351,565, Cl. 299-1.000.
Itoh, Masashi, to Matsushita Electric Industrial Co., Ltd. Electromagnetic pickup cartridge. 4,352,176, Cl. 369-170.000.
ITT Industries, Inc.: *See*—
Burgdorf, Jochen, 4,351,420, Cl. 188-73.450.
Flamm, Peter M., 4,352,123, Cl. 358-23.000.
Schopper, Bernd, 4,351,571, Cl. 303-40.000.
Ivy, James R. Portable campfire grill assembly. 4,351,312, Cl. 126-30.000.
Iwagami, Seigo: *See*—
Yoshida, Tooru; Iwagami, Seigo; Ueshima, Takashi; and Hosoda, Yoshikazu, 4,351,922, Cl. 525-116.000.
Iwama, Hideto: *See*—
Hirata, Noritsugu; Toyama, Masamichi; Iwama, Hideto; Okajima, Hidekazu; and Nishimura, Akimasa, 4,351,590, Cl. 352-140.000.
Iwane, Yoshitaka: *See*—
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Iwasaki, Shinichiro, to Aisin Seiki Company, Limited. Pressure sensor. 4,351,191, Cl. 73-728.000.
Iwata, Mitsuo; Masuda, Naomasa; Uraki, Hideki; and Tsuchino, Kunio, to Sanyo Electric Co., Ltd.; and Tottori Sanyo Electric Co., Ltd. Cassette tape device. 4,351,498, Cl. 242-204.000.
Iwata, Toshiharu: *See*—
Utsumi, Hiroo; Sakakibara, Yukio; Ito, Teruyoshi; Iwata, Toshiharu; and Yamada, Takashi, 4,351,282, Cl. 123-425.000.
Iwaya, Toshio: *See*—
Inoue, Shunzo; Nagasawa, Takeshi; Yanagawa, Hitoshi; Iwaya, Toshio; and Kasuya, Michio, 4,351,609, Cl. 355-50.000.
Izumi, Kenkichi: *See*—
Matsuzaki, Harumi; Kuroda, Osamu; Okouchi, Isao; Izumi, Kenkichi; and Takahashi, Sankichi, 4,351,715, Cl. 204-301.000.
Izumi, Shigeru: *See*—
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J.C. Penney Company, Inc.: *See*—
Woodring, Cooper C.; and Torbet, Philip A., 4,351,418, Cl. 188-24.220.
J. I. Case Company: *See*—
Mozingo, Robert E., 4,351,199, Cl. 74-566.000.
J. M. Voith GmbH: *See*—
Egelhof, Dieter; and Schmid, Hans R., 4,351,728, Cl. 210-415.000.
Schmoller, Karl-Heinz; Bahr, Theodor; Bottger, Ernst; Henrich, Hans-Otto; Thumm, Helmut; and Beck, Heinz, 4,351,486, Cl. 241-67.000.
J. R. Simplot Company: *See*—
Glorfield, Paul H.; Bryant, Spencer L.; and Kirklin, Vance L., 4,351,141, Cl. 53-473.000.
Jaffe, Stephen B., to Mobil Oil Corporation. Catalyst for hydrotreating residual petroleum oil. 4,351,717, Cl. 208-216.0PP.
Jahnke, Joachim; Lehming, Gunther; Kunig, Helmut; and Nagel, Jens, to Nordischer Maschinenbau Rud. Baader. Needle bar draw frame. 4,351,089, Cl. 19-129.00R.
Jain, Surendar M., to Ionics, Incorporated. Fractionation of protein mixtures. 4,351,710, Cl. 204-180.00P.
Jasperson, F. Bon, to Northwood Mills Ltd. Stucco composition. 4,351,912, Cl. 523-218.000.
Jendrick, Rodney J., to Xerox Corporation. Sheet feeding apparatus. 4,351,519, Cl. 271-117.000.
Jenkins, Arthur P.: *See*—
Coote, Jack H.; and Jenkins, Arthur P., 4,351,608, Cl. 355-35.000.
Jensen, Thomas H., to PPG Industries, Inc. High pressure forming bushing. 4,351,656, Cl. 65-1.000.
Jetter, Milton W. Alarm deactivation system employing timed manual switch operation. 4,352,170, Cl. 368-73.000.
Jetter, Milton W. Clock alarm-deactivating system. 4,352,171, Cl. 368-73.000.
Jirkovsky, Ivo L.: *See*—
Dobson, Thomas A.; Humber, Leslie G.; Demerson, Christopher A.; and Jirkovsky, Ivo L., 4,351,942, Cl. 546-269.000.
Jochum, Peter; and Gasser, Oswald, to Espe Fabrik Parmazeutischer Praparate G.m.b.H. Method for producing prosthetic dental appliances by photopolymerizing a shapeable mass. 4,351,853, Cl. 427-2.000.
Joh.Friedrich Behrens AG: *See*—
Fehrs, Hellmuth; and Elliesen, Wolfgang, 4,351,464, Cl. 227-7.000.
Johansen, Donald L. Air conducting mechanism. 4,351,163, Cl. 62-305.000.
Johansson, Bengt; Keinonen, Arno; and Makinen, Eero, to Oy Wartsila AB. Ice-breaking ship. 4,351,255, Cl. 114-41.000.
John Manufacturing Limited: *See*—
Yuen, Se-kit, 4,351,125, Cl. 40-381.000.
Johne, Albrecht: *See*—
Tappert, Hans-Jurgen; Schulz, Horst; Johne, Hans; and Johne, Albrecht, 4,351,237, Cl. 101-216.000.
Johne, Hans: *See*—
Tappert, Hans-Jurgen; Schulz, Horst; Johne, Hans; and Johne, Albrecht, 4,351,237, Cl. 101-216.000.
Johns, Allan T., to General Electric Company Limited, The. Methods and apparatus for fault detection. 4,352,137, Cl. 361-82.000.
Johnsen, Ulf: *See*—
Axelsson, Bror; Johnsen, Ulf; Stenstrom, Lennart; and Thors, Bengt, 4,352,140, Cl. 361-127.000.
Johnson, Ben E. Solar collector panel. 4,351,321, Cl. 126-446.000.
Johnson, Bruce K.; and Whiteside, George D., to Polaroid Corporation. Method and apparatus for selective positioning of spectral filter during exposure control. 4,351,593, Cl. 354-27.000.
Johnson, Clifford T.: *See*—
McCubbin, Melvin J.; and Johnson, Clifford T., 4,351,239, Cl. 102-364.000.
McCubbin, Melvin J.; Johnson, Clifford T.; and Cordle, Paul E., 4,351,240, Cl. 102-364.000.
Johnson, David A.: *See*—
Walker, Derek; Silvestri, Herbert H.; Sapino, Chester; and Johnson, David A., 4,351,766, Cl. 260-239.100.
Johnson, James E., to Reliability, Inc. Packaging system for semiconductor burn-in. 4,351,108, Cl. 29-741.000.
Johnson, John H., to General Electric Company. Single phase motor with reversible auxiliary windings. 4,352,051, Cl. 318-790.000.
Johnson, Louis W. Power drive structure for rotating threadedly supported rock crusher bowls. 4,351,490, Cl. 241-286.000.
Johnson, Matthey & Co., Limited: *See*—
Bishop, David C.; and Heywood, Alan E., 4,351,887, Cl. 428-594.000.
Johnson, Michael R., to Pfizer Inc. 9-Amino-1-hydroxyoctahydrobenzo[c]quinolines and derivatives thereof as analgesics and anti-emetics. 4,351,833, Cl. 424-248.500.
Johnson-Progress, Limited: *See*—
Jones, Paul F., 4,351,724, Cl. 210-230.000.
Johnston, Leslie H.: *See*—
Burns, Terry A.; and Johnston, Leslie H., 4,352,134, Cl. 360-123.000.
Jokh, Thomas: *See*—
Adler, Karl-Heinz; Pfaff, Georg; Leussink, Reinhard; Sohner, Gerhard; Hohne, Gerd; Jokh, Thomas; and Decker, Heinz, 4,351,310, Cl. 123-644.000.
Jones, Brenton E.: *See*—
Reusser, Robert E.; Claytor, Elizabeth A.; and Jones, Brenton E., 4,351,980, Cl. 585-820.000.
Jones, John H.: *See*—
Kaelblein, Robert; and Jones, John H., 4,351,474, Cl. 229-68.00R.
Jones, Paul F., to Johnson-Progress, Limited. Filter assembly having side-supported slidable king and queen ends. 4,351,724, Cl. 210-230.000.

Jones, Peter W. J.; and Purcell, Dennis W. Self-calibrating speedometer/odometer. 4,352,063, Cl. 324-171.000.

Jones, Richard D., to Solar Energy of Colorado, Inc. Method and apparatus for using solar energy to augment a refrigerant heating and cooling system. 4,351,161, Cl. 62-235.100.

Jonsson, Sven A. Method for manufacture of a boat deck having a surface of adjacent strips, and a deck manufactured according to the method. 4,351,256, Cl. 114-85.000.

Jore, Alfred; Van Gorkom, Gerardus G. P.; and Dekkers, Nicolaas H., to U.S. Philips Corporation. Anti-contamination diaphragm for an electron beam apparatus. 4,352,015, Cl. 250-311.000.

Joseph, A. David: *See*—
Anderson, David L.; and Joseph, A. David, 4,351,550, Cl. 285-158.000.

Joshi, David; and Klingaman, Richard. to Colgate Palmolive Company. Bottled particulate detergent. 4,351,740, Cl. 252-90.000.

Joy Manufacturing Company: *See*—
Lapointe, Roland R., 4,351,399, Cl. 173-148.000.

Julius Blum Gesellschaft m. b. H.: *See*—
Rock, Erich; and Mages, Bernhard, 4,351,575, Cl. 308-3.800.

JWI, Ltd.: *See*—
Kirby, Garry E., 4,351,874, Cl. 428-229.000.

Kabel-und Metallwerke Gutehoffnungshutte Aktiengesellschaft: *See*—
Bauermeister, Klaus; Ziemek, Gerhard; and Eilhardt, Bernd, 4,351,365, Cl. 138-149.000.
Leykamm, Herbert; and Knabel, Siegfried, 4,351,177, Cl. 72-354.000.

Kabushiki Kaisha Daini Seikosha: *See*—
Asano, Kazuhiro, 4,352,169, Cl. 368-73.000.
Ueda, Makoto; Torisawa, Akira; Otawa, Shuji; Mandai, Masaaki; Shida, Masaharu; and Sato, Katsuhiko, 4,352,172, Cl. 368-76.000.

Kabushiki Kaisha Komatsu Seisakusho: *See*—
Fujiwara, Yasuo; Maeo, Hidemi; and Muramoto, Eiichi, 4,351,572, Cl. 305-27.000.

Kabushiki Kaisha Medos Kenkyusho: *See*—
Ouchi, Teruo; and Ueda, Hirohisa, 4,351,323, Cl. 128-4.000.

Kabushiki Kaisha Tokai Rika Denki Seisakusho: *See*—
Kuwako, Tomohisa, 4,352,036, Cl. 310-83.000.
Morita, Masayuki; and Nakano, Tasuku, 4,351,991, Cl. 200-61.270.

Kabushiki Kaisha Tokuda Seisakusho: *See*—
Kuriyama, Noboru, 4,351,714, Cl. 204-298.000.

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See*—
Arakawa, Hiroshi, 4,351,369, Cl. 139-435.000.

Kaelblein, Robert; and Jones, John H., to Beatrice Foods Co. Mailer with sticker-type sign. 4,351,474, Cl. 229-68.00R.

Kahut, Marvin L.: *See*—
Keehner, James E.; Linn, Samuel A.; Kahut, Marvin L.; Forrester, Bobby G.; and Bohanan, Roy E., 4,351,234, Cl. 101-10.000.

Kaiser Aluminum & Chemical Corporation: *See*—
Goodrich, David G., 4,351,384, Cl. 164-468.000.

Kaiser, Emil T. Synthesis of 24,25-dihydroxycholesterol. 4,351,767, Cl. 260-239.55R.

Kajiyama, Ryuichi: *See*—
Terazono, Narihiro; and Kajiyama, Ryuichi, 4,351,416, Cl. 187-29.00R.

Kakizaki, Masao: *See*—
Klagane, Kiyoshi; and Kakizaki, Masao, 4,351,104, Cl. 29-603.000.

Kalbskopf, Reinhard; and Baumberger, Otto, to Societe Italiana Vetro-Siv-S.p.A. Apparatus for continuously depositing a layer of a solid material on the surface of a substrate heated to a high temperature. 4,351,267, Cl. 118-718.000.

Kalivas, Risty T.: *See*—
Dampier, Frederick W.; and Kalivas, Risty T., 4,351,888, Cl. 429-62.000.

Kamada, Kazumasa; Sasaki, Isao; and Kushi, Kenji, to Mitsubishi Rayon Co., Ltd. Radiation cured acrylate coating method and coated product. 4,351,881, Cl. 428-412.000.

Kamerling, Marc A., to Optical Coating Laboratory, Inc. Contrast enhancement filter and method. 4,351,681, Cl. 156-99.000.

Kammerer, Friedrich-Johannes; and Schleyerbach, Rudolf, to Hoechst Aktiengesellschaft. Pharmaceutical preparation and method of treatment. 4,351,841, Cl. 424-272.000.

Kanazawa, Akio: *See*—
Nishimura, Tadahiko; Yamamoto, Hiroshi; Osuo, Masatoshi; and Kanazawa, Akio, 4,351,967, Cl. 568-754.000.

Kanebo, Ltd.: *See*—
Kondo, Yoshikazu; Yamamoto, Toshihiro; and Yamamoto, Takaji, 4,351,879, Cl. 428-374.000.

Kanebo Synthetic Fibers Ltd.: *See*—
Kondo, Yoshikazu; Yamamoto, Toshihiro; and Yamamoto, Takaji, 4,351,879, Cl. 428-374.000.

Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See*—
Ariki, Yusaku; Hino, Takio; and Yoshida, Noboru, 4,351,976, Cl. 570-262.000.

Kaneko, Makoto: *See*—
Suzuki, Hideo; and Kaneko, Makoto, 4,351,214, Cl. 84-1.030.

Kaneko, Thomas M., to BASF Wyandotte Corporation. Liquified normally solid polyoxyalkylene block copolymers. 4,351,753, Cl. 252-357.000.

Kanemaru, Muneaki; Yoshida, Kenji; Higashino, Thikashi; and Kozima, Tadashi, to Mitsui Toatsu Chemicals, Inc. Process for preparing lower alcohols. 4,351,971, Cl. 568-898.000.

Kano, Gota: *See*—
Takagi, Hiromitsu; Umebachi, Shotaro; Kano, Gota; and Teramoto, Iwao, 4,351,099, Cl. 29-571.000.

Kanou, Noboru; and Mori, Keiji, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Aisin Seiki Kabushiki Kaisha. Removable roof of a motor vehicle. 4,351,560, Cl. 296-216.000.

Karasawa, Shuichi; Matsumoto, Fuyuhiko; Ikeda, Kunihiko; and Tsushima, Shuichi, to Ricoh Company, Ltd. Multi-color electrostatic copying apparatus. 4,351,604, Cl. 355-4.000.

Karhan, Barry L.; and Archibald, James B., to General Electric Company. Stator core with axial and radial cooling for dynamoelectric machines wth air-gap stator windings. 4,352,034, Cl. 310-59.000.

Karlen, Urs: *See*—
Baumgartner, Peter; Karlen, Urs; and Keller, Urs, 4,351,774, Cl. 260-383.000.

Kart, Warren E.: *See*—
Toffolon, Roger L.; and Kart, Warren E., 4,351,507, Cl. 249-63.000.

Kastura, John L.: *See*—
Luckman, James E.; Winstead, William P.; and Kastura, John L., 4,351,306, Cl. 123-609.000.

Kasugayama, Yukio: *See*—
Kyogoku, Hiroshi; Tazaki, Shigemitsu; Okamura, Shigeru; Terasawa, Koji; Kasugayama, Yukio; and Hattori, Yoshihumi, 4,352,114, Cl. 346-140.00R.

Kasuya, Michio: *See*—
Inoue, Shunzo; Nagasawa, Takeshi; Yanagawa, Hitoshi; Iwaya, Toshio; and Kasuya, Michio, 4,351,609, Cl. 355-50.000.

Katayama, Yoshifumi: *See*—
Matsui, Makoto; Shiraki, Yasuhiro; Katayama, Yoshifumi; Tsukada, Toshihisa; and Maruyama, Eiichi, 4,351,856, Cl. 427-38.000.

Kato, Akira: *See*—
Matsuda, Shinpei; Kato, Akira; Uno, Shigeo; Sakuta, Youichi; and Nakajima, Fumito, 4,351,811, Cl. 423-239.000.

Kato, Masaki; and Tobita, Katsumi, to Alps Electric Company, Ltd. Tuning system. 4,352,205, Cl. 455-183.000.

Kauffman, Gilbert, to Ametek, Inc. Spark cell ozone generator. 4,351,734, Cl. 210-748.000.

Kaufmann, Reinhold: *See*—
Schleupen, Richard; Kaufmann, Reinhold; and Raff, Dieter, 4,351,309, Cl. 123-630.000.

Kautz, Wilbert G.: *See*—
Brandenberg, Karl A.; and Kautz, Wilbert G., 4,351,225, Cl. 91-50.000.

Kawachi, Yasunori: *See*—
Kishida, Kazuo; Hasegawa, Akira; and Kawachi, Yasunori, 4,351,921, Cl. 525-80.000.

Kawai, Hiromasa: *See*—
Sugitani, Hatuo; Kudo, Takeo; Mukoyama, Yoshiyuki; and Kawai, Hiromasa, 4,351,910, Cl. 521-56.000.

Kawai Musical Instrument Mfg. Co., Ltd.: *See*—
Deutsch, Ralph, 4,351,218, Cl. 84-1.190.

Kawasaki, Haruhiko: *See*—
Koiwai, Hideshi; Matsumura, Shizuo; and Kawasaki, Haruhiko, 4,351,356, Cl. 137-491.000.

Kawasaki, Hiroshi: *See*—
Masuda, Eiji; and Kawasaki, Hiroshi, 4,352,092, Cl. 340-347.0DA.

Kawasaki, Itaru: *See*—
Nyuji, Tomoaki; Kawasaki, Itaru; Noguchi, Masahiro; and Tsukamoto, Masahide, 4,352,162, Cl. 364-724.000.

Kawasaki Steel Corporation: *See*—
Nishide, Teruyuki; Naoi, Takayuki; Shitomi, Makoto; Hamada, Keiichi; and Noguchi, Hidetami, 4,351,576, Cl. 308-37.000.

Kawasaki, Teruo: *See*—
Nomura, Hiroyuki; Kawasaki, Teruo; and Takeuchi, Mikio, 4,352,062, Cl. 324-169.000.

Kayaba Kogyo Kabushiki Kaisha: *See*—
Koiwai, Hideshi; Matsumura, Shizuo; and Kawasaki, Haruhiko, 4,351,356, Cl. 137-491.000.

Kayanuma, Nobuaki, to Toyota Jidosha Kogyo Kabushiki Kaisha. Apparatus for controlling deceleration of an internal combustion engine. 4,351,296, Cl. 123-328.000.

Kazuno, Yuzo: *See*—
Miyazawa, Takeo; Ishii, Takahiro; Kazuno, Yuzo; Akita, Eiichi; Yamada, Yujiro; and Niida, Taro, 4,351,830, Cl. 424-180.000.

Keehner, James E.; Linn, Samuel A.; Kahut, Marvin L.; Forrester, Bobby G.; and Bohanan, Roy E., to General Foods Corporation. Marking apparatus with orbiting marking head. 4,351,234, Cl. 101-10.000.

Keinonen, Arno: *See*—
Johansson, Bengt; Keinonen, Arno; and Makinen, Eero, 4,351,255, Cl. 114-41.000.

Keller, Teddy M.; and Griffith, James R., to United States of America, Navy. Preparation of iodophthalonitrile. 4,351,776, Cl. 260-465.00G.

Keller, Urs: *See*—
Baumgartner, Peter; Karlen, Urs; and Keller, Urs, 4,351,774, Cl. 260-383.000.

Kelly, Darrell A.: *See*—
Blackmon, Lawrence E.; Kelly, Darrell A.; Mowe, Wayne T.; and Yu, Jing-peir, 4,351,147, Cl. 57-208.000.

Kelly, William D.; and Vella, Gregory J., to Balmar Crimp Tool Corp. Contact insertion/removal tool. 4,351,109, Cl. 29-747.000.

Kemp, Ian: *See*—
Corner, Michael R.; Kemp, Ian; and French, Tom, 4,351,382, Cl. 152-330.0RF.

Kendrick, Raymond D.; Wind, Robert A.; and Yannoni, Costantino S., to International Business Machines Corporation. Method for adjusting the magic angle in NMR experiments. 4,352,066, Cl. 324-321.000.

Kent, Brian, to Starcote Limited. Touch switch device. 4,352,141, Cl. 361-181.000.

Keogh, Michael J., to Union Carbide Corporation. Heat curable polymer. 4,351,926, Cl. 525-370.000.

Keppel, Heinrich; Klapper, Peter; and Fleischmann, Herbert, to Licentia Patent-Verwaltungs-GmbH. Microwave oven with resistance heating unit. 4,351,998, Cl. 219-10.55R.

Kercheval, Marie C.: *See*—
Wittmaier, Edward A., 4,352,087, Cl. 340-632.000.

Kerkenbush, Darle L.; Whittington, Jimmie L.; and Sanchez, Terry J., to Wham-O Mfg. Company. Flying disc with central insert. 4,351,129, Cl. 46-74.00D.

Kern, Eugene F. Barbecue grill slab with mold as shipping container. 4,351,313, Cl. 126-39.00J.

Kernforschungszentrum Karlsruhe Gesellschaft mit beschrankter Haftung: *See*—
Becker, Erwin W.; Ehrfeld, Wolfgang; Krieg, Gunther; and Bier, Wilhelm, 4,351,653, Cl. 55-394.000.

Kerr Glass Manufacturing Corp.: *See*—
Fuller, Stuart C., 4,351,693, Cl. 156-556.000.

Kerschner, James J., to Acme Highway Products Corporation. Expansion seal. 4,351,622, Cl. 404-64.000.

Kertscher, Eberhard: *See*—
Hochstrasser, Ulrich; and Kertscher, Eberhard, 4,351,790, Cl. 264-174.000.

Khanna, Pyare; and Ullman, Edwin F., to Syva Company. Novel alkyl substituted fluorescent compounds and polyamino acid conjugates. 4,351,760, Cl. 260-112.00R.

Khanna, Ram-Tirth, to Du Pont de Nemours, E. I., and Company. Corrosion-resistant, improved powder primer surfacer. 4,351,914, Cl. 523-448.000.

Khoury, Nick S.: *See*—
Giggard, Earl D.; Khoury, Nick S.; Kowalik, John J.; and Terrien, Donald R., 4,351,445, Cl. 220-91.000.

Khudyakov, Georgy N.: *See*—
Zhukov, Mikhail F.; Lytkin, Albert Y.; Khudyakov, Georgy N.; and Anshakov, Anatoly S., 4,352,044, Cl. 315-111.210.

Kiessling, Werner; Wiedemann, Otto; Lau, Peter; and Vondrovsky, Gabriel, to Agfa-Gevaert Aktiengesellschaft. Cassette for band material. 4,351,497, Cl. 242-194.000.

Kijima Musen Kabushiki Kaisha: *See*—
Kijima, Seiichi, 4,352,081, Cl. 336-198.000.

Kijima, Seiichi, to Kijima Musen Kabushiki Kaisha. Compact trans core. 4,352,081, Cl. 336-198.000.

Kim, Byung H.: *See*—
Suh, Nam P.; Senturia, Stephen D.; and Kim, Byung H., 4,352,059, Cl. 324-61.00R.

Kimball International, Inc.: *See*—
Bass, Steven C., 4,351,219, Cl. 84-1.210.

Kimberly-Clark Corporation: *See*—
Day, Winterton U., 4,351,793, Cl. 264-518.000.

Kimura, Takao; Sakaguchi, Shigeki; and Takata, Hisao, to Nippon Telegraph & Telephone Public Corporation. Method for coating optical fibers with thermoplastic resin. 4,351,657, Cl. 65-3.110.

Kindt, Lawrence J.: *See*—
Rosenberg, Arnold M.; Gaidis, James M.; and Kindt, Lawrence J., 4,351,671, Cl. 106-90.000.

Kinsolving, Clyde R.: *See*—
Griffith, Ronald C.; and Kinsolving, Clyde R., 4,351,847, Cl. 424-325.000.

Kirby, Garry E., to JWI, Ltd. Low permeability dryer fabric. 4,351,874, Cl. 428-229.000.

Kirchmayr, Rudolf: *See*—
Berner, Godwin; and Kirchmayr, Rudolf, 4,351,708, Cl. 204-159.230.

Kirklin, Vance L.: *See*—
Glorfield, Paul H.; Bryant, Spencer L.; and Kirklin, Vance L., 4,351,141, Cl. 53-473.000.

Kirkman, Michael; Rydwansky, Frank C., Jr.; Hanlon, Richard J.; and Petersen, Richard W., to Augat Inc. Carrier socket for leadless integrated circuit devices. 4,351,580, Cl. 339-17.0CF.

Kishida, Kazuo; Sasaki, Isao; and Mori, Hiroshi, to Mitsubishi Rayon Co., Ltd. Glass fiber reinforced polyethylene terephthalate resin composition. 4,351,751, Cl. 524-375.000.

Kishida, Kazuo; Hasegawa, Akira; and Kawachi, Yasunori, to Mitsubishi Rayon Co., Ltd. Resin composition for use in uncoated exterior material. 4,351,921, Cl. 525-80.000.

Kishida, Takashi: *See*—
Aoyama, Hideki; and Kishida, Takashi, 4,351,492, Cl. 242-18.00R.

Kita, Yasuo, to Shimadzu Corporation. Hydraulic elevator installation. 4,351,415, Cl. 187-29.00B.

Kitamura, Kazuaki: *See*—
Fukushima, Osamu; Akisada, Masahide; Monma, Yoshiyuki; and Kitamura, Kazuaki, 4,352,198, Cl. 378-185.000.

Kitamura, Masaki; Saisu, Naoki; and Koide, Shigeo, to Kitamura, Masaki. Cartridge equalizer. 4,352,178, Cl. 369-252.000.

Kivits, Hendrikus P. M.: *See*—
Tels, Martinus; Lotens, Jan P.; and Kivits, Hendrikus P. M., 4,351,807, Cl. 423-24.000.

Kiyooka, Hisamaro, to Harada Industry Co., Ltd. Matching cable for automobile antennas for receiving FM broadcasts. 4,352,107, Cl. 343-715.000.

Klagane, Kiyoshi; and Kakizaki, Masao, to TDK Electronics Co., Ltd. Method for manufacturing magnetic heads. 4,351,104, Cl. 29-603.000.

Klapper, Peter: *See*—
Keppel, Heinrich; Klapper, Peter; and Fleischmann, Herbert, 4,351,998, Cl. 219-10.55R.

Klauke, Erich: *See*—
Baasner, Bernd; Klauke, Erich; and Kysela, Ernst, 4,351,974, Cl. 570-174.000.

Klauschenz & Perrot KG: *See*—
Perrot, Erwin, 4,351,731, Cl. 210-647.000.

Kleemann, Axel; and Schalke, Peter M., to Degussa AG. Process for the recovery of malonodinitrile. 4,351,778, Cl. 260-465.80R.

Kleinhappl, Erich: *See*—
Marsoner, Hermann; List, Helmut; and Kleinhappl, Erich, 4,351,798, Cl. 422-63.000.

Kletny, Mikhail M.: *See*—
Abduganiev, Abdurakhim; Krjuk, Timur P.; Zhestkov, Vitaly I.; Tikhonov, Valentin N.; Glazov, Vladimir G.; Kletny, Mikhail M.; Shlykov, Gennady N.; Afanasiev, Vladimir K.; Dyachkov, Vasily M.; Zhigalov, Gennady V.; Mangutov, Rafael A.; and Angarov, Ernst I., 4,351,149, Cl. 57-263.000.

Klijnstra, Jan H.: *See*—
Van Herk, Alfred; Buis, Jacob A. M.; Klijnstra, Jan H.; and Van Staalduinen, Jan, 4,352,131, Cl. 360-78.000.

Kline, Donald D., to Bell & Howell Company. Aircraft passenger entertainment system. 4,352,124, Cl. 358-60.000.

Klingaman, Richard: *See*—
Joshi, David; and Klingaman, Richard, 4,351,740, Cl. 252-90.000.

Klinge, Gerd: *See*—
Upmeier, Hartmut; Klinge, Gerd; and Winkler, Gerhard, 4,351,785, Cl. 264-40.100.

Kluger, Edward W.; and Welch, Calvin D., to Milliken Research Corporation. Epoxy resin compositions. 4,351,934, Cl. 528-111.000.

Knabel, Siegfried: *See*—
Leykamm, Herbert; and Knabel, Siegfried, 4,351,177, Cl. 72-354.000.

Knapp, William K.: *See*—
Holbrook, Mark D.; and Knapp, William K., 4,352,031, Cl. 307-444.000.

Knecht, Siegfried H., to Maschinenfabrik Alfred Schmermund GmbH & Co. Device for feeding web-shaped packaging material. 4,351,463, Cl. 226-154.000.

Knifton, John F., to Texaco Inc. Preparation of ethylene glycol. 4,351,907, Cl. 518-700.000.

Knowles, Albert H.: *See*—
Rines, Robert H.; and Knowles, Albert H., 4,351,269, Cl. 119-3.000.

Knox, Charles R.: *See*—
Crouse, William G.; and Knox, Charles R., 4,351,983, Cl. 179-1.0SC.

Kobayashi, Isao: *See*—
Date, Tasuku; Nomura, Toshio; and Kobayashi, Isao, 4,352,158, Cl. 364-431.050.

Kobayashi, Izumi: *See*—
Hashimoto, Yuuji; Kobayashi, Izumi; Suzuki, Mitsuo; Yamada, Kimio; Izumi, Shigeru; and Michiguchi, Yoshihiro, 4,352,167, Cl. 367-127.000.

Kobayashi, Kimiyuki: *See*—
Fujita, Taira; Nakagawa, Hiroyuki; Sugihara, Mikio; Kobayashi, Kimiyuki; and Okamoto, Katuhiko, 4,351,765, Cl. 260-163.000.

Kobayashi, Masateru: *See*—
Shibuya, Chisei; Murakami, Masahiro; Kobayashi, Masateru; and Sone, Takanori, 4,351,947, Cl. 548-251.000.

Kobayashi, Seishichi: *See*—
Ishibashi, Kazuhisa; Matsui, Sadaki; Yasumuro, Hisakazu; Imatani, Tsuneo; Ueno, Hiroshi; and Kobayashi, Seishichi, 4,352,001, Cl. 219-64.000.

Kobayashi, Tetsu: *See*—
Nagamoto, Shunichi; Ito, Masao; Saka, Tatsuo; and Kobayashi, Tetsu, 4,351,999, Cl. 219-10.55B.

Kobler, Ingo, to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. Internally cooled roller body construction. 4,351,386, Cl. 165-89.000.

Koch, Fenton C. Apparatus for purifying molten metal. 4,351,514, Cl. 266-217.000.

Kochengin, Evgeny Y.: *See*—
Daiker, Artur L.; Veis, Anatoly I.; Kochengin, Evgeny Y.; Novoselov, Nikolai M.; Morozov, Gennady Y.; Rybin, Vladimir S.; Belokur, Nikolai A.; and Savelieva, Nina A., 4,351,676, Cl. 148-9.00C.

Koehler Manufacturing Company: *See*—
Sundberg, Erik G., 4,351,889, Cl. 429-141.000.

Koerwer, John F., to Union Carbide Corporation. Enol derivatives of 2-aryl-1,3-cyclohexanedione compound as sugar enhancer for plants. 4,351,666, Cl. 71-106.000.

Kohan, Melvin I., to Du Pont de Nemours, E. I., and Company. Polyoxymethylene molding blends. 4,351,916, Cl. 524-377.000.

Kohn, Jean, to Baltek Corporation. Technique for converting balsa logs into contourable panels. 4,351,680, Cl. 156-79.000.

Koide, Shigeo: *See*—
Kitamura, Masaki; Saisu, Naoki; and Koide, Shigeo, 4,352,178, Cl. 369-252.000.

Koike, Kouichi: *See*—
Horiba, Isao; Yanaka, Shigenobu; Kuwabara, Yasuo; and Koike, Kouichi, 4,352,020, Cl. 378-18.000.

Koiwai, Hideshi; Matsumura, Shizuo; and Kawasaki, Haruhiko, to Kayaba Kogyo Kabushiki Kaisha. Pressure control valve. 4,351,356, Cl. 137-491.000.

Kokusan Kinzoku Kogyo Kabushiki Kaisha: *See—*
Tuchiya, Yoshimasa; Ishii, Katsumi; Iidaka, Toshiharu; and Fujita, Masao, 4,351,561, Cl. 296-216.000.

Koller, Floyd G.; and Drew, Ralph H., Jr., to Auto-Valve, Inc. Drain valve. 4,351,355, Cl. 137-329.060.

Kolomayets, George: *See—*
Dennis, James T.; and Kolomayets, George, 4,352,177, Cl. 369-246.000.

Kolowski, Michael A.: *See—*
Roberts, Charles W.; Lindner, Daniel J.; Kwee, Henry T.; Kolowski, Michael A.; and Fetty, Harold D., 4,351,381, Cl. 152-209.00R.

Komurasaki, Satoshi; and Ueda, Atsushi, to Mitsubishi Denki Kabushiki Kaisha. Ignition timing controller for an internal combustion engine. 4,351,307, Cl. 123-618.000.

Kondo, Shigeki; Iketani, Tomofumi; Yamazaki, Yoshio; Doi, Keiichiro; and Tanaka, Seiji, to Riccar Co., Ltd.; and Sharp Kabushiki Kaisha. Induction heating apparatus with thermistor and magnetic sensor. 4,351,996, Cl. 219-10.49R.

Kondo, Yoshikazu; Yamamoto, Toshihiro; and Yamamoto, Takaji, to Kanebo, Ltd.; and Kanebo Synthetic Fibers Ltd. Porous acrylic synthetic fibers comprising cellulose acetate in an acrylic matrix. 4,351,879, Cl. 428-374.000.

Kondrashov, Alexei I.: *See—*
Laptev, Lev N.; Legotsky, Sergei S.; Semenovsky, Viadimir A.; Sambursky, Sergei S.; Litvinov, Abram B.; and Kondrashov, Alexei I., 4,351,489, Cl. 241-261.300.

Koogler, Steven C., to R. L. Drake Company. Variable rate tuning for radio transmitters and receivers. 4,352,010, Cl. 235-92.0EV.

Kopp, Reiner H.; and Panetz, Allen I., to Biochemical Diagnostics, Inc. Thin layer plate chromatography apparatus. 4,351,800, Cl. 422-70.000.

Kordes, Arthur W.; Andrade, Robert M.; and Peterson, Roger W., to Initiators, The. Clamp for electrical cable and cable terminating system. 4,351,579, Cl. 339-14.00R.

Kortmann, Wilfried: *See—*
Steinberger, Helmut; Moretto, Hans-Heinrich; Kortmann, Wilfried; and Pfeiffer, Josef, 4,351,736, Cl. 252-8.600.

Koshino, Yutaka: *See—*
Yonezawa, Toshio; Ajima, Takashi; Hiraki, Shunichi; Koshino, Yutaka; and Oka, Yoshitami, 4,351,894, Cl. 430-313.000.

Kosmala, Rupert M. Hydraulic control device. 4,351,153, Cl. 60-581.000.

Kosonen, Ahti A., to Outokumpu Oy. Copper wire for intrauterina contraceptive devices and a method for manufacturing the same. 4,351,326, Cl. 128-130.000.

Kountz, Kenneth J.; and Erth, Richard A., to Borg-Warner Corporation. Capacity control systems for screw compressor based water chillers. 4,351,160, Cl. 62-201.000.

Kowalik, John J.: *See—*
Giggard, Earl D.; Khoury, Nick S.; Kowalik, John J.; and Terrien, Donald R., 4,351,445, Cl. 220-91.000.

Kozhanov, Evgeny V.: *See—*
Gross, Valery N.; Kozhanov, Evgeny V.; Stupnik, Vyacheslav D.; and Valov, Vladimir V., 4,351,799, Cl. 422-63.000.

Kozima, Tadashi: *See—*
Kanemaru, Muneaki; Yoshida, Kenji; Higashino, Thikashi; and Kozima, Tadashi, 4,351,971, Cl. 568-898.000.

Kraft, Hermann: *See—*
Beisel, Hermann; and Kraft, Hermann, 4,351,236, Cl. 101-148.000.

Kramer, Gunter. Liquid crystal display of time dependent signals. 4,352,102, Cl. 340-784.000.

Kranz, Walter; and Tillmann, Heinz, to Messerschmitt-Bolkow-Blohm GmbH. Jet engine with a thrust vector control. 4,351,479, Cl. 239-265.230.

Krebs, Waldemar; and Bromme, Hermann, to Chemische Werke Huls Aktiengesellschaft. Process for the removal of precipitates in heat exchangers of low temperature installations. 4,351,654, Cl. 62-13.000.

Kremer, Robert. Heat recovery device for boilers. 4,351,276, Cl. 122-20.00B.

Kress, Paul J.: *See—*
Marcantonio, Arnold F.; Kress, Paul J.; and Powers, John W., 4,351,883, Cl. 428-450.000.

Kreuzer, Helmut: *See—*
Grozinger, Alfred; Frister, Manfred; and Kreuzer, Helmut, 4,351,102, Cl. 29-596.000.

Kriebitzsch, Norbert; Puschner, Kurt; and Hentschel, Klaus, to Degussa Aktiengesellschaft. Process for handling liquid cyanuric chloride. 4,351,644, Cl. 23-293.00R.

Krieg, Gunther: *See—*
Becker, Erwin W.; Ehrfeld, Wolfgang; Krieg, Gunther; and Bier, Wilhelm, 4,351,653, Cl. 55-394.000.

Krjuk, Timur P.: *See—*
Abduganiev, Abdurakhim; Krjuk, Timur P.; Zhestkov, Vitaly I.; Tikhonov, Valentin N.; Glazov, Vladimir G.; Kletny, Mikhail M.; Shlykov, Gennady N.; Afanasiev, Vladimir K.; Dyachkov, Vasily M.; Zhigalov, Gennady V.; Mangutov, Rafael A.; and Angarov, Ernst I., 4,351,149, Cl. 57-263.000.

Kroenig, Hans E. K. System for processing potatoes. 4,351,232, Cl. 99-540.000.

Kroll, Walter. Combustion apparatus for burning waste oils. 4,351,316, Cl. 126-93.000.

Krupey, John: *See—*
Hurwitz, Arthur; Michelucci, John; and Krupey, John, 4,351,158, Cl. 62-60.000.

Krupp-Koppers GmbH: *See—*
Deuser, Norbert; and Diemer, Peter, 4,351,742, Cl. 252-373.000.

Kubbeler, Hans K.; Erpenbach, Heinz; Gehrmann, Klaus; and Schmitz, Klaus, to Hoechst Aktiengesellschaft. Process for making anhydrous alkyl iodides. 4,351,972, Cl. 570-101.000.

Kubik, Hans. Sliding window or sliding door. 4,351,131, Cl. 49-501.000.

Kubo, Kyoji: *See—*
Shinoda, Naoharu; Maeda, Nobutaka; and Kubo, Kyoji, 4,351,650, Cl. 55-181.000.

Kubota, Ltd.: *See—*
Yoshida, Jituo; and Toyokuni, Kazuo, 4,351,196, Cl. 74-15.400.

Kubota, Naohiro; Shibata, Toshihiro; Sugibuchi, Kazuo; and Minagawa, Motonubu, to Adeka Argus Chemical Co., Ltd. 2,2,6,6-Tetramethyl-4-piperidyl spiro aliphatic ethers as stabilizers for synthetic polymers. 4,351,915, Cl. 524-103.000.

Kubota, Tetsumaru: *See—*
Matsuo, Kazumasa; and Kubota, Tetsumaru, 4,351,587, Cl. 350-255.000.

Kudo, Takeo: *See—*
Sugitani, Hatuo; Kudo, Takeo; Mukoyama, Yoshiyuki; and Kawai, Hiromasa, 4,351,910, Cl. 521-56.000.

Kumano, Shinji, to Nippon Gakki Seizo Kabushiki Kaisha. Keyboard musical instrument with casing comprising two halves. 4,351,222, Cl. 84-423.00R.

Kunig, Helmut: *See—*
Jahnke, Joachim; Lehming, Gunther; Kunig, Helmut; and Nagel, Jens, 4,351,089, Cl. 19-129.00R.

Kuo, Chan-Hwa: *See—*
Patchett, Arthur A.; and Kuo, Chan-Hwa, 4,351,844, Cl. 424-279.000.

Kuppenheimer, John D., Jr.; and Baer, James W., to Sanders Associates, Inc. Laser crystal. 4,352,186, Cl. 372-41.000.

Kuramoto, Takaki: *See—*
Fujishima, Kunihiro; and Kuramoto, Takaki, 4,352,000, Cl. 219-10.770.

Kuraray Co., Ltd.: *See—*
Nakamura, Seishiro; and Tamura, Masuhiko, 4,351,964, Cl. 568-484.000.

Kurata, Masayuki; and Watanabe, Yushiyo, to Akebono Brake Industry Co., Ltd. Disc brake. 4,351,421, Cl. 188-73.450.

Kurihara, Keisuke, to Hitachi, Ltd. Production method for solder coated conductor wiring. 4,351,704, Cl. 204-15.000.

Kurihara, Yasutoshi; Hachino, Hiroaki; and Nakamura, Kousuke, to Hitachi, Ltd. Semiconductor device using SiC as supporter of a semiconductor element. 4,352,120, Cl. 357-81.000.

Kuriyama, Noboru, to Kabushiki Kaisha Tokuda Seisakusho. Sputter-etching device. 4,351,714, Cl. 204-298.000.

Kuroda, Osamu: *See—*
Matsuzaki, Harumi; Kuroda, Osamu; Okouchi, Isao; Izumi, Kenkichi; and Takahashi, Sankichi, 4,351,715, Cl. 204-301.000.

Kushi, Kenji: *See—*
Kamada, Kazumasa; Sasaki, Isao; and Kushi, Kenji, 4,351,881, Cl. 428-412.000.

Kusilek, LeRoy I., to Minnesota Mining and Manufacturing Company. Method of forming web material. 4,351,683, Cl. 156-167.000.

Kuwabara, Yasuo: *See—*
Horiba, Isao; Yanaka, Shigenobu; Kuwabara, Yasuo; and Koike, Kouichi, 4,352,020, Cl. 378-18.000.

Kuwako, Tomohisa, to Kabushiki Kaisha Tokai Rika Denki Seisakusho. Electrical rotary machine. 4,352,036, Cl. 310-83.000.

Kwee, Henry T.: *See—*
Roberts, Charles W.; Lindner, Daniel J.; Kwee, Henry T.; Kolowski, Michael A.; and Fetty, Harold D., 4,351,381, Cl. 152-209.00R.

Kwiatkowski, Robert E.: *See—*
Du Pont, John P.; Taj, Hatim H.; Schoenwetter, Randall R.; Vanlankvelt, Theodore J.; Kwiatkowski, Robert E.; and Lange, Richard W., 4,352,139, Cl. 361-117.000.

Kyogoku, Hiroshi; Tazaki, Shigemitsu; Okamura, Shigeru; Terasawa, Koji; Kasugayama, Yukio; and Hattori, Yoshihumi, to Canon Kabushiki Kaisha. Ink jet printer with temperature compensation. 4,352,114, Cl. 346-140.00R.

Kyowa Chemical Industry Co., Ltd.: *See—*
Miyata, Shigeo; and Okada, Akira, 4,351,814, Cl. 423-306.000.

Kysela, Ernst: *See—*
Baasner, Bernd; Klauke, Erich; and Kysela, Ernst, 4,351,974, Cl. 570-174.000.

Labruyere, Gilles, to Societe Nationale Industrielle Aerospatiale. Foldable antenna reflector. 4,352,113, Cl. 343-915.000.

Lakin, Ira W.: *See—*
Fenton, Edward A., Jr.; Lakin, Ira W.; and Blair, Gilbert, 4,351,431, Cl. 198-823.000.

Landa, Benzion, to Savin Corporation. Microballistic printer. 4,351,617, Cl. 400-118.000.

Lange, Richard W.: *See—*
Du Pont, John P.; Taj, Hatim H.; Schoenwetter, Randall R.; Vanlankvelt, Theodore J.; Kwiatkowski, Robert E.; and Lange, Richard W., 4,352,139, Cl. 361-117.000.

Langlais, Gerard: *See—*
Plantard, Dominique; Langlais, Gerard; and Fournier, Rene, 4,351,660, Cl. 65-5.000.

Langlois, Pierre; and Mollet, Marc. Vaginal tampon. 4,351,338, Cl. 128-285.000.

Lanier Business Products, Inc.: *See—*
Titus, Theodore, IV; and Bagley, Julius B., 4,352,173, Cl. 369-27.000.

Lansing Bagnall Limited: *See*—
Gibbons, Ralph D.; and Shackleford, Geoffrey G., 4,351,684, Cl. 156-215.000.
Lapointe, Roland R., to Joy Manufacturing Company. Drill. 4,351,399, Cl. 173-148.000.
Laporte, Joseph L. Counterweight system. 4,351,245, Cl. 108-136.000.
Laptev, Lev N.; Legotsky, Sergei S.; Semenovsky, Viadimir A.; Sambursky, Sergei S.; Litvinov, Abram B.; and Kondrashov, Alexei I. Refiner disk. 4,351,489, Cl. 241-261.300.
Larock, Richard C., to Iowa State University Research Foundation, Inc. Bicyclic prostaglandin analogs and method of synthesis. 4,351,949, Cl. 548-359.000.
Larson, Gary O.: *See*—
Foulks, Alan L.; and Larson, Gary O., 4,351,187, Cl. 73-178.00R.
Larson, Jay M.: *See*—
Worthen, Roger P.; and Larson, Jay M., 4,351,292, Cl. 123-188.0AA.
Latif, Chester C.: *See*—
Ferm, Richard L.; and Latif, Chester C., 4,351,750, Cl. 524-8.000.
Lau, Peter: *See*—
Kiessling, Werner; Wiedemann, Otto; Lau, Peter; and Vondrovsky, Gabriel, 4,351,497, Cl. 242-194.000.
Laures, Antoine. High-speed digital/analog converter. 4,352,093, Cl. 340-347.0DA.
Laverty, William F., to United Technologies Corporation. Labyrinth seal. 4,351,532, Cl. 277-53.000.
Lawrence, Randall K.; and Stevens, Aaron A., to Murray Ohio Manufacturing Co., The. Combined clutch and brake. 4,351,424, Cl. 192-18.00R.
Lawson, Michael B., to Halliburton Company. Method for removing iron sulfide scale from metal surfaces. 4,351,673, Cl. 134-3.000.
Lay, Larry D. Velocipede for the physically handicapped. 4,351,406, Cl. 180-65.00R.
Lazarus, Harrison; and Nelson, James A., to Lazarus, Harrison; and Nelson, James A. Peritoneal fluid treatment apparatus, package and method. 4,351,333, Cl. 128-214.400.
Learmonth, William H.: *See*—
Evans, Jonathan L.; and Learmonth, William H., 4,352,005, Cl. 219-121.0LJ.
Le Dieu, Bernard; and Herledan, Jean-Rene, to Compagnie Industrielle des Telecommunications CIT-ALCATEL. Device for synchronising multiplex lines in a time-division exchange. 4,352,181, Cl. 370-105.000.
Lee, Chien-Ping: *See*—
Yariv, Amnon; Margalit, Shlomo; and Lee, Chien-Ping, 4,352,116, Cl. 357-17.000.
Lee, Seung Y.: *See*—
Finlayson, James E., III; Holder, Joseph P.; Holt, L. Earl; and Lee, Seung Y., 4,351,638, Cl. 8-463.000.
Leff, Martin J.: *See*—
Flaum, Stephen S.; and Leff, Martin J., 4,351,264, Cl. 118-203.000.
Leggett & Platt, Incorporated: *See*—
Taylor, William B., 4,351,439, Cl. 211-49.00D.
Legotsky, Sergei S.: *See*—
Laptev, Lev N.; Legotsky, Sergei S.; Semenovsky, Viadimir A.; Sambursky, Sergei S.; Litvinov, Abram B.; and Kondrashov, Alexei I., 4,351,489, Cl. 241-261.300.
Lehming, Gunther: *See*—
Jahnke, Joachim; Lehming, Gunther; Kunig, Helmut; and Nagel, Jens, 4,351,089, Cl. 19-129.00R.
Lehrer, Harris I., to ICL Scientific. Polystyrene latex reagents, methods of preparation, and use in immunological procedures. 4,351,824, Cl. 424-12.000.
Leible, Erwin: *See*—
Stritt, Helmut; Schmidt, Alfred; and Leible, Erwin, 4,351,620, Cl. 403-13.000.
Leif, Robert C., to Coulter Electronics, Inc. Monitoring of a detection zone utilizing zero order radiation from a concave reflecting grating. 4,351,611, Cl. 356-328.000.
Leining, Lyndon R.; Fischer, Nathan A.; Simonson, Kent L.; White, Gordon G.; and Lindstrom, Oscar H., to Geo. A. Hormel & Company. Method and apparatus for removing skin from animal carcasses. 4,351,088, Cl. 17-50.000.
Leisner, Ernst: *See*—
Drexel, Peter; Maier, Gernot; and Leisner, Ernst, 4,351,628, Cl. 414-749.000.
Leiter, Bernd: *See*—
Steuer, Werner; and Leiter, Bernd, 4,351,569, Cl. 301-6.00V.
Lemanski, Michael F.: *See*—
Milberger, Ernest C.; Lemanski, Michael F.; and Spitnale, Gregory G., 4,351,773, Cl. 549-259.000.
Lemieux, George E.; and Tibbles, Tom T., to Ford Motor Company. Electronic and hydraulic control system for automatic gear change transmission. 4,351,206, Cl. 74-866.000.
Lemonnier, Jean, to Millipore Corporation. Test method and apparatus for the presence of microorganisms in ampoule. 4,351,900, Cl. 435-31.000.
Leonard, Frank W. Press. 4,351,233, Cl. 100-48.000.
Leonhardt, Fritz; Andra, Wolfhart; Zellner, Wilhelm; and Schlaich, Jorg. Reflector with air pressure means. 4,352,112, Cl. 343-915.000.
Lersmacher, Bernhard: *See*—
Hubner, Horst; Lersmacher, Bernhard; Lydtin, Hans; and Wilden, Rolf, 4,352,041, Cl. 374-144.000.
Lesage, Gaston. Machine for coiling strip material with a device for momentary immobilization of the tails of the strips. 4,351,687, Cl. 156-353.000.
Lesher, George Y.; Opalka, Chester J., Jr.; and Page, Donald F., to Sterling Drug Inc. Pyridinyl-pyridines. 4,351,941, Cl. 546-258.000.
Lessig, William R., III, to Black & Decker Inc. Ground support system for a grass cutting machine. 4,351,143, Cl. 56-17.500.
L'Etat Francais, represente par le Secretaire d'Etat aux Poste et Telecommunications (Centre Nationale d'Etudes des Telecommunications): *See*—
Guillou, Louis C., 4,352,011, Cl. 235-375.000.
Leupold, Ernst I.: *See*—
Schmidt, Hans-Joachim; and Leupold, Ernst I., 4,351,908, Cl. 518-716.000.
Leussink, Reinhard: *See*—
Adler, Karl-Heinz; Pfaff, Georg; Leussink, Reinhard; Sohner, Gerhard; Hohne, Gerd; Jokh, Thomas; and Decker, Heinz, 4,351,310, Cl. 123-644.000.
Leuthold, Oskar, to Ebauches Electroniques SA. Complementary MOS field effect transistor amplifier. 4,352,073, Cl. 330-264.000.
Levecque, Marc, administrator: *See*—
Levecque, Marcel, deceased; Levecque, Marc, administrator; Battigelli, Jean A.; and Plantard, Dominique, 4,351,661, Cl. 65-5.000.
Levecque, Marcel, deceased; by Levecque, Marc, administrator; Battigelli, Jean A.; and Plantard, Dominique, to Isover Saint-Gobain. Fiberization by gas blast attenuation. 4,351,661, Cl. 65-5.000.
Lewis, Andrew G. Lighting apparatus. 4,352,151, Cl. 362-368.000.
Lewis, Edward J.; and Rattee, Ian D. Decorating textile fabrics. 4,351,871, Cl. 428-195.000.
Lewis, Tom: *See*—
Sexstone, John H.; Lewis, Tom; and Milliner, Ken, 4,351,792, Cl. 264-293.000.
Leykamm, Herbert; and Knabel, Siegfried, to Kabel-und Metallwerke Gutehoffnungshutte Aktiengesellschaft. Apparatus for making a bevel gear. 4,351,177, Cl. 72-354.000.
Licentia Patent-Verwaltungs-G.m.b.H.: *See*—
Grunsch, Eckhardt; and Wochele, Gunter, 4,352,054, Cl. 323-224.000.
Keppel, Heinrich; Klapper, Peter; and Fleischmann, Herbert, 4,351,998, Cl. 219-10.55R.
Liedtke, Kurt: *See*—
Focke, Heinz H.; Liedtke, Kurt; and Bretthauer, Hans J., 4,351,142, Cl. 53-575.000.
Likins, Merle R., Jr.; and Stacy, Galen D., to Phillips Petroleum Company. Carbon black furnace process. 4,351,818, Cl. 423-450.000.
Lilley, George S. Lawn edger and trimmer. 4,351,395, Cl. 172-13.000.
Lilley, Martin A., to Ampex Corporation. PAL Burst phase shift error corrector. 4,352,121, Cl. 358-326.000.
Linden-Alimak AB: *See*—
Selestam, Berndt; Forssell, Ake; and Winnersjo, Per A., 4,351,625, Cl. 405-303.000.
Lindner, Daniel J.: *See*—
Roberts, Charles W.; Lindner, Daniel J.; Kwee, Henry T.; Kolowski, Michael A.; and Fetty, Harold D., 4,351,381, Cl. 152-209.00R.
Lindstrom, Fred B.; and Bengtsson, Alf R. A., to Aktiebolaget IRO. Thread-storage and delivery device for textile machines. 4,351,495, Cl. 242-47.010.
Lindstrom, Oscar H.: *See*—
Leining, Lyndon R.; Fischer, Nathan A.; Simonson, Kent L.; White, Gordon G.; and Lindstrom, Oscar H., 4,351,088, Cl. 17-50.000.
Linecker, Josef. Device for pushing a forwardly extending portion of a ski shoe sole into a cross-country ski binding. 4,351,543, Cl. 280-615.000.
Link, Manfred, to Triumph-Adler A.G. Crankshaft assembly. 4,351,201, Cl. 74-598.000.
Link, William T.; Runyan, Steven R.; and Hobson, Stephen, to Datagraphix, Inc. Collapsible microfiche reader assembly especially suitable for use in a desk drawer. 4,351,592, Cl. 353-72.000.
Linn, Samuel A.: *See*—
Keehner, James E.; Linn, Samuel A.; Kahut, Marvin L.; Forrester, Bobby G.; and Bohanan, Roy E., 4,351,234, Cl. 101-10.000.
Liou, Jin S. Connector for combination furniture. 4,351,621, Cl. 403-217.000.
Lipp, Alfred: *See*—
Hunold, Klaus; Reinmuth, Klaus; Lipp, Alfred; Napholcz, Johannes; and Arnold, Peter, 4,351,858, Cl. 427-193.000.
Liqui-Box Corporation: *See*—
Bond, Curtis J., 4,351,455, Cl. 222-153.000.
List, Hans: *See*—
Marsoner, Hermann; List, Helmut; and Kleinhappl, Erich, 4,351,798, Cl. 422-63.000.
List, Helmut: *See*—
Marsoner, Hermann; List, Helmut; and Kleinhappl, Erich, 4,351,798, Cl. 422-63.000.
Litvinov, Abram B.: *See*—
Laptev, Lev N.; Legotsky, Sergei S.; Semenovsky, Viadimir A.; Sambursky, Sergei S.; Litvinov, Abram B.; and Kondrashov, Alexei I., 4,351,489, Cl. 241-261.300.
Livlab, Inc.: *See*—
Miller, Gene H., 4,351,554, Cl. 296-24.00R.
LLorente Agudo, Nieves; Elia Miguel, Maria F.; Aranguren Escobar, Maria A.; Pares Olivet, Eulalia; and Fernandez Garvajosa, Jose M., to Compania Espanola de Petroleos, S.A. Process for obtaining glucose-isomerase. 4,351,903, Cl. 435-234.000.
Lockwood Graders (UK) Limited: *See*—
Long, Peter G., 4,351,437, Cl. 209-545.000.

Logicon, Inc.: *See*—
Stockett, Larry A., 4,351,591, Cl. 353-25.000.

Loire, Rene, to Morrison-Knudsen Company, Inc. Single point mooring and directional fender. 4,351,259, Cl. 114-230.000.

Lokocki, James A.: *See*—
Floury, Claude P.; Guillet, Claude L. J. M.; Lokocki, James A.; Devoille, Maurice R.; and Fanene, Bernard, 4,351,468, Cl. 228-4.500.

Long, John M. Powered wheel assembly for grain augers and the like. 4,351,428, Cl. 198-302.000.

Long, Peter G., to Lockwood Graders (UK) Limited. Method and apparatus for examining objects. 4,351,437, Cl. 209-545.000.

Looper, Bruce T. Apparatus for cleaning tanks or vessels. 4,351,478, Cl. 239-227.000.

Lorenz, Hans P.; and Wengert, Rolf, to Siemens Aktiengesellschaft. Luminescent screens for flat image display devices. 4,352,042, Cl. 313-485.000.

Lotens, Jan P.: *See*—
Tels, Martinus; Lotens, Jan P.; and Kivits, Hendrikus P. M., 4,351,807, Cl. 423-24.000.

Lovell, Robert; and Vanos, Robert. Flexible towing hitch. 4,351,542, Cl. 280-489.000.

Lovisolo, Francesco: *See*—
Bassoli, Cesare; Cornetti, Giorgio; and Lovisolo, Francesco, 4,351,295, Cl. 123-300.000.

Lowhurst, Harvey G.: *See*—
Brosseau, Janet V.; and Brosseau, Jon A., 4,351,872, Cl. 428-198.000.

Lu, Shau-Zou; and Druin, Melvin, to Celanese Corporation. Polyester blends. 4,351,758, Cl. 524-227.000.

Lucas Industries Limited: *See*—
Costello, Christopher, 4,351,299, Cl. 123-472.000.

Lucerne Products, Inc.: *See*—
Wied, Julius P., 4,351,581, Cl. 339-95.00D.

Lucitron, Inc.: *See*—
De Jule, Michael C., 4,352,101, Cl. 340-769.000.

Luckman, James E.; Winstead, William P.; and Kastura, John L., to General Motors Corporation. Electronic ignition system. 4,351,306, Cl. 123-609.000.

Ludwig, George C., to Tom McGuane Industries, Inc. Internal combustion engine with water heated intake manifold. 4,351,284, Cl. 123-545.000.

Lummus Company, The: *See*—
Riegel, Herbert; and Huang, Chiung-Yuan, 4,351,819, Cl. 423-488.000.

Lundmark, Ebbe: *See*—
Garpendahl, Gunnar; Bruce, Ingrid; and Lundmark, Ebbe, 4,352,060, Cl. 324-61.00R.

Luxa, Gunther, to Siemens Aktiengesellschaft. Disconnect switch for metal-encapsulated high-voltage switching installations. 4,351,989, Cl. 200-48.0CB.

Lydtin, Hans: *See*—
Hubner, Horst; Lersmacher, Bernhard; Lydtin, Hans; and Wilden, Rolf, 4,352,041, Cl. 374-144.000.

Lytkin, Albert Y.: *See*—
Zhukov, Mikhail F.; Lytkin, Albert Y.; Khudyakov, Georgy N.; and Anshakov, Anatoly S., 4,352,044, Cl. 315-111.210.

M.A.N.-Roland Druckmaschinen Aktiengesellschaft: *See*—
Kobler, Ingo, 4,351,386, Cl. 165-89.000.

M.L. Engineering (Plymouth) Limited: *See*—
Miller, Geoffrey D., 4,352,201, Cl. 455-58.000.

Ma, John. Up-down frequency converter for cable T.V. 4,352,209, Cl. 455-315.000.

Maag Gear-Wheel & Machine Co. Ltd.: *See*—
Staedeli, Otto, 4,351,635, Cl. 440-75.000.

Maasberg, Wolfgang; and Huperz, Adalbert. Sealing arrangement for a piston pump. 4,351,531, Cl. 277-22.000.

Mach-Neal, Inc.: *See*—
Neal, Barry; and Morris, Timothy M., 4,351,517, Cl. 270-52.000.

Madden, Michael J., to Pomeco Corporation. High-security fill cap for underground storage tanks. 4,351,446, Cl. 220-210.000.

Maeda, Nobutaka: *See*—
Shinoda, Naoharu; Maeda, Nobutaka; and Kubo, Kyoji, 4,351,650, Cl. 55-181.000.

Maeo, Hidemi: *See*—
Fujiwara, Yasuo; Maeo, Hidemi; and Muramoto, Eiichi, 4,351,572, Cl. 305-27.000.

Magee, Walter L., Jr., to Stauffer Chemical Company. Method for preparation of alkyl vanadates. 4,351,775, Cl. 260-429.00R.

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Rock, Erich; and Mages, Bernhard, 4,351,575, Cl. 308-3.800.

Magnaflux Corporation: *See*—
Garcia, Vilma A., 4,351,185, Cl. 73-104.000.

Mahaney, Robert A., to Champion Spark Plug Company. Glow plug. 4,351,291, Cl. 123-145.00A.

Mahle, Christoph E.: *See*—
Childs, William H.; and Mahle, Christoph E., 4,352,071, Cl. 329-105.000.

Mahoney, Paul F.; and Bonn, Jerrold L., to Signatron, Inc. Signal processing circuitry. 4,352,029, Cl. 307-317.00R.

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Hasegawa, Hiroshi; and Maida, Osamu, 4,351,600, Cl. 354-60.00L.

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Drexel, Peter; Maier, Gernot; and Leisner, Ernst, 4,351,628, Cl. 414-749.000.

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Maillefer S.A.: *See*—
Hochstrasser, Ulrich; and Kertscher, Eberhard, 4,351,790, Cl. 264-174.000.

Majewski, Edward. Bowl for maintaining liquids and solid foods separate. 4,351,444, Cl. 220-20.000.

Makinen, Eero: *See*—
Johansson, Bengt; Keinonen, Arno; and Makinen, Eero, 4,351,255, Cl. 114-41.000.

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Furukawa, Yuji; and Sato, Makoto, 4,351,574, Cl. 308-3.00A.

Malhotra, Sudarshan K., to Dow Chemical Co., The. Production of 6-(chloro or substituted phenoxy)-2-di-(substituted phenoxy)methyl pyridines. 4,351,943, Cl. 546-301.000.

Malik, Marvin J., to General Motors Corporation. Vehicle drive system with energy storage and retrieval. 4,351,409, Cl. 180-165.000.

Mallouk, Robert S.: *See*—
Parish, Darrell J.; and Mallouk, Robert S., 4,351,746, Cl. 252-511.000.

MAN Maschinenfabrik Augsburg-Nurnberg AG: *See*—
Moll, Hans, 4,351,408, Cl. 180-135.000.

Mandai, Masaaki: *See*—
Ueda, Makoto; Torisawa, Akira; Otawa, Shuji; Mandai, Masaaki; Shida, Masaharu; and Sato, Katsuhiko, 4,352,172, Cl. 368-76.000.

Mangutov, Rafael A.: *See*—
Abduganiev, Abdurakhim; Krjuk, Timur P.; Zhestkov, Vitaly I.; Tikhonov, Valentin N.; Glazov, Vladimir G.; Kletny, Mikhail M.; Shlykov, Gennady N.; Afanasiev, Vladimir K.; Dyachkov, Vasily M.; Zhigalov, Gennady V.; Mangutov, Rafael A.; and Angarov, Ernst I., 4,351,149, Cl. 57-263.000.

Manizza, Guelfo A., to Federal Paper Board Co., Inc. Tray container with tear out cover. 4,351,473, Cl. 229-43.000.

Manley, Paul W.: *See*—
Fellner, Peter J.; Hamill, Brendan J.; and Manley, Paul W., 4,351,948, Cl. 548-336.000.

Mann, Friedrich; and Negro, Guido, to Bielomatik Leuze GmbH + Co. Apparatus for producing coils. 4,351,371, Cl. 140-92.300.

Manna, Daniel C.: *See*—
Mueller, Paul; Manna, Daniel C.; and Prine, Ray A., 4,351,271, Cl. 119-14.090.

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Bringhurst, Edward D., 4,351,235, Cl. 101-93.040.

Mansbridge, Martin H.: *See*—
Swadling, Sidney J.; Mansbridge, Martin H.; Payne, Dennis J.; and Norton, John, 4,351,470, Cl. 228-157.000.

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Marcantonio, Arnold F.; Kress, Paul J.; and Powers, John W., to Ball Corporation. Compositions for treating aluminum surfaces for tarnish resistance. 4,351,883, Cl. 428-450.000.

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Curtis, George F., 4,351,224, Cl. 89-37.0BA.

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Yariv, Amnon; Margalit, Shlomo; and Lee, Chien-Ping, 4,352,116, Cl. 357-17.000.

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Schultz, Raymond J.; and Marr, Michael E., 4,351,228, Cl. 92-128.000.

Marshall, Alan, to Ciba-Geigy Corporation. Method for scale control. 4,351,796, Cl. 422-15.000.

Marsoner, Hermann; List, Helmut; and Kleinhappl, Erich, to List, Hans. Analyzing apparatus for liquid samples. 4,351,798, Cl. 422-63.000.

Martikainen, Kaarlo, to Oy Wartisila AB. Cylinder lock mechanism. 4,351,172, Cl. 70-366.000.

Martin, John K., III: *See*—
Whitney, Douglass G.; and Martin, John K., III, 4,351,332, Cl. 128-214.00F.
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Martinengo, PierCarlo; Giachello, Angelo; Tommasini, Giuseppe; and Popper, Paul, to Fiat Societa per Azioni. Process for sintering reaction bonded silicon nitride. 4,351,787, Cl. 264-65.000.

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Maruyama, Eiichi: *See*—
Matsui, Makoto; Shiraki, Yasuhiro; Katayama, Yoshifumi; Tsukada, Toshihisa; and Maruyama, Eiichi, 4,351,856, Cl. 427-38.000.

Masaki, Kenji; and Saito, Masaaki, to Nissan Motor Company Limited. Fuel injection valve for an automotive vehicle. 4,351,480, Cl. 239-585.000.
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Knecht, Siegfried H., 4,351,463, Cl. 226-154.000.
Maschinenfabrik Hilma GmbH: *See*—
Ersoy, Metin; and Weber, Albrecht, 4,351,516, Cl. 269-27.000.
Maskinfirma Certus AB: *See*—
Engelbart, Wilhelm, 4,351,457, Cl. 223-57.000.
Massachusetts Institute of Technology: *See*—
Clark, John I.; Mengel, Loretta S.; and Benedek, George B., 4,351,826, Cl. 424-81.000.
Growdon, John H.; and Wurtman, Richard J., 4,351,831, Cl. 424-199.000.
Suh, Nam P.; Senturia, Stephen D.; and Kim, Byung H., 4,352,059, Cl. 324-61.00R.
Massey, Stewart R.: *See*—
Baylis, Michael A.; Harris, Peter; and Massey, Stewart R., 4,351,802, Cl. 422-89.000.
Mastumoto, Fuyuhiko: *See*—
Ohori, Tamio; Mastumoto, Fuyuhiko; and Tomita, Satoru, 4,352,128, Cl. 358-294.000.
Masuda, Eiji; and Kawasaki, Hiroshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Digital to analog converter. 4,352,092, Cl. 340-347.0DA.
Masuda, Naomasa: *See*—
Iwata, Mitsuo; Masuda, Naomasa; Uraki, Hideki; and Tsuchino, Kunio, 4,351,498, Cl. 242-204.000.
Masuda, Yoshihisa: *See*—
Fukushima, Madoka; Akita, Kin-ichiro; and Masuda, Yoshihisa, 4,351,188, Cl. 73-189.000.
Materne, Carsten, to Bayer Aktiengesellschaft. 1,4-Dihydropyridine-3,5-dicarboxylate-4-carboxamide compounds, compositions containing same and method of using same. 4,351,837, Cl. 424-266.000.
Mathis, Ronald R. Rack for laying Italian and quarry tile. 4,351,694, Cl. 156-574.000.
Matlock, Gordon E.: *See*—
Moehlenpah, Walter G.; and Matlock, Gordon E., 4,351,465, Cl. 227-7.000.
Matrone, John L., to Fairchild Camera & Instrument Corp. Universal test fixture employing interchangeable wired personalizers. 4,352,061, Cl. 324-158.00F.
Matsuda, Mutsuhide: *See*—
Suzuki, Toyotosi; Tamamura, Hideo; and Matsuda, Mutsuhide, 4,351,598, Cl. 354-288.000.
Suzuki, Toyotosi; Matsuda, Mutsuhide; and Tamamura, Hideo, 4,351,599, Cl. 354-288.000.
Matsuda, Shinpei; Kato, Akira; Uno, Shigeo; Sakuta, Youichi; and Nakajima, Fumito, to Hitachi, Ltd.; and Babcock-Hitachi Kabushiki-Kaisha. Process for reducing an eliminating nitrogen oxides in an exhaust gas. 4,351,811, Cl. 423-239.000.
Matsui, Makoto; Shiraki, Yasuhiro; Katayama, Yoshifumi; Tsukada, Toshihisa; and Maruyama, Eiichi, to Hitachi, Ltd. Semiconductor device and method of manufacturing the same. 4,351,856, Cl. 427-38.000.
Matsui, Sadaki: *See*—
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Matsumoto, Fuyuhiko: *See*—
Karasawa, Shuichi; Matsumoto, Fuyuhiko; Ikeda, Kunihiko; and Tsushima, Shuichi, 4,351,604, Cl. 355-4.000.
Matsumoto, Hiroshi: *See*—
Ogata, Masaru; and Matsumoto, Hiroshi, 4,351,770, Cl. 548-567.000.
Matsumoto, Kimiichiro; Miyake, Hajimu; and Suga, Hisashi, to Ono Pharmaceutical Co., Ltd. 3-Hydroxy and 3-oxo-prostaglandin analogues. 4,351,846, Cl. 424-305.000.
Matsumura, Shizuo: *See*—
Koiwai, Hideshi; Matsumura, Shizuo; and Kawasaki, Haruhiko, 4,351,356, Cl. 137-491.000.
Matsumura, Shunichi; Inata, Hiroo; and Morinaga, Tsuto, to Teijin Limited. Method for reducing the terminal carboxyl group content of a saturated polyester, a saturated polyester having a reduced terminal carboxyl group content, and a molded article composed of such a saturated polyester. 4,351,936, Cl. 528-289.000.
Matsuo, Kazumasa; and Kubota, Tetsumaru, to Olympus Optical Company, Ltd. Apparatus for positioning eyepiece of endoscope. 4,351,587, Cl. 350-255.000.
Matsushita Electric Industrial Co., Ltd.: *See*—
Itoh, Masashi, 4,352,176, Cl. 369-170.000.
Nagamoto, Shunichi; Ito, Masao; Saka, Tatsuo; and Kobayashi, Tetsu, 4,351,999, Cl. 219-10.55B.
Nyuji, Tomoaki; Kawasaki, Itaru; Noguchi, Masahiro; and Tsukamoto, Masahide, 4,352,162, Cl. 364-724.000.
Matsushita Electronics Corporation: *See*—
Takagi, Hiromitsu; Umebachi, Shotaro; Kano, Gota; and Teramoto, Iwao, 4,351,099, Cl. 29-571.000.
Matsuzaki, Harumi; Kuroda, Osamu; Okouchi, Isao; Izumi, Kenkichi; and Takahashi, Sankichi, to Hitachi, Ltd.; and Babcock-Hitachi Kabushiki Kaisha. Apparatus for high temperature electrodialysis. 4,351,715, Cl. 204-301.000.
Matthews, Leslie N. Boat hull. 4,351,262, Cl. 114-284.000.
Matthews, Ralph E. Apparatus for attaching a firescreen to a fireplace. 4,351,317, Cl. 126-139.000.
Mattisson, Lennart; and Ganrot, Bertil, to Societe d'Assistance Technique pour Porduits Nestle S.A. Food package. 4,351,997, Cl. 219-10.55E.
Maudal, Inge; Wedertz, Larry D.; and Yost, Kenneth M., to General Dynamics. Double fabric, retractable, self-erecting wing for misale. 4,351,499, Cl. 244-3.270.
Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V.: *See*—
Weppner, Werner, 4,352,068, Cl. 324-452.000.
May, Adolf: *See*—
Billenstein, Siegfried; May, Adolf; and Bucking, Hans-Walter, 4,351,737, Cl. 252-8.800.
Mayer, Norbert: *See*—
Hieber, Konrad; and Mayer, Norbert, 4,351,695, Cl. 156-603.000.
Maynard, Walter P., Jr. Liquid container having stacking feature. 4,351,454, Cl. 222-143.000.
Mazeau, Jean P.: *See*—
Boudot, Jean E.; Mazeau, Jean P.; and Michaud, Andre C., 4,351,906, Cl. 501-74.000.
McCann, John D.: *See*—
Stephen, James H.; McCann, John D.; and Flemming, Michael A., 4,352,098, Cl. 340-572.000.
McCartney, Charles P., Jr.; and Wheadon, Ellis G., to General Motors Corporation. Lead-acid storage battery plate and method of making same. 4,351,891, Cl. 429-225.000.
McCartney, Thomas, to ONEAC Corporation. AC Variable voltage source utilizing pulse width modulation. 4,352,055, Cl. 323-263.000.
McClocklin, Samuel B.: *See*—
Solie, James C.; and McClocklin, Samuel B., 4,351,362, Cl. 137-625.650.
McCollum, Anthony W.; Edmonson, William L.; and Belote, Stephen N., to Eastman Kodak Company. Glycolized polyesters. 4,351,927, Cl. 525-437.000.
McCormick & Company, Incorporated: *See*—
Costamagna, Robert M.; Mori, Denis W.; and Bardett, Allen R., 4,351,850, Cl. 426-302.000.
McCubbin, Melvin J.; and Johnson, Clifford T., to United States of America, Navy. Warhead, incendiary. 4,351,239, Cl. 102-364.000.
McCubbin, Melvin J.; Johnson, Clifford T.; and Cordle, Paul E., to United States of America, Navy. Incendiary fragmentary warhead. 4,351,240, Cl. 102-364.000.
McDonald, Richard. Anti-crushing bar assembly for pig farrowing crates. 4,351,272, Cl. 119-20.000.
McDonnell Douglas Corporation: *See*—
Calhoun, Leslie D.; and Peeples, Marion E., 4,351,388, Cl. 165-104.260.
McDowell, Donald J., to Felt Products Mfg. Co. Abrasive-erosion resistant gasket assembly. 4,351,534, Cl. 277-235.00B.
McElroy, Jerry W., to Emerson Electric Co. Removable snap-on actuators for program timer dial. 4,351,200, Cl. 74-568.00T.
McGinley Mills, Inc.: *See*—
McGinley, Thomas F., 4,351,367, Cl. 139-11.000.
McGinley, Thomas F., to McGinley Mills, Inc., a part interest. Beat-up system. 4,351,367, Cl. 139-11.000.
McGraw-Edison Company: *See*—
Gilker, Clyde, 4,352,138, Cl. 361-92.000.
McGuire, Hugh K., to CASCO Inc. Flexible duct forming apparatus and method. 4,351,682, Cl. 156-143.000.
McInturff, Ace: *See*—
Verderber, Joseph A.; Fortcamp, James A.; McInturff, Ace; and Rose, Denis A., 4,352,012, Cl. 235-487.000.
McJunkin Corporation: *See*—
McJunkin, Howard P., Jr.; and Rowley, Larry W., 4,352,148, Cl. 362-61.000.
McJunkin, Howard P., Jr.; and Rowley, Larry W., to McJunkin Corporation. Equipment corner notch-mounted triangular enclosure for tubular light source. 4,352,148, Cl. 362-61.000.
McKindary, Thomas W., to Zimmer Manufacturing Corp. Shear cut tooth. 4,351,210, Cl. 83-835.000.
McLeod, Syble A. Panty liner construction. 4,351,340, Cl. 128-288.000.
McMillan, William J.; and Severson, Jerry L., to Dow Chemical Company, The. Roof construction and method thereof. 4,351,138, Cl. 52-309.400.
McNairy, James A.; and Fitzgerald, John B., to ACF Industries, Inc. By-pass valve. 4,351,151, Cl. 60-290.000.
McVey, John K.; and Wanatowicz, Edward W., Jr., to Illinois Tool Works Inc. Capacitive keyswitch with overtravel plunger mechanism. 4,352,144, Cl. 361-288.000.
Mead Corporation, The: *See*—
Hutchins, Ferris L., Jr., 4,351,246, Cl. 108-156.000.
Suttles, James M., 4,351,244, Cl. 108-107.000.
Mead, Harold C., to Nixdorff Krein Industries, Inc. Versatile fast hitch side mounting of agricultural spray tanks. 4,351,535, Cl. 280-5.00R.
Mead Johnson & Company: *See*—
Simms, Jack C., deceased; and Old National Bank in Evansville, administrator, 4,351,939, Cl. 544-230.000.
Meade, Reginald E., to DEC International. Foraminous mat products. 4,351,849, Cl. 426-61.000.
Meaden, Douglas G.: *See*—
Barber, Donald J.; and Meaden, Douglas G., 4,351,433, Cl. 206-264.000.
Mechalas, Emmanuel. System of apparatus for filling bags with dry powder. 4,351,373, Cl. 141-51.000.
Mechtron International Corp.: *See*—
Brashears, David F., 4,351,251, Cl. 110-261.000.

Megy, Joseph A.; and Hard, Robert A., to Occidental Research Corporation. Process for reducing phosphate ore. 4,351,809, Cl. 423-167.000.

Megy, Joseph A.; and Hard, Robert A., to Occidental Research Corporation. Process for producing phosphorus pentoxide or phosphorus or phosphoric acid. 4,351,813, Cl. 423-304.000.

Meiji Seika Kaisha, Ltd.: *See*—
Miyazawa, Takeo; Ishii, Takahiro; Kazuno, Yuzo; Akita, Eiichi; Yamada, Yujiro; and Niida, Taro, 4,351,830, Cl. 424-180.000.

Meinan Machinery Works, Inc.: *See*—
Hasegawa, Katsuji, 4,351,379, Cl. 144-365.000.

Meisenheimer, Daniel T., Jr. Frangible connectors with independently selectable bending and tension separation loads. 4,351,352, Cl. 137-68.00R.

Melchior, Jean. Internal combustion engine with improved efficiency and filling by recovery of part of the energy of the blasts which are produced during the opening of the exhaust ports. 4,351,290, Cl. 123-59.0BM.

Memorex Corporation: *See*—
Osborne, John R., 4,351,698, Cl. 156-661.100.

Mengel, Loretta S.: *See*—
Clark, John I.; Mengel, Loretta S.; and Benedek, George B., 4,351,826, Cl. 424-81.000.

Mennesson, Paul; and Moreau, Hugues. Flexible strip facing material and method and apparatus for cutting the material. 4,351,866, Cl. 428-60.000.

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Patchett, Arthur A.; and Kuo, Chan-Hwa, 4,351,844, Cl. 424-279.000.

Merten, Jeff L., to ACF Industries, Incorporated. Lubricant fitting. 4,351,414, Cl. 184-105.00B.

Messerschmitt-Bolkow-Blohm GmbH: *See*—
Kranz, Walter; and Tillmann, Heinz, 4,351,479, Cl. 239-265.230.

Metzner, Robert G.: *See*—
Fields, Gerald M.; and Metzner, Robert G., 4,351,405, Cl. 180-65.00A.

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Michaud, Andre C.: *See*—
Boudot, Jean E.; Mazeau, Jean P.; and Michaud, Andre C., 4,351,906, Cl. 501-74.000.

Michelucci, John: *See*—
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Michno, Michael J., Jr.: *See*—
Ballintyn, Nicolaas J.; and Michno, Michael J., Jr., 4,351,069, Cl. 3-1.912.

Middleman, Lee M.; Evans, Joseph H.; Blake, Arthur E.; and Scheff, Victor A., to Raychem Corporation. Circuit protection devices. 4,352,083, Cl. 338-23.000.

Midrex Corporation: *See*—
Sanzenbacher, Charles W., 4,351,513, Cl. 266-156.000.

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Milberger, Ernest C.; Lemanski, Michael F.; and Spitnale, Gregory G., to Standard Oil Company, The. Preparation of maleic anhydride from butane using fluidized vanadium-phosphorous-oxide containing catalysts. 4,351,773, Cl. 549-259.000.

Milia, Louis. Sieve assembly for cleaning bodies and heat exchanger system including same. 4,351,387, Cl. 165-95.000.

Miller, Dennis L.: *See*—
Rarig, Larry L.; Alleman, Raymond A.; and Miller, Dennis L., 4,351,263, Cl. 118-665.000.

Miller, Gene H., to Livlab, Inc. Motor vehicle sleeper unit. 4,351,554, Cl. 296-24.00R.

Miller, Geoffrey D., to M.L. Engineering (Plymouth) Limited. Data transmission system. 4,352,201, Cl. 455-58.000.

Miller, William J.; and Trbovich, Nick G., to Racal-Milgo, Inc. RSA Public-key data encryption system having large random prime number generating microprocessor or the like. 4,351,982, Cl. 178-22.110.

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Eschenbach, Paul W., 4,351,148, Cl. 57-209.000.
Kluger, Edward W.; and Welch, Calvin D., 4,351,934, Cl. 528-111.000.

Milliner, Ken: *See*—
Sexstone, John H.; Lewis, Tom; and Milliner, Ken, 4,351,792, Cl. 264-293.000.

Millipore Corporation: *See*—
Lemonnier, Jean, 4,351,900, Cl. 435-31.000.

Milne, Robert, to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence of Her Majesty's Canadian Government. Antenna beam shaping structure employing dipoles arrayed on a parabolic surface. 4,352,108, Cl. 343-756.000.

Minagawa, Motonubu: *See*—
Kubota, Naohiro; Shibata, Toshihiro; Sugibuchi, Kazuo; and Minagawa, Motonubu, 4,351,915, Cl. 524-103.000.

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Muramatsu, Hiroshige; and Ueda, Teruo, 4,351,954, Cl. 562-574.000.

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Farnstrom, Sven E.; and Andersson, Hans, 4,351,616, Cl. 374-209.000.

Minnebraker, Jeffrey P., to Quadra Wheelchairs, Inc. Wheelchair construction. 4,351,540, Cl. 280-242.0WC.

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Kusilek, LeRoy I., 4,351,683, Cl. 156-167.000.

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Ishida, Tokuji; and Sahara, Masayoshi, 4,351,594, Cl. 354-139.000.

Minotti, Peter L. Pipe repair kit apparatus and method. 4,351,349, Cl. 137-15.000.

Mirviss, Stanley B.: *See*—
Giolito, Silvio L.; and Mirviss, Stanley B., 4,351,780, Cl. 260-974.000.

Mita, Yoichi: *See*—
Tajima, Osamu; Yamamura, Takashi; Mochizuki, Masafumi; and Mita, Yoichi, 4,352,174, Cl. 369-77.000.

Mitchell, Charles T. Ocean bottom sampler. 4,351,127, Cl. 43-9.000.

Mitchell, Richard F.: *See*—
Davis, Christopher K.; and Mitchell, Richard F., 4,352,183, Cl. 371-33.000.

Mitsubishi Chemical Industries Limited: *See*—
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Mitsubishi Denki Kabushiki Kaisha: *See*—
Komurasaki, Satoshi; and Ueda, Atsushi, 4,351,307, Cl. 123-618.000.
Terazono, Narihiro; and Kajiyama, Ryuichi, 4,351,416, Cl. 187-29.00R.

Mitsubishi Jukogyo Kabushiki Kaisha: *See*—
Shinoda, Naoharu; Maeda, Nobutaka; and Kubo, Kyoji, 4,351,650, Cl. 55-181.000.

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Doi, Shuhei; Isaka, Tsutomu; and Iida, Shinichiro, 4,351,876, Cl. 428-349.000.

Mitsubishi Rayon Co., Ltd.: *See*—
Kamada, Kazumasa; Sasaki, Isao; and Kushi, Kenji, 4,351,881, Cl. 428-412.000.
Kishida, Kazuo; Sasaki, Isao; and Mori, Hiroshi, 4,351,751, Cl. 524-375.000.
Kishida, Kazuo; Hasegawa, Akira; and Kawachi, Yasunori, 4,351,921, Cl. 525-80.000.

Mitsui Petrochemical Industries, Ltd.: *See*—
Nishimura, Tadahiko; Yamamoto, Hiroshi; Osuo, Masatoshi; and Kanazawa, Akio, 4,351,967, Cl. 568-754.000.
Takahata, Kazunori; and Taniguchi, Katsuo, 4,351,958, Cl. 564-409.000.

Mitsui, Tadashi; Wasaki, Masaru; and Ohta, Junpei, to TDK Electronics Co., Ltd. Ferrite core. 4,352,080, Cl. 336-83.000.

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Kanemaru, Muneaki; Yoshida, Kenji; Higashino, Thikashi; and Kozima, Tadashi, 4,351,971, Cl. 568-898.000.

Mixon, James A., to American Enviro-Port, Inc. Water treatment plant. 4,351,722, Cl. 210-195.300.

Miyahara, Takashi, to Nippon Seiko Kabushiki Kaisha. Clutch release bearing assembly provided with a self-centering mechanism. 4,351,427, Cl. 192-98.000.

Miyake, Hajimu: *See*—
Matsumoto, Kimiichiro; Miyake, Hajimu; and Suga, Hisashi, 4,351,846, Cl. 424-305.000.

Miyake, Masayuki; Sekino, Takeo; and Takeda, Masashi, to Sony Corporation. Shift register. 4,352,027, Cl. 307-221.00R.

Miyamoto, Kazumichi; Nishizawa, Akira; Okuda, Takao; Nakamura, Mamoru; and Abe, Takaharu, to Nippon Zeon Co. Ltd.; and Victor Company of Japan Limited. Information signal record medium of the capacitance type. 4,351,747, Cl. 252-511.000.

Miyao, Masanobu: *See*—
Yoshida, Isao; Wada, Yasuo; Tamura, Masao; Miyao, Masanobu; Ohkura, Makoto; Natsuaki, Nobuyoshi; and Tokuyama, Takashi, 4,351,674, Cl. 148-1.500.

Miyata, Shigeo; and Okada, Akira, to Kyowa Chemical Industry Co., Ltd. Hydrotalcites having a hexagonal needle-like crystal structure and process for production thereof. 4,351,814, Cl. 423-306.000.

Miyazawa, Takeo; Ishii, Takahiro; Kazuno, Yuzo; Akita, Eiichi; Yamada, Yujiro; and Niida, Taro, to Meiji Seika Kaisha, Ltd. Polymeric compound, MF-300, with protective activity against bacterial infections and its preparation. 4,351,830, Cl. 424-180.000.

Mizuta, Toshiaki; Abe, Takeshi; Yoshihara, Ichiro; and Saito, Kazuhito, to Ricoh Company, Ltd. Remote meter reading apparatus. 4,352,104, Cl. 340-825.150.

Mobil Oil Corporation: *See*—
Chester, Arthur W.; and Chu, Yung F., 4,351,979, Cl. 585-481.000.
Jaffe, Stephen B., 4,351,717, Cl. 208-216.0PP.
Robertson, Arthur B., 4,351,884, Cl. 204-159.120.
Yan, Tsoung-yuan; and Espenscheid, Wilton F., 4,351,566, Cl. 299-5.000.

Mochizuki, Masafumi: *See*—
Tajima, Osamu; Yamamura, Takashi; Mochizuki, Masafumi; and Mita, Yoichi, 4,352,174, Cl. 369-77.000.

Mochizuki, Yasuhiro; Wakui, Yoko; and Hachino, Hiroaki, to Hitachi, Ltd. Method of manufacturing semiconductor device having aluminum diffused semiconductor substrate. 4,351,677, Cl. 148-188.000.

Moehlenpah Industries, Inc.: *See*—
Moehlenpah, Walter G.; and Matlock, Gordon E., 4,351,465, Cl. 227-7.000.

Moehlenpah, Walter G.; and Matlock, Gordon E., to Moehlenpah Industries, Inc. Apparatus for end-plating railroad ties. 4,351,465, Cl. 227-7.000.

Mogonye, Marjorie: *See*—
Marburger, Ben; and Mogonye, Marjorie, 4,351,522, Cl. 272-52.000.

Mojden, Wallace W., to Fleetwood Systems, Inc. Magnetic rail construction for can conveyor. 4,351,430, Cl. 198-690.000.

Molin, Roland, to PR Processutveckling AB. Machine for cleaning vertical or inclined surfaces. 4,351,132, Cl. 51-180.000.

Molins PLC: *See*—
Barber, Donald J.; and Meaden, Douglas G., 4,351,433, Cl. 206-264.000.

Moll, Hans, to MAN Maschinenfabrik Augsburg-Nurnberg AG. Articulated vehicle. 4,351,408, Cl. 180-135.000.

Mollet, Marc: *See*—
Langlois, Pierre; and Mollet, Marc, 4,351,338, Cl. 128-285.000.

Monma, Yoshiyuki: *See*—
Fukushima, Osamu; Akisada, Masahide; Monma, Yoshiyuki; and Kitamura, Kazuaki, 4,352,198, Cl. 378-185.000.

Monsanto Company: *See*—
Baizer, Manuel M.; and Goodin, Richard D., 4,351,951, Cl. 560-186.000.
Chupp, John P., 4,351,667, Cl. 71-118.000.
Tokas, Edward F., 4,351,923, Cl. 525-250.000.

Monsheimer, Rolf; and Pfleiderer, Ernst, to Rohm GmbH. Process for liming pelts of animal hides and skins. 4,351,639, Cl. 8-94.160.

Montabord, Lucien: *See*—
Bonavent, Gerard; and Montabord, Lucien, 4,351,642, Cl. 23-230.00M.

Montedison S.p.A.: *See*—
Foa, Marco; Moro, Alessandro; Gardano, Andrea; and Cassar, Luigi, 4,351,952, Cl. 562-406.000.

Montefiore Hospital: *See*—
Stanko, Ronald T., 4,351,835, Cl. 424-252.000.

Montel, Jacques: *See*—
Moutou, Paul C.; and Montel, Jacques, 4,352,115, Cl. 357-13.000.

Moore, Curtis L., to Electric Power Research Institute, Inc. Combination static plate and liquid distribution manifold for electrical inductive apparatus. 4,352,078, Cl. 336-60.000.

Moore, John A., to Caterpillar Tractor Co. Face seal with rotatable seal ring. 4,351,533, Cl. 277-83.000.

Morbark Industries, Inc.: *See*—
Morey, Larry L., 4,351,719, Cl. 209-234.000.

Moreau, Hugues: *See*—
Mennesson, Paul; and Moreau, Hugues, 4,351,866, Cl. 428-60.000.

Moreton, Neal S. Acoustical transmission wave guide assembly for predicting failure of structured members. 4,352,038, Cl. 310-323.000.

Moretto, Hans-Heinrich: *See*—
Steinberger, Helmut; Moretto, Hans-Heinrich; Kortmann, Wilfried; and Pfeiffer, Josef, 4,351,736, Cl. 252-8.600.

Morey, Larry L., to Morbark Industries, Inc. Vibrating screen apparatus. 4,351,719, Cl. 209-234.000.

Mori, Denis W.: *See*—
Costamagna, Robert M.; Mori, Denis W.; and Bardett, Allen R., 4,351,850, Cl. 426-302.000.

Mori, Hiroshi: *See*—
Kishida, Kazuo; Sasaki, Isao; and Mori, Hiroshi, 4,351,751, Cl. 524-375.000.

Mori, Keiji: *See*—
Kanou, Noboru; and Mori, Keiji, 4,351,560, Cl. 296-216.000.

Moriga, Hiroyuki: *See*—
Takahashi, Masao; Yoshida, Katumi; Ohwaki, Shinji; and Moriga, Hiroyuki, 4,351,738, Cl. 252-8.750.

Morigaki, Masakazu: *See*—
Aoki, Kozo; Seto, Nobuo; Yabuki, Yoshiharu; Morigaki, Masakazu; Furutachi, Nobuo; and Nakamura, Kotaro, 4,351,897, Cl. 430-555.000.

Morinaga, Tsuto: *See*—
Matsumura, Shunichi; Inata, Hiroo; and Morinaga, Tsuto, 4,351,936, Cl. 528-289.000.

Morishita, Teru: *See*—
Sugiyama, Matsuyoshi; Morishita, Teru; and Suzuki, Toshikazu, 4,351,482, Cl. 239-703.000.

Morita, Masayuki; and Nakano, Tasuku, to Kabushiki Kaisha Tokai Rika Denki Seisakusho. Direction indicator blinker light switching arrangement. 4,351,991, Cl. 200-61.270.

Moro, Alessandro: *See*—
Foa, Marco; Moro, Alessandro; Gardano, Andrea; and Cassar, Luigi, 4,351,952, Cl. 562-406.000.

Morozov, Gennady Y.: *See*—
Daiker, Artur L.; Veis, Anatoly I.; Kochengin, Evgeny Y.; Novoselov, Nikolai M.; Morozov, Gennady Y.; Rybin, Vladimir S.; Belokur, Nikolai A.; and Savelieva, Nina A., 4,351,676, Cl. 148-9.00C.

Morris, Timothy M.: *See*—
Neal, Barry; and Morris, Timothy M., 4,351,517, Cl. 270-52.000.

Morrison-Knudsen Company, Inc.: *See*—
Loire, Rene, 4,351,259, Cl. 114-230.000.

Morton, David C. Portable heater. 4,351,314, Cl. 126-59.000.

Morton, Kenneth E. Apparatus for analyzing a fish population. 4,351,438, Cl. 209-675.000.

Mosa, B.V.: *See*—
Schreurs, Gustaaf J., 4,351,788, Cl. 264-67.000.

Moser, Reinhard: *See*—
Hilterhaus, Karl-Heinz; and Moser, Reinhard, 4,351,354, Cl. 137-240.000.

Motorola, Inc.: *See*—
Beesley, Graham E., 4,352,030, Cl. 307-350.000.
Cave, David L.; Harris, Steven L.; and Zobel, Don W., 4,352,056, Cl. 323-314.000.
Schroeder, Daniel R., 4,352,208, Cl. 455-266.000.

Moulin, Pierre A., to Schlumberger Technology Corporation. Apparatus for conduit free-point detection in boreholes. 4,351,186, Cl. 73-151.000.

Moulton, Lee J., to Hawaiian Motor Company. Oscillating powered cultivating tool. 4,351,396, Cl. 172-40.000.

Moutner, David N.: *See*—
Brickner, Laurence R.; Moutner, David N.; and Pratt, Barbara J., 4,351,230, Cl. 98-31.000.

Moutou, Paul C.; and Montel, Jacques, to Thomson-CSF. Transit time diode with an input structure formed by a matrix of micropoints. 4,352,115, Cl. 357-13.000.

Mowe, Wayne T.: *See*—
Blackmon, Lawrence E.; Kelly, Darrell A.; Mowe, Wayne T.; and Yu, Jing-peir, 4,351,147, Cl. 57-208.000.

Mozingo, Robert E., to J. I. Case Company. Cover plate arrangement. 4,351,199, Cl. 74-566.000.

MTU Motoren-und Turbinen-Union Munchen GmbH: *See*—
Zacherl, Anton, 4,351,577, Cl. 308-189.00R.

Mueller, Alvin W., to Mueller-Perry Co., Inc. Method for making a stress-relieved composite foamed resin baseball bat or bowling pin. 4,351,786, Cl. 264-46.700.

Mueller, Dale A.; and Sperry, Timothy P., to Honeywell Inc. High voltage ignition transformer. 4,352,079, Cl. 336-65.000.

Mueller, Frederick N. Truck body construction. 4,351,558, Cl. 296-187.000.

Mueller, Paul; Manna, Daniel C.; and Prine, Ray A., to Paul Mueller Company. Refrigerated receiver. 4,351,271, Cl. 119-14.090.

Mueller-Perry Co., Inc.: *See*—
Mueller, Alvin W., 4,351,786, Cl. 264-46.700.

Mueller, William A.: *See*—
Harper-Tervet, Jan; Dowler, Warren L.; Yen, Shiao-Ping S.; and Mueller, William A., 4,351,878, Cl. 428-367.000.

Mukoyama, Yoshiyuki: *See*—
Sugitani, Hatuo; Kudo, Takeo; Mukoyama, Yoshiyuki; and Kawai, Hiromasa, 4,351,910, Cl. 521-56.000.

Mulvey, Robert F.; and Crepeau, Charles E., to General Electric Co. Thermal insulation composite of cellular cementitious material. 4,351,867, Cl. 428-70.000.

Munnekehoff, Gerd: *See*—
Schippers, Heinz; Munnekehoff, Gerd; and Teich, Udo, 4,351,494, Cl. 242-35.50A.

Murai, Shinichi: *See*—
Oguchi, Takuro; Ohsawa, Zenichi; and Murai, Shinichi, 4,352,053, Cl. 323-220.000.

Murakami, Masahiro: *See*—
Shibuya, Chisei; Murakami, Masahiro; Kobayashi, Masateru; and Sone, Takanori, 4,351,947, Cl. 548-251.000.

Murakami, Yasushi: *See*—
Takahashi, Hironobu; Honda, Masamitus; Murakami, Yasushi; and Iwane, Yoshitaka, 4,351,834, Cl. 424-249.000.

Muramatsu, Hiroshige; and Ueda, Teruo, to Agency of Industrial Science & Technology; and Ministry of International Trade & Industry. Halogenated α-amino acids. 4,351,954, Cl. 562-574.000.

Muramoto, Eiichi: *See*—
Fujiwara, Yasuo; Maeo, Hidemi; and Muramoto, Eiichi, 4,351,572, Cl. 305-27.000.

Murao, Yutaka: *See*—
Namimoto, Keiji; Eguchi, Seiji; and Murao, Yutaka, 4,352,157, Cl. 364-200.000.

Murayama, Stanley T.: *See*—
Gradeff, Peter S.; and Murayama, Stanley T., 4,351,962, Cl. 568-432.000.

Muroi, Kaname; and Fujino, Hiroko, to Mitsubishi Chemical Industries Limited. Karl-Fischer Reagent. 4,351,744, Cl. 252-408.000.

Murray Machinery, Inc.: *See*—
Haller, Jack R.; and Haselton, William M., 4,351,487, Cl. 241-92.000.

Murray Ohio Manufacturing Co., The: *See*—
Lawrence, Randall K.; and Stevens, Aaron A., 4,351,424, Cl. 192-18.00R.

Musashi Co., Ltd.: *See*—
Tanaka, Shigeru, 4,351,520, Cl. 271-315.000.

Myers, Allen: *See*—
Reynolds, Richard W.; Myers, Allen; and Foley, Daniel J., 4,351,152, Cl. 60-395.000.

Nagai, Kiyokazu, to Chugairo Kogyo Kaisha Ltd. Burner with suppressed NO_x generation. 4,351,632, Cl. 431-183.000.

Nagai, Yohei: *See*—
Okamoto, Shimaji; and Nagai, Yohei, 4,351,212, Cl. 84-1.010.

Nagamoto, Shunichi; Ito, Masao; Saka, Tatsuo; and Kobayashi, Tetsu, to Matsushita Electric Industrial Co., Ltd. Heating apparatus provided with a voice synthesizing circuit. 4,351,999, Cl. 219-10.55B.

Nagasawa, Takeshi: *See*—
Inoue, Shunzo; Nagasawa, Takeshi; Yanagawa, Hitoshi; Iwaya, Toshio; and Kasuya, Michio, 4,351,609, Cl. 355-50.000.

Nagashima, Toshio: *See*—
Saitoh, Takeshi; Hatashita, Hiroshi; Nagashima, Toshio; and Yamamoto, Susumu, 4,352,076, Cl. 333-204.000.

Nagel, Jens: *See*—
Jahnke, Joachim; Lehming, Gunther; Kunig, Helmut; and Nagel, Jens, 4,351,089, Cl. 19-129.00R.

Nakagawa, Hiroyuki: *See*—
Fujita, Taira; Nakagawa, Hiroyuki; Sugihara, Mikio; Kobayashi, Kimiyuki; and Okamoto, Katuhiko, 4,351,765, Cl. 260-163.000.
Nakajima, Fumito: *See*—
Matsuda, Shinpei; Kato, Akira; Uno, Shigeo; Sakuta, Youichi; and Nakajima, Fumito, 4,351,811, Cl. 423-239.000.
Nakamura, Kotaro: *See*—
Aoki, Kozo; Seto, Nobuo; Yabuki, Yoshiharu; Morigaki, Masakazu; Furutachi, Nobuo; and Nakamura, Kotaro, 4,351,897, Cl. 430-555.000.
Nakamura, Kousuke: *See*—
Kurihara, Yasutoshi; Hachino, Hiroaki; and Nakamura, Kousuke, 4,352,120, Cl. 357-81.000.
Nakamura, Mamoru: *See*—
Miyamoto, Kazumichi; Nishizawa, Akira; Okuda, Takao; Nakamura, Mamoru; and Abe, Takaharu, 4,351,747, Cl. 252-511.000.
Nakamura, Seishiro; and Tamura, Masuhiko, to Kuraray Co., Ltd. Process for producing acetaldehyde. 4,351,964, Cl. 568-484.000.
Nakamura, Takanori: *See*—
Shindome, Mamoru; Yanagita, Takanori; Nakamura, Takanori; and Otsuji, Hiroyuki, 4,351,252, Cl. 110-346.000.
Nakano, Tasuku: *See*—
Morita, Masayuki; and Nakano, Tasuku, 4,351,991, Cl. 200-61.270.
Nakao, Kazumune: *See*—
Hatano, Yasuhiro; and Nakao, Kazumune, 4,351,978, Cl. 585-469.000.
Nakata, Shinichi: *See*—
Hirano, Reiji; and Nakata, Shinichi, 4,352,161, Cl. 364-706.000.
Nalley, David J., to Singer Company, The. Sabre saw bar and blade holder. 4,351,112, Cl. 30-392.000.
Namimoto, Keiji; Eguchi, Seiji; and Murao, Yutaka, to Tokyo Shibaura Electric Co., Ltd. Data-processing apparatus having improved interrupt handling processor. 4,352,157, Cl. 364-200.000.
Nanos, Ralph G.: *See*—
Argyle, Charles S.; and Nanos, Ralph G., 4,351,390, Cl. 165-149.000.
Naoi, Takayuki: *See*—
Nishide, Teruyuki; Naoi, Takayuki; Shitomi, Makoto; Hamada, Keiichi; and Noguchi, Hidetami, 4,351,576, Cl. 308-37.000.
Napholcz, Johannes: *See*—
Hunold, Klaus; Reinmuth, Klaus; Lipp, Alfred; Napholcz, Johannes; and Arnold, Peter, 4,351,858, Cl. 427-193.000.
Nashua Corporation: *See*—
Cormier, Raymond G.; and Gibbs, John D., 4,351,601, Cl. 355-3.0SH.
Nation, Robert H.: *See*—
Anderson, Forest L.; and Nation, Robert H., 4,351,155, Cl. 60-618.000.
National Institute of Radiological Sciences: *See*—
Tanaka, Eiichi; Nohara, Norimasa; Tomitani, Takehiro; Yamamoto, Mikio; Ishimatsu, Kenji; and Takami, Katsumi, 4,352,018, Cl. 250-363.00S.
National Machinery Company, The: *See*—
Allebach, Gene E., 4,351,180, Cl. 72-405.000.
National Research Development Corporation: *See*—
Blair, Albert; and Grant, Patrick T., 4,351,268, Cl. 119-3.000.
Gray, John O.; and Sanderson, Michael L., 4,351,189, Cl. 73-196.000.
Natsuaki, Nobuyoshi: *See*—
Yoshida, Isao; Wada, Yasuo; Tamura, Masao; Miyao, Masanobu; Ohkura, Makoto; Natsuaki, Nobuyoshi; and Tokuyama, Takashi, 4,351,674, Cl. 148-1.500.
NCR Corporation: *See*—
Allbright, Forrest E., 4,351,988, Cl. 200-5.00A.
O'Connell, Stephen B., 4,352,100, Cl. 340-723.000.
Voyer, Joseph L., 4,352,153, Cl. 363-56.000.
Neal, Barry; and Morris, Timothy M., to Mach-Neal, Inc. Insert apparatus. 4,351,517, Cl. 270-52.000.
Neal, James V., Jr.: *See*—
Fajt, John; and Neal, James V., Jr., 4,351,578, Cl. 316-1.000.
Negro, Guido: *See*—
Mann, Friedrich; and Negro, Guido, 4,351,371, Cl. 140-92.300.
Neidleman, Saul L.; Amon, William F., Jr.; and Geigert, John, to Cetus Corporation. Production of 2-keto-D-gluconic acid and hydrogen peroxide. 4,351,902, Cl. 435-137.000.
Nelson, Gale C.: *See*—
Bardens, William H.; and Nelson, Gale C., 4,352,119, Cl. 357-78.000.
Nelson, James A.: *See*—
Lazarus, Harrison; and Nelson, James A., 4,351,333, Cl. 128-214.400.
Nemo Industries, Inc.: *See*—
Elsas, Norman E., 4,351,073, Cl. 4-654.000.
Neriki, Yoshiaki: *See*—
Ojima, Shin; and Neriki, Yoshiaki, 4,351,318, Cl. 126-208.000.
Neuman, Richard F.: *See*—
Garrett, Wayne; and Neuman, Richard F., 4,351,419, Cl. 188-71.900.
Neville, William A.: *See*—
Buddemeyer, Bruce D.; Neville, William A.; Rozzo, Nancy A.; and Bourne, Richard G., 4,351,735, Cl. 252-1.000.
Newman, Bruce A.; and Boyer, Lyndon D., to Conoco Inc. Processing of heavy high-sulfur feedstocks. 4,351,702, Cl. 201-5.000.
Newman, Don, to Stretch Devices, Inc. Method of making railing. 4,351,469, Cl. 228-135.000.
Newns, George R.: *See*—
Beales, Keith J.; Day, Clive R.; and Newns, George R., 4,351,659, Cl. 65-3.130.
Nezworski, James E., to Perlick Company, Inc., The. Valved keg closure. 4,351,456, Cl. 222-400.700.
Nicholson, Graham, to British Nuclear Fuels Limited. Grids for nuclear fuel assemblies. 4,351,795, Cl. 376-442.000.
Nicholson, Ross C.: *See*—
Ingersoll, Brian E.; Nicholson, Ross C.; and Dennisson, James W., 4,351,448, Cl. 220-318.000.
Nielsen, Hilmar R. Impregnating composition, a process for its preparation and products prepared by using the composition. 4,351,669, Cl. 106-2.000.
Nihon Technical Kabushiki Kaisha: *See*—
Ohashi, Tamaki, 4,351,195, Cl. 74-10.330.
Niida, Taro: *See*—
Miyazawa, Takeo; Ishii, Takahiro; Kazuno, Yuzo; Akita, Eiichi; Yamada, Yujiro; and Niida, Taro, 4,351,830, Cl. 424-180.000.
Nims, Philip A.: *See*—
Guy, David A.; and Nims, Philip A., 4,351,370, Cl. 139-450.000.
Nippon Electric Co.: *See*—
Yamasaki, Koji, 4,352,091, Cl. 340-311.100.
Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Kumano, Shinji, 4,351,222, Cl. 84-423.00R.
Okamoto, Shimaji; and Nagai, Yohei, 4,351,212, Cl. 84-1.010.
Suzuki, Hideo; and Kaneko, Makoto, 4,351,214, Cl. 84-1.030.
Yamada, Shigeru; and Ichikawa, Kiyoshi, 4,351,220, Cl. 84-1.240.
Nippon Kogaku K. K.: *See*—
Hasegawa, Hiroshi; and Maida, Osamu, 4,351,600, Cl. 354-60.00L.
Nippon Seiko Kabushiki Kaisha: *See*—
Miyahara, Takashi, 4,351,427, Cl. 192-98.000.
Nippon Telegraph & Telephone Public Corporation: *See*—
Kimura, Takao; Sakaguchi, Shigeki; and Takata, Hisao, 4,351,657, Cl. 65-3.110.
Nippon Zeon Co. Ltd.: *See*—
Miyamoto, Kazumichi; Nishizawa, Akira; Okuda, Takao; Nakamura, Mamoru; and Abe, Takaharu, 4,351,747, Cl. 252-511.000.
Nippondenso Co., Ltd.: *See*—
Isogai, Kiyoshi; and Sugaya, Kazuyoshi, 4,351,305, Cl. 123-590.000.
Shirasaki, Shinji; Yamada, Takashi; and Shimamoto, Mamoru, 4,351,287, Cl. 123-609.000.
Utsumi, Hiroo; Sakakibara, Yukio; Ito, Teruyoshi; Iwata, Toshiharu; and Yamada, Takashi, 4,351,282, Cl. 123-425.000.
Nishide, Teruyuki; Naoi, Takayuki; Shitomi, Makoto; Hamada, Keiichi; and Noguchi, Hidetami, to Kawasaki Steel Corporation. Oil film bearing for rolling roll. 4,351,576, Cl. 308-37.000.
Nishimura, Akimasa: *See*—
Hirata, Noritsugu; Toyama, Masamichi; Iwama, Hideto; Okajima, Hidekazu; and Nishimura, Akimasa, 4,351,590, Cl. 352-140.000.
Nishimura, Tadahiko; Yamamoto, Hiroshi; Osuo, Masatoshi; and Kanazawa, Akio, to Mitsui Petrochemical Industries, Ltd. Process for producing phenolic compounds. 4,351,967, Cl. 568-754.000.
Nishizawa, Akira: *See*—
Miyamoto, Kazumichi; Nishizawa, Akira; Okuda, Takao; Nakamura, Mamoru; and Abe, Takaharu, 4,351,747, Cl. 252-511.000.
Nissan Motor Company, Limited: *See*—
Hashimoto, Akihiro, 4,351,555, Cl. 296-37.160.
Masaki, Kenji; and Saito, Masaaki, 4,351,480, Cl. 239-585.000.
Nomura, Hiroyuki; Kawasaki, Teruo; and Takeuchi, Mikio, 4,352,062, Cl. 324-169.000.
Tsunoda, Masakazu, 4,352,088, Cl. 340-52.00F.
Tuchiya, Yoshimasa; Ishii, Katsumi; Iidaka, Toshiharu; and Fujita, Masao, 4,351,561, Cl. 296-216.000.
Yano, Hiroshi; and Tsunoda, Masakazu, 4,352,089, Cl. 340-52.00F.
Nixdorf Computer AG: *See*—
Hager, Horst, 4,352,133, Cl. 360-106.000.
Hullwegen, Josef, 4,352,190, Cl. 375-14.000.
Unglaube, Uwe; and Miehe, Friedrich V., 4,352,096, Cl. 340-815.060.
Nixdorff Krein Industries, Inc.: *See*—
Mead, Harold C., 4,351,535, Cl. 280-5.00R.
Noguchi, Hidetami: *See*—
Nishide, Teruyuki; Naoi, Takayuki; Shitomi, Makoto; Hamada, Keiichi; and Noguchi, Hidetami, 4,351,576, Cl. 308-37.000.
Noguchi, Masahiro: *See*—
Nyuji, Tomoaki; Kawasaki, Itaru; Noguchi, Masahiro; and Tsukamoto, Masahide, 4,352,162, Cl. 364-724.000.
Nohara, Norimasa: *See*—
Tanaka, Eiichi; Nohara, Norimasa; Tomitani, Takehiro; Yamamoto, Mikio; Ishimatsu, Kenji; and Takami, Katsumi, 4,352,018, Cl. 250-363.00S.
Noiles, Douglas G., to United States Surgical Corporation. Disposable instrument for surgical fastening. 4,351,466, Cl. 227-8.000.
Nomura, Hiroyuki; Kawasaki, Teruo; and Takeuchi, Mikio, to Nissan Motor Co., Ltd. Digital display type tachometer for an automobile. 4,352,062, Cl. 324-169.000.
Nomura, Toshio: *See*—
Date, Tasuku; Nomura, Toshio; and Kobayashi, Isao, 4,352,158, Cl. 364-431.050.
Nordischer Maschinenbau Rud. Baader: *See*—
Jahnke, Joachim; Lehming, Gunther; Kunig, Helmut; and Nagel, Jens, 4,351,089, Cl. 19-129.00R.

Nordson Corporation: *See*—
Baker, Robert G.; and Ramazzotti, Dario J., 4,352,007, Cl. 219-301.000.

Norman, Ralph L.: *See*—
Hagood, Jerry W.; and Norman, Ralph L., 4,352,039, Cl. 310-328.000.

Northern Telecom, Inc.: *See*—
Young, Robert E.; and Huffman, Richard K., 4,351,984, Cl. 179-7.10R.

Northwood Mills Ltd.: *See*—
Jasperson, F. Bon, 4,351,912, Cl. 523-218.000.

Norton, John: *See*—
Swadling, Sidney J.; Mansbridge, Martin H.; Payne, Dennis J.; and Norton, John, 4,351,470, Cl. 228-157.000.

Novoselov, Nikolai M.: *See*—
Daiker, Artur L.; Veis, Anatoly I.; Kochengin, Evgeny Y.; Novoselov, Nikolai M.; Morozov, Gennady Y.; Rybin, Vladimir S.; Belokur, Nikolai A.; and Savelieva, Nina A., 4,351,676, Cl. 148-9.00C.

Nuovo Pignone S.p.A.: *See*—
Filidoro, Roberto; and Di Sciascio, Nicola, 4,351,353, Cl. 137-219.000.

Nyuji, Tomoaki; Kawasaki, Itaru; Noguchi, Masahiro; and Tsukamoto, Masahide, to Matsushita Electric Industrial Co., Ltd. Digital filter. 4,352,162, Cl. 364-724.000.

OBE-Werk Ohnmacht & Baumgartner GmbH & Co. K.G.: *See*—
Drlik, Gunther, 4,351,086, Cl. 16-228.000.

Occidental Research Corporation: *See*—
Megy, Joseph A.; and Hard, Robert A., 4,351,809, Cl. 423-167.000.
Megy, Joseph A.; and Hard, Robert A., 4,351,813, Cl. 423-304.000.

Ochiai, Izumi: *See*—
Uehara, Katuharu; and Ochiai, Izumi, 4,351,178, Cl. 72-383.000.

O'Connell, Stephen B., to NCR Corporation. Image formatting apparatus for visual display. 4,352,100, Cl. 340-723.000.

Oelbermann, Max: *See*—
Rademacher, Karl A.; and Oelbermann, Max, 4,351,725, Cl. 210-230.000.

Oesterlin, Rudolf, to Sterling Drug Inc. Improved process for preparing 3-(4-pyridinyl)aniline. 4,351,944, Cl. 546-329.000.

Offshore Company, The: *See*—
Ray, Donald R.; and Steddum, Riddle E., 4,351,258, Cl. 114-230.000.

Ogata, Masaru; and Matsumoto, Hiroshi, to Shionogi & Co., Ltd. Preparation of N(2-pyrrolidinylmethyl)2-methoxy-5-benzenesulfonamidobenzamides. 4,351,770, Cl. 548-567.000.

Ogle, Francis H., Jr., to Transamerica DeLaval Inc. Check-valve construction. 4,351,358, Cl. 137-512.100.

Oguchi, Takuro; Ohsawa, Zenichi; and Murai, Shinichi, to Fujitsu Limited. Temperature compensating voltage generator circuit. 4,352,053, Cl. 323-220.000.

Ohai, Reynolds K. Loop for leveling a hanging lamp. 4,351,506, Cl. 248-344.000.

Ohama, Satoru. Detection and alarm device for use with car for detecting obstacle and abnormal conditions of tire. 4,352,090, Cl. 340-52.00R.

Ohashi, Tamaki, to Nihon Technical Kabushiki Kaisha. Pushbutton tuner. 4,351,195, Cl. 74-10.330.

Ohgishi, Tsutomu; and Sakurai, Tadashi, to Sanyo Electric Co., Ltd. Entry apparatus of digital value in memory. 4,352,204, Cl. 455-182.000.

Ohkubo, Wataru, to Alps Electric Company, Ltd. Station selecting device. 4,352,203, Cl. 455-176.000.

Ohkura, Makoto: *See*—
Yoshida, Isao; Wada, Yasuo; Tamura, Masao; Miyao, Masanobu; Ohkura, Makoto; Natsuaki, Nobuyoshi; and Tokuyama, Takashi, 4,351,674, Cl. 148-1.500.

Ohniwa, Takehiko; and Saito, Syuichiro, to Canon Kabushiki Kaisha; and Canon Denshi Kabushiki Kaisha. Electromagnetic driving source for shutter. 4,351,596, Cl. 354-234.000.

Ohnmacht, Helmut: *See*—
Hofer, Edwin; and Ohnmacht, Helmut, 4,352,008, Cl. 219-540.000.

Ohori, Tamio; Mastumoto, Fuyuhiko; and Tomita, Satoru, to Ricoh Company, Ltd. Combination electrostatic copying machine and facsimile transceiver. 4,352,128, Cl. 358-294.000.

Ohsawa, Zenichi: *See*—
Oguchi, Takuro; Ohsawa, Zenichi; and Murai, Shinichi, 4,352,053, Cl. 323-220.000.

Ohta, Junpei: *See*—
Mitsui, Tadashi; Wasaki, Masaru; and Ohta, Junpei, 4,352,080, Cl. 336-83.000.

Ohtake, Yasushi: *See*—
Hasegawa, Tsunao; and Ohtake, Yasushi, 4,352,130, Cl. 360-66.000.

Ohwaki, Shinji: *See*—
Takahashi, Masao; Yoshida, Katumi; Ohwaki, Shinji; and Moriga, Hiroyuki, 4,351,738, Cl. 252-8.750.

Ojima, Shin; and Neriki, Yoshiaki, to Hosiden Electronics Co., Ltd. Pocket body warmer with a cigarette lighter. 4,351,318, Cl. 126-208.000.

Oka, Yoshitami: *See*—
Yonezawa, Toshio; Ajima, Takashi; Hiraki, Shunichi; Koshino, Yutaka; and Oka, Yoshitami, 4,351,894, Cl. 430-313.000.

Okada, Akira: *See*—
Miyata, Shigeo; and Okada, Akira, 4,351,814, Cl. 423-306.000.

Okada, Takashi; Sahara, Hiroshi; and Otsuka, Fumikazu, to Sony Corporation. Constant current source. 4,352,057, Cl. 323-315.000.

Okajima, Hidekazu: *See*—
Hirata, Noritsugu; Toyama, Masamichi; Iwama, Hideto; Okajima, Hidekazu; and Nishimura, Akimasa, 4,351,590, Cl. 352-140.000.

Okamoto, Katuhiko: *See*—
Fujita, Taira; Nakagawa, Hiroyuki; Sugihara, Mikio; Kobayashi, Kimiyuki; and Okamoto, Katuhiko, 4,351,765, Cl. 260-163.000.

Okamoto, Shimaji; and Nagai, Yohei, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instrument with equally spaced binary note codes. 4,351,212, Cl. 84-1.010.

Okamura, Shigeru: *See*—
Kyogoku, Hiroshi; Tazaki, Shigemitsu; Okamura, Shigeru; Terasawa, Koji; Kasugayama, Yukio; and Hattori, Yoshihumi, 4,352,114, Cl. 346-140.00R.

Okouchi, Isao: *See*—
Matsuzaki, Harumi; Kuroda, Osamu; Okouchi, Isao; Izumi, Kenkichi; and Takahashi, Sankichi, 4,351,715, Cl. 204-301.000.

Okuda, Takao: *See*—
Miyamoto, Kazumichi; Nishizawa, Akira; Okuda, Takao; Nakamura, Mamoru; and Abe, Takaharu, 4,351,747, Cl. 252-511.000.

Old National Bank in Evansville, administrator: *See*—
Simms, Jack C., deceased; and Old National Bank in Evansville, administrator, 4,351,939, Cl. 544-230.000.

Oldershaw, C. G. Peter, to General Foods Corporation. Pouch filling machine. 4,351,374, Cl. 141-71.000.

Olshansky, Robert, to Corning Glass Works. Manufacture of optical fibers. 4,351,658, Cl. 65-3.120.

Olson, Glenn O., to Boeing Company, The. Composite aircraft structure having lightning protection. 4,352,142, Cl. 361-218.000.

Olson, John S., to Phillips Petroleum Company. Hydrocarbon heating apparatus. 4,351,803, Cl. 422-106.000.

Olympus Optical Co. Ltd.: *See*—
Hosoda, Seiichi, 4,352,150, Cl. 362-282.000.
Matsuo, Kazumasa; and Kubota, Tetsumaru, 4,351,587, Cl. 350-255.000.

ONEAC Corporation: *See*—
McCartney, Thomas, 4,352,055, Cl. 323-263.000.

Ono Pharmaceutical Co., Ltd.: *See*—
Matsumoto, Kimiichiro; Miyake, Hajimu; and Suga, Hisashi, 4,351,846, Cl. 424-305.000.

Ontrax Corporation: *See*—
Schulze, Dieter M. O. T., 4,352,048, Cl. 318-135.000.

Opalka, Chester J., Jr.: *See*—
Lesher, George Y.; Opalka, Chester J., Jr.; and Page, Donald F., 4,351,941, Cl. 546-258.000.

Opie, William R.: *See*—
Ernst, Runyon G., deceased; Ernst, Margaret, executrix; Opie, William R.; Rajcevic, Harold P.; and Parker, Peter D., 4,351,705, Cl. 204-108.000.

Opper, Ray C. Adaptor for charging small cells in large-cell charger. 4,352,052, Cl. 320-2.000.

Optical Coating Laboratory, Inc.: *See*—
Kamerling, Marc A., 4,351,681, Cl. 156-99.000.

Orion-yhtyma Oy: *See*—
Sothmann, Gunnar A.; and Marttila, Esko V., 4,351,825, Cl. 424-19.000.

Orme, Myrl E., to Bendix Corporation, The. Fail safe compensator used in a hydraulic servo control system. 4,351,357, Cl. 137-446.000.

Ortner, Artur; and Zeller, Rudolf, to Voest-Alpine Aktiengesellschaft. Method of recovering the sensible heat of continuously cast slabs. 4,351,633, Cl. 432-77.000.

Osaka Prefectural Government: *See*—
Hatano, Yasuhiro; and Nakao, Kazumune, 4,351,978, Cl. 585-469.000.

Osaka, Susumu: *See*—
Toda, Minoru; and Osaka, Susumu, 4,351,192, Cl. 73-861.180.

Osborn, Thomas W., III, to Proeter & Gamble Company, The. Soft, absorbent tissue paper. 4,351,699, Cl. 162-112.000.

Osborne, John R., to Memorex Corporation. Variable sloped etching of thin film heads. 4,351,698, Cl. 156-661.100.

Osuo, Masatoshi: *See*—
Nishimura, Tadahiko; Yamamoto, Hiroshi; Osuo, Masatoshi; and Kanazawa, Akio, 4,351,967, Cl. 568-754.000.

Otani, Takashi, to Toyoda Gosei Co., Ltd. Molding. 4,351,868, Cl. 428-120.000.

Otawa, Shuji: *See*—
Ueda, Makoto; Torisawa, Akira; Otawa, Shuji; Mandai, Masaaki; Shida, Masaharu; and Sato, Katsuhiko, 4,352,172, Cl. 368-76.000.

Otsuji, Hiroyuki: *See*—
Shindome, Mamoru; Yanagita, Takanori; Nakamura, Takanori; and Otsuji, Hiroyuki, 4,351,252, Cl. 110-346.000.

Otsuka, Fumikazu: *See*—
Okada, Takashi; Sahara, Hiroshi; and Otsuka, Fumikazu, 4,352,057, Cl. 323-315.000.

Ott, Lothar: *See*—
Gessner, Dieter; and Ott, Lothar, 4,351,631, Cl. 425-533.000.

Ottone, Robert J., to DC Electronic Industries, Inc. Battery analyzer. 4,352,067, Cl. 324-434.000.

Ouchi, Teruo; and Ueda, Hirohisa, to Kabushiki Kaisha Medos Kenkyusho. Curvable pipe assembly in endoscope. 4,351,323, Cl. 128-4.000.

Ouellette, Alfred R., to Itek Corporation. Transport system for phototypesetting machine. 4,351,460, Cl. 226-25.000.

Ouellette, Joseph F., to Ouellette Machinery Systems. Apparatus and method for automatically filling and heat weld sealing lengths of plastic tubing. 4,351,692, Cl. 156-443.000.

Ouellette Machinery Systems: *See—*
Ouellette, Joseph F., 4,351,692, Cl. 156-443.000.

Ousby, John C.: *See—*
Bailey, Martin; Hines, David A.; Ousby, John C.; and Roesler, Frank C., 4,351,730, Cl. 210-629.000.

Outboard Marine Corporation: *See—*
Wick, Gerald H., 4,351,279, Cl. 123-391.000.

Outokumpu Oy: *See—*
Kosonen, Ahti A., 4,351,326, Cl. 128-130.000.

Owatonna Tool Company: *See—*
Solie, James C.; and McClocklin, Samuel B., 4,351,362, Cl. 137-625.650.

Owen, Donald W. Multi-phase current balancing compensator. 4,352,026, Cl. 307-14.000.

Owen, Oliver E. Semi-quantitative assay of metabolic acids. 4,351,899, Cl. 435-26.000.

Owens, William R.; Chan, Henry C.; Abraham, Ooriapadical C.; and Parker, Levi C., to Texaco Inc. Control system for gas dehydrators. 4,351,649, Cl. 55-162.000.

Oxenreider, Terry, to General Battery Corporation. Battery case having a side terminal molded therein. 4,351,890, Cl. 429-179.000.

Oxman, Martin H., to Bell and Howell Company. Wireless aircraft passenger audio entertainment system. 4,352,200, Cl. 455-41.000.

Oxysynthese: *See—*
Thirion, Pierre, 4,351,820, Cl. 423-588.000.

Oy Wartisila AB: *See—*
Martikainen, Kaarlo, 4,351,172, Cl. 70-366.000.

Oy Wartsila AB: *See—*
Johansson, Bengt; Keinonen, Arno; and Makinen, Eero, 4,351,255, Cl. 114-41.000.

Paananen, Eugene E.: *See—*
Fasig, Harold A.; and Paananen, Eugene E., 4,352,013, Cl. 250-223.00R.

Page, Donald F.: *See—*
Lesher, George Y.; Opalka, Chester J., Jr.; and Page, Donald F., 4,351,941, Cl. 546-258.000.

Pajot, Michel: *See—*
Boudot, Bernard; Grosbois, Jean; and Pajot, Michel, 4,351,821, Cl. 423-624.000.

Palau, Joseph, to S.A. des Etablissements Staubli. Dobby. 4,351,368, Cl. 139-324.000.

Palmer, Michael C. Means for removing residual water from a surface. 4,351,723, Cl. 210-198.100.

Pandzik, Richard T.: *See—*
Copp, Carl A., Jr.; Pandzik, Richard T.; and Gaines, Marvin E., 4,351,227, Cl. 92-71.000.

Panetz, Allen I.: *See—*
Kopp, Reiner H.; and Panetz, Allen I., 4,351,[illegible], Cl. 422-70.000.

Pannier, Steven R. Livestock feeder with a [illegible]ble feed gate. 4,351,274, Cl. 119-53.500.

Pares Olivet, Eulalia: *See—*
LLorente Agudo, Nieves; Elia Miguel, Maria F.; Aranguren Escobar, Maria A.; Pares Olivet, Eulalia; and Fernandez Garvajosa, Jose M., 4,351,903, Cl. 435-234.000.

Parish, Darrell J.; and Mallouk, Robert S., to Du Pont de Nemours, E. I., and Company. Compound dispersions and films. 4,351,746, Cl. 252-511.000.

Parker, Charles R.: *See—*
Tigner, Thomas E.; and Parker, Charles R., 4,352,046, Cl. 315-362.000.

Parker-Hannifin Corporation: *See—*
Cyrot, Luc P., 4,351,226, Cl. 91-387.000.

Parker, Jack: *See—*
Holland, Eddie L.; Stallings, Charles K.; and Parker, Jack, 4,351,273, Cl. 119-51.00R.

Parker, Levi C.: *See—*
Owens, William R.; Chan, Henry C.; Abraham, Ooriapadical C.; and Parker, Levi C., 4,351,649, Cl. 55-162.000.

Parker, Peter D.: *See—*
Ernst, Runyon G., deceased; Ernst, Margaret, executrix; Opie, William R.; Rajcevic, Harold P.; and Parker, Peter D., 4,351,705, Cl. 204-108.000.

Parmeko Limited: *See—*
Stephen, James H.; McCann, John D.; and Flemming, Michael A., 4,352,098, Cl. 340-572.000.

Parrillo, Michael R.; and Colwell, John C., to Bunker Ramo Corporation. ECG Patient monitoring lead assembly. 4,351,343, Cl. 128-695.000.

Patchett, Arthur A.; and Kuo, Chan-Hwa, to Merck & Co., Inc. Hypocholesterolemic hydrogenation products and process of preparation. 4,351,844, Cl. 424-279.000.

Patel, Naren I., to Siecor Corporation. Filling materials for electrical and light waveguide communications cables. 4,351,913, Cl. 523-218.000.

Patnaik, Birendra K., to El Paso Polyolefins Company. Propylene copolymerization process and product. 4,351,930, Cl. 526-125.000.

Paul Mueller Company: *See—*
Mueller, Paul; Manna, Daniel C.; and Prine, Ray A., 4,351,271, Cl. 119-14.090.

Payne, Dennis J.: *See—*
Swadling, Sidney J.; Mansbridge, Martin H.; Payne, Dennis J.; and Norton, John, 4,351,470, Cl. 228-157.000.

Payne, Roger E.: *See—*
Pilliod, Charles J., Jr.; and Payne, Roger E., 4,351,380, Cl. 152-169.000.

Pearsall, Wally. Dual purpose jacket. 4,351,066, Cl. 2-85.000.

Peash, Douglas E.; and Yorozu, Arthur S., to Boeing Company, The. Ram air enhanced relief valve. 4,351,501, Cl. 244-129.100.

Peeples, Marion E.: *See—*
Calhoun, Leslie D.; and Peeples, Marion E., 4,351,388, Cl. 165-104.260.

Pelerin, Jacques, to Centre de Recherches Metallurgiques-Centrum voor Research in de Metallurgie. Method of protecting devices for galvanizing metal products. 4,351,854, Cl. 427-34.000.

Pelerin, Jacques: *See—*
Cosse, Paul; and Pelerin, Jacques, 4,351,862, Cl. 427-300.000.

Penney, Gaylord W., to United Air Specialists, Inc. Electrostatic precipitator having dual polarity ionizing cell. 4,351,648, Cl. 55-137.000.

Pennwalt Corporation: *See—*
Griffith, Ronald C.; and Kinsolving, Clyde R., 4,351,847, Cl. 424-325.000.
Toukan, Sameeh S.; and Hauptschein, Murray, 4,351,946, Cl. 548-142.000.

Perez, Andre; Boljevic, Jean M.; and Dautremay, Alain, to Thomson-CSF. Timing signal synchronization device. 4,352,192, Cl. 375-56.000.

Perlick Company, Inc., The: *See—*
Nezworski, James E., 4,351,456, Cl. 222-400.700.

Perreault, Irenee: *See—*
Chartrand, Joseph A.; and Perreault, Irenee, 4,351,250, Cl. 110-227.000.

Perron, Robert: *See—*
Gauthier-Lafaye, Jean; and Perron, Robert, 4,351,953, Cl. 562-519.000.

Perrot, Erwin, to Klauschenz & Perrot KG. Process for dialyzation of blood. 4,351,731, Cl. 210-647.000.

Petersen, Richard W.: *See—*
Kirkman, Michael; Rydwansky, Frank C., Jr.; Hanlon, Richard J.; and Petersen, Richard W., 4,351,580, Cl. 339-17.0CF.

Peterson, Carlton F.: *See—*
Sivertsen, John W., 4,351,128, Cl. 43-44.910.

Peterson, Roger W.: *See—*
Kordes, Arthur W.; Andrade, Robert M.; and Peterson, Roger W., 4,351,579, Cl. 339-14.00R.

Petrolite Corporation: *See—*
Winslow, Joseph D., Jr., 4,351,703, Cl. 204-1.00T.

Pettit, Geroge D.: *See—*
Chappell, Terry I.; Pettit, Geroge D.; and Woodall, Jerry M., 4,351,706, Cl. 204-129.300.

Pezet, Michael J.: *See—*
Hardwick, John P.; Pezet, Michael J.; Sarvestany, Asadollah A.; and Satharasinghe, Dayananda, 4,351,485, Cl. 241-36.000.

Pfaff, Georg: *See—*
Adler, Karl-Heinz; Pfaff, Georg; Leussink, Reinhard; Sohner, Gerhard; Hohne, Gerd; Jokh, Thomas; and Decker, Heinz, 4,351,310, Cl. 123-644.000.

Pfeiffer, Josef: *See—*
Steinberger, Helmut; Moretto, Hans-Heinrich; Kortmann, Wilfried; and Pfeiffer, Josef, 4,351,736, Cl. 252-8.600.

Pfizer Inc.: *See—*
Hess, Hans-Jurgen E.; Bindra, Jasjit S.; and Shah, Praful K., 4,351,940, Cl. 544-293.000.
Holland, Gerald F., 4,351,843, Cl. 424-274.000.
Johnson, Michael R., 4,351,833, Cl. 424-248.500.
Pirie, Donald K., 4,351,840, Cl. 424-271.000.
Shively, Jesse E., 4,351,845, Cl. 424-283.000.

Pfleiderer, Ernst: *See—*
Monsheimer, Rolf; and Pfleiderer, Ernst, 4,351,639, Cl. 8-94.160.

PFP-Anstalt Fur Produktentwicklung und Verwertung: *See—*
Schramm, Werner, 4,351,441, Cl. 211-207.000.

Pfundner, Hans P.: *See—*
Droscher, Erich; Pfundner, Hans P.; and Wrulich, Herwig, 4,351,564, Cl. 299-1.000.

Phares, Gary L. Pulled bow arrow holder. 4,351,311, Cl. 124-41.00A.

Phillips, Michael J.; and Crick, Aubrey M., to International Standard Electric Corporation. Termination of optical fibers. 4,351,586, Cl. 350-96.200.

Phillips Petroleum Company: *See—*
Eddy, William R., 4,351,472, Cl. 229-43.000.
Likins, Merle R., Jr.; and Stacy, Galen D., 4,351,818, Cl. 423-450.000.
Olson, John S., 4,351,803, Cl. 422-106.000.
Ray, Gardner C.; and Solomon, Paul W., 4,351,963, Cl. 568-477.000.
Reusser, Robert E.; Claytor, Elizabeth A.; and Jones, Brenton E., 4,351,980, Cl. 585-820.000.
Slagel, John E.; and Howard, Allen C., 4,351,817, Cl. 423-450.000.

Pilliod, Charles J., Jr.; and Payne, Roger E., to Goodyear Tire & Rubber Company, The. Track belt assembly. 4,351,380, Cl. 152-169.000.

Pinkhasov, Eduard. Noncrucible method of and apparatus for the vapor deposition of material upon a substrate using voltaic arc in vacuum. 4,351,855, Cl. 427-37.000.

Pioneer Electronic Corporation: *See—*
Hasegawa, Tsunao; and Ohtake, Yasushi, 4,352,130, Cl. 360-66.000.
Yamamuro, Isao; and Tsukagoshi, Tsunehiro, 4,351,412, Cl. 181-170.000.

Pirie, Donald K., to Pfizer Inc. Antibacterial esters of resorcinol with ampicillin and penicillanic acid 1,1-dioxide derivatives. 4,351,840, Cl. 424-271.000.

Pittard, Hal K., Jr. Combination oil plug wrench and integral oil filler. 4,351,075, Cl. 7-138.000.

Plantard, Dominique; Langlais, Gerard; and Fournier, Rene, to Isover Saint-Gobain. Toration with multiple jet deflection. 4,351,660, Cl. 65-5.000.
Plantard, Dominique: *See*—
Levecque, Marcel, deceased; Levecque, Marc, administrator; Battigelli, Jean A.; and Plantard, Dominique, 4,351,661, Cl. 65-5.000.
Plymale, Jay F. Restraining device. 4,351,169, Cl. 70-16.000.
Poddar, Syamal K.: *See*—
Gorbaty, Martin L.; Stone, John B.; and Poddar, Syamal K., 4,351,716, Cl. 208-8.0LE.
Polaroid Corporation: *See*—
Johnson, Bruce K.; and Whiteside, George D., 4,351,593, Cl. 354-27.000.
Poling, Ronald W., to General Electric Company. Method of making a control device. 4,351,105, Cl. 29-622.000.
Politechnika Gdanska: *See*—
Stefanska, Barbara J.; Falkowski, Leonard S.; and Borowski, Edward, 4,351,937, Cl. 536-6.400.
Pollard, David E., to Helgeson Nuclear Services, Inc. In-vivo radiation counter. 4,352,019, Cl. 250-394.000.
Polson, Charles L., to Dover Corporation. Dual spout dispensing nozzle. 4,351,375, Cl. 141-98.000.
Pomeco Corporation: *See*—
Madden, Michael J., 4,351,446, Cl. 220-210.000.
Poncin, Jacques; Rogel, Pierre; and Remy, Maurice. System for reducing visible noise in television images. 4,352,126, Cl. 358-167.000.
Popper, Paul: *See*—
Martinengo, PierCarlo; Giachello, Angelo; Tommasini, Giuseppe; and Popper, Paul, 4,351,787, Cl. 264-65.000.
Possati, Mario, to Finike Italiana Marposs, S.p.A. Apparatus for checking the linear dimensions of shafts. 4,351,115, Cl. 33-178.00D.
Post Office, The: *See*—
Beales, Keith J.; Day, Clive R.; and Newns, George R., 4,351,659, Cl. 65-3.130.
Pound, William C.: *See*—
Valbona, Bruno M.; and Pound, William C., 4,351,612, Cl. 366-206.000.
Powell, Brian. Sampler and cell for radon detectors and method of using same. 4,352,014, Cl. 250-253.000.
Power, Joseph S.: *See*—
Schultz, Edward R., Jr.; Cook, Kenneth J.; Power, Joseph S.; and Ruszala, Frederick B., 4,352,163, Cl. 364-801.000.
Powers, John W.: *See*—
Marcantonio, Arnold F.; Kress, Paul J.; and Powers, John W., 4,351,883, Cl. 428-450.000.
PPG Industries, Inc.: *See*—
Das, Balbhadra; and Fahey, Dennis M., 4,351,752, Cl. 523-401.000.
Henery, Vern A., 4,351,861, Cl. 427-255.100.
Jensen, Thomas H., 4,351,656, Cl. 65-1.000.
PR Processutveckling AB: *See*—
Molin, Roland, 4,351,132, Cl. 51-180.000.
Prager, Elliot D. Stoma control device and method. 4,351,322, Cl. 128-1.00R.
Pratt, Barbara J.: *See*—
Brickner, Laurence R.; Moutner, David N.; and Pratt, Barbara J., 4,351,230, Cl. 98-31.000.
Prem, Dorothy C.; Duke, June T.; and Isley, Ralph E., to SOHIO. Rubber-modified high nitrile copolymers with improved impact resistance. 4,351,756, Cl. 524-314.000.
Prewarski, Mike, to International Business Machines Corporation. Selection controlled print impression control for single element impact printers. 4,351,618, Cl. 400-166.000.
Prince, George T.; and Ballendux, Gerardus M., to Allis-Chalmers Corporation. Torsion vibration damper. 4,351,168, Cl. 464-64.000.
Prine, Ray A.: *See*—
Mueller, Paul; Manna, Daniel C.; and Prine, Ray A., 4,351,271, Cl. 119-14.090.
Prins, Klaar; and Prins, Reinout K. N. J. Well drilling apparatus. 4,351,398, Cl. 173-104.000.
Prins, Reinout K. N. J.: *See*—
Prins, Klaar; and Prins, Reinout K. N. J., 4,351,398, Cl. 173-104.000.
Procter & Gamble Company, The: *See*—
Osborn, Thomas W., III, 4,351,699, Cl. 162-112.000.
Professional Marketing Associates: *See*—
Cobleigh, Wendall C.; and Barmore, Donald L., 4,351,208, Cl. 83-167.000.
Propst, Robert L.; and Raftery, William B., to Herman Miller, Inc. Vehicle towing system. 4,351,541, Cl. 280-408.000.
Psaras, John D.; and Zahniser, James A., to C. M. Kemp Manufacturing Co., The. Dehydration of ethanol. 4,351,732, Cl. 210-689.000.
Puckette, Charles M., to General Electric Company. Linear mixer with reduced spurious responses. 4,352,210, Cl. 455-317.000.
Purcell, Dennis W.: *See*—
Jones, Peter W. J.; and Purcell, Dennis W., 4,352,063, Cl. 324-171.000.
Puschner, Kurt: *See*—
Kriebitzsch, Norbert; Puschner, Kurt; and Hentschel, Klaus, 4,351,644, Cl. 23-293.00R.
Quadra Wheelchairs, Inc.: *See*—
Minnebraker, Jeffrey P., 4,351,540, Cl. 280-242.0WC.
Queneau, Paul B.: *See*—
Beckstead, Leo W.; Huggins, Dale K.; and Queneau, Paul B., 4,351,808, Cl. 423-61.000.
Quinn, James R.: *See*—
Boyd, Douglas P.; Herrmannsfeldt, William B.; Quinn, James R.; and Sparks, Robert A., 4,352,021, Cl. 378-12.000.
R.F. Technical Products, Inc.: *See*—
Cross, James A.; and Snyder, John E., 4,352,207, Cl. 455-223.000.
R.G.B. Laboratories Inc.: *See*—
Buddemeyer, Bruce D.; Neville, William A.; Rozzo, Nancy A.; and Bourne, Richard G., 4,351,735, Cl. 252-1.000.
R. L. Drake Company: *See*—
Koogler, Steven C., 4,352,010, Cl. 235-92.0EV.
Racal-Milgo, Inc.: *See*—
Miller, William J.; and Trbovich, Nick G., 4,351,982, Cl. 178-22.110.
Rademacher, Karl A.; and Oelbermann, Max, to Rittershaus & Blecher GmbH. Plate filter press with stop rails for plate guidance. 4,351,725, Cl. 210-230.000.
Radiation Dynamics, Inc.: *See*—
Harney, Robert C., 4,352,105, Cl. 343-5.0CD.
Radigan, Kenneth J., to Fairchild Camera & Instrument Corp. Corrosion inhibition of aluminum or aluminum alloy film utilizing bromine-containing plasma. 4,351,696, Cl. 156-643.000.
Radio Research Laboratories, Ministry of Posts and Telecommunications: *See*—
Fukushima, Madoka; Akita, Kin-ichiro; and Masuda, Yoshihisa, 4,351,188, Cl. 73-189.000.
Radisic, Branko: *See*—
Halilovic, Esref; and Radisic, Branko, 4,351,308, Cl. 123-627.000.
Raff, Dieter: *See*—
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Raftery, William B.: *See*—
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Rajagopalan, Parthasarathi, to Du Pont de Nemours, E. I., and Company. 1,2,3,4,4a,5,10,10a-Octahydro-5,10-ortho-benzenobenz[g]isoquinolines and antidepressant use thereof. 4,351,836, Cl. 424-258.000.
Rajcevic, Harold P.: *See*—
Ernst, Runyon G., deceased; Ernst, Margaret, executrix; Opie, William R.; Rajcevic, Harold P.; and Parker, Peter D., 4,351,705, Cl. 204-108.000.
Rakhit, Sumanas; and Bagli, Jehan F., to American Home Products Corporation. 2-(Piperazinyl)-4-pyrimidinamines. 4,351,832, Cl. 424-246.000.
Raley, Garland E.: *See*—
Thomas, Paul E.; and Raley, Garland E., 4,351,784, Cl. 264-22.000.
Ramanadin, R.; Roustan, Alain; and Soula, Gerard, to Rhone-Poulenc Industries. Preparation of fluorobenzonitriles. 4,351,777, Cl. 260-465.00G.
Ramazzotti, Dario J.: *See*—
Baker, Robert G.; and Ramazzotti, Dario J., 4,352,007, Cl. 219-301.000.
Ramsey, James M.: *See*—
Emerson, James A.; Ramsey, James M.; and Buck, Kerry O., 4,351,582, Cl. 339-97.00R.
Ramsey, Robert E.: *See*—
Clements, Gary B.; and Ramsey, Robert E., 4,351,090, Cl. 24-263.00D.
Rarig, Larry L.; Alleman, Raymond A.; and Miller, Dennis L., to RCA Corporation. Apparatus for sensing bare metal on a moving strip of insulatively coated conductive material. 4,351,263, Cl. 118-665.000.
Rattee, Ian D.: *See*—
Lewis, Edward J.; and Rattee, Ian D., 4,351,871, Cl. 428-195.000.
Ray, Donald R.; and Steddum, Riddle E., to Offshore Company, The. Method and apparatus for tension mooring a floating platform. 4,351,258, Cl. 114-230.000.
Ray, Gardner C.; and Solomon, Paul W., to Phillips Petroleum Company. Aliphatic olefin oxidation using catalyst containing Sn, P, O, Li. 4,351,963, Cl. 568-477.000.
Raychem Corporation: *See*—
Middleman, Lee M.; Evans, Joseph H.; Blake, Arthur E.; and Scheff, Victor A., 4,352,083, Cl. 338-23.000.
Raymond International Builders, Inc.: *See*—
Fuller, Francis M., 4,351,136, Cl. 52-155.000.
Heinz, Edward J.; and Collins, H. Thomas, 4,351,623, Cl. 405-210.000.
RCA Corporation: *See*—
Aschwanden, Felix, 4,352,206, Cl. 455-184.000.
Caracappa, Michael G., 4,352,194, Cl. 375-89.000.
Carlson, David J.; and Tsou, Sander H. C., 4,352,111, Cl. 343-860.000.
Crooks, Horatio N., 4,352,175, Cl. 369-77.000.
Duffy, Michael T.; and Zanzucchi, Peter J., 4,352,016, Cl. 250-358.100.
Duffy, Michael T.; Corboy, John F., Jr.; and Zanzucchi, Peter J., 4,352,017, Cl. 250-358.100.
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Holbrook, Mark D.; and Knapp, William K., 4,352,031, Cl. 307-444.000.
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Reitmeier, Glenn A.; and Dischert, Robert A., 4,352,122, Cl. 358-11.000.
Toda, Minoru; and Osaka, Susumu, 4,351,192, Cl. 73-861.180.
Reed, Alan C.; and Sherwood, John H., to Utility Devices, Inc. Data recording method and apparatus. 4,352,164, Cl. 364-900.000.

Reesink, Johan B.; Hageman, Hendrik J.; and Wiersum, Ulfert E., to Akzo N.V. Thermosetting coating composition containing a blocked acid catalyst. 4,351,935, Cl. 528-242.000.

Rehme, Wilfried; Stipura, Anatoly; Ripnyi, Victor; Donskoi, Leonid; and Schevtschenko, Nikolai. Ultrasonic non-destructive testing device for welding beads. 4,351,190, Cl. 73-638.000.

Reiber, Hans, to International Standard Electric Corporation. Varying two phase voltages in dc to three phase converter. 4,352,154, Cl. 363-123.000.

Reich, Stefan. Analyzer apparatus for measuring and adjustment of color filtering effects and/or exposure on making photographic prints. 4,351,607, Cl. 355-35.000.

Reinmuth, Klaus: *See*—
Hunold, Klaus; Reinmuth, Klaus; Lipp, Alfred; Napholcz, Johannes; and Arnold, Peter, 4,351,858, Cl. 427-193.000.

Reisman, Arnold; and Berkenblit, Melvin, to International Business Machines Corporation. Single gas flow elevated pressure reactor. 4,351,805, Cl. 422-202.000.

Reitmeier, Glenn A.; and Dischert, Robert A., to RCA Corporation. Adaptive composite-component transcoding hierarchy for digital video. 4,352,122, Cl. 358-11.000.

Reliability, Inc.: *See*—
Johnson, James E., 4,351,108, Cl. 29-741.000.

Reliable Security Systems, Inc.: *See*—
VanDerLinden, Roy E., 4,351,552, Cl. 292-201.000.

Relium AG: *See*—
Zullig, Harry T., 4,351,588, Cl. 350-259.000.

Remy, Maurice: *See*—
Poncin, Jacques; Rogel, Pierre; and Remy, Maurice, 4,352,126, Cl. 358-167.000.

Renaux, Charley: *See*—
Artaud, Robert; Aubert, Michel; and Renaux, Charley, 4,351,794, Cl. 376-404.000.

Renda, Vince A. Water injection system for internal combustion engines. 4,351,289, Cl. 123-25.00A.

Reneric, Michel E., to Telediffusion de France. Device for acquiring and averaging samples of a noisy periodic signal. 4,352,094, Cl. 340-347.0AD.

Repa Feinstanzwerk GmbH: *See*—
Fohl, Artur, 4,351,496, Cl. 242-107.40A.

Research Corporation: *See*—
Gaafar, Hassan A., 4,351,761, Cl. 260-112.00R.

Research-Cottrell, Inc.: *See*—
Biedell, Edward L.; and Ferb, Robert J., 4,351,804, Cl. 422-170.000.

Reusser, Robert E.; Claytor, Elizabeth A.; and Jones, Brenton E., to Phillips Petroleum Company. Removal of olefin from aliphatic hydrocarbon by treatment with active solid. 4,351,980, Cl. 585-820.000.

Reuther, Albert: *See*—
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Reynolds, Blake: *See*—
Marion, Charles P.; Brent, Albert; Richter, George N.; Crouch, William B.; Child, Edward T.; and Reynolds, Blake, 4,351,645, Cl. 48-61.000.
Marion, Charles P.; Brent, Albert; Richter, George N.; Crouch, William B.; Child, Edward T.; and Reynolds, Blake, 4,351,647, Cl. 48-197.00R.

Reynolds, Donald K.; and Smithmeyer, Louis P. C. End supportable dipole antenna. 4,352,109, Cl. 343-792.000.

Reynolds, Richard W.; Myers, Allen; and Foley, Daniel J., to Sundstrand Corporation. Electronic constant speed control for a hydrostatic transmission. 4,351,152, Cl. 60-395.000.

Rhone-Poulenc Agrochimie: *See*—
Cordier, Georges, 4,351,959, Cl. 564-412.000.

Rhone Poulenc Inc.: *See*—
Gradeff, Peter S.; and Murayama, Stanley T., 4,351,962, Cl. 568-432.000.

Rhone-Poulenc Industries: *See*—
Boudot, Bernard; Grosbois, Jean; and Pajot, Michel, 4,351,821, Cl. 423-624.000.
Bourdon, Jacques, 4,351,969, Cl. 568-774.000.
Gauthier-Lafaye, Jean; and Perron, Robert, 4,351,953, Cl. 562-519.000.
Ramanadin, R.; Roustan, Alain; and Soula, Gerard, 4,351,777, Cl. 260-465.00G.

Riccar Co., Ltd.: *See*—
Kondo, Shigeki; Iketani, Tomofumi; Yamazaki, Yoshio; Doi, Keiichiro; and Tanaka, Seiji, 4,351,996, Cl. 219-10.49R.

Richardson, Harvey J.: *See*—
DeMoss, Dean; and Richardson, Harvey J., 4,352,135, Cl. 360-133.000.

Richey, Warren F.: *See*—
Ishibe, Nobuyuki; and Richey, Warren F., 4,351,973, Cl. 570-104.000.

Richter, George N.: *See*—
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Marion, Charles P.; Brent, Albert; Richter, George N.; Crouch, William B.; Child, Edward T.; and Reynolds, Blake, 4,351,647, Cl. 48-197.00R.

Richter, Helmuth, to Aktiengesellschaft Muhnle, Kopp & Kausch. Feed of the exhaust gases from an internal-combustion engine to the rotor of a centripetal turbine of an exhaust gas turbocharger. 4,351,154, Cl. 60-605.000.

Ricoh Company, Ltd.: *See*—
Karasawa, Shuichi; Matsumoto, Fuyuhiko; Ikeda, Kunihiko; and Tsushima, Shuichi, 4,351,604, Cl. 355-4.000.
Mizuta, Toshiaki; Abe, Takeshi; Yoshihara, Ichiro; and Saito, Kazuhito, 4,352,104, Cl. 340-825.150.
Ohori, Tamio; Mastumoto, Fuyuhiko; and Tomita, Satoru, 4,352,128, Cl. 358-294.000.
Tagawa, Kazuaki, 4,351,603, Cl. 355-3.0CH.

Riegel, Herbert; and Huang, Chiung-Yuan, to Lummus Company, The. Recovery of chlorine values in integrated process for oxychlorination and combustion of chlorinated hydrocarbons. 4,351,819, Cl. 423-488.000.

Rieke Corporation: *See*—
Summers, Kenneth L., 4,351,442, Cl. 215-216.000.

Rieman, Willis E.: *See*—
Barry, Leon G.; and Rieman, Willis E., 4,352,082, Cl. 337-409.000.

Riese, Hans M., to Alfa-Laval Inc. Method for freeze-stabilizing wine. 4,351,851, Cl. 426-524.000.

Rigden, Sydney A. R., to General Electric Company Limited, The. Cathodoluminescent light sources and electric lighting arrangements including such sources. 4,352,043, Cl. 315-1.000.

Riker Laboratories, Inc.: *See*—
Barnett, William E., 4,351,938, Cl. 536-21.000.

Rimedio, Nicholas T., Sr.: *See*—
Hohnerlein, Otto G., Jr.; Smith, Willie E., Jr.; and Rimedio, Nicholas T., Sr., 4,351,672, Cl. 127-46.300.

Rines, Robert H.; and Knowles, Albert H. Method of and apparatus for unconfined fish farming and the like. 4,351,269, Cl. 119-3.000.

Rinne, Gerhart; and Heim, Ulrich, to Dragerwerk Aktiengesellschaft. Device for connection to a respiratory gas line. 4,351,327, Cl. 128-200.140.

Ripnyi, Victor: *See*—
Rehme, Wilfried; Stipura, Anatoly; Ripnyi, Victor; Donskoi, Leonid; and Schevtschenko, Nikolai, 4,351,190, Cl. 73-638.000.

Rittershaus & Blecher GmbH: *See*—
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Robbins, Roland W., Jr. Radiant energy tracker. 4,351,319, Cl. 126-425.000.

Robert Bosch GmbH: *See*—
Adler, Karl-Heinz; Pfaff, Georg; Leussink, Reinhard; Sohner, Gerhard; Hohne, Gerd; Jokh, Thomas; and Decker, Heinz, 4,351,310, Cl. 123-644.000.
Drexel, Peter; Maier, Gernot; and Leisner, Ernst, 4,351,628, Cl. 414-749.000.
Grozinger, Alfred; Frister, Manfred; and Kreuzer, Helmut, 4,351,102, Cl. 29-596.000.
Haug, Gerhard; and Siegel, Heinz, 4,351,363, Cl. 138-30.000.
Herden, Werner, 4,352,085, Cl. 338-42.000.
Salzer, Richard; and Schwering, Hans-Ulrich, 4,351,733, Cl. 210-738.000.
Schleupen, Richard; Kaufmann, Reinhold; and Raff, Dieter, 4,351,309, Cl. 123-630.000.
Schweizer, Kurt, 4,351,304, Cl. 123-585.000.
Wessel, Wolf; and Engel, Gerhard, 4,352,032, Cl. 307-515.000.
Zirps, Wilhelm, 4,352,035, Cl. 310-80.000.

Roberts, Charles W.; Lindner, Daniel J.; Kwee, Henry T.; Kolowski, Michael A.; and Fetty, Harold D., to Goodyear Tire & Rubber Company, The. Tread for pneumatic tire. 4,351,381, Cl. 152-209.00R.

Roberts, Peter B.: *See*—
White, David J.; and Roberts, Peter B., 4,351,156, Cl. 60-737.000.

Robertson, Arthur B., to Mobil Oil Corporation. Shaped articles from poly(p-methylstyrene) blends. 4,351,884, Cl. 204-159.120.

Robinson Nugent, Inc.: *See*—
Emerson, James A.; Ramsey, James M.; and Buck, Kerry O., 4,351,582, Cl. 339-97.00R.

Robson, Charles H. Pollen trap. 4,351,074, Cl. 6-1.000.

Rock, Erich; and Mages, Bernhard, to Julius Blum Gesellschaft m. b. H. Pull-out guide assembly for drawers. 4,351,575, Cl. 308-3.800.

Rockwell International Corporation: *See*—
Cunningham, Vernon R., 4,352,075, Cl. 333-28.00R.
Harrington, Timothy A., 4,352,072, Cl. 330-149.000.

Rodenbeck, Philip G., to General Electric Company. Method and apparatus for supporting slot liner cuffs during coil insertion. 4,351,103, Cl. 29-596.000.

Rodolakis, Michael S., to AMS Industries, Inc. Trash barrel. 4,351,539, Cl. 280-47.260.

Roesler, Frank C.: *See*—
Bailey, Martin; Hines, David A.; Ousby, John C.; and Roesler, Frank C., 4,351,730, Cl. 210-629.000.

Roesner, Keith G., to Deere & Company. Paint spraying assembly. 4,351,863, Cl. 427-421.000.

Roessler, Franz: *See*—
Hermanutz, Peter; and Roessler, Franz, 4,352,146, Cl. 361-428.000.

Rogachev, Viktor I.; Trakhtenberg, Lev I.; and Shkatov, Petr N. Nondestructive electromagnetic inspection of pipelines incorporated in an electrically closed loop. 4,352,065, Cl. 324-238.000.

Rogard, Roger. Method and device for detecting and interpreting a distress signal. 4,352,199, Cl. 455-31.000.

Rogel, Pierre: *See*—
Poncin, Jacques; Rogel, Pierre; and Remy, Maurice, 4,352,126, Cl. 358-167.000.

Rogier, Leonce, to Valeo. Method for limited, gradual disengagement of a brake, and such a brake. 4,351,423, Cl. 188-216.000.

Rogier, Leonce E. R.: *See—*
Depoisier, Jean-Claude; and Rogier, Leonce E. R., 4,351,885, Cl. 428-544.000.
ROHCO, Inc.: *See—*
Guhde, Donald J., 4,351,675, Cl. 148-6.15R.
Rohm GmbH: *See—*
Monsheimer, Rolf; and Pfleiderer, Ernst, 4,351,639, Cl. 8-94.160.
Rohm and Haas Company: *See—*
Arkens, Charles T., 4,351,875, Cl. 428-290.000.
Chan, Hak-Foon, 4,351,839, Cl. 424-269.000.
Dupre, Jean, 4,351,754, Cl. 524-445.000.
Romey, Ingo; and Trojan, Willi, to Bergwerksverband GmbH. Sound absorbent panel. 4,351,739, Cl. 252-62.000.
Roneo Alcatel Limited: *See—*
Clark, Leslie, 4,351,685, Cl. 156-234.000.
Rood, William E., Jr. Air filtering system and method of operation. 4,351,476, Cl. 237-50.000.
Ropp, Richard C., to Vitrex Corporation. Molecular glasses for nuclear waste encapsulation. 4,351,749, Cl. 252-629.000.
Rose, Denis A.: *See—*
Verderber, Joseph A.; Fortcamp, James A.; McInturff, Ace; and Rose, Denis A., 4,352,012, Cl. 235-487.000.
Rosenberg, Arnold M.; Gaidis, James M.; and Kindt, Lawrence J., to W. R. Grace & Co. Water reducing agent with reduced air. 4,351,671, Cl. 106-90.000.
Rosenfeldt, Wolfgang, to Sybron Corporation. Priority system dental instrument delivery. 4,351,634, Cl. 433-28.000.
Ross, Louis, to Borg-Warner Corporation. Accessory drive assembly with compact gear differential. 4,351,204, Cl. 74-804.000.
Ross, Tsuneyo. Inflatable apparatus and methods of constructing and utilizing same. 4,351,544, Cl. 280-743.000.
Rossi, Alessandro: *See—*
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Rotaque (Proprietary) Limited: *See—*
Brouwer, Cornelis, 4,351,243, Cl. 105-241.200.
Roustan, Alain: *See—*
Ramanadin, R.; Roustan, Alain; and Soula, Gerard, 4,351,777, Cl. 260-465.00G.
Rovetta, Alberto; Franchetti, Ilario; and Vicentini, Pietro, to Alfa Romeo S.p.A. Multi-purpose mechanical hand. 4,351,553, Cl. 294-106.000.
Rowe International, Inc.: *See—*
Scalera, Frank T.; and Sloss, Andris C., 4,351,452, Cl. 221-11.000.
Rowley, Larry W.: *See—*
McJunkin, Howard P., Jr.; and Rowley, Larry W., 4,352,148, Cl. 362-61.000.
Rozenblad, William L. Multiple use exercising devices. 4,351,525, Cl. 272-93.000.
Rozzo, Nancy A.: *See—*
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RTE Corporation: *See—*
Du Pont, John P.; Taj, Hatim H.; Schoenwetter, Randall R.; Vanlankvelt, Theodore J.; Kwiatkowski, Robert E.; and Lange, Richard W., 4,352,139, Cl. 361-117.000.
Rubin, David, to Schwimmer, Adolf W.; Schwartz, Irwin S.; and Rubin, David. Diagnosis of tumors or bacterial infections having β-glucuronidase activity. 4,351,823, Cl. 424-9.000.
Rule, Charles E.; Gilmore, Cecilia; and Stefanski, Eugene J., to SCM Corporation. Low calorie cake batter or mix. 4,351,852, Cl. 426-554.000.
Runyan, Steven R.: *See—*
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Ruszala, Frederick B.: *See—*
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Rutger, J. Neil; and Carnahan, Howard L., to United States of America, Agriculture. Recessive tall—a fourth genetic element to facilitate hybrid cereal production. 4,351,130, Cl. 47-58.000.
Ryan, Jerry E.; and Grove, Edward E., to Tranter, Inc. Sootblower for economizer. 4,351,277, Cl. 122-390.000.
Rybin, Vladimir S.: *See—*
Daiker, Artur L.; Veis, Anatoly I.; Kochengin, Evgeny Y.; Novoselov, Nikolai M.; Morozov, Gennady Y.; Rybin, Vladimir S.; Belokur, Nikolai A.; and Savelieva, Nina A., 4,351,676, Cl. 148-9.00C.
Rydwansky, Frank C., Jr.: *See—*
Kirkman, Michael; Rydwansky, Frank C., Jr.; Hanlon, Richard J.; and Petersen, Richard W., 4,351,580, Cl. 339-17.0CF.
S&C Electric Company: *See—*
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S&S Corrugated Paper Machinery Co., Inc.: *See—*
Flaum, Stephen S.; and Leff, Martin J., 4,351,264, Cl. 118-203.000.
Sabco Limited: *See—*
Smyth, Donald N., 4,351,360, Cl. 137-624.120.
Sabin, Darrell L. Terrarium/aquarium. 4,351,270, Cl. 119-5.000.
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Sachs, Herbert K.; and Sachs, George A. Mechanism for generating power from wave motion on a body of water. 4,352,023, Cl. 290-42.000.
Sahara, Hiroshi: *See—*
Okada, Takashi; Sahara, Hiroshi; and Otsuka, Fumikazu, 4,352,057, Cl. 323-315.000.
Sahara, Masayoshi: *See—*
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Saisu, Naoki: *See—*
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Saito, Kazuhito: *See—*
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Saito, Masaaki: *See—*
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Saitoh, Takeshi; Hatashita, Hiroshi; Nagashima, Toshio; and Yamamoto, Susumu, to Hitachi, Ltd. Band pass filters. 4,352,076, Cl. 333-204.000.
Saka, Tatsuo: *See—*
Nagamoto, Shunichi; Ito, Masao; Saka, Tatsuo; and Kobayashi, Tetsu, 4,351,999, Cl. 219-10.55B.
Sakaguchi, Shigeki: *See—*
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Sakakibara, Yukio: *See—*
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Sakano, Tetsurou, to Fujitsu Fanuc Limited. Method and apparatus for error correction in position sensing circuit. 4,352,050, Cl. 318-661.000.
Sakurada, Nobuaki: *See—*
Date, Nobuaki; Sakurada, Nobuaki; and Shimizu, Masami, 4,351,595, Cl. 354-173.000.
Sakurai, Tadashi: *See—*
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Sakuta, Youichi: *See—*
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Salzer, Richard; and Schwering, Hans-Ulrich, to Robert Bosch GmbH. Process and apparatus for purification of industrial waste water. 4,351,733, Cl. 210-738.000.
Sambursky, Sergei S.: *See—*
Laptev, Lev N.; Legotsky, Sergei S.; Semenovsky, Viadimir A.; Sambursky, Sergei S.; Litvinov, Abram B.; and Kondrashov, Alexei I., 4,351,489, Cl. 241-261.300.
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Elias, William H.; and Granger, Harold M., 4,352,147, Cl. 361-433.000.
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Iwata, Mitsuo; Masuda, Naomasa; Uraki, Hideki; and Tsuchino, Kunio, 4,351,498, Cl. 242-204.000.
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Scarberry, Eugene N. Emergency internal defibrillation. 4,351,330, Cl. 128-207.150.
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Schlichte, Max; and Springstubbe, Wolf, to Siemens Aktiengesellschaft. Coupling system for a telecommunication exchange installation. 4,351,985, Cl. 179-18.0GF.
Schlumberger Technology Corporation: *See—*
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Schmid, Hans R.: *See—*
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Schmoller, Karl-Heinz; Bahr, Theodor; Bottger, Ernst; Henrich, Hans-Otto; Thumm, Helmut; and Beck, Heinz, to J. M. Voith GmbH; and Dyckerhoff & Widman AG. Process and a grinding stone for preparing mechanical wood pulp. 4,351,486, Cl. 241-67.000.
Schoenwetter, Randall R.: *See—*
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Schramm, Werner, to PFP-Anstalt Fur Produktentwicklung und Verwertung. Display stand for garments. 4,351,441, Cl. 211-207.000.
Schreurs, Gustaaf J., to Mosa, B.V. Method for the manufacture of cleaving tiles. 4,351,788, Cl. 264-67.000.
Schroeder, Daniel R., to Motorola, Inc. Automatic IF selectivity for radio receiver system. 4,352,208, Cl. 455-266.000.
Schultz, Edward C.; and Stevenson, Robert K. Racket handle. 4,351,529, Cl. 273-75.000.
Schultz, Edward R., Jr.; Cook, Kenneth J.; Power, Joseph S.; and Ruszala, Frederick B., to Valeron Corporation, The. Vectorcardiogram simulator. 4,352,163, Cl. 364-801.000.
Schultz, Raymond J.; and Marr, Michael E., to General Motors Corporation. Power assist rack and pinion steering gear. 4,351,228, Cl. 92-128.000.
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Schulze, Dieter M. O. T., to Ontrax Corporation. Electromagnetic actuator apparatus. 4,352,048, Cl. 318-135.000.
Schulze, Elmar. Digital time-division multiplex telecommunication system. 4,352,180, Cl. 370-58.000.
Schulze, Wallace M., to General Electric Company. Auxiliary air system for gas turbine engine. 4,351,150, Cl. 60-226.00R.
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Rule, Charles E.; Gilmore, Cecilia; and Stefanaki, Eugene J., 4,351,852, Cl. 426-554.000.
Scott, Floyd L., Jr., to BJ-Hughes Inc. Apparatus for making multiple orientation measurements in a drill string. 4,351,116, Cl. 33-307.000.
Scribner, Albert W. Pneumatic feeder for punch presses and the like. 4,351,462, Cl. 226-150.000.
Sea-Land Service, Inc.: *See—*
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Sealed Power Corporation: *See—*
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Seiz, Frederick G.; and Seiz, Carl G., to Variable Control Systems, Inc. Speed retarder. 4,351,417, Cl. 187-81.000.
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Selestam, Berndt; Forssell, Ake; and Winnersjo, Per A., to Linden-Alimak AB. Apparatus for automatic bolting in rock reinforcement. 4,351,625, Cl. 405-303.000.
Selvidge, Richard H.; and Clark, Dewey. LP Gas carburetor. 4,351,300, Cl. 123-527.000.
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Shackleford, Geoffrey G.: *See—*
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Shanefield, Daniel J.; and Verdi, Fred W., to Western Electric Company, Inc. Printed wiring boards. 4,351,697, Cl. 156-643.000.
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Sharkey, William H.: *See—*
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Sharp, James M.: *See—*
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Sharp Kabushiki Kaisha: *See—*
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Shibuya, Chisei; Murakami, Masahiro; Kobayashi, Masateru; and Sone, Takanori, to Asahi Chemical Industry Co., Ltd. Tetrazole derivative. 4,351,947, Cl. 548-251.000.
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Shindome, Mamoru; Yanagita, Takanori; Nakamura, Takanori; and Otsuji, Hiroyuki, to Asahi Engineering Co. Ltd. Method for treating water solution of waste material containing salt of smelt-water explosion characteristic. 4,351,252, Cl. 110-346.000.
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Shinoda, Naoharu; Maeda, Nobutaka; and Kubo, Kyoji, to Mitsubishi Jukogyo Kabushiki Kaisha. Exhaust gas desulfurization apparatus. 4,351,650, Cl. 55-181.000.
Shionogi & Co., Ltd.: *See—*
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Shively, Jesse E., to Pfizer Inc. Method of increasing feed efficiency in swine. 4,351,845, Cl. 424-283.000.
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Shoulis, John E.: *See—*
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Showa Denko Kabushiki Kaisha: *See—*
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Sidles, James; and Blayne, Jerome J., to B. F. Goodrich Company, The. Mold and process for molding. 4,351,789, Cl. 264-130.000.
Sidman, Kenneth R., to Arthur D. Little, Inc. Biodegradable, implantable drug delivery device, and process for preparing and using the same. 4,351,337, Cl. 128-260.000.
Siecor Corporation: *See—*
Patel, Naren I., 4,351,913, Cl. 523-218.000.
Siegel, Heinz: *See—*
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Siemens Aktiengesellschaft: *See—*
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Schlichte, Max; and Springstubbe, Wolf, 4,351,985, Cl. 179-18.0GF.
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Waerve, Hans, 4,352,197, Cl. 378-177.000.
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Winzer, Gerhard; and Auracher, Franz, 4,351,585, Cl. 350-96.150.
Sigg, Hans; Viret, Robert; Wegmann, Heinz; and Waser, Ernst. Process for measuring using standard blocks and a standard measuring block. 4,351,114, Cl. 33-174.00H.
Sigma Development Corp.: *See—*
Smith, Harvey A., 4,351,378, Cl. 144-193.00A.
Signatron, Inc.: *See—*
Mahoney, Paul F.; and Bonn, Jerrold L., 4,352,029, Cl. 307-317.00R.
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Simms, Jack C., deceased; and Old National Bank in Evansville, administrator, to Mead Johnson & Company. Spiro-quaternary ammonium halides and N-(2-pyrimidinyl)piperazinylalkylazaspiroalkanedione process. 4,351,939, Cl. 544-230.000.
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Simon, Wayne E. Deceleration apparatus for safety nets. 4,351,413, Cl. 182-139.000.
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Simonson, Theodore K. Foldable gaff hook. 4,351,126, Cl. 43-5.000.
Simonsson, Sven B., to Aktiebolaget Electrolux. Vacuum cleaning nozzle. 4,351,083, Cl. 15-373.000.
Simpson, Harold G., to Wickes Corporation, The. End lap seam construction for standing seam roof panels. 4,351,140, Cl. 52-542.000.
Sing, Edmond L. Blend of normal and mutant *Streptococcus diacetilactis*. 4,351,904, Cl. 435-253.000.
Singer Company, The: *See—*
Brown, Jack, 4,351,254, Cl. 112-158.00E.
Nalley, David J., 4,351,112, Cl. 30-392.000.
Taylor, Allen R., 4,351,194, Cl. 74-5.370.
Sircar, Ila, to Warner-Lambert Company. Anti-arteriosclerotic agents. 4,351,950, Cl. 560-62.000.
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Siver, Chester A. Valve with yoke and captive gland wrench. 4,351,512, Cl. 251-214.000.
Sivertsen, John W., to Peterson, Carlton F., a part interest. Fish line bobber/sinker. 4,351,128, Cl. 43-44.910.
Sivertsen, Marvin L.; and Sobolewski, Valentine S., to General Electric Company. Film mount with protected face sheet. 4,351,124, Cl. 40-158.00B.
Skrypek, John P.; Williams, Robert; and Sirvet, Enn, to Sun Chemical Corporation. Photocomposer. 4,351,610, Cl. 355-86.000.
Slagel, John E.; and Howard, Allen C., to Phillips Petroleum Company. Carbon black process. 4,351,817, Cl. 423-450.000.
Slater, Billy R., to Forney Engineering Company. Industrial control system. 4,352,103, Cl. 340-825.010.
Slaugh, Lynn H.: *See—*
Willis, Carl L.; and Slaugh, Lynn H., 4,351,955, Cl. 562-579.000.
Sloss, Andris C.: *See—*
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Smith, Don W.: *See—*
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Smith, Harry A., to Dow Chemical Company, The. Curable hydroxy functional resin compositions containing reactive diluents. 4,351,928, Cl. 525-443.000.
Smith, Harvey A., to Sigma Development Corp. Hydraulic logsplitter assembly. 4,351,378, Cl. 144-193.00A.
Smith, Marc, to Automatic Solar Covers, Inc. Semi-automatic pool cover. 4,351,072, Cl. 4-503.000.
Smith, Stephen H., to Hybricon Inc. High speed non-saturating inverter. 4,352,152, Cl. 363-41.000.
Smith, Willie E., Jr.: *See—*
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Smithmeyer, Louis P. C.: *See—*
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Smolin, William, to Texaco Inc. Separation of para-xylene. 4,351,981, Cl. 585-828.000.
Smyth, Donald N., to Sabco Limited. Fluid timer. 4,351,360, Cl. 137-624.120.
Sneider, Vincent R. Twist bottle dispenser. 4,351,336, Cl. 128-232.000.
Sneider, Vincent R. Tampon with a protective accordion-style cover. 4,351,339, Cl. 128-285.000.
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Sobolewski, Valentine S.: *See—*
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Societa Italiana Vetro-SIV-S.p.A.: *See—*
Zega, Bogdan, 4,352,006, Cl. 219-219.000.
S.A. des Etablissements Staubli: *See—*
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Societe Anonyme Francaise du Ferodo: *See—*
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Societe d'Assistance Technique pour Porduits Nestle S.A.: *See—*
Mattisson, Lennart; and Ganrot, Bertil, 4,351,997, Cl. 219-10.55E.
Societe Industrielle de Brevets et d'Etudes SIBE: *See—*
Arnaud, Gaston, 4,351,280, Cl. 123-415.000.
Societe Italiana Vetro-Siv-S.p.A.: *See—*
Kalbskopf, Reinhard; and Baumberger, Otto, 4,351,267, Cl. 118-718.000.
Societe Nationale Industrielle Aerospatiale: *See—*
Labruyere, Gilles, 4,352,113, Cl. 343-915.000.
Soffer, Bernard H.: *See—*
Chavel, Pierre H.; Sawchuk, Alexander A.; Soffer, Bernard H.; Strand, Timothy C.; and Tanguay, Armand R., Jr., 4,351,589, Cl. 350-342.000.
SOHIO: *See—*
Prem, Dorothy C.; Duke, June T.; and Isley, Ralph E., 4,351,756, Cl. 524-314.000.
Sohner, Gerhard: *See—*
Adler, Karl-Heinz; Pfaff, Georg; Leussink, Reinhard; Sohner, Gerhard; Hohne, Gerd; Jokh, Thomas; and Decker, Heinz, 4,351,310, Cl. 123-644.000.
Solar Energy of Colorado, Inc.: *See—*
Jones, Richard D., 4,351,161, Cl. 62-235.100.
Solie, James C.; and McClocklin, Samuel B., to Owatonna Tool Company. Rotary valve. 4,351,362, Cl. 137-625.650.
Solomon, Paul W.: *See—*
Ray, Gardner C.; and Solomon, Paul W., 4,351,963, Cl. 568-477.000.
Somerville, Robert L. Traveling belt filter having vacuum channels formed along edges of said belt. 4,351,726, Cl. 210-401.000.
Sommer, August; Heitmann, Wilhelm; and Brucker, Rainer, to Veba-Chemie Aktiengesellschaft. Method of preparing alcohols having two to four carbon atoms by catalytic hydration of olefins. 4,351,970, Cl. 568-895.000.
Sone, Takanori: *See—*
Shibuya, Chisei; Murakami, Masahiro; Kobayashi, Masateru; and Sone, Takanori, 4,351,947, Cl. 548-251.000.
Sonnek, Martin, to U.S. Philips Corporation. Tape tension control for a tape recorder. 4,351,493, Cl. 242-190.000.
Sontek Industries, Inc.: *See—*
Bodai, Balaza I., 4,351,328, Cl. 128-202.160.
Sony Corporation: *See—*
Imayasu, Tomoyoshi; and Isono, Katsuo, 4,352,047, Cl. 315-370.000.
Miyake, Masayuki; Sekino, Takeo; and Takeda, Masashi, 4,352,027, Cl. 307-221.00R.
Okada, Takashi; Sahara, Hiroshi; and Otsuka, Fumikazu, 4,352,057, Cl. 323-315.000.
Sothmann, Gunnar A.; and Marttila, Esko V., to Orion-yhtyma Oy. Process for the preparation of tablets with retarded liberation of the active agent is predetermined. 4,351,825, Cl. 424-19.000.
Soula, Gerard: *See—*
Ramanadin, R.; Roustan, Alain; and Soula, Gerard, 4,351,777, Cl. 260-465.00G.
Sovra S.A.: *See—*
Azzolini, Georges P., 4,351,211, Cl. 83-861.000.
Sparks, Robert A.: *See—*
Boyd, Douglas P.; Herrmannsfeldt, William B.; Quinn, James R.; and Sparks, Robert A., 4,352,021, Cl. 378-12.000.
Sperry Corporation: *See—*
Foulks, Alan L.; and Larson, Gary O., 4,351,187, Cl. 73-178.00R.
Sperry, Timothy P.: *See—*
Mueller, Dale A.; and Sperry, Timothy P., 4,352,079, Cl. 336-65.000.
Spitnale, Gregory G.: *See—*
Milberger, Ernest C.; Lemanski, Michael F.; and Spitnale, Gregory G., 4,351,773, Cl. 549-259.000.
Spivack, John D., to Ciba-Geigy Corporation. Alkylated 2,2'-biphenylene phosphites and stabilized compositions. 4,351,759, Cl. 524-100.000.
Sprecher & Schuh AG: *See—*
Graf, Rudolf, 4,351,993, Cl. 200-148.00A.
Sprecker, Mark A., to International Flavors & Fragrances Inc. Organoleptic uses of norbornyl ethers and esters. 4,351,347, Cl. 131-276.000.
Sprecker, Mark A., to International Flavors & Fragrances Inc. Norbornyl ether preparation. 4,351,965, Cl. 568-665.000.
Springstubbe, Wolf: *See—*
Schlichte, Max; and Springstubbe, Wolf, 4,351,985, Cl. 179-18.0GF.
Stacy, Galen D.: *See—*
Likins, Merle R., Jr.; and Stacy, Galen D., 4,351,818, Cl. 423-450.000.
Staedeli, Otto, to Maag Gear-Wheel & Machine Co. Ltd. Drive system for marine vessels. 4,351,635, Cl. 440-75.000.
Stallings, Charles K.: *See—*
Holland, Eddie L.; Stallings, Charles K.; and Parker, Jack, 4,351,273, Cl. 119-51.00R.
Stamicarbon, B.V.: *See—*
Tels, Martinus; Lotens, Jan P.; and Kivits, Hendrikus P. M., 4,351,807, Cl. 423-24.000.
Stamm, Klaus: *See—*
Geiger, Istvan; Theuerkauf, Heinz; and Stamm, Klaus, 4,351,281, Cl. 123-425.000.
Stampfli, Harald. Valve with servo-command. 4,351,509, Cl. 251-38.000.
Standard Oil Company, The: *See—*
Milberger, Ernest C.; Lemanski, Michael F.; and Spitnale, Gregory G., 4,351,773, Cl. 549-259.000.
Standard Products Company, The: *See—*
Giannakidis, Dimitrios, 4,351,864, Cl. 428-31.000.
Stanko, Ronald T., to Montefiore Hospital. Method for preventing body fat deposition in mammals. 4,351,835, Cl. 424-252.000.
Stanley Works, The: *See—*
Clark, David F., 4,351,686, Cl. 156-329.000.
Suska, Charles R., 4,351,085, Cl. 16-273.000.
Stant Inc.: *See—*
Crute, Billy G., 4,351,350, Cl. 137-39.000.
Starcote Limited: *See—*
Kent, Brian, 4,352,141, Cl. 361-181.000.
Starnes, Roger L.; Henson, Ernest D.; Wilkes, Thomas J.; and Sharp, James M., to Teledyne Industries, Incorporated. Player piano recording system. 4,351,221, Cl. 84-1.280.
Statkus, Frank D., to Boeing Company, The. Continuous skin, variable camber airfoil edge actuating mechanism. 4,351,502, Cl. 244-219.000.
Stauffer Chemical Company: *See—*
Felix, Raymond A., 4,351,665, Cl. 71-103.000.
Giolito, Silvio L.; and Mirviss, Stanley B., 4,351,780, Cl. 260-974.000.
Magee, Walter L., Jr., 4,351,775, Cl. 260-429.00R.
Steddum, Riddle E.: *See—*
Ray, Donald R.; and Steddum, Riddle E., 4,351,258, Cl. 114-230.000.
Stefanska, Barbara J.; Falkowski, Leonard S.; and Borowski, Edward, to Politechnika Gdanska. N-Glycosyl derivatives of anthracycline antibiotics and the method of their preparation. 4,351,937, Cl. 536-6.400.
Stefanski, Eugene J.: *See—*
Rule, Charles E.; Gilmore, Cecilia; and Stefanski, Eugene J., 4,351,852, Cl. 426-554.000.
Steinberger, Helmut; Moretto, Hans-Heinrich; Kortmann, Wilfried; and Pfeiffer, Josef, to Bayer Aktiengesellschaft. Pile-stabilizing silicon-containing textile agents. 4,351,736, Cl. 252-8.600.
Steiner, Eginhard: *See—*
Martin, Pierre; Steiner, Eginhard; and Bellus, Daniel, 4,351,961, Cl. 568-381.000.
Stenstrom, Lennart: *See—*
Axelsson, Bror; Johnsen, Ulf; Stenstrom, Lennart; and Thors, Bengt, 4,352,140, Cl. 361-127.000.
Stenzler, Alex, to Bio-Med Devices, Inc. Method and apparatus for monitoring lung compliance. 4,351,344, Cl. 128-720.000.
Stephen, James H.; McCann, John D.; and Flemming, Michael A., to Parmeko Limited. Surveillance systems. 4,352,098, Cl. 340-572.000.
Stephenson, Leonard P.; and Schweizer, Arthur A., to Cominco Ltd. Flotation of Cu and Pb sulfide concentrates containing carbonates. 4,351,668, Cl. 75-2.000.
Sterling Drug Inc.: *See—*
Crounse, Nathan N.; and Schmidt, Paul J., 4,351,768, Cl. 260-326.13R.
Lesher, George Y.; Opalka, Chester J., Jr.; and Page, Donald F., 4,351,941, Cl. 546-258.000.
Oesterlin, Rudolf, 4,351,944, Cl. 546-329.000.
Sternberg, Kurt, to Vorwerk & Co. Interholding GmbH. Driving arrangements for floor maintenance machines. 4,351,078, Cl. 15-49.00C.
Stetler, Harold O. Simulated rain on a window pane panel assembly. 4,352,149, Cl. 362-96.000.
Steuer, Werner; and Leiter, Bernd, to Fichtel & Sachs AG. Hub sleeve formed of deep-drawn parts. 4,351,569, Cl. 301-6.00V.
Stevens, Aaron A.: *See—*
Lawrence, Randall K.; and Stevens, Aaron A., 4,351,424, Cl. 192-18.00R.
Stevens, Timothy S., to Dow Chemical Co., The; and Dionex Corporation. High performance ion-exchange composition. 4,351,909, Cl. 521-28.000.
Stevenson, Robert K.: *See—*
Schultz, Edward C.; and Stevenson, Robert K., 4,351,529, Cl. 273-75.000.
Stewart-Warner Corporation: *See—*
Fontana, Frank J., 4,351,084, Cl. 16-45.000.
Stievenart, Emile. Suction-operated device for feeding sheets one by one to a point of utilization. 4,351,518, Cl. 271-90.000.
Stinger, Henry J., to Du Pont de Nemours, E. I., and Company. Electrically conductive polyetherester elastomers. 4,351,745, Cl. 252-511.000.
Stipura, Anatoly: *See—*
Rehme, Wilfried; Stipura, Anatoly; Ripnyi, Victor; Donskoi, Leonid; and Schevtschenko, Nikolai, 4,351,190, Cl. 73-638.000.
Stockett, Larry A., to Logicon, Inc. Merchandising terminal. 4,351,591, Cl. 353-25.000.
Stockman, Richard F., to Combustion Engineering, Inc. Heat exchange tube with heat absorptive shield. 4,351,392, Cl. 165-186.000.

Stockman, Robert M., to American Radionic Co., Inc. Multiple element cylindrical metallized film capacitors and method of making the same. 4,352,145, Cl. 361-329.000.

Stoll, Kurt; and Tschacher, Dieter. Abrasive paper connection for use on an oscillating grinder. 4,351,133, Cl. 51-358.000.

Stoll, Kurt. Fluid power driving unit. 4,351,229, Cl. 92-128.000.

Stone, John B.: *See*—
Gorbaty, Martin L.; Stone, John B.; and Poddar, Syamal K., 4,351,716, Cl. 208-8.0LE.

Stone & Webster Engineering Corp.: *See*—
Bhojwani, Arju H.; Gartside, Robert J.; and Woebcke, Herman N., 4,351,275, Cl. 122-7.00R.

Story, Alfred D.: *See*—
Williams, Frank E.; and Story, Alfred D., 4,351,549, Cl. 285-27.000.

Strand, Timothy C.: *See*—
Chavel, Pierre H.; Sawchuk, Alexander A.; Soffer, Bernard H.; Strand, Timothy C.; and Tanguay, Armand R., Jr., 4,351,589, Cl. 350-342.000.

Street, Sidney W.; and Beckley, Don A., to Hitco. Bis-maleimide/divinyl aryl crosslinking agent resin system. 4,351,932, Cl. 526-262.000.

Stretch Devices, Inc.: *See*—
Newman, Don, 4,351,469, Cl. 228-135.000.

Stritt, Helmut; Schmidt, Alfred; and Leible, Erwin, to Brown, Boveri & Cie Aktiengesellschaft. Device for fastening built-in wiring devices. 4,351,620, Cl. 403-13.000.

Stupnik, Vyacheslav D.: *See*—
Gross, Valery N.; Kozhanov, Evgeny V.; Stupnik, Vyacheslav D.; and Valov, Vladimir V., 4,351,799, Cl. 422-63.000.

Styring, Ralph E., Jr., to Atlantic Richfield Company. Two-stage carbon dioxide and methane separation. 4,351,655, Cl. 62-28.000.

Suematsu, Toshio, to Toyota Jidosha Kogyo Kabushiki Kaisha. Method and apparatus for controlling the ignition timing of an internal combustion engine. 4,351,297, Cl. 123-421.000.

Suga, Hisashi: *See*—
Matsumoto, Kimiichiro; Miyake, Hajimu; and Suga, Hisashi, 4,351,846, Cl. 424-305.000.

Sugaya, Kazuyoshi: *See*—
Isogai, Kiyoshi; and Sugaya, Kazuyoshi, 4,351,305, Cl. 123-590.000.

Sugibuchi, Kazuo: *See*—
Kubota, Naohiro; Shibata, Toshihiro; Sugibuchi, Kazuo; and Minagawa, Motonubu, 4,351,915, Cl. 524-103.000.

Sugihara, Mikio: *See*—
Fujita, Taira; Nakagawa, Hiroyuki; Sugihara, Mikio; Kobayashi, Kimiyuki; and Okamoto, Katuhiko, 4,351,765, Cl. 260-163.000.

Sugisawa, Masaki. Parcel trim attachment construction. 4,351,559, Cl. 296-195.000.

Sugitani, Hatuo; Kudo, Takeo; Mukoyama, Yoshiyuki; and Kawai, Hiromasa, to Hitachi Chemical Company, Ltd. Expandable styrene series resin composition and process for production thereof. 4,351,910, Cl. 521-56.000.

Sugiyama, Matsuyoshi; Morishita, Teru; and Suzuki, Toshikazu, to Toyota Jidosha Kogyo Kabushiki Kaisha. Rotary type electrostatic spray painting device. 4,351,482, Cl. 239-703.000.

Suh, Nam P.; Senturia, Stephen D.; and Kim, Byung H., to Massachusetts Institute of Technology. Determination of moisture level in materials. 4,352,059, Cl. 324-61.00R.

Sumitomo Chemical Company, Limited: *See*—
Fujita, Taira; Nakagawa, Hiroyuki; Sugihara, Mikio; Kobayashi, Kimiyuki; and Okamoto, Katuhiko, 4,351,765, Cl. 260-163.000.

Summerfield, James D., to General Motors Corporation. Groove structure for a retaining ring. 4,351,450, Cl. 220-319.000.

Summers, Kenneth L., to Rieke Corporation. Child-resistant safety closure. 4,351,442, Cl. 215-216.000.

Summers, Robert F. Engine. 4,351,202, Cl. 74-604.000.

Sun Chemical Corporation: *See*—
Skrypek, John P.; Williams, Robert; and Sirvet, Enn, 4,351,610, Cl. 355-86.000.

Sun, Kwok K., to Upjohn Company, The. Process for preparing diaminodiphenyl-alkanes. 4,351,957, Cl. 564-331.000.

Sundberg, Erik G., to Koehler Manufacturing Company. Tubular bodies for use in a positive plate of a lead-acid storage battery. 4,351,889, Cl. 429-141.000.

Sundstrand Corporation: *See*—
Reynolds, Richard W.; Myers, Allen; and Foley, Daniel J., 4,351,152, Cl. 60-395.000.

Suska, Charles R., to Stanley Works, The. Non-handed two knuckle hinge. 4,351,085, Cl. 16-273.000.

Suttles, James M., to Mead Corporation, The. Shelving system. 4,351,244, Cl. 108-107.000.

Suzuki, Hideo; and Kaneko, Makoto, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instrument with performance mode selection. 4,351,214, Cl. 84-1.030.

Suzuki, Mitsuo: *See*—
Hashimoto, Yuuji; Kobayashi, Izumi; Suzuki, Mitsuo; Yamada, Kimio; Izumi, Shigeru; and Michiguchi, Yoshihiro, 4,352,167, Cl. 367-127.000.

Suzuki, Toshikazu: *See*—
Sugiyama, Matsuyoshi; Morishita, Teru; and Suzuki, Toshikazu, 4,351,482, Cl. 239-703.000.

Suzuki, Toyotosi; Tamamura, Hideo; and Matsuda, Mutsuhide, to Canon Kabushiki Kaisha. Camera. 4,351,598, Cl. 354-288.000.

Suzuki, Toyotosi; Matsuda, Mutsuhide; and Tamamura, Hideo, to Canon Kabushiki Kaisha. Camera. 4,351,599, Cl. 354-288.000.

Swadling, Sidney J.; Mansbridge, Martin H.; Payne, Dennis J.; and Norton, John, to British Aerospace Public Limited Company. Method of making a stiffened panel. 4,351,470, Cl. 228-157.000.

Swanson, Roy T.: *See*—
Evans, David M.; and Swanson, Roy T., 4,351,994, Cl. 200-153.0SC.

Sybron Corporation: *See*—
Rosenfeldt, Wolfgang, 4,351,634, Cl. 433-28.000.

Syva Company: *See*—
Khanna, Pyare; and Ullman, Edwin F., 4,351,760, Cl. 260-112.00R.

Szentkiralyi, Laszlo: *See*—
Farkas, Peter E., 4,351,145, Cl. 56-400.160.

Tagawa, Kazuaki, to Ricoh Company, Ltd. Electronic copying apparatus. 4,351,603, Cl. 355-3.0CH.

Taiheiyo Engineering Inc.: *See*—
Takahashi, Ken; and Ito, Tsunetoshi, 4,351,565, Cl. 299-1.000.

Taiho Kogyo Kabushiki Kaisha: *See*—
Ichikawa, Shigeo; Ito, Motonobu; and Aiba, Makoto, 4,351,175, Cl. 72-203.000.

Taj, Hatim H.: *See*—
Du Pont, John P.; Taj, Hatim H.; Schoenwetter, Randall R.; Vanlankvelt, Theodore J.; Kwiatkowski, Robert E.; and Lange, Richard W., 4,352,139, Cl. 361-117.000.

Tajima, Osamu; Yamamura, Takashi; Mochizuki, Masafumi; and Mita, Yoichi, to Victor Company of Japan, Ltd. Disc-shaped recording medium reproducing apparatus. 4,352,174, Cl. 369-77.000.

Takagi, Hiromitsu; Umebachi, Shotaro; Kano, Gota; and Teramoto, Iwao, to Matsushita Electronics Corporation. Method of making FET utilizing shadow masking and diffusion from a doped oxide. 4,351,099, Cl. 29-571.000.

Takahashi, Hironobu; Honda, Masamitsu; Murakami, Yasushi; and Iwane, Yoshitaka, to Chugai Seiyaku Kabushiki Kaisha. Pesticide. 4,351,834, Cl. 424-249.000.

Takahashi, Ken; and Ito, Tsunetoshi, to Taiheiyo Engineering Inc. Roof sensing control of shearer in longwall mining. 4,351,565, Cl. 299-1.000.

Takahashi, Masao; Yoshida, Katumi; Ohwaki, Shinji; and Moriga, Hiroyuki, to Teijin Limited. Yarn treating composition for high-speed friction draw-false twist texturing and a filamentary yarn treated with the same. 4,351,738, Cl. 252-8.750.

Takahashi, Sankichi: *See*—
Matsuzaki, Harumi; Kuroda, Osamu; Okouchi, Isao; Izumi, Kenkichi; and Takahashi, Sankichi, 4,351,715, Cl. 204-301.000.

Takahata, Kazunori; and Taniguchi, Katsuo, to Mitsui Petrochemical Industries, Ltd. Process for producing orthoalkylated aromatic amine. 4,351,958, Cl. 564-409.000.

Takami, Katsumi: *See*—
Tanaka, Eiichi; Nohara, Norimasa; Tomitani, Takehiro; Yamamoto, Mikio; Ishimatsu, Kenji; and Takami, Katsumi, 4,352,018, Cl. 250-363.00S.

Takata, Hisao: *See*—
Kimura, Takao; Sakaguchi, Shigeki; and Takata, Hisao, 4,351,657, Cl. 65-3.110.

Takeda, Masashi: *See*—
Miyake, Masayuki; Sekino, Takeo; and Takeda, Masashi, 4,352,027, Cl. 307-221.00R.

Takenaka, Hidenori: *See*—
Ariga, Nagao; Shimazu, Kyotaro; Takenaka, Hidenori; and Sato, Hiroyuki, 4,351,920, Cl. 525-67.000.

Takeuchi, Mikio: *See*—
Nomura, Hiroyuki; Kawasaki, Teruo; and Takeuchi, Mikio, 4,352,062, Cl. 324-169.000.

Tamamura, Hideo: *See*—
Suzuki, Toyotosi; Tamamura, Hideo; and Matsuda, Mutsuhide, 4,351,598, Cl. 354-288.000.
Suzuki, Toyotosi; Matsuda, Mutsuhide; and Tamamura, Hideo, 4,351,599, Cl. 354-288.000.

Tamura, Masao: *See*—
Yoshida, Isao; Wada, Yasuo; Tamura, Masao; Miyao, Masanobu; Ohkura, Makoto; Natsuaki, Nobuyoshi; and Tokuyama, Takashi, 4,351,674, Cl. 148-1.500.

Tamura, Masuhiko: *See*—
Nakamura, Seishiro; and Tamura, Masuhiko, 4,351,964, Cl. 568-484.000.

Tanaka, Eiichi; Nohara, Norimasa; Tomitani, Takehiro; Yamamoto, Mikio; Ishimatsu, Kenji; and Takami, Katsumi, to National Institute of Radiological Sciences; and Hitachi Medical Corporation. Apparatus for performing positron emission computed tomography. 4,352,018, Cl. 250-363.00S.

Tanaka, Seiji: *See*—
Kondo, Shigeki; Iketani, Tomofumi; Yamazaki, Yoshio; Doi, Keiichiro; and Tanaka, Seiji, 4,351,996, Cl. 219-10.49R.

Tanaka, Shigeru, to Musashi Co., Ltd. Stacker apparatus for a card counting machine. 4,351,520, Cl. 271-315.000.

Tanguay, Armand R., Jr.: *See*—
Chavel, Pierre H.; Sawchuk, Alexander A.; Soffer, Bernard H.; Strand, Timothy C.; and Tanguay, Armand R., Jr., 4,351,589, Cl. 350-342.000.

Taniguchi, Katsuo: *See*—
Takahata, Kazunori; and Taniguchi, Katsuo, 4,351,958, Cl. 564-409.000.

Taniguchi, Kazuhiro: *See*—
Ando, Masato; Yamamoto, Kenji; and Taniguchi, Kazuhiro, 4,351,266, Cl. 118-425.000.

Tanis, Georges: *See*—
Gervais, Yvon; Gillet, Renen; and Tanis, Georges, 4,352,004, Cl. 219-121.0ED.

Tappert, Hans-Jurgen; Schulz, Horst; Johne, Hans; and Johne, Albrecht, to Veb Kombinat Polygraph "Werner Lamberz" Leipzig. Device for printing-pressure control. 4,351,237, Cl. 101-216.000.

Tarkinson, Ann W.: *See—*
Tarkinson, Kevork W., 4,351,081, Cl. 15-210.00R.

Tarkinson, Kevork W., to Tarkinson, Ann W. Absorbent pad and holder assembly for carpet cleaning. 4,351,081, Cl. 15-210.00R.

Taylor, Allen R., to Singer Company, The. Gyro autophase system. 4,351,194, Cl. 74-5.370.

Taylor, Dorothy L. Panty hose garments. 4,351,068, Cl. 2-409.000.

Taylor, Thomas J.: *See—*
Elliott, William A.; and Taylor, Thomas J., 4,351,689, Cl. 156-378.000.

Taylor, William B., to Leggett & Platt, Incorporated. Merchandise display device. 4,351,439, Cl. 211-49.00D.

Tazaki, Shigemitsu: *See—*
Kyogoku, Hiroshi; Tazaki, Shigemitsu; Okamura, Shigeru; Terasawa, Koji; Kasugayama, Yukio; and Hattori, Yoshihumi, 4,352,114, Cl. 346-140.00R.

TDK Electronics Co., Ltd.: *See—*
Klagane, Kiyoshi; and Kakizaki, Masao, 4,351,104, Cl. 29-603.000.
Mitsui, Tadashi; Wasaki, Masaru; and Ohta, Junpei, 4,352,080, Cl. 336-83.000.

Te Ka De Felton & Guilleaume Fernmeldeanlagen GmbH: *See—*
Braak, Dirk J., 4,352,110, Cl. 343-844.000.

Teepak, Inc.: *See—*
Williams, Frank E.; and Story, Alfred D., 4,351,549, Cl. 285-27.000.

Teets, J. Michael: *See—*
Wiita, Bruce E.; and Teets, J. Michael, 4,351,342, Cl. 128-349.00B.

Teich, Udo: *See—*
Schippers, Heinz; Munnekehoff, Gerd; and Teich, Udo, 4,351,494, Cl. 242-35.50A.

Teijin Limited: *See—*
Aoyama, Hideki; and Kishida, Takashi, 4,351,492, Cl. 242-18.00R.
Matsumura, Shunichi; Inata, Hiroo; and Morinaga, Tsuto, 4,351,936, Cl. 528-289.000.
Takahashi, Masao; Yoshida, Katumi; Ohwaki, Shinji; and Moriga, Hiroyuki, 4,351,738, Cl. 252-8.750.

Telediffusion de France: *See—*
Reneric, Michel E., 4,352,094, Cl. 340-347.0AD.

Teledyne Industries, Incorporated: *See—*
Starnes, Roger L.; Henson, Ernest D.; Wilkes, Thomas J.; and Sharp, James M., 4,351,221, Cl. 84-1.280.

Tels, Martinus; Lotens, Jan P.; and Kivits, Hendrikus P. M., to Stamicarbon, B.V. Process for selective extraction of metal ions from aqueous solutions and extracting agents suitable for that purpose. 4,351,807, Cl. 423-24.000.

Temple, Victor A. K., to Electric Power Research Institute, Inc. Thyristor with segmented turn-on line for directing turn-on current. 4,352,118, Cl. 357-38.000.

Teramoto, Iwao: *See—*
Takagi, Hiromitsu; Umebachi, Shotaro; Kano, Gota; and Teramoto, Iwao, 4,351,099, Cl. 29-571.000.

Terasawa, Koji: *See—*
Kyogoku, Hiroshi; Tazaki, Shigemitsu; Okamura, Shigeru; Terasawa, Koji; Kasugayama, Yukio; and Hattori, Yoshihumi, 4,352,114, Cl. 346-140.00R.

Terazono, Narihiro; and Kajiyama, Ryuichi, to Mitsubishi Denki Kabushiki Kaisha. Elevator control device. 4,351,416, Cl. 187-29.00R.

Terrien, Donald R.: *See—*
Giggard, Earl D.; Khoury, Nick S.; Kowalik, John J.; and Terrien, Donald R., 4,351,445, Cl. 220-91.000.

Tetirick, Jack E. Solar energy heating panel for a building. 4,351,320, Cl. 126-425.000.

Tetra Pak International AB: *See—*
Carlsson, Lars, 4,351,461, Cl. 226-28.000.

Texaco Inc.: *See—*
Knifton, John F., 4,351,907, Cl. 518-700.000.
Marion, Charles P.; Brent, Albert; Richter, George N.; Crouch, William B.; Child, Edward T.; and Reynolds, Blake, 4,351,645, Cl. 48-61.000.
Marion, Charles P.; Brent, Albert; Richter, George N.; Crouch, William B.; Child, Edward T.; and Reynolds, Blake, 4,351,647, Cl. 48-197.00R.
Owens, William R.; Chan, Henry C.; Abraham, Ooriapadical C.; and Parker, Levi C., 4,351,649, Cl. 55-162.000.
Smolin, William, 4,351,981, Cl. 585-828.000.

Texas Instruments Deutschland GmbH: *See—*
Guth, Friedrich, 4,352,125, Cl. 358-101.000.

Thalenfeld, David R., to Trion Industries Inc. Merchandise hook. 4,351,440, Cl. 211-57.100.

Theuerkauf, Heinz: *See—*
Geiger, Istvan; Theuerkauf, Heinz; and Stamm, Klaus, 4,351,281, Cl. 123-425.000.

Thirion, Pierre, to Oxysynthese. Regeneration of chemical reconversion catalysts used in a cyclic process for the production of hydrogen peroxide and apparatus therefor. 4,351,820, Cl. 423-588.000.

Thomas, Daniel W.: *See—*
Cesark, Frank F.; and Thomas, Daniel W., 4,351,956, Cl. 564-256.000.

Thomas, Paul E.; and Raley, Garland E., to Ethyl Corporation. Corona treatment of perforated film. 4,351,784, Cl. 264-22.000.

Thomas, Richard C.: *See—*
White, David R.; and Thomas, Richard C., 4,351,771, Cl. 549-361.000.

Thomas Steel Strip Corp.: *See—*
Hirt, Theodore A.; and Dillon, Robert H., 4,351,713, Cl. 204-207.000.

Thomson-CSF: *See—*
Dautremay, Alain; and Boljevic, Jean M., 4,352,195, Cl. 375-120.000.
Moutou, Paul C.; and Montel, Jacques, 4,352,115, Cl. 357-13.000.
Perez, Andre; Boljevic, Jean M.; and Dautremay, Alain, 4,352,192, Cl. 375-56.000.

Thors, Bengt: *See—*
Axelsson, Bror; Johnsen, Ulf; Stenstrom, Lennart; and Thors, Bengt, 4,352,140, Cl. 361-127.000.

Thumm, Helmut: *See—*
Schmoller, Karl-Heinz; Bahr, Theodor; Bottger, Ernst; Henrich, Hans-Otto; Thumm, Helmut; and Beck, Heinz, 4,351,486, Cl. 241-67.000.

Tibbles, Tom T.: *See—*
Lemieux, George E.; and Tibbles, Tom T., 4,351,206, Cl. 74-866.000.

Tierney, Raymond J. Manually adjustable valve means for an exhaust gas recirculation system. 4,351,303, Cl. 123-568.000.

Tigner, Thomas E.; and Parker, Charles R. Non-tactile switch. 4,352,046, Cl. 315-362.000.

Tikhonov, Valentin N.: *See—*
Abduganiev, Abdurakhim; Krjuk, Timur P.; Zhestkov, Vitaly I.; Tikhonov, Valentin N.; Glazov, Vladimir G.; Kletny, Mikhail M.; Shlykov, Gennady N.; Afanasiev, Vladimir K.; Dyachkov, Vasily M.; Zhigalov, Gennady V.; Mangutov, Rafael A.; and Angarov, Ernst I., 4,351,149, Cl. 57-263.000.

Tillmann, Heinz: *See—*
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Titus, Theodore, IV; and Bagley, Julius B., to Lanier Business Products, Inc. Dictation display device. 4,352,173, Cl. 369-27.000.

Tobita, Katsumi: *See—*
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Toda, Minoru; and Osaka, Susumu, to RCA Corporation. Fluid flow velocity sensor using a piezoelectric element. 4,351,192, Cl. 73-861.180.

Toffolon, Roger L.; and Kart, Warren E., to Doublewal Corporation. Multi-part form with improved tie and stripping means. 4,351,507, Cl. 249-63.000.

Tokas, Edward F., to Monsanto Company. Process for terpolymer polyblends having high gloss and ductility. 4,351,923, Cl. 525-250.000.

Tokuyama, Takashi: *See—*
Yoshida, Isao; Wada, Yasuo; Tamura, Masao; Miyao, Masanobu; Ohkura, Makoto; Natsuaki, Nobuyoshi; and Tokuyama, Takashi, 4,351,674, Cl. 148-1.500.

Tokyo Electric Power Co., Inc., The: *See—*
Hashimoto, Yuuji; Kobayashi, Izumi; Suzuki, Mitsuo; Yamada, Kimio; Izumi, Shigeru; and Michiguchi, Yoshihiro, 4,352,167, Cl. 367-127.000.

Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Masuda, Eiji; and Kawasaki, Hiroshi, 4,352,092, Cl. 340-347.0DA.
Yamada, Yoshihiro, 4,351,602, Cl. 355-3.00R.

Tokyo Shibaura Electric Co., Ltd.: *See—*
Namimoto, Keiji; Eguchi, Seiji; and Murao, Yutaka, 4,352,157, Cl. 364-200.000.
Yonezawa, Toshio; Ajima, Takashi; Hiraki, Shunichi; Koshino, Yutaka; and Oka, Yoshitami, 4,351,894, Cl. 430-313.000.

Tom McGuane Industries, Inc.: *See—*
Ludwig, George C., 4,351,284, Cl. 123-545.000.

Tomalia, Donald A.: *See—*
Chamberlin, Thomas A.; and Tomalia, Donald A., 4,351,933, Cl. 526-266.000.

Tomita, Satoru: *See—*
Ohori, Tamio; Mastumoto, Fuyuhiko; and Tomita, Satoru, 4,352,128, Cl. 358-294.000.

Tomitani, Takehiro: *See—*
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Tommasini, Giuseppe: *See—*
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Torisawa, Akira: *See—*
Ueda, Makoto; Torisawa, Akira; Otawa, Shuji; Mandai, Masaaki; Shida, Masaharu; and Sato, Katsuhiko, 4,352,172, Cl. 368-76.000.

Tosi, Bruno: *See—*
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Tottori Sanyo Electric Co., Ltd.: *See—*
Iwata, Mitsuo; Masuda, Naomasa; Uraki, Hideki; and Tsuchino, Kunio, 4,351,498, Cl. 242-204.000.

Toukan, Sameeh S.; and Hauptschein, Murray, to Pennwalt Corporation. Fluorinated heterocyclic sulfides. 4,351,946, Cl. 548-142.000.

Townsend Engineering Company: *See—*
Townsend, Ray T., 4,351,410, Cl. 180-210.000.

Townsend, Ray T., to Townsend Engineering Company. Self-balancing wheeled vehicle. 4,351,410, Cl. 180-210.000.

Toyama, Masamichi: *See—*
Hirata, Noritsugu; Toyama, Masamichi; Iwama, Hideto; Okajima, Hidekazu; and Nishimura, Akimasa, 4,351,590, Cl. 352-140.000.

Toyo Seikan Kaisha Limited: *See—*
Ishibashi, Kazuhisa; Matsui, Sadaki; Yasumuro, Hisakazu; Imatani, Tsuneo; Ueno, Hiroshi; and Kobayashi, Seishichi, 4,352,001, Cl. 219-64.000.
Toyoda Gosei Co., Ltd.: *See—*
Otani, Takashi, 4,351,868, Cl. 428-120.000.
Toyoda, Minoru, to Aisin Seiki Kabushiki Kaisha. Key holder. 4,351,173, Cl. 70-456.00R.
Toyokuni, Kazuo: *See—*
Yoshida, Jituo; and Toyokuni, Kazuo, 4,351,196, Cl. 74-15.400.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Igarashi, Isao, 4,351,404, Cl. 180-14.00R.
Kanou, Noboru; and Mori, Keiji, 4,351,560, Cl. 296-216.000.
Kayanuma, Nobuaki, 4,351,296, Cl. 123-328.000.
Suematsu, Toshio, 4,351,297, Cl. 123-421.000.
Sugiyama, Matsuyoshi; Morishita, Teru; and Suzuki, Toshikazu, 4,351,482, Cl. 239-703.000.
Yoshida, Akio, 4,351,515, Cl. 267-8.00R.
Toyota Jodosha Kogyo Kabushiki Kaisha: *See—*
Fukunaga, Koichi, 4,351,203, Cl. 74-606.00R.
tpT Machinery Corporation: *See—*
Gessner, Dieter; and Ott, Lothar, 4,351,631, Cl. 425-533.000.
Trakhtenberg, Lev I.: *See—*
Rogachev, Viktor I.; Trakhtenberg, Lev I.; and Shkatov, Petr N., 4,352,065, Cl. 324-238.000.
Transamerica DeLaval, Inc.: *See—*
Allen, Walter E., 4,351,301, Cl. 123-557.000.
Ogle, Francis H., Jr., 4,351,358, Cl. 137-512.100.
Tranter, Inc.: *See—*
Ryan, Jerry E.; and Grove, Edward E., 4,351,277, Cl. 122-390.000.
Trbovich, Nick G.: *See—*
Miller, William J.; and Trbovich, Nick G., 4,351,982, Cl. 178-22.110.
Trianco Redfyre Limited: *See—*
Babbage, Thomas A., 4,351,315, Cl. 126-73.000.
Trion Industries Inc.: *See—*
Thalenfeld, David R., 4,351,440, Cl. 211-57.100.
Triquet, Christian: *See—*
Andrien, Yves; and Triquet, Christian, 4,351,678, Cl. 148-6.310.
Triumph-Adler A.G.: *See—*
Link, Manfred, 4,351,201, Cl. 74-598.000.
Trojan, Willi: *See—*
Romey, Ingo; and Trojan, Willi, 4,351,739, Cl. 252-62.000.
Troyen, Harry D. System for generation of electrical power. 4,352,025, Cl. 290-54.000.
Tschacher, Dieter: *See—*
Stoll, Kurt; and Tschacher, Dieter, 4,351,133, Cl. 51-358.000.
Tsou, Sander H. C.: *See—*
Carlson, David J.; and Tsou, Sander H. C., 4,352,111, Cl. 343-860.000.
Tsuchino, Kunio: *See—*
Iwata, Mitsuo; Masuda, Naomasa; Uraki, Hideki; and Tsuchino, Kunio, 4,351,498, Cl. 242-204.000.
Tsuchiya, Yutaka, to Hamamatsu TV Co., Ltd. Method and apparatus for analyzing streak image of light pulse formed on electro-optical streaking image tube. 4,352,127, Cl. 358-217.000.
Tsui, Yaiman, to China National Light Industrial Products Import Export Corporation, Shantung Branch. Sequential locking two key lock. 4,351,171, Cl. 70-339.000.
Tsukada, Toshihisa: *See—*
Matsui, Makoto; Shiraki, Yasuhiro; Katayama, Yoshifumi; Tsukada, Toshihisa; and Maruyama, Eiichi, 4,351,856, Cl. 427-38.000.
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Tsunoda, Masakazu, to Nissan Motor Company, Limited. Voice warning system for an automotive vehicle. 4,352,088, Cl. 340-52.00F.
Tsunoda, Masakazu: *See—*
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Tsushima, Shuichi: *See—*
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Tuchiya, Yoshimasa; Ishii, Katsumi; Iidaka, Toshiharu; and Fujita, Masao, to Nissan Motor Co., Ltd.; and Kokusan Kinzoku Kogyo Kabushiki Kaisha. Locking device for an openable automobile roof. 4,351,561, Cl. 296-216.000.
Turro, Nicholas J., to Alpine Kinetics, Inc. Methods employing magnetic isotope effect. 4,351,707, Cl. 204-158.00R.
Tuson, Samuel; and Vilain, Robert, to Entreprise d'Equipements Mecaniques et Hydrauliques, E.M.H. Arrangement for mooring a floating body such as a ship. 4,351,260, Cl. 114-230.000.
Twitchell, Brent L.; Twitchell, Kendel S.; and Zitting, Brent W. Movable seat for a motorized transport chair. 4,351,562, Cl. 297-345.000.
Twitchell, Kendel S.: *See—*
Twitchell, Brent L.; Twitchell, Kendel S.; and Zitting, Brent W., 4,351,562, Cl. 297-345.000.
Tymon, Thomas M., to Armstrong World Industries, Inc. Continuous dyeing of pile fabrics. 4,351,641, Cl. 8-638.000.
Tyree, Charles N., to Fike Metal Products Corp. Nozzle having deflector for pressurized fire suppression fluid. 4,351,393, Cl. 169-37.000.
Tzikas, Athanassios, to Ciba-Geigy AG. Process for preparing chlorinated compounds. 4,351,975, Cl. 570-209.000.
Uchidoi, Masanori: *See—*
Date, Nobuaki; Aizawa, Hiroshi; Uchidoi, Masanori; and Watanabe, Yoshiaki, 4,351,597, Cl. 354-266.000.
Ueda, Atsushi: *See—*
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Ueda, Hirohisa: *See—*
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Ueda, Makoto; Torisawa, Akira; Otawa, Shuji; Mandai, Masaaki; Shida, Masaharu; and Sato, Katsuhiko, to Kabushiki Kaisha Daini Seikosha. Detection device of electronic timepiece. 4,352,172, Cl. 368-76.000.
Ueda, Teruo: *See—*
Muramatsu, Hiroshige; and Ueda, Teruo, 4,351,954, Cl. 562-574.000.
Uehara, Katuharu; and Ochiai, Izumi, to Hitachi, Ltd. Apparatus for bending a straight tube into a serpentine tube. 4,351,178, Cl. 72-383.000.
Ueno, Hiroshi: *See—*
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Uhlig, Gerhardt E. Dual liquid tight closures. 4,351,443, Cl. 215-216.000.
Ullman, Edwin F.: *See—*
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Umebachi, Shotaro: *See—*
Takagi, Hiromitsu; Umebachi, Shotaro; Kano, Gota; and Teramoto, Iwao, 4,351,099, Cl. 29-571.000.
Un, Chong K. Hybrid companding delta modulation system. 4,352,191, Cl. 375-30.000.
Unglaube, Uwe; and Miehe, Friedrich V., to Nixdorf Computer AG. Device for providing a modulo-n check character. 4,352,096, Cl. 340-815.060.
Union Carbide Corporation: *See—*
Ballintyn, Nicolaas J.; and Michno, Michael J., Jr., 4,351,069, Cl. 3-1.912.
Frost, Albert C.; and Yang, Chang-lee, 4,351,646, Cl. 48-197.00R.
Keogh, Michael J., 4,351,926, Cl. 525-370.000.
Koerwer, John F., 4,351,666, Cl. 71-106.000.
Schulz, David A., 4,351,816, Cl. 423-447.400.
Uniphase Corporation: *See—*
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United Air Specialists, Inc.: *See—*
Penney, Gaylord W., 4,351,648, Cl. 55-137.000.
United Kingdom Atomic Energy Authority: *See—*
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United Kingdom of Great Britain and Northern Ireland, The Minister for Transport in Her Britannic Majesty's Government of the: *See—*
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U.S. Industries, Inc.: *See—*
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Agriculture: *See—*
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Air Force: *See—*
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Army: *See—*
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Assard, Gerald L., 4,352,095, Cl. 340-347.0DD.
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McCubbin, Melvin J.; and Johnson, Clifford T., 4,351,239, Cl. 102-364.000.
McCubbin, Melvin J.; Johnson, Clifford T.; and Cordle, Paul E., 4,351,240, Cl. 102-364.000.
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Hubner, Horst; Lersmacher, Bernhard; Lydtin, Hans; and Wilden, Rolf, 4,352,041, Cl. 374-144.000.
Jore, Alfred; Van Gorkom, Gerardus G. P.; and Dekkers, Nicolaas H., 4,352,015, Cl. 250-311.000.
Sonnek, Martin, 4,351,493, Cl. 242-190.000.
Van Herk, Alfred; Buis, Jacob A. M.; Klijnstra, Jan H.; and Van Staalduinen, Jan, 4,352,131, Cl. 360-78.000.
United States Surgical Corporation: *See—*
Noiles, Douglas G., 4,351,466, Cl. 227-8.000.

United Technologies Corporation: *See—*
Laverty, William F., 4,351,532, Cl. 277-53.000.
University of California, The Regents of the: *See—*
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University Patents, Inc.: *See—*
Allen, Robert H., 4,351,822, Cl. 424-1.000.
Uno, Kenkichi. Device for discharging static electricity and method of producing the same. 4,352,143, Cl. 361-221.000.
Uno, Shigeo: *See—*
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Upadek, Horst; and Bruns, Klaus, to Henkel Kommanditgesellschaft auf Aktien. 6(9)-Isopropyl-9(6)-methyl-6,9-ethano-2-oxaspiro[4,5]dec-7-enes. 4,351,772, Cl. 549-331.000.
Upjohn Company, The: *See—*
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Whaley, Howard A.; and Coats, John H., 4,351,769, Cl. 260-326.340.
White, David R.; and Thomas, Richard C., 4,351,771, Cl. 549-361.000.
Upmeier, Hartmut; Klinge, Gerd; and Winkler, Gerhard, to Windmoller & Hoischer. Method of controlling the film thickness at a blown film extruder installation. 4,351,785, Cl. 264-40.100.
Uraki, Hideki: *See—*
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UreSil Company: *See—*
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Usines a Cuivre et a Zinc de Liege: *See—*
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Utility Devices, Inc.: *See—*
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Utsumi, Hiroo; Sakakibara, Yukio; Ito, Teruyoshi; Iwata, Toshiharu; and Yamada, Takashi, to Nippondenso Co., Ltd. Ignition timing control system for internal combustion engine. 4,351,282, Cl. 123-425.000.
V-Band Systems, Inc.: *See—*
Feil, Thomas E., 4,351,987, Cl. 179-99.00H.
Valbona, Bruno M.; and Pound, William C., to Dynamics Corporation of America. Drink mixer. 4,351,612, Cl. 366-206.000.
Valeo: *See—*
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Valeron Corporation, The: *See—*
Schultz, Edward R., Jr.; Cook, Kenneth J.; Power, Joseph S.; and Ruszala, Frederick B., 4,352,163, Cl. 364-801.000.
Valov, Vladimir V.: *See—*
Gross, Valery N.; Kozhanov, Evgeny V.; Stupnik, Vyacheslav D.; and Valov, Vladimir V., 4,351,799, Cl. 422-63.000.
van der Bruggen, Hendrik D. Device for the acoustic indication of the beats of a musical time. 4,351,215, Cl. 84-1.030.
VanDerLinden, Roy E., to Reliable Security Systems, Inc. Emergency exit door latching and locking apparatus. 4,351,552, Cl. 292-201.000.
Van Gorkom, Gerardus G. P.: *See—*
Jore, Alfred; Van Gorkom, Gerardus G. P.; and Dekkers, Nicolaas H., 4,352,015, Cl. 250-311.000.
Vanhelle, Michel: *See—*
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Van Herk, Alfred; Buis, Jacob A. M.; Klijnstra, Jan H.; and Van Staalduinen, Jan, to U.S. Philips Corporation. Memory disc addressing device. 4,352,131, Cl. 360-78.000.
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Van Staalduinen, Jan: *See—*
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Varian Associates, Inc.: *See—*
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Veb Kombinat Polygraph "Werner Lamberz" Leipzig: *See—*
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Verderber, Joseph A.; Fortcamp, James A.; McInturff, Ace; and Rose, Denis A. Header sheet for image communications system. 4,352,012, Cl. 235-487.000.
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Verhulst, Michael J., to Deere & Company. Bale twine knotter with adjustable wiper. 4,351,551, Cl. 289-2.000.
Verlander, Michael S.; Fuller, William D.; and Goodman, Murray, to BioResearch, Inc. Rapid, quantitative peptide synthesis using mixed anhydrides. 4,351,762, Cl. 260-112.50R.
Vettori de Almeida Rodrigues, Carlos A. Differential dilatometer. 4,351,615, Cl. 374-56.000.
Viak AB: *See—*
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Vicentini, Pietro: *See—*
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Victor Company of Japan Limited: *See—*
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Viessmann, Hans. Heating boiler for the combustion of baled straw. 4,351,248, Cl. 110-170.000.
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Droscher, Erich; Pfundner, Hans P.; and Wrulich, Herwig, 4,351,564, Cl. 299-1.000.
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Young, Miriam F., to Honeywell Inc. Semiconductor device processing for readily and reliably forming electrical interconnects to contact pads. 4,351,101, Cl. 29-577.00C.
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Duffy, Michael T.; Corboy, John F., Jr.; and Zanzucchi, Peter J., 4,352,017, Cl. 250-358.100.

Zega, Bogdan, to Societa Italiana Vetro-SIV-S.p.A. Heated mirror, designed in particular to constitute an external rearview mirror element for a vehiole. 4,352,006, Cl. 219-219.000.

Zeigler, Andy W. Method and apparatus for forming ice sculptures or the like. 4,351,157, Cl. 62-1.000.

Zeller, Rudolf: *See*—
Ortner, Artur; and Zeller, Rudolf, 4,351,633, Cl. 432-77.000.

Zellner, Wilhelm: *See*—
Leonhardt, Fritz; Andra, Wolfhart; Zellner, Wilhelm; and Schlaich, Jorg, 4,352,112, Cl. 343-915.000.

Zetler, Gerhard; Rossi, Alessandro; and De Paolis, Chiara, to Farmitalia Carlo Erba Spa. Use of polypeptides as analgesic drugs. 4,351,829, Cl. 424-177.000.

Zhestkov, Vitaly I.: *See*—
Abduganiev, Abdurakhim; Krjuk, Timur P.; Zhestkov, Vitaly I.; Tikhonov, Valentin N.; Glazov, Vladimir G.; Kletny, Mikhail M.; Shlykov, Gennady N.; Afanasiev, Vladimir K.; Dyachkov, Vasily M.; Zhigalov, Gennady V.; Mangutov, Rafael A.; and Angarov, Ernst I., 4,351,149, Cl. 57-263.000.

Zhigalov, Gennady V.: *See*—
Abduganiev, Abdurakhim; Krjuk, Timur P.; Zhestkov, Vitaly I.; Tikhonov, Valentin N.; Glazov, Vladimir G.; Kletny, Mikhail M.; Shlykov, Gennady N.; Afanasiev, Vladimir K.; Dyachkov, Vasily M.; Zhigalov, Gennady V.; Mangutov, Rafael A.; and Angarov, Ernst I., 4,351,149, Cl. 57-263.000.

Zhukov, Mikhail F.; Lytkin, Albert Y.; Khudyakov, Georgy N.; and Anshakov, Anatoly S. Plasma generator. 4,352,044, Cl. 315-111.210.

Ziemek, Gerhard: *See*—
Bauermeister, Klaus; Ziemek, Gerhard; and Eilhardt, Bernd, 4,351,365, Cl. 138-149.000.

Zimmer Manufacturing Corp.: *See*—
McKindary, Thomas W., 4,351,210, Cl. 83-835.000.

Zirps, Wilhelm, to Robert Bosch GmbH. Electric motor operated adjusting drive. 4,352,035, Cl. 310-80.000.

Zitting, Brent W.: *See*—
Twitchell, Brent L.; Twitchell, Kendel S.; and Zitting, Brent W., 4,351,562, Cl. 297-345.000.

Zobel, Don W.: *See*—
Cave, David L.; Harris, Steven L.; and Zobel, Don W., 4,352,056, Cl. 323-314.000.

Zobel, Dwight D. Self-locking, unlocking detachable hand lever cam sealed container. 4,351,449, Cl. 220-318.000.

Zukowski, Edward A.: *See*—
Depweg, Frank A.; and Zukowski, Edward A., 4,351,096, Cl. 29-38.00A.

Zullig, Harry T., to Relium AG. Process and means for controlling the radiant energies of the entire spectral range in rooms. 4,351,588, Cl. 350-259.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 28TH DAY OF SEPTEMBER, 1982

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Carbone, Victor T.: *See*—
Clark, Stephen C.; and Carbone, Victor T., Re. 31,042, Cl. 219-121.0LG.

Clark, Stephen C.; and Carbone, Victor T., to Houdaille Industries, Inc. Laser cutting head attachment for punch presses. Re. 31,042, Cl. 219-121.0LG.

Du Pont de Nemours, E. I., and Company: *See*—
McKinney, Charles R., Re. 31,043, Cl. 250-283.000.

Houdaille Industries, Inc.: *See*—
Clark, Stephen C.; and Carbone, Victor T., Re. 31,042, Cl. 219-121.0LG.

McKinney, Charles R., to Du Pont de Nemours, E. I., and Company. Mass spectrometer beam monitor. Re. 31,043, Cl. 250-283.000.

McReynolds, Marshall B.; Oscar, Irving S.; and Van Tilbury, Jack, to TRAC, Inc. Traffic coordinator for arterial traffic system. Re. 31,044, Cl. 364-437.000.

Oscar, Irving S.: *See*—
McReynolds, Marshall B.; Oscar, Irving S.; and Van Tilbury, Jack, Re. 31,044, Cl. 364-437.000.

Otto Zollinger, Inc.: *See*—
Zollinger, Otto, Re. 31,041, Cl. 242-152.100.

Possis, Zinon C., to St. Jude Medical, Inc. Heart valve prosthesis. Re. 31,040, Cl. 3-1.500.

St. Jude Medical, Inc.: *See*—
Possis, Zinon C., Re. 31,040, Cl. 3-1.500.

TRAC, Inc.: *See*—
McReynolds, Marshall B.; Oscar, Irving S.; and Van Tilbury, Jack, Re. 31,044, Cl. 364-437.000.

Van Tilbury, Jack: *See*—
McReynolds, Marshall B.; Oscar, Irving S.; and Van Tilbury, Jack, Re. 31,044, Cl. 364-437.000.

Zollinger, Otto, to Otto Zollinger, Inc. Yarn tensioning device. Re. 31,041, Cl. 242-152.100.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Runyon, Robert C., to Chemet Research, Inc. Flexible, self-supporting blade for cutting electronic crystals and substrates or the like. B1 4,219,004, Cl. 125–15.

Chemet Research, Inc.: *See*—
Runyon, Robert C. B1 4,219,004, Cl. 125–15.

Raybould, Delmar H. Conveyor chain. B1 3,160,264. Cl. 198–851.

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A/S Tasso Odense: *See*—
Rasmussen, Henning, 266,352, Cl. D23-90.000.
Rasmussen, Henning, 266,353, Cl. D23-90.000.
Rasmussen, Henning, 266,354, Cl. D23-90.000.

Abbott Laboratories: *See*—
Kerns, Ralph M., 266,358, Cl. D24-56.000.

Acme Steel Door Corp.: *See*—
Siegal, Burton L., 266,359, Cl. D25-74.000.

Advertising Displays Company: *See*—
Zaro, Marvin, 266,297, Cl. D6-199.000.

AGFA-Gevaert AG: *See*—
Schultes, Herbert; and Rubner, Karl-Heinz, 266,330, Cl. D16-1.000.
Schultes, Herbert; and Rubner, Karl-Heinz, 266,331, Cl. D16-6.000.
Schultes, Herbert; and Rubner, Karl-Heinz, 266,332, Cl. D16-8.000.

American Commercial, Incorporated: *See*—
Everhan, Walter, 266,304, Cl. D7-66.000.

Ansel, Pierre, to SEB. Meat grill. 266,306, 9-28-82, Cl. D7-88.000.

Bachmann, G. Merle; Davis, Charles L.; and Morgan, Annis R., Jr., to Coca-Cola Company, The. Vending machine. 266,337, 9-28-82, Cl. D20-5.000.

Bates Manufacturing Company, The: *See*—
Leib, William S., III, 266,336, Cl. D19-76.000.

Bergquist, Gregory D.; and Jones, John A., to Simmons Universal Corporation. Table. 266,296, 9-28-82, Cl. D6-175.000.

Bigham, George F.; and Johnston, Rodney B. Golfing wrist control attachment or the like. 266,345, 9-28-82, Cl. D21-234.000.

Blissett, Malcolm G.; Bowen, Arthur W.; and Lucarelli, James H., to Goodyear Tire & Rubber Company, The. Shoe sole. 266,287, 9-28-82, Cl. D2-320.000.

Bowen, Arthur W.: *See*—
Blissett, Malcolm G.; Bowen, Arthur W.; and Lucarelli, James H., 266,287, Cl. D2-320.000.

Breneman, Jack L., to Quaker Oats Company, The. Toy helicopter rig. 266,341, 9-28-82, Cl. D21-134.000.

Butchko, Joseph J. Telephone console. 266,325, 9-28-82, Cl. D14-63.000.

Chau, Ho Sing, to H & T Electronic Industries Ltd. Combined writing instrument and watch. 266,335, 9-28-82, Cl. D19-36.000.

Clarion Co., Ltd.: *See*—
Kikuhara, Toshiyoshi, 266,326, Cl. D14-96.000.

Clarks Limited: *See*—
Haring, Noel J.; and Snook, Laurence A., 266,314, Cl. D10-70.000.

Coca-Cola Company, The: *See*—
Bachmann, G. Merle; Davis, Charles L.; and Morgan, Annis R., Jr., 266,337, Cl. D20-5.000.

Coelho dos Santos, Jose. Building block. 266,360, 9-28-82, Cl. D25-80.000.

Coelho dos Santos, Jose. Building block. 266,361, 9-28-82, Cl. D25-80.000.

Coelho dos Santos, Jose. Building block. 266,362, 9-28-82, Cl. D25-80.000.

Coelho dos Santos, Jose. Building block. 266,363, 9-28-82, Cl. D25-80.000.

Coelho dos Santos, Jose. Building block. 266,364, 9-28-82, Cl. D25-80.000.

Coon, Richard H. Bowling glove. 266,288, 9-28-82, Cl. D2-361.000.

Corigliano, Mary. Contemporary rosary. 266,369, 9-28-82, Cl. D99-26.000.

Cornacchuila, Frank: *See*—
Fidler, Jay W.; and Cornacchuila, Frank, 266,310, Cl. D9-392.000.

Corning Glass Works: *See*—
Gerow, Cynthia S., 266,303, Cl. D7-39.000.
Haner, Richard V., 266,300, Cl. D7-17.000.
Moskal, Loretta H., 266,298, Cl. D7-9.000.
Moskal, Loretta H., 266,302, Cl. D7-26.000.
Rosenbaum, Robert A., 266,365, Cl. D26-22.000.

Dantzer, James I.: *See*—
Schneider, Robert W.; Gilly, Alfred S.; Diamant, John R.; and Dantzer, James I., 266,351, Cl. D23-40.000.
Davis, Charles L.: *See*—
Bachmann, G. Merle; Davis, Charles L.; and Morgan, Annis R., Jr., 266,337, Cl. D20-5.000.
Diamant, John R.: *See*—
Schneider, Robert W.; Gilly, Alfred S.; Diamant, John R.; and Dantzer, James I., 266,351, Cl. D23-40.000.
Dino, William C.; and Johnson, Stephen L. Pill counter. 266,317, 9-28-82, Cl. D10-97.000.
Duclos, Clovis R. Golf driver head. 266,344, 9-28-82, Cl. D21-214.000.
Dunstan, Dennis B. Puzzle. 266,339, 9-28-82, Cl. D21-104.000.
Du Vall, Zell, to TSI Incorporated. Fluid flow measuring head. 266,316, 9-28-82, Cl. D10-96.000.
Easterling, Ted. Master control for television and video recorder system. 266,322, 9-28-82, Cl. D13-12.000.
Emerson Electric Co.: *See*—
Mariol, James F., 266,355, Cl. D23-155.000.
Everhan, Walter, to American Commercial, Incorporated. Cream pitcher. 266,304, 9-28-82, Cl. D7-66.000.
F.I.R. Fabbrica Italiana Rubinetterie S.p.A.: *See*—
Piesco, Nazzareno, 266,348, Cl. D23-28.000.
Piesco, Nazzareno, 266,349, Cl. D23-32.000.
Piesco, Nazzareno, 266,350, Cl. D23-32.000.
Fidler, Jay W.; and Cornacchuila, Frank, to Hercules Chemical Company, Inc. Jar or similar article. 266,310, 9-28-82, Cl. D9-392.000.
Flanders, Dudley K., to Flanders Industries, Inc. Log cart. 266,368, 9-28-82, Cl. D34-26.000.
Flanders Industries, Inc.: *See*—
Flanders, Dudley K., 266,368, Cl. D34-26.000.
Fleshman, Shirley F. Combination support and control for a heat shrink roller. 266,328, 9-28-82, Cl. D15-144.000.
Fratelli Saporiti: *See*—
Radaelli, Ernesto, 266,293, Cl. D6-71.000.
Fulton, Jerrell F. Drafting and measuring tool. 266,313, 9-28-82, Cl. D10-62.000.
Gerow, Cynthia S., to Corning Glass Works. Decorative band for casserole holders or the like. 266,303, 9-28-82, Cl. D7-39.000.
Gilly, Alfred S.: *See*—
Schneider, Robert W.; Gilly, Alfred S.; Diamant, John R.; and Dantzer, James I., 266,351, Cl. D23-40.000.
Goodyear Tire & Rubber Company, The: *See*—
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Gulf & Western Manufacturing Company: *See*—
Schneider, Robert W.; Gilly, Alfred S.; Diamant, John R.; and Dantzer, James I., 266,351, Cl. D23-40.000.
H & T Electronic Industries Ltd.: *See*—
Chau, Ho Sing, 266,335, Cl. D19-36.000.
Haight, Marvin E.; and Jones, William R., to Micromolder Machinery, Inc. Automatic injection molding machine. 266,327, 9-28-82, Cl. D15-135.000.
Hall, Ardal F. Handyman tray. 266,301, 9-28-82, Cl. D7-19.000.
Haner, Richard V., to Corning Glass Works. Covered sugar bowl or the like. 266,300, 9-28-82, Cl. D7-17.000.
Haring, Noel J.; and Snook, Laurence A., to Clarks Limited. Footgauge. 266,314, 9-28-82, Cl. D10-70.000.
Harper, David S., to Mayer Mill Mining and Trade Company. Welsh miner's lamp. 266,366, 9-28-82, Cl. D26-104.000.
Harper, Ronald D.: *See*—
Millay, George D.; and Harper, Ronald D., 266,346, Cl. D21-244.000.
Hercules Chemical Company, Inc.: *See*—
Fidler, Jay W.; and Cornacchuila, Frank, 266,310, Cl. D9-392.000.
Hilko, Steven E., to Quaker Oats Company, The. Toy dragster. 266,343, 9-28-82, Cl. D21-137.000.
HOH, Inc.: *See*—
O'Halloran, Paul J.; and Morgan, Glen, 266,294, Cl. D6-95.000.
Honda Giken Kogyo Kabushiki Kaisha (Honda Motor Co., Ltd.): *See*—
Morioka, Minoru; and Sugihara, Hideki, 266,321, Cl. D12-182.000.
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Johnson, Stephen L.: *See*—
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Bigham, George F.; and Johnston, Rodney B., 266,345, Cl. D21-234.000.
Jones, John A.: *See*—
Bergquist, Gregory D.; and Jones, John A., 266,296, Cl. D6-175.000.
Jones, William R.: *See*—
Haight, Marvin E.; and Jones, William R., 266,327, Cl. D15-135.000.
Kampfe, Kenneth E., to Willsie Cap and Gown Company. Collar for tassels. 266,289, 9-28-82, Cl. D2-448.000.
Karamian, Narbik A. Faucet for protecting sterile fluid systems. 266,347, 9-28-82, Cl. D23-03.000.
Kawasaki Steel Corporation: *See*—
Tsujimoto, Eiichi, 266,329, Cl. D15-145.000.
Kerns, Ralph M., to Abbott Laboratories. Sample cup. 266,358, 9-28-82, Cl. D24-56.000.
Kfoury, Elie P. Hover craft. 266,320, 9-28-82, Cl. D12-5.000.
Kikuhara, Toshiyoshi, to Clarion Co., Ltd. Amplifier for automobile. 266,326, 9-28-82, Cl. D14-96.000.
Lam, Yanta H. T., to Meyer Manufacturing Co. Ltd. Cooking pan unit. 266,307, 9-28-82, Cl. D7-94.000.
Lawrence, Frederick J. Combined copying and sorting apparatus. 266,333, 9-28-82, Cl. D16-32.000.
Leffler, Dennis F.; and Truette, Danny M., to Pelton & Crane Company, The. Chair. 266,291, 9-28-82, Cl. D6-30.000.
Leffler, Dennis F.; and Truette, Danny M., to Pelton & Crane Company, The. Stool. 266,292, 9-28-82, Cl. D6-35.000.
Leib, William S., III, to Bates Manufacturing Company, The. Card file. 266,336, 9-28-82, Cl. D19-76.000.
Lin, Ellick. Digital watch ring. 266,312, 9-28-82, Cl. D10-31.000.
Linden, Erkki O., to Oy Fiskars AB. Scissors. 266,308, 9-28-82, Cl D8-57.000.
Linden, Erkki O., to Oy Fiskars AB. Scissors. 266,309, 9-28-82, Cl. D8-57.000.
Lucarelli, James H.: *See*—
Blissett, Malcolm G.; Bowen, Arthur W.; and Lucarelli, James H., 266,287, Cl. D2-320.000.
Mandel, Charles S. Card holder and display device. 266,338, 9-28-82, Cl. D20-43.000.
Marini, Louis G.; and Marini, Thomas O., to Suntemp Industries, Inc. Trash cart. 266,367, 9-28-82, Cl. D34-24.000.
Marini, Thomas O.: *See*—
Marini, Louis G.; and Marini, Thomas O., 266,367, Cl. D34-24.000.
Mariol, James F., to Emerson Electric Co. Air blower. 266,355, 9-28-82, Cl. D23-155.000.
Mattheis, Harley H., to Risdon Corporation. Dispensing cap for liquid containers. 266,311, 9-28-82, Cl. D9-446.000.
Mayer Mill Mining and Trade Company: *See*—
Harper, David S., 266,366, Cl. D26-104.000.
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Moskal, Loretta H., to Corning Glass Works. Cup or the like. 266,298, 9-28-82, Cl. D7-9.000.
Moskal, Loretta H., to Corning Glass Works. Plate or the like. 266,302, 9-28-82, Cl. D7-26.000.
Noguchi, Kiichi. Dial plate for a timepiece. 266,318, 9-28-82, Cl. D10-123.000.
O'Halloran, Paul J.; and Morgan, Glen, to HOH, Inc. Fluid dispenser. 266,294, 9-28-82, Cl. D6-95.000.
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Picheria, Ernest. Badge. 266,319, 9-28-82, Cl. D11-56.000.
Piesco, Nazzareno, to F.I.R. Fabbrica Italiana Rubinetterie S.p.A. Faucet handle. 266,348, 9-28-82, Cl. D23-28.000.
Piesco, Nazzareno, to F.I.R. Fabbrica Italiana Rubinetterie S.p.A. Combined spout and pop-up drain knob. 266,349, 9-28-82, Cl. D23-32.000.
Piesco, Nazzareno, to F.I.R. Fabbrica Italiana Rubinetterie S.p.A. Spout. 266,350, 9-28-82, Cl. D23-32.000.
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Quaker Oats Company, The: *See*—
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Wilkes, Kenneth R., 266,342, Cl. D21-137.000.
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Rasmussen, Henning, to A/S Tasso Odense. Boiler section. 266,352, 9-28-82, Cl. D23-90.000.
Rasmussen, Henning, to A/S Tasso Odense. Boiler section. 266,353, 9-28-82, Cl. D23-90.000.
Rasmussen, Henning, to A/S Tasso Odense. Boiler section. 266,354, 9-28-82, Cl. D23-90.000.
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Scheurer, Stephen M. Beverage container insulator. 266,305, 9-28-82, Cl. D7-77.000.

Schneider, Robert W.; Gilly, Alfred S.; Diamant, John R.; and Dantzer, James I., to Gulf & Western Manufacturing Company. Multidirectional welding outlet. 266,351, 9-28-82, Cl. D23-40.000.
Schultes, Herbert; and Rubner, Karl-Heinz, to AGFA-Gevaert AG. Photographic camera. 266,330, 9-28-82, Cl. D16-1.000.
Schultes, Herbert; and Rubner, Karl-Heinz, to AGFA-Gevaert AG. Combined camera and flash unit. 266,331, 9-28-82, Cl. D16-6.000.
Schultes, Herbert; and Rubner, Karl-Heinz, to Agfa-Gevaert AG. Single lens reflex camera. 266,332, 9-28-82, Cl. D16-8.000.
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Ansel, Pierre, 266,306, Cl. D7-88.000.
Siegal, Burton L., to Acme Steel Door Corp. Channel member for office space dividing system. 266,359, 9-28-82, Cl. D25-74.000.
Simmons Universal Corporation: *See*—
Bergquist, Gregory D.; and Jones, John A., 266,296, Cl. D6-175.000.
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Vermonet, Christian, 266,286, Cl. D2-309.000.
Speers, Stephen M. Computer for blackjack decisions. 266,334, 9-28-82, Cl. D18-10.000.
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Tamm, Ulf S. Hydrometer. 266,315, 9-28-82, Cl. D10-84.000.
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Taylor, Andrew V., to Tayclox Industries Pty. Limited. Food storage container. 266,299, 9-28-82, Cl. D7-17.000.
Truette, Danny M.: *See*—
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TSI Incorporated: *See*—
Du Vall, Zell, 266,316, Cl. D10-96.000.
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Vermonet, Christian, to Societe Technisynthese (S.A.R.L.). Shoe. 266,285, 9-28-82, Cl. D2-309.000.
Vermonet, Christian, to Societe Technisynthese (S.A.R.L.). Shoe. 266,286, 9-28-82, Cl. D2-309.000.
Ward, Bruce K. Blank for a combined vent and baffle. 266,356, 9-28-82, Cl. D23-163.000.
Ward, Bruce K. Blank for a combined vent and baffle. 266,357, 9-28-82, Cl. D23-163.000.
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Wilkes, Kenneth R., to Quaker Oats Company, The. Toy race car. 266,342, 9-28-82, Cl. D21-137.000.
Willsie Cap and Gown Company: *See*—
Kampfe, Kenneth E., 266,289, Cl. D2-448.000.
Zaro, Marvin, to Advertising Displays Company. Dispensing rack for rolling goods. 266,297, 9-28-82, Cl. D6-199.000.
Zola, Colman. Buffet cabinet. 266,295, 9-28-82, Cl. D6-159.000.

LIST OF PLANT PATENTEES

Cook, Albert B. Strawberry plant. 4,890, 9-28-82, Cl. 48.000.
Pan-American Plant Company: *See*—
van der Knaap, Jacques C. M., 4,891, Cl. 76.000.
van der Knaap, Jacques C. M., to Pan-American Plant Company. Chrysanthemum named Orange Westland. 4,891, 9-28-82, Cl. 76.000.

CLASSIFICATION OF PATENTS

ISSUED SEPTEMBER 28, 1982

NOTE.—First number, class; second number, subclass; third number, patent number

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23	4,351,065
85	4,351,066
160	4,351,067
409	4,351,068

CLASS 3

1.5	Re.31,040
1.912	4,351,069
27	4,351,070

CLASS 4

324	4,351,071
503	4,351,072
654	4,351,073

CLASS 6

1	4,351,074

CLASS 7

138	4,351,075

CLASS 8

94.16	4,351,639
149.1	4,351,076
463	4,351,638
524	4,351,640
638	4,351,641

CLASS 15

1.7	4,351,077
49 C	4,351,078
104.06 A	4,351,079
167 R	4,351,080
210 R	4,351,081
316 R	4,351,082
373	4,351,083

CLASS 16

45	4,351,084
228	4,351,086
273	4,351,085

CLASS 17

44.1	4,351,087
50	4,351,088

CLASS 19

129 R	4,351,089

CLASS 20

230 EP	4,351,643
230 M	4,351,642
293 R	4,351,644

CLASS 24

263 D	4,351,090

CLASS 27

22 R	4,351,091

CLASS 28

100	4,351,092
149	4,351,093

CLASS 29

1.2	4,351,094
25.12	4,351,095
38 A	4,351,096
229	4,351,097
402.15	4,351,098
571	4,351,099
577 C	4,351,100
	4,351,101
596	4,351,102
	4,351,103
603	4,351,104
622	4,351,105
730	4,351,106
736	4,351,107
741	4,351,108
747	4,351,109
749	4,351,110

CLASS 30

164.9	4,351,111
392	4,351,112

CLASS 33

137 R	4,351,113
174 H	4,351,114
178 D	4,351,115
307	4,351,116
435	4,351,117

CLASS 34

24	4,351,118
28	4,351,119

CLASS 36

117	4,351,120
125	4,351,121

CLASS 37

58	4,351,122

CLASS 40

120	4,351,123
158 B	4,351,124
381	4,351,125

CLASS 43

5	4,351,126
9	4,351,127
44.91	4,351,128

CLASS 46

74 D	4,351,129

CLASS 47

58	4,351,130

CLASS 48

61	4,351,645
197 R	4,351,646
	4,351,647

CLASS 49

501	4,351,131

CLASS 51

180	4,351,132
358	4,351,133

CLASS 52

12	4,351,134
67	4,351,135
155	4,351,136
202	4,351,137
309.4	4,351,138
378	4,351,139
542	4,351,140

CLASS 53

473	4,351,141
575	4,351,142

CLASS 55

137	4,351,648
162	4,351,649
181	4,351,650
210	4,351,651
229	4,351,652
394	4,351,653

CLASS 56

17.5	4,351,143
295	4,351,144
400.16	4,351,145

CLASS 57

6	4,351,146
208	4,351,147
209	4,351,148
263	4,351,149

CLASS 60

226 R	4,351,150
290	4,351,151
395	4,351,152
581	4,351,153
605	4,351,154
618	4,351,155
737	4,351,156

CLASS 62

1	4,351,157
13	4,351,654
28	4,351,655
60	4,351,158
79	4,351,159
201	4,351,160
235.1	4,351,161
239	4,351,162
305	4,351,163
315	4,351,164
371	4,351,165

CLASS 63

15	4,351,166

CLASS 65

1	4,351,656
3.11	4,351,657
3.12	4,351,658
3.13	4,351,659
5	4,351,660
	4,351,661
30.1	4,351,662
66	4,351,663
128	4,351,664

CLASS 70

16	4,351,169
90	4,351,170
339	4,351,171
366	4,351,172
456 R	4,351,173

CLASS 71

103	4,351,665
106	4,351,666
118	4,351,667

CLASS 72

47	4,351,174
203	4,351,175
322	4,351,176
354	4,351,177
383	4,351,178
391	4,351,179
405	4,351,180

CLASS 73

23	4,351,181
27 R	4,351,182
32 R	4,351,183
104	4,351,184
	4,351,185
151	4,351,186
178 R	4,351,187
189	4,351,188
196	4,351,189
638	4,351,190
728	4,351,191
861.18	4,351,192
864.82	4,351,193

CLASS 74

5.37	4,351,194
10.33	4,351,195
15.4	4,351,196
89.22	4,351,197
482	4,351,198
566	4,351,199
568 T	4,351,200
598	4,351,201
604	4,351,202
606 R	4,351,203
804	4,351,204
866	4,351,205
	4,351,206

CLASS 75

2	4,351,668

CLASS 82

36 R	4,351,207

CLASS 83

167	4,351,208
788	4,351,209
835	4,351,210
861	4,351,211

CLASS 84

1.01	4,351,212
	4,351,213
1.03	4,351,214
	4,351,215
1.15	4,351,216
1.16	4,351,217
1.19	4,351,218
1.21	4,351,219
1.24	4,351,220
1.28	4,351,221
423 R	4,351,222

CLASS 89

14 R	4,351,223
37 BA	4,351,224

CLASS 91

50	4,351,225
387	4,351,226

CLASS 92

71	4,351,227
128	4,351,228
	4,351,229

CLASS 98

31	4,351,230

CLASS 99

277.2	4,351,231
540	4,351,232

CLASS 100

48	4,351,233

CLASS 101

10	4,351,234
93.04	4,351,235
128.4	4,351,238
148	4,351,236
216	4,351,237

CLASS 102

364	4,351,239
	4,351,240

CLASS 104

93	4,351,241

CLASS 105

206 A	4,351,242
241.2	4,351,243

CLASS 106

2	4,351,669
88	4,351,670
90	4,351,671

CLASS 108

107	4,351,244
136	4,351,245
156	4,351,246

CLASS 109

19	4,351,247

CLASS 110

170	4,351,248
210	4,351,249
227	4,351,250
261	4,351,251
346	4,351,252

CLASS 111

2	4,351,253

CLASS 112

158 E	4,351,254

CLASS 114

41	4,351,255
85	4,351,256
219	4,351,257
230	4,351,258
	4,351,259
	4,351,260
264	4,351,261
284	4,351,262

CLASS 118

203	4,351,264
211	4,351,265
425	4,351,266
665	4,351,263
718	4,351,267

CLASS 119

3	4,351,268
	4,351,269
5	4,351,270
14.09	4,351,271
20	4,351,272
51 R	4,351,273
53.5	4,351,274

CLASS 122

7 R	4,351,275
20 B	4,351,276
390	4,351,277

CLASS 123

25 A	4,351,289
59 BM	4,351,290
145 A	4,351,291
188 AA	4,351,292
195 R	4,351,278
198 DB	4,351,293
291	4,351,294
300	4,351,295
328	4,351,296
391	4,351,279
415	4,351,280
421	4,351,297
425	4,351,281
	4,351,282
432	4,351,298
458	4,351,283
472	4,351,299
527	4,351,300
545	4,351,284
557	4,351,301
566	4,351,302
568	4,351,285
	4,351,303
585	4,351,304
590	4,351,305
601	4,351,286
609	4,351,287
	4,351,306
618	4,351,307
627	4,351,308
630	4,351,309
644	4,351,310

CLASS 124

41 A	4,351,311

CLASS 125

15	B1 4,219,004

CLASS 126

30	4,351,312
39 J	4,351,313
59	4,351,314
73	4,351,315
93	4,351,316
139	4,351,317
197	4,351,288
208	4,351,318
425	4,351,319
	4,351,320
446	4,351,321

CLASS 127

46.3	4,351,672

CLASS 128

1 R	4,351,322
4	4,351,323
80 J	4,351,324
96	4,351,325
130	4,351,326
200.14	4,351,327
202.16	4,351,328
204.21	4,351,329
207.15	4,351,330
207.17	4,351,331
214 F	4,351,332
214.4	4,351,333
218 A	4,351,335
218 PA	4,351,334
232	4,351,336
260	4,351,337
285	4,351,338
	4,351,339
288	4,351,340
348	4,351,341
349 B	4,351,342
695	4,351,343
720	4,351,344
786	4,351,345

CLASS 131

276	4,351,346
	4,351,347

CLASS 134

3	4,351,673

CLASS 135

66	4,351,348

CLASS 137

15	4,351,349
39	4,351,350
68 R	4,351,351
	4,351,352
219	4,351,353
240	4,351,354
329.06	4,351,355
446	4,351,357
491	4,351,356
512.1	4,351,358
521	4,351,359
624.12	4,351,360
625.44	4,351,361
625.65	4,351,362

CLASS 138

30	4,351,363
133	4,351,364
149	4,351,365
	4,351,366

CLASS 139

11	4,351,367
324	4,351,368
435	4,351,369
450	4,351,370

CLASS 140

92.3	4,351,371

CLASS 141

2	4,351,372
51	4,351,373
71	4,351,374
98	4,351,375

CLASS 144

193 A	4,351,377
	4,351,378
193 G	4,351,376
365	4,351,379

CLASS 148

1.5	4,351,674
6.15 R	4,351,675
6.31	4,351,678
9 C	4,351,676
188	4,351,677

CLASS 152

169	4,351,380
209 R	4,351,381
330 RF	4,351,382

CLASS 156

70	4,351,679
79	4,351,680
99	4,351,681
143	4,351,682
167	4,351,683
215	4,351,684
234	4,351,685
329	4,351,686
353	4,351,687
358	4,351,688
378	4,351,689
384	4,351,690
435	4,351,691
443	4,351,692
556	4,351,693
574	4,351,694
603	4,351,695
643	4,351,696
	4,351,697
661.1	4,351,698

CLASS 162

112	4,351,699
252	4,351,700

CLASS 164

448	4,351,383
468	4,351,384

CLASS 165

61	4,351,385
89	4,351,386
95	4,351,387
104.26	4,351,388
141	4,351,389
149	4,351,390
154	4,351,391
186	4,351,392

CLASS 169

37	4,351,393
61	4,351,394

CLASS 172
13 4,351,395
40 4,351,396
464 4,351,397

CLASS 173
104 4,351,398
148 4,351,399

CLASS 175
69 4,351,400
329 4,351,401
340 4,351,402

CLASS 177
2 4,351,403

CLASS 178
22.11 4,351,982

CLASS 179
1 SC 4,351,983
7.1 R 4,351,984
18 GF 4,351,985
27 FH 4,351,986
99 H 4,351,987

CLASS 180
14 R 4,351,404
65 A 4,351,405
65 R 4,351,406
75 4,351,407
135 4,351,408
165 4,351,409
210 4,351,410

CLASS 181
168 4,351,411
170 4,351,412

CLASS 182
139 4,351,413

CLASS 184
105 B 4,351,414

CLASS 187
29 B 4,351,415
29 R 4,351,416
81 4,351,417

CLASS 188
24.22 4,351,418
71.9 4,351,419
73.45 4,351,420
4,351,421
170 4,351,422
216 4,351,423

CLASS 192
18 R 4,351,424
58 B 4,351,425
4,351,426
98 4,351,427
851 B1 3,160,264

CLASS 198
302 4,351,428
688 4,351,429
690 4,351,430
823 4,351,431
847 4,351,432

CLASS 200
5 A 4,351,988
48 CB 4,351,989
50 AA 4,351,990
61.27 4,351,991
144 B 4,351,992
148 A 4,351,993
153 SC 4,351,994
159 A 4,351,995

CLASS 201
1 4,351,701
5 4,351,702

CLASS 204
1 T 4,351,703
15 4,351,704
108 4,351,705
129.3 4,351,706
158 R 4,351,707
159.12 4,351,884
159.23 4,351,708
180 G 4,351,711
180 F 4,351,710
180 R 4,351,709
192 EC 4,351,712
207 4,351,713
298 4,351,714
301 4,351,715

CLASS 206
264 4,351,433
366 4,351,434
379 4,351,435
477 4,351,436

CLASS 208
8 LE 4,351,716
216 PP 4,351,717
262 4,351,718

CLASS 209
234 4,351,719
545 4,351,437
675 4,351,438

CLASS 210
101 4,351,720
150 4,351,721
195.3 4,351,722
198.1 4,351,723
230 4,351,724
4,351,725
401 4,351,726
411 4,351,727
415 4,351,728
603 4,351,729
629 4,351,730
647 4,351,731
689 4,351,732
738 4,351,733
748 4,351,734

CLASS 211
49 D 4,351,439
57.1 4,351,440
207 4,351,441

CLASS 215
216 4,351,442
4,351,443

CLASS 219
10.49 R 4,351,996
10.55 B 4,351,999
10.55 E 4,351,997
10.55 R 4,351,998
10.77 4,352,000
64 4,352,001
78.15 4,352,002
103 4,352,003
121 ED 4,352,004
121 LG Re.31,042
121 LJ 4,352,005
219 4,352,006
301 4,352,007
540 4,352,008

CLASS 220
20 4,351,444
91 4,351,445
210 4,351,446
306 4,351,447
318 4,351,448
4,351,449
319 4,351,450
420 4,351,451

CLASS 221
11 4,351,452

CLASS 222
83.5 4,351,453
143 4,351,454
153 4,351,455
400.7 4,351,456

CLASS 223
57 4,351,457
106 4,351,458

CLASS 225
96.5 4,351,459

CLASS 226
25 4,351,460
28 4,351,461
150 4,351,462
154 4,351,463

CLASS 227
7 4,351,464
4,351,465
8 4,351,466
142 4,351,467

CLASS 228
4.5 4,351,468
135 4,351,469
157 4,351,470

CLASS 229
15 4,351,471
43 4,351,472
4,351,473
68 R 4,351,474

CLASS 235
92 EV 4,352,010
92 ST 4,352,009
375 4,352,011
487 4,352,012

CLASS 237
46 4,351,475
50 4,351,476

CLASS 239
205 4,351,477
227 4,351,478
265.23 4,351,479
585 4,351,480
670 4,351,481
703 4,351,482

CLASS 241
24 4,351,483
30 4,351,484
36 4,351,485
67 4,351,486
92 4,351,487
224 4,351,488
261.3 4,351,489
286 4,351,490

CLASS 242
18 PW 4,351,491
18 R 4,351,492
35.5 A 4,351,494
47.01 4,351,495
107.4 A 4,351,496
152.1 Re.31,041
190 4,351,493
194 4,351,497
204 4,351,498

CLASS 244
3.24 4,351,503
3.27 4,351,499
105 4,351,500
129.1 4,351,501
219 4,351,502

CLASS 246
249 4,351,504

CLASS 248
316 D 4,351,505
344 4,351,506

CLASS 249
63 4,351,507
90 4,351,508

CLASS 250
223 R 4,352,013
253 4,352,014
283 Re.31,043
311 4,352,015
358.1 4,352,016
4,352,017
363 S 4,352,018
394 4,352,019
561 4,352,022

CLASS 251
38 4,351,509
118 4,351,510
174 4,351,511
214 4,351,512

CLASS 252
1 4,351,735
8.6 4,351,736
8.75 4,351,738
8.8 4,351,737
62 4,351,739
90 4,351,740
313 R 4,351,741
357 4,351,753
373 4,351,742
408 4,351,743
4,351,744
511 4,351,745
4,351,746
4,351,747
522 R 4,351,748
629 4,351,749

CLASS 260
112 R 4,351,760
4,351,761
112.5 E 4,351,763
112.5 R 4,351,762
112.7 4,351,764
163 4,351,765
239.1 4,351,766
239.55 R 4,351,767
326.13 R 4,351,768
326.34 4,351,769
383 4,351,774
429 R 4,351,775
465 G 4,351,776
4,351,777
465.8 R 4,351,778
970 4,351,779
974 4,351,780

CLASS 261
29 4,351,781
39 A 4,351,782
44 E 4,351,783

CLASS 264
22 4,351,784
40.1 4,351,785
46.7 4,351,786
65 4,351,787
67 4,351,788
130 4,351,789
174 4,351,790
267 4,351,791
293 4,351,792
518 4,351,793

CLASS 266
156 4,351,513
217 4,351,514

CLASS 267
8 R 4,351,515

CLASS 269
27 4,351,516

CLASS 270
52 4,351,517

CLASS 271
90 4,351,518
117 4,351,519
315 4,351,520

CLASS 272
52 4,351,521
4,351,522
67 4,351,523
85 4,351,524
93 4,351,525
122 4,351,526
137 4,351,527

CLASS 273
67 A 4,351,528
75 4,351,529
82 R 4,351,530

CLASS 277
22 4,351,531
53 4,351,532
83 4,351,533
235 B 4,351,534

CLASS 280
5 R 4,351,535
7.13 4,351,536
11.12 4,351,537
11.26 4,351,538
47.26 4,351,539
242 WC 4,351,540
408 4,351,541
489 4,351,542
615 4,351,543
743 4,351,544
806 4,351,545

CLASS 281
45 4,351,546

CLASS 283
8 R 4,351,547
21 4,351,548

CLASS 285
27 4,351,549
158 4,351,550

CLASS 289
2 4,351,551

CLASS 290
42 4,352,023
52 4,352,024
54 4,352,025

CLASS 292
201 4,351,552

CLASS 294
106 4,351,553

CLASS 296
24 R 4,351,554
37.16 4,351,555
63 4,351,556
97 D 4,351,557
187 4,351,558
195 4,351,559
216 4,351,560
4,351,561

CLASS 297
345 4,351,562
408 4,351,563

CLASS 299
1 4,351,564
4,351,565
5 4,351,566
45 4,351,567

CLASS 301
6 V 4,351,569
36 R 4,351,568

CLASS 303
24 F 4,351,570
40 4,351,571

CLASS 305
27 4,351,572
54 4,351,573

CLASS 307
14 4,352,026
221 R 4,352,027
252 A 4,352,028
317 R 4,352,029
350 4,352,030
444 4,352,031
515 4,352,032

CLASS 308
3 A 4,351,574
3.8 4,351,575
37 4,351,576
189 R 4,351,577

CLASS 310
52 4,352,033
59 4,352,034
80 4,352,035
83 4,352,036
89 4,352,037
323 4,352,038
328 4,352,039

CLASS 313
217 4,352,040
485 4,352,042

CLASS 315
1 4,352,043
111.21 4,352,044
291 4,352,045
362 4,352,046
370 4,352,047

CLASS 316
1 4,351,578

CLASS 318
135 4,352,048
370 4,352,049
661 4,352,050
790 4,352,051

CLASS 320
2 4,352,052

CLASS 323
220 4,352,053
224 4,352,054
263 4,352,055
314 4,352,056
315 4,352,057

CLASS 324
51 4,352,058
61 R 4,352,059
4,352,060
158 F 4,352,061
169 4,352,062
171 4,352,063
178 4,352,064
238 4,352,065
321 4,352,066
434 4,352,067
452 4,352,068

CLASS 328
127 4,352,069
151 4,352,070

CLASS 329
105 4,352,071

CLASS 330
149 4,352,072
264 4,352,073

CLASS 331
17 4,352,074

CLASS 333
28 R 4,352,075
204 4,352,076
252 4,352,077

CLASS 336
60 4,352,078
65 4,352,079
83 4,352,080
198 4,352,081

CLASS 337
409 4,352,082

CLASS 338
23 4,352,083
42 4,352,085
127 4,352,084

CLASS 339
14 R 4,351,579
17 CF 4,351,580
95 D 4,351,581
97 R 4,351,582
259 R 4,351,583

CLASS 340
35 4,352,086
52 F 4,352,088
4,352,089
52 R 4,352,090
311.1 4,352,091
347 AD 4,352,094
347 DA 4,352,092
4,352,093
347 DD 4,352,095
571 4,352,097
572 4,352,098
632 4,352,087
633 4,352,099
723 4,352,100
769 4,352,101
784 4,352,102
815.06 4,352,096
825.01 4,352,103
825.15 4,352,104

CLASS 343
5 CD 4,352,105
18 C 4,352,106
715 4,352,107
756 4,352,108
792 4,352,109
844 4,352,110
860 4,352,111
915 4,352,112
4,352,113

CLASS 346
140 R 4,352,114

CLASS 350
89 4,351,584
96.15 4,351,585
96.20 4,351,586
255 4,351,587
259 4,351,588
342 4,351,589

CLASS 352
140 4,351,590

CLASS 353
25 4,351,591
72 4,351,592

CLASS 354
27 4,351,593
60 L 4,351,600
139 4,351,594
173 4,351,595
234 4,351,596
266 4,351,597
288 4,351,598
4,351,599

CLASS 355
3 CH 4,351,603
3 R 4,351,602
3 SH 4,351,601
4 4,351,604
8 4,351,605
14 R 4,351,606
35 4,351,607
4,351,608
50 4,351,609
86 4,351,610

CLASS 356
328 4,351,611

CLASS 357
13 4,352,115
17 4,352,116
30 4,352,117
38 4,352,118
78 4,352,119
81 4,352,120

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